APPENDIX III: DRILL LOGS

Blackwater Project
Drill Logs

Hole ID:	BW0300	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375202.1
Depth (m):	273.5	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5892649.53
Azimuth:	0	Date Completed:	11/01/2012	Casing (m):	23	Elevation (m):	1621
Dip:	-90	Logged By:	CML	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	6.4	-89.7
153	18.4	-89.9
252	176.4	-89.1
273.5	166.9	-89.3

Blackwater Project
Drill Summary - Lithology

BW0300

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	23	OB							
23	43	DYKE	mxtl		D	GRY	UNKN		and, porphyritic texture, massive and? intrusion?, plag lathes .5-1.5mm locally crowded, some qtz, some hb; local flting to 43m; fx-controlled brn-orng goe decreasing w/ depth
43	69	DYKE	mxtl		D	GRY	OXFR		as above, base of oxid'n
69	108	DYKE	mxtl		D	GRY	UNKN		continuation of above, locally darker and lighter, tr po @ depth, 10cm interval @88.35m w/ increased plag/qtz and 3%sp>py (possible inclusion)
108	114	DYKE	mxtl		D	GRY	INTR	SH	increased fspr from above, undulating c^20 ctc b/t intrusive and AND
114	135.5	AND	lpt		D	GRY	FLT	GR10	volcanoclastic andesitic, mafic fragments in mafic matrix; wk carb vning; wk po; flt'd @119.7-121m
135.5	155	VC	bx		MO	GRY	UNKN		polymictic comp, volcanoclasic text; miafic dominant, fx-controlled oxid'n, scant po
155	163.4	AND	bx		D	GRY	DEP	GR5	andesitic clasts in andesitic matrix; v.wk fx-controlled orng-brn goe; clasts .3-2cm, sub-angular
163.4	200	FLPT	bx		M	GRY	OXFR	GR30	texturally similar to above w/ strong felsic content, some fx-controlled oxid'n, strongest @174.5-180m assoc w/ flting
200	204	FLPT	bx		M	GRY	UNKN		as above w/ no oxid'n
204	214.7	VC	lpt		MO	GRY	DEP	GR30	andesitic dominant volcanoclastic interval, some distortion on felsic clasts; scant sulfides, v.wk local bleaching as vn halos, wk chl in groundmass
214.7	226	VC	lpt		D	GRY	FLT		still poorly sorted, with >50% 2-20mm
226	250.3	VC	lpt		D	GRY	FLT		fault zone w/ some fx-controlled oxid'n, 1 apy-rich vn @239.9m
250.3	273.5	VC	lpt		D	GRY	UNKN		andesitic-dominant volcanoclastic w/ wk flting and wk fx-assoc oxid'n; EOH, hole wedged

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0300		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
23	29.3	T		0	PERV	3		0		0							clay-matrix w/ plag lathes to clay
29.3	31.3	T		0	REP	1		0		0							plag lathes w/ some wk clay replacement
31.3	34	T		0	REP	2		0	FR	2							some clay-ser halos assoc w/ oxid'd fx @33.5m
34	40.5	T		0	REP	1		0		0							plag lathes w/ some wk clay replacement
40.5	41.2	T		0	PERV	3		0	FR	2							clay-matrix w/ plag lathes to clay, assoc w/ flt
41.2	55	T		0	REP	1		0		0							wk clay after palg, oxid'n decreasing w/ depth
55	69	T	FR	1		0		0		0							base of oxid'n
69	88.35	S	FR	1		0	FR	1	FR	1							v.wk bleaching along fx w/ some silica
88.35	88.5	S	PATC	2	REP	1	PATC	1	PERV	2							possible reaction rim, increased bleaching
88.5	108	S	FR	1		0	PATC	1	FR	1							wk ser (possible clay) bleaching along fx .5-3cm
108	135.5	S		0		0	PATC	1		0	CAL	VN	1				v.wk carb-anhy vnlts
135.5	155	T		0	FR	1	PATC	1		0	CAL	VN	1				wk orng-red-brn goe on fx strongest @148-151m
155	163.4	T	FR	1		0	PATC	1		0							
163.4	183.5	T	REP	1		0	PATC	2	PERV	1	BIOT	CLST	1				intermittant patchy silicified zones (3-10cm), some drk brn biot
183.5	187	T		0	FR	1	PATC	1	VNHL	3							bleached vnlt halos .3/1/5-20cm
187	200	T	PATC	1		0	PATC	1	PATC	1							
200	205	S	PATC	1		0	PATC	1	PATC	1							
205	214.4	S	PATC	2		0	PERV	3	VNHL	1	BIOT	CLST	1	CAL	VN	1	drk grn chl in 2-10cm unduating patches, mod silicified, wk ser bleaching on scant carb vnlts
214.4	225.5	S	FR	1		0	CLST	2	CLST	1	BIOT	CLST	1				wk silicifed clasts
225.5	225.8	S	FR	3	FR	1	PERV	1		0							drk grn chl on fx
225.8	228.5	T	FR	2		0	CLST	1		0	BIOT	CLST	1				
228.5	230.4	S		0		0	PATC	1		0	CAL	VN	1	TALC	VN	1	calcite-talc vnlts
230.4	242	T	FR	2	FR	1	CLST	1		0	BIOT	CLST	1				
242	243.5	T	FR	1		0	CLST	1		0	BIOT	CLST	1	CAL	VN	1	carb vnlts
243.5	250.4	T		1	FR	1	CLST	1	MTRX	1							wk ser in annealed flt zone
250.4	273.5	T	FR	2	FR	1	CLST	1		0	BIOT	CLST	2				v.wk yellow-grn clay on fx; v.wk drk grn chl on fx

Blackwater Project
Drill Summary - Mineralization

BW0300		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
23	34		0		0		0	Goe	FP	5							fx-controlled orng-brn goe
34	40.3		0		0		0	Goe	FP	1							as above
40.3	41.2		0		0		0	Goe	FP	10							as above
41.2	55		0		0		0	Goe	FP	0.5							fx-controlled oxid'n
55	69		0	DI	0.1		0	Goe	FP	0.1							base of oxid'n, tr red-brn sp
69	88.35		0	DI	0.1		0										tr sp
88.35	88.5	DI	1	DI	3	DI	1	Cp	DI	0.1							intergrown plag w/ red-brn sp>>bright anh py, wk brassy po, tr cp
88.5	108		0	DI	0.1	DI	0.1										
108	126	DI	0.1	DI	0.1	DI	0.1	Ga	FP	0.1							
126	126.7		0		0		0	Goe	FP	0.5							wk fx-controlled reddish-brn goe
126.7	135.5	DI	0.1		0	DI	0.1										
135.5	147.5	DI	0.1		0	CR	0.5	Goe	FP	0.5							wk po concentrated in some mafic clasts
147.5	154.5		0		0		0	Goe	FP	1							reddish orng-brn goe on fx
154.5	163.6		0		0		0	Goe	FP	0.5							
163.6	174.5	DI	0.1	CR	0.5	CR	0.5	Goe	FP	0.1							wk intergrown sp-po in mafic clast sites
174.5	180	VN	2	VN	1		0	Goe	FP	3							tarnished anh py vnlts, increased oxid'n assoc w/ flt
180	200	DI	1	DI	0.5	DI	0.1	Goe	FP	0.1							fine diss'd py in matrix
200	205	DI	1	DI	0.5	DI	0.1										
205	221	SP	0.1		0	CR	0.5	Mrc	FP	0.5							spotty po as replacement in mafic clasts
221	225.8	SP	0.1		0	DI	0.1										
225.8	228.3	FP	0.5		0		0	Goe	FP	1	Cp	FP	0.1				wk py (w/ tr cp) stringers in fx along clast boundries
228.3	239.9	SP	0.1		0	CR	0.5										
239.9	240		0		0		0	Apy	VN	10							2-5mm c^25 apy vn w/ euh xtls .2-5mm
240	246.2	SP	0.1		0	DI	0.1										
246.2	250.5	FP	0.1		0	DI	0.1	Goe	FP	0.5							wk orng-brn goe in annealed flt
250.5	273.5	SP	0.1		0	SP	0.1	Goe	FP	1							

Blackwater Project
Drill Summary - Structure

BW0300

From (m)	To (m)	Structure	Strength	Comments
23	41.2	FZ	3	series of jnt failures w/ orng-brn goe on fx
41.2	44.1	BRKZ	3	blocky w/ some well jnt'd w/ orng brn goe on fx
44.1	56	JZ	2	v.wkly jnt'd w/ v.wk orng-brn goe on fx
56	108	JZ	1	v.wk jnts w/ cly or chl
108	119.5	JZ	1	v.wkly jnt'd
119.5	121	FL	4	sandy clay gge w/ some blocky-rubble
121	135.4	JZ	2	wk rough undulating jnts
135.4	149	BRKZ	3	wkly blocky w/ some well jnt'd
149	150	FL	4	sandy oxid'd caly w/ rubble
150	155	JZ	3	mod jnt'd, v.wk oxid'n
155	163.1	BRKZ	3	blocky w/ some rubble, wk oxid'n
163.1	167.8	JZ	2	rough stepped fx
167.8	170.5	BRKZ	3	mod oxid'd blocky-rubble
170.5	182	FL	3	blocky w. sandy clay-rich gge, mod oxid'd
182	203	JZ	2	rough stepped jnts
203	225.5	JZ	2	as above
225.5	250.5	FZ	3	series of intense rubble zones w/ competent material b/t
250.5	257.4	JZ	1	orng-brn goe-coated fx
257.4	262.5	BRKZ	3	jagged blocky oxid'd
262.5	268	JZ	2	rough stepped oxid'd jnts
268	273.5	FL	3	blocky-rubble w/ sandy clay gge @271.6m

newgold
a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0301	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376002.07
Depth (m):	334.5	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5893199.1
Azimuth:	180	Date Completed:	08/01/2012	Casing (m):	0	Elevation (m):	1525
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	180	-90
151.5	199.1	-88.2
202.5	196.4	-87.9
250.5	192	-88
301.5	183.9	-87.6

newgold
a clear direction

Blackwater Project
Drill Summary - Lithology

BW0301

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	49.5	OB							
49.5	51.2	VC	ms	LAP	M	GRY	DEP		oxidized volcaniclastic with tecture obscured. subangular moderately sorted clasts within ash matrix. Majority of clasts appear to be mafic.
51.2	91.5	AND	mas	LAP	M	GRY			massive andesite with autobreccia sections. Oxide on fractures, chlorite pervasive.
91.5	101.8	AND	cgl	CA	D	GRY	ALTFR	GR10	Dark Gray Clasts and Matrix of AND. poor-mod sorting. Near bottom contact weak bleaching chloritically alters clasts and bleaches matrix. minor Plag grains (<2mm), weakly sericite altered. minor-abundant amygdules (<3mm), sericite/chlorite/silica fil
101.8	103.6	FT	amg	CA	L	GRN	ALTFR	SH	Light green-gray bleached AND? Trace sericite replaced plag grains. sericite filled amygdules. Silica blebs (Silica filled amygdules?). Bottom contact sharp contact at 30 dtca.
103.6	108.1	AND		FA	L	GRY	FLT	GR10	Light gray-green bleached AND? minor-moderate sericite replacing clasts, grains (and filling amygdules?). Small clast fragments moderatley sorted sub rounded to angular. Bottom contact gradational clay rich fault gouge over 10-15cm.
108.1	155	AND	bx	LAP	D	GRY	UNKN	GR30	Dark Gray matrix supporting Grayish Black Amygdaloidal AND clasts (from 1-58mm majority, with some bomb size calsts). Clast Amygdules silica filled (locally Po fill). Interfingering at 111.65-111.95m, purple matrix with 90% mafic:10% felsic clasts, a
155	209.1	AND	t	LAP	D	GRY	DEP	SH	tuffaceous clastic AND. Grayish Black Clasts ranging from <2mm to 20mm, supported by D.Gray Matrix. locally silica filled amygdules (minor), locally crystal bearing (Crystal Tuff).
209.1	269	VC	t	LAP	M	GRY	UNKN	GR10	locally variable L. to M.Gray matrix supported 2mm to 40mm 75:25 Mafic:Felsic sub-angular to angular clasts. size of clasts variable within unit, as well as % of matrix. Bottom contact appears airly gradational over ~5-10cm with a small section of in
269	283.5	AND	mas	LAP	D	GRY	UNKN		massive AND locally flow brecciated and/or amygdaloidal (silica filled), amygdules < or = to 3mm.
283.5	285.3	AND	mas	LAP	D	GRY	DEP	GR30	massive AND, Amygdaloidal at top of section into flow Bx at bottom of Litho bordering contact with next litho. Silica filled amygdules < or = to 7mm.
285.3	290.2	AND	mas	LAP	M	GRY	DEP	GR30	massive AND, Amygdaloidal and plag porphyritic at top of section into flow Bx at bottom of Litho bordering contact with next litho. Silica filled amygdules < or = to 2mm.

Blackwater Project
Drill Summary - Lithology

BW0301

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
290.2	334.5	AND	mas	LAP	D	GRN			massive AND, repeated sections of massive Amygdaloidal AND punctuated by non-amygdaloidal and amygdaloidal flow bx AND. Silica filled amygdules higly veriable in size.

Blackwater Project
Drill Summary - Alteration

BW0301		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
49.5	51.2	O	PATC	1	PERV	1	PATC	1	PATC	1							oxidized volcaniclastic with sericite and chlorite alteration noticeable where less oxidized. hematite and jarosite on fractures, in patches and through clasts.
51.2	91.5	T	PERV	2	PATC	1		0		0							pervasive chlorite, clay in patches giving core lighter colour and within broken zones. limonite on and rimming fractures, and intense oxidation from 58.6 to 60m. Hematite in autobreccia matrix locally
91.5	101.9	T	REP	1	FR	1	PERV	1	INFILL	1	CAL	VN	3				transition zone, limonite oxidation on FP's and patchy throughout (oxidation of sulphide masses?). Sericite infills amygdules, and appears with calcite in veins. Chlorite is trace at best, and replaces the trace relict plag grains.
101.9	103.6	S	PERV	2	FR	3	PERV	2	INFILL	3	SIL	AMYG	1	TALC	FR	1	bleached rock, with weak-moderate chlorite perasive chlorite alteration. Silica is weakly pervasive moderatley in patches, occurs as silica blebs as well (relict silica filled amygdules?). disseminated sericite blebs (infilling relict amygdules), and sericite replacemement of trace relict rectangular grains. Clay occurs moderatley on FP's. Talc occurs weakly mixed in with clay on FP's.
103.6	108.1	S	REP	1	FR	2	PERV	2	REP	1							bleached rock, with moderate chlorite and sericite raplacing grains/clasts. Clay occurs weakly-moderatley on FP's.
108.1	124.5	S		0	FR	1	AMYG	3	AMYG	1	SIL	MTRX	2	CAL	VN	1	dark gray to blackish gray. Weak-moderate matrix dominant silicification. Silica filled amygdules abundant, locally sericite present as well. Clay on FP's, calcite in veinlets.
124.5	142.2	S		0		0	AMYG	1		0							dark gray to grayish black. weak pervasive silicification, qtz is abundant as fracture fill, veining, and as amygdule filler where amygdules are present.
142.2	155	S		0		0	AMYG	1		0							weak perv silicification, amygdules silica filled.
155	160.5	S	INFILL	2		0		0		0							fault zone. Chlorite moderatley mixed in with gray and white clay of fractures

Blackwater Project
Drill Summary - Alteration

BW0301		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
160.5	179.1	S	VN	1	VN	1		0		0							hardness <2 L.Green to White clay/chlorite mixture as masses in calcite veins.
179.1	197	S		0		0	PERV	2		0							weak pervasivie silicification. Weakly bleached locally.
197	198.2	S		0		0	MTRX	2		0							matrix dominant silicification, weakly bleached.
198.2	209.2	S	PATC	1	CLST	1		0	CLST	1							weakly bleached locally. clast/crystal replacement with <2 hardness white to L.Gray sericite/clay. Chlorite is patchy replacing some grains and groundmass.
209.2	222.2	S	PATC	1	PATC	1		0	PATC	2							pale-green to olive soft~2-2.5 hardness patchy sericite-chlorite mix. patchy aggregates of sericite chlorite and clay on FP's and within some veins, non-divisible fractions.
222.2	243.6	S	PATC	2	FR	2	CLST	1	PATC	3							moderate clay on FP's and filling fractures. Felsic clasts silica replaced.
243.6	250	S	PATC	2		0	CLST	1	PATC	2							
250	257	S	PATC	1		0	MTRX	3	PATC	1	SIL	CLST	1				silicification matrix and elsic clast dominant.
257	264.7	S	PATC	1		0	CLST	1	PATC	2							wak matrix dom siliciication. 5cm Sericite patch at
264.7	266	S		0		0	MTRX	2	PATC	2	SIL	CLST	1				
266	269	S		0	VNHL	1	CLST	1	PATC	2							soft clay pervasive halos around mixed calcite and clay veinlets.
269	275	S	FR	1	FR	2	AMYG	1		0							silica filled amygdules where present. Oriented clay strongly grown of FP's locally. Chlorite on FP's
275	282	S		0	VNHL	1	PERV	4		0							pervasivley silicified.Clay in alteration halos around calcite veinlets.
282	291.7	S	SPHL	1		0	PERV	4		0							chlorite associated with Po mineralization locally, haloing
291.7	302.5	S		0		0	PERV	4		0	BIOT	PATC	1				patchy biotite, reducing hardness from silicification.
302.5	315.5	S	FR	2	FR	1	PERV	3		0							weak chlorite coating of FP's locally, locally with clay.
315.5	316.4	S	PATC	3	PERV	5		0		0							bleached rock, pervasivley clay altered. patchy chlorite alteration.
316.4	327.7	S	VN	1		0	PERV	3		0	BIOT	PATC	1				pervasivley silicified. chlorite lining calcite veinlet locally. Biotite patchy replacing small grains in GM.

Blackwater Project
Drill Summary - Alteration

BW0301		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
327.7	328.5	S		0	VN	1	PERV	1		0							clay mixed in with calcite in veinlets.
328.5	330.5	S		0		0	PATC	1		0							patches of silicification among broken fragments.
330.5	332.7	S		0		0	PERV	3		0							
332.7	334.5	S		0		0	AMYG	1		0	CAL	AMYG	1				calcite and silica amygdule filler.

Blackwater Project
Drill Summary - Mineralization

BW0301		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
51.2	61.5	DI	0.1		0	DI	0.1										trace disseminated sulphides.
61.5	74	DI	0.1		0	DI	0.5										disseminated pyrrhotite
74	91.5	DI	0.1		0	DI	0.5										disseminated pyrrhotite.
91.5	103.6	DI	0.1		0	DI	0.1										Py trace local disseminations. Po occurs as minor disseminations locally associated with calcite blebs and discontinuous veinlets.
103.6	108	DI	0.1		0		0	Ga	DI	0.1							Py disseminated amongst patches of microbrecciations, with a sericite/clay matrix. disseminated galena locally as blebs or euhedral (<= 3.5mm).
108	124.5	DI	0.5		0		0.1	Py	EU	0.1							Euhedral (cubes and octahedra) Py in patchy disseminations, as well as small crystals as larger cube-like disseminations. Po occurs in patches as amygdule infill and as partial amygdule infill with silica.
124.5	138	DI	0.1		0		0										trace disseminated pyrite localized around faults.
138	151	FP	0.5		0	VN	0.1	Py	DI	0.1	Py	MA	0.1				Py; blebs of microgranular Py in between fragments in fault zones,weakly disseminated, and microgranular discoid aggregates of Py coating FP's locally. Po and Sp occur locally in veinlets. Py, calcite and occassionally Po occur in <1-2mm veinlets. Ap
151	160.5	VN	0.5		0	DI	0.1										strongly veined blebby Py assoc with chlorite. very finely disseminated Po locally.
160.5	168	VN	0.5		0	DI	0.5	Py	DI	0.1							Py weakly veined and finely disseminated. Po finely disseminated.
168	169	DI	0.1	BB	0.5		0	Apy	VN	1							finely DI Py and APy. APy is veined with Blebs of Sp in and around the veins/veinlets.
169	172.8	BB	0.5		0		0										blebs of Py infilling fractures.
172.8	188.5		0		0	FP	0.5	Po	DI	0.1							Po finely disseminated and aggregates on FP's
188.5	198.2	VN	0.1	VN	0.1	DI	0.5	Po	VN	0.1							Euhedral Py in vein with weak Po. Po finely disseminated and in a vein with Sp blebs.

Blackwater Project
Drill Summary - Mineralization

BW0301		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
198.2	205.5	VN	0.1	VN	0.1	DI	0.5	Po	VN	0.1	Po	BB	0.1				Po DI>BB>VN. Py and Sp occur together in a discontinuous veinlet with Calcite.
205.5	209.1		0	VN	0.1	DI	0.5	Po	VN	0.1	Apy	VN	0.1				Po finely disseminated. APy occurs in veinlets with Po or Sp.
209.1	213.6		0		0.5	VN	0.5		SP	0.1							Po blebby and veined. Unknown brown soft mineral, specks. Apy VN locally. Red-brown Sp DI.
213.6	225.5	DI	0.5	DI	0.1		0	Py	VN	0.1							Py veined and finely moderatley finely disseminated locally.
225.5	240		0		0	CR	0.5										local clast replacement.
240	251.5	DI	0.1		0	CR	0.5										local clast replacement and occassionally patchy disseminations.
251.5	254.3	VN	0.1		0		0	Apy	VN	0.1							APy VN'd and FP coating locally.
254.3	269.4	DI	0.1		0	DI	1										clast replacing DI Po as well as patchy DI's.
269.4	270.5		0		0	DI	0.5										Po amygdule filler, along with silica.
270.5	281	VN	0.5		0	DI	1										Py veined and local blebs. Po disseminated and blebs.
281	291	VN	0.1		0	DI	1										Po fill amygdules, DI, and BB;s
291	308.3	VN	0.1		0	BB	1.5										blebs of Po partially filling amygdules, DI locally as well. Py veined.
308.3	328	FP	0.1		0	DI	1										Po Di and blebby, amygdule filler where present. Euhedral aggregates of Py crystals on FP's
328	334.5	DI	0.1		0	DI	0.1										weakly disseminated Py adn Po, locally weakly veined Py.

Blackwater Project
Drill Summary - Structure

BW0301

From (m)	To (m)	Structure	Strength	Comments
49.5	60	BRKZ	3	broken to jointed core. intensely oxidized from 58.6 to 60m, with clay.
60	91.5	JZ	2	joint set at 30 degrees.
91.5	92.3	JZ	2	jont zone with angles of 30-55 dtca
92.3	95	JZ	4	joint zone with angles of 30-80 dtca
95	101.8	JZ	2	joint zone with strong orientation of 60 dtca.
101.8	103.4	FZ	4	broken/fault zone, bleached rock with abundant clay and broken fragments. top and bottom contacts at 50 and 60 respectively.
103.4	107.5	JZ	2	joint zone, bleached rock with minor clay.
107.5	108.2	FL	5	fault with major amounts of dark gray fault gouge.
108.2	112.8	JZ	3	
112.8	119.9	BRKZ	2	
119.9	129	FZ	4	fault zone, spanning numerous meters with a number of visible faults at 35,40 and 30 dtca.
129	135.8	FL	5	fault, fragments within a mostly intact clay fault gouge.
135.8	137.5	FZ	3	broken intact rock with minimal clay fault gouge.
137.5	138.8	FL	5	fault, fragments within a mostly intact clay fault gouge.
138.8	148.5	JZ	3	joint zone, locally broken. Planes opf weakness created by moderate calcite veining. jointing from 25-70 dtca.
148.5	151.6	BRKZ	2	ragmental
151.6	155.5	JZ	3	
155.5	157.5	FL	3	partially annealed fault, minor-abundant clay interstitial to fragments.
157.5	158.4	JZ	3	
158.4	162.2	FL	4	locally annealed fault, gouge and fragmental.
162.2	163.2	JZ	3	
163.2	165.7	FZ	4	fragmental rock.
165.7	167.1	JZ	3	
167.1	168	BRKZ	3	
168	172.9	FZ	5	fragments in abundant clay (fault gouge). Locally partially intact and annealed.
172.9	209.2	JZ	4	
209.2	216	FZ	3	

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Blackwater Project
Drill Summary - Structure

BW0301

From (m)	To (m)	Structure	Strength	Comments
216	218.6	BRKZ	3	
218.6	220.1	FZ	3	fault zone minor gouge.
220.1	223.2	JZ	2	
223.2	225.5	FZ		fault/fault zone, broken rock and sharp contact with abundant clay and fragments.
225.5	236.1	JZ	2	joint zone, with numerous small joint failures.
236.1	236.2	FL	4	joint failure fault.
236.2	237.6	JZ	3	joint zone with fractures at 45 ad 60 dtca.
237.6	238.3	FL	4	fault with minor clay but abundant rock ragments.
238.3	267.9	JZ	4	joint zone with 45, 60, 70 dtca
267.9	269.1	FL	3	intact partially annealed fault, broken fragments in clay.
269.1	270.8	JZ	2	Weak joint zone.
270.8	271.6	FL	3	intact partially annealed fault.
271.6	275	BRKZ	2	
275	282.3	JZ	2	competent fault rock, rock fragments with interstitial clay.
282.3	296.8	JZ	3	joint zone with redrill from; 294.36-294.5. 40-50 dtca.
296.8	298.1	BRKZ	2	
298.1	308.2	JZ	3	joint zone with multiple fracture angles from 20-50 dtca.
308.2	308.5	BRKZ	2	
308.5	311	JZ		fractures range from 5-40 dtca.
311	311.7	JZ	3	one fractue at 60 dtca.
311.7	312.3	BRKZ	3	
312.3	313.5	JZ	3	
313.5	313.7	BRKZ	3	
313.7	315.6	JZ	3	fractures at 70 dtca, veins at 35.
315.6	316.4	FZ	4	bleached fault zone, chloritized and clay rich.
316.4	316.7	JZ	2	intact, only broken on vein lines.
316.7	317.6	BRKZ	3	broken planes all calcite covered.
317.6	334.5	JZ	3	

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Blackwater Project
Drill Logs

Hole ID:	BW0302	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375751.62
Depth (m):	353.5	Date Started:	14/12/2011	Casing Size:	HWT	Northing:	5893250.39
Azimuth:	0	Date Completed:	09/01/2012	Casing (m):	13	Elevation (m):	1537
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	227.4	-89.5
106	199.9	-89.3
157	160.2	-89.8
208	253.3	-89.9
259	249.8	-89.5
310	260.1	-89.3
353.5	223.3	-89.4

Blackwater Project
Drill Summary - Lithology

BW0302

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10	OB							
10	22.1	FT	lam	CA	P	OR	OXFR	GR5	Oxidized felsic tuff with laminated bands, weak clay alteration, vuggy surface where sulphides have leached
22.1	38.5	FLPT	t	LAP	L	GRY	FLT	GR10	Grey green polymicitc felsic tuff with clay altered clasts, chlorite altered clasts and clasts with sulphide replacement. Matrix is made up of broken microbreccia
38.5	52	AND	autbx	LAP	D	GRY	DEP	GR5	Dark grey to black autobrecciated andesite unit with larger amygdaloidal clasts, weakly faulted and grading into a more volcanoclastic sequence below
52	54.6	VC	plm	LAP	M	YLW	FLT	SH	light green pale yellow chlorite/clay altered volcanoclastic unit with pyrite stringers. Clasts are sub-angular, moderately sorted with a finer grained 1-2mm sized matrix and lapilli sized randomly oriented fragments 25% of which are mafic
54.6	73.4	FLPT	bx	LAP	M	CRM	FLT	GR30	Cream grey green felsic lapilli tuff hydrothermal breccia. Rock is strongly altered with clay alteration as gouge and abundant dbs
73.4	82	VC	volc	LAP	D	GRY	FLT	GR10	Mafic volcanoclastic bound by faults between felsic units, polymicitc with clay altered halos and some larger clasts of more crystalline looking porphyritic input, very fine 0.5mm laths, some oval shaped clay spheres, weak chlorite alteration
82	114.3	FT	lam	LAP	M	CRM	DEP	GR5	Light grey green laminated felsic tuff breccia. Clasts are mostly between 2-5cm and are laminated in random orientations within the breccia. More pebbly sizes 2-5mm matrix.
114.3	116.1	VC	volc	LAP	M	GRN	DEP	GR5	Small volcanoclastic unit between felsic tuff and andesite units, more mafic in composition (makes sense with underlying andesite) weakly altered
116.1	289	AND	autbx	LAP	D	GRY	FLT	GR10	Dark grey to black andesite autobreccia, with locally amygdaloidal clasts. Unit is moderately faulted, calcite veining appears at 173.6m
289	298.8	FT	aph	CA	M	GRN	FLT	GR10	Grey green felsic tuff? strongly obscured by alteration. no visible texture, possibly altered andesite?
298.8	353.5	AND	autbx	LAP	D	GRY			Dark grey auobrecciated andesite, locally amydaloidal, no visibile calcite veining (washed out by alteration?)

Blackwater Project
Drill Summary - Alteration

BW0302		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10	22.1	T		0		0	PERV	2	OP	2	LIM	FC	3				Transitional zone, clay as a result of deformation, weak silica alteration and sericite overprint
22.1	38.5	S	CLST	2		0	PERV	3	OP	2							Strongly faulted clay altered sulphide zone, chlorite alltering clasts, sericite overprint and pervasive silica
38.5	52	S	FC	2		0		0	OP	2							Weak chlorite on fractures
52	54.6	S	CLST	2		0		0	OP	2							weak chlorite alteration of clasts
54.6	73.4	S		0	REP	2	PERV	3	OP	1							silica intensifies, clay replacement in small specks
73.4	82	S	FC	2		0		0	OP	1							chlorite alteration on fractures
82	114.3	S		0	CLST	3	PERV	3	OP	2							increased silica
114.3	116.1	S	FR	1	CLST	1	PERV	1	OP	2							Sericite overprint, weak silica and minor clay replacement of clasts.
116.1	173.5	S	FR	1		0	PATC	1	OP	2							Alteration is generally weak, with increased deformational clay, trace silica and increased sericite adjacent to structures
173.5	289	S	VN	1		0		0	PATC	2	CHL	FR	1				Weakly altered andesite with patchy sericite alteration concentrated around calcite veining, chlorite is also associtated with calcite veining and also occurs on fracture planes
289	298.8	S	FC	2		0	PERV	5	OP	1							Intense silica alteration completely obscuring texture, alteration is bound by faulting, probably a differenet litho type (FTFF)
298.8	353.5	S	FC	2		0	PATC	1	MTRX	2							Weak sericite altering matrix, clay as a result of deformation, chlorite controlled by fractures

Blackwater Project
Drill Summary - Mineralization

BW0302		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	29	DI	0.1	DI	0.5		0	Dbs	DEN	1							Purpley colored sphalerite disseminated blebbs with trace associated pyrite and minor Dbs
29	46	DI	0.1	DI	0.1		0	Dbs	LAM	1.5							DBS following laminations in rock
46	62	VN	0.5	DI	0.1		0	Dbs	DEN	0.5							Pyrite as small veinlets brassy in color, DBS and disseminated sphalerite throughout
62	72	DI	0.5	DI	0.5		0	Dbs	DEN	2							Sulphides as below but rock is strongly faulted with finer grained sulphide goo
72	82	DI	0.1	SP	0.1		0										trace sulphides
82	89	DI	0.1	DI	0.1		0	Dbs	DEN	3							Intense DBS within laminated felsic tuff breccia
89	94	VN	0.5	DI	0.1	SP	0.1	Dbs	DEN	0.5							Pyrite locally in small veinlets with fine grained sphalerite and pyrite, core appears to be a healed fault zone
94	112	DI	0.5	DI	0.5	SP	0.1	Dbs	DEN	1	Cp	SP	0.1				Specks of po and cp, increased DBs with associated py and sp
112	138	BB	0.1	DI	0.1	SP	0.1										Trace sulphides py > po > sp
138	156		0	GmR	0.1	DI	0.1										Trace pyrite locally associated with ground mass in autobreccia, specks of pyrrhotite
156	172	CR	0.5	CR	1	CR	0.5	Cp	CR	0.1							Increase in sulphides replacing amygdules in clasts, trace chalcopyrite
172	190		0	SP	0.1	DI	0.1										Specks of sphalerite and pyrrhotite
190	208	SP	0.1	SP	0.1	SP	0.1										Trace sulphides
208	228	DI	0.2	DI	0.1	DI	0.1	Cp	SP	0.1							Slight increase in visible pyrite, chalopyrite specks, trace sp and po
228	247	VN	0.5	DI	0.1	DI	0.1	Py	CR	0.1	Cp	CR	0.1				Pyrite as minor cross-sutting veinlets with chlorite rims, and also replacing amygdules in clasts with po
247	265	VN	0.5	BB	0.5	DI	0.1	Ga	SP	0.1	Cp	VN	0.1				Pyrite mostly in veins with chlorite and trace chalcoppyrite, speck of galena, minor sp and trace pyrrhotite
265	277	VN	0.1		0		0										Trace pyrite in shoddy veinlet

Blackwater Project
Drill Summary - Mineralization

BW0302		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
277	287	DI	1	SP	0.1		0	Ga	SP	0.1	Mrc	FP	0.1				Specks of disseminated pyrite throughout crushed core, sphalerite and galena occuring together in clusters
287	298	DI	1	DI	1	DI	0.1										Disseminated py and sp, trace po
298	305	DI	0.5	DI	0.5	SP	0.1	Ga	VN	0.1	Py	VN	0.5				Pyrite in veins and as disseminations, brassy in lustre, minor red colored sphalerite, trace galena
305	319	BB	1	DI	0.1	BB	0.5										Sulphides concentrated in amygdules with silica replacement
319	333	SP	0.1	DI	0.5	SP	0.1										Sulphides drop off with textural change (no amygdules)
333	353.5	BB	0.5	DI	0.1	BB	0.5										Sulphides in minor amounts again associated with amygdule replacement

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Drill Summary - Structure

BW0302

From (m)	To (m)	Structure	Strength	Comments
10	14	FL	2	Broken zone with weak gouge on fractures
14	17	BRKZ	2	Broken zone
17	23	JZ	2	weak joint set
23	38	FZ	4	Strongly broken and faulted rock with clay gouge
38	41.7	JZ	2	jointing at 30 and 50
41.7	45	FL	3	crushed fault gouge
45	53.8	JZ	3	joint set at 50, 30 and 15
53.8	57.6	FL	4	partially annealed and broken fault gouge
57.6	62	BRKZ	2	Broken zone between faults
62	76	FZ	3	Fault zone with clay gouge and annealed fault material
76	89	BRKZ	3	Broken core with no preffered orientation
89	95.3	FL	2	healed and weakly broken fault zone
95.3	107	BRKZ	3	broken core and rubble
107	122.5	JZ	2	weak jointing 35 and 50 degrees
122.5	149	BRKZ	4	broken zone with minor gouge between fractures (could be considered a very weak fault zone)
149	153.4	FL	4	Clay and fault gouge
153.4	171.3	BRKZ	4	broken core and local gougey intervals on the cm scale
171.3	180.2	JZ	3	jointing at 25-35 degrees
180.2	181.1	FL	2	small fault
181.1	185.5	JZ	2	weakly jointed section
185.5	187.8	FL	2	small fault with gouge and annealed core
187.8	260.5	JZ	3	joint sets at 60 and 45
260.5	299	FZ	5	Broken gouge and clay annealed core
299	305.8	BRKZ	3	Broken and weakly clay gougey zone
305.8	353.5	JZ	4	Jointing at 50, 60 and 30 degrees tca

Blackwater Project
Drill Logs

Hole ID:	BW0303	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375301.82
Depth (m):	491.5	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5893198
Azimuth:	0	Date Completed:	15/01/2012	Casing (m):	23.5	Elevation (m):	1571
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
34	236.7	-88.6
85	221.4	-88.4
138	236.4	-88.3
187	229.1	-88.4
238	228	-87.9
289	229.5	-88.1
340	230.1	-87.8
388	222.6	-87.3
439	217.7	-86.9
491.5	222.4	-86.3

Blackwater Project
Drill Summary - Lithology

BW0303

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7	OB							Overburden with distinct amygdaloidal andesite boulders
7	25.1	VC	plm	LAP	M	GRY	FLT	GR10	Polymicitc volcanoclastic unit with strong fault gouge, clasts consist of sub-angular ash tuff clasts, chlorite altered clasts, and smaller assorted mafic clasts.
25.1	50.6	FLPT	lptbx	LAP	M	GRY	DEP	GR5	Medium green grey felsic lapilli tuff breccia, clasts are choaotically organized and range in size, laminated clasts are very common, chlorite and sericite overprint, locally looks like a hydrothermal breccia near bottom contact
50.6	53	VC	volc	LAP	M	BLU	DEP	GR10	Fine grained mafic and felsic volcanoclastic unit, fairly well sorted, with strong sericite alteration of matrix
53	137.8	VC	volc	BLOCK	M	GRN	FLT	SH	Dark to medium grey green polymictic volcanoclastic, dominated by felsic ash tuff clasts, grain size is quite variable ranging from ash-lapilli sized matrix and lapilli-block sized clasts, mafic input is variable and increasing downhole with some blo
137.8	176	FT	lam	CA	M	GRN	FLT	GR5	Medium grey green laminated felsic tuff. Laminated ash tuff with somewhat continuous banding and locally more clastic texture.
176	206.4	VC	volc	BLOCK	D	GRY	FLT	GR5	Dark grey green volcanoclastic with predominantly blocky sr/sa andesite/mafic clasts, matrix is more felsic, finer grained and altered silica/sericite/chlorite
206.4	217	FLPT	lptbx	LAP	M	GRN			Green grey felsic lapilli tuff breccia. Ash tuff clasts, moderate sorting, clasts as large as 4cm, minor clay alteration in local microbreccia
217	491.5	FT	lpt	CA	M	GRN			Laminated felsic tuff with local lapilli tuff breccia texture.

Blackwater Project
Drill Summary - Alteration

BW0303		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
7	25.1	T	FC	1		0	MTRX	1	OP	2	LIM	FR	2				Transition zone with geothite and jarosite staining fractures, sericite overprint and weak silica alteration of matrix
25.1	50.6	S	FR	1	CLST	2	PERV	2	OP	1							Sercite overprint, local albite clay replacement of clasts, weak to moderate pervasive silica
50.6	53	S	FR	2	CLST	1	MTRX	1	OP	3							Sericite increase (gives pale blue color to matrix), weak chlorite (fractures), silica (matrix), and clay (clasts)
53	137.8	S	FC	3	CLST	1	MTRX	1	OP	3							Increased chlorite (stronger in broken zones), local clay alteration of clasts
137.8	176	S	FC	2	CLST	2	PERV	2	OP	1							Weakly silica altered, chlorite on fractures, sericite overprint, white clay locally replacing clasts associated with brecciation
176	184	S	FC	2	REP	1	OP	2	MTRX	2	CHL	CLST	1				Weak silica overprint, chlorite on fractures, sericite matrix dominant
184	196.1	T	FR	2	REP	1	OP	2	MTRX	2	CARB	FC	2				Very similar to unit above but with fe carbonate on fractures (transition zone oxide?)
196.1	206.4	S	FR	2	REX	1	OP	2	MTRX	2							As above
206.4	407	S	FC	2	CLST	2	PERV	3	OP	2							Weak clay alteration in small white specks in clasts, pervasive silica, weak sericite overprint giving green hue, chlorite fairly strong on fractures
407	449	S	FR	1		0	PERV	4	OP	2							Silica increasing with depth, chlorite weakening along fractures
449	491.5	S	FR	2		0	PERV	5	OP	2							Little to no primary textures preserved, local breaccias and ghost evidence of laminations

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Blackwater Project
Drill Summary - Mineralization

BW0303		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
7	33	DI	0.1	DI	0.5		0	Dbs	DEN	1							DBS with associated specks of pyrite and blotchy sphalerite blebbs
33	51	DI	1	DI	0.5	SP	0.1	Dbs	DEN	1							DBS often following fracture planes
51	70	DI	0.5	DI	1	CR	0.5	Dbs	DEN	0.5	Ga	SP	0.1				Sulphides replacing clasts and disseminated throughout matrix
70	87	DI	0.1	CR	0.5	CR	0.5	Dbs	DEN	0.5							
87	106	CR	1	CR	0.1	CR	0.1	Dbs	DEN	0.5							
106	124	CR	0.1	CR	1	CR	0.5	Dbs	DEN	0.1	Mrc	FP	0.1				Sulphides replacing clasts and appearance of marcasit eon fractures
124	135	CR	0.1	CR	1.3	CR	0.5	Mrc	FP	0.1							Dominantly as clast rep. sp and po occur together
135	154	DI	0.5	DI	0.5	DI	0.5	Dbs	DEN	0.5							Sulphide associated with local brecciation textures and clat replaced
154	163	DI	0.5	DI	0.5	DI	0.1										Weakly disseminated sulphides
163	176	SP	0.1	LAM	0.3		0										Sp reddish brown in blebbs often following laminations
176	193	FP	0.1	CR	0.1	FP	0.1	Py	CR	0.1	Py	VN	0.1				Trace pyrite in one small veinlet, locally replacing a few clasts (duller in color) w/ po/sp
193	203.5	FP	0.1	CR	0.1	FP	0.1										Trace sulphides
203.5	206.4	FP	0.1	DI	0.1	DI	0.5										slight increase in pyrrrhotite replacing clasts
206.4	216	DI	0.5	DI	1	DI	0.3	Dbs	DEN	0.3	Ga	VN	0.1				Disseminated py/sp trace galena in small vein. minor pyrrhotite
216	234	DI	1.5	DI	2		0	Apy	VN	0.1	Py	VN	0.5	Mo	VN	0.1	Pyrite in small veinlets with quartz/sphalerite as well as disseminations/blebbs, trace arsenopyrite and possible moly in veins
234	254	DI	2	DI	1.5	DI	0.3	Sp	VN	0.1	Py	VN	0.1				Pyrite and pyrrhotite as subhedral cubic disseminations, minor pyrite/sphalerite in veinlets with quartz
254	270	DI	1.5	DI	1.5	DI	0.1										Very similar to above
270	288	DI	2.5	DI	1	DI	0.1	Dbs	DEN	0.1	Hm	FP	0.1				Nicely disseminated salt and pepper sphalerite and pyrite, trace hematite on fractures from 274.5-274.8m trace PO.

Blackwater Project
Drill Summary - Mineralization

BW0303		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
288	306	DI	2	DI	1.5	DI	0.1	Dbs	DEN	0.5							Continued nicely disseminated subhedral aggregates of sulphides, increase DBS
306	325	DI	2	DI	1	DI	0.1	Dbs	DEN	0.5	Cp	DI	0.1				Continued disseminated and aggregated sulphides (around local brecciated clasts), frequent vuggy pyrite clusters, sulphides align with local alteration fluxes
325	344	DI	2	DI	2		0	Dbs	DEN	0.5							Increased sulphides, subhedral disseminated, sphalerite often follows laminations
344	362	DI	2.5	DI	2		0	Dbs	DEN	0.5							sulphides increasing same style as above
362	380	DI	2.5	DI	2		0	Dbs	DEN	0.1	Cp	DI	0.1				Disseminated subhedral pyrite with clustery blebbs of disseminated pyrite, trace dbs and trace chalcopyrite associated with pyrite
380	397	DI	2.5	DI	2		0	Dbs	DEN	0.1							As above
397	413	DI	2	DI	1.5		0	Dbs	DEN	0.1							As above
413	428	DI	1	DI	1.5	DI	0.1	Dbs	DEN	0.1	Cp	DI	0.1				Slight decrease in sulphides, similarly distributed to above
428	437	DI	1	DI	1	DI	0.1										Broken zone with some finer grained sulphides and locally more concentrated sulphides
437	445	DI	0.5	DI	0.5	DI	0.1	Mrc	FP	0.1							sulphides decreasing, marcasite appearing on fractures
445	449.5	DI	1.5	DI	1.5	DI	0.5	Cp	SP	0.1							locally concentrated disseminated sulphides (blebby dark red sphalerite and euhedral py/po/cp masses)
449.5	464	DI	0.5	DI	1	DI	0.1	Apy	VN	0.1							Deacresing disseminated sulphides more in veins with 1 anomalous arsenopyrite vein
464	481.3	DI	1	DI	1	DI	0.5	Py	VN	1	Cp	DI	0.1	Dbs	DEN	0.1	Increase in pyrite within veinlets, euhedral disseminations of pyrite, trace chalcopyrite and minor DBs
481.3	491.5	BB	0.5	DI	0.5	BB	0.5	Dbs	DEN	0.1							Blebby masses of subhedral py/po, disseminated sphalerite, trace Dbs. Sulphides look to have been overprinted by additional silica influxes

Blackwater Project
Drill Summary - Structure

BW0303

From (m)	To (m)	Structure	Strength	Comments
12.8	23.5	FL	4	Strongly clay altered fault gouge
23.5	29.5	BRKZ	3	Fairly strong broken zone with some clay on fractures
29.5	67	JZ	1	weak joint set and some minor broken sections
67	69	FL	2	Small broken fault
69	72	BRKZ	2	
72	79	JZ	2	
79	84.3	BRKZ	3	weak clay gouge and strong chlorite alteration
84.3	118.6	JZ	2	weak joint set, moderately broken
118.6	122.3	BRKZ	4	Broken rubbly core, no gouge
122.3	126	JZ	2	wavy joint set
126	136.5	BRKZ	2	Broken core with minor gouge locally on breaks
136.5	142.5	FL	2	Small fault with clay gouge and crushed core
142.5	150.4	JZ	3	sub-planar joint set
150.4	176.8	BRKZ	5	Core is strongly broken, rubbly but not strongly clay altered or gougey
176.8	184	JZ	3	joint set at 60 and 20 degrees, sub planar to wavy
184	200.5	BRKZ	2	weakly broken core
200.5	204.5	BRKZ	1	weaker broken zone
204.5	210.1	FZ	1	weakly faulted or strongly broken zone with minor amounts of clay gouge
210.1	217.4	BRKZ	3	
217.4	222.2	JZ	2	joints at 20 and 60
222.2	223.9	BD	2	small broken zone
223.9	254.5	JZ	4	Joint sets at 50 and 60 degrees
254.5	256.5	BRKZ	2	small broken zone
256.5	263	JZ	3	joint set at 50 degrees
263	268	BRKZ	2	Minor broken zone
268	328.5	JZ	4	joint sets at 50 and 30 degrees, can be wavy to planar, small local broken zones <20cm, also low angle joint set at 15 dgrs
328.5	332	BRKZ	2	fractured and broken core

Blackwater Project
Drill Summary - Structure

BW0303

From (m)	To (m)	Structure	Strength	Comments
332	370.5	JZ	4	good consistent joint sets at 30 and 45-50 degrees
370.5	381	BRKZ	1	Weakly broken zone
381	384.5	JZ	2	joint sets at 60 and 15 degrees
384.5	386.7	BRKZ	1	weak broken zone
386.7	414.5	JZ	2	jointing at 60 and 15 degrees (small section of redrill within interval)
414.5	428.5	BRKZ	3	broken zone on top of fault
428.5	436.3	FL	4	Fault with significant cave in and poor recovery
436.3	445	JZ	1	jointing at 50 and 30 degrees
445	479	BRKZ	1	Majority of core is broken with small <50cm intact portions throughout interval, local hydrothermal breccia
479	481.3	JZ	2	weak jointing at 60 degrees
481.3	482.1	FL	3	Crumbled broken crushed core and fault gouge
482.1	488	JZ	3	planar joints at 60 degrees, wavy jointing at 25 degreees
488	491.5	BRKZ	2	Broken zone with small intact pieces.

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Blackwater Project
Drill Logs

Hole ID:	BW0304	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375527.29
Depth (m):	503.53	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5892824.21
Azimuth:	270	Date Completed:	13/01/2012	Casing (m):	0	Elevation (m):	1608
Dip:	-60	Logged By:	Other	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	266	-60
45.72	265.3	-59
91.44	267.3	-60
137.2	267.4	-60.5
182.9	270.1	-60.6
228.6	271	-60.9
274.3	272	-61.1
320.7	271.6	-61.7
367.9	272	-61.1
411.5	272.7	-60.8
457.8	272.9	-59.9

Blackwater Project
Drill Summary - Lithology

BW0304

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
17.37	26.52	FLPT	lpt	LAP	MO	OR	FLT	SH	Completely oxidized felsic lapillit tuffs and flt breccias.
26.52	119.5	AND	mas	CA	D	GRY	DEP		Dark grey andesites with lapilli tuff and brecciated textures with small zones being massive. slight maroon attributed to Bt alt.
119.5	147	AND	mon	LAP	D	GRY	DEP		Same as above. zones with feldspar phenos.
147	174.4	AND	mas	LAP	D	GRY	FLT	SH	predominately massive andesites with euhedral feldspar phenocrysts. feldspars are 10-20% of core.
174.4	178.1	FT	lam	CA	L	GRN	FLT	SH	pale olive felsic tuffs. laminated with occasional mico faults. BDS present (BDS may be present in Andesites but hard to differentiate).
178.1	207.9	AND	mon	LAP	D	GRY	DEP	GR30	andesites are slightly bleached compared to surrounding and. lapilli tuff texture and slightly brecciated. intermittent faults. Felsic tuffs are found from 186.5-190.5m
207.9	245.8	AND	mon	LAP	D	GRY	FLT	GR30	Dark grey andesites with a slightly maroon matrix. lapilli tuff texture. Brecciation is also likely but hard to differentiate.
245.8	255.5	FT	mon	CA	L	GRN	FLT	SH	laminated light green felsic tuffs with several micro-fractures. small felsic lapilli tuff component towards bottom of interval (possibly a flt breccia).
255.5	264	VC	plm	LAP	MO	GRY	FLT	GR10	Polymictic VC. zones are matrix supported with other zones being clast supported. some zones are slightly felsic rich while others are mafic rich.
264	298	AND	lpt	LAP	D	GRY	FLT	GR10	Dark grey Andesites with small brecciated zones occasionally containing traces of felsics. infrequent amygdules. slight maroon matrix possibly Bt alteration
298	314.8	FLPT	lpt	LAP	MO	GRN	FLT	SH	50/50 felsic tuffs and FLPT. Tuffs may be volcanic block. FLPT are mottled light-dark greys and light greens. Tuffs are banded light-dark greens and greys
314.8	340	VC	plm	LAP	D	GRY	DEP	GR30	Small zone of Ft from 322.5-323.5m Volcanoclastics wish approx 25% felsics.
340	441	FT	mon	CA	L	GRN	DEP	GR10	Mottled light greens and grey felsic tuffs and felsic lapilli tuffs. Approximately equal portions of tuffs and lappilli tuffs. Greens are a product of Ser and Chl alteration.
441	503.5	FT	mon	CA	L	GRN	UNKN		Approx 90% is laminated felsic tuffs with shades of green and grey being banded. dark green on fxs attributed to Chlorite alteration. Black sulfide specks found dissemnated throughout.

Blackwater Project
Drill Summary - Alteration

BW0304		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
17.37	26.52	O		0	FR	1	PERV	3		0							Sericite is overprinted by Ox. Ox is found as limonite, hematite and undifferientiated
26.52	119.5	S	FR	3		0	PERV	4	PATC	1	BIOT	PATC	1				Weakly altered interval with exception to silicification.
119.5	147	S	PERV	4		0	PERV	4	PATC	1							Chlorite alt is strong on fxs and in matrix
147	204.8	S	FR	3		0	PERV	4	PATC	4	BIOT	PERV	1				sericite selective to felsics. Slight maroon is interpreted as Bt alt and is selective to Andesite.
204.8	247	S	FR	4		0	PERV	5		0	BIOT	MTRX	1				Chl alt is strong on fxs and in flt gouge. Bt is matrix dominated. Silicification flooding evident in amygdules.
247	255.5	S	FR	3		0	PERV	5	PERV	3							Pale green is interpreted as sericite
255.5	264	S	PATC	3		0	PERV	5	PATC	3							Chl and Ser are selective to certain clasts/matrixs likely depending on lithologies
264	298	S	FR	2		0	PERV	5		0	BIOT	MTRX	1				Maroon possibly by alteration. Strongly Silicified.
298	314.8	S	PATC	3		0	PERV	5	PATC	3							Nearly completely sericitized. Chl on fxs and bands in tuffs
314.8	340	S	FR	2		0	PERV	4	PATC	0							Sericite is selective to felsics.
340	503.5	S	FR	4		0	PERV	5	PATC	3							Sericite is patchy (nearly pervasive). Chl on fractures, selectively replacing some clasts, and occasionally having a banded appearance in tuffs.

Blackwater Project
Drill Summary - Mineralization

BW0304		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
17.37	26.52	DI	0.1	DI	0.1		0										Sphalerite and Py found in patches within the interval
26.52	52.43	VN	3	BB	0.5	BB	0.1										Py is found in veins of various widths and disseminated. Spalerite found as blebs. Po only found in one location with Py.
52.43	72.24	DI	0.5	BB	0.5	BB	0.5										
72.24	81.38	VN	0.5	BB	4	BB	0.5										Py found veined and disseminated. Spalerite is found in high concentrations as replacements. occasional Po.
81.38	128.5	VN	2	BB	1	BB	1										Py veined and on fxs. Veins approx 1/m. Po is found concentrated in zones.
128.5	147	BB	1	BB	0.5	BB	0.5										
147	173.5	BB	0.1		0	DEN	0.1										Py and Po found in a couple isolated patches
173.5	178.4	DI	1	BB	0.5	BB	0.1										Py is disseminated and found in a couple veinlets. Spalerite found as a patch of blebs
178.4	207.9	VN	2	BB	1	DI	0.5										Py veins are <1mm up to 20mm and frequently tarnished.
207.9	225	DI	0.1		0	BB	1										Po typically found with sil as amygdules
225	246.5	VN	1		0	BB	1										Py as small veinlets. Po as amygdules w/ qtz
246.5	255.5	DI	2	DI	0.1	DI	0.1										Py found as Veinlets and disseminated.
255.5	265	DI	1		0	DI	2										Py and Po are also found in blebs
265	298	VN	1.5	DI	0.5	BB	1										Po-qtz amygdules. Py veinlets and veins are wispy inconsistantly distributed.
298	314.8	VN	1	DI	1	BB	1.5										Py veinlets have a soft bright blue mineral.
314.8	328.3	VN	1	DI	1	BB	1										Po found with qtz in amygdules. Minor Py-Po veinlets
328.3	340	DI	0.1	DI	1	BB	1										Po found in blebs (amygdules). Minor Py-Po veinlets
340	363.6	DI	1	DI	0.5	BB	0.5										Py is dissenminated and druzy on fracture surfaces.
363.6	382.3	DI	1	DI	0.1	DI	0.5	Dbs		0.5							Py is also found in Qtz-Py veinlets.
382.3	392.2	DI	2	DI	0.1	DI	0.5										Qtz-Py-Po veinlets occur at approx 4/m
392.2	409	DI	1	DI	0.1	DI	0.5										Po and Sp found in trace amounts. Py dissemenated

Blackwater Project
Drill Summary - Mineralization

BW0304		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
409	424	DI	1	DI	0.1	DI	0.1	Cp	VN	1							Chalcopyrite found in stringer veinlets.
424	435	DI	0.5	DI	0.1		0	Dbs		0.5	Cp	VN	0.1				Qtz-Cpy veinlets are present but sparse. Cpy is approx .5% of veinlets
435	452	VN	0.5	DI	0.5	BB	0.1	Dbs		0.1							In frequent Py stringer veinlets
452	473.1	VN	1	DI	0.5	BB	0.5										Several qtz-py veinlets and stringers in this interval
473.1	489.4	DI	2	DI	0.1	BB	0.5	Dbs		0.5							Py found disseminated, as blebs, and veined. Po found rarely but in large blebs
489.4	503.5	VN	1	DI	0.1		0	Cp	VN	0.5							Py-Cp stringer veinlets present. Py and Sp found dissemenated in trace amounts

Blackwater Project
Drill Summary - Structure

BW0304

From (m)	To (m)	Structure	Strength	Comments
17.37	31.09	FZ	4	Faulted with zones of gouge.
31.09	81.38	JZ	3	Jointed with occasional faults on the cm scale. a couple small rubble zones.
81.38	148	JZ	3	Moderate to strongly jointed with occasional faults filled with gouge.
148	184.6	JZ	3	intermittent faults infilled with gouge.
184.6	229.2	FZ	2	Serveral small intermittent flts within weakly jointed to intact core
229.2	249.0	JZ	2	fairly intact
249.0	338	JZ	1	weakly jointed. very hard intact core
338	357	BRKZ	2	Moderately Jointed with intermittent broken zones
357	409	JZ	2	Weak to moderately jointed with intermittent small broken zones
409	427	JZ	3	Joints at various angles to core axis
427	441	BRKZ	3	
441	473	BRKZ	3	Joints are more commonly 55-80 deg but overall incosistant.
473	503.5	JZ	2	Weakly jointed

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Blackwater Project
Drill Logs

Hole ID:	BW0305	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375300.93
Depth (m):	500.48	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5893247.18
Azimuth:	0	Date Completed:	13/01/2012	Casing (m):	0	Elevation (m):	1560
Dip:	-90	Logged By:	Other	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.33	169.4	-89.2
92.05	178.1	-89.2
137.8	185.2	-88.9
182.9	175.1	-88.8
229.2	146.1	-88.1
274.9	189	-87.8
317.6	191.2	-87.7
369.4	194.4	-87.2
412.1	202.1	-87
457.8	201.2	-86.4
500.5	199	-85.6

Blackwater Project
Drill Summary - Lithology

BW0305

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
14.33	18.9	FLPT	lpt	LAP	L	GRY	OXFR	GR10	Felsic Lapilli Tuffs with oxidation on fractures and patchy. Matrix supported with primarily angular felsic clasts. approx 10% of clasts are mafic.
18.9	42.6	FLPT	lpt	LAP	L	GRN	DEP	GR10	FLPT. Matrix supported primarily felsic clasts with infrequent mafic clasts. Primarily angular clasts.
42.6	67.67	AND	mas	LAP	D	GRY	FLT	GR10	Dark grey massive andesite. faulted. Frequent calcite breccia infilling.
67.67	99.67	FLPT	lpt	LAP	L	GRN	DEP	GR10	Interval of felsic lapilli tuffs and tuffs alternating incosistantly. entire interval is a fault zone. from 81.65-85.95 is a darker possibly andesite component.
99.67	143	VC	plm	LAP	L	GRN	DEP	GR30	Volcanoclastics with approx equal felsics and mafics. frequent tuff clasts. pervasively altered. primarily intact to moderately jointed.
143	189.6	FLPT	mon	LAP	L	GRN	DEP	GR30	FLPT have a distinct breccia puzzle texture. Tuffs are laminated and massive.
189.6	225	FLPT	mon	LAP	L	GRN	DEP	GR10	Light green sericite altered FLPT w/ VC from 201-204.83m. VC have distinct mineralization differences. Occasional 20-30cm patches of tuffs.
225	282	FLPT	mon	LAP	L	GRN	DEP	GR30	Pale yellowish green interpreted as sericite alteration. Dusky Green interpreted as Chlorite alt overprinting. Laminated tuff clasts with green banding. Some clast have a breccia crackled to breccia puzzle texture.
282	314	FT	mon	FA	L	GRN	DEP	GR30	Laminated tuffs are moderately brecciated. laminated texture has a wavy appearance (possibly occured before lithification as opposed to shearing). zones of lapilli tuff (deposition vs. fault emplacement?)
314	390.8	FT	mon	FA	MO	GRN			Laminated felsic tuffs with a weak brecciated texture in patches. moderately jointed with intermittent broken zones. Light tanish green, forest green and tanish grey mottled appearance
390.8	444	FLPT	mon	LAP	MO	GRN	DEP	GR30	alternation zones of Felsic tuffs and lapilli tuffs. Strong to intensely silicified. Green due to alteration
444	500.5	FT	mon	CA	L	GRN	DEP	GR10	Altered Felsic Tuffs. banded. Strongly silicified. Green alteration attributed to Chl and Ser.

Blackwater Project
Drill Summary - Alteration

BW0305		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
14.33	18.9	O		0	FR	1	PERV	3	PERV	1							Fracture controlled oxidation with minor associated clay. Sericite is weak. Silicification is stonger in white felsic clasts.
18.9	42.6	S	PATC	3		0	PERV	4	PERV	4							Light to medium olive green attributed to sericite alteration. Darker green found on fxs and selectively attriubted to chl. Sericite is stronger in white felsic clasts.
42.6	50.75	S	FR	2		0	PERV	4	PERV	4							Light to medium olive green pervasively sericitized. Sericite appears to have weakly bleached this interval.
50.75	67.67	S	FR	1		0	PERV	4	PATC	1	BIOT		1				Slight Maroon coloration attributed to Bt alteration.
67.67	99.67	S	PATC	3		0	PERV	3	PERV	4							Pervasively sericitized felsics with Chlorite found concentrated around some fxs.
99.67	124.1	S	PATC	3		0	PERV	4	PERV	4							Strongly silicified and pervasively sericitized. Chl found on fxs, patches, and replacing clasts.
124.1	143	S	PATC	4		0	PERV	4	PATC	4							Sericite selective to felsics. Ser and Chl alterations are very incosistanly selective to clasts, matrix, and in patches.
143	200	S	PATC	3		0	PERV	5	PERV	4							Ser and chl alt styles are inconsistant; replace clasts, banded, patchy, on fxs.
200	204.8	S	FR	3		0	PERV	4	PATC	1							Strongly silicificed. Ser and Chl are patchy w/ Chl coating most fracture planes
204.8	266	S	FR	3		0	PERV	5	PERV	4							Strongly Silicified. Chl alt on fxs and hairline fxs.
266	314.6	S	FR	3		0	PERV	5	PATC	3							Slightly less sericitized then above and patchy. weak mottled light grey/light yellowish green coloration
314.6	390.8	S	PATC	3		0	PERV	5	PATC	3							Various shades of green interpretted as sericite (lighter pale) and Chlorite (darker forest green) found banded and mottled. Chl found on fxs throughout interval. Silicification is strong and pervasive.
390.8	500.5	S	FR	2		0	PERV	5	PATC	3							Intensely silicifed. (Possibly green silica?) Sericite moderate and pervasive. Chl on fxs

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Blackwater Project
Drill Summary - Mineralization

BW0305		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
14.33	18.9		0	BB	0.5		0										Small blebs of spalerite.
18.9	32.61	FP	0.1	BB	0.5		0	Dbs		0.5							DBS and spalerite are concentrated in the same areas. Trace amounts of Py on fx planes
32.61	42.6	FP	0.2	BB	0.3		0	Dbs		0.5							interval is quite incosistant. 30cm zones w/ sulfides and other 30 zones being nearly barren
42.6	77	DI	0.1		0		0										fine grained Py found occasionally. 1 fx coated with Py
77	99.67	DI	0.1	DI	0.1		0										Fine grained Py and Spalerite found throughout. Py is tarnished
99.67	143	BB	0.3	BB	0.4	BB	0.5										infrequent Py-Po veins. Py occasionally coating fxs.
143	180.4	DI	0.2	BB	0.5	BB	0.2	Dbs		0.2							Sulfides frequently found within small cavities
180.4	189	DI	0.2	BB	0.8	BB	0.2	Ga		0.1							1 galena vein at 181m
189	201	DI	1	DI	1	DI	1										Disseminated Py Po Sp occasionally found in blebs
201	204.8	DI	0.1		0	BB	2										Po blebs.
204.8	230	VN	0.5	DI	0.5	BB	1										Py found as veinlets <1mm and less dissemenated
230	247.5	DI	0.5	DI	1	BB	2	Ga	VN	0.5							Po is found fine grained, as blebs, in stringer veinlets, and in 2 Qtz-Gal-Po veins at 231-232m. Trace amounts of Galena are found with exception to the mentioned veinlets
247.5	267	DI	1	DI	3	DI	0.1	Ga	DI	0.5							Sp and Py are occasionally found as blebs
267	285.6	DI	0.1	DI	1	BB	1	Ga	DI	0.1	Mrc	FP	0.1				occasional sulfide blebs
285.6	314.6	DI	0.5	DI	2	BB	1	Ga	DI	0.5	Mrc	FP	0.1				Sp and Po also frequently occur as blebs
314.6	316.1	BB	1	DI	1	DI	0.1										Spalerite sometimes found coating cavities. Py is fine grained disseminated to large nearly 1cm blebs
316.1	324.3	DI	0.5	BB	2	DI	0.5										Spalerite and Po frequently found in the same blebs. Qtz-Py-Sp veinlets occur approx 1/m. Disseminated Sp follows banding in tuffs (likely an indicator of porosity)
324.3	360.3	DI	0.5	BB	2	BB	1										Sp found in inconsistant quantities. avg 2%. Qtz-Py-Sp veinlets approx 1/m.

Blackwater Project
Drill Summary - Mineralization

BW0305		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
360.3	373	DI	0.1	BB	1	BB	1										Sp found in inconsistant quantites.
373	390.8	DI	0.5	BB	1	BB	0.5										Sp and Po are found in inconsistant quantites but are found clustered together.
390.8	406	DI	0.5	DI	2	DI	0.5	Dbs		0.5							Sp found dissementated occasionally dissemenated Sp are clustered
406	431.9	DI	1	DI	2	BB	1	Dbs		0.5							Po blebs up to 10mm
431.9	444	FP	1	DI	1	BB	0.5	Dbs		0.1							Py on fxs and trace amounts disseminated
444	463.9	DI	1	DI	0.1	BB	1.5	Dbs		0.5							Po found disseminated and as blebs. Occasional Po-Py stringers
463.9	473.1	DI	1	DI	0.1	BB	2	Dbs		1							Po blebs are found in healed flt breccias that seem to have been flooded with silica.
473.1	500.5	DI	0.1		0	BB	1	Dbs		0.5							Py also found in Qtz-Py veinlets

Blackwater Project
Drill Summary - Structure

BW0305

From (m)	To (m)	Structure	Strength	Comments
14.33	64.62	BRKZ	4	strongly broken zone with faulted zones containing gouge
64.62	98.76	FZ	4	Strongly faulted zone with some healed flt breccias and gouge.
98.76	143	JZ	3	modertaely jointed with occasional broken zones.
143	189.6	JZ	4	Occasional broken zones.
189.6	225	JZ	3	Moderately jointed with intermittent broken zones.
225	239	BRKZ	3	75% of interval is a broken zone with moderately jointed core between 230-236.
239	315	JZ	4	Moderately to strongly jointed with a couple small zones of rubble
352	372	BRKZ	4	Moderate to strongly broken. Possibly some faulting in interval
372	390.8	BRKZ	2	approx 50% of interval is broken 50% intact
390.8	444	BRKZ	2	approx 50% of interval is broken 50% intact
444	473.1	JZ	2	Weak to moderaterly jointed with a couple faults/flt gouge up to 30cm.
473.1	500.5	JZ	2	a couple small intermittent flts otherwise weakly jointed

Blackwater Project
Drill Logs

Hole ID:	BW0306	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375601.98
Depth (m):	335.5	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5893399.17
Azimuth:	0	Date Completed:	08/01/2012	Casing (m):	6	Elevation (m):	1528
Dip:	-90	Logged By:	RWh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	199.2	-88.5
100	198.4	-89.3
150	185.8	-89.1
200	175.8	-89
250	175.3	-89
300	193.9	-89
335.5	191.3	-88.6

Blackwater Project
Drill Summary - Lithology

BW0306

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6	OB							
6	28	VC	bx	BLOCK	M	GRY	FLT	GR30	Non-magnetic, polylithic VC Brx; clasts up to 25 cm diam; angular to sub-rounded, clasts of AND PP, felsic and intermediate volc's.
28	41.1	VC	bx	BLOCK	D	GRY	DEP	GR30+	Higher AND PP composition than upsection; stronger chl alt'n gives rock a darker grey-green colour; some amygd sections/blocks of AND PP (feldspar phenos up to 8mm long); unit similar to AND flow brx locally but w/ fragmental component.
41.1	60	VC	bx	LAP	L	GRY	DEP	GR30+	Lithology similar to above but w/ decrease in AND PP clasts, increase in Felsic clasts, some laminated; matrix contains abundant broken phenocrysts (possibly a pyroclastic fragmental or immature VC?); also decrease in size of clasts in a xtal-rich ma
60	100.8	VC	bx	LAP	M	GRY	DEP	GR30+	Clast to matrix-supported, immature VC with greater felsic than dark clasts; angular to sub-rounded; some coarse laminated felsics up to 8cm diam; felsic to intermediate ash matrix.
100.8	116.6	AND	volc	BLOCK	D	GRY	DEP	GR5	Dark geenish-grey, medium-grained AND-VC, fairly angular blocks and clasts in a tuffaceous matrix (same material as above unit), strong chlorite throughout. Approx 3-5% round sil-carb filled amygdules.
116.6	119.2	VC	bx	LAP	L	GRY	DEP	GR30	Lithology as upsection of 100.8m.
119.2	122.9	AND	volc	BLOCK	D	GRY	FLT	SH	Dark geenish-grey, medium-grained AND-VC, fairly angular blocks and clasts in a tuffaceous matrix (same material as above unit), very strong chlorite throughout.
122.9	141.5	FLPT	bx	LAP	M	GRN	DEP	GR30+	Interval characterized by abundant, coarse, laminated felsic clasts with strong sx mineralization (sp-po-py-gal-apy); fault zone at base of deposition.
141.5	183	FLPT	plm	LAP	M	GRY	FLT	GR30+	FLPT unit cont`d but with smaller clast size, much less laminated felsics and greater polylithic component.
183	187.8	EC	plm	LAP	M	GRY	FLT	GR30+	Short section of EC coarse sst to pebble-conglomerate, py-po-sp on fract`s; note--may be a basal section of upsection VC wé greater rounding of clasts. Strong faulting through contact zone.
187.8	193.7	AND	t	CA	D	GRY	DEP	SH	Unit well-faulted and brxd; fine-grained AND tuff with some coarse ash or a strongly alt`d finer variety of VC.
193.7	211.3	AND	flw		D	BR	DEP	GR30+	Mod magnetic, approx 15-25% elongate amygdules 2-6mm long, but up to 15mm locally, aligned approx 30-40 to CA; feldspar phenos alt`d to carb-ser-cly; strong pervasive bt-chl-carb alt`n throughout; approx 2-4% po as dissem, replacing amygdules and on

Blackwater Project
Drill Summary - Lithology

BW0306

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
211.3	258	AND	flw		D	BR			Gradational change from upsection unit into a more massive, finer-grained AND flow with less amygdules, coarse feldspar phenos and po; non to weakly magnetic; bt-chl-carb alt`n continues.
258	280.5	AND	flw	BLOCK	D	GRY	DEP	GR30+	Grading into somewhat more clastic AND with fewer amygdules, finer feldspar pheons. bt alt`n
280.5	293.5	AND	flw		D	GRY			Similar to flow AND unit above, fine grained, few amygdules. less chl-carb alt`n. minor elongate amygdules 4-15mm long, 25 to CA
293.5	329	AND	flw		D	GRY	DEP	GR30	As above with elongated amygdules occaisonally reaching 15 mm in length showing good alignment at 35 degrees to CA.
329	335.5	AND	flw	BLOCK	M	BR			AND flow without amydgules grading into AND breccia. Angular clasts. strong biotite.

Blackwater Project
Drill Summary - Alteration

BW0306		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	10	O	CLST	1	MTRX	3	PATC	1	PERV	2	CAL	FR	1				Note: weakly developed oxide zone to 10m.
10	28	S	CLST	2	MTRX	3	MTRX	2	MTRX	3	CAL	FC	2	BIOT	PATC	1	Stronger cly-ser+/-carb alt'n from 21m where faulting strongest.
28	44	S	PERV	3	FR	2	FC	2	PERV	2	CAL	FC	2	BIOT	PATC	1	Section darker grey-green due to greater chl-sil+/-bt alt'n of AND PP and VC matrix.
44	54	S	FC	2	MTRX	3	FC	2	PERV	3	CAL	FR	2				Increasing ser-cly-sil-py downsection towards flt zones starting at 46m. Pale greenish-grey to cream colour to unit.
54	94	S	FC	2	PERV	4	FC	2	PERV	3	CAL	FR	2				Light greenish-grey cly-ser-carb-chl alt`n, some silica; clasts show variable alt`n based on content (felsic vs. intermediate).
94	122.9	S	PERV	4	FC	2	VN	2	FR	3	CAL	FR	2	BIOT	PATC	2	Felsic VC cly-ser-carb alt`d; AND VC sections and clasts chl-ser-bt-carb alt`d.
122.9	183	S	FC	5	PERV	3	FC	3	PERV	4	CAL	FR	2				Section of dark-green, v. strong chl-ser alt`n throughout, strongest in flt zones.
183	228	S	PERV	3	FR	1	VN	2	FC	2	BIOT	PERV	4	CAL	VN	2	Dark brown-grey pervasive bt-chl-carb alt`n and assoc po-py-sp; amygdules filled with sil-carb-chl-po.
228	270	S	PERV	2	FR	2	VN	2	FC	2	BIOT	PERV	4	CAL	VN	1	dark grey pervasive bt alt`n. minor chl-carb with sulphides in amygdules
270	300	S	PERV	1	FR	2	VN	2	FC	2	BIOT	PERV	4	CAL	VN	2	same as above unit with more ser and silica alt`n. pervasive bt continues
300	314.5	S	PERV	1	FR	1	VN	3	PERV	2	BIOT	PERV	4	CAL	VN	1	several blotchy veins with ser-sil-carb-chl. bt alt'n pervasive througout
314.5	335.5	S	VN	1	FR	1	VN	3	PERV	2	BIOT	PERV	3	CAL	VN	2	veining with ser-carb. varying biot alt'n but mostly moderate to strong. Moderate ser-carb through the unit

Blackwater Project
Drill Summary - Mineralization

BW0306		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	22	FP	0.1		0		0										
22	54	VN	0.3		0		0										Trace py as fine euhedral grains on fractures and in sub-mm vnlt's ~60-70 and 35 to CA.
54	70	VN	0.5	VN	0.1	FP	0.3	Ga	VN	0.1							
70	123	VN	0.5	VN	1.3	FP	1	Hm	VN	0.3	Ga	VN	0.3				Rare coarse sp-py-po-spec hem vein up to 1cm wide.
123	142	VN	1.5	DI	4	DI	3	Hm	FP	0.5							Section of elevated sx in strongly chl-ser-cly alt`n.
142	187.8	VN	1	DI	3	DI	2	Ga	FP	0.3							Similar sx as above but decreasing towards base and fault zone.
187.8	208	DI	1	DI	1	DI	4	Cp	FP	0.1							Po as fine to med-grained blebs and clusters often replacing amygdules.
208	228	VN	0.5	DI	0.3	DI	2	Cp	FP	0.1							Overall decrease in sx content.
228	234.3	VN	0.5	VN	0.5	DI	1	Cp	FP	0.1							minor sp-py-cpy in veining
234.3	240	VN	1	VN	0.5	VN	3	Cp	DI	0.5							po strong in a couple veins, with py-cpy-sp mostly in vnlt`s, trace in disseminaiton
240	253	VN	1.5	VN	0.3	VN	3	Cp	DI	0.5	Apy		0.1				po-py-cpy continuing in vnlts with increase in dissimenated sulphides, mainly py-po. aspy on a couple vein fractures
253	298	DI	0.5	VN	0.3	DI	1	Cp	FP	0.1							minor po-py-sp disseminations and replacing amygdules. rare vnlt with sx.
298	317	VN	0.3	VN	0.3	VN	0.5	Cp	DI	0.1							occaisonal vnl't with dominantly po and minor sp-py-cpy. rare blotchy po replacement of amygdule
317	335.5	FP	0.3	VN	0.3	DI	1	Cp	DI	0.1							increased po-sph-cpy-py in dissemination blebs. rare vnlt with mostly po. small euhedral py on some fracture planes.

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0306

From (m)	To (m)	Structure	Strength	Comments
0	11	BRKZ	2	
11	14.8	FZ	4	Flt zone at 30 to CA and 40 to CA downsection; gge.
14.8	22.3	BRKZ	3	
22.3	28	FZ	4	Flt brxn and gge 30-35 +/-60-70 to CA; strong cly-ser-carb+/-chl.
28	32	BRKZ	2	
32	36	BZ	3	Section of localized flt brx/gge ~25-35 to CA (+/-60 to CA).
36	45.5	BRKZ	3	Well broken w/ narrow local flt gge.
45.5	55.25	FZ	4	Section of localized strong flt brxn and gge ~20-30 to CA; 60 to CA at base;light grey-green cly-ser.
55.25	60	BRKZ	3	
60	60.15	FL	5	Dark-grey brittle flt gge, sharp ct.
60.15	62.5	BZ	4	Well brxd/shattered felsic unit w/ dusty cly-ser-carb coatings on fractures.
62.5	66.75	FZ	5	Strong brittle flt gge zone; well-milled and crushed rock; cly-chl-ser-carb gge; dominant upsection ~60-80 to CA w/ 30-40 to CA downsection. trace py in gge.
66.75	79.25	BZ	4	Section of well-broken/shattered core w/ local flts/flt breccias 5-10cm wide ~20-30 to CA.
79.25	89.2	BRKZ	2	As above w/ less local flts/brxs ~15-30 to CA, <4cm wide.
89.2	94	FZ	5	Strong brittle flt zone/gge ~25-35 to CA, well crushed and milled rock w/ cly-chl-ser-carb gge, minor milled sx in gge locally as "bands".
94	121.2	BRKZ	2	Fairly competent section of core w/ fractures ~30-40 to CA; local slips and thin chl-ser-cly gge ~20-30 to CA.
121.2	123	BZ	4	Mod well-healed (sil-chl-ser-sx) flt brx approx 30-40 to CA, dark green-grey; minor gge, strong chlorite alt`n.
123	142.7	BRKZ	2	Fault brx from 126.8-127.6m approx 25-35 to CA, dark-green sil-chl-ser matrix, crackle texture, some chl-cly gge material.
142.7	151.3	FZ	4	Strong fault zone with sections of gouge 50 to 80 cms wide, approximately 50 to 70 degrees to CA. Strong chlorite alteration. At base of interval fault breccia 65 degrees.
151.3	159.7	BRKZ	3	Unit is well fractured with local narrow fault breccia 10 to 30 cms wide approximately 30 to 40 degrees to CA. Strong chlorite alteration continues.
159.7	168.1	BZ	3	Zone of numerous narrow fault breccias ranging from 20 to 40 cms wide. Moderately well healed with strong chlorite + carbonate + sericite. Dominant set 60 to 70 degrees and minor set approx 30 degrees to CA.
168.1	183	FZ	5	Large brittle fault zone with some local semi ductile fabrics approx 50 to 70 degrees. Strong chlorite + sericite clay gouge.

Blackwater Project
Drill Summary - Structure

BW0306

From (m)	To (m)	Structure	Strength	Comments
183	193.3	FZ	4	Decreasing in chlorite alteration and becoming more competant. Section of brittle fault gouge up to 1 meter wide
193.3	228	JZ	2	fairly competant unit with fracture sets 35 to 45. Another minor set 25 to 35 degrees to CA. Fracture coatings of chlorite + carbonate + clay + pyrite.
228	241	BRKZ	3	consistant broken zone with fracture sets at 40, another set approx 65 to CA.
241	267.6	JZ	2	fairly competant unit with fracture sets at 50 with minor set at 25 degrees to CA
267.6	271	BRKZ	4	minor faulting but still not totally uncompetant. fracture sets at 60 and 40 degrees to CA
271	294.5	BRKZ	3	jointed to broken zone with main fracture set at 45 degrees to CA
294.5	309	JZ	2	competant section with main fracture set at 35 degrees to CA.
309	330.5	JZ	2	even more competant than previous unit. fractures at 40 degrees to CA
330.5	335.5	BRKZ	2	increasing fractures towards bottom of hole. main angle at 75 degrees to CA

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Blackwater Project
Drill Logs

Hole ID:	BW0307	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375276.85
Depth (m):	402	Date Started:	07/01/2012	Casing Size:	HWT	Northing:	5892675.06
Azimuth:	180	Date Completed:	15/01/2012	Casing (m):	45	Elevation (m):	1621
Dip:	-60	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	182	-60
102	181.3	-60.8
150	182.1	-59.8
199.5	182.8	-58.5
249	183.4	-60.8
303	182.9	-57.7
351	184.5	-57.1
402	184.7	-56.8

Blackwater Project
Drill Summary - Lithology

BW0307

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	44	OB							
44	69	DYKE	dyk	CA	M	GRY	OXFR	GR30	equigranular coarse qtz-plag w/ assoc biot/hb intrusive w/ some elongate plag lathes; fx controlled oxid'n greatly decreasing below 46.5m; wk undulating carb vnlts
69	97.3	DYKE	dyk	CA	M	GRY	OXFR	GR5	continuation of above w/o oxid'n
97.3	106.5	DYKE	dyk	CA	M	GRY	UNKN		equigranular coarse qtz-plag w/ assoc biot/hb intrusive w/ some elongate plag lathes; wk fx controlled oxid'n; wk undulating carb vnlts
106.5	163	INTR	dyk	CA	M	GRY	DEP	GR30+	Equigranular coarse qtz-plag with associated biotite/hb. Unit gradually transitions into "andesite" in some sections. Fresh looking intrusive with altered areas becoming more brown and green in color. Increase shearing towards 177m. Calcite veins wit
163	174.7	AND	flwbx	LAP	M	GRY	DEP	GR10	dark green brown andesite. Bleaching associated with veining. Gradational upper contact with intrusive unit.
174.7	185.7	VC	lptbx	LAP	M	GRY	DEP	GR10	Reworked volcanics. Rounded to angular clasts with increase clay alteration within matrix. Sharp lower contact with andesite
185.7	195.3	AND	flw	CA	M	GRY	DEP	SH	Similar to above andesite. Porhyritic in places.
195.3	244.7	VC	lptbx	LAP	M	GRY	DEP	SH	Silicified volcaniclastic. 40% rounded felsic clasts with 25% mafic clasts. Bleaching is dominant around fractures and veins. Moderate to weak sulphides. Increase in laminations toward 230m.
244.7	272.1	AND	flw	LAP	M	GRY	DEP	SH	typical porphritic andesite, clastic in some places.
272.1	300	VC	bx	FA	M	GRY	FLT	SH	texturally obscured silicified VC? FT? unit contains blotchy alteration associated with veining. Local banding, along with foggy clasts and porpyhyritic.Unit becomes more brecciated toward lower faulted contact with andesite.
300	320.8	AND		LAP	M	GRY	DEP	SH	Same andesite as above. Py>po>cpy veining found. Veins appear to be calcite but are dolomite.
320.8	351	VC	bx	LAP	M	GRY	DEP	SH	Brecciated volcaniclastics. Ghost clasts are rounded in shape. Bleaching throughout associated with veins. Calcite veining. 40% of clasts are 2-5cm laminated with biotite alteration throughout.
351	368.5	SED	mud	CA	D	GRY	INTR	SH	Dark grey black aphanitic mudstone. Pyrite on fractures. Calcite veining throughout.

Blackwater Project
Drill Summary - Lithology

BW0307

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
368.5	381.7	INTR	dyk	CA	M	GRY	INTR	SH	Light green grey dyke. 5% 1mm black magnetite. (diss) No sulphides. Very competant, sharp upper and lower contacts with sed fragments withing 20cm of lower contact. 80degrees TCA.
381.7	402	SED	mud	CA	D	GRY			Same as mudstone above. Pyrite on some fractures, calcite veining.

Blackwater Project
Drill Summary - Alteration

BW0307		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
44	46.5	O		0		0		0		0							well oxid'd
46.5	58.8	T	REP	1	PATC	1	PATC	1	PATC	1							v.wk fx-controlled oxid'n; wk patchy bleaching
58.8	69	T	REP	1	PATC	1	PATC	1	PERV	1	CAL	VN	1				wk bleaching; wk carb vning
69	73.2	S	REP	1	PATC	1	PATC	1	PERV	1	CAL	VN	1				wk pale mint grn ser/clay overprinting fsp
73.2	97	S	REP	1	PATC	1	PATC	1	PATC	1	CAL	VN	1				10-20cm intermittant wk bleaching zones
97	120	T	REP	1	PATC	1	PATC	1	PATC	1	CAL	VN	1				as above w/ wk fx-cont oxid'n
120	163	S	PATC	3	FR	1	PATC	2	PATC	1	BIOT	PATC	3				fairly unaltered with patchy biotite and chlorite
163	174.7	S	PERV	2	FR	1	PATC	1		0	BIOT	PERV	4				strong biotite altered andesite
174.7	185.7	S	FR	2	FR	2	PERV	4	VN	2	SIL	VN	3				chlorite/clay/serecite rich unit with bleaching around qtz veins
185.7	195.3	S	PERV	2	FR	1	VN	2		0	BIOT	PERV	3				similiar to andesite above
195.3	244.7	S	PERV	2	FR	2	PERV	4	PERV	3	SIL	VN	3				Strong bleaching, qtz veins with altered halos, zonations. Increase in bleaching downhole
244.7	272.1	S	PERV	3	FR	1	PERV	2	PATC	1	CAL	VN	3	BIOT	PERV	3	chlorite, biotite rich andesite. Calcite veins.
272.1	300	S	PATC	1		0	PERV	4	PERV	2							strong silica alteration, bleaching around veins and fratures
300	320.8	S	PATC	2	FR	1	PERV	1	PATC	1	BIOT	PERV	3	ANH	VN	3	andesite
320.8	351	S	FR	1	FR	2	PERV	3	PATC	1	BIOT	PERV	4	CAL	VN	4	brecciated felsic volcanics with moderate to strong biotite alteration following laminations within clasts. Pervasive silica, clay on fractures
351	368.5	S	PERV	2		0	PERV	1		0							mudstone, relatively unaltered
368.5	381.7	S	PERV	3		0	PERV	3	PERV	2	EPI	PERV	2				intermediate dyke, magnetite, epidote visible
381.7	402	S	PERV	2		0		0		0							mudstone unaltered with calcite veins.

Blackwater Project
Drill Summary - Mineralization

BW0307		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
44	46.5		0		0		0	Goe	FP	25							well oxid'd w/ reddish orng brn goe
46.5	69	DI	0.1		0		0	Goe	FP	0.5							scant specks of py w/ v.wk fx-controlled oxid'n
69	87.3	DI	0.1		0		0										scant specks of py
87.3	87.5	DI	0.5	SP	0.1	DI	0.1	Po	DI	0.1	Cp	SP	0.1				vn brx w/ v.wk sulfide
87.5	97.3	SP	0.1		0		0										
97.3	106.5	SP	0.1		0	FP	0.1	Goe	FP	0.5							
106.5	120	DI	0.1		0	DI	0.1	Goe	FP	0.5							weak sulphides
120	146.6	DI	0.3		0	DI	0.3										increase in po
146.6	163.4	DI	0.5		0	DI	0.5										
163.4	175	DI	0.3	DI	0.3	DI	0.3										moderate sphalerite
175	217.5	VN	0.4	DI	0.3	DI	0.1										increase in sulphides
217.5	244.7	DI	0.5	DI	0.3	DI	0.1										weak sulphides
244.7	272.1	DI	0.3	DI	0.3	DI	1	Cp	DI	0.1							increase in cpy, increase in gold?
272.1	284	BB	0.5		0		0										blebby pyrite
284	300	DI	0.1		0	DI	0.1										weak sulphides
300	321	BB	0.3	BB	0.5	BB	0.5	Cp	VN	0.1	Po	VN	0.3				Increase in veining with sulphides. Blebby po>py>sp throughout
321	351	BB	0.3		0		0										blebby pyrite
351	368.5	FP	0.3		0		0										pyrite on fractures
368.5	381.7		0		0		0	Mag	DI	0.3							trace magnetite?
381.7	402	FP	0.3		0		0										pyrite on fracture plains

Blackwater Project
Drill Summary - Structure

BW0307

From (m)	To (m)	Structure	Strength	Comments
44	52.5	BRKZ	4	blocky w/ some rubble
52.5	97.5	JZ	1	v.wk rough undulating jnts
97.5	98.5	FL	3	sandy clay-rich gge w/ some blocks and rubble
98.5	108	JZ	2	v.wk rough undulating jnts
108	144	JZ	3	moderatly jointed
144	146.5	BRKZ	3	broken rock
146.5	171.5	JZ	3	strong jointing
171.5	180	BRKZ	3	
180	327.1	JZ	3	competant rock, majority of joints at 40
327.1	328	FL	2	small fault
328	351	SZ	2	increase in shears, competant rocks
351	368	JZ	3	jointing at 55
368	381.7	JZ	3	joints at 60, very competant dyke
381.7	402	JZ	3	sed with joints at 55

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Blackwater Project
Drill Logs

Hole ID:	BW0308	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375926.33
Depth (m):	444	Date Started:	08/01/2012	Casing Size:	HWT	Northing:	5892822.58
Azimuth:	270	Date Completed:	15/01/2012	Casing (m):	47.5	Elevation (m):	1580
Dip:	-60	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	272	-62
100	271.2	-62.9
150	271.4	-63.4
200	270.2	-63.9
250	270.4	-64.1
300	272.6	-63.9
400	274.6	-64.3
444	276	-63.8

Blackwater Project
Drill Summary - Lithology

BW0308

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	46.5	OB							
46.5	260.7	FT	lam	LAP	VL	GRY	DEP	SH	bleached weakly silicified strongly laminated (20,40,45 and irregular) small clastic sections, locally laminations bend around clasts as large as 6cm (eg:~196m, flow banding?), FT. Possibly Rhyolite?
260.7	268.5	VC	ms	CA	M	GRY	DEP	GR30	matrix supported felsic clast dominant 10:90 M:F. Clast size increases with depth to 4-5mm avg.
268.5	289	VC	ms	LAP	M	GRY	FLT	SH	matrix supported 50:50 M:F clasts, variable clast size averaging 4-5mm but variable M:F and clast size locally. Heavily faulted area.
289	444	AND	mas		D	GRY			Massive AND. Locally Brecciated. divided into plag porphyritic (crystals partially ankerite replaced and <or=to 10mm), and amygdaloidal of various sizes. Locally Flow Brecciated.

Blackwater Project
Drill Summary - Alteration

BW0308		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
46.5	70.5	O		0	REP	2	PATC	2		0	SIL	PERV	1				weakly silicified patchy stronger silicification in darker M.Gray laminations, transparent clay replaces small (0.5-2mm) circular and rectangular grains throughout (Crazy thought: Relict clay filled /replaced amyg's and plag lathes respectively?).
70.5	87	O		0	REP	2	PATC	1	INFILL	1	SIL	PERV	1				clay replacing minerals in veins and on FP's. sericite and clays infilling small nodules/replacing small grains?
87	105.9	O		0	REP	2	PERV	1	INFILL	1							
105.9	123.8	O		0	REP	2	PATC	1	INFILL	1	SIL	PERV	1				
123.8	132.7	O		0	REP	2	PERV	1		0							
132.7	152	O		0	REP	2	PERV	1		0	CLY	PATC	3				cpatchy clay replacement of groundmass.
152	157.7	O		0	REP	3		0		1							L.Green Sericite locally halos clay replaced grains and fractures, and follows laminations. Clay replacing small grains <or=to 1mm, and locally patches of clay alteration in VN's
157.7	158	O		0	FR	1	PERV	5	FR	2	TALC	FR	3				Talc strpngly on FP's. M.Gray, Pervasivley silicified. Sericite coats Fp's moderatley.
158	171.3	O		0	REP	3	CLST	1	PATC	3							sericite patchy following laminations, Fractures, FP's and filling previous fractures. Silica replacing clasts locally.
171.3	184.4	O		0	REP	2		0	PATC	1							sericite alteration trace. Rock strongly hematite altered pervasivley. White and transparent clay replacing circular and rectangular grains.
184.4	189	O		0	REP	2		0	PATC	1							
189	190.4	O		0	REP	1	PERV	2		0							
190.4	200	O		0	REP	2		0		0	TALC	FR	1				talc filling fractures locally.
200	207.9	O		0	REP	2		0	PATC	1							
207.9	219.2	T		0	REP	2	PERV	1	PATC	1							transition zone, marked areas of Fe-oxidation and other areas of sooty Py.
219.2	228.5	T		0	SPHL	3	PERV	3		0							patches of pervasive silica alteration associated with egg-white clay sulphide halos. Intermittent non-pervasive silicified patches lack sulphide halos.

Blackwater Project
Drill Summary - Alteration

BW0308		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
228.5	233.2	T		0	SPHL	3		4		0							Pervasivley silicified throughout, strong silica perv altered clay sulphide halos.
233.2	244	S		0	SPHL	3	PERV	4		0							
244	253.5	S		0		0	PERV	4		0							pervasivley silicified, locally laminated.
253.5	261	S	FR	2		0	PERV	4		0							chlorite staining Fp's weakly, locally pervasive into FP.
261	265.7	S	FR	2	FR	1	PERV	3	REP	3							perv silicified. sericite strongly replaces clasts, sometimes with chlorite locally. Chlorite coats FP's and clay and chlorite mixture occur on FP's together
265.7	280.5	S	FR	2	FR	1	PERV	3	REP	1							fault. Clay/chlorite alteration locally.
280.5	297.2	S	FR	4	FR	1	PERV	3	REP	1	CHL	PATC	3				chlorite occurs stongly on FP's and in gouge. Patchy chlorite replaces groundmass/grains (Pyroxenes....) locally.
297.2	315.8	S	FR	4	FR	1	PERV	3	FR	1	CHL	REP	3	ANK	REP	2	brown-red, Fe-CO3 partially replaces Plag crystals. Hornblendes are chlorite replaces. FP's are stongly coated with chlorite. Biotite partially replacing clasts and is usually associated with Po.
315.8	329	S	FR	4	FR	2	PERV	3	FR	2	CHL	REP	3	BIOT	REP	3	chlorite strongly fills/coats FP's, locally sericite/clay mixtures are incorporated into the chlorite.
329	334	S	FR	2	FR	1	PERV	3		0	ANK	FR	2	ANK	REP	2	Ankerite replaces plag crystals and locally coats FP's.
334	352.6	S	FR	3	FR	1	PERV	3		0	CHL	REP	3	ANK	REP	2	Chlorite abundant; replacing hornblende, haloing veinlets, coating FP's strongly locally with sulphides, and patchy throughout the groundmass.
352.6	370.5	S	AMYG	3		0	PERV	2		0	CHL	REP	3	SIL	AMYG	1	brown streaking chlorite replacing hornblendes and Pyroxenes. chlorite fills amygdules with silica locally.
370.5	390.2	S	PATC	2	REP	1	PERV	2	REP	2	BIOT	PATC	2	SIL	PATC	2	weakly-moderatley silicified pervasivley. Locally silica wash bands occur, and pervasive alteration is stronger around them. Chlorite occurs in patchy blebs associated with silica locally (amygdule filler locally?). Biotite occurs in patches surrounding
390.2	399.5	S	FR	3	FR	1	PERV	2		0	CHL	SPHL	1				chlorite strongly coats FP's and weakly locally halos sulphides (predominatly Po).

Blackwater Project
Drill Summary - Alteration

BW0308		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
399.5	407.3	S	FR	4	FR	3	MTRX	5	PATC	3							chlorite stains FP's, and is locally patchy with Sericite (but patches in GM are predominatly L.Green Sericite). Matrix completely silicified. Majority of Rock faulted so no info.
407.3	425.5	S	PATC	4		0	PERV	3		0	CHL	SPHL	1	BIOT	REP	2	chlorite patchy throughout, alterig sections slightly bleaching them making plag crystals and GM more visible, while locally chlorite and silica occur in blebs occassioally haloing sulphides. Small browen patchy specks in GM, interpreted to be Biotite.
425.5	444	S	PATC	5	FR	1	PERV	3		0	ANK	REP	1	BIOT	REP	3	chlorite stongly patchy throughout, assoc with silica (similar to a hydro fluid wash throught the rock touching select locations). Chlorite also halos vainlets. Blue clay locally on FP's. Ankerite weakly rep plag crystals. Biotite present in VN's and as s

Blackwater Project
Drill Summary - Mineralization

BW0308		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
46.5	70.5		0		0		0	Goe	FP	2	Jaro	GmR	5				black fine-grained mineral streaking black, filling veins and coating FP's. moderate orange-medium yellow Fe-oxide stain on core (goethite). .
70.5	87		0		0		0	Goe	FP	1.5	Hm	BB	0.5	Goe	GmR	3	hematite clay filling vugs, (Westhered blebs of Sulphides turning to oxides and dissolving away?)
87	105.9		0		0		0	Goe	FP	1	Hm	BB	0.1	Goe	GmR	3	
105.9	123.8		0		0		0	Goe	FP	0.5	Hm	FP	0.5	Goe	GmR	5	Hematite locally coating FP's with Goe, as small discoidal masses and hematitic clays.
123.8	132.7		0		0		0	Goe	FP	0.5	Hm	GmR	4	Goe	GmR	6	Hematite locally staining the groundmass around veins, blebs and FP's.
132.7	152		0		0		0	Goe	FP	1	Hm	GmR	0.5	Goe	GmR	4	Hm as partial vug fill (clay rich), and locally weakly staining groundmass around veins, blebs and FP's. Goe replacing vein material and coating FP's.
152	171		0		0		0	Goe	FP	1.5	Hm	BB	0.5	Goe	GmR	3	
171	184.4		0		0		0	Goe	FP	0.5	Hm	GmR	5	Goe	GmR	1	Hm also replaces disseminations.
184.4	200		0		0		0	Goe	FP	1	Hm	DI	0.1	Goe	GmR	2	Hm only as DI's.
200	207.9		0		0		0	Goe	FP	1	Hm	GmR	0.5	Goe	GmR	6	
207.9	215.3	DI	0.5	DI	0.1		0	Goe	GmR	3							patches of groundmass replacement goethite oxidation, and patches of weak to no oxidation with sooty disseminations of Py and Sp.
215.3	225.3	DI	1	DI	0.5	FP	0.1	Goe	GmR	0.5							sooty Py and Sp DI, locally surrounded by clay alt halos. Py on FP's. Trace Po found on single Fp among Py crystals (<0.5mm).
225.3	230.2	DI	1	DI	2.5		0	Py	LAM	0.5							strong zone of Py and Sp mineralization. black and sooty Py and Sp, Sp also red. Py locally follows laminations in small disontinuous laminations.
230.2	247.5	BB	0.5	DI	1.5		0	Py	DI	0.5	Dbs	DEN	0.1				Py occurs as DI, following laminations, and as large blebs (<15mm). Py and Sp both occur as part of the dendritic black sulphides. Sp; red and black DI and partially in blebs with Py..
247.5	260	DI	0.5	DI	1	DI	0.1	Sp	LAM	0.5							Sp locally occurs as red laminations following silica laminations.

Blackwater Project
Drill Summary - Mineralization

BW0308		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
260	265.7	FP	0.1	DI	0.1	DI	0.5	Dbs	FP	0.5							Sp locally Di with Po. Po DI. Py occurs as Dbs locally. trace amount of Po occurs as blebs.
265.7	273.3	DI	1	DI	0.5		0										Euhedral Py Di throuhgout, locally concentrated in mafic clasts that are chloritically replaced. Strong Py on FP's as aggregates of Py crystals and single crystals. Py DI in fault gouge as well. SP DI in competent rock.
273.3	283	FP	0.5	DI	2	DI	0.5	Py	DI	0.5							Discoidal massive aggregates of Py coating FP's, VN, DI. Po patchy DI's Sp strongly Disseminated locally stained on FP's.
283	289.2	BB	0.5	DI	0.1	DI	0.5	Py	DI	0.5							Py Blebs in fault material as well as DI. Po patchy DI's.
289.2	303.5		0		0	DI	0.5										
303.5	324.5	FP	0.5		0	DI	1	Po	BB	0.5	Mrc	FP	0.5				Marcasite and Py on FP's, as discoidal aggregates and bulbous forms locally. Po Di in groundmass and infills amygdules.
324.5	334.5	FP	0.1		0	DI	1	Mrc	FP	0.1							
334.5	352.6	VN	0.5	BB	0.1	DI	0.5	Py	DI	0.5							Py Di locally and veined as oreiented veinlets and fracture filling. Po DI in black masses. Sp occurs in single bleb with Py.
352.6	371	DI	0.5		0	DI	0.5	Po	BB	0.5							Po DI and filling amygdules as blebs with calcite and chlorite. Py DI throughout.
371	380		0	CR	0.1		0										Sp occurs within mafic clasts/groundmass, replacing small grains, locally with chlorite.
380	381.5		0	VN	0.1	DI	3	Apy	VN	0.1	Cp		0.1				Mineralized zone begins with a calcite veinlet including Po>APy>Sp>CP. Galena in a chlorite patch with CP and Po, all 3 minerals seperate.
381.5	397	BB	0.1	BB	0.1	VN	0.5	Cp	DI	0.1	Ga	BB	0.1				Galena in a chlorite patch with CP and Po, all 3 minerals seperate. Po occurs as small patchy DI's, amygdule fill and blebs, but most strongly as VN's. Sp occurs only as an associate mineral with Po, wrapping itself around Po locally in small blebs.

Blackwater Project
Drill Summary - Mineralization

BW0308		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
397	406.8	VN	0.5		0	DI	0.1	Mrc	FP	0.5							Py fracture fill, and veined. Within fault mineralization is all Py blebs, DI grains and veinlets. Mrc coats FP's as discoidal aggregates. Po onlcy occurs from 397-399m as small blebs (Amyg filler?) and DI's.
406.8	427.5		0	VN	0.1	DI	1.5	Apy	DI	0.1							Po Disseminated throughout entire rock, in GM. Locally Po is halo'd by chlorite. Po occurs in veins with minor amounts of Sp. trace DI's of Apy.
427.5	444	VN	0.1	VN	0.1	DI	1.5		VN	0.1	Cp	VN	0.1				Po disseminated throughout and veined alone and with either CP or Sp. Py veined with calcite, and biotite/CP seperatley.

Blackwater Project
Drill Summary - Structure

BW0308

From (m)	To (m)	Structure	Strength	Comments
46.5	60	CRZ	5	crushed zone at top of hole, <1m of intact rock.
60	62.9	JZ	3	angles at 60,70 dtca.
62.9	65.9	FL	4	broken rock with abundant clay.
65.9	67.3	BRKZ	2	
67.3	69	FL	4	abundant fragments with abundant clay, top of fault appears to be at 6 dtca.
69	69.7	BRKZ	3	
69.7	71.3	FL	3	
71.3	78.8	JZ	3	at 60 and 70 dtca
78.8	79.5	BRKZ	2	
79.5	80.5	JZ	2	
80.5	80.9	FL	3	small fault abundant clay even more abundant rock gragments.
80.9	82.3	JZ	3	
82.3	82.7	BRKZ	4	joint failure fault, no gouge/clay.
82.7	84.85	JZ	2	
84.85	85.02	FL	3	joint failure fault.
85.02	85.6	BRKZ	2	
85.6	87.5	JZ	3	50:50 Jointed vs Broken.
87.5	89.12	BRKZ	3	
89.12	89.6	FL	4	crushed rock, and abundant clay.
89.6	99.3	JZ	3	
99.3	100.5	BRKZ	5	acundant fragments, no-min clay.
100.5	102.8	BRKZ	1	broken rock, no well formed fractures.
102.8	103.5	FL	3	abundant fragments, only moderate clay.
103.5	104.5	BRKZ	3	
104.5	107	JZ	4	
107	107.8	FL	4	higly fragmental but only moderate-abundant clay
107.8	108.7	BRKZ	1	rehealed fractures.
108.7	110.1	FL	3	highyl fragmental only moderate clay.

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Blackwater Project
Drill Summary - Structure

BW0308

From (m)	To (m)	Structure	Strength	Comments
110.1	112.2	BRKZ	1	
112.5	114.7	JZ	3	
114.7	115	BRKZ	3	
115	117.2	JZ	4	no angle standsout.
117.2	117.6	FL	3	joint failure fault.
117.6	123.8	JZ	4	30,45,60 dtca.
123.8	123.8	JZ	4	
123.8	124.5	BRKZ	2	
124.5	180.4	JZ	3	25,60,74 dtca. ~15% fractures unmeasurable. 50:50 broken and measurable fractures.
180.4	181	BRKZ	4	
181	202.5	JZ	2	50,55,60,70,80,90 dtca. Rough fractures.
202.5	202.8	BRKZ	2	
202.8	213	JZ	2	mostly strong well developed fracture planes
213	228	JZ	2	
228	229	BRKZ	2	
229	232.4	JZ	2	30,40,50 dtca
232.4	232.5	BRKZ	3	
232.5	244.4	JZ	3	
244.4	249.5	FL	3	
249.5	251.4	JZ	3	30,35,40,45,60 dtca
251.4	261.2	FL	4	
261.2	265	JZ	3	30,40,50,80 dtca. 60:40 jointed vs broken.
265	268.6	BRKZ	4	
268.6	293.7	FZ	5	fault zone v.strong gouge. Competent clay/fragments.
293.7	304.2	JZ	3	20,60 dtca.
304.2	304.5	FL	3	
304.5	321.9	JZ	4	40,50,80 dtca.
321.9	324.7	BRKZ	5	

Blackwater Project
Drill Summary - Structure

BW0308

From (m)	To (m)	Structure	Strength	Comments
324.7	327.8	BRKZ	2	
327.8	344.5	JZ	3	50,55,60 dtca.
344.5	345.4	FL	5	abundant calcitic gouge fault.
345.4	346	BRKZ	3	broke rock, calcite on Fractures.
346	382.7	JZ	3	25,40,50,60,70 dtca.
382.7	383.1	FL	3	washed fault, so broken fragments but minimal clay.
383.1	393.1	JZ	3	40,50,60,65,80 dtca.
393.1	406.9	FZ	5	fault zone, with multiple large brecciated faults. Abundant gouge and fragments. First measurable fault at 40dtca.
406.9	444	JZ	3	well defined fractures at 60,45,65,20,80 dtca. no distinct orientation.

Blackwater Project
Drill Logs

Hole ID:	BW0309	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376052.75
Depth (m):	293.5	Date Started:	08/01/2012	Casing Size:	HWT	Northing:	5893247.94
Azimuth:	255	Date Completed:	15/01/2012	Casing (m):	47.5	Elevation (m):	1518
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	255	-90
206.5	273.9	-89.6

Blackwater Project
Drill Summary - Lithology

BW0309

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	46.99	OB							
46.99	137.6	AND	mas	LAP	D	GRY	DEP	GR10	Plag crystals throughout. Locally Bx'd with anugular clasts in between and fill (joint failures? depositional?). Locally appears fine-grained with plag crystals sitting in locally altered chl/ser matrix. Possible Intermediate volcanic.
137.6	155.5	AND	ms	LAP	D	GRY	FLT	SH	Grayish-Black Clasts supported by a M. to D.Gray matrix, poorly sorted, sub-rounded to angular. Becomes amygdaloidal with depth.
155.5	158.9	AND			D	GRN	FLT	SH	fault rock original texture obscured by silica alteration, locally blebs of matrix supported AND visible. Bottom contact is the sharp termination of a fault at 0-30 dtca, bends.
158.9	180.2	AND	ms	LAP	D	GRY	UNKN	GR10	Grayish black clasts supported by a M. to D. Gray matrix, poorly sorted, sub-rounded to angular. Locally amygdaloidal (silica filled, and locally some Calcite).
180.2	213.9	AND	mas		D	GRY	DEP	SH	Massive AND, locally amygdaloidal. Pyroxenes and hornblendes locally seperated and altered to chlorite. Bottom contact sharp terminus to unit at 71 dtca.
213.9	233.1	AND	mas		M	GRY	FLT	SH	locally volcanic rich in plagioclase crystals and plag rich groundmass, into an oriented breccia zone seperating a non-oriented clastic AND Another oriented breccia zone then seperates a plag porphyritic unit with chlorite altered pyroxenes from the
233.1	245.7	AND	ms	LAP	M	GRY	DEP	SH	matrix supported lapiulli tuff, with sub-angular to angular mafic clasts, some with amygdules and/or plag phenos (partially ankerite altered). bottom of unit is a multi meter breccia-fault, which ends before the terminus of the unit, definable deposi
245.7	293.5	AND	mas	LAP	M	GRY			amygdaloidal AND bleached near top of section, with major <1mm plag grains, locally sericite/clay replaced, Amygdules filled with silica and calcite. Locally mafic clasts (with and without either plag crystals, or amygdules) sitting in a Lighter gray

Blackwater Project
Drill Summary - Alteration

BW0309		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
46.99	59.08	O	PATC	3	REP	2		0	REP	1							patchy grondmass replacing chlorite. Clay replaces certain grains and some crystals, as well sericite locally replaces off-white to L.Green rectangular grains (relict plag?) along with jarosite and other oxides.
59.08	69.1	O	PATC	3	REP	2		0	REP	1							
69.1	76	O		0	REP	1		0	REP	1	CAL	REP	2				calcite strongly replaces small grains circular and rectangular, as well as filling veinlets and fractures with goethite.
76	86.37	T		0	REP	1		0	REP	1	CAL	PERV	2				calcite minor-moderatley pervasive. Sericite weakly replaces rectangular / box shape grains (relict plag), with clay and calcite locally.
86.37	104.1	T		0	REP	1		0	REP	1	CAL	PERV	3				
104.1	108.5	T		0	FR	1		0		0	CAL	PERV	3				clay occur locally on FP's
108.5	116.8	S	FR	1	FR	2		0		0	TALC	FR	3	CAL	PERV	2	chlorite weakly coating more competent FP's locally, and as part of clay locally. White talc and clay on fault FP's mixed together.
116.8	125.7	S	FR	1	FR	2	PERV	2		0	TALC	FR	3	CAL	PERV	1	pervasivley silicified, calcite throughout groundmass.
125.7	137.6	S	FR	2	FR	1	PERV	2		0	TALC	FR	1	CAL	PERV	1	
137.6	140.5	S	FR	1	FR	1	PERV	1		0	CAL	CLST	2				calcite alteration localized to mafic clasts.
140.5	140.8	S		0		0	PERV	4		0							pervasivley silicified, L.Green-Gray bleaching.
140.8	151.3	S	FR	2	FR	2	PERV	1		0							fault rock, slicken clay on FP and chlorite as fill in fault planes, and locally patchy
151.3	155.5	S	FR	2	FR	2	PATC	2		0	SIL	AMYG	1				blebby patches of silica in matrix, and filling amygdules. chlorite and clay on FP's along with Py aggregates.
155.5	158.9	S	PERV	3	FR	1	PERV	5		0							chlorite and silica pervasive. Chlorite occurs on FP's as well, along with off-white clay locally.
158.9	169	S	REP	1	FR	1	AMYG	2	REP	1	CAL	AMYG	1				silica fills amygdules, locally calcite weakly fills amygdules. chlorite and sericite locally patchy (replacing clasts?)
169	178	S	FR	1	FR	2	AMYG	2		0	CAL	AMYG	1				

Blackwater Project
Drill Summary - Alteration

BW0309		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
178	196.7	S	PATC	1		0	PERV	3		0	SIL	AMYG	2	CAL	AMYG	1	pervasive silicification, and filling amygdules Locally weak calcite fills amygs as well.
196.7	196.9	S	REP	4		0	MTRX	5		0							small silica replaced fracture zone, where brecciated AND is supported by a completely silicified matrix and smaller clasts have been chlorite replaced.
196.9	213.9	S	REP	2		0		0		0	BIOT	PATC	2				calcite is the only alteration product, fills fractures, veins, etc... chlorite replacing hornblendes, and locally Pyroxenes.
213.9	221.5	S	PATC	1	REP	1	PERV	2		1	TALC	VN	3	BIOT	PATC	2	moderate perv silicification, locally Talc strongly fills Fractured fill veinlets. Light brown-Dbrown biotite in patches in G.mass. Sericite and clay locally replace plag grains.
221.5	226.5	S	PERV	1		0	PERV	1		0	BIOT	REP	1	ANK	REP	2	weakly perv silicified.
226.5	232.5	S	PATC	3	REP	2	PERV	4	REP	2	BIOT	REP	1	ANK	REP	3	pervasivley silicified 4-5 in the center, but towards top and bottom contact silicification weakens.Moderate chlorite alteration throughout. Fe-Co3 locally partially replaces feldspars. Biotite increases in abundance in teh less silicified locations. Seri
232.5	236.5	S	PATC	4	REP	1	PATC	4	REP	1	BIOT	REP	1	ANK	REP	3	plag grains strongly Fe-CO3 replaced. Patches of chlorite. Small zones of Strong pervasive silica alteration.
236.5	245.7	S	REP	2		0	PERV	2		0	BIOT	REP	1	ANK	REP	3	calcite filling amygdules, chlorite locally replacing mafic clasts. Chlorite alteration is strongest in fault material up to 4 strength.
245.7	254.5	S	PERV	2	REP	2	PERV	4	REP	2	ANK	REP	3	BIOT	PATC	1	sericite/clay replacing plag grains locally.
254.5	271	S	SPHL	2		0	PERV	1	REP	1	CAL	AMYG	2	BIOT	REP	1	chlorite halos Po locally. Sericite replaces small plag grains locally.
271	279	S	REP	2		0	PERV	3	REP	1				SIL	AMYG	3	Locally bleached, patchy pervasive silicification. Silica fills amygdules with Po.

Blackwater Project
Drill Summary - Alteration

BW0309		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
279	293.5	S	REP	2		0	PATC	4		0	BIOT	REP	1	ANK	REP	1	chlorite replaces small crystals (rectaungular and cubic) in groundmass, as well as locally haloing Po. Biotite grains replace groundmass locally. calcite fills healed silicified fractures. Silica is large blebs and patches of L.Gray silicification.

Blackwater Project
Drill Summary - Mineralization

BW0309		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
46.99	59.08		0		0		0	Goe		4	Jaro	BB	0.5		DEN	0.1	orangish brown goethite replacing minerals and locally lathes (plag). Jarosite goethite occurs locally as blebs replacing unknown minerals, it is a dirty yellow to off orange colour. Unknown radiating dendritic D.bown-black mineral coating FP's local
59.08	76		0		0		0	Goe		3	Jaro	BB	0.1		DEN	0.1	
76	88.64		0		0	DI	0.5	Goe	FP	1.5							Po occurs as fine DI's and Blebs locally, Blebs usually associated with Goethite in flow fractures tat have been altered.
88.64	94.55	DI	0.1		0		0	Goe	FP	1.5		DEN	0.1				0-1% Py locally, as Disseminations in the GM, and specks locally in calcite veinlets. Black dendritic thin and soft unknown mineral coating FP's locally (Mn-OH?),
94.55	104.4		0		0		0	Goe	FP	1							no visible mineralization other than oxides that coat FP's are locally Pervasive, and DI.
104.4	108.5		0		0	DI	0.5	Goe	FP	1.5	Hm	DI	0.1				finely DI Po, locally assoc with Hm DI.
108.5	118		0		0	DI	0.5										finely DI Po.
118	125.5		0		0	SP	0.5										non-visible Di Po throughout, causing almost whole rock to be magnetic.
125.5	135	DI	0.1		0	DI	0.5										Po locally DI, fine and micro disseminations. Trace Py DI's.
135	146.5	FP	0.1		0		0										Py locally on FP's
146.5	160.3	VN	0.5	VN	0.1		0										veined Py, Ca and Sp blebs int eh veinlets
160.3	170.5	DI	3		0		0										Strongly DI Py, 0.5 mm DI's and <0.5mm DI's.
170.5	187.5		0		0	SP	0.5										Po DI and Specks, locally stronger. Py veined locally assoc with calcite.
187.5	198.1		0		0	DI	1										locally 1mm DI's, and larger blebs. Rock throughout magnetic, (Specks of Po?)
198.1	207.5		0		0	SP	0.1										locally magnetic, no visible Po
207.5	224.1	FP	0.5		0	FP	0.1										Py and Po locally filling FP veinlets with calcite.
224.1	227		0.1		0	SP	1										specks of Po causing entire rock to be magnetic

Blackwater Project
Drill Summary - Mineralization

BW0309		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
227	234.3	DI	0.5		0	VN	1										Py as fracture fill, and veined with Po. Po alos occurs as blebs, specks and DI's in groundmass.
234.3	245.5	DI	0.1		0	CR	0.5										Py DI. Po clast dominant, clast replacement.
245.5	260.5		0		0	DI	1.5										Po DI strongly, locally as blebs, VN's and amygdule filler.
260.5	267		0		0	BB	1.5										amygdule filler.
267	270.3	VN	0.1		0	VN	1										Po occurs in blebby discontinuous and continuous veinlets, as well as DI. Py veined.
270.3	278.5		0		0	BB	2.5										Po blebs infilling Amygdules, and DI and blebby in GM locally.
278.5	287.5	BB	0.5		0	BB	1	Cp	BB	0.1							blebs of CP assoc with Po in calcitic healed fractures. Py blebs in calcitic healed fractures. Py and Po both DI moderatley through body of rock. Mineralization decreases in amygdaloidal zone.
287.5	290.8	DI	0.5		0	DI	0.1										Py in calcite veinlet, coating FP's, DI in groundmass and replacing mafic clast. Po replaces mafic clast and is weakly DI throughout.
290.8	293.5	VN	0.5	BB	0.5	BB	1										SP and Po together fill the matrix of healed flow Bx AND. Py occurs in calcite veinlets.

Blackwater Project
Drill Summary - Structure

BW0309

From (m)	To (m)	Structure	Strength	Comments
46.99	50.5	BRKZ	1	top of hole, factures at iregular jagged angles. Joint failure
50.5	60.7	JZ	3	fractures averaging around 60-70 dtca.
60.7	61.05	FL	4	abundant gouge and fractured ock.
61.05	66.2	JZ	3	at 30, 60, 40 dtca
66.2	68.6	BRKZ	3	
68.6	68.93	FL	4	Rock fragments in abundant clay gouge.
68.93	74.7	JZ	2	45 and 60 dtca.
74.7	76	FL	3	fault, both ends gouged, while middle semi-intact.
76	79.82	JZ	4	20, 30 40, 60 irregular
79.82	79.9	FL	4	joint failure
79.9	80.8	JZ	3	30,40,45,70 dtca.
80.8	81	BRKZ	4	broken rock no clay.
81	85.9	JZ	4	joint zone with intermittent small broken zones.
85.9	86.5	BRKZ	4	
86.5	91.3	JZ	3	
91.3	92.1	BRKZ	4	no clay
92.1	92.7	JZ	3	45-30 dtca.
92.7	93.25	BRKZ	4	no clay
93.25	94.65	JZ	2	
94.65	97	FL	4	abundant gouge.
97	101.3	JZ	4	locally broken. 0-80 dtca.
101.3	103	BRKZ	3	locally jointed.
103	105.7	JZ	3	well defined joints.
105.7	108.9	FZ	2	local gouge and abundant fractures, well defined joints.
108.9	121	FL	5	crushed rock, abundant clay mechanical and alteration, with minor to moderate talc locally. Locally more competent.
121	124	BRKZ	4	
124	124.9	JZ	5	35,50 dtca.

Blackwater Project
Drill Summary - Structure

BW0309

From (m)	To (m)	Structure	Strength	Comments
124.9	124.9	FL	5	joint ailure fault
124.9	128.2	JZ	5	45,50,70 dtca
128.2	129.1	FL	4	
129.1	135.8	BRKZ	4	broken zone averaging 3-5 strength locally.
135.8	136.2	FL	5	
136.2	140.5	JZ	3	
140.5	141.5	FL	4	
141.5	148.1	BRKZ	4	variable from 3-5
148.1	152.4	BZ	4	fault breccia, partially intact core, that is predominatly clay and fragments.
152.4	155.4	JZ	4	60,65,70 dtca
155.4	158.4	BRKZ	4	
158.4	158.9	FL	5	bottom contact at 30 dtca.
158.9	169	FZ	3	fault zone, with small ~2cm faults locally. One fault at 165.8m @20 dtca.
169	170.9	BZ	5	
170.9	176.9	BRKZ	2	
176.9	178	BZ	5	
178	198.6	JZ	3	30,35,40,45,55,60,70 dtca.
198.6	198.8	FL	4	
198.8	203.5	BRKZ	2	locally broken 4, but averages 2
203.5	208	JZ	3	60 and 70 dtca.
208	209.5	BZ	4	fault breccia, with small sections intact.
209.5	215.6	JZ	3	
215.6	215.7	FL	4	
215.7	217	JZ	3	
217	218	FZ	5	40 and 50 dtca, small 3cm faults.
218	233	JZ	3	45,55,60,80 dtca.
233	235.7	BZ	4	
235.7	243	JZ	4	

Blackwater Project
Drill Summary - Structure

BW0309

From (m)	To (m)	Structure	Strength	Comments
243	245.5	BZ	5	
245.5	287.5	JZ	3	15,25,30,40,55,60,70,85 dtca. No specific orientation.
287.5	287.9	FL	4	fault breccia with abundant gouge. ad clear begginning and terminus.
287.9	289.6	BRKZ	3	BRoken zone, locally intact and locally fragmental (5)
289.6	293.5	JZ	3	joints at 50,55, 60 dtca. 70:30 jointed vs broken.

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Blackwater Project
Drill Logs

Hole ID:	BW0310	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375501.66
Depth (m):	307	Date Started:	08/01/2012	Casing Size:	HWT	Northing:	5893399.22
Azimuth:	0	Date Completed:	12/01/2012	Casing (m):	12	Elevation (m):	1530
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	214	-88
59	213.6	-88
100	227.4	-88
150	225.4	-88.2
200.5	214.8	-88.2
250	229.8	-88.3
300	220.7	-88.9

Blackwater Project
Drill Summary - Lithology

BW0310

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10.95	OB							
10.95	24.9	FLPT	ms	LAP	L	GRY	DEP	GR5	FLPT mostly with small clasts and moderate to well sorted with a few local exceptions of large mafic clasts. Majority of smaller clasts are felsic
24.9	31.1	FLPT	cs	LAP	L	GRY	DEP	GR10	FLPT with angular clasts, clasts composed mostly of banded felsic tuff with occaisional large mafic clast.
31.1	37	VC	plm	BLOCK	M	GRY	FLT	GR10	Boulder sized mafic clasts with smaller clast set mainly felsic. moderate to poorly sorted
37	52.9	AND	flw		D	GRY	FLT	SH	fault bounded dark AND unit with some flow banding, brecciation.
52.9	63.3	FLPT	flwbnd	LAP	M	GRN	DEP	GR10	unit has local brecciation but most clasts are sub rounded. sil-cly-ser matrix. flow banding prevalent.
63.3	77.1	FLPT	flwbnd	LAP	L	GRY	DEP	GR30	very prevalent flow banding, with brecciated felsic clasts. clasts show good laminations. matrix supported
77.1	114.5	FLPT	ms	LAP	M	GRY	DEP	GR10	smaller clasts than previous units, local microbrecciation. flow banding not as prevalent. unit is fairly massive
114.5	120.2	FLPT	bx	LAP	M	GRN	DEP	GR30	quite a bit of brecciation with clay matrix.clasts sizes larger than previous unit no flow banding visible
120.2	135.6	FLPT	plm	LAP	M	GRY	FLT	SH	gradually grading into a polymictic nearly VC with increasingly larger mafic clasts. quite a bit of brecciation. well sorted at beginning of uint to poorly sorted at base
135.6	151	FLPT	flwbnd	LAP	L	GRY	DEP	GR30	flow banding with brecciated felsic clasts . clasts showing laminations. clast supported
151	167.5	FLPT	plm	LAP	D	GRY	DEP	GR10	overall an equigranular FLPT with significant mafic clasts. a couple near block sized mafic clasts near top of unit
167.5	170.5	VC	plm	LAP	D	GRY	DEP	GR30+	gradual grading from FLPT into more VC bx. breccia veining in local 10 cm areas. Clasts are mostly fairly rounded with a few exceptions.
170.5	203	VC	bx	LAP	D	GRN	DEP	GR10	very green due to strong chl alt'n. frequent large bx veins with mostly felsic clasts. host rock is VC with subrounded mafic clasts. poorly sorted on a large scale with some near block sized clasts, but locally can be well sorted
203	240.4	VC	plm	LAP	MO	GRN	DEP	GR5	moderate to well sorted massive unit of VC with mottled texture. moderate clast alignment particularly around larger clasts. mostly sub centimeter mafics with felsic clasts slightly larger
240.4	244.3	VC	t	CA	D	GRN	DEP	GR5	fine grained VC with tuffaceous texture. most clasts are under 3mm, rounded with moderate alignment.

Blackwater Project
Drill Summary - Lithology

BW0310

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
244.3	257	VC	plm	LAP	M	GRY	DEP	SH	gradually transitioning from dominantly VC with flow lammanations and clast alignment into a FLPT with less obvious flow textures. these lithos are interdeposited within each other.
257	260.6	FLPT	plm	LAP	M	GRY	DEP	SH	FLPT with moderate to well sorted clasts, fairly rounded and moderate clast alignment. sharp contact with bottom AND unit
260.6	261.9	AND	dyk		D	GRN	DEP	SH	AND dyke(?) with upper and lower contacts about 35 degrees to CA. can't see individual grains. not porphyritic.
261.9	282.3	VC	ms	LAP	M	GRY	DEP	GR10	VC with poorly sorted fairly rounded clasts. some flow laminations in same orientation as dyke above.
282.3	288.1	FLPT	flw	LAP	M	GRY	DEP	GR10	unit has brecciation at contact with lower unit
288.1	293.5	VC	ms	LAP	M	GRY	FLT	SH	unit transitions from matrix supported grey VC to clast supported mottled VC, then back to matrix supported. more late stage brecciation with cpy in clast supported zone. fault gouge at bottom contact with wavy banding from movement
293.5	301.1	AND	bx	LAP	D	GRY	DEP	GR10	fairly equigranular AND with pervasive brecciation with strong sericite infill. minor areas of ser-sulphide replaced small plag amygdules
301.1	307	AND	mas		D	GRN			as above without brecciation

Blackwater Project
Drill Summary - Alteration

BW0310		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	18	O	CLST	2	PERV	4	OP	3	FR	2							clay-ser alt'n in matrix, sil alt'n strongest near OB contact
18	31.1	S	FR	2	MTRX	4	OP	2	FC	2							sil alt'n becoming less dominant, slight increase in chl-ser on fracture surfaces
31.1	37	S	PERV	3	MTRX	3	OP	2	PERV	3							moderate overall alt'n with increase in chl-ser resulting in pale green colour
37	44.7	S	CLST	2	MTRX	3	OP	2	FR	2							white to green color as a result of cly/chl alt'n. small cly clasts in matrix, chl prevalant on fractures
44.7	52	S	FR	1	FR	1	INFILL	1	FR	3	BIOT		1				fault bounded AND unit has low alt'n, ser most dominant on fracture planes. weak brown biotite alt'n
52	56.5	S	CLST	2	MTRX	3	OP	3	PERV	2							cly in brecciation fractures, also in clasts in matrix.
56.5	58	S	PERV	4	FR	2	REP	1	FR	3							1.5m of anomolously high chl alt'n. green to dark green throughout, with cly on fracture planes
58	76.5	S	INFILL	2	FC	4	MTRX	2	FR	1							wide fractures with cly alt'n, chl in late matrix, sil in matrix. core is crumbly and white due to high cly alt'n
76.5	102.2	S	CLST	3	FC	2	OP	2	PERV	5							strong pervasive ser, chl in large clasts assiociated with mafic clasts. cly on a few fractures
102.2	118	S	PERV	3	FC	2	REP	1	PERV	4							chl alt'n becoming more pervasive
118	125	S	CLST	2	FC	1	OP	2	PERV	3							moderate to strong ser alt'n with chl
125	134	S	PERV	4	FR	2	REP	2	PERV	3							strong chl-ser alt'n. rock is dark grey-green. sil-cly alt increasing at base of unit
134	149.7	S	CLST	3	FC	2	OP	3	FR	2	KSPR		1				sil alt consistent in unit, chl in clasts and matrix, some felds(?) replacement of felsic clasts
149.7	167.5	S	PERV	5	FR	1	OP	2	FR	2	BIOT		1				strong chl alt through unit. slight bio alt especially on mafic clasts
167.5	172.8	S	CLST	3	MTRX	1	INFILL	2	PERV	4	CARB		2				ser-sil-chl infilling fracture veins, strong pervasive ser alteraiton, becoming more chl alt'n towards base of unit
172.8	201	S	FC	5	MTRX	1	OP	2	PERV	3	CARB		1				intenser chl alt'n in bx matrix, and on fracture planes with carb. pervasive ser-sil alt'n
201	217	S	FR	3	FC	2	OP	3	CLST	2							chl-ser alt'n of clasts with chl still strong on FP. cly-ser-carb in microbreccia at beginning of unit
217	226	S	FR	3	MTRX	1	OP	3	CLST	2							as above with a slight increase in sil overprinting

Blackwater Project
Drill Summary - Alteration

BW0310		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
226	241	S	CLST	3	MTRX	1	PERV	4	CLST	2							perv sil alt in some places very strong
241	251.5	S	CLST	3	MTRX	1	OP	3	CLST	3	CARB		1				chl-ser clast replacement more frequent. sil overprinting strong in some spots
251.5	260.5	S	PERV	3	MTRX	1	PERV	3	PERV	2							moderate pervasive alt'n chl-sil more dominant with slight decrease in ser
260.5	266.5	S	PERV	2	MTRX	1	INFILL	2	MTRX	4	BIOT		1				strong ser alt'n in matrix, bio on mafic clasts in FLPT
266.5	275.5	S	FR	2	FC	2	REP	2	PERV	3	CARB		1				fairly strong grey ser alt'n. minor sil replacing clasts, and chl on fracture planes.
275.5	280	S	CLST	2	INFILL	3	OP	2	INFILL	4	CARB		2				strong gouge zone with ser-cly-carb infill. sil OP in non gouged zones
280	287.5	S	CLST	2	MTRX	1	PATC	3	PERV	4	CARB	VN	2				patchy sil overprint with consistant ser alt'n. the odd vnlt' with carb
287.5	293.7	S	PERV	3	INFILL	2	REP	2	PERV	3	CARB		1				gouge with ser-cly infill near base of unit. ser-chl alt with stronger chl component. light sil alt'n
293.7	301.1	S	FR	1	MTRX	1	REP	1	INFILL	4	CARB	VN	2	BIOT	PERV	2	strong ser alt'n in breccia infill, carb-ser on fracture planes and in vnlt's. bio alt'n in AND flow giving characteristic brown colour
301.1	307	S	PERV	1	FC	1	REP	1	PERV	2	BIOT	PERV	3	CARB	VN	2	bio-ser alt'n giving rock greyish brown colour. vnlt with carb becoming more frequent

Blackwater Project
Drill Summary - Mineralization

BW0310		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	23.5	BB	0.1	DI	0.5	BB	0.1										sp disseminated in blotches and sometimes following a vague banding. local disseminated patches of good sp
23.5	37	SP	0.1	DI	0.5	SP	0.1										as above with a bit more blotchy sp and replaceing felsic clasts.
37	44.5	FP	0.1	DI	0.3	DI	0.1										sp specks in mafic clasts with trace po-py. py on a couple fracture planes
44.5	65	FP	0.1	DI	0.1	DI	0.1										rare visible sulphide. trace py-sp on fracture plane. possible sp replacing voids
65	76.7		0	DI	0.1		0										only specks of possible sp seen
76.7	83.5	VN	0.1	BB	0.5	BB	0.3										sp-po in blebs replacing mafic clasts. possible py here as well, py in rare vnlt
83.5	98.5	VN	0.1	BB	0.5	SP	0.1										as above, with decrease in po
98.5	109.5	BB	0.5	DI	0.5	BB	0.3	Mrc		0.5							increase in py with sp and decrease in po. marc on several fracture planes
109.5	117.5	BB	0.3	DI	0.3	BB	0.1	Mrc		0.3							smaller blebs of sp-py. marc on one fracture plane.
117.5	134	BB	0.5	BB	1	BB	0.3	Mo		0.1							more frequent blebs of sp-py as they replace mafic clasts. trace mo(?)
134	149.7	BB	0.5	DI	0.5	SP	0.1	Mo		0.1							as above with somewhat less mineralization
149.7	166	VN	1	BB	4	BB	1	Mrc		0.5							frequent blebs of sp-py replacing nearly every mafic clast, veining of py-sp-po, disseminated sp throughout, semi-massive vein of blebby py-sp at 162.7. frequent marc on fracture planes
166	173.5	VN	1	BB	2	BB	1	Apy	VN	0.5	Cp	FP	0.1	Mrc	FP	0.5	strong po correlation with sp, appearing together. bright py in vnlt's with specks of cpy in alteration. opened vein with aspy-py-sp
173.5	182.5	VN	1	BN	2	BB	1	Apy	SP	0.5	Cp	SP	0.1	Mrc		0.5	good py grade in bx matrix with strong chl alt'n. sp-po replacing clasts and somewhat laminated in areas. vnlt's of py-sp-aspy-cpy possible ga. mrc on most FP
182.5	190	VN	2	BB	2	BB	2	Apy	SP	0.1	Cp	VN	0.1	Mrc		0.5	as above, with increased py-bearing vnlt's

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Blackwater Project
Drill Summary - Mineralization

BW0310		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
190	201.1	BB	3	BB	2	BB	1	Apy	VN	0.5	Cp	VN	0.5	Mrc		0.5	py-sp replacing clasts with prefrence to small grained mafics, py strong in breccia matrix.
201.1	211.3	BB	3	BB	2	BB	2	Apy	SP	0.1	Cp	BB	1	Mrc		0.5	not as many sulphide vnlt's as previous, but increasing py-sp-cpy in blebs and py-sp in dissemination. Fairly consistant mineralization
211.3	216.4	BB	3	MA	4	BB	1	Apy	SP	0.1	Cp	VN	0.5	Mrc		0.5	zones of vg grade sp-py-po, and semi-massive sp with blebby py-cpy. po not strongly associated with massive sp.
216.4	224.9	BB	1	BB	2	BB	2	Apy	VN	0.1	Cp	BB	0.5	Mrc		0.5	clast replacement of smaller clasts than upper unit, but still good mineralization. sp-po in more euhedral forms, while py-cpy in vnlt's and blebs in disseminations
224.9	233.1	BB	2	BB	2	BB	2	Apy	VN	0.5	Cp	VN	0.5	Mrc		0.5	good clast replacement of sp-po-py-cpy. vnlt with aspy.
233.1	242	BB	2	BB	2	BB	2	Apy	VN	0.5	Cp	FP	1	Mrc		0.5	sp-po continues. good cpy on a couple fracture planes. a couple veins with good semi-massive py. previously unseen sp with metallic lustre, possible Mo(?)
242	248.5	BB	1	BB	2	BB	2	Apy	SP	0.1	Cp	FP	0.1	Mrc		0.1	large clasts replaced with sp-po-py. some vnlt's with py-cpy
248.5	257.5	FP	1	BB	1	BB	1	Cp	SP	0.1	Mrc	FP	0.1				sulphides not as good as unit above. Some good bright py on fracture planes
257.5	261.5	VN	1	BB	2	BB	2	Apy	VN	1	Cp	VN	0.5	Mrc		0.5	zones with good large clast replacement with sp-po-py. several veins 3-10mm with good aspy-py-sp from 260.7-261.5
261.5	282.3	VN	1	DI	1	DI	1	Mrc	FP	0.5	Cp	BB	0.1				still pretty good sp-po disseminated, mrc-py in fractures, and py-cpy in vnlt's.
282.3	287.5	SP	0.5	BB	1	BB	2	Mrc	FP	0.1	Cp	VN	0.1				good diss sp-po and in blebs. Not as many py vnlt's as previous.
287.5	293.1	VN	2	BB	2	VN	3	Cp	VN	2	Mrc		0.1				vein network with dominant vein running sub-parallel to CA. massive py-cpy-po in veins/vnlt's

Blackwater Project
Drill Summary - Mineralization

BW0310		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
293.1	307	BB	1	DI	1	DI	1	Cp	SP	1							still decent sp-po-py-cpy in blebby disseminations throughout and unit. also rare vnlt with good py-cpy-po

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Blackwater Project
Drill Summary - Structure

BW0310

From (m)	To (m)	Structure	Strength	Comments
0	18	BRKZ	1	strong end of broken zone, inconsistant compentancy.
18	34.2	JZ	4	fairly competant with local half meter broken zones.
34.2	37	BRKZ	3	gradually worse competancy from last unit
37	43	FZ	3	half gouge, half rubble
43	48.5	BRKZ	3	major fracture set at 30, minor set at 55
48.5	55.6	FZ	3	half gouge, half rubble
55.6	83.7	FZ	2	quite a bit of rubble, some gouge with clay
83.7	116.9	BRKZ	4	a well broken zone, low competancy, fairly consistant
116.9	119	FZ	4	quite a bit of gouge
119	128.5	JZ	3	minor set at 70. good competant rock
128.5	135.6	BRKZ	4	major set at 60 to CA, minor at 35. small section of gouge/rubble
135.6	143.3	JZ	4	major joint set at 25, not much of a minor set seen
143.3	160	BRKZ	2	varying angles of dominant fracture. a bit of rubble
160	177.4	BRKZ	3	rock is healed in many sections
177.4	185.5	BRKZ	4	fracture sets at 30-40 to CA
185.5	203.1	BRKZ	2	major set at 35, minor at 55
203.1	215.1	JZ	3	major set at 35, minor at 60
215.1	217	BRKZ	5	just one fracture really, parallel to core
217	233	JZ	3	major joint set at 35, minor set at 70 to CA
233	236.5	JZ	5	same fracture sets as previous, more fractures with a couple subparallel to core
236.5	249.7	JZ	3	major set at 40, minor at 70
249.7	256	JZ	5	inconsistant joint zone with small broken zones. minor set at 70 to CA
256	266.5	JZ	3	minor set at 60
266.5	270.2	BRKZ	5	not quite FZ. minor gouge
270.2	277	BRKZ	3	minor set at 35
277	278.7	FZ	5	all mud/clay gouge. well healed
278.7	283.4	BRKZ	2	major set at 35, minor set at 60-70
283.4	287	JZ	2	sets at 30 and 50 to CA. very competant rock

Blackwater Project
Drill Summary - Structure

BW0310

From (m)	To (m)	Structure	Strength	Comments
287	294.2	BRKZ	3	sets at 30 and 60, some minor sets measured at 15 and 80
294.2	297.8	JZ	5	sets at 30 and 50
297.8	307	JZ	3	major set at 40, minor set at 10-20

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Drill Logs

Hole ID:	BW0311	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375950.07
Depth (m):	344.5	Date Started:	09/01/2012	Casing Size:	HWT	Northing:	5893348.94
Azimuth:	0	Date Completed:	12/01/2012	Casing (m):	7.5	Elevation (m):	1518
Dip:	-90	Logged By:	TOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	240	-89
52	239.8	-88.6
118	245.2	-88.4
163	266.8	-89.1
214	258	-88.5
265	266.1	-88.7
325	129.1	-88.6

Blackwater Project
Drill Summary - Lithology

BW0311

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
7	9	OB							Overburden
9	20.8	VC	volc	BLOCK	M	GRN	DEP	SH	Predominantly volcaniclastics with localized sections of andesite; Clasts in the volcaniclastics are variable and angular, clasts in the andesite are SA/SR
20.8	34.68	AND	amg	CA	D	GRN			Dark green grey andesite with some flow texture and some amygdules
34.68	58.2	VC	volc	BLOCK	M	GRN			Mafic volcaniclastics with mostly angular mafic boulder sized clasts, gradually becomes felsic volcaniclastic with 90%felsic clasts that are range from 2-64mm SA/SR
58.2	92	VC	volc	BLOCK	D	GRY			Polymictic mafic volcaniclastics with boulder sized clasts, localized andesite breccia
92	94.83	VC	volc	BLOCK	M	GRN			Polymictic volcaniclastics with 75% mafic clasts
94.83	111.1	AND	flw	CA	D	GRY			Some flow texture, some localized andesite brecciation
111.1	121	AND	mas	FA	M	GRN			Massive textured andesite with some amygdules
121	151	AND	bx	CA	D	GRN			Brecciated andesite with some amygdules, some sections are paler in colour than others
151	178	AND	mas	FA	D	GRY			Massive textured andesite with localized brecciation in sections
178	196	AND	mas	FA	D	GRY			Greyish black massive textured andesite
196	222.1	AND	bx	CA	M	GRY			Brecciated andesite with angular clasts
222.1	241.4	AND	mas	CA	M	GRY			Massive textured andesite with <1m sections of brecciated andesite, some amygdules present
241.4	279	AND	mas	CA	M	GRY			Massive textured andesite with amydules, some sections are slightly darker in colour than others
279	288.6	AND	mas	CA	M	GRY			Massive textured andesite with stockwork of calcite veins/veinlets/stringers, some amygdules present
288.6	326.5	VC	mon	BLOCK	M	GRN			Monomictic(30% of interval) volcaniclastics at start of interval with SA/SR andesite clasts and eventually becomes polymictic(70% of interval) volcaniclastics with more angular and larger clasts; some sections are slightlty darker/have more alteratio
326.5	344.5	AND	flw	CA	D	GRY			Flow characterized andesite with calclte replaced amygdules

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Blackwater Project
Drill Summary - Alteration

BW0311		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
7	26.05	T	FR	2	PATC	3	OP	2	PATC	1							Some weak sericite and chlorite alteration
26.05	40	S	CLST	1	PATC	1	OP	3	CLST	2							Some sericite and chlorite alteration in clasts, patchy clay alteration
40	58	S	CLST	1	PATC	2	OP	2	CLST	2							Sericite alteration in clasts, very weak chlorite alteration in clasts and patchy clay alteration
58	71.65	S	CLST	1	FR	1	OP	2	MTRX	2							Sericite alteration in matrix, chlorite alteration in some clasts
71.65	84	S	FR	2	PATC	2	OP	2	CLST	1							Weak sericite alteration in clasts, weak chlorite alteration along fractures
84	92	S	FR	3	PATC	3	OP	2	CLST	2							Stronger chlorite alteration on fractures than previous interval
92	95.2	S	OP	4	FR	2	OP	2	CLST	2							Strong overprint chlorite alteration, some sericite alteration in clasts
95.2	113.5	S	AMYG	2	FR	1	OP	2	CLST	1	CHL	FR	2				Chlorite alteration in amygdules and along fracture planes, weak sericite alteration in breccia clasts
113.5	122.5	S	OP	3	FR	1	OP	3	MTRX	1	CHL	FR	2				Stronger chlorite alteration than previous interval
122.5	133	S	OP	1	FR	1	OP	3	MTRX	1							Moderate silica alteration, weak sericite and chlorite alterations
133	139	S	FR	3	MTRX	2	OP	2	OP	2							Stronger Chlorite and sericite alteration than previous interval
139	151	S	FR	2	FR	2	OP	2	OP	1							weak sericite alteration, some chlorite alteration
151	178	S	FR	2	FR	1	OP	3	OP	1							Some chlorite alteration on fracture planes, weak overprint sericite alteration, moderate silica alteratio and weak clay alteration
178	196	S	FR	1	FR	1	PERV	4	AMYG	2							Sericite alteration in amygdules, weak chlorite and clay alterations on fracture planes
196	222.1	S	FR	2	PATC	3	OP	3	VN	1							Weak sericite alteration, some chlorite alteration
222.1	241.4	S	FR	2	FR	2	PERV	4	VN	1							less clay alteration and more silica alteration than previous interval
241.4	279	S	FR	2	FC	3	PERV	4	VN	2							Strong silica alteration, sericite alteration in some calcite veins

Blackwater Project
Drill Summary - Alteration

BW0311		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
279	288.6	S	FR	1	FR	1	OP	3	VN	1							Weak sericite, chlorite and clay alterations
288.6	326.5	S	FR	3	MTRX	3	OP	3	CLST	3	ANK		3				Moderate alterations throughout interval, more in some sections than others; Ankerite/iron carbonate alteration?? (Brownish discolouration)
326.5	344.5	S	VN	1	INFILL	1	OP	3	VN	1	CAL	AMYG	4				Weak sericite and chlorite alteration in some calcite veins, weal clay alteration almost like infill ?? around calcite veins, calcite replaced amygdules

Blackwater Project
Drill Summary - Mineralization

BW0311		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
7	26		0		0		0	Dbs	DEN	0.1							No Sph, Py or Po present; trace Dbs
26	37		0		0		0	Dbs	DEN	0.5							Slight increase in Dbs from previous interval
37	55		0		0		0	Dbs	DEN	7.5							Significant increase in Dbs
55	92		0		0	BB	0.1	Dbs	DEN	0.1							Little or no sulphides present; trace Po; trace Dbs
92	141.9	VN	0.1		0		0										Trace sulphides; No Sph and Po; trace Py found closely associated with calcite veins present
141.9	178	FP	0.2		0	DI	0.1										Trace sulphides; No Sph; Huge pyrite cluster on fracture plane, some pyrite veinlets and some in calcite veins, disseminated Po
178	196	VN	0.1	VN	0.1	VN	0.1	Py	FP	0.2							Sph+py+po in a vein; some py in calcite veins and on fracture planes
196	222.1	VN	0.3		0	VN	0.1	Py	FP	0.2							No Sph, decent py+po vein, some py on fractures and in calcite veins
222.1	244.2	VN	0.1	VN	0.1	VN	0.1										Sph+Py+Po associated with calcite veins, some py hairline stringers
244.2	279	VN	0.5		0	BB	1	Cp	FP	0.1	Py	FP	0.3	Ga	VN	1	Significant increase in sulphides, py+po veins sometimes associated with calcite veins, disseminated blebs of po throughout this interval, silver coloured looking po+py veined/on fp???, Huge galena vein/cluster (nice well formed crystals), Cp on frac
279	288.6	VN	0.5		0	BB	0.8										Decrease in sulphides from previous interval, no sph, py+po associated with calcite veins/veinlets/stringers, some po in blebs
288.6	326.5	VN	0.8		0	BB	1										Some sulphides present, py+calcite veinlet/stringers, py+po vein and on fractures, some po in blebs
326.5	344.5	VN	0.1		0	VN	0.1										Trace Sulphides; no sph, py and po associated with calcite veins/veinlets/stringers present

Blackwater Project
Drill Summary - Structure

BW0311

From (m)	To (m)	Structure	Strength	Comments
7	26	BRKZ	4	Moderate to strong broken zone with some fairly competent core up to 1m, some sections with clay gge<1m
26	35.5	JZ	3	Joint zone with angles between 40-50dtca and one at 20dtca
35.5	40	FZ	2	Fault/clay gge
40	47	JZ	3	Joints mostly at 80dtca, one at 60dtca and one at 35dtca.
47	58	BRKZ	2	Moderate broken zone, section with competent core>1m
58	60	FL	2	Fault/clay gge
60	70	BRKZ	1	Fairly brokenzone/not very broken with competent core up to 1m
70	92	BRKZ	2	Moderate brokenzone with sections of competent core <1m
92	95.2	BRKZ	3	Moderate broken zone with some clay gge along fractures
95.2	101.5	JZ	3	Joints between 45-65dtca with a steep one at 30dtca
101.5	116.6	BRKZ	3	Moderate brokenzone with some competent core <1m in sections
116.6	127	BRKZ	4	Moderate to strong brokenzone with fault/clay gge in sections
127	131.5	JZ	3	3 Joints at 50dtca, 2 joints at 40dtca and 1 joint at 80dtca
131.5	137.5	BRKZ	3	Moderate broken zone
137.5	139.4	FL	2	Fault/clay gge
139.4	151	BRKZ	4	moderate to strong brokenzone with fault gge section <1m; >1m of competent core in sections
151	178	JZ	4	Competent core with joints between 30-70dtca; ~0.2m of fault gge in section 173.5m -175m
178	196	JZ	2	Poor Joint set with jagged/wispy joints between 30-70dtca
196	222.1	BRKZ	2	Broken zone not too broken up with some fault/clay gge in sections
222.1	239.5	JZ	2	poorly jointed with rough edged joints between 30-70dtca and steeper ones at about 10dtca
239.5	279	JZ	4	Strong joint zone with competent core, joints between 20-75dtca
279	292	JZ	3	Moderate joint zone with some wispy and jagged joints, joints are between 20-70dtca
292	305.5	FZ	3	Fault/clay gge with some competent core<1m
305.5	326.5	BRKZ	1	Poor brokenzone/not very broken up section with clay gge in sections
326.5	344.5	JZ	4	Strong joint zone with competent core, joints between 15-70dtca

Blackwater Project
Drill Logs

Hole ID:	BW0312	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375098.76
Depth (m):	421	Date Started:	12/01/2012	Casing Size:	HWT	Northing:	5892651.41
Azimuth:	0	Date Completed:	21/01/2012	Casing (m):	16	Elevation (m):	1613
Dip:	-90	Logged By:	CML	Drill Contractor:	Falcon	Survey Method:	DGPS

Downhole Surveys

Depth	Azimuth	Dip
0	30	-89
50	30.1	-88.9
100	27.9	-89.2
151	26.3	-88.9
200	355.8	-89.5
250	32.7	-89.5
304	18.1	-89.6
355	44.3	-89.5
400	38.5	-89.6

Blackwater Project
Drill Summary - Lithology

BW0312

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10.5	OB							
10.5	41	VC	lpt	LAP	MO	GRY	DEP	GR30+	fragmental, w/ stronger mafic componant; grain size increases w/ depth from majority 1-3mm to majority 10-20+mm; fx controlled oxid'n
41	47	VC	lpt	LAP	MO	GRY	DEP	GR30+	Sulfide zone, decrease in felsics, greater matrix-support, some clasts >2cm
47	69.3	AND	lpt	LAP	D	GRY	UNKN		some fragmental, some porphyritic andesite, scant sulfide
69.3	126.7	AND	lpt	LAP	D	GRY	UNKN		semi-massived andesite w/ some lapilli-sized fragments and some bomb-sized >6.2cm increasing w/ depth and having porphyritic texture; 1-3cm vuggy vein c^20 w/ carb and galena/py/specular hem
126.7	143.4	AND	lpt	LAP	D	GRY	DEP	SH	semi-massived andesite w/ some lapilli-sized fragments and some bomb-sized >6.2cm increasing w/ depth and having porphyritic texture
143.4	149.5	VC	lpt	LAP	MO	GRY	DEP	GR10	scant silicified felsic clastsin andesitic matrix
149.5	185	AND	lpt	LAP	D	GRY	UNKN		andesitic clasts in andesitic matrix; wkly flt'd @151-171m, carb vnlt stockwrk @153-154m
185	196	EC	plm	LAP	MO	GRY	DEP	SH	Polymictic, matric supported epiclastic unit. Minor carbonate veining, po in clasts. Some silica altertion.
196	221.5	AND	mas	LAP	MO	BR	DEP	GR5	Andesite, with strong silica-biotite-chlorite +/- actinolite. Partially porphyritic, partially autobrecciated, patchily alteration obscured.
221.5	258.5	FLPT	mon	LAP	M	GRY	DEP	GR30	Felsic lapilli tuff, with banded sub-rounded clasts, fairly silicified. Some larger blocks of banded ash tuff, up to 1.5m.
258.5	367.2	FT	flwbnd	CA	M	GRY	DEP	SH	Felsic lapilli tuff graded into felsic ash tuff, with occasional lapilli-sized fragments. Pervasive and banding-dominant silicification, with patchy clay and sericite alteration. Minor po blebs
367.2	421	AND	mas		D	GRY			Andesite, with chlorite replacing phenocrysts and infilling amygdules (with calcite), moderately silicified. Some calcite veining, with an unidentified soft, black mineral (possibly phlogopite or vivianite) coating calcified fractures.

Blackwater Project
Drill Summary - Alteration

BW0312		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10.5	41	T		0	FR	1	CLST	2	CLST	1							some silicified felsic clasts
41	47	S		0		0	CLST	1	CLST	1	CARB	VN	1	ANH	VN	1	deacrease in silicified clasts, v.wk carb-anhy vning
47	61	S	VN	1		0	REP	1		0	CARB	VN	1	ANH	VN	1	some scattered plag lathes replaced w/ silica, 1 undulating qtz vn @57.6m, scant v.wk carb-anhy vning
61	69	S	FR	1		0	PATC	1		0							
69	85	S	PERV	1	FR	1	PATC	1	VNHL	1	CARB	VN	1	ANH	VN	1	wk bleached halos on carb vnlts
85	92.4	S	VN	2	VN	1	VN	1	VNHL	3	CARB	VN	2	ANH	VN	1	increased carb vning w/ increased bleaching @89.3-92.3
92.4	105	S	PATC	2		0	PATC	1	PATC	1							
105	126.7	S	CLST	3		0	CLST	1	PATC	2							some porphyritic clasts w/ chl-ser halos
126.7	143.4	S	CLST	1		0	PATC	1	PATC	2							chl-ser halos on bomb-sized porphyritic clasts
143.4	149.5	S	CLST	1		0	CLST	1	CLST	2							wkly silicifed clasts
149.5	152.9	S	FR	2		0	PATC	1		0	CARB	VN	1				
152.9	154	S	FR	2		0	PATC	1	VNHL	1	CARB	VN	2				carb vn stckwrk
154	173.2	S	FR	1		0	CLST	1	FR	1	CARB	FR	1				
173.2	181	T		0		0	PERV	2		0							Short transitional zone, with goethite/limonite on fractures. Pervasive silicification.
181	193.2	S		0	FR	1	PERV	3	PERV	1							Pervasive silica and minor sericite, minor clay on some fractures
193.2	221	S	PATC	2		0	PERV	4		0	BIOT	PATC	2	ACT	PATC	1	Pervasive silica, with patchy biotite, chlorite and possibly actinolite
221	304	S		0	PATC	1	PERV	3	PATC	1	GRNT		2				Pervasive silica with some clay and weak, patchy sericite alteration. Some garnets present, associated with po
304	321.5	T	FR	1	PERV	1	PERV	3	PATC	1	GRNT		1				Transition zone with goethite, manganese oxide and possibly a yellow-green jarosite. Patchy weak sericite and clay, chlorite on some fractures, pervasive silica. Decreasing garnet blebs.
321.5	329	S	FR	1	PATC	1	PERV	3		0							Patchy weak clay, minor chlorite on fractures, pervasive silica
329	330	T		0		0	PERV	3		0							Short zone of oxidation on fractures, with goethite and jarosite. Pervasive silica

Blackwater Project
Drill Summary - Alteration

BW0312		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
330	367.2	S		0		0	PERV	3		0	CARB	FR	1	GRNT		2	Pervasive silica with carbonate on fractures. Up to 1.5% garnet blebs
367.2	421	S	CLST	2		0	PERV	3		0	BIOT	PATC	2	CARB	FR	2	Pervasive silicification, chlorite replacing clasts and infilling amygdules @ 412-416m. Patchy biotite, calcite infilling fractures/veins.

Blackwater Project
Drill Summary - Mineralization

BW0312		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10.5	21	SP	0.1		0		0	Goe	FP	0.5							wk fx-controlled oxid'n
21	24.8	SP	0.1		0		0	Goe	FP	1.5							
24.8	41		0		0	CR	0.5	Goe	FP	1							spotty po dominating some mafic clasts
41	55	SP	0.1		0	SP	0.1										
55	60	VN	0.1		0	SP	0.1										wk anh loosly aggregated brassy py along carb-anhy vnlt @55.3M
60	69	SP	0.1		0	BB	0.5										v.wk po replacement
69	89.5	SP	0.1		0	DI	0.1										
89.5	90	VN	1	VN	1		0	Ga	VN	5	Hm	VN	5				specilarite, ga, w/ wk py-sp in vuggy carb vn
90	107.5	SP	0.1	DI	0.1	DI	0.1										scant py-sp-po in porphyritic clasts
107.5	126.7	DI	0.5	DI	0.1	DI	0.1										as above
126.7	139	SP	0.1		0	DI	0.1										
139	154.4	SP	0.1		0	CR	1										stronger po in clasts
154.4	185	SP	0.1		0	CR	1										increased po in flt zone
185	196		0		0	CR	0.2										Trace po, clast-dominant
196	221.5	FP	0.2	CR	0.5	PERV	0.8	Hm	SP	0.1							Speccular hematite, visible on some fractures, di po, minor sphal replacing clasts
221.5	258.5		0		0	BB	0.1										Trace po
258.5	304		0		0	BB	0.5										Slight increase in dark/black po blebs
304	313.5		0		0	DI	0.5	Goe	FP	0.2	Hm	FP	0.1	Jaro	FP	0.1	Trace po, oxidation of sulphides to hematite, goethite and possibly yellow-green jarosite. Also dendritic manganese oxide on some fractures.
313.5	330.1		0	DI	2	BB	0.1	Goe	FP	0.1	Hm	FP	0.1	Jaro		0.05	Increase in sphalerite, up to 2%, some in veins or with po. Continued oxidation on fractures.
330.1	367	BN	0.1		0	CR	0.2										Infrequent sooty sulphide veins, with trace di po, mostly in clasts/blebs
367	383		0		0	CR	1										Po replaced clasts
383	395		0		0	VN	0.5										Minor po in veinlets
395	421		0		0	DI	0.1										Trace po, almost no sulphide

Blackwater Project
Drill Summary - Structure

BW0312

From (m)	To (m)	Structure	Strength	Comments
10.5	40.3	BRKZ	3	blocky w/ orng-brn goe fx-coating, scant rubble/gge
40.3	71	JZ	2	rough stepped jnts
71	77	JZ	2	as above
77	92.2	BRKZ	3	blocky interval w/ carb-anhy coating, some vning
92.2	126.7	JZ	1	v.wkly jnt'd w/ some wk carb caoting
126.7	151	JZ	1	as above
151	186	BRKZ	4	blocky w/ rubble 1 wk 5cm gge zone @163m
186	274.9	JZ	1	Joint zone, fractures 80>60
274.9	277.5	BRKZ	3	Short broken zone, some mechanical clay on fractures, blocky to rubbly
277.5	304.1	JZ	1	Consistent joint rock
304.1	330	BRKZ	3	Broken zone, with oxidation on fractures, blocky with some mechanical clay on fractures
330	346	JZ	3	Moderately jointed rock, 80>60>45 fractures angles
346	357	BRKZ	2	Weakly broken rock, some mechanical clay on fractures
357	421	JZ	1	Strong stick rock, few joints. Fractures 80>75?45

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a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0313	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375401.88
Depth (m):	44.5	Date Started:	12/01/2012	Casing Size:	HWT	Northing:	5893399.88
Azimuth:	0	Date Completed:	14/01/2012	Casing (m):	13.5	Elevation (m):	1531
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90

Blackwater Project
Drill Summary - Lithology

BW0313

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7.5	OB							
7.5	30	FLPT	ms	LAP	L	GRY	FLT	SH	poorly sorted matrix supported FLPT with rare barely block sized clast. unlaminated
30	37.1	VC	ch	LAP	M	GRY	FLT	SH	fault bounded VC unit with poorly sorted sub-angular to rounded clasts. Unit is clast supported and brecciated. most of this length is clay gouge.
37.1	39.1	VC	mon	BLOCK	M	GRY	FLT	SH	mostly clast supported with sharp small zones of matrix supported felsic VC. large distribution of monomictic grain sizes. most clasts show very strong wavy laminations
39.1	44.5	FLPT	lam	LAP	L	GRY	UNKN		matrix supported FLPT with laminations around select large, rounded-subrounded clasts. late clastics are fairly angular.

Blackwater Project
Drill Summary - Alteration

BW0313

From (m)	To (m)	Oxide Facies	Chlorite Style	Chlorite Int	Clay Style	Clay Int	Silica Style	Silica Int	Sericite Style	Sericite Int	Alteration 1 Code	Alteration 1 Style	Alteration 1 Int	Alteration 2 Code	Alteration 2 Style	Alteration 2 Int	Comments
0	11.2	O	CLST	1	CLST	3	OP	2	PERV	2							fair pale green ser alt'n throughout, and in fault gouge groundmass with cly. ser-cly on fracture planes. small clasts of chl replacement
11.2	22	S	CLST	1	CLST	3	REP	1	PERV	2							as above, less sil alt'n.
22	29	S	CLST	1	CLST	2	OP	2	PERV	2							grey-pale green rock. light overall texture masking, some sil overprinting
29	36.5	S	CLST	1	PERV	4	OP	3	PERV	3							ser+/- cly in fault gouge section. increase in sil alt'n on unfaulted pieces.
36.5	41	S	CLST	2	CLST	2	OP	3	PERV	2							increase in chl clasts and with pervasive ser alt'n.
41	44.5	S	MTRX	3	CLST	2	OP	2	MTRX	2							matrix with dominant pervasive chl-ser alt'n.

Blackwater Project
Drill Summary - Mineralization

BW0313		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	22	SP	0.1	BB	0.5	SP	0.1										minor sp-po replacing plag clasts in blebs.
22	33.2	VN	0.5	BB	0.1	SP	0.1										a few whispy vnlt's of py. trace of sp-po in blebs.
33.2	40	VN	0.1	BB	0.5	SP	0.1										a few blebs of sp on the edge of clasts.
40	44.5	FP	0.5	SP	0.1	SP	0.1										minor py on fracture plane.

Blackwater Project
Drill Summary - Structure

BW0313

From (m)	To (m)	Structure	Strength	Comments
0	13.35	BRKZ	4	broken up core. small runs of more competant core. no fracture sets identified
13.35	15.5	FZ	4	gouge. fairly well healed.
15.5	22	JZ	4	mostly competant core. small section of gouge which runs subparallel to core. fractures at 20-30 degrees to CA
22	29.2	BRKZ	4	fracture sets at 45 and 10 to CA. a bit of rubble/crushed zones
29.2	32.9	FZ	4	fault gouge
32.9	36.25	BRKZ	5	well broken/crushed core.
36.25	39.65	BRKZ	2	major fracture set at 55 degrees to CA. minor set at 15
39.65	44.5	BRKZ	3	some fractures at shallow angles to CA around 15.

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Blackwater Project
Drill Logs

Hole ID:	BW0314	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375901.71
Depth (m):	323.5	Date Started:	14/01/2012	Casing Size:	HWT	Northing:	5893299.06
Azimuth:	0	Date Completed:	17/01/2012	Casing (m):	6	Elevation (m):	1524
Dip:	-90	Logged By:	TOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	234.6	-89.7
106	235.6	-89.9
157	134	-89.7
208	43.1	-89.9
259	191.2	-89.7
323.5	5.5	-89.7

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a clear direction

Blackwater Project
Drill Summary - Lithology

BW0314

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
3.5	5.5	OB							
5.5	17.5	FLPT	lpt	LAP	M	BR	UNKN	GR30	Brownish grey felsic lapilli tuff (Colour due to oxidation facies), 75% felsic clasts
17.5	37.8	VC	plm	BLOCK	M	GRY	FLT	SH	Interval starts off with smaller clasts 75% of which are felsic and gradually goes into predominantly blocky mafic clasts; <1m section of andesite in between
37.8	38.85	FLPT	lpt	LAP	L	GRN	FLT	GR10	Faulted felsic lapilli tuff with fault/clay gge throughout interval
38.85	53.7	VC	plm	BLOCK	M	GRY	DEP	SH	Volcaniclastics with mostly angular blocky andesite clasts; ~1m or less section of andesite in between interval
53.7	55.4	AND	mas	CA	M	GRY	DEP	SH	Flow characterized andesite with calcite replaced amygdules; sharp contacts top and bottom
55.4	79	VC	plm	BLOCK	M	GRY			Alternate sections of andesite and volcaniclastics at start of interval??? may just have been huge andesitic clasts in matrix???; Bleached out section ~2.5m of volcaniclastics in between interval (very light greenish grey)
79	98	VC	plm	BLOCK	M	GRY			Polymictic volcaniclastic with blocky angular clasts; some calcite replaced amygdules in andesite clasts.
98	106.8	VC	plm	LAP	D	GRY			Dark mafic volcaniclastics with SA/SR clasts;has the andesitic texture but also clearly has clasts??; looks like it grades into the andesite interval below
106.8	160.5	AND	flw	CA	M	GRY			Flow characterized andesite with some localized brecciated sections (clay gge); sulphides present Py>Po>Sph
160.5	213	AND	amg	CA	M	GRY			Amygoloidal andesite with a few local brecciated sections <1m, less sulphides than previous interval
213	236	AND	mas	CA	M	GRY			Massive texttured andesite with localized brecciated sections <0.5m, some amygdules present ; Py>sph>po
236	264.9	AND	mas	CA	M	GRY			Andesite with stockwork of calcite veins/veinlets/hairlines; massive textured
264.9	292	AND	flw	CA	D	GRY	DEP	GR5	Flow characterized amygoloidal andesite with decreased calcite stockwork than previous interval; bottom contact at 292m may be alteration???or just sharp contact
292	294	VC	mon	LAP	M	GRY	DEP	GR5	Medium grey intermediate to mafic volcaniclastica with smaller clasts
294	296.5	VC	mon	BLOCK	M	BR	ALTFR	GR10	Monomictic volcaniclastics with smaller clasts at first then grades to Brownish (due to alteration) grey polymictic volcaniclastics with blocky clasts
296.5	323.5	AND	amg	CA	M	GRY			Flow characterized andesite with calcite replaced amygdules

Blackwater Project
Drill Summary - Alteration

BW0314		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.5	19.68	O	CLST	1	PATC	3	OP	2	CLST	1							Weak sericite and chlorite alteration; strong goethite and jarosite alteration as overprint and on fractures, some hematite (oxidized interval)
19.68	41.81	O	MTRX	4	PATC	4	OP	3	CLST	3							Strong clay and chlorite alterations, Strong goethite and jarosite alteration as overprint and on fractures (Very oxidized interval)
41.81	88.27	T	MTRX	3	PATC	2	OP	4	CLST	2	CAL	AMYG	1				Some sericite, chlorite and clat alteration; strong silica alteration; some Goethite and Jarosite on fracture planes
88.27	98	S	FR	2	MTRX	2	OP	3	CLST	1	CAL	AMYG	2				Weak sericite alteration in clasts, some weak chlorite on fracture planes, Calcite replaced amygdules
98	121	S	FR	3	PATC	3	OP	3	OP	1	HM	INFILL	2				Moderate patchy clay alteration, moderate chlorite on fracture planes, some Hematite alteration (reddish colour)???
121	164.5	S	FR	2	FR	2	OP	3	VN	1	CAL	AMYG	1				Weak sericte in calcite veins, some chlorite on fracture planes
164.5	213	S	FR	1	PATC	2	OP	4	VN	1	CAL	AMYG	2				Weak sericite and clay alterations, strong silica and some calcite replaced amygdules
213	236	S	FR	2	FR	2	OP	4	VN	1							Weak sericite alteration in veins, strong silica overprint, some chlorite and clay on fractures
236	264.9	S	FR	2	FR	2	OP	4	VN	2							Some veined sericite, some chorite and clay on fractures
264.9	294	S	VN	2	FR	1	OP	4	VN	1	ANK	PATC	2	BIOT	PATC	1	Weak clay and sericite alterations, Some Iron carbonate/ankerite/boitie alteration (more in some sections than others - patchy)
294	296.5	S	CLST	2	FR	1	OP	4	CLST	1	ANK	PATC	2	CARB	PATC	1	Weak sericite alteration in clasts, weak clay alteration on fractures, some ankerite/carbonate alteration
296.5	323.5	S	VN	1	PATC	2	OP	3	VN	1	ANK	PATC	1	CAL	AMYG	1	Patchy clay alteration, calcite replaced amygdules

Blackwater Project
Drill Summary - Mineralization

BW0314		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3.5	41.5		0		0		0										No sulphides present, very oxidized interval
41.5	88.27	SP	0.1	BB	0.1	BB	0.1	Hm	BB	0.1							Trace sulphides py, sph and po mostly found in the andesite clasts, trace Hematite
88.27	98	SP	0.1		0	DI	0.1	Hm	BB	0.2							Trace sulphides; no sph, some Hematite found around clasts in matrix and some in blebs
98	106.8	SP	0.1		0	DI	0.1	Hm	BB	0.1							Trace sulphides, some Py in veinlets and hairline stringers, some py+po on fracture planes, some bleby hematite
106.8	160.5	VN	1	VN	0.3	BB	0.5	Py	SP	0.8	Mrc	FP	0.3				Sulphides significantly increase in this interval; pyrite vein, lots of pyrite in specs in a particular brecciated andesite interval; some po+py+sph in calcite veinlets/stringers; some marcasite on fractures
160.5	213	FP	0.3		0	FP	0.1	Hm	BB	0.1	Mrc	FP	0.3				Decreased sulphides from previous interval; Some py+po closely associated with calcite veinlets/hairline stringers, some py+po in specks and on fracture planes; some marcasite on fracture planes and some hematite in blebs
213	236	VN	0.3	VN	0.3	FP	0.3										Py>Sph>Po; py+sph+po veinlets/hairlines present; py+weak po on fractures; some calcite veins/veinlets/hairlines
236	264.9	FP	0.3	VN	0.3	VN	0.1										Slight decrease in sulphides from previous interval; 3 vuggy py+po+sph+calcite veins, py+calcite veinlets/hairlines, increased stockwork of calcite veins/veinlets/hairlines
264.9	294	VN	0.3		0	BB	1										Sulphides present; py+po+calcite veinlets, some py+po hairlines, lots of po in blebs in the volcaniclastics
294	296.5	BB	0.3		0	BB	0.8										Slight decrease in bleby Po from previous interval, some py
296.5	323.5	SP	0.1		0	BB	0.5										Trace py, some po in veins, some po in amygdules and some as specks

Blackwater Project
Drill Summary - Structure

BW0314

From (m)	To (m)	Structure	Strength	Comments
3.5	37.8	BRKZ	3	Moderate brokenzone, some overburden, some clay gge on fracture planes and in patches
37.8	41.5	FZ	4	Moderate to strong faultzone/fault with fault/clay gge throughout interval
41.5	58.3	BRKZ	2	Weak brokenzone/not very broken; clay gge on fractures and patchy
58.3	98	JZ	2	Poorly jointed zone with some measurable wispy/ jagged joints ranging from 10-70dtca
98	101	JZ	3	Moderate jointzone with joints between 30-50dtca
101	103.8	FZ	3	Moderate Fault zone with fault/clay gge and some competent core<1m in sections
103.8	121	BRKZ	3	Moderate broken zone with patchy clay gge in sections
121	139	JZ	2	Weak Joint zone with wispy/jagged joints between 10-70dtca
139	175.7	BRKZ	2	Moderate brokenzone/ not very broken up zone with patches of clay gge in sections
175.7	213	JZ	2	Weak joint zone with local brokenzones <1m; joints predominantly between 15-70dtca
213	236	JZ	3	Moderate joint zone with joints between 20-80dtca, some local broken zones
236	238.8	BRKZ	3	Fairly broken zone with some clay gge in sections
238.8	264.9	JZ	2	Weak joint zone with wispy/jagged joints between 20-70dtca
264.9	294	JZ	3	Moderate Joint set with some wispy/jagged joints at first then good joints; joints mostly between 25-80dtca
294	323.2	JZ	3	Moderate jointset with a few wispy/jagged joints; joints between 10-70dtca

Blackwater Project
Drill Logs

Hole ID:	BW0315	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375626.12
Depth (m):	527.61	Date Started:	13/01/2012	Casing Size:	HWT	Northing:	5892824.15
Azimuth:	270	Date Completed:	22/01/2012	Casing (m):	28	Elevation (m):	1605
Dip:	-60	Logged By:	AVe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	268	-60
45.72	267.1	-60.8
92.05	263.3	-61.6
137.8	266.5	-60.8
182.9	266.3	-60.1
228.6	267.1	-59.8
274.3	269.8	-59.3
320	271.6	-58.7
366.4	272.6	-58.6
411.5	274.2	-57.8
457.2	274.9	-55.7
502.9	276.3	-54.8
527.6	276.1	-54.2

Blackwater Project
Drill Summary - Lithology

BW0315

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
16	46.03	AND	mon	LAP	D	GRY	FLT	SH	Poorly sorted Lapilli tuff andesite. Fracture controlled oxidation down to 33.83m. Trace mineralization.
46.03	62.7	AND	fltbx	LAP	D	GRY	FLT	SH	Faulted andesites. Appears to be the same lithology as above. medium to dark grey with patchy chl alteration and oxidation. Flt gouge and Flt breccias
62.7	111.6	AND	lpt	LAP	D	GRY	FLT	SH	Large zone of Andesitic lapilli tuff. Top 2m of interval are distictly different (fine grained. unknown lith. bleached. increased sulfides)
111.6	126.2	AND	fltgge	LAP	M	GRY	FLT	SH	Strongly faulted Andesites. Flt gouge.
126.2	131.1	AND	mon	LAP	D	GRY	FLT	SH	Small zone of massive andesite. feldspar rich. Slightly bleached. possibly the same lith as in above flt.
131.1	155	FT	mon	CA	L	GRY	DEP	GR30	Zone of massive felsic tuff which has been flooded with sulfides. This interval is hard and fairly intact.
155	178.6	FT	mon	CA	L	GRY	FLT	SH	Massive felsic tuff with little distint feature. open spaces were flooded with sulfides. Core is weakly joionted and very hard. high grade zone.
178.6	186.2	AND	lpt	CA	D	GRY	FLT	GR30	Small zone of andesites with a lapilli tuff texture (possibly a healed flt) zone seems like it was flooded with the same sulfide rich fluids however less disseminated sulfides.
186.2	218	FLPT	mon	LAP	L	GRY	UNKN		A hodge podge of felsic lapilli tuffs and felsic tuffs. Moderate to Good mineralization
218	235	FLPT	plm	LAP	L	GRY	UNKN	GR30+	Alternation zones of massive lapilli tuffs (50%), which have approx 15% mafic clasts. approx 50% felsic tuffs. Good mineralization.
235	258	AND	mas	LAP	D	GRY	FLT	GR30+	Grades from felsics to andesites with a polymictic zone as the core gradually transitions into andesites. The bottom on the interval transitions into VC gradually.
258	275	VC	plm	LAP	D	GRY	DEP	GR30	VC alternating between Clast and matrix supported. Sorting is quite variable.
275	332	AND	volc	LAP	D	GRY	UNKN		Dark grey Andesites with variability in grain size. Small zones being very fine grained. Zones with Feldspar phenocrysts. Zones with amygdules (Qtz py infilling). Patchy strong chlorite alteration
332	368	AND	volc	LAP	D	GRY	DEP	GR30	Dark grey Andesites.Zones locally faulted with talc filiing fractures.
368	372.1	FT	mon	CA	L	GRY	DEP	GR5	Relict clast texture
372.1	424	VC	plm	LAP	D	GRY	UNKN		Small zone of volcanoclastic texture.Big clasts
424	457.6	VC	plm	LAP	D	GRY	DEP	GR10	Zones of aligned felsic clasts.Felsic clasts are dominant
457.6	472	EC	cs			GRY	DEP	GR10	Clast supported. Zones of aligned clasts

Blackwater Project
Drill Summary - Lithology

BW0315

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
472	484	FT	mon		L	GRY	UNKN		Sections obscoured by alteration dominantely has relict clastic texture
484	527.6	FT	mon	LAP	L	GRY	UNKN		Zones of relict clast texture.Zones of banding texture.

Blackwater Project
Drill Summary - Alteration

BW0315		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
15.5	33.83	O	CLST	3		0	PERV	2	PATC	2							Chlorite predominately replacing clasts. Oxidation is fracture controlled and selective to some clasts. Sericite is weak and selective (more prevalent towards top of interval. Oxidation seems to have destroyed sulfides.
33.83	56.2	S	CLST	2	FC	1	PERV	2		0							Weak patchy bleaching. Weakly chlorite and sericite altered. Flt gouge seems to have been slightly clay altered (possibly due to the fault being a fluid pathway
56.2	62.6	S	PERV	4	FC	1	CLST	1		0							Zone of flt gouge and flt breccia that has been nearly completely chloritized. traces of oxidation.
62.6	93.27	S	CLST	3		0	PERV	2	PATC	1							Chlorite alteration on fxs and replacing some clasts. Patchy Beaching is weak
93.27	111.6	S	FC	2		0	PERV	2		0							Chlorite alteration is fracture controlled and replacing clasts. pervasive weak Silicification. Clay alteration maybe present in flt gouge?
111.6	126.2	S	FC	2		0	PERV	1		0							Flt zone with weak to moderated chl. Moderate bleaching (possibly clay alteration (difficult to differentiate gouge from clay alt)
126.2	131.1	S	CLST	2		0	PERV	2		0							Chlorite selective to clasts. Weakly bleached
131.1	155	S		0		0	PERV	4	PERV	1	ALB	PERV	4				Strong bleaching around sulfides attributed to albite alteration. Entire interval is very hard and appears to have some bleaching
155	178.6	S	FR	1		0	PERV	4	PERV	3	ALB	PERV	4				Very hard zone. (Possibly Albite altered?)
178.6	192.5	S	FR	3		0	PERV	4		0							Zone of mafics with chl alteration on fxs and replacing clasts
192.5	218	S	FR	1		0	PERV	4	PERV	2							Pervasively silicified. Chlorite wk on fxs and replacing some clasts.
218	235	S	FR	2		0	PERV	4	PERV	2							Strongly silicified with chl on fxs and selectively replacing some clasts.
235	269	S	FR	4		0	PERV	3	PATC	1							Silicification is moderate to strong. Chlorite is strong on fractures and replacing clasts and found in patches
269	332	S	FR	4		0	PERV	4		0							Pervasive Silicification, Chlorite moderate to strong on fxs and occasionally in patches.

Blackwater Project
Drill Summary - Alteration

BW0315		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
332	368.1	O	CLST	3	FC	0	CLST	1	PATC	2							Chlorite replacing felsic clasts
368.1	372	S	CLST	2		0	PERV	3	PERV	2							Pervasive silicification
372	403.5	S	CLST	3		0	PERV	2	PATC	1							Chlorite pervasive controlled by fractures patterns
403.5	410.3	S	CLST	4		0	CLST	1	PATC	1							Chlorite pervasive in broken zone
410.3	424	S	FC	3		0	PERV	2	PERV	2							Chlorite pervasive in fractures. Silicification is strong
424	454	O	FR	3		0		0	MTRX	1	CHL	CLST	2				Chlorite occurs in fracure planes and felsic clasts
454	469.8	S	FR	3		0	MTRX	1	MTRX	1							Chlorite controlled by fractures
469.8	470.4	S	FR	2		0	PERV	2	MTRX	1							Weakly chlorite alteration. fractur controlled
470.4	481.5	S	FC	3		0	PERV	4	MTRX	1							Chlorite controlled by fractures
481.5	487.6	S	FC	3		0	PERV	2	MTRX	1							Chlorite found in fractures.
487.6	500.8	S	PERV	4		0	PERV	3	MTRX	1							Chlorite fractured controlled. Pervasive silisification
500.8	513.1	S	FR	4		0	PERV	3	MTRX	1							Chlorite found in fractures. Patchy silicification
513.1	527.6	S	CLST	3		0	PERV	3		0							Chlorite found in clasts. Pervasive silicification

Blackwater Project
Drill Summary - Mineralization

BW0315		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	33.83	DI	0.5		0		0										
33.83	46	DI	0.5	DI	0.1		0										Py found as veinlets, disseminated, and as blebs (amygdules)
46	49.07	DI	2		0		0										Fine grained disseminated Py. Euhedral crystals in open space filling.
49.07	62.7	BB	0.1		0		0										Trace Py blebs. overall barren
62.7	65.5	DI	2	DI	0.1		0	Viv		0.5							Py also found veined w/ vivianite
65.5	93.27	DI	1		0		0										Py found as veinlets/fracture coatings and disseminated. Disseminated Py has a bronze appearance (tarnished ?, other sulfide. not magnetic?
93.27	111.6	VN	2		0.5		0										Py is found as veinlets and as blebs
111.6	126.2	DI	3		0		0										Euhedral py found disseminated in flt gouge
126.2	131.1		0		0		0	Cp	VN	0.5							Trace Cp with 1 vein @ 130.85m
131.1	155	DI	3	DI	0.5		0	Cp	VN	2							Sulfide flooding. Occasional Cp-sp veins. Py blebs and acicular replacements. Bleaching (albite alteration? around many of the sulfides
155	178.6	DI	3	DI	0.5		0	Cp	VN	2							Cp also have Py and occasionally Sp
178.6	186	VN	3	VN	0.5		0	Cp	VN	0.5							Several Py-Cp-Sp veins and veinlets. Approx 2/m
186	205.6	VN	4	DI	1		0										Py also as blebs. Several Py stringer veins. Py has a slight tarnished look.
205.6	218	VN	2		0.5		0										Py veined. Sp found disseminated in traces
218	227	DI	2	BB	1		0	Cp	VN	0.5	Bn		0.5				Zone around 220m with significant Sp. Cp-bornite VN @ 224.40
227	248.7	DI	3	BB	1		0										interval has significant Py in different styles, VN, blebs. Sp is found in a PY-Sp vein.
248.7	262	VN	2	BB	0.5		0										Primarily Py Veins and Veinlets with Py also being disseminated. Trace Spalerite
262	275	VN	2	DI	0.5	BB	1	Cp	VN	1							Several Py-Po-Cp veins and veinlets approx 1/m. Py Po and Cp also found disseminated
275	289	VN	2	DI	0.1	BB	1	Cp	VN	2							Qtz-Po amygdules. Cp-Py veins and veinlets. Sulfides also disseminated.

Blackwater Project
Drill Summary - Mineralization

BW0315		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
289	306.6	DI	0.5	DI	0.1	BB	0.1	Cp	VN	0.5							Cp and Py vein and veinlets. Sulfides disemminated
306.6	325.0	DI	0.5	DI	0.1	BB	0.1	Cp	VN	0.5							Cp and Py veins(1cm wide)
325.0	334.3	DI	0.5	DI	0.1	BB	0.1	Cp									Cp and Py vein and veinlets. Sphaleryte
334.3	353.2	DI	0.5	VN	0.1	BB	0.1										Cp and Py vein and veinlets
353.2	370	DI	2	BB	0.1		0										Sulfides replacing felsic clasts. Trace Py blebs
370	394.6	DI	2	VN	0.5	BB	0.1										Sulfides in qz veins. Py disseminated
394.6	395.7	DI	5	BB	0.1	DI	0.1										Py and Cpy disseminated replacing matrix.
395.7	413.6	DI	5	BB	0.1	BB	0.1										Sphaleryte in Qz veins.Sulfides replacing felsic clasts
413.6	424	DI	0.5	BB	0.1		0										Py replacing felsic clasts. Sphaleryte found as blebs
424	437.2	DI	2	DI	0.5	BB	2.5										Disseminated sulfides replacing clasts.
437.2	443.9	DI	1		0	DI	1	Cp	VN	0.5							Cp found as veinlets. Py replacing clasts
443.9	451.4	DI	2		0	BB	2.5	Cp	VN	0.5							Zones of pyrite cubes.
451.4	461.7	DI	1		0	DI	0.5	Cp	VN	0.5							Py replacing clasts.Py and Cpy veilents
461.7	468.7	DI	1		0	DI	0.5	Cp	VN	0.5							Py and Cpy veinlets.
468.7	472.5	DI	3		0	BB	2	Cp	VN	1	Grnt	FP	1				Zone of euhedral Py. Euhedra garnet fracture controled
472.5	481.9	DI	1		0	BB	0.5	Cp	VN	1							Sulfides matrix disseminated. Cpy veins
481.9	487.6	DI	2		0	DI	0.1	Cp	VN	1							Cpy veins and veinlets. Py fractured controlled
487.6	492.9	DI	1		0	BB	0.1	Cp	VN	0.5							Subhedral Cpy and Py vein and veinlets. Blebes of Po
492.9	501.7	DI	2	DI	0.1	BB	0.1	Cp	VN	1	Grnt	EU	0.1				Cpy and Py vein and veinlets. Subhedral garnet found in veins
501.7	513.1	DI	1		0	DI	0.1	Cp	VN	0.5	Grnt	SUBH	0.1				Subhedral garnet at 500.70m. Cpy veins. Py disseminated fracture controlled
513.1	527.6	DI	1	DI	0.5	BB	0.5	Cp	VN	1							Py disseminated. Py replacing clasts. Sphaleryte found as blebs

Blackwater Project
Drill Summary - Structure

BW0315

From (m)	To (m)	Structure	Strength	Comments
0		BRKZ		
15.55	46.4	JZ	3	Moderately jointed. top of interval fxs are coated with FeOx
46.4	62.8	FL	4	Strongly faulted with significant flt breccia and flt gouge
62.8	93.27	JZ	3	Moderately jointed with intermittent rubble and flts
93.27	111.6	JZ	4	Moderately jointed with several small fault infilled with gouge. flts aperture range from a few mm to several cm.
111.6	126.2	FL	4	significant flt gouge
126.2	155	JZ	2	Weakly jointed. joints at incosistant angles
155	186	JZ	2	Weakly to moderately jointed.
186	191.9	BRKZ	4	moderate to strongly broken
191.9	225.9	JZ	2	Joints at irregular angles to core axis
225.9	268.4	JZ	3	Moderately jointed with a couple small 30cm zones being broken
268.4	275.8	JZ	3	Moderately
275.8	284.9	JZ	3	Moderately
284.9	294.3	BRKZ	3	Moderately broken, joined zones
294.3	303.6	JZ	3	Weakly
303.6	312.7	JZ	3	Weakly jointed
312.7	321.9	JZ	3	Moderately, weakly broken zones
321.9	331.2	JZ	3	Moderately
331.2	334.3	JZ	2	Weakly
334.3	350	JZ	2	Weakly jointed
350	357	BRKZ	2	Gauge zones
357	387.6	JZ	2	Moderately jointed
387.6	403.2	BRKZ	2	Weakly broken.
403.2	408.7	FZ	2	Moderately faulted
408.7	413.5	JZ	2	Weakly jointed
413.5	418.2	BRKZ	2	Weakly broken
418.2	424	JZ	2	Weakly jointed with local broken zones
424	447.1	JZ	2	Weakly jointed. Zones of weakly fracture planes

Blackwater Project
Drill Summary - Structure

BW0315

From (m)	To (m)	Structure	Strength	Comments
447.1	449.9	BRKZ	2	Moderately broken
449.9	461.7	BRKZ	3	Moderate to weakl
461.7	464.9	JZ	2	Weakly jointed
464.9	468.6	BRKZ	2	Moderately broken
468.6	472.8	JZ	3	Moderately jointed
472.8	483.5	JZ	2	Weakly jointed
483.5	492.1	BRKZ	2	Zones of gouge.
492.1	510.3	JZ	2	Moderately jointed
510.3	527.6	JZ	3	Moderately jointed

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Blackwater Project
Drill Logs

Hole ID:	BW0316	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375351.61
Depth (m):	386.18	Date Started:	13/01/2012	Casing Size:	HWT	Northing:	5893247.4
Azimuth:	0	Date Completed:	19/01/2012	Casing (m):	0	Elevation (m):	1560
Dip:	-90	Logged By:		Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-88
92.05	155.1	-88.3
137.8	141.5	-88.9
183.5	135.9	-88.8
229.2	129	-88.6
274.9	141.3	-88.7
320.7	147.3	-88.9
366.4	156.7	-88.1

Blackwater Project
Drill Summary - Lithology

BW0316

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
28	54.1	FLPT	lpt	FA	L	GRN	FLT	GR30+	
54.1	92	AND	lpt	LAP	D	GRY	FLT	GR30+	Massive dark grey andesite with zones of lapilli tuffs and brecciation. 1.5m of FLPT starting at 74m. Weakly altered. Calcite veins.
92	137	FLPT	lpt		L	GRY	UNKN		Light grey felsic lappili tuffs. moderate to strong chl alteration is patchy. zones with flt gouge
137	167.1	FLPT	fltbx	LAP	L	GRN	FLT	GR10	Intensely brecciated throughout, occasionally banded clasts of FT/FLT in gouge matrix.
167.1	188.8	FLPT	lptbx	LAP	MO	GRN	DEP	GR30	Intermittently faulted FLPT, interval is ~40% composed of gouge/breccia, remainder is fragmental FLPT.
188.8	201	FT	t	FA	L	GRN	DEP	GR10	Dominantly planar banded FT, occasional 5-10cm of brecciated FT with 0.1-1cm wide angular homolithic clasts.
201	209.9	FLPT	t	LAP	M	GRN	DEP	GR30	Largely FT with occasional large (1-3cm) clasts, clasts are often mafic.
209.9	244.5	FT	t	FA	L	GRY	FLT	SH	Texture varies between breccia (homolithic, angular, 0.1-0.5cm wide clasts) and banded. Often rubbly, occasional fault gouged.
244.5	251.7	FT	fltbx	FA	L	GRN	FLT	GR10	Locally poor recovery, fragments of brecciated Ft in gouge matrix.
251.7	289.6	FT	lam	FA	L	GRN	DEP	GR30+	Locally highly contorted but typically planar banded FT. Occasional 5-20cm thick intervals of brecciated FT (homolithic, 0.1-1cm wide clasts, angular). Lower 25m of unit is locally Felsic Lapilli Tuff, section ~ 50cm.
289.6	345	FLPT	lpt	LAP	L	GRY	UNKN		Clast are 5% mafic 5-40mm typically 5-10mm, Gradually fines and then coursen agian over 30m in midlle section of unit.
345	386.2	FT	t	FA	MO	GRN	UNKN	SH	Upper contact obscured in rubble, but gradational change from FLPT to FT, locally brecciated, increasingly laminated downhole

Blackwater Project
Drill Summary - Alteration

BW0316		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
28	54.1	S	CLST	2		0	PERV	2	PERV	2							Weak pervasive ser and sil alt. Chl
54.1	92	S	PATC	2		0	PERV	2		0							Weak-moderately silicified. Chl patchy and replacing clasts
92	125.6	S	FC	4		0	PERV	3	PERV	2							Chlorite is on fracture, in patches, and replacing clasts
125.6	146.9	S	PATC	2		0	PERV	2	PERV	1							Chlorite alteration sytle is inconsistant. matrix, clast replacement, on fxs, etc.
146.9	167.1	S	MTRX	3		0		0	PATC	2							Entire interval is moderatley sericite and/or chlorite altered, chlorite is most evident as dark green hue in gouge matrix, sericite in clasts and locally in gouge matrix.
167.1	191.1	S	CLST	2		0	PATC	1	PATC	2	CHL	FR	1				Silicification as occasional hard glassy intervals, Sericite intermittent throughout in clasts and matrix, chlorite as velvety grn/black on fractures and dark green clast alteration.
191.1	201	S	FR	1		0		0	PATC	2							Sericitization patchy throughout
201	244	S	FR	2		0		0	PERV	2	CHL	PATC	2				Light olive grn sericite throughout, chlorite on majority of fracture surfaaces, and occasionally in patchily in groundmass.
244	251.7	S	MTRX	3		0	CLST	1	PATC	2							Chlorite pervasive in gouge matrix, sericite in clasts, isolated intensly silicifed clast.
251.7	289.6	S	PATC	2		0		0	PATC	2							Majority of interval is either chlorite or sericite altered, isolated unaltered patches. Chlorite on most fracture surfaces.
289.6	348	S	CLST	4		0		0	PERV	1	CHL	FR	3	CHL	MTRX	1	Hemitite alteration/mineralization along fracture plane associated with Py
348	354.3	S	PATC	2		0	PATC	2	PERV	2	CHL	FR	2				Silicification increasingly prevalent downhole.
354.3	380.2	S	FR	2		0	PATC	3	PATC	2							Silicification border on pervasive, often overprints sericite, and sometimes appears to preferntially occur in certain bands.
380.2	386.2	S	FR	3		0		0	PATC	1							Sercite is sparse, most evident in competent pieces of rubble. Chlorite fracture controlled, but core is highly fractures.

Blackwater Project
Drill Summary - Mineralization

BW0316		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
28	54.1	BB	0.5	BB	0.5		0	Mrc	FP	0.1	Ga	BB	0.1				Sulfides are typically found as blebs in this interval. Some blebs are in cavities.
54.1	73.53	DI	0.1	DI	0.1		0										nearly barren interval
73.53	92	DI	0.1	DI	0.1		0										Nearly barren interval.
92	111.9	FP	0.5	DI	0.5		0										Very weakly mineralized. Sphalerite and Py traces
111.9	122.5	FP	0.5	DI	3		0										zone of increased sulfides. in particularly sphalerite
122.5	137.8	FP	0.5	DI	1		0										Weakly mineralized primarily disseminated sp. Possibly marcasite on fxs.
137.8	157	BB	0.1	BB	0.1		0										Sulfides restricted to larger clasts of FT as millimetric blebs
157	167.1	BB	0.2		0		0										Millimetric blebs of black sulfide ?py in clasts.
167.1	177.2	BB	0.2	BB	0.1		0										Focused in clasts of FT, as millimetric blebs and occasional sphal stringers.
177.2	183	DEN	2		2	BB	0.1										Irregular py stringers and locally intense millimetric blebs of ?sphal.
183	191	VN	0.5	BB	0.1	BB	0.1	Py	BB	0.2							Locally barren, occasional fine py veinlets/fracture coatings, short intervals of millimteric blebby mixed sulphides.
191	201.5	VN	0.5	BB	1.5	BB	0.1	Py	DEN	0.5							Sphal common in millimetric blebs, frequently showing preference for individual layers in banded intervals. Intermittent DBS. Fine crystalline py on some fractures.
201.5	218.4	VN	0.5	BB	1		0	Py	DEN								Dense clusters of millimetric sphalerite blebs, occasional py veinlets and patches of py mx on fractures, also mild DBS throiughout
218.4	233.8	FP	0.1	BB	0.5		0	Py	DEN	0.5							fracture plane py is scarce and patchy, DBS intermittent throughout, sphal in stringers and occasional clusters of millimetric blebs.
233.8	238.7	DEN	0.5	BB	0.5		0	Py	FP	0.1							Locally dense DBS associated with sphal blebs, very occasional crystalline py on fractures

Blackwater Project
Drill Summary - Mineralization

BW0316		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
238.7	244.5	DEN	0.1	BB	0.1		0	Py	FP	0.1							Very much occasional DBS and sphal blebs with scarce trace py on fractures.
244.5	251.7	VN	0.1		0		0	Apy	BB	0.1							Very occasional py stringers and an isolated 1cm thick band replete with millimetric blebs of arseno.
251.7	267.1	BB	0.5	BB	0.2		0	Py	VN	0.5	Py	DEN	0.5				Intermittent DBS, often associated with trace sphal. occasional clusters of millimetric fine crystalline py, also fine specks of sooty black ?py, and fairly common 1mm wide planar-undulating py veinlets.
267.1	272.3	BB	0.5		0	BB	2	Ga	EU	0.1	Py	FP	1				Galena in Py blebs in Qtz-vein
272.3	281.3	FP	0.1		0	BB	0.1										Po resembles Py however is magnetic.
281.3	295	FP	0.5		0	BB	2	Apy	EU	0.1							Apy is concentrated in 50% in 50cm section near bottom of interval
295	298.6	FP	0.5		0	BB	1.5	Hm	FP	0.1							increasing Hemitite along fracture.
298.6	309.5	BB	1		0	BB	3.5	Py	VN	1	Hm	FP	1				Py an Po in blebs 5mm to 2cm, finer grained blebs display less magnetism.
309.5	316.9	FP	0.5		0	BB	1	Py	VN	5	Hm	FP	0.5				Py and Po in blebs < 1cm.
316.9	324.8	BB	1		0	BB	2.5	Py	VN	0.2	Hm	FP	0.1				Hemitite on fracture surface, Py / Marcasite on FP
324.8	328.8	BB	0.5		0	BB	3	Cp	BB	0.1	Py	VN	0.5				Cp bleps are with in veins and around veins.
328.8	339	BB	1.5		0	BB	1.5										Blebs of mixed Py and Po and blebs of Py and Po individually.
339	341.3	EU	0.1		0	BB	0.5										Occasional millimetric euhedral pyrite disseminated in groundmass, po ?replacing clasts in 0.1-1cm blebs.
341.3	348.8	DI	1		0	DI	0.5										Typically millimetric sooty black flecks disseminated throughout, but often focused in 1cm thick bands. Po typically closely associated with py.
348.8	349.9	VN	0.1		0		0	Dbs	DEN	2							Locally intense DBS and an isolated blebby py vein, associated with ?structure.
349.9	360.6	DI	1	DEN	0.1	BB	0.1	Dbs		1							DBS is locally quite intense, py, po, and trace sphal are in fine millimetric disseminations

Blackwater Project
Drill Summary - Mineralization

BW0316		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
360.6	373.5	BB	1	BB	0.1		0	Dbs		0.5	Apy	EU	0.1	Py	FP	0.1	Majority of py is in sooty black millimetric blebs, discernable as py in larger blebs, trace sphal associated with py blebs. Ars focused in isoleted ~1cm thick band.
373.5	386.2	FP	0.1		0		0	Apy	BB	0.1	Dbs		0.1				In larger DBS sections fine py visible, associated with Ars in a single instance.

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Blackwater Project
Drill Summary - Structure

BW0316

From (m)	To (m)	Structure	Strength	Comments
28.04	93.57	BRKZ	2	Broken zone with small intervals of intact core and intermittent flts
93.57	137.8	FZ	2	Faulted zone with moderate gouge. Core is strongly broken between gouge zones
137.8	146.9	FZ	4	Fault gouge
146.9	167.1	FL	4	Breccia with gouge matrix
167.1	177.2	FZ	2	Intermittent intervals of breccia with gouge matrix.
177.2	188.5	BRKZ	2	Frequently rubbly but no discreet gouge, heavily fractured.
188.5	206	JZ	1	Weakly fractured interval
206	222.2	BRKZ	2	Locally rubbly, very occasional gougy intervals.
222.2	244.5	FZ	4	Largely rubbly, intermittently gougy brecciated FT.
244.5	253.2	FL	4	Fault breccia with gouge matrix, poor recovery
253.2	273.9	JZ	2	Weakly fractured, latgely competent core
273.9	279.6	BRKZ	3	
279.6	283	JZ	3	
283	283.1	FL	5	Fault gauge
283.1	286.8	JZ	3	
286.8	287.8	BRKZ	2	
287.8	289.7	JZ	2	
289.7	291.1	BRKZ	2	
291.1	292.5	JZ	2	
292.5	294.5	BRKZ	3	
294.5	307.9	JZ	2	some at 15
307.9	319.1	BRKZ	3	
319.1	334	JZ	2	rare joints at 5 deg to CA, and broken core associated with low angle joints
334	341	BRKZ	2	
341	348.7	BRKZ	4	Very rubbly, chossy interval.
348.7	349.3	FZ	3	Competent core but brecciated, associated with locally intense DBS
349.3	350.9	BRKZ	4	Rubble
350.9	360.4	JZ	2	~2-3 joints per metre, 35-45degTCA

Blackwater Project
Drill Summary - Structure

BW0316

From (m)	To (m)	Structure	Strength	Comments
360.4	360.8	FZ	3	Heavily brecciated competent core, increased DBS.
360.8	366.9	BRKZ	3	Moderately rubbly interval.
366.9	375.2	JZ	2	~1-2 joints p/m, 40-45degTCA
375.2	382.1	BD	2	Modeereatley rubbly
382.1	386.2	BD	4	highly rubbly, soft chossy rock.

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Blackwater Project
Drill Logs

Hole ID:	BW0317	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375400.5
Depth (m):	371.5	Date Started:	14/01/2012	Casing Size:	HWT	Northing:	5893400.59
Azimuth:	0	Date Completed:	21/01/2012	Casing (m):	43.5	Elevation (m):	1520
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	DGPS

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
49	337.2	-89.3
100	296.4	-88.9
150	312.6	-88.9
200	336.2	-89.2
250	341.9	-89.6
300	302.9	-89.5
350	302.3	-89.6

Blackwater Project
Drill Summary - Lithology

BW0317

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5	OB							
5	29.9	FLPT	ms	LAP	L	GRY	FLT	SH	poorly sorted matrix supported FLPT. Rare blocky clast. increasing clast size with depth.
29.9	38.7	FLPT	cs	LAP	M	GRY	FLT	SH	fault bounded FLPT unit, mainly clast supported. sub-angular to rounded clasts. lots of gouge. brecciated in places
38.7	86.35	FLPT	bx	LAP	M	GRY	DEP	GR5	messy unit with mostly subangular clasts, fairly large monomictic clasts of mainly laminated felsic tuffs. Very pourous unit with significant zone of hydrothermal fluid alteration. ashy groundmass
86.35	92	FT	t	CA	L	GRY	DEP	GR30	felsic ash tuff coarsening with depth.
92	111	VC	ms	LAP	M	GRY	DEP	GR30+	grading into pale grey VC unit with high percentage of ashy groundmass. heavily altered, clasts are difficult to distinguish. appears to be increase in mafics
111	133	VC	bx	LAP	M	GRY	FLT	SH	grey to pale greenish VC with high percentage of groundmass. fairly brecciated. little grading of clast sizes evident until 2m from bottom of contact, where there is a section of larger angular mafic clasts. About 2 m of interbedded FT with this at 1
133	137.5	FLPT	frctz	LAP	M	GRY	FLT	SH	messy lithology due to high fracturing in fault zone.FLPT with fairly small clast sizes and matrix supported.
137.5	152.7	FT	hydbx	FA	L	GRY	DEP	GR30+	hydrothermal fracturing/brecciation with dominant silica groundmass. some fracture gaps are quite wide (2-3cm between fragments) with silica infill. garnet bearing replacements in more wavy laminated zones.
152.7	178.3	FT	flwbnd	FA	L	GRY	DEP	GR30+	well flow-laminated with garnet bearing clasts. perhaps some resorbed mafic clasts? areas of microbrecciation as we grade out of the hydrofracture zone from above. local brecciated zones especially in bottom half of unit.
178.3	188.5	FT	bx	FA	M	GRY	DEP	GR30	medium to light grey brecciated felsic tuff. brecciatin from hydrothermal fluid, similar to what was seen above, but seems to be more pervasive and intensely altered.
188.5	194.3	FT	flw	FA	M	GRY	DEP	GR10	textures poorly visible due to high banded alteration. flow laminations can bee seen in spots in this FT
194.3	212.5	FT	mcbx	FA	M	GRY	DEP	GR30+	low confidence level on litho contacts. appears to be brecciated to micro-brecciated FT, with small lengths of laminated flow visible. Possibly interstratified FLPT.
212.5	236.7	FLPT	bx	LAP	M	GRY	DEP	GR30+	crystal ash tuffaceous groundmass in matrix supported FLPT. local zones of intense brecciation, likely large scale breccia veins.

Blackwater Project
Drill Summary - Lithology

BW0317

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
236.7	248.5	FLPT	plm	LAP	M	GRY	DEP	GR30+	larger clasts sizes than above, with perhaps an increase in mafic clasts. arguably graded into VC, with felsic ash matrix. Local zones of intense breccia veining.
248.5	284.5	VC	plm	LAP	M	GRN	DEP	GR30+	very gradual change into VC, with high percentage of crystal tuff groundmass. clasts are randomly scattered and fairly sparse.
284.5	295	VC	plm	LAP	M	GRY	DEP	GR30+	mostly smaller clasts, fairly reworked, ashy groundmass
295	321.3	VC	t	LAP	M	GRY	DEP	GR30	small clasts, very tuffaceous, in some places may be more of a crystal tuff. Also some alignment of clasts.
321.3	355.2	VC	plm	LAP	M	GRY	DEP	GR10	varying clast sizes, possibly interbedded VC with lengths of crystal tuff. some lengths of large fairly rounded clasts, with other lenghts with smaller clasts.
355.2	364.3	VC	plm	LAP	D	GRY	DEP	GR5	unit of mostly larger clasts, and more mafic than seen previously. fairly dark rock, streaked with light zones of alteration
364.3	371.5	VC	ms	LAP	D	GRN			much smaller clast sizes than above. could be a tuff. fairly brecciated. EOH

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Blackwater Project
Drill Summary - Alteration

BW0317		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	6	O	CLST	1	MTRX	3	OP	1	PERV	3							intense oxidaiton near top of unit, quickly diminishing in intensity.cly-ser altn fairly stong
6	10	T	CLST	1	MTRX	3	OP	1	PERV	3							as above, transitional between O and S
10	25	S	CLST	1	CLST	2	PERV	2	PERV	2							ser-sil-cly alt'n fair. fault gouging with mostly ser-cly.
25	29.7	S	CLST	2	CLST	2	PERV	3	PERV	3							more sil alt'n than previous unit. also chl stronger with cly.
29.7	35.5	S	CLST	1	FC	3	OP	2	PERV	3							mixed bag of alt'n. soft cly-ser in fault gouge
35.5	46.5	S	PATC	2	MTRX	3	PERV	3	PERV	3							brecciation of rock increases with hydrothermal alt'n with strong ser-sil with increasing chl.
46.5	51	S	MTRX	3	REP	2	PATC	3	PATC	3							patchy ser-chl + sil alt'n with localized failry strong chl alt'n in hydrothermal fluids. cly replacing plag
51	61.5	S	INFILL	2	REP	3	PERV	4	INFILL	4							heavy sil alt'n in matrix infill as well as replacement of clasts in brecciated early FLPT. developing alt'n laminations in places. ser-cly the dominant infill alt'n.
61.5	66.2	S	MTRX	2	REP	2	PATC	3	PERV	4							ser-sil-cly alt'n as above, but not so much heavy sil influence, and more patchy.
66.2	71.5	S	MTRX	2	REP	2	PERV	3	PERV	3							transitioning out of the hydrothermal heavily altered zone in favor of more pervasive sil-ser alt'n.
71.5	82.5	S	CLST	1	FC	3	PERV	3	PERV	4							increased fracture-controlled ser-cly alt'n as we move through a fault zone.
82.5	86.4	S		0	REP	2	MTRX	3	PATC	2							patch ser alt'n with lots of sil in matrix.
86.4	100	S	MTRX	1	REP	2	PERV	3	PERV	3							continuous pervasive sil-ser alt'n throughout unit
100	124.4	S	MTRX	1	FC	2	PATC	3	PATC	3							patchy ser-sil alt'n fairly strong, masking a bit of the textures. consistant throughout this unit. some fracture controlled clay alteration
124.4	127.2	S	CLST	1	FR	1	PERV	4	PATC	2							pervasive light grey sil alt'n in brecciated zone. patch ser alt'n plus some ser-cly in fractures
127.2	131	S	PERV	3	FC	1	PERV	2	FC	2							short run of heavy chl alt'n at top of unit, the moderate chl-sil throughout. ser-cly dominantly in fractures
131	138.5	S	CLST	2	FC	2	PERV	3	PATC	2							increasing sil altn with bit of a reduction in ser-chl alt'n

Blackwater Project
Drill Summary - Alteration

BW0317		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
138.5	146.5	S	CLST	1	CLST	1	PERV	4	PATC	1							dominant sil with hydrothermal brecciation zone. very hard rock, silicious texture on fracture planes, and patches of intense pervasive alt'n where textures are masked
146.5	156.6	S		0	MTRX	1	PERV	4	PATC	1							As above, with more zones of intense sil alterations. chl virtually absent
156.6	167	S	FR	1	FR	1	PERV	3	PERV	2							highly sil-ser alt'n pervasive. very hard rock from sil alt'n
167	175	S	FR	1	REP	3	PERV	2	PERV	3							more ser alt'n than sil, pervasive together, with significant clay alt'n in halos around mineralization blebs, particularaly grnt-sp replacements
175	178.9	S	PERV	3	REP	2	OP	2	PERV	3	HM	SPHL	1				highly chl alt'n section with minor amount of hemitite altn in one sulphide mineralized spot with localized very high chl alt'n. sil dying off somewhat but still a fair overprint.
178.9	188.5	S	PATC	2	REP	2	PERV	4	INFILL	2							high sil altn' is back in hydrothermal brecciated zone. ser-sil infill; clay alt'n as before, patchy banded chl altn usually sulphide bearing
188.5	194.8	S	PATC	2	CLST	2	PERV	4	PERV	4							intense banded alt'n of alternating ser-chl-cly alt'n with sil alt'n, masking primary textures. overall appearance is a streaky blue-green
194.8	199.9	S	PATC	2	CLST	2	PERV	4	PERV	4							similar alt'n composition as above, but less banded and mre pervasive/patchy
199.9	204.9	S	PERV	3	MTRX	2	PERV	3	PERV	3							decrease in sil-ser alt'n with more chl. rock color a pale blue-green
204.9	207	S	FR	2	MTRX	1	PATC	4	PERV	3							patches of intense sil alt'n, with most lengths having decent ser-sil-chl pervasive alt'n, some strong chl alt'n on fracture planes.
207	212.5	S	FC	3	FC	3	PATC	2	PERV	4							soft core, clay alt'n in gouge with ser, many fracture dependent chl alt'n patches
212.5	222.3	S	CLST	3	MTRX	1	PERV	3	PERV	3							more sil alt'n than above, chl alt'n becoming prevalent, in particular replacing felsic clasts, causing them to appear dark.

Blackwater Project
Drill Summary - Alteration

BW0317		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
222.3	238	S	PERV	4	MTRX	1	PERV	3	PERV	2	HM	FR	1				rock becoming dark green with heavy chl alt'n, pervasive sil atl'n keeping rock fairly hard. breccia infill is dominantly chl
238	242.4	T	INFILL	5	INFILL	2	PERV	2	PATC	2	HM	FR	1				breccia with intensely altered chl infill, accompanied with some cly. soft rock some rusty red hem alt'n on fracture planes
242.4	248	T	CLST	2	MTRX	1	OP	2	PATC	2	HM	FR	1				chl replacing clasts, and fairly heavy on fracture planes. hem with sulphides, also a soft black oxide on fracture planes as well
248	265	T	CLST	2	MTRX	1	PERV	2	PERV	2	HM	FR	1				as above, very constistant weak to moderate overal alt'n throughout unit. hem+/-py with some black oxide
265	281	T	CLST	3	MTRX	1	PERV	2	PERV	2	HM	FR	2				as above, with a bit of an increase in frequencty of chl clast replacement
281	284.5	T	INFILL	4	MTRX	1	OP	2	PERV	3	HM	FR	1				breccia veining with strong chl infill. chl alt'n of clasts, aswell as on fracture planes. moderate consistent ser alt'n
284.5	303.5	S	CLST	3	MTRX	1	PERV	2	PERV	2							light to moderate overall alt'n. sil-ser pervasive, chl pretty much exclusively replacing clasts
303.5	323.5	T	CLST	3	MTRX	1	PERV	2	PERV	2	HM		1				As above, with some hemitite and black oxide on fracture planes. Transitional facies. Frequent clast replacement with chl
323.5	348.3	T	CLST	3	MTRX	1	PERV	3	PERV	2	HM		1				slight increase of sil alt'n pervasive, plus some patches of clast replacement. short lengths of more pervasive chl alt'n. still a bit of hemitite on fracture planes
348.3	357	S	FR	2	FR	1	PATC	2	MTRX	2	BIOT	CLST	1				lower intensity patchy ser-sil alt'n, some brown biot alt'n dominantly in mafic clasts
357	371.5	S	FC	2		0	PATC	2	FC	2	CARB	PATC	1	BIOT	CLST	2	lower intensity patchy ser-sil alt'n, with local patches of carb alt'n. Also some brown biot alt'n dominantly in mafic clasts. chl prevalent on some fracture planes especially. EOH

Blackwater Project
Drill Summary - Mineralization

BW0317		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	20.5	VN	0.1	SP	0.5		0										minor specks of sp, partacularaly as felsic clast edge replacement. the odd hairline vnlt with sp-py
20.5	34.5	VN	0.1	SP	0.5		0										as above. occaisional felsic clast with significant sp blebs
34.5	35.5	VN	0.1	SP	0.1		0	Ga	FP	0.1	Apy	FP	0.1				as above, with a small dark sulphide band with high chl alt'n bearing ga+/-aspy(?) in the midst of a crushed zone (around 34.8m)
35.5	40.9	SP	0.1	SP	0.1		0										trace py and po in specks
40.9	50.5	SP	0.1	SP	0.5	SP	0.1										as above. localized good blebby sp where replacing mafic clast. trace po with sp
50.5	61.5	SP	0.1	SP	0.3	SP	0.1										trace py. sp-po specks with hornblende in sericite matrix and clasts.
61.5	67		0	SP	0.3		0										as above
67	73	SP	0.1	BB	0.5	SP	0.1										several laminated felsic clasts with good disseminated sp blebs, one clast with very good sp (2-3% within the clast itself)
73	79	VN	0.3	BB	0.5	SP	0.1										blebs of sp-trace po in felsic clasts as before. a few hairline vnlt's bearing py-sp.
79	86.3	VN	0.1	BB	0.5		0										blebs of sp in clasts, including the odd mafic clast. hairline vnlt's potentially with py.
86.3	93	VN	0.3	BB	0.5		0	Ga	VN	0.3	Apy	VN	0.1				increase of disseminated specks of dark sulphides as well as shoddy hairline vnlt's with sp-ga-py, vnlt's nearing dbs but not well formed.
93	98	VN	0.5	DI	1	SP	0.1	Ga		0.3							good disseminated sp and ga in some spots, particularly around vnlt's. many hairline vnlt's with sp-py-ga (trace aspy?). not much po to speak of.
98	103	VN	0.5	DI	1	SP	0.1	Ga	VN	0.1							a couple hairline vnlt's running nearly parallel to CA, going continuous for over 3 m of core length. vnlt's with sp-py-ga. py is quite dark. good disseminated sp, especially where replacing mafic clasts in VC.

Blackwater Project
Drill Summary - Mineralization

BW0317		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
103	111.5	VN	0.3	DI	1	SP	0.3	Ga		0.1							good sp with minor po especially where replacing mafic clasts. one 1.5 cm mafic clast nearly entirely replaced by sp-po. a few shoddy vnlt's with dark sulphides including some ga.
111.5	117.5	VN	0.3	DI	0.5		0										bit of a decrease in sulphides.
117.5	127.2	VN	0.5	DI	1	SP	0.3	Ga		0.1							decent consistant disseminated sp with trace po. a few hairline sp-py bearing vnlt's.
127.2	134	SP	0.1	DI	0.5		0										section of poor mineralization, except for decent disseminated sp in spots
134	135	VN	1	SP	0.5		0	Ga	VN	1	Apy	VN	0.5				one sheared vein with massive ga-aspy-py+/- sp. vein is approx 5 cm thick. pretty much the only mineralization over an otherwise barren interval.
135	140	SP	0.1	CR	0.5		0	Grnt	CR	0.3	Apy	SP	0.1				minor disseminated sp. specks of aspy. sp+grnt in clast replacements
140	151	SP	0.1	SP	0.3		0	Apy	SP	0.1	Grnt	CR	0.3				overall poor mineralization in hydrothermal brecciation zone. minor sp specks, trace py, aspy. grnt in replacement of clasts
151	157	VN	0.1	SP	0.1		0	Grnt	BB	0.5							blebs of grnt. nothing else of significance.
157	158	BB	0.3	SP	0.3	BB	0.1	Grnt	CR	1							quite a few blobs of small garnets as they replace clasts in an otherwise tuff flow. one bleb of py-po at start of unit
158	169	SP	0.1	DI	0.1		0	Grnt	CR	0.5	Mrc		0.1				decreasing amount of grnt. minor sp in diss specks, trace mrc on fracture plane
169	174.2	SP	0.1	DI	0.5		0	Grnt	SP	0.3							decent sp in disseminations, with clay halos and occuring with grnts.
174.2	175.6	VN	0.5	SP	0.5		0	Ga	VN	0.3	Apy	VN	0.3				several vnlts with dark sulphides, increasing in frequency
175.7	175.8	MA	20	MA	15	MA	10	Ga	MA	5	Apy	MA	5				quartz vein with zone of massive dark sulphide mineralization around it. heavy. strongly magnetic in spots, perhaps magnetite aswell?
175.8	177.2	VN	0.5	VN	0.5	VN	0.1	Ga	VN	0.3	Apy	VN	0.3				decreasing vnlt's similarly as section before massive sulphide interval above.

Blackwater Project
Drill Summary - Mineralization

BW0317		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
177.2	184	DI	1	BB	0.5	BB	0.1	Ga	BB	0.1	Apy	BB	0.1				minor to decent disseminated dark sulphides with a few chloritized, sheard vnlts, similar composition.
184	188.5	DI	0.5	SP	0.5	SP	0.5	Cp	VN	0.1							many vnlts with py, one seen bearing cpy. sp in diss. po increasing
188.5	193	SP	1	SP	0.3	BB	0.5										decent grade py in disseminated specks throughout interval.
193	198	VN	1	SP	0.1	SP	0.5										increasing po, some magnetic blebs.
198	205	VN	0.5	DI	1	BB	2	Cp	VN	0.1	Dbs	DEN	0.5				local high grade po+/- sp. py in some vnlt's. one vnlt seen with possible cpy? Bit of dbs whisps.
205	209.5	VN	0.5	BB	1	BB	0.5	Cp	VN	0.1	Dbs	DEN	0.1				a bit less mineralization than prevous unit, but some good 1 cm blebs of sp
209.5	212	VN	1	DI	1	BB	0.5	Cp		0.1							increase in cross-cutting vnlt's mostly py bearing. sp in local disseminations.
212	214.4	DI	3	DI	3	BB	1	Cp	BB	0.5							good sulphide mineralization, particularly sp-py in local high grade disseminations. some veins and vnl'ts bearing these sulphides. cpy usually in edges of other sulphide blebs.
214.4	221	DI	1	BB	1	BB	2										still good diss sulphides. pretty high grade po blebs, strongly magnetic
221	227.5	FP	1	DI	1	BB	1										pretty good po-sp. po in some large blebs, subhedral crystals in one bleb. some py on fracture planes.
227.5	233.5	DI	1	DI	1	BB	2										increasing overall disseminated mineralization. some disseminated mineralization trending in a rough laminations.
233.5	242.3	DI	3	DI	3	BB	4	Dbs		1							great disseminated py-sp-po, some dbs, good interval, some blebby py veins, some good shiny py on fracture planes
242.3	252.4	DI	1	DI	4	DI	4										high grade sp-po in large specks disseminated throughout.
252.4	257	VN	2	DI	3	DI	3	Cp	VN	0.5							good grade sulphides. py-cpy good in veinlets. occaisional large bleb of pure po, causing strong magnetic pull

Blackwater Project
Drill Summary - Mineralization

BW0317		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
257	258.7	VN	1	DI	3	DI	2	Cp	VN	0.3							good disseminated sp-po. a few vnlt's with nice dark brown-purple sp with py and cpy?.
258.7	263.5	FP	0.5	DI	3	DI	4	Apy	SP	0.1							good consistent disseminated po+/-sp. slightly stronger affinity for mineralization in chl altered clasts.
263.5	268	VN	2	BB	3	BB	3										increasing amount of blebby mineralization, and a vew vnlt's and a vein with good blebby sp-py
268	275.5	BB	1	DI	4	DI	4	Cp	SP	0.5							excellent disseminated sulphides. affinity of sp-po for large clasts as before. sp-po-py disseminated consistently througout unit
275.5	280	BB	1	DI	2	DI	2										slight decrease overall of sulphides, but still good sp-po disseminated
280	284.5	VN	2	DI	4	BB	4	Cp		0.3							great sulphide mineralization. A couple large clasts well replaced with sp-po. py with minor cpy(?) in breccia veining
284.5	287.5	DI	1	DI	2	DI	3	Cp	BB	0.5							good sulphides, especially disseminated sp-po in small blebs consistent. blebby shiny cpy seen.
287.5	296.5	VN	0.5	DI	2	DI	3	Cp	VN	0.1							good blebby disseminated po-sp. not much py seen, only in an isolated vnlt. A bit on fracture planes too.
296.5	301.6	SP	0.3	DI	1	SP	1										drop in sulphide grade, but still continuous smaller dissemination specks.
301.6	307	SUBH	1	DI	2	BB	4	Cp	BB	0.5							good po, blebby throughout, where it was very strongly magnetic. some subhedral py crystals in with po. associated sp. small blebs of cpy seen
307	313	SUBH	1	BB	2	BB	4	Cp	BB	0.5							as above, with increasing py-cpy with po. sulphide blebs growing in size
313	319	SP	0.5	BB	2	BB	4										as above, but with less py-cpy seen. good large blebs of po
319	323	BB	2	BB	2	BB	4	Cp	BB	0.5							lots of blebby sulphides, po blebs becoming quite large, with very strong magnetism. sp and py with po, perhaps cpy mixed in. One semi-massive blebby vein with py-po-sp

Blackwater Project
Drill Summary - Mineralization

BW0317		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
323	326.5	VN	2	BB	3	BB	4	Cp	BB	0.5							as above, with a few py-sp bearing vnlts. smear-like blebs of sp, large blebs of po.
326.5	330	FP	1	DI	2	DI	3	Mrc	FP	0.5							decent disseminated sp-po. fracture controlled py with mrc.
330	333	FP	1	DI	3	BB	4	Mrc	FP	0.3	Cp	VN	0.3				as above. local high grade (~10%) disseminated po-sp at very end of interval
333	337.2	BB	0.5	DI	2	BB	4										cm sized blebs of solid po, strong magnetism. disseminated sp.
337.2	337.5	BB	3	DI	8	DI	20										small interval of very high grade disseminated po-sp-py.
337.5	341.7	SUBH	1	DI	2	BB	5	Mrc	FP	0.5							large blebs of po. highest grade at start of interval
341.7	346	SUBH	1	DI	2	BB	3	Cp	SP	0.3							some decrease in mineralization. subhedral py in po-sp blebs.
346	350.5	BB	1	DI	2	BB	3	Mrc	FP	0.5	Cp	BB	0.3				local high grade blebs of po-sp, especially in occaisional mafic clast, but decreasing disseminated sulphide grade
350.5	353.5	SUBH	1	DI	2	BB	3	Cp	BB	0.5							high grade sp-po disseminated blebs especially at beginning of interval; grade decreasing a bit towards bottom
353.5	358	BB	3	DI	1	BB	3	Cp	BB	0.5							very large blebs of sp-py (1-2cm) throughout interval, and in some fracture-veining with cpy. very peculiar interval. blebs sometimes in ser-carb veining.
358	362.5	BB	0.5	DI	1	BB	1										the odd large bleb of po, smaller blebs of py, and disseminated sp. grade of mineralization declining significantly, as rock becomes more carb/chl altered and more mafic material
362.5	367	BB	0.5	DI	1	BB	1										as above, but mineralization becoming quite localized, with pretty barren runs in between.
367	371.5	SP	0.1	SP	0.3	SP	0.3										sulphide grade pretty much gone. some smudgy blebs of sp-po

Blackwater Project
Drill Summary - Structure

BW0317

From (m)	To (m)	Structure	Strength	Comments
0	7	BRKZ	3	few planar fractures
7	13	JZ	5	dominant fractures at 70 to CA. another set at low angle (10-20) to CA.
13	18	FZ	2	rubbly core, with some gouge
18	22	JZ	2	quite competant section. few measurable fractures
22	26.5	BRKZ	5	rubbly core with a bit of gouge.
26.5	28.8	BRKZ	3	many fractures at 50 degrees to CA
28.8	30.05	FZ	4	lots of fault gouge
30.05	31.2	BRKZ	1	small section pretty competant overall rock
31.2	37	FZ	4	extensive fractures and fault gouge.
37	39.7	BRKZ	2	incosistantly broken core. planar fracture set at 70 to CA, otherwise, chunky fracture planes
39.7	45	BRKZ	4	core quite broken up. main fracture set at 50
45	47.4	BRKZ	2	fractures variable in orientation
47.4	48.4	BRKZ	5	rubbly, chewed core. poor recovery
48.4	67	JZ	3	competant core for a good length. fracture set at 50, with minor sets at 80 and 15 to CA.
67	73	BRKZ	1	major fracture set at 60-70, minor set at 30-40 to CA
73	82.5	FZ	3	large fault zone, frequent lengths of gouge, with interspaced broken core.
82.5	93.8	BRKZ	5	badly broken core, could be splays off the fault zone from above.
93.8	97.5	BRKZ	3	core gradually getting more competant. minor fracture set at aorund 10 degrees to cA
97.5	101	JZ	3	major set at 30, minor at 60
101	108.8	BRKZ	3	many planar fractures at 30-35 degrees to CA. some rubbly core.
108.8	110.7	JZ	3	major fracture set at 50
110.7	117.2	FZ	3	heavly fractured zone into fault gouge
117.2	122.5	BRKZ	2	2m of competant core, then section of broken core, some gouge. perhaps splay from above fault zone
122.5	124.5	JZ	2	very competant rock, two fractures in this section.
124.5	131	BRKZ	5	highly fractured section, with a bit of gouge
131	137.7	FZ	1	very broken with some gouge.
137.7	142.3	BRKZ	3	lots of planar fractures at 10-20 degrees to CA. Minor set at roughly 50 degrees to CA

Blackwater Project
Drill Summary - Structure

BW0317

From (m)	To (m)	Structure	Strength	Comments
142.3	149.5	BRKZ	4	major fracture set varies from 10-30 degrees to CA. minor set at roghly 55. one stage higer fracture intensity from prevous unit.
149.5	154.6	BRKZ	1	clear, prominent fracture sets at 10 degrees to CA and 60-70 degrees to CA.
154.6	159.1	BRKZ	2	not intensly fractured broken zone, with several planar parallel fractures at 20-30 degrees
159.1	161	JZ	4	a few fractures in this unit
161	169.4	BRKZ	4	fairly highly broken zone, some rubbly rock
169.4	174.6	JZ	2	competant core
174.6	178	BRKZ	5	highly broken, nearly gouge in areas
178	185.5	BRKZ	2	quite a few fractures at 40 degrees to cA
185.5	197	JZ	2	very competant core, a prominent fracture orientation at 40
197	207.3	JZ	4	many fracture orientations from 30 to 40 degrees
207.3	215.5	FZ	1	bordering on fault zone. a bit of gouge, but mostly rubbly rock, very shardy fractures
215.5	224	BRKZ	3	fracture sets at 30 and 50 degrees to CA
224	238	BRKZ	1	a difinitive joint set at 50 degrees to CA. overall fairly competant core, with minor short runs of more heavly fractured.
238	243	FZ	3	fault zome with fair bit of gouge, though well consolidate together again.
243	248.5	BRKZ	3	quite a few fractures, many of them around 60 degrees to CA
248.5	254.1	BRKZ	4	lots of fractures, major set at 30-50 degrees to CA
254.1	257	JZ	5	joint sets at 40 and 65
257	261.8	JZ	1	very competant core. few natural breaks
261.8	269.5	BRKZ	2	wavy fractures at 10, planar fractures at 40 degrees to cA
269.5	281.2	JZ	2	not really a strong fracture set
281.2	296.7	JZ	4	several fractures at 30 degrees to CA
296.7	301.1	BRKZ	2	cross-cutting fractures, one set at 30, one at ~50 to CA
301.1	316	JZ	3	2 or 3 fractures per meter, avg
316	317.1	BRKZ	2	probably just one wavy fracture at low angle to CA
317.1	319.7	JZ	2	no measurable planar fractures
319.7	323.5	JZ	5	many fracture sets tat ~40 degrees to CA
323.5	328	JZ	2	very competant, 2-3 fractures per meter avg

Blackwater Project
Drill Summary - Structure

BW0317

From (m)	To (m)	Structure	Strength	Comments
328	342.4	JZ	4	small runs of more fractured core, but overall, quite competant rock
342.4	349	JZ	2	competant core
349	352	JZ	5	some parallel fractures at ~ 25
352	359.5	BRKZ	3	some broken core, some healed fractures, some rubble
359.5	364.3	JZ	2	competent section
364.3	371.5	FZ	1	high angle, shardy fragments with some gouge. rubbly

Blackwater Project
Drill Logs

Hole ID:	BW0318	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375400.62
Depth (m):	536	Date Started:	15/01/2012	Casing Size:	HWT	Northing:	5893199.41
Azimuth:	0	Date Completed:	27/01/2012	Casing (m):	51	Elevation (m):	1564
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
70	61.1	-89.3
121	88	-89.5
169	62	-89.3
220	99.8	-89.5
271	231.4	-89.9
322	113.7	-89.5
370	184.7	-88.4
421	179	-88.2
470	177.6	-88.2
523	178.8	-87.9
535	178	-88

Blackwater Project
Drill Summary - Lithology

BW0318

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10	OB							
10	14.5	AND	autbx	LAP	D	GRY	FLT	GR30	Dark grey weakly autobrecciated andesite flow with calcite veining.
14.5	35	VC	volc	LAP	M	GRY	FLT	GR30	Medium grey strongly faulted and gouge rich volcanoclastic, most texture is destroyed by faulting, where textures are visible it shows an equal distribution between mafic and felsic clasts, sub-angular to sub-rounded with weak microbreccia textures
35	41.8	FT	fltgge	LAP	L	GRY	FLT	GR30	Light grey strongly altered felsic tuff with local lapilli tuff texttures, weak clay alteration.
41.8	46	AND	autbx	LAP	D	GRY	FLT	GR5	Small interval of andesite slotted in between felsic tuffs, rubbly broken, autobreccia
46	56.5	FLPT	lptbx	LAP	L	GRY	FLT	GR10	Light grey felsic lapilli tuff breccia fault bound on both sides with autobrecciated andesite
56.5	79.2	AND	autbx	LAP	D	GRY	DEP	GR5	Dark grey andesite autobrecciated flow, with sub-rounded amygdaloidal fragments of andesite within a slightly lighter matrix.
79.2	104	VC	plm	LAP	L	GRY	DEP	GR30+	Felsic volcanoclastics with shardy sub-angular well sorted clasts of chlorite altered felsic, sub rounded felsics and local lapilli tuff breccia clasts, infrequently laminated clasts are observed.
104	121	FLPT	lptbx	LAP	L	GRY			Light grey green strongly altered lapilli tuff breccia with local hydrothermal breccia textures, and chaotic assortments of laminated felsic clasts.
121	131.2	VC	volc	BLOCK	D	GRY	FLT	GR5	Dark grey blocky mafic volcanoclastic breccia with altered matrix and assorted clasts ranging from blocky angular andesite fragments to lapilli sized sulphide replaced clasts, very small amount of felsic input <2%
131.2	139	FLPT	hydbx	LAP	M	GRY	FLT	GR5	Felsic lapilli tuff breccia? This unit is intensely altered with few ghost clast textures, hydrothermal breccia textures and abundant clay altered fault gouge
139	141.8	VC	volc	BLOCK	D	GRY	FLT	GR5	Small interval of blocky mafic dominant volcanoclastic breccia same as above fault
141.8	147.3	FLPT	hydbx	LAP	M	GRY	FLT	GR5	More strongly altered felsic lapilli sized fault gouge breccia/ hydrothermal breccia.
147.3	171.1	VC	ms	LAP	MO	GRY	DEP	GR30	Variable mottled grey green volcanoclastics with locally mafic dominant and felsic dominat secitons. Locally unit is completely turned to clay fault gouge, clasts are often replaced with sulphides, weakly laminated, chlorite altered clasts.
171.1	179.5	VC	cs	BLOCK	MO	GRY	DEP	GR5	Clast supported mottled grey green felsic dominant blocky volcanoclastic unit locally more fine grained and matrix supported from 174-176m. As above clasts can be replaced by sulphides, chlorite altered and laminated.

Blackwater Project
Drill Summary - Lithology

BW0318

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
179.5	425.5	FLPT	hydbx	LAP	M	GRY			Grey green strongly altered felsic lapilli tuff breccia, locally strongly faulted with hydrothermal breccia textures
425.5	484	FT	flwbnd	FA	L	GRN			Felsic tuff, somtimes showing stong banding, occasional felsic clasts present, often massive (without texture). Strongly obscured by silica-sericite alteration.
484	510	FLPT	lpt	LAP	L	GRN	DEP	GR10	Felsic lapilli tuff, clast supported, fairly obscured by alteration.
510	518.2	VC	ms	LAP	D	GRN	DEP	GR10	Volcanoclastic, matrix supported, with majority mafic clasts. Strong chlorite alteration, possibly with healed clay gge. Clasts sometimes show alignment.
518.2	536	FT	flwbnd	CA	L	GRN			Felsic tuff, with some brecciation and fault gge.

Blackwater Project
Drill Summary - Alteration

BW0318		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10	14.5	T	FR	1		0		0		0	CAL	VN	2	LIM	FR	3	Weak chlorite alteration and minor calcite veinlets, oxide minerals limited to fractures
14.5	21	T		0	CLST	1		0	OP	1	LIM	FR	2				Weak jarosite/goethite (limonite) on fractures, sericite overprint
21	35	S	CLST	2	CLST	1		0	OP	2							weak sericite dominantly in the matrix, locally clay and chlorite altered clasts
35	41.8	S	FR	2		0	PERV	2	OP	2							Silica alteration is pervasive, chlorite on fractures, sericite overprint
41.8	46	S	FR	1		0		0	MTRX	1							Weak sericite and chlorite in small andesite interval
46	56.5	S	CLST	1	CLST	1	PERV	3	OP	1							
56.5	79.2	S	FR	1		0		0	OP	2	CAL	VN	2				Calcite reappears as veins within abx andesite
79.2	104	S	CLST	2	CLST	1	PERV	3	OP	2							Strong silica, chorite/clay altered clasts, sercitie overprint
104	112	S		0		0	PERV	4	OP	2							Increaed silica locally obliterating primary texture, and locally as hydrothermal breccias
112	131.2	S	FR	1		0		0	MTRX	2	CAL	VN	2				Calcite in cross-cutting veinlets, sericite altering matrix.
131.2	139	S		0		0	PERV	4	OP	1							Strong silica alteration, abundant clay in fault gouge
139	141.8	S	FR	2		0		0		0							Chlorite alteration on fractures
141.8	147.3	S		0		0	PERV	4	OP	2							Pervasive silica alteration and hydrothermal breccia
147.3	171.1	S	FR	1		0	MTRX	2	OP	3							Weak silica/sericite/chlorite alteration of volcanoclastics
171.1	263.5	S	FR	2		0	PERV	4	PERV	2	CHL	CLST	3				Incrreased silica
263.5	271	T	FR	3		0	PERV	4	PATC	2	HM	FR	2				Strong silica, minor sericite and chlorite on fractures, dark red brown hematite staining on fractures
271	350.5	S	FR	1		0	PERV	4	OP	2	TOUR	INFILL	1				Strong silica overprint, some gohost textures preserved, hydrothermal breccia textures and patchy sericite. Asicular tourmaline infilling one qtz vein
350.5	372.2	T	FR	1		0	PERV	4	OP	2	HM	FR	1				Strong sericite-silica overprinting, with chlorite and red-purple hematite on fractures
372.2	510	S	FR	1		0	PERV	4	OP	2							Strong pervasive silica and sericite overprinting, with chlorite on fractures. Fracture controlled chlorite decreases with depth.

Blackwater Project
Drill Summary - Alteration

BW0318		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
510	518.2	S	PERV	3	PERV	2		0	OP	1							Rock is pervasively clay and chlorite altered, with some sericite overprinting
518.2	536	S	FR	1		0	PERV	3	PERV	2							Pervasive silica and sericite alteration, with chlorite on fractures. Some pink coloured, fracture controlled sericite (?) alteration.

Blackwater Project
Drill Summary - Mineralization

BW0318		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	35	SP	0.1	SP	0.1		0										Specks of sulphides
35	41.8	DI	0.1	DI	0.1		0	Dbs	DEN	0.1							specks
41.8	46		0		0		0										few visible sulphides
46	56.5	SP	0.1	DI	0.5		0										specks
56.5	79.2	SP	0.1	CR	0.5	CR	0.1										some sphalerite and pyrrhotite replacing clasts
79.2	104	DI	0.5	CR	1.5	DI	0.5	Py	CR	0.5	Dbs	DEN	0.5				Sulphides replacing clasts, py/sp/po associated together
104	112	CR	1	CR	1		0	Dbs	DEN	0.5							sulphides replacing laminated clasts, salt and pepper leopard textured in some clasts
112	120	SP	0.5	DI	1.5	DI	0.1	Dbs	DEN	0.1							Disseminations of sphalerite, fine grained pyrite and trace pyrrhotite
120	131	CR	0.5	CR	0.5	CR	0.1										Sulphides predominantlly replacing clasts
131	147	DI	1	CR	0.5		0	Dbs	DEN	0.5							Fine grained grey pyrite and blebby sphalerite in faulted hydrothermal breccia, with minor dbs
147	163	DI	1	DI	1		0										Fine grained sulphides in fault gouge
163	182	CR	0.5	CR	0.5		0										sulphides replacing clasts in polymicitic volcanoclastic unit
182	192	VN	0.5	DI	0.5	VN	0.1	Py	DI	0.5	Mrc	FP	0.1				Sulphides on fractures, and as small veinlets. locally replacing clasts and as blebby disseminations
192	207	DI	0.5	DI	1	DI	0.5	Mrc	FP	0.1							Sulphides slowly increasing, pyrite/pyrrhotite and sphalerite as blebby disseinations
207	222	DI	1	DI	0.5	DI	2	Cp	DI	0.1	Mrc	FP	0.1				Abundant disseminated clusters of pyrrhotite and pyrite with trace chalcopyrite and marcasite along fractures
222	239	DI	2	DI	0.5	DI	2	Py	VN	0.5	Dbs	DEN	0.5				Beautiful disseminations of pyrite and pyrrhotite, pyrite in locally in a large vein with minor sphalerite.
239	254	DI	2	DI	0.5	DI	2	Dbs	DEN	0.1							Splotchy patches of disseminated pyrite and pyrrhotite, some acicular DBS
254	270	DI	2	DI	0.1	DI	1.5	Py	VN	0.5							Continued strong pyrite and pyrrhotite as blotchy disseminations and in small veins

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Blackwater Project
Drill Summary - Mineralization

BW0318		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
270	287	DI	3	DI	0.1	DI	1										Abundant disseminated pyrite in vugs fractures, as disseminationns throughout faulted core
287	304	DI	3	DI	0.5	DI	0.5	Dbs	DI	0.5	Cp	SP	0.1				Some speck sof chalcopyrite with continued disseminations of pyrite
304	311	DI	1.5	DI	0.5	DI	1	Dbs	DEN	0.1							Aggregates and flowery disseminations of sulphides, becoming slightly duller in color (more pyrrhotite)
311	329	DI	1.5		0	DI	2	Dbs	DEN	0.5							Disseminated po and py, with DBS
329	338.5	BB	1.5		0	BB	2	Dbs	DEN	0.5							Blebs po and py, with DBS
338.5	340	DI	1.5		0	DI	1.5	Dbs	DEN	0.2	Apy	EU	0.1				Di po and py, with specks of euhedral arsenopyrite
340	346	DI	0.5		0	DI	15	Dbs	DEN	5							Sharp increase in po and DBS, blebs and dendrites up to 20%
346	347.5	DI	1		0	DI	10	Dbs	DEN	4	Apy	DI	0.2	Cp	FP	0.1	Di po and py, with di arsenopyrite and traced chalcopyrite on fractures
347.5	352.5	DI	1.5		0	DI	10	Viv	EU	0.1	Dbs	DEN	0.5				Di po and py, with euhedral vivianite on some fractures
352.5	355	DI	1.5	BB	0.2	DI	10	Dbs	DEN	1							Di po and py with DBS, and bleby sphalerite with py
355	374.5	DI	2		0	DI	15	Dbs	DEN	5							Di po and py, concentrated in blebs up to 1.5cm wide and in veins. Also DBS
374.5	390	DI	0.5		0	DI	1.5	Dbs	DEN	0.5							Minor di po, py and DBS. Reduced sulphides in fault/rubble zone
390	394	DI	0.5		0	BB	4	Dbs	DEN	3							Blebby po with DBS, minor py
394	406	VN	1	VN	0.1	BB	5	Dbs	DEN	3	Py	BN	0.2				Blebby po with DBS, veined py (one vein also with sphal), a short zone (402.2-403) of healed fault gge with banded sooty sulphide
406	417.3	DI	1		0	BB	3	Dbs	DEN	2							Blebby po with DBS, minor py
417.3	438	DI	1		0	DI	3	Dbs	DEN	2							Po with DBS, minor py
438	456	DI	0.5		0	DI	4	Dbs	BN	2	Apy	VN	0.2				Di py and po, also strongly banded DBS with po. One 8mm wide arsenopyrite vein at 447.6m
456	472	BB	1.5		0	DI	2	Dbs	DEN	1							Di po, blebby py, and decreased DBS
472	483	BB	1.5	BB	0.5	DI	1.5	Dbs	DEN	1							Di, blebby py, po and occasional shpal, with DBS.

Blackwater Project
Drill Summary - Mineralization

BW0318		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
483	485	DI	0.5	BB	3	BB	2										Minor py, with a sharp increase in blebby po and sphal
485	494	DI	0.5	BB	0.5	DI	1.5	Dbs	DEN	1.5							DBS, di py and po, minor sphal
494	510	FP	1	CG	0.1	BB	1.5	Dbs	DEN	0.5							Decrease in TS, minor py on fractures, minor blebby po, patchy DBS
510	518	DI	0.5		0	DI	0.5										Minor di po and py
518	536	DI	0.5	BB	2	DI	1	Dbs	DEN	0.5							Increased sphalerite blebs, with minor po and py

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Blackwater Project
Drill Summary - Structure

BW0318

From (m)	To (m)	Structure	Strength	Comments
0	16.6	BRKZ	3	Broken zone with small pieces of competant rock
16.6	65	FZ	4	Strongly broken, rubbly, crushed and broken rock with abundant fault gouge
65	79	JZ	2	low angle joint set
79	83.5	JZ	3	mid angle joint set
83.5	88	BRKZ		
88	89.7	JZ	1	
89.7	91.3	FL	2	small localized gouge
91.3	94.7	JZ	2	wavy joint set at 40
94.7	97.5	BRKZ	1	
97.5	100	FL	2	anneled fault gouge
100	101.3	JZ	5	
101.3	103	BRKZ	2	
103	105.8	JZ	2	jointing at 30 and 60 degrees
105.8	130	BRKZ	5	Strong broken section with local annealed fault gouge
130	135.2	FL	4	annealed fault zone
135.2	137.4	JZ	2	50 degree joint set
137.4	139	FL	4	strongly gouge rich fault
139	142.5	BRKZ	3	broken zoen between faults
142.5	163	FZ	4	strong fault zone
163	186.2	JZ	2	wavy to planar joint sets at 30, 60
186.2	186.4	FL	2	small fault
186.4	202	JZ	2	joint sets at 50 and 60
202	205.3	BRKZ	2	weak broken zone with low angle jointing
205.3	207.6	FL	3	healed fault zone
207.6	210	BRKZ	2	small blocky and broken zone
210	215.3	FZ	3	rubble and gouge zone
215.3	224.6	BRKZ	2	broken section with local hydrothermal breccia textures
224.6	227	FL	2	small broken fault zone with gouge and crushed/annealed rock

Blackwater Project
Drill Summary - Structure

BW0318

From (m)	To (m)	Structure	Strength	Comments
227	236	BRKZ	5	broken and locally healed gouge zone
236	240.5	JZ	2	weak joint sets at 45 and 60 degrees
240.5	259	BRKZ	3	Broken and rubbly core with some intact pieces <45cm
259	264	JZ	1	jointing at 50, 30 and 15 degrees
264	271	BRKZ	4	broken core with some rock flour
271	281.7	BZ	4	Hydrothermal fault breccia (locally annealed)
281.7	286.6	BRKZ	2	small broken section between faults
286.6	290.2	FL	5	Clay gouge and rock flour
290.2	293	JZ	3	strongly silicified intact section of rock jointing at 50 degrees
293	301.4	FL	4	annealed and crushed fault zone
301.4	308.5	BRKZ	2	broken zone
308.5	311.2	JZ	2	Joint set at 50 degrees
311.2	313.1	FL	4	Broken crushed and clay rich fault gouge
313.1	346	BRKZ	2	Broken rock, with some stretches of joint rock. Sometimes blocky, occaisonal healed fault gge
346	371	JZ	2	Joint rock, with fractures 80>60>45>20 degrees
371	379	BRKZ	3	Fairly broken rock, blocky, with some mechanical clay on fractures
379	380	FL	4	Fault with rubble and clay gge
380	390	FZ	4	Fault zone with rubble and clay gge
390	423.5	BRKZ	2	Broken zone, with intervals up to 2m of jointed rock
423.5	452.5	JZ	4	Strongly jointed rock with fractures 45>30>80 degrees TCA
452.5	522	BRKZ	3	Fairly broken zone, with short intervals of rubble
522	536	FZ	4	Fault zone with rubbly fragments and patchy to pervasive clay gge.

Blackwater Project
Drill Logs

Hole ID:	BW0319	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375328.01
Depth (m):	496.5	Date Started:	15/01/2012	Casing Size:	HWT	Northing:	5892725.88
Azimuth:	270	Date Completed:	25/01/2012	Casing (m):	7.5	Elevation (m):	1620
Dip:	-60	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
51	269.8	-60.6
100	270.1	-60
150	270.9	-59.1
201	270	-58.3
252.5	268.6	-58.2
300	269.6	-57.9
350	268.5	-57.4
400	268.1	-56.9
460.5	266.7	-55.8
496.5	267.9	-54.5

Blackwater Project
Drill Summary - Lithology

BW0319

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5	OB							Overburden
5	108	AND	por	LAP	M	GRY	ALTFR	GR30	Massive andesite, porphyrititc, limonite on fractures down to 85 meters.
108	171.4	AND	por	CA	M	GRY			Similar to above, fresher looking andesite. Almost intrusive. Similar rock called intrusive in BW0307 near start of hole. Local polymictic volcanic intervals.
171.4	185	AND	por	LAP	BA	PUR	ALTFR	GR30	Similar to above, with bleaching around fracturea and alteration zones around chlorite, pyrite filled amgdules.
185	218.8	AND	por	LAP	M	GRY	ALTFR	GR10	Biotite altered dark porphyritic amgdoidal Andasite flows, sections are broken and there are multip[le fault zones. Pyrrohotite with minor pyrite.
218.8	256.9	AND	lptbx	LAP	MO	GRY	DEP	GR30+	Biotite altered dark porphyritic amgdoidal Andasite flows, sections are broken and there are multip[le fault zones. Pyrrohotite with minor pyrite.
257.5	264	FLPT	lptbx	LAP	L	GRY	DEP	GR30+	Andisites above grade into Felsic over ~1m. 10% BDS, Strong pervasive silcification. clasts are 2mm to 2cm
264	335.2	FT	lam	FA	L	GRY	DEP	GR30+	Laminated with small lapilli intervals <30cm and rare lapilli through out, local small inrevals of secondary breccia possilbly hoydrothermal injection.
335.2	346.4	VC	lptbx	LAP	D	GRY	DEP	SH	MAfic and felisci angular clasts in a felsic ash matrix, rare calst approch bomb size, most clast < 2cm. Clast are slightly more rounded down hole.
346.4	349.5	VC	lptbx	BLOCK	D	GRY	ALTFR	GR10	Large angular and sub-rounded clasts, all blocks are other volcanocalastic lithologies, FLPT, VC, FT < 15cm in size, blocks apear slightly more rounded then other clasts.
349.5	352.9	VC	lptbx	BLOCK	L	GRY	DEP	GR30+	Large angular and sub-rounded clasts, all blocks are other volcanocalastic lithologies, FLPT, VC, FT < 15cm in size, blocks apear slightly more rounded then other clasts. large clast of FLPT possible hydro fracking at 350m
352.9	355	FLPT	lam	LAP	L	GRN	DEP	GR30+	Small interval of FLPT, several course ash beds with sub rounded felsic clasts, strongly silicified through out.
355	361.1	VC	lptbx	LAP	D	GRY	ALTFR	GR30	Silicified volcaniclastics graded contacts top and bottom, Lower contact is lithological and alteration.
361.1	367.6	FLPT	lptbx	LAP	L	GRY	DEP	SH	Lower contact is shape with underlieing, Ash (FT). Near clast supported to locally calst supported.
367.6	372.9	FLPT	lptbx	LAP	L	GRY	DEP	GR30	Grading from FT to FLPT to VC and back to FT in to cycles, some sharp contacts with in the unit. `

Blackwater Project
Drill Summary - Lithology

BW0319

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
372.9	406.3	FLPT	lptbx	LAP	L	GRY	DEP	GR30+	Rare blocks of mafics and sediment, weak alteration halos around blocks. Pervasive garnet alteration retrograded grain <2cm 5-10% of core. occationally vugy.
406.3	449.7	VC	lptbx	LAP	D	GRY	DEP	SH	Clast coursen down hole. Clast increasingly have reaction halos down hole, below 411.5m 75% of clasts have reaction halos.
449.7	496.5	AND	amg	CA	M	GRY			Massive Andasite, locally amgdoidal. Amigduals are chlorite filled, Zones of strong pervasive sericite alteration with minor chlorite

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Blackwater Project
Drill Summary - Alteration

BW0319		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5	76	T	PERV	3	FR	1	PERV	1	PERV	2	BIOT	PERV	2				
76	85	T	PERV	3	FR	1	PERV	2	PERV	2	BIOT	PERV	2	CAL	VN	3	start of calcite veining
85	114	S	PERV	3	FR	1	PERV	2	PERV	2	BIOT	PERV	2	CAL	VN	2	no oxidation
114	134	S	PATC	2		0	PATC	2	PATC	2	BIOT	PATC	1				fairly unaltered andesite, increase chlorite
134	159.9	T	PERV	3	FR	2	PERV	2	PATC	2	BIOT	PERV	3	LIM	FR	3	fault zone, limonite on fractures
159.9	171.4	S	PERV	3		0	PATC	1	PATC	2	BIOT	PERV	2	CAL	VN	2	Calcite after Dolomite? (unreactive carbonate) filling fractures
171.4	185	S	PERV	3		0	PERV	1	PATC	3	BIOT	PERV	3	SIL	VNHL	3	Silica halos around amgdules, infilled with chlorite, and pyrite of pyrhotite cores
185	210.5	T	PERV	3		0	PERV	1	PATC	2	BIOT	PERV	3	LIM	FR	2	Trace Jerocite along fractures
210.5	218.5	S	PERV	3		0	PATC	5	PATC	2	BIOT	PERV	3	LIM	FR	2	
218.5	219.5	O		0	PERV	2		0		0	ANH	PERV	4	LIM	PERV	4	Oxidation along a fault gauge and associated fractures.
219.5	222.5	S	PATC	1	PATC	1		0	PATC	1	BIOT	PERV	3	LIM	FR	1	Hemitie alteration along fracture nearer to faults
222.5	227	O	PERV	3	PERV	1	PATC	5	PERV	1	ANH	PATC	3	LIM	PATC	2	Alteration concentrated around fault gauges
227	238.5	T	FR	3		0	PATC	5	PERV	1	BIOT	PERV	3	LIM	FC	3	
238.5	243.3	O	PATC	3	FR	2	PATC	5	PERV	1	BIOT	PERV	3	ANH	PATC	5	Hemitite, Limonite and Anhyrite alteration are associated with Fault Gauges and proximal fractures
243.3	249.2	T	PERV	1		0	PATC	4	PERV	1	BIOT	PERV	3	LIM	FR	2	
249.2	250.1	T	FR	2	PERV	2		0	PERV	2	LIM	FC	4	HM	FC	1	
250.1	253.5	S	PATC	1		0	PERV	4		0	BIOT	PERV	3	LIM	FR	1	Silification overprinting biotite alteration.
253.5	256.9	S	FR	3	PERV	1	PATC	3	PERV	1	BIOT	PERV	3	LIM	FR	1	
256.9	262.5	S	PATC	2		0	PERV	2	PERV	2	BIOT	PATC	1				
262.5	270.9	T	PATC	1	PATC	1	PERV	2	PERV	3	LIM	FC	2	HM	FC	1	Jerocite > Goethite
270.9	277.1	T	PATC	1	PATC	1	PERV	3	PERV	1	BIOT	PERV	3	LIM	FC	3	Jerocite > Goethite
277.1	277.9	T	PATC	1	PATC	3	PATC	1	PERV	4	LIM						
277.9	279.5	T	PATC	1	PATC	2	PATC	3	PATC	2	HM	FC	2	LIM	FC	3	jerocite >= Goethite
279.5	288	T	PATC	1	REP	3	PERV	1	PERV	2	LIM	FC	3	HM	FR	1	Sercite altering glass of feldspar crystals?
288	301.5	O	FR	3	REP	1	PERV	1	PERV	3	BIOT	PATC	1	LIM	FR	1	

Blackwater Project
Drill Summary - Alteration

BW0319		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
301.5	304	T	FR	3	REP	1	PERV	1	PERV	3	BIOT	PATC	1	LIM	FR	3	Limonite alteration along fracture associated with fault gauge anf puzzle breccia associated with fault.
304	311.5	T	FR	2	REP	2	PERV	1	PATC	1	BIOT	PERV	1	LIM	FC	2	Limonite alteration increaseing down hole.
311.5	319.2	T		0	REP	1	PERV	1	PATC	1	LIM	FC	3				Limonite alteration increases down hole
319.2	333	O		0	PERV	2		0	PERV	2	LIM	FC	4	LIM	PERV	2	Goethite = Jarosite
333	336	T	PERV	2	REP	2		0	PATC	2	LIM	FR	1				Weak limonite alteration is strong at top on interval and recures down hole.
336	341.7	T	FR	1		0		0	PATC	1	BIOT	PERV	3	LIM		1	generally competant rock broken due to fracture not alteration.
341.7	346.5	T	FR	2	MTRX	2		0	PERV	2	BIOT	PERV	3	LIM	FR	1	Increased intensity of matrix alteration from the above.
346.5	349.5	S	FR	1	PATC	2	PATC	2	PATC	2	BIOT	PERV	3				Increaseing silica alteration over printing sericite and clay alteration down hole.
349.5	351.8	S		0		0	REP	4		0	BIOT	PERV	3				Other alteration overprinted by silica alteration original textures still clearly visible
351.8	354.2	T		0	PATC	2	REP	4	PATC	2							Other alteration overprinted by silica alteration original textures still clearly visible
354.2	358.4	S	FR	2	PERV	2	REP	3	PATC	1	BIOT	PERV	3				Other alteration overprinted by silica alteration original textures still clearly visible
358.4	361.1	T	FR	1	PERV	1	REP	2	PATC	1	BIOT	PERV	3				Other alteration overprinted by silica alteration original textures still clearly visible
361.1	362.7	T		0	PERV	1	PERV	2	PATC	2	LIM	FC	3				Limontie alteration around Pyrite vein and fault zoen decreasing down hole.
362.7	372.7	S	FR	1	REP	2	PERV	2	PATC	3	BIOT	PATC	3				Biotite alteration is pervasive throught the short intervals of VC
372.7	403.9	T	FR	2	REP	2	PERV	1	PERV	3	BIOT	REP	1	GRNT	REX	3	Biotite alteration is pervasive throught the short intervals of VC, Limonite after hemitite after Goethite/ Black oxide/black sulphide? along fracture
403.9	406.3	T	PATC	1	PATC	2		0	PATC	2	BIOT	MTRX	2	LIM	FC	3	Increaseing Biotite alteration toward contact with Volcanoclastic unit.
406.3	408.2	T	FR	3	MTRX	1		0	REP	1	BIOT	PERV	3	LIM	FC	3	Biotite increase through the top few metres of Volcanoclastics

Blackwater Project
Drill Summary - Alteration

BW0319		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
408.2	411.3	T	FR	3	CLST	1		0		0	BIOT	PERV	3	HM	FR	1	
411.3	441.6	S	FR	3	CLST	1	PERV	3		0	BIOT		3				As silica altertion increases clasts show stronger reaction halos and halos are around more clasts
441.6	449.6	S	PERV	5	PERV	1		0	PERV	2							Chlorite alteration is stronger in clasts then in matreix for 90% of clasts. 10% of clast are strong sericite alteration.
449.6	452.8	S	PERV	3	PERV	1		0	PERV	4							Sericite is dominant down hole from a large Qtz vein.
452.8	458.8	S	FR	1		0		0	PATC	1	BIOT	PERV	3				
458.8	460.5	O	PERV	2	PERV	1		0	PERV	4							Sericite and chlorite alteration associated with veining.
460.5	476.6	S	VNHL	2	VNHL	1		0	VNHL	4	BIOT	PERV	3				Large sections of pervasive sericite and chlorite alteration centred around VNLT
476.6	486.3	S	PATC	2	PATC	1		0	PERV	3	BIOT	PATC	3				Sericite and chlorite alteration associated with Qtz carb veins. Short interval where Biotite alteration has not been overprinted
486.3	496.5	S	VNHL	1		0		0	VNHL	1	BIOT	PERV	3				Weak sericite halos around carbonate

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Blackwater Project
Drill Summary - Mineralization

BW0319		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
46	67	FP	0.1		0	FP	0.5										po>py on fractures
67	140	DI	0.1		0	DI	0.1										weak sulphides
140	159.9	DI	0.1		0	DI	0.1										weak sulphides
159.9	171.4	DI	0.1		0	DI	1										po>py. prite filling amgdules 5% Po over 10 cm .
171.4	185	DI	0.1	BN	0.1	DI	1										Spalerite is in bands with in alteration halos around fractures.
185	198	BB	0.1		0	DI	0.5										oxidised along fractures
198	204	BB	0.1		0	DI	1.5										Po filling amgdules.
204	218.5	BB	0.1		0	DI	1										
219.3	223	FP	0.1		0	FP	0.1	Py	DI	0.1	Po	DI	0.1				
227	228.5	DI	1		0	DI	4.5										
228.5	239	DI	0.1		0	DI	1										
239	257	DI	0.1		0	DI	0.5										most sulphide oxidized away
257	264		0		0	DI	3	Dbs	DEN	7	Jaro	FP	0.1				Dendrtic balck sulphides are fine grained, courser grains are Po.
264	277.9		0		0	DI	0.5	Dbs	DI	10							Oxide and hydroxide alteration replacing some sulfides near fractures.
277.9	279.4		0		0	BB	0.1	Dbs	DI	5							Linomite replacement of Po and py significant Goethite.
279.4	289.8		0.1	BB	0.1	DI	1	Dbs	DEN	10							Pervasive dendritidc black sulphides with Po associated with larger masses.
289.8	301.5	FP	0.1		0	DI	0.5	Dbs	DEN	7	Grnt	DI	1				
301.5	304		0		0		0	Dbs	DI	3							Oxidation of core section is moderate
304	311.5		0		0		0	Dbs	DI	5							localized strong limonite alteration around tectonic breccia
311.5	318		0		0		0	Dbs		3							oxidation increasing down hole
318	319.2		0		0		0	Dbs	DI	3							Dendritic Manganese oxide
319.2	333		0.1		0		0	Goe	FP	5	Jaro	FP	50	Goe	DI	1	Strong alteration associated with faults and fault related fractures

Blackwater Project
Drill Summary - Mineralization

BW0319		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
333	335.1	DI	0.5		0		0	Py	FP	0.5							
335.1	349.5	DI	1		0	DI	3	Py	FP	0.1							mag reading alternate high and low as pyrite an dPo alterante and total sulphides changes
349.5	352	DI	0	DI	0.1	DI	3	Po		0.2							
352	357.8		0	DI	0.1	DI	3	Dbs	DEN	3							
357.8	361.1	DI	0.1		0	DI	0.5										
361.1	363.6	DI	1	DI	0.2		0	Dbs	DEN	0.5	Py	VN	0.5				Pyrite decreases down hole with alteration.
363.6	367.6	DI	0.2	BB	1	BB	2	Dbs	BB	0.5							Sulphides are mixed in blebs filling voids following bedding/ porosity. Po after Sp after BDS
367.6	372.9		0	BB	0.1	BB	2	Dbs	DEN	0.2	Grnt	SUBH	3				sulphides being oxidized in area near limonite alteration.
372.9	375	BB	1	BB	0.1	BB	0.1	Grnt	SUBH	0.1							Most sulphides appear to be oxidised.
375	387.7	DI	0.1	DI	0.3	DI	0.5	Dbs	DEN	0.1	Ga	DI	0.1	Grnt	SUBH	10	
387.7	391		0		0		0	Ga	DI	0.1	Grnt	SUBH	10				Trace Galena in porosity, other sulphide appear to have been oxidised/ disolved away.
391	403.9	BB	0.2	BB	0.3	BB	0.4	Ga	BB	0.1	Grnt	SUBH	10	Py	FP	0.1	Sulphides are mixed in blebs filling voids following bedding/ porosity. Po, Sp, Py, Ga. Grnt decreaseing last 5m of interval to 3%
403.9	406.3	BB	0.1	BB	0.1	BB	0.2	Grnt	SUBH	2							Bleb similar to above but decreasing toward contact with Volcano Clastics
406.3	411.3	DI	1	DI	2		0										Increasing Py ans Sp over upper 1 m of unit locally 5% Sp.
411.3	431.7		0	DI	1	DI	1										Py is replace by Po with silica alteration, Py an Sp concentrated in mafic clasts, filling voids or as replacement, dissiminated through out core.
431.7	441.6		0		0	DI	0.5										Po is disseminated in clasts and in locallized areas
441.6	448.7	DI	0.5		0	DI	0.5										Disseminated intergrowths of Po and Py
448.7	450.2	BB	5		0	BB	1	Dbs	DEN	1							DBS mostly in 2 cm Qtz vein.
450.2	452.8	FP	0.7		0	FP	0.3										inter grown Py an Po in fractures, sub milimetric veins

Blackwater Project
Drill Summary - Mineralization

BW0319		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
452.8	458.8	BB	0.1		0	BB	0.1										Trace Py an Po
458.8	460.5	FP	0.5		0		0	Dbs	DEN	0.2							Pyrite in veins with 2 generations of carbonate on cream coloured and one white. both seam to me calcite.
460.5	476.6	VN	0.1		0		0										Py in carb veins surrounded by sericite alteration halos.
476.6	486.4	DI	0.1		0		0	Py	VN	0.1							Pyrite in veins and along fracture, locally trace disseminated.
486.4	496.5	FP	0.1		0		0										Trace Py on fracture

Blackwater Project
Drill Summary - Structure

BW0319

From (m)	To (m)	Structure	Strength	Comments
5	16	BRKZ	3	broken zone
16	134.5	JZ	3	fairly competant rock. Jointing ranges from 35-55
134.5	139	FL	4	fault zone, redrill. High torque when drilliing.
139	160	JZ	3	competant rock
160	184.8	JZ	3	joint sets are 45 and 30 deg to CA and 45 deg with respect to each other.
184.8	184.9	FL	3	8cm fault gauge with clasts up to 5mm. Anhydrite vein 1 cm post date fault gauge. Sliken fibres oriented parallel to strike of fault if Angle TCA is assumed dip.
184.9	189.9	JZ	3	joint sets are 45 and 30 deg to CA and 45 deg with respect to each other.
189.9	190.4	FZ	4	strong 6 cm gauge, <3mm clasts, moderat iregular fracture to second and third 2cm gauge. intermediate material possibly reconsolidated <5mm breccia.
190.4	193.5	JZ	4	joint sets are 45 and 30 deg to CA and 45 deg with respect to each other. numerous micro faults, along joint planes and locally tectonic puzzle breccia.
193.5	197.2	FZ	3	Several fault gauges 1-5cm 70 to 90 to CA, intervals of broken core, strong oxidation along fractures and faults gauge.
197.2	203.9	JZ	4	joint sets are 45 and 30 deg to CA and 45 deg with respect to each other. several micro faults <1mm 45 deg to CA strong chlorite alteration along fracture.
203.9	205.6	FZ	2	Several parallel fault gauges 35-55 deg to CA <1cm. Slicken fibers oriented ~orthogonal to CA.
205.6	210.1	JZ	3	core broken along joint 2 joint sets ~ othogonal to each other.
210.1	210.5	FL	5	35cm Fault Gauge. clasts < 1cm dirty brown, little associated alteration.
210.5	217	JZ	3	Joints @ 20 deg to CA have sliken fibers 70 to 90deg to CA rake angle.Moderate Chlorite alteration along fracture rare anhyrite minerization
217	218.7	BRKZ	2	broken core appears associated with Fault below.
218.7	219.1	FL	5	35 cm of fault gauge, 20 cm of well developed fault gauge <1cm clasts, 15 cm of angular psudeo puzzle breccia variable infilled by fine gauge and anhydrite. strong hemitie and limonite alteration along fractures and in gauge with I<30% anhydrite mixed in.
219.1	225.4	BRKZ	4	Core broken upper and lower section of braken more and show stronger hemitite alteration along fracture
225.4	226.9	FZ	5	70% fault gauge, rest is broken core. strong hemitie and limonite alteration along fractures and in gauge with I<30% anhydrite mixed in.
226.9	238.9	JZ	3	hemitite and anhydrite alteration along fracture.
238.9	243.6	FZ	3	A few fault gauges <5cm and broken core.

Blackwater Project
Drill Summary - Structure

BW0319

From (m)	To (m)	Structure	Strength	Comments
243.6	248.8	JZ	4	increasingly broken down hole
248.8	250.1	BRKZ	1	
250.1	254	BRKZ	3	
254	275.5	JZ	3	second set orthogonal to 30deg set, and third set at 70deg to CA
275.5	279.4	BRKZ	1	several 50cm intervals of broken core realted to low angle joints and oxidation along joints and fractures.
279.4	290	JZ	4	Short intervals of broken core moderately limonite altered
290	293.2	BRKZ	4	
293.2	301.5	BRKZ	1	alternating broken and jointed core, many joints are irregular, chlorite along fractures.
301.5	304.6	JZ	4	second set of joints at 10 deg to CA. Limonite alteration along fracture.
304.6	304.7	FL	4	10 cm fault Gauge, 50 deg to CA. Clasts are anglur and <1cm.
304.7	313.5	JZ	3	short interval of broken core @ 310m
313.5	323	JZ	5	Several set of joints failing, 60, 40, 30, 20, 80
323	333	BRKZ	3	Fracture associated with alteration and faulting.
333	338	BRKZ	4	
338	345	BRKZ	1	
345	360.5	JZ	2	Joints at 30 and 45
360.5	361.9	FZ	3	10cm fault gauge 45 deg to CA
361.9	373	JZ	2	secind set locally being exploited by veins.
373	280.5	BRKZ	1	Intermeitant broken core associated with stronger Limonite alteration.
380.5	387	JZ	2	
387	390.7	BRKZ	1	Intermeitant broken core associated with stronger Limonite alteration.
390.7	433	JZ	3	Joint sets at 45, 20 and 10 deg to CA, locally broken core associated with Chlorite alteration.
433	435	JZ	5	
435	438	JZ	2	
438	439.5	BRKZ	3	
439.5	449	JZ	3	
449	449.1	FL	3	Angular fault gauge, with Qtz, carb, Py vein along fault trace.
449.1	451.4	JZ	3	

Blackwater Project
Drill Summary - Structure

BW0319

From (m)	To (m)	Structure	Strength	Comments
451.4	451.6	FL	4	fault gauge clasts less than 2mm. undulary contacts.
451.6	453.6	BRKZ	4	core intermintantly competant and broken. 50 cm core missing at 452.7m
453.6	476	JZ	4	joint sets at 30, 45 and 60.
476	478.4	FZ	5	20 cm fault Gauge @ 475m
478.4	482.9	JZ	2	
482.9	484	FL	2	Broken Core assocaited with Fault. 1 cm fault gauge with numerous minor splays
484	496.5	JZ	3	Joint sets at 20 and 60

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Blackwater Project
Drill Logs

Hole ID:	BW0320	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376101.59
Depth (m):	379	Date Started:	16/01/2012	Casing Size:	HWT	Northing:	5893299.84
Azimuth:	0	Date Completed:	23/01/2012	Casing (m):	44.5	Elevation (m):	1510
Dip:	-90	Logged By:	KCh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	248	-88
104.5	247	-87.1
149.5	277.7	-86.6
206.5	247.6	-87.3
251.5	253.3	-87.1
257.5	245.3	-87
299.5	306.8	-87.5
350.5	237.6	-87.5

Blackwater Project
Drill Summary - Lithology

BW0320

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	43	OB							
43	53.7	VC	volc	LAP	M	GRY	DEP	GR10	OXIDE: Sub rounded clasts that are almost completely replaced by chl. Clasts vary in size from 2mm-8cm in size, but majority are 2mm. Majority of clasts are mafic, with sporadic felsic clasts. Some gouge and clay areas.
53.7	108.4	AND	por	FA	D	GRY	DEP	GR30	Dark grey, with small white phenocrysts (feldspars altered to clay?). Microfractures throughout the rock filled with carbonate. Weak brecciation from 83-83.5m, 100.7-101.8m with fractures filled with carbonate.
108.4	144	AND	flwbx	LAP	M	GRY	DEP	GR10	Varying alteration styles throughout, creating a plethora of textures, of meter scale. Localized brecciation of the rock, also m scale. Breccia appears to be in place.Clasts, (xenoliths?) of rock sporadically throughout.
144	203	AND	amg	LAP	D	GRY	DEP	GR30+	Dark grey andesite with distinctive amygadoidal texture. Phenocrysts are also present, though sometimes difficult to differentiate between phenocrysts and amygdules. Large fault from 164.4-189.5m.
203	379	AND	mas	LAP	D	GRY			Medium to dark grey andesite, massive. Locally porphrytic, decimeter to meter scale. Low angle veinlets prominant (carbonate). From 222-229, there was an influx of a silica rich fluid that lightened the core in colour significantly, as well as brecci

Blackwater Project
Drill Summary - Alteration

BW0320		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	43	O		0		0		0		0							OVB
43	51	O	CLST	3	PATC	2		0	PATC	1	HM	PERV	2	LIM	PERV	3	Chl and limonite dominant alteration styles, with minor hemaitite and sericite in veins and clasts throughout.
51	53.7	O	PERV	2	PERV	4		0	PERV	1	LIM	PERV	4	HM	PATC	2	Strong clay alteration, core is barely consolidated. Strong limonite alteration as well, pervasive throughout, but hematite is patchy, mm sized specks.
53.7	74	O	PATC	3	PATC	1		0	PATC	1	LIM	PERV	3	HM	PATC	2	Chl alteration is patchy, in decimeter scale areas, often associated with biotite alteration. Although it is also present in andesitic clasts. Clay alteration of phenocrysts, speckled throughout.
74	84.7	O	PATC	1		0	PATC	2		0	LIM	FC	2	CARB	FC	2	Silicified in areas, dec scale throughout. Minor limonite in fractures and in veins.
84.7	99.2	T	PATC	2	FC	1	PERV	1	FC	2	LIM	FC	1				Stronger carbonate, chl and clay alteration due to faulting
99.2	108.4	T	PATC	1	FC	1	PERV	3	FC	1	LIM	FC	2				More prominant limonite alteration than previous section. Rock is silicified, pervasive. Minor sericite alteration in carb wisps.
108.4	118.2	T	MTRX	2		0	MTRX	2	FC	1	LIM	FR	2	HM	MTRX	3	Start of varying alteration styles in the andesite. A lot of hematite (?), very fine grained reddish purple in the matrix, along with chl. Limonite concentratin on fracture surfaces, moderately silicified. Speckled carbonate alteration 113.4-113.5m, very
118.2	125.9	T	PERV	3	PERV	3	PERV	1	PERV	2	LIM	FC	3				Bleached andesite, much lighter in colour, with small specks of andesite (unaltered?) with very clay altered matrix. Limonite on fracture surfaces, and slightly pervasive into the rock.
125.9	129.9	T	CLST	2	PATC	2	PERV	2		0	HM	CLST	2	CARB	FC	1	Very iron rich (red in colour), concentrating in the matrix. Chl alteration in mafic clasts. Some alteration halo around clasts, mm in size, black. Clay alteration concentrating in faulted areas.
129.9	130.5	S	CLST	1		0	AMYG	3		0							Prominant Amygdules, cm in size. Irregular in shape. Some chl in mm scale clasts.

Blackwater Project
Drill Summary - Alteration

BW0320		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
130.5	135.7	S	MTRX	3		0	MTRX	1	FC	2	HM	MTRX	2				Hematite, chl and silicification in matrix. Sericite on fracture surfaces.
135.7	137.4	S	MTRX	2	PATC	1	CLST	3	PATC	1	HM	MTRX	3	SIL	AMYG	3	Influx of chl and sil rich fluid. Amygdules filled with silica.
137.4	144	S	MTRX	3	PATC	1	PERV	3	PATC	1							Silica rich fluid pervasively altering the rock, as well as in concentrated patchy blebs thorughout.
144	164.4	S	MTRX	3	CLST	1	PERV	3	AMYG	1							Weak sericite alteration surrounding the outside of sporadic amygdules. Chl alteration distinctive in matrix, flowing around the amygdules and phenocrysts.
164.4	189.5	S	PERV	2	FC	2	FC	3	FR	1	CARB	AMYG	2				A silica rich fluid locally flooded areas of the fault (dec scale) and is filling microfractures. Graphite rich slicken surfaces. Clay alteration is also filling microfractures thourhgout the rock, but in also abundant on fracture surfaces. Chl alteration
189.5	203	S	MTRX	2	FC	1	PERV	3		0							Silica rich fluid flooding through the matrix.
203	222.6	S	MTRX	1	FC	1	PERV	4		0							Silicified andesite, with minor chl alteration. Overall, unaltered.
222.6	227	S	CLST	2		0	PERV	5	MTRX	1							Influx of silica rich fluid, brecciating the rocks from 226-227m, but pervasive throughout the rest of the unit. Chl alteration in phenocrysts.
227	233.5	S	CLST	1	FC	2	PERV	4	VN	1							Strong pervasive silica alteration. Minor clay alteration on fracture surfaces, and microfractures in the core.
233.5	236.8	S	FC	1	FC	3	PERV	2	FC	2							Dominantly clay alteration due to faulting, with weakly pervasive silica aleration
236.8	247	S	MTRX	2		0	PERV	4	FC	1							Pervasive sil alteration
247	256	S	CLST	2	FC	1	PERV	3		0	SIL	AMYG	3				Silica filling amygdules with minor chl alteration.
256	260	S		0		0	PERV	5		0	ALB	CLST	1				Bleached/leached andesite. Very silica rich
260	272	S	CLST	1	FC	2	PERV	4		0	HM	CLST	1				Very silicified, pervasive Minor hermatite.
272	281.5	S	FC	1	CLST	1	PERV	4		0	BIOT	OP	1				Bleached/leached section with strong silica alteration.
281.5	292	S	MTRX	1	FC	3	PERV	2	FC	1	CARB	FC	1				Fracture controlled carbonate alteration. Clay alteration also in fracture surfaces, weakly faulted in areas

Blackwater Project
Drill Summary - Alteration

BW0320		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
292	312.5	S	FC	1	VNHL	2	PERV	4		0	KSPR	VN	1	CARB	FC	1	Small areas bleached/leached, decimeter scale. Pinkish clay alteration surrounding rare veins.
312.5	333.2	S	CLST	1	FC	1	MTRX	3	MTRX	2	BIOT	MTRX	1				Sil/ser altering matrix leaving a blueish white colour in place Minor biotite.
333.2	339	S	VNHL	2	VNHL	1	PATC	3	VNHL	2	CARB	FC	1				Patchy silica rich fluid influx. Carb/clay/chl altering areas around small veins, as well as being patchy throughout the core
339	355	S	VN	2		0	PERV	4	CLST	1	CARB	FC	2				Talc, chl, carb veins Carb filling microfractures abundant and filled with carbonate. Silica is pervasive.
355	376	S	AMYG	1	AMYG	2	PERV	4	AMYG	1	CARB	AMYG	4	BIOT	CLST	1	Amygdules prominant, filled with carbonate, chl and clay. Matrix is silicified.
376	379	S	CLST	2	PERV	3	VN	1	PERV	2	CARB	FC	2				Very soft, with brown clasts. Becomes brecciated, with carbonate infilling.

Blackwater Project
Drill Summary - Mineralization

BW0320		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	43		0		0		0										OVB
43	53.7		0		0		0										Oxide facies, only limonite and hemaitite.
53.7	84.7		0		0		0										No sulphide mineralization seen.
84.7	99.7	DI	0.1	BB	0.1	DI	2										Core is very magnetitic, though no pyr. Rare blebs of sph.
99.7	108.4	DI	0.1		0	DI	2										As above. Core is very magnetitic, with trace py.
108.4	118.2	DI	0.1		0	DI	0.5										Trace mineralization of py and po
118.2	125.9	DI	0.5		0	DI	0.2										Py sprinkled throughout the core, concentrating in the bleached sections.
125.9	130.5	FP	0.5		0	DI	0.1										Py filling microfractures.
130.5	137.4	DI	0.1		0	DI	0.1										Trace mineralization of py and po
137.4	144	DI	0.1		0	DI	0.1										Trace py and po mineralization throughout.
144	158.5	BB	0.3		0	DI	0.2										Disseminated po, in clusters as well as present in the center of amygdules. In amygdules the po is often associated with py.
158.5	164.4	VN	1		0	DI	0.2										Mainly py, sooty, present in veins and veinlets.
164.4	175	VN	0.5	VN	0.1	DI	0.1										Blebby py present in veins, associated with trace sph
175	189.5	VN	1	VN	0.1	DI	0.2										Blebby py in veins and filling microfractures.
189.5	193	DI	0.3		0	DI	0.2										Weak overprinting of py in some areas.
193	203	DI	0.5		0	DI	1										Py present disseminated as well as filling microfractures. Po disseminated throughout, concentrating in clusters
203	217.6	DI	0.3		0	BB	1										Blebby po associated with an influx of qtz.
217.6	234	VN	1	DI	0.1	BB	1.5										Po in blebs, on fracture surfaces, disseminated and in veinlets. Py concentrates in veinlets.
234	236.8	DI	0.3		0		0										Disseminated py, mianly on fracture surfaces. Few sulphides due tothe faulting.
236.8	247	VN	2		0	DI	0.5										Significant increase sulfides. Po and py associated with veiningand microfractures, but radiates from those areas into the core.

Blackwater Project
Drill Summary - Mineralization

BW0320		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
247	256	CR	1	DI	0.1	CR	2										Po replacement of sil clasts in the nucleus of the amygdules, as is py, but not as prominant
256	260.2	FP	1.5		0	BB	4										Blebby po abundant. Py concentrating in wisps, filling microfractures, giving a slightly green tinge to the py.
260.2	272	BB	1		0	BB	2										blebby po and py. Po follows an influx of silica rich fluid towards the end of section
272	282.1	FP	1		0	BB	5										Large blebs (cm scale) throughout. Often the clusters are combinations of po and py
282.1	292.2	DI	0.5		0	FP	1										Weak fault zone, few disseminated po blebs and py.
292.2	307	BB	1		0	BB	3										Blebby po and py. Py also present as a veinlet and in veins.
307	320	DI	0.5		0	DI	3										Po and py disseminated throughout. Po also on fracture surfaces
320	332.5	DI	0.5		0	DI	3										Po filling microfractures, as well as disseminated throughout.
332.5	339	BB	4		0	BB	6	Cp	DI	0.1							Significant increase in sulphides. Po and py are intergrown in large blebs (5x2cm). Po is also disseinated throughout, and filling microfractures. Trace chalcopyrite is associated with po mineraliztion in carbonate/clay/chl altered areas. Py wisps th
339	355	VN	1.5		0	DI	0.5										Py in veins, as well as microfractures (abundant in this area).
355	361	DI	0.1		0	CR	1										Disseminated po, present in microfractures as well as in amygdules.
361	379	FP	0.3		0	CR	1										Py concentrated in filling microfractures. Po replacing the amygdules.

Blackwater Project
Drill Summary - Structure

BW0320

From (m)	To (m)	Structure	Strength	Comments
51	52.75	FL	2	Gouge, strong clay alteration.
52.75	58	JZ	1	Weakly jointed, many orientations
58	61	FZ	1	3 small ad weak faults throughout, as determined by gouge.
61	84.7	JZ	2	Very consolidated, but becomes more fractured towards end of section.
84.7	99.2	FZ	3	\low angle, very faulted with abundant calcite in fractures and in rubble.
99.2	125.9	JZ	1	Consolidated rock, with few fractures, with limonite staining.
125.9	126.4	SZ	3	Distinct alteration front/shear. Distinct change in alteration, and contact is vuggy.
127.6	127.9	FL	5	Horizontal fault, with compression. Mainly clay with some fault breccia clasts, lapilli sized.
127.9	164.4	JZ	1	Weakly jointed, mainly low angle, but few high angle breaks as well.
164.4	189.5	FZ	4	Large fault zone with few consolidated pieces unaffected by faulting (carb influx in microfractures), slickenlines present on low angle fractures. Consolidated pieces range from cm to 10cm in size.
189.5	234	JZ	2	Weakly jointed area
234	236.8	FL	3	Distinctive UC, rubble and gouge throughout.
236.8	283	JZ	2	Weakly jointed. Weakly brecciated before bleached zone (271-272m), large clasts.
283	292	FZ	1	Weakly faulted, pseudo healed, some clay alteration present.
292	340	JZ	1	Low angle joints, abundant stringers throughout.
340	355	BRKZ	1	Not broken, but full of microfractures and not as competent as above areas.
355	376	JZ	1	Few joints, very consolidated.
376	379	BRKZ	3	Weakly competent broken zone, brecciation dominanent.

Blackwater Project
Drill Logs

Hole ID:	BW0321	Tenure #:	515810	Hole Diameter:	HQ	Easting:	376026.01
Depth (m):	451.76	Date Started:	15/01/2012	Casing Size:	HWT	Northing:	5892823.91
Azimuth:	270	Date Completed:	28/01/2012	Casing (m):	78	Elevation (m):	1575
Dip:	-60	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	268	-62
100	267.3	-63.8
150	266.9	-64.8
200	267.3	-65
250	267.2	-65.2
300	267.1	-65.8
350	266.5	-65.8
400	269.2	-65.5
451.5	270.4	-65

Blackwater Project
Drill Summary - Lithology

BW0321

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	77	OB							
77	268.5	FT	lam		VL	GRY			Felsic Tuff faintly laminated locally with small clasts and crystals locally <or=to 1-2mm sericite/clay replaced. Lolcally FT appears Brecciated and/or undulating, proposed maybe slumping and/or debris flow reworking the rock. Felsic Lapilli Tuff cla
268.5	292.1	AND	amg		D	GRY			andesite, locally amygdaloidal, plag-phyric throughout; local tuffaceous intervals with sericite increasing in the matrix of these sections; fault zone from 292.5 to 318m depth with strong chlorite/clay along fractures
292.1	325.5	AND	fltgge						same as above but fault zone
325.5	364.8	AND	por		D	GRY			andeste, mostly tuffaceous, some locally amygdaloidal and plag-phyric sections
364.8	371.9	AND	t		D	GRY	FLT	GR5	andesite with tuffaceous texture, matrix supported, biotite alteration in some clasts,
371.9	377	AND	fltgge		D	GRY			fault
377	379	AND	t		D	GRY			same as above
379	388	AND	t		D	GRY			andesite, mostly tuffaceous, intervals of re-healed brecciated andesite
388	399.9	AND	por		D	GRY			andesite, locally plag-phyric, sulphide veinlets with py>sph>carbonate, also some carbonate>talc>chlroite>>py veinlets; increase in sulphides with sph>py>po>>gn
399.9	408	AND	bx		D	GRY			andesite, local zones of re-healed breccia
408	413.5	VC	ms		M	GRY			polymictic volcanoclastic, mafic clasts>felsic clasts (75:25)
413.5	417.7	VC	fltbx		M	GRY	FLT		fault zone
417.7	451.8	AND	por		D	GRY			andesite, porphyrictic textures, carbonate+talc veins throughout

Blackwater Project
Drill Summary - Alteration

BW0321		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
77	92	O	PATC	1	REP	2	PERV	4	PATC	1	CLY	PATC	4				Sericite locally replaces small grains <or=to 1mm with clay, and is patchy with chlorite locally. Silica is pervasive. Local clay alteration zones, where rock has completely gone to clays and oxides, predominatly hematite.
92	108.9	O	PATC	1	REP	2	PERV	4	PATC	1	CLY	INFILL	2				Clay infills small blebs locally with orange-red oxidation (goethite vs hematite). sericite/chlorite occurs in small patches, of GM alteration.
108.9	127.2	O		0	REP	3	PERV	4		0	ALB	SPHL	3				Black potassic (Albite?) Halo surrounding Py at 119m.
127.2	138	O		0	REP	2	PERV	4		0	CLY	INFILL	3	ALB	SPHL	3	Clay replaces small grains (clasts/crystals?), and infills vugs.
138	154.5	T		0	REP	3	PERV	4		0	CLY	INFILL	3	ALB	SPHL	3	clay infills small vuggy blebs, with sulphides.
154.5	169	T		0		0	PERV	4		0	ALB	OP	1				black potassic (albitic?) halos surrounding blebs of Py/Galena, at 164.3m white albitic alteration partially overprints the black potassic alteration halos (albitic?).
169	183	T		0	REP	3	PERV	4		0							Clay alteration of small grains (unsure, original component could be devitrifying glass shards, replacing crystals of feldspar or even clasts).
183	185.8	T		0	FR	3	PERV	5		0	ALB	SPHL	2				bright white clay on FP's. Pervasivley silicified 5, surrounding patches/blebs of transparent silica/Qtz.
185.8	186.2	T		0	PERV	5	PATC	2		0							Entire rock has gone to Bright white clay, partially competent, and laminated texture preserved. Patches of silicification still present.
186.2	188.5	T		0	PATC	4	PERV	4		0	ALB	SPHL	1				Patchy pervasive clay alteration, and patches of silica that offset such alteration. Overall reock is pervasivley silicified.
188.5	197.2	S		0	FR	1	PATC	3	PATC	3	ALB	SPHL	4				Weak white clay on FP's locally. patchy silicification/sericitization intermittent with eachother, locally follows laminations, locally overprinting white-eggwhite albitic sulphide halos.
197.2	197.5	T		0	PERV	5		0	PERV	3	TALC	PERV	3				Hm staining on FP's. L.Green Sericite alteration with clay pervasivley.

Blackwater Project
Drill Summary - Alteration

BW0321		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
197.5	214	S	FR	1	FR	3	PERV	4	PERV	2		SPHL	4				Black soft unknown Zn rich alteration mineral (Altered Sp?) haloing sulphides (Black metal oxide?). Sericite pervasive with silica. Chlorite locally assoc with clays in FP's.
214	222.3	S	PATC	3	FR	3	PERV	4	PERV	2		SPHL	4				Sericite and Silic Pervasive. Locally chlorite>sericite patches that are soft and partly translucent. White clay partially coats FP's, and replaces small grains locally.
222.3	239	S	FR	1	FR	2	PERV	4	PATC	2		ISSOLL	4				chlorite coating FP's weakly. Patchy Sericite in small fracture filling, blebs, folowing laminations and alteration masses sericite>chlorite. black metal oxides DI. Silica strongly sericite weakly pervasive. Black metal oxide as blebs haloing sulphides, a
239	245.9	S	FR	2	FR	2	PERV	4	PATC	2							
245.9	268.5	S	PATC	2	FR	1	PERV	4	PATC	2							Chlorite>Sericite in patches. perv silicified, clay on FP's and locally chlorite grown in slickens on a 30dtca fracture at a 60 degree rake.
268.5	279.7	S	FR	3	PATC	2	AMYG	3	PATC	2							patchy sericite and clay alteration throughout, silica in amygdules, moderate chlorite along fractures
279.7	292.5	S	FR	3	PATC	2	AMYG	2	MTRX	3							increase in sericite in matrix throughout tuffaceous inteval
292.5	325.5	S	FR	4	PATC	2	AMYG	2	PATC	3	CAL	VN	1				clay patchy throughout (overall softish); sericite/chlorite annealed intervals, strong clay due to fault zone
325.5	342.7	S	FR	2	PATC	2	PERV	2	PERV	3	SIL	AMYG	1				sericite pervasive throughout, some stronger sericite as vein halos, weak pervasive silca, as well as in amygdules; weak chlortre on fracture planes, weak clay along some fractures
342.7	364.8	S	FR	2	FR	1	PATC	2	PATC	2	SIL	AMYG	1				weak sericite+silca patchy throughout, weak chlorite and some clay along fractures
364.8	370.8	S	FR	2	FR	1	MTRX	2	MTRX	3							sericite+silica alteration in matrix, weak clay ateration in some clasts, weak chlorite along fractures

Blackwater Project
Drill Summary - Alteration

BW0321		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
370.8	388	S	FR	3	FR	1	MTRX	2	MTRX	3							chlorite along fractures, slick n slides at 371m on a fracture that is 30 dtca, and slicks have a rake angle of 40 degrees, carbonate + talc veins throughout
388	417.7	S	FR	2	PATC	1	MTRX	1	MTRX	3	CARB	VN	1	TALC	VN	1	carbonate and talc in veinlets, sericite and silica alteration in matrix, mechanical clay intreases fro m 399.9 to 414 as it is re-healed/ partly annealed breccia
417.7	451.8	S	PATC	3	VNHL	1	PATC	2	PATC	2	CHL	FR	1	TALC	VN	1	carbonate+talc veins throughout intervals, patchy chlorite throughout, weak chlorite along fractures, patchy silica+sericite alteration throughout, clay +sericite alteration haloes surroundine veinlets

Blackwater Project
Drill Summary - Mineralization

BW0321

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
77	92		0		0		0	Goe	FP	1	Goe	FP	5	Hm	FP	0.5	Black Goethite coats FP's strongly, while orange goethite stains the rock in pervasive patches around fractures and veinlets. Hm locally occurs as pervasive alterations around DI's and veins, but more predominatly as clay alteration in patchy clay al
92	105		0		0		0	Goe	FP	1	Goe	FP	5	Hm	DI	0.1	Hematite infills with clay locally, goethite may substitute for hematite. Otherwise hematite replaces DI's.
105	108.1		0		0		0	Goe	FP	4	Goe	FP	1	Hm	FP	30	Hematite strongly Fracture controlled alteration occuring pervasive around FP's
108.1	119		0		0		0	Goe	FP	0.5	Goe	FP	4				D.Brown Goethite coats FP's, and fills partially fills vugs.
119	119.3	BB	0.5		0		0	Goe		1	Goe	FP	2				vuggy Py haloed by black Fe-Oxides (Goethite).
119.3	136.8		0		0		0	Goe	FP	1.5	Goe	FP	6	Hm	FP	0.5	fracture controlled Hm. Orange Oxides (Goethite staining is also fracture controlled as well as constituent of fault gouge.
136.8	156.3	BB	0.5		0		0	Ga	BB	0.1	Goe	FP	1	Goe	FP	3	vuggy Py haloed by black Fe-Oxides (Goethite), with intermittent zones of stronger limonite alteration (Orange Goethite). Galena occurs as trace blebs surrounded by black Fe-Oxides (Goethite).
156.3	162.1	DI	1.5		0		0	Py	BB	0.5	Goe	FP	0.1	Goe	FP	2	DI Py locally, DI and Blebs of Py locally haloed by black Fe-Oxides.
162.1	169	DI	0.5		0		0	Py	BB	0.5	Goe	FP	0.5	Ga	BB	0.5	black metal oxide halos around Py and galena blebs, one halo is overprinted by albitic alteration partially, locally Euhedral DI Py mostly altered to black metal Oxides. Orange-Brown Goethite coats FP's.
169	181	DI	1	DI	0.5		0	Dbs	FP	0.1	Goe	FP	0.5				Sooty DI Py, and Sp. Sp, Py also occurs in sooty veinlets. Fracture controlled dendritic Py.
181	188.5	DI	1	SP	0.5		9	Dbs	FP	0.5	Goe	FP	0.5				Sooty DI Py and weak Sp. Sp locally specks trailing laminations. Py and Sp veined in varying amounts.

Blackwater Project
Drill Summary - Mineralization

BW0321		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
188.5	197.2	DI	1	DI	5	BB	0.5	Ga	DI	0.1	Dbs	FP	1				Sp DI and patchy DI stretched out along laminations, locally as abundant as 20% and as low as 1%. Sooty Py DI, locally and fills fractures as DBS that trails laminations locally. Off-white albitic sulphide halos surround Py locally. Po blebs and DI l
197.2	197.5	SP	0.1		0		0	Hm	FP	1							trace specks of Py within clay. Hm/clay staining on FP.
197.5	200	DI	0.5	DI	1.5		0										patchy Sp DI's and bright bronze Py DI's.
200	215	DI	3	DI	5		0										patchy L.Red Sp DI's, and bright bronze Py DI's locally Euhedral. Assoc with a soft, black metal oxide.
215	220.6	BB	2.5	DI	2		0										Blebby>DI>VN Py. Sp DI>Blebby and massive.
220.6	226	DI	1	DI	2.5		0	Ga	FP	0.1	Cp	FP	0.1				Galena and CP locally assoc on FP's. Py and SP DI.
226	228	VN	1	VN	5		0	Dbs	FP	2							Dbs (Py) filling fractures. Black crystalline Sp veined. Red DI's of Sp.
228	242	DI	1	DI	2		0	Ga	VN	0.1	Cp	FP	0.1	Dbs	FP	0.1	Galena in hairline Py veinlet, CP on FP.
242	243.6	DI	2	DI	0.5		0										DI Py and Sp.
243.6	245.9	DI	5		0		0										Finely DI Py.
245.9	248	MA	10		0		0										Massive Py, also DI throughout.
248	251	DI	10		0		0										Finely DI <or=to 0.5mm Py
251	252.9	DI	3	DI	2		0	Dbs	FP	1							DI Py and Sp, Py large DI's and fine <0.5mm. small massive blobs of Py. Dbs occuring in stringers at 40dtca.
252.9	254	DI	20	MA	5		0	Cp	DI	0.5							Tarnished CP in amongst Massive Py and Sp. Py DI finely throughout. Euhedral Py and Sp assoc with massive Sp.
254	268	DI	2.5		4.5		0										TS~7%; disseminated sphalerite; py as disseminations as well as in little veinlets
268	279.7	VN	1	DI	0.2		0	Ga	FP	1							TS~1-1.5%; sulphides drop significantly in andesite. py stringers throughout, trace galena on fractures
279.7	301.2	BB	1	BB	1		0.8	Ga	VN	0.5							TS~3%; py as stringers and disseminated throughout in mixed sulphide blebs with sphalerite, po is replacing silica amygdules

Blackwater Project
Drill Summary - Mineralization

BW0321		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
301.2	325.5	VN	1	DI	0.5	DI	1	Ga	FP	0.5							TS~2.5%; py disseminated throuhgout also in mixed blebs with sphalerite, po disseminated throughout and in silica amygdules
325.5	334.5	DI	2	DI	1	DI	1.5	Po	CR	0.5							TS~5%, disseminated py and some as stringers, po in little blebs throughout as well as within silica amygdules, sph disseminated throughout
334.5	348.3	DI	1.5	DI	2	DI	1										TS~5%, fine disseminations of py and some py stringers, sphalerite dissemianted throughout, po within silca amugdules and as blebs throughout
348.3	357.1	DI	1	DI	0.5	DI	1										TS~2.5%, sulphides decrease from previous interval, py in stringers and as fine disseminations, sph also as fine disseminations and py in little blebs throughout
357.1	364.8	DI	0.8	DI	0.5	BB	2										~3.5% ts; BB of bright po, fine disseminations, sphalerite disseminted locally
364.8	370.8	DI	1	CR	1	DI	1	Sp	DI	0.5							TS~3% with disseminated py and py in stringers, sph disseminated thorughout and some as clasts replacement, po disseimated and some as clasts replacement
370.8	371.3	MA	15	MA	10	MA	5										TS~30% with massive, py, sph, and po; large almost vein but not quite vein, throughotu section
371.3	388.1	DI	1.5	DI	2	CR	2										TS~5% spaleraite as clasts replacement and disseminated, py in little stringers and dissemianted, po as little brassy blebs within clasts
388.1	399.9	VN	2	VN	1	VN	2	Po	CR	0.5							~4%TS; with py>po>>sph in veins up to 2cm wide, some py. sph, and po as disseminations
399.9	406.2	DI	2	DI	3	DI	1	Ga	DI	0.2							TS~5% , disseminated sph>py>po and trace gn throughout
406.2	427.5	VN	1	VN	1	DI	0.5	Ga	FP	0.5	Cp	VN	0.2				TS~2-3% with suphides dominantly in little veinlets, some fine disseminations of brassy pyrite and sphalerite, cpy on fp and in veinlets, gn along fracture planes
427.5	451.8	VN	0.8	VN	1	DI	0.5	Ga	FP	0.5	Cp	FP	0.1				same as previous interval, slightly less sulphides

Blackwater Project
Drill Summary - Structure

BW0321

From (m)	To (m)	Structure	Strength	Comments
77	79.6	BRKZ	5	broken zone, rich in clay gouge/oxides. becomes more competent with depth.
79.6	89.1	BRKZ	2	broken zone, with alteration clay patches conpletely gone to clay/oxides (81.5 and 84m). Small 2 cm fault occurs at 87.95m at 75 dtca.
89.1	90.9	FL	2	broken rock, locally rich gouge that is rich in clay and limonite oxidation.
90.9	108.3	BRKZ	1	broken, at odd angles, some competent fractures, >50% broken.
108.3	108.9	FL	3	fault, broken rock, and minor limonitic gouge.
108.9	111.3	JZ	4	joint zone ~20% broken fractures.
111.3	114.5	BRKZ	3	broken fractures, and partially healed broken rock.
114.5	116.3	JZ	2	
116.3	119.4	BRKZ	3	broken zone, rock broken , and competent rock composed of healed breccia (healed fault?)
119.4	120	BZ	2	well defined healed fault breccia that runs the length of the core, 3cm wide.
120	122.6	BRKZ	3	broken rock, and healed competent fractured rock.
122.6	135	FZ	3	fault zone, encoporating 3 faults (broken rock and minor limonitic gouge) and competent healed fractured rock (ancient healed faults?)
135	161.7	JZ	3	> 50% measureable fractures, at 30,40,50,55,60,70 dtca. averaging at 55
161.7	163.5	FL	2	fault broken rock and minor limonitic gouge.
163.5	165.3	JZ	4	well planed fractures, eposing unaltered Euhedral DI Py.
165.3	165.7	BRKZ	4	broken zone, no gouge.
165.7	170.2	JZ	3	jointed getting stonger with depth, at 40,45,70 dtca.
170.2	259.6	FZ	4	Fault zone, beginnign with partially healed goiuge fault, and leading into predominatly fragmental rock, locally broken 5, and locally defineable fractures/more competent. Locally chlorite grown on slickens (@246.9m chlorite slicken rake at 60 degrees on
259.6	292.1	JZ	3	joint set, joints dominantly at 45-50ish dtca, some at closer to 80 dtca, local broken zones up to 20cm throughout
292.1	325.5	FZ	4	Fault zone, locally annealed goiuge fault, locally broken 5, and locally defineable fractures/more competent sections.
325.5	330	JZ	2	joint set, fractures are somewhat rough and jagged, majority at 45 dtca, some at 80
330	331.6	FZ	3	weakly faulted interval
331.6	335.2	JZ	3	joints at 45>80>30 dtca, one at 0 dtca...some joints rough and jagged,

Blackwater Project
Drill Summary - Structure

BW0321

From (m)	To (m)	Structure	Strength	Comments
335.2	342.7	FZ	2	fault zone with clay+chlorite+sericite annealed intervals, some fault gouge, and a couple competent pieces up to 20 cm throughout
342.7	367.5	JZ	3	joints 45>30>>80
367.5	370.8	BD	2	weak broken zone leading into a fault zone, jagged fractures
370.8	375.5	FZ	3	fault zone, chlorite+sericite gge/rock flour along fractures, a couple competent pieces up to 10cm
375.5	377	BRKZ	2	weak broken zone with some rock flour along fractures
377	388	BZ	2	re-healed breccia, some sections that are more annealed
388	400.5	JZ	2	pretty competent core, some fractures close to 80sih dtca
400.5	417.7	BZ	3	healed fault breccia, some pieces of competent core
417.7	422.4	JZ	3	competent core with joints 50>80
422.4	424.5	FZ	3	crushed fault zone, high clay due to mechanics of faulting
424.5	451.8	JZ	2	competent core with joints at 45>80>30

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Blackwater Project
Drill Logs

Hole ID:	BW0322	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375851.36
Depth (m):	328	Date Started:	17/01/2012	Casing Size:	HWT	Northing:	5893349.37
Azimuth:	0	Date Completed:	21/01/2012	Casing (m):	7.5	Elevation (m):	1525
Dip:	-90	Logged By:	TOl	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	93.5	-89.7
103	143.1	-89.7
154	128.9	-89.5
205	169.6	-89.8
265	30.8	-89.7

Blackwater Project
Drill Summary - Lithology

BW0322

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.5	OB							Overburden
5.5	9.1	FLPT	lpt	LAP	M	RD			Felsic lapilli tuff with 100% felsic clasts; leached sulphide sites
9.1	17.5	FT	bx	FA	M	YLW			Felsic tuff with localized brecciated sections, leached sulphide sites
17.5	22.35	VC	plm	BLOCK	M	GRN			Polymictic volcaniclastics with predominantly felsic clasts and a few mafic clasts; grades into FLPT interval???
22.35	33	FLPT	flwbnd	LAP	M	GRN			Some local banding in some sections at start of interval; some sections of lapilli tuff breccia towards end of interval ; 75% SA/SR felsic clasts
33	35.5	VC	plm	BLOCK	M	GRN			Intermediate to mafic polymictic volcaniclastics
35.5	44.8	AND	mas	CA	M	GRY			Massive characterized andesite
44.8	48.3	VC	plm	LAP	M	GRN			Faulted mafic volcaniclastics with fault/clay gge throughout interval
48.3	81.9	VC	plm	BLOCK	D	GRN			Felsic volcaniclastics at start of interval gradually grades to more mafic clasts
81.9	124	VC	plm	BLOCK	D	GRN			Felsic volcaniclastics with mafic clasts and felsic matrix grades into more blocky clasts with intermediate matrix; section of ~1.4m of andesite in between
124	137	VC	plm	BLOCK	M	GRY			Mafic volcaniclastics with about 1m section of andesite between; clasts become more blocky towards andesite interval below
137	147.5	AND	bx	CA	D	GRY			Andesite with local brecciated sections and some amygdules in sections
147.5	172.9	AND	amg	CA	D	GRY			Flow characterized andesite with some amygdules in sections and some local brecciated sections
172.9	199.7	AND	mas	CA	D	GRY			Massive textured andesite with some brecciated sections; calcite stockwork
199.7	227.2	AND	mas	CA	D	GRY			Andesite with massive texture and localized sections with andesite breccia; slight decrease in calcite stockwork
227.2	249	AND	mas	CA	M	GRY			Massive textured andesite with some calcite stockwork and sulphide veins/veinlets/hairlines
249	274.5	AND	mas	CA	D	GRY			Massive textured andesite; calcite stockwork
274.5	307.3	AND	bx	LAP	D	GRY	DEP	GR5	Andesite with massive texture and local brecciation in sections; increased calcite stockwork
307.3	308.1	VC	plm	LAP	D	GRY	DEP	GR10	Polymictic volcaniclastics with predominantly mafic clasts but some felsic clasts in the mix
308.1	310.6	AND	mon	LAP	M	BR	UNKN	SH	Monomictic andesitic volcaniclatics with small andesite clasts, porous felsic matrix
310.6	311.1	AND	bx	LAP	M	GRY	DEP	SH	Brecciated andesite

Blackwater Project
Drill Summary - Lithology

BW0322

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
311.1	314.1	AND	mon	LAP	M	BR			Monomictic andesite volcaniclatics with smaller clasts
314.1	319.2	VC	mon	LAP	M	BR	DEP	SH	Monomictic andesitic volcaniclastic at start of interval then grades to darker more mafic polymictic volcaniclastic
319.2	328	AND	amg	LAP	D	GRY			Andesite with localized brecciated sections and amygdules in sections

Blackwater Project
Drill Summary - Alteration

BW0322		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	17.5	O	OP	1	PATC	3	OP	4	OP	3							Oxide facies with moderate sericite as overprint and clay in patches; Goethite+Jarosite+Hematite present; strong silica overprint
17.5	32.6	T	FR	3	PATC	2	OP	3	CLST	3							Transitional facies with moderate sericite alteration (in clasts) and chlorite alteration (in some clasts and along fractures); Oxides still present along fracture planes and cracks
32.6	45.13	S	FR	3	FR	2	OP	3	CLST	2							Moderate alterations through interval
45.13	48.3	S	OP	4	PATC	3	OP	2	CLST	3							Strong chlorite overpint, some clay in patches/on fractures
48.3	74.71	S	CLST	3	FR	2	OP	3	OP	3							some chlorite alteration in clasts; silica overprint
74.71	91.8	S	FR	3	PATC	3	OP	3	CLST	1							Weak sericite in clasts
91.8	118.2	S	FR	4	PATC	3	OP	3	CLST	3							Strong chlorite alteration on fractures, slight increase from previous interval
118.2	131.5	S	FR	3	PATC	3	OP	3	OP	3							Moderate sericite and silica alteration as overprint, some chlorite on fractures
131.5	147.4	S	FR	2	FR	2	OP	3	AMYG	2							Some sericite alteration in amygdules; some clay and chlorite alteration on fractures
147.4	172.9	S	FR	3	FR	1	OP	4	VN	2	CAL	VN	2				Strong silica overprint, some chlorite on fracture planes as well as some calcite in veins/veinlets/hairlines
172.9	199.7	S	FR	2	FR	2	OP	3	VN	1	CAL	FR	4				Weak sericite alteration in veins, strong calcite on fracture planes
199.7	227.2	S	FR	2	FR	2	OP	3	PATC	1	CAL	FR	3				Moderate clay alteration in patches, less calcite on fractures than previous interval
227.2	249	S	FR	3	FR	3	OP	3	VN	2	CAL	VN	3				Some chlorite and clay on fractures, weak sericite in veins and some calcite in veins
249	274.5	S	FR	3	PATC	2	OP	3	VN	1	CAL	VN	2	ANK	MTRX	1	Weak sericite in veins and fractures, moderate chlorite alteration, some ankerite/iron carbonate alteration
274.5	302.8	S	FR	2	PATC	4	OP	3	VN	2	CAL	VN	4	ANK	MTRX	3	Strong clay alteration in patches and on fracture, increase in ankerite/iron carbonate alteration from previous interval, increased calcite in veins/stockwork

Blackwater Project
Drill Summary - Alteration

BW0322		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
302.8	328	S		0	INFILL	3	OP	3	VN	1	CAL	VN	3	ANK	MTRX	2	No chlorite alteration, very weak sericite in some veins, calcite in veins/stockwork, some on fractures and amygdules,moderate clay as infill/matrix

Blackwater Project
Drill Summary - Mineralization

BW0322		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	17.5		0		0		0										Oxide facies, no sulphides present; leached sulphide sites
17.5	33	SP	0.1	DI	0.5		0	Dbs	DEN	0.2							Trace Py found in specks; some disseminated sph in clusters, Some horneblend/biotite??? in areas where sph is seen
33	82.32	SP	0.1		0.3		0										Trace sulphides; Sph>Py, Py found in specks and some on fractures
82.32	147.5	FP	0.3	SP	0.1	VN	0.1										Trace sulphides; Py>Sph, Py crystals found in clusters on fracture planes; Some py+sph in hairlines, po found in veinlet
147.5	227.2	VN	0.3	VN	0.1	FP	0.1										Trace sulphides; py>po>sph, some py+po+sph in veinlets/hairlines, some py in specs and on fracture planes
227.2	249	VN	0.5		0	BB	0.3										Slight increase in sulphides; more py+po veinlets/hairlines sometimes associated with calcite veins/veinlets/hairlines; some nice py crstals in clusters along fracture plane, some pt+po in blebs
249	274.5	VN	0.5		0	FP	0.1										Some sulphides present in veinlets/hairlines and fractureplanes, py>po; some py in blebs
274.5	302.8	VN	0.3		0	VN	0.1										Trace po in blebs; some py and po in veinlets/hairlines, nice py crystals on fracture
302.8	322	DI	0.1		0	BB	0.5										Trace disseminated py; some po in blebs
322	328	BB	0.1		0		0										Trace py in calcite amygdules

Blackwater Project
Drill Summary - Structure

BW0322

From (m)	To (m)	Structure	Strength	Comments
0	13.27	BRKZ	4	Strong brokenzone with clay gge in sections
13.27	27	BRKZ	1	Weak brokenzone/not very broken up with some competent core
27	30.4	JZ	2	Weak to moderate joint set with wispy/jagged joints between 25-70dtca
30.4	33	BRKZ	5	Strong brokenzone/almost a weak fault with fault/clay gge in patches
33	37.3	JZ	1	Weak joint zone with poor wispy/jagged joints between 15-60dtca
37.3	45.13	BRKZ	2	Weak brokenzone with clay gge in sections and fractures
45.13	48.3	FZ	3	Moderate faultzone with fault/clay gge throughout
48.3	52.15	BRKZ	3	Moderate brokenzone with some clay gge in sections
52.15	65.27	JZ	3	Moderate jointset with joints between 20-70dtca
65.27	74.71	BRKZ	2	Moderate to strong brokenzone with competent core >0.5m
74.71	83.5	JZ	3	Moderate jointzone with joints ranging from 20-80dtca
83.5	84.6	FL	2	Fault/clay gge
84.6	86.5	BRKZ	3	Moderate brokenzone with section <0.5m of clay gge
86.5	89.5	BRKZ	5	Strong brokenzone almost a weak fault with clay/fault gge
89.5	100	BRKZ	3	Moderate broken zone with some clay gge sections
100	147	JZ	3	Moderate Joint set with some wispy/jagged joints; joints ranging from 15-70dtca
147	172.9	JZ	4	Strong joint zone with 1 local brokenzone <0.5m; joints btw 30-70dtca
172.9	173.8	BRKZ	3	Moderate brokenzone
173.8	182	JZ	2	Weak joint zone with local broken zone <0.5m, joints between 35-60dtca
182	190.7	BRKZ	3	Moderate broken zone
190.7	193.8	JZ	3	Moderate jointzone with joints at 30dtca, 50dtca and 80dtca
193.8	196.6	BRKZ	1	Strong brokenzone/not very broken up section
196.6	215.5	JZ	3	Moderate jointzone with localized brokenn zones<0.5m, joints btw 25-70dtca
215.5	218.6	JZ	2	Weak jointzone with wispy/jagged joints; measurable joints between 20-50dtca
218.6	222.9	JZ	3	Moderate joiontzone with joints between 15-60dtca
222.9	224.8	BRKZ	4	Moderate to strong brokenzone with clay gge on fracture and in section
224.8	249	JZ	2	Weak/poorly jointed zone with predominantly wispy/jagged joints between 20-80dtca; some clay gge on fractures

Blackwater Project
Drill Summary - Structure

BW0322

From (m)	To (m)	Structure	Strength	Comments
249	274	JZ	4	Moderate to strong joint zone with good joints between 35-80dtca
274	278.6	BRKZ	4	Strong brokenzone with some clay gge in sections and on fractures of competent core <0.5m
278.6	293.5	JZ	2	Weak jointzone with predominantly wispy/jagged joints between 30-75dtca
293.5	312.5	JZ	3	Moderate jointzone with local broken zones and joints between 25-80dtca
312.5	322	JZ	2	Weak joint zone with 1 local brokenzone+clay gge, wispy/jagged joints betweek 30-80dtca
322	328	JZ	3	Moderate joint zone with joints between 40-70dtca

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a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0323	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375452.38
Depth (m):	363.32	Date Started:	19/01/2012	Casing Size:	HWT	Northing:	5893247.96
Azimuth:	0	Date Completed:	26/01/2012	Casing (m):	0	Elevation (m):	1554
Dip:	-90	Logged By:	TJo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.3	270.7	-89.4
137.8	253.9	-89.4
183.5	254.4	-89.5
229.2	215.8	-89.7
275	326.5	-89.6
323.7	342.8	-89.4
363.3	7.1	-89

Blackwater Project
Drill Summary - Lithology

BW0323

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
20	52.6	FLPT	bx	LAP	L	GRN	UNKN		Pervasively highly brecciated FLPT / ?FT. Occasional laminated clasts. Clasts are dominantly highly angular, and where present matrix is fine felsic ash. Typically 60-90% clasts.
52.6	57.5	FT	bx	FA	D	GRY	FLT	GR30	Lower contact is gradational, composed of fine breccia of mixed composition, FT and Andesite.
57.5	95	AND	bx	FA	D	GRY	DEP	SH	Homogenous medium to fine brecciated andesite, only locally porphyritic, fragments typically 2-10mm wide and angular.
95	95.7	FT	bx	FA	L	GRY	UNKN	SH	Lower contact is marked by sharp decrease in core competency, FT is solid, rubbly beneath ?small structure.
95.7	104.3	AND	bx	FA	D	GRY	UNKN		Interval is very rubbly and incompetent, locally gougy, composed of chunks of both andesite and FLPT (could be called VC as does contain sizeable mafic clasts, but dominantly felsic)
104.3	117.4	VC	cgl	LAP	D	GRY	DEP	GR10	Frequently rubbly, intermittently brecciated. Clasts typically 0.5 4cm wide. Also ~60cm interval with felsic matrix.
117.4	120.2	AND	mas	FA	D	GRY	DEP	GR10	Only short intervals of porphyritic texture, lath shaped phenocrysts 2mm long. Typically massive - brecciated.
120.2	131.8	VC	cgl	LAP	D	GRY	DEP	GR30	Matrix varies in composition between mafic and felsic, and is typicall y composed of fine (<1mm) but discernible grains. Lower contact is increasingly gradational, with a greater proportion of rounded clasts, borderline epiclastic.
131.8	140.2	FLPT	t	LAP	L	GRY	FLT	GR10	~10% clasts, very occasional ?mafic clasts (obscured by mineralization & alt). Brecciation is restricted to 1m immediately above lower (faulted) contact.
140.2	157.9	VC	cgl	LAP	D	GRY	FLT	GR30	Largely clast supported, 80-95% clasts. ~5% felsic clasts, usually in form of quite well rounded quartz clasts. Interval is very rubbly, and occasional pieces are massive andesite - probably just large clasts. Lower 4m decreasing clast content, and i
157.9	170.4	VC	ms	LAP	M	GRY	UNKN		Interval is only 0-30% clasts in felsic tuffaceous matrix, clasts are mafic however, hence VC.
170.4	191.7	VC	ms	LAP	M	GRY	UNKN		Clast sorting, composition, and content is consistent (~40-60% clasts). Clasts size is bimodal, with majority between 3-15mm, but 5-7cm clasts also present throughout.
191.7	194.9	VC	ms	LAP	MO	GRY	DEP	GR10	~40% clasts, increasingly felsic matrix but still dominantly mafic clasts.

Blackwater Project
Drill Summary - Lithology

BW0323

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
194.9	201.9	VC	ms	LAP	M	GRY	DEP	GR10	Could easily be chloritized FLPT, uncertain, quite frequent dark green chloritic clasts, and occasional mafic clasts towards bottom of interval. Felsic matrix and dominantly felsic clasts throughout.
201.9	215.5	VC	ms	LAP	D	GRY	FLT	GR10	Upper 2m is clast supported, grades into a more matrix supported VC lower down. Lith two is represented by 3 distinct intervals of 95% felsic clastic material.
215.5	223.6	VC	fltbx	LAP	D	GRY	FLT	GR30	Pervasivley brecciated to gougey faulted VC.
223.6	237.8	VC	ms	LAP	D	GRY	DEP	GR10	Clast size is bimodal, ~50% are 3-6cm wide, remainder are 2-10mm wide forming matrix. Matrix fragments and larger clasts are a mix of felsic and mafic.
237.8	243	FLPT	lpt	LAP	MO	GRN	DEP	GR10	~2% mafic clasts. Frequent large clasts of laminated FT, locally brecciated. Mnay clasts are heavily chloritized/sericitized - could be originally mafic?
243	258	VC	ms	LAP	MO	GRN	UNKN		Essentially a FLPT with ~10-15% mafic clasts. Intervals is 40-50% clasts throughout. Frequent 3-6cm clasts of laminated FT.
258	266.4	FLPT	lpt	LAP	MO	GRN	FLT	GR30	~50-65% clasts, frequent 2-7cm wide clasts of laminated FT and massive FT in matrix of very fine ash tuff and centimetric clasts.
266.4	269	FLPT	fltgge	LAP	M	GRN	FLT	GR30	Faulted FLPT, ~80% of interval is brecciated with gouge matrix. Occasional undeformed pieces are identical to surrounding FLPT
269	280.5	FLPT	lpt	LAP	MO	GRN	FLT	GR30	~50-65% clasts, frequent 2-7cm wide clasts of laminated FT and massive FT in matrix of very fine ash tuff and centimetric clasts.
280.5	284.3	FLPT	fltbx	LAP	MO	GRN	FLT	GR30	Heavily brecciated, gouge rich felsic fault rock, an isolated 20cm interval of un-brecciated core shows FLPT, ~25% clasts, clasts 0.5-1.5cm wide in ash tuff matrix.
284.3	291.5	FLPT	ms	LAP	MO	GRN	FLT	GR10	~25% clasts, clasts are consistently 0.5-1.5cm wide in ash tuff matrix, large clasts are also consistenly sub-rounded. Lack the larger laminated FT clasts.
291.5	340.2	FLPT	ctls	LAP	MO	GRN	UNKN		95% of interval consists of fault breccia with gouge matrix. Most intense intervals show beginings of ?cataclastic shear fabric development defined by ?sulphide stringers wrapping around larger clasts.
340.2	344.7	VC	fltbx	LAP	D	GRY	FLT	GR10	Upper 2m are heavily brecciated, locally gougy, with deformation decreasing downhole. Where competent core is ~25-50% clasts, dominantly mafic but with 50% felsic matrix. clasts typically 1-2cm wide.
344.7	349	VC	ms	LAP	D	GRY	UNKN		70-80% clasts but still supported by matrix of fine felsic material and coarse sand sized mafic clasts. Clasts are 2-6cm wide.
349	355.7	VC	ms	LAP	D	GRY	DEP	SH	Felsic matrix, clasts 0.5-1.5cm wide, ~40% clasts

Blackwater Project
Drill Summary - Lithology

BW0323

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
355.7	357.8	VC	t	FA	D	GRY	DEP		Peculiar interval of fine grained, locally laminated, largely mafic but locally felsic tuffaceous material. Classifdied as VC because upper 40cm shows large clast, and ??entire interval is clast of altered FT??
357.8	363.3	VC	cs	LAP	D	GRY	UNKN		~85% clasts in felsic matrix, grades into fault gouge/breccia for last 3m.

Blackwater Project
Drill Summary - Alteration

BW0323		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
20	32.35	S	FR	2	SPHL	1		0	PERV	3							Sericite appears to overprint clay, which is visible as rims to fine sulphide flecks.
32.35	40.15	S	PATC	4		0		0	CLST	1							Chlorite is pervsive giving dark green hue to clasts and matrix alike. Sericite only rarely visible as pale olive reen hue inside clasts.
40.15	52.75	S	FC	2		0		0	PERV	3							Sercite somwehat patchy, in clasts and matrix, chlorite restricted to fractures, particularly evident in gouge
52.75	57.7	S	PATC	2		0		0	PATC	2							Interval is mixed andesite and FT, sercite is mild and near pervasive in felsic sections, likewise chlorite in the mafics.
57.7	95	S	PATC	1		0		0		0	CHL	FR	1				Patchy chlorite is very sparse, restricted to isolated centimetric patches. Fracture chlorite very much occasional, ~1/10 of fractures.
95	111	S		0	CLST	1		0	PATC	2							Sericte is near pervasive in felsic intervals and gouge, dropping off markedly over lower 1m. Clay very sparse, restricted to rare felsic clasts in FLPT sections, and ?trace as soft white material in some gouge.
111	116.9	S	FR	1		0		0		0	CHL	CLST	1				Chlorite is moderately intense in occasional short gougy intervals, otherwise on occasional fractures and occasionally replacing clasts
116.9	126.8	S		0		0		0		0							Essentially no signs of alt, very feint trace chl on occasional fractures
126.8	129.6	S		1		0		0		0							Scarce trace chl on fractures
129.6	140.3	S	CLST	2		0		0	CLST	1	CHL	FR	2				Significantly more felsic interval than above, frequent chloritic and occaisional sericitc alt in clasts. ~50% of fractures have moderate chlorite alt
140.3	147.7	S	FR	1		0		0		0	CHL	CLST	1				Occasional chloritic clasts and fractures, chlorite notably absent from gougy intervals.
147.7	162	S	FR	3		0		0		0							Chlorite on majority of fracture planes and quite intense in gouge

Blackwater Project
Drill Summary - Alteration

BW0323		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
162	179.1	S	FR	3		0		0	PERV	2	CHL	PATC	1	CHL	CLST	2	Sericite is near pervasive is pale green hue throughout, chlorite on fracturers and locally extensive in brecciated intervals. Clast dominant chl alt is increasingly prevalent downhole.
179.1	191.2	S	FC	4		0		0	CLST	1	CHL	CLST	2				Chlorite is common on fractures and particularly so in rubbly and occasional gougy intervals. Clast dominant alt is far from pervasive, some is ser some is chl -> perhaps original lith control.
191.2	201.9	S	FR	3		0		0	PATC	3	CHL	CLST	1				Matrix here is more felsic and sericite is intermittent throughout, occasional chloritic clasts, and all fracture faces are chloritized.
201.9	237.8	S	FR	3		0		0	PATC	2							Sericitization is restricted to felsic clasts and mor felsic intervals of matrix. Chlorite moderateluy intense on all fractures, particularly evident in rubble.
237.8	252	S	FR	3		0	PERV	2	PERV	4							Largely felsic interval with near pervasive light olive green hue, and glassy, very hard veneer. Chlorite on fractures.
252	259	S	FR	2		0	PATC	2	PATC	2							Although is similar compositionally to above, sericite is reduced in intensity, most evident in laminated FT clasts, and quite intense in some smaller clasts, but typically absent from matrix. Only locally silicified, chlorite on most but not all fracture
259	267.2	S	FR	3		0	PERV	4	PERV	4							Interval is hardness 6.5+ throughout with glassy veneer, also imbued with olive green hue throughout, most intense in clasts, but also present throughout matrix.
267.2	280.3	S	FR	3		0	PATC	3	PERV	4							Heavily sericitized throughout, affecting clasts most obviously but also matrix. Chl on fractures, ~80% of interval shows evidence of silicification as high hardness (6.5+) and glassy veneer.
280.3	282.1	S	FR	4		0	PATC	3	PERV	4							Rubbly interval with large amounts of chlorite on fractures, as well as near pervasive sericictization and silicification in matrix and clasts alike.

Blackwater Project
Drill Summary - Alteration

BW0323		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
282.1	283.8	S	FR	1		0	PATC	2	PERV	4							Rubbly interval with (peculiarly) very little chlorite on fractures, sericite is still pervasive, and some competent pieces are very hard ?sil
283.8	291.5	S	FR	3		0	PERV	4	PERV	3							Pervasive sericite and sil as pale olive green hue and high hardness (6.5+). Chl on fractures.
291.5	299.4	S	FR	2		0		0	PERV	4							Fault zone, gouge and competent clasts are all pale green in hue, occasional dark green on fractures. No evidence of sil, mostly soft gouge.
299.4	331	S	PATC	4		0		0	PATC	3							Sericite is still near pervasive in gouge, chlorite very prominet, locally very intense as dark forest green throughout gouge and on fractures.
331	341.5	S	FR	4		0		0	MTRX	2							Chlorite is locally very prominent as dark green in gouge and rubble, sericite is still near pervasive, but often overshadowed by chlorite.
341.5	344.7	S	FR	2		0		0	MTRX	1							Scarce sericite as occasional pale green hue in felsic matrix. Moderate to weak chlorite on fractures.
344.7	348	S	FR	1		0		0		0							Only patchy weak chlorite on fractures.
348	360.9	S	FR	1		0		0		0	CHL	PATC	1				Scarce chl on fractures, and occasional patches in matrix.
360.9	363.3	S	DEF	3		0		0		0							Chlorite green hue throughout gouge

Blackwater Project
Drill Summary - Mineralization

BW0323		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
20	23.5	BB	1	BB	0.5		0	Py	VN	0.5							1-5mm wide flecks and blebs of dark sooty py +/- sphal. Occasional planar veinlets of sooty black py ?=/-sphal.
23.5	32	BB	1.5	BB	1		0	Py	VN	0.1							Frequent clusters of 1-7mm wide blebs of sooty py +/-sphal. Occasional fine planar vt's of similar sooty sulphide.
32	34.1	DEN	1	BB	0.1		0										Clusters of DBS, typically at 10degTCA, but up to 80degTCA. Also short intervals of blebby sphal.
34.1	35.95		0	BB	0.1	VN	0.1										Occasional fine blebs of sphal, and an isolated 2mm thick planar vein po
35.95	38.5	FP	0.5	BB	0.1	BB	0.1	Dbs		0.5							Frequent DBS at 10-30degTCA, py patchy on most fracture planes, po + sphal associated with ?clay alteration ahloes in occasional blebs.
38.5	41.95		0		0		0	Dbs		0.1							Interval straddles a structure, very sparse sulphides, trace sooty blavk blebs.
41.95	44.5	BB	1	BB	1		0										Quite regular sooty brown-black millimetric blebs
44.5	47.4	BB	1	BB	1.5		0										Frequent 1-3mm wide sphal +/-sooty black py blebs.
47.4	48.45		0	BB	0.5		0										occasional 1-4mm wide blebs of sphal within larger mafic clasts
48.45	50.65		0	CR	3.5	CR	0.5										Extensive replacement of ?mafic clasts by sphal and occasional po
50.65	52.5		0	BB	0.1	BB	0.1										Scarce fine flecks
52.5	54	VN	0.1		0		0	Py	FP	0.5							Fairly frequent bu very fine and discontinuous py vt's, also common patchy py mx on fractures
54	55.9		0		0		0										Barren rubble
55.9	57.65	FP	0.1		0		0	Dbs		0.1							Very scarce trace sulphides
57.65	63.05		0		0	DI	0.5										Intermittent patchy very fine disseminated po
63.05	66.15		0		0		0										Utterly barren AND
66.15	68.85	DI	2		0	DI	1.5	Py	FP	0.5							Locally intense disseminated py and po.
68.85	75.85	VN	0.1		0	DI	3	Py	FP	0.5							Near pervasive disseminated po, locally up to 3mm wide aggregations. fine py veinlets in upper 20cm.

Blackwater Project
Drill Summary - Mineralization

BW0323		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
75.85	82.25		0		0	DI	0.1										Very scarce trace po
82.25	93.15	FP	0.1		0	DI	0.5										Very much occasional py on fractures, intermittent fine disseminated po throughout
93.15	95		0		0	DI	1										Steadily increasing downhole, very fine disseminated
95	95.75	VN	0.5		0	CR	0.5	Py	FP	0.1							Po replacing mafic clasts, occasional fine py vt's and py on fractures
95.75	107.3		0		0	DI	0.5										occasional blebs and fine disseminations of po
107.3	110.9		0	CR	0.5	CR	1										Frequent po and sphal replacing mafic clasts
110.9	114.9	FP	0.5	CR	0.5	CR	0.1	Py	VN	0.1							Frequent 1-2mm thick encrustations of py on fractures and occasional fine py vt's. Po associated with sphal ?replacing clasts
114.9	126.9	FP	0.1		0		0										Virtually barren VC/And, very occasional millimetric blebs on fracture surfaces.
126.9	129.4		0	SP	0.5		0										Centimetric patches in which fine sphal appears to ?replace matrix
129.4	131.7	VN	0.5	BB	0.1		0										Quite frequent but very fine, discontinuous py vt's.
131.7	137.1	FP	0.1	BB	1		0	Py	BB	0.5							Fine millimetric blebs of sooty sphal +/- ?py disseminated throughout. Trace py on occasional fracture surfaces.
137.1	139.8	BB	0.5	BB	1.5		0										Again, millimetric sooty sphal +/-py blebs, also larger (1-2cm wide) patches dominated by fine sphal.
139.8	146.2	SP	0.1	BB	0.1	BB	0.5										Patchy, fine disseminated sulphides
146.2	153.7	FP	0.1		0	CR	0.5										Sparse py on fractures, po replacing fragments / clasts
153.7	158.7	VN	0.5		0	CR	1										Clusters of fine py vt's, also on occasional fractures. Po replacing mafic clasts
158.7	163.4	VN	0.1	BB	0.5		0	Apy	FP	0.1							Isolated fracture surface with fine crystalline ars, py in fine vt's, sphal in 0.1-1cm wide patches.

Blackwater Project
Drill Summary - Mineralization

BW0323		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
163.4	164.8	FP	0.1	BB	0.5	CR	2	Apy		0.1							po is dominant sulphide, sphal is also common as millimetric blebs. Py restricted to small patches on fractures, and is also present with ars in a 4mm thick vein at top of interval
164.8	171.2	VN	1.5	SP	0.5		0										Frequent very fine anastamosing py vt's, brassy to sooty. Also quite common fine flecks of sphal in groundmass.
171.2	173	VN	1.5		1.5		0										Frequent <1 - 3mm thick anastamosing py vt's, and sphal disseminated throughout in millimetric flecks, as well occasionally replacing clasts
173	177.2	VN	1	SP	1	CR	3	Py	SP	1.5							Heavily mineralized, frequent 1-4mm thick py vt's, majority of clasts are replaed by po, often with specks of py overprinting. Sphal also common as millimetric flecks throughout
177.2	180.3	VN	0.5	CR	1	BB	0.1										Significant drop off in po, py veins still prominent, frequent sphal replacing 1-3mm clasts.
180.3	190.5	VN	0.1	CR	0.5	CR	1	Py	FP	0.1	Sp	SP	0.5				Only scarce py vt's, po and sphal still common, often together, replacing clasts and as fine millimetric disseminations in matrix.
190.5	196	VN	1.5	BB	1.5	CR	1										frequent late stage py vt's visibly cross-cutting blebs of sphal and po. Po is conentrated in upper 3m of interval.
196	201.9	VN	0.5	BB	1	CR	0.5	Py	SP	0.1							Quite scarce fine veinlets of py, sphal is dominant sulphide as millimetric blebs throughout. Po is evident throughout as occasional clasts.
201.9	204.9	VN	0.1	BB	1	CR	1.5	Py	SP	0.1							Po throughout replacing mafic clasts, also frequent blebs and specks fo sphal
204.9	209.7	FP	0.1	BB	0.5	CR	0.5										Py % is maybe a little higher than 1%, quite common on fractures. Sphal and Po in millimetric blebs, scarce throughout.
209.7	213.2	VN	0.5	SP	0.5	BB	1										Po is consitent throughout, sphal concentrated in upper 1.5m. Py in fine veinlets throughout, and an isolated chunkier vein at 210.45m.

Blackwater Project
Drill Summary - Mineralization

BW0323		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
213.2	215.5	FP	0.1	SP	0.1		0	Py	SP	0.1							
215.5	216	VN	4	GmR	1		0										Large irregular but somewhat planar veins of Py and associated patchy spahl directly associated with tecontic brecciation.
216	222.1	FP	0.5		0	CR	0.5										Very gougy interval, py on fractures and po in clasts in what little competent core there is.
222.1	228.5	VN	0.5	CR	0.5		0										Quite frequent very fine py veinlets, and sphal patchily replacing clasts.
228.5	237.2	VN	0.5	SP	0.5	CR	0.1	Py	BB	0.5							Py veinlets are consitent throughout, very fine anf typically at 35-45degTCA - late stage. Clast replacement and fine specks of po, sphal are intermittent throughout, with po decreasing and sphal increasing downhole.
237.2	240.9	VN	0.5		0	BB	0.5										Po is in quite dense centimetric patches of belbs, py vt's subtly increase in density downhole.
240.9	242.8	VN	0.5		0		0	Py	BB	0.5							Similar to above, but where Po was Py now is.
242.8	247.1	VN	1		0		0	Py		0.5							Increased desnsity of fine py vt's, almost stockwork at most intense, angles from 5-40degTCA. Also quite frequent patches of millimetric py blebs. 1cm thick Py vein at 244.6m
247.1	252.4		0		0		0.1										Fault zone, largely gouge, only trace po in clast in breccia
252.4	259	VN	0.5	SP	0.1		0	Py	SP	0.1							Py veinlets are typically very fine, but occasionally thicker with inconsistent width, 'bellying out'.
259	266.4	VN	0.5	SP	0.5	BB	0.1	Dbs	DEN	0.1							Quite frequent fine py veinlets, spahl in millimetric specks, patchy throughout.
266.4	269.2	FP	0.1	SP	0.1		0	Dbs	DEN	0.1	Py	BB	0.1				Interval is brecciated and gouge, so py blebs are ?chopped up veinlets
269.2	270.3	FP	0.1	BB	1		0	Dbs	DEN	0.1	Py	SP	0.1				locally dense patches of sphal blebs.
270.3	280.7	FP	0.1	BB	0.5	BB	0.5	Dbs	DEN	0.1	Py	VN	0.1				Sphal blebs are most concentrated in laminated FT clasts.

Blackwater Project
Drill Summary - Mineralization

BW0323		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
280.7	284.4	DI	0.1	DI	0.1		0										Trace sooty black sulphide ??py +sphal in amongsy gouge
284.4	291.4	FP	0.1	BB	1		0	Dbs	DEN	0.1	Py	VN	0.1				Evenly disseminated millimetric blebs of sphal, DBS is patchy.
291.4	294.7	DI	0.1	SP	0.1		0										Intesnely gouged fault breccia, what sulphides thee are are in small competent clasts of FLPT in form of millimetric sooty black blebs.
294.7	295.2	SP	0.1	SP	0.1		0	Dbs		1							Again, fine sooty specks in clasts of FLPT/FT. Also locally dense stringers of DBS
295.2	298.5	DI	0.1	SP	0.5		0										Py as very fine sooty specks in gouge and clasts, sphal as millimetric blebs in clasts.
298.5	299.1	SP	0.1		0	BB	1	Dbs		0.1							DBS concentrated in upper 15cm. Po as 2-6mm wide blebs throughouit. Py as very scarce millimetric blebs.
299.1	300.2	SP	0.1		0		0	Dbs		3							Locally very dense concentrations of sooty black sulphide as thick DBS is matrtix to breccia
300.2	301.7	FP	0.1	BB	0.5	SP	0.1										Slightly less brecciated interval with sphal and trace py in millimetric blebs and specks. Alos trace py on fractures.
301.7	304.1		0	BB	0.1		0	Dbs		0.5							Trace sphal as millimetric blebs in occasional competent clasts. DBS as vague sooty black patches and locally quite intense networks of fine vt's.
304.1	310.3	VN	0.1	BB	0.5		0	Py	SP	0.1	Dbs		3				Locally intense massess of sooty black sulphide, and at least trace DBS throughout. Sphal and pu as blebs and specks in all competent clasts, also occasional fine py vt's in between clasts.
310.3	315.9	SP	0.5	BB	2.5	BB	0.1	Dbs		0.5							Atypically competent interval is locally very heavily mineralized. Millimetric blebs of sphal and sooty black sulphide, patchy DBS. Fine specks of py associated with sphal blebs, and occasional isolated blebs of Po.

Blackwater Project
Drill Summary - Mineralization

BW0323		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
315.9	331.6	DI	0.5	DI	0.5		0	Dbs	DI	0.5							Intesnely deformed interval, sulphides are scattered throughout typically as sooty black patches, but sometimes as discernible py, and sphal on small competent clasts. DBS is most evident i short intensely deformed intervals, ie 327.5m
331.6	336.4	SP	0.1	BB	0.5	BB	0.5	Dbs		0.1							More competent core, quite even spread of millimetric sphal and po blebs throughout, occaisonally accompanied by very fine specks of py. DBS as scarce short strands.
336.4	341.7	BB	0.5		0		0	Dbs		0.5							Infrequent 0.1-1cm wide blebs of brassy py disseminated in gouge. DBS is patchy.
341.7	347.2		0	BB	0.1	BB	0.1										Trace Po and sphal is scarce millimetric blebs.
347.2	355.5	FP	0.1	CR	1		0										Quite frequent 2-10mm wide blebs of sphal ?replacing clasts. Occasional fractures coated in py at 90degTCA
355.5	357.8	BB	0.5		0.5		0										In banded mystery tuf, some bands are quite highly sulfidic, with millimetric sooty black blebs and sphal.
357.8	363.3	FP	0.1		0		0										Occasional py on fractures.

Blackwater Project
Drill Summary - Structure

BW0323

From (m)	To (m)	Structure	Strength	Comments
20	33.5	BRKZ	2	Moderately fractured to rubbly
33.5	38.2	FZ	2	Intermittently rubbly with frequent discreet 5-10cm thick intervals of fracturing and gouge.
38.2	40.1	BD	2	Moderately rubbly
40.1	41.8	FZ	3	Poor recovery, gouge and rubble
41.8	45.5	FL	4	Fractured, rubbly core. Locally gouge.
45.5	57.7	FZ	3	Where competent core is highly brecciated, otherwise rubbly and occasionally sandy/gouge
57.7	62.75	JZ	2	~2-4 fractures p/m, 45-70degTCA
62.75	66.15	BRKZ	3	Highly fractured to rubbly, associated with high density of talc veinlets.
66.15	77.6	JZ	3	Moderatley fractured, 10-35degTCA
77.6	88.7	BRKZ	2	Intermittently broken, ~1m of competent core followed by ~1m of chunky rubble throughout interval
88.7	96	JZ	1	Competent core, fractures at 40-50degTCA
96	104.9	FZ	4	Rubbly to gougy, mixed FT and AND throughout.
104.9	112.2	JZ	2	Weakly jointed
112.2	122.4	BRKZ	3	Locally very rubbly, isolated 10cm interval of sandy gouge @ 112.7
122.4	128.4	FZ	3	Rubble to gouge throughout.
128.4	139.8	JZ	2	Locally rubbly, weakly fractured throughout
139.8	140.8	FL	4	Sandy gouge with discreet slickensides on planar fracture and litho break at 140.15m
140.8	158	FZ	4	Rubbly to gougy throughout.
158	171.3	BRKZ	3	Rubbly with occasional gougy intervals.
171.3	180.2	JZ	2	Consistent planar fractures at 45degTCA
180.2	180.9	FZ	3	Rubble and gouge, no litho break.
180.9	186.5	JZ	3	Quite frequent fractures at 25-40degTCA
186.5	187.2	FZ	2	Rubbly and layer of gouge visibble at ~5degTCA
187.2	203	JZ	3	Quite frequent fratcures at 25-40degTCA, also occasional isolated breccias associated with low angle TCA veinlets.
203	215.4	BRKZ	2	Fre~50% of interval is broken and rubbly, no gouge, rock competency decreases downhole.
215.4	229.3	FL	4	Majority of interval is sandy gouge, with competent intervals being brecciated with gougy matrix. Upper boundary of interval shows contact of breccia and overlying rock at ~5degTCA
229.3	232.3	JZ	2	Competent core, 2-4fractures p/m

Blackwater Project
Drill Summary - Structure

BW0323

From (m)	To (m)	Structure	Strength	Comments
232.3	242.7	BRKZ	2	Intermittently rubbly.
242.7	251.9	FZ	4	Largely rubbly, occasionally sandy gouge, evidence of significant brecciation,
251.9	258.7	JZ	3	Fractures between 30-60deg TCA
258.7	266.3	BRKZ	3	Heavily fractured to rubbly
266.3	268.6	FL	4	Rubbly with frequent sandy gouge, largely incompetent core. ~20cm of semi-competent fault breccia in gouge matrix at 268m.
268.6	278.4	JZ	3	Frequent clean planar fractures
278.4	280.7	BRKZ	3	Heavily fractured to rubbly
280.7	284.3	FL	4	Frequent sandy gouge amongst rubble, semi-competent pieces of fault breccia in gouge matrix
284.3	285.9	BRKZ	4	Largely rubble
285.9	306.7	FL	5	Majority of interval is fully blown cataclasite, angle TCA is measurement of sooty black ?sulphide stringers wrapping around large clast in most intense interval (294.95m). Large amounts of gouge and fault breccia.
306.7	315.1	FZ	4	Clast supported fault breccia in gouge matrix, rubbly
315.1	331.3	FL	5	Interval is dominated by fine fault breccia in gouge matrix.
331.3	336.5	BRKZ	4	75% rubble but lacking fully blown fault gouge.
336.5	341.8	FL	5	Intensely brecciated with gouge matrix, core is mostly semi competent with borderline mylonitic textures.
341.8	345	BRKZ	4	Rubbly core, heavily fractured but lacking gouge.
345	351	JZ	2	Moderately fractured
351	360.9	BRKZ	3	Moderately rubbly
360.9	363.3	FL	4	Rubble and fault breccia in gouge matrix

Blackwater Project
Drill Logs

Hole ID:	BW0324	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376050.82
Depth (m):	424	Date Started:	22/01/2012	Casing Size:	HWT	Northing:	5893349.64
Azimuth:	0	Date Completed:	27/01/2012	Casing (m):	27	Elevation (m):	1513
Dip:	-90	Logged By:	TOl	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	168	-89
55	166.8	-88.5
118	171.5	-88.6
157	176.7	-88.5
208	184.7	-88.7
259	189.7	-88.7
310	166.1	-88.1
367	168.8	-87.8
418	166.7	-87.5

Blackwater Project
Drill Summary - Lithology

BW0324

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
5	28	OB							Overburden > than estimated overburden depth of 5m; probably faulted???
28	34.83	VC	plm	LAP	M	GRN			Mafic volcaniclastic with predominantly mafic andesite clasts 75%, intermediate to mafic matrix
34.83	38.5	VC	plm	LAP	M	GRN			Felsic to intermediate volcaniclastics with smaller clasts, mostly mafic clasts and felic matrix
38.5	40.46	VC	ms	LAP	L	GRY			Intermediate volcaniclastics with 50%mafic clasts and 50%felsic clasts
40.46	41.7	VC	ms	BLOCK	M	GRY			Fault/clay gge
41.7	55.3	VC	ms	BLOCK	M	GRY			Intermediate to mafic volcaniclastics with mostly blocky mafic andesite clasts, smaller felsic clasts and intermediate matrix
55.3	55.8	AND	amg	CA	D	GRY			Amygoloidal andesite
55.8	62.3	VC	ms	LAP	M	GRN			Felsiv volcaniclastics with small clasts at start of interval with relatively 50%mafic and 50%felsic clasts, grades to a blocky VC with huger mafic clast, still relatively 50%mafic 50%felsic
62.3	73	VC	plm	BLOCK	L	GRY			Mafic volcaniclastics with huge andesite boulder sized clasts, some of the andesite clasts are brecciated in section, some of the clasts have elongated amygdules indicating flow at some point
73	80.73	VC	volc	BLOCK	M	GRY			Volcaniclastics with blocky clasts at start of interval grades to smaller clasts, predominantly mafic clasts with intermediate matrix
80.73	83.55	AND	bx	CA	D	GRY			Brecciated andesite
83.55	89.4	VC	plm	LAP	M	GRY			Mafic volcaniclastics with predominantly blocky clasts 75%mafic 25% felsic
89.4	111.9	AND	bx	CA	M	GRY			Amygoloidal andesite at start of interval becomes just massive andesite with no amygdules
111.9	145.7	AND	bx	CA	D	GRY			Andesite with some amygdules in sections and local breccition in sections; more calcite stockwork than previous interval
145.7	151	VC	ms	BLOCK	MO	GRN			Mafic/heavily altered volcaniclastics; significant amount of mafic clasts at start of interval grades to section with very few blocky clasts
151	169.5	AND	amg	BLOCK	M	GRY			Flow characterized andesitie with amygdules and local brecciation in sections
169.5	175	AND	amg	CA	M	GRY			Amygoloidal andesite indicating flow at some point, brecciated towards the end of the interval
175	178	AND	fltbx	LAP	M	GRY			Strong broken zone/weak fault; some fault gge
178	180.7	AND	amg	CA	M	GRY			Andesite with few amugdules in sections

Blackwater Project
Drill Summary - Lithology

BW0324

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
180.7	184.4	AND	fltgge	CA	M	GRY			Fsult/clay gge with some competent core up to 0.5m
184.4	201.9	AND	bx	LAP	M	GRY			Brecciated andesite; sections with amygdules indicating flow
201.9	230.7	AND	bx	CA	M	GRY			Brecciated andesite with about 0.1m sections that have amygdules
230.7	250	AND	bx	CA	M	GRY			Brecciated andesite; calcite veinlets+hairlines
250	259.5	AND	por	CA	M	GRY			Porhyritic andesite with local autobrecciated section
259.5	267	AND	bx	CA	MO	GRN			Mottled greenish grey andesite with some porphyritic texture in sections and brecciated in sections; bleached out in some sections
267	282	AND	por	CA	MO	GRY	ALTFR	SH	Medium grey porphyritic andesite with localized brecciation, mottled/greenish in patches due to alteration/bleaching???, sharp bottom contact with next interval
282	287.1	AND	bx	LAP	D	BR	FLT	GR30	Brownish grey brecciated andesite with some amygdules in sections, faulted bottom contact ~0.7m; calcite stockwork
287.1	292	AND	por	CA	M	GRY			Porphyritic andesite with localized brecciation around calcite veins/veinlets, some clasts in calcite veins/veinlets
292	365.5	AND	bx	LAP	D	GRY			Andesite with local porphyritic and amygdaloidal textures. Locally brecciated with calcite and talc infilling fractures.
365.5	385	AND	hydbx	LAP	D	GRY			Strongly brecciated andesite, with stockwork veins of calcite and talc.
385	424	AND	por	CA	D	GRY			Andesite, intermittently amygaloidal and porphyritic. Some hydrothermal brecciation with calcite-talc infill.

Blackwater Project
Drill Summary - Alteration

BW0324		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	28	O		0	PATC	3	OP	4		0							Overburden, fairly oxidized on fractures goethite+jarosite+hematite+black oxides, no sulphides
28	58.24	T	OP	3	PATC	4	OP	3	CLST	3							Oxides on fractures/cracks, fractureplanesand in a few clasts; some sericite alteration in clast and some in matrix/overprint??; some chlorite as overprint, on some fracturesand in some clasts
58.24	73	T	OP	4	FR	1	OP	3	CLST	2							Slightly less oxidation on farctures and fracture planes than previous interval, some oxidation in amygdules goethite+hematite+jarosite; chlorite alteration as overprint and in some clasts
73	89.5	T	OP	4	PATC	3	OP	3	CLST	3							Moderate sericite alteration, strong chlorite as overprint; oxides present on fractures planes and cracks
89.5	111.9	T	FR	2	FR	2	OP	4	AMYG	1							Weak sericite/chlorite in amydules, some chlorite on fractures as well as some oxides goethite+jarosite+hematite
111.9	132.5	T	FR	2	PATC	2	OP	3	VN	1							Slight increase in oxides present from previous interval, some sections more than others; weak sericite/chlorite alterations
132.5	143.5	T	FR	1	FR	1	OP	3		0							Increased oxides on fractures/cracks on core and on fracture planes; weak chlorite and clay alterations, no sericite
143.5	152.5	T	PATC	4	PATC	3	OP	3	OP	2							Strong chlorite in patches/as overprint and on fractures, weak sericite as overprint; decreased sulphides
152.5	169.5	S	FR	4	FR	2	OP	4	AMYG	1							Very little (small patch on core surface) to hardly any oxides present, strong chlorite on fractures and strong silica as overprint
169.5	184.4	S	FR	3	PATC	4	OP	3		0							No visible sericite alteration, strong clay alteration in patches, some chlorite on fractures/patchy
184.4	201.9	S	OP	2	PATC	3	OP	3		0							No sericite, moderate patchy clay and some on fractures, weak chlorite on fractures/overprint
201.9	250	S	FR	2	FR	1	OP	3		0							Weak alterations; moderate silica overprint

Blackwater Project
Drill Summary - Alteration

BW0324		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
250	259.5	S	PATC	2	PATC	2	OP	3	VN	1							Some patchy clay and some clay on fractures, very weak sericie alteration in one or two calcite veinlets
259.5	278.5	S	CLST	3	FR	1	OP	4	VN	2							Very weak alteration on fractures, strong silica as overprint, some chlorite in clasts/some patchy chlorite
278.5	287.5	S	PATC	2	PATC	3	OP	3	VN	1	ANK	PATC	3	CARB	PATC	2	Some ankerite/iron carbonate alteration (brownish) in patches, moderate patchy clay in patches and some chlorite in patches and fractures
287.5	292	S	PATC	2	PATC	1	OP	4	VN	1							Weak patchy clay, weak sericite in calcite veins, Strong silica as overprint
292	365.5	S		0		0	PATC	3	PATC	1	CAL	VN	2	TALC	VN	1	Weak patchy sericite and silica, locally bleaching andesite. Additional patchy silicification. Talc and calcite infilling fractures and breccias
365.5	384	S		0		0	PATC	2		0	CAL	INFILL	2	TALC	INFILL	2	Patchy silicification, with calcite and talc infilling stongly brecciated andesite.
384	424	S	FR	2		0	PATC	2	PATC	1	CAL	INFILL	2	TALC	INFILL	1	Weak patchy sericite and silica, chlorite on fractures, calcite and talc infilling fractures.

Blackwater Project
Drill Summary - Mineralization

BW0324		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	28		0		0		0										No sulphides; only oxides; overburden
28	58.24		0	VN	0.1		0	Dbs	DEN	0.3							Dendritic Dbs present, some in clasts and some spreading out of fractures/cracks; trace sph in hairline
58.24	73		0	BB	0.1		0	Dbs	DEN	0.5							Slight increase in Dbs from previous interval; trace sph in blebs
73	89.5		0		0	SP	0.1	Dbs	DEN	0.1							Trace po and trace Dbs present
89.5	95.6		0		0		0										No sulphides, dead rock
95.6	122		0		0	SP	10										Very fine grained po, some coulb be seen with a hand lens other than that core was quitemagnetic
122	157	FP	0.1		0	SP	0.3										Trace py some as cluster on a fracture plane and as disseminated specks; some po present very fine grained (core slightly magnetic in sections)
157	169.5	BB	1		0	BB	0.8										Increased sulphides; some bleby py in sectionswith amygdules; some bleby po in sections with py and some very fine grained ones
169.5	184.4	VN	0.3		0	SP	0.1										Significant decrease in sulphides from previous interval, some py in veinlets and hairlines, some py in clusters on fracture planes, trace po - fine grained
184.4	201.9	VN	0.5		0	SP	0.5										Increased sulphides; py in veins+veinlets+hairlines, some py in clusters and on fractures, fine grained po
201.9	230.7	BB	0.5		0	SP	0.8										Increased fine grained po from previous interval (core quite magnetic), py in blebs in some sections of the core and on fractures
230.7	250	VN	0.5	VN	0.1	SP	0.3										Decreased po, some py+po on fractures and py+po+sph in huge vein, some py in calcite veinlet and po in specks
250	269.3	FP	0.5		0	BB	0.8	Apy	FP	0.3							TS ~1%; some po+py in veins/veinlets, some py+ nice arsenopyrite crystals on fracture, some po in blebs/specks; po>py>arsenopyrite
269.3	282	VN	0.8	VN	0.3	VN	1										TS ~2%; py+po+sph in veinlet, py+po in calcite veins/veinlets, some po in hairline stringers and blebs

Blackwater Project
Drill Summary - Mineralization

BW0324		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
282	285.1	VN	0.1		0	SP	0.1										Significant decrease in sulphides; trace sulphides, trace py in calcite veinlets, trace po in specks
285.1	292	VN	0.3		0	BB	0.5										Some sulphides present; py+po in veinlets/hairline stringers, some are associated with calcite veinlets/stringers
292	349	VN	1.5		0	DI	2	Po	VN	1							Py and po in veins, plus di po
349	353.5	VN	0.5		0	DI	4										Sharp increase in di po, minor py in veinlets
353.5	366	VN	3		0	VN	2	Apy	SP	0.1							Strong increase in blebby veins, py>po
366	384.7	DI	0.5		0	DI	0.5										Sharp drop in sulphides, coinciding with calcite-talc stockwork breccia
384.7	406	FP	1		0	DI	2										Increase in py and po, especially present in blebby veins
406	424	FP	0.5		0	DI	1										Up to 1% di po, trace py

Blackwater Project
Drill Summary - Structure

BW0324

From (m)	To (m)	Structure	Strength	Comments
0	28	BRKZ	4	Brokenzone with small pieces of competent rock and some clay gge in sections
28	37.63	BRKZ	3	Moderate brokenzone with clay/fault gge in sections
37.63	38.5	FL	2	fault/clay gge
38.5	40.46	BRKZ	3	Moderate brokenzone with clay gge on fractures
40.46	41.7	FL	3	Fault/clay gge
41.7	45.2	JZ	2	Poor joint zone with wispy/jagged joints between 30-60dtca
45.2	58.24	BRKZ	2	Weak brokenzone with some competent core >0.5m in sections and localized strong broken zones (5) in sections
58.24	60.5	JZ	2	Weak joint zone with joints at 50, 75 and 80 dtca
60.5	63	BRKZ	1	Weak brokenzone/ not very broken up
63	64.11	BRKZ	4	Strong broken zone
64.11	67.7	JZ	3	Moderate jointzone with joints between 25-80dtca and one local broken zone
67.7	73	BRKZ	1	Weak brokenzone with competent core greater than 1m
73	84	BRKZ	2	Weak brokenzone with some clay gge in sections
84	91	BRKZ	1	Weak brokenzone/not very broken up with some competent pieces
91	103	JZ	2	Weak jointzone with wispy/jagged joints, poor joints between 35-60dtca, some locan brokenzones
103	120.5	BRKZ	1	Brokenzone with competent pieces >0.5m
120.5	131.5	BRKZ	3	Moderate brokenzone with some clay gge on fractures
131.5	137.5	BRKZ	2	Weak broken zone with some local strong broken sections
137.5	144	JZ	3	Joint zone with joints between 30-80dtca
144	144.6	FL	2	Weak fault with fault/clay gge
144.6	148	BRKZ	3	moderate brokenzone
148	150.7	JZ	2	Weak joint zone with wispy / jagged joints between 20-80dtca
150.7	151.5	BRKZ	4	Strong brokenzone with some clay gge in sections
151.5	169	JZ	3	Moderate joint zone with joints between 10-80dtca, local brokenzones in sections
169	175	JZ	4	Strong joint zone with joints between 30-80dtca
175	178	BRKZ	5	Strong brokenzone/weak fault with clay gge on fractures and in sections
178	180.7	JZ	3	Moderate jointzone with joints mostly at 50/80dtca
180.7	184.4	FL	2	Weak fault with some competent core up to 0.5m; fault/clay gge

Blackwater Project
Drill Summary - Structure

BW0324

From (m)	To (m)	Structure	Strength	Comments
184.4	193	JZ	2	Weak joint zone with wispy /jagged joints mostly at 60dtca; some localized broken zones
193	201.9	BRKZ	2	Weak brokenzone with sections <0.5m of strong broken zone
201.9	214.8	JZ	4	Strong joint zone with joints between 25-80dtca
214.8	224.1	JZ	3	Joint zone with some local brokenzones, joints mostly at 50dtca
224.1	236.5	JZ	4	Strong joint zone with joints between 25-85dtca
236.5	242.5	JZ	2	Weak joint zone with wispy/jagged joints at 25/35/50dtca
242.5	250	JZ	3	Moderate joint zone with some wispy joints, good joints between 20-80dtca
250	257.1	JZ	2	Weak joint zone with wispy/jagged joints; measurable joints at 50/80dtca
257.1	257.4	FL	2	Weak fault zone; Fault/clay gge with rubbles
257.4	269.3	JZ	3	Moderate joint zone with 2 local broken zones <0.5m; joints mostly between 40-80dtca, one steep joint at 10dtca
269.3	281.5	JZ	3	Joints mostly at 60/80dtca with some jagged ones
281.5	286.4	BRKZ	1	Weak brokenzone/not too broken up, some clay/fault gge on fractures
286.4	287.1	FL	2	compact clay/fault gge
287.1	295	JZ	2	Weak joint zone with no consistent joint set; joints between 20-80dtca
295	297	FL	4	Fault with strong clay gge
297	299	FZ	3	Fault zone with some clay gge and calcite infilling broken/brecciated fragments
299	365.5	JZ	3	Moderately jointed rock with some short (<2m wide) locally broken zones.
365.5	406	BZ	3	Strongly brecciated unit, re-healed with calcite-talc infill.
406	408.6	FZ	3	Fault zone with clay gge and rubble
408.6	424	JZ	3	Moderately jointed rock

Blackwater Project
Drill Logs

Hole ID:	BW0325	Tenure #:	515809	Hole Diameter:	HQ	Easting:	374901.35
Depth (m):	421	Date Started:	21/01/2012	Casing Size:	HWT	Northing:	5892650.9
Azimuth:	0	Date Completed:	02/02/2012	Casing (m):	7	Elevation (m):	1614
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	71.9	-89.4
100	90.6	-89.3
150	94	-89.2
200	134.4	-89
250	193.7	-89.3
300	174	-88.8
421	146.5	-88

Blackwater Project
Drill Summary - Lithology

BW0325

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
10	24	AND	flwbnd	LAP	D	GRY	DEP	GR30	Subrounded felsic clasts. Oxidation zones found in fractures. Relict texture. Zones of banded texture
24	87.5	VC	ms	LAP	D	GRY	DEP	GR10	Zones of fine felsic matrix at (46-49;50-52;55.60-58 and 61.5-63). Zones of epicalstic texture at 70-72m rounded felsic clasts.
87.5	95	AND	mas	LAP	D	GRY	UNKN		Subangular felsic clasts. Fine felsic matrix.
95	151	AND	ms	FA	D	GRY	DEP	GR5	Zones of fine felsic matrix at 104-109. Zones of fine felsic matrix with pervasive chlorite alteration at 129-137.50..Talc and carbonates filling fractures at 141.39-143.5
151	157.5	FT	ms	LAP	L	BLCH	DEP	GR10	Massive felsic tuff. Fine felsic matrix.
157.5	172	AND	por	LAP	D	GRY			Fine felsic matrix. Porphyiritic texture. Qz and Feldspar.
172	188	AND	por	LAP	D	GRY			Porphyiritic texture. Fine felsic matrix
188	220	AND	ms	LAP	D	GRY	DEP	GR30	Zones of porphyiritic texture. Oxidation zone found in fractures.
220	245.5	VC	ms	LAP	D	GRY			Subangular to subrounded clasts. Dominant felsic clasts. Felsic fine matrix
245.5	262	VC	ms	LAP	D	GRY	UNKN		Volcanoclastic texture. Fine felsic matrix.
262	301.1	VC	ms	LAP	D	GRY	UNKN		Fine felsic matrix.Zones of laminated andesite at 290.68. Mafic clasts are dominant.
301.1	346.8	AND	mas	LAP	D	GRY	UNKN		Andesite with volcanoclastic texture. Brecciated andesite.
346.8	368.5	AND	mon	LAP	D	GRY	UNKN		Andesite with volcanoclastic texture.
368.5	421	VC	mas	LAP	D	GRY	DEP	GR5	Subangular to angular clasts. Felsic matrix

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Blackwater Project
Drill Summary - Alteration

BW0325		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10	24.5	O	FR	1		0		0		0							Oxidation zones fracture controlled. Weak chlorite alteration found in felsic clasts.
24.5	41.5	O	FR	2		0	PATC	1		0							Oxidation zones fracure controlled. Moderate chlorite alteration found in clasts and fractures.
41.5	43	S	CLST	2		0	PATC	1		0							Chlorite alteration found in felsic clasts as well in fractures.
43	55.33	S	FR	2	CLST	1	PERV	1		0	CHL	MTRX	2				Chlorite alteration found in felsic clasts as well as in fine matrix. Weak silicification
55.33	68	S	CLST	2		0	PERV	2		0							Chlorite alteration found in clasts as well in fine matrix. Pink-reddish alteration found in fine matrix as well in felsic clasts of andesite ??
68	77	S	CLST	3		0	PERV	2		0							Chlorite alteration found in felsic clasts
77	86.5	S	FC	2		0	PATC	2		0							Chlorite fracture controlled.
86.5	87.1	S	MTRX	3		0	PERV	2		0							Chlorite zones matrix controlled.
87.1	95	S	FR	3		0	PERV	1		0							Chlorite fracture controlled
95	103	S	FR	3	INFILL	1		0		0							Chlorite alteration found in fracure planes
103	109.1	S	MTRX	4		0		0		0							Pervasive chlorite alteration found in felsic fine matrix
109.1	127.4	S	FR	3		0		0		0							Chlorite alteration fracture controlled
127.4	137	S	MTRX	4		0	PERV	2		0	CHL	FR	2				Chlorite alteration found in fine felsci matrix as well as in fracture planes
137	151.3	S	FR	3		0		0		0							Chlorite alteration fracture controlled
151.3	157.5	O	MTRX	2		0		0		0	BIOT						Biotite alteration found in fine felsic matrix. Chlorite alteration found in fracture planes as well as in felsci matrix
157.5	173.5	S	MTRX	2		0		0		0							Chlorite alteration found in fine felsic matrix of andesite porphyiritic
173.5	184.5	S	PERV	4		0	PATC	1		0	BIOT	OP	2				Patchy silisification. Pervasive chlorite alteration found in fine felsic matrix as well in felsic clasts. Biotite alteration overprinting chlorite alteration
184.5	197.8	O	FR	3		0	PATC	1		0							Chlorite alteration found in fracture planes.

Blackwater Project
Drill Summary - Alteration

BW0325		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
197.8	202	S	MTRX	4		0	PERV	2		0	CHL	FR	2				Chlorite alteration found in felsic matrix as well as in fractures. Bleached felsic matrix
202	205	S	FR	2		0		0		0							Chlorite alteration found in fracture planes.
205	211	S	MTRX	5		0	PERV	3		0	CHL	FR	2				Strong chlorite alteration zone found in felsic matrix.Rocks looking completely bleached. Pervasive silicification
211	215.5	S	MTRX	3		0	PERV	2		0							Chlorite alteration found in fine felsic matrix.
215.5	220	S	MTRX	5		0		0		0	CHL	CLST	3				Strong chlorite alteration found in felsic clasts as well as in fine felsic matrix
220	226	S	MTRX	3		0	PATC	2		0							Patchy chlorite alteration found in felsic matrix.
226	232.5	S	CLST	3		0	PERV	3		0	CHL	FR	2				Chlorite alteration found in fractures as well as in felsic matrix
232.5	244	S	CLST	4	CLST	2	PERV	2		0							Chlorite alteration found in felsic clasts. Weak chlorite found in fractures.Clay alteration found in clasts
244	245.5	S	MTRX	4		0		0		0							Strong chlorite alteration found in matrix as well as in clasts.
245.5	248.3	S	MTRX	3		0		0		0							Chlorite alteration found in felsic matrix
248.3	262	O	PERV	4	PATC	2	PATC	1		0	LIM	FR	3				Oxidation zones found in fractures. Dendritic oxides found in fractures. Patchy clay alteration.Pervasive Chlorite alteration
262	292	O	PERV	3	CLST	2	PATC	2		0	HM	FC	3	LIM	FC	3	Oxidation zone found in fractures. Hematite and Limonite found in fracture planes. Pervasive chlorite alteration. Clay alteration found mainly in mafic clasts
292	302.5	S	PERV	3	VN	2	PERV	3	PATC	2							Pervasive chlorite alteration found in fractures. Patchy silicification. Clay alteration found in felsic clasts
302.5	346.8	S	PERV	3	PATC	3	PERV	3		2							Pervasive chlorite found in matrix. Patchy biotite alteration. Chlorite halos
346.8	355	S	PERV	3	PATC	2	PERV	3	PATC	1							Pervasive Chlorite alteration. Pervasive silicification
355	368.5	S	FC	3	PATC	1	PERV	3		0							Pervasive silicification. Chlorite alteration found in fracture planes

Blackwater Project
Drill Summary - Alteration

BW0325		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
368.5	374.2	S	FR	1		0	PERV	3		0							Pervasive silicification. Chlorite alteration fracture controlled
374.2	376	S	FR	2		0	PATC	2		2							Chlorite alteration found in fractures. Weak sericite alt
376	381	S	FR	1		0	PERV	3	PATC	2							Strong pervasive silicification alteration
381	403.5	S	MTRX	1		0	PERV	3		0							Pervasive silicification alteration
403.5	408.1	S	PERV	3	PATC	2	PERV	3	VN	2							Chlorite alteration found in fracture planes.Veined Clay alteration. Pervasive silicification
408.1	421	S	MTRX	3	PATC	2	PERV	3	MTRX	1							Clay alteration found overprinting silicification.

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Blackwater Project
Drill Summary - Mineralization

BW0325		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10	19.2	DI	0.5		0	BB	0.1										Po found in blebs.
19.2	24.9	DI	1	DI	0.5	BB	0.5	Cp	VN	0.5							Cpy,Py vein and veinlets.Py replacing felsic clasts
24.9	43	DI	0.5		0		0	Cp	VN	0.5							Disseminated Py found in felsic clasts.
43	45.6	DI	0.5		0	DI	0.1										Py and Po disseminated in felsic clasts
45.6	48.3	DI	1.5		0	DI	0.1										Py and Po disseminated in fine matrix of felsic tuff
48.3	50	DI	0.5		0	DI	0.1										Py and Po disseminated in fine matrix of andesite
50	52	DI	1.5		0		0										Py disseminated in fine felsic matrix of felsic tuff
52	55.4	DI	1	DI	1	BB	0.5										Py and Sp found disseminated in fine matrix of andesite. Blebly Po
55.4	57.82	DI	1.5	DI	0.5		0										Py and Sp disseminated in fine felsic matrix od felsic tuff.
57.82	61.5	DI	0.5		0	BB	0.5										Py and Po found disseminated in felsic clasts of andesite
61.5	69.7	DI	1	DI	0.5	BB	0.5										Bleby Po found in fine matrix of andesite.Disseminated Py in felsic matrx of andesite
69.7	71.5	DI	0.5		0		0										Py disseminated in felsic clasts of volcanoclastic
71.5	72.6	DI	0.5	DI	0.1		0	Cp	VN	0.5							Disseminated Py found in clasts
72.6	88	DI	1		0	BB	0.5										Py and Po found disseminated in clasts as well as in felsic clasts.
88	95	DI	0.5		0	BB	1	Cp		0.1							Disseminated Py found in fine matrix of andesite
95	101.5	DI	1	DI	0.5	BB	0.5										Py and Sp disseminated in fine felsic matrix of andesite. Bleby Po
101.5	109.1	DI	1		0	DI	1										Py and Po disseminated in fine felsic matrix of andesite. Py veins
109.1	121.3	DI	1	DI	0.1	BB	1	Cp	VN	0.1							Py, Po disseminated in fine felsic matrix. Bleby Po. Cpy found in veins
121.3	127	DI	0.5	DI	1	BB	1										Bleby Po. Disseminated Py and Sp in fine felsic matrix
127	150.1	DI	0.5	DI	1	BB	1										Disseminated Py and Sp found in fine felsic matrix of andesite. Bleby Po. Talc and Carbonates found in fractures

Blackwater Project
Drill Summary - Mineralization

BW0325		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
150.1	157.4	DI	0.5		0	DI	0.1										Py and Po disseminated
157.4	163.5	DI	1	DI	1	BB	0.5	Cp	VN	0.5							Cpy veins. Diiseminated Py and Sp in felsic matrix. Bleby Po
163.5	173.5	DI	1	DI	1	DI	1	Cp	VN	0.1							Cpy veins. Disseminated Py and Po in felsic clasts of andesite porphyiritic.
173.5	182.5	DI	1	DI	0.5	BB	1										Bleby Po found in felsic matrix. Disseminated Py and Sp found in clasts of andesite porphyiritic
182.5	187	DI	0.5		0.1	BB	0.5	Cp	VN	0.5							Cpy veins. Bleby Po. Disseminated Py and Po in felsic matrix of andesite porphyiritic
187	195	DI	0.5		0	DI	0.5										Disseminated Py and Po found in felsic fine matrix of andesite porphyiritic
195	198	DI	0.5		0	BB	0.5										Blebby Po found in felsic clasts. Disseminated Py found in fine felsic matrix
198	202	DI	0.1		0	BB	0.5										Disseminated Py found in felsic matrix. Blebby Po replacing felsic clasts
202	204	DI	0.1		0	BB	0.5										Disseminated Py found in fine felsic matrix. Blebby Po replacing felsic clasts
204	205.5	DI	0.1		0	DI	0.5										Disseminated Py in fine felsic matrix. Blebby Po replacin felsic clasts. Py veins
205.5	211	DI	0.5		0	DI	0.1										Disseminated Py found in matrix.Anhedral Py found in fractures
211	217	DI	0.5		0	BB	0.5										Disseminated Py in matrix. Blebby Po found in felsic clasts
217	220	FP	1.5		0	DI	0.5										Disseminated Py found in fracture planes. Disseminated Po found in matrix
220	227.2	FP	0.5		0	BB	0.1										Disseminated Py in matrix. Blebby Po
227.2	232.5	DI	0.5		0	BB	0.5										Disseminated Py found in felsic matrix. Blebby Po
232.5	245.5	FP	1		0	BB	0.5										Disseminated Py found in fractures. Blebby Po found replacing felsic clasts
245.5	255.7	FP	0.5		0	BB	0.1										Disseminated Py found in fracure planes.

Blackwater Project
Drill Summary - Mineralization

BW0325		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
255.7	262	FP	0.1		0		0										Disseminated Py found in fractures. Dendtritic oxides fracture controlled.
262	281.7	DI	0.5		0	CR	0.5	Jaro	FP	5							Blebby Po found replacing clasts. Limonite and Jarosite found in fracture planes
281.7	290.5	DI	0.1		0	DI	0.1										Blebby Po replacing clasts.
290.5	301.1	DI	1		0	BB	0.5										Blebby Po found in clasts. Disseminated Py found in fractures
301.1	311.5	FP	0.1		0	BB	1										Blebby Po replacing clasts.
311.5	327.6	FP	0.1		0	BB	0.5										Blebby Po reaplacing clasts
327.6	346.8	DI	0.1		0	BB	0.5										Blebby Po replacing clasts
346.8	366.2	DI	0.1	DI	0.1	CR	0.5										Blebby Po found replacing clasts. Disseminated Py
366.2	377.5	DI	0.1		0	BB	1										Blebby Po found replacing clasts
377.5	397	DI	0.1		0	BB	0.5										Blebby Po found in mafic clasts
397	403.5	FP	0.5		0	DI	0.5	Cp	VN	0.1							Cpy locally found in mafic matrix.
403.5	408.0	FP	0.1		0	BB	0.5										Dendritic sulfides. Blebby Po replacing clasts
408.0	415.3	FP	0.1		0	BB	0.5										Po replacing clasts
415.3	421		0		0	DI	0.1										Disseminated Po

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Blackwater Project
Drill Summary - Structure

BW0325

From (m)	To (m)	Structure	Strength	Comments
10	25.64	JZ	3	Moderately jointed.
25.64	31.33	BRKZ	2	Moderately broken. Gouge zone at 30.5m.
31.33	34.35	JZ	2	Moderately jointed. Fractured zones
34.35	37	BRKZ	3	Gouge zone at 36.8.Moderately broken
37	43	JZ	2	Moderately jointed.
43	55.4	JZ	2	Moderately jointed
55.4	58	BRKZ	2	Moderately broken
58	68	JZ	2	Moderately jointed. Fractured zones
68	70	BRKZ	3	Fractured zones in andesite
70	77.5	JZ	2	Moderately jointed
77.5	84.35	BRKZ	2	gouge zone at 81.40
84.35	95	JZ	2	Moderately jointed
95	112.5	BRKZ	2	Moderately broken zone. Local shear zone at 102.50
112.5	122	JZ	2	Moderately jointed
122	128	BRKZ	2	Moderately broken
128	142	JZ	2	Moderately jointed
142	145	SZ	2	Modetarely fractured. Talc and carbonates found in fractures.
145	184	JZ	3	Moderately jointed
184	191.2	BRKZ	2	Moderately broken. Fractured zones
191.2	200.5	JZ	2	Moderately jointed
200.5	210.3	BRKZ	2	Fracture zones
210.3	227.2	JZ	3	Moderately jointed
227.2	245.5	JZ	2	Moderately jointed. Fracture zones at 237m
245.5	250.7	JZ	2	Moderately jointed
250.7	262	BRKZ	3	Broken zone, zones of fractures. Oxidation zone highly broken
262	289.5	FL	3	Clay gouge. Brecciated mafic clasts.
289.5	301.1	JZ	2	Moderately broken zone
301.1	311.3	JZ	3	Moderately ointed zone associated with fractures

Blackwater Project
Drill Summary - Structure

BW0325

From (m)	To (m)	Structure	Strength	Comments
311.3	317.3	JZ	2	Moderately jointed zone associated with fractures.
317.3	346.8	JZ	2	Slightly jointed zone. Fault point at 338.60m-gouge zone
346.8	366.2	JZ	2	Moderately jointed. 1 Fracture/ meter
366.2	421	JZ	2	Moderately joint zone

Blackwater Project
Drill Logs

Hole ID:	BW0326	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375624.34
Depth (m):	538.27	Date Started:	21/01/2012	Casing Size:	HWT	Northing:	5892722.83
Azimuth:	270	Date Completed:	30/01/2012	Casing (m):	0	Elevation (m):	1617
Dip:	-60	Logged By:	TJo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
45.7	270.7	-60
91.4	271.3	-60.2
137.2	272.5	-60
182.8	272.2	-59.7
228.6	272.5	-59.7
274.6	275.3	-59.6
320	273.6	-59.4
365.8	276.1	-58.7
411.5	278.7	-58.7
457.2	280.3	-56.9
504.7	282.6	-55.8
538.3	282.3	-54.8

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Blackwater Project
Drill Summary - Lithology

BW0326

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	8.9	OB							
8.9	20.75	FLPT	cs	LAP	L	GRY	DEP	GR30+	Angular to subangular, clasts typically 0.5-3cm wide.
20.75	25.3	FT	lam	FA	L	GRY	DEP	SH	Well laminated FT, locally mildly brecciated. Bedding anlge changes from ~0-45degTCA downhole.
25.3	29.35	VC	bx	LAP	M	GRY	DEP	SH	Atypical for VC, may in fact be brecciated FT, however occasional (~10%) mafic clasts - VC. Well sorted, clasts 0.5-1.5cm wide, ~90% clasts.
29.35	33.75	FT	lam	FA	L	GRY	DEP	SH	Massive to well laminated FT, increasingly laminated downhole. Upper 2m is massive with consistent density of cavities distinctly reminiscent of vesicles.
33.75	37.05	VC	lptbx	LAP	M	GRY	DEP	SH	Moderately well sorted with clasts 0.2-1cm wide, 95% clasts. Very few, ~2% mafic clasts. Appears to be brecciated FT, but presence of mafic clasts = VC.
37.05	93.25	FT	mas	FA	M	GRY	FLT		Homogenous, massive FT. No laminations, no brecciation, pock marked throughout with millimetric cavities at a very even density, sometime spherical, sometimes angular - look like ?vesicles and phenocryst cavities.
93.25	102.6	VC	ms	LAP	D	GRY	FLT	SH	~45-60% clasts, matrix ix composed of coarse sand (1-5mm) mafic fragments. Occasional (5%) felsic clasts. Faulted upper and lower contacts.
102.6	154.9	FT	mas	FA	L	GRY	DEP	GR30	Homogenous, very fine grained ash tuff.
154.9	168	VC	ms	LAP	M	GRY	FLT	GR30+	Matrix is largely felsic at top of interval and becomes increasingly felsic downhole, lower ~6m is borderline FLPT, but still ~5-10% mafic clasts. Clasts are typically 2-15mm wide, but up to 40mm.
168	178.4	FT	mas	FA	M	GRY	DEP	GR10	Homogenous, occasionally very feintly laminated ash tuff.
178.4	183	AND	mas	CA	D	GRY	DEP	GR10	~20% clasts, ~1-2% of which are mafic.
183	189.1	VC	ms	LAP	M	GRY	DEP	GR10	Felsic matrix, ~20% clasts, matrix consits of medium sand size angular-subrounded fragments. Clasts are typically 5-15mm wide, subang-subround.
189.1	193.5	AND	mas	LAP	D	GRY	DEP	SH	Homogenous, occasionally ?autobrecciated andesite.
193.5	202.5	EC	ms	LAP	M	GRY	DEP	GR10	Clast in upper 1m are frequently elongate and aligned at ~40degTCA, on average clasts are subrounded but are frequently well rounded, rarely subangular. ~25% clasts in fine-med sand matrix.
202.5	207.8	VC	ms	LAP	M	GRY	UNKN	SH	Similar to overlying epiclastic but less well rounded, with no evidence of alignment in elongate clasts. Also Higher clastic content (~40%), and ~10% mafic clasts. Fine/medium sand matrix. Lower contact could be structural and depositional.

newgold
a clear direction

Blackwater Project
Drill Summary - Lithology

BW0326

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
207.8	209.4	VC	cs	LAP	D	GRY	DEP	SH	Peculiar interval, moderatley brecciated, heavily mineralized. Andesite is present as ~20cm in middle of interval. Remainder is combination of very coarse (clasts 1-5cm wide) clasts, and a short 100% felsic interval. ??structure associated with rheol
209.4	213.1	VC	ms	LAP	D	GRY	DEP	GR10	100% mafic VC, 45-60% clasts, clasts are typically 1-5cm wide and angular.
213.1	358.1	AND	mas	CA	D	GRY	UNKN		Largely homogenous andesite, with frequent autobrecciation and occasional 10-30cm intervals of VC AND in which clasts are roated and lack jigsaw fit.
358.1	380.4	VC	cs	LAP	D	GRY	DEP	GR10	~50-60% clasts, locally clast supported, Larger clasts
380.4	381.6	AND	por	CA	D	GRY	DEP	GR10	Quite highly porphyritic andesite
381.6	395.4	VC	ms	LAP	D	GRY	DEP	GR10	Distinct VC from overlying interval. Clasts are 2-15mm wide, typically 5-10mm, in mafic matrix.
395.4	401.8	FT	mas	FA	M	GRY	DEP	GR30	Largely massive, only locally with feint laminae.
401.8	412.4	VC	lpt	LAP	MO	GRY	DEP	GR30	Peculiar interval of very large (up to 30cm wide) clasts of Ft and smaller mafic clasts in mafic matrix, texture and lithology obscured by locally intense patchy alt. Lower 2.5m lacks the large felsic clasts, and is composed of mafic clasts (2-10mm)i
412.4	420	FT	mas	FA	M	GRY	FLT		Locally feintly laminated FT, otherwisw massive. From 417m Ft is fault brecciated with gouge.
420	452.1	FT	lam	FA	M	GRY	FLT	GR10	Ltihologically homogenous, ~60% of interval has visible laminations, consitently between 55-60degTCA. Up to 1m long massive intervals.
452.1	453.6	FT	lam	FA	M	GRY	FLT	GR10	Moderately brecciated, laminated FT, weak sandy gouge development.
453.6	517.8	FT	lam	FA	M	GRY	UNKN		Only occasionally weakly brecciated, laminations planar and consistent at ~50degTCA. Very occasional tight folding in isolated interval - slumping.
517.8	519.2	FLPT	cs	LAP	L	GRY	DEP	GR10	Somewhat spurious classification, heavily obscured by alteration. Laminations have dissapeared, and ~40% of interval is composed of heavily chloritized 1-4cm long elongate 'clasts' in FT matrix. Could be soft ded deformation of laminated FT?
519.2	528.1	FT	mas	FA	MO	GRY	UNKN		Un-laminated, massive FT.
528.1	533.5	FT	mas	FA	MO	GRY	UNKN		Massive FT with two discreet 40cm long brecciated bands, breccias are fully competent core consisting of subang-subround, 1-10mm wide clasts in sulphide matrix, ~75% clasts.
533.5	538.3	FT	mas	FA	M	GRY	UNKN		Massive to very feintly laminated FT.

Blackwater Project
Drill Summary - Alteration

BW0326		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
8.9	10.65	O		0		0		0		0	LIM	PERV	4	HM	PERV	4	intensely oxidized, rust red with black flecks throughout
10.65	12.49	O		0		4		0		0	HM	PATC	4	LIM	PATC	4	Soft mushy oxidized clay.
12.49	19.8	T		0	CLST	2		0		0	HM	FR	2				Clay is restricted to clasts in FLPT, iron oxides on all fractures and in veinlets
19.8	24.45	T		0		0		0	PATC	2	HM	FR	3				Sericite as pale olive green in alternating laminations. Iron oxides along vt's, fractures, and in millimetric blebs throughout.
24.45	29.3	O		0	CLST	2		0		0	HM	PATC	4				Clay is quite scarce completely altering a low proportion of clasts. Fe oxides locally pervasive, on all fractures, and coating ~25% of clasts. Lower 40cm is heavily oxidized mush.
29.3	33.75	T		0		0		0		0	HM	VN	2				All veinlets and fracture planes coated with Fe oxides
33.75	35.6	O		0	CLST	1		0		0	HM		3				Clay in occasional clasts, Fe oxides in veinlets and matrix throughout, and coating ~35% of clasts
35.6	36.9	S		0	CLST	2		0		0							~25% of clasts altered to clay
36.9	40.3	T		0	DEF	2		0		0	HM	FR	3	HM	MTRX	2	Clay is restricted to 2 discreet heavily brecciated intervals, not gouge, soft very white clay alt.
40.3	57.3	T		0	SPHL	2		0		0	HM	FR	1				Steadily decreasing proportion of fractures and veinlets coated with Fe oxides. Clay is present as 1-2mm wide alt haloes around millimetric sulphide blebs.
57.3	93.35	S		0	SPHL	2		0	PATC	1							Alt is very consistent throughout interval, Sericite is very scarce, present as occasional vague feint olive green in groundmass and on fractures. Clay as 1-8mm wide haloes to blebby sulphides.
93.35	101.7	S	FR	1		0		0	CLST	2							Very weak chlorite coating on fractures, pale green sericite appearing to prefer what few felsic clasts are available.
101.7	102.6	S	DEF	3		0		0	DEF	1							Prominent chl and trace ser throughout gouge and on fractures.
102.6	106	S	FR	1		0		0	FR	2							Ser and chlor locally prominent in rubble. Clay haloes notable by their absence.
106	113	S	FR	1		0		0	MTRX	3							Near pervasive pale green sericite hue to matrix

Blackwater Project
Drill Summary - Alteration

BW0326		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
113	115.9	S	FC	2		0		0	PERV	4							Sericite in breccia and gouge throughout, local quite intense cchlorite associated with fracturing
115.9	129.8	S	FR	3		0		0	PATC	1							Only feint and intermittent sericite in goundmass to tuf. Chlorite on most fractures, but not very intense.
129.8	154.5	S	FC	4		0		0	PERV	2							Large majority of fractures are deep chlorite green, lots of fractures in interval. Sericte near pervasive but weak throughout groundmass
154.5	169	S	DEF	3		0		0		0	CHL	FC	3				Locally intesne chloritic alt throughout gouge and on fractures in rubble
169	178.6	S		0		0		0	PERV	1	SER	FR	1				Pervasive feint greenish sericitic hue throughout groundmass of tuff, and on fractures.
178.6	189	S	PATC	1		0		0		0	CHL	FR	3				Quite intense, deep green on fractures, and occasional patches of chloritie in felsic minerals of andesite.
189	194.5	S	FR	2		0		0		0							Only alt is moderate chl on fractures.
194.5	207.9	S	FR	3		0		0	PATC	1							All fractures have very dark green/black ?chlorite. Occasional feint sericite alt in felsic clasts.
207.9	209.3	S	FC	4		0		0		0							Quite heavily fractured interval, chlorite on fractures and emanating from fine fractures.
209.3	218	S	FR	3		0		0		0							Only real alt is on fracture planes, moderate chl
218	226.2	S	FR	1		0		0		0							Weak patchy chl on fractures
226.2	229.1	S	FR	3		0		0		0							Again, chl restricted to fractures, more rubbly heavily fractured interval.
229.1	240.5	S	FR	1		0		0		0							Weak patchy chl on fractures
240.5	243.4	S	FR	2		0		0		0							Locally rubbly, with two 3cm wide gougy intervals, chl is on all fractures and in gouge.
243.4	249.5	S		1		0		0		0							Weak patchy chl on fractures
249.5	251.4	S		3		0		0		0							Quite heavily fractured to rubbly, chl on all fractures, locally quite intense.
251.4	263.4	S	FR	1		0		0		0							Weak patchy chl on fractures
263.4	267.5	S	FC	3		0		0		0							Locally intense chlorite alt associated with moderate brecciation in bands at 10degTCA

Blackwater Project
Drill Summary - Alteration

BW0326		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
267.5	271.6	S	FR	1		0		0		0							Trace chl on fractures
271.6	273.6	S	MTRX	2		0		0		0	CHL	FR	1				Very weak, scarce chl on fractures. Also moderate patchy chl in matrix.
273.6	289.4	S	FR	3		0		0		0	CHL	PATC	1				Majority of fractures have trace chl, ~1/5 are quite intensely chloritized. Occasional centimetric patches of chloritization in matrix.
289.4	294.7	S	PATC	2		0		0		0	CHL	FR	1				More frequent patches of chl in matrix, up to 10cm wide.
294.7	296	S	DEF	3		0		0		0							Moderately gougy interval, near pervasive very dark green/black ?chl in gouge
296	313.9	S	FR	1		0		0		0							Trace chl with gypsum on fractures.
313.9	316.7	S	PATC	1		0		0		0	CHL	FR	1				Occasional feint chloritic alt in matrix, trace chl on fractures
316.7	317.2	S	PERV	4		0		0		0							Quite intense chl associated with brecciation.
317.2	320.2	S	FR	1		0		0		0							Trace chl on fractures
320.2	334.9	S	PATC	2		0		0		0	CHL	FR	1				Very scarce on fractures, occasional 1-5cm wide patches of chloritized matrix.
334.9	345.7	S	FR	1	FC	1		0		0							??clay alt is evident as bleaching and subtle softening around veins and fractures.
345.7	347.6	S	PATC	2	FC	1		0		0							Quite frewuent centimteric patches of chloritization in matrix. Weak clay alt in vein selvages.
347.6	358	S	PATC	1	FC	1		0		0							Only feint occasional patchy chloritization in matrix, clay selvages on veins
358	374.9	S	CLST	2		0	PERV	4		0	UNK	CLST	2				Entire interval is silicified, hardness 6.5+, including clasts of FT. Occasional clasts are heavily chloritized, and majority of clasts have a millinetric white rim
374.9	376.2	S	PATC	3		0	PERV	5		0							Pervasive intense silicification. Near pervasive chloritization of felsic material (~50% of interval).
376.2	380.4	S	PATC	1		0	PERV	5		0							Pervasive intense sil, but only trace chl in centimetric patches.
380.4	395.3	S	FR	1		0	PATC	4		0							Majority of interavl is extremely hard, but visible quartz is rare, ?sil.

Blackwater Project
Drill Summary - Alteration

BW0326		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
395.3	398.7	S	FC	2		0		0		0							Majority of fractures are chloritic, with chl occasionally emanating into groundmass.
398.7	404	S	FC	3		0	PATC	3		0							Chlorite locally intense, particularly evident in rubble. Locally very hard, with glassy veneer.
404	410	S	PATC	1		0	PERV	5		0							Intense sil throughout, chlorite is focused in lower 1m.
410	412.4	S	FC	3		0		0		0							Chlorite is quite intense on fractures and occasionally emanating into grounmass from fractures/very fine veinlets.
412.4	417.2	S	FR	3		0	PERV	4	PATC	2							Sil present as elevated hardness. Sericite is present as centimetric discolourations of groundmass.
417.2	420	S	DEF	4		0	PATC	4	PATC	2							Higlhy gougy interval, chlorite is pervasive throughout gouge. Competent pieces are pervasively silicified, with weak patchy sericite
420	428.9	S	FC	3		0	PERV	4	PATC	3							Pervasively elevated hardness, and primary texture typically blurred and locally indistinguishable. Sericite appears to be more intense in layers (associated with laminations), fracture plane chlorite.
428.9	466	S	FR	3		0	PERV	4	PATC	3							Very consistent alteration throughout. Sericite is patchy in groundmass, frequently subtly banded with ?primary laminations. Chl on fractures, and intense in rubbly/brecciated intervals. Sil throughout as high hardness (6.5+), glassy veneer on core, and s
466	473.4	S	FR	3		0	PERV	4	PATC	2	CHL	VNHL	4				Sericite is badned, prefering certain layers. Chl on fractures but also emanating from veins into groundmass.
473.4	489	S	FR	3		0	PERV	4	PATC	2	CHL	PATC	1				No vein centric haloes, but occasional centimetric patches of chloritization. Sericite still banded.
489	502.8	S	PATC	4		0	PERV	4		0	CHL	FR	3				Preferential alteration of alternationg bands has switched from sericite to chlorite. Still pervasive sil, and chl on fractures
502.8	510.2	S	FR	4		0	PERV	4	PATC	2	CHL	PATC	2				Groundmass is near pervasively silicified, with patchy, lamination controlled sericite and chlorite throughout. Chlorite is also quite intense on all fractures.

Blackwater Project
Drill Summary - Alteration

BW0326		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
510.2	514.1	S	FR	4		0	PERV	3	PATC	2	CHL	PATC	3				Similar to above interval, but patches of chl in groundmass are darker green, and core is less consistently silicifed, quite frequently <5 hardness
514.1	518.4	S	FR	3		0	PATC	3	PERV	2							Chlorite absent from groundmass, restricted to fracture planes. Pervasive weak sericitization, patchy sil
518.4	519.5	S	FR	3		0	PATC	3	PATC	2	CHL	PATC	3				Interval of ?FLPT with chl completely replacing ?clasts. Weak sericite intermittently in groundmass.
519.5	528.2	S	FR	3		0	PATC	3	PERV	3	CHL	VNHL	1				Near pervasive moderate sericitization, only patchy sil, with large intervals <5 hardness. Chl on fractures and in millimetric patches throughout.
528.2	533.5	S	FR	4		0	PATC	3	PERV	2	CHL	DEF	3				Interval includes two discreet breccia bands which are associated with heavy chl, mild ser and patchy sil throughout
533.5	538.3	S	FR	4		0	PERV	3	PATC	2	CHL	PATC	2				Fracture plane chlorite is pervasivce and intense, groundmass is variously sericite or cjhlorite altered, typically in planar bands.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
8.9	40.15		0		0		0										Oxide zone, all sulphides have been altered to oxides.
40.15	44.2	BB	1	BB	0.5		0	Dbs		0.1							Evenly distributed, millimetric blebs of sulphude (py+/-sphal) in small cavities disseminated throughout. Trace DBS also evenly distributed tthroughout.
44.2	46.6	BB	0.5	BB	0.1		0	Dbs		1.5							Increased density of DBS as perfect fronds. Py and sphal again infilling millimetric vugs.
46.6	47.9		0		0		0										Oxidized interval, sulphides all now metal oxides
47.9	54.1	BB	1	BB	0.5		0	Dbs		1							Evenly distribute vug filling py +/-sphal and perfect DBS fronds.
54.1	55.1	BB	1.5	BB	1		0	Dbs		1							Evenly distribute vug filling py +/-sphal and perfect DBS fronds. Also 2 discreet intervals of dense py + sphal mx associated with veinlets.
55.1	60.2	BB	1	BB	0.5		0	Dbs		0.5							Evenly distribute vug filling py +/-sphal and perfect DBS fronds.
60.2	65.3	BB	1.5	BB	0.5		0	Dbs		1.5							Evenly distribute vug filling py +/-sphal and perfect DBS fronds and long very fine vt's which occasionally 'belly out' into sphal+/-py
65.3	70	BB	1.5	BB	1.5		0	Dbs		2							Intense DBS up to 3mm thick throughout, often interconnected with an even spread of millimetric sooty py and sphal blebs, ?infilling vugs.
70	71.7	BB	3	DI	2		0	Dbs		2							Intenselt mx'd. DBS and millimetric blebs of py & sphal locally merging in centimetric areas of 90% sulphide.
71.7	81.45	BB	1.5	BB	1.5		0	Dbs		1.5							Somewhat patchy but locally very intense frond like DBS. Millimetric blebs of sooty py and sphal evenly distributed throughout, associated with small vugs
81.45	89.85	BB	1.5	BB	1		0	Dbs		0.5							Again, millimetric blebs of py and sphal in vugs, occasional euhedral py - ?open space filling, along with typically short, discontinuous threads of DBS
89.85	92.75		0.1	DI	10		0	Dbs		0.1							~2-3% sphal throughout with ~10cm of 70% fine sphal at 91.55m.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
92.75	95	VN	0.1	CR	1.5		0	Py	FP	0.1							Frequent clast replacement by sphal. Occasional fine py vt's at ~55-65degTCA.
95	97.9		0	DI	0.5	CR	1										Po common completelty replacing occasional small clasts, sphal as intermittent patchy disseminations.
97.9	101.2	VN	0.5	SP	0.1	BB	1.5										Fine irregular py vt's, po ?replacing clasts but could be fine blebs in matrix.
101.2	102.6	FP	0.1	CR	1	CR	0.5										Frequentmillimetric blebs of sphal, often in close association with po replacing clasts, extends quite evenly into fault breccia/gouge.
102.6	104.5	BB	0.5		0		0	Dbs		0.5							Very fine sooty black sulphide specks, occasional with visible py.
104.5	107.5	BB	1.5	SP	2.5		0	Dbs		1	Apy		0.1				Patchy but locally very intense sooty black py and fine disseminated sphal. Focused around fine millimetric specks/blebs. Top of interval is marked by 5mm thick arseno vein at ~30degTCA.
107.5	113	BB	8	DI	5		0	Dbs	DEN	5							Py is disseminated throughout in fine, typically sooty but often brassy flecks. Sphal is also disseminated throughout, but also extremely dense at 110-110.5, where it is ~30% of core. DBS is not classic DBS, rather included to describe frequent fine
113	115.9	GmR	1	BB	0.5		0										Py could really be any combination of fine sooty sulphides, present in matrix to breccias and as small massive sooty pacthes in gouge.
115.9	118.8	BB	3.5	BB	0.5		0										Even spread of millimetric, sub-anhedral py blebs and anhedral sphal blebs throughout groundmass
118.8	128.4	BB	2	SP	0.5		0	Dbs		0.5							Even spread of millimetric, sub-anhedral py blebs and anhedral sphal blebs throughout groundmass
128.4	139.4	BB	1	BB	1		0	Py	FP	0.1							Millimetric blebs of sub-anhedral py and very fine sphal, also trace py on fractures
139.4	139.8	BB	10	BB	10		0										Extremely dense millimetric flecks and blebs of sooty black sulphide, occasional visible as py or sphal.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
139.8	144.4	BB	1	BB	1		0	Plag	VN	1	Dbs		0.1				Frequent 1-4mm thick sooty-brassy py veins, also the typcial even spread of millimetric belbs and trace short DBS.
144.4	149.3	BB	0.5	BB	1.5		0	Dbs		0.5							Even spread of fine millimetric blebs, frequent better developed DBS than further up hole. Bottom 15cm is very dense with sphal.
149.3	153.9	BB	0.5	BB	1		0	Dbs		0.5							Fine millimetric blebs of py and sphal, moderately well developed DBS
153.9	155.8	VN	1	DI	0.5		0	Dbs		0.5							Py is concentrated in chunky brassy irregular veins, sphal still in occasional blebs and specks, particlularly in associateion with DBS at 154-154.2m
155.8	158.7	FP	0.1	CR	0.5	DI	1										Po is often difficult to see, largely evidenced by magnetism. Sphal is sporadic, completely replacing occasional clasts.
158.7	162.6	VN	1	CR	0.5	DI	0.1										Quite frequent irregular 1-3mm thick py veinlets, occasional sphal and very scarce po.
162.6	165.5	VN	0.5		0	BB	0.5										Only occasional fine py vt's, po could be replacing clasts, could just be small blebs.
165.5	169	VN	0.1		0		0	Py	BB	0.1							Very gougy interval, trace py in fine discontinuous vt's and occasional blebs
169	171.8	BB	2	BB	2		0	Py	VN	0.5							py veins are planar. Py blebs are frequently euhedral and millimetric, sphal is in large 5-10mm blebs and aphanitic.
171.8	174.1	BB	3.5	SP	0.5		0	Py	VN	0.5							Dominated by quite evenly spread sub-euhedral py, 1-3mm wide. Trace sphal as specks and fine blebs.
174.1	176.2	VN	0.5	BB	2		0	Py	SP	0.1							Very few fine py specks, dominated by millimetric blebs of sphal, and occasional planar py veins.
176.2	178.2	BB	1.5	BB	1		0	Py	VN	1	Dbs		0.5				Veined py here is in more irregular vt's subparallel TCA, often euhedral-subhedral py blebs, soewhat pathy, and fine sphal belbs often associated with DBS.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
178.2	180.6	VN	1.5		0	DI	1										Very fine Po disseminated throughout, also frequent planar py veinlets 1-3mm wide.
180.6	181.7		0	CR	0.5	BB	1										Frequent fine specks and blebs of Po, sporadic sphal replacing clasts
181.7	183	VN	0.5	DI	0.5	DI	1										Frequent fine planar py vt's, sphal and po scattered throughout matrix in fine specks
183	189.3	VN	1	CR	0.5	BB	0.5										Py veinlets here are irregular and subparallel TCA, sphal and Po in 1-5mm blebs ?replacing clasts
189.3	193.4	VN	0.5		0	BB	1										Py veins and frequent blebs of po
193.4	199.2	VN	0.5	BB	0.5	SP	0.1										Sphal appears to selectively replace some clasts, po typically in very fine millimetric blebs
199.2	202.3	VN	1	SP	0.1		0										Frequent 1-10mm wide irregular py veins, anastamosing at ~5degTCA
202.3	207.8	VN	0.5	SP	0.1	CR	0.5	Py	CR	0.1							occasional fine py veinlets at 30-40degTCA, sphal and py both as very scarce flecks in felsic clasts, po more common replacing clasts
207.8	208.8	VN	8	VN	0.1	BB	0.1										Deformed interval with py present as frequent very chunky blebby veins, sphal not in individual veins, but associated with edges of py veins. Po also associated with py veins in barely visible blebs.
208.8	209		0.1		0		0										Barren other than isolated occurence of py on fracture
209	209.5	CR	40		0		0										Highly atypical interval of peculiar VC with large clasts entirely ?replaced by py.
209.5	218	VN	0.5		0	BB	2.5	Py	FP	0.1							Fairly frequent fine py veinlets, po common throughout as fine blebs in clasts and matrix alike.
218	226.3	VN	0.5		0	BB	1.5										Frequent blebs of po and fine irregular vt's of py
226.3	233.5		0		0	BB	0.5										Occasional millimetric blebs of Po, typically associated with edges of clasts in autobreccia
233.5	237.2		0		0	SP	0.1										Barren
237.2	241.1	VN	0.5		0		0	Py	SP	0.1							.5% for vn'd py is a little excessive, very fine discontinuous veinlets and occasional specks.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
241.1	247.4		0		0		0										Utterly barren
247.4	253.9	FP	0.1		0	SP	0.1										Very sparse, occasional trace py on fractures and po in millimetric specks in groundmass. Interval is coincident with weak structure.
253.9	259.1		0		0	SP	0.5										Occasional millimetric specks of brassy Po
259.1	259.3		0		0		0	Apy		70							Highly atypical, coarse qtz vein rich in fine crystalline ars
259.3	268.3		0		0	SP	0.5										Very fine specks of Po disseminated throughout.
268.3	281.7	FP	0.1		0	SP	0.5										Very occasional trace py on fractures, sparse millimetric-sub-millimetric specks of Po disseminated in matrix
281.7	285.1		0		0	SP	0.5	Po	VN	0.1							Isolated occurrence of Po in short discontinuous veinlet subparallel TCA, also fine specks of Po disseminated through matrix.
285.1	295		0		0	SP	0.5	Mrc	FP	0.1							Po is mostly in millimetric specks, occasional up to 2mm wide. ?Marcasite as trace brassy sulphide rosettes on fractures
295	295.7	DI	4		0		0										Fault zone, sooty black to classic brassy py disseminated throughout gouge, locally intense mineralization
295.7	314.1	FP	0.1		0	BB	0.5										Very occasional trace py or ?marc on fractures. Po as specks and blebs, frequenty concentrated in centimetric chloritc patches.
314.1	326	FP	0.1		0	SP	1										Locally quite dense specks of Po in matrix.Associated with realtively high carbonate vein density
326	333	VN	0.5		0	SP	1										Fairly frequent, often discontinuous hairline py veinlets, often associated with mild chloritization. Speck up to millimetric blebs of Po disseminated throughout matrix
333	338.2	FP	0.1		0	SP	1										Py veinlets are absent, trace py on fractures, Po as very fine disseminations in matrix.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
338.2	345.6	BB	0.1		0	BB	1	Py	FP	0.1							Typicaly fine specks as well as multimillimetric blbes of po, also up to 2mm wide py blebs, and trace py on fractures.
345.6	358.1	VN	0.1		0	SP	0.5										Very scarce py associated with carbonate in vein, fine specks of Po disseminated throughout matrix.
358.1	373.5	VN	0.1		0	BB	1										Infrequent py vt's and trace py on fractures. Po as millimetric blebs replacing clasts throughout.
373.5	379.6		0		0	SP	0.1										Trace specks of Po
379.6	384	FP	0.1		0	BB	2										Millimetric to centimetric blebs of Po.
384	395.5	FP	0.1		0	SP	0.5										Very fine specks of Po disseminated throughout, in matrix and clasts alike
395.5	399	SP	0.5	BB	4		0	Dbs		0.1							Interval of FT, very fine specks of py and millimetric blebs of sphal deisseminated throughout, somewhat patchy. Also occasional DBS
399	404	FP	0.1	BB	0.5		0	Mrc	FP	0.1							Sphal is present exclusively as millimetric blebs in short felsic intervals (?clasts).
404	404.2	VN	5		0		0										2 chunky 5-9mm wide py veins
404.2	407.7	BB	0.5	BB	0.5		0										Sulphides here are entirely as sooty black millimetric blebs in large felsic clasts, NOT neccasarily py + sphal.
407.7	412.5	VN	0.1	BB	0.1	BB	1.5										Occasional very fine py veinlets. Po is quite common as millimetric to centimetric blebs, typically replacing vague mafic clasts.
412.5	415.2	SP	0.5	BB	0.5	SP	0.1	Apy	BB	0.1							Even spread of millimetric sooty py and sphal blebs, isolated occurrence of Po, seperate isolated occurrence of ars in 1-3mm blebs.
415.2	415.6		0	GmR	1	GmR	7										3 seperate large (3-5cm wide) patches of Po with 1-4mm wide rims of sphal
415.6	417.2	VN	0.1	BB	0.5		0										Frequent millimetric blebs of sphal, occasional trace py on gfractures and in very fine veinlets
417.2	420		0	BB	0.1		0										Gouge zone, no sulphides visible in gouge but competent pieces have ~.5% blebby sphal.
420	425	FP	0.1	BB	2	SP	0.1										Somewhat patchy blebby sphal.

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
425	428.9	FP	0.1	BB	2.5	SP	0.1	Py	VN	0.1							Locally intense sphal (up to 8% in small patches), also py in fine veinlets and on fractures. Occasional specks of Po
428.9	438	VN	0.5	BB	1	SP	0.1	Py	BB	0.5							Py is sporadically present in groundmass as 1-5mm wide irregularly shaped blebs as well as in quite frequent veinlets, sphal in millimetric sooty blebs,
438	442.4	FP	0.1	BB	1	SP	0.1										Py restricted to fracture planes. Sphal in millimetric sooty blebs (??+/-py)
442.4	445.3	FP	0.1	BB	1.5	BB	0.5										Po is focused in large centimetric patches and occasional very fine specks
445.3	449.2		0	SP	0.5		0										Only trace very fine specks of sphal and sooty black sulphide disseminated throughout.
449.2	460	FP	0.1	BB	1	SP	0.1										Sphal is in quite intense patches of millimetric blebs.
460	467.5	VN	0.1	BB	1.5		0	Py	FP	0.1							Occasional fine py veinlets, intermittently dense bleby sphal.
467.5	468.5	VN	0.1	BB	1		0	Dbs	DEN	0.1							Patchy but quite well developed DBS, isolated fine planar py veinlets, blebs of sphal and sooty black sulphide
468.5	469.8	VN	7	VN	3		0	Cp	VN	0.5	Sp	BB	0.1				Massive sulphide vein slightly subparallel TCA, noticeably very little disseminated blebby sulphide in vicinity of the vein.
469.8	473.9	BB	0.5	BB	1.5		0	Dbs	DEN	0.5	Cp	VN	0.1				'Py' is included to represent fine blebs of sooty sulphide (could be sphal), mineralization is onewhat patchy throughout, occuring in dense patches of millimetric blebs, and DBS. Also an isloated planar 5mm wide veinlet of chalco + py
473.9	481	FP	0.1	BB	2		0	Sp	VN	0.1	Py	BB	0.1	Dbs	DEN	0.1	Again, dense patches of millimetric sphal & sooty black ?py blebs, sphal is also occassional discontinuous sphal veinlets
481	487.3	FP	0.1	BB	2		0	Py	BB	0.5							Patches of millimetric sphal blebs accompanied by fine sooty ?py blebs

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
487.3	491	BB	0.5	BB	2		0	Py	VN	0.1							Sphal is present in dense centimetric patches of millimnetric blebs, py as occasional fine veinlets, and fine specks associated with sooty black sulphide and sphal
491	498	BB	1	BB	3.5		0										Frequent dense patches of blebby sulphide, sulphide blebs up to 3cm wide, also fine py veinlets. Sulphides clearly prefering certain layers, visible following 'strata' in folded interval.
498	503.4	BB	0.5	BB	0.5		0										Somewhat sporadic, patches of millimetric sphal, sooty black sulphide and occasional sub-euherdral py
503.4	510.3	SP	1	BB	1.5	SP	0.1	Py	VN	0.1							?strata-contolled, blebby sphal, sooty py and very scarce Po is concentrated in bands parallel with laminations.
510.3	512.6	BB	1.5	BB	1.5		0	Py	FP	0.1							Again, strat-contolled mineralization, locally dense layers of millimetric sphal and sooty py blebs
512.6	513	VN	7	VN	3		0	Py	SP	0.5	Sp	BB	0.5				Low density of blebby sulphides in vivinity of 1cm thick massive sulphide vein
513	515.9	BB	1.5	BB	1.5	BB	0.5	Dbs	DEN	0.1							Occasional 5-15mm wide Po blebs, quite even spread of fine sooty black ?py/sphal blebs throughout, and trace very short wisps of DBS
515.9	520.9	SP	3	BB	2		0	Dbs	SP	1							Quite evenly distributed fine sooty black strands of DBS and specks of sooty py disseminated throughout. Sphal typically in larger millimetric blebs.
520.9	521.2	VN	10	VN	3		0	Py	SP	2	Dbs	SP	1				1cm thick massive sulphide vein and moderate density of fine sooty black sulphide and specks.
521.2	528.2	SP	3	BB	2	SP	0.1	Dbs	DEN	1							Locally very dense fine specks of sooty black sulphide and py, sphal in larger blebs throughoiut. DBS is poorly developed in 1-2mm long strands.
528.2	528.7	GmR	5	SP	1		0	Py	SP	1							Massive py forming matrix to breccia, background specks of fine sooty black sulphide and sphal disseminated through groundmass

Blackwater Project
Drill Summary - Mineralization

BW0326		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
528.7	531.5	SP	2	BB	1.5		0	Py	VN	0.5							Typical locally dense specks of sooty black py and blebs of sphal disseminated throughout. Also occasional planar py veinlets.
531.5	533	GmR	4	SP	1		0	Py	SP	0.5							Brecciated interval with sooty black sulphide and py forming matrix. Also frequent fine speck sof sphal and sooty black py in groundmass.
533	538.3	VN	0.5	BB	2		0	Py	SP	1							Sooty black py and blebby of sphal in groundmass throughout. Also occasional fine anastamosing py vt's, and two discreet thicker py & sphal veins.

Blackwater Project
Drill Summary - Structure

BW0326

From (m)	To (m)	Structure	Strength	Comments
8.9	15.7	BRKZ	3	Rubbly.
15.7	57	JZ	3	consistent fracture sets at ~45-65degTCA
57	61.15	BRKZ	2	Moderately rubbly
61.15	68.45	JZ	2	Weakly jointed
68.45	77.7	BRKZ	2	Locally rubbly, moderatley fractured
77.7	89.5	BRKZ	4	~60% of interval is sandy rubble, remainder is heavily fractured
89.5	93.45	FL	4	Lots of sandy gouge and rubble, litho break.
93.45	102	JZ	4	Moderately fractured to rubbly
102	102.6	FL	3	Competent core but brecciated with gouge matrix, litho break.
102.6	113	BRKZ	4	Very rubbly.
113	115.9	FL	5	No litho break, moderately competent core consisting of fault breccia in distinct gouge matrix. Clasts in breccia are all highly internally fractured.
115.9	125.9	BD	4	Highly fractured and rubbly core
125.9	134	FZ	3	Rubbly core with competent pieces showing high degree of brecciation, no gouge, no litho break.
134	148.7	BRKZ	3	Fractured and locally rubbly core, occasional short brecciated intervals.
148.7	152.3	FZ	3	Rubble and sandy gouge, competent core shows brecciation.
152.3	164.5	BD	3	Fractured to rubbly, occasional brecciation.
164.5	169.1	FL	5	Moderately competent core, intense brecciation with pervasive gouge matrix, litho break.
169.1	207.9	JZ	1	Occaional fractures at 35-50degtCA
207.9	209.3	FZ	3	Uncertain, competent core, moderately brecciated with gouge in upper 5cm and very heavy mineralization.
209.3	218	JZ	2	occasional fractures
218	226.3	JZ	1	Occasional clean planar fractures
226.3	229.1	BRKZ	3	Laregly rubbly, locally sandy gouge, lacks evidence of displacement.
229.1	240.5	JZ	3	Consistently fractured, clean fractures
240.5	243.2	FZ	2	~ 40% rubble with local gouge, lower 50cm features two discreet 3cm gouge zones amidst competent core.
243.2	248	JZ	1	Occasional clean fractures at 45-60degTCA
248	263.5	FZ	2	Moderately rubbly, very weak breccciation and goiuge development, slickensides on some fragments.
263.5	267.5	FZ	2	Weakly brecciated, long contacts with competent core at 10degTCA visible, evidence of enhanced fluid flow.

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Blackwater Project
Drill Summary - Structure

BW0326

From (m)	To (m)	Structure	Strength	Comments
267.5	294.7	JZ	2	Fairly scarce clean planar fractures.
294.7	296	FL	3	Rubble with ~ 40% gouge.
296	302.1	BRKZ	2	Locally rubbly.
302.1	316.6	JZ	1	Fractures at ~60 or at 40fegTCA
316.6	317.2	FZ	2	Weakly brecciated, slickensides on fracture, evidence of enhanced fluid flow.
317.2	360.5	JZ	2	~1-3clean planar fractures p/m. Bimodal angle TCA, ~40 or 65-70
360.5	360.8	FZ	2	Short interval of brecciation assocviated with increased alt.
360.8	370.2	JZ	1	Occasional fractures
370.2	370.8	BD	2	weakly rubbly
370.8	377.6	JZ	2	Occasional clean planar fractures
377.6	378	FZ	2	Weakly brecciated, associated with increased alt intensity
378	392	JZ	1	Occasional clean planar fractures
392	398.9	JZ	3	Quite frequent fractures, ~3p/m
398.9	399.5	BZ	3	Rubbly, brecciated with beginning of gouge development
399.5	404.2	JZ	3	Quite frequent fracturing
404.2	413	JZ	4	locally brecciated, frequent fracturing
413	415.2	BRKZ	4	Rubbly
415.2	417.2	JZ	3	Fractured, most at 50, one at 0degTCA
417.2	420	FZ	3	Fault breccia with moderate amount of sandy gouge
420	427	JZ	4	Quite heavily fractured, bordering on rubble
427	434.8	BRKZ	3	Rubble consisting of relatively large, clean chunks.
434.8	439	JZ	3	Moderately fractyres, clean, planar, consistent in angle
439	439.5	FZ	2	Weakly brecciated, moderately rubbly.
439.5	441.9	BRKZ	2	Weakly rubbly
441.9	447.6	JZ	3	Quite heavily fractured
447.6	452.1	BD	4	Pervasively rubbly.
452.1	453.6	FZ	2	Rubbly with small amounts of sandy gouge, also small amoubt of fault breccia.
453.6	456.3	JZ	2	Occasional clean planar fractures

Blackwater Project
Drill Summary - Structure

BW0326

From (m)	To (m)	Structure	Strength	Comments
456.3	456.6	FZ	3	Short interval of rubble and sandy gouge
456.6	458.9	JZ	4	Frequent clean planar fractures at 40degTCA, and occasional fractures subparallelTCA
458.9	459.9	BRKZ	2	Interval is ~70% rubble.
459.9	466.8	JZ	2	Weakly jointed interval, fractures at 45degTCA and less often subparallel
466.8	470.2	FZ	3	Discreet band of brecciation in gouge matrix at 20degTCA
470.2	476.9	JZ	2	Occasional clean planar fractures.
476.9	477.4	FZ	3	~50% is sandy gouge, remainder is rubble.
477.4	481.3	BRKZ	3	Medium sized rubbly chunks throughout. No gouge
481.3	483.7	JZ	4	Quite heavily fractured interval.
483.7	484	FZ	2	Rubble with small amount of sany gouge
484	488.2	BRKZ	3	Moderately rubbly, chunks 5-10cm wide
488.2	489.4	FZ	4	Sandy gouge for first 80cm, rubble and sandy gouge for remainder.
489.4	494	JZ	3	Quite heavily fractured, fractures at 25 and 45degTCA
494	495.5	FZ	3	Rubble with ~20cm interval of sandy gouge in middle
495.5	507.4	BRKZ	3	Moderately rubbly
507.4	515.1	JZ	4	Locally rubbly, quite heavily fractured throughout
515.1	528.2	JZ	2	Weakly fractured, fractures at 45 or 20degTCA
528.2	528.5	FZ	1	Zone of brecciation, probably hydrothermal in origin, see lith for details
528.5	531.6	JZ	1	Occasional clean planar fractures
531.6	533.5	FZ	1	Zone of brecciation, probably hydrothermal in origin, see lith for details
533.5	537.3	BRKZ	2	Moderately rubblyu
537.3	538.3	JZ	1	Occasional clean planar fractures

Blackwater Project
Drill Logs

Hole ID:	BW0327	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375302.22
Depth (m):	305.5	Date Started:	22/01/2012	Casing Size:	HWT	Northing:	5893399.27
Azimuth:	0	Date Completed:	28/01/2012	Casing (m):	23.5	Elevation (m):	1531
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	294.3	-89.9
100	308.8	-89.8
150	329.1	-89.7
200	53.9	-89.5
260.5	267.8	-89.5
300	219.7	-89.8

Blackwater Project
Drill Summary - Lithology

BW0327

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6.7	OB							
6.7	40	FLPT	ms	LAP	L	GRY	DEP	GR30	light coloured, mainly matrix supported, with short (<.5m) runs with clast supported litho. otherwise, plenty of groundmass
40	61.95	FT	mas	CA	M	GRY	DEP	GR10	intervall is mostly tuff, with sharp contacts (clasts perhaps?) with short runs of FLPT. some fault brecciation. groundmass is medium pale grey, crystal ash
61.95	122.5	FLPT	ms	LAP	M	GRY	DEP	GR30	pale grey-green FLPT, clasts are dark, likely preferentially altered. Some intervals of a more tuffaceous litho, with possibly some resorbed clasts within it. localized zones with rough alignment of clasts
122.5	146.1	FT	mas	CA	M	GRY	DEP	GR10	dominantly FT, with occaisional interstratified (short) clastic (FLPT) section
146.1	154.5	FLPT	ms	LAP	M	GRY			FLPT with high percentage of ashy groundmass. fairly angular clasts, moderately sorted. Clasts are quite ser-chl altered and appear much darker than typical FLPt
154.5	207.5	VC	ms	LAP	M	GRY	DEP	GR30	dominantly a matrix supported volcanoclastic, felsic to intermediate matrix, majority clasts are mafic, LITH 2 is a felsic lapilli tuff with banded clasts, majority clasts are felsic (80:20) felsic: mafic clasts; relict clastic texture
207.5	222.8	FLPT	bx	LAP	M	GRN	DEP	GR30	FLPT with some sections taht are almost brecciated but mostly tuffaceous, certain interval that are more obscured by alteration with a relict clastic texture
222.8	305.5	FLPT	fltgge	LAP	M	GRN			EOH;felsic lapilli tuff, large fault zone, sections up to 1m with competent core mostly micro-brecciated or brecciated some sections where there is a relict clastic texture; sericite and clay alteration observed in clasts, sericite also pervasive thr

Blackwater Project
Drill Summary - Alteration

BW0327		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2	7.5	O	CLST	1	MTRX	2	OP	1	PERV	2							fairly weak alt'n. small zone of oxidation
7.5	12.9	S	CLST	1	MTRX	2	OP	1	PERV	2							as above. some ser-cly in fracture gouge
12.9	28	S	CLST	1	MTRX	2	INFILL	2	CLST	1							silica alt'n in infil groundmass
28	37.1	S	PATC	1	MTRX	2	OP	2	PERV	2							transitioning to a weak ser-chl patchy zones. rock colour changing from light grey to pale grey-green
37.1	44	S	PATC	2	MTRX	2	OP	1	PATC	3							fairly well altered patches with ser-chl. weak sil alt'n. felsic clasts are altered to appear dark
44	61	S	FR	1	MTRX	3	OP	2	PERV	2							weak alteration overall. fair bit of clay in matrix
61	68	S	CLST	2	MTRX	2	OP	2	PERV	2							increasing chl replacing clasts, with some ser-chl on fracture planes too
68	78	S	PATC	1	FC	3	OP	2	FC	3							high gouge area, with sil-cly in gouge. ser-cly alt'n of felsic clasts, making them dark
78	85	S	PATC	1	MTRX	1	OP	2	PERV	2							less overall alt'n, with core becoming harder as percentage of sil alt'n increases
85	93	S	CLST	1	MTRX	2	OP	2	PERV	2							a bit more clay alt'n in matrix. felsic clasts are ser-chl altered to appear dark in color
93	101	S	CLST	2	MTRX	2	PERV	3	PERV	2							as above with a bit more sil alt'n. rare large clast with heavy pervasive ser-sil-chl alt'n.
101	110	S	CLST	1	MTRX	2	PERV	3	PATC	2							hard rock from sil alt'n, local heavy alt'n with quite hard rock
110	118	S	CLST	2	MTRX	2	OP	2	PERV	3	ALB	CLST	1				increasing chl altered clasts, as well so on fracture planes and gouge. felsic clasts altering to possibly albite at end of unit
118	122.5	S	INFILL	2	INFILL	3	OP	1	INFILL	3	ALB	CLST	2				high gouge zone, with abundant ser-cly-chl infill. possible albite alteration of clasts at start of unit
122.5	130.5	S	INFILL	1	FC	2	OP	3	PERV	2							chl alt'n heaviest on edges of fracture gouge zones, also in patchy clast replacemnt/halos. pervasive ser and a moderate sil op
130.5	140	S	FC	3	MTRX	1	OP	3	PERV	2							some patchy chl alt'n zones, also fairly heavy chl alt'n on many fracture planes. ser-sil as above. no significant cly alt'n seen

Blackwater Project
Drill Summary - Alteration

BW0327		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
140	146.5	S	PATC	2	MTRX	1	PATC	3	PERV	2							patches of quite heavy sil alt'n, with streaky patches of chl alt'n. chl on fracture planes moderatly
146.5	169.3	S	FR	2	MTRX	1	PATC	2	PERV	2	CHL	CLST	1				sericite pervasive throughout, some clay in clasts, and some chlorite altered clasts, chlorite moderate along fractures
169.3	221	S	FR	3	PATC	2	PATC	2	PERV	3							increace in chlorite from above through fault zone
221	305.5	S	FR	3	CLST	1	PERV	3	PERV	2	CHL	CLST	2	SER	CLST	1	large fault zone with chlorite along fractures/crushed interval, sericite pervasive throughotu but also within clasts especially in micro-brecciated/hydrothermal brecciated competent sectionsn

Blackwater Project
Drill Summary - Mineralization

BW0327		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	12.9	VN	0.3	BB	0.5		0										isolated vnl't with dark py. sp in localized blebs. a bit of dark flakes hornblende(?)
12.9	31	VN	0.1	BB	0.3		0										tiny whisps of possible py. bit of sp in little blebs. lots of hornblende flakes
31	46	VN	0.1	BB	0.5		0										as above. clasts with local sp blebs fairly good grade in some cases
46	60	VN	0.1	BB	0.5		0	Dbs	DEN	0.1							as above. short, small whisps of dbs.
60	68.5	VN	0.1	BB	0.3		0	Dbs	DEN	0.1							as above, but not so much hornblende.
68.5	77	VN	0.1	CR	0.3		0	Dbs	DEN	0.1							minor sp replacing reworked felsic clasts. possible aspy(?) speck seen. minor whispy dbs
77	85		0	SP	0.1		0	Dbs	DEN	0.1							traces of sp specks. pretty barren section
85	92.5	SP	0.1	CR	0.5		0	Dbs	DEN	0.3							more frequent sp replacemnt of clasts. minor disseminated sp. whispy dbs here and there.
92.5	93.2	VN	0.1	BB	0.5		0	Dbs	DEN	1							short interval with good dbs
93.2	101	BB	0.3	DI	1		0	Dbs	DEN	0.5							localized good disseminated sp, one example with good sp around a large heavily ser-sil altered clast. zones of decent dbs. py bleb or two seen
101	106	BB	0.3	DI	1	BB	0.5	Dbs	DEN	0.3							frequent sp replacing clasts. breccia vein with chl-ser bearing large bleb of py. the odd fairly large po bleb seen
106	112	BB	0.3	CR	1	BB	0.1	Dbs	DEN	0.3							A bit less frequent mineralized clasts. whispy dbs here and there. not as much disseminated sp seen
112	119.5	BB	0.1	BB	1	BB	0.1	Dbs	DEN	0.1	Al		0.3				more sp in disseminations, also in clearly laminated clasts. At the end of unit some of these clasts have been altered to albite(?).
119.5	127	BB	0.1	DI	0.5	BB	0.1	Grnt	BB	0.3							upper boundary of interval is lots of fault gouge. less disseminated sp than above unit. sp in small blebs throughout with grnt's
127	134.5	VN	0.5	DI	1	BB	0.3	Dbs	DEN	0.3	Apy	SP	0.1				decent localized disseminated sp. some whispy dbs. Closer look at dbs appears to bear a fair bit of py, possibly cpy(?). specks of aspy seen

Blackwater Project
Drill Summary - Mineralization

BW0327		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
134.5	139	VN	1	BB	1	BB	1	Apy	SUBH	0.5	Cp	VN	0.1	Ga	VN	0.1	mix of mineralization, pretty good sp-py in blebs, with vnlts of py-cpy-ga-aspy. also some blebs of dark sulphide (galena?) around py +/- po with subhedral aspy.
139	154.5	VN	0.5	DI	1	DI	1	Apy	SP	0.1	Dbs	DEN	0.3				decent disseminated sp. whispy dbs more at beginning of interval. py-sp vnlt seen. trace aspy
154.5	169.3	BB	1	BB	2	DI	1										disseminated py and sph and po in little blebs, also sph>py following laminations within large clasts/blocks
169.3	201.2	DI	1	DI	1	DI	0.5										decrease in sulphides, py slightly > than sph disseminated throghout, some mixed sulphide blebs,
201.2	212	BB	2	BB	2	BB	1										disseminated blebs of sph+py+po, sph also following alignment/bandine within clasts,
212	228.9	BB	1	BB	2	BB	1	Py	DI	0.5	Sp	DI	0.5				TS~4% with mixed sulphide blebs of sph, po, and py; py and sph also disseminated throughout, a few sph+py stringers present
228.9	250		1	DI	1	DI	0.8	Dbs		1.5							TS~4%, slightly less sulphides than previous interval, py as fine disseminated but also in little stringers as black sooty py, some dbs throughout, sph and po as little blebs
250	268.5	BB	1.2	BB	1.5	DI	1	Dbs		1							same as above but slightly more sphalerite
268.5	281.3	DI	0.8	DI	1	DI	0.8	Ga	VN	0.5							TS~3%; disseminated py, sph, and po in little blebs, mostly in mixed littl eblebs, some dbs,
281.3	294.2	BB	1	BB	1.5	DI	1	Dbs	DEN	0.5							TS4%, incease in mixed sulphide blebs
294.2	305.5	DI	0.5	DEN	1	DI	0.8										TS~2.5% with disseminated sph>po>py, decrease in sulphides, but also still little mixed blebs of sph, po, and py

Blackwater Project
Drill Summary - Structure

BW0327

From (m)	To (m)	Structure	Strength	Comments
0	8	BRKZ	2	too close to surface to get reliable fracture orientations
8	12	FZ	4	fairly intense fault zone, quite a bit of gouge
12	43	FZ	1	large zone of highly broken, rubbly rock. most block lengths with quite poor recovery
43	47	BRKZ	5	comparitively more competant core, but still pretty broken, a bit of breccia gouge at end
47	56.5	FZ	1	rubbly rock, with small amount of gouge
56.5	62.3	BRKZ	1	pretty competant rock in this small section. rough fracture set at ~30 to CA
62.3	68.3	FZ	3	quite a bit of gouge, with small competant runs particularly in first half of interval
68.3	70	BRKZ	2	fairly competant short run. several parallel fractures around 30-40 degrees to CA
70	78.2	FZ	4	lots of gouge. intensity at 4 to 5
78.2	79	JZ	3	very short run of unfractured core.
79	90	FZ	2	shardy fractures with a bit of gouge
90	106	BRKZ	2	fairly competant section. planar fracture sets at 60 and 30 degrees to CA
106	111	FZ	1	highly fractured, small amounts of gouge locally
111	116	BRKZ	4	broken core, but some decent lengths of unfractured core
116	131	FZ	3	long interval of highly fracture core, with frequent local gouge. likely a main fault channel
131	144.8	BRKZ	3	moderatly broken core, some competant runs. fracture orientations ranging from 20-50
144.8	151.5	JZ	2	very competant core now. fractures consistant at around 50 degrees to CA
151.5	166	BZ	1	weakly broken zone with sections up to 1 m that are slightly more broken
166	169.3	JZ	3	
169.3	207.3	FZ	3	fault zone, rock flour along fractures, some sections of re-healed breccia, some sections of competent core up to 50cm
207.3	217.8	JZ	3	rough jagged joints, almost a weak broken zone
217.8	244	FZ	3	gouge throughout, some competen sections
244	249	JZ	2	steep, rough jagged joints
249	273.4	FZ	4	strong fault, some sections of competent core up to 50 cm, also mostly fault gge/mechanical clay/crushed; some annealed sections up to 20cm
273.4	276.8	JZ	3	competent core with fractures dominantly at 30dtca
276.8	305.5	FZ	4	fault zone same as previous fault zone

Blackwater Project
Drill Logs

Hole ID:	BW0328	Tenure #:	515809	Hole Diameter:	HQ	Easting:	376000.48
Depth (m):	409	Date Started:	23/01/2012	Casing Size:	HWT	Northing:	5893300.87
Azimuth:	0	Date Completed:	30/01/2012	Casing (m):	23.5	Elevation (m):	1519
Dip:	-90	Logged By:	KCh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	257	-89
50	256.3	-88.4
100	234.7	-88.2
100.1	246.9	-88.3
150	243.8	-88.5
200.5	243	-88.2
251.5	248.9	-88.2
300	226.5	-88.2
350.5	236.2	-88.4
400	253.4	-88.5

Blackwater Project
Drill Summary - Lithology

BW0328

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	23.5	OB							
23.5	31.1	VC	bx	LAP	L	WH	FLT	SH	OXIDE: Intensely altered volcaniclastic. Matrix supported, with sub angular clasts - majority of clasts are felsic, though they potentially are mafic altered by clay. Vugs left over from altered out minerals present in abundance.
31.1	54.5	AND	por	LAP	D	GRY	FLT	GR30+	OXIDE: Strongly altered AND (Limonite, hematite, chl, clay). Massive in areas, though upon closer inspection small, mm sized crystals (altered by clay). Some areas are vuggy, due to casts of weathered out minerals. Alteration is pervasive, changing t
54.5	153.8	AND	mas		D	GRY			TRANSITION: Dark grey, massive andesite. Weakly porphyrytic in areas. Most clasts replaced by chl. Limonite fracture controlled. Multiple cm-dec sized faults. Few healed microfractures, filled with carbonate and qtz.
153.8	263.5	AND	por	LAP	D	GRY	FLT	SH	Sulphide. Dark grey. Moderately to strongly altered (chl, sil, ser). Porphrytic overall, but localized areas (dec-m scale) are massive. Sporadic areas of breccia (dec-m scale) due to influx of sil/chl/ser rich fluid.
263.5	343.5	VC	bx	LAP	M	GRY	DEP	SH	Matrix supported, tuffaceous volcaniclastic. Clasts are angular, and range in size from mm -cm sized. Faulting throughout.
343.5	408.5	VC	bx	LAP	M				EOH=409m. Intercalated volcaniclastic and andesite, m long sections each. Each andesite section is slightly different, some having amygdules prominant and some have abundant phenocrysts, some quite massive. The volcaniclastic rocks appear to be fairl

Blackwater Project
Drill Summary - Alteration

BW0328		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	23.5	O		0		0		0		0							OVB
23.5	31.1	O	CLST	3	CLST	5		0	PERV	1	LIM	PERV	5	HM	FC	4	Intensely altered. Limonite alteration is pervasive, though fracture controlled as well. Hematite alteration is dark gry/black in colour and is fracture controlled, radiating dendritically from fractures. Clay alteration is concentrating in clasts, though also pervasive. Chl alteration becomes more prominant downsection, and is prominantly in clasts as well as weakly pervasive.
31.1	44.55	O	CLST	2	FC	2	CLST	1	CLST	2	LIM	PERV	4	HM	FC	3	Strongly altered. Limonite pervasive, as well as fracture controlled- some areas with strong limonite alteration surrounding, is vuggy. Sericite and chl alteration is concentrating in clasts. Clay alteration is fracture contorlled, and slightly pervasive. Clay alteration is also filling vugs.
44.55	54.6	O	PERV	4	PERV	5		0	FC	3	LIM	PERV	4	HM	PERV	4	Intensely altered fault zone. Sericite alteration is seen in the few competent pieces of core, in microfractures. Chl, limonite and hematite are pervasive throughout. Clay alteration is prominant, as the majority of the section is clay.
54.6	70	T	PATC	3	FC	3	MTRX	2	MTRX	2	LIM	FC	2	CARB	CLST	1	Transition zone. Limonite is concentrated on fracture surfaces. Chl is patchy, in the small faulted sections, parallel to the fractures, as well as in large roughly circular sections. In the competent sections, a sil/ser combination is altering hte matrix.
70	85	T	CLST	3	FC	1	PERV	3	MTRX	1	LIM	FC	2				Moderately altered. Chl replacing the plagioclase xtyls. Limonite and sericite contentrating in/near fractures. Clay alteration fracture controlled, and sporadically throughout
85	101.9	T	FC	2	FC	1		0	FC	2	LIM	FC	1				Ser and chl alteration are concentrated on fracture planes, as is limonite. Rare clay alteration on fracture planes.
101.9	104	T	PERV	2	PERV	4	MTRX	3	MTRX	3	LIM	FC	1				Fault zone, thus more clay alteration. Sericite and sil alteration in matrix. Limonite alteration on fractures.

Blackwater Project
Drill Summary - Alteration

BW0328		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
104	132	T	FR	2	FC	1	MTRX	3	FR	3	HM	FC	1				Moderate sericite, chl and limonite alteration on fracture surfaces. Clay alteration on some fractures. Hematite alteration surrounding microfractures.
132	153.8	S	FC	3	FC	1	PERV	4	FC	1	HM	MTRX	3	CARB	FC	2	Chl alteration filling microfractures. Clay alteration is on fracture surfaces as well as in microfractures brecciating the rock.
153.8	162.5	S	PATC	2	FC	2	PERV	3	FC	1	CARB	CLST	1				Carbonate alteration of clasts. Clay alteration in microfractures as well as on fracture planes - a lot mechanical though.
162.5	184.2	S	FC	2		0	PERV	5	MTRX	2							Strongly silicified, minor sericite in matrix. Chl alteration concentrating in fractures.
184.2	205	S	PATC	4		0	PERV	5	PATC	3	BIOT	PATC	1				Rare biotite mineralization xtyls. A variety of alteration styles grading into and out of each other quite gradationally. Localized areas of an influx of silica rich fluid brecciating the rock. Si is pervasive is throughout the rest of hte rock.
205	219.3	S	PATC	3	CLST	2	PERV	4	MTRX	3	HM	MTRX	1				Patchy alteration of many different types, decimeter scale. Core is brecciated due to sil influx from 207.60-209.6m and 213.4-214.3m - areas have stronger ser and chl alteration as well. Weak hematite alteration in core, giving it a slight reddish tinge.
219.3	236.5	S	MTRX	2	CLST	2	PERV	4	MTRX	2	HM	MTRX	2				Medium brownish red andesite (HEM). Chl and ser replacing clasts.
236.5	263.5	S	PATC	3	CLST	3	PERV	4	MTRX	2	HM	MTRX	2				Patchy alteration being dec scale. Mainly dark, with pervasive silicification. Chl is patchy
263.5	354.1	S	CLST	2	FC	2	PERV	4	CLST	2	BIOT	CLST	1	GRNT	CLST	2	Clasts are being replaced by sericite and chl. Clay alteration is mechanical, due to faulting. Competent rock is quite silicified
354.1	389.5	S	FC	2	FC	2	MTRX	3	FC	2							Chl and sericite present on fracutre surfaces and in gouge. Silica alteration is strongly present in the matrix.
389.5	408.5	S	FC	2	FC	3	MTRX	2	FC	2							Clay alteration due to faulting.

Blackwater Project
Drill Summary - Mineralization

BW0328		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	54.6		0		0		0										Ovb and oxide facies. No sulphide mineralization.
54.6	70	DI	0.1		0		0										Trace py, seen in fractures.
70	85	VN	0.2		0		0										Trace py mineralization present in and surrounding 1mm sized carbonate veinl
85	101.9	DI	0.1		0		0										Trace py disseminated throughout. No po seen.
101.9	104	DI	0.1		0		0										Trace py in fault
104	119	DI	0.1		0		0										Trace py seen in andesite. Mainly massive, unmineralized andesite.
119	133	DI	0.1		0		0										Trace py seen, disseminated thorughout.
133	143.7	DI	0.2		0	DI	1										Trace py. Core is weakly magnetic, but unable to see po.
143.7	153.8	DEN	0.2		0	DI	1										As above.
153.8	162.5	DI	0.3		0	DI	0.5										Fault - weakly dissemianted po throughout.
162.5	169	DI	0.1		0	DI	2										weakly magnetic thorughout. Minor disseminated py.
169	184.2	DI	0.2		0	DI	4										Locally, core is extremely magnetic, but no po is visible. Trace disseminated po.
184.2	205	VN	1	CR	0.2	DI	1	Apy	VN	1							Aspy present in vein at 185.6m (2cm wide) with 30% aspy, disseminated throughout the core. Py present in stringers (1-2mm) throughout. Po not seen, but core is weakly magnetic.
205	219.3	VN	3	DI	0.3	DI	2	Dbs		0.1							Sph associated with strongly chl altered section. Py present in small stringers throughout the core. Po is in blebs as well as disseinated thoughout the core. DBS seen in strongly altered zones, (core lighter in colour, thus may be elsewhere).
219.3	236.5	DI	0.1		0	DI	0.5										Significant decrease in sulphides. Po is is determined by weak magnetism of the core, no xtyls are seen.
236.5	240	DI	0.1		0	DI	0.5										As above.
240	263.5	VN	4		0	DI	2										Significant increase in sulfphides. Py stringers prominant, as are qtz/carb veins with po and py.

Blackwater Project
Drill Summary - Mineralization

BW0328		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
263.5	271.2	DI	0.5		0	CR	1										Po replacing clasts, py present disseminated throughout and filling microfractures.
271.2	287.4	FP	0.5		0	DI	0.1	Apy	SP	0.1							Py coating on fracture surfaces. Garnets present in clasts. Aspy present in small vugs, rare.
287.4	300.6	FP	1		0		0.5										Py fracture coating as well as filling microfractures. Core is weakly magnetic in areas, po disseminated throughout.
300.6	320.9	BB	0.5	CR	0.1	DI	0.5										Sph and po replacing a clast. Py in veins, blebs as well as disseminated. Po disseminated.
320.9	343.5	VN	0.5		0	DI	1										Po disseminated throughout the core, py present in association with qtz veins.
343.5	344.5	DI	1		0	CR	5										Po is strongly clast replacing, with py disseminated throughout.
344.5	354	FP	1		0	DI	3										An andesite section. Po is disseminated througout, determined by magnetism of the core. Py is fracture coating and blebby.
354	363	FP	2		0	BB	1	Grnt		3							Py present in this very gouge rich section, mainly coating fracture surfaces. Po is blebby and replacing clasts.
363	368.6	FP	3		0	DI	1										Py fracture coating, po disseminated throughout.
368.6	376.9	FP	1		0	DI	2	Grnt	CR	5							Garnet is prominantly replacing clasts. Py present coating fracture surfaces, po disseminated throughout.
376.9	382	FP	2		0	DI	3										Prominant po mineralization disseminated throughout. Py coating fractures, up to 0.5cm thick.
382	389.5	CR	1.5		0	DI	0.5	Grnt		3							Py replacing mafic clasts, po is weakly disseminated throughout.
389.5	408.5		0.3		0	DI	0.5										Disseminated po and py.

Blackwater Project
Drill Summary - Structure

BW0328

From (m)	To (m)	Structure	Strength	Comments
30.85	31.12	FL	5	Too broken, unalbe to determine and core to axis angle.
31.12	44.55	BRKZ	2	Broken, due to minor faulting, but not prominant. Joints prominatly high angle, but few low angle joints (20 degrees) as well.
44.55	54.6	FL	5	Strongly faulted, with mainly gouge. Intensely altered.
54.6	59.5	BRKZ	3	Moderately to strongly broken.
59.5	60	FL	5	Fault, strong gouge, and strong chl alteration.
60	62.05	BRKZ	2	moderately broken with a range of size of consolidated core from cm sized rubble to 30cm sized core.
62.05	64.1	FL	4	Compressional, high angle fault (horizontal), with some brecciation. Gouge abundant
64.1	85	BRKZ	2	Two sets of joints prominant (20 and 65 degrees to core axis). With some broken zones sporadically throughout.
85	87.9	FL	4	Fault, gouge prominant and very broken throughout. Microfractures abundant in consolidated core
87.9	101.9	JZ	2	Weakly jointed, mainly high angle.
101.9	104	FL	5	High angle fault, fault breccia, but still consolidated in areas. Some gouge.
104	153.8	JZ	2	Weakly jointed thorughout, mianly high angle, though some low angle.
153.8	162.5	FL	3	High angle fault, with rubble and gouge.
162.5	243.4	JZ	1	Joints are quite consistent throughout.
243.4	303.7	FL	3	Large fault zone, starting at the upper contact with andesite. Gouge is periodically throughout, cm to decimeter scale, with fault bx.
303.7	314.5	JZ	2	Few joints, various angles.\
314.5	337	FZ	3	Large moderately broken fault zone. Few sections of gouge.
337	354.1	JZ	2	Weakly jointed.
354.1	408.5	FZ	4	Large fault zone with intercalated volcaniclastic and andesites.

Blackwater Project
Drill Logs

Hole ID:	BW0329	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375426.94
Depth (m):	490.5	Date Started:	25/01/2012	Casing Size:	HWT	Northing:	5892724.38
Azimuth:	270	Date Completed:	01/02/2012	Casing (m):	12	Elevation (m):	1626
Dip:	-60	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	267	-60
50	266.2	-60.4
100	266.6	-59
150	266.1	-59
200	266.4	-58.4
252	266.8	-57.6
300	267.7	-57.1
350	268.4	-55.7
405	268	-54.4
450	268	-52.7
490.5	267.4	-51.4

Blackwater Project
Drill Summary - Lithology

BW0329

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.5	OB							
4.5	12.5	FLPT	lptbx	LAP	L	GRY	FLT	GR30+	litho is strongly altered by limonite, clay and sericite. Lower contact is broken core and contact location is estimated.
12.5	74.7	AND	por	CA	M	GRY	DEP	GR30+	Strongly Altered AND has gradiational contacts with unaltered andasite grading over 50-100cm.
74.7	91.2	VC	lptbx	BLOCK	M	GRY	DEP	GR30+	40% clasts and 60% matrix. Clasts are 1cm to 15cm, large blocks a re sub-rounded, clasts are dominately Andasitic, angular and sulphide mineralizatrion is concentrated in clasts at 60% clasts 40% matrix. Matrix is weakly silicified, with weak alterat
91.2	175.7	AND	por	CA	M	GRY	DEP	GR30+	Locally porphyritic to massive Andasite no ovious contacts, flow top, or other depositional structures.
175.7	185	VC	lptbx	LAP		GRY	DEP	SH	large mafic lapilli with a second clast fraction in the matrix of 1-3mm angular mafic clasts and Quartz grains. Fine ask matrix is dominately felsic.
185	242	AND	por	CA	M	GRY	DEP	GR30+	Locally porphyritic to massive Andasite no ovious contacts, flow top, or other depositional structures.
242	253	AND	bx		M	GRY	DEP	GR30+	Psudo breccia dicaested by many fractures, psuedo clasts are lapilli size, alteration follows fractures, core is still competant.
253	270	AND	mas	LAP	M	BLK	DEP	GR30+	Homogenious clasts and matrix very difficult to spot clasts.
270	326	EC	cgl	BLOCK	L	GRY	FLT	GR30+	The unit as a whole is bourder line as to which is any sections are Epiclastic or Volcanoclastic, the unit as a whole could be described as one or the other, or any mixture in between. There is signifigant vertical variability in clast size and sorti
326	414.2	FLPT	lam	FA	L	GRY	DEP	GR30	Volcanoclastics are interbedded in FT with gradiational boundries on top and bottom occationally an erosional surface on bottom.
414.2	426.6	VC	bx	LAP	L	GRY		GR30+	Lithic dominated VC with 75% felsic clasts.
426.6	456.8	FLPT	bx	LAP	L	GRY	DEP	GR30+	20% lithic fragments, rare sedimentry clast with strongly resemble retrograde garnets. intervals of 50cm are Felsic tuff.
456.8	464.6	AND	mas	CA	M	GRY			Massive andisite typical of area.
464.6	472.5	AND	mas	CA	L	GRY			Strong pervasive silica replacement, locally primary? banding is still visable it is dissimilar to FT banding.
472.5	490.5	AND	mas	CA	M	GRY			Massive andisite typical of area.

Blackwater Project
Drill Summary - Alteration

BW0329		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4.5	14.1	O		0	REP	3		0	PERV	4	LIM	FC	5				Clay repalcemnet of Phenocrysts
14.1	18.3	T		0	REP	4		0	PERV	1	LIM	FC	3	HM	FC	2	Clay repalcemnet of Phenocrysts
18.3	23.9	O		0	REP	5		0	PERV	4	LIM	FC	5	LIM	PERV	3	Clay repalcemnet of Phenocrysts
23.9	24.7	T		0	REP	4		0	PERV	2	LIM	FC	2	BIOT	PERV	2	Clay repalcemnet of Phenocrysts
24.7	26	O		0	REP	5		0	PERV	4	LIM	FC	4				Clay repalcemnet of Phenocrysts
26	30.3	O		0	REP	5		0	PERV	5	LIM	FC	2	HM	FR	1	Clay repalcemnet of Phenocrysts
30.3	32	O		0	REP	5		0	PERV	4	LIM	FC	5				Clay repalcemnet of Phenocrysts
32	40.7	T		0	REP	2		0		0	LIM	FC	4	HM	FR	3	Clay repalcemnet of Phenocrysts
40.7	45.7	T	FR	1		0		0		0	LIM	FR	2	BIOT	PERV	3	
45.7	70.6	S	FR	1	FR	3		0		0	BIOT		3				Clay alteration is very course for clay has a gritty feel to it. possible altered mechanical Clay?
70.6	72.5	S	FR	3		0		0	PATC	2	BIOT	PERV	3				Alteration associated with broken core.
72.5	76.5	S	FR	2	FR	4		0		0							Similar to the alteration above
76.5	91.2	S	FR	2	FC	4	MTRX	1	MTRX	2	BIOT	CLST	2				Biotite alteration is being replaced silica.
91.2	175.7	S	MTRX	1		0		0	MTRX	1	BIOT						Sericite altereation is weak and primarily matrix alteration in porphyeritic zones.
175.7	185	S	FR	2		0		0		0	BIOT	PERV	3				Bleaching and sericite alteration disipates as over the 5 m above and below the contacts with Volcanoclatic Andasite
185	251	S	FR	2	REP	1		0	PERV	1	BIOT	PATC	3				
251	270	S	PATC	1		0		0	PATC	2	BIOT	PERV	3				Pathcy Sericite and chlorite, are in area between fractures where biotite alteration is strongest. Sericite patches are 1-5cm in diametre and occur over interlvals of a few metres
270	285	T	FR	1		0	PERV	2	PATC	2	LIM	FC	3	BIOT	PERV	3	Alteration through out the EP/VC lithology is highly variable on a cm scale in both the matrix and within clasts of different lithology, >50% of clast have alteration within there outer edge.

Blackwater Project
Drill Summary - Alteration

BW0329		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
285	302.4	S	FR	1		0	PERV	2	PATC	2	BIOT	PERV	3				Alteration through out the EP/VC lithology is highly variable on a cm scale in both the matrix and within clasts of different lithology, >50% of clast have alteration within there outer edge.
302.4	324.4	T	FR	1		0	PERV	2	PATC	2	BIOT	PERV	3	LIM	FC	3	Alteration through out the EP/VC lithology is highly variable on a cm scale in both the matrix and within clasts of different lithology, >50% of clast have alteration within there outer edge.
324.4	327.3	O	PATC	1		0		0	PERV	2	BIOT	PATC	1	LIM	FC	4	LImonite an hematite alteration is associated with fault near Lithology contact
327.3	331.5	T	FR	1	REP	2	PERV	2	PERV	3	BIOT	REP	1	LIM	FC	2	Sericite is replacing feldspars and biotite is replacing an unknown mineral or possibly filling voids
331.5	333.3	O	FR	1	REP	2		0	PERV	2	BIOT	REP	1	LIM	FC	4	Sericite is replacing feldspars and biotite is replacing an unknown mineral or possibly filling voids. LImonite an hematite alteration is associated with fault near Lithology contact
333.3	351.2	T	FR	1	REP	2	PERV	2	PERV	3	BIOT	REP	1	LIM	FC	1	Sericite is replacing feldspars and biotite is replacing an unknown mineral or possibly filling voids
351.2	359.9	T	FR	1	REP	2	PERV	1	PERV	3	BIOT	REP	1	LIM	FC	3	Sericite is replacing feldspars and biotite is replacing an unknown mineral or possibly filling voids. LImonite an hematite alteration is associated with fault near Lithology contact
359.9	375.6	S	FR	1	REP	2	PERV	1	PERV	3	BIOT	REP	2				Sericite is replacing feldspars and biotite is replacing an unknown mineral or possibly filling voids
375.6	404	T	FR	1	REP	2		0	PERV	3	BIOT	REP	1	LIM	FC	3	Sericite is replacing feldspars and biotite is replacing an unknown mineral or possibly filling voids. LImonite an hematite alteration is associated with fault near Lithology contact
404	411	T	FR	1	REP	2	PERV	1	PERV	3	BIOT	PERV	2	LIM	FC	2	Biotite alteration is in moderate intensity cm scale bands roughly orthoganal to CA.
411	413	T		0	REP	2		0	PERV	5	LIM	PATC	2	LIM	FC	3	Core is more broken over this interval alteration is strong enough it is difficult to see primary textures.

Blackwater Project
Drill Summary - Alteration

BW0329		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
413	419.4	T		0	REP	2	PERV	2	PERV	4	LIM	FC	2	BIOT	PERV	3	Biotite alteration is stronger in matrix, intensity changes from 2 to 4 over metre scale intervals
419.4	422.4	S		0	REP	2	PERV	2	CLST	2	BIOT	PERV	3				Biotie is stronger in matrix. Single Py vein at 0 deg to CA has Hm and Lim along vein edges.
422.4	424.2	T		0	REP	2	PERV	2	PERV	3	BIOT	PERV	3	LIM	FC	2	Biotite alteration is unevenly effecting clasts,
424.2	428.9	S		0	REP	2	PERV	2	PERV	3	BIOT	PERV	3				
428.9	431.2	T		0		0	PERV	2	PERV	3	LIM	FC	4	LIM	PERV	2	Strongest Limonite alteration is associated with broken core, possibly minor fault.
431.2	456.8	T	FR	2	FR	2	PERV	2	PERV	3	LIM	FC	2				Limonite and chlorite are not on all fracture surfaces and are not on the same fracture surfaces.
456.8	464.6	S		0	REP	2		0		0	BIOT	PERV	3				Sharp conterast in alteration form up hole is consistant with lithology
464.6	472.5	S	FR	2	PERV	2	REX	5	PERV	2							Intense Silica replacement of andisite.
472.5	490.5	S	FR	3	REP	2		0		0	BIOT	PERV	3				Fine (<2mm) psudo stockwork sericite?/chlorite? alteration bands and blebs. Clays are replaceing feldspar phenocrysts.

Blackwater Project
Drill Summary - Mineralization

BW0329		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
14.1	18	DI	0.1		0		0	Dbs	DEN	0.1							DBS is questionable, py is intergrown with dbs, strong evidence for Sulphide alteration from core.
40.5	56		0.1		0.1		0.1										Locally 3% Spl and Py in veins, most of interval is oxidized and sulphides are only present in are which are not oxidized.
56	76.5		0		0	BB	0.1										Some mineralization associated with Qtz and local short intervals, <20cm of lapilli tuff breccia closer to the bottom of the interval.
76.5	91.2		0	DI	4	DI	1										Po and Sp are are preferentially replaciung clast 60% to 40% replacing matrix, diseminated in clasts and core. locally 10-15% of core
91.2	108	DI	0.1		0	GmR	0.2	Hm	GmR	0.1	Ga	EU	0.1				Po appears to be in Halos around Qtz-carb veins. rare discontinous veins of Chl, Ga, Po.
108	126	DI	0.1		0	GmR	0.2	Hm	GmR	0.1	Ga	EU	0.1				Po appears to be in Halos around Qtz-carb veins. rare discontinous veins of Chl, Ga, Po.
126	127		0		0		0										Po and Sp are are preferentially replaciung clast 60% to 40% replacing matrix, diseminated in clasts and core. locally 10-15% of core
127	144		0	VN	0.1	DI	1	Po	BB	1							Po is vfg disseminated and in blebs with chlorite up to 1cm v. magnetic. Sp and Po in carbonate veins
144	162		0		0	DI	1	Po	BB	1							Po is vfg disseminated and in blebs with chlorite up to 1cm, v. magnetic.
162	175.7		0	DI	0.1	DI	0	Po	BB	1							Po is vfg disseminated and in blebs with chlorite up to 1cm, v. magnetic. Sp in disseminated aggregates.
175.7	185		0	DI	2	VN	1	Po	DI	1	Sp	DI	3				Po and Sp preferentially along fracture forming psudo veins with diffuse boundries. Po and Sp which is dissminated is locally 10%, some time clast preferential and sometimes matrix preferential
185	195.5	DI	0.1		0		0										Po in small anhedral blebss
195.5	197.4	VN	0.5	VN	1	BB	0.5										Sp and Py are in wispy veins <1mm in diametre.
197.4	197.7	BB	10	VN	40		0	Mag	DI	1							Healed Fault? matix is primarily Sp with blebs of Py up to 1 cm.

Blackwater Project
Drill Summary - Mineralization

BW0329		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
197.7	198.6	VN	0.5	VN	1	BB	0.5										Sp and Py are in wispy veins <1mm in diametre.
198.6	214	VN	0.1		0		0										Trace Py associated with carb veins
214	232	VN	0.1		0		0										Trace Py associated with carb veins
232	243	VN	0.1		0		0										Trace Py associated with carb veins
243	254		0	BB	1	BB	2										Sulphides are in locallized masses associated with fracture and veining, fine grained aggregates of anhedral veins.
254	267		0		0	DI	0.1	Po	VN	0.1	Po	FP	0.1				Po is in several styles of mineralization all appears to be the same event.
267	269.8		0		0	FP	1										Po minerization is controlled by fracture/ matric dominate. locally 3 %
269.8	288		0		0	CR	0.1										Localized replacement of clasts, disseminated in matrix
288	306		0		0	CR	0.1										Localized replacement of clasts, disseminated in matrix
306	319.6		0	CR	0.1	DI	0.1										Po and Sp in clasts
319.6	324.7		0	DI	0.5	DI	0.5										much of the Po is oxidized and non-magnetic.
324.7	327.3		0		0		0										Sulphides are compleately altered
327.3	331.5		0	DI	1		0	Dbs	DEN	0.1							DBS is slightly magnetic
331.5	333.3		0		0		0										Sulphides are compleately altered
333.3	335.4		0	DI	0.5		0										Sp is locally being oxidized
335.4	344.6		0		0	EU	0.1		DEN	0.1							Disseminated euhedral Po is rusted and often non-magnetic. Dendritic Manganese oxide on several fractures
344.6	359.8		0		0		0										Sulphides are compleately altered
359.8	367.8		0	DI	1	DI	0.5										Disseminated Sp and Po locally is open cluster up to 10 cm with 5% TS
367.8	377.7		0		0.5		0.1										Decreased Sp down hole, very little Po. Sp is only effect by the strongest Limonite alteration in this interval.

Blackwater Project
Drill Summary - Mineralization

BW0329		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
377.7	395		0.1	DI	1		0	Dbs	DEN	1							Toourmaline in vein. Dbs and Sp are evenly diseminated and moderately resistant to oxide alteration. Disseminated Sp and DBS are locally concentrated in cm scale bands and blobs of dissmeniation. Py and possibly non-magnetic Po are in rare veins with
395	406.8		0	DI	1		0	Dbs	DEN	1							Disseminated Sp and DBS are locally concentrated in cm scale bands and blobs of dissmeniation. decrease rapidly as lithology changes.
406.8	426.4	BB	0.1	DI	0.5		0	Dbs	DEN	0.5							Sulphides are highly localized 10% over 10cm in more area closer to FLPT composition.
426.4	429.1		0	DI	0.5	DI	0.1	Dbs	DEN	5							
429.1	430.6		0		0		0	Dbs	DEN	0.1							Sulphides are primarily oxidized.
430.6	444.3	DI	0.1	DI	1		0	Dbs	DEN	0.5							
444.3	456.5	DI	0.1	DI	0.5		0	Dbs	DEN	1							
456.5	464.7		0	DI	0.1	DI	0.5										Po is disrminated and Euhedral, 1% Po in 50cm below litology contact. Sp is also concentrated near Lithology contact.
464.7	472.5		0		0		0	Grnt	EU	0.1							Diseminated euhedral Garnet and unknow dark minerization along fracture.
472.5	490.5	DI	0.1		0	DI	0.1										Daed Andisite

Blackwater Project
Drill Summary - Structure

BW0329

From (m)	To (m)	Structure	Strength	Comments
4.5	11.7	BRKZ		Core is broken some evidence for faulting
11.7	13	FZ		unknown orientation, gauge is in several locations.
13	18.9	JZ	3	
18.9	22.5	FZ	4	Numerous fault gauges, some are healed. Gauge ranges from breccia with minor matrix to clay rich with Qtz sand.
22.5	30	JZ	3	
30	32	FZ	2	Faule Breccia with limonite matrix and 30% porosity
32	36	JZ	2	second fracture set @ 45 deg to CA
36	51	BRKZ	4	some evidence of clay but fau;ltign but nothing substantial of convincing.
51	51.2	FL	4	Strong fault Guage 80% clay clasts < 1cm. Possible the clay alteration near by is mechanical clay which and subsequently under gone chemical alteration.
51.2	56	BRKZ	3	Broken all fracture broken faces are clay altered
56	70	JZ	2	
70	76.5	FZ	2	Broken core with minor gauge and different appearent orientations.
76.5	175.7	JZ	2	fracture sets at 40-50 and 2 orthogonal sets 15-20 DTCA, locally short intervals (50cm) of broken core where low angle factureing is more dominant
175.7	185	JZ	3	fracture set at 80 and 2 orthogonal sets 15-20 DTCA, locally short intervals (50cm) of broken core where low angle factureing is more dominant
185	195.5	JZ	2	fracture sets at 40-50 and 2 orthogonal sets 15-20 DTCA, locally short intervals (50cm) of broken core where low angle factureing is more dominant
195.5	198	FZ	2	Healed fault with extensive Sp and Po minerization.
198	243	JZ	2	fracture sets at 40-50 and 2 orthogonal sets 15-20 DTCA, locally short intervals (50cm) of broken core where low angle factureing is more dominant
243	252	JZ	3	fracture sets at 40-50 and 80 DTCA.
252	268.5	JZ	2	fracture sets at 40-50 and 2 orthogonal sets 15-20 DTCA, locally short intervals (50cm) of broken core where low angle factureing is more dominant
268.5	276.2	FZ	1	Broken Core associated with fault zone. main interval of Guage is 30 cm thick from 271.1 to 271.4. minor guages and varied angle through the remaining interval.
276.2	280	JZ	3	dominate fracture @ 45 to CA is 80 % of fractures.
280	302.5	JZ	1	Fractures at various low angles to CA 15-30

Blackwater Project
Drill Summary - Structure

BW0329

From (m)	To (m)	Structure	Strength	Comments
302.5	316.8	BRKZ	2	Several metre scale intervals of broken core and competant core. Broken intervals are related to minor faults and low angle fractures.
316.8	324.5	JZ	1	joint sets at 45 and 20 DTCA
324.5	328.2	FZ	3	Three distinct fault gauges both at 45 deg to CA. broken core in between. gauge at 324.5 80 deg to CA and 325.5, 327.9 @ 45 to CA
328.2	351.3	JZ	4	Variable jointing.
351.3	364.9	BRKZ	4	broken core ranging from 1 to 5 ON brokeness scale. some metre intervals of strongly jointed core.
364.9	375	JZ	4	20 to 30 deg to CA joints are strongly dominante.
375	386.3	FZ	1	>3, cm scale faults of unknown orientation. interval is 50% broken core and 50% number 4 jointed core. dominate jointing is 20 - 4- deg to CA.
386.3	422.5	JZ	3	Jointis is dominated by one set at 20-40 deg to CA with a second orthogonal set nearly as strong. third set at 45 deg to CA. it is also noted that dendritic MgO is locally (411.5m) preferentially growing outward from the liniation described by the inters
422.5	436.5	BRKZ	3	Core is broken to jointing 3.
436.5	457	JZ	3	Increasingly competant rock down hole with joints dominantly @ 20-40 deg to CA
457	464	JZ	3	Dominant fracture angle has reduced relitive to CA with change in Lithology
464	475	FZ	4	65cm of core lost from 471-472.5m this appears to be the location of a major fault of unknow orientation. several minor fault gauges are oriented 30-40 deg to CA and there are indicators the major fault is also oriented this way.
475	490.5	JZ	2	one set of joints is oriented 40-50 deg to CA with a second set @ 20-30 deg to CA.

Blackwater Project
Drill Logs

Hole ID:	BW0330	Tenure #:	515810	Hole Diameter:	NQ	Easting:	376126.46
Depth (m):	428.5	Date Started:	28/01/2012	Casing Size:	HWT	Northing:	5892824.19
Azimuth:	270	Date Completed:	06/02/2012	Casing (m):	45	Elevation (m):	1570
Dip:	-60	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
175	268.8	-59.7
203.5	273	-60.3
251.5	271.5	-60.6
302.5	270.8	-61.1
350.5	269.6	-61.6
400	272.4	-61.9
428.5	272.6	-61.6

Blackwater Project
Drill Summary - Lithology

BW0330

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	108	OB							bouldery sandy overburden
108	120.6	FT	fltgge		L	GRY			oxide zone: felsic tuff completely crushed/fault gge
120.6	133	FT	lam		L	GRY	DEP		FT, laminated in places, some micro brecciated sections, and some sections that are obscured by alteration
133	152	FLPT	t	LAP	M	GRY	DEP	GR30+	matrix supported felsic lapilli tuff with completely felsic sub angular clasts. Bleached near bottom, and grades into AND
152	301	AND	bx	LAP	D	GRY	DEP	GR10	matrix supported D.Gray moderatley sorted sub-angular to sub0rounded clasts avging 1-4cm in size. Hornblende in clasts clay replaced, locally clasts amygdaoloidal or contains plag crystals. Matrix is M.Gray and partially silicified. Small intervals<3
301	304	AND	mas		D	GRY			massive AND, top of litho amygdaloidal 3-20mm size Po-Silica, Silica, Silica-Albite filled. Lower section of Lithology is Plag phyric, equigranular plag phenos in plag rich groundmass. Minor hornblende throughout.
304	331	AND	bx	LAP	D	GRY	DEP	GR10	Bx ms AND. 100:0, sub-rounded clasts. some clasts amygdaloidal. Appears highly fragmental, debris flow????
331	351	AND	mas		D	GRY	DEP	GR30+	Predominatly amygdaloidal, locally relict plag rich, minor hornblende.
351	385	AND	bx	LAP	D	GRY			Bx ms ANd locally crystal rich. Clasts predominatly without texture, but locally amygdaloidal.
385	428	AND	mas		D	GRY			Massive Amygdaoloidal AND, localy crystal rich, Hornblende>Plag througout. Bottom of hole around 326.5m is abundant replaced hornblende crystals with amygdules aligned (trachytic). 2nd Litho is a Auto-Bx to Bx AND, clasts are locally curviplanar and

Blackwater Project
Drill Summary - Alteration

BW0330		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
108	118	O		0	PERV	1		0	PERV	3	LIM	PERV	2	HM	FR	1	oxidation zone, strongly faulted, strong mechanical clay
118	120.6	T		0	PERV	1	PERV	3	PERV	2	LIM	FR	1	HM	FR	1	decrease in oxidation, some sulphides present, pervasive sericite +silica
120.6	150	S	FR	2	PERV	1	PERV	3	PERV	2							pervasive silica and sericite, weak pervasive clay, chlorite along fractures and as gge, mechanical clay also present
150	163	S	FR	1	FR	1	PERV	3	CLST	3	SER	PERV	2				Sericite alteration is predominantly altering the clasts but still present in the matrix. contact with the underlying alteration interval is gradational and sericite becomes matrix dominant. chlorite on fractures. sil is pervasive to matrix dominant.
163	182.6	S	FR	3	REP	2	MTRX	3		0	SIL	AMYG	2	BIOT	PATC	1	silica alteration is moderate and dominant in the matrix - also present filling amyg of andesitic clasts. Clay as mafic phenocryst replacement in andesititc clasts. Patchy biotite alteration occurring with po mineralization
182.6	192	S	FR	2	FR	1	MTRX	3	FR	3	BIOT	PATC	1				silica aleration is predominantly in the matrix, sericite alteration is on fracture planes and local sericite-chlorite patches. Clay on fracture planes and amygdules in clasts.
192	194.7	S	FR	1	REP	3	PATC	4	PATC	1							silica alteration is stronger in this zone then the confining intervals - patchy. Chlorite on fracture planes, clay weakly on fracture planes and replacing phenos and clasts.
194.7	203.5	S	FR	2	REP	1	MTRX	3		0	BIOT	PATC	1				strong chlorite in the fault zone. silica pervasive in the matrix, no ser, clay replacing phenos and clasts.
203.5	214	S	PATC	2	FR	3	MTRX	2	FR	2	CHL	FR	1	TALC	FR	1	White to Yellowish-Green Sericite/Clay mixture, with weak talc filling FP's. Silica Matrix dominant patches/blebs. Chlorite occurs as small Sericite/Chlorite patches in matrix and coating FP's beneath clay and locally incorporated in clay.
214	221.5	S	FR	2	FR	3	MTRX	1	FR	3	TALC	FR	1				silica weakly matrix dominant.
221.5	231	S	FR	2	FR	4	MTRX	2	FR	2	TALC	FR	2	ALB	ISSOLL	2	Vuggy Albite dissolution structure locally associated with Qtz and black metallic Sp masses. Albite blebs are locally vugged, with quartz crystals inside.

Blackwater Project
Drill Summary - Alteration

BW0330		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
231	247	S	PATC	1	FR	2	MTRX	3	FR	2	BIOT	CLST	2	TALC	FR	1	Silica matrix dominant. <2mm patches of Sericite/Chlorite. Biotite replacing select clasts locally.
247	256	S		0	FR	3	MTRX	2	FR	3	BIOT	CLST	2	TALC	FR	2	
256	262	S	FR	1	FR	1	MTRX	2		0	BIOT	CLST	2				Matrix dom silica alt. Chlorite locally coats FP's. Biotite moderatley replaces select mafic clasts.
262	279	S	FR	3	FR	2	MTRX	3	FR	1	SIL	AMYG	1	BIOT	CLST	2	Sericite/Chlotire coating FP's clay locally abundant on FP's with Ser/Chl. Silican is matrix dom. Biotite alt weaker clast replacement.
279	294	S	FR	3	FR	2	MTRX	2	FR	3	SIL	AMYG	2	ALB	AMYG	2	Amygdules silica with albite, silica, or albite filled, with partial sericite replacement? Biotite partially replaces mafic clasts. Locally vesicles large and stretched out (2-3.5cm length and 1cm width) and only partially infilled with Albite +/- silica, open cavities contain chloritic mud. Albite blebby replacement in matrix with Po crystals within. Fractures coated with Chl/Ser mixture.
294	309	S	FR	3	FR	2	AMYG	3	FR	1	ALB	AMYG	1	BIOT	CLST	3	amygdules silica, silica with albite filled. Weak perv silicification. Chlorite moderatley coats FP's with Sericite and green clay. Biotite moderatley to strongly locally replaces clasts assoc with Po.
309	326	S	FR	4	FR	2	PERV	2	FR	2	BIOT	CLST	3				
326	335	S	FR	3	FR	1	PERV	3	REP	1	SER	AMYG	1	SER	FR	1	Sericite partially replaces plag grains, infills amygdules, and coats FP's with chlorite. Chl/Ser alt on FP's decreases with depth, as Calcite on FP's increases with depth..
335	341.4	S		0	PATC	2	PERV	2		0	CAL	FR	3	BIOT	PATC	4	calcite strenght increases with depth, locally clay perv patches, and predominatley silica perv. BIOT with minor Po patches, replacing clasts? White lcay locally on FP's with Calcite.
341.4	351	S		0	FR	3	PERV	3		0	CAL	FR	3	BIOT	PATC	3	Plag crystals partially-fully Fe-Co3 replaced.

Blackwater Project
Drill Summary - Alteration

BW0330		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
351	371.6	S	FR	2	FR	2	PERV	3	REP	1	CAL	FR	3	SIL	AMYG	1	Silica pervasive, veined (inclusions of sericitizes feldspar), partial amygdule filler (localy concentrically zoned with Po). calcite strongly moderatley veined. BIOT patchy alteration locally assoc with Po. chlorite starts to return on FP's with calcite and near end of interval filling FP's alone.
371.6	386	S	REP	1	REP	2	PERV	3		0	SIL	AMYG	1	BIOT	PATC	2	Silica perv and fills amygdules. Biotite patchy aggregates associated with Po, and partially replaces Hornblende. Clay partially-wholly replaces Hornblende. Chlorite as replacement of GM and as select FP fill.
386	398.5	S	PATC	3	REP	2	PERV	3		0	SIL	AMYG	2	BIOT	PATC	2	
398.5	411	S	PATC	4	REP	1	PERV	3		0	CHL	AMYG	2	SIL	AMYG	2	Silica locally replaces plag. Chlorite patches/silica patches, strongly bleaching rock (exposing texture of moderate hornblende and minor plag, locally, exhibiting trachytic texture). Silica locally haloing chlorite blebs, which contain Po.
411	428	S	FR	1	REP	1	PERV	3		0	SIL	AMYG	2	BIOT	PATC	2	BIOT alt predom in the Auto-Bx/Bx sections as patches replacing clasts assoc with Po mineralization. hornblende partially clay replaced.

Blackwater Project
Drill Summary - Mineralization

BW0330		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
118	120	DI	0.5		0		0										black sooty py, dissemintaed and some in stringers
120	134.5	DI	1	BB	2	BB	1	Dbs		0.8							dbs throughout, some black sooty pyrite, clusters of sph with specs of py and po,
134.5	152	DI	1.5	BB	1.5	BB	1	Dbs		0.5							same as above but slightly more py and less sphalerite; sulphides are disseminated throughout, sort of in clusters,
152	161.6	DI	1	BB	2	BB	2	Dbs	VN	0.5							sp patchy plebs associated with po, po is blebby and black, py is veined and blebby. dbs is minor and occurs as veinlets.
161.6	176.7	VN	2	VN	0.5	BB	1	Ga	VN	0.5	Cp	DI	0.1	Mrc	FP	0.1	pyrite as veins with sphalerite and galena - py also as fracture fill, vugg fill. Galena, po, sp also infilling clast amygdules. Po is blebby and less than above.
176.7	192	FP	2	DI	0.5	BB	1	Ga	VN	0.1	Mrc	FP	0.5				gal, sp, py veins minor - pyrite as blebby masses in the matrix rimming clasts. sph disseminations.
192	205	FP	2	DI	0.5	BB	1	Ga	VN	0.1	Mrc	FP	0.1				minor py, sp, gal veins - pyrite as blebby masses. sph disseminations
205	207	MA	5	BB	0.5		0										minor DI Blebby Sp. Py Massive Blebs, within gouge of fault.
207	215	DI	0.5		0	CR	0.5	Mrc	FP	0.5							Po blebs replace AND clasts rich in amygdules and plag phenos. Py is finely DI throughout and localy as blebs in matrix. Anhedral Marcasite masses coat FP's.
215	226	DI	0.5	MA	1	CR	1.5										Large massive blebs of black metallic SP, and red Sp DI's throughout. Po replaces AND clasts moderatley as fine DI's and blebs. Fine Py DI's throughout.
226	239	VN	1		0	CR	0.5	Cp	VN	0.1	Mrc	FP	0.1				Euhedral Py and CP in small veinlets and filling small fractures. Py also occurs as blebs and DI locally. Po replaces clasts partially, and marcasite coats FP's weakly. Py blebs also occur in conjunction with Albite masses.
239	254	BB	2	BB	1	CR	0.5	Mrc	FP	0.5							Large Blebs of Py and black metallic Sp rimming clasts in matrix. Po blebs as AND clast replacement. Mrc discoid aggregates coating FP's

Blackwater Project
Drill Summary - Mineralization

BW0330		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
254	268	VN	1.5		0	BB	0.5										Py Fracture Coating veinlets. Po blebs and filling amygdules in mafic clasts.
268	274	VN	1	MA	0.1	DI	2	Po	BB	1	Ga	DI	0.1	Ga	MA	0.1	Po fine DI's and Blebs predominatly in mafic clasts lesser in matrix, Po fills amygdules in mafic clasts. Sp + Ga occur in massive bleb at 272.95m. trace Ga DI's. Py occurs as fracture coating veinlets and DI in matrix predominatly, lesser in clasts.
274	288	DI	0.5		0	DI	1	Ga	DI	0.1							Euhedral 0.5mm DI's of Py. DI Ga stronger in broken rock. Po finely DI within BIOT clast alt, causing magnetism, lesser in matrix.
288	288.8	FP	0.1		0	BB	2										Di BB's of Po throughout, Po filling amygs in clasts. Py occurs in fault gouge.
288.8	294		0		0	DI	1	Ga	DI	0.1	Ga	MA	0.1				Po DI's and DI BB's throughout. Ga DI weakly and locally Ma incorporating Po BB's.
294	298.7	FP	0.5		0	DI	0.1	Ga	DI	0.1							Finely Di Po. Ga local trace DI's. Po coats FP's
298.7	305.5	FP	0.5		0	BB	1.5										Po BB's throughout, partially replacing plag phenos, and filling amygdules. Py coats FP's as coarse-grained and fine-grained.
305.5	318	FP	0.1	DI	0.1	DI	0.1										DI Sp and Po. Py coating FP's locally.
318	319	FP	0.5	DI	0.1	BB	1	Ga	DI	0.1							Po and Py in concentrically oned Amygdules and non-zoned amygdules, Locally Po/Py?Ga intergrown.
319	328	FP	0.1	BB	0.1	SP	0.5	Py	SP	0.5	Cp	SP	0.1				Po, Cp, Po occur as patches of specks in AND clasts, Po/Py amygdule fill locally. Sp surrounds Po in concentrically zoned amygdules locally.
328	333	FP	0.1		0	DI	0.1										Py VN and FP. Po small fined FI assoc with BIOT.
333	334.5	FP	0.1	BB	0.1	BB	2										Po blebs filling amygdules and massive bleb with black Sp bleb at 333.9m
334.5	337		0		0	SP	0.5										Po blebs locally, Po specks assoc with BIOT patches throughout.
337	349	VN	0.5		0	BB	2										Po blebs filling amygdules and locally replacing rectangular grains (feldspars?). Py VN'd and weakly Fracture coating.

Blackwater Project
Drill Summary - Mineralization

BW0330

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
349	368	VN	0.5	VN	0.1	BB	0.5	Po	VN	0.1	Cp	VN	0.1				Sp euhedral crystals in calcite veinlet. Py veined with calcite. Po intergrown in Py veinlet, incorporating blebs of CP.
368	388	VN	0.1	BB	0.1	BB	4										Po DI BB's, predom BB's filling Amygdules. Py in veins with calcite. Sp locally BB's fill Amygs and trace in VN's
388	398.5		0		0	BB	3										
398.5	411		0		0	BB	0.5										Perv Silicified. Po blebs occur in chloritic patches/amygdules, locally trace-minor.
411	425.5		0	DI	0.1	DI	0.5										DI'd and DI'd BB's of Po. trace Sp DI.
425.5	428	BB	0.1		0	BB	1										Single Py BB (2.5mm wide) halo'd by silica, and single Fracture coating BB. Po BB's filling amygdules with silica.

Blackwater Project
Drill Summary - Structure

BW0330

From (m)	To (m)	Structure	Strength	Comments
108	121	FZ	4	strong flt gge throughout, could be crushed do to it being an oxidation zone? lots of mechanical clay
121	149.7	FZ	2	fault zone, some more competent sections (weakly broken) up to 1 m, flt gge throughout, with mechanical clay throughout
149.7	166.9	JZ	2	joint set with fractures dominantly at 45 dtca, on at 15 dtca
166.9	167	FL	3	joint failure fault, minor gauge, chloritic
167	179.7	JZ	4	joint zone with fractures at 60 dtca (dominantly), moderately - 70, lesser - 20 and 30 dtca
179.7	245	FZ	3	local zones of competant and moderate fault gauge. 197.0 - 201.5 m low angle (about 5 dtca) 1 cm fault gauge zones. Small 2cm fault gouge sections at 30dtca (At 288.8m. Stongly competent fractures at 20, 30,50,60 dtca.
245	249.4	BRKZ	2	
249.4	251.6	BRKZ	4	minor gouge.
251.6	252.2	JZ	3	
252.2	252.8	BRKZ	4	
252.8	254.3	JZ	3	
254.3	256.5	FZ	3	broken rock minor gouge locally, seperated by semi-competent rock section
256.5	258	BRKZ	1	irregularly fractured competent rock
258	258.5	FL	3	minor gouge
258.5	262.4	JZ	2	~60% competent fractures.
262.4	266.4	BRKZ	4	
266.4	266.7	FL	3	moderate gouge.
266.7	270.3	BRKZ	1	
270.3	271	BRKZ	4	
271	273.5	BRKZ	2	
273.5	274	FL	4	small fault gouge moderate to abundant.
274	274.5	JZ	3	
274.5	279.2	FL	4	broken rock abundant gouge, Small gap whre core short (washed away gouge?)
279.2	283.2	JZ	3	joint zone w fractures at 30,60,50 dtca.
283.2	286.1	FL	4	abundant chloritic gouge.
286.1	288.8	JZ	3	
288.8	288.8	FL	5	99% chloritic gouge.

Blackwater Project
Drill Summary - Structure

BW0330

From (m)	To (m)	Structure	Strength	Comments
288.8	294.1	JZ	3	
294.1	295.4	FL	3	moderate gouge locally. Predominatly broken.
295.4	296.1	JZ	3	
296.1	297.1	FL	4	abundant gouge locally, otherwise broken.
297.1	297.7	BRKZ	4	small intermittent competent zones
297.7	299	BRKZ	3	
299	305.7	JZ	3	
305.7	306.5	BRKZ	4	
306.5	314.7	JZ	3	
314.7	316.8	BRKZ	3	
316.8	317.6	FL	4	fault with minor-moderate gouge
317.6	318.3	BRKZ	2	
318.3	320.7	JZ	3	
320.7	321.1	FL	3	minor chloritic gouge.
321.1	326.6	BRKZ	2	
326.6	329.3	JZ	3	2 greater 8,60 dtca. many others lesser.
329.3	329.3	FL	5	chloritic gouge containing lithis.
329.3	331.1	JZ	2	
331.1	331.9	FL	4	abundant clay rich gouge, and fragments.
331.9	346.4	JZ	2	
346.4	347.3	FL	3	partially rehealed clay altered. Calcite fills fractures.
347.3	367.7	JZ	3	
367.7	385.2	JZ	1	50>60>40>80 dtca.
385.2	385.3	FL	3	joint failure, moderate gouge.
385.3	404	JZ	1	60>55>65>30>80 dtca. strong competent silicified rock
404	404.4	BZ	3	intact, predom clastic clay gouge supported. Partial calcite infill of Fractures.
404.4	411.9	JZ	1	40>70 dtca. stong competent silicified rock.
411.9	413.5	FL	3	abundantly broken with moderate gouge, strength 3-3.5

Blackwater Project
Drill Summary - Structure

BW0330

From (m)	To (m)	Structure	Strength	Comments
413.5	414.6	BRKZ	2	fractured rock.
414.6	414.7	BZ	4	small 1.5cm fault Bx, captured between fractured rock.
414.7	415.3	BRKZ	1	fractured rock
415.3	423	JZ	3	
423	428	JZ	3	45>30

Blackwater Project
Drill Logs

Hole ID:	BW0331	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375500.6
Depth (m):	370.94	Date Started:	26/01/2012	Casing Size:	HWT	Northing:	5893299.29
Azimuth:	0	Date Completed:	31/01/2012	Casing (m):	10	Elevation (m):	1544
Dip:	-90	Logged By:	AVe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.3	33.7	-89
92	37.5	-89.3
183.5	53.4	-89.4
232.2	27.1	-89.7
275	143.9	-89.3
320.7	135.6	-89.3
366.4	138	-89.3

Blackwater Project
Drill Summary - Lithology

BW0331

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour	Bottom Contact Nature	Bottom Contact Type	Comments
31	50.9	AND	mas	FA	D	DEP	GR30	Andesite porphyiritic with felsic subangular clasts.
50.9	54.9	VC	mas	LAP	D	DEP	SH	Fine felsic matrix. Matrix supported. Felsic clasts are dominant being 90%
54.9	77.5	AND	por	FA	D	ALTFR	GR10	Porphyiritic texture. Fine felsic matrix.
77.5	90	VC	ms	LAP	D	DEP	GR30	Andesite clasts. Felsic fine matrix.
90	95.7	AND	mas	FA	D	DEP	GR5	Fine felsic matrix. Felsic subangular clasts
95.7	97.2	VC	mas	LAP	D	DEP	SH	Lapilli tuff clasts of andesite. Fine felsic matrix
97.2	98.25	VC	mas	LAP	M	DEP	GR5	Fine felsic matrix. Andesite clasts
98.25	101.7	VC	cs	LAP	D	DEP	GR5	Andesite clasts. Fine felsic matrix
101.7	110.3	VC	mas	LAP	D	DEP	GR5	Fine felsic matrix. Subangular andesite clasts
110.3	116.6	VC	mas	CA	L	DEP	GR5	Felsic clasts. Massive felsic matrix
116.6	145	VC	mas	LAP	D	UNKN		Andesite clasts. Fine felsic matrix
145	154.5	VC	ms	LAP	D	DEP	GR5	Fine felsic matrix.
154.5	168.2	VC	mas	LAP	D	DEP	GR5	Angular felsic-andesite clasts
168.2	174.6	VC	mas	LAP	D	DEP	GR5	Subangular felsic clasts. Fine felsic matrix
174.6	209.4	VC	mas	LAP	D	DEP	GR5	Angular to subangular felsic clasts
209.4	238.4	VC	mas	LAP	D	UNKN	GR5	Fine felsic matrix.
238.4	249.0	VC	ms	LAP	D	DEP	GR5	Fine felsic matrix. Andesite and Felsic Tuff-lapilli clasts
249.0	253.8	VC	ms	LAP	D	DEP	GR5	Fine felsic matrix. Andesite and Felsic medium clasts
253.8	287.1	VC	mas	LAP	D	DEP	GR5	Fine felsic matrix. Andesite and felsic lapilli tuff clasts chlorite altered
287.1	293.2	VC	ms	LAP	D	UNKN	GR10	Subangular mafic clasts. Fine felsic matrix
293.2	308.6	FLPT	lpt	LAP	L	DEP	GR5	Angular felsic clasts. Fine felsic matrix
308.6	328.3	VC	ms	LAP	D	DEP	GR5	Subangular felsic-mafic clasts.
328.3	357.2	AND	mas	LAP	D			Volcanoclastic texture. Mafic clasts
357.2	370.9	AND	mas	LAP	D	UNKN		Subangular mafic clasts.

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Blackwater Project
Drill Summary - Alteration

BW0331		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
31	50.19	S	FR	3		0	PATC	1		0							Chlorite alteration found in fractures
50.19	55	S	PERV	4	CLST	2	PATC	2		0							Clay alteration found in felsic clasts. Silicification found in halos around felsic clasts
55	66.14	S	FR	3		0		0		0							Chlorite alteration found in fractures
66.14	69	S	PERV	4	CLST	2		0		0							Clay alteration found in felsic clasts. Chlorite alt found in clasts as well as in felsic matrix
69	77.5	S	FR	3	CLST	1		0		0							Clay alteration found in clasts
77.5	87.56	S	PERV	4	CLST	2	PATC	3		0							Clay alteration in felsic clasts. Pervasive chlorite alt found in felsic matrix
87.56	95.5	S	FR	3	CLST	2	PATC	2		0							Clay alteration found in felsic clasts. Silicification found in halos
95.5	106.5	S	PERV	3	CLST	2	PATC	1		0							Clay alteration found in felsic clasts
106.5	116.6	S	CLST	3	CLST	4		0		0							Srong clay alteration found in clasts
116.6	126	S	PERV	4	CLST	2	PATC	2		0							Clay alteration found in felsic clasts. Patchy silicification
126	145	S	PERV	4	CLST	3	PATC	2		0							Clay alteration found in felsic clasts. Patchy silicification
145	154.5	S	PERV	3	MTRX	3	PERV	2		0							Pervasive Chlorite alteration. Clay alt found in felsic clasts
154.5	166	S	PERV	3	MTRX	2	PATC	2		0							Chlorite alteration found in felsic clasts. Clay alteration overprinting chlorite alt
166	186.1	S	PERV	4	CLST	2	PATC	2		0							Pervasive chlorite found in felsic clasts. Clay alt found in felsic clasts
186.1	216.1	S	PERV	3		0	PATC	3		0							Pervasive chlorite alteration.Pervasive silicification found in halos
216.1	238.4	S	PERV	3		0	PERV	3		0							Chlorite alteration found in matrix as well as in felsic clasts. Pervasive silicification
238.4	287.1	S	PERV	3		0	PATC	3	PATC	3							Chlorite alteration found in felsic matrix. Patchy Sericite alteration
287.1	293.3	S	MTRX	3		0	PATC	2		0							Chlorite alteration found in felsic matrix.
293.3	299.3	S	PERV	3		0	PATC	2	PATC	2							Pervasive Chlorite alteration. Patchy silicification
299.3	308.6	S	CLST	2		0	OP	3	PATC	3							Chlorite alteration found in clasts. Patchy sericite. Patchy silicification

Blackwater Project
Drill Summary - Alteration

BW0331		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
308.6	325.1	S	CLST	2		0	PERV	3	PATC	1							Chlorite alteration found in clasts. Pervasive silicification
325.1	328	S	PERV	3		0	PERV	3	PATC	1							Pervasive silicification. Chlorite alteration found in clasts as well in groundmass
328	345.0	S	PERV	3		0	PERV	2	PATC	0							Pervasive Chlorite alteration
345.0	357.2	S	FC	2		0		0		0							Chlorite alteration found in fracture planes
357.2	370.9	S	PERV	3		0	PATC	2		0							Pervasive Chlorite alteration

Blackwater Project
Drill Summary - Mineralization

BW0331		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
30	49.37	DI	0.1		0	DI	0.5										Disseminated Py and Po in fine felsic matrix
49.37	56		0		0	BB	0.5										Blebby Po found in clasts.
56	66.14		0		0	DI	0.1										Disseminated Po in fine matrix
66.14	69		0		0	DI	1										Disseminated Po in fine felsic matrix
69	77.5		0		0	DI	0.5										Disseminated Po
77.5	87.58		0		0	BB	0.5										Blebby Po found in matrix
87.58	95.09	FP	0.5		0	DI	0.5										Disseminated Py found in fracture planes
95.09	107.5	FP	2		0	DI	1										Disseminated Py and Po found in fracture planes
107.5	116.6	DI	0.1		0	BB	1										Blebby Po found in clasts
116.6	126	FP	1		0	DI	0.5										Disseminated Py and Po found in fractures
126	145.1	FP	1	CR	0.5	BB	1										Blebby Po found reaplicing felsic clasts. Disseminated Py found in fracture planes
145.1	162.2	FP	1	DI	1	BB	1										Blebby Po. Disseminated Py found in fractures. Disseminated Sphaleryte in felsic matrix.Dendritic sulfides
162.2	174.6	FP	2		2	DI	1										Disseminated Py found in fractures.Py vein. Sp and Po found in blebs
174.6	189.2	FP	2	DI	1.5	CR	2										Disseminated Py found in fractures. Disseminated Po replacing clasts
189.2	206.9	FP	2	CR	2	CR	2	Py	VN	1	Mrc	FP	0.5				Disseminated Py found in fractures. Subhedral Py found in fractures. Po and Sp found as blebes and replacing clasts
206.9	225.4	FP	2	CR	2	CR	2	Py	VN	1							Py disseminated in fractures. Py veins. Po and Sp replacing felsic clasts.Dendritic sulfides
225.4	239.9	FP	2	CR	2	BB	1										Disseminated Py found in fracture planes. Blebby Po. Sp replacing felsic clasts
239.9	262.8	FP	2	BB	1.5	CR	2										Disseminated Py found in fractures. Po and Sph replacing mafic clasts
262.8	279.5	FP	2	BB	1.5	CR	1.5	Py	VN	1							Disseminated Py found in fracture planes. Zones of subhedral Py found in fractures. Po replacing mafic clasts.

Blackwater Project
Drill Summary - Mineralization

BW0331		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
279.5	289.5	FP	2	DI	1.5	CR	2										Disseminated Py found in fracture planes. Py veins. Po and Cp replacing mafic clasts
289.5	293.2	FP	1	BB	0.5	CR	1										Po replacing mafic clasts. Py veins. Blebby Sp
293.2	308.6	FP	1.5	CR	2	BB	1.5	Apy	VN	0.5							Disseminated Py found in fractures. Arsenopyrite found in veins
308.6	313.5	FP	1	CR	1.5	BB	1	Cp	VN	0.5							Blebby Sp. Disseminated Py found in fractures.
313.5	324.2	FP	1		0	CR	1	Cp	VN	0.5							Disseminated Py found in fracture planes. Py and Cpy veins
324.2	328	FP	0.5	DI	1	BB	1	Cp									Cpy and Py veins. Blebby Po
328	344.5	DI	0.5	DI	1.5	BB	1										Disseminated Sp found in groundmass. Blebby Po
344.5	357.2	FP	0.5	DI	0.1	BB	1	Cp	VN	0.5							Cpy and Py veins. Blebby Po found replacing clasts.Carbonates and Talc found ind fractures
357.2	370.9	FP	0.1		0	BB	1										Blebby found replacing volcanoclastic clasts

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Blackwater Project
Drill Summary - Structure

BW0331

From (m)	To (m)	Structure	Strength	Comments
30	53.94	JZ	3	Moderately jointed zone
53.94	56.35	BRKZ	2	Small gouge zone
56.35	73.5	JZ	3	Moderately jointed.
73.5	85.95	BRKZ	2	Broken zone with small zone of gouge
85.95	90	JZ	2	Moderately jointed
90	93.57	BRKZ	2	Broken zone
93.57	99.38	JZ	3	Highly jointed
99.38	104.2	BRKZ	3	Broken zone
104.2	116.6	JZ	2	Moderately jointed
116.6	118	BRKZ	3	Broken zone
118	145.8	JZ	2	Moderately jointed
145.8	162.2	JZ	2	Moderately jointed
162.2	177.4	BRKZ	2	Broken zone with small fractures zones
177.4	193.8	JZ	3	Highly jointed
193.8	221	JZ	3	Moderately jointed. Planar fractures
221	222.3	FZ	2	Brecciated zone. Gouge zone
222.3	239.5	JZ	2	Moderately jointed
239.5	255.5	JZ	3	Moderately jointed
255.5	258.6	BRKZ	2	Broken zone
258.6	273.4	JZ	3	Jointed zone. Zones of fractures
273.4	275.5	BRKZ	3	Broken zone. Moderately brecciated
275.5	279.9	JZ	3	Moderately Jointed zone
279.9	283.5	FL	3	Gouge zone. Brecciated clasts
283.5	299.3	JZ	2	Moderately jointed.
299.3	306.9	JZ	2	Moderately jointed
306.9	309.1	FZ	3	Gouge zone. Brecciated clasts
309.1	315.3	JZ	3	Slightly jointed. Long fractures
315.3	325.2	FZ	3	Gouge zone. Brecciated clasts

Blackwater Project
Drill Summary - Structure

BW0331

From (m)	To (m)	Structure	Strength	Comments
325.2	335.9	FZ	2	Gouge zone. Brecciated clasts. Clay gouge
335.9	357.2	JZ	3	Moderately jointed
357.2	370.9	JZ	2	Moderately jointed

Blackwater Project
Drill Logs

Hole ID:	BW0332	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375051.42
Depth (m):	386.5	Date Started:	27/01/2012	Casing Size:	HWT	Northing:	5893249.69
Azimuth:	0	Date Completed:	03/02/2012	Casing (m):	4.5	Elevation (m):	1552
Dip:	-90	Logged By:	NLe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	331.7	-88.6
151	339.3	-88.3
200.5	338.2	-88.1
250	335.1	-89.1
301	316	-89.2
352	247.6	-89.5
386	23.1	-89.6

Blackwater Project
Drill Summary - Lithology

BW0332

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3.6	OB							
3.6	11.3	FLPT	cs	LAP	L	GRY	DEP	GR30	Intensely silica + sericite altered mixed volcaniclastic breccia; predominantly felsic clasts weakly etched locally
11.3	49	FT	lam	FA	L	GRN	DEP	GR10	Transition facies; strongly silicified ash fall tuff w/ minor chl (light green hint) and specled sericite (1mm);
49	69.2	FLPT	lptbx	LAP	M	GRN	DEP	SH	Transition facies; poorly sorted strongly silicified matrix supported lapilli tuff breccia;
69.2	92	FLPT	lptbx	LAP	M	GRN			Transition facies; poorly sorted strongly silicified clast supported lapilli tuff breccia; increased quantity mafic clasts, clast larger than previous run; garnet selectively replacing clasts (mafic?)
92	164.3	FLPT	lptbx	LAP	M	GRN	DEP	GR10	Sulfide facies, rocks as above; relatively proximal debris flow represented in the flptbx rock logged in this hole; significant amount of clast-replacement garnet
164.3	192	FLPT	lptbx	LAP	D	GRN	DEP	GR5	Poorly sorted felsic>mafic lapilli tuff breccia; larger clasts than previous run; mafic-felsic ratio 5-10:95-90; rock more intensely altered than previous
192	241	FLPT	lptbx	LAP	D	GRN	DEP	GR30	Poorly sorted felsic>mafic lapilli tuff breccia; smaller 0.5-1cm clasts, matrix supported
241	302.8	FLPT	lptbx	LAP	D	GRN	DEP	GR30	Poorly sorted felsic>mafic lapilli tuff breccia, clast spported; clasts of banded ash tuff (cinter?) hosting relatively more intense sulfide diss's
302.8	386.5	FT	lam	FA	D	GRN			flow baded lapilli tuff w/ zones of lapilli tuff breccia; 3-5% garnet blebs locally

Blackwater Project
Drill Summary - Alteration

BW0332		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.6	11.3	T	CLST	1	PERV	1	PERV	4	PERV	2							Pervasive strong silica w/ weak clast dominant sericite + chl
11.3	49	T	PERV	1	PERV	1	PERV	4	PERV	2							Strongly altered rock, texture destructive, weak pervasive greenish hint (chl?) w/ spotty (1mm) sericite clots
49	69.2	T	CLST	1	CLST	1	MTRX	4	CLST	3							selective alteration w/respect to clast vs. matrix; matrix almost completely silica; clasts variably altered to sericite and/or chl
69.2	116.5	T	CLST	1	CLST	1	MTRX	4	CLST	3	GRNT		4				Selected larger clasts replaced by garnet and garnet + sphalerite
116.5	164.3	S	CLST	1	CLST	1	MTRX	4	CLST	3	GRNT		4				sulfide facies; alteration as above
164.3	241	S	CLST	3	CLST	2	PERV	3	CLST	2	GRNT		4				alteration generally as above w/ stronger chl clast replacement and pervasive alteration
241	291	S	CLST	3	CLST	2	PERV	3	CLST	2	GRNT		4	BIOT	CLST	3	wall rock alteration as above, garnet sites apprear to have significant biotite?
291	386.5	S	FR	2	PERV	1	PERV	5	PERV	1	GRNT		4				Pervasive strong silicificatoin w/ weaker pervasive sericite/chl; strong garnet (diss'd or clast replacement?)

Blackwater Project
Drill Summary - Mineralization

BW0332		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3.6	20.1		0		0		0	Dbs	DEN	0.5	Goe	FP	0.5	Hm	FP	0.5	moderate fx + weak diss feox hem>goe; minor local fresh dbs
20.1	49	DI	0.1	DI	0.1		0	Dbs	DEN	0.5	Goe	FP	0.5	Hm	FP	0.5	weak fx > perv. oxidation; slight increase in fresh dbs
49	69.2	DI	0.1	DI	1		0	Dbs	DEN	0.5	Goe	FP	0.1	Hm	FP	0.1	increased dbs; weak diss py + sp favoring clasts
69.2	136	DI	0.1	DI	3		0	Dbs	DEN	0.1	Grnt	CR	4				impressive garnet + sphalerite replaceing banded ash tuff clasts
136	192	DI	1.5	DI	1.5	DI	0.5	Dbs	DEN	0.1	Grnt	CR	4				similar mineralization as above, slightly smaller blebs yet higher quantity of garnet; diss'd blebs of py+sp>po; minor veined sp>py
192	241	DI	0.5	DI	2	DI	1.5										Stong diss'd sp > po > py blebs (clast replacement?)
241	302.8	DI	1.5	DI	0.5	DI	2	Grnt	CR	3							increased diss'd sulfides and garnet; diss sulfide blebs in ground mass po>py; garnet (clast replacement?) blebs garnet > po (biotite?)
302.8	330	DI	1.5	DI	0.5	DI	1	Grnt	DI	4							Garnet sites may not be replacing clasts, they are disseminated in this laminated zone; diss'd sub-euhedral py w/ weak veined pyrite; trace large diss'd clots of cpy;
330	345	DI	1	DI	0.5	DI	0.5	Grnt	DI	3							Ratty shreddy looking garnets and disseminated pyrite/sphalerite and pyrrhotite
345	360	DI	0.5	DI	0.1	DI	0.5	Grnt	DI	3							as above
360	386.5	DI	0.5	DI	0.1	DI	0.1	Grnt	DI	4							Weak sulphides continued garnets

Blackwater Project
Drill Summary - Structure

BW0332

From (m)	To (m)	Structure	Strength	Comments
3.6	12.4	JZ	2	weakly fx'd hosting oxidation; c^60,0
12.4	14.5	FL	4	fault zone, blocky to clay gouge; hosting intense oxidation
14.5	44.5	JZ	2	moderately fractured rock; c^0,15,45
44.5	63.1	JZ	4	intensely fx'd rock, blocky with weak clay at 52.1m
63.1	112.5	JZ	2	weakly fx'd rock; c^15,45,0
112.5	115	FL	5	intesne fault zone, clay gouge mostly washed away with drilling <50% recovery
115	128.1	JZ	4	high intensity of fractures, between two faults; c^70,35,0
128.1	133.1	FL	5	fault zone, fines 99% washed out, left w/ blocky rubble; poor recovery <35%
133.1	151	JZ	3	moderately fx'd rock; c^25-30,60,0
151	152.4	FL	3	fault, predominantly blocky w/ minor clay gouge
152.4	173.5	JZ	3	moderately fx'd rock w/ minor clay at 162m (intense mineralization in seam)
173.5	192	JZ	3	moderately fx'd rock w/ chl + clay coatings
192	241	JZ	2	weakly fx'd; c^15-35; weak chl + clay + py fracture coatings
241	286.9	JZ	1	very weakly fractured rock (stick rock), w/ weak chl + py (marcasite?) coatings; c^30-25, 0
286.9	289.9	BRKZ	3	blocky rubble w/ mionr clay at top boundary including sooty sulfide
289.9	306.3	JZ	2	weakly fx'd rock; c^35 w/ weak chl + clay + euhedral cubic py
306.3	307.1	FL	3	Fault zone w/ weak clay and sooty sulfide and minor euhedral py cubes
307.1	322.2	JZ	3	moderately fractured rock; c^ 60 weak garnet; c^10,35 have chl +marcasite coatings
322.2	331	JZ	1	weakly fx'd rock; c^40
331	350.7	BRKZ	2	weakly broken zone
350.7	355.8	FL	3	small fault zone with gouge
355.8	358	JZ	1	Weak joint set
358	368.5	BRKZ	5	broken and rubbly core
368.5	382.1	JZ	3	Jointing at 40 and 50 degrees
382.1	383.4	BRKZ	3	broken zone
383.4	386.5	JZ	2	weak joint set

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Blackwater Project
Drill Logs

Hole ID:	BW0333	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376000.03
Depth (m):	350.5	Date Started:	28/01/2012	Casing Size:	HWT	Northing:	5893399.38
Azimuth:	0	Date Completed:	01/02/2012	Casing (m):	16	Elevation (m):	1512
Dip:	-90	Logged By:	LMo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
73	114.5	-89.6
124	155.6	-88.2
169	173.4	-88.7
226	169.5	-89
277	164.1	-89.2
331	182.3	-88.8

Blackwater Project
Drill Summary - Lithology

BW0333

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	16	OB							Overburden
16	101	VC	volc	LAP	BA	PUR	DEP	GR5	Volcanoclastic, majority mafic clasts, matrix supported. Frequent zones of clay-gge with rounded brecciated clasts. Intermittent zones of strong purple coloured oxidation and green-blue chlorite alteration.
101	153.7	AND	por	LAP	D	PUR			Andesite, brecciated (and autobrecciated), dominantly porphyritic with an interval of flowbanding at 128-132m. Still showing strong purple colour.
153.7	342.1	AND	por		D	GRY	FLT	GR10	Andesite, porphyritic to massive, with brief intervals of amygdules infilled with calcite.
342.1	350.5	VC	volc	LAP	M	GRY			Polymictic, matrix supported volcanoclastic unit, with some silicification, and minor sukphides (<0.5%).

Blackwater Project
Drill Summary - Alteration

BW0333		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
16	70	T	PATC	3	CLST	2		0	PATC	1	UNK	PATC	3	LIM	CLST	2	Moderate pervasive chlorite in intermittent zones with pervasive and dendritic (purple) manganese oxide. Possibly also clayy-sericite alteration in zones with felsic clasts. Limonite replacing clasts in some intervals.
70	89.9	S	PATC	2		0		0	PATC	1	UNK	PATC	3	CAL	FC	1	Patchy chlorite and sericite (dominant in areas with felsic material), pervasive mn-oxide in mafic dominant zones. Calcite infilling breccias and fractures
89.9	99.5	S	PERV	3	PATC	1		0	PATC	3	CAL	FC	2				Sericite and clay in felsic dominant areas, pervasive chlorite. Calcite infilling fracture zones.
99.5	146.1	S		0		0	PATC	2		0	UNK	PERV	3	CAL	INFILL	2	Pervasive mn-oxide (dark red-purple) with weak, patchy silicification. Calcite infilling breccias and on fractures
146.1	150.9	S	REX	3	MTRX	3	PATC	1	PATC	2							Possibly fluid altered andesite - phenocrysts are completely recrystalized (possibly to chlorite - soft,dark green), pale green clay (also sericite?) pervades matrix. Blebs of silica, also with rust red coloured blebs of unknown mineral.
150.9	152.7	S	CLST	1	PATC	1		0		0	UNK	PATC	2				Minor clay-chlorite alteration, with patches of pervasive purple coloured mn-oxide
152.7	217	S	FR	1		0		0		0	CAL	INFILL	2				Chlorite on fractures, with calcite infilling amygdules and fractures
217	223.5	S	PATC	1	DEF	2	PATC	1	PERV	2							Fault zone with pale green clay gge and breccia clasts.
223.5	272	S	FC	1		0	PATC	1		0	CAL	INFILL	2				Calcite infilling fractures and amgdules, chlorite in zones of clay gge, weak, patchy silica
272	276.7	S	FC	1	DEF	2	PATC	1	PERV	2							Clay, chlorite, silica and sericite, associated with faulted material
276.7	281	S	FC	1		0	PATC	1		0	CAL	INFILL	2				Patchy silica, chlorite associated with fractured/brecciated rock, calcite infilling fractures and amygdules
281	342.1	S	FR	1		0	PATC	3		0	CAL	INFILL	1	TALC	INFILL	1	Patchy silicification, sometimes overprinting feldspar phenocrysts and making them look pink. Chlorite on some fractures, calcite and talc infilling fractures
342.1	350.5	S	CLST	1		0	CLST	2	CLST	1	BIOT	CLST	1				Clast dominant silica/chlorite/sericite alteration.

Blackwater Project
Drill Summary - Mineralization

BW0333		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	60.5		0		0	DI	2										Di po, patchy limonite
60.5	64	BN	0.5		0	CR	0.5										One band of sooty sulphide, also on fractures. Minor po in clasts.
64	70		0		0		0	Goe	FP	1	Jaro	FP	1				Jarosite and goethite on fractures
70	89.5		0		0	DI	4										Di po
89.5	100		0		0	DI	2										Decrease in di po
100	146		0		0	DI	0.1										Trace po, barely distinguishable
146	147	FP	0.5		0	DI	0.1										Some py on fractures, trace po
147	217	FP	0.5		0	DI	1.5										Po di throughout andesite, py visible on some fractures
224	272.1	SP	0.5		0	DI	2										Py, specks on and around fractures. Di po, 1-3%
272.1	276.7	BN	0.5	BB	0.5	DI	0.1	Ga	BB	0.5							Sooty sulphide (banded pyrite) with sphal and gal blebs, associated with fault gge. Trace po.
276.7	281	DI	0.5		0	DI	1.5										Minor po, trace py
281	304.5	DEN	0.1		0	DI	0.1										Trace po and py
304.5	316.5	DI	0.5		0	BB	2										Blebby, di po, with small amounts of py
316.5	342.1	DEN	0.1		0	DI	0.1										Trace py and po, mostly dead andesite
342.1	350.5	DI	0.5	SP	0.1	BB	1										Minor po and py in blebs, occasional specks of sphal

Blackwater Project
Drill Summary - Structure

BW0333

From (m)	To (m)	Structure	Strength	Comments
16	23.75	JZ	2	Moderately jointed rock
23.75	27	FZ	4	Fault zone, with strong clay gge and rounded breccia clasts
27	36.2	BRKZ	3	Moderately broken zone
36.2	37.1	FL	4	Fault with re-healed clay gge and rounded breccia clasts
37.1	71.7	FZ	3	Fault zone with local intense clay gge, and intervals <3m of joint rock. predominantly 45 degree joints
71.7	90	JZ	3	Moderately jointed rock, with some short zones of broken rock
90	108	FZ	3	Fault zone, with areas of intense clay and rubble
108	125	JZ	2	Moderately jointed rock with occasional short areas of rubble
125	127	FL	4	Fault with intense pervasive clay gge
127	143.8	JZ	2	Jointed rock, with variable fracture angles, short sections of broken rock
143.8	147	FZ	4	Fault zone, with areas of intense clay alteration
147	217.6	BRKZ	3	Broken zone, with short intervals of rubbly clay gge. Some short sections (<2m) of joint rock.
217.6	223.5	FL	4	Fault with intense clay gge and strong alteration
223.5	252	BRKZ	2	Broken rock, with zones of up to 60% joint rock, some areas of gougy rubble, and predominantly weak cleavage planes on fractures
252	276.7	FZ	4	Fault zone, with intervals of intense clay gge and rubble. Some banded sooty sulphide at the end of the fault zone, in the more altered clay gge.
276.7	350.5	JZ	3	Moderately jointed rock, with some weak broken areas.

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Blackwater Project
Drill Logs

Hole ID:	BW0334	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375201.01
Depth (m):	502	Date Started:	28/01/2012	Casing Size:	HWT	Northing:	5893399.44
Azimuth:	0	Date Completed:	10/02/2012	Casing (m):	6.5	Elevation (m):	1533
Dip:	-90	Logged By:	NDh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	152.9	-89.3
100	117.4	-89.5
150	198.4	-89.9
200	306.9	-89.6
299.5	263.1	-89
313.4	260	-88.8
359.5	258.8	-89.1
397	265.2	-89.1
450	257.6	-88.8
496	260	-88.8

Blackwater Project
Drill Summary - Lithology

BW0334

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.5	OB					DEP		
5.5	56.5	FLPT	t	LAP	L	GRY	ALTFR	GR30	flpt, felsic laminated clasts with a felsic matrix, oxidation to 35.5m depth
56.5	98.1	FLPT	t	LAP	M	GRY			same as above, some clasts still have laminations, majority of clasts are felsic, a few mafic ones, alteration change=slightly more chlorite and sericite
98.1	154	FLPT	t	LAP	M	GRN	DEP		fault gge throughout, clay+chlorite+sericite? annealed sections, some sandy bouldry sections
154	235	FT	bx		M	GRN			Felsic tuff; brecciated in places, laminations, still in a large fault zone with gge throughout, some sections that are more strongly broken but overall, fault zone
235	315	FLPT	ms	LAP	M	GRN			felsic lapilli tuff, dominantly a relict clastic texture, some sections up to 5cm of micro-brecciated sections, some sections that appear to be obscured by alteration. Minor (<3 m) zones that appear to be brecciated banded felsic tuff. In some zones
315	319.6	VC	bx	LAP	M	GRN	DEP	GR10	Felsic dominated volcaniclastic with matrix supported subangular clasts. Chloritized clasts, intense silicification.
319.6	329	FLPT	bx	LAP	L	GRN	DEP	GR10	Felsic lapilli tuff with subangular clasts that are chloritzed and typically banded.
329	345	VC	bx	LAP	M	GRY			Felsic dominated volcaniclastic with matrix supported subangular clasts. Chloritized clasts, intense silicification.
345	442	FLPT	bx	LAP	L	GRN			Light grey-green felsic lapilli tuff, matrix supported with chlorite and slicks on fracture planes. Small intervals of pale laminated felsic tuff with a microbrecciated texture.
442	502	FT	lam		L	GRN	UNKN		Light grey-green felsic tuff with convoluted laminations (? chaotic primary flow banding?). Garnets preferentially mineralizing specific flow bands as irregular, anheadral crystals.

Blackwater Project
Drill Summary - Alteration

BW0334		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	36.5	T		0	CLST	2	PERV	2	PERV	3	LIM	FC	2	HM	FR	2	pervasive sericite >silica throughout, weak clay in some clasts, fractures controlled oxidation
36.5	98.1	S	FR	2	CLST	1	PERV	3	PERV	2	CHL	PERV	1				chlorite weakly pervasive throughout, sericite and silica pervasive as well, weak clay in some clasts also chlorite alt in some clasts and fracture planes
98.1	154	S	DEF	4	PATC	1	PATC	3	PERV	2	SER	DEF	2				sandy bouldery gge, strong mechanical clay throughout, annealed fault throughout
154	215.5	S	PERV	1	PERV	1	PERV	4	PERV	3	CHL	FR	2				fault zone, mechanical clay, pervasive sericite, silica throughout, weak pervasive chlorite and moderate chlorite on fractures
215.5	224.5	S	FR	2	PERV	1	PERV	4	PERV	3	CHL	PERV	1				less chlorite, competent core, pervasive sericite, silica, and weak clay
224.5	235	S	PERV	1	PERV	1	PERV	4	PERV	3	CHL	FR	3				fault zone, moderate to strong mechanical clay throughout
235	254.5	S	PERV	1	PERV	1	PERV	4	PERV	2	CHL	FR	3				fault zone, pervasive silica, sericite and clay, chlorite along fractures and in some clasts
254.5	293.5	S	FR	3	PATC	2	PERV	4	PERV	2	CHL	CLST	4	CHL	PERV	1	silicification is strong and pervasive, chlorite alteration is clast dominant but also present on fracture planes and weakly pervasive. Sericiate and clay aleration is weak to moderate and is patchy throughout the section. Clay also present on fracture planes with chlorite.
293.5	320	S	PATC	3	PATC	2	OP	4	PATC	1	CLY	FR	3	CHL	FR	2	Intense silicification, chlorite alteration is patchy throughout, on fracture planes and altering clasts, clay alteration of clasts, patches of the matrix and on fracture planes, weak serictite.
320	323	S	CLST	4	FR	4	PERV	4	PATC	1	CLY	PATC	2				strong silicification, chlorite alteration os clasts, clay on fractures and patches within the matrix.
323	370	S	FR	4	PERV	2	PERV	3	PATC	2	CLY	FR	1	CHL	CLST	4	moderate silicification, strong chloritization of clasts and fracture planes. Pervasive clay throughout and weak clay on fracture planes.
370	394	S	PERV	3	CLST	2	PERV	4	PATC	1	CHL	FR	2				Similar to above, with moderate, pervasive chlorite alteration, chlorite and clay on fracture planes. Clay alteration of clasts.

Blackwater Project
Drill Summary - Alteration

BW0334		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
394	414.6	S	PERV	3	FR	2	PERV	5	PATC	2	CHL	FR	3	BIOT	REP	2	Strong pervasive silica alteration that typically obscures the primary texture of the core. Sericite alteration of some faint clasts, chlorite alteration is patchy-pervasive and on fracture planes, clay alteration is weak to moderate on fracture planes. Biotite rims on sphalerite/pyrrhotite blebbs.
414.6	430	S	PERV	3	FR	2	PERV	5	PATC	2	CHL	FR	3	BIOT	REX	2	same as above but with weak hematite staining on fracture planes.
430	441	S	FR	4	FR	2	PERV	5	PATC	2	CHL	PATC	3				Clay on fractures and as weak alteration halos around (?fracture controlled) pyrite veinlets. Anhydrite? on fracture planes, slickensides on fracture planes. Sericite is patchy, could be clast replacement (primary texture is cryptic with intense alteration). Strong chlorite on fracture planes. Minor calcite veining.
441	450	S	FR	3	FR	2	PERV	4	PERV	4	CHL	PERV	3				Less chlorite on fracture planes, stronger sericite alteration, less clay than above.
450	464	S	FR	3	FR	2	PERV	4	PERV	4	CHL	PERV	3	HM	FR	1	same as above with weak hematite on fracture planes
464	476	S	PERV	2	FR	1	PERV	4	PERV	5	CHL	FR	3				same as above without hematite on fracture planes.
476	502	S	PATC	1	FR	3	PERV	4	PERV	5							Similar to above with strong silica and sericite alteration, very weak chlorite alteration. Moderate clay on fracture planes - some mechanical.

Blackwater Project
Drill Summary - Mineralization

BW0334		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.5	40	DI	0.5	DI	0.1		0										fine disseminations of mostly brassy py, some black sooty py, trace sphalerite specks
40	56.5	DI	1	BB	1.5	DI	0.5	Dbs	DEN	0.5							TS~ 3% with disseminated py , some in little veinlets as black sooty py, blebs of sph; and dendritic black sulphide throughout
56.5	73.4	DI	1.5	BB	2	BB	1	Dbs	DEN	0.5							TS~4.5%; blebs of sphalerite, sort of replacing clasts, py disseminated throughout, po in little blebs throughout, some mixed sulphide blebs with sph>po>py
73.4	84	DI	0.1	DI	0.5		0										significant decrease in sulphide, little blebs of sph and trace brassy py specs throughtou
84	104.5	DI	0.5	DI	0.5	DI	0.2										fine disseminated brassy specs of py throughout, little blebs of sph and some trace py
104.5	126.4	DI	1	DI	1		0										blebs of sphalerite, some sort of as clast replacement, specs of py throughout;
126.4	146.6	DI	1	DI	0.5		0	Ga	DI	0.2							fault zone, fine disseminated sulphides throughout, basically specs of sulphide throughout
146.6	161.3	BB	1	BB	1	BB	1										up to 3% sulphides, sulphides mostly as mixed blebs with sph+po+py
161.3	169.6	DI	0.5	DI	0.5	DI	0.5										same as above but decrease in over all amount of sulphide blebs, some sections with py as fine brassy specks
169.6	177.4	BB	1	BB	1	BB	0.5										blebs and sort of disseminted in fault gge
177.4	188.5	DI	0.2	DI	0.5	DI	0.2										decrease in sulphides, trace specs of brassy py, spahlerite as little blebs sort of in clusters and some following laminated of laminated clasts
188.5	194	DI	1	BB	1	DI	0.5	Dbs		0.2							black sooty py, also some little specs of brassy py, sph in little blebs, some as clast replacement, maybe with garnet?; trace dbs
194	200	SP	0.2	BB	5	DI	0.2										trace specks of py, little blebs of sph

Blackwater Project
Drill Summary - Mineralization

BW0334		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
200	226.6	BB	1	BB	2	BB	1.5	Dbs		0.5							mixed sulphide blebs with sph>po>py, also little specs of py throughout interval, some dbs and some black sooty py s
226.6	247	DI	1		2		1	Dbs		0.5	Ga						ts~4.5% with sulphides disseminated througout, some mixed clusters of brassy py, sph, po and gn; dbs througouts, py also as stringersn
247	261.6	BB	1.5	DI	2	DI	1	Dbs	DI	0.5	Grnt	CR	0.1				sulphides disseminated throughout. Pyrite as brassy blebs - where rock is banded py preferentially mineralizing in some layers. Sphalerite mineralizing as blebby disseminations throughout and as clast replacement. Pyrrhotite disseminations throughout
261.6	278.7	BB	1	DI	2.5	BB	1	Dbs	DI	0.1	Cp	SP	0.1	Apy	VN	0.1	sulphide disseminated throughout. Pyrite as brassy blebbs +/- chalcopyrite specks. Pyrrhotite blebbs and sphalerite as red-brown blebby disseminations. Trace arsenopyrite in pyrite veinlet.
278.7	290.5	BB	0.5	DI	1	BB	0.5	Dbs	DEN	0.5	Py	VN	0.5	Po	VN	0.5	pyrite in blebbs and as discontinuous hairline veins, sphalerite as disseminations throughout and in fine veins with pyrrhotite.
290.5	315.5	VN	1	DI	2	DI	1.5	Dbs	DI	0.5	Mrc	FP	0.1				pyrite as hairline veins and minor disseminations associated with pyrrhotite blebbs, disseminated red blebby sphalerite, marcasite on fracture planes, weak DBS.
315.5	326.5	VN	0.5	BB	1	DI	1.5	Dbs	DI	0.1	Mrc	FP	0.1	Py	CR	0.5	pyrite as hairline veins and as clast replacement, blebby, red sphalerite, pyrrhotite disseminations, marcasite and hematite on fracture planes, trace DBS.
326.5	337	VN	1	BB	1	DI	1.5	Dbs	DI	0.1	Hm	FP	0.1	Po	CR	1	similar to above.
337	344.5	VN	1	BB	2	BB	1.5	Dbs	DI	0.1	Mrc	FP	0.1				pyrite as hairline veins and blebbs with pyrrhotite. Sphalerite and pyrrhotite disseminations. Marcasite on fracture planes. Trace DBS disseminated throughout.

Blackwater Project
Drill Summary - Mineralization

BW0334		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
344.5	358.5	BB	0.5	DI	1.5	BB	2.5	Dbs	DI	1	Mrc	FP	0.1				Fine red sphalerite disseminations, blebby pyrrhotite associated with pyrite blebbs, disseminated DBS and marcasite on fracture planes.
358.5	364.3	BB	0.5	DI	1	BB	1.5	Dbs	DI	0.5	Mrc	FP	0.1				Similar to above with lesser pyrrhotite and lesser sphalerite.
364.3	371	VN	0.1	DI	1	BB	2	Dbs	DI	0.1	Mrc	FP	0.1				similar to above with slightly more pyrrhotite
371	375.3	VN	0.5	DI	0.5	BB	1	Dbs	DI	0.1	Mrc	FP	0.1				Less mineralized than the bounding zones.
375.3	388.2	VN	1	BB	2	BB	1.5	Dbs	DI	0.5	Mrc	FP	0.1				Pyrite as hairline veins and within blebbs with pyrrhotite. Deep red sphalerite as blebbs typically associated with pyrrhotite blebbs. Small, scattered disseminations of DBS. Marcasite on fracture planes with chlorite.
388.2	391	BB	0.5	BB	1.5	BB	1	Dbs	DI	0.1	Mrc	FP	0.1				slightly less mineralized than the bounding intervals. Red sphalerite blebs, vuggy pyrite-silica blebbs, pyrrhotite blebs.
391	398	VN	1	BB	1.5	BB	1	Dbs	DI	0.1	Mrc	FP	0.1				Less sphalerite than above, more pyrite. Pyrite as discontinuous, wandering veinlets at multiple orientations.
398	419	VN	0.5	BB	2	DI	2	Dbs	DI	0.1	Py	SP	0.1	Mrc	FP	0.1	Pyrite as both fine, hairline veins and as trace inclusions in pyrrhotite blebbs. Sphalerite and pyrrhotite as disseminations and larger clusters forming blebbs, typically associated together.
419	422	VN	1	DI	2	BB	2	Grnt	CG	0.1	Py	SP	0.1	Mrc	FP	0.1	Similar to above with the appearance of garnet at 419.0 m
422	441	VN	1	DI	0.1	DI	1	Grnt	CG	3							Stronger garnet than above, slightly increasing in abundance with depth. Garnet is a cruddy black/brown and anhedral. A decrease in sulphide (pyrite, pyrrhotite, and sphalerite) with depth. Pyrite occuring as hairline veinlets, discontinuous and mult

Blackwater Project
Drill Summary - Mineralization

BW0334		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
441	465	DI	0.5	DI	1.5	BB	2	Py	VN	1	Dbs	DI	0.1				Disapearance of garnet and increase in sulphide mineralization. Pyrite occuring as both disseminations and as veinlets - tetrahedral pyrite on fracture planes with chlorite and weak to moderate hematite staining. Sphalerite and pyrrhotite are typical
465	477	VN	0.5	SP	0.1	BB	1	Grnt	CG	0.5	Mrc	FP	0.1				Reappearance of garnet, increasing in abundance with depth. Fine disseminations of red sphalerite near blebbs of pyrrhotite. Pyrite as hairline veins (many look like mineralization in tension cracks ... griffiths cracks? orientation 5 dtca) and also
477	502	VN	1	BB	1	BB	1	Grnt	CG	1.5							Increase in garnet from interval above. Increase in sphalerite - black sphalerite forming blebby masses with pyrrhhotite. Garnet preferentially mineralizing on laminations as course grained, anhedral masses typically elongated in the direction of ban

Blackwater Project
Drill Summary - Structure

BW0334

From (m)	To (m)	Structure	Strength	Comments
5.5	11	JZ	2	competent core, few fractures at ~ 55 dtca
11	44	FZ	3	fault zone, gge zone with strong oxidation,
44	75	JZ	3	mostly competent core, some weak broken sections up to 50cm
75	88	FZ	2	weak to moderate fault zone, some gge throughout
88	98.1	JZ	3	competent rock with weak broken sections up to 40cm
98.1	215.5	FZ	4	strong gge and mechanical clay annealed intervals, some sandy bouldery crushed material
215.5	224.5	JZ		fairly competent core, some sections that are weakly broken up to 10 cm, joints dominantly at 80 dtca
224.5	235	FZ	2	fault zone, gge throughout, moderate to strong mechanical clay
235	254	FL	2	moderate fault zone, with sections that are competent core (weakly broken) up to 1 meter, gge throughout
254	262.5	JZ	5	intense joint zone with local broken zones. Jointing at 15/30/60 dtca
262.5	273.1	JZ	3	joint zone with jointing at 15/30/60 dtca
273.1	287.5	FZ	2	Fault zone with local fault gauge and zones of competant core and intense broken zones. Slicks on fracture planes (chloritized).
287.5	294	JZ	5	intense joint zone with main jointing at 70, 30 and 15 dtca
294	304.8	FZ	3	Fault zone with intense broken zones and clay healed gouge. Intervals of coherent core.
304.8	319.9	JZ	4	Joint zone with slickensides on fracture planes, clay on fracture planes.
319.9	329	FZ	3	fault zone with local zones of clay healed gouge and clay on fracture planes.
329	340	BRKZ	2	broken zone with clay, hematite and chlorite on fractrures
340	345	FZ	5	fault zone with intense broken zones and clay healed gouge zones. Chlorite, clay and slickensides on fracture planes.
345	355	JZ	4	joint zone with clay, chlorite, and slickensides on fracture planes.
355	364	FZ	2	A zone of competant core, intense broken zones, and clay healed gouge. Chlorite, clay and slickensides on fracture planes.
364	367.5	JZ	2	joint zone with clay, chlorite, and slickensides on fracture planes. Joint set strong at 30 and lesser at 65 dtca
367.5	370	BRKZ	3	a small, moderate broken zone with some minor clay healed gouge. Chlorite and clay on fracture planes.
370	389.4	JZ	3	a moderate joint zone with clay and chlorite on fracture planes. Main orientation of jointing at 30 degrees and lesser at ~65 dtca
389.4	390.6	BRKZ	2	Weak to moderate broken zone with clay and chlorite on fracture planes.
390.6	394.5	JZ	3	Moderate joint zone with jointing at 30-45 dtca and ~70 dtca. Chlorite and clay on fracture planes

Blackwater Project
Drill Summary - Structure

BW0334

From (m)	To (m)	Structure	Strength	Comments
394.5	398	BRKZ	4	Broken zone with clay and weak chlorite on fracture planes.
398	401	JZ	3	Joint zone with main joint set orientation at 50-60 dtca.
401	401.4	BRKZ	3	Small interval of broken core.
401.4	405.7	JZ	3	Joint zone with main orientation of jointing at 50-60 dtca.
405.7	406.1	BRKZ	2	small interval of broken core.
406.1	408.5	JZ	1	Interval of competant core with minimal jointing. Main orientation of jointing at ~60 dtca.
408.5	424	BRKZ	2	Interval where greater than 50% of fracture surfaces could not be measured. Within this interval there are zones of competant core and zones where core is serverly broken. Small (>30 cm) interval of clay gouge at 412.1 and 416.2 m.
424	442.5	FZ	3	Fault zone with broken zones and intense jointing where the main orientation of jointing is a 30 dtca.
442.5	446.5	JZ	3	Joint zone with main joint set at 30 dtca, lesser at 60-70 dtca Chlorite and slicks on fracture planes.
446.5	451.4	BRKZ	3	Broken zone with small (<10 cm) clay gouge faults at 60 dtca.
451.4	464	JZ	4	moderate to intense joint zone with the main orientation of jointing from 45-55 dtca - minor joint sets also at 70 and 25-30 dtca.
464	476.5	BRKZ	4	Broken zone with minonr zones of clay healed gouge.
476.5	485	JZ	2	Joint zone with main joint setss at 45 and 70 dtca.
485	485.5	FL	5	Small fault with clay healed gouge. 50 dtca.
485.5	500.4	JZ	2	Joint zonen with main orientations of jointing at 70 band 45 dtca.
500.4	502	BRKZ	4	Broken zone with clay on fracture planes ... ? hydrothermal breccia zone? Clay is competant in small zones with stockwork fractures with clay alteration.

newgold
a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0335	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375726.37
Depth (m):	474.27	Date Started:	31/01/2012	Casing Size:	HWT	Northing:	5892725.19
Azimuth:	270	Date Completed:	06/02/2012	Casing (m):	18	Elevation (m):	1612
Dip:	-60	Logged By:	KOI	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	275	-60
45.72	275.9	-59.8
91.44	274.9	-60
137.2	275.8	-59.8
182.9	276.4	-59.8
228.6	279.2	-59.5
274.6	279.3	-59.4
320.0	281.5	-58.7
366.1	281.6	-57.8
411.8	284.9	-57.1
443.8	285.1	-55.6
457.2	286.6	-55.3

newgold
a clear direction

Blackwater Project
Drill Summary - Lithology

BW0335

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	17.2	OB							
17.2	21.7	FLPT	lptbx	LAP	L	GRY	FLT	GR30	~80% clasts, clasts are 5-30mm wide, occasionally with internal laminations. Intermittently brecciated.
21.7	48	FT	mas	FA	L	GRY	DEP	GR10	Primary textures obscured by oxidation, sil and cly alt throughout. Fine laminations are quite frequently visible, locally in small scale folds and contortions. Frequent brecciation producing intervals 10-70cm long of ~60% and-subang clasts, 5-20mm w
48	96.4	FT	mas	FA	M	GRY	FLT	GR30+	Massive, locally with feint locally contorted laminations, and frequent 10-30cm thick intervals composed of up to 15% ?vesicles - millimetric spherical cavities. Intermittently brecciated, breccias are ~65% ang-subang clasts in clay rich matrix - ?te
96.4	112.5	VC	ms	LAP	D	GRY	FLT	GR30	~60% clasts, clasts typically 5-60mm wide, ~5% smaller felsic clasts. Quite felsic matrix.
112.5	124.7	AND	volc	CA	D	GRY	FLT	GR10	Weakly mosaic brecciated throughout, locally volcanoclastic andesite. Occasional porphyritic. Lower half is heavily bleach/chloritized ?by proximity to underlying structure.
124.7	137.3	VC	ms	LAP	D	GRY	FLT	GR30+	~95% mafic clasts, typically 5-50mm wide in felsic matrix. ~60% clasts. Frequently brecciated.
137.3	164.6	FT	mas	FA	L	GRY	UNKN		Largely homogenous, occasionally with very feint laminations, massive felsic tuff. Occasional short intervals of fault breccia and gouge. Lower contact is quite heavily altered, ??fault.
164.6	184	VC	cs	LAP	D	GRY	FLT	GR30+	~50-70% clasts, clasts are ~95% mafic in matrix of largely felsic sand sized material. Clasts are typically 1-6cm wide and angular, but upto 20cm bombs, and occasionally subrounded. All of the larger clasts are mafic.
184	188.2	AND	amg	FA	D	GRY	UNKN		Locally very densely amygdaloidal, minor porphyritic component, intermittenly brecciated with volcanoclasitic texture.
188.2	190	FT	mas	FA	L	GRY	FLT	GR30+	Homogenous massive felsic ash tuff. Upper contact is marked by a short interval of rubble, but lacking significant brecciation or gouge - unclear in nature.
190	219.8	VC	ms	LAP	D	GRY	FLT	GR30	Interval is composed of alternating VC and AND - AND may simply be large bombs - up to 50cm long. VC is 100% mafic clasts in mixed mafic/felsic matrix, pervasively angular.
219.8	221.7	VC	bx	CA	M	GRY	FLT	SH	Peculiar interval, ~10% clasts, 90% of which are 3-8mm wide ang/subround and mafic. 100% felsic matrix.

Blackwater Project
Drill Summary - Lithology

BW0335

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
221.7	232.5	VC	ms	LAP	D	GRY			~65% clasts but matrix support throughout, largely felsic matrix, clasts are 95% mafic with occasional subrounded felsic clasts.
232.5	243.8	VC	ms	LAP	M	GRY	FLT	SH	Interval is a mix of moderately brecciated andesite and VC composed of ~40% clasts in moderately felsic matrix. VC is 95% mafic clasts, with occasional 2-10mm wide felsics. Clasts are typically 5-20mm wide and angular, occasional subang-subround.
243.8	258.6	AND	ctls	CA	D	GRY	FLT	GR30	Interval is largely composed of well developed fault gouge and breccia, rubbly throughout. Occasional larger clasts are andesite, with the exception of occasional felsic volcanoclastic clasts.
258.6	261.7	VC	ms	LAP	MO	GRY	DEP	GR10	Interval is ~60% mafic clasts in felsic matrix. Clast content varies from 30-70%. Clasts are mostly angular, occasionally subang, and typically 5-30mm wide. Occasional larger andesite clasts (10-20cm)
261.7	275.4	AND	autbx	CA	D	BLK			Weakly autobrecciated throughout, no phenocrysts, essentially homogenous.
275.4	299	AND	autbx		D	BLK			~60% ofi interval is brecciated, with frequent gouge development as matrix. Compotent intervals are autobrecciated andesite.
299	337.5	AND	volc	CA	D	GRY			Pervasive VC - brecciated texture. Clasts content varies from 50-80%, with clasts angular-subangular throughout, and varying in size between 2-30mm. Occasionally short porphyritic intervals.
337.5	349.3	VC	lpt	LAP	MO	GRY	DEP	SH	Quite variable in terms of clasts composition and size, upper 3m is dominantly felsic, with clasts typically 5-20mm wide. With depth proportion of large clasts increases with lapilli and bombs up to 30cm wide, and mafic clast content increase to 40%.
349.3	351.4	AND	volc	CA	D	GRY	DEP	SH	Short interval of andesite, primary texture is somewhat obscured by alt, but vague clasts are visible. Fine (up to 1mm wide) phenocyrsts throughout.
351.4	354	FT	mas	FA	L	GRY			Only feint, local laminations, otherwisew massive vfg ash tuff.
354	380.5	FT	bx		M	GRY	DEP	GR30+	Felsic tuff with faint local laminations and brecciated zones and larger areas where alteration has obscured the primary texture of the rock. Medium to dark greenish-gray and strongly silicified.
380.5	412	VC	bx	LAP	M	GRY			Medium to dark grey-green volcaniclastic, polymictic but dominated by mafic clasts, matrix supported, subangular to subrounded lapilli sized clasts. With local zones of massive to micro brecciated andesite. Disseminated and veined sulphide throughout

Blackwater Project
Drill Summary - Lithology

BW0335

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
412	422	AND	bx	LAP	D	BLK		GR30+	Dark grey to black andesite breccia, matrix supported with lapilli sized clasts, angular, gradational bounding contacts, minor calcite veining (+/- pyrite)
422	441	VC	bx	LAP	M	GRY	DEP	GR30+	Polymictic volcaniclastic with approx. equal number of felsic to mafic clasts (small zone of 100% andesitic clasts within this interval). Lapilli sized clasts, poorly sorted, matrix supported, subangular with gradational bounding contacts.
441	470.1	AND	bx	LAP	D	GRY	DEP	GR10	Dark grey to black brecciated andesite with lapilli sized, subangular to subrounded clasts, variably matrix supported, monomictic, minor calcite veining (more abundant with depth). Gradational bounding contacts.
470.1	474.3	FLPT	bx	LAP	L	GRY	UNKN		Light grey felsic lapilli tuff with a small interval of laminated felsic tuff. Subangular felsic clasts, variably matrix supported, moderately sorted.

Blackwater Project
Drill Summary - Alteration

BW0335		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
17.2	81	O		0	PATC	4	PATC	3		0							Interval alternates between soft (hardness3) whiteish clay altered groundmass and hard (~6.5) with glassy veneer silicified. ~65% of interval is clay altered, with remainder bewing silicified. Intervals can be 30-200cm long, and no relationship with faulting is noted. Sil drops out gradually over bottom 5m.
81	93.4	T		0	PERV	3		0		0	CLY	SPHL	5				Moderate cly alt throughout evident as bleached appearance and low hardness (2-3). Also occasional 2-5mm wide haloes of more intense clay alt +/- oxidation around sulphide blebs
93.4	99.15	T	FR	2		0		0		0							Weak chlorite on fractures in rubble of fault zone.
99.15	101.4	S	FR	2	VNHL	1		0		0							Weak chl on fracture surfaces and an isolated occurrence of a cm wide cly alt around a vein.
101.4	101.8	S	PERV	3		0		0		0							Moderately fractures, but no obvious structure, pervasive chl
101.8	105.6	S	FR	3		0		0		0							On all fractures.
105.6	112.7	S	DEF	4		0		0		0							Chl on all fractures and in gouge.
112.7	120	S	FR	1		0		0		0							Weak chl on most fractures
120	125.3	S	DEF	3		0		0		0	UNK	PERV	3				Chlorite on fractures and in gouge, also groundmass of andesite is pervasively bleached.
125.3	136.8	S	DEF	4		0		0		0							Interval is rubbly to gougy throughout, with extensive chloritization on fractures and in gouge
136.8	145.2	S	FR	3		0	PERV	1	PERV	3							Groundmass is tinted pale green throughout by sericite, also with weak silic alt. Fractures are mostly chlorite coated.
145.2	149.3	S	FR	3		0	PERV	3	PATC	2							Sericite is restricted to occasional planar lenses parallel with feint ?primary laminations. Chlorite on ~50% of fracture surfaces.
149.3	154	S	FR	4		0	PATC	2	PATC	2							Locally very intense chlorite, particulalry in gougy intervals. Sil and ser are both patchy in groundmass

Blackwater Project
Drill Summary - Alteration

BW0335		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
154	164.3	S	FC	2		0	PATC	1	PERV	3	CHL	PATC	2				Majority of interval is weak pale green hue in groundmass, more intense in certain laminations. Chlorite on ~50% of fractures, and occsionally emanating into groundmass. Lower 2m is more frequently chloritic.
164.3	182	S	FR	3		0		0		0							Majority of fractures are chloritized, very occasional chloritization of clasts.
182	184.5	S	DEF	4		0		0	DEF	2							Intensely gougy interval, frequently intensely chloritic with patches of much lighter clay rich material.
184.5	188.1	S	FR	3		0		0		0							All fractures are chloritic.
188.1	190	S		0		0		0	PERV	1							Only very weak flecks of pale green sericite throughout.
190	213.2	S	FR	4		0		0		0							All fracturs and short gougy intervals are heavily chloritized.
213.2	219.8	S	FR	4		0		0		0	CHL	DEF	4	SIL			All fractures are heavily chloritized, also pervasive chlorite in gouge.Sil is exclusively in the lower 2m, where large amounts of secondary quartz is present forming matrix to atypical breccia.
219.8	221.8	S	FR	3		0		0	PATC	4							Locally intense sericite in felsic matrix, intense chlorite on fractures.
221.8	227.1	S	FR	3	CLST	2		0		0							Fracture planes are pervasively chloritized. Cly in clasts is based on low (~3) hardness of mafic clastss.
227.1	235.5	S	FR	4		0		0		0							Rubbly and locally gougy interval with chlorite on all fractures and coating rubbly pieces.
235.5	238.7	S	FR	3		0		0	CLST	2	CHL	CLST	1				Frequently sericitized clasts, and occasionally chloritic clasts, also chlorite on fractures.
238.7	243.7	S	FR	3		0		0		0							All fractures are chloritic, occasionally intense.
243.7	258.6	S	PERV	4		0		0		0							Interval is dominated by gouge and rubble. Chlorite is pervasive throughout gouge and coating rubble.
258.6	261.6	S	FR	4		0		0		0	CHL	PATC	1				Dark chlorite on all fractrure surfaces, and occasional centimetric patches of chlorite either replacing clasts or in bands
261.6	274.1	S	FR	1		0		0		0							Occasional patchy chlorite on fractures

Blackwater Project
Drill Summary - Alteration

BW0335		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
274.1	286.5	S	DEF	3		0		0		0							Intermittently gougy interval, gouge is pervasively chloritic. Undeformed intervals are virtually un-altered andesite, with only trace chlorite on fractures.
286.5	291.5	S	FR	2		0		0		0							Quite common but weak chlorite on fractures.
291.5	299	S	DEF	4		0		0		0							Interval is dominated by fault breccia and gouge, with chlorite pervasive in gouge and matrix to fault breccia.
299	306.9	S	FC	4		0		0		0							Quite heavily fractured interval with chlorite pervasive on fractures, in rubble, and occasionally emanating from fracture into groundmass.
306.9	315.8	S	FR	2		0	PATC	1		0							Only weak chloritization of fractures, with some fractures completely clean. Occasional small, innocuous patches of elevated hardness in groundass, with visible secondary silica in matrix to brecciation in lower 1m of interval - ?sil
315.8	316.4	S	PERV	4		0	PERV	3		0							Interval is texturally similar to surrounding rock, but near pervasivley chloritized and silicified.
316.4	330	S	FR	2		0	PERV	3		0	CHL	PATC	1				Millimetric blebs of ?secondary silica in matrix and hardness 6-7 throughout - sil. Weak chl on fractures, and occasional centimetric patches of chloritization in clasts.
330	337.5	S	FR	2		0	PATC	1		0							Weak chlorite on fracture planes and occasional glassy hard patches associated with increases hardness.
337.5	351.3	S	PATC	3		0	PERV	4	CLST	3	CHL	CLST	1				Pervasively elevated hardness and glassy sheen, occasional ??secondary quartz in matrix. Sericite is common affecting felsic clasts, and chlorite is often present in laminated FT clasts and occasionally in mafic clasts.
351.3	358.5	S	FR	3	FR	3	PERV	5	PATC	2	CHL	PATC	3				Strong, pervasive silicification that obscures the primary texture of the rock. Moderate sercite-chlorite alteration is patchy throughout the interval. Chlorite and clay on fracture planes.
358.5	359.2	S	PATC	3	FR	5	PERV	5		0							Similar to above with intense clay alteration on fracture planes.

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Drill Summary - Alteration

BW0335		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
359.2	366.7	S	PATC	3	FR	4	PERV	5	PERV	2	CHL	FR	2				Strong silicification that obscured the primary texture of the rock. Moderation sericite and chlorite alteration, chlorite on fracture planes, clay on fracture planes.
366.7	378.5	S	PERV	4	FR	4	PERV	5	PATC	1							Strong, pervasive silicification, strong clay alteration on fractures, chlorite alteration is strong, pervasive to patchy. Weak sericite.
378.5	385	S	CLST	2	CLST	3	PERV	4	CLST	2	CHL	FR	2				Moderate to strong silicification which is pervasive although strongest in the matrix. Moderate clay, sericite and chlorite alteration of clasts. Chlorite also on fracture planes with marcasite.
385	412	S	PERV	3	FR	2	PERV	3	PERV	2	CLY	CLST	2				Weaker silicification than above, sericite and chlorite alteration is pervasive through clasts and groundmass, clay alteration on fracture planes and of clasts.
412	422	S	FR	1	PERV	2	PERV	4	PERV	1	CLY	FR	1				Strong pervasive silicification, weak clay throughout, weak chlorite and clay on fracture planes.
422	441	S	FR	1	MTRX	3	PERV	3	CLST	1	CHL	CLST	1	CLY	CLST	2	Moderate silicification, clay alteration of the matrix and mafic clasts, sericite alteration of some clasts, chlorite weak in the clasts and fracture planes.
470.1	474.2	S	PATC	2	FR	1	PERV	4	PERV	1	CHL	FR	2	CLY	PATC	2	Strong silicification, chlorite on fracture planes and in patches throughout rock, weak clay on fracture planes and in patches throughout, weak sericite.

Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
17.2	26.5		0		0	BB	0	Hm	FP	20	Hm	CR	10				Haem is coating fracture and emanating out of fractures into groundmass, also replacing clasts completely in FLPT and in fault breccias.
26.5	30.3		0		0		0	Hm	FP	20	Hm	BB	5				Again, orange haem is pervasive on and around fractures, and in brecciated intervals. Also centimetric patches of black oxide.
30.3	46.6		0		0		0	Hm	FP	20							Again, orange haem on fractures and near pervasive in brecciated intervals
46.6	47.5		0		0		0	Hm	PERV	50							Interval is deep orange throughout, 90% of surface area is coated with haem.
47.5	72.9		0		0		0	Hm	FP	5							Haem is pervasive on fractures and in matrix to breccias
72.9	90	SP	0.1		0		0	Hm	FP	10							Transition oxidation zone, occasional vugs have trace py in them, always associated with prominent haloe of sooty black unknown material.
90	93.3	SP	0.5		0		0	Hm	GmR	1							Haem is still present on fractures, but also forming haloes around vugs and sulphide specks. Py as fine specks deep inside small vugs.
93.3	99.4	SP	0.5		0		0										Occasional millimetric specks and blebs of py in ouge and breccia. Also millimetric sooty black blebs in cometent pieces of FT in upper 1.5m of interval.
99.4	104.4	FP	0.1		0	SP	0.1										Quite frequent fine specks of py on fracture planes, also very scarce millimetric blebs of py, and barely visible specks of Po in groundmass.
104.4	119.9	VN	0.1	CR	0.5	VN	1										Quite frequent 5-10mm wide irregular veins of Po + trace py. Also occasional patchy replacement of clasts by sphal and trace Po
119.9	122	VN	0.5		0	VN	0.1	Py	BB	0.1							Similar quanitiy and style of sulphide veining to the above interval, but veins are dominantly py with trace po. Also occasional 2-3mm wide blebs of py in groundmass.
122	122.3	VN	8	VN	2		0										Massive sulphide vein, 1cm thick, 80% py 20% sphal

Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
122.3	123.9	VN	0.1		0		0										Occasional fine py veinlets
123.9	125.8	BB	2		0		0	Po	VN	2							Frequent centimetric blebs of py and an 35cm long interval of ~8% py in anasamosing veins
125.8	128.5	BB	1	SP	0.1	SP	0.1										Py in 2-6mm wide irregular blebs, decreasing downhole. Trace sphal and Po.
128.5	131	BB	0.1		0	BB	0.5										Gougy interval with occasional trace py
131	136	BB	1.5	SP	0.1	BB	0.5										Locally intense contorted blebs/lenses of py and po in fault breccia. Isolated instance of trace sphal.
136	137.1	SP	0.1	SP	0.1	SP	0.1										Gougy fault breccia, trace sulphides occasionally throughout.
137.1	140.5	SP	1	SP	0.5		0	Py	EU	0.1							Evenly distributed millimetric specks of occasionally euhedral py and sooty black sulphuide +/- sphal throughout.
140.5	140.6	VN	50		0		0										Massive py vein
140.6	145	VN	0.1	SP	0.1		0	Py	SP	0.1							Sparse flecks of py, sphal and sooty black sulphide throughout. Two 1mm thick planar py veinlets.
145	148	SUBH	1	SP	0.1		0										Evenly distribute sub-euhedral millimetric py, occasional sphal and sooty black sulphide.
148	158.5	SUBH	1	BB	0.5		0	Py	VN	0.1							Quite evenly distributed millimetric sub-euhedral millimetric py, sphal and sooty black sulphide throughout. Py locally concentrated in planar bands, also an isolated irregular 3mm thick py vein
158.5	162.6	SP	0.5	BB	4	BB	1	Dbs	DI	0.5							Sphal is in very dense patches of millimetric blebs, patches are 2-5cm wide. Py as fine sooty black sulphide specks, DBS as very short discontinuous fronds disseminated throughout. Also trace lates stage py on fractures.
162.6	164.5		0	GmR	0.5	BB	0.5	Po	VN	0.1							Millimetric blebs of Po sporadically throughout, sphal in 1-5mm wide patches.
164.5	168.8		0	CR	2	BB	0.5										Occasional clasts are upto 70% replaced by fine specks of sphal. Po in isloated 1-2mm wide blebs.

Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
168.8	169.8	VN	0.5	CR	1	VN	1										Occasional 1-5mm thick massive Po + py veins, irregular and at ~15degTCA. Also occasional patchy replacement of clasts by sphal.
169.8	176		0	CR	5	SP	1										Massive replacement of andesitic clasts by fine specks of sphal. Also frequent millimetric blebs of po.
176	182	VN	0.1	CR	2	BB	0.5	Py	CR	0.1							Occasional fine py veinlets. Clasts being replaced by variously sphal and occasionally py, with or without po as fine millimetric blebs.
182	184.7	BB	0.5	VN	0.1	BB	0.5										Intensely deformed interval of gouge with occasional centimetric blebs of mixed py +po. Also occasional wispy veinlets of sphal and py.
184.7	188.2	VN	0.1	SP	1.5	SP	1	Sp	VN	0.5							Sphal and Po are patchily disseminated throughout in fine specks and blebs. Also fine py veinlets and an isolated 3mm wide sphal vein.
188.2	189.8	SP	0.5	BB	1		0	Dbs		0.1							Evenly distributed millimetric blebs of sphal and finer sooty black py specks, also occasional poorly developed DBS as 2-4mm long strands.
189.8	192.4		0	CR	1	SP	0.5										Occasional felcks of Po and fine specks of sphal replacing isolated clasts.
192.4	197.5	VN	0.1	SP	0.5	SP	1	Po	VN	0.5	Py	FP	0.1				Very frequent tiny specks of Po and sphal disseminated throughout. Also occasional planar veins of Po and trace py.
197.5	202		0	BB	5	BB	3										Locally very intense sphal mineralization as 1-2mm wide blebs in ?amygdules in andesite clasts. Less frequent but larger (1-4mm) irregularly shaped Po blebs throughout.
202	213.1	FP	0.1	BB	1	BB	2										Po is quite evenly distributed as fine to millimetric Po blebs. Sphal is much more sporadic, largely replacing isolated clasts as fine millimetric secks and vlebs.
213.1	216.2	VN	1	VN	0.5	CR	2	Sp	CR	0.5							Quite frequent 1-4mm wide py veins and one sphal vein. Very frequent Po replacement of clasts, occasionally with sphal.

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Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
216.2	218.2	VN	10		0		0										Very peculiar interval, large amount of ?secondary silica a very high density of veined pyrite.
218.2	222.1	VN	3.5		0	SP	0.1										Frequent 1-3mm wide veinlets of py, occasionally with trace Po. Also occasional blebs of py associated with the veins.
222.1	225.9	VN	0.5	CR	0.1	BB	1.5										Occasional veins of py and fracture plane py, sporadic trace clast replacement by sphal, and fairly frequent patches of Po blebs.
225.9	228.6	VN	0.5		0	BB	0.5										Occasional finr pyu veinlets, and blebs of Po.
228.6	236.7		0	CR	0.5	SP	0.5										Sphal is very patchy, locally quite intense replacing clasts en masse. Po is more disseminated in occasional millimetric blebs.
236.7	240.6	VN	0.1	CR	0.5	BB	1	Sp	VN	0.1	Po		0.1				Isolated 3mm wide mixed sulphide veinlet. Also Frequent blebs and specks of Po throughout, and occasional en masse clast eplacement by sphal
240.6	243.8	BB	0.5	CR	2.5	SP	0.5	Sp	VN	0.5	Py	VN	0.5	Po	VN	0.1	Spahl replacing large clasts extensively throughout. Also four 2-4mm wide mixed sulphide veins, and specks and belbs of py and Po disseminated throughout.
243.8	257.1	DI	0.5	DI	0.5		0										Fault zone composed largely of gouge. Sparse sulphides disseminated in gouge, and speckled on occasional competent clasts.
257.1	258.7	VN	2	SP	0.1		0										Still in fualt gouge/breccia but with frequent fine networks of py veinlets and blebs. Also trace sphal in specks associated with py.
258.7	261.9	VN	0.5	BB	0.5	SP	1	Py	BB	2							Occasional 1-3mm wide py veinlets, planar at ~45degTCA. Also blebs and specks of py>po>sphal patchyily throughout.
261.9	270	DI	0.5	DI	0.5	DI	0.1										Very fine specks of py, sphal and trace po disseminated throughout.
270	277.3	SP	0.1	SP	0.1		0										Essentially barren andesite

Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
277.3	280	VN	0.5	DI	0.5		0										Frequent very fine py veinlets and blebs in gougy intervals. Sphal in centimetric patches
280	292		0	SP	0.1	SP	0.5										Occasional fine specks of sphal and po.
292	299	VN	0.5	BB	0.5		0										Occasional centimetric blebs of sphal in competent pieces of core, and occasional 2-5mm wide discontinuous veins/blebs of py. Gouge is barren.
299	306.2	VN	0.5	SP	0.1	SP	0.1	Py		0.1							Occasional very fine specks of py>po and sphal disseminated throiughout matrix. Also occasional fine planar py veinlets.
306.2	306.9	VN	0.5	VN	1		0										Weakly deformed interval with frequent 1-3mm wide veinlets of sphal>py.
306.9	309.1	FP	0.1	DI	1.5	SP	1										Very fine specks of sphal and Po disseminated patchily throughout.
309.1	313.4	FP	0.1	SP	0.1	DI	0.5										Very scarce millimetric specks of sphal and sub-millimetric specks of Po disseminated throughout.
313.4	322.9		0		0	SP	0.1										Largely barren, occasional short intervals with trace specks of Po
322.9	325.2	FP	0.1	BB	1	SP	0.5										Sphal is patchy, but quite intense in up to 10cm wide patches, Po is more disseminated throughout in very fine specks.
325.2	329.4	VN	0.5	BB	0.5	SP	0.1										Occasional 1-5mm wide py + trace po veins. Sphal disseminated in fine specks with trace Po throughout.
329.4	337.5	VN	0.1	BB	1.5	SP	1										Occasional fine py veinlets. Sphal is present in majority of interval as dense patches of millimetric specks. Po is disseminated throughout in fine specks, and occasionally 1-3mm wide belebs.
337.5	340.4		0	BB	0.1		0										Largely barren interval of silicified VC. Very occasional millimetric blebs of sphal.
340.4	342.4		0	BB	1	BB	0.5										<1-2mm wide specks and blebs of sphal and Po ?replacing small clasts, often closely associated with one another.

Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
342.4	346	VN	0.1	SP	0.5	BB	1.5										Similar mineralization style to above interval but Po more common than sphal. Occasional fine py +/- po veinlets. Gradual increase in Po over lower 1m.
346	349.3	BB	1	DI	0.5	BB	1	Po	SP	0.1							Po is largely concentrated in centimetric blebs, sometime associated with py. Sphal as fine disseminated background in groundmass. Py in irregular networks of veinlets, 1-3mm wide.
349.3	351.5	VN	0.5	DI	0.5	DI	1.5	Py		0.1							Po is largely as very fine, occasionally upto 2mm wide specks disseminated with sphal in matrix. Py in occasional 1-3mm wide planar veinlets at 15degTCA, and on fractures.
351.5	360	DI	1.5	DI	1	DI	1.5										Brassy pyrite disseminations, sphalerite and pyrrhotite disseminations. Veins of sphalerite and pyrite minor.
360	366.1	VN	1	DI	2	DI	2										Pyrite veins and minor disseminations. Sphalerite as red-brown disseminated clusters, pyrrhotite disseminations.
366.1	378.3	VN	1	DI	0.5	DI	2										same as above with lesser sphalerite.
378.3	386.4	VN	1	DI	0.5	DI	2	Mrc	FP	0.1							Pyrite as veins and lesser disseminations with pyrrhotite. Sphalerite as blebby disseminations. Marcasite on fracture planes with chlorite.
386.4	403.2	VN	1	DI	1	DI	2	Py	CR	0.5	Mrc	FP	0.1				Similar to above with pyrite replacing plagioclase phenocrysts in andesitic clasts.
403.2	412	VN	0.5	DI	0.5	DI	2	Mrc	FP	0.1							Similar to above. Lesser pyrite.
412	422	VN	0.5	BB	0.5	DI	1										fine pyrrhotite dissemimations throughout, pyrite as a minor component in calcite veins, sphalerite as tiny variably blebbs.
422	441	VN	1	DI	1	DI	1										pyrite/chlorite veins, sphalerite and pyrite as disseminations throughout (associated together)
441	470.1	VN	0.5	DI	1	DI	1.5	Mrc	FP	0.1							fine sphalerite disseminations, pyrrhotite disseminations, pyrite-calcite veins, pyrite-chlorite veins

Blackwater Project
Drill Summary - Mineralization

BW0335		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
470.1	474.2	BB	0.5	DI	1	DI	0.5	Dbs	DI	0.5							minor pyrite and DBS disseminations, sphalerite and pyrrhotite disseminations associated together.

Blackwater Project
Drill Summary - Structure

BW0335

From (m)	To (m)	Structure	Strength	Comments
17.2	20.9	JZ	3	Occasional planar fractures.
20.9	25.4	FL	4	~70% of interval is moderate-intensely brecciated, locally with gouge development. No lith break.
25.4	36.05	FZ	1	Largely compotent core, but with quite frequent short intervals of brecciation, and occasional 5cm wide intervals of breccia with distinct gouge matrix.
36.05	40.85	FZ	4	~85% of interval is moderate to intensely brecciated, and ~40% is composed of breccia in gouge matrix. 20-50cm intervals are gouge supported, with only ~25% ang-subang clasts. No lith break.
40.85	44.05	FZ	1	Competent core with occasional mild-moderate brecciation.
44.05	44.9	FZ	4	Interval is breccia with gouge matrix, 25-50% ang-subang clasts, no lith break
44.9	51.45	FZ	1	Intermittently brecciated, two 1cm wide gouge intervals.
51.45	61.35	JZ	2	Occasional fractures
61.35	62	FZ	2	Moderately brecciated, ~30% gouge. Competent core
62	93.7	JZ	2	Occassional rough fractures
93.7	99.8	FL	4	Rubbly to gougy throughout, competent intervals show well developed cataclasite. Lith break across interval
99.8	105.6	JZ	4	Quite heavily fractured, locally rubbly.
105.6	112.6	FZ	4	~50% of interval is fault breccia/cataclasite with goiuge matrix, locally rubbly.
112.6	121.8	JZ	2	occasional clean planar fractures
121.8	129.2	FZ	3	Intermittently rubbly with occasional short intervals of gouge
129.2	134	FZ	4	Largely rubbly with fairly frequent gouge and occasional competent intervals of fault breccia
134	137	FL		Cataclaite, breccia and gouge matrix. Litho break immediately below fault.
137	143.9	BRKZ	3	Moderately rubbly, no evidence of brecciation or gouge development
143.9	145.7	FZ	2	Rubbly with occasional brecciation and short gougy intervals
145.7	154	FZ	2	Intermittent 10-30cm thick intervals of fault breccia and gouge throughout interval, remainder is quite rubbly
154	156.8	BRKZ	3	Moderately rubbly interval
156.8	163.4	JZ	1	Occasional clean fractures.
163.4	180.4	BRKZ	1	Intermittently rubbly, very occasional short intervals fo gouge.
180.4	184.2	FL	5	Intense gouge and brecciation, litho break.
184.2	188.1	JZ	2	Occasional clean fractures.
188.1	190	BRKZ	2	Intermittently rubbly
190	190.7	FL	3	Fault brreccia in gouge matrix. Litho break.

Blackwater Project
Drill Summary - Structure

BW0335

From (m)	To (m)	Structure	Strength	Comments
190.7	213.2	JZ	2	Locally rubbly, majority of interval is weakly fractured.
213.2	222.1	FZ	3	Frequently brecciated and gougy.
222.1	226	JZ	2	occasional clean fractures.
226	232.6	BRKZ	4	Rubbly throughout, locally gougy, weak fault zone/broken zone
232.6	243.7	JZ	4	Quite heavily fractured, borderline broken zone.
243.7	258.6	FL	3	~50% of interval is rubble, with remainder being competent core but cataclasite/fault breccia with gouge matrix.
258.6	270	JZ	2	Fractures at 50 and 20degTCA
270	275.6	JZ	3	Quite heavily fractured zone, coincident with appearance of ?yellow soapy clay material coating fractures.
275.6	280	FZ	3	Locally rubbly, ~40% is somewhat gougy and brecciated.
280	282.6	BRKZ	3	Interval is riddled with fractures coated in soapy yellow clay mateerial. Lower 25cm is brecciated.
282.6	291.4	BRKZ	2	Intermittently jointed, locally rubbly.
291.4	299	FL	3	Lragely rubbly with frequent sandy gouge, and intermittent fault breccia with gouge matrix.
299	304.7	BRKZ	2	Locally rubbly, otherwise moderately fractured.
304.7	306.9	FZ	2	Heavily fractured, occasonally brecciated with short intervals of gouge.
306.9	342.7	JZ	2	Occasional clean planar fractures at 30-45degTCA
342.7	343.2	FZ	3	Rubbbly with sprinkling of sandy gouge, competent pieces show brecciation.
343.2	463.6	JZ	2	Occasional fractures at either ~50-55 or 10-15degTCA
463.6	470.3	JZ	4	Intense joint zone with joint sets at 80, 40 , and 20 dtca.
470.3	473	FZ	3	Moderate faulted zone with intervals of broken core and clay healed gouge
473	474.3	JZ	2	Joint zone with joint sets at 60 and 80

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Blackwater Project
Drill Logs

Hole ID:	BW0336	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375951.86
Depth (m):	333.81	Date Started:	30/01/2012	Casing Size:	HWT	Northing:	5893249.24
Azimuth:	0	Date Completed:	04/02/2012	Casing (m):	31.5	Elevation (m):	1524
Dip:	-90	Logged By:	KCh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	261.6	-89.1
100	287.4	-89.1
151	282.2	-89.3
200	231.6	-89.1
250	242.2	-89
300	238.2	-88.8
333	223.2	-88.4

Blackwater Project
Drill Summary - Lithology

BW0336

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	32.5	OB							
32.5	38	AND	mas	LAP	D	GRY	DEP	SH	OXIDE: Strongly pervasive oxidized. Massive. Overall consolidated, with strong clay alteration on fracture surfaces.
38	41.75	VC	bx	LAP	M	GRY	ALTFR	SH	OXIDE: Strongly pervasivly oxidized. Clasts are angular, and are almost clast supported in areas, but overall is matrix supported. Clasts range in size from mm to cm sized clasts, majority of the larger clasts are mafic, while smaller are felsic. Fai
41.75	68.5	AND	por	LAP	D	GRY	ALTFR	GR30+	OXIDE/TRANSITION: Gradational transition from oxide to transition to sulphide facies, though no sulphides seen.
68.5	124	AND	por	LAP	D	GRY	DEP	GR10	SULPHIDE: Hematite alteration patchy, surrounding veins and fracture surfaces as well. Small amounts of brecciation surrounding the faults, but overall mainly weakly prophrytic.
124	140	AND	mas	LAP	M	GRY	DEP	GR30+	No prominant hematite or manganese alteration as seen in the previous section. However, slightly more chl alteration, with strong sulphide mineralization in veins, not disseminated thoughout. The section grades between prophrytic and massive.
140	272	AND	mas		M	GRY	FLT	SH	Moderate to dark grey massive andesite. Some small phenocrysts, but overall texture is massive. Fairly typical andesite, unaltered with few veinlets.
272	277	VC	ms	LAP	M	GRY	FLT	SH	Small unit of volcaniclastic rock, all fault. Clasts are equally mafic and felsic, and very clast supported.
277	302.5	AND	mas		D	BLK	FLT	SH	Massive dark grey anediste with some qtz stringers brecciating the rock.
302.5	333.8	VC	bx	LAP	M	GRY			Sharp upper contact with AND at 30 degrees to CA. Unit is dominantly VC with minor intercalated units of andesite. Andesite is a healed breccia, with very weak traces of relict clasts present. Volcaniclastic rock is poorly sorted with the larger clas

Blackwater Project
Drill Summary - Alteration

BW0336		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
32.5	49	O	CLST	1	FC	3		1		0	LIM	PERV	5	HM	FC	2	OXIDE: Strong limonite alteration, pervasive throughout. Concentrating on fracture surfaces, but permiating the core and clasts.
49	62.5	T	CLST	2	FC	2	PERV	1		0	LIM	FC	3	LIM	PERV	3	TRANSITION: Moderate to strong limoinite alteration, pervasive from fractures. Hematite is in the matrix, weakly brecciating the core, as well as on fracture surfaces.
62.5	72.5	T		0	CLST	2		0	FC	1	LIM	FC	2	LIM	PERV	2	TRANSITION: Moderate limonite alteration. There is a slight purple tinge to the core (Manganese/hematite - pervasive). Porphrytic feldspar xtyls are altered to clay
72.5	89	S	PATC	1	FC	1	VN	1	FC	1	HM	PATC	3				SULPHIDE: Hematite alteration is very rusty, reddish brown. In some areas it appears veined, others patchy, other irregular - often associated with weak silica patches in the veins.
89	99	S		0	PERV	2	CLST	1		0	HM	MTRX	1				Weak hematite alteration that is patchy and in the matrix throughout, but not as prominant than in the previous section, and slowly tapers out downsection. Core is soft, slightly clay altered, clasts are stronger, sil alteration.
99	124	S	MTRX	2	FC	1		0		0	CARB	FC	1	CLY	CLST	1	Core is soft, with clay alteration in phenocrysts and on fracture surfaces. Chl alteration in matrix.
124	140	S	PERV	3	FC	1	PATC	1		0							Pervasive chl alteration giving the core a green tinge. Patchy sil alteration.
140	151	S	MTRX	1	FC	1	PATC	3		0							Patchy pervasive sil alteration. Weak chl alteration in matrix.
151	211	S	VNHL	2	VNHL	1	PERV	3		0	BIOT	PERV	1	HM	VNHL	1	Fairly unaltered massive andesite. Majority of alteration occurs in vein centric halos, approximately 5-10cm surrounding the vein. Core is quite hard, with a slight brownish tinge, silica and biotite respectively. Sporadically throughout an influx of silica rich fluid weakly brecciates the rock, it is more a a crackle breccia.
211	218.8	S	FC	1	FC	2	PERV	3		0	HM	FR	2	BIOT	PERV	3	Strong biotite and hematite alteration which is fracture controlled. Clay alteration is mechanical and due to faulting.

Blackwater Project
Drill Summary - Alteration

BW0336		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
218.8	223	S		0		0	PERV	2		0	BIOT	PERV	2				Pervasively altered by silica and biotite.
223	239.7	S	FC	0	PATC	2	PERV	2		0	HM	VNHL	2	BIOT	PERV	2	Alteration is prominant in vein centric halos - strong boitite and hematite alteration. Small section from 233.35-233.6m, where the core is very bleached and clay altered.
239.7	245.7	S	MTRX	2	MTRX	4		0	MTRX	2							Very bleached, core is white. Strong clay, sericte and chl alteration, pervasive.
245.7	257.5	S	VN	2	FC	1	PERV	1		0	BIOT	PERV	3				Strong biotite alteration, clay alteration concentrating on fracutre surfaces. Chl atleration in veins.
257.5	265	S	VN	2	FC	2		0		0	BIOT	PERV	3	HM	MTRX	1	Strong biotite and hematite alteration, healed fault zone.
265	272	S		0	FC	1	MTRX	2	MTRX	1	BIOT	PERV	2				Strongly pervasive biotite alteration. Matrix slight ser/sil alteration.
272	277	S	FC	2	FC	1	CLST	2	FR	1							Chl, sericite and clay alteration on fracture surfaces. Sil alteration is concentrated in the clast.
277	302.5	S	MTRX	1		0	PERV	3		0							Black, relatively unaltered andesite. Silicified.
302.5	325.6	S	CLST	4	FC	1	MTRX	3	PATC	1	ALB	CLST	1	HM	PATC	1	Chl alteration strongly altering clasts, as well as present on fracture surfaces. Sil alteration concentratign on fracture surfaces.
325.6	333.8	S	CLST	2	FR	1	MTRX	4	CLST	2	BIOT	CLST	3				Strong biotite alteration in clasts and in the matrix. Strongly pervasive silica alteration

Blackwater Project
Drill Summary - Mineralization

BW0336		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	71.5		0		0		0										OXIDE: No mineralization due to alteration.
71.5	88	DI	3		0	DI	2										Strong dusting of py mineralization, disseminated. However, py is also associated with the hematite alteration (patchy, veined and fracture controlled). Sporadic xtyls are euhedral, though small. Core is quite magnetic in areas, but no xtyls seen..
88	99	DI	3		0	DI	2										As above, but the py is not as strongly associated with the hematite in the previous section.
99	113.5	DI	0.5		0	DI	0.1										Strong decrease in sulphides. Minor py mineralization dissemianted thorughout.
113.5	124	FP	1.5		0	DI	0.5										Disseminated py and po. Py also present in veins.
124	128.4	VN	2	VN	1.5	VN	0.5	Ga	VN	1	Apy	VN	0.1				A strong presences of sulphide rich veinlets and veins. Py>sph>po>gal>aspy.
128.4	128.6	VN	10	VN	20	VN	20	Apy	VN	35	Ga	VN	1				Massive sulphide vein from 128.35-128.55m, at 60 degrees to CA. Aspy xtyls are subhedral to euhedral, small, 0.5cm sized and heavily intergrown with sphalerite. Py and po are concentrated on the fringes of the rock, and appear to xtyllize slightly la
128.6	140	VN	2	VN	2	VN	1	Ga	VN	0.1							A continuation of sulphide rich veins, slightly vuggy. Mainly py, sph and po. Trace galena.
140	151	DI	0.5		0	DI	1.5										Disseminated po and py throughout.
151	167.5	VN	4	VN	3	DI	1	Ga	VN	0.1							Sulphides concentrating in veins and veinlets. Minor po is dissemianted throughout
167.5	183	DI	0.5		0	DI	3	Cp	VN	0.1							Strong po mineralization (as determined by strong magnetism of the core) with minor py splattered throughout. Trace chalcopyrite seen in a small veinlet.
183	202	DI	0.5		0	DI	0.1										Few sulphides. Dissemated py and po.
202	211.5	VN	1	VN	0.5	VN	0.5	Apy	VN	3							Veins with aspy+py+sph+po mineraliation, hosted in carbonate veinlets.
211.5	218.8	DI	0.5		0	DI	0.1										Py mineralization present disseminated throughout, in hematite rich areas.

Blackwater Project
Drill Summary - Mineralization

BW0336		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
218.8	221.0	DI	0.5		0	DI	0.5										Minor py and po mineralization.
221.0	239.7	DI	0.1		0	FP	0.5										Minor sulphides. Po present in microfractures.
239.7	245.7	DI	0.5		0	DI	0.5	Grnt	DI	1							Minor mineralization, disseminated throughout. Garnets are small, 2mm in sized, anhedral.
245.7	257.5	FP	1		0	DI	0.5										Py filling microfractures and in veinlets. Po dissemianted thoughout.
257.5	272	DI	0.5		0	DI	0.5										Minor mineralization inhealed fault and after. Minor py in stringer.
272	277	FP	0.5	CR	0.1	DI	0.5	Grnt	CR	3							Clast replacement with biotite, garnet and sphalerite. Py is present in clay rich areas, fracture controlled. Po is replacing clasts as well as disseminated.
277	302.5	BB	1		0	BB	1										Mineralization is blebby throughout, py and po blebs throughout sporadically
302.5	317.5	DI	1		0	CR	0.5	Grnt	CR	3							Py and po clast replacing as well as blebby throughout the core. Small garnet mineralization throughout.
317.5	321.2	FP	0.5		0	DI	1										Po strongly disseminated thorughout the core, though little visual representation of it. Py is plated on fracture surfaces.
321.2	333.8	VN	0.5		0	DI	1										Strongly disseminated po throughout, though no xtyls seen. Py present in stringers. Some vugs that appear to be weathered out.

Blackwater Project
Drill Summary - Structure

BW0336

From (m)	To (m)	Structure	Strength	Comments
32.5	62	JZ	2	Top of hole, some fracturing, some clay and some jointing.
62	72.5	FL	4	Strongly faulted, a lot of gouge and clay, few fractured pieces, very few consolidated pieces.
72.5	81	JZ	2	Weakly to moderately jointed.
81	82.5	FL	3	Distinct, brecciated strong fault. Consolidated, some breccia, mainly clay though.
82.5	99	JZ	2	Weakly jointed.
99	127	BRKZ	3	Very broken rock, though competent. Various angles, mainly pieces of half core, or complete rubble.
127	211.5	JZ	2	Jointed section, but mainly quite consolidated.
211.5	218.5	FL	3	Begins with a healed fault section, fault breccia, and extends to a broken zone.
218.5	257.5	JZ	2	Still not fully competent, due to above faulting, but mroe consolidated and jointed.
257.5	265	FL	1	Healed fault, consolidated but distinctly faulted.
265	272	JZ	2	Jointed, few breaks.
272	277	FL	3	Fault that brought in VC. Clay gouge present on fracture surfaces.
277	304	JZ	1	Very consolidated, few joints, mainly on veins.
304	333.8	FZ	3	Large, high angle fault zone. Multiple orientations are present throughout, but the measured orientation was a distinct contact at 307.50m between solid core and gouge.

Blackwater Project
Drill Logs

Hole ID:	BW0337	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375452.68
Depth (m):	355.7	Date Started:	01/02/2012	Casing Size:	HWT	Northing:	5893349.94
Azimuth:	0	Date Completed:	05/02/2012	Casing (m):	80	Elevation (m):	1540
Dip:	-90	Logged By:	MNu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	323	-88
46	322.3	-87.8
92	351.1	-88.6
137	357.7	-88.6
183	5.7	-88.7
229	349.7	-88.5
274	13.2	-88.7
321	359	-88.7
355.7	51.1	-88.3

Blackwater Project
Drill Summary - Lithology

BW0337

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	21.95	OB							
21.95	47	AND	bx	LAP	M	BLK	DEP	GR30	
47	49.3	VC	cs	CA	D	GRN	DEP	GR30+	
49.3	57.86	FLPT	ms	CA	P	GRN	DEP	GR30+	
57.86	72.24	VC	ms	LAP	MO	GRN	DEP	GR30	Variably felsic with block sized mafic clasts
72.24	78.33	FLPT	ms	LAP	M	GRN	DEP	GR10	
78.33	84.45	FT	lam	LAP	L	GRN	DEP	GR30	
84.45	96.75	FT	mas	LAP	P	GRN	DEP	GR30	Relict felsic clasts overprinted by alteration give a massive appearance
96.75	102.3	VC	cs	LAP	D	GRN	DEP	GR30+	
102.3	112.9	FLPT	ms	LAP	P	GRN	DEP	GR30	
112.9	127	VC	ms	LAP	M	GRN	DEP	GR30+	
127	129.5	FT	lam	FA	M	GRN	DEP	GR10	
129.5	138.4	VC	ms	LAP	D	GRN			
138.4	174.4	VC	ms	LAP	D	GRY	DEP	GR30+	Coarse blocky clastic VC grades pebble sized VC with increasing felsic clasts
174.4	177.6	FLPT	ms	LAP	D	GRN	DEP	GR30+	
177.6	187.2	FT	lam	FA	L	GRN	DEP	GR30	
187.2	203.5	FLPT	ms	LAP	L	GRN	DEP	GR30	
203.5	218.2	FT	lam		L	GRN	DEP	GR10	
218.2	328.5	FLPT	ms	LAP	L	GRN	DEP	GR30	Healed faults and fractures from 247-257
328.5	341.9	VC	ms	LAP	M	GRN	DEP	GR30+	
341.9	351.3	AND	fltbx	LAP	D	GRN	INTR	SH	
351.3	355.7	AND	mas		D	PUR			

Blackwater Project
Drill Summary - Alteration

BW0337		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
21.95	26.95	S	FR	1	PATC	1		0	PATC	1							
26.95	47	S	PERV	1	FC	1		0		0	CHL	FC	3				Occasional fractures with moderate chlorite haloes
47	49.3	S	PERV	3	FC	1		0	PATC	1							
49.3	57.83	S	PATC	1	FC	2		0	PERV	3							
57.83	72.24	S	PATC	3	FC	2	PERV	1	PATC	2	SER	MTRX	2				
72.24	78.33	S	PATC	1	FC	1	PERV	1	MTRX	3							
78.33	85.35	S	REP	1	FC	1	PERV	2	MTRX	4							
85.35	91	S	FR	1	FC	3	PERV	2	PERV	4							
91	96.75	S	FC	1	FC	1	PERV	4	PERV	3							
96.75	102.3	S	MTRX	2	CLST	1	PERV	4	PATC	1							
102.3	127	S	MTRX	1	CLST	1	PERV	4	PERV	2	SER	CLST	1	CHL	CLST	1	
127	129	S	MTRX	1	INFILL	1	PERV	3	PERV	2							
129	138.4	S	MTRX	1	CLST	1	PERV	3	PERV	2	SER	CLST	2	CHL	CLST	1	
138.4	174.4	S	CLST	2	CLST	1	PERV	4	CLST	1							
174.4	177.6	S	CLST	1		0	PERV	2	CLST	3	SER	MTRX	2				
177.6	187.2	S	MTRX	1		0	PERV	3	PERV	4							
187.2	203.5	S	CLST	1	CLST	1	PERV	4	MTRX	3							
203.5	218.2	S		0		0	PERV	4	PERV	3							
218.2	328.5	S	CLST	2		0	PERV	3	MTRX	3	CHL	FC	1				Healed faults and fractures with weak chlorite altered cement
328.5	341.9	S	CLST	3		0	PERV	4	PERV	2	CHL	FR	2				
341.9	351.3	S	FC	3	FC	5	CLST	1		0							
351.3	355.7	S	PATC	2	PATC	1	PERV	2		0	CARB	FR	1	CHL	FR	1	

Blackwater Project
Drill Summary - Mineralization

BW0337		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
21.95	26.52	BB	0.1	BB	0.1		0	Dbs	DEN	0.1							
26.52	47	SP	0.1		0		0										
47	49.3		0	BB	0.1		0										
49.3	57.86	DEN	0.3	SP	0.1	DEN	0.3	Dbs		0.5							
57.86	59	VN	0.1	SP	0.5		0.1										
59	63.68	DI	0.1	SP	0.1		0										
63.68	72.24	FP	0.1	SP	0.5	FP	0.1	Dbs	DEN	0.5							
72.24	78.33	SP	0.5		0	DEN	0.1	Dbs	DEN	0.1							
78.33	84.4	FP	0.1	SP	0.5	SP	0.1	Dbs	DEN	0.1							
84.4	85.35		0	SP	10	FP	0.1										
85.35	91	FP	0.5	SP	0.1		0										
91	96.75	FP	0.1	SP	5	SP	0.5	Dbs	DEN	0.1							
96.75	102.3	FP	0.1	FP	0.1	FP	0.1										
102.3	104		0	SP	0.1	DEN	0.1	Dbs	DEN	0.1							
104	107	FP	0.5	SP	0.5	DEN	0.5	Dbs	DEN	0.5	Ga	SP	0.1				
107	112.9	FP	0.5	SP	0.1	DEN	0.5	Dbs	DEN	0.5							
112.9	115.4	SP	0.1	SP	0.1	DEN	0.1	Dbs	DEN	0.1							
115.4	120		0	SP	0.1	DEN	0.5	Dbs	DEN	0.5							
120	127		0	SP	1	DEN	0.5	Dbs	DEN	0.5	Ga	SP	0.1				
127	129.5		0	SP	0.1	SP	1										
129.5	133.9		0	SP	0.5	DEN	0.5	Dbs	DEN	0.5							
133.9	138.4	VN	0.1	SP	2	DEN	0.5	Dbs	DEN	0.5	Apy	VN	0.1				
138.4	147.5	FP	0.1	SP	0.5	SP	0.1										
147.5	151.4	FP	0.1	SP	1	SP	0.1										
151.4	162.2		0	CR	0.5	FP	0.1										
162.2	163.8	FP	0.1		0	FP	0.1										
163.8	174.4		0	CR	0.5	SP	0.1										

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Blackwater Project
Drill Summary - Mineralization

BW0337		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
174.4	177.6	FP	0.5	SP	1	DEN	1.5	Dbs	DEN	1.5							
177.6	187.2	FP	0.5	SP	0.5	DEN	1	Dbs	DEN	1.5							
187.2	195.1	DEN	1	SP	1	DEN	1	Dbs	DEN	2	Ga	SP	0.1				
195.1	203.5	FP	0.5	SP	1	DEN	1	Dbs	DEN	1.5							
203.5	218.2	FP	0.5	CR	2	DEN	1	Dbs	DEN	1	Po	FP	1				
218.2	225.5	FP	0.5	CR	2	CR	5										
225.5	228.8	FP	0.5	CR	1	CR	5	Dbs	DEN	1							
228.8	232	FP	0.5	CR	1	CR	5										
232	238.7	FP	0.1	CR	3	CR	5										
238.7	243.3	FP	0.1	CR	1	CR	5										
243.3	257.5	FP	0.5	CR	3	CR	5	Ga	SP	0.1	Apy	VN	0.1				
257.5	267	FP	0.1	CR	1	CR	5										
267	277.3	FP	0.1	CR	3	CR	3										
277.3	295	VN	0.1	CR	1	CR	3	Cp	SP	0.1	Apy	VN	0.1				
295	299.2	BB	0.5	CR	2	CR	3	Py	FP	0.1							
299.2	302.5	SP	1	CR	5	CR	7	Py	FP	0.5							
302.5	308.7	SP	1	CR	2	CR	3										
308.7	318.8	BB	1	CR	3	CR	2										
318.8	326.8	CR	1	SP	1	CR	2										
326.8	328.5	SP	0.5	CR	2	CR	3.5										
328.5	332	CR	0.5	SP	0.5	CR	5	Py	FP	0.1							
332	341.9	FP	1	SP	0.5	CR	7										
341.9	351.3	FP	0.1	FP	0.5	CR	2										
351.3	355.7	FP	0.5		0	BB	3										

newgold
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Blackwater Project
Drill Summary - Structure

BW0337

From (m)	To (m)	Structure	Strength	Comments
21.95	36.8	JZ	1	
36.8	37.5	FL	4	
38.85	38.87	CLYSEAM	5	
39.3	41.5	FZ	1	
41.5	41.7	CLYSEAM	2	
41.7	51	JZ	1	
51	52.43	FZ	4	
52.43	56	JZ	3	
56	57.64	BRKZ	3	
57.64	61.57	FZ	3	
65.07	65.1	CLYSEAM	5	
68.9	69.3	FZ	2	
69.3	70.71	JZ	3	
70.71	74.75	JZ	2	
74.75	79	FZ	1	
79	85.35	JZ	2	
85.35	90.3	FZ	4	
90.3	96.82	JZ	2	
96.82	102.3	JZ	2	
102.3	112.9	JZ	3	
112.9	127.7	JZ	4	
127.7	127.8	CLYSEAM	4	
127.8	129.5	JZ	2	Layering attributed to weak laminations
129.5	136.9	JZ	4	
136.9	137.8	FL	3	
137.8	158	JZ	2	
158	163	JZ	4	
163	164	FZ	2	

Blackwater Project
Drill Summary - Structure

BW0337

From (m)	To (m)	Structure	Strength	Comments
164	174.4	JZ	4	
174.4	177.6	JZ	4	
177.6	187.2	JZ	3	
187.2	203.5	JZ	2	
203.5	218.2	JZ	2	
218.2	233.5	JZ	1	
233.5	243.3	BRKZ	3	
243.3	257.5	JZ	3	Highly fractured zone contained healed fault breccia zones
257.5	308.7	JZ	2	
308.7	312.5	JZ	4	
312.5	312.8	FL	5	
312.8	315.3	JZ	3	
315.3	315.6	FL	4	
315.6	321.9	JZ	4	
321.9	328.3	JZ	3	
328.3	329.6	FZ	3	
329.6	341.9	JZ	3	
341.9	351.3	FZ	4	
351.3	355.7	JZ	3	

Blackwater Project
Drill Logs

Hole ID:	BW0338	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375901.41
Depth (m):	373	Date Started:	02/02/2012	Casing Size:	HWT	Northing:	5893398.68
Azimuth:	0	Date Completed:	06/02/2012	Casing (m):	4	Elevation (m):	1519
Dip:	-90	Logged By:	LMo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	305	-89
52	304.5	-88.2
100	292.5	-88.2
150	309.4	-88.2
202	298.4	-88.2
250	276.2	-87.8
322	299.4	-87.8
373	299.7	-88

Blackwater Project
Drill Summary - Lithology

BW0338

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							Overburden
4	28	VC	volc	LAP	MO	PUR	DEP	SH	Volcanoclastic unit, with majority mafic clasts and pale green/blue felsic matrix.
28	49.5	AND	autbx	LAP	D	PUR	FLT	GR30	Young, purple Fe-oxide altered andesite, brecciated with an unknown roof-red mineral colouring the matrix.
49.5	68.7	FLPT	lpt	LAP	L	GRN	FLT	GR10	
68.7	74.7	AND	bx	LAP	D	PUR			Andesite, brecciated in some patches, predominantly massive
74.7	84.8	VC	volc	LAP	MO	PUR	DEP	GR10	Volcanoclastic unit with majority mafic clasts. Matrix supported, angular-sub-angular clasts.
84.8	98.2	AND	por	LAP	D	PUR	DEP	GR10	Andesite, porphyritic and massive, with short areas of brecciated material.
98.2	118	VC	volc	LAP	MO	PUR	FLT	GR30	Volcanoclastic, with majority mafic, angular clasts, matrix supported.
118	145	AND	por		D	PUR	FLT	GR30	Young andesite, with purple Fe-oxide colouration. Some brecciation, fairly porphyritic.
145	209	AND	bx		D	GRY			Older andesite, porphyritic
209	235	AND	por	LAP	D	GRY	FLT	GR30	Porphyritic andesite, massive in sections and brecciated in sections
235	265.2	AND	por	LAP	D	GRY			Porphyritic andesite with localized brecciated sections; calcite stockwork
265.2	291.5	AND	por	LAP	M	BR			Brownish grey porphyritic andesite, brecciated in sections; some calcite stockwork
291.5	313.5	AND	bx	LAP	D	GRY	DEP	GR5	Brecciated andesite with some porphyritic texture in sections, some calcite stockwork
313.5	326	VC	plm	LAP	M	GRY	DEP	SH	Polymictic, matrix supported volcaniclastics; mostly mafic clasts SA/SR
326	341	AND	amg	LAP	MO	GRY	DEP	GR10	Amygoloidal andesite with localized brecciation in sections
341	373	AND	amg		D	GRY			Amygoloidal andesite, possibly faint brecciation in sections. mostly massive, with small sections of rough amygdoidal alignment. EOH

Blackwater Project
Drill Summary - Alteration

BW0338		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	28	T	CLST	1	PERV	1		0	PATC	2	LIM	FC	2				Weak pervasive clay, wk chlorite in mafic clasts, sericite in felsic clasts and in areas with felsic matrix, fracture controlled limonite/goethite
28	49.5	S	FR	2	PERV	1		0		0	HM	MTRX	1	CAL	INFILL	1	Weak pervasive clay, chlorite on fractures, pervasive purple coloured iron-oxide. Some calcite infill.
49.5	68.7	S	CLST	1	PERV	1		0	PERV	3							Pervasive sericite, with some chlorite altered clasts, wk pervasive clay.
68.7	74.7	S	FR	2	PERV	1	CLST	1		0							Pervasive purple Fe-oxide staining andesite, minor chlorite on fractures, some silicified clasts, but mostly wk pervasive clay
74.7	85.8	S	CLST	1	PERV	2		0	CLST	1	UNK	INFILL	1				Sericite and chlorite in felsic and mafic clasts, respectively. Weak pervasive clay. Also an unknown roof-red coloured mineral, infilling spaces, and in some clasts.
85.8	98.2	S	FR	1	PATC	1	PATC	1		0	CAL	INFILL	2	UNK	INFILL	1	Patchy clay and silicification, with chlorite on some fractures, calcite and unknown roof-red mineral infilling breccias and fractures
98.2	118	S	FR	1	PERV	1		0	MTRX	2	CAL	FR	1				Sericite altering matrix, chlorite replacing some clasts and on fractures, calcite on other fractures and infilling pores, wk pervasive clay
118	147	S	FC	1	FC	1		0	CLST	1	CLY	PERV	1	CAL	INFILL	2	Wk pervasive clay, also clay and chlorite alterering around some fractures. Calcite infilling fractures, with some of the unknown roof-red mineral in clay gge.
147	209	S	FC	1	PERV	1		0		0	CAL	INFILL	2				Wk pervasive clay, fractures controlled chlorite, calcite infilling fractures, and in veins
209	237	S	FC	1	PATC	3	PERV	2		0	CAL	INFILL	2				No sericite, weak chlorite on fractures, moderate patchy clay and some on fractures, calcite infilling fractures and veins
237	265.2	S	FC	1	PATC	2	PERV	4	VN	1	CAL	INFILL	3				Weak sericite in veinlets, weak chlorite on fractures, some patchy clay, increase in calcite infilling fractures and veins form previous interval
265.2	291.5	S	FC	2	PATC	2	PERV	4	VN	2	ANK	OP	3	CARB	OP	2	Weak sericite and chlorite alterations, some patchy clay, calcite infilling in veins, moderate ankerite/iron carbonate as overprint strong pervasive silica

Blackwater Project
Drill Summary - Alteration

BW0338		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
291.5	313.5	S	FC	2	PATC	3	PERV	4	VN	2	ANK	OP	3	CARB	OP	3	Weak sericite and chlorite alterations, moderate patchy clay, moderate calcite infilling in veins
313.5	326	S	CLST	3	PATC	2	OP	3	CLST	1	ANK	OP	2	CARB		1	Weak sericite in clasts, moderate to strong chlorite in clasts, weak patchy clay, moderate silica alteration as overprint, decreased ankerite/carbonate alteration from previous interval
326	341	S	VN	1	PATC	2	OP	3		0	ANK	OP	2	CARB		2	No sericite, weak chlorite around veins, weak clay alteration in patches, some ankerite/carbonate as overprint
341	357	S	CLST	1	PATC	2	OP	2		0	ANK	OP	1	CARB	VNHL	1	weak alteration overall, patches of clay alteration, slight sil overprint. occaisional vein with carb/calcite halo
357	361.3	S		0	PATC	1	OP	1		0	ANK	INFILL	3	CARB	VNHL	3	zone of stockwork-like calc-carb veining with carb/ankerite halos. rock somewhat brown with biotite altn' stronger downhole
361.3	373	S		0	PATC	1	OP	2	VN	1	ANK	OP	2	CARB	VNHL	1	dark rock, weaker alteration overall, biotite as before. less carb/ank.

Blackwater Project
Drill Summary - Mineralization

BW0338		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	12.5		0		0		0	Goe	DI	2							Patchy goethite and limonite
12.5	31		0		0	DI	0.1										Trace po, in mafic clasts
31	49.5		0		0	DI	2	Goe	FP	1							Di po in fresh/young andesite
49.5	67.5	BB	0.1	CR	0.5	DI	0.1	Ga	CR	0.1	Py	BN	0.5				Sooty sulphide in clay gge, some clasts being replaced with sphal/gal, trace po
67.5	74.7		0		0	DI	0.1										Trace di po
74.7	100		0		0	DI	0.1										Trace di po
134.5	148	SP	0.1		0	DI	0.5										Trace py in specks and veins with calcite, minor po, di and in specks
148	174		0		0	DI	0.1										Trace po
174	180	SP	0.5		0	DI	0.1										Specks of py, especially around fractures, trace di po.
180	189	SP	0.5		0	DI	0.5										Specks of py, di po
189	209		0		0	DI	1										Minor di po
209	235	BB	0.1		0	DI	1										Trace py in blebs, disseminated po
235	265.2	VN	0.1		0	BB	0.5										Trace py associated with calcite veinlets, po in blebs
265.2	291.5	VN	0.1		0	BB	0.5										Trace py in calcite veinlets and some on fractures, po in blebs and on fractures
291.5	313.5		0		0	DI	0.5										Fine grained disseminated po
313.5	326	VN	0.3		0	BB	0.5										Py associated with calcite veinlets and hairlines and some as disseminated specks, po in blebs and some in clasts
326	341	BB	1		0		5	Apy	BB	0.5							Intergrown py+po blebs, po in blebs , some arsenoprite blebs and some on fractures
341	349	SUBH	2	BB	0.1	BB	2	Apy	BB	0.5							good py-po mineralization, many well shaped crystals, some getting fairly large
349	353.5	VN	1		0	BB	1	Apy	SP	0.1							blebby py strongest in veins and rough bands. po blebs here and there

Blackwater Project
Drill Summary - Mineralization

BW0338		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
353.5	356.5	SUBH	2	BB	0.1	SUBH	4										strong po-py mineralization in veins. large veins with subhedral crystal growth. po seems preferentially in larger veins, while py occurring largely in smaller frequent veinlets.
356.5	363.3	SP	0.1		0		0										rock has gone pretty much barren
363.3	373		0		0	SP	0.1										rare speck of po.

Blackwater Project
Drill Summary - Structure

BW0338

From (m)	To (m)	Structure	Strength	Comments
4	16.6	JZ	2	Joint zone, fractures with weak cleavage, 60>45>80 degree fractures
16.6	20.5	FZ	3	Fault zone, with rubble and clay gge
20.5	48	BRKZ	2	Weakly broken zone, with some sections of joint rock (good cleavage), and some short zones of rubbly clay gge
48	68	FZ	3	Fault zone, with areas of intense clay gge, and rubble
68	74	BRKZ	3	Fairly broken, with short zones (<20cm) of moderate clay gge
74	80.2	FZ	4	Fault zone with patchy intense clay gge
80.2	106	JZ	2	Moderately jointed rock, 80>45 degree fractures, some areas of broken rock
106	111	FZ	3	Fault zone with areas of intense clay gge
111	145	BRKZ	4	Broken zone with areas of rubble
145	147.5	FL	4	Fault zone separating young from old andesite, intense clay gge
147.5	169	BRKZ	4	Broken zone, with areas of complete rubble
169	173	FZ	2	Weak fault zone with rubble and some clay gge
173	199.3	BRKZ	3	Moderately jointed rock, with brief intervals of broken rock. Fractures 60>80>45 degree TCA
199.3	208.3	JZ	2	weak jointzone with localized broken zones, joints between 40-70dtca
208.3	215.5	BRKZ	3	Moderate brokenzone with some strongly broken sections
215.5	235	JZ	2	Weak to moderate jointzone with some wispy and jagged joints; measurable joints mostly at 40dtca and 30dtca
235	237	FL	2	Fault/clay gge, some andesite clasts present
237	244	BRKZ	2	Weak brokenzone
244	255.3	JZ	1	Weak jointzone with wispy and jagged joints; joints at 50/35/25dtca
255.3	275.1	JZ	3	Moderate to good jointzonewith joints mostly at 50/60/70dtca
275.1	291.5	JZ	3	Moderate jointzone with some wispy joints; joints mostly at 50dtca and 70dtca
291.5	301.5	JZ	3	Jointzone with 1 local brokenzon; some wispy and jagged joints mostly at 50/40dtca
301.5	324.5	JZ	3	Moderate joint zone with joints between 40-70dtca
324.5	353	JZ	2	Joint zone with mostly wispy/jagged joints; measurable joints at 65dtca
353	373	JZ	2	as above. planar joints at approximately 60 degrees to CA. minor set at 40

Blackwater Project
Drill Logs

Hole ID:	BW0339	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375526.23
Depth (m):	487	Date Started:	01/02/2012	Casing Size:	HWT	Northing:	5892723.87
Azimuth:	270	Date Completed:	10/02/2012	Casing (m):	3	Elevation (m):	1621
Dip:	-60	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	275	-60
52	275.5	-59.3
100	276	-59.3
151	276.5	-59
200	278.3	-58.5
250	277.9	-58.3
302.5	278.4	-56.8
358	280.6	-54.7
400	280.1	-54.1
452.5	280.4	-53

Blackwater Project
Drill Summary - Lithology

BW0339

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6.5	OB							
6.5	17.5	VC	bx	LAP	M	GRY	DEP	GR30+	Volcanoclastic sections are interbedded with short intervals of andesite. VC contains large clasts of Andesite and smaller <2cm clasts of other lithologies
17.5	22	VC	lptbx	LAP	L	GRY	DEP	GR30+	Short interval of more felsic clasts and matrix? lighter colour is possibly alteration related
22	29.5	FLPT	bx	LAP	M	GRY	FLT	SH	Volcanoclastic sections are interbedded with short intervals of andesite. VC contains large clasts of Andesite and smaller <2cm clasts of other lithologies
29.5	81.2	FLPT	bx	LAP	L	WH	DEP	GR30+	Felsic lapilli tuff is clasts up to Block, some are banded and rare mafic clasts moch of interval is strongly altered to locally replaced by limonite.
81.2	90.2	VC	bx	LAP	M	GRN	ALTFR	GR30	Clasts are less then 3 cm in a light coloured (felsic????) matrix. darker (more mafic???) clasts are preferentially spalerite replaced.
90.2	100.2	VC	bx	LAP	MO	GRN	ALTFR	GR30+	Interval is intensly silica altered, the few outline which where visible where difuse and clast roundness was difficult to determine. Silica alteration appears to be spacially associated with amoderate fault
100.2	116.7	VC	bx	LAP	M	GRY	DEP	GR30+	Massive homogenious lapilli tuff, dominately andesitic clasts.
116.7	121.8	VC	bx	LAP	M	GRY	DEP	GR30+	Volcanoclastics in this interval are weakly foliated / bedded? increasingly felcis down hole with disticnt change in composion and clast size around contact.
121.8	153.4	VC	bx	BLOCK	L	GRY	DEP	GR30	Several felsic and mafic rich alternation grade back and forth through the interval.
153.4	199	AND	mas	LAP	M	GRY			Massive porphyeritic Andesite, weakly minerized, very competant.
199	205	INTR	equi	CA	M	GRY	DEP	GR30+	equigranular fsp-dominant w/ amph/biot; tr py in chl-dom vnlts
205	232.9	AND	volc	LAP	D	GRY	ALTFR	SH	mafic clasts in mafic matrix; wk carb vning
232.9	234.6	VC	ms	LAP	MO	GRN	ALTFR	SH	well silicified green interval
234.6	258	AND	volc	LAP	D	GRY	UNKN		mafic clasts in mafic matrix; wk carb vning
258	323	AND	mas	CA	D	GRY	UNKN		gradational equigranular fsp-amph w/ clastic biotitic AND, no distinct contacts
323	344.7	AND	volc	LAP	D	GRY	ALTFR	GR30	biotitic andesitic clasts in andesitic matrix
344.7	365	AND	bx	LAP	MO	GRY	DEP	GR30	alternating bands of wk bleached felscis and wkly bleached andesites in drk andesite
365	373	FLPT	volc	LAP	M	GRY	DEP	GR10	fragmental felsic w/ chl on fx; 1-3%sulfide
373	458.8	FT	lam		M	GRY	DEP	GR30	fine tuff w/ wk banded text, flt'd @374-402.7m
458.8	487	AND	mas	LAP	M	GRY			Massive andesite with sections of clasts. Clasts are angular. Calcite veining.

Blackwater Project
Drill Summary - Alteration

BW0339		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
6.5	15.6	T	CLST	3	REP	1		0	REP	1	BIOT	PERV	3	LIM	FC	3	Sericite and clays are replacing Feldspars and felsic calasts.
15.6	18	O		0		0		0		0	BIOT	PERV	3	LIM	PERV	5	All alteration being progressively replaced by Limonite,. Biotite is moderate at the begining of the interval dropping out down hole.
18	22.2	O		0	REP	2		0	REP	2	LIM	FC	4	SER	CLST	4	Pervasive sericite and clay alteration is stronger in clasts of felsic material.
22.2	28.95	T		0		0		0	FC	1	BIOT	PERV	3	LIM		2	
28.95	66.2	O		0	REP	5		0	REP	3	LIM	FC	4	CLY	PERV	1	Clay replacement of clasts is compleate with banding still visible. Sericite alteration is pervasive and stronger in a minorite of clasts.
66.2	76.7	T	FR	1	REP	5		0	REP	3	LIM	FC	3	LIM	PATC	1	Clay alteration is signifigantly stronger in clasts which are in local areas of oxidation, clay after sericite?. Limonite is patchy at metre scale and areas of patchy pervasiveness are associated with greater fracture intensity. Clay replacing feldspar grains.
76.7	81.4	S	FR	3	REP	4		0	PERV	3	CHL	PERV	1				LImonite is out, very similar to interval above, Clay replacing Feldspar grains/ clasts.
81.4	100.3	S	FR	4	PERV	1	PERV	3	PERV	2							Pervasive sercite and clay alteration. spacially associated with moderate fault. Spalerite minerization is also associated with alteration. v. fine grained v. evenly disseminated Py is also associated with silicification.
100.3	114.6	S	FR	3	PERV	2		0	PERV	3	BIOT	PERV	3				Decreasing sericite and increasing biotite over this interval.
114.6	121.8	S	FR	3		0	PERV	1	CLST	2	BIOT	PERV	3				Sericte replacing clast preferentially.
121.8	153.4	S	FR	2	PERV	2	PERV	3	PERV	3	BIOT	PERV	3	SER	CLST	4	Sericite is stronger in more silica rich zones and chlorite is stronger in more mafic zones. Pervasive Silica alteration is quite even across lithologies changes.

Blackwater Project
Drill Summary - Alteration

BW0339		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
153.4	199	S	FR	2	REP	2		0	REP	3	BIOT	MTRX	3	TALC	FR	1	Talc, carbonate, and chlorite on fracture through out interval. moderate biotite alteration is pervasive throught out and concentrated in the matrix. Clay and Sericite alteration of feldspar phenocryst is pervasive and moderate to strong.
199	205	S	VN	2	PATC	1	PATC	2	PERV	2							patchy zones of texture obscuring silicification, wk chl-rich vnlts
205	232.9	S	FC	2		0	PATC	1	FR	1	BIOT	CLST	3	CARB	VN	1	carb-anhy-talc vnlts
232.9	234.6	S	MTRX	2	CLST	1	PERV	3	FR	1	SIL	CLST	4				grn silica w/ chl strongest in matrix
234.6	257	S	FC	2		0	PATC	1	VNHL	1	BIOT	CLST	2	CARB	VN	1	wk carb-anhy-talc vnlts
257	323	S	PERV	2	REP	1	PATC	1	VNHL	1	BIOT	CLST	2	CARB	VN	1	chl strongest in equigranular; biot strongest in clastic
323	344.7	S	PERV	2	REP	1	PATC	1	VNHL	1	BIOT	CLST	2	CARB	VN	1	as above
344.7	345.9	S	FR	2	REP	1	PERV	2	PERV	2							bleached interval
345.9	352	S	PERV	2	REP	1	PATC	1	FC	1	BIOT	CLST	2	CARB	VN	1	chl strongest in equigranular; biot strongest in clastic
352	359	S	FR	2	REP	1	PATC	3	PATC	2	BIOT	CLST	2	CARB	VN	1	alternating 5-7cm bleached zones
359	365	S	PERV	2		0	PATC	1		0	BIOT	CLST	2				
365	458.8	S	FR	3	PERV	1	PATC	2	PERV	1							increased drk grn chl on fx, wk ser or clay bleaching
458.8	487	S	PERV	3	FR	1	PATC	1	PATC	1	BIOT	PERV	3	CARB	VN	3	biotite chlorite alteration. Calcite veining.

Blackwater Project
Drill Summary - Mineralization

BW0339		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	29.5		0		0		0										Sulphides are weathered out or where not there to begin with.
29.5	50		0		0.1		0	Dbs	DEN	0.1							Trace Sp and DBS in small intervals of weaker alteration. some evidence of SP and DBS being altered out and originally being present above trace levels
55	76.7		0		0.1		0	Dbs	DEN	0.1							Trace Sp and DBS in small intervals of weaker alteration. some evidence of SP and DBS being altered out and originally being present above trace levels
76.7	86	DI	0.1	CR	1	BB	0.5										Preferential replacement of clast for spalerite and Dissseminated blebs of Po which is strongly magnetic.
86	90.4		0.1	CR	5	BB	1										Preferential replacement of clast with spalerite, increaseed spalerite and Po with increasing silica alteration intensity. and Dissseminated blebs of Po which is strongly magnetic.
90.4	92.5	DI	1	BB	0.5		0	Dbs	DEN	0.5							V. fine disseminated euhedral Py and disseminated blebby Sp. with local dendritic DBS
92.5	93.4	DI	1	BB	20		0	Grnt	EU	0.5							Spalerite is in large blebs 1mm to 3cm in scale Gr is more closely associated with smaller blebs of Sp though not exclusively, Gr is in singluar or small clusters of euhedral grains. Primary textures are nearly compleately gone and it is difficult to
93.4	100.3	DI	1		0.1		1	Py	VN	0.5	Po	VN	0.5				Py is v. fine grained and disseminated, Po is in small blebs, < 1cm veins of mixed Py and PO are also common.
100.3	111.2	DI	0.1	CR	3	BB	0.5	Py	VN	0.5	Sp	VN	0.5				Sp replacing clast preferentially also disseminated to weak degree. Py is disseminated in trave amounts and is Po in small <1mm blebs. Small <1cm veins of Py and Sp are present Py> Sp

Blackwater Project
Drill Summary - Mineralization

BW0339		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
111.2	121.8	FP	0.1	CR	2	DI	2										Sp is replacing clast with very little in matrix, Po is in euhedral to subhedral grains disseminated, locally up to 5% over 10cm . Py is dominately on fracture surfaces as "marcasite"
121.8	137	DI	0.5	DI	2.5	DI	1	Dbs	DI	1							Sulphides are diseminated as grains and blebs, Po is slightly concentrated in more mafic intervals while other sulphides are slightly concentrated in more felsic intervals.
137	148.1	DI	5	DI	2.5	DI	1	Dbs	DI	1							Sulphides are diseminated as grains and blebs, Po is slightly concentrated in more mafic intervals while other sulphides are slightly concentrated in more felsic intervals.
148.1	153.4	DI	0.5	DI	1	DI	1	Py	VN	0.5	Sp	VN	0.5	Po	VN	0.5	This interval is dominated by mafic clasts and there are few felsic before turning to andesite.
153.4	170	DI	0.1	VN	0.1	DI	0.5	Py	VN	0.1							Andesite s with trace minerization and 0.5% Po Py and Sp are in low concerntration through out. Upper metre is slightly more then rest of interval. rare Py stringers along fracture
170	183	DI	0.1	VN	0.1	DI	0.5	Py	VN	0.1							rare Py stringers along fracture
183	205	VN	0.1		0		0	Mrc	FP	0.1							tr tarnished anhy py in chl-dominant vnlts
205	221	SP	0.1		0	CR	1	Mrc	FP	0.1							
221	232.9	SP	0.1		0	CR	1	Mrc	FP	0.1							
232.9	234.6	DI	2	DI	1	DI	1	Dbs	FP	0.5							spotty sooty py w/ sp-po, fx-cont dbs
234.6	248	SP	0.1	SP	0.1	CR	0.5	Mrc	FP	0.5							
248	257	SP	0.1	SP	0.1	CR	0.5	Mrc		0.1							
257	265	DI	0.1	DI	0.1	CR	0.5	Mrc	FP	0.1							
265	273.5	VN	0.1		0	VN	0.5	Po	BB	0.1							po in clay-chl-rich vnlts/ some blebs
273.5	285	SP	0.1		0	SP	0.1										
285	298	SP	0.1		0	SP	0.1										
298	323	SP	0.1		0	SP	0.1										

Blackwater Project
Drill Summary - Mineralization

BW0339		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
323	332.5		0		0		0.1										
332.5	344.7	SP	0.1		0	CR	0.5										
344.7	346	DI	0.5	DI	0.5	DI	0.5										matrix-dominant coarse subh tarnished py
346	351	SP	0.1	DI	0.1	DI	1										
351	359	DI	1	DI	0.5	DI	1	Dbs	DI	0.5							wk bright py stringers, some diss'd in matrix
359	365	DI	0.1	DI	0.5	CR	1.5										
365	373	DI	1	DI	0.5	BB	1	Dbs	DI	0.1	Py	VN	0.5				wk blebby po; wk vn'd py-po-sp
373	388.5	DI	1	DI	0.5	DI	0.1	Dbs	VN	0.5							spotty disseminated mixed py-sp
388.5	403	DI	1	DI	0.5	DI	0.1	Dbs	VN	0.5							as above
403	420	DI	1	DI	0.5	DI	0.1	Dbs	VN	0.5							continuation of above
420	443.1	DI	0.5	DI	1		0	Dbs	DEN	0.5							slight decrease in sulphides, blebby pyrite and sphalerite. Possible cruddy garnets. Weak to moderate DBS
443.1	458.5	BB	1	DI	2		0	Dbs	DEN	0.5							slight increase in sphalerite
458.5	466	DI	0.1	DI	0.1	DI	3										increase in Po. Decrease in pyrite and sphalerite.
466	487	DI	0.1	DI	0.1	DI	2										weak sulphides, Po 2% diss and veined.

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Blackwater Project
Drill Summary - Structure

BW0339

From (m)	To (m)	Structure	Strength	Comments
6.5	14	JZ	5	
14	14.3	FL	5	30cm of fault gauge, clasts < 1cm in size
14.3	16.2	JZ	5	
16.2	17.9	FZ	5	30cm and 40cm fault gauges witrh associated minor fault gauges, clasts <1cm in size, all of unknown orientation
17.9	29.5	JZ	4	
29.5	40	FZ	3	Numerous fault gauges 40 to 1 cm majority are oriented at or near 50 deg to CA.
40	57	JZ	5	Core is slightly more competant down hole.
57	59.4	FL	5	Fault Gauge, clasts <1cm.
59.4	74.4	JZ	3	Moderate fracte with Limonite folloing fracture.
74.4	91.3	JZ	4	Locally broken core and minor faults ?<1cm fault gauge.
91.3	95	BRKZ	3	Broken core assocaited with Fault
95	95.4	FL	5	20cm of guage recoverd assumed 20cm - 40 cm of gauge etc. lost as recovery for interval is 1.05m, angle of fault is 70% confident.
95.4	100.4	FZ	4	Core is very broken pervasive fault gauge is spread trhrough out. discrete gauge @ 98 m???.
100.4	155.5	JZ	4	Strongly jointed occationally broken level 2, dominant jointing is 60 - 70 deg to CA.
155.5	156.5	FL	2	Orientation of structure is 70% confident. 50% fault gauge and 50% broken core.
156.5	183	JZ	2	fracture is variable with no oviously dominant set.
183	231.5	JZ	2	wk undulating rough fx w/ chl and some carb lining
231.5	243	BRKZ	2	blockt-well jnt'd w/ some carb-coating
243	257	JZ	2	carb-coated high angle jnts
257	323	JZ	2	as above
323	338	JZ	2	as above
338	356	BRKZ	3	blocky
356	361.7	FL	4	rubble-gge w/ blocks
361.7	369	BRKZ	3	blocky w/ some rubble
369	373.6	JZ	3	mod jnt'd w/ some blocks
373.6	390	BRKZ	4	blocky-rubble
390	395	FL	4	sandy clay gge w/ some blocks-rubble

Blackwater Project
Drill Summary - Structure

BW0339

From (m)	To (m)	Structure	Strength	Comments
395	410.3	BRKZ	4	blocky w/ some wk rubble
410.3	424	JZ	3	mod jnt'd w/ some wk blocky
424	427	BRKZ	3	broken zone
427	433	JZ	3	mod jointing
433	437.4	FL	4	redrill faulted broken
437.4	458.5	BRKZ	3	broken zone
458.5	487	JZ	4	jointing with calcite veins, 50 TCA

Blackwater Project
Drill Logs

Hole ID:	BW0340	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375402.66
Depth (m):	425.5	Date Started:	03/02/2012	Casing Size:	HWT	Northing:	5892650.39
Azimuth:	0	Date Completed:	11/02/2012	Casing (m):	10	Elevation (m):	1629
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	150.2	-89.2
103	151.2	-89.5
150	164.5	-89.1
205	166.3	-89.2
250	158.7	-88.7
304	173.6	-88.8
352	196.9	-88.3
400	184.1	-87.8
425	173.1	-87.7

Blackwater Project
Drill Summary - Lithology

BW0340

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	0.5	OB							
0.5	19.3	FLPT	lam	LAP	L	BLCH	DEP	GR30	Felsic lapilli tuff with local laminations, weak clay altering clasts and local breccia texture
19.3	83.1	AND	autbx	LAP	M	GRY	FLT	GR10	Dark grey to black autobrecciated andesite with calcite veining and weak sericite/silica overprint
83.1	116	FT	ch	CA	L	OR	FLT	GR5	Strongly altered transitional zone felsic tuff, primary textures are completely obcured with possible faint laminations observed
116	208.1	AND	mas	LAP	M	GRY	DEP	GR30+	Dark grey andesites with massive to weakly autobrecciated textures. Bleached patches with chloritization.
208.1	236.5	FT	lam	CA	L	GRY	DEP	GR30	Light grey massive/weakly laminated felsic tuffs with weak green sericite alteration (banded). Zone towards bottom of interval has oblong subround to round clasts (result of welding or shear?).
236.5	300.4	AND	mas	LAP	D	GRY	DEP	GR30	Dark grey andesites. Feldspar rich. Zones with a brecciated texture
300.4	334	VC	ms	LAP	M	GRY	FLT	GR30	clast become more rounded towards bottom (Epiclastic). predominately mafic clasts and matric with occasional zones of felsic matrix.
334	356	FT	ms	CA	L	GRY	DEP		FT with the top portion being an epiclastic texture gradeing into a massive texture. Faulted toward top of interval
356	425.5	AND	mas	LAP	D	GRY	UNKN		Massive with zones with a weak remnant aphanitic texture and amygdulal zones.

Blackwater Project
Drill Summary - Alteration

BW0340		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
6	27	O		0	PATC	2	PERV	3	CLST	2	LIM	FR	3	HM	FR	1	Moderate silicification alteration overprinting clay alt. Veined clay alt. Limonite alteration found in fractures
27	43	T		0		0	OP	2	OP	2	LIM	FR	1				Sericite/silica overprint limonite staining fractures
43	83.1	S		0		0	MTRX	2	OP	2	CAL	VN	2				Calcite in small veinlets, silica altering the matrix, weak sericite overprint
83.1	116	T		0	REP	1	PERV	5	OP	1	LIM	FC	3	HM	FR	2	Intense silica alteration obscuring primay textures, limonite and hematite staining fractures, clay as replacement/infill of clasts?
116	140	T	FR	2	FR	1	PERV	4	OP	1	LIM	FC	3	HM	FC	2	
140	169	S	FC	2	FR	1	PERV	4	OP	1							
169	208.1	S	CLST	3		0	PERV	5	OP	1							Chlorite alteration is patchy and clast-dominated. Silicification is strong.
208.1	236.5	S		0		0	PERV	4	OP	2							Strongly silicified. sericite weakly overprinting and banded
256	295	S	FR	1		0	PERV	4	OP	1							
295	312	S	CLST	1		0	PERV	4	OP	2							Sericite alteration is stronger in felsic clasts
312	334	S	CLST	2		0	PERV	4	OP	1							Same as above with some clast being replaced by chl
334	356	S	FR	4		0	PERV	4	OP	3							
356	425.5	S	PATC	2		0	PERV	4	OP	1							Weakly chl altered (typically in patches and some clast replacement). Strong silicification

Blackwater Project
Drill Summary - Mineralization

BW0340		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
6.5	19.3		0		0	BB	0.1	Goe	FP	3	Jaro	FP	1				Limonite found in fractures.
19.3	43	DI	0.1	CR	0.1		0	Goe	FP	0.5	Jaro	FP	0.1				Weak limonite on fracs, trace pyrite and sphalerite
43	83.1	DI	0.5	DI	0.5	DI	0.5	Py	VN	0.1							weakly disseminated pyrite/sphalerite and pyrrhotite, trace pyrite in veinlets
83.1	116	CR	0.1	CR	0.1		0	Hm	FP	1	Goe	FP	2	Jaro	FP	2	Trace visible sulphides, abundant leached sulphide sites and vuggy dippled surficial texture, oxide minerals on fractures
116	134	DI	0.1	DI	0.1		0	Hm	FP	1							Weakly disseminated py and sp. Feox on fractures and fracture walls
134	151	DI	0.5	DI	0.1		0										Py found in minor amounts disseminated and as qtz-py amydules
151	176.5	DI	0.5	DI	0.1		0										Same as above
176.5	182.5	DI	2	DI	0.1	DI	0.1										This interval is more brecciated and more strongly silicified then surrounding core.
182.5	208.1	DI	1	DI	0.1		0										slight elevation of sulfides in patches
208.1	226.2	CR	1	CR	4		0	Dbs	DEN	0.5							Sulfides frequently found in cavities
226.2	236.7	CR	1	CR	4	BB	0.5	Dbs		0.5							Sulfides frequently found in cavities
236.7	256	DI	0.5	DI	0.5	BB	2	Mrc		0.5							Minor to moderate mineralization. Po associated with Qtz typically as Amygdules
256	273	DI	1	VN	1	VN	0.5	Cp	VN	1	Ga	VN	0.5				Several sulfide rich veinlets
273	300.4	DI	0.5	DI	0.5	BB	1	Cp	VN	0.1							Po-qtz amydules. Qtz-Ca-Cp veinlets
300.4	312	DI	0.5	VN	0.5	DI	0.1	Cp	VN	0.5							Sp-Cp veinlets present
312	333.4	DI	0.5	DI	0.5		0	Cp	VN	0.5							
333.4	356	CR	1	CR	3		0	Cp	VN	0.5	Dbs		0.5				Py-Sp-Cp veinlets are irregularly distributed at approx 1 per 3m.
356	384	DI	0.5		0		0										trace Py disseminated with 1 remnant stringer veinlet
384	403	DI	0.1		0		0										
403	425.5		0	BB	0.1	BB	0.5										Min found in amygdules w/ traces in veinlets

Blackwater Project
Drill Summary - Structure

BW0340

From (m)	To (m)	Structure	Strength	Comments
6.5	22.8	JZ	2	Moderately jointed
22.8	25.1	BRKZ	2	broken core with no intact pieces
25.1	34	JZ	1	weak low angle joint set at 10 degrees
34	42	BRKZ	3	broken zone
42	71.5	JZ	2	joint set 50 degrees tca
71.5	74	FL	3	crushed and broken fault zone
74	81.3	BRKZ	3	broken zone with minor clay on fractures
81.3	82.9	FL	3	fault gouge with some visible slickensides
82.9	84.6	JZ		weak joint set
84.6	87.6	BRKZ	4	broken zone with signifigant redrill
87.6	115.5	JZ	1	joint set with some more strongly fractured pieces, joint sets at 15, 30, and 50 degrees
115.5	148.7	JZ	3	Inconsistant Angle TCA
148.7	153	BRKZ	2	Broken zone with intervals being moderate to strongly jointed
153	312	JZ	1	Inconsistant Angle TCA
312	425.5	JZ	1	Variability in Angle TCA with 65-75deg being typical.

Blackwater Project
Drill Logs

Hole ID:	BW0341	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374951.36
Depth (m):	367	Date Started:	03/02/2012	Casing Size:	HWT	Northing:	5893249.5
Azimuth:	0	Date Completed:	10/02/2012	Casing (m):	14.5	Elevation (m):	1546
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
58	317	-89.1
100	359.3	-88.5
157	345.2	-88.8
206.5	316.4	-88.8
256	314.2	-88.4
301	317.1	-88.6
352	309.6	-87.4

Blackwater Project
Drill Summary - Lithology

BW0341

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	1.8	OB							
1.8	64	FT	lam	CA	M	OR	OXFR	GR30	Oxidized laminated felsic tuff with local lapilli tuff breccia texture (<2%)
64	64.5	VC	volc	LAP	D	GRY	FLT	GR10	very thin sequence of volcanoclastics between felsic units
64.5	108	FLPT	lam	LAP	M	GRY	DEP	GR10	Garnet bearing strongly altered felsic lapilli tuff breccia, chlorite locally very strongly alters clasts. Core has a somewhat glassy texture with ghost clast textures preserved
108	137.3	FLPT	hydbx	LAP	MO	GRN	DEP	GR10	Chlorite altered felsic hydrothermal breccia
137.3	138.3	VC	volc	LAP	M	GRY	DEP	GR10	Small andesite dominant volcanoclastic sequence with minor felsic input, clasts are more poorly sorted than underlying unit
138.3	140.7	VC	volc	LAP	MO	GRY	DEP	GR10	More felsic dominant polymicitc equigranular volcanoclastic sequence with star shaped, angular shardy looking chlorite altered clasts
140.7	158.8	AND	autbx	LAP	M	GRY	DEP	SH	Autobrecciated andesite with locally amygdaloidal texture
158.8	165.8	FLPT	hydbx	LAP	MO	YLW	DEP	GR10	Felsic lapilli tuff hydrothermal breccia with sharp contact above, angular chlorite altered clasts and locally laminated clasts
165.8	171.3	VC	plm	LAP	MO	GRY	DEP	GR10	Felsic dominant volcanoclastic sequence with minor mafic input, locally clast supported and polymictic with majority of clasts being between 1-4cm
171.3	258	FLPT	bx	LAP	MO	GRN	FLT	GR30	Strongly altered and faulted felsic lapilli tuff breccia with locally chlorite altered clasts
258	278.3	FLPT	bx	BLOCK	MO	GRN	DEP	GR5	Coarser grained locally blocky felsic lapilli tuff breccia with increased chlorite and more angular clasts
278.3	280	VC	volc	LAP	D	GRY	DEP	GR5	Polymictic volcanoclastic with mafic dominant matrix and 50/50 mix of felsic and mafic clasts, strong biotite alteration grading back into coarser grained felsic lapilli tuff
280	349	FLPT	ms	BLOCK	MO	GRN			Coarser grained locally blocky felsic lapilli tuff with mottled pathy alteration, chaotic mix of laminated ash tuff clasts, local hydrothermal breccia texture
349	367	VC	volc	LAP	M	GRY			Polymictic dark grey volcanoclsatics sequence with sub angular to sub rounded clasts locally clasts can be dominated by felsics closer to upper contact

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Blackwater Project
Drill Summary - Alteration

BW0341		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
1.8	70.3	T		0	CLST	1	PERV	3	PATC	1	HM	FC	3	LIM	FC	4	Weak sericite, strong silica, hematite and limonite on fractures increasing locally in fault zones
70.3	88.2	S		0	CLST	1	PERV	4	PATC	1	GRNT	CLST	3				Garnets appear to be replacing clasts, silica alteration still strong and overprints other alteration.
88.2	89.8	T		0	CLST	2	PERV	4	PATC	2	GRNT	CLST	3	LIM	FR	2	Limonite and hematite on fratures
89.8	103	S	CLST	1		0	PERV	4	PATC	2	GRNT	CLST	2				Patchy sericite, continued strong silica, local garnet and chlorite locally altering brecciated clasts
103	111.8	S	CLST	4	INFILL	1	PERV	4	PATC	2	GRNT	CLST	3				Locally strong chloritic breccia with sericite and silica alteration, garnets also present
111.8	137.3	S	CLST	2	INFILL	1	PERV	4	PATC	2	GRNT	CLST	1				Very strong silica, clay as small white specks (albite), some chlorite as above in breccia zones, weak garnet
137.3	138.3	S		0	CLST	1	PERV	5	CLST	2							intense silica, minor clay and sericite in clasts
138.3	140.7	S		0		0	PATC	1	MTRX	3							sercite dominating matrix
140.7	158.8	S	CLST	3		0	PATC	1	MTRX	2							weak sericite and minor silica
158.8	165.8	S	CLST	1	CLST	1	PERV	3	CLST	2	GRNT	CLST	1	UNK	MTRX	1	chlorite/clay altered clasts pervasive silica throughout, unknown local red staining of the matrix
165.8	171.3	S	CLST	1		0	PATC	2	CLST	1							
171.3	203	S	CLST	1	PATC	2	PERV	4	MTRX	1	GRNT	CLST	2				clay alteration in local brecciated sections
203	278.3	S	CLST	2		0	PERV	4	CLST	2	GRNT	CLST	3	CHL	FC	3	Strong pervasive silica overprinting, sericite alteration of clasts associated with breccia textures, local clay altered and garnet replaced clasts, locally mottled and halos of silica alteration around clasts
278.3	280	S	CLST	1		0	CLST	2	MTRX	1	BIOT	PATC	4				Locally clay/silica altered clasts, sericite weakly alteraing matrix, strong speckled biotite alteration
280	349	S	CLST	2		0	PERV	3	PATC	1	GRNT	CLST	2	SIL	PATC	4	Strong silica alteration of matrix and locally clasts, patchy sericite overprinted by silica (can be up to intensity 4 in hydrothermal breccia zones), locally chlorite altered clasts, ratty garnet replacing clasts
349	367	S	FR	1	CLST	1	OP	2	MTRX	2							Sericite altering matrix, weak silica overprint, local clay replacement in clasts and minor chlorite on fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0341		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	62		0		0		0	Hm	FP	3	Goe	FP	2	Jaro	FP	2	Oxide minerals (hm, goe, jar) no visible sulphides, garnet sites look to have been replaced by oxide minerals
62	103	DI	0.5	DI	0.5	CR	0.1	Grnt	CR	3	Goe	FP	0.1	Dbs	DEN	0.5	Ratty manganese garnets replacing clasts, disseminated blebbs and clusters of sphalerite and pyrite with dbs
103	122	SP	0.1	SP	0.1		0	Grnt	BB	1							Specks of pyrite and sphalerite, trace garnet
122	137.3	SP	0.1	SP	0.1		0										specks of sulphides
137.3	158.8	CR	1	CR	1	CR	0.1	Py	DI	0.5	Py	VN	0.1				sulphides replacing amygdules in clasts and locally as disseminations/veinlets with chlorite
158.8	173.1	DI	2	DI	1	DI	0.1	Grnt	CR	1							Noticeable sulphides increase, pyrite/sphalerite dominate, minor pyrrhotite
173.1	203	DI	1	DI	0.5		0	Grnt	CR	3							Strongly faulted zone with some visible sulphides and frequent ratty garnet
203	218.4	SP	0.1	DI	0.1		0	Grnt	CR	1							Trace py/sp garnet replacement of clasts
218.4	238	SP	0.1	DI	0.5		0	Grnt	CR	4							Lots of garnet replacing clasts, minor sphalerite
238	256	BB	0.5	BB	0.5	DI	0.1	Grnt	CR	3	Dbs	DEN	1				Minor clotted diseminations of py/sp hairline dissminations of DBS, garnet replacing clasts
256	278.3	DI	0.5	SP	0.1	SP	0.1	Grnt	CR	3							Minor disseminated sulphides, continued garnet replacing clasts
278.3	280	DI	2	DI	0.5	DI	0.1										Disseminated pyrite in the matrix, minor sp/po
280	292	DI	0.5	DI	0.1	DI	0.1	Grnt	CR	2							Minor pyrite disseminations and continued garnet replacement
292	316	DI	2	SP	0.1	DI	0.5	Grnt	CR	2							locally increased disseminated pyrite/pyrrhotite concentrating in bands of laminated ash tuff clasts. Ratty garnet replacing clasts
316	322	DI	0.5	DI	0.1	DI	0.1	Grnt	CR	3							Minor pyrite/sp/po, ratty garnet replacemenet of clasts
322	349	DI	0.5	DI	0.1	DI	0.1	Py	VN	0.1	Dbs	DEN	0.1	Py	FP	0.1	Minor pyrite as disseminations, veinlets with sphalerite and on fracture planes. Garnets replacing clasts

Blackwater Project

Drill Summary - Mineralization

BW0341		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
349	367	CR	0.5	DI	0.1	CR	1.5	Dbs	DEN	0.1							Notable increase in pyrrhotite replacing clasts in VC, trace DBs and local pyrite

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0341

From (m)	To (m)	Structure	Strength	Comments
0	52	JZ	3	jointing at 30 and 50 (aligned with laminations)
52	61	FZ	3	Clay altered fault gouge with some intact core
61	68.5	JZ	2	jointing continues at 50 dgrs
68.5	75	BRKZ	2	small broken zone with some intact core
75	95.5	JZ	2	jointing at 50 and 30 degrees
95.5	106	BRKZ	1	broken core with some intact pieces
106	159	JZ	2	subplanar to wavy joint set
159	160.1	BRKZ	2	mini broken zone
160.1	185.3	JZ	2	two joint set one at 30 and one at 40
185.3	202.1	FZ	4	strongly faulted and broken core
202.1	210.3	FL	4	main portion of fault
210.3	215.4	BZ	3	hydrothermal fault breccia
215.4	220.4	FL	5	strong fault gouge and crushed core
220.4	232	BRKZ	3	broken core with localized milled grains on fractures
232	253.8	JZ	3	joint sets at 30 and 60
253.8	258.7	FL	3	minor fault gouge and milled grains on fractures
258.7	287.7	JZ	4	consistnet joint set at 50 degrees
287.7	290	BRKZ	3	Broken blocky core and some redrill
290	315	JZ	3	jointing steepened to 60 and 40 degrees
315	320.8	FL	3	Broken fault zone with milled grains and locally gouge/annealed core
320.8	323.4	JZ	2	50/30 degree jointing sub planar to wavy
323.4	323.7	FL	1	small gouge zone
323.7	326.5	JZ	2	planar50 degree jointing
326.5	327.8	BRKZ	2	small broken zone
327.8	347.5	BRKZ	1	broken zone with some intact core jointed at 50 degrees
347.5	349	FL	3	fault contact
349	358	JZ	2	wavy to sub planar jointing at 60 and 30
358	367	BRKZ	3	Broken core with 10-15cm intact pieces ever few metres

Blackwater Project
Drill Logs

Hole ID:	BW0342	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375852.07
Depth (m):	326.5	Date Started:	04/02/2012	Casing Size:	HWT	Northing:	5893199.82
Azimuth:	0	Date Completed:	10/02/2012	Casing (m):	8	Elevation (m):	1536
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	312	-89.7
100	326.9	-89.6
151	26.9	-89.8
200	246.2	-89.8
250	262.5	-89.7
300	221.9	-89.9
326.5	167.9	-89.5

Blackwater Project
Drill Summary - Lithology

BW0342

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9.53	OB							
9.53	19.25	VC	ms	LAP	M	GRY	DEP	SH	Broken/Faulted. 15-25:75-85 Mafic:Felsic, sub-rounded, 2-20mm size clasts,matrix supported.
19.25	27.2	FT	lam		VL	OR	DEP	SH	blebby laminations with abundant vugs. Vugs, round (vesicles?), lesser rectangular and square (Eroded Feldspars?), some silica haloed, (Or just sulphides with no oxidation trace?). Blebby Silica laminations (@ 30-40 dtca), locally undulating (@ 60-65
27.2	34.5	VC	ms	LAP	M	GRY	DEP	SH	similar to above VC.
34.5	38.25	FT	lam		VL	OR	DEP	SH	moderatley laminated, stretched out silica blebs, and nodular qtz (Qtz eyes?). perv silicified, coulur similar to sericite, (Qtz-eye sericitic FT (not quite a schist...))
38.25	55	VC	ms	LAP	M	GRY	DEP	GR30+	poorly sorted clasts ranging from <1cm to >=25cm, 95:5 Mafic:Felsic, M.Gray Mafic bombs/clasts abundantly plag phyric and absent-weakly amygdaloidal. small section from 45.7-46.1 undulating laminations and a sharp undulating contact with lower VC uni
55	67.22	VC	ms	LAP	L	GRY	DEP	SH	felsic and mafic lithics, predominatley felsic, locally 5:95 avg 25:75 Mafic:Felsic, sub-rounded to-sub-angular. locally aligned @~50dtca. Bottom contact sharp at 40dtca.
67.22	74.82	AND	bx	LAP	D	GRY	DEP	GR5	Bx ms, clasts plag crystal rich, poorly sorted 1-80mm clasts clast or matrix dominant locally, D>Gray-Black clasts in M-D.Gray purply matrix. Bottom contact gradational over ~5cm with felsic and mafic ash rich weakly clastic properties of both rock.
75.82	103.8	FT	lam		L	GRN	DEP	SH	Local laminations (@ dtca). Small ser/clay filled holes (filled vesicles? altered spherulites?). Bottom contact appears to be partially undulating, appears as though FT has abraded and loaded into the AND.
103.8	135.7	AND	bx	LAP	D	GRY	FLT	SH	Bx ms, locally clast supported and jigsawed. strongly chlorite altered clasts, with Fe-CO3 - Anhydrite - Calcite filling fractures.
135.7	142.2	FT	lam		M	GRN	FLT	GR10	Laminated (@ dtca) (@ top of section Laminations U-shaped) M.Green-Gray FT, ms with faint ghost clasts with/without Ser/Clay replaced lathe chaped crystals.
142.2	260.5	AND	mas	LAP	D	GRY	UNKN	GR30+	Bx predom clast supported weakly ms locally, locally jigsaw fit clasts, clasts SA poorly sorted predom amygdaloidal lesser plag pheno rich. Sections with large clasts, and partially massive? (Series of flows with autobreccia on margins?), Sharp Depos

Blackwater Project
Drill Summary - Lithology

BW0342

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
260.5	306.0	VC	ms	LAP	M	GRY	DEP	GR30	matrix supported/dominant (matrix M.Gray, mafic clasts Grayish Black), poorly sorted, angular lesser sub-angular (Silica replaced clasts sub-rounded due to alt.), 90:10 - 90:5 Mafic:Felsic clasts. Small interval from 269.9-275.6m of AND (large bomb?)
306.0	326.5	AND	mas	LAP	D	GRY			Massive>Bx, Bx on edges, and small <1m section of mafic dom VC. Series of flows.

Blackwater Project
Drill Summary - Alteration

BW0342		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9.53	19.25	O	PERV	1	PERV	2	PERV	2	PATC	1	LIM	FR	4	LIM	FC	2	Black to Orange Limonite coating FP's, as well as perv altering around FP's. Limonite also partially replaces minerals and is DI'd in clasts. Weak green tinge to Groundmass, pervasive Ser/clay/chl alt?
19.25	26.87	O		0	INFILL	1	PERV	4	INFILL	1	LIM	FR	3	LIM	FC	3	Vugs, round, lesser rectangular and square, some silica haloed. (eroded plag crystals). Blebby Silica laminations, locally undulating (Primary?). Black, lesser orange Goethite coating FP's, pervasive blebby black goethite fracture controlled, and orange pervasive fracture controlled alteration. Sericite/clay infill of small silica halo's vugs.
26.87	29.2	T	PATC	2		0	PERV	2	PATC	2	LIM	FR	3				L-M.Green Ser/Chl patches, partially infilling fracture and partially replacing select clasts. moderate Limonite coating FP's
29.2	34.2	T	PATC	1		0	PERV	2	PATC	2	LIM	FR	4	LIM	FC	3	within larger fine-grained clasts sericite halos square black grains (clay/Limonite replaced Py? possible due to porosity difference of large clasts?)
34.2	37.9	O		0	INFILL	2	PERV	4	PERV	1	SER	INFILL	1	LIM	FR	3	perv silicified, GM the coulour of sericite and locally weaker silicification more sericitic. sericite/clay infill vugs... (replacing plag/filling vesivles??).
37.9	54.9	T	PATC	2	REP	2	MTRX	3	CLST	3	LIM	FR	1				egg-white sericite partially replacing plag crystals. bright white-sericite, with soem clay replacing clasts lcoally, with chl patches included. Patchy chl alt in mafic clasts. predom mtrx silicified, but FT section perv silicified.
54.9	55.6	O	PATC	1		0	PERV	3		0	LIM	FR	4				
55.6	67.22	T	PATC	1	CLST	2	PERV	3	CLST	3	LIM	FC	2				perv silicification locally 4
67.22	73	S	CLST	3	PERV	1	PERV	2	REP	3	BIOT	REP	1				Ser-BIOT-Clay replacing plag crystals in clasts, clay pervasivley replacing GM. chlorite replacing weakly pervasive, but moderatley-strongly clasts.
73	75.9	S	CLST	2	PERV	1	PERV	2	REP	3	CHL	FR	2	BIOT	REP	2	chlorite additionally coats FP's. Ser-Sp-BIOT replace plag grains and blebby masses locally.

Blackwater Project
Drill Summary - Alteration

BW0342		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
75.9	95.5	S		0	PATC	2	PERV	4	INFILL	2	CLY	INFILL	2	SER	PERV	2	Clay-Ser infilling small 1mm round and irregular shapes (vesicles? weathered minerals? altered spherulites?). large patches of clay partially alt siliceous rock. silica banding (primary?). Ser weakly pervasive. Locally white ser/clay haloin sulphides
95.5	103.8	S	FR	1	PATC	2	PERV	4	PERV	2							
103.8	122.5	S	CLST	4	REP	2	PERV	1	REP	3	ANH	FR	3		FC	3	egg-white to dull-yellow Anhydrite on FP's and fracture controlled, locally assoc with Fracture controlled Hm, M.Red unidentified Fe-CO3 (listed as ankerite, probably siderite), with dolomite?, fracture controlled. Sericite-Clay replacing plag. Strong Chl replacement of clasts. calcite locally fracture controlled, (Healing fault Breccia replacing gouge?)
122.5	135.7	S	CLST	2	REP	1	PERV	1	REP	3		FC	4	ANH	FR	3	Fe-CO3 localy patrially fills in matrix surrounding clasts.
135.7	137	S	FR	1	OP	3	PERV	4	PERV	2							Sericite pervasivley altering rock, silica mod-strongly perv. Select laminations have gone to clay and minor chlorite.
137	142.2	S	PATC	3	PATC	2	PERV	4	PERV	4	CLY	REP	1	SER	REP	1	Pervasivley silica-ser altered. clay is patchy (ghost clast rep?), weakly follows laminations locally, and replaces with Ser lathe shaped crystals (Plag?).
142.2	169	S	CLST	2	FR	1	AMYG	4	REP	2	CLY	AMYG	1		FC	2	Weak clay on FP's. Silica strongly fills amygdules, locally weak concentric zonations with clay rimmin silica in amygs. Sericite replacing lathe shaped crystals. Chlorite weak on FP's and moderately replaces clasts. M.Red hard 5-6, fracture controlled Fe-CO3 similar to above. BIOT alt patches assoc with Po.
169	175	S	PERV	1	FR	3	AMYG	3	REP	1	CLY	AMYG	1	CAL	FC	3	similar to above lacking Fe-CO3
175	176	S	PERV	2	REP	3	PERV	3	REP	5	CAL	VN	2				Vein alt halo bleaching. Ser replacing square, and lathe shaped grains in abundance.
176	185.5	S	PATC	1	FR	2	PERV	3	REP	2	BIOT	PATC	2	CAL	VN	2	
185.5	197.5	S	PATC	1	PERV	2	AMYG	3	REP	1	BIOT	PATC	1	CAL	VN	3	

Blackwater Project
Drill Summary - Alteration

BW0342		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
197.5	206	S	PERV	2		0	PATC	3		0	SIL	AMYG	3	CAL		2	lathe shape square ended crystals <= to 5mm, L.Pinkish-Brown. (Ankerite altered plag or, primary K-spar. Weak chlorite alt perv, but larger patches of perv chl alt.
206	208.8	S	PERV	2	PERV	2	PERV	3	PERV	2	SER	REP	1				Silica-Ser-Chl-Clay perv alteration. Ser partially replaces lathe shaped white crystals.
208.8	225.3	S	PATC	2		0	PERV	4		0	CAL	VN	2	SIL	AMYG	4	perv silicified. feldspars either partially ank replaced and silicified or it is K-spar.
225.3	226.0	S	PATC	3	PERV	3	VN	2	REP	4	CAL	VN	2				Singular Qtz-Py-Chl Veinlet, in between a vein alt halo that includes DI Ser in a pervasivley clay rich GM, with patchy chl.
226.0	233	S	REP	3	REP	3	PERV	3		0	SIL	AMYG	2	CAL	VN	2	Silica perv and fill amygs. near bottom of interval, rectaungular, slightly wavy D.Green-Black 1mm chlorite/clay replaced amphiboles? aligned @~60 dtca (trachytic)
233	236.5	S	REP	2	REP	2	PERV	3		0	CLY	PATC	2	SIL	AMYG	2	replaced amphiboles dissapearing. Calcite filling amygs with silica, locally concentrically zoned. patch of perv clay alt at 234.5m
236.5	238.1	S		0	PERV	4		0	REP	2	CLY	REP	3	CAL	FC	3	fault zone, bleached with clay alt perv and to small trachytically aligned amphiboles.
238.1	253.5	S	VNHL	2		0	PERV	3		0	CHL	PATC	1	BIOT	PATC	1	patchy BIOT and chlorite. Perv silica. Feldspars Pink-Brown, possible Fe-CO3 alt.
253.5	260.5	S	PATC	3	PATC	3	PERV	3		0	CAL	FC	3				
260.5	263.5	S	PATC	1	CLST	2	MTRX	3	PATC	1	BIOT	PATC	1	CAL	FC	4	matrix silicified. mafic clasts clay-BIOT replaced. Small patches of chl/ser
263.5	270	S	CLST	1	REP	2	MTRX	4	REP	3	SER	PATC	1	CHL	PATC	1	Silica replacing select clasts (More Felsic?), and strongly matrix dom. Ser replaces small grains, strongly in select mafic clasts lesser in matrix. Small <3mm Ser-Chl patches
270	275.7	S	CLST	1	PATC	1	PERV	2		0	BIOT	PATC	2				
275.7	281	S	PATC	2	CLST	1	MTRX	3	PATC	2	BIOT	CLST	1				Silica replaces select clasts (locally ghost int.-mafic coulour shows through), silica matrix dominant alt 3-4. Chl-Ser patches stronger with depth, lesser clast replacement.

Blackwater Project
Drill Summary - Alteration

BW0342		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
281	289	S	PATC	3	CLST	3	MTRX	3	PATC	3	BIOT	FC	4	GRNT	CLST	2	similar to above more abundant and larger chl-ser patches. Garnet selectly replacing clasts and infilling chl-ser patches.
289	297.8	S	PATC	3	CLST	2	MTRX	2	PATC	3	CHL	PERV	2	GRNT	CLST	2	Weakly silicified matrix. Perv chloritic rock. Chlorite-Ser replacing clasts and as vitreous patches throughout rock. Silica replaces select clasts.
297.8	305.9	S	FR	4	FR	2	AMYG	1	PATC	2	CHL	PATC	2				Chloritic Fault Gouge, Bx of VC lesser AND, similar to above, but fault gouge chloritic
305.9	326.5	S	PERV	1	FR	0	PERV	3		0	SIL	PATC	1	GYP	VN	2	

Blackwater Project
Drill Summary - Mineralization

BW0342		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9.53	19.25		0		0		0	Goe	FP	6	Goe	BB	3	Hm	FP	0.1	Orange Fracture controlled Goethite around fractures and blebs within clasts infill of vugs. Black Goethite on FP's. Hm trace Fracture controlled.
19.25	27		0		0		0	Goe	FP	5	Goe	FP	5	Hm	FP	0.5	
27	29.2	BB	0.1		0		0	Dbs	FP	10	Goe	FP	0.5	Goe		1	Fracture controlled Dbs, trace blebby Py assoc with Dbs, (all Py?)
29.2	34.2	FP	0.5		0		0	Dbs	FP	1	Goe	FP	10	Goe	FP	5	Py occurs as fracture controlled within L.Gray clast. Dbs strongest throughout clasts. weathered out black square DI's in larger fine-grained clasts with sericite alt.hjalos.
34.2	37.9		0		0		0	Goe	FP	6	Goe	FP	5				
37.9	54.9	FP	1.5		0	DI	1.5	Apy	DI	0.1	Dbs	FP	1.5				trace Apy Di in Felsic clasts locally. Po DI lesser in GM. Py fracture controlled veinlets, and Dbs fracture controlled.
54.9	55.6		0		0		0	Goe	FP	10							
55.6	61	FP	1		0	DI	1	Goe	FP	1							Fp controlled Py. Sooty black Po DI blebs.
61	68	FP	0.5	DI	2	BB	0.1	Dbs	FP	0.5							black non-metallic Sp DI. Po blebby locally assoc with Sp. Py Fracture controlled, similar to Dbs
68	73.5	FP	0.1		0	DI	1	Apy	BB	0.1							Arsenopyrite xenoblast @71.3m. Finely DI Po throughout. FRCT Py trace.
73.5	76.3	FP	1	DI	5	DI	0.1										Finely DI PO. Sp strongly DI in clasts and moderatley in FT unit. Py Fracture coating veinlets in fault/broken rock.
76.3	83	DI	0.5	DI	2	DI	1.5	Ga	DI	1	Py	FP	0.5	Dbs	FP	2	Galena and Sp occur intergrown in square DI's (replaced Py? locally lathe shape, replacing feldspar?), occasionally with sooty Py. Galena ans Sp occassionally occur with Po infilling square-anhedral DI blebs. Py coats FP's, as well as moderate Dbs (v
83	96	FP	1	DI	3	DI	1	Dbs	FP	2	Ga	DI	0.5	Ga	VN	0.1	
96	103.7	FP	1		4	DI	2	Ga	DI	0.5	Dbs	FP	1.5				fracture coating Py.
103.7	118	FP	0.1		0	DI	0.1										trace Py on Fp at top of hole. Trace finely DI Po.

Blackwater Project
Drill Summary - Mineralization

BW0342		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
118	121		0		0	DI	1	Po	FP	0.5							finely DI Po. Locally fracture controlled Po assoc with FeCO3
121	135		0		0	DI	1	Po	FP	0.5							
135	136.3		0	DI	1	DI	5										DI Po and Sp.
136.3	138.2	FP	1	BB	3	DI	4	Py	DI	1							blebby laminations of Sp. Po DI's/BB's. Py coating FP's
138.2	142	DI	1	BB	2	DI	1	Py	FP	0.5	Apy	VN	0.1	Ga	VN	0.1	
142	144.5	FP	1	DI	1	BB	5	Po	DI	2							fracture controlled Py. BB's and amygdule filler on Po.
144.5	150.5	FP	0.5	DI	1	DI	3										square Po DI's.
150.5	152.5		0	DI	0.5	DI	2	Cp	DI	2	Cp	VN	0.1				Po and CP fine DI's, CP veined.
152.5	158		0		0	DI	2										Finely DI Po.
158	164	FP	0.5		0	DI	3										
164	173.5		0		0	DI	2.5										Finely DI and weakly Amygdule fill.
173.5	177.1	VN	1	VN	1	DI	1	Apy	VN	1							VN Py, with Sp and trace Po. Single 3cm vein with Apy
177.1	198	VN	0.1	BB	0.5	DI	1										Finely DI Po>VN, VN'd Py>>Sp, and patchy Blebby Sp.
198	202	DI	0.1		0	DI	1										weak DI Py, minor DI Po.
202	203	VN	1	VN	0.5		0										fracture coating Py and Sp, assoc with calcite.
203	219.8	VN	0.5	VN	0.1	DI	0.1										DI BB's of Po locally assoc with Sp. Py Vn's and FP coating locally.
219.8	225.7	BB	0.1	BB	0.1	DI	1										Blebs of Sp with Po as amygdule partial fill. Py singley as amygdule fill. Po DI throughout.
225.7	226.1	VN	5		0		0	Py	BB	1							Veined Py, and Blebbed in the vein alt halo.
226.1	237	VN	0.1		0	DI	1										VN Py, DI Po.
237	238.2	FP	0.1		0	FP	0.1										Fracture controlled Po, and Py.
238.2	254.3	VN	0.5		0	DI	2	Po	VN	0.1	Py	BB	0.5				Po-Py BB's and amygdule fill. small Po veinlets. Py Veinlets and Fracture coating veinlets with minor Po.
254.3	255	DI	2		0		0										DI Py inf ault gouge.
255	259.9	DI	0.5		0	BB	1.5										Po blebs filling amygs, and minor DI's.
259.9	260.5	VN	0.1		0		0	Apy	VN	2							minor Py in calcite veinlet. Apy in Qtz vein.
260.5	269.9	DI	0.1		0	BB	2	Py	VN	0.1							weak DI Py. Mafic Clast Dominant Patchy Po Blebs.

Blackwater Project
Drill Summary - Mineralization

BW0342		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
269.9	275.6	VN	0.5	BB	0.5	DI	3	Po	BB	2							5% Po 0.2-0.3mm DI's > BB's in GM and filling amyg's.
275.6	277.6	BB	1	BB	2	DI	1	Ga	DI	0.5	Cp	DI	1	Cp	BB	2	euhedral DI of Ga <=to 1mm lathes. Py local blebs in Sp BB rich sections. CP strongest in middle of interval up to 15% DI and BB'd, weakening on either side. Po DI/BB's throughout.
277.6	281.5	FP	1	BB	5	DI	5	Ga	DI	0.5	Cp	DI	0.1				Euhedral lathe DI's of Ga. CP trace DI's. SP/Po choice replacement of clasts and infill of clast amygs, lesser DI/BBy DI's in Matrix. Py coating FP's.
281.5	295	FP	1.5	CR	0.5	CR	3	Grnt	CR	1	Cp	FP	0.5	Py	DI	0.1	Garnets are BB's replacing clasts and lesser within GM (fully replaced clasts?). Garnet has inclusions of Ga-Po-Sp-CP in varying amounts locally. Ga coats FP's with Py and CP.
295	296.3	BB	3	DI	3	DI	4	Ga	DI	5	Cp	DI	0.5	Sp	VN	0.5	Ga DI throughout , especially strong in siliceous clast that is rimmed by Po. CP DI minor throughout. Py minor DI, abundant BB's with intergrown Po. Po-Sp DI strongly. Po blebs locally. large Sp-Ga-Po Vein.
296.3	299	DI	2	DI	0.5	DI	0.5	Ga	DI	3							
299	305.9	FP	0.5	DI	0.1	DI	0.1	Ga	DI	0.5	Py	DI	0.5				DI sulphides in Fault zone.
305.9	326.5	FP	0.5	BB	0.1	BB	3										Po Blebby>DI, locally intergrown with Sp. Py coats select FP's and is in local calcite-anhydrite-gypsum veinlets.

Blackwater Project
Drill Summary - Structure

BW0342

From (m)	To (m)	Structure	Strength	Comments
9.53	14	BRKZ	3	top of hole broken
14	19.3	BRKZ	2	
19.3	30	JZ	3	20% broken
30	36.7	BRKZ	1	40>20 dtca. 30-40% jointed
36.7	54.9	JZ	3	
54.9	55.56	BRKZ	3	
55.56	65.8	JZ	2	50>60>30 dtca.
65.8	66.35	FL	2	minor gouge, joint failure fault.
66.35	74.27	JZ	2	20>30 dtca.
74.27	74.7	BZ	3	
74.7	77.2	BRKZ	2	
77.2	97.25	JZ	3	fractured>broken. Small broken zones of strength 2. 60>70>30>35>80
97.25	97.47	FL	3	join t failure, minor gouge.
97.47	102.6	JZ	3	50>60>15
102.6	103.4	BRKZ	4	
103.4	103.8	JZ	2	
103.8	104.3	BRKZ	3	broken 3-4
104.3	104.7	JZ	1	jointed>broken
104.7	110.9	JZ	2	40>30>60
110.9	111	FL	3	
111	117.8	JZ	3	40>35>25>15
117.8	117.8	FL	4	90% gouge, 10% fragments.
117.8	119.3	BRKZ	2	
119.3	119.6	FZ	3	
119.6	119.6	FL	4	90% gouge 10% fragments.
119.6	125.1	JZ	2	
135.1	135.3	BRKZ	2	
135.3	135.6	JZ	2	

Blackwater Project
Drill Summary - Structure

BW0342

From (m)	To (m)	Structure	Strength	Comments
135.6	135.7	FL	3	joint failure
135.7	140	JZ	3	
140	141.1	BRKZ	3	
141.1	142	JZ	2	
142	142.6	BZ	4	
142.6	147.3	JZ	3	
147.3	147.5	BZ	4	
147.5	149.1	JZ	3	
149.1	149.4	BZ	4	70% gouge 30% Bx.
149.4	150.7	FZ	3	broken partially gouged rock, locally competent.
150.7	152.5	BRKZ	3	
152.5	156.6	FZ	3	one fault at 15 dtca.
156.6	159.1	JZ	4	
159.1	159.9	FL	4	
159.9	161.2	JZ	2	
161.2	163.8	FL	4	
163.8	165.4	JZ	2	40>50>30 dtca.
165.4	166	BRKZ	3	
166	193.8	JZ	3	locally broken.
193.8	194.5	BRKZ	3	
194.5	195.8	JZ	3	
195.8	197.6	FL	3	fault with no gouge on outer edges but moderate gouge in center 5-6cm.
197.6	203.1	JZ	2	
203.1	203.4	BRKZ	3	broken calcite fracture comntrolled rock, with minor calcitic gouge.
203.4	205.2	BRKZ	2	broken>jointed calcite veined .
205.2	205.8	FL	4	abundant gouge.
205.8	227.4	JZ	2	50>55>60>30 dtca.
227.4	228.1	FZ	3	moderate gouge, trace talc.

Blackwater Project
Drill Summary - Structure

BW0342

From (m)	To (m)	Structure	Strength	Comments
228.1	236.9	JZ	2	50>60>45
236.9	237.8	FZ	1	predom calcite/clay healed fault, with more recent sections of failure @~45, 40 dtca.
237.8	238	BZ	4	brecciated competent section with ~30-40% clay gouge.
238	252.7	JZ	2	40>50>30 dtca.
252.7	257.1	FL	4	broken rock interspersed with fault breccia and abundant gouge.
257.1	258	BRKZ	2	
258	261.5	JZ	4	jointed=broken.
261.5	262.9	FZ	4	3 smaller faults dominatly gouge with interspersed competent calcite fractured rock.
262.9	275.6	JZ	2	50>55>45>30 dtca.
275.6	277.6	BRKZ	4	broken rock, minor gouge locally.
277.6	297.8	JZ	4	65>35>55>75 dtca.
297.8	305.9	FL	5	Abundant chloritic gouge with interspersed broken zones.
305.9	307.5	BRKZ	3	60:40 Broken:Jointed.
307.5	321	JZ	4	65>40>25
321	321.3	FL	4	joint failute, heavily calcite veined, abundant small fragments and gouge.
321.3	326.5	JZ	4	55>60>65

Blackwater Project
Drill Logs

Hole ID:	BW0343	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375551.56
Depth (m):	247.5	Date Started:	05/02/2012	Casing Size:	HWT	Northing:	5893349.44
Azimuth:	0	Date Completed:	10/02/2012	Casing (m):	10	Elevation (m):	1535
Dip:	-90	Logged By:	MNu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46	129.7	-89.1
92	121.9	-89.2
137	330.8	-89.8
183	97	-89.4
229	319.5	-89.7

Blackwater Project
Drill Summary - Lithology

BW0343

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9.3	OB							
9.3	10.65	VC	ms	LAP	D	GRN	DEP	SH	
10.65	29.95	AND	equi	FA	D	GRN	DEP	SH	Plag and amygdule rich andesite
29.95	40.85	VC	ms	LAP	L	GRN	DEP	GR30+	
40.85	48.35	AND	equi	CA	D	GRN	DEP	GR30+	Plag crystal rich andesite
48.35	49.9	VC	ms	LAP	D	PUR	DEP	GR30	
49.9	63	FLPT	ms	LAP	L	GRN	DEP	GR30	
63	66.5	VC	ms	LAP	M	GRN	DEP	GR10	
66.5	70.7	AND	autbx	CA	D	PUR	DEP	GR30	
70.7	73.75	VC	ms	LAP	D	GRN	DEP	GR30+	
73.75	81.4	FLPT	ms	LAP	L	GRN	DEP	GR30	
81.4	85.05	AND	amg	CA	D	PUR	DEP	GR30	
85.05	93.57	VC	ms	BLOCK	D	PUR	DEP	SH	Blocky, mafic volcaniclastic, boulders up to 50cm, cemented with chlorite altered cement
93.57	111.9	FLPT	ms	LAP	L	GRN	DEP	GR30	
111.9	146.6	VC	ms	LAP	D	PUR	DEP	GR30	Blocky, mafic volcaniclastic, cemented with chlorite altered cement
146.6	218	FLPT	ms	LAP	M	GRN	DEP	SH	Chloritized felsic lapilli tuff hosting brecciated framents of seds? and sericitized laminated clasts unit is strongly brecciated and healed by chlorite pyrite fractures
218	243.4	VC	ms	LAP	D	PUR	DEP	SH	Coarse subrounded volcaniclastic that has been intensely faulted and broken consisting primarily of mafic clasts
243.4	247.5	AND	amg	LAP	D	PUR	DEP	SH	Massive amygdoloidal

Blackwater Project
Drill Summary - Alteration

BW0343		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9.3	10.65	S	PERV	3		0	PERV	3	CLST	1	BIOT	PERV	3				
10.65	29.95	S	PERV	4		0	PERV	3		0	BIOT	PERV	3	CAL	FR	1	
29.95	40.85	S	CLST	3		0	PERV	2	CLST	2	BIOT	CLST	1				
40.85	48.35	S	CLST	3	FR	1	PERV	3		0	BIOT	PERV	3				
48.35	49.9	S	PERV	3		0	PERV	4	CLST	1	BIOT	PERV	2				
49.9	63	S	MTRX	1		0	PERV	4	CLST	4							
63	66.5	S	PERV	3		0	PERV	3	CLST	2	BIOT	CLST	2				
66.5	70.7	S	MTRX	1		0	PERV	4		0	BIOT		4				
70.7	73.75	S	MTRX	3		0	PERV	2		0	BIOT	CLST	3				
73.75	81.4	S	MTRX	2	CLST	2	PERV	4	CLST	3							
81.4	85.05	S	MTRX	2		0	PERV	4		0	BIOT	PERV	4	CHL	FR	1	
85.05	93.57	S	MTRX	1		0	PERV	2		0	BIOT	CLST	3				
93.57	111.9	S	MTRX	2	SPHL	1	PERV	4	CLST	2	CHL	FR	2				
111.9	146.6	S	MTRX	3	CLST	1	PERV	2	CLST	1	BIOT	CLST	3	CLY	MTRX	2	
146.6	218	S	CLST	2	CLST	1	MTRX	4	MTRX	2	SER	CLST	2	CHL	MTRX	1	
218	243.4	S	CLST	2	FC	2	CLST	1	FC	1	BIOT	CLST	2	CHL	MTRX	1	Intensely faulted zone, with weak sericitization of clay gouge near lapilli tuff contact
243.4	247.5	S	PERV	1		0	PERV	4		0	BIOT	PERV	5	CAL	FC	1	

Blackwater Project
Drill Summary - Mineralization

BW0343		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9.3	29.95	FP	0.1		0	FP	0.1										
29.95	40.85	SP	0.1		0		0										
40.85	48.35	FP	0.1		0	SP	0.1										
48.35	49.9	CR	0.1	CR	0.1	CR	0.1										
49.9	55.5	SP	0.1	SP	1		0	Dbs	DEN	0.1							
55.5	63	BB	0.5	CR	0.5	CR	0.1										
63	66.5	SP	0.1		0		0										
66.5	70.7	SP	0.1		0		0										
70.7	73.75	SP	2	BB	1		0	Dbs	DEN	1							
73.75	81.4	FP	0.5	SP	0.5		0	Ga	SP	0.1							
81.4	85.05	FP	0.5	SP	0.1		0		CR	0.1							
85.05	93.57		0		0	CR	0.1	Mag		0.5							
93.57	96.62	FP	1	CR	2		0	Dbs	FP	0.1							
96.62	100.3	SP	1	CR	3	SP	0.1	Ga	SP	0.1							
100.3	105.7	SP	0.5	CR	1		0	Ga	SP	0.1							
105.7	109.5	DEN	1	CR	3	SP	0.1	Dbs	DEN	1	Ga	SP	0.1				
109.5	111.9	SP	0.1	CR	0.5		0										
111.9	119		0	SP	0.1	SP	0.5	Ga	FP	0.1							
120	127.5	DEN	0.1	SP	1	SP	0.1										
127.5	136.3	VN	0.5	SP	0.5	SP	0.1										
136.3	146.6	FP	1	CR	3	CR	1	Dbs	DEN	0.5							
146.6	153	FP	0.5	SP	1	CR	5										
153	159	FP	0.5	CR	3	CR	2										
159	167.4	FP	0.5	CR	3	CR	2										
167.4	168.4	FP	1	CR	1		0	Dbs	DEN	0.1							
168.4	178	FP	0.5	CR	4	CR	2										
178	180	FP	0.5	SP	1	BB	0.5	Dbs	DEN	1							

Blackwater Project
Drill Summary - Mineralization

BW0343		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
180	194.6	FP	0.5	CR	2	CR	5										
194.6	196.6	FP	2	CR	4	CR	2	Ga	CR	0.1							
196.6	201.9	FP	0.1	CR	2	CR	2										
201.9	207.5	CR	2	CR	5	CR	3	Py	FP	2							
207.5	207.9	FP	3	CR	5	CR	7										Structurally sheared Po and Sp vein? clast ? @ 207.87m
207.9	218	FP	0.5	CR	2	CR	3	Dbs	DEN	0.1							
218	243.4	FP	2	CR	3	CR	3	Hm	CR	0.5							Mineralization restricted to competent material, unknown quantity of suflides within gouge zones
243.4	247.5	FP	0.1		0	SP	0.1										

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Blackwater Project
Drill Summary - Structure

BW0343

From (m)	To (m)	Structure	Strength	Comments
9.3	29.95	JZ	3	
29.95	31.5	JZ	3	
31.5	31.55	CLYSEAM	5	
31.55	34.5	JZ	3	
34.5	35.5	FL	4	
35.5	37	BRKZ	4	
37	37.8	FL	5	
37.8	40	BRKZ	4	
40	40.8	FL	4	
40.8	48.35	JZ	3	
48.35	49.9	BRKZ	3	
49.9	63	JZ	4	
63	66.5	BRKZ	3	
66.5	70.7	BRKZ	4	
70.7	73.75	FZ	3	
73.75	73.8	FL	4	
73.8	76.81	FZ	4	
76.81	77.2	FL	4	
77.2	81.4	FZ	4	
81.4	85.05	JZ	5	
85.05	87	FL	4	
87	87.7	BRKZ	4	
87.7	90.53	JZ	2	
90.53	92.55	BRKZ		
92.55	93.7	FZ	4	
93.7	96.62	JZ	4	
96.62	97	FL	5	
97	98.15	BRKZ	3	

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Blackwater Project
Drill Summary - Structure

BW0343

From (m)	To (m)	Structure	Strength	Comments
98.15	100.5	BRKZ	3	
100.5	101	FL	4	
101	101.8	FL	3	
101.8	105.9	BRKZ	2	
105.9	107.3	JZ	3	
107.3	109.5	BRKZ	3	
109.5	111.9	FZ	2	
111.9	112	FL	5	
112	115.1	JZ	2	
115.1	115.8	FZ	2	
115.8	118.5	JZ	3	
118.5	120	FZ	4	
120	123	JZ	3	
123	123.5	FL	4	
123.5	126.2	BRKZ	3	
126.2	127	FZ	2	
127	136.6	JZ	3	
136.6	140.5	JZ	5	
140.5	140.8	BZ	3	
140.8	146.6	JZ	2	
146.6	148.6	JZ	2	
148.6	153.5	JZ	2	
153.5	154.7	BRKZ	2	
154.7	158	JZ	4	
158	164	JZ	3	
164	165.7	JZ	2	
165.7	168.5	FZ	1	
168.5	170.5	JZ	2	

Blackwater Project
Drill Summary - Structure

BW0343

From (m)	To (m)	Structure	Strength	Comments
170.5	171.2	BZ	1	
171.2	172.4	BRKZ	2	
172.4	173.6	JZ	1	
173.6	174.5	BRKZ	2	
174.5	175	JZ	1	
175	176	BRKZ	2	
176	177.5	JZ	1	
177.5	178.9	FZ	2	
178.9	193.8	JZ	2	
193.8	197.3	JZ	3	
197.3	205.5	BRKZ	3	Moderately to strongly fractured with Py Chlorite coatings on planes
205.5	209	JZ	5	
209	209.4	FL	4	
209.4	218	BZ	4	local 10cm fault zones bordered by healed fault breccia
218	229.6	FL	5	
229.6	233.3	BRKZ	4	
233.3	234.5	FL	5	
234.5	241.7	BZ	4	local 10cm fault zones
241.7	243.4	FL	5	
243.4	247.5	JZ	3	

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Blackwater Project
Drill Logs

Hole ID:	BW0344	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375827.3
Depth (m):	472.74	Date Started:	06/02/2012	Casing Size:	HWT	Northing:	5892722.42
Azimuth:	270	Date Completed:	13/02/2012	Casing (m):	41.5	Elevation (m):	1602
Dip:	-60	Logged By:	TWi	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
46	270.5	-60
91	269.8	-60.2
137	268.7	-60.8
183	268.7	-61.5
229	268.2	-61
274	267.8	-61.4
320	268.5	-61.1
366	271.1	-61.1
411	272.8	-61.3
457	273.1	-60.2

Blackwater Project
Drill Summary - Lithology

BW0344

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	41.5	OB							Overburden
41.5	157.6	VC	plm	LAP	M	BR	FLT		Medium grey orange polymictic volcaniclastic. Clasts are subrounded, dominantly andesite lithology, Rare felsic clasts. FeOx is prominent on fracture planes to 98.
157.6	160	VC	fltbx	LAP	L	BEI	FLT	GR5	Possibly just fault zone? Light grey, similar polymictic unit to previous section, with 15 cm felsic clast unit at 18.90m
160	170.5	VC	plm	LAP	M	GRY	FLT	SH	No visible felsic clasts within section. Medium grey polymictic volcaniclastic. Dominantly andesite clasts
170.5	205.6	VC	lith	LAP	D	GRY	DEP	GR30	Finer grained, well sorted volcaniclastic unit (possibly epiclastic), weak-crude layering visible at 70 TCA
205.6	234.5	FT	lam	CA	MO	GRN	UNKN	GR30	Light mottled green felsic tuff unit. Stratified/laminated particularly visible at 212m at 35 degrees TC. 0.5% Garnets from 225.50-226.20m.
234.5	248.6	AND	volc	CA	D	GRY	UNKN	GR30+	Difficult to distinctly term as andesite, appears to be transitioning into more volcaniclastic unit at lower contact?
248.6	252.1	VC	plm	LAP	D	GRY	UNKN	GR10	Short interval of mafic-rich volcaniclastic within andesite unit
252.1	294.9	AND	por	CA	VD	GRY	UNKN		Phenocrystic andesite with euhedral laths of plagioclase, minor calcite stringers throughout interval up to 1cm in width
294.9	420	AND	por	CA	VD	GRY	UNKN		Subtle porphyrtic unit of dark grey andesite. Clasts of amygdaloidal basalt? caught up within unit.
420	472.7	AND	plm	CA	D	GRY	UNKN		Polymictic andesite. Silicified clasts within unit. Observed to be more polymictic then previous sections

Blackwater Project
Drill Summary - Alteration

BW0344		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
41.45	98	T	PERV	3	FR	3	PERV	2	CLST	1	LIM	FR	3	CARB	VN	1	Strong FeOx on fractures. Pervasive in some places. Strongly chloritic. Local clasts with increase in sericite replacing plag
98	110.4	S	PERV	3	FR	2	CLST	2	CLST	1	CAL	VN	2				No FeOx, sulphide zone. Weak silica, strong chlorite. Minor carb 105.1, gouge zone. Increased clay within gouge zone from 117.65 to 119.20. Increased silica in vein zone from 120.33-120.45 m
110.4	134.9	S	PERV	3	FR	3	CLST	3	FC	2	CAL	VN	2				Separated from previous section because of increased clay within fault zones and faults
134.9	157.6	S	PERV	3	FR	2	CLST	2	CLST	1	CAL	VN	2				Sulphide zone, weak silica, strong chlorite, minor carbonate in gouge zone at 136.6m
157.6	170.5	S	PERV	3	FR	3	CLST	2	FC	2	CAL	FR	1				Within fault zone, there are sections of gouge with clay and calcite
170.5	205.6	S	PERV	3	FR	2	CLST	2	CLST	1	CAL	FR	1				Pervasive chlorite alteration within zone. Minor sericite-qtz alteration of clasts
205.6	234.3	S	FR	2	FR	2	PERV	2	FR	3	ANH	FR	2				Within felsic tuff unit. Locally pervasive silicification. Strong chlorite-sericite-clay alteration along fracture planes, with pervasive chlorite alteration throughout section. Anhydrite within fracture planes on en echelon fractures.
234.3	248.5	S	PERV	3	FR	1	CLST	1	FR	1	CHL	FR	4	CHL	FR	3	Chloritized volcanics. Minimal to absent clay-sericite. Pyroxene phenos have been replaced by pyrrhotite. Minor biotite alteration
248.5	252.1	S	PERV	3	FR	1	CLST	1	FR	1	CAL	VN	1	BIOT		2	Chloritized zone, noticeable along fractures, minor biotite alteration
252.1	288.6	S	PERV	3	FR	1	CLST	1	FR	1							Chloritized volcanics , slightly stronger within gouge zones
288.6	294.9	S	FR	4	FR	2	CLST	1	FR	3	CARB	FR	2				Strongly clay-sericite-clorite alteration within fault zone
294.9	396.6	S	PERV	4	FR	2	CLST	2	FR	2	CARB	FR	3	ANH	FR	2	Calcite, chlorite alteration locallly stronger within sections of interval. Pervasively chloritized, minor biotite alteration

Blackwater Project
Drill Summary - Alteration

BW0344		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
396.6	398.7	S	PERV	1	FR	2	PERV	4	PERV	3							Strongly qtz-sericite altered, strongly broken, potentially along a fault zone. Upper contact sharp at 45 degrees TCA, lower contact gougy with chlorite at 35 degrees TCA
398.7	427	S	PERV	3	FR	2	CLST	2	FR	2	CARB	FR	3	ANH	FR	2	Calcite, chlorite alteration locally stronger within intervals of section. Pervaisvely chloritized, minor biotite alteration
427	468.2	S	PERV	3	FR	2	PERV	3	FR	2	BIOT	FR	1				Weakly biotite altered purple, strongly chloritized volcanic unit, minor silicified clasts within interval
468.2	470.5	S	PERV	2	FR	2	PERV	4	PERV	3							Stongly qtz-sericite altered zone
470.5	472.7	S	PERV	4	FR	2	CLST	2	FR	1	CARB	FR	1				

Blackwater Project
Drill Summary - Mineralization

BW0344		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
41.45	78	SP	0.1		0		0										Weak sulphides, local felsic clast at 47.55 with increase in pyrite.
78	98	BB	0.1	BB	0.1	BB	0.1	Goe	FP	5							FeOx on fractures. Blebby pyrite and sphalerite
98	106	FP	1	CR	0.1	CR	0.5										Pyrite stronger along fracture planes. Noticed along low angle (20-45 TCA) fracture planes. Po visible replacing clasts and infill of the silica amygdules. Trace sphalerite.
106	134.9	FP	1.5	CR	0.1	BB	0.5	Apy	CR	0.1							Increased mineralization on fracture/fault zones. Strongly mineralized at vein interval (120.33m). Pyrite percentage rated higher because of the vein at 120.33 m and more py-clay gouge within fault zones
134.9	148.2	FP	1	CR	0.1	BB	0.5										Minor pyrite along fracture planes
148.2	157.3	FP	1.5	CR	0.1	BB	0.5										Separated from previous interval as there is a clast(?) that appears to have been replaced at 148.15 at the upper contact of a distinguishable fault
157.3	170.5	FP	1	CR	0.1	CR	0.5										Po visible within mafic clasts of interval. Pyrite stronger within gouge and along fracture planes
170.5	178.2	FP	1	CR	0.1	CR	0.5										Minor po-py stringers (1 mm) within interval
178.2	189	FP	1.5	CR	0.1	CR	0.5	Po	VN	5	Py	VN	5	Apy	VN	0.1	Bands of Po-Py-Aspy (veins) at 25 degrees TCA (note low angle TCA), spaced approximately every metre within interval.
189	192.3	FP	1.5	CR	0.1	CR	0.5	Cp	VN	5	Py	VN	1				Bands from previous interval absent, replaced by steeper angle bands of Cpy approximately 5mm in diameter.
192.3	205.6	FP	1.5	CR	0.1	CR	0.5	Po	VN	5	Py	VN	5	Apy	VN	0.5	Bands of Po-Py-Aspy (veins) at 25 degrees TCA. Absent after 205.6 m.
205.6	210	FP	0.5	SP	0.1	FP	0.5	Hm	GmR	0.5							Weak mineralization in interval (no strong bands as per previous intervals). Hematite groundmass replacement? from 207.8-208.5 m.
210	217.7	FP	1	CR	0.1	CR	0.5	Po	VN	2	Py	VN	2				Sparse bands of pyrrhotite-pyrite following fracture planes within interval

Blackwater Project
Drill Summary - Mineralization

BW0344		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
217.7	234.3	FP	0.5	CR	0.1	FP	0.1	Sp		0.5	Viv		0.1				Minor pyrite-pyrrhotite along fracture planes. Small stringers of sphalerite from 225.5-226.2m. Vivianite along fracture planes at 229.30m
234.3	248	FP	0.1	CR	0.1	CR	0.5										Very minor mineralization, with the exception of 244m, where pyrrhotite appears to be replacing clast and is as high as 1%.
248	252.1	FP	0.5	CR	0.1	CR	0.5										Within volcaniclastic unit, pyrrhotite is replacing minor clasts.
252.1	288.6	FP	0.1	CR	0.1	CR	0.5	Hm	FP	0.5							Pyrrhotite replaces mafic minerals within interval, minor specular hematite within interval.
288.6	294.9	FP	0.1	FP	0.1	CR	0.5										Increased pyrite-pyrrhotite within gouge zones of fault interval
294.9	341	FP	0.1	CR	0.1	CR	0.5										Mineralization weak throughout interval, as it appears that most of the iron is within the chlorite alteration
341	347.8	FP	1	CR	0.1	CR	0.5										Increased mineralization within gouge zones, black sooty pyrite-chlorite alteration of gouge
347.8	356	FP	0.1	CR	0.1	CR	0.5										Weak mineralization within interval
356	375	FP	0.5	CR	0.1	CR	1	Po	FP	1							Pyrite-pyrrhotite mineralization stronger within this interval, locally as high as 5 % (vein at 359.5m). Fracture-controlled
375	388.2	FP	1	CR	0.1	CR	0.1										Weakly mineralized interval
388.2	396.6	FP	1	CR	0.1	CR	0.1	Po	FP	1							Strongly fractured controlled band of pyrrhotite-pyrite within interval
396.6	398.7	FP	2	CR	0.1	CR	0.5	Po	FP	5			2				Abundant pyrite-pyrrhotite within silica-sericite altered interval, strong fractured. Intense pyrite-chlorite gouge at lower contact
398.7	419	FP	0.5	CR	0.1	CR	0.1										Weakly to non-mineralized interval of chloritized andesite
419	428.8	FP	0.1	CR	0.1	CR	0.5										Weakly mineralized interval throughout section. Mineralized focused on fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0344		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
428.8	450	FP	0.5	CR	0.1	CR	1	Po	FP	1							Increased pyrrhotite mineralization along fracture planes
450	452.5	FP	0.5	CR	0.1	CR	0.5										Decreased pyrrhotite mineralization
453.4	455.2	FP	1	CR	0.1	CR	1	Po	FP	5							Increased pyrrhotite along fracture planes (bands)
455.2	468.1	FP	0.5	CR	0.1	CR	0.5										Weakly mineralized interval
468.1	468.2	FP	1	CR	1	CR	1										Small zone of increased clast replacement sphalerite before start of silicified zone along fault structure
468.2	470.5	FP	2	CR	0.1	CR	0.5										Qtz-sericite alteration zone with increased sooty pyrite stringers
470.5	472.7	FP	0.1	CR	0.1	CR	0.5										Weakly mineralized

Blackwater Project
Drill Summary - Structure

BW0344

From (m)	To (m)	Structure	Strength	Comments
41.5	66	JZ	3	Competent core, minor joints, angles varied from 30-70 degrees TCA.
66	68.5	FZ	2	Minor shearing within fault zone, clay gouge zones within major interval
68.5	98.3	JZ	3	Competent core, minor joints, angles varied from 50-70 degrees TCA.
98.3	99	FL	3	Gouge and broken zone. Sharp upper contact at 50 degrees
99	104.7	JZ	2	Joint zone with fractures from 20-50 degrees TCA. Minor amounts of gouge within zone.
104.7	105.2	FZ	2	Lower contact sharp at 75 degrees TCA
105.2	110.4	JZ	3	Joint zone with minor gouge zones (<1cm) at 106.9, 108.2m
110.4	117.7	FZ	2	Fault zone. Observed an increase in sericite-clay-sulphides along this fault, 50-70 TCA fractures. Py locally 5% from 110.9-111.2
117.7	119.2	FL	4	Fault Breccia, increased clay within interval, gouge matrix
119.2	134.9	FZ	3	Several minor faults within larger fault zone
134.9	140.7	JZ	2	Minor gouge within joint zone, joints vary from 20-60 degrees
140.7	140.9	FL	3	Upper contact of fault sharp at 65 degrees. Pyrite veinlets at 60 degrees TCA within fault. lower contact subtle into joint zone to 148.20
140.9	148.2	JZ	3	Joints from 20-60 degrees. Minor gouge zones at 144.20, 145.20 m.
148.2	148.8	FL	3	Low angle fault zone with increased pyrite at upper contact of fault. Sharp lower contact at 25 degrees TCA.
148.8	153	JZ	3	Joints vary between 30-60 degrees TCA.
153	157.3	FZ	3	Faulted zone with fractures in zone between 50-70 degrees TCA. Mostly fault breccia within interval
157.3	158.6	FL	4	Fault that appears to separate a more mafic-clast volcaniclastic unit to a felsic-clast volcaniclastic unit
158.6	170.5	FZ	3	Fault zone with abundant chlorite-clay-sericite gouge with fragments of andesite. Fractures 30-50 degrees TCA. Lower contact at 30 degrees TCA
170.5	229.4	JZ	3	Larger joint zone. Difficult to pick out important fault from section. 30-70 degree TCA joints.
229.4	234.3	FZ	2	Fractures within fault zone vary from 30-70 degrees TCA. minimal gouge. 30 degree upper contact has vivianite along fracture surface
234.3	236.2	JZ	2	Weakly jointed. Lower contact at 60 degrees TCA
236.2	237.8	FZ	2	Minor gouge zones within faulted interval
237.8	252	JZ	3	Joint zone 30-70 degrees TCA, minimal gouge within zone.
252	284.6	JZ	2	Joint zone, weak, 30-60 degree TCA, gouge absent.
284.6	295	FZ	3	Fault breccia zone up to 289.9, fracture zone with abundant gouge to 294.4

Blackwater Project
Drill Summary - Structure

BW0344

From (m)	To (m)	Structure	Strength	Comments
295	313.5	JZ	3	Relatively competent core, minor intervals of broken rock within section
313.5	316.3	BRKZ	3	Minor gouge within broken zone of interval
316.3	325.4	JZ	2	Joint zone with fractures between 30-60 degrees TCA
325.4	331.6	BRKZ	3	Broken zone with increased chlorite along fracture planes, spacing approximately 5cm for fractures
331.6	341	JZ	3	Strongly fractured zone with minor gouge
341	347.8	FZ	4	Strong gouge within fault zone over large interval. Similar looking andesite above and below
347.8	350.7	JZ	2	Weak joint zone, calcite mineralization along fracture zones.
350.7	354.9	FZ	3	Low angle fractures observed within interval (as low as parallel TCA)
354.9	355.4	JZ	2	Low angle fractures within interval
355.4	360.5	FZ	3	Gouge lower contact at 30 degrees TCA
360.5	372.2	JZ	3	Strongly jointed, minor gouge within zone
372.2	396.4	JZ	2	Weaker joint zone then previous interval
396.4	398.7	VZ	4	Strongly faulted, intense sericite-clay within microfractures. Veinlets of pyrite-pyrrhotite as well as pyrite specks
398.7	403	BRKZ	3	Strongly chloritized along fracture planes, broken along low angle structures
403	420.8	JZ	3	Fractures between zones are 20-50 degrees TCA
420.8	427	BRKZ	3	Fractures between 25 to 35 degrees, minor faulting?
427	452.3	JZ	2	Joints from 60-80 degrees TCA
452.3	455.9	FZ	3	Low angle upper contact of fault zone
455.9	468.2	JZ	3	Joint zone from 25-70 degrees TCA
468.2	470.5	VZ	4	Strongly silicified zone within relatively non-silicified andesite. Pyrite stringers throughout interval
470.5	472.7	JZ	2	Weakly jointed zone

Blackwater Project
Drill Logs

Hole ID:	BW0345	Tenure #:	515810	Hole Diameter:	HQ	Easting:	376026.02
Depth (m):	448	Date Started:	07/02/2012	Casing Size:	HWT	Northing:	5892774.3
Azimuth:	270	Date Completed:	16/02/2012	Casing (m):	81	Elevation (m):	1585
Dip:	-60	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-62
100	270.4	-62.6
150	270	-63.1
200	272.2	-63.4
250	270.9	-63.9
300	270.7	-64.3
350	271.8	-64.9
400	271.6	-65.1
448	270.7	-64.3

Blackwater Project
Drill Summary - Lithology

BW0345

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	80	OB							Overburden, gravels to boulders to clay. Casing set at 81m
80	130.3	FT	lam	CA	M	OR	OXFR	SH	Strongly clay and oxidized FT. Laminations present. Rare 1-3mm angular felsic fragments.
130.3	227	FT	lam	CA	L		DEP	GR10	Faulted broken FT. Transition zone to 133m. Moderate to strong blebby sulphides. Strong sulphides from 146 to 215.
227	235	VC	lptbx	LAP	L	GRN	DEP	GR30	Light green grey volcaniclastic. Increase in sphalerite. Local faulted sections. Increase in chlorite replacing clasts.
235	250.7	VC	volc	LAP	D	GRY	FLT	SH	Dark grey mafic volcaniclastics. Rare felsic clasts. Autobrecciated. Stronger silica matrix.
250.7	253.4	VC	fltgge		D	GRY	FLT	SH	Major fault, intense chlorite. Fault at 20 TCA
253.4	313.9	AND	volc	LAP	D	GRY	FLT	SH	Dark grey mafic volcaniclastics. Polymictic mafic unit. Autobrecciated. Rare rounded felsic clasts. Locally broken. Calcite veins throughout. Waxy green clay on fractures.
313.9	315.4	AND	fltgge	LAP	D	GRY	FLT	SH	dark grey chlorite rich fault zone
315.4	373	AND	autbx	LAP	D	GRY	FLT	SH	Majority of interval is andesite. From 326 to 325, unit is more volcaniclastic, matrix supported. Decrease in number of clasts. Increase in felsic groundmass. Numerous broken zones.
373	374.6	AND	fltgge		D	GRY	FLT	SH	Strong fault.Gouge.
374.6	387	AND	volc	LAP	M	GRY			Dark grey/brown andesite. Chlorite on fractures. Broken and minor faults throughout.
387	390.3	AND	fltgge	LAP	D	GRY	FLT	GR30	Highly brecciated andesite with locally intense gouge development
390.3	396.6	AND	volc	LAP	D	GRY	FLT	GR30	Brecciated/fragmental throughout, clasts are bimodal, with larger 1-5cm wide clasts in matrix of 0.1-0.5cm clasts. ~1% of smaller clasts are sub-well rounded quartz.
396.6	438.7	VC	cs	LAP	D	GRY	DEP	GR30+	Majority is clast supporeted, felsic content varies from 25-50%, steadily decreasing over lower ~5m. Clasts typically 0.5-5cm wide, with occasional bombs up to 40cmwide. Clasts typically subang-subround, occasional short intervals of well rounded cla
438.7	448	AND	volc	LAP	D	GRY	UNKN		EOH. Volcanolcastic andesite, dark grey-brown,clasts largely sub-ang, occasionally subround, 0.1-1.5cm wide.

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Blackwater Project
Drill Summary - Alteration

BW0345		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
80	118	O		0	PERV	4	PERV	1	PERV	4	LIM	PERV	4				Strongly oxidized FT. Limonite, goethite. Stronger on fractures. Strong clay altered.
118	133	T	PERV	1	PERV	3	PERV	2	PERV	3	LIM	FR	3				Decrease in oxidation. Limonite on fractures.
133	223	S	PERV	1	PERV	2	PERV	3	PERV	2							Increase in sulphides. No oxidation.Decrease in clay alteration.
223	235	S	CLST	3	FR	2	PERV	3	PERV	2							Chlorite rich clasts in a moderatly silica rich matrix
235	250.7	S	PERV	4	FR	1	MTRX	3	PATC	1	BIOT	PERV	2				Mafic volcaniclastic with in chrlorite and biotite.
250.7	253.4	S	PERV	5	PERV	4		0		0							fault zone
253.4	313.5	S	PERV	4	FR	3	PERV	1		0	BIOT	PERV	3				mafic unit with strong chlorite and biotite.
313.5	315.4	S	PERV	5	PERV	3	PERV	1	PERV	1							fault zone, strong clay and chlorite.
315.4	326	S	PERV	4	FR	3	PERV	1		0	BIOT	PERV	3				typical andesite, clay on fractues. Waxy clays on fractures.
326	341.5	S	PERV	3	FR	3	MTRX	3	PERV	1							increase in silica in the matrix, VC unit
341.5	361	S	PERV	4	FR	3	PERV	2		0	BIOT	PERV	2				Typical andesite, strong chlorite and biotite.
361	387	S	PERV	4	FR	1	PERV	1	PERV	0	BIOT	PERV	3				
387	389	S	DEF	4		0		0		0	BIOT	PATC	3				Locally intense patchy chlorite in gouge
389	396.7	S	FR	2		0	PATC	3		0	BIOT	PERV	4				Weak chl on some fractures, sil as local increase in hardness and centimetric patches of secondadry qtz in groundmass
396.7	406	S	FR	1		0	PATC	1		0	BIOT	PERV	4				Occasional traces of chl on fractures, occasional 1-4mm wide well rounded qtz blebs- secondary?
406	413.5	S	FR	3		0	PATC	2		0	CHL	CLST	1	BIOT	CLST	2	All fractures and occsional clasts are moderately chloritized, many smal clasts replaced biotite. Patchy sil
413.5	439	S	FR	2		0	MTRX	4		0	BIOT	CLST	4				Matrix is pervasively heavily silicified, clasts biotite rich, occasional weak chlorite on fractures.
439	448	S	FR	1		0	PATC	4		0	BIOT	CLST	4				Sil in discreet patches, biotite still dominating clasts, occasional trace chl on fractures.

Blackwater Project
Drill Summary - Mineralization

BW0345		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
118.4	139	BB	0.5	BB	1		0										blebby sulphides. Sp>py.
139	146	BB	1	BB	2		0										increase in sphalerite.
146	163.4	DI	3	DI	4		0	Dbs	DEN	3							strong sulphides. DBS throughout, sphalerite and pyrite associated.1 3.5cm vein of sphalerite at 163.1m
163.4	180.7	DI	3	DI	3		0	Dbs	DI	3							strong sulphides, same as above.
180.7	190.5	DI	2	DI	2		0	Dbs		3							slight decrease in sulphides before fault.
190.5	206.5	DI	3	DI	3		0										fault zone, sulphide gouge. Decrease in DBS due to fault masking textures.
206.5	216	DI	2	DI	2		0	Dbs		1							decrease in sulphides.
216	235	DI	0.5	DI	5		0	Dbs	DEN	1							strong sphalerite with pyrite and dbs.
235	266.5	DI	1	DI	1	CR	2										increase in po with clasts
266.5	303	DI	0.5	DI	0.5	DI	0.5										moderate sulphides throughout, rare pyrite veinlets.
303	320.5	BB	1.5	DI	0.5	DI	0.5										blebby veins of pyrite.
320.5	342	VN	2.5	DI	0.5	BB	0.5	Py	BB	0.5							increase in sulphides, some 10 cm blebby veins present of pyrite.
342	362	VN	0.5	VN	1	CR	0.5										fairly intense mineralization. minor veinlets with clast replaced Po, and amygdules
362	387	DI	1.5	CR	0.5	BB	0.5										moderate sulphide
387	390	BB	1		0	SP	0.1	Py	DI	0.5							Very fine py disseminated in gouge, also centimetric elongate blebs of py. Very scarce fine specks of Po in clasts
390	397		0	SP	0.1	SP	1										Frequent millimetric specks of Po replacing mafic clasts.
397	400.8	VN	0.1	CR	4	SP	0.5										Immediately below small structure. Sphal replacing 1-4mm long laths, occasionally with associated specks of Po. Very occasional fine py veinlets.
400.8	404.7	VN	0.1	BB	1.5	BB	2										Frequent 1-3mm wide blebs of sphal and Po, ?replacing small clasts. Trace py vt's. Generally increasing in density over lower 1.5m

Blackwater Project
Drill Summary - Mineralization

BW0345		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
404.7	405	VN	2	BB	1.5	BB	2										Py in 3-6mm wide globular veinlets, sphal and Po disseminated in 1-4mm wide blebs ?replacing clasts
405	407.9	FP	0.1	CR	2.5	CR	1.5										Po and sphal frequently replacing clasts, trace py on fractures.
407.9	411.1		0	BB	1.5	GmR	10										massive patchy replacement of groundmass by Po, ?with trace py. Sphal as 1-4mm wide blebs intermittently throughout.
411.1	415.9	BB	0.1	CR	2	SP	0.5										Py is in isolated 1cm wide bleb at topof interval. Sphal and Po throughout replacing 1-3mm wide clasts
415.9	424.8	FP	0.1	CR	1	BB	2										Somewhat frequent sphal partially replacing clasts, associated with biotite. Po in 1-3m wide blebs and flecks throughout.
424.8	448	VN	0.5	SP	0.5	BB	1										Po is locally quite intense, typically as millimetric blebs replacing large mafic clasts. Sphal also in millimetric blebs, intermittent throughout. occasional 1-2mmwide py veinlets, late stage. Mineralization is somewhat patchy, but largely consisten

Blackwater Project
Drill Summary - Structure

BW0345

From (m)	To (m)	Structure	Strength	Comments
80	130.8	JZ	3	jointing at 60. Local strong clay broken zones.
130.8	143	FZ	4	fault zone, clay and broken core.
143	146	BRKZ	3	broken core
146	190.6	JZ	2	Local broken zones. Strong fault at lower contact.
190.6	198	FL	5	strong fault gouge. Intense fault. Sulphides throughout.
198	219.2	FZ	4	broken core, lower part of fault above.
219.2	226	JZ	3	
226	227	FL	5	strong fault, gouge with sharp contacts. 30 TCA.
227	231.2	JZ	2	competent rock with local broken zones.
231.2	232	FL	4	clay gouge, rehealed, intense
232	250.8	JZ	3	jointing
250.8	253.4	FL	5	intense fault, chlorite rich
253.4	268	JZ	3	locally broken
268	284.5	BRKZ	3	broken zone with local intact sections of core
284.5	313.9	JZ	3	jointin at 50, some local broken sections.
313.9	315.3	FL	4	clay fault, no sharp contacts TCA
315.3	326	BRKZ	3	broken core
326	347.5	JZ	3	
347.5	373	BRKZ	3	broken and competant core.
373	374.5	FL	4	major fault .
374.5	386	BRKZ	3	broken core.
386	390.3	FL	4	IIntensely brecciated with frequent gouge development. Fractures, gouge bands, and elongate sulphide blebs at 50degTCA
390.3	394.8	JZ	2	Weakly fractured
394.8	396.7	FZ	3	Brecciated with goge development over lower30cm.
396.7	400.6	BRKZ	3	Moderately rubbly
400.6	407.5	JZ	2	fractures at 40 or 60degTCA
407.5	413.5	BRKZ	2	Locally rubby

Blackwater Project
Drill Summary - Structure

BW0345

From (m)	To (m)	Structure	Strength	Comments
413.5	448	JZ	2	Occasional joints at either 35or 65degTCA

Blackwater Project
Drill Logs

Hole ID:	BW0346	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375802.69
Depth (m):	259	Date Started:	06/02/2012	Casing Size:	HWT	Northing:	5893398.58
Azimuth:	0	Date Completed:	10/02/2012	Casing (m):	4.5	Elevation (m):	1524
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
53	283.5	-89
103	270.1	-88.8
153	280.6	-89.2
202	287.5	-89.3
253	333.9	-89.7

Blackwater Project
Drill Summary - Lithology

BW0346

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6	OB							
6	8.3	AND	bx	FA	M	GRY	ALTFR	SH	strong alteration in this inteval making AND appear lighter and creamy. brecciated well. hemitite dominant groundmass
8.3	20	AND	mas	CA	M	GRY	INTR	GR5	fairly large grained AND crowded with rounded as well as clay. some small sections with elongated aligned phenos.
20	36.75	AND	mas	CA	M	GRY	FLT	SH	litho as above with zones of hydrothermal fluid movement and brecciation of host rock. hydrothermal groundmass of ser-sil
36.75	45	FLPT	plm	LAP	L	GRY	DEP	GR10	upper contact fault. light grey FLPT with large poorly sorted lapilli clasts. one very large block sized clasts of brecciated FT. Clasts more rounded at top, grading to become angular
45	52.3	FLPT	lam	LAP	L	GRY	DEP	GR30	intervals of wavy laminated groundmass, also some clasts themselves with wavy laminations. some vuggy vesicles, infilled with quartz-albite(?).
52.3	82	VC	plm	BLOCK	M	GRY	DEP	GR30+	large block sized clasts, up to refrigerator sized, poorly sorted. most mafic clasts are dark andesite, felsic clasts vary in litho. groundmass is a FLPT
82	97	AND	hydbx	CA	D	GRY	FLT	GR5	hydrothermal brecciation of dark purplish grey andesite, with some fault brecciation as well. lots of fluid movement. some ~20cm runs with vesicular andesite. looks similar to unit above fault contact from 20-36.5m in this hole
97	100	VC	fltbx	LAP	M	GRY	FLT	GR10	clay rich fault breccia; soft core, but pretty well healed. clasts mostly andesite, but grading into increasing felsics at end of interval
100	119.7	VC	ms	LAP	M	GRY	DEP	GR30	fairly felsic groundmass. frequent large near block sized mafic clasts, with smaller 3-4 cm felsic clasts. Clasts are quite angular.
119.7	130.1	AND	hydbx	CA	D	GRY	DEP	GR30	section of andesite; faint autobrecciation seen within unit, also some small hydrothermal brecciation spots. andesite is amydoloidal, amygdules varying in size, and some are elongated, some are large and round, carbonate/anhydrite infilled
130.1	144	VC	ms	BLOCK	D	GRY	DEP	GR10	blocky angular dark grey-purplish clasts, with a moderately lighter groundmass. This zone could be a large zone of hydrothermal fluid movement, with large clasts and considerable movement. clasts are monomictic andesite similar as adjacent intevals.
144	164.1	AND	mas	CA	D	GRY	ALTFR	GR5	fairly massive andesite, similar to 119.65-130.1m above. amygdoloidal in spots, increasing brecciation towards end of interval.
164.1	167.5	AND	fltbx	CA	L	GRN	FLT	GR30+	intensely altered rock; assuming unit is similar to above andesite, primary textures masked. Fault contact marked by "lost core" at 167.5m. precise contact unknown.

Blackwater Project
Drill Summary - Lithology

BW0346

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
167.5	186.3	FT	a	FA	L	GRY	FLT	GR30+	fault bounded FT; ashy; hydrothermal fracturing throughout unit
186.3	221.5	AND	mas	CA	D	GRY	FLT	GR30+	upper contact obscure; broken gougey core with alteration bands. massive AND with faint autobrecciation.
221.5	259	FT	hydfrct	FA	L	GRY			heavily faulted unit, litho remains consistant ashy FT, with some sulphide replaced phenocrysts. intense hydrofracturing

Blackwater Project
Drill Summary - Alteration

BW0346

From (m)	To (m)	Oxide Facies	Chlorite Style	Chlorite Int	Clay Style	Clay Int	Silica Style	Silica Int	Sericite Style	Sericite Int	Alteration 1 Code	Alteration 1 Style	Alteration 1 Int	Alteration 2 Code	Alteration 2 Style	Alteration 2 Int	Comments
0	18	O	CLST	2	CLST	3	OP	1	PERV	3	LIM	INFILL	2				patchy pervasive ser, yellow-green limonite infilling microfractures and spaces. Small clay clasts throughout, perhaps white mica
18	25	O	CLST	2	CLST	3	INFILL	2	PERV	3	LIM	FC	1	HM	INFILL	2	plenty of red hemitite permeating through the groundmass. other hydrothermal alteration of ser-sil. Also soft brittle talc in small gaps
25	31	T	CLST	1	CLST	3	OP	1	PERV	3	LIM	INFILL	1	HM	INFILL	1	transitional facies. talc on fractures. clay, limonite as before. hem a bit weaker than above interval
31	35	T		0	CLST	1	OP	1	PERV	3	HM	INFILL	3				bright red hemitite infill. clay alteration not as strong
35	44.5	S	CLST	2	CLST	2	OP	3	CLST	3	ALB	CLST	1	TOUR	ISSOLL	1	rock is fairly hard from sil alteration. cm sized clasts of ser-chl. replacement albite with associated tourmaline
44.5	50.5	S	FR	1	PERV	2	PATC	3	CLST	3	ALB	REP	2	TALC		1	cherty in places. vesicles occuring in areas of intense laminating, with replacement albite with quartz, some galena in these as well. biotite halos on some clasts
50.5	59.7	S	CLST	2	MTRX	1	OP	2	PERV	3	ALB	VN	1	CHL	FC	2	small frequent chl-ser clasts. chl-ser on some fracture planes. Moderate sil overprint
59.7	67	S	CLST	2	MTRX	1	OP	1	PERV	2	ALB	INFILL	2	CARB	FR	2	overall core becoming less altered. carbonate on fracture planes, very brittle and soft
67	74	S	PERV	2	MTRX	2	PERV	3	PERV	3	ALB	INFILL	1	HM	INFILL	1	groundmass is quite siliceous, with ser-chl pervasive in clasts. some soft clay clasts in matrix. Hemitite preferentially in mafic clasts
74	90	S	MTRX	3	FC	3	OP	1	MTRX	4	ALB	INFILL	1	HM	CLST	1	stronger ser alt'n in matrix, with block mafic clasts exhibiting chl-hem-carb alt'n. sil notably weaker than upper section. quite a bit of clay gouge on fractures.
90	97	S	CLST	2	INFILL	2	OP	1	PERV	2	CARB	FC	2	TALC	CLST	2	increasing carb on fracture planes towards bottoms. large clasts of talc+chl towards in one spot near end. moderate pervasive ser
97	100.2	S	CLST	2	FC	3	OP	2	PERV	2	CARB	FC	2				fault gouge section, abundant cly-chl-ser-carb alt'n
100.2	109	S	FC	2	FC	2	OP	1	PERV	2	CARB	FC	1				chl-ser-carb-cly in small soft local fracturing. weak sil
109	115	S	CLST	3	MTRX	2	PERV	2	PERV	2	CARB	FC	1				moderate pervasive ser-sil alt'n. common small chl clasts. tiny clay clasts in matrix
115	120	S	CLST	2	MTRX	2	OP	1	PERV	2	CARB	FC	1				weaker overall alt'n.

Blackwater Project
Drill Summary - Alteration

BW0346		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
120	129	S	CLST	1	MTRX	1		0	PERV	3	CARB	INFILL	2	ANH	INFILL	1	sericite alt'n giving rock a kind of pale purplish color with mafics. amygdule replacement of carb-anh
129	158	S	CLST	1	MTRX	1	INFILL	1	PERV	3	CARB	INFILL	2	ANH	INFILL	2	hydrothermal brecciation channels with ser-sil groundmass, with possible anh. carb-anh replacement of amygdules and pores. Some purple fluorite clasts(?)
158	164.1	S	PERV	3	FC	2	PATC	2	PERV	3	CARB	INFILL	2	ANH	INFILL	2	increasing chl and ser alt'n, and further towards bottom sil alt'n gradually increasing.
164.1	168.1	S	CLST	1	FR	2	PERV	4	PERV	3	CARB	FC	2				intensely sil altered interval, completely masking primary textures. has a greenish tinge, attribuited to pervasive ser-chl
168.1	172.4	S	PERV	1	MTRX	4	PERV	3	PERV	4							soft core, hydrofracturing, lots of clay and ser.
172.4	174	S	PERV	2	MTRX	4		0	PERV	2	UNK	PERV	2				lots of clay alt'n, giving core crumbly look. section of dark grey-purple alt'n - possibly siderite(?).
174	180	S	PERV	3	FC	2	PERV	2	PERV	3	CARB		1				pale green rock, ser alt'n at top of interval, lending to sil-chl alt'n towards bottom
180	194.5	S	PERV	4	FC	1	OP	1	PERV	3	HM	INFILL	1				becoming pretty intensely altered with dark green chl. ser alt'n constant. Minor streaky bright red hm
194.5	205	S	PERV	2	FC	1	OP	1	PERV	2	CAL	VN	1	CARB	FC	1	considerably less chl alt'n than above. consistant pervasive ser alt'n. calcite veining with qtz. carb infilling fractures.
205	214	S	PERV	1	FC	1		0	PATC	2	CAL	VN	2	CARB	FC	1	patchy ser with ankerite(?). slight brownish colouring from biotite alt'n. calcite veining with qtz, carb in fractures. perhaps some minor alite
214	221.5	S	PERV	2	FC	1		0	FR	1	CAL	VN	1	CARB	FC	1	as above, with increase in chl alt'n.
221.5	245	S		0	FC	4	PERV	4	FC	2	GRNT	REP	1				strong sil alt'n masking primary textures; heavy clay in gouge
245	259	S	CLST	1	FC	5	PERV	3	PERV	3	GRNT	REP	1	CARB	FC	2	intense clay gouge in many zones, sil-ser pervasive alt'n, rock pale grey-green. occaisional grnts

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Blackwater Project
Drill Summary - Mineralization

BW0346		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4.5	10	SP	0.3	SP	0.1	BB	0.5	Apy	SP	0.1	Cp	SP	0.3				specks of many sulphides, moreso at very top of hole.
10	22	SP	0.1		0		0	Apy	SP	0.1	Hm	PERV	1				trace specks of sulphides
22	29.5	VN	0.1		0	SP	0.1	Hm	PERV	1							low mineralization. one shoddy carb vnlt with minor blebs of py
29.5	36	DI	0.5		0		0	Apy	SP	0.1	Hm	CG	1				becoming fair py in disseminated specks, some euhedral crystals. coarse hemitite especially at end of interval.
36	46	FP	0.5		0		0	Apy	SP	0.1	Ga	BB	0.1	Grnt	BB	0.1	specks of sulphides, py on fracture planes. grnts in bleb groups. some galena-apy replacing vesicles with albite
46	53	SP	0.3		0		0	Apy	SP	0.1	Ga	BB	0.3	Dbs	DEN	1	some vlnts with py and dbs. rare bleb of galena-aspy
53	59.5	VN	0.1	DEN	0.5		0	Dbs	DEN	0.1							trace of whispy dbs. light brown sp in dendritic form in a large poikiolitic textured mafic block.
59.5	67	VN	0.5	BB	0.1		0	Apy	SP	0.1	Hm	PERV	1				rare vnlt with py. rare specks of aspy. patchy pervasive hemitite
67	74.5	SP	0.5		0		0	Apy	SP	0.3	Hm	PERV	0.5	Cp	SP	0.1	microscopic speck of py-aspy, seemingly only in the large andesite block clasts. little to no mineralization in felsic groundmass. possible cpy among these specks
74.5	90	SP	0.1		0		0	Hm	PERV	0.3							next to nothing for sulphides. one speck of py seen on a fracture.
90	106		0		0		0	Hm		0.1							possible very rare sulphide specks, but negledgable.
106	116.5	DI	0.5	BN	1	BN	1	Apy	SP	0.5	Ga	SUBH	0.5	Cp		0.3	sudden appearance of sulphihdes, occurring on outer edge of clasts, particularly large clasts, where sp-po-py band around it. Good sp disseminated within some clasts. At end of interval, some subhedral galena with sp-cpy
116.5	126	SP	0.3	DI	0.5	SP	0.1	Hm		0.1							some sp-hem lining outside edge of clasts as above, but much less frequent. minor py in disseminated specks.

Blackwater Project
Drill Summary - Mineralization

BW0346		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
126	128.7	MA	5		0	MA	5	Ga	MA	5	Cp	MA	3				15 cm zone of broken core with massive gal+py+po-cpy. NOTE: crumbly massive sulphides may have contaminated adjacent intervals from spilling over.
128.7	140.5		0		0		0										no sulphides seen
140.5	141.5	DI	0.5	DI	0.1		0										tiny disseminated specks of py in a short interval
141.5	154		0	DI	0.3		0	Hm	DI	0.1							minor sphalerite smudges, minor hem in small disseminated blebs
154	158.5		0		0		0	Hm		0.1							barren
158.5	163	VN	0.5	BB	0.5		0										zones of little sp blebs. also dull py in a fracture vein.
163	170	VN	0.5	SP	0.5	VN	0.3	Ga	VN	1	Cp	VN	1				several veinlets bearing ga-cpy-py. sp in blebby disseminations.
170	176.5	DI	1	SP	0.1	BB	0.5	Cp	DI	0.5	Ga		0.1				patch of disseminated py-po-cpy in dark altered rock at 173.5
176.5	182.5	VN	2	DI	0.3	SP	0.1	Ga	VN	1	Cp	VN	0.5	Apy	VN	0.5	DBS (can be seen in skeleton core @ 177.2) oriented at 75 degrees to CA. Other whispy DBS throughout interval. nice vein with gal-py-aspy-cpy at 178.1m. A couple other simillarly composed vnlts within interval
182.5	188.5	SP	0.1	DI	0.5	BB	0.5	Grnt	BB	0.5	Mrc	FP	0.3				low mineralization, some blebs of dark po, little bit of mrc on fracture planes. a few patches of smudgy grnts.
188.5	198	DI	0.5	DI	0.1	DI	0.1	Hm	BB	0.3							very fine grained disseminated py, difficult to see, but grades up to 1 % locally. some streaky hm
198	203.5	VN	0.5	DI	0.1		0	Cp	VN	0.5	Hm	BB	0.1				clasts of py+cpy in calcite-qtz vein. tiny specks of low-grade py and sp disseminated locally
203.5	214	VN	0.5		0	VN	0.3	Cp	VN	0.5							occaisional calc-qtz vein with low grade py or cpy. Trace very fine grained py ?& peraps apy disseminated
214	218.5	VN	1	VN	0.5	VN	0.3	Cp	VN	1							increasing grade of py-cpy. occurring in calc-qtz veins, also in crosscutting hairline vnlts as well as very fine grained disseminated. minor po bleb in a vnlt or two. euhedral, shiny black sp seen in one calcite vnlt with cpy-po

Blackwater Project
Drill Summary - Mineralization

BW0346		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
218.5	221.5	VN	2	VN	0.5	VN	1	Ga	VN	1	Apy	VN	1	Cp	VN	0.5	lots of veined mineralization, one really nice ga-py-apy 2cm vein at ~219.3m. cross cutting py vnlts. one vnlt grading pretty high in apy
221.5	232	VN	0.3	BB	0.3	SP	0.1	Ga	VN	0.5	Grnt	BB	0.5	Apy	SP	0.1	small vnlts of ga with minor py. ga-apy also partially replacing some phenos.
232	239.5	VN	0.3	BB	0.3		0	Ga	VN	0.5	Cp	VN	0.3	Grnt		0.3	vnlt in fault gouge with decent ga-cpy. ga also replacing phenos. occaisional grnt cluster
239.5	259	BB	0.3	BB	0.1		0	Ga	BN	0.3	Grnt	BB	0.3				sparse mineralization. some phenocryst replacement with sulphides; streaks of possible fine grained galena

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Blackwater Project
Drill Summary - Structure

BW0346

From (m)	To (m)	Structure	Strength	Comments
0	16.1	JZ	5	competant jointed core, but fairly frequent fractures, especially several fractures at low angles to CA
16.1	17.7	BRKZ	2	short section of broken core. some low angle fractures
17.7	22.3	JZ	4	varying fracture angles, but competant core.
22.3	32	BRKZ	1	in and out of broken/jointed small sections.
32	36	BRKZ	4	becoming increasingly rubbly
36	40.1	FZ	2	fault zone with perhaps significant movement due to quite different lithos on either side. some gouge, quite a bit of rubble.
40.1	44	BRKZ	3	lots of fractures consistent at approx 70 degrees to CA
44	50.5	JZ	5	overall pretty competant core, with several low angle fractures.
50.5	53.2	BRKZ	2	many fractures at low angles (less than 30 degrees) to CA
53.2	61.2	JZ	4	competant section. major fracture set at 70 degrees to CA, with a minor set at 10 to 20 degrees to CA
61.2	68	BRKZ	3	many fractures. various fracture orientations
68	72.8	JZ	4	joint zone, losing some competancy towards end of run. fracture sets at ~65 and 30 degree to CA
72.8	78.6	BRKZ	4	shardy fracturing, lots of fracturing at low angles to CA
78.6	91	BRKZ	2	slightly more competant than above unit, but still frequent fractures. fractures generally ranging from 20 to 40 degrees to CA
91	94.5	JZ	5	decent core, fractures at ~40 degrees to CA, with other various sets.
94.5	99.5	FZ	1	well healed fault gouge. upper fault contact at ~30 degrees to CA
99.5	108.5	BRKZ	4	small sections turned to rubble
108.5	113.5	JZ	4	some decent runs of competant core. fractures most common at about 60 degrees to CA
113.5	116.5	BRKZ	3	rough fracturing
116.5	117.7	JZ	2	interval has 2 fractures @ ~ 50 degrees to CA
117.7	120.2	BRKZ	5	rubble
120.2	127.3	JZ	4	pretty competant core, with fractures at ~50 degrees to CA
127.3	131.5	BRKZ	3	rough fracturing. not many clean fractures.
131.5	139.6	BRKZ	2	fair competency. many fractures around 50 degrees to CA
139.6	143.8	FZ	1	plenty of broken core with small amounts of gouge
143.8	153.5	BRKZ	3	rough fracturing of moderate intensity.
153.5	158.5	BRKZ	5	rubbly core, minor gougey bits

Blackwater Project
Drill Summary - Structure

BW0346

From (m)	To (m)	Structure	Strength	Comments
158.5	167	FZ	1	shardy, rubbly core. not much gouge, but some local poor recovery
167	168	FL	3	"lost recovery"
168	179.9	BRKZ	3	some well broken core, mixed with small good runs of core. shardy fracturing.
179.9	186.4	FZ	2	rubbly core, with crumbly well healed gouge. section of "no recovery" at 184
186.4	187.5	JZ	2	short secton of core with few fractures. fractures at about 60 degrees to CA
187.5	190.3	BRKZ	4	well broken core, rubble, some redrill
190.3	194.1	BRKZ	3	slightly more competant core than above unit. fracture angles from 40-60 degrees
194.1	196.8	BRKZ	5	rubbly core, rough fractures
196.8	201.9	JZ	4	a few short rough sections, but overall pretty competant rock. joint set at 30 degrees to CA
201.9	203.5	BRKZ	5	small rubbly section
203.5	214	JZ	5	some sections a bit better than others, but a pretty competant unit. mostly clean planar fractures. crosscutting joints at right angles to each other, at approx +45 and -45 degrees to CA
214	221.5	BRKZ	3	many random fractures
221.5	227	FZ	3	lots of rubble and gouge
227	231.8	FZ	1	very rubbly with section of broken fragmental core
231.8	233	FZ	5	totally gouge
233	243.8	FZ	2	gouge, with some rubble; bit of lost recovery
243.8	248.6	FZ	4	very very rubbly, and gouge
248.6	250	FZ	2	less faulting intensity than surrounding intervals, but still bad rock
250	259	FZ	5	totally gouge

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Blackwater Project
Drill Logs

Hole ID:	BW0347	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375805
Depth (m):	119.5	Date Started:	11/02/2012	Casing Size:	HWT	Northing:	5892649.56
Azimuth:	0	Date Completed:	14/02/2012	Casing (m):	30	Elevation (m):	1611
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50.5	147.6	-89
100	149.9	-89.4

Blackwater Project
Drill Summary - Lithology

BW0347

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	29.34	OB							
29.34	57.1	VC	ms	LAP	M	GRY	FLT	GR30+	75:25 - 50:50 Mafic:Felsic clasts srounded-sub-rounded, matrix supported, 1-40mm clasts. Oxidized FP's and locally moderatley pervasive.
57.1	66	VC	ms	CA	M	GRY	DEP	GR10	50:50 Mafic :felsic, well sorted, 1-3mm clasts, clast dominant but matrix supported. Epiclastic?
66	119.5	VC	ms	LAP	D	GRY			95:5 Mafic:Felsic, poorly sorted, sub-R to sub-A, matrix supported, clasts; amygdaloidal;massive;porphyritic.

Blackwater Project
Drill Summary - Alteration

BW0347		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
29.34	51	O		0	CLST	3	MTRX	2	REP	1	SIL	CLST	2	LIM	FC	4	Silica weak-mod matrix dominant, select clasts silicified. Mafic clasts moderatley clay replaced, Amphiboles in mafics replaced by clays. FP's hairline fractures, haloing clasts, and DI limonite oxidation products locally assoc with Hm.
51	61	O		0	CLST	3	MTRX	2	REP	1	SIL	CLST	2	LIM	FC	3	similar, locally vuggy.
61	82	T		0	CLST	2	MTRX	3	REP	1	SIL	PATC	2	LIM	FR	2	similar, but mineralized. Only oxidized on FP's. Patchy blebs of Garnet
82	91	S		0	CLST	3	MTRX	3	REP	1	SIL	PATC	2	SIL	AMYG	1	similar, with garnets
91	101	S	FC	2	CLST	3	MTRX	3	REP	1	SIL	CLST	2	GRNT	PATC	2	chlorite rich gouge, and chlorite on FP's
101	119.5	S	FC	2	CLST	2	MTRX	1		0	SIL	CLST	1				

Blackwater Project
Drill Summary - Mineralization

BW0347		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
29.34	51		0		0		0	Goe	FP	7	Hm	FP	1				Oxides fracture controlled halojng clasts and DI.
51	61		0		0		0	Goe	FP	5	Hm	FP	0.5				
61	71	VN	0.1	VN	0.1	DI	0.5	Ga	VN	0.1	Ga	VN	0.1				Ga-Py-Sp VN'd. Po-Ga DI's.
71	82	FP	0.1		0	BB	1	Ga	DI	0.5	Grnt	BB	0.1	Cp	BB	0.1	Garnet blebs locally in matrix surrounded by silica and in silica filled amygdules. Po-Ga-Py-CP fill centers of amygdules with silica filling rest.
82	110	FP	0.5	SP	0.5	DI	1	Grnt	BB	2	Ga	DI	0.1				localized DI's of Ga assoc with halos of Sp. Sp-Py blebs replacing clasts together, atypical colour. Blebs of white hard mineral with brown GRNT within, blebs throughout.
110	119.5	FP	1.5	CR	0.5	CR	0.5	Ga	VN	0.1							Py infilling fault gouge and on FP's. Po specks partially replacing clasts with Sp.

Blackwater Project
Drill Summary - Structure

BW0347

From (m)	To (m)	Structure	Strength	Comments
29.34	34	BRKZ	3	broken with small jointed zones of competent rock <1m.
34	43.59	JZ	4	70>25>30>45 dtca.
43.59	44.04	FZ	4	
44.04	44.62	JZ	4	
44.62	45	FL	4	
45	51.5	FZ	3	broken rock minor-moderate gouge locally. Driller said most of run was clay/sand and washed away.
51.5	54.79	JZ	3	
54.79	55.37	FL	5	abundant gouge, moderate Bx.
55.37	57.1	FZ	3	rehealed
57.1	61.34	FZ	5	abundant gouge/Bx
61.34	62.4	BRKZ	1	non measureable fractures.
62.4	66.1	FL	3	short interval, washed away?
66.1	69.3	JZ	2	50>60>40
69.3	72.1	BRKZ	3	
72.1	72.34	FL	4	
72.34	74.5	BRKZ	3	
74.5	80	JZ	2	50>45>30>5 dtca.
80	80.7	BRKZ	4	
80.7	81.35	JZ	2	35>45
81.35	85.23	FL	5	broken abundant gouge.
85.23	85.6	JZ	3	
85.6	90	FZ	3	local gouge/Bx. Small competent BRKN zones.
90	92	JZ	3	50>60 dtca.
92	94.1	FL	5	low angle fault locally constrained @5dtca.
94.1	103.5	FZ	4	gouge washed away according to driller.
103.5	106.2	FL	5	gouge=breccia.
106.2	110.2	FZ	4	
110.2	113.3	FL	5	abundant gouge>Bx

Blackwater Project
Drill Summary - Structure

BW0347

From (m)	To (m)	Structure	Strength	Comments
113.3	119.5	FZ	4	broken rock, moderate gouge.

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Blackwater Project
Drill Logs

Hole ID:	BW0348	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375251.78
Depth (m):	346	Date Started:	10/02/2012	Casing Size:	HWT	Northing:	5893350.58
Azimuth:	0	Date Completed:	18/02/2012	Casing (m):	9	Elevation (m):	1538
Dip:	-90	Logged By:	KOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
51	22.9	-89.1
100	43.3	-89.3
150	10.6	-89.4
199	30.4	-89.6
250	40.4	-89.4
300	9.4	-89.3
346	103.1	-89.7

Blackwater Project
Drill Summary - Lithology

BW0348

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9	OB							
9	25.5	FLPT	volc	LAP	L	GRY	DEP	GR30+	Felsic lapilil tuff with 100% felsic clasts. Clasts: rounded to subrounded, massive to laminated, sericite/clay altered, clast supported (locally variable).
25.5	52	FLPT	volc	LAP	M	GRY	DEP	GR30+	As above with up to 1% mafic clasts.
52	70.4	FT	lam		L	GRY			Light grey-green felsic tuff with convoluted laminations/flow banding. Local zones of hydrothermal brecciation (with a strong silica matrix). Bedding is convoluted but predominantly at 50 degrees to core axis.
70.4	89.5	FLPT	lam	LAP	M	GRN	DEP	GR30+	Green-grey felsic lapilli tuff with gradational contacts on both the upper and lower boundaries, poorly sorted, sub-angular.
89.5	100	VC	plm	LAP	M	GRN	DEP	GR30+	Felsic dominated (95%), poorly sorted, matrix supported, with sub-angular to sub-rounded clasts with sulphide mineralization (sp>po>py).
100	115	VC	plm	LAP	M	GRN	DEP	GR30+	Similar to above with more mafic clasts. Volcaniclastic with ~25% mafic clasts, sub-angular to sub-rounded, poorly sorted with gradational bounding contacts. Felsic clasts are both massive and banded and have be chlorite and clay altered and sulphide
115	140	VC	plm	LAP	M	GRN	FLT	GR30+	Same as above with more mafic clasts and better sorted. The lower contact is gradational and within a fault zone - faulted contact?
140	187	FT	lam		M	RD	DEP	GR30+	Laminated felsic tuff with laminations oriented from 30-40 degrees TCA - some convoluted laminations but pretty consistant with range given. Intervals where alteration obscures the primary texture of the rock.
187	292	FLPT	lpt	LAP	M	GRN	DEP	GR30+	Felsic lapilli tuff, medium grey to green, poorly sorted, matrix supported, intensely altered so that primary texture is typically obscured by alteration where clast edges are blurred. Small (<1m) intermittent intervals of laminated felsic tuff with
292	346	FLPT	lpt	LAP	M	GRN			As above without the intervals of laminated felsic tuff. Polymictic = laminated felsic clasts, massive clasts, chloritized clasts.

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Blackwater Project
Drill Summary - Alteration

BW0348		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9	25.5	T	CLST	2	CLST	4	MTRX	3	CLST	4	LIM	FR	1				Weak limonite oxidation on fracture planes. Strong sericite/clay alteration of clasts. Some chlorite alteration of clasts. Groundmass is strongly silicified.
25.5	35.5	S	CLST	3	CLST	4	MTRX	2	CLST	3							Sulphide Zone: loss of limonite weathering. Decreasee in sericite and silica, increase in chlorite from interval above.
35.5	59	S	PATC	3	CLST	3	PERV	3	CLST	4	CHL	FR	1				Increase in sericite and silica from interval above. Moderate clay alteration of clasts. Chlorite alteration is patchy and not restricted to clasts. Silica alteration is pervasive to patchy (especially in laminated felsic tuff)
59	70.4	S	PATC	2	REP	4	PATC	3	REP	5							Sericte and clay replacement of clasts and bands in laminations. Sililca alteration following bands in laminations as well as patchy washes +/- chlorite.
70.4	79	S	CLST	3	CLST	3	MTRX	3	CLST	4							Strong silica alteration of the matrix, strong sericite, chlorite and clay alteration of clasts.
79	89.5	S	CLST	3	CLST	3	MTRX	2	CLST	3	SER	MTRX	2				Sericite alteration of clasts and groundmass, chlorite and clay alteration of clasts. Silica alteration is weak to moderate and dominant in the matrix.
89.5	100	S	CLST	4	CLST	3	MTRX	3	PATC	3							Stronger chlorite than above, increasing with depth. Silica alteration is patchy in the matrix, patchy sericite alteration, chlorite and clay alteration of clasts.
100	115	S	CLST	3	CLST	3	MTRX	2	MTRX	3							Chlorite and clay alteration of clasts, sericite and silica alteration of the matrix.
115	128.5	S	CLST	3	CLST	3	MTRX	2	MTRX	3	CHL	FR	1				similar to above with chlorite on fracture planes with slickensides
128.5	140	S	PERV	3	CLST	2	MTRX	2	MTRX	3	CLY	FR	4	CHL	FR	3	Strong clay on fractures, chlorite is pervasive.
140	163	S	PERV	4	FR	3	PERV	4	PERV	3	CHL	FR	4				Strong chlorite and clay on fractures planes, pervasive silica, sericite alteration is pervasive and strongest as replacement of tiny ?plagioclase crystals
163	181.3	S	DEF	3	FC	3	PERV	2		0							Strong mechanical clay healing a fault gouge, chlorite alteration throughout, silica alteration is pervasive, weak sericite alteration evident.

Blackwater Project
Drill Summary - Alteration

BW0348		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
181.3	201	S	PATC	3	FR	2	PATC	3	PERV	3	CHL	FR	3	HM	FR	1	More sericite than above, clay on fracture planes, chlorite is patchy and on fracture planes, silica alteration is patchy to pervasive.
201	226	S	FR	5	FR	1	MTRX	4	PATC	1	CHL	PATC	4	HM	FR	1	Less sericite than above, more chlorite than above, slightly more intense silicia, hematite on fracture planes.
226	242	S	FR	5	FR	4	PERV	3	PATC	2	HM	FR	1	CHL	PERV	4	Intervals where the texture is obscured by alteration, weak hematite on fracture planes, chlorite is intense on fracture planes and pervasive throughout the rock giving it a strong green colour. Sericite alteration is variable from weak to moderate and ap
242	248.5	S	FR	5	FR	3	MTRX	4	MTRX	4	HM	FR	1	SER	CLST	2	Similar to alteration interval above, with stronger chlorite alteration of clasts, silica alteration is strongest in the matrix but also altering banded felsic clasts.
248.5	257	S	PATC	2	CLST	1	PERV	3	PATC	2	CHL	CLST	3	CHL	FR	3	Chlorite alteration is strong, although weaker than overlying interval. Texture is typically obscured by the alteratio so difficult to observe.
257	285.3	S	CLST	3	FR	2	MTRX	3	PATC	2	CLY	CLST	2	CHL	PATC	4	Strongly chloritized, the patchy chlorite alteration tends to follow the cryptic laminations of the laminated felsic tuff intervals - this patchy alteration is associated with concentrations of disseminated pyrite and as vein centric alteration halos.
285.3	329	S	CLST	3	CLST	2	MTRX	3	PERV	3	CHL	FR	2	CHL	PERV	1	Chlorite alteration is strong and clast dominant, also present on fracture planes with marcasite. Sericite alteration is pervasve to patchy and can be found in both the clasts and the matrix.
329	346	S	FR	3	FR	3	PERV	3	PATC	3	CHL	CLST	3	CHL	FR	3	Strong chlorite alteration of clasts, pervasive patches, and on fracture planes. Silica alteration of the matrix and some clasts, sericite alteration is pervasive.

Blackwater Project
Drill Summary - Mineralization

BW0348		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9	23	CR	0.5	CR	0.1		0	Jaro	FP	0.5	Dbs	VN	1.5	Ga	CR	0.1	Limonite (?Jarosite) on fracture planes. DBS is 50% veined and 50% disseminated (includes pyrite, sphalerite, ?galena). Pyrite, sphalerite, and trace galena in disseminations in felsic clasts.
23	41.5	CR	0.5	CR	1		0	Dbs	VN	1							Dbs as veins and disseminations. Disseminations of very fine grained sulpide clusters (pyrite, sphalerite +/- galena) in felsic clasts creating a salt and pepper look to several of the clasts in this interval.
41.5	63	CR	0.5	CR	1		0	Dbs	DI	2							DBS is mineralizing as veins and long, dendric disseminations that follow the banding of the laminated host rock. Red sphalerite and fine grained pyrite mineralizing in clasts as little black clusters.
63	73	DI	0.5	CR	1		0	Dbs	DEN	2	Ga	DI	0.5				Minor pyrite and galena disseminations. DBS as dendric disseminations and minor veinlets oriented at 50 degrees TCA. Sphalerite as red clusters in clasts.
73	79	DI	1	CR	3	CR	1	Dbs	DEN	1							More sphalerite than above, the appearance of pyrrhotite as disseminations in clasts.
79	103	DI	1	CR	1	CR	1.5	Dbs	DEN	1.5	Ga	DI	0.1				Pyrite disseminations throughout and as minor veins with galena. Trace galena disseminations. DBS as dendric disseminations and as discontinuous hairline veinlets @ 30 degrees TCA. Sphalerite and pyrrhotite as blebbs together in clasts.
103	111	DI	1	CR	2.5	CR	1.5	Dbs	DEN	0.1	Ga	DI	0.1				As above with more sphalerite and lesser DBS than overlying interval.
111	134	DI	0.5	CR	2	CR	0.5	Dbs	DEN	0.1							Less mineralization than above with sphalerite and pyrrhotite as disseminated blebbs with mafic clasts (some mineralization of felsic clasts too).
134	142	DI	1.5	CR	1.5	CR	1	Dbs	DEN	0.5							Sphalerite and pyrrhotite disseminations in clasts, minor pyrite and DBS disseminations throughout.
142	163	DI	0.5	DI	1	DI	0.5										less sulphide than above. Sphalerite, pyrrhotite and pyrite disseminations throughout.

Blackwater Project
Drill Summary - Mineralization

BW0348		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
163	181.3		1.5		0.5		0.5	Apy		0.1							Pyrite, sphalerite, pyrrhotite and arsenopyrite as fine grained 'sulphide goo' veins throughout the clay healed fault.
181.3	200	VN	0.5	DI	2	BB	2.5	Dbs	DEN	1.5	Mrc	FP	0.1				Pyrite as veins with chlorite and pyrrhotite, sphalerite disseminations, pyrrhotite as blebbs and lesser as veins, dendric disseminations of DBS. Marcasite on fracture planes with chlorite.
200	217	BB	1	DI	1	BB	2	Po	BB	2	Dbs	DEN	2	Mrc	FP	0.1	less sphalerite than above, more DBS and same veins as above.
217	233	VN	0.5	BB	0.5	BB	2.5	Dbs	DEN	1	Mrc	FP	0.1	Viv	FP	0.1	Brassy pyrite blebbs and veins with chlorite. Po as blebby masses, sp as disseminated clusters-blebbs, DBS as dendric disseminations throughout the matrix, subhedral to euhedral vivianite on fracture planes, marcasite on fracture planes.
233	242	VN	0.5	DI	2	BB	1	Dbs	DEN	1.5	Mrc	FP	0.5	Py	BB	1	As above with more sp, less po, no vivianite.
242	250.5	BB	1	DI	1.5	BB	1.5	Dbs	FP	1	Py	VN	0.5	Mrc	FP	0.1	Pyrite as brassy disseminations and veins with chlorite, marcasite on fracture planes, pyrrhotite blebbs, sphalerite dissemination throughout but concentrated in clasts. DBS as dendric disseminations.
250.5	257	VN	1	DI	1.5	BB	2	Dbs	DEN	1.5	Mrc	FP	0.1	Py	DI	1	More veined pyrite than above, more disseminations of pyrite.
257	263.5	VN	1.5	BB	1	BB	1.5	Grnt	BB	0.1	Cp	SP	0.1	Py	DI	0.5	Pyite: veined and blebby with chlorite alteration halos, disseminations around veins are more frequent in areas where cryptic laminations control chlorite alteration. Disseminated pyrite is strong along pathway at 50 degrees TCA. Garnet as coarse gra
263.5	280	DI	1.5	BB	1.5	BB	1.5	Py	VN	1	Grnt	BB	0.1	Apy	SP	0.1	Similar to above with blebby sphalerite, pyrrhotite, pyrite (preferentially mineralizing clasts). Veins of pyrite with chlorite alteration halos (at 50 and 30 degrees TCA), trace Arsenopyrite in pyrite-pyrrhotite blebbs, minor garnet blebbs with sul

Blackwater Project
Drill Summary - Mineralization

BW0348		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
280	290.5	DI	2.5	BB	1.5	BB	15	Dbs	DEN	1							Pyrite as disseminations that are typically subhedral to euhedral, some blebby. Pyrrhotite and sphalerite disseminated blebbs, preferentially mineralizing clasts but present throughout. DBS as dendric disseminations, and black sooty pyrite disseminat
290.5	313	VN	1	CR	2	CR	1.5	Dbs	DEN	1							Pyrite as veins and as minor clast replacement with sphalerite and pyrrhotite (biotite replacement halos). Dendric DBS disseminations and discontinuous veinlets.
313	328	VN	1.5	CR	2	CR	1.5	Dbs	DEN	1.5	Apy	VN	0.5				Sulphide mineralization of clasts: i) disseminated within, ii) rimming or iii) complete replacement. Similar style in mineralization as above with more DBS and accesory Aspy in veinlets. Veins of fine grained sulphide, likely pyrite form hairline vei
328	346	BB	1.5	DI	1.5	CR	3	Apy	SP	0.1	Dbs	DEN	1.5				DBS as dendric disseminations, pyrite as bebbly specks, pyrrhotite as clast replacement and red sphalerite disseminations. Trace Aspy in pyrrhotite blebbs.

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Blackwater Project
Drill Summary - Structure

BW0348

From (m)	To (m)	Structure	Strength	Comments
9	15.3	BRKZ	4	Intense broken zone with clay healed gouge zone at 15.3 m oriented at 30 degrees TCA.
15.3	19.8	JZ	4	Joint zone with main orientation of jointing around 15-20 degrees TCA. Local broken zones.
19.8	25.5	BRKZ	4	Broken zone with clay gouge at 19.8 m oriented 15 degrees TCA and clay gouge at 26.2 m oriented at 50 degrees TCA. Internal intervals of jointing oriented at 15, 30, and 80 degrees TCA.
25.5	31.5	JZ	4	Intense joint zone with local internal broken zones. Jointing is at 30-45 degree TCA.
31.5	38.5	BRKZ	4	Broken zone with clay healed gouge at 30 degrees TCA.
38.5	41.1	JZ		Joint jone with 2 orientations of jointing: 1) 30 degrees TCA and 2) 50 degrees TCA.
41.1	59.5	FZ	4	Fault zone with local zones of competant core: jointing at 15-20, 30 degrees TCA. Intense broken zones and clay healed gouge: gouge at 15-30 degrees TCA.
59.5	67	JZ	4	Joint zone of moderate to strong intensity with joint sets at 30, 15, and 70 degrees TCA.
67	73.6	BRKZ	4	Broken zone with clay, chlorite and slickensides on fracture planes. Fractures tend to be at 20 degrees TCA.
73.6	74.8	FL	5	Fault with clay healed gouge with chlorite and slickensides oriented at 50 degrees TCA.
74.8	78.5	JZ	3	Joint zone with joint sets at 50 degrees TCA, less prominant jointing also at 30 degrees TCA.
78.5	89.5	FZ	4	Fault zone with clay healed gouge zones with chlorite and slickensides on fractures, intense broken zones, and fracturing at 0-30 and 50 degrees TCA.
89.5	100	JZ	3	Joint zone with main joint set at 30 degrees TCA and lesser at 10 and 20 degrees TCA.
100	104.5	FZ	5	clay healed gouge zone that is long and continuous over the entire interval, oriented at 30 degrees TCA.
104.5	112	JZ	4	Joint zone with local broken zones and clay healed gouge zone at 10 degrees TCA.
112	163	FL	4	Intense fault zone with regular clay gouge zones and intense broken zones, minor slickensides on fracture planes. Fractures at 20-40 degrees (mostly 40) TCA and lesser at 70 degrees TCA.
163	181.3	FL	5	Intense fault zone with clay healed gouge over the entire interval - well healed with fine grained sulphide 'goo' at an angle os 40-45 degrees TCA.
181.3	210	JZ	4	Joint zone with local broken zones with pyrite, marcasite and chlorite on fracture planes. Joint sets: a) 0-10 b) 25-30 c) 50-60 degrees TCA.
210	217.5	BRKZ	3	Broken zone with local intense broken zones with intervals of competant core with fracture sets same as above.
217.5	226	JZ	5	Intense joint zone with cave and broken zones. Fracture planes have chlorite, clay, marcasite, pyrite, hematite and vivianite. Joint sets at: a) 40, b) 15-20, c) 60 degrees TCA.
226	250.5	BZ	3	Intense broken zones with intermittent intervals of competant core. Chlorite, clay, marcasite, pyrite, hematite and vivianite on fractures.
250.5	256.5	JZ	2	Moderate joint zone with fracture sets at 50 and 20 degrees TCA

Blackwater Project
Drill Summary - Structure

BW0348

From (m)	To (m)	Structure	Strength	Comments
256.5	269	JZ	4	Joint zone with local minor broken zones. Joint sets at 30-40 and 50 degrees TCA.
269	271	BRKZ	4	Moderate to intense broken zone with clay to gravel sized peices.
271	284.8	JZ	4	Joint zone with a clay gouge at 281.5 m oriented at 30 degrees TCA. Joint sets at 30, 40, 50 degrees TCA.
284.8	290.6	BRKZ	3	Broken zone with chlorite and clay on fracture planes, jointing and fractures at 30 degrees TCA.
290.6	294.6	FZ	4	Fault zone with clay gouge at 50 degrees TCA with intense broken zones.
294.6	297	JZ	3	Joint zone with fractures oriented at 30 and 15 degrees TCA.
297	314.3	BRKZ	3	Broken zone with cave and redrill - area causing problems for drilling.
314.3	318.4	JZ	4	Joint zone with jointing at 30 and 50 degrees TCA.
318.4	322	BRKZ	3	Broken zone with clay gouge at 30 degrees TCA.
322	329.5	JZ	3	Joint zone with multiple orientations of jointing: at 15, 30 and 50 degrees TCA
329.5	332.8	BRKZ	2	Broken Zone
332.8	333	FL	4	Small clay healed gouge at 30 degrees TCA.
333	346	JZ	4	Joint zone with jointing at 15, 30 and 50 degrees TCA

Blackwater Project
Drill Logs

Hole ID:	BW0349	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375426.27
Depth (m):	502	Date Started:	09/02/2012	Casing Size:	HWT	Northing:	5892673.75
Azimuth:	270	Date Completed:	19/02/2012	Casing (m):	3	Elevation (m):	1627
Dip:	-60	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
50	267.3	-60.5
100	268.9	-60.7
152	270.2	-60.4
200	271	-60.5
250	271	-60.2
302.5	266	-60.2
352	271.5	-58.2
400	271.9	-56.9
451	272.9	-55.2

Blackwater Project
Drill Summary - Lithology

BW0349

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							Overburden. 3m casing.
3	53.3	FLPT	lpt	LAP	L	GRY	DEP	SH	Oxidized FLPT, rare andesite clasts at 18.5 and 25.1m. Majority of clasts have increase in clay alteration. Groundmass is silica rich. Clasts are laminated and range in size from 1-10 cm.
53.3	67.85	VC	lpt	LAP	M	GRY	DEP	SH	Dark grey volcaniclastic unit. Majority mafic andesite clasts. Small interval of mafic andesite within the FLPT unit.
67.85	82.6	FLPT	lpt	LAP	L	GRY	DEP	SH	Felsic lapilli tuff with 1 % mafic clasts. Strong sulphides, dbs throughout. Clast are rounded to angular.
82.6	94.5	AND	volc	LAP	M	GRY	FLT	GR30+	volcaniclastic andesite. Possible intrusive. Equigranular.
94.5	202	AND	equi	CA	M	GRY	DEP	GR30+	Dark grey brown equigranular andesite. Gradational alterationj contacts throughout. Calcite veins throughout. No oxides. Increase silica alteration where equigranular textures are present. Unit ranges from dark grey/brown to medium grey.Could very we
202	270	AND	equi	CA	M	GRY	DEP	GR30+	similar to above, dyke at 217.5 to 218m. 40 degrees to core axis. Strong chlorite on margins with Po. Intrusive center.
270	358	AND	por	LAP	D	GRY	FLT	GR30+	Andesite, massive to porphyritic, with feldspar phenocrysts subhedral and sometimes rounded. Some brecciated zones
358	374.4	VC	lptbx	LAP	D	GRY	DEP	GR10	Volcanoclastic increasing grain size down hole, felsic clasts (1-5cm) are larger then mafic (1-2cm) increasing silification down hole, locally moderately fractured, and minor faults at high angle to CA.
374.4	432.4	FLPT	lptbx	LAP	L	GRY	DEP	SH	Ash rich FLPT, 5-10% Lapilli possibly rare small blocks, ash is generally course, interval of finer ash are 10 -50cm and more common down hole. Lithology is intermitantly oxidized controlled by fracture. lower contact is 30 deg to CA.
432.4	502	AND	mas	CA	D	GRY			Massive amygdoloidial, andesite, pervasive biotite alteration if locally overprinted by chlorite, Amygdioles are rimmed by Silica, and filled by chlorite and Po. Local hydrothermal breccia with weak clay alteration of matrix, clasts are < 5mm. Brecci

Blackwater Project
Drill Summary - Alteration

BW0349		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
407.1	420.4	T	FR	3	MTRX	2	REP	5	CLST	2	SIL	MTRX	3	LIM	FC	2	Weak Limonite on fracture surface, decreasing down hole. Silca preferentially replaceing clasts. minor local hemitite alteration in halos 1-3mm around fracture
420.4	432.4	S	FR	2	MTRX	2	REP	5	CLST	2	SIL	MTRX	3	LIM	FR	1	Weak Limonite on fracture surface, increasing down hole. Increaseing silica alteration down hole. Silca preferentially replaceing clasts
432.4	433.7	T	PERV	2	PERV	2	REP	0	PERV	2	SIL	PERV	1	LIM	FR	1	Bleaching with biotite alteration increasing down hole from lithology.
433.7	465	S	PATC	3	PATC	2	PERV	3	PATC	2	BIOT	PERV	3				Local patchy chloite/ clay alteration over printing pervasive Biotite alteration
465	502	S	PATC	3	PATC	2	PERV	3	PATC	2	BIOT	PERV	3	CLY	FC	4	Local patchy chloite/ clay alteration over printing pervasive Biotite alteration. Clay alteration halos around calcite+qtz Veins.

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Blackwater Project
Drill Summary - Alteration

BW0349		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	53.3	T		0	CLST	4	MTRX	3	CLST	3	LIM	FC	4				Limonite rich fractures. Clay dominant clasts. Silica rich matrix.
53.3	67.5	T	PERV	4	FR	2	PERV	2	PERV	2	BIOT	PERV	3				Mafic rich unit. Chlorite and biotite strong. Limonite decreasing but still on fractures.
67.5	82.7	T	PERV	1	CLST	2	PERV	3	CLST	3	LIM	FR	3				felcic tuff with clay/serecite clasts. silica rich matrix.
82.7	94.6	T	PERV	4	FR	1	PERV	1	PERV	1	BIOT	PERV	4	LIM	FR	1	chlorite/biotite rich andesite
94.6	142	S	PERV	3	FR	2	PATC	3	PERV	1	BIOT	PERV	4				strong chlorite and biotite throghout with local intervals of increase silica. Increase silica brings out intrusive textures. Intrusive textures obscured throughout??
142	270	S	PERV	4		0	PATC	2	PATC	1	BIOT	PATC	2				waves of bleaching/silica alteration throughout. Calcite veins. Veins with increase chlorite/po
270	358.5	S	PATC	2		0	PERV	2		0	BIOT	PATC	2	CAL	VN	2	Patchy and vein dominant chlorite alteration, weak pervasive silica, with patchy biotite alteration
358.5	361	T	PATC	2		0	PERV	2		0	BIOT	PATC	2	LIM	FR	1	Limonite on fracture associated with fault zone
361	365.2	S	FR	4	PERV	2	PERV	1	CLST	1							Strong clorite alteration along fracture associated with fractue s and faulting.
365.2	366.4	T	FR	3	MTRX	2	REP	5	CLST	2	SIL	MTRX	3	LIM	FR	1	Limonite on fracture associated with fault zone
366.4	373	S	FR	3	MTRX	2	REP	5	CLST	2	SIL	MTRX	3				Increaseing silica alteration down hole, mafic clast have sericite and clay alteration of presumed feldspar.
373	376.8	T	FR	3	MTRX	2	REP	5	CLST	2	SIL	MTRX	3	LIM	FR	1	Weak Limonite on fracture surface, increasing down hole. Increaseing silica alteration down hole. Silca preferentially replaceing clasts
376.8	387	T	FR	1	MTRX	2	REP	5	CLST	2	SIL	MTRX	3	LIM	FC	4	Moderate to strong Limonite formoing halos around fracture goethite along fracture surfaces. Silca preferentially replaceing clasts
387	395.7	T	FR	1	MTRX	2	REP	5	CLST	2	SIL	MTRX	3	LIM	FC	1	Weak Limonite on fracture surface, decreasing down hole. Silca preferentially replaceing clasts. minor local hemitite alteration in halos 1-3mm around fracture
395.7	407.1	S	FR	3	MTRX	2	REP	5	CLST	2	SIL	MTRX	3				Primary textures appear more sharp and less disturbed over this interval relitive to the rest of the FLPT in this Lithology. Possible difference in porosity/ silification? interval is slight finer grained over all

Blackwater Project
Drill Summary - Mineralization

BW0349		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	37	DI	0.1		0		0										weak sulphides in upper transition zone. Minor pyrite.
37	53.5	DI	0.5	DI	0.1		0	Dbs	DEN	2							increase in DBS. Strong mineralization.
53.5	67.2	DI	0.5	DI	1	DI	0.1	Dbs	DEN	0.5							decrease in dbs within the majic units.
67.2	82.7	DI	1	DI	1		0	Dbs	DEN	3							increase in DBS in FLTP zone. Alteration halos around some of the sulphides.
82.7	94.6	DI	1	DI	1	DI	3										decrease in dbs, increase in Po.
94.6	146	DI	0.1		0		0										trace trace pyrite present. Dead rock.
146	174.1	DI	0.5		0	DI	0.5										very fine grain sulphides. Some fractures contain increase Po. Chlorite veinlets with associated sulphides.
174.1	202	DI	0.1		0	DI	0.5	Po	VN	0.1							same as above, rare chlorite veins with increase in Po.
202	221.2	DI	0.1		0	DI	1										diss po throughout. Rare fractures with pyrite. Chlorite is routinely associated with Po.
221.2	240	DI	0.5		0	DI	0.5										
240	270	DI	0.5		0	DI	1										fine grain po throughout.
270	331	DI	0.5	VN	0.2	DI	1.5	Apy	FP	0.1							Di po and py, with infrequent veins of po/py/sphal, arspy coating some fractures
331	349	DI	0.5		0	DI	1	Po	VN	0.5							Py may be non-magnetic Po
349	358.5	DI	0.5		0	DI	1	Po	VN	0.5							Py may be non-magnetic Po
358.5	361		0		0		0	Jaro	FP	2							Oxidation has destroyed sulphides
361	365.5	DI	0.5		0	DI	0.5										Diseminate py and po < .5mm
365.5	374.4	DI	0.1		0	DI	1	Apy	DI	0.1							Diseminated Po in matrix and diseminated in mafic clasts, mafic clast can be 5% sulphide.
374.4	387	DI	0.1	DI	5		0	Dbs	DEN	1	Jaro	FP	10				Diseminated SP and Dendritic sulphides trend to ward blebs associated with garnet alteration down hole.
387	395.7	DI	0.1	DI	5		0	Dbs	DEN	1	Jaro	FP	1				Sulphides are diseeminated to blebs moderately concentrated near "skarn/garnet" alteration.

Blackwater Project
Drill Summary - Mineralization

BW0349		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
395.7	407.1	DI	0.1	DI	5		0	Dbs	DEN	1							Sulphides are diseeminated to blebs moderately concentrated near "skarn/garnet" alteration.
407.1	420.4	DI	0.1	DI	5		0	Dbs	DEN	1	Jaro	FP	1				Sulphides are diseeminated to blebs moderately concentrated near "skarn/garnet" alteration.
420.4	432.4	DI	0.1	DI	5		0	Dbs	DEN	1							Sulphides are diseeminated to blebs moderately concentrated near "skarn/garnet" alteration.
432.4	433.6		0		0		0	Jaro	FP	1							Jarocite on fracture, and bleaching from Lithology contact decreasing down hole.
433.6	447		0		0	FP	0.5	Po	DI	1							Po and Chlorite filling amygdioles lined with Silica.
447	472		0		0	DI	0.1										Trace diseminated Po associated with chlorite+clay+silica Alteration.
472	490		0		0	DI	0.1	Po	VN	0.1							Trace diseminated Po associated with chlorite+clay+silica Alteration. Locally Po in Calcite+qtz veins.
490	502		0		0	DI	0.1										Trace diseminated Po associated with chlorite+clay+silica Alteration.

Blackwater Project
Drill Summary - Structure

BW0349

From (m)	To (m)	Structure	Strength	Comments
3	25.6	JZ	3	moderate joining
25.6	27.36	BRKZ	3	broken zone
27.36	94.6	JZ	3	local broken zones
94.6	94.8	FL	5	small but intense fault. Clay gouge, rehealed, slicks present, movement can be noted.
94.8	130	JZ	3	competent rock, 40 degrees TCA
130	136.2	BRKZ	3	broken core, increase clay
136.2	146	JZ	3	jointing at 40 TCA
146	217.4	JZ	3	competant rock, some intervals broken due to redrill
217.4	217.9	VZ	5	vein/dyke
217.9	273	JZ	4	competant core.
273	277	BRKZ	2	Short broken zone with some calcite/talc infill and some re-healed clay gge
277	359.5	JZ	3	Joint zone, stick rock, with most fractures at 80 degree TCA
359.5	365.2	FZ	4	locally 50cm of fault Gauge, minor gauge through out, strong jointing through out.
365.2	414.1	JZ	4	Moderate jointing, and dominate fracture oriented at 20 deg to CA
414.1	421	BRKZ	3	Increasing intensity down hole
421	422.5	BRKZ	5	50% core loss, no gauge.
422.5	434.5	BRKZ	3	decreasing intensity down hole
434.5	502	JZ	2	fracture is 40- 60 deg to CA, fracture is exploited by Qtz-calcite veins.

Blackwater Project
Drill Logs

Hole ID:	BW0350	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374899.27
Depth (m):	368.5	Date Started:	10/02/2012	Casing Size:	HWT	Northing:	5893199.59
Azimuth:	0	Date Completed:	17/02/2012	Casing (m):	4.5	Elevation (m):	1543
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
57	70.3	-89.9
100	137.6	-89.9
151	225.2	-89.1
253	171.9	-89
301	188.1	-89.2
368.5	158.1	-88.7

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Blackwater Project
Drill Summary - Lithology

BW0350

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							
3	23	EC	cs	LAP	M	GRY	DEP	GR30	Sub-rounded light to medium grey clast supported epiclastic sequence, clast are predominantly felsic some with 5-10% mafic input grades into a more angular volcanoclastic unit
23	85.3	VC	ms	LAP	M	GRY	FLT	GR30+	Sub rounded to angular polymictic poorly sorted volcanoclastics, felsic clasts are more dominant as is the matrix. Locally clasts are replaced with sulphides and chlorite altered.
85.3	156	VC	ms	BLOCK	M	GRY	DEP	GR30	Medium to light grey polymictic poorly sorted volcanoclastics with local large blocks of ash tuff (>20cm) and 5-10cm sized angular andesite clasts) unit is locally annealed fault gouge
156	161.1	AND	autbx	LAP	D	GRY	DEP	GR10	Small sliver of clastic fragmental andesite
161.1	172	VC	bx	LAP	L	GRY	DEP	GR10	Locally brecciated polymicitic volcanoclastics dominated by felsics, Matrix is strongly altered close to upper contact
172	246.6	VC	cs	BLOCK	D	GRY	DEP	GR10	Continued volcanoclastic sequence with increased blocky angular mafic input locally clast supported
246.6	267.8	AND	bx	LAP	D	GRY	DEP	SH	Dark grey to black andesite flow breccia, reoccuring intervals of autobrecciated andesite with true breccia intervals every 40cm-1.5m, locally are amydaloidal and sub rounded
267.8	270.7	VC	bx	LAP	M	GRY	DEP	SH	Small volcanoclastic sequence dominated by andesite flow breccia with small intervals of felsic input with sharp contact into FLPT below
270.7	280	FLPT	bx	LAP	L	GRY	DEP	GR10	Strongly silica altered light grey angular felsic lapilli tuff breccia, tiightly packed poorly sorted grouping of ash tuff clasts
280	292	VC	plm	LAP	M	GRY			Polymicitc volcanoclastic sequence dominated by mafic clasts with ~25% laminated felsic tuff clasts, locally the unit is clast supported and moderate to strongly altered, andesite clasts can be block sized
292	307	VC	plm	BLOCK	M	GRY			Polymictic volcaniclastic with dominantly mafic clasts; clast supported with poorly sorted sub angular to sub rounded clasts
307	319.8	VC	cs	LAP	M	GRY	DEP	SH	Volcaniclastics with roughy equal ratios of mafic to felsic clasts, few clasts >64mm
319.8	320.6	FT	ms	CA	L	GRY	DEP	GR5	Matrix supported flesic tuff; somewhat monomictic with clasts <0.5mm
320.6	321.8	FLPT	lptbx	LAP	L	GRY	DEP	GR10	Felsic lapilli tuff with lapilli tuff breccia; Clast supported with sub angular to sub rounded felsic clasts

Blackwater Project
Drill Summary - Lithology

BW0350

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
321.8	326.1	VC	plm	BLOCK	M	GRY	DEP	GR30	Polymictic volcaniclastics with sub angular to sub rounded blocky clasts; predominantly mafic clasts
326.1	332.5	FLPT	lptbx	LAP	L	GRY			Light grey green felsic lapilli tuff with a few scattered mafic clasts < 2%, clasts are sub rounded, some banded texture present
332.5	345.2	VC	plm	LAP	D	GRY	DEP	SH	Dark greenish grey faulted volcaniclastics; some competent core<0.5m + fault/clay gge
345.2	347.5	AND	bx	LAP	D	GRY	DEP	SH	Greyish black andesite with flow breccia
347.5	351.7	VC	plm	LAP	D	GRY	DEP	SH	Dark grey polymictic volcaniclastics with relatively 50:50 mafic to felsic clasts
351.7	353.2	AND	bx	LAP	D	GRY	DEP	SH	Greyish black brecciated andesite with calcite veinlets and hairlines
353.2	368.5	VC	plm	LAP	M	GRY			Polymictic volcaniclastics with some localized sections more clast supported than others; intermediate matrix

Blackwater Project
Drill Summary - Alteration

BW0350		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	23	T	CLST	1	CLST	2	CLST	3	MTRX	2	LIM	FR	2	HM	CLST	2	Clasts are dominantly silica altered, 5-10% are chlorite altered, 5-10% altered to clay, weak sericite and clay altering matrix, limonite and hematite on fractures
23	35	T	CLST	1	CLST	2	CLST	3	MTRX	2	SIL	OP	2	LIM	FR	2	As above with slight silica overprint
35	56.1	S	FR	1	FR	1	CLST	2	MTRX	2							Sulphide zone, silica weakens slightly, sericite more visible in matrix
56.1	58	S		0	CLST	1	PERV	3	MTRX	2							locally intensified silica alteration
58	85.3	S		0		0	MTRX	3	MTRX	1							Silica pervasive in the matrix and also as primary alteration of clasts (before redeposition) weak sericite
85.3	114	S	FR	2		0	CLST	3	MTRX	2	SIL	MTRX	2				Silica (before redeposition of clasts), chlorite along fractures (yellow to green in color)
114	127	S	FR	2	CLST	1	CLST	3	MTRX	1							faulted and gouged core with silica altered clasts and weak chlorite on fractures
127	156	S	CLST	2		0	CLST	3	MTRX	1	ANH	VN	2				Anhydrite in planar veins, chlorite locally altering mafic clasts
156	161.1	S	FR	1		0		0	MTRX	1							Sericite altering matrix
161.1	172	S	CLST	2		0	PERV	3	MTRX	2							locally more intense silica near upper contact
172	230	S	FR	1		0	MTRX	2	MTRX	2							Matrix altered by silica/sericite
230	233	S	CLST	3		0	CLST	2	MTRX	2							Chlorite locally altering clasts to a dark green with abundant pyrrhotite
233	246.6	S		0		0	PERV	3	MTRX	2							More strongly altered volcanoclastics with strong silica and sericite between clasts and brecciations
246.6	267.8	S		0		0	MTRX	1	MTRX	1							minor alteration of matrix silica/sericite
267.8	280	S		0		0	PERV	4	MTRX	1							strong silica alteration obliterating clasts and dominating matrix
280	292	S		0		0	PERV	3	MTRX	2							continued strong silica alteration of volcanoclastics with andesite clasts displaying some infill of silica
292	310	S	CLST	2	VN	1	PERV	3		0							No sericite, some chlorite in clasts and some on fracture planes, weak clay as infill in veinlet/fracture plane; strong silica alteration

Blackwater Project
Drill Summary - Alteration

BW0350		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
310	319.8	S	FR	3	FR	1	PERV	3	CLST	2							Weak sericite in clasts, moderate chlorite on fracture planes, weak clay and moderate to strong pervasive silica
319.8	322.3	S	FR	2		0	PERV	4	MTRX	2							Weak sericite in matrix, weak chlorite on fracture planes, no clay, strong pervasive silica
322.3	326.1	S	FR	3		0	PERV	3	MTRX	1							Weak sericite, no clay, moderate chlorite on fracture planes and some in clasts, moderate silica
326.1	327	S	FR	1		0	PERV	4	MTRX	2							Some sericite in matrix almost as overprint, weak chlorite on fractures, no clay and strong pervasive silica
327	332.5	S	FR	3	FC	1	PERV	4	MTRX	3							Moderate sericite in matrix, moderate chlorite on fractures and some in clasts, strong pervasive silica
332.5	347.5	S	OP	4	PATC	4	OP	2	MTRX	1							Very weak sericite, strong chlorite as overprint in fault/clay gge and some on fractures of competent core, strong patchy clay, weak sericite
347.5	361	S	FR	3	FR	2	PERV	3	CLST	2							Weak sericite in clasts and weak clay on fractures and in veinlets, moderate chlorite on fractures and moderate pervasive silica
361	368.5	S	FR	2	FR	1	PERV	3	CLST	1							Very weak sericite in clasts, weak chlorite on fractures and some in matrix, moderate pervasive silica

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Blackwater Project
Drill Summary - Mineralization

BW0350		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	23	SP	0.1	SP	0		0										Trace sulphides, some leached sulphide sites
23	35	DI	1	DI	0.5	DI	0.5	Py	CR	0.1	Po	CR	0.1				Disseminated and clast replacement sulphides
35	80.5	CR	0.5	CR	0.1	CR	1	Py	VN	0.1							Pyrrhotite and pyrite dominantly replacing clasts, one small pyrite vein
80.5	104.5	CR	0.1	CR	0.1	CR	1										Trace pyrite/sphalerite minor pyrrhotite replacing clasts
104.5	107.5	DI	1	SP	0.1	SP	0.1										Fine grained grey pyrite in fault gouge
107.5	137	CR	0.1	CR	0.1	CR	0.1										specks of sulphides replacing clasts
137	156	GmR	0.5	GmR	0.1	GmR	0.5										Fine grained pyrite and pyrrhotite surrounding clasts in matrix
156	172	SP	0.1	SP	0.1	SP	0.1										Specks of sulphides
172	194.5	GmR	0.5	CR	0.5	CR	1										Sulphides replacing clasts and as disseminations in groundmass
194.5	215	CR	0.5	SP	0.1	CR	1	Cp	CR	0.1							Minor sulphides replacing andesitic clasts and disseminated thoughout matrix, mostly py/po
215	233	DI	1	DI	0.5	DI	1.5	Cp	DI	0.1							Increased sulphides as dissminations and spotty clast replacement, locally sulphides can be close 20-30% of clasts
233	253	DI	1	SP	0.1	DI	1.5	Cp	DI	0.1	Py	VN	0.1				Abundant disseminations, small cross cutting veinlets and infill of amygdules by mostly pyrite with pyrrhotite and trace chalcopyrite
253	270.7	DI	1.5	DI	0.5	DI	0.5	Cp	DI	0.1							Speckled and disseminated sulphides throughout
270.7	280	DI	0.5		0		0	Dbs	DEN	1							minor pyrite and DBS as flowery disseminations and small veinlets with dendritic branching
280	292	DI	1	DI	0.1	CR	1	Cp	DI	0.1							Pyrrhotite replacing clasts with some pyrite and trace chalcopyrite
292	307	DI	0.8	DI	0.1	CR	1	Cp	DI	0.1							Disseminated py, po in clasts/clast replacing, trace sph and cp
307	319.8	DI	0.8	CR	0.1	CR	0.5	Cp	DI	0.1	Mrc	FP	0.3				Slight decrease in po in clasts, trace sph also in clasts, trace cp and some marcasite on fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0350		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
319.8	320.6	DI	0.1	BB	0.5	BB	0.3	Cp	VN	0.1							Sph in blebs, po in blebs as well, disseminated trace py, trace cp in hairline
320.6	321.8	DI	0.1	BB	0.5	DI	0.1										Trace disseminated po and py, sph in blebs
321.8	326.1	VN	0.3		0	CR	0.8	Cp	DI	0.5							Po in clasts and some disseminated, some py on fractures and in hairlines, some cp in hairlines and some disseminated, marcasite on fractures
326.1	332.5	VN	0.3	BB	0.3	DI	0.1										Some py in veinlets/hairline and some nice euhedral py crystals on fracture planes, trace po and some sph in blebs
332.5	345.2	FP	0.3	BB	0.1	CR	0.5										Po in clasts, py on fracture planes, trace sph in blebs and in clasts
345.2	347.5	VN	0.1		0	BB	0.3										No sph, trace py in veinlets/hairlines, po in blebs and some in veinlets/hairlines
347.5	351.7	FP	0.1		0	CR	0.3										No sph, trace py as specks on fracture planes, po in clasts
351.7	353.2		0		0	SP	0.1										Trace po, no sph or py
353.2	368.5	BB	0.3	BB	0.1	CR	0.5	Mrc	FP	0.1							Py in blebs, trace sph, some po in clasts, trace marcasite on fracture planes

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Blackwater Project
Drill Summary - Structure

BW0350

From (m)	To (m)	Structure	Strength	Comments
3	35.4	JZ	4	joint set at 40 and 50 degrees
35.4	46	BRKZ	2	Broken core with some intact pieces
46	50.2	JZ	3	continued jointing at 40 and 50 degrees
50.2	53.5	BRKZ	3	small broken zone
53.5	60	JZ	3	joinitng at 40 and 50-60 degrees
60	66	FL	2	small fault with broken crushed core and redrill
66	71.5	JZ	3	jointing at 40 and 50 degrees
71.5	85.3	FZ	2	broken and faulted zone
85.3	90.6	JZ	2	jointing at 35 degrees
90.6	104.6	BRKZ	3	Broken zone with some milled grains and redrill
104.6	106.7	FL	4	strong fault gouge and annealed clay altered core
106.7	125.7	FZ	3	broken and faulted core
125.7	173.5	JZ	3	jointing at 50 and wavy joint set at 30 degree
173.5	176	BRKZ	2	small broken zone
176	184.7	JZ	2	jointing at 30 and 50 degrees
184.7	186.9	BRKZ	3	broken core
186.9	202	JZ	2	jointing at 20, 40 and 50 degrees
202	214	FL	2	fault zone with milled grains and broken core
214	292	JZ	5	30 and 50 degree joint sets with veining coincident at 50 degrees
292	310	JZ	4	joint set at 50, 60 and 70 dtca
310	312	JZ	2	weak joint set at 60 and 70 dtca
312	314.5	BRKZ	3	Moderate brokenzone with some competent core <0.5m
314.5	320.5	JZ	3	joints mostly at 30 dtca
320.5	327	JZ	3	joints between 30-70 dtca; local strong brokenzone <0.5m
327	334	BRKZ	1	brokenzone with competent core, some localalized sections with strong brokenzone
334	345.2	FZ	3	broken core + fault/clay gge
345.2	346.9	BRKZ	3	broken core
346.9	349	JZ	2	measurable joints mostly at 70 dtca, some at 40/50/60 dtca

Blackwater Project
Drill Summary - Structure

BW0350

From (m)	To (m)	Structure	Strength	Comments
349	361	BRKZ	2	broken core with some stronger local broken zones ~0.5m
361	368.5	JZ	4	joints mostly at 80 dtca, others at 60/70 dtca

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Blackwater Project
Drill Logs

Hole ID:	BW0351	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375651.65
Depth (m):	338.94	Date Started:	11/02/2012	Casing Size:	HWT	Northing:	5893350.25
Azimuth:	0	Date Completed:	15/02/2012	Casing (m):	115	Elevation (m):	1533
Dip:	-90	Logged By:	MNu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46	308.6	-89.5
92	281.8	-89.6
151	332	-89.9
183	20.6	-89.6
229	303	-89.8
275	257.6	-89.4
320	228.4	-89.4

Blackwater Project
Drill Summary - Lithology

BW0351

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	29.57	OB							
29.57	37.65	AND	cxt	CA	D	PUR	DEP		Microbrecciated and healed andesite with occasional calcite filled fractures
37.65	57	FLPT	plm	LAP	L	CRM	DEP	GR30+	Fine grained ash tuff hosting lapilli sized laminated fragments
57	61.57	AND	cxt		M	PUR			Fine grained biotite altered crystal rich andesite sharp contacts
61.57	63.4	FLPT	plm	LAP	L	CRM	DEP	SH	Hydrothermally altered? Felsic lapilli tuff; pale yellow, abundant clay and sericite alteration
63.4	72.24	AND	cxt		M	PUR			Fine grained biotite altered crystal rich andesite sharp contacts
72.24	87.3	FLPT	plm	LAP	L	CRM			Hydrothermally altered? Felsic lapilli tuff; pale yellow, abundant clay and sericite alteration
87.3	90.53	FLPT	fltgge	LAP	L	CRM	FLT	GR30+	Faulted and gouge altered FLPT sharp lower contact
90.53	97.3	AND	fltgge	LAP	D	GRY	FLT	SH	Faulted and gouge alted andesite with short runs of unaltered andesite, rich in calcite altered amygdules and plag crystals
97.3	103.5	AND	cxt	LAP	D	PUR	DEP	SH	Mechanically autobrecciated
103.5	107.9	AND	dyk	LAP	M	GRN	INTR	SH	Chlorite altered andesite lapilli tuff hosted within chilled silica rich cherty margin intruding andesite volcaniclastic depositing undulating and irregular silica rich halo
107.9	123.7	VC	cs	LAP	M	PUR	DEP	SH	Andesite clast rich volcaniclastic hosted in pale purple green chlorite altered cement with smaller green angular clasts entrained interval is cut sharply by occasional amygdoloidal andesite dykes at 30 to the core axis
123.7	139	FLPT	ms	LAP	P	GRN	DEP	GR30	Strongly fractured poorly a sorted felsic lapilli ash tuff hosting fracture filling pyrite and clast replacing sulfide
139	143	FLPT	fltbx	LAP	P	GRN	DEP	GR10	Strongly faulted and sheared FLPT
143	165.8	FLPT	ms	LAP	P	GRN	DEP	SH	Moderately fractured FLPT ash tuff with clast replacing sulfide
165.8	173.5	VC	ms	LAP	M	PUR	DEP	GR30	Andesite and felsic lapilli sized clasts cemented by grey chlorite altered cement hosting minor felsic and mafic volcanic fragments.Felsic fragments are occianionally compressed into fiamme while other clasts demonstrate laminations.
173.5	176.4	AND	fltbx	LAP	D	PUR	DEP	GR10	Andesite and
176.4	184.6	AND	bx	LAP	D	PUR	DEP	SH	Healed Andesite breccia
184.6	197.8	AND	mas		D	PUR	DEP	SH	Crystal rich Andesite nearly massive
197.8	205.1	AND	mcbx	LAP	D	PUR	DEP	SH	Healed Andesite microbreccia with moderate calcite filled fractures
205.1	213.3	AND	cxt		D	BR	DEP	GR10	Crystal rich Andesite; amygdoids altering to quartz calcite; localized clay alteration of plag.

Blackwater Project
Drill Summary - Lithology

BW0351

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
213.3	216.2	FT	a		L	GRY	DEP	SH	Short interval of massive felsic tuff grading into andesite on either end
216.2	227.4	AND	volc	FA	D	BR	DEP	GR30+	Amygdoloidal crystal rich andesite brecciated and cemented with intervals of ash tuff; interval is stongly fractured with calcite quatrz filled fractures
227.4	234.7	AND	amg		D	BR	DEP	SH	Amygdoloidal crystal rich andesite locally fractured by calcite filled fractures causes localized belaching and breccia
271.9	272.3	VC	plm	LAP	L	BR	DEP	SH	Vein and fracture induced breccia zone with moderate sulfide mineralization
272.3	338.9	AND	cxt		M	BR	DEP	SH	Fractured Andesite with vuggy calcite quartz filled fractures; local bleached caly altered halos around calicte fractures; matrix is crystal rich with local amygdaloids

Blackwater Project
Drill Summary - Alteration

BW0351		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
29.57	34.14	T	CLST	1		0	PERV	3		0	BIOT	PERV	5	LIM	FR	1	Transitional oxide is trace to none
34.14	37.65	S	CLST	1		0	PERV	3		0	BIOT	PERV	5	CAL	FR	1	
37.65	57	S	MTRX	2	REP	2	PERV	3	CLST	2	SER	MTRX	1	CLY	FC	1	Pale green chlorite sericite altered matrix hosting clay and sericite altered lapilli
57	61.57	S	MTRX	2		0	PERV	3	CLST	1	BIOT	PERV	4	CAL	FC	1	
61.57	63.4	S	MTRX	1	CLST	2	PERV	4	PERV	4	CLY	FC	1				
63.4	72.24	S	MTRX	2		0	PERV	3	CLST	1	BIOT	PERV	4	CHL	FC	1	
72.24	87.3	S	MTRX	1	CLST	3	PERV	4	PERV	4	CLY	FC	1				
87.3	97.3	S	FC	2	FC	5		0	CLST	4	BIOT	PERV	4				Fault gouged FLPT AND zone with equal parts mechanically clay altered felsic and mafic lithologies
97.3	103.5	S	CLST	1		0	PERV	4	CLST	1	BIOT	PERV	4				
103.5	107.9	S	FC	2		0	PERV	4		0	BIOT	PERV	3	CHL	MTRX	1	
107.9	123.7	S	CLST	2	MTRX	1	PERV	4	CLST	1	BIOT	CLST	3				Clast supported andesite rich mafic clasts in contact with chlorite and sericitzed polymictic volcanic clasts held together by pale grey silica rich cement
123.7	139	S	PERV	2	SPHL	1	PERV	3	CLST	2							
139	143	S	PERV	3	FC	4	PERV	4	SPHL	1							
143	165.8	S	MTRX	3	FC	1	PERV	4	MTRX	3							
165.8	173.5	S	CLST	3		0	PERV	4	CLST	1	BIOT	CLST	3				
173.5	176.4	S	FC	2	FC	5	CLST	3	MTRX	3	BIOT	CLST	3				
176.4	184.6	S	CLST	2		0		1	CLST	2	CAL	FC	3				
184.6	197.8	S	CLST	3		0	PERV	4	CLST	1	BIOT	PERV	4	CAL	FC	2	
197.8	205.1	S	PATC	1	CLST	1	PERV	3		0	BIOT	PERV	4	CAL	FR	2	
205.1	213.3	S	REP	2	VNHL	1	PERV	2		0	BIOT	PERV	4	CAL	FC	1	Weak clay formation on the periphery of calcite silica filled fractures
213.3	216.2	S	MTRX	2	PERV	4		0	MTRX	1	BIOT	CLST	2				
216.2	227.4	S	INFILL	2	PERV	3	CLST	1	CLST	1	CAL	FC	3				

Blackwater Project
Drill Summary - Alteration

BW0351		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
227.4	234.7	S	PATC	1	VNHL	2	PERV	2		0	CAL	FC	3				Locally bleached and clay altered Andesite with vein centric clay altered haloes around calcite silica filled fractures
234.7	271.9	S	MTRX	1	VNHL	2	FC	1		0	BIOT	PERV	4	CAL	FC	2	Localized clay alteration surrounding calcite quartz fracture fill
271.9	272.3	S	FC	1	VNHL	3	FC	2	FC	2	CAL	VN	4	BIOT	CLST	2	Localized vein fracture zone with intense calcite and moderate clay alteration
272.3	338.9	S	MTRX	1	VNHL	2	FC	1		0	BIOT	PERV	4	CAL	FC	2	Localized clay alteration surrounding calcite quartz fracture fill

Blackwater Project
Drill Summary - Mineralization

BW0351		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	37.65	SP	0.1		0		0										
37.65	44.4	DEN	0.5	CR	0.1		0	Dbs	DEN	0.5							
44.4	57	FP	0.1	SP	0.5		0										
57	61.57		0		0		0	Mag	SP	0.1							
61.57	63.4		0	CR	0.5		0	Dbs	DEN	1							
63.4	72.24		0		0		0	Mag	SP	0.1							
72.24	76	SP	0.1	SP	1		0	Ga	SP	0.5							
76	82.9	CR	0.1	CR	1		0	Dbs	DEN	0.5							
82.9	90.53	FP	0.5	CR	1		0	Dbs	DEN	1	Ga	SP	0.1				
90.53	103.5	FP	0.5		0		0	Mag	SP	0.5							
103.5	107.9	FP	0.5	DEN	0.5		0										Pyrite is hosted in chlorite healed fracture pathways giving the appearance of disseminated mineralization sphalerite occurs as wisps and specks bleeding out of contact zone
107.9	118	FP	0.5	CR	1	CR	0.5	Sp	SP	0.5							Pyrite occurs as wisps and as clast replacement with sphalerite occuring as encrustations along andesite clast rims
118	123.7	FP	0.5	CR	7	BB	2	Py	CR	0.5	Cp	CR	0.1				
123.7	133.7	DEN	1	CR	2	CR	1	Dbs	DEN	0.5							
133.7	138.6	FP	1	CR	3	CR	2	Dbs	DEN	0.5	Ga	VN	0.1				
138.6	143		0		0		0	Dbs	FP	2							
143	151.5	FP	1	CR	3	CR	2	Dbs	DEN	1							
151.5	153.5	FP	1	CR	7	CR	2	Dbs	DEN	0.5							
153.5	162.5	FP	1	CR	3	CR	2	Dbs	DEN	0.5							
162.5	165.8	FP	0.5	CR	2	CR	1										
165.8	173.5	SP	0.5	SP	3	SP	1										
173.5	176.4	FP	1	SP	2	CR	1										
176.4	184.6	SP	0	SP	0.1	SP	3										
184.6	197.8		0		0	CR	0.5										

Blackwater Project
Drill Summary - Mineralization

BW0351		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
197.8	205.1	FP	0.5		0	SP	3										
205.1	213.3	FP	0.5		0	SP	0.1										
213.3	216.2	SP	0.5	SP	0.1	SP	0.5										
216.2	227.4	FP	0.5		0	CR	1										
227.4	234.7		0		0	SP	0.5										
234.7	271.9	CR	0.5		0	CR	0.5										
271.9	272.3	FP	1		0		0										Pyrite fracture fill associated with calcite quartz veining
272.3	338.9	FP	0.1		0	FP	0.5										Weak pyrite and pyrrhotite mineralization associated with quartz calcite fractures

Blackwater Project
Drill Summary - Structure

BW0351

From (m)	To (m)	Structure	Strength	Comments
29.57	36.5	JZ	2	
36.5	46.33	BRKZ	5	
46.33	49.38	JZ	3	Localized 1cm clay seams on fracture planes
49.38	57	FZ	2	Broken zone with localized minor faults occuring 50 to core axis
57	61.57	JZ	5	Heavily jointed andesite with calcite on joint planes occuring 50 to coare axis
61.57	63.4	FZ	3	Broken zone with minor faults occuring 40 to core axis
63.4	71.6	JZ	4	Intensely jointed zone with multiple fracture angles, the most common being 50
71.6	72	FL	5	Minor fault no clear contact angle
72	78.9	JZ	3	Strongly joint zone with minor clay gouge on fracture planes
78.9	80.2	FL	5	Sharp contact on clay rich structurally induced gouge zone
80.2	83.6	JZ	3	
83.6	87.3	BRKZ	5	Rubblized and intensely fractured broken zone with no clear clay on fracture planes
87.3	97.3	FL	5	Intensely gouge altered fault with fault contacts occuring at 50 degrees and 30 degrees
97.3	100.5	JZ	4	
100.5	103.5	JZ	4	
103.5	107.9	CM	4	Cherty silica rich chilled margin between volcaniclastic andesite and grn lapilli andesite; andesitic intrusive?
107.9	111.9	JZ	3	Py-Po-Ga?-Hem? on fracture planes
111.9	114.9	JZ	2	
114.9	123	BRKZ	4	Broken zone with irregular fracture planes within volcaniclastic, matrix weaker than clasts giving multiple fracture planes
123	125	JZ	3	
125	133.9	BZ	4	
133.9	136.5	JZ	1	
136.5	138.8	BRKZ	3	
138.8	143	FL	5	
143	147.8	JZ	3	
147.8	156.6	JZ	3	moderate healed fractures
156.6	159.1	FZ	3	occasional minor gouge zones associted with fractured core and faults

Blackwater Project
Drill Summary - Structure

BW0351

From (m)	To (m)	Structure	Strength	Comments
159.1	162.4	BRKZ		
162.4	163	FL	5	
163	165.4	FZ	4	Moderate to Strong gouge filled fractures on the periphery of a level 5 fault
165.4	166	LY	4	Well sorted volcaniclastic into measurable layers
166	173.5	JZ	3	
173.5	176.5	FL	5	
176.5	185	JZ	3	
185	197.8	JZ	2	
197.8	205.1	JZ	2	Jointed along Calcite filled fratures
205.1	213.3	JZ	1	
213.3	216.2	JZ	1	
216.2	227.4	JZ	2	
227.4	234.7	JZ	1	
234.7	242.5	JZ	1	
242.5	243	FL	5	
243	271.9	JZ	1	
271.9	272.3	VZ	5	Intense calcite silica vein zone locally brecciating andesite and depositing wisps of pyrite
272.3	338.9	JZ	1	

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Blackwater Project
Drill Logs

Hole ID:	BW0352	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375352.19
Depth (m):	520	Date Started:	10/02/2012	Casing Size:	HWT	Northing:	5893349.83
Azimuth:	0	Date Completed:	21/02/2012	Casing (m):	3	Elevation (m):	1537
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
58	22.2	-89.1
106	8.4	-89.4
151	5.4	-89
202	356.6	-88.4
250	359.4	-88.5
301	6.5	-88.7
352	0.3	-88.2
403	348.3	-89.2
451	312.1	-89.7
500	278.7	-89.3

Blackwater Project
Drill Summary - Lithology

BW0352

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.1	OB							
5.1	17.7	FLPT	ms	LAP	L	GRY	DEP	GR30	matrix supported FLPT. light grey with white plag clasts. most of the clasts are not laminated, nor is the groundmass
17.7	58	FLPT	cs	LAP	M	GRY	DEP	GR10	moderate grey-green rock, FLPT. some euhedral hornblende in plag clasts
58	79.8	VC	ms	LAP	M	GRY	DEP	GR30+	grading from cm sized clasts to roughly 5 cm sized clasts. undulating alteration texture near end of unit - perhaps hydrothermally controlled
79.8	106.4	FLPT	t	LAP	M	GRY	FLT	SH	short fault gouge interval at bottom of unit. some brecciation, where litho looks more tuffaceous.
106.4	139	FLPT	ms	LAP	M	GRY	FLT	SH	small sub-centimeter sized clasts, many clasts are fairly well rounded. clasts appearing dark green due to strong chl alt'n. Many clasts partially resorbed into the groundmass
139	154	FLPT	fltgge	LAP	M	GRN	FLT	SH	fault zone with mostly gouge, well healed. clasts in fault gouge appear to be tuffaceous, but perhaps a strongly altered FLPT.
154	163	VC	plm	LAP	M	GRY	DEP	GR30	VC with more mafic than felsic clasts. groundmass rich. core moderate grey.
163	208.2	FLPT	ms	LAP	L	GRY	DEP	GR10	seems to be coarsening downward. Section with moderate chl alt'n causing clasts to darken. Towards end of interval, a transition zone where it goes in and out of FT - perhaps straddling the contact, or a interstitial depositional zone.
208.2	226.3	FT	lam	CA	L	GRN	DEP	GR30+	interstratified or perhaps banded channels (?) of FLPT. well laminated zones towards end of interval
226.3	265	FT	lam	CA	M	GRY	DEP	GR30+	mostly appears to be FT, with zones of lapilli clasts visible, faint to obvious laminations throughout interval. local zones of FLPT no more than 2 m before going back into FT, contacts at similar orientation as laminations. Also significant alterati
265	313.5	FLPT	t	LAP	M	GRY	FLT	GR10	appears to be interstratified FLPT with FT, with tuffaceous zones and lapilli tuff texture zones, often difficult to distinguish which litho. FLPT is matrix supported, laminated matrix in spots, and laminated FT clasts. FT is finely laminated and som
313.5	324.8	FT	bx	FA	L	GRY	DEP	GR30	obscure contact from upper unit. pale grey FT, brecciated, and laminated in some places. some fault gouge
324.8	341	FLPT	bx	LAP	M	GRY	DEP	GR30+	gradational contact above and below. moderate to light grey FLPT with subangular altered clasts.
341	360	VC	ms	LAP	M	GRY	DEP	GR30+	hard to tell if clasts are mafic origin or heavily ser-chl altered felsics. seem to be becoming more reworked toward the end of unit. brecciated in zones.

Blackwater Project
Drill Summary - Lithology

BW0352

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
360	400.3	VC	ms	LAP	M	GRY	FLT	SH	high percentage of matrix, small clasts (sub cm), mostly subangular clasts. zones of brecciation. clasts are quite altered with chl-ser, appearing dark, and difficult to distinguish mafic and felisic clasts
400.3	413	VC	bx	LAP	M	GRY	INTR	SH	very brecciated unit, clasts not as well sorted as above. matrix supported with high percentage of matrix, although gradually becoming more clast rich
413	420.6	VC	ms	LAP	M	GRN	FLT	SH	fault brecciated unit with gouge. light to moderate coloured VC, matrix rich
420.6	438.3	VC	ms	LAP	MO	GRY	FLT	SH	matrix supported, more poorly sorted unit, with quite angular clasts. moderate to light grey groundmass with darker green altered clasts making unit quite mottled in colour
438.3	446.2	VC	ms	LAP	L	GRY	FLT	SH	unit very intensely altered to pale light grey, difficult to distinguish clasts or primary textures. also a couple fault zones, with high percentage of clay gouge material. appears to be similar VC unit as above.
446.2	471	VC	ms	LAP	M	GRY	DEP	GR5	becoming darker, with more mafic content, zones of intense ser alt'n masking primary textures. Local zones where clasts are larger, and more angular. sil groundmass
471	476.6	VC	ms	LAP	D	GRY	DEP	GR30+	unit becoming clast supported, with nearly 100 percent mafic clasts (mafic to felsic approximately 90-10%), sil groundmass, some near-block sized clasts approx 4-5 cms in size.
476.6	486.3	VC	ms	LAP	MO	GRY	FLT	SH	clast rich, some interbanded VC with much smaller clast sizes, and quite rounded, mature clasts. almost epiclastic.
486.3	492	VC	fltgge	LAP	M	GRN	FLT		total gouge material, clay rich, fine grained pyrite throughout. some angular brecciated clasts
492	497.5	AND	aph		M	GRY	ALTFR	GR30+	bleached alt'n, front, rock a creamy moderate grey, grading into lower andesite unit.
497.5	520	AND	por		MO	BR	UNKN		phenocryst rich AND. sulphides replacing phenos, moreso at beginnning of interval. Abundant stockwork-like ser-clay-talc veining amygdule rich, rock consistantly mottled. possibly intrusive, with above unit a FT?

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Blackwater Project
Drill Summary - Alteration

BW0352		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	11.5	O		0	MTRX	2	OP	2	CLST	2	HM	FR	2				moderate to weak overall alt'n. bit of ser-clay gouge.
11.5	21	S		0	MTRX	2	OP	2	CLST	2							no change in rock alt'n. sharply into sulphide facies
21	25	O		0	MTRX	2	OP	2	CLST	2	HM	FR	2				sharply back into oxide facies for a short bit. seems to be little to no transition zone.
25	30.5	T	CLST	1	MTRX	2	OP	2	PERV	2	HM	FR	1				occaisional fracture plane with iron oxidation, transitioning to suplhide facies. a bit of clay gouge.
30.5	38.5	S	PERV	3	MTRX	2	OP	1	PERV	2							section of moderate dark pervasive chl alt'n. bit of ser-chl-clay in gouge bits as well
38.5	46	S	PERV	2	FC	3	OP	1	PERV	2							moderate overall alt'n, with clay gouge among rubbly core
46	58	S	CLST	3	FC	3	PATC	3	PERV	1							more sil alt'n in patches and clasts; chl in clasts, clay gouge bits
58	67	S	CLST	1	MTRX	2	OP	1	PERV	2	BIOT	PATC	1				moderate-weak overall alt'n. perhaps a bit of biotite alt'n giving a slight brownish colour in places
67	69	S	CLST	1	PERV	3	PERV	3	PERV	1							small interval of more beige-bleached rock, with more sil-clay alt'n
69	74.5	S	CLST	1	MTRX	1	OP	1	PERV	2	BIOT	PATC	1				weak over all alt'n. similar as two units uphole, with weaker sil overprint. perhaps biotite patches again
74.5	80	S	PERV	3	FC	1	PERV	3	PERV	1							groundmass alt'n becoming strongly sil-chl altered, increasingly near end of interval, and above contact with lower unit. Strange undulating alteration texture where fragments have been "eaten" away by the alteration.Possibly hydrothermal fluid passageway
80	106.5	S	CLST	2	PERV	2	PERV	3	PERV	1							into the FLPT unit, alteration is consistant over long interval, with moderate pervasive sil with clay-chl. clay shears every now and then. Some alteration banding.
106.5	142	S	PERV	3	FC	1	OP	2	PERV	2							consistant pervasive chl altn' most notable in this interval. very dark green on majority of fracture planes, with core having a very green colour. moderate ser with chl. sil overprint
142	152.8	S	PERV	2	FC	4	OP	1	FC	3							fault gouge with heavy clay-ser.

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Drill Summary - Alteration

BW0352		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
152.8	154.5	S	PERV	2	FC	1	OP	2	PERV	2							moderate to weak overall alt'n. increasing chl on fracture planes
154.5	157.2	S	PERV	3	FC	1	OP	1	PERV	2							fairly strong pervasive chl alteration, some deep green sections especially in more broken core. Light sil overprint
157.2	166	S	PERV	2	MTRX	2	OP	2	PERV	2							consistant chl alt'n, evident by broken core with dark green.
166	179.4	S	CLST	1	MTRX	2	OP	3	PERV	3							not as much chl alt'n in this interval. sil-ser alt'n consistant
179.4	199	S	PATC	3	MTRX	2	OP	2	PERV	3							patchy dark green chl alt'n, with fairly consistant ser-clay throughout unit.
199	205	S	CLST	1	MTRX	3	PERV	3	PERV	3							increasing sil-ser alt'n, with small clay clasts in matrix, chl alt'n not as strong
205	221.5	S	PATC	2	FC	2	PATC	3	PATC	3							banded patches of moderate alt'n, in many places obscuring primary textures as litho changes.
221.5	223.3	S	PATC	1	FC	3	OP	2	PERV	2							highly fractured section with clay-ser in gouge material. lighter chl alt'n.
223.3	246.2	S	PATC	3	FC	1	OP	2	PERV	2							patchy chl alt'n, but stronger than previous interval. dark chl can be seen on most fracture surfaces
246.2	266	S	PATC	2	FC	3	PATC	2	PATC	3							sections of core more beige due to clay alt'n, also ser-clay in gouge material. ser-sil al'n fairly pervasive, with sil alt'n being more patchy. moderate chl mostly dark green on fracture planes
266	303	S	PATC	2	FC	2	PATC	3	PATC	3							patchy sil-ser-chl alt'n, with local zones of fairly heavy sil alt'n. Also small sections of gouge with significant clay altn. Overall fairly consistant alteration style on the large scale.
303	317	S	PATC	2	FC	2	PERV	4	PERV	2							becoming well silica altered, with patchy dark green chl, as well as on fracture planes. rock is hard, although much of it is broken
317	324.6	S	FR	1	FC	3	PERV	4	PATC	1							very hard rock rock from pervasive sil alt'n, and with quite a bit of clay in gouge material. Minor chl on fracture planes, becoming stronger at end of unit

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Drill Summary - Alteration

BW0352		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
324.6	337	S	FC	2	FC	2	PERV	3	PERV	2							silica alt'n cooling off a bit. increasing chl alt'n particularly on fracture planes, but also patchy and light clast alteration. sericite with clay in fracture gouge material .
337	351	S	CLST	3	FC	2	PERV	4	CLST	3	CHL	FR	3				clasts becoming very chl-ser altered, obscuring their primary textures. very hard pervasive sil alt'n. dark green chl alt'n on most fracture planes, moderate to heavy.
351	360	S	CLST	4	FC	1	PERV	3	PERV	3	CHL	FR	5	HM	FR	1	heavy chl alt'n on fracture planes, very dark green. pervasive sil-ser alt'n, rock still quite hard. clasts almost completely chloritized, making it very difficult to distinguish origins of these
360	370	S	CLST	4	FC	1	PERV	3	PERV	2	CHL	FR	4	HM	FR	1	clasts very strongly chl replaced, as well as strong dark chl on nearly every fracture plane. frequent hem alt'n on fracture planes as well, bright rusty red.
370	380	S	CLST	3	FC	1	PERV	2	PERV	4	CHL	FR	2				transition into more pervasive sericite alt'n, in densely speckled appearance. clasts not as dark chloritized and core not quite as hard due to this sericite alt'n.
380	390	S	FC	3	FC	1	PATC	2	PERV	3	CHL	FR	3	HM	FR	1	clasts not as strongly chl altered here, sericite alteration most prevalent, with patchy pervasive sil alt'n "speckeled" appearance within the chl alt'n especially. very dark chl alt'n on fracture planes, with still some hemitite smears as well
390	397	S	CLST	3	FC	2	PERV	2	PERV	3	CHL	FR	1	HM	FR	1	alteration similar as above, a few veins with white quartz-clay-anhydrite(?). quite distinct looking. minor hemitite on fracture planes
397	406	S	CLST	4	FC	1	PATC	3	PERV	3	CHL	FC	4	HM	FR	1	clasts strongly chl altered, also sericite getting involved with clast alteration. consistent pervasive sil alt'n. breccia/gouge zones with extensive heavy chl alt'n. some hemitite alt'n
406	413	S	FC	4	FC	2	PATC	2	PERV	3	CHL	CLST	2	SER	CLST	2	gouge material with heavy chl-ser-clay. dark chl on fracture planes. Some hemitite within core in smear-like style, as well as on fracture planes.
413	420.6	S	FC	2	FC	4	PATC	2	FC	3							zone with significant gouge mateiral, with clay-ser most dominant, patchy sil alt'n in local runs of harder rock

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Drill Summary - Alteration

BW0352		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
420.6	438	S	PATC	3	FC	1	PATC	4	PATC	2							rock is quite hard. Textbook patchy alteration of chl+/ser+/-sil. clasts chl altered, with some darker and some lighter due to varying ser alteration. strong patchy sil alteration, very hard glossy grey
438	448.5	S	PATC	2	FC	4	PATC	3	PATC	2							similar patchy alteration as above, but with significantly more clay in gouge-rich unit. some zones bleached very light and cherty. dark chl on some fracture planes
448.5	463.2	S	FR	2	PERV	2	INFILL	1	PERV	4							very noticable drop in sil alt'n, and increase in ser alt'n pervasive and quite strong. rock scratches smoothly and fairly soft. chl on fracture planes, and some small zones of heavy fractured rubble.
463.2	487	S	FR	1	FC	1	PATC	2	PERV	2							pretty weak overalll alt'n, sil-ser in groundmass. mild chl alt'n on groundmass
487	492	S	FC	1	FC	3		0	FC	3	CARB	VN	1				gouge material, clay rich, carb vein seen within and below fault contact, fairly minor
492	497.5	S	FR	1	FC	1	PERV	2	PERV	4							heavy alt'n front, for a length below fault structure, creamy greyish blue-green with heavy ser-sil alt'n
497.5	520	S	FR	1	VN	2		0	AMYG	3	BIOT	PERV	2	CAL	VN	1	sericite replacing amygdules in andesite, increasing veins with white-green anhydrite, and minor calc-carb.

Blackwater Project
Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	18.4	FP	0.5	SP	0.1		0	Ga	FP	1	Dbs		2				good grade DBS, decreasing in grade at end of interval. good gal-py on the odd fracture plane
18.4	28	SP	0.5	SP	0.5		0	Ga	CR	1	Dbs		1				decreasing DBS, specks of py and sp, one low angle fracture plane with good gal, py on its surface
28	39	VN	1	BB	0.5		0	Dbs		0.1							low grade interval, save for local good sp blebs, and occaisional py veinlet
39	50	VN	0.5	BB	2		0	Dbs		2							good DBS, preferentially oriented mostly at about 25 degrees to CA. sp becoming pretty high grade in clusters of blebs, dark. infrequent py vnlt
50	58	SP	0.1	BB	1		0	Dbs		1							DBS a bit more infrequent; dark blebs of sp within plag clasts.
58	63	BB	1	DI	1		0	Dbs		0.5							DBS more difficult to see in darker unit, but still present in whisps. py blotches in broken core - could be fracture controlled. local good grade disseminated sp.
63	71	SP	0.3	BB	0.5		0	Dbs		0.1							low grade DBS whisps. infrequent sp blebs. specks of py
71	79	SP	0.3	DI	1	DI	0.5	Dbs		0.5							increase in whispy DBS. zones of good streaky disseminated sp with po.
79	83	BB	1	SP	0.3		0	Ga	VN	0.5	Apy	SP	0.3	Dbs		1	pretty good short whisps of DBS. some thicker, coarser grained "DBS" where galena is evident; py in fine rained agglomerates and fracture vnlts; specks of bright shiny aspy
83	90	VN	1	DI	1		0	Ga	FP	1	Dbs		1	Apy	SP	0.3	pretty good mineralization. decent grade DBS, and where core is heavily broken you can see different minerals of DBS on fracture planes. appears to be sp-py-gal pretty well separated. Some shear veins with dark sulphides. sp in blebby disseminations,
90	98.5	SP	0.1	BB	3	SP	0.1	Dbs		1	Apy	SP	0.3				sp becoming high grade blebby throughout; DBS in short whisps throughout unit. decent grade
98.5	106	BB	0.5	SP	5		0	Dbs		0.5							very good grade sp, up to 10 percent locally, but consistant in bleb clusters. Other suphides grade seem to have dropped off. DBS becoming minor

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Blackwater Project
Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
106	110.5	CR	1	SP	2		0	Ga	CR	0.5	Dbs		0.5				good grade py with sp, in blebby replacement of clasts.
110.5	117	BB	1	BB	2		0	Ga	VN	0.5	Apy	VN	0.5	Dbs		1	highly mineralized section, good grade sp with py; DBS in short whisps, but fairly abundant. dark sulphides in one shear vein high grade; likely gal-aspy-py
117	119	DI	2	DI	5		0	Ga	DI	0.5	Apy	DI	1	Dbs		0.5	very good grade py+/-sp. local disseminated lengths up to 10 %. frequent shiny aspy and galena as well
119	124	DI	2	DI	4		0	Ga	DI	0.3	Apy	DI	1	Dbs		0.3	mineralization as above, with perhaps a bit lower grade diss sp. Aspy seems to have a purplish tinge, possibly more of a cobaltite(?)
124	130	DI	1	DI	3	BB	1	Apy	DI	1	Ga		0.1	Dbs		0.1	po starting to show up in blebs. trace of DBS
130	136	DI	3	DI	4	SP	0.3	Apy	DI	1	Dbs		0.1				very good grade sulphides, especially sp with apy-py. several hairline vlnts with very bright py. some intervals where sulphide mineralization is very fine grained disseminated. These intervals seem to be where highest grade is
136	140.5	DI	1	DI	2		0.3	Apy	DI	0.3	Dbs		0.3				decrease in sulphide grade. sp still decent in dissemination. DBS still kicking around
140.5	148	BB	0.5	DI	1	BB	0.1	Ga	SP	0.1	Dbs		0.1				sp still decent in clay gouge, but other sulphides seem to be minor.
148	157	BB	1	DI	1		0	Ga	SP	0.3	Apy	SP	0.1	Dbs		0.3	higher grade py than previous interval. some dark fine grained py in shear veins, and some bright blotches in fractures. blebby disseminated sp as before. fair DBS whisps. Semi-massive py in very fractured/broken core at 155.5m
157	160	DI	3	DI	0.5	BB	0.5	Dbs		0.1							very nice py disseminated and infilling hairline fracture openings. other sulphides not as abundant. one large bleb of po seen. trace DBS
160	162.8	VN	1	DI	1	BB	1	Apy	SP	0.5	Ga	SP	0.5				some py in fracture vnlts and some fracture planes. sp disseminated, po replacing clasts, specks of apy here and there

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Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
162.8	166.2	VN	1	DI	3	BB	0.5	Apy	DI	1	Ga	VN	1				good disseminated sp, up to 10 % locally. dark, fine grained py in breccia vnlts and vnlts with gal-sp-apy subhedral. not much evidence of po in this interval.
166.2	172	FP	0.5	DI	1	SP	0.1	Apy	SP	0.1	Ga	SP	0.1				decent disseminated blebby sp; traces of other sulphides. some nice bright py on a fracture plane
172	178	DI	1	DI	1		0	Apy	CR	2	Ga	SP	0.5	Dbs		0.1	decent py and sp disseminated together in places. Some clasts replaced almost entirely replaced by
178	180.4	DI	1	BB	1	BB	0.5	Apy	DI	0.5							some disseminated sp and py in fairly large blebs
180.4	181	DI	1	DI	2		0	Apy	DI	1	Ga	DI	0.5				very short interval, with different looking mineralization, within possibly different lithology blebs of sulphides are smaller and more frequent.
181	185	BB	1	DI	1	BB	0.1	Ga	DI	0.5	Apy	DI	0.1				sp and gal in fairly small blebs, moderate frequency, with dark py standing out in larger blebs and on some fracture planes
185	191	BB	1		2		0	Ga	SP	0.1	Apy	DI	0.1				blebs of dark sulphides, composed mostly of sp with some py, possibly other sulphides present
191	193	SP	0.3	SP	1		0										broken/gouge core with not a lot of sulphides; some sp blebs.
193	193.4		0		0		0										cave. The rock here has pretty good grade py, but it came from somewhere else. NOT SAMPLED.
193.4	199	BB	0.5	DI	0.5		0	Dbs		0.1							sulphide grade dropped. trace DBS. some minor sp in dissemination. Occaisional bleb of py
199	205	SP	0.5	DI	1		0	Ga	SP	0.1	Dbs		0.1				spotty patches of disseminated sp in small blebs, 2-3% locally, also some minor py within this. trace dbs, gal
205	211	VN	1	DI	2	SP	0.5	Dbs		1	Apy	SP	0.3				increasing sulphides, sp with py in dissemination, some po with this. Increasing DBS to pretty good grade, up to 1-2% locally especially toward bottom of interval
211	217.5	BB	0.5	BB	1		0	Apy	DI	0.5	Dbs		0.5				some sp in dissemination, py and aspy on fracture planes (possible marcasite?) as well as in small blebs.

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Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
217.5	224	BB	1	DI	2	SP	0.1	Dbs		0.5	Apy	SP	0.1				dark disseminated blebs, likely py and sp. py and sp both seen in blebs by themselves. a few DBS whisps. trace aspy
224	232	DI	2	DI	1	BB	0.5	Apy	SP	0.5	Dbs		0.5				decent disseminated dark py as well as some bright py on fracture planes. 2% might be a bit of an overestimate, sp with py in disseminated patches. specks of apy within these patches, minor DBS
232	239	DI	1	DI	2	BB	0.1	Apy	SP	0.1	Dbs		0.5				sp>py in this interval, style as above. little bit of bright euhedral py cubes seen on a fracture.
239	249	BB	1	BB	1		0	Dbs		0.1							spotty, low grade mineralization, some dark blebs of sp-py.
249	253.5	FP	1	BB	0.5	BB	0.5	Apy	SP	0.1	Dbs		0.1				py decent on fractures, with one or two blebs seen. minor po in blebs, sp minor disseminated. specks of aspy
253.5	260	VN	1	DI	3		0	Apy	VN	3	Ga	VN	0.1				some sp-py in small disseminated blebs, local patches. a few dense blotches of sp including one good one right at 254m. one 12mm vein with massive aspy at 258m. also a veinlet with pretty good py-sp
260	266	BB	1	DI	2	BB	0.1	Apy	DI	0.5	Dbs		0.5				good disseminated sp throughout interval; a few blebs of py, and on fracture planes. minor DBS
266	270	DI	2	DI	3	DI	1	Apy	DI	1	Dbs		0.5				good sulphide grade. sp-py-po occurring together disseminated, also some vnlts with mostly py. aspy in local disseminations, minor DBS
270	272.6	DI	2	DI	2	DI	0.5	Apy	LAM	2	Dbs		0.3				mineralization as above, except one zone of fault gouge, with laminations of aspy oriented in the same direction as fault gouge contact
272.6	275.5	DI	2	DI	3	DI	1	Apy	DI	0.5							frequent blotches of good grade sp with associated py-po. minor aspy
275.5	275.7		0		0		0										cave. NOT SAMPLED
275.7	278	DI	2	DI	3	DI	1	Apy	DI	1							high grade sp-py-po in disseminated blotches. euhedral aspy on fracture planes, with some disseminated specks/blebs

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Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
278	285.5	VN	2	DI	2	SP	0.5	Apy	VN	4							local disseminations of high grade sp-py with minor po; py also within vnlts and on fracture planes. Aspy very good grade in several 10mm+ veins, some cases semi-massive.
285.5	293	DI	2	DI	2	DI	1	Apy	VN	1	Dbs		1				bright py in crosscutting vnlts as well as disseminated with sp. Some aspy in vlnts. DBS common, with some zones more dense than others
293	302.5	DI	3	DI	3	DI	1	Apy	DI	1	Dbs		0.5				sp+/-py grading very well. py in dissemination, as well as vnlts and blebs and fracture planes. sp mostly good grade in dissemination blotches. occaisional bleb of po. Within shear zones where there is some clay gouge, mineralization also seems to be
302.5	311	DI	3	DI	3	BB	1	Apy	DI	0.5	Dbs		0.5				mineralization as above; local zones of up to 5-7% sp in disseminations. less aspy seen
311	317	DI	2	DI	3	SP	0.5	Apy	LAM	1							lots of clay gouge, with good grade dark sulphides within it, likely mostly composed of py-aspy-sp.
317	324	FP	0.5	BB	0.5		0	Apy	SP	0.5	Dbs		0.5				interval of pretty poor sulphide mineralization. infrequent speckle-blebs of sp. minor py on fracture planes, and hairline vnlts. specks of aspy. A bit of dark sulphide goo in small amount of gouge material
324	328	DI	1	DI	1		0	Apy	VN	0.5							gradual increase in py-sp, from less than 1% at start of interval to 1-2% near end of interval.
328	336.2	DI	2	DI	2		0	Apy	DI	1	Dbs	LAM	1				lots of fault gouge throughout interval, with dark sulphide goo within. In runs of more competant rock, good disseminated py with patchy sp disseminations. Lots of fluid movement and sulphides in gouge should have this interval grading well for Au
336.2	341	DI	2	DI	1	BB	0.5	Apy	DI	1	Dbs		0.5				some clay gouge material, with bright sulphide goo, but mostly bright disseminated py. some sp visible in more competant runs. aspy seen in gouge.

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Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
341	346	DI	4	DI	3	BB	1	Apy	SP	0.5							excellent grade py, in dissemination, and some very good grade veinlets and blotches. Also bright on nearly every fracture plane to some degree. Disseminated sp. A few blebs of po popping up.
346	355	DI	5	DI	3	BB	1	Apy	SP	0.1	Cp	DI	0.5				again, excellent grade py, disseminated and particularaly replacing ser-chl altered clasts. also on practically every fracture plane, and blebby vnlts. Possibly some cpy within this as well(?). disseminated sp as above.
355	363.1	DI	4	DI	2	BB	1	Apy	SP	0.1							very good grade py in disseminated blebs, also vnlts, and subhedral cubes. less sp, increasing po slightly in smallish blebs.
363.1	363.8	LAM	5	LAM	2	DI	0.1	Dbs	LAM	40	Apy	LAM	1				short unit of fault gouge matierial, with dark laminated sulphides in a flaky goo texture. very high grade sulphides, likely will grade well for Au.
364	370	DI	4	BB	2	BB	1	Apy	SP	0.3	Dbs	LAM	5				sulphides as seen before the gouge material. aspy seen slightly more often than upper unit. Possible V.G. seen at 365.65m, very tiny speck visible under 20X lens. laminated dark sulphide goo in some brecciated fault gouge at a few spots
370	373	DI	5	DI	2	BB	0.5	Dbs		0.1	Apy	SP	0.3				abundant disseminated py, good grade sp accompanying. hairline DBS whisps.
373	377	DI	5	DI	3	DI	2	Apy	DI	0.5							abundant diss py-sp. A few patches with excellent (7-10%) py+/-sp. po also increasing in grade in blebby dissemination. minor aspy seen.
377	382	DI	5	DI	3	DI	2	Apy	DI	0.3	Dbs	DEN	1				similar mineralization as above, with some DBS. also some breccia veining with dark sulphides occaisionally.
382	390	DI	4	DI	3	BB	2	Apy	SP	0.5	Dbs	LAM	1				dark sulphides in occaisional brecciated gouge vein. abundant diss py and in vnlts, significant diss sp, with higher grade locally. subtle aspy specks.

Blackwater Project
Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
390	395.6	DI	3	DI	3	BB	2	Apy	SP	0.1	Dbs	DEN	0.5				decreasing grade of py a bit, but still high grade in vlnts and spotty disseminations. sp increasing a bit, and po becoming more dominant. very chl altered breccia veining, with good grade dark sulphides within
395.6	400.4	BB	2	DI	3	BB	4	Apy	SP	0.5	Dbs		0.5				jump in po grade in consistent small blebs, with sp. py grade dropped off quite a bit, but still bleb or two kicking around. minor dark sulphides
400.4	404.5	VN	5	VN	4	BB	1	Apy	MA	2	Dbs	LAM	2				into a unit of brecciation gouge material, with abundant sulphides within chloritized groundmass, abundant py, smears of sp good grade in places. surprisingly little po seen, considering above unit.
404.5	407.5	VN	3	BB	4	BB	0.5	Apy	DI	0.5	Dbs		0.3				less porous, more competant rock unit, with good py in veinlets, also frequent blebs of red-brown sp. some diss py-aspy. Minor po
407.5	414	VN	3	BB	3	BB	1	Apy	LAM	1	Dbs	LAM	2				some moderate to well healed gouge-breccia material, with probably more spotty sulphide mineralization than previous similar mater uphole. some zones with good dark sulphides, and veinlets of py here and there. occaisional bleb of po, and fair grade
414	416	VN	1	BB	3	BB	0.5	Apy	FP	2	Dbs	LAM	0.5				small interval with aspy on fracture planes, not as much py seen, consistant sp
416	420.5	VN	3	BB	3	BB	0.5	Apy	SP	0.5	Dbs	LAM	1				interval with some gouge material, pretty good grade py in brecciation veining, sp blebby disseminations, some dark sulphide goo within gouge material
420.5	428	CR	5	CR	3	CR	3	Apy	VN	0.5	Dbs	LAM	0.5	Cp		0.5	frequent sulphides completely replacing clasts, some large up to 3 cms. More py than others, but also good grade po-sp among py. Py mineralization is quite bright, perhaps some cpy here as well?

Blackwater Project
Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
428	430	CR	4	CR	3	CR	3	Apy	VN	2	Dbs	DEN	1	Cp		0.5	slight decrease in py grade, one zone with an aspy vein, with nice disseminate specks of aspy around it as well. po common
430	437	BB	2	CR	4	CR	4	Apy	SP	0.1	Dbs	DEN	1	Cp	CR	1	definately cpy here among sp and po replacing clasts. some py as well. high grade sp, short branches of DBS every now and then
437	442.6	BB	2	BB	4	BB	3	Apy	SP	0.5	Dbs	LAM	1	Cp	BB	1	similar to above, with perhaps more py, bright green-yellow cpy blebs seen. frequent blebs of sp. some dark sulphide goo in gouge material. Aspy specks
442.6	448	BB	5	BB	3	BB	1	Apy	SP	0.5	Dbs	DEN	0.5	Cp	BB	1	some local very high grade py veining (~10%), and blebs among gouge material. Po grade seems to have dropped. cpy in gouge material, blebby. frequent consistant sp blebs
448	455	BB	2	BB	2	BB	3	Apy	VN	0.1	Cp	BB	0.5				py grade dropped, in favour of increased po. sp slightly down in grade. perhaps some minor cpy. trace aspy specks
455	460	DI	5	BB	3	DI	5	Apy	DI	1	Cp	VN	0.5				sulphides in many different forms of mineralization, particularly in fine grained diss, where py-po-sp can be very high grade. abundant py veinlets around, aspy disseminated near end of interval. some places with large blebs of semi-massive py-sp
460	463	DI	4	DI	4	DI	4	Apy	DI	3	Cp	VN	0.5	Ga	VN	0.5	fine grained sulphides disseminated, equal balance of py, sp, po. significant aspy veined and disseminated. One nice looking vein with good sp-aspy-py-gal
463	468	VN	2	DI	3	BB	3	Apy	DI	0.5	Cp	BB	1				disseminated sulphides died off, but still po in blebs, veined py, and in gouge material, and decent sp in spotty dissemation patches. Cpy appearing with po blebs mostly
468	473.5	VN	2	BB	2	BB	4	Apy	BB	1	Cp	BB	0.5				blebs of po common, and with cpy associated. one gouge fracture zone with py blebs within. bright py in vnlts

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Blackwater Project
Drill Summary - Mineralization

BW0352		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
473.5	482	VN	1	DI	2	BB	4	Apy	DI	0.1	Cp	BB	0.1				abundant po blebs, with trace cpy within the blebs, minor py blebs, most py in bright vnlts
482	486.5	VN	1	DI	3	BB	4	Apy	DI	0.1	Cp	BB	0.1				po common as above, with blebs becoming a bit larger. also increasing sp associated with po. py in gouged/fractured core.
486.5	491.6	VN	5	VN	5	BB	2	Apy	DI	3	Cp	BB	0.5	Dbs	LAM	5	fault gouge, some zones very rich in fine grained py shear veins, sp good as well. dark sulphide goo ("laminated DBS") within gouge, likely will grade well for Au?
491.6	496.5	VN	5	VN	4	DI	2	Apy	SP	0.5	Cp	BB	1				excellent py in abundant vnlts, sometimes accompanied by sp. high grade diss sp, po grade picking up near end. cpy in with po blebs
496.5	497.5	DI	7	DI	10	DI	5	Apy	SP	0.1	Cp	BB	2				excellent high grade sp-py-po disseminated, cpy in bright yellow-green blebs, usually adjacent to po. grading stronger towards bottom of interval, in altered andesite litho. 25-30% sulphides locally
497.5	499.5	BB	4	BB	5	BB	7	Apy	SP	0.1	Cp	BB	1				py blebs gradually dying off, but at beginning of interval, very high grade. po becoming very abundant with sp.
499.5	506.5	DI	2	SP	3	BB	10	Apy	SP	0.5	Cp	BB	1				po blebs everywhere, consistantly replacing amygdules in andesite. dying off slightly towards end of unit. py and cpy kicking around in small blebs.
506.5	509.5	VN	2	DI	2	BB	5	Apy	SP	1	Cp	BB	1				po high grade at beginning, and quickly dying off towards end of unit, aspy specks within more heavily broken/veined core, as well as py and cpy blebs
509.5	515	VN	2	DI	1	BB	1	Apy	SP	0.5	Cp	SP	0.1				bright py in anhydrite veining, with possible cpy. po in occaisional bleb,
515	520	VN	1	DI	0.5	BB	1	Apy	SP	0.1	Cp	SP	0.1				mineralization as above, but less frequency of veinlets/blebs. EOH.

Blackwater Project
Drill Summary - Structure

BW0352

From (m)	To (m)	Structure	Strength	Comments
0	12.95	BRKZ	5	rubbly, broken rock
12.95	16.1	FZ	2	poor recovery interval, with a bit of gouge.
16.1	19	BRKZ	1	fairly competant. fracture set at 70 degrees to CA (rough)
19	22.2	BRKZ	3	increasing fractures
22.2	24.6	BRKZ	5	many low angle fractures, shardy rock
24.6	28.3	BRKZ	1	various fracture orientations
28.3	30.8	BRKZ	4	transitioning into a fautl zone
30.8	39.2	FZ	1	rubbly, shardy core fragments
39.2	41	FZ	3	gouge, with some slickensides on fracture planes
41	46.5	FZ	1	gouge areas, with rubble, lower intensity than above unit
46.5	50.2	BRKZ	3	very broken rock. many low angle fractres
50.2	54.1	FZ	1	light intensity fault zone, bit of gouge. possible splay from adjacent major zones.
54.1	56.3	BRKZ	1	short unit of pretty competant rock
56.3	69	FZ	2	frequent alternating between fault gouge and broken rock. lumping it together as a large zone
69	72.2	BRKZ	4	very broken, rubbly
72.2	80.7	BRKZ	2	not bad competency, rough fracturing, with some low angle fractures as well. Seems to be a major fracture set around 20 degrees to CA
80.7	85.4	BRKZ	4	frequent rough shardy fractures. mostly low angles to CA, but varying
85.4	87.7	FZ	2	very frequent fracturing, minor gouge
87.7	91.4	BRKZ	3	low angle fracturing, not very competant but short sections of blocky core.
91.4	92.75	FZ	2	half very fractured rock, half gouge
92.75	94.4	BRKZ	2	short section pretty competant. rough fracturing; not many measurable planes
94.4	96	BRKZ	4	short section of very broken rock
96	106.5	BRKZ	3	lots of rough fracturing.
106.5	106.8	FL	3	fault gouge with measurable angle at about 45-50 degrees to CA. Slickensides on contacts
106.8	117	BRKZ	4	very rough fracturing, shardy fragments.
117	124	BRKZ	3	slightly more competant than above
124	129.5	JZ	4	most competant core so far this hole. couple fractures at 15 degrees to CA

Blackwater Project
Drill Summary - Structure

BW0352

From (m)	To (m)	Structure	Strength	Comments
129.5	136.5	BRKZ	3	planar fractures at around 40 degrees to CA.
136.5	141.5	BRKZ	5	many fractures at very low angles to CA, giving this section no competancy, and largely rubble
141.5	142.5	FZ	1	very broken core, minor gouge
142.5	150.1	FZ	4	mostly gouge, well healed
150.1	157.1	FZ	1	very broken core.
157.1	161.5	JZ	5	fairly competant core, but some rough fracturing
161.5	167	BRKZ	3	core broken up, lots of splaying small fractures
167	168.3	JZ	4	short zone of decently competant core
168.3	172	BRKZ	4	broken and rubbly
172	177.7	BRKZ	2	not totally broken up, some planar fractures, set at around 35 degrees to CA, another minor set at 50-60
177.7	184	JZ	5	pretty competant core, some local small zones of increased fractures. joint set at around 40-50 degrees to CA
184	185.5	BRKZ	4	very broken, rubbly shards
185.5	187.3	BRKZ	1	pretty competnat, but some rough fracturing with few planar fractures
187.3	192.5	FZ	1	highly broken rock, with minor gouge. fracturing consistant throughout interval
192.5	193.5	FZ	5	gouge, with a cave below, poor recovery
193.5	199.4	BRKZ	5	highly broken core, no competancy
199.4	202	BRKZ	4	less mashed up than previous, but still very broken rock. measurable fracture planes around 30 degrees to CA
202	213.7	JZ	5	competant rock, but frequent half meter or less broken zones (splays from above fault), as well as some low angle fracture angles
213.7	215	FZ	2	sudden gouge zone, short interval
215	219.1	BRKZ	2	pretty broken core, rough fracturin
219.1	227.7	BRKZ	3	highly broken, fractured rock
227.7	237	BRKZ	4	rubbly broken rock, no measurable planar fractures
237	245	BRKZ	3	a bit less intensely fractured than above interva, but fractuing is rough; no clean fracture planes
245	260.5	BRKZ	5	very broken, rubbly in zones, with rare short runs of competant core. minor gouge in small zones
260.5	266.5	BRKZ	3	many fractures. major joint set at approx 40-50 degrees to CA
266.5	271.7	BRKZ	5	broken, rubbly core, somewhat gougey
271.7	272.6	FZ	4	small fault zone, all gouge

Blackwater Project
Drill Summary - Structure

BW0352

From (m)	To (m)	Structure	Strength	Comments
272.6	275.5	JZ	5	fairly competnat core
275.5	278.6	CLYSEAM	3	quite competant core. cave from 275.5 to about 275.7m
278.6	284	BRKZ	5	broken, rubbly, core with some gouge
284	286.7	FZ	1	weak fault zone. rubbly core, no longer run than 10 cms.
286.7	287.6	BRKZ	4	very fractured, blocky
287.6	294.5	BRKZ	2	fracture every 10-20 cms. One joint set around 20 degrees to CA
294.5	300	FZ	1	weak fault zone, not alot of gouge, but very heavily fractured core. with minor gouge on the fracture planes
300	303.5	JZ	4	1 fracture every 20-30cms.
303.5	307	BRKZ	3	incosistant competancy, some very broken zones, with some 30 cm runs.
307	324.5	FZ	2	rubbly core, with some gouge. some poor recovery intervals
324.5	327.8	BRKZ	4	heavily broken core
327.8	331	FZ	1	rubbly core with a bit of gouge material
331	332.5	FZ	4	mostly gouge, well healed
332.5	333.8	BRKZ	2	short interval of blocky runs of core. rough wavy fracturing
333.8	336.7	FZ	4	consistant stretches of clay gouge. splay with upper fault zone perhaps
336.7	342.3	BRKZ	4	fairly well fractured, with some healed gouge fracture zones
342.3	363.1	BRKZ	1	borderline of "broken zone and joint zone". zones of competant core, with short zones of more fractured rock. Fracture set at 50 degrees to CA measured
363.1	363.8	FL	5	all fault gouge, with significant sulphides within it. contact angles at 30 degrees to CA.
363.8	370.5	BRKZ	3	frequently fractured core, fracture set varying from 60 to 75 degrees
370.5	372.2	JZ	5	competant core, with some planar fractures at roughly 65 degrees to CA
372.2	384	BRKZ	1	incosistant zones of broken core, interspaced half meter runs of unbroken solid core.
384	404.5	BRKZ	2	more frequent fracturing than above, but still quite blocky. most fractures at high angles to CA, around 65-75 degrees
404.5	407.5	BRKZ	3	interval starts out fairly competant, then degrades to more broken core
407.5	409.3	FZ	2	gouge fault zone, with contacts obscure, kind of brecciating out of the fault zone, giving no measurable angle
409.3	414.4	BRKZ	4	broken rock, with healed brecciated zones
414.4	420.5	FZ	3	significant gouge, with good sulphides. bottom contact angle @ ~45 degrees to CA
420.5	422.1	JZ	2	short section very competant, only two fractures

Blackwater Project
Drill Summary - Structure

BW0352

From (m)	To (m)	Structure	Strength	Comments
422.1	425.5	BRKZ	5	one box length interval with broken, rubbly core, minor gouge material.
425.5	437.9	JZ	4	mostly competant unit, with short zones of comparitively more fractures. fracture set at 15-25 degrees to CA
437.9	439.9	FZ	3	rubbly, gouge core. clear lower contact at 35 degrees to CA
439.9	443.2	BRKZ	3	moderately fractured core, set at around 25 degrees to CA
443.2	446.2	FZ	4	gouged up core, moderately well healed. lower contact clear at 30 degrees to CA
446.2	454.7	JZ	5	competant rock, dominant fracture set at 30 degrees to CA
454.7	466.8	BRKZ	2	a bit more fracted than previous interval, dominant fracture set around 45 degrees
466.8	484.3	BRKZ	1	fairly competant rock, various fracture orientations
484.3	486.8	BRKZ	3	increasingly fractured
486.8	491.4	FZ	4	intense fault zone, lots of gouge, clear upper and lower contacts at low angles
491.4	496	BRKZ	3	shardy fracturing
496	504	JZ	2	pretty much "stick rock"
504	509.5	BRKZ	4	rough fracturing, rubble
509.5	512.2	BRKZ	1	joint set at 15-20 degrees to CA
512.2	520	BRKZ	3	rough, rubbly fracturing

Blackwater Project
Drill Logs

Hole ID:	BW0353	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375451.78
Depth (m):	445	Date Started:	11/02/2012	Casing Size:	HWT	Northing:	5892649.49
Azimuth:	0	Date Completed:	21/02/2012	Casing (m):	4	Elevation (m):	1630
Dip:	-90	Logged By:	MYo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	247.4	-89.6
100	193.3	-89.6
157	240.7	-89.8
205	207.8	-89.1
250	189.2	-88.5
313	197.3	-87.9
358	195.7	-87.7
403	196.7	-87
445	201.1	-86.8

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Blackwater Project
Drill Summary - Lithology

BW0353

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.5	OB							Small interval of overburden recovered from 4m-5.5m
5.5	17.5	AND	volc	LAP	M	GRY	UNKN	GR30	fracture controlled oxidation. occasional cavities and pits (from dissolution?)
17.5	26.5	FLPT	lpt	LAP	L	GRY	UNKN		Fracture controlled oxidation of FLPT. Cavities and pits resulting from dissolution
26.5	40.5	AND	lpt	LAP	D	GRY	UNKN	GR30	
40.5	54	FLPT	lpt	LAP	MO	GRY	UNKN	GR30+	Long interval (approx 2m) of transition from andesites to FLPT. Clasts are up to 10cm. Matrix supported. Fracture controlled oxidation.
54	58.2	VC	ms	LAP	MO	GRY	UNKN	GR30	grades in and out of a felsic dominated volcanoclastic. black sulfides found replacing clasts and as dendritic features.
58.2	89	FLPT	cs	LAP	MO	GRY	UNKN	GR10	Mottled light to dark green and grey with beige clay altered clasts. Strongly silicified. modeartely mineralized.
89	105	FT	lam	CA	L	GRY	UNKN	GR30	Primarily FT with patches of FLPT. weakly laminated. moderately mineralized
105	185	FLPT	mon	LAP	MO	GRN	UNKN	GR30+	Mottled light green and grey FLPT with intermittent FT. Alteration has obscured some primary textures.
185	277	FLPT	mon	LAP	MO	GRN	UNKN		mottled light green and grey FLPT with typical clast less than 2cm. Alteration has obscured much of the primary texture. Occasional clast of FT
277	307.2	FLPT	mon	LAP	MO	GRN	UNKN		Same as above with zones of undulating laminations in isolated FT.
307.2	315	VC	plm	LAP	M	GRY	DEP	GR30+	Transition into VC with patches of light greenish grey alternation with patches of medium grey. Alteration controlling color vs lithology is questionable.
315	329	VC	plm	LAP	L	GRY	DEP	GR30+	Felsic dominated VC. Felsic matric and predominantly felsic clast. 5% mafic clasts increasing to 15% towards bottom of the interval.
329	337.2	VC	plm	LAP	M	GRY	DEP	GR30	Becomes more mafic rich downhole towards underlying andesites.
337.2	374.5	AND	volc	LAP	D	GRY	DEP	GR30+	Dark grey andesited. lapilli sized clast with small isolated intervals of corse ash sized clasts
374.5	410	AND	volc	LAP	D	GRY	DEP	GR30+	Dark grey andesites with zones of amygdules interpretted as flows (possibly blocks of flows).
410	445	AND	volc	LAP	D	GRY	UNKN		dark grey andesites with a blue green(chlorite) alteration of matrix.

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Blackwater Project
Drill Summary - Alteration

BW0353		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.5	17.5	O	PERV	2	FC	2	PERV	1	OP	1	HM	FC	3	LIM	FC	3	
17.5	26.5	O	FC	1	CLST	4	PERV	1	OP	2	HM	FC	3	LIM	FC	3	
26.5	40.5	O	PERV	1	FC	1	PERV	1	OP	1	HM	FC	2				
40.5	47.5	O	CLST	2	CLST	3	PERV	2	OP	1	HM	FC	2	LIM	FC	1	
47.5	71.5	O	PATC	2	CLST	3	PERV	3	OP	3	HM	FC	2	LIM	FC	1	
71.5	89	S	PATC	3	CLST	3	PERV	3	OP	3							
89	105	S	FC	3	CLST	1	PERV	4	OP	3							Chlorite primarily on fxs with some clast replacement
105	118	S	FC	3		0	PERV	4	OP	3							Chlorite primarily on fxs with some clast replacement
118	195	S	FC	4		0	PERV	4	OP	3							Chlorite primarily on fxs with some clast replacement
195	236.5	S	PERV	4	FR	2	PERV	4	OP	3							
236.5	248.5	S	FC	2	FC	1	PERV	4	OP	3							
248.5	307.2	S	FC	3		0	PERV	4	OP	3							
307.2	337.2	S	CLST	3		0	PERV	3	OP	3							chlorite is found as clast replacements and on fractures (weakly pervasive?). more prevalent with increased mafics downhole.
337.2	374.5	S	PERV	1		0	PERV	2	OP	1	BIOT	MTRX	1				
374.5	406	S	FC	2	FC	1	PERV	3	OP	1	BIOT	MTRX	2				
406	445	S	MTRX	3		0	PERV	4	OP	1							

Blackwater Project
Drill Summary - Mineralization

BW0353		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.5	26.5		0		0		0	Goe	FP	1							
26.5	40.25		0		0		0										
40.25	43	FP	0.1		0	FP	0.5										
43	59.9	CR	0.5	CR	3		0	Dbs		1							Py and sp are primarily clast replacement but also fracture controlled
59.9	77.94	CR	0.5	CR	2	CR	0.5	Dbs		0.5							Sulfides styles are clast replacement and fracture controlled.
77.94	83.5	FP	0.5	CR	2		0	Dbs		1							Dendritic black sulfides may contain significant amounts of fine grained galena?
83.5	95.5	FP	1	FP	2	FP	0.5	Dbs		0.5	Ga	FP	0.5				
95.5	105	FP	1	FP	2	BB	0.1	Dbs		1							Sulfides are fracture controlled but are also disseminated into the wall rx
105	121.5	FP	0.5	FP	3	BB	1	Dbs		1							
121.5	142	VN	1	CR	3	BB	0.5	Dbs		1							Fractures appear to have controlled fluid mobility after which dissemination and clast replacement occured
142	155	VN	1	CR	3	BB	1	Dbs		1							Py is veined and fracture controlled
155	166	VN	1	BB	5		2	Dbs		1							Strongly mineralized. fracture controlled with large blebs of Sp and Po
166	182	VN	1	BB	2	BB	3	Dbs		0.5	Cp	VN	0.1				
182	200	VN	1	VN	2		0	Ga	VN	0.5							multiple styles of mineralization. Py and Sp are fracture controlled/veined and clast replacement
200	208	VN	2	BB	2		0										Py found a breccia crackled veining
208	219	DI	0.5	BB	3		0										Py and Sp are found as blebs. Fracture controlled
219	240.5	FP	0.5	BB	3	BB	0.1	Dbs		0.5	Cp	VN	0.1				Sp found as stringers and blebs
240.5	248.5	VN	1	BB	1	BB	0.5	Dbs		0.5							Various styles of mineralization. Appears to be fracture controlled with Sp found as blebs, Po as blebs or clast replacement. Py primarily as veins
248.5	257.5	VN	1.5	VN	1.5	BB	0.1	Dbs		0.5							Sulfide stringer veinlets. approx 2/m
257.5	274.5	FP	0.5	BB	2	BB	2	Dbs		0.5							Po blebs up to 10mm

Blackwater Project
Drill Summary - Mineralization

BW0353		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
274.5	290	VN	1.5	BB	1	BB	0.5	Dbs		0.5							Several Py-Po-Sp stringer veinlets
290	300	VN	1	SP	0.5	BB	0.5	Dbs		0.5	Ga	VN	0.1	Cp	VN	0.1	Py-Ga and Cp-Ga veinlets found 1mm thick. a chloritized Py vein (5mm thick) runs near parallel to the core axis at 297.
300	307.2	BB	0.5	SP	1	BB	0.1	Ga	VN	0.1							
307.2	323.5	VN	0.5	VN	1	BB	0.1	Ga	VN	0.5	Cp	VN	1				Core has minor sulfide blebs and significant veins running down the core axis. Samples with veins likely to run "high grade"
323.5	337.2		0	BB	0.5	CR	0.5										
337.2	359	VN	0.5	VN	0.5	VN	0.1	Cp	VN	0.1							trace to minor sulfides. fracture infilling. sulfides quite variable from vein to vein.
359	377.5	VN	0.1		0	BB	1										
377.5	406	VN	0.5	DI	0.1	BB	0.1	Cp	VN	0.1							
406	445	DI	0.1		0		0										very fine grained trace Py

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Blackwater Project
Drill Summary - Structure

BW0353

From (m)	To (m)	Structure	Strength	Comments
5.5	26.5	BRKZ	3	
26.5	32.3	BRKZ	1	approximately 50% broken and 50% weakly jointed.
32.3	46.2	JZ	1	Angle tca is frequently 40-45deg but overall inconsistant.
46.2	47.5	BZ	3	
47.5	73	JZ	3	
73	74	BRKZ	2	
74	82	JZ	2	
82	84.5	BRKZ	2	
84.5	101	JZ	2	
101	115.5	JZ	3	
115.5	123	BRKZ	2	Weakly broken and jointed zone
123	139	JZ	2	
139	149.5	BRKZ	2	Broken and jointed zone.
149.5	182.5	JZ	3	moderately jointed with zone being broken. joint sets at 15deg and 45deg.
182.5	197.5	JZ	2	75 and 15deg joint sets
197.5	205	FZ	3	
205	213.5	BRKZ	2	
213.5	221	JZ	3	Multiple joint sets 45 and 15deg.
221	226	BRKZ	4	
226	235	JZ	3	Angle TCA inconsistant. Predominantly 15-20deg in this zone. joints running down core have contributed to several mechanical breaks during drilling
235	242.5	FL	4	Strong fault cause poor recovery.
242.5	254.3	JZ	3	multiple joint sets. at inconsistant alphas
254.3	257.5	BRKZ	3	Joints along core axis. maybe irregular to joint sets
257.5	277	JZ	3	
277	309	JZ	4	inconsistant alpha angles. several joints between 15-25 deg
309	322.5	BRKZ	1	Some jointed core between broken zones
322.5	323	FL	3	Healed flt with increased sulfides

Blackwater Project
Drill Summary - Structure

BW0353

From (m)	To (m)	Structure	Strength	Comments
323	337	BRKZ	2	Weakly to moderatedly Broken and jointed zone
337	377	JZ	3	45deg slightly more common then other joint angles
377	445	JZ	2	

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Drill Logs

Hole ID:	BW0354	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375925.56
Depth (m):	466.65	Date Started:	13/02/2012	Casing Size:	HWT	Northing:	5892726.07
Azimuth:	270	Date Completed:	19/02/2012	Casing (m):	48.78	Elevation (m):	1596
Dip:	-60	Logged By:	Other	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
67	272.4	-60.9
91	271.9	-61.2
137	271.8	-61.3
183	272.2	-61.1
229	271.7	-61.6
274	272.3	-62
320	273	-61.5
366	273.1	-61.1
411	274.3	-60.2
457	273.3	-60.9

Blackwater Project
Drill Summary - Lithology

BW0354

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	56.8	OB							
56.8	62.05	VC	plm	LAP	L	GRY	FLT	SH	Oxidized volcaniclastic unit with abundant andesite clasts
62.05	68.26	VC	plm	CA	L	GRY	DEP	SH	Well sorted, medium-grained volcaniclastic unit. Coarse sandstone?-pebble conglomerate appearance to unit.
68.26	98	VC	plm	LAP	L	GRY	UNKN	GR10	Similar to above interval, but with larger clast fragments
98	120	VC	plm	LAP	M	GRN	UNKN		Mafic-rich volcaniclastic unit, with lapilli sized fragments, variably altered
120	134.8	VC	plm	LAP	VL	GRY	FLT	SH	Abundant felsic clasts that have been chloritized light-green and grey (mudstones/ash), very few mafic clasts
134.8	148.1	VC	plm	LAP	D	GRY	FLT	SH	Dominantly mafic clast volcaniclastic, subrounded clasts, possibly weak bedding? @ 50 degrees TCA, very crude
148.1	166.4	VC	plm	CA	M	GRN	FLT	SH	Predominantly finer-grained volcaniclastic, with minor larger clasts post fault at 166.42m
166.4	175.5	VC	plm	CA	L	GRY	FLT	GR30+	Finer-grained volcaniclastic unit, mix of mafic & felsic clasts
175.5	186.8	FT	mas	FA	L	GRN	UNKN	GR10	Finer-grained felsic tuff, strongly chloritized, minor volcaniclastic section from 181.5 to 183m
186.8	188.8	VC	plm	LAP	L	GRN	FLT	SH	Interbed of volcaniclastic unit within felsic tuff unit
188.8	192.4	FT	fltbx	FA	M	GRN	FLT	SH	
192.4	205.2	EC	plm	CA	M	GRY	FLT	SH	Epiclastic unit, well sorted and well rounded clasts
205.2	214.6	VC	plm	LAP	M	GRY	FLT	GR30+	Weakly epiclastic
214.6	218.2	EC	plm	CA	M	GRY	FLT	SH	Epiclastic section, clasts are well rounded and well sorted
218.2	235.3	VC	plm	CA	L	GRN	FLT	GR30+	Large fault zone separates bleached interval from interval below
235.3	235.7	VC	plm	LAP	L	GRN	FLT	SH	As interval above, but with larger lapilli-sized clasts
240.5	244	VC	plm	LAP	M	GRY	FLT	GR10	Polymictic, mafic-rich clast zone
244	253	VC	plm	LAP	D	GRY	FLT	GR10	Mix of larger lapilli sized fragments within weakly epiclastic volcaniclastic unit, possibly minor FT unit at 249
253	265.2	AND	fltbx	CA	D	GRY	FLT	GR10	Faulted zone of andesite clasts with gougy matrix
265.2	296.4	AND	volc	LAP	D	GRY	FLT	GR5	Plagioclase phenocrystic unit, possible porphyry-andesite clasts within finer grained andesite matrix
296.4	308.2	AND	volc	LAP	D	GRY	DEP	GR5	Plagioclase porphyritic clasts within interval

Blackwater Project
Drill Summary - Lithology

BW0354

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
308.2	311.2	AND	volc	LAP	D	GRY	DEP	GR30+	Gradational zone between andesite (above) and felsic tuff (below). Felsic tuff matrix with andesite clasts? Amygdules weakly aligned in interval. Phenocrysts dominantly plagioclase
311.2	357.6	FT	mas		MO	GRN	FLT	GR5	
357.6	441.4	AND	volc	LAP	D	GRY	FLT	SH	Interval intermixes between plagioclase phenocrysts > amygdules, which may be within lapilli-sized fragments of andesite in interval
441.4	446.8	AND	fltbx	CA	D	GRY	FLT	SH	Fault zone of plag-porphyritic andesite within fault zone full of gouge and fault breccia
446.8	466.7	AND	por	LAP	D	GRY	UNKN		Grey-purple andesite with strong zones/clasts of euhedral plag-porphyritic andesite. Appears to have weak crystal alignment from 459 to 460m

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Blackwater Project
Drill Summary - Alteration

BW0354		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
56.8	58	O	FR	2	FR	3	CLST	2	FC	1	LIM	PERV	5				Within oxide zone, strong limonite-clay alteration throughout interval
58	62	T	FR	1	FR	3	CLST	2	FC	2	LIM	FC	4				Transition zone with strong oxidation along fracture planes
62	68.26	T	FR	1	FR	3	CLST	3	CLST	2	LIM	FR	3				Limonite oxidation along fracture planes and within gouge zones
68.26	73.5	T	FR	2	FR	3	CLST	2	CLST	1	LIM	FR	2				Weakly silicified clasts within zone (mostly mafic clasts)
73.5	88.1	T	FR	2	FR	3	CLST	2	CLST	2	LIM	FR	3				Less silicified clasts then alteration zone up hole. Limonite stringers dominate fracture planes.
88.1	90.6	T	FR	2	FR	2	CLST	3	FR	4							Quartz-sericite alteration clasts with white clay within the matrix. Pyrite along fractures.
90.6	98	T	FR	2	FR	3	CLST	2	FR	2	LIM	FR	3				Limonitized gouge fault zone with silicified clasts within interval
98	109.6	T	FR	3	FR	3	CLST	3	FR	3	LIM	FR	2				Dark grey silicified zone, strongly chlorite-sericite altered along fracture planes
109.6	113.5	T	FR	2	FR	3	CLST	2	FR	3	LIM	FR	4				Strong FeOx along fracture planes and in stringers throughout rock
113.5	119.5	T	FR	3	FR	2	CLST	2	FR	3	LIM	FR	2				Weak FeOx along fractures, sericite-chlorite-qtz altered
119.5	129	T	FR	2	FR	4	CLST	2	FR	2	LIM	FR	1				Weak limonite alteration along fracture planes, out of transition zone and into sulphide zone. Minor brownish-red colour along fracture planes is sphalerite
129	134.8	S	PERV	4	FR	2	CLST	4	FR	3							
134.8	160.7	S	PERV	4	FR	1	CLST	3	FR	3							Chlorite-sericite alteration zone
160.7	166.4	S	PERV	5	FR	1	CLST	3	FR	2							Chlorite-sericite alteration strong along fractures
166.4	174.2	S	PERV	4	FR	2	CLST	3	FR	2							Strongly green chlorite altered, weaker sericite
174.2	191	S	FR	4	FR	3	CLST	3	FR	4							Light bleached green, strongly chlorite-sericite altered
191	205.8	S	PERV	3	FR	1	CLST	3	FR	2	CHL	FR	4				Dark green, strongly chloritized, weak clay-sericite alteration
205.8	211.5	S	PERV	3	FR	1	CLST	2	FR	2	CHL	FR	4				Dark green chloritized interval, texture still visible
211.5	218.2	S	FR	3	FR	1	CLST	2	FR	2							Texture still visible, chloritized on fracture planes

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Blackwater Project
Drill Summary - Alteration

BW0354		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
218.2	233.4	S	FR	4	FR	2	CLST	4	FR	4							Light green, strongly chlorite-sericite-silica altered
233.4	247.9	S	PERV	5	FR	1	CLST	2	FR	2							Strongly black-dark green chloritized interval
247.9	249	S	FR	5	FR	3	CLST	3	FR	3							Bleached white kaolinite-sericite-chlorite-silica visible through interval
249	250.4	S	PERV	4	FR	3	CLST	4	FR	4							Light green-bleached colour, potentially felsic tuff unit caught within fault zone
250.4	265.2	S	PERV	4	FR	3	CLST	2	FR	2							Moderately silicified, clay alteration higher within gouge section, strongly chloritized
265.2	281.2	S	PERV	3	FR	2	CLST	1	FR	2	CHL	FR	5	CARB	FR	2	White-light green carbonate-chlorite-clay with minor sericite along fracture planes
281.2	283	S	FR	2	FR	3	CLST	4	FR	3							Dark grey silica-sericite-clay alteration within fault breccia interval
283	299	S	PERV	2	FR	3	CLST	2	FR	1	CHL	FR	5	CARB		2	White-light green carbonate-chlorite-clay with minor sericite along fracture planes
299	308.2	S	FR	3	FR	3	CLST	2	FR	1	BIOT	MTRX	2				Hydrothermal biotite alteration increases towards lower end of interval
308.2	311	S	FR	3	FR	2	CLST	4	FR	2	BIOT	MTRX	1				Bleached zone - gradational deposition front that has been silica-sericite altered
311	327.5	S	PERV	2	FR	1	PERV	4	CLST	4	SIL	OP	2	ALB	CLST	1	Silica-chlorite overprinting sericite alteration within interval, possible albite haloes? surrounding circular ash particles within interval
327.5	331	S	PERV	3	FR	3	CLST	4	CLST	3	CHL	FR	4	SIL	VN	2	Within fracture-fault zone, increased clay, minor qtz veinlets
331	355.6	S	FR	2	FR	2	CLST	4	CLST	3	CHL	FR	4				Silica overprinting sericite alteration
355.6	357.6	S	PERV	2	FR	2	CLST	4	CLST	3	CHL	FR	4				
357.6	365.7	S	FR	3	FR	2	PERV	2	FR	1	BIOT	MTRX	1				Weakly purplish biotite altered matrix, minor chlorite-sericite-clay along fractures
365.7	402.5	S	FR	3	FR	2	PERV	2	FR	2	BIOT	MTRX	3				Strongly altered purple biotite matrix. Evidence of biotite alteration rounding clasts at 370.9m
402.5	421.6	S	FR	2	FR	1	PERV	2	FR	1	BIOT	MTRX	2				Slightly weaker biotite alteration within interval

Blackwater Project
Drill Summary - Alteration

BW0354		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
421.6	441.4	S	FR	2	FR	2	PERV	2	FR	1	BIOT	MTRX	2				Weakly altered, biotite-chlorite alteration providing purplish hue to colour of rock
441.4	446.9	S	FR	2	FR	3	CLST	1	FR	1	BIOT	CLST	2				Clasts of andesite within fault zone are biotite altered, moderately clay altered
446.9	466.7	S	FR	2	FR	1	PERV	2	FR	1	BIOT	MTRX	2	CAL	VN	4	Strong calcite veinlets throughout interval, minor bt alteration giving purplish hue, chlorite-pyrite prominent along fracture surfaces

Blackwater Project
Drill Summary - Mineralization

BW0354		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
56.8	62.1	FP	0.5	CR	0.1	CR	0.1	Goe	FP	2	Hm	FP	2				Strong goethite-hematite mineralization along fracture planes
62.1	88.1	FP	0.5	CR	0.1	CR	0.1	Goe	FP	1	Hm	FP	1	Goe	CR	0.1	Reaction rims of goethite? around clasts. Minor pyrite stringers within interval
88.1	90.6	FP	1	CR	0.1	CR	0.5	Po	FP	0.1							Black soot pyrite veinlets dominant in qtz-sericite altered zone, minor pyrrhotite
90.6	97.9	FP	0.1	CR	0.1	CR	0.1	Goe	FP	0.5	Hm	FP	0.5				Minor goethite-hematite mineralization along fracture planes, pyrite minimal.
97.9	109.6	FP	2	CR	0.1	CR	0.5	Hm	FP	0.1							Minor black sooty pyrite throughout interval along fracture planes
109.6	114.6	FP	0.5	CR	0.5	CR	0.1	Hm	FP	0.5							Hematite-goethite along fracture planes
114.6	119.2	FP	2	FP	2	FP	1										Pyrite-gouge within section
119.2	124.1	VN	1	FP	0.1	CR	0.5										Gouge-rich section with black sooty pyrite. Expecting good gold values within gouge zone
124.1	126.2	FP	0.5	VN	10	CR	0.5										Veinlets of sphalerite shot throughout interval
126.2	129.6	FP	0.5	FP	0.5	CR	0.5										Minor sphalerite within section, mostly black sooty pyrite along fracture planes
129.6	134.6	FP	1	FP	0.5	CR	1	Dbs		1							Pyrrhotite increases along fracture planes and within gougy zones of interval
134.6	144.2	FP	0.5	CR	0.1	CR	0.5										Fracture-plane mineralization throughout interval
144.2	162.1	FP	1	CR	0.5	CR	0.5										Minor pyrrhotite-pyrite along fracture planes
162.1	162.5	FP	1	CR	0.1	CR	0.5	Ga	FP	2	Dbs		1				Bluish grey galena throughout interval, possibly will spike silver values
162.5	166.5	FP	0.5	CR	0.1	CR	0.5										Mineralization is fracture plane dominant
166.5	175.1	FP	0.5	CR	0.5	CR	0.5										
175.1	175.3	FP	0.5	CR	0.5	CR	0.1	Ga	FP	5	Dbs	DEN	0.1	Po	DEN	1	Bluish grey Galena visible within short broken interval
175.3	179.8	FP	0.5	CR	0.5	CR	0.1	Dbs	DEN	0.5							Stringers of black pyrite DBS prominent from 177.10-177.25m
179.8	184.1	FP	1	CR	0.5	CR	0.1										Black pyrite-chlorite alteration strong along fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0354		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
184.1	192.9	FP	0.5	CR	0.5	CR	0.5	Dbs	DEN	0.5							Dendritic black sulphides through felsic tuff unit
192.9	206.7	FP	2	CR	0.1	CR	1	Dbs	DEN	1							Minor dendritic black sulphides within interval
206.7	210.7	FP	1	CR	0.1	CR	1										Fine black pyrite along fracture planes and within gouge sections
210.7	218.2	FP	2	CR	0.1	CR	1										
218.2	227.5	FP	1	CR	10	CR	1	Sp	FP	1							Intense sphalerite throughout interval, possibly just clast replacement, despite appearing on fracture planes as well
227.5	230.3	DI	10	CR	2	CR	2	Hm	VN	0.1	Sp	VN	1	Po	VN	1	Disseminated pyrite zone with pyrrhotite-sphalerite veinlets, hematite-chalcopyrite veinlets and clast replacement by both pyrrhotite and sphalerite
230.3	236	FP	1	CR	5	CR	1	Sp	FP	1							Very minor pyrite in interval, sphalerite still abundant in section, possible VG spotted at 230.9
236	247.9	FP	5	CR	0.1	CR	0.5										Abundant black pyrite-chlorite along fracture planes
247.9	249	FP	2	CR	3	CR	2	Cp	CR	0.1							Black sooty pyrite-chlorite alteration within fracture zones, clast replacement strong from pyrrhotite and sphalerite, minor cpy with pyrrhotite clasts
249	250.4	FP	1	CR	1	CR	1	Py	VN	0.1							Black sphalerite clast replacement in interval
250.4	265.5	FP	1	CR	0.5	CR	1	Po	BN	0.5							Banded pyrrhotite within interval, black sooty pyrite-chlorite along fracture planes
265.5	281.2	FP	1	CR	0.1	CR	0.5	Po	BN	0.1							Black pyrite-chlorite alteration along fracture planes
281.2	282.7	FP	2	CR	0.1	CR	0.5										Increased pyrite within gouge section
282.7	299	FP	2	CR	0.1	CR	0.5										Increased black sooty pyrite at 291, black chlorite-pyrite alteration throughout interval
299	308.2	FP	1	CR	1	CR	2										Pyrrhotite has replaced amygdules throughout interval
308.2	310.7	FP	1	CR	0.5	CR	0.5	Py	BN	1	Mrc	FP	0.1	Sp	VN	0.1	Fine black mud = banded pyrite in interval. Minor marcasite spotted at 309.45m, trace sphalerite veinlets
310.7	311.5	FP	2	CR	1	CR	1	Dbs	DEN	0.5	Sp	VN	2				Sphalerite veinlets wispy throughout interval

Blackwater Project
Drill Summary - Mineralization

BW0354		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
311.5	327.5	FP	1	CR	2	CR	1	Dbs	DEN	1	Py	BN	0.1				Dendritic black sulphides and black-red sphalerite dominate in interval
327.5	331	FP	1	CR	1	CR	0.5	Dbs	DEN	0.5	Grnt	MA	0.1	Py	BB	0.5	Trace garnets within interval at 328
331	353	FP	1	CR	2	CR	1	Dbs	DEN	2	Sp	VN	0.5				Abundant DBS & clast replacement by pyrrhotite-sphalerite
353	353.2	FP	1	CR	0.1	CR	0.1	Mrc	FP	0.5							Radiating marcasite visible on fracture plane
353.2	355.4	FP	1	CR	0.5	CR	0.5	Dbs	DEN	0.5	Py	VN	1				Abundant DBS & clast replacement by pyrrhotite-sphalerite
355.4	357.4	FP	1	CR	0.5	CR	0.5	Dbs	DEN	0.5	Py	VN	1				Pyrite veinlets wispy throughout interval
357.4	360.2	FP	1	CR	0.1	CR	2										Pyrrhotite has strongly replaced amygdules within interval
360.2	380.5	FP	0.5	CR	0.1	CR	0.5	Py	VN	0.1							Fine pyrite along fracture planes (late-stage?), weak pyrrhotite amygdule replacement
380.5	389.8	FP	0.5	CR	0.1	CR	1										Increased pyrrhotite replacing amygdules within interval
389.8	407.6	FP	0.5	CR	0.1	CR	2										Blebby-like pyrrhotite replacing amygdules within andesite clasts, minor pyrite-pyrrhotite wispy bands
407.6	420.8	FP	0.5	CR	0.1	BB	1										1+ mm sized pyrrhotite blebs, possibly still clast replacement?, but does not appear overly amygdaloidal.
420.8	434.5	FP	0.5	CR	0.1	BB	1										Pyrrhotite blebs (possibly amygdule replacement?) within interval, pyrite restricted to fracture planes as alteration product with chlorite
434.5	441.5	FP	1	CR	0.1	CR	0.1	Py	VN	0.1							Weak fracture controlled/pyrite veinlets at 45 degrees TCA
441.5	446.8	DI	1	CR	0.1	CR	0.1	Py	DI	0.5							Pyrite disseminated within gouge intervals as well as zones of chlorite-pyrite alteration
446.8	466.7	FP	0.5	CR	0.5	CR	0.5	Py	VN	0.5	Sp	VN	0.1	Po	VN	0.1	Weak mineralization within interval, trace pyrite, pyrrhotite and sphalerite veinlets within interval. Sphalerite-pyrrhotite band at 466.5m

Blackwater Project
Drill Summary - Structure

BW0354

From (m)	To (m)	Structure	Strength	Comments
56.8	62.1	BRKZ	4	Small fractures parallel to core axis. Dominant fracture set at 50 degrees TCA.
62.1	73.8	JZ	3	Gouge zones within zone (5 mm in width), prevalent approximately ever metre
73.8	73.95	FL	4	Gougy fault zone breccia
73.95	75.8	BRKZ	3	Broken zone 45-60 degree TCA breaks between core
75.8	78.1	JZ	2	Weakly jointed zone
78.1	79	FZ	2	Weakly faulted zone 60-80 degrees TCA
79	84.5	JZ	3	Weak joint set as well at 20 degrees TCA
84.5	87.5	FZ	1	Very weak fault zone, 50 degrees TCA joints
87.5	90.6	JZ	3	Minor gouge in section, mostly weak fractures
90.6	98	BZ	4	Limonite-clay matrix with silicified clasts in fault breccia interval
98	110.9	JZ	2	Weakly jointed zone
110.9	112.2	BRKZ	3	Broken zone with minor gouge, limonite-hematite along fracture planes
116	117	FZ	3	Lower contact at 30 degrees TCA
117	122.4	BRKZ	3	Broken zone, minor gouge in interval
122.4	123.4	FZ	2	Weak fault, minor gouge within interval
123.4	126	VZ	4	Weakly jointed, mineralized zone, sphalerite-rich
126	128	FL	4	Beige-white gouge fault at low angle TCA, with black pyrite paralleling gouge fault
128	132.7	BRKZ	3	Silicified zone with weak low angle fracture set
132.7	134.8	CRZ	3	Crushed zone of silicified-mineralized core, no distinct angles to measure within zone.
134.8	137.6	BRKZ	3	Broken zone of silicified-chloritized core
137.6	158.3	JZ	2	Weak joint zone, fractures from 50-70 degrees TCA, minor broken rock within zone
158.3	159.8	FZ	2	Lower contact at 30 degrees TCA
159.8	160.8	JZ	1	Small section of weakly jointed core
160.8	166.4	FZ	4	Fault zone with minor gouge within zone. Strongly silicified, abundant chlorite gouge
166.4	169	BRKZ	3	Broken zone, 2 more intense zones within section
169	170.1	FZ	3	
170.1	175.2	JZ	3	Minor broken zones within joint zone
175.2	180	FZ	4	Strongly broken crushed rock within zone, gouge at start of fault zone has galena

Blackwater Project
Drill Summary - Structure

BW0354

From (m)	To (m)	Structure	Strength	Comments
180	185.1	BRKZ	2	Weakly broken zone
185.1	188.7	JZ	3	Strong gouge lower contact
188.7	193.9	FZ	4	Gouge-rich section within fault zone, minor fault breccia, broken zones. Lower contact, shows normal movement at 30
193.9	200.3	BRKZ	3	Weak broken zone/joint zone, chlorite along slickenlines
200.3	201.3	BRKZ	3	
201.3	205.2	BRKZ	3	Broken zone of chloritized core
209.5	210.7	BZ	2	Difficult to determine true fracture angle, fault breccia zone, gouge is solid
210.7	211.5	FL	4	Slickenlines visible on fracture surface, chlorite, at 15 degrees TCA
211.5	214.6	BRKZ	3	broken zone, very minor gouge
214.6	215.2	FL	4	
215.2	224	JZ	2	Minor broken zones throughout interval
224	233.8	BRKZ	2	Slightly more broken zone then previous interval, mineralization prominent in this interval
233.8	235.3	FZ	4	Gougy zone, sharp upper and lower contacts at 60 (upper) and 40 (lower)
235.3	238.4	BRKZ	3	Broken zone, minor gouge in interval
238.4	240.5	FZ	4	Upper contact sharp at 40 degrees TCA
240.5	244.6	JZ	4	Joint zone, no major gouge in interval, minor broken zones within interval
244.6	245.8	BRKZ	2	Slightly broken throughout zone
245.8	246.9	JZ	2	Weakly jointed interval
246.9	250.7	BZ	4	Fault Breccia zone, lt green sericite-chlorite-clay alteration in interval, gougy, rich in pyrite
250.7	255.8	BRKZ	3	
255.8	265.3	FZ	4	Lower contact at 55 degrees TCA, gougy at lower interval
265.3	268.9	JZ	2	Dominant angle of joints within zone
268.9	269.1	FL	4	Gougy fault zone, sharp lower contact
269.1	271	BRKZ	2	Prominent fracture angle, minor fractures at 30 degrees TCA
271	271.2	FZ	1	Weak fault zone, minor gouge in section, more of a broken zone
271.2	271.6	JZ	2	
271.6	271.9	FZ	2	Low angle TCA, minor gouge

Blackwater Project
Drill Summary - Structure

BW0354

From (m)	To (m)	Structure	Strength	Comments
271.9	274.6	JZ	3	Minor joints in section
274.6	275.9	FZ	4	Chlorite-rich gouge along fault
275.9	278.2	JZ	2	40 degree TCA fractures within zone
278.2	279.7	FZ	2	
279.7	280.8	JZ	2	Joints vary from 40 to 70 degrees TCA
280.8	281.1	FZ	1	Gouge within zone at 60 degrees TCA
281.1	283.2	BZ	3	Gougy fault breccia within interval
283.2	285.2	FZ	4	Low angle fractures gouge filled
285.2	286.4	JZ	2	
286.4	287.1	FZ	3	Sharp lower contact
287.1	288.6	BRKZ	2	
288.6	292.8	FZ	3	Sharp upper contact
292.8	300	JZ	3	Joints from 30 to 70 degrees TCA
300	301.5	BRKZ	2	Primary joints at 60 degrees TCA, upper contact at 20 TCA
301.5	302.5	FZ	3	Minor gouge, slickenlines visible on broken piece of core in interval
302.5	306	BRKZ	1	Weakly broken, joint zone?
306	308.5	LY	2	Amygdules very weakly aligned at 60 degrees TCA
308.5	327.3	JZ	3	Minor broken zones within larger joint zone
327.3	331.5	FZ	3	Lower contact at 40 degrees TCA
331.5	333.9	JZ	2	
333.9	334	FL	4	Fault gouge over short interval
334	356.5	JZ	2	Minor broken zones within interval
356.5	357.6	BRKZ	2	
357.6	363.2	JZ	2	Weakly jointed zone, no visible gouge
363.2	364.9	FZ	2	Minor gouge zone at 363.9m
364.9	365.4	JZ	2	
365.4	365.5	FL	4	Weak fault filled with calcite-rich gouge
365.5	367.9	JZ	2	Weak joint zone minor broken zone from 367.4-367.45m

Blackwater Project
Drill Summary - Structure

BW0354

From (m)	To (m)	Structure	Strength	Comments
367.9	368.1	FL	2	Calcite infilling thin 20mm fault
368.1	371.3	JZ	2	Joints vary from 35-55 within interval
371.3	371.5	FL	4	Fault gouge and weak slickensides visible at 371.25m
374.3	375.2	BRKZ	3	Broken zone, no visible gouge
375.2	389.9	JZ	2	Joints vary from 40-60 degrees TCA within interval
389.9	390.8	BZ	2	Zone of gouge fault matrix with rounded clasts of andesite
390.8	391.2	FL	4	Gouge rich zone, sharp lower contact
391.2	420.6	JZ	3	Primary joints at 30 degrees TCA, secondary joints at 60 degrees TCA
420.6	421.6	FZ	4	Gouge rich zone, upper contact at 15 degrees TCA
421.6	435.5	JZ	3	
435.5	435.5	FL	2	Minor gouge, very short interval
435.5	441.5	BRKZ	3	Broken zone, no visible gouge within interval
441.5	446.8	FZ	4	Gouge within fault zone, angles consistent throughout zone
446.8	466.7	JZ	3	Weakly jointed zone

Blackwater Project
Drill Logs

Hole ID:	BW0355	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375801.13
Depth (m):	418	Date Started:	14/02/2012	Casing Size:	HWT	Northing:	5892649.63
Azimuth:	0	Date Completed:	23/02/2012	Casing (m):	30	Elevation (m):	1611
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	311.4	-89.6
100	248.5	-89.6
150	217.7	-88.8
200	205.8	-88.7
250	200.8	-88
301	185.4	-88.1
350	196.8	-88
400	193.8	-88
418	198.8	-87.5

Blackwater Project
Drill Summary - Lithology

BW0355

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	29.6	OB							
29.6	62	VC	ms	LAP	M	GRY	FLT	GR30+	90:10 matrix supported, poorly sorted, bi-modal clast size (3mm and >= to 8mm), sub-rounded to rounded. Locally bleached clay/sericite alteration that makes mafic clasts appear felsic, notably mafic by clay/sericite replaced plag lathes and a transit
62	106.9	VC	ms	LAP	M	GRY	DEP	GR30	90:10 coarse sand matrix supported, poorly sorted, bi-modal clast size (1-5mm and 10-150mm). Large clasts clack clay replaced plag crystal rich. Silica clasts appear rounded and replaced by silica (not really felsic).
106.9	111.9	AND	bx	LAP	D	GRY	FLT	GR30	100:0 sub-angular to angular (hydrothermally eaten between 118 and 120m), locally massive, small (<or=to 15mm) bx clasts between larger clasts/masses.
111.9	117.6	VC	ms	LAP	M	GRY	FLT	GR30+	90:10 coarse sand matrix supported, poorly sorted, bi-modal clast size (1-5mm and 10-150mm). Large clasts clack clay replaced plag crystal rich. Silica clasts appear rounded and replaced by silica (not really felsic).
117.6	139	AND	bx	LAP	M	GRY	UNKN	GR30+	Bx ms AND weakly amygdaloidal.
139	373.7	AND	mas		D	GRY			Seperated Sections of Porphyritic plag and silica filled amygdules. locally in-between sections of amygdaloidal and plag porphyry rock is partially jigsaw fit minorly curviplanar Bx (auto Bx), with only 5-20% matrix. Locally purplish matrix assoc wit
373.7	391.6	VC	plm	LAP	MO	GRY	UNKN		Peculiar interval, essentially three liths present, all VC in nature. The VC listed can be split into two distinct liths, one is well sorted, locally laminated and largely felsic, other is porrly sorted with larger clasts and largely mafic. Lith 3 is
391.6	418	VC	ms	CA	MO	GRY	DEP	GR30+	Entie interval is ?epiclastic, grades from lith 1 to lith 2 very gradually, representing a coarsening down succesion. Frequent intervals between 395 - 406 show weak foliation defined by aligned elongate clasts.

Blackwater Project
Drill Summary - Alteration

BW0355		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
29.6	33	O		0	CLST	4	CLST	1		0	LIM	FC	4	HM	FC	2	Clay strongly replacing clasts, trace silica blebs (clast replacement). Matrix is harder, but weak-moderatley clay replaced. Oxidation products on and following fractures, as well as locally DI (replacing sulphides...?)
33	50	O	CLST	1	CLST	4	CLST	1	CLST	1	LIM	FC	3	HM	FC	1	Clay weak-moderatre replaces matrix, Strong egg-white replacement of clasts, Strong translucent clay replacement of Plag crystals in clasts. Silica replaces blebs in clasts and locally small clasts.
50	50.55	O		0	MTRX	4	CLST	5	MTRX	4	LIM	PATC	3				Sericite-Clay alteration of Matrix, while all clasts have been stongly silica replaced. Ends of unit and small patches within have been limonitically altered.
50.55	65.5	O		0	CLST	3	CLST	3		0	LIM	FC	4	HM	FC	1	
65.5	82.2	T		0	PERV	3	AMYG	2		0	SIL	CLST	1	LIM	FR	2	Matrix locally weakly silicified, Silica rims sulphides in amygdules (concentric zonationw ith silica on outside), Small clasts with silica/white mica (replaced feldspar?) circles near edges (possibly spherulites?). pervasivley clay altered, locally stronger in clasts. Small white clay blebby clast alteration (masses of clay, sulphides and Garnet).
82.2	87	S	FR	1	PERV	3	CLST	1		0	BIOT	REP	3	CLY	SPHL	2	clay pervasive in clasts and matrix. Chlorite weakly on FP's. BIOT anhedral brown replacement masses in clasts and crystals of clasts with Po. White clay halos blebs with euhedral BIOT some Sp and Py locally (Garnet inclusions locally?).
87	106	S	FR	2	CLST	3	PATC	3		0	BIOT	REP	3	GRNT	CLST	1	patchy matrix dominant silicification. Blebby Grnt and sulphides rimmed by white clay
106	107.5	S		0	MTRX	2	AMYG	3		0	SIL	CLST	2	GRNT	CLST	3	silica clast dominant and filling amygdules. Matrix clay altered weak-moderate. Grnt blebs predom clast replacement haloed by white-tan clay.
107.5	110.5	S		0	SPHL	3	PERV	3		0	GRNT	CLST	2	BIOT	CLST	1	
110.5	117.9	S	FR	3	CLST	3	PATC	2		0	BIOT	CLST	3	SIL	CLST	1	moderate chlorite on FP's. locally silica patchy and matrix dominant, as well as replacing choice clasts as rounded silica blebs. BIOT choice replaces mafic clasts partially with accessory sulphides and white circular clay blebs.

Blackwater Project
Drill Summary - Alteration

BW0355		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
117.9	120.5	S	FR	2	CLST	3	PATC	4		0	BIOT	CLST	4				Patchy matrix dominant silicification that eats away at the AND contributing to a hydrothermal dissolution of the AND leaving small discontinuous clasts of AND with Plag. The remnant AND or clasts.... are clay replaced with silica-shulphide filled amygdules. BIOT strongly replaces these clasts remnant alteration clasts.
120.5	134	S	FR	2	CLST	3	PATC	2		0	BIOT	CLST	3	GYP	FC	1	locally patchy matrix dominant silicification. Clast dominant BIOT and clay alteration. White clay on FP's Between 122.5-125.5, fine-grained prismatic translucent soft <2 mineral coating vuggy FP's with euhedral Py (gypsum)
134	140.5	S	FR	2	PERV	2	AMYG	2		0	BIOT	PERV	4	GYP	FC	2	clay patchy and amygdule filler. BIOT/clay pervasivley replacing GM. chlorite/soft clay on FP's
140.5	146.5	S	FR	1	PERV	2	FR	2		0	CAL	FR	4	ANH	FR	3	whit to off-green anhydrite assoc with chlorite on fracture planes, Calcite-Anhydrite on FP's and veinlets. Locally vuggy with sulphides filling vugs, and Qtz on FP's.
146.5	158.5	S	FR	1	CLST	2	PATC	3		0	ANH	FR	2				patchy what appears to be matrix dom silicification, but silica may have eaten away at AND and altered texture to appear clastic.
158.5	164.6	S	PATC	1		0	PATC	3		0	SIL	VN	3	CAL	FR	2	silica patchy/blebby in throughout, and locally veined with small vugs, and veins with calcite on the interior, Qtz also occurs as crackle veins with small hydrothermal brecciation in between. Chlorite occurs with silica in small patches.
164.6	173	S	FC	1	PERV	2	AMYG	2		0	CAL	FC	3	ANH	FC	2	fault, abundant clay gouge and calcite/anhydrite filling fractures. Fragments are partially pervasivley clay altered, with weak chlorite fracture plane controlled
173	177.7	S	PATC	4	PATC	2	VN	3		0	CAL	VN	2				Patchy chlorite locally assoc with veins and replacing ground mass, locally fills amygs?. Qtz-Ca veinlets throughout. small blebby patches of clays.

Blackwater Project
Drill Summary - Alteration

BW0355		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
177.7	190.8	S		0	REP	2	PERV	2		0	SIL	AMYG	2	GRNT		2	weakly per silicified, with silica filling amygdules. Black clay replacing lathe shape minerals. D.Brown Garnets appear to be partially replacing Plag and infiling amygs locally with silica and Po.
190.8	195.7	S	VN	1	PATC	2	VN	2		0	CAL	VN	3	BIOT	PATC	2	Calcite on FP's and veinlets, locally with chlorite inclusions. Qtz-Calcite veinlets locally. BIOT patchy in GM.
195.7	200.4	S		0		0	PERV	3		0	GYP	FC	3	CAL	VN	1	pervasivley silicified, Qtz vn locally, associated with Bx and vuggy gypsum filled cavities.
200.4	216.2	S		0		1	PERV	3		0	BIOT	PATC	2				Clay replacing or infilling small <1mm grains.
216.2	224.7	S		0	CLST	2	PERV	1		0	BIOT	CLST	2	CAL	VN	1	Weak to non-existant silicification. BIOT replacing clasts partially with clays.
224.7	228.5	S	FR	2	REP	1	PERV	1		0	BIOT	PERV	2	CAL	VN	2	Siliceous purply metal rich alteration fluids, following matrix and locally causing brecciation (with dissolution of clasts causing rounding). BIOT choice replaces mafic clasts, and eakly pervasive.
228.5	231.8	S	PATC	3	REP	1	PATC	3		0	BIOT	CLST	2	CAL	VN	2	Silica occurs in alteration fluidized matrix, and patchy blebs ith chlorite.
231.8	254.8	S	PATC	3	REP	3	PERV	3		0	BIOT	CLST	1	CAL	FC	1	Strong Alteration zone, silica is pervasive, but also occurs in patches rich with chlorite. Feldspars are aligned @ 60 dtca and blay replaced.
254.8	264.8	S	VN	2	VNHL	4		0	REP	4	CAL	VN	4	BIOT	PERV	4	mod-strong Sericite rep of feldspar phenos. Chl-Ser accessory in calcite veinlets. BIOT pervasivley and patchy alteration of GM.
264.8	265.4	S	PATC	2	PATC	4		0	PATC	2	CLY	VN	3	CAL	VN	4	Dissolution of Feldpsar has left patches of lathe shaped Vugs, within these patches the remainder of the groundmass has 100% gone to clay-Ser-chl. Vuggy Euhedral Calcite vein, assoc with strong clay alteration and dissolution of Feldspars. Fine-grained translucent-transparent prismatic soft <2 gypsum crystals growing on plane surface in Calcite vugged VN.

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0355		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
265.4	286	S	REP	2	VNHL	4	PATC	1	REP	1	BIOT	CLST	2	CAL	VN	4	Local minor Dissolution of Feldpsar haloing calcite veinlets has left patches of lathe shaped Vugs, within these patches the remainder of the groundmass has 100% gone to clay-Ser-chl. Vuggy Euhedral Calcite veines, assoc with strong clay alteration halos on one side up core. patches of weak silica in GM. local replacement of unknown crystals by Ser-Chl.
286	299.5	S	FR	2	VNHL	4	PATC	2		0	BIOT	PATC	2	CAL	VN	3	fine-grained egg-white to yellow soft<4 Fe-Ti Oxides (Leucoxene)
299.5	301	S	PERV	4	PERV	4		0		0	CAL	VN	1				
301	321.5	S	FR	2	VNHL	3	PATC	3		0	BIOT	PATC	2	CAL	VN	3	
321.5	324.5	S	FR	2		0	PATC	2		0	BIOT	PATC	2				Intermittent silicified, chl with calcite and ?talc in veins/fractures
324.5	355.8	S	FR	2	VNHL	1		0		0	BIOT	PATC	2				Very consistent alteration, patchy biotite as purplish brown in matrix, clay as very soft core in vicinity of more intense carbonate veining, and weak chloritization of fracture planes
355.8	373.5	S	FR	3	VNHL	2		0		0	BIOT	PATC	3				Mjority of fractures chloritized, prophyritic intervals frequently in large amount of biotite in matrix. Frequent 5-10cm wide patches of ?clay alteration shouldering carbonate veins producing soft core.
373.5	377.5	S	PATC	3		0	PATC	2		0	CHL	FR	3				Locally rubbly with pervasive chl on fractures, also patchy silica alt in matrix overprinting chlorite in matrix
377.5	381	S	FR	2		0		0		0							Weak chl on fractures, interval is ??bleached AND, more likely felsic VC
381	385.4	S	FR	2		0	PATC	3		0	BIOT	MTRX	2				Pervasive moderate silica, weak chl on fractures, biotite patchy in matrix of AND intervals.
385.4	391.9	S	FR	3	PATC	2	PERV	4		0	BIOT	CLST	1				Pervasive glassy hard silica, weak chl on fractures, very occaisonal biotite replacing clasts. Sporadic centimetric clay alt in matrix.

Blackwater Project
Drill Summary - Alteration

BW0355

From (m)	To (m)	Oxide Facies	Chlorite Style	Chlorite Int	Clay Style	Clay Int	Silica Style	Silica Int	Sericite Style	Sericite Int	Alteration 1 Code	Alteration 1 Style	Alteration 1 Int	Alteration 2 Code	Alteration 2 Style	Alteration 2 Int	Comments
391.9	400	S	FR	2	VNHL	2		0		0	BIOT	CLST	2				Occasional haloes of soft clay alt around carbonate veinlets, weak chl on fractures, occasional biotite rich clasts.
400	418	S	FR	1		0	PATC	3		0	BIOT	CLST	1				Scarce weakly chloritized fractures and biotite rich clasts, quite frequent patches of silicification 10-30 cm thick

Blackwater Project
Drill Summary - Mineralization

BW0355		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
29.6	48.5		0		0		0	Goe	FP	8	Goe	DI	2	Hm	FP	0.5	Goe-Hm Fracture controlled, Goethite locally infilling DI vigs
48.5	62		0		0		0	Goe	FP	8	Goe	DI	1				
62	69.9		0		0	BB	0.1	Ga	BB	0.1							Ga-Po in silica blebs within mafic clasts.
69.9	78.4	FP	0.1		0	CR	0.5	Po	BB	0.5	Ga	BB	0.5	Cp	FP	0.1	Po-Ga blebs rimmed by silica in amygdules, Po also minor clast replacement. Py-Ga-Cp on FP at 73.7m. Small white blebby clast alteration locally (Garnets?)
78.4	85.9		0	CR	0.5	CR	0.5	Grnt	BB	0.5	Ga	FP	0.5				Ga-Py coating FP's, Blebs rimmed by white clay of GRNT-Sp-Po.
85.9	101.1	FP	0.5	BB	0.5	CR	0.5	Grnt	VN	0.5	Grnt	BB	1	Ga	BB	1	Ga Blebs and DI. Ga-Py-Sp locally assoc with Grnt blebs rimmed by clay. Grnt-Ga-Py Veined. Ga-Py-Sp masses within silica patches. Po clast replacement with BIOT
101.1	108.3	FP	0.5	DI	0.1	CR	1	Grnt	BB	3	Ga	BB	1				
108.3	109		0	BB	0.1	BB	1.5	Grnt	BB	0.5	Ga	BB	0.5				Po-Ga-Sp infilling amygdules, Po BB's locally, Grnt-Po-Ga BB's
109	110.5		0	SP	0.1	SP	0.5	Grnt	BB	3							Clay rimmed Grnt blebs incorporating sulphides.
110.5	112	DI	0.1		0		0	Ga	DI	0.1							Fault zone DI Py and Ga
112	122.5	FP	2	CR	0.1	CR	1	Ga	BB	0.5	Po	BB	0.1				Po-Ga blebs, within the matrix. Py fracture coating veinlets.
122.5	124.9	EU	1		0	BB	0.5										Euhedral Py in Vuggy FP's with translucent fine-grained soft<2 hardness prismatic mineral (gypsum?)
124.9	136.2	FP	1	DI	0.5	CR	1										Po fine DI's replacing clasts, Sp patchy DI's, Py coating FP's and weak veinlets.
136.2	140.5	FP	0.5	DI	0.5	BB	2	Ga	DI	0.5							Po BB's in GM and filling amygdules, assoc with minor Ga DI's.
140.5	143.5	EU	0.5	DI	0.1	DI	0.5										fine Po DI's. Euhedral Py in vuggy fractures.
143.5	152	FP	0.5	GmR	0.5	GmR	0.1	Ga	DI	0.1	Sp	VN	0.1				patchy DI's of Sp-Po, Sp locally veined with Py. Ga DI'd
152	158.4	FP	0.1	DI	0.1		0	Ga	BB	0.5							Ga Blebs with patchy Sp DI's.
158.4	159.6		0		0	BB	2	Ga	DI	0.1							Po BB's and Ga DI's

Blackwater Project
Drill Summary - Mineralization

BW0355		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
159.6	167.4	DI	0.1		0		0										trace Py DI's and fracture fill in fault
167.4	173	DI	0.1		0		0	Ga	BB	0.1							Ga square blebs and Py DI's.
173	177.5		0	GmR	0.1		0	Sp	VN	0.1							Sp locally GM rep around Sp veinlet.
177.5	177.8	FP	1		0		0										Py filing fault gouge.
177.8	186.1		0	BB	0.5	BB	2	Grnt	BB	0.5							Po filling amygs, Po-Sp Blebs filling amygs and locally blebby. BB's of Grnt rimmed by white clay assoc with other sulphides.
186.1	190	VN	0.1		0	BB	1	Po	DI	1							Po finely DI'd with patchy BIOT replacement, and locally BB's up to 3mm. Py on FP's and small veinlets with calcite
190	198		0	BB	0.1	SP	0.1										specks-finely DI'd Po assoc with BIOT. Sp BB's
198	204.5		0	GmR	0.5	BB	0.5	Ga	BB	0.1							small patchy Sp in GM. locally blebs of Po and fine DI's. Ga BB's locally filling silica rimmed amygs.
204.5	212.5		0		0	BB	1	Ga	BB	0.5							Po and Ga BB's thorughout. Ga BB's assoc with Qtz BB's and fracture fill.
212.5	216.2		0		0	BB	1.5	Po	VN	0.1							Po fillimg amygs and BBy throughout. Locally VN'd
216.2	218.2		0	BB	0.5	BB	2.5										Matrix dominant Blebs of Po with accessory Sp.
218.2	223.5		0		0	BB	1.5	Ga	BB	0.1							BB's of Po and locally BB's of Ga.
223.5	227.7	VN	2	BB	2	BB	2	Mrc	FP	0.1	Ga	VN	0.1	Sp	VN	0.1	Sp-Po strength decreases with depth as Py VN's and Fracture coat increases. Sp occurs in select Py veinlets with Ga.
227.7	231.7		0	BB	1	BB	2	Ga	BB	0.5							Po blebs throughout. Sp blebs/DI's decrease in strength with depth, while Ga accessory to Po blebs increaes in strength with depth.
231.7	239.5	FP	2.5	BB	0.1		0										Fault FP/VN
239.5	250	FP	0.5		0	CR	0.5										specks of Po clast replacement, and Py weakly coating FP's
250	254.7	FP	0.5	CR	0.1	CR	1										
254.7	260.2		0		0	GmR	1										Po fine-grained specks of GMR with BIOT.
260.2	262.3		0		0		0										Calcite veined

Blackwater Project
Drill Summary - Mineralization

BW0355		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
262.3	265	VN	0.1		0	GmR	1										small percentage of Py inc alcite vein.
265	267.9	FP	0.5		0	GmR	0.5										
267.9	272.9		0	BB	0.1	SP	2										Po specks and fine-grained GMR. locally BB's of Sp haloed by chlorite.
272.9	279	VN	0.1		0	SP	1										minor Py in calcite veinlets, specks of Po in GM.
279	280.7	FP	1		0	CR	0.5										fault zone Py mineralization in fault gouge, and Po mineralization in remaining clasts.
280.7	298	VN	0.5		0	SP	0.5										specks and blebs of Po in GM and replacing leucoxene. py in clacite veinlets.
298	319.8	VN	0.1		0	SP	0.5										Specks of Po throughout, Py in veinlets and in clay alteration around veinlets.
319.8	325.4	VN	0.5		0	BB	1										Increased py vein density associated with weak deformation, millimetric blebs of Po disseminated throughout
325.4	346.4	VN	0.1		0	SP	0.5										Occasional fine irregular py vt's. Po in millimetric specks unevenly disseminated throughout
346.4	353.7	VN	0.5	BB	0.1	BB	1.5										Frequent 1-3mm wide blebs, and occasional centimetric blebs of Po, Py vein thickness is between 1-10 mm, locally associated with very scarce trace sphal
353.7	359	VN	0.5		0	SP	1										Quite frequent fine py veinlets, often associated with short faulted intervals, also replacing calcite in veinlets. millimetric specks of po throughout.
359	364.5	VN	0.1		0	SP	0.5										Greatly reduced frequency of py veinlets, also only sparse specks of po in groundmass
364.5	373.7	VN	0.5		0	BB	1.5										Locally quite intense py veinlets and partial replacement of calcite veins. Frquent <1-2mm wide po blebs disseminated somewhat patchily throughout.
373.7	381	VN	0.1		0	BB	0.1										Very patchy, occasional fine py veinlets, and isolated centimetric patches of Po in either clasts, or an isolated irregular veinlet

Blackwater Project
Drill Summary - Mineralization

BW0355		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
381	391.5		0		0	CR	0.5										Quite frequent mafic clasts partially replaced by specks of po.
391.5	418	VN	0.1		0	CR	1	Po	VN	0.1							Extremely scarce py. Po sproadicallt replacing clasts, and in very occasional veinlets.

Blackwater Project
Drill Summary - Structure

BW0355

From (m)	To (m)	Structure	Strength	Comments
29.6	33.13	BRKZ	3	irregular vuggy.
33.13	33.67	FL	4	abundant gouge, small <3mm fragments
33.67	35.85	BRKZ	2	irregular fractures at various angles.
35.85	37	FL	3	predominatley rehealed clay rich.
37	38.5	BRKZ	2	trace gouge
38.5	40.1	JZ	2	40>45>50 dtca.
40.1	40.9	FL	3	moderate guige and abundant small fragments
40.9	42.6	BRKZ	2	
42.6	48.15	JZ	3	55>20>25 dtca
48.15	49	FL	3	shards and trace gouge
49	50.64	JZ	3	40-25 dtca
50.64	52.37	FL	4	
52.37	55	JZ	3	50>55>60
55	56.95	BRKZ	2	broken>jointed, small discontinuous fractures.
56.95	65.53	FL	4	partially healed
65.53	67.2	BRKZ	3	minor clay
67.2	80.25	JZ	3	50>60>55>45
80.25	82.27	BRKZ	2	large fragments @ 45 dtca.
82.27	85.8	FL	5	greenish gouge abundant with abundant clasts.
85.8	91.6	FZ	4	Broken>Gouge
91.6	92.2	FL	4	low angle fault, abundant gouge.
92.2	98.5	FZ	4	fault zone with brecciation and moderate gouge
98.5	98.8	FL	4	
98.8	103.3	FZ	4	bottom contact at 35 dtca.
103.3	106	BRKZ	2	
106	110.5	JZ	2	50>70>60>25 dtca
110.5	111.9	FL	5	varied angle to core axis from 50-70.
111.9	114.3	FZ	4	Bx>Gouge

Blackwater Project
Drill Summary - Structure

BW0355

From (m)	To (m)	Structure	Strength	Comments
114.3	117.1	BRKZ	2	
117.1	117.7	FL	5	
117.7	118.5	FZ	3	partially healed
118.5	122.9	FZ	4	patrially healed Bx and Gouge.
122.9	126	BRKZ	2	
126	126.4	FL	3	equal gouge and breccia portions
126.4	128.3	BRKZ	2	
128.3	128.5	FL	4	90% gouge
128.5	134	FZ	3	
134	134.5	FL	4	
134.5	135.2	BRKZ	2	
135.2	136	FL	3	
136	137.3	JZ	2	
137.3	137.6	FL	4	
137.6	143	BRKZ	2	
143	147.2	JZ	2	
147.2	147.6	FL	3	
147.6	152.7	BRKZ	2	
152.7	155.8	JZ	3	
155.8	157.1	FL	5	
157.1	164.5	JZ	2	50>60 dtca.
164.5	173.1	FL	4	partially healed calcite veined clay gouge with breccia.
173.1	179.4	JZ	2	60>65>40 dtca.
179.4	180.4	FL	4	Bx=Gouge
180.4	198.3	JZ	3	65>20
198.3	198.5	BRKZ	3	
198.5	198.7	VZ	3	low angle 0-10 dtca bowled, hydrothermal breccia. clasts of BIOT replaced AND sitting in Qtz matrix. Vug surfaces coated with gypsum.

Blackwater Project
Drill Summary - Structure

BW0355

From (m)	To (m)	Structure	Strength	Comments
198.7	200.4	BRKZ	2	
200.4	200.8	FL	3	calcitic gouge moderate.
200.8	202.2	BRKZ	2	
202.2	204	JZ	3	25>40 dtca. Jointe4d>Bx
204	204.4	FL	4	low angle small sharp gouge rich fault.
204.4	211	JZ	3	70>80>30 dtca
211	211.1	FL	3	small sharp gouge abundant fault
211.1	212	BRKZ	4	
212	226.9	JZ	2	45>60>70>80>20 dtca.
226.9	227.4	BRKZ	4	broken no gouge.
227.4	231.7	JZ	3	45>70>75>80 dtca
231.7	237.8	FL	4	20? dtca. top partially healed, overal abundant gouge, locally calcite associated with partial rehealing.
237.8	239.2	BRKZ	3	broken, rock and lost recovery. Partially competent, maybe fault structure ashed away
239.2	248.7	FL	4	tumbled fragments of rock, with minor-moderate gouge remaining. All short intervals that driller had hard time drilling and core was remaed and rounded.
248.7	249.4	BRKZ	3	
249.4	249.8	BRKZ	1	
249.8	249.9	FL	4	joint failure, gouge abundant
249.9	252.2	BRKZ	2	25>30>65
252.2	252.4	FL	3	minor gouge.
252.4	260.3	JZ	4	jointed >broken, small 10-20cm sections of broken minor gouged rock.
260.3	262.1	VZ	5	Calcite Veins, with subhedral-euhedral calcite crystals injecting into teh rock and fracturing it. Weakly vugged. pervasive clay alteration of the surrounding rock.
262.1	265	JZ	2	50>40
265	265.2	VZ	5	Strongly Vugged calcite vein, large >10mm euhedral crystals.. Wall rock altering to clay and fedspars leaving lathe shaped vugs.
265.2	267.8	FZ	4	Fault zone with atleast 2 strongly gouged faults. In amongst fault material is similar strong injection and brecciating calcite veining similar to above. Faults occuring amongst a strong calcite vein zone.....?
267.8	271.8	JZ	2	strongly calcite veined, fractures that are present are at 50 dtca.

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Drill Summary - Structure

BW0355

From (m)	To (m)	Structure	Strength	Comments
271.8	272.2	BRKZ	3	broken on veins.
272.2	272.9	JZ	2	
272.9	274.6	FZ	4	strongly calcite veined fault zone, with intermittent abundant gouge.
274.6	275.6	JZ	2	50>40 dtca.
275.6	277.3	VZ	3	30 and irregular dtca, calcite veins.
277.3	277.8	BRKZ	3	broken
277.8	280.6	FZ	4	faults at 12-15 dtca.
280.6	282.9	JZ	3	
282.9	288	FL	4	abundant fault gouge.
288	290	BRKZ	2	
290	293.1	JZ	3	50>70>65
293.1	293.2	FL	3	joint failure
293.2	293.5	BRKZ	4	broken redrilled rock.
293.5	298.4	JZ	3	40>35>40>25
298.4	299.2	FL	4	abundant gouge.
299.2	300.1	BRKZ	3	
300.1	301.1	FL	4	chloritic fault gouge.
301.1	302.6	BRKZ	2	
302.6	305.5	BRKZ	4	broken with moderate gouge.
305.5	309	BRKZ	3	broken strongly calcite veined rock.
309	319.7	JZ	3	Quite heavily fractured
319.7	324.4	BD	3	Moderately rubbly throughout, no gouge
324.4	327.5	JZ	3	Locally rubbly
327.5	330.8	FZ	2	Rubbly throughout, short interval of gouge at 338.6-339m
330.8	355.8	JZ	3	frequent fractures at 30 or 85degTCA
355.8	359.8	FZ	2	Competent core but frequent 10-20cm wide intervals of brecciation.
359.8	365.8	JZ	2	Weakly fractured
365.8	366	FL	3	Discreet interval of gouge and breccia

Blackwater Project
Drill Summary - Structure

BW0355

From (m)	To (m)	Structure	Strength	Comments
366	374.5	JZ	2	Weakly fractured
374.5	380.7	FL	3	Very rubbly, poor recovery and locally gouygy
380.7	387.9	JZ	3	Weakly fractured , locally broken
387.9	389.1	FL	4	Rubble and gouge
389.1	418	JZ	2	Weakly fractured, occasionally weakly broken

Blackwater Project
Drill Logs

Hole ID:	BW0356	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375754.61
Depth (m):	329.79	Date Started:	15/02/2012	Casing Size:	HWT	Northing:	5893343.88
Azimuth:	0	Date Completed:	19/02/2012	Casing (m):	3.5	Elevation (m):	1529
Dip:	-90	Logged By:	AVe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.3	241.6	-89.6
92	128.5	-89.7
137.8	239	-89.7
183.5	139.4	-89.8
229.2	130	-89.7
275	137.2	-89.7
329.7	202.7	-89.5

Blackwater Project
Drill Summary - Lithology

BW0356

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
3.5	42	FLPT	ms	LAP	L	GRY	DEP	GR10	Subangular-subrounded Felsic tuff clasts
42	45.2	VC	mas	LAP	D	GRY	DEP	GR5	Mafic subrounded clasts. Felsi fine matrix
45.2	49.85	AND	mas	LAP	D	GRY	DEP	GR5	Massive Andesite.
49.85	52.8	VC	mas	LAP	D	GRY	DEP	GR5	Subangular to subrounded mafic clasts
52.8	57.45	AND	mas	LAP	D	GRY	DEP	GR5	Mafic fine matriz. Volcanoclastic texture
57.45	60.2	VC	mas	LAP	D	GRY	DEP	GR5	Subangular mafic clasts Fine felsic matrix
60.2	61.6	AND	mas	LAP	D	GRN	DEP	GR5	Massive Andesite.
61.6	66.45	VC	mas	LAP	D	GRY	FLT	GR5	Subangular to subrounded mafic clasts
66.45	75.6	FLPT	ms	LAP	L	GRN	DEP	GR10	Subangular to subrounded felsic clasts
75.6	86.56	VC	mas	LAP	D	GRY	DEP	GR5	Fine felsic matrix. Mafic clasts
86.56	93.57	FLPT	mon	CA	L	GRN	DEP	GR10	Fine felsic matrix
93.57	143.9	AND	mas	LAP	D	GRY	DEP	GR30	Brecciated andesite. Clay gouge.
143.9	163.7	VC	ms	LAP	D	GRY	DEP	GR30+	Fine felsic matrix. Brecciated gouge texture
163.7	187	AND	mas	LAP	D	GRY	DEP	GR5	Massive Andesite.
187	250.5	AND	mas	LAP	D	GRY	UNKN	GR5	Massive Andesite,Locally volcanoclastic texture
250.5	293.2	AND	mas	CA	D	GRY	DEP	GR30	Massive Andesite. Volcanoclastic texture
293.2	308.5	FT	lam	FA	L	GRN	UNKN		Felsic tuff with laminated texture
308.5	312.3	FT	mas	LAP	L	GRN	DEP	GR30	Massive felsic tuff, laminated
312.3	329.8	AND	mas	LAP	D	GRY	UNKN		Massive andesite with volcanoclastic texture

Blackwater Project
Drill Summary - Alteration

BW0356		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	21	O	CLST	1	CLST	2		0	PATC	1	LIM	FR	3				Limonite alteration found in fracture planes. Clay alteration found in felsic clasts.
21	42	S	CLST	2	CLST	2		0	PATC	1							Chlorite alteration found in felsic clasts as well as in matrix
42	47.5	S	PERV	2	CLST	2	PATC	1		0							Pervasive Chlorite alteration found in felsic clasts
47.5	60.1	S	PERV	2	CLST	2	PERV	1	PATC	1							Patchy Clay alteration
60.1	64.62	S	PERV	3	CLST	2		0	PATC	2							Clay alteration found in clasts. Pervasive chlorite alteration
64.62	75.29	S	CLST	2	PERV	3		0	MTRX	2							Pervasive clay alteration. Chlorite alteration found in felsic clasts
75.29	85.95	S	PERV	3		0		0		0							Pervasive chlorite
85.95	93.57	S	MTRX	2	PERV	3		0	PATC	1							Clay alteration found in felsic clasts
93.57	96.7	S	PERV	2	CLST	3		0	PATC	2							Clay alteration found in felsic clasts
96.7	119.6	S	MTRX	3	PERV	3	PATC	1		0							Chlorite alteration found in fine felsci matrix Clay alteration found in gouge clay
119.6	154.5	S	MTRX	2		0	PATC	1		0							Chlorite alteration found in clasts as well as in fine felsic matrix
154.5	165.2	S	PERV	2	CLST	2		0		0							Clay alteration found in brecciated clasts
165.2	187	S	FR	2		0	PATC	1	PATC	1							Sericite alteration found along carbonate veins.
187	247.5	S	FR	1		0	PATC	1		0							Patchy silicification found in fracture along with carbonates
247.5	293.2	S	MTRX	2		0	PATC	1		0	BIOT	PERV	2	HM		1	Chlorite alteration found in matrix.Pervasive Biotite alteration, Hematite alteration found in matrix at
293.2	308.5	S	MTRX	2		0		0		0							Chlorite alteration found in felsic matrix
308.5	312	S	MTRX	2		0	PERV	2	PATC	2							Sericite alteration, patchy silicification
312	319.1	S	MTRX	2	PATC	2	PERV	2	PATC	1							Pervasive Clay alteration, silicification overprinting sericite
319.1	329.8	S	FR	2		0	PERV	2		0							Pervasive silicification alteration

Blackwater Project
Drill Summary - Mineralization

BW0356		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
8	20		0		0	DI	0.5	Dbs		2							DBS found in felsic matrix
20	35.96		0	BB	0.5	DI	0.5	Dbs		1							DBS found in fine felsci matrix as well as in felsic clasts
35.96	42.5		0	BB	0.5	DI	0.5	Dbs		1							Blebby Sph found in felsic clasts
42.5	48		0	DI	0.1	DI	0.5										Blebby Po disseminated in clasts
48	50		0		0	BB	1										Carbonate veins. Jasper found in fracture. Massive, hard reddish
50	52.65		0		0	DI	0.1										Disseminated Po found in felsic matrix
52.65	60.1		0		0	DI	1										Blebby Po disseminated found in clasts
60.1	65.5	DI	0.1		0	BB	0.5										Blebby Po found in clasts
65.5	75.29	SP	0.5	BB	1	DI	0.1	Ga	SP	0.5	Dbs	DEN	2				Blebby Galena, Pyrite and Sph
75.29	85.95	FP	1		0	BB	0.5	Py	BB	0.1							Py and Po found as blebs in mafic clasts. Late stage Py found in fractures
85.95	94.95	DI	0.1	BB	1	BB	0.5	Ga	FP	0.5	Dbs	DEN	1				Galena and and Py found in fractures. Blebby Po
94.95	110.3	FP	2		0	BB	0.5										Blebby Po found in clasts. Late stage Py found in fractures
110.3	119.6	FP	0.1		0	BB	0.5										Py found in fractures. Blebby Po
119.6	133.2	FP	2		0	BB	0.1										Blebby Po found in brecciated clasts
133.2	143.9	FP	1		0	BB	1										Blebby Po found in clasts. Py in fractures
143.9	155	FP	1		0	DI	0.5										Disseminated Po found in breacciated clasts
155	172.8	FP	1		0	BB	0.5										Py found in fractures, carbonate veins
172.8	181.7	FP	0.5		0	BB	0.5										Blebby Po, Late stage Py found in fractures
181.7	209.5	VN	0.1		0	BB	0.5										Blebby Po found in mafic matrix. Py veinlets
209.5	229.2	VN	0.5		0	BB	1										Blebby Po found in mafic matrix
229.2	247.5	FP	0.5		0	BB	1										Blebby Po found in matrix, Py found in fractures
247.5	267.1		0		0	DI	0.5										Disseminated Po found in mafic matrix
267.1	286.4	VN	0.5		0	DI	0.5	Ga	VN	0.5							Py veins, Blebby Po, Galena vein at 273.10
286.4	293.2		0		0	BB	0.5										Blebby Po found in mafic matrix

Blackwater Project
Drill Summary - Mineralization

BW0356		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
293.2	301.9	FP	1	DI	2	DI	1	Py	VN	1							Py and galena veins, Py found in fractures, Po and Sp found as blebs
301.9	312	FP	1	DI	2	DI	1	Ga	DI	0.5							Py found in fractures, Po and Sp found as blebs
312	318.7	FP	0.1	DI	0.5	DI	0.5										Disseminated Po and Sph
318.7	329.8	FP	1		0	BB	1	Py	VN	1							Py veins, Po found as blebs

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Drill Summary - Structure

BW0356

From (m)	To (m)	Structure	Strength	Comments
8	20	BRKZ	2	Broken zone. Brecciated clasts
20	21.95	FL	2	Fault zone. Gouge zone with gouge clay. Brecciated felsic clasts
21.95	37	JZ	2	Joint zone. Fracture zone with weak clay gouge
37	47.2	FZ	3	Brecciated felsic clasts. Clay gouge
47.2	66.14	JZ	2	Joint zone. Moderately jointed zone
66.14	75.29	FL	2	Gouge zone. Brecciated clasts.Fault breccia
75.29	79.15	FZ	2	Broken zone.
79.15	94.95	FZ	2	Clay gouge zone. 80degree core axis. Brecciated clasts
94.95	106.5	JZ	2	Joint zone with brecciated clasts
106.5	114	FL	4	Fault breccia. Fault at 70 to the core axis
114	119.6	FZ	2	Fault zone with gouge clay
119.6	133.2	FL	3	Clay gouge. Fault breccia. Brecciated clasts. Fault at low angle
133.2	155.6	FZ	2	Clay gouge. Brecciated clasts
155.6	165.2	FL	4	Fault gouge, Clay gouge, Brecciated clasts, fault at 45 to core axis
165.2	206.5	JZ	2	Moderately joint zone
206.5	210	BRKZ	2	Moderately broken zone
210	214	FZ	2	Clay gouge, Brecciated clasts, Fault breccia
214	231.7	JZ	3	Moderately joint zone
231.7	233.8	FZ	2	Fault zone with clay gouge, fault gouge breccia
233.8	247.5	JZ	2	Moderately join zone with fractures parallel to the core axis
247.5	293.2	JZ	2	Moderately joint zone. Gouge zones at 277.98
293.2	300	FL	4	Clay gouge, Fault breccia, Brecciated clasts
300	312.6	BRKZ	2	Broken zone with fractures parallel to the core axis
312.6	317	FL	4	Fault breccia with gouge clay
317	326.8	BRKZ	2	Moderately broken zone, Clay gouge found locally
326.8	329.8	JZ	2	Moderately joint zone

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Blackwater Project
Drill Logs

Hole ID:	BW0357	Tenure #:	515810	Hole Diameter:	HQ	Easting:	376126.41
Depth (m):	408	Date Started:	16/02/2012	Casing Size:	HWT	Northing:	5892774.55
Azimuth:	270	Date Completed:	01/03/2012	Casing (m):	50	Elevation (m):	1582
Dip:	-60	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-61
50	268.3	-61.4
100	269.4	-61.1
150	268.3	-61.8
213	268	-61.6
250	266.8	-61.7
350	270.3	-61.4
400	270.3	-61.6

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Blackwater Project
Drill Summary - Lithology

BW0357

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	103	OB							Overbudren
103	126.7	AND	autbx	CA	D	GRY	DEP	GR30	Largely autobrecciated, locally with millimetric feldspar lath phenocrysts.
126.7	162.4	AND	volc	LAP	D	GRY			Clast content varies from 40-70%, clasts are typically 5-30mm wide in matrix of very fine ?ash. Majority of clasts are subang, but can be subround
162.4	170.3	VC	cs	LAP	M	GRN	FLT	SH	Heavily bleached and chloritized interval, proximal to small structure. VC texture throughout, 20-40% matrix, clasts 1-40mm wide. Clasts are often very light in colour, but porphyritic and in texture - ??entire interval is bleached andesite?
170.3	190.5	AND	volc	LAP	D	GRY	DEP	GR10	40-70% clasts, largely matrix support, locally clast support breccia. Clasts are typicaly 1-5cm wide, 100% Andesitic.
190.5	201	AND	por	CA	D	GRY	DEP	GR30+	Massive porphyritic to autobrecciated AND. Auto-bx consists of 90% clasts, anglular, 2-10mm wide in mosaic arrangement.
201	227.8	AND	volc	LAP	D	GRY	FLT	GR30	~60% of interval is AND with lapilli VC texture ~60% clasts, clasts 1-6cm wide. Remainder of interval is either porphyritic or fine ?VC/breccia of ~50% 1-3mm wide clasts in ?ash matrix. All mafic.
227.8	231.7	VC	plm	LAP	MO	GRY	FLT	GR10	~60% clasts, clasts 1-15mm wide, largely matrix supported but locally clast supported. Matrix of fine felsic material.
231.7	262.5	AND	por	CA	D	GRY			~70% of interval is porphyritic, remainder VC texture, intermittently brecciated and rubbly throughout. Porph intervals vary in phenocryst size from 1-7mm.
262.5	303.5	AND	autbx	CA	D	GRY			Majority of interval is autobrecciated, quite frequently amygdular, lower 8m begins to show VC texture with larger angular clasts and greater proportion of matrix vs clasts. Isolated ~65cm interval of polymicitc VC at 291-291.7m, depositional contact
303.5	338	VC	plm	LAP	M	GRY	FLT	SH	Largely andesitic with 1-10% small felsic clasts. Largely matrix supported with intermediate composition matrix.
338	347.5	VC	fltbx	LAP	M	GRY	FLT	GR10	Fault rock, gouge rubble and fault breccia. Competent pieces are largely andesitic in composition.
347.5	353.8	VC	plm	LAP	M	GRY	FLT	GR10	~50/50 clasts-matrix, compositionally felsic matrix, ~50% mafic clasts. Clasts are typically 3-10mm, occasionally up to 20mm wide.
353.8	366	VC	ms	LAP	D	GRY	DEP	GR30	~95% andesitic with andesitic matrix. ~50/50 clasts - matrix ratio. Clasts are typical 1-10mm wide, but can be up to 10cm wide.
366	372.4	VC	ms	LAP	M	GRY			~50-50 matrix to clasts ratio, and 50-50 mafic to felsic in flesic matrix. Clasts are typically 1-8mm wide, but often up to 5cm wide.

Blackwater Project
Drill Summary - Lithology

BW0357

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
372.4	385.5	VC	fltgge	LAP	MO	GRY	FLT	GR30	Interval is 95% fault breccia in gouge matrix, occasional larger (1-4cm) clasts in breccia show Similar VC texture and composition to overlying VC unit.
385.5	408	VC	plm	LAP	M	GRY	UNKN		~50% clasts - matrix, and ~15-20% felsic clasts. Much of interval is very rubbly, and locally brecciated with palpable fault gouge.

Blackwater Project
Drill Summary - Alteration

BW0357		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
103	120.7	T		0	PERV	2		0		0	HM	FR	3				orange red haem on fractures, clay noted as general hardness <5, and as low as 2-3 in phenocrysts.
120.7	135	S	FR	2	PERV	2		0		0							Frequent patchy chlorite on fractures, hardness frequently <4 - weak clay alt
135	142	S		0		0	PATC	2		0							Largely unaltered, Occasional patches of silicification associated with very occasional quartz veinlets.
142	151.9	S	FR	2		0	PATC	1		0	BIOT	PATC	2				Matrix is locally rich in purple-brown ?biotite, silica restricted to short intervals in upper 3m.
151.9	152.7	S		0		0		0		0	BIOT	PERV	5				Matrix of entire interval is biotised
152.7	162.5	S	FR	3	CLST	1		0		0	BIOT	MTRX	2				Patchy brown biotite dominating in patches, moajority of fractures and occasional narrow structures chloritic. Trace ?clay in isolated clasts as millimetric creamy white specks.
162.5	170.2	S	PATC	3		0		0	PERV	3	CHL	DEF	3	CHL	CLST	4	Interval is quite heavily bleached - attriubeted to sericitization of matrix and some andesitic clasts. Chlorite is prevalent on fractures, in narrow goge bands, and also in sporadic centimetric patches of matrix, and completely replacing some clasts.
170.2	174.5	S	FR	3	CLST	1		0		0	CHL	CLST	2				Occasional clasts are heavily ?clay altered to hardness ~3 creamy white mineral, also occasional clasts weakly chloritized. Also chlorite on majority of fractures.
174.5	180.3	S	DEF	4	CLST	1		0		0							Gouge rich interval, gouge is pervasively chloritic. Occaisonal clasts in competent intervals show fine specks of clay alt.
180.3	203.2	S	PATC	2	CLST	1		0		0	CHL	FR	3	BIOT	MTRX	2	Occasional 5-20cm wide pacthes of chloritization, ~ 1 patch p/m. Majority of fractures chloritic. Frequent clay alt of ?felspar laths in porhyritic intervals. In Abx intervals matrix is frequently biotite rich.
203.2	204.6	S	PATC	3	CLST	3		0	PERV	2							Very fine phenocrysts pervasively clay altered. Groundmass is largely sericitic, and patchily quite inetnsely chloritic.

Blackwater Project
Drill Summary - Alteration

BW0357		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
204.6	205.8	S	PATC	2		0	PERV	3	MTRX	2							Pervasivley hard and glassy - silicified. 5-10cm wide patches of intense chloritization, Matrix is locally sericitc.
205.8	219.3	S	FR	1		0		0		0	BIOT	MTRX	2				Very scarce chl on fractures, matrix to abx texture is frequently biotiute rich
219.3	221.2	S	FR	1	PERV	3		0		0							Pervasively bleached and soft - clay alt. Trace chl on fractures.
221.2	228	S	FR	3	PERV	2		0		0	BIOT	MTRX	1				pervasive weak clay alt as low hadness, moderate chl on fractures. Occasional biotite in matrix to porph intervals.
228	231.7	S	DEF	2		0		0		0							Moderate chl on fractures and pervasive in gouge
231.7	234	S	DEF	3		0		0		0	BIOT	MTRX	2				Chl pervasive in frequent gouge, biotite patchy in groundmass of AND
234	237.5	S	FR	2		0	PERV	3		0	BIOT	PATC	2				Pervasively sil, locally intense with millimetric blebs of secondary qtz.
237.5	242.6	S	FR	1	PATC	3	PATC	2		0	BIOT	CLST	2				Locally silicified. Peculiar, irregularly shaped patches of bleaching (?clay alt) in matrix of porph AND. Biotite in some clasts of AND
242.6	262.5	S	DEF	2	PERV	2	PATC	1		0	CHL	FR	2				Chlorite is quite common on fractures, and lending gree hue to gouge. Competent pieces are typically relatively soft, hardness 3-4 - ?clay alt
262.5	290.8	S	PATC	1		0	PATC	4		0	BIOT	MTRX	3				Majority of interval is moderately silicified, hard with glassy sheen and occasional blebs of secondary quartz in amygdules. Chlorite is restricted to occasional centimetric patches in matrix. Biotite is present as reddish tint to matrix, and increases in
290.8	293.8	S	PATC	2	VNHL	2	PERV	3		0	BIOT	MTRX	3				Isolated carbonate vein set associated with quite intense clay alt. Biotite throughout matrix, silica pervasive throughout, and occasional centimateric patches of chloritization.
293.8	299.9	S	PATC	3		0	PERV	3		0	BIOT	MTRX	3				Frequent 5-20cm wide patches of chloritization in matrix, pervasive silica and frquent biotite in matrix.

Blackwater Project
Drill Summary - Alteration

BW0357		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
299.9	333	S		0	VNHL	1	PERV	3		0	BIOT	CLST	1				Pervasive moderate silicification, very occasional but quite intense clay alt around carbonate veinlets. Biotite is restricted to occasional porph andesitic clasts.
333	336.5	S	FR	3		0	PATC	3		0	BIOT	MTRX	2				Frequently quite intensely chloritic fractures, locally hard, glassy intervals, and patchy biotite in matrix to abx texture
336.5	347.2	S	DEF	4		0		0		0	CHL	FR	4				Pervasive moderate to intense chloritization of gouge and fractures
347.2	351	S	FR	4		0	PERV	3		0							Fractures are deep chlorite green, hardness is 4.5-6 throughout - ?sil
351	356.8	S	DEF	4		0		0		0	CHL	FR	4				Chlorite intense and pervasvie in gouge and on fractures
356.8	372.4	S	FR	4		0	PATC	3		0	BIOT	CLST	1				Moderate to intense chlorite on fractures throughout, consistent hardness >5 - sil, and occasional mafic clasts with biotite.
372.4	393.2	S	DEF	4		0		0	DEF	1	BIOT	MTRX	1				Interval is largely fault gouge, with pervasive chloritic alt and locally lighter green-whit ?sericite. Biotite is restricted to matrix of VC in occasional competent intervals.
393.2	408	S	FR	3		0	PATC	4		0	BIOT	PATC	2				Moderately intense Chl on fractures, locally intense sil as glassy sheen and increased hardness, and weak biotite in matrix to VC

Blackwater Project
Drill Summary - Mineralization

BW0357		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
103	117.9		0		0		0	Hm	FP	3							Oxidized/transition zone, majority of fractures are fe oxide rich.
117.9	132.2	FP	0.1	BB	0.1	CR	0.5	Py	SP	0.1							Infrequent millimetric blebs of po ?replacing small clasts, occasionally associated with sphal. Very occasional specks of py, always associated with sphal, and frequent patchy py on fractures
132.2	142		0		0	SP	0.1										Very sparse sub-millimetric specks of po in matrix. Essentially barren.
142	151	VN	0.1	BB	0.1	SP	1										occasional fine py +/-po veinlets, frequent millimetric specks of Po in matrix and infilling abx texture, also isolated occurence of sphal in elongate blebs at 146.6m
151	162	BB	0.5		0	SP	1	Py	VN	0.1	Py	FP	0.1				Po and py as very fine, sub-millimetric specks disseminated through matrix, somewhat patchy. Also occasional fine late stage py ?+/-po veins and py on fracture planes
162	166.8	VN	0.1	BB	0.5	CR	1.5	Po	SP	0.5	Dbs	DEN	0.1				More heavily mineralized, occasional 1-5mm wide blebs of sphal in matrix, patchy weak DBS, Frequent clasts being replaced by millimetric blebs of Po, all somewhat patchy - locally intense
166.8	168	VN	2		0		0										Structurally compromised interval with moderately dense network of fine py veinlets, <1-3mm wide, also sooty sulphide in narrow gouge zone.
168	172	VN	0.5		0	BB	1										Sporadic millimetric blebs of po, locally replacing clasts, otherwise in matrix. Quite frequent very fine py veinlets ?associated with deformation.
172	178.5	VN	0.1		0	CR	1										Fine specks of po replacing some clasts, occasional very fine py veinlets
178.5	180.4	DI	1		0	CR	0.5										Fine py disseminated throughout gouge, occasional po in clasts
180.4	185.6	VN	0.1		0	SP	0.5										occasional fine py veinlets, very fine specks of po
185.6	187	FP	0.1		0	BB	2										Frequent 1-5mm wide blebs of po, both in clasts and infilling in matrix of abx texture.

Blackwater Project
Drill Summary - Mineralization

BW0357		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
187	200.2		0		0	SP	0.1										Very scarce <1-3mm wide specks of po, sporadica
200.2	203	VN	0.5	VN	0.1	VN	1.5										'veined' po appears with trace sphal as frequent patchy replacement of secondary silica +/- calcite in matrix to abx texture. Distinctly different style to above intervals.
203	206.8		0		0		0										Barren silicifed AND
206.8	207.7		0		0	BB	1										Frequent 1-3mm wide blebs of po ?filling amygdules
207.7	214.3	VN	0.1	VN	0.1	CR	0.5										occasional py veinlets associated with trace sphal. Quite frequent fine specks/blebs of po replacing clasts
214.3	219.4	FP	0.1		0	SP	0.5										Quite frequent patchy py mx on fractures, sporadic intervals with 0.5-1% po in millimetric specks
219.4	231.9	FP	0.1		0	SP	0.1										Very scarce sulfides, occasional very fine py veinlets and millimetric encrustations on fractures. Po is also very scarce as 1-3mm wide belbs in clasts. Also an isolated bleb of py.
231.9	232.9	VN	0.5		0	SP	0.1										Frequent fine and one 4mm wide py veinlets associated with faulting.
232.9	238.8		0		0	SP	0.5										Largely invisible, very fine specks of po logged on magnetism alone.
238.8	243	FP	0.1		0	BB	1.5										Locally intense Po mx as fine specks and up to 2mm wide belbs
243	251.6	FP	0.1	SP	0.1	BB	2										Po frequently Occuring with qtz in amygdules.
251.6	267	FP	0.1		0	SP	1.5										Po in very fine specks throughout and locally in larger (1-2mm wide blebs) with qtz filling matrix to fine breccias
267	290.8		0		0	DI	0.5										Very fine <1mm specks of Po disseminated throughout
290.8	292.3		0		0	DI	0.5	Po	VN	0.1							Very fine specks disseminated throughout, also occasional elongate blebs of po within carbonate veinlets.

Blackwater Project
Drill Summary - Mineralization

BW0357		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
292.3	303.5		0	DI	0.1	SP	0.5										Occasional very fine specks of sphal disseminated in groundmass, quite frequent <1 - 2mm wide specks of Po, frequently within amygdules.
303.5	309.4	VN	0.1	CR	0.5	SP	0.1	Sp	VN	0.1							Very occasional 1mm wide py + sphal veinlets, 20degTCA. Also quite frequent pacthy replacement of clasts by sphal and occasionally po
309.4	315.3	VN	0.5	CR	0.5	CR	0.1	Sp	VN	0.1							Increased density of py +/- sphal veinlets. Quite frequent patchy replacement of clasts by sphal and po
315.3	328	VN	0.1	CR	0.5	CR	0.5	Sp	VN	0.1							Po and sphal replacing occasional clasts, po more common than sphal (0.1-0.5%). Also occasional very fine py+sphal veinlets, 10-20degTCA
328	331.6	VN	1	DI	0.5		0										Faulted interval, py in fine veinlets throughout +/- calcite. Sphal is disseminated and concentrated in core of fault.
331.6	333.5	FP	0.1	DI	0.1	DI	1										Frequent very fine specks of Po disseminated throughout.
333.5	339	VN	1	CR	0.5	CR	0.5										frequent 1mm wide py veinlets, and occasional clasts being patchily replaced by millimetric specks of po or sphal.
339	347	VN	1.5		0		0										frequent py stringers in fault zone
347	353.5	VN	1	BB	0.5	SP	0.5										frequent fine py veinlets, sphal as irregulalrly shaped pinkish red blebs, and very fine specks of po throughout
353.5	356.8	FP	0.5		0		0	Py	DI	0.5							Small amounts of py disseminated in gouge, quite chunky encrustations of py on fractures.
356.8	365	VN	0.1	DI	0.5	SP	2	Py	FP	0.1							Very frequent fine specks of po disseminated throughout, locally dense as millimetric blebs in clasts. Also patchy belbby shal.
365	372.3	VN	0.5	VN	0.1	BB	0.5	Po	VN	0.1							Frequent 1-2mm wide py veinlets, occasionally with sphal. Po in millimetric blebs and occasional very irregular veinlets.

Blackwater Project
Drill Summary - Mineralization

BW0357		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
372.3	393.2	DI	1		0	SP	0.5	Dbs		1.5							Py disseminated in specks and discontinuous veinlets throughout gouge, also multiple 1cm thick bands of sooty black py rich sulphide goo subparallel TCA in gouge. occasional competent pieces of core are Po rich as 1-2mm wide specks.
393.2	408	FP	0.1		0	SP	1										Specks of po disseminated throughout, frequent small patches of py on fractures.

Blackwater Project
Drill Summary - Structure

BW0357

From (m)	To (m)	Structure	Strength	Comments
103	112.5	BRKZ	3	Frequently rubbly, locally oxidzed. Very poor recovery 103-108m.
112.5	119	JZ	4	Heavily jointed, borderline broken zone
119	124.8	BRKZ	3	frequently rubbly, no gouge.
124.8	134	FZ	1	intermittently rubbly, with occasional weak gouge development
134	142	BRKZ	2	intermittently rubbly
142	147.9	JZ	3	Moderately jointed, 40-65degTCA
147.9	150.4	FZ	2	Jointed section bounded by two discreet 5-15cm wide intervals of gouge and rubble, gouged contacts at 45degTCA
150.4	166.9	JZ	2	Majority of fractures at 45degTCA, remainder at ~60
166.9	170.5	FZ	2	Interval is bounded by 10-30cm wide intervals of gouge and breccia, competent core in between
170.5	174.5	JZ	2	occasional fractures at 45-85degTCA
174.5	179.4	FZ	3	Interval is ~60% chossy rubble with weak gouge development, remainder is competent core.
179.4	185.5	BRKZ	2	Moderately rubbly, no gouge.
185.5	214.5	JZ	3	Moderately fractured, fractures oriented at 45 - 60degTCA, typically 45
214.5	223	BRKZ	3	Moderately rubbly
223	232.2	FZ	3	heavily rubbly, locally gougy, most extreme at 231.4-232m
232.2	242	JZ	4	Quite heavily fractured, bordeline broken zone
242	243.3	FL	3	Rubbly with small amount of sandy gouge
243.3	251.6	BRKZ	4	Rubbly throughout
251.6	255.5	FL	3	locally very poor recovery, rubbly with frequent sandy gouge.
255.5	263	FZ	4	Rubbly throughout, locally with sandy gouge
263	305.6	JZ	2	occasional clean planar fractures
305.6	315.9	JZ	4	Locally quite intense, producing rubble of quite large fragments
315.9	328.4	JZ	2	Locally more intense, largely competent core.
328.4	331.6	FZ	3	Central 1.5m of interval is heavily fractured fault breccia, remainder of interval is rubbly
331.6	333	JZ	1	Competent core.
333	339	FZ	2	Rubbly with occasional gouge and heavy fracturing.
339	347.2	FL	5	Very poor recovery, rubble, fault breccia and abundant gouge.

Blackwater Project
Drill Summary - Structure

BW0357

From (m)	To (m)	Structure	Strength	Comments
347.2	353.7	BRKZ	4	Rubbly and fractured throughout
353.7	356.6	FL	4	Rubble, abundant gouge and fault breccia
356.6	360.6	JZ	3	Frequent clean planar fractures
360.6	365.2	BRKZ	4	Rubbly and heavily fractured throughout, no real gouge ??fault
365.2	370	JZ	3	Locally rubbly, joints also at ~40degTCA
370	372.4	BRKZ	4	Rubbly throughout
372.4	384	FL	4	Majority of interval is fault breccia in gouge nmatrix, occasionally rubbly, locally poor recovery.
384	393.3	FZ	4	Still large intervals of goge and breccia, but ~30% competent core or rubble without gouge or brecciation.
393.3	408	BRKZ	4	Moderately to extremely rubbly, locally poor recovery. No gouge or real brecciation.

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Blackwater Project
Drill Logs

Hole ID:	BW0358	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375002.02
Depth (m):	361	Date Started:	17/02/2012	Casing Size:	HWT	Northing:	5893200.47
Azimuth:	0	Date Completed:	25/02/2012	Casing (m):	3	Elevation (m):	1558
Dip:	-90	Logged By:	TOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	248.9	-89.9
103	48.2	-89.7
157	7.7	-89.8
208	18.8	-89.3
268	291.5	-89.3
319	299.6	-89
361	284.4	-88.6

Blackwater Project
Drill Summary - Lithology

BW0358

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							Overburden
3	22.09	FLPT	lam	LAP	L	GRY			Felsic lapilli tuff with alternate sections of lamination/banding and lapilli tuff clasts; some clasts follow banding
22.09	39.5	FLPT	flwbnd	LAP	L	GRY			Felsic lapilli tuff with flow banding/lamination in sections and lapilli tuff breccia in some sections; some clasts have been elongated due to flow and follow banding
39.5	63	FLPT	flwbnd	LAP	L	GRY	DEP	SH	Felsic lapilli tuff with some flow banding in sections and lapilli tuff breccia in sections, some auto breccia in little sections
63	63.45	VC	plm	LAP	M	GRY	DEP	SH	Polymictic volcaniclatics with roughly 50-50 mafic to felsic clats, matrix supported/intermediate matrix
63.45	78.95	FLPT	lptbx	LAP	L	GRY	DEP	SH	Laminated brecciated felic tuff
78.95	84.6	VC	plm	LAP	M	GRY	DEP	SH	Polymictic with a lapilli to cobble sized clasts variably altered with silica and chlorite with rare clast replacing garnet
84.6	87.1	FLPT	mon	LAP	L	CRM	DEP	GR30+	Pale cream coloured laminated ash tuff, autobrecciated into laminated clastic FLPT
87.1	90.5	FT	lam	LAP	L	CRM	DEP	SH	Pale laminated felsic tuff locally autobrecciated and moderately oxidized.
90.5	104	FLPT	lam	LAP	L	CRM	DEP	GR30	Moderately silicified hydrothermally brecciated and autobrecciated laminated FT and FLPT with weak blebs of intergrown anhedral to subhedral garnet
104	128	FT	lam	LAP	L	CRM	DEP	SH	Locally autobrecciated (hyaloclastite?) flow banded laminated felsic tuff with weak to moderate blebs of garnet
128	153	FT	lam		L	GRY	DEP	GR10	Massive locally brecciated laminated FT with weak bleabs of interlaminated Garnet; Relatively unmineralized
153	187.4	FT	lam		M	GRY	DEP	GR10	Moderately garnet bearing locally hydrothermally brecciated laminated FT
187.4	194	VC	plm	LAP	M	GRN	DEP	SH	Pale green chlorite and sericite silicified Felsic volcaniclastic; Transition zone between FT and VC
194	256	VC	plm	LAP	D	GRY	DEP	SH	Poorly to moderately sorted Dark grey to black polymictic volcaniclastic; Cement is dark grey and clasts range from pebble to cobble size
256	361	FLPT	lam		M	GRY	DEP	SH	Alteration front? Lith Change?; Pale grey nearly massive felsic unit with relict turbulent laminae and relict clastic texture; Weak garnet; Intensely silicified felsic volcaniclastic?

Blackwater Project
Drill Summary - Alteration

BW0358		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	24.92	T	PATC	1	CLST	2	PERV	3	MTRX	1	LIM	FR	3	HM	FR	3	Weak sericite in matrix and some in clasts, weak patchy chlorite, some clay in clasts, moderate pervasive silica, limonite on fracture planes and some in patches, some hematite on fractures, in clasts and patchy in areas
24.92	39.5	T		0	CLST	2	PERV	3	MTRX	2	LIM	FR	3	HM	FR	2	Slightly more sericite in matrix than previous interval, no chlorite, some clay in clasts, pervasive silica, limonite on fractures, hematite of fractures and less patchy than previous interval
39.5	63	T	MTRX	1	CLST	2	PERV	2	MTRX	3	LIM	FR	2	HM	FR	1	Sericitized/ clay altered felsic clasts, with trace amounts of chlorite moderate pervasive silica and limonite on fractures
63	78.95	S	CLST	2	CLST	1		4	MTRX	3							Sericitized and chlorite felsic lapilli tuff, same unit as previous but unoxidized
78.95	84.6	S	CLST	2		0	PERV	4	MTRX	1	CHL	FR	1				Silicified weakly cloritzed volcaniclastic
84.6	90.5	T		0	CLST	2	PERV	4	MTRX	2	LIM	FR	3	HM	FR	2	Weakly clay altered and strongly silicified FT and FLPT with moderate hematite limonite oxides on fracture faces
90.5	104	S	MTRX	2	CLST	2	PERV	4	MTRX	2							Hydrothermally altered bleached clasts of Laminated FT mixed with overprinting silica chlorite altered FLPT
104	128	S	PERV	2	PERV	2	PERV	4	PERV	2							Hydrothermally altered bleached clasts of Laminated FT mixed with overprinting silica chlorite altered FLPT
128	153	S	PERV	2		1	PERV	4	PERV	1							Pale green pervasively chloritized and silicified fine grained ash volcanic
153	172	S	PATC	3	MTRX	1	PERV	4	PATC	1							Weakly hydtothermally clay altered cream coloured laminated FT with zones of moderate chlorite alteration occuring in patches and pervasive silicification
172	182.2	S	MTRX	1		0	PERV	4	MTRX	2	GRNT	CLST	2				Pale grey green silica sericite alteration with weak to moderate garnet blebs throughout
182.2	187.4	S	PERV	2		0	PERV	4	PERV	1	GRNT	CLST	2				Increasingly chloritized silica sericite alteration with weak to moderate garnet
187.4	194	S	PERV	1		0	PERV	4	PERV	1	GRNT	CLST	1				Weak silica sericite chlortie alteration as rock transitions from FT to VC

Blackwater Project
Drill Summary - Alteration

BW0358		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
194	221	S	FR	2	FR	1	PERV	2		0	BIOT	CLST	1	GRNT	CLST	1	Pale grey purple VC with weak garnet alteration, weaker silica, and weak chlortie alteration on fractures; Moderate Biotite alteration of clasts
221	245	S	FR	2	FR	1	PERV	2		0	BIOT	CLST	1	GRNT	CLST	1	Pale grey purple VC with weak garnet alteration, weaker silica, and weak chlortie alteration on fractures; Moderate Biotite alteration of clasts
245	256	S	FR	3	FR	2	PERV	3		0	BIOT	CLST	1	GRNT	CLST	1	Subtle increase in chlorite and clay on fracute planes as VC becomes fractured approaching lower faulted contact.
256	286	S	PERV	3	FR	1	PERV	5	PERV	3	GRNT	CLST	1				Intense obliterative Silica-Ser-Chlorite alteration; Possibly multiple lith breaks but alteration has masked textures
286	305	S	PATC	2	FR	1	PERV	4	PERV	3	GRNT	CLST	1				Garnets are large >2cm, with intergrown sulphides, anhedral, and sub-mm Silica halos.
305	321.3	S	PATC	3	FR	1	PERV	4	PERV	3	GRNT	CLST	1	GRNT	REX	3	Garnets are large >2cm, with intergrown sulphides, euhedral to anhedral, and sub-mm Silica halos preferentially around euhedral grains. euhedral grains are recryastalization and anhedral are replacement?????
321.3	328	S	MTRX	3	FR	1		0	PERV	3							Alteration in fault zone.
328	334	S	PATC	3	FR	1	PERV	4	PERV	3	GRNT	REX	3				Euhedral garnets
334	337.3	S	MTRX	3	PATC	3		0	PERV	3							Alteration in fault zone. locally alteration front of sericite an chlorite can be seen in faault gauge.
337.3	342.5	S	PATC	3	FR	1	PERV	4	PERV	3	GRNT	REX	3				Euhedral garnets
342.5	346.7	S	MTRX	3	PERV	2		0	PERV	3							Alteration in fault zone. locally alteration front of sericite an chlorite can be seen in faault gauge.
346.7	361	S	PATC	3	FR	1	PERV	4	PERV	3	GRNT	REX	3				Euhedral garnets

Blackwater Project
Drill Summary - Mineralization

BW0358		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	24.92		0		0		0	Grnt	BB	0.5	Dbs	DEN	0.3				No Py, Sph or Po; some garnet in huge blebs/clusters; Dbs present
24.92	39.5		0		0		0	Grnt	BB	1							Slight increase in garnets present from previous interval
39.5	63		0		0		0	Grnt	BB	1	Dbs	DEN	0.5				
63	63.45	VN	0.1		0	FP	0.1		BB								
63.45	76	SP	0.1	SP	0.5	BB	0.5	Grnt	BB	1	Dbs	DEN	0.5				
76	79	BB	0.1	BB	1	BB	0.1	Grnt	BB	0.5							
79	84.6	SP	0.5		0	BB	0.5	Grnt	BB	0.5							
84.6	90.5	SP	0.1	BB	0.5	SP	0.1	Grnt	BB	0.5	Dbs	DEN	0.1				Rare sulfide mineralization restricted to clast replacing specks; Weak blebs of Garnet throughout.
90.5	104	SP	0.1	SP	0.5	SP	0.1	Grnt	BB	0.5							
104	128	SP	0.1	SP	0.1	SP	0.1	Grnt	BB	0.5							Trace mineralization occuring in rare fractures
128	153		0.1		0		0.1	Grnt	BB	0.5							
153	172	SP	0.1	SP	0.1	SP	0.1	Grnt	BB	2							2% lapilli sized blebs of deep red brown garnet; trace sulfide mineralization associated with garnet blebs
172	177		0.5		0.5	BB	1	Grnt	BB	1							
177	182	SP	0.1	SP	0.1	VN	0.5										
182	187.4	SP	0.1		0	BB	0.5	Grnt	BB	0.5							
187.4	194		0.1		0		0	Grnt	BB	0.5	Apy	FP	0.1				
194	205		0.1		0	BB	0.5	Grnt	BB	0.5							
205	221	SP	0.1	SP	0.1	SP	0.5	Dbs	DEN	0.1	Grnt	BB	0.1				
221	241	SP	0.1	BB	0.5	BB	0.5	Grnt	BB	0.5							
241	249	FP	0.5	BB	0.5	CR	1										
249	256.2	CR	0.5	SP	0.1	SP	0.1	Grnt	BB	0.1							
256.2	259.5	FP	0.1	SP	0.1	SP	1										
259.5	265.5		0.1	SP	0.1	SP	0.5										
265.5	271.5	SP	0.1	SP	0.1	SP	0.5	Grnt	BB	0.5	Apy	SP	0.1				
271.5	278	FP	0.5	SP	0.5		1	Grnt	BB	0.5	Cp	FP	0.1				

Blackwater Project
Drill Summary - Mineralization

BW0358		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
278	286	FP	0.1	SP	0.5	SP	1.5	Grnt	BB	1							
286	298.8	FP	0.1		0		0	Grnt	BB	1							
298.8	311		0		0	VN	0.5	Po	DI	0.1	Grnt	BB	1				
311	319		0		0	VN	0.5	Po	DI	0.1	Grnt	BB	0.5	Grnt	EU	0.5	Euhedral Grnt have sub mm silica halos.
319	342.5	DI	0.1	BN	0.1	DI	0.1	Grnt	EU	1							Euhedral Grnt have sub mm silica halos.
342.5	361	DI	0.1		0	DI	0.1	Grnt	EU	0.5							Euhedral Grnt have sub mm silica halos. GArnets are small then up hole.

Blackwater Project
Drill Summary - Structure

BW0358

From (m)	To (m)	Structure	Strength	Comments
3	4	BRKZ	3	
4	22.09	JZ	1	Weak joint zone with wispy/jagged joints, measurable joints mostly at 60dtca
22.09	39.5	JZ	2	Joints mostly at 60/70 dtca, others at 30/50/80 dtca; local broken zones <0.5m
39.5	56.5	JZ	3	Joints mostly at 60 degree angles others at 70/80
56.5	58	BRKZ	2	broken up bits of rock
58	70	JZ	2	weak jointed zone, with localized broken zones joints at 40, 50, 70
70	83	BRKZ	3	Moderate broken zone with some competent core
83	89	JZ	1	Wispy jagged joints, measurable joints at 40 and 60
89	90.6	JZ	2	Jointed FT with laminations roughly 40 to core axis
90.6	104	JZ	3	Moderately jointed with fracture planes at 60 and 30 to core axis
104	104.5	FL	5	
104.5	128	LY	5	Strong lamination texture interrrupted locally with hydrobreccia/hyaloclastite
128	153	JZ	2	
153	172	LY	3	Laminated FT and Joints occuring 60 to core axis
172	191	JZ	3	
191	194.5	BRKZ	3	
194.5	195.5	JZ	3	
195.5	205	JZ	3	
205	209.5	BRKZ	3	Cave Zone
209.5	212.8	JZ	3	
212.8	213.2	CLYSEAM	5	Sandy gritty clay seam zone, no obvious evidence of fault
213.2	221	JZ	4	Weak clay along fracture faces
221	226.5	JZ	2	
226.5	239	BRKZ	3	Chlorite clay fractured zone multiple low angle fractures and 50 degree fractures
239	248.2	JZ	3	moderate fracture zone interspersed with cave and fracture zones; no gouge
248.2	248.3	FL	4	gouge clay on fracture surface shallow to core axis
248.3	252	JZ	2	Steep chlorite pyrite covered fractures
252	255.6	FZ	4	intensely fractured and broken zone leading up to fault; chlorite clay gouge on surfaces

Blackwater Project
Drill Summary - Structure

BW0358

From (m)	To (m)	Structure	Strength	Comments
255.6	256.2	FL	5	Faulted contact with intense gouge; approximately 20 to core axis divind volcaniclastic from felsic tuff
256.2	271	JZ	3	
271	286	JZ	3	
286	298.8	JZ	4	locally broken core
298.8	321.3	JZ	2	
321.3	326.5	BRKZ	3	
326.5	328	FL	5	signifigant core loss
328	334	BRKZ	3	
334	337.4	FL	5	Signifigant mineralization of guage. 20% sulphide locally
337.4	342.6	JZ	5	Local minor fault guage.
342.6	346.7	FL	2	minor fault
346.7	361	JZ	2	

Blackwater Project
Drill Logs

Hole ID:	BW0359	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375151.15
Depth (m):	380.87	Date Started:	18/02/2012	Casing Size:	HWT	Northing:	5893350.06
Azimuth:	0	Date Completed:	29/02/2012	Casing (m):	27	Elevation (m):	1538
Dip:	-90	Logged By:	KOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	164.3	-89.8
156	123.4	-89.8
196	84.6	-89.7
250	259.7	-88.8
310.5	186.7	-89.6
358	233.7	-89.7

Blackwater Project
Drill Summary - Lithology

BW0359

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	11	OB							
11	16.5	FLPT	volc	LAP	M	GRY	DEP	GR30+	Medium-grey felsic lapilli tuff wtih chlorite and clay altered clasts (most clasts are banded). Subangular, matrix supported, moderately sorted with sulphide mineralized clasts.
16.5	25.5	VC	volc	LAP	M	GRY	UNKN	GR30+	Medium to dark grey volcaniclastic interval with 50% mafic clasts, some banded felsic clasts. The clasts are subangular to subrounded and some are chlorite and clay altered. Matrix supported, moderately sorted. Sulphide mineralization of clasts.
25.5	28	FT	lam	FA	L	GRY	UNKN	GR30+	Laminated felsic tuff (? stratified? - laminations may grade into eachother surrounded by sharp contacts - ash bed?) with alternating bands of sericite and silica alteration. Sulphide mineralization also following laminations, extensive disseminated
28	55	VC	volc	LAP	M	GRY	DEP	GR30+	Medium to dark grey, matrix supported, polymictic, 75% mafic, subangular to subrounded volcaniclastic interval. Bottom contact with VC unit is gradational and depositional. Alteration is variable within this interval. Clasts are ~1-3 cm.
55	89.5	VC	volc	LAP	M	GRY	DEP	GR30+	Similar unit as above interval with smaller clasts (~1cm diameter), well sorted, subrounded.
89.5	100	VC	volc	LAP	MO	GRY	DEP	GR30+	as above but moderately sorted. Medium to coarse lapilli sized clasts.
100	109	VC	volc	LAP	MO	GRY	DEP	GR30+	as above but well sorted, with 75% mafic clasts. Clasts are fine-lapiili sized.
109	113.5	VC	volc	LAP	MO	GRY	DEP	GR30+	as above but moderately sorted, variably matrix supported, clasts are a medium to course lapilli.
113.5	122.5	VC	volc	BLOCK	MO	GRY	DEP	GR30+	as above with larger variation in clast size, fine lapilli to block. Poorly sorted, 50% mafic clasts, clast supported (variably mastrix supported). Banded and massive felsics and masive mafics.
122.5	149.5	VC	volc	BLOCK	MO	GRY	DEP	GR30	as above ith 75% mafic clasts
149.5	187.3	FLPT	lpt	LAP	M	GRN	DEP	GR30	Felsic lapilli tuff with strong chlorite-silica alteration (obscures primary texture but can still see a relict clastic texture) difficult to determine is clast or matrix supported because of alteration. intermittent sections of laminated felsic rock
187.3	203	VC	volc	LAP	M	GRN	DEP	GR30	dominantly felsic volcanoclastic, with 90%felsics and 10% mafic clasts, matrix is felsic, strong chlorite-silica and sericite alteration throughout
203	380.9	FT	lam		M	GRN			felsic tuff with strong chlorite and silica alteration, fault zone= quite a bit of mechanical clay, some sections of competent core

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0359		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
11	16.5	T	CLST	1	CLST	2	MTRX	4	CLST	3	CLY	FR	3	HM	FR	4	Transition Zone - some weathered out sulphide disseminations. Hematite on fracture planes and as patchy alteration zones throughout. Weak CHL, strong SIL in matrix, CLAY and SER of clasts.
16.5	25.5	T	PATC	2	CLST	2	MTRX	4	CLST	1	CHL	CLST	3	HM	FR	3	Transition Zone - weaker hematite than above, stronger chlorite
25.5	28	S	FR	1	FR	3	PERV	4	PERV	3							Sulphide Zone - no oxide weathering. Pervasive silica and sericite alteration, weak chlorite on fracture planes, moderate mechanical clay gouge on fractures
28	35	S	PATC	2	FR	2	PERV	3	PERV	4	CHL	CLST	2	CLY	CLST	2	Stronger clay and sericite than above.
35	37	S	PATC	1	FR	2	CLST	3	CLST	1	SER	PERV	4	SIL	MTRX	3	Weaker sericite and chlorite than above.
37	57	S	FR	1	FR	3	MTRX	3	MTRX	2	SER	CLST	2				Bleached zone where primary texture is almost obscured by alteration. Weak clastic texture.
57	76	S	PATC	1	FR	2	MTRX	4	MTRX	2	SER	CLST	1				Stong silica in the matrix, moderate mechanical clay on fracture planes.
76	86	S	FR	3	FR	2	PATC	4	PATC	3	SIL	MTRX	3				
86	100	S	FR	2	FR	1	CLST	2	CLST	2	SER	MTRX	2	CHL	CLST	2	
100	142	S	FR	4	FR	1	CLST	2	CLST	2	SER	MTRX	2	CHL	CLST	2	As above with strong chlorite on fracture planes and clasts
142	187.3	S	PATC	3	FR	1	PERV	4	PATC	4	CHL	FR	3				Stronger chlorite on fractures and pervasive thoguh the rock. Strong silica and patchy (? clasts replacement) sericite alteration
187.3	202	S	PATC	4	FR	1	PERV	3	PATC	2	CHL	FR	4				
202	380.9	S	FC	3	FR	1	PERV	3	PATC	3	CHL	FR	3	GRNT	REX	1	same as above, stronger sericite, strong mechanical clay throughout, rare garnets. Additionally, fine mustard-yellow xtals-dust/clay coating fractures

Blackwater Project
Drill Summary - Mineralization

BW0359		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
11	17	DI	0.5	DI	0.5		0	Hm	FP	5							Minor pyrite and sphalerite disseminations, hematite on fracture planes and as alteration fronts.
17	25	DI	1.5	CR	1		0	Hm	FP	2	Ga	SP	0.1				Trace galena appearing within sphalerite disseminations in clasts. Pyrite as very fine grained disseminations and clast replacement
25	39	DI	1	CR	1		1.5	Ga	SP	0.5	Grnt	VN	0.5	Sp	VN	0.5	Greater galena than above, veins of garnet, sphalerite, chalcopyrite, pyrite and Quartz-dolomite-clay. DBS is veined, hairline and discontinuous and dendric. Variable mineralization within this interval.
39	55	DI	1.5	CR	1.5	DI	1	Ga	CR	1							Galena and spalerite occuring together as clast replacement - galena also on fracture planes - subhedral. Pyrite and pyrrhotite disseminations.
55	76	DI	1	CR	2		0	Ga	CR	1							No pyrrhotite. Sphalerite and galena mineralizing clasts.
76	86	FP	0.5	CR	1	CR	0.5	Ga	SP	0.5							Minor po and py, sphalerite disseminations in clasts associated with galena mineralizations.
86	104	DI	0.5	DI	2	DI	1	Ga	SP	0.1	Mrc	FP	0.1				minor py. Py and sp as disseminations in clasts, galena occuring with sp. Marcacite on fracture planes.
104	127	DI	1	CR	2	CR	1	Ga	CR	0.5	Dbs	DEN	0.5	Mrc	FP	0.1	Pyrite in veins and fine grained disseminations, sphalerite, galena and pyrrhotite as clast replacement. Marcasite on fracture planes, dbs as dendric disseminations.
127	149.5	DI	0.5	CR	2	CR	1.5	Ga	SP	0.5	Mrc	FP	0.1				Sphal and pyrr as blebbs in clast replacement, galena occuring with sphal. Marcasite on fracture planes.
149.5	167	DI	0.5	BB	1	BB	1	Grnt		0.5	Mrc	FP	0.1				Sphal and pyrr as blebbs, pyrite disseminations, garnet as courge grained blebs.
167	199.7	DI	0.5	BB	0.8	DI	1	Grnt	BB	1	Mrc	FP	0.1	Apy	VN	0.5	little sph blebs throughout, po as fine disseminations throughout and in little blebs, py disseminated as brassy little specs some py in veinlets with apy, garnet blebs torughout some with little blebs of sph/po within them (being replaced by?)

Blackwater Project
Drill Summary - Mineralization

BW0359		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
199.7	207.5	BB	1	BB	1.5	BB	1	Grnt	BB	0.2							mixed sulphide blebs with sph, po, and py, some sulphides mainly sphalerite in alignment with laminations in laminated clasts,
207.5	217	DI	0.5	DI	0.5	DI	0.5										decrease in sulphides, disseminated specs of py, sph and some small blebs of po throughout
217	234	DI	0.5	VN	0.1		0	Apy	VN	0.1							Occasional arspy and sph veinlets (not together) with di py
234	273	DI	0.5	BB	0.1	BB	0.1	Apy	DI	0.5							Di arspy and py, especially on fractures. Occasional po and sph
273	286.3	DI	1	BN	1.5	DI	0.5	Dbs		1							Di py, in blebs and on fractures, banded DBS and sph, with minor po
286.3	301.4	DI	1	BN	3	DI	0.5	Dbs	BN	2	Apy	SP	0.1				Strong increase in banded sph and DBS, with di py, sparse po, and some arspy on and around fractures
301.4	308	DI	1	BB	1	SUBH	3	Dbs	DEN	0.5							Increased po, blebby to subhedral, some py, blebs of sph, and minor DBS
308	334	DI	1	DI	3	DI	0.5	Dbs	DEN	1.5							Strong di sph, di DBS>py>po
334	352	DI	1	DI	2	DI	1.5	Dbs	DEN	1.5	Apy	DI	0.5				Di sph, DBS, po>py, some concentrations of arspy specks
352	353	DI	1	BB	2	DI	1.5	Ga	BB	0.5							Some blebs of sph+po+py+gal
353	370	DI	1	DI	2.5	DI	1.5	Dbs									Di sph, po, py and DBS
370	380.9	DI	0.5	DI	3	DI	1	Dbs	DEN	2							Concentrations of sph, especially with DBS, blebby and di po, minor py

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Blackwater Project
Drill Summary - Structure

BW0359

From (m)	To (m)	Structure	Strength	Comments
11	17.5	BRKZ	3	hematite and clay on fractures
17.5	23.5	JZ	4	60, 40, 20 degrees TCA. Subhedral galena on fracture planes (60 degrees).
23.5	29.5	BRKZ	5	gravel to cobble size pieces
29.5	31	FL	4	fault with clay gouge at 40 degrees TCA
31	36	JZ	3	joint zone with joint sets at 30, 50, 60 degrees TCA
36	38	FL	4	milled clay gouge at 30 degrees TCA
38	43.5	JZ	5	joint zone with joint sets at 15 and 30 degrees with broken zones.
43.5	44	FL	4	clay gouge at 30 degrees TCA
44	46	JZ	4	joints sets at 30 and 50 degrees TCA
46	62	FZ	4	clay gouge and broken zones. Gouge at 50 and 20 degrees TCA
62	68	JZ	3	Jointing at 15, 30, 50 degrees TCA
68	86.5	BRKZ	4	broken zone with clay gouge at 72.9 at an unknown angle TCA and a clay gouge at 77.5 at 50 and 15 degrees TCA
86.5	91.6	JZ	3	Jointing at 15, 30 and 50 degrees TCA. Local broken zones
91.6	117.5	BRKZ	4	broken zone with gravel to cobble sized pieces and intervals of joint zones with fractures at 30 to 50 degrees TCA
117.5	140.3	JZ	4	jointing at 30 and 50 degree TCA, local broken zones with slicks on fractures.
140.3	142.5	BRKZ	3	moderate broken zone
142.5	143	FL	4	clay healed gouge
143	168	BRKZ	2	moderate to weak broken zone with small intervals of competant core
168	188.3	BD	3	broken zone with mechaincal clay with small intervals of competent core
188.3	211	FZ	3	fault zone, some gge throughout
211	223	FZ	4	clay gge throughout, moderate to strong fault zone
223	301.5	FZ	3	continued fault zone, with less clay gge, lots of rubble
301.5	380.9	BRKZ	2	Broken zone, with more areas of competent rock as it moves below the fault.

Blackwater Project
Drill Logs

Hole ID:	BW0360	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375525.75
Depth (m):	502	Date Started:	19/02/2012	Casing Size:	HWT	Northing:	5892674.25
Azimuth:	270	Date Completed:	28/02/2012	Casing (m):	5.5	Elevation (m):	1627
Dip:	-60	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	268	-61
52	266.7	-61
101.5	266.1	-62.1
160	263.6	-62.5
202	265.6	-62.2
250	267.4	-61.6
301	269	-60.5
350	267.3	-59.6
400	268.6	-56.6
450	270.4	-54.3
500	270.4	-53

Blackwater Project
Drill Summary - Lithology

BW0360

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.5	OB							
5.5	17.7	EC	mas	LAP	M	GRY	DEP	GR30+	Course Sand to fine pebble conglomerate, clasts are angular to rounded, mafic clast tend to be skewed toward more angular while felsic clasts are dominately sub rounded to well rounded. matrix is v.f. sand to silt sized, dominatly felsic material. Lo
17.7	20.8	VC	bx	LAP	D	GRY	DEP	SH	Clasts are 70% of lithology, locally clast supported, matrix is dominately felsic. 5% of clasts are moderately to strongly chloritized.
20.8	22.7	FLPT	flwbnd	LAP	L	GRY	DEP	GR30+	Felsic Lapilli tuff with 40cm interval of FT from 22.3m to 22.7m. Lower contact is 50 cm of dominately felsic lapilli tuff with increasing proportion of mafic clasts, with the contact set at sharp increase in clast size and the drop out of felsic cla
22.7	42.7	VC	bx	LAP	M	GRY	FLT	SH	Short interval of EC polymictic pebble conglomerate, Volcaniclastics clasts are 100 % Andisite in a felsic matrix.
42.7	99.5	FLPT	hydbx	LAP	L	GRY	DEP	GR30+	Felsic lapilli tuff 60% clast. clast are dominately banded. Common Fluid breccia. increasing minerization down hole.
99.5	151.8	FLPT	hydbx	LAP	L	GRY	UNKN	SH	Clasts have diffuse boundries, superficially looks like FT.
151.8	181	AND	bx	LAP	M	GRY	DEP	GR30+	Dep[ositional breccia and over printed by hydrothermal breccia, upper 4 metre fractured and viened.
181	220.7	AND	bx	LAP	M	GRY	ALTFR	GR30+	Fine grained breccia 50% ash matrix clasts <5mm, with strong overprint of hydrothermal breccia.
220.7	263.2	AND	equi	LAP	MO	GRY	ALTFR	GR30+	Equigranular Andisite, granis under 3mm, massive rare sulphide veins.
263.2	267.7	AND	bx	LAP	M	GRY	DEP	SH	Increaseingly veined and altered tpwards lower contact. Larger clast are equigranular AND, smaller clasts are difficult to determine textures in.
267.7	278.3	FT	mas	CA	L	GRY	FLT	GR30	Course felsic ash, with 2 mm feldspar?? crystals/phenocryst, mostly replaced by Sp or Chl.
278.3	306.4	AND	hydbx	LAP	D	GRY	DEP	GR30+	Alternating hydrothermal breccia/ auto breccia, and equigranular/porphyeritic andisite. possible flows. short interval of asf (Felsic???) at 294.3
306.4	312	AND	por	CA	MO	GRY			alternating flows on top of Hydrothermal breccia/auto breccia. Sharp contact between breccia and Porphyeritic unit @ 306.4 and 310.4.
312	324.7	AND	bx	LAP	D	GRY	DEP	GR5	Brecciated (autobreccia?) andesite, very dark color - hard to distinguish between clast and matrix; weak porphyritic texture in clasts
324.7	333.2	VC	cs	LAP	D	GRY	DEP	GR10	Polymictic volcaniclastic breccia; very poorly sorted sub-angular to sub-rounded clasts

Blackwater Project
Drill Summary - Lithology

BW0360

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
333.2	340	AND	bx	LAP	D	GRY	DEP	GR10	Predominatly brecciated andesite with local massive textures and local matrix supported brecciated textures
340	352.2	AND	mas		D	GRY	DEP	GR30	Dark gray/black massive andesite; becomes brecciated w/ depth, ultimately grading into mixed volcaniclastic (next interval); weakly porphyritic 1-2mm laths altered to white clay (sericite)
352.2	368	VC	por	LAP	D	GRY	DEP	GR5	Poorly sorted polymictic breccia w/ large 2-10cm sub-angular clasts; upper interval grading from massive AND (previous interval) to brecciated and to mixed vc
368	412	AND	mas	FA	D	GRY			Massive to weakly porphyritic andesite w/ minor local brecciation; trace sulfides, diss'd po + veined po + cpy; minor carb veining
412	459	AND	mas		D	GRY			Competent dark gray to black andesite w/ weak porphyritic and amygdoidal textures locally
459	502	AND	mas		D	GRY			As above, more intense local/patchy alteration and bleaching centered around amygdules and carb veining

Blackwater Project
Drill Summary - Alteration

BW0360		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.5	13.5	T		0	PERV	2		0	MTRX	2	BIOT	CLST	3	BIOT	MTRX	2	Pervasive Biotite alteration of mfaic clasts
13.5	17.7	T		0	MTRX	2		0	MTRX	3	BIOT	CLST	3	LIM	FC	3	increased Clay and sericite alteration of the matrix.
17.7	20.9	T	PERV	2	MTRX	2		0	MTRX	2	BIOT	CLST	3	LIM	FR	1	Increases biotite alteration with increaseing mafic composition.
20.9	22.7	T	PATC	2	PERV	3		0	PERV	3	LIM	FC	3				Chlorite is along foliation, highly localized, and mafic clasts in lower portion of interval.
22.7	30	T		0	MTRX	2		0	MTRX	3	BIOT	CLST	3	LIM	FC	3	
30	36.2	T		0	MTRX	2		0	MTRX	3	BIOT	CLST	3	LIM	FC	4	Limonite alteration increase imediately below a fault zone
36.2	39.6	O		0	REP	5		0	REP	5	BIOT	CLST	2	LIM	PERV	4	Clay and Sericite alteration of felsic clasts and matrix. Limonite increase directly below a fault zone.
39.6	42.7	T	MTRX	3	REP	5		0	REP	5							Sericite and clay replacement of felsic clasts.
42.7	56.5	O		0	REP	5		0	REP	5	LIM	FC	4	LIM	PERV	2	Pervasive Limonite gets stronger towards fraqcture. Sericite and clay replacement of felsic clasts.
56.5	58.3	T		0	REP	5		0	REP	5	LIM	FC	2				Short interval of v.weak oxidation, 2% DBS.
58.3	69.9	O		0	REP	4		0	REP	4	LIM	FR	3	LIM	PERV	1	Black and Yellow/orange mineral occur at oxide alteration fronts through out interval.
69.9	86.6	S		0	REP	2		0	REP	2							Sericite and clay replacement of felsic clasts.
86.6	99.5	S	FR	1	REP	2		0	REP	2							Sericite and clay replacement of felsic clasts.
99.5	140.8	S	FR	2		0	PERV	4	PERV	3							Pervasive Silica alteration has blurred clast boundries.
140.8	151.7	S	FR	2	REP	0	PERV	4	PERV	3							Pervasive Silica alteration has blurred clast boundries. Clay replacement of some clasts.
151.7	171	S	FR	3		0	MTRX	1		0	BIOT	PERV	3				Weak silica in matrix of breccia especially where breccia is Hydrothermal.
171	220.5	S	FR	3	FR	2	MTRX	1		0	BIOT	PERV	3				Weak silica in matrix of breccia especially where breccia is Hydrothermal. Clay alteration on some fractures
220.5	267.7	S	PATC	2	REP	1	PATC	2	PATC	1	BIOT	PERV	3				Mottled coloring corolates with Sericite and Clay replacement of Feldspars.
267.7	278.3	S	FR	2	REP	3		0	PERV	2							Generally silica removal from FT. felpspars? possibly Amphiboles???? are replaced by sulphides, Sp or Py with distinct zones for each.

Blackwater Project
Drill Summary - Alteration

BW0360		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
278.3	283.4	S		0	FC	1		0	FC	2	BIOT	PERV	3				Sericite and clay alt of feldspars and to a leesser degree matrix. in cm scale halos around fractures/veins.
283.4	306.4	S		0		0		0		0	BIOT	PERV	3				Even pervasive Biotite alteration
306.4	323.4	S	FR	3	FC	3		0	FC	3	BIOT	PERV	3				Biotite alteratin being overprinted by sericite and clay alteration, controlled by fracture and only in the Porphyritic/Equigranular intervals.
323.4	340	S	FC	1	PERV	1	PERV	3		0	BIOT	PERV	2				Silica alteration overprinting all earlier stages of alteration, locally clay altered sites now silica; weak chl selvages at py + po + cpy veining
340	360.6	S	FC	1	PERV	1	PERV	3	CLST	1	BIOT	PERV	2				Local sericite (white clay?) after plag sites? <1mm; pervasive qtz (easily viewed under microscope); locally/patchy bleaching
360.6	368	S	FC	2	PERV	1	PERV	4	FC	2	CARB	FR	2				Pervasive silica w/ chl + sericite vein selvages; carb veining and fracture coatings
368	412	S	PATC	2	PERV	1	PERV	4		0							Clay/Sericite alteration overprinted by intense silica; patchy bleaching ~2%
412	442	S	AMYG	2	VNHL	2	PERV	3	AMYG	1							Pervasive intense silica alteration overprinting previous alteration assemblages; vein centric halos/selvages of chl +-bleaching; amybdules qtz + chl fillings
442	459	S	AMYG	3	VNHL	3	PERV	2	AMYG	2	CARB	VN	3				Increased intensity carb veining and clay + bleached selvages/halos; qtz + chl + clay amygdule filling like above w/ patchy bleaching
459	502	S	AMYG	3	VNHL	3	PERV	3	AMYG	2	CARB	VN	3				Alteration similar to above, higher intensity chl + qtz + clay altered blebs(amygdules)

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Blackwater Project
Drill Summary - Mineralization

BW0360		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.5	20.9	DI	0.1		0		0										Trace v.f. Pyrite.
20.9	23.5	DI	0.1	DI	1		0	Dbs	DEN	0.5							Dbs and Sp in FLPT and felsic matrix of VC
23.5	56.5		0		0		0										
56.5	58.2	DI	0.1	DI	0.1		0	Ga	DI	0.1	Dbs	DEN	2				Locally 5% DBS, with trace associated Py, Sp, Ga.
58.2	81.2	DI	0.1	DI	0.1		0	Ga	DI	0.1	Dbs	DEN	1				Locally 2% DBS, with trace associated Py, Sp, Ga.
81.2	99.5	VN	0.5	DI	0.5	VN	0.5	Dbs	DEN	1	Sp	VN	0.5				Po and Py in veins with some Sp.
99.5	123	DI	0.1	DI	5		0	Dbs	DEN	2							Pervasive Sp and Dbs concentrated in matrix of core.
123	137	DI	0.1	DI	5		0	Dbs	DEN	2							Pervasive Sp and Dbs concentrated in matrix of core.
137	151.8	DI	0.1	DI	5		0	Dbs	DEN	2	Py	VN	0.5	Sp	VN	0.1	Pervasive Sp and Dbs concentrated in matrix of core. veins of Py and Sp.
151.8	155.5	DI	1	DI	2	VN	1	Py	VN	1	Sp	VN	0.5				moderate veining, < 1 cm, irregular orientation, discontinous, Py, Po and Sp
155.5	183.5	DI	0.5	DI	2	DI	0.5										Disseminated sulphides locally Py or Po dominate.
183.5	206	DI	0.5	DI	2	DI	0.5										Disseminated sulphides locally Py or Po dominate.
206	220.5	DI	0.1	DI	0.5	DI	0.5										Decreasing Sulphide content with little change in habit.
220.5	240.3	FP	0.1		0		0										Pyrite (marcasite? sic) on cloritized fractures
240.3	260.2	FP	0.1		0	FP	0.1										Py and Po on fractures and in Qtz veinlets.
260.2	267.6	VN	0.1		0.1	DI	0.5	Po	VN	0.5							<1cm veins of Sulphides, Qtz, and Clay.
267.6	278.3		0	CR	2	DI	0.1										Sp replaces feldspar grains.
278.3	296	VN	0.1		0	VN	0.5										Po > Py in veins and blebs along fracture.
296	306.4	VN	0.1		0	VN	0.1										Po > Py in veins and blebs along fracture.
306.4	324	DI	0.1	DI	0.5	DI	0.5										Very weak mineralization; trace disseminated sulfides
324	352.2	VN	0.1	CR	0.5	CR	2	Cp	CR	0.1							Sulfides predominantly replacing mafic clasts (incomplete replacement) trace cpy visible only under scope; weak py + chl veinlets @324.2
352.2	368	DI	0.1	DI	0.5	DI	0.5										Trace sulfides po > sp > py > cpy predominantly in mafic clasts
368	412		0	DI	0.5	DI	1	Cp	VN	0.1							Trace diss'd po; weak diss'd sp; trace veined po + cpy

Blackwater Project
Drill Summary - Mineralization

BW0360		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
412	433		0	DI	0.1	BB	1	Po	VN	0.5							Weak po filling amydgules and veined w/ chl + qtz; trace diss'd sp
433	459		0	DI	0.1	BB	0.5	Po	VN	0.5	Cp	VN	0.1				Similar but weaker mineralization as above; addition of 1cm qtz > po > cpy vein
459	502	VN	0.1	DI	0.1	VN	0.5	Cp	VN	0.1							Very weak mineralization; veincentric alteration around chl + po veins; trace qtz + po veins > carb + py veins

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Blackwater Project
Drill Summary - Structure

BW0360

From (m)	To (m)	Structure	Strength	Comments
5.5	27	BRKZ	1	Core broken with irregular fractures.
27	30.5	FZ	2	>4 minor faults.
30.5	36.2	JZ	5	strongly jointed locally broken core
36.2	36.8	FL	5	40 cm of fault guage <2mm clast size.
36.8	39.8	JZ	4	
39.8	46	FZ	3	Several faults, Gauge interval 10 to 20cm.
46	67	JZ	4	
67	71.2	FZ	3	Several faults, Gauge interval 10 to 20cm.
71.2	77.3	BRKZ	4	
77.3	77.6	FL	5	Gauge is clay
77.6	151.7	JZ	2	
151.7	152.7	JZ	4	jointed with some breaking, some brecciation, in core by veins.
152.7	155	FL	3	fault uf unknown thickniss, appears < 10cm of gauge. broken core with high local sulphide content.
155	162.5	JZ	1	
162.5	162.7	FL	5	Fault
162.7	163.5	BRKZ	4	Associated with fault
163.5	170.5	BRKZ	2	Associated with fault
170.5	171.5	FL	5	clay rich and chemical clay alteration.
171.5	210	JZ	3	second set of joints at 30 deg to CA
210	224.1	JZ	1	
224.1	224.7	FL	3	20cm of fault guage and 50 cm of associated strongly broken core with minor gouge.
224.7	265	JZ	1	
265	277.5	JZ	5	no oviously dominate orientation, a statistical study could be used to determine prominant orientation of joints.
277.5	278.5	FL	4	%-10cm of Guage.
278.5	282.3	FZ	1	several minor faults 1mm to 2cm, clay filled
282.3	299	JZ	2	
299	325.8	JZ	1	several runs with no breaks.
325.8	327.8	JZ	3	moderately fx'd rock; c^0,35,65

Blackwater Project
Drill Summary - Structure

BW0360

From (m)	To (m)	Structure	Strength	Comments
327.8	358	JZ	1	weakly fractured rock; c^20,35,60
358	363.3	JZ	3	fx'd rock; c^0 w/ carbonate filling
363.3	412	JZ	1	c^ 10, 50-60, carbonate fracture coatings
412	444	JZ	1	c^15,35-45; weak carb fillings with 1-2cm altered selvages (bio?, bleaching)
444	444.9	JZ	3	similar to above with introduction of fracture parallel to core axis, resulting in more intensely broken rock
444.9	454.2	JZ	1	c^40-50; weakly fx'd rock
454.2	456	FL	4	moderately healed fault gouge w/ clay + sooty sulfides; relatively intense (2%) carb veining in zone
456	480	JZ	1	competent core; weakly fx'd
480	502	JZ	2	Relatively competent core w/ increased intensity carb veining (causing breaks); c^20,55

Blackwater Project
Drill Logs

Hole ID:	BW0361	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376102.34
Depth (m):	338.94	Date Started:	20/02/2012	Casing Size:	HWT	Northing:	5893198.88
Azimuth:	0	Date Completed:	25/02/2012	Casing (m):	70.1	Elevation (m):	1518
Dip:	-90	Logged By:	AVe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
77	98.7	-89.3
101.1	43.7	-87.8
138	44.6	-87.5
183.4	94.1	-87.7
229.2	100.8	-87.5
281	108.2	-89.7
326.8	102.9	-87.6
338.9	106.3	-87.5

Blackwater Project
Drill Summary - Lithology

BW0361

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
68.33	96.62	AND	por	LAP	D	GRY	DEP		Massive Andesite with volcanoclastic and porphyritic texture
96.62	102.7	VC	volc	LAP	D	GRY	DEP		Polimictic volcanoclastic.
102.7	185	AND	por	FA	D	GRY	UNKN		Andesite with porphyritic texture. Crystal rich texture
185	273.4	AND	mas	LAP	D	GRY	UNKN		Andesite with volcanoclastic texture
273.4	338.9	AND	mon	LAP	D	GRY			Andesite with volcanoclastic and porphyritic texture

Blackwater Project
Drill Summary - Alteration

BW0361		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
68.33	93.57	O	FR	2	CLST	2	PERV	2		0	LIM	FC	2	BIOT	PERV	2	Limonite alteration found in fractures. Chlorite alteration found in fractures. Pervasive biotite alteration
93.57	102.7	O	FR	2		0	PERV	2		0	LIM	FC	2	BIOT	MTRX	2	Biotite alteration found in matrix.
102.7	122.5	O	CLST	2		0	PERV	2		0	LIM	FC	2				Limonite alteration found in fractures
122.5	133.2	S	FR	3		0	PERV	2	FR	2							Patchy silicification. Sericite alteration found in fractures
133.2	151.1	S	PERV	2		0	PERV	2	FR	2							Pervasive Chlorite alteration. Sericite found in fractures
151.1	160.4	S	PERV	2		0	PERV	3	FR	1							Pervasive Chlorite alteration
160.4	185.4	S	PERV	3		0	PERV	3	FR	1							Pervasive alteration. Sericite found in fractures
185.4	194.2	S	MTRX	2		0	PERV	2	FR	1							Chlorite alteration found in matrix.
194.2	218	S	FR	2		0	PERV	3	FR	1							Chlorite alteration found in matrix.
218	273.4	S	FR	2		0	PERV	3		0							Pervasive Silisification alteration. Chlorite alteration found in fractures
273.4	293.2	S	FC	2		0	PERV	2	FR	1	BIOT	PERV	2				Pervasive Biotite alteration, Sericite found in fractures
293.2	303.9	S	MTRX	1		0	PERV	3	FR	2	BIOT	MTRX	2				Biotite alteration found in matrix
303.9	338.9	S	MTRX	3		0	PERV	3	FR	2							Pervasive silicification alteration.

Blackwater Project
Drill Summary - Mineralization

BW0361		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
68.33	81.96	FP	0.1		0	DI	0.1										Po disseminated in mafic matrix. Py found in fractures
81.96	93.57	FP	0.1		0	DI	0.1										Po disseminated in mafic matrix.
93.57	102.7		0		0	DI	0.1										Po disseminated in mafic matrix
102.7	119.4	DI	0.1		0	BB	0.5										Blebby Po replacing clasts
119.4	138.6	DI	0.5		0	DI	0.5										Po adn Py disseminated
138.6	157.6	FP	1		0	DI	0.5										Po disseminated. Late stage Py found in fractures
157.6	176.2	FP	1		0	DI	0.5										Disseminated Po, Py found in fractures and veinlets
176.2	185.4	FP	0.5		0	CR	1										Po found as clast replacement. Py found in fractures
185.4	200	FP	0.5		0	CR	0.5										Po found in clast replacement
200	217.0	FP	1		0	DI	2	Apy	FP	1							Arsenopyrite disseminated in fractures. Blebby Po found replacing mafic clasts
217.0	225	DI	0.5		0	CR	2										Po found in clast replacement
225	244.3	FP	0.5		0	CR	1	Apy	VN	1	Po	VN	1				Po and Arsenopyrite veins. Po veinlets. Po found as clast replacement
244.3	263.7	FP	0.5		0	DI	1	Apy	FP	0.5	Py	VN	0.5				Py vein and veinlets. Po found as clast replacement.
263.7	273.4	FP	0.5		0	DI	1										Po disseminated in clasts. Py found in fractures
273.4	283.2	FP	0.5		0	VN	1										Veined Po, Py found in fractures
283.2	303.1	FP	0.5		0	DI	1										Po disseminated found in mafic clasts
303.1	321.7	FP	1		0	DI	1										Subhedral Py found in fractures. Po Disseminated in mafic matrix
321.7	338.9	FP	1		0	CR	1	Apy	CR	0.5							Po clast replacement associated with arsenopyrite. Py found in fractures

Blackwater Project
Drill Summary - Structure

BW0361

From (m)	To (m)	Structure	Strength	Comments
68.33	93	JZ	2	Moderately joint zone. 2 fractures/meter
93	102.7	BRKZ	2	Broken zone with local clay gouge
102.7	160.7	JZ	3	Moderately joint zone. 3 fractures/meter. Fault plane at 117.50(55 degree at core axis)
160.7	166.2	FL	4	Clay gouge.Fault breccia, brecciated clasts. 55 degree at core axis
166.2	170.5	JZ	2	Moderately joint zone. Fracture planes at 45 core axis
170.5	175.9	FZ	3	Clay gouge, brecciated clasts. Fault plane at 175.30, 70 degree at core axis
175.9	180.4	JZ	2	Moderately jointed.
180.4	182.5	FL	4	Fault clay. Brecciated clasts. Fault breccia
182.5	188.1	JZ	2	Joint zone with fractute planes parallel to the core axis
188.1	273.4	JZ	2	Moderately joint zone. Zone with fracture planes along core axis. Fault breccia at 194.35-195.70
273.4	283.4	JZ	2	Moderately joint. Fracture planes at 60degree to core axis
283.4	295	FZ	2	Fault zone with clay gouge. Brecciated clasts
295	301	JZ	2	Moderately joint with fracture planes along core axis
301	325.2	FL	4	Clay gouge. Fault gouge breccia. Brecciated clasts. 45degree fault plane to the core axis
325.2	338.9	JZ	2	Moderately joint zone. Fracture planes parallel to the core axis

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Blackwater Project
Drill Logs

Hole ID:	BW0362	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375325.08
Depth (m):	489.81	Date Started:	20/02/2012	Casing Size:	HWT	Northing:	5892923.79
Azimuth:	270	Date Completed:	29/02/2012	Casing (m):	3.9	Elevation (m):	1610
Dip:	-60	Logged By:	KOI	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
46	267.5	-60.4
91	268.9	-61
137	270.3	-61.2
183	268.7	-61.4
250	268.8	-61.9
274	271.1	-61.4
320.0	272.7	-61.5
366.1	274.2	-61.5
417.9	272.7	-60.6
457.5	274.1	-59.7
489.8	272.7	-59.6

Blackwater Project
Drill Summary - Lithology

BW0362

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3.35	OB					UNKN		Rounded pebbles, no glaciofluvial or till overburden, good place to trench
3.35	34.64	AND	volc	LAP	D	GRY	DEP	SH	Clast boundaries are difficult to see. Crystal-rich, phenocrysts minimal to absent and crystals seem to be included within the groundmass. Ragged depositional lower contact
34.64	35.3	VC	plm	LAP	M	GRY	DEP	SH	VC unit set within finer andesitic matrix, matrix supported. Ragged depositional lower contact
35.3	61.55	AND	volc	LAP	D	GRY	FLT	GR5	As per 1-34.64m unit
61.55	67.7	VC	plm	LAP	D	GRY	DEP	GR30	Predominantly andesitic matrix with minor felsic clasts. From 64.31- 64.5m - hydrothermal breccia with completely quartz replaced clasts and iron silica-sericite matrix
67.7	100.5	FT	flwbnd	FA	VL	GRY	FLT	GR30+	Subangular clasts of FLPT are interbedded within predominantly laminated/banded felsic tuff unit
100.5	111.2	FLPT	flwbnd	LAP	VL	GRN			Intervals of laminated felsic tuff in felsic lapilli tuff. Clasts are subangular
111.2	125.7	FLPT	lptbx	LAP	VL	GRN	DEP	GR5	Densely spaced reaction rims/spherulites? at proposed depositional contact
125.7	164.8	FT	mas	FA	VL	GRY	UNKN	GR30+	Fine-grained felsic tuff with abundant reaction rim zones of qtz-albite surrounding crystalline pyrite. Ash-rich
164.8	172.3	FLPT	ms	LAP	L	GRN	DEP	SH	Interbedded felsic lapilli tuff with felsic tuff, distinct lower depositional contact (from 60-80 degrees TCA) into dominant FLPT unit
172.3	186.7	FLPT	ms	LAP	L	GRN			Clast-rich felsic lapilli tuff unit, no distinct laminae within interval
186.7	268	FLPT	lam	LAP	L	GRN			Clast-rich felsic lapilli tuff, zones of laminated lapilli-sized clasts intermixed with zones of angular blocky non-laminated lithic clasts
268	306.8	FLPT	lam	LAP	L	GRN			As above, laminated clasts vary in orientation throughout interval
306.8	321	FLPT	ms	LAP	L	GRN	UNKN	GR30+	Non-laminated clasts within interval. Clasts are subtle and have been replaced with aggregate blebs of pyrite-pyrrhotite mineralization
321	330	FLPT	ms	LAP	L	GRY	UNKN	GR10	Non-laminated clasts within interval. Clasts are subtle and have been replaced with aggregate blebs of pyrite-pyrrhotite mineralization
330	335.8	FLPT	lam	LAP	L	GRN	UNKN	GR10	Laminated bands of felsic tuff within felsic lapilli tuff unit. Tuff fragments up to 2cm in diameter. Has appearance of a brecciated banded felsic tuff
335.8	342.2	FLPT	ms	LAP	L	GRY	DEP	SH	Very subtle evidence of FT clasts within interval. Borderline FT for entire interval. Clasts are up to 1.5 cm in diameter and are bleached grey-beige
342.2	361.5	FLPT	lam	LAP	L	GRN			Aligned-stretched clasts of FT within FLPT unit. Tuff fragments up to 1.5 cm in diameter. Steep angle TCA of aligned clasts

Blackwater Project
Drill Summary - Lithology

BW0362

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
361.5	417.2	FT	bx	LAP	M	GRN			felsic tuff, brecciated laminated clastic sections, some sections with a relict clastic texture where textures are obscured by alteration
417.2	441.2	VC	ms	LAP	M	GRN	DEP	GR30+	volcanoclastic unit with some mafic clasts, section of felsic lapilli tuff with a relict clastic texture in places alternating with volcanoclastic unit into vc unit
441.2	489.8	VC	volc	LAP	D	GRN			volcanoclastic unit, polymictici subrounded-sub angular clasts, poorly sorted in a felsic matrix;EOH

Blackwater Project
Drill Summary - Alteration

BW0362		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.35	21.64	T	FR	2	FR	4	PERV	3	FR	2	LIM	FR	4	BIOT	MTRX	1	Sericite-qtz-pyrite clay alteration through interval, very weak hydrothermal bt alteration giving purplish hue
21.64	34.64	T	FR	3	FR	4	PERV	3	FR	2	LIM	FR	4				Increased chlorite alteration along fracture surfaces
34.64	35.3	T	FR	2	FR	2	PERV	4	FR	2	LIM	FR	3				Interval of polymictic volcaniclastic unit that has been well silicified
35.3	63.85	T	FR	3	FR	4	PERV	3	FR	2	LIM	FR	4				Gouge zones = increase in clay and chlorite, clay stronger at 59.7m
63.85	68.2	T	FR	2	FR	4	PERV	5	FR	4	LIM	FR	3	LIM	MTRX	5	Interval of strong sericite-qtz-pyrite alteration. Hydrothermal breccia at 64.31m is shot with limonite matrix and subrounded qtz clasts
68.2	73.46	T	FR	1	FR	5	CLST	4	FR	1	LIM	FR	5	CLY	CLST	3	Yellowish-orange zone of strongly limonitic-altered felsic tuff. Strongly silicified at 71.5m
73.46	79.6	T	FR	1	REP	4	PERV	4	FR	1	LIM	PATC	5	LIM	FR	3	Patchy orange limonite alteration (looks almost like liesegang banding) within strongly silicified interval. FeOx also follows fractures within interval. Slightly vuggy through interval (dissolution?)
79.6	89.95	T	FR	4	FR	2	PERV	4	FR	4	LIM	FR	2	SIL	ISSOLL	2	Weak limonite alteration on fracture planes, strong silica-sericite-pyrite alteration within interval, weakly vuggy, alteration has dissolved and made the edges of several of the white felsic clasts ragged
89.95	99	T	FR	2	FR	5	PERV	5	FR	2	LIM	FR	5	HM	FR	5	Strong FeOx alteration in interval, noticeble along fracture planes
99	107.7	S	MTRX	4	FR	4	PERV	5	PERV	2							Clay intensity increases within gouge intervals
107.7	125.7	S	PERV	4	INFILL	3	PERV	5	PERV	4							Light green chlorite-sericite alteration replacing both clasts and matrix throughout interval
125.7	164.5	S	PERV	3	FR	2	PERV	5	PERV	4	ALB	SPHL	4	SIL	SPHL	4	Interval defined by mm-sized albite-sericite altered haloes, with spherulitic? texture
164.5	172.3	S	PERV	3	FR	2	PERV	5	PERV	4	ALB	SPHL	3	SIL	SPHL	3	Haloes surround lapilli-sized fragments within interval, as opoosed to finer mm-sized particles in previous interval
172.3	194.3	S	PERV	4	FR	1	PERV	5	PERV	4							Halo zones absent within interval
194.3	201.6	S	PERV	4	FR	2	PERV	5	PERV	4	CHL	FR	4				Strong chloritic alteration along fracture planes from about 195-198m.

Blackwater Project
Drill Summary - Alteration

BW0362		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
201.6	268	S	PERV	4	FR	1	PERV	5	PERV	4	CHL	FR	5				VERY chloritically altered. Chlorite strong along fracture planes (black-green). Light grey silica alteration at 243.8 m and from approximately 250.75-262.4m
268	321	S	PERV	4	FR	2	PERV	5	PERV	4	CHL	FR	5	HM	FR	1	Minor reddish hematite alteration from 320.5-321.75m. Fault breccias have a slight grey tinge (strongly silica altered) and are located around 296m
321	349	S	PERV	4	FR	2	PERV	5	PERV	4	CHL	FR	5				Silica>sericite>quartz altered core with strong chlorite alteration along fracture planes.
349	351	S	PERV	4	FR	2	PERV	5	PERV	4	CHL	FR	5	HM	PATC	2	As above, but with light pink patchy Fe? hematite alteration (could be Mn-carbonate-rhodochrosite) or pink sericite/potassic alteration within interval. Alteration haloes around pyrite-pyrrhotite and sphalerite blebs.
351	361	S	PERV	4	FR	2	PERV	5	PERV	4	CHL	FR	5	SIL	SPHL	4	Silica>sericite>quartz altered core with strong chlorite alteration along fracture planes. Alteration haloes around pyrite-pyrrhotite and sphalerite blebs.
361	417.2	S	PERV	3	FR	1	PERV	5	PERV	4	CHL	FR	3	SER	FC	1	pervasive silca>sericite, chlorite along fractures, some sericite fracture controlled
417.2	489.8	S	PERV	3	FR	1	PERV	3	FC	2	CHL	FR	3	BIOT	CLST	1	silica alteration not as strong as previous interval,clasts with strong silca and matrix with moderated silica; some clasts with weak clay and chlorite alteration, pervasive chlorite and chlorite along fractures weak clay on fractures; mechanical clay al

Blackwater Project
Drill Summary - Mineralization

BW0362		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3.35	21.64	FP	1	CR	0.1		0	Goe	FP	1	Hm	FP	1	Py	DI	0.5	Mineralization resticted to fracture planes
21.64	34.64	FP	1	CR	0.1		0	Hm	FP	0.5				Py	DI	0.5	Weakly mineralized, restricted to fracture planes
34.64	35.3	FP	1.5	CR	0.5		0	Hm	FP	1							Increased pyrite along fracture planes, possibly clast replaced
35.3	38.05	FP	1.5	CR	0.1		0	Hm	FP	1				Py	DI	0.5	Weakly mineralized interval, locally strong hematite
38.05	46.5	FP	1	CR	0.1		0	Goe	FP	0.5	Hm	FP	0.1	Py	DI	0.5	Goethite has replaced hematite within interval
46.5	61.55	FP	1	CR	0.1		0	Hm	FP	1	Goe	FP	0.1	Py	CR	0.5	Pyrite veinlets visible at 46.9, and 52-53.50m
61.55	68.9	FP	1.5		0		0	Py	DI	1							Strong black pyrite, rich on fracture planes and disseminated within interval
68.9	75.5	DI	1.5		0		0	Jaro	PERV	1	Hm	FP	1				No limonite category...labelled as jarosite clay (yellowish-orange alunite) for interval?? uncertain though, no visible evidence of pyrrhotite or sphalerite. Evidence of pyrite cubes that have been oxidized
75.5	79.6	CR	0.5		0		0	Jaro	LAM	0.5	Hm	FP	1				Patchy/laminated jarosite? throughout interval, red hematite is stong along fracture planes. Pyrite crystals appear to have oxidized and left moulds.
79.6	89.95	BN	1	BB	0.1		0	Dbs	DEN	0.5	Py	FP	0.1	Py	CR	0.5	Black pyrite bands throughout appear lens-like throug interval, more pronounced at several sections including 89 m mark.
89.95	99	BN	0.5	FP	1	BB	0.1	Dbs	DEN	0.5	Hm	FP	0.5	Jaro	FP	0.5	Uncertain about jarosite (possibly just limonite or oxidation of pyrite). Pyrrhotite still absent-minimal in hole
99	107.7	FP	1	BB	0.5	BB	0.1	Dbs	DEN	0.5	Py	BB	1				Blebby pyrite visible within section dominantly within white vfg ash clasts
107.7	125.7	BB	1	BB	0.5	BB	0.5	Dbs	DEN	1							Pyrite has infilled cavities/vugs within zone, along with minor sphalerite and pyrrhotite, reaction rims surrounded infilled zones
125.7	132.2	BB	1	BB	0.5	BB	0.5	Dbs	DEN	1							Thin DBS stringers within zone. Pyrite is massive within alteration halos

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Blackwater Project
Drill Summary - Mineralization

BW0362		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
132.2	146.9	BB	1.5	BB	0.5	BB	0.5	Dbs	DEN	2							Dense blotchy DBS stringers within interval, intense pyrite-sphalerite-pyrrhotite with silicifed alteration haloes
146.9	152.4	BB	2	BB	0.5	BB	0.5	Dbs	DEN	1							As above, but less DBS within fault zone and more visible pyrite cubes
152.4	160.7	BB	2	BB	0.5	BB	0.5	Dbs	DEN	1.5	Py	VN	1				Alteration haloes for clast replacement pyrite with minor sphalerite and pyrrhotite, 5% pyrite within 160.75m-161m interval
160.7	172.3	BB	2	BB	0.5	BB	0.5	Dbs	DEN	1	Py	FP	0.5				Strong pyrite mineralization along fracture plane
172.3	187.5	BB	1	BB	0.5	BB	0.5	Dbs	DEN	1.5	Py	CR	0.5				Minor pyrite clast replacement (alteration halos), most sulphide concentrated in DBS
187.5	199.9	BB	1	BB	0.5	BB	0.5	Dbs	DEN	1.5	Py	BN	0.1				Massive pyrite crystals filling in vugs/haloes within interval. Minor pyrite banding at 199m.
199.9	210.5	BB	0.5	BB	0.5	BB	0.5	Dbs	DEN	0.5	Py	BN	0.1				Contorted clasts at 208m may be pyrite muds?
210.5	214.5	BB	0.5	BB	0.5	BB	1.5	Dbs	DEN	0.1	Py	SUBH	0.1	Py	VN	0.1	Subhedral pyrite blades (have actinolite crystal structure) at 210.5 and 211.7m
214.5	221.8	BB	1	BB	1	BB	1	Dbs	DEN	0.5							Pyrite blebs increase within interval, blebby mineralization of pyrrhotite-sphalerite
221.8	223	FP	0.5	BB	0.1	BB	0.1	Dbs	DEN	0.1							Fracture controlled mineralization (thinly laminated), weakly mineralized
223	226.5	BB	1	BB	1	BB	0.5	Dbs	DEN	0.1							Non-laminated unit, increased mineralization
226.5	229.1	FP	1	BB	0.1	BB	0.1										Non-mineralized tuffaceous unit
229.1	233.5	BB	1	BB	1	BB	1										Pyrite-pyrrhotite-sphalerite blebs replacing clasts within intevrval
233.5	243.4	FP	2	BB	0.1	BB	0.1										Weakly mineralized interval
243.4	246.8	FP	1.5	BB	0.5	BB	0.5										
246.8	251.2	BB	1	BB	0.5	BB	0.5	Py	FP	1							Finely laminated section, mostly fracture controlled mineralization

Blackwater Project
Drill Summary - Mineralization

BW0362		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
251.2	252.3	FP	1	BB	0.1	BB	0.1	Py	BB	0.5	Dbs	DEN	0.5				Increased pyrite mineralization within interstices and bordering clasts. Extremely circular clast replacement at 252.4m, light grey colour silicified zone
252.3	259	FP	1	BB	0.1	BB	0.1										
259	265.7	BB	1.5	BB	0.5	BB	0.5	Py	FP	0.5	Dbs	DEN	0.5				Minor dendritic black sulphides within interval
265.7	267.9	BB	1	BB	0.5	BB	0.5	Py	FP	0.5							
267.9	268.2	BB	1	BB	0.5	BB	0.5	Dbs	DEN	2							Clast of silica mud/silt? with increased DBS. No evidence of fracture-fault control or vein textures to indicate a quartz vein
268.2	271.5	BB	1	BB	0.5	BB	0.5	Dbs	DEN	0.1							
271.5	274	BB	1	BB	0.5	BB	0.5	Dbs	DEN	1							Increased DBS along light grey silica zone subparallel TCA
274	275	BB	0.5	BB	0.5	BB	0.5										Strongly laminated, decreased mineralization
275	276.5	BB	1	BB	1	BB	1										Light grey silicified mud zones = increased sphalerite
276.5	279.4	BB	0.5	BB	1	BB	0.5										Large sphalerite clast (20 cm diameter) at 278.50m increases sphalerite % over interval
279.4	279.5	BB	2	BB	1	BB	1.5										Locally high pyrrhotite-pyrite mineralization within foreign clast/vein
279.5	291.4	BB	1	BB	0.5	BB	0.5	Sp	FP	0.5	Dbs	DEN	0.5				Localized intervals of increaased sphalerite along fracture planes
291.4	295.2	FP	0.5	BB	0.1	BB	0.5	Po	FP	0.5							Mineralization within interval noticeable in gougy zones and along fracture planes
295.2	298.1	BB	0.5	BB	1	BB	1										Rehealed fault breccia. Lithic clasts have been strongly chloritized and contain pyrrhotite.
298.1	302.1	FP	0.5	BB	0.5	BB	0.5										Broken zone
302.1	306.8	FP	0.5	BB	0.5	BB	1										Possibly rehealed fault breccia? Strongly silicified felsic lapill tuff with rounded white quartz clasts. Mineralization overprinting alteration
306.8	314	FP	1	BB	0.1	BB	0.5										Thin stringers of pyrite follow along fracture planes within gouge zones

Blackwater Project
Drill Summary - Mineralization

BW0362		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
314	317.6	FP	0.5	BB	0.5	FP	0.5	Py	BB	0.5							Weakly mineralized interval
317.6	321.4	BB	1	BB	0.5	BB	0.5										Minor aggregates of blebby Po replacing larger clasts
321.4	328	BB	1	BB	0.5	BB	1										Py-Po cubes mm-sized in blebby aggregates replacing clasts up to cm-sized. 327.2m - appearance of cube with half-pyrite and half pyrrhotite
328	335	FP	1	BB	0.1	BB	0.5	Py	BB	0.1							Po-Py cubes sporadic within interval. Pyrite mineralization increased along strongly chloritized fracture planes
335	340	FP	0.5	BB	0.5	BB	1	Py	BB	0.5	Hm	FP	0.1	Mag	FP	0.1	Trace cpy in blebs with pyrrhotite and pyrite. More intense mineralization zones mentioned in veins section, pyrite needles at 339m
340	342	BB	0.5	BB	0.5	BB	1										Larger blebs, but less total mineralization then previous interval
342	379.8	BB	0.5	BB	0.5	BB	1										Sparsely blebby sulphides, sulphide alteration haloes prominent
379.8	394.6	BB	0.5	BB	1	BB	1.5	Mrc	FP	0.2	Dbs	DEN	0.5				sulphide blebs with po>sph>py, some larger blebs but dominantly small3-4mm wide, little dbs throughout
394.6	417.2	BB	0.5	BB	0.5	BB	0.5	Mrc	FP	0.2							little blebs of mixed sulphides as above but decrease in blebs, some py>po+chlorite veinlets throughout as well.
417.2	427.9	DI	2	DI	1	DI	1.5	Mrc	FP	0.1							py disseminated throughout sometimes as little blebs, sph as clast replacement, po also in little blebs throughout. Py also as clast replacement
427.9	438.3	BB	1	DI	0.5	BB	0.8	Mrc	FP	0.1							same mineral style as above but less overall sulphides
438.3	450.7	DI	2	DI	1.3	DI	2	Mrc	FP	0.1							disseminated py=po>sph throughout interval, one section at 441.9m that has py throughout the matrix surround clasts
450.7	471.3	DI	1	DI	1	DI	1.5	Mrc	DI	0.2							disseminated blebby py, po, and sphaleraite throughout, some py in veinlet/stringers, some suphides (sph and po) as clasts replacement

Blackwater Project
Drill Summary - Mineralization

BW0362		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
471.3	476.9	DI	1	CR	1	BB	2	Mrc	FP	0.1							blebby po, mixed sulphide blebs of po>py>sph and trace cpy, sph as clast replacement
476.9	489.8	BB	0.5	CR	1	BB	1	Mrc	FP	0.1							same as above but decrease in sulphides EOH

Blackwater Project
Drill Summary - Structure

BW0362

From (m)	To (m)	Structure	Strength	Comments
3.35	6.7	JZ	2	
6.7	6.75	FL	4	Gouge
6.75	10.7	JZ	2	
10.7	11.5	FZ	4	Lower contact at 30 degrees TCA
11.5	18.35	JZ	4	Minor jointing parallel TCA
18.35	20.3	BRKZ	3	
20.3	22.7	JZ	2	Weakly jointed
22.7	23.7	FZ	3	Very minor gouge
23.7	24.7	JZ	2	
24.7	24.8	FL	4	Gouge
24.8	27.5	BRKZ	2	Weakly fracture & broken
27.5	27.7	FL	4	Gouge
27.7	47.7	JZ	4	
47.7	48.15	FZ	4	Gouge at lower contact
48.15	50.9	JZ	4	
50.9	52.12	FZ	4	Gouge-rich zone
52.12	54.3	BRKZ	3	
54.3	56.7	FZ	3	Minor gouge, mostly broken zone, fractures at end of run consistent
56.7	60.45	JZ	4	
60.45	60.9	CRZ	3	
60.9	64.15	JZ	4	
64.15	64.6	VZ	4	Hydrothermal breccia prominent within interval
64.6	68.95	JZ	2	Weakly jointed
68.95	70	BZ	4	Lower contact sharp at 40 degrees TCA, limonite-rich zone, strongly consolidated, clasts? separated by gouge
70.5	71.5	LY	3	Limonite rich banding within qtz-clay altered interval
71.5	73.2	BZ	4	Lower contact sharp at 45 degrees with finer tuffaceous unit below
73.2	75.85	JZ	2	Primary joint set at 30 degrees TCA
75.85	76.35	BD	4	Pyrite beds showing layering (bedding of fine mineralized muds?) at 50 degrees within a joint zone

Blackwater Project
Drill Summary - Structure

BW0362

From (m)	To (m)	Structure	Strength	Comments
76.35	91.7	BD	4	Contorted banding/bedding/vein zone? within joint zone interval, angles inconsistent from 30-50 degrees TCA, contorted
91.7	94.79	BRKZ	4	Strongly broken zone, no visible gouge
94.79	97.4	FZ	4	Lower contact at 25 degrees TCA more distinct, upper contact approximately near parallel with TCA
97.4	98.95	JZ	3	Moderately broken zone
98.95	99.1	BZ	5	Gouge with fine pebbles
99.1	99.21	FZ	3	Lower contact at 20 degrees TCA, primarily gouge
99.21	100.2	JZ	1	Only 1 visible joint in interval
100.2	100.5	BZ	5	Lower contact sharp at 45 degrees TCA
100.5	101.3	JZ	2	Joint near parallel TCA
101.3	102.4	FZ	5	Low angle fault zone with abundant breccia and gouge near parallel TCA
102.4	103.5	JZ	4	
103.5	107.7	FZ	4	Fault zone with minor zones of gouge and ocassional fracturing parallel TCA
107.7	111.2	BD	3	Bedding of fine black pyrite mud within jointed interval
111.2	119.5	JZ	2	
119.5	121.3	BRKZ	3	
121.3	122.8	FZ	4	Lower contact at 40 degrees TCA, fault breccia at lower contact
122.8	128.9	JZ	3	Weakly jointed
128.9	128.9	FL	4	Gouge
128.9	131.5	JZ	3	
131.5	131.6	FL	4	Weakly gougy
131.6	137.4	JZ	4	
137.4	139.3	JZ	4	Prominent joint set at low angle TCA
139.3	146.5	JZ	3	
146.5	152.4	FZ	4	Minor gouge within zone, strongly broken, lower contact at 25 TCA
152.4	164.5	JZ	4	
164.5	167.5	FZ	4	Gouge on both sides of interval, questionable whether 2 faults on either side or entire fault zone. Gougy breccia at lower contact
167.5	186.7	JZ	2	Weakly jointed

Blackwater Project
Drill Summary - Structure

BW0362

From (m)	To (m)	Structure	Strength	Comments
186.7	186.9	FL	5	Gougy, massive 1 cm wide massive pyrite vein filling in fault
186.9	190.4	JZ	3	Weakly jointed
190.4	190.5	FL	5	FeOx gouge
190.5	194.8	JZ	2	Weak broken zone from 191.09 to 191.50 m
194.8	194.9	FL	4	Fault breccia at upper contact
194.9	196.9	JZ	1	
196.9	198	FZ	4	Strong chlorite alteration (5) along fracture surface, minor FeOx visible at 198m
198	209.6	JZ	2	
209.6	223.6	JZ	3	Prominent joint set, chlorite alteration on fracture planes, interesting mineralization along hanging wall? at 210.5...pine-needle shape pyrite crystals
223.6	225.2	BD	3	Weak bedding/laminae. Fairly consistent throughout interval...may be large block?
225.2	234	JZ	3	
234	235	BRKZ	4	Broken interval
235	236.6	JZ	3	
236.6	238.7	BD	3	Finely laminated section at 60-80 degrees TCA
238.7	242.6	BRKZ	4	
242.6	290.1	JZ	3	Weakly jointed zone, minor broken zones from 276.45-277.90m, 284.25-284.40m
290.1	291.4	BRKZ	3	Minor joint set at 50 degrees TCA
291.4	295.2	FZ	4	Gouge-rich zone
295.2	297.1	BZ	4	Rehealed fault breccia, strong chlorite alteration of felsic clasts
297.1	302.1	FZ	3	Fault zone? Slickensides along fractures. Lower contact with fault gouge at 25 degrees TCA. Fault breccia from 300 to 301.5m
302.1	306.6	JZ	3	
306.6	306.8	BRKZ	3	No gouge
306.8	314	FZ	4	Fault breccia zones from 309.5-311.20m.
314	320.7	JZ	3	Primary joint set at 60 degrees TCA, weaker joint set parallel TCA
320.7	321.3	BRKZ	2	Weak broken zone, short interval
321.3	328	JZ	2	
328	333.9	BRKZ	4	

Blackwater Project
Drill Summary - Structure

BW0362

From (m)	To (m)	Structure	Strength	Comments
333.9	338.8	JZ	2	
338.8	340.2	BRKZ	4	
340.2	342.5	JZ	2	
342.5	345	BRKZ	4	Additional weak joint zone at 55 degrees TCA
345	346.1	JZ	2	
346.1	349	BRKZ	3	
349	351.6	JZ	3	
351.6	351.7	FL	4	Gouge zone within interval
351.7	360.2	JZ	2	
360.2	388.9	BRKZ	3	moderate to strong broken zone with sections of competent core throughout
388.9	398.1	FZ	3	moderate to strong fault zone, clay along fractures
398.1	414.8	BRKZ	3	broken zone, weak gge along some fracture
414.8	431.2	JZ	2	joint set, competent core, 45>30; small broken zone from 423 to 423.5
431.2	447.9	BRKZ	3	weak to moderate broken zone, weak clay on fractures
447.9	458.3	JZ	2	fairly competent core
458.3	468.5	BRKZ	2	weak to moderate broken zone
468.5	477.1	JZ	2	fairly competent core, few joints at 50ish dtca
477.1	481.2	BRKZ	3	moderate broken zone leading into a fault zone
481.2	489.8	FZ		moderate fault zone with gge along fractures and throughout

Blackwater Project
Drill Logs

Hole ID:	BW0363	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375299.97
Depth (m):	431.57	Date Started:	21/02/2012	Casing Size:	HWT	Northing:	5893298.46
Azimuth:	0	Date Completed:	29/02/2012	Casing (m):	7	Elevation (m):	1550
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
56	81	-89.3
103	55.5	-89.5
150	73.7	-89.4
201	101.5	-89.5
253	74.1	-89.5
301	141.1	-89.3
353	146.1	-89.3
403	119.9	-89.4
431	113.7	-89.5

Blackwater Project
Drill Summary - Lithology

BW0363

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.8	OB							
4.8	70	FLPT	volc	LAP	L	GRY	DEP	GR30+	very haphazard depositional FLPT; perhaps felsic VC??? small zones of clast supported, not many mafic clasts (around 5% or less). Tuff matrix. varying alterations, changing rock color from light grey, to greenish grey, to a darker green-grey.
70	88	VC	ms	LAP	M	GRN	DEP	GR30+	primary textures well masked by alt'n, some large rounded clasts (mafic origin?), with felsic clasts typically smaller. some packed clasts zones
88	97	VC	ms	LAP	M	GRN	DEP	GR30+	again, not a well defined litho, zones of brecciation, and grading into zones of large fairly rounded mafic clasts, in a sil groundmass. grades into more felsic clasts towards bottom
97	113.5	VC	ms	LAP	M	GRN			poorly sorted, matrix rich VC. some very silicified clasts as well as chloritized clasts. polymictic at least in primary alt'n, difficult to tell mafic from felsic clasts, however groundmass is tuffaceous.
113.5	121.8	VC	ms	LAP	M	GRN	FLT	SH	zones of clasts supported mostly felsic clasts, quickly into more mafic composition VC. Overall matrix supported, with fairly rounded clasts
121.8	131.5	VC	ms	LAP	M	GRN	FLT	SH	clast sizes smaller than above unit, and more matrix rich
131.5	152	VC	fltgge	LAP	M	GRN	FLT	SH	short runs of more competant core idicate similar litho as above, however unit is intensely gouged for extended length.
152	165	VC	plm	LAP	M	GRY	FLT	GR10	very poorly sorted VC, with mixed bag of clast sizes, polymictic. some large near-block size clasts.
165	186.2	VC	ms	LAP	L	GRY	DEP	GR30+	felsic rich VC. 90 % felsic clasts, some small zones arguably FLPT?, quite rounded clasts, well reworked, small clasts, fairly matrix rich
186.2	241	FLPT	ms	LAP	L	GRY			Ash rich locally VC texture. over all <50% clasts. locally small intervals of FT.
241	382	FT	t	FA	L	GRY			Felsic Tuff with local hydrothermal breccia. parvasive banding of variable orientation. silica alteration is likely a misnomer.
382	431.6	FT	hydbx	FA	L	GRY			Short intervals of auto breccia <1m, overprinted bylow to moderate intensity hydrothermal breccias. strong clay alteration of clasts associated with hydrothermal breccia. Strong silica overprint on everything.

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0363		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	9	O	PATC	1	MTRX	2	PERV	3	PERV	1							dark oxide zone until 9m
9	17	T	PATC	1	MTRX	2	PERV	3	PERV	1							lighter brown oxide alt'n on fracure planes. hard core with significant silica alt'n
17	34	S	PATC	2	MTRX	2	PERV	3	PATC	2							consistant sil alt'n, with patchy accompanying ser-chl
34	50.5	S	PERV	2	MTRX	2	OP	3	PATC	2							gradaully becoming a darker green rock due to very gradual increasing ser-chl alt'n.
50.5	59	S	PATC	2	FC	2	OP	2	PERV	3							rock not as hard with decreasing sil alt'n, and increase in ser alt'n
59	74.5	S	PERV	3	FC	1	OP	2	PATC	3							fairly dark green fracture planes from moderate sil-chl alt'n, mild sil overprinting
74.5	86.3	S	CLST	1	FC	3	PERV	3	PATC	2							hard rock with sil alt'n. fracturing with clay gouge material, also some clay in matrix.patchy clast chl alt'n
86.3	89	S	FC	3	FC	1	OP	1	PERV	2							much softer core, moderate chl alt'n, particularly in some gouge material
89	96	S	PERV	3	FC	1	OP	1	PERV	4							strong ser alt'n, making core easy to scratch, weak sil overprint. moderately dark chl alt'n on fractures
96	110	S	PERV	3	FC	1	OP	3	PERV	2							moderately hard core, sil overprint, with also some patchy pervasive zones. chl-ser giving core pale green colour
110	118	S	PERV	3	FC	2	OP	3	PERV	2							hard sections of core, also some clay gouge material. core is moderately chl altered to a pale green, more noticable on fracture planes
118	121.8	S	PERV	4	FC	2	OP	1	PERV	2							rock not hard to scratch. very dark green chl pervasive alt'n.
121.8	130.6	S	FR	2	MTRX	2	OP	2	PERV	3							rock somewhat hard from sil overprint. little chl alt'n, quite sericitezed
130.6	143.7	S	FC	2	FC	5	OP	1	FC	2							extreme gouge, clay intense, sil overprint in brecciated clasts
143.7	146.8	S	FC	4	FC	5		0	FC	2							gouge becoming increasingly chl rich, very dark green and soft.
146.8	149.3	S	FC	2	FC	5		0	FC	3							gouge, abundant clay-ser

Blackwater Project
Drill Summary - Alteration

BW0363		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
149.3	152.5	S	FC	1	FC	4	OP	2	PERV	2							bits of gouge, but getting out of the fault zone, some runs of hard sil overprint.
152.5	156.3	S	CLST	2	MTRX	1	PERV	3	PERV	2							quite hard core, with pervasive sil alt'n. chl mostly replacing clasts
156.3	158	S	FC	2	FC	3	OP	3	PERV	2							gouge with abundant clay, then broken core, chl altered especially the more rubbly zones.
158	164.7	S	CLST	2	MTRX	1	OP	3	PERV	1							low intensity overall alt'n except for patchy sil alt'n
164.7	186.2	S	FC	2	FC	2	PERV	4	PATC	2							very strong pervasive sil alt'n, hard glossy rock, gouge sections with significant clay, sericite in regular patchy alt'n
186.2	241	S	FR	3	REP	4	PATC	4	PERV	3	CHL	CLST	5				Ash rich areas are more silicified, Clay replacement of feldspars and clasts in locally stronger. 1% clasts are strongly altered by chlorite.
241	261.1	S	PATC	2	REP	4	PERV	4	PERV	3							Silica alteration is likly a misnomer, Clays are replaceing feldpargrains and moderate along banding
261.1	272.5	S	PERV	3	REP	4	PERV	2	PERV	3	CHL	FR	4				Chlorite alteration increases as core compitancey decreases. Clays replace feldspars
272.5	284.1	S	PATC	1	REP	4	PERV	4	PERV	4							Pronounced drop in chlorite and increase in sericite
284.1	431.6	S	PERV	3	REP	4	PERV	3	PERV	3	CLY	FR	2				possible connection between Sp alteration and Clay alteration, and later Quartz and Apy.

Blackwater Project
Drill Summary - Mineralization

BW0363		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	14.5	SP	0.5	DI	2		0	Ga	DI	1	Cp	SP	0.1	Dbs		1	patchy zones of good sp, with fine grained py+/- gal. possible cpy(?) in specks. small DBS whisps common.
14.5	25.7	SP	0.5	DI	2		0	Ga	DI	1	Dbs		2				pretty good DBS throughout, thick sometimes. other mineralization as above.
25.7	25.85	LAM	3	LAM	5		0	Ga	LAM	3	Dbs	LAM	25				excellent fine grained sulphides in small gouge material zone.dark sulphides, appears to be rich in py(?) May run well for Au
25.85	32.5	SP	1	DI	1		0	Ga	DI	1	Dbs		2	Apy	SP	0.5	dbs in messy veinlets, and some blotchy whisps. fine grained py
32.5	40	VN	2	DI	1		0	Ga	VN	1	Dbs		1				dark blotches of sulphides continue, likely mostly py with sp. dbs in messy vnlt whisps, and fine grained dark py in vnlts
40	51.7	BB	1	BB	1		0	Ga	BB	1	Apy	SP	0.5				most mineralization in dark fine grained blebs, consisting of py-sp-gal. minor apy specks
51.7	59	BB	2	DI	1	BB	0.5	Dbs		1							dark py and sph, usually occuring together, some bright py on fracture planes. po spotted at beginning of interval
59	66	CR	2	BB	2	SP	0.1	Ga	CR	1	Dbs		1				dark sulphide blotches readily replacing felsic clasts, some sp-py banded around some larger clasts. honey coloured sph. whispy DBS especially at beginning of interval
66	68.5	CR	1	DI	1		0	Ga	CR	0.5	Dbs		2				diminishing frequency of dark blotchy sulpide clast replacement. increase in DBS
68.5	70	DI	2	DI	3		0	Ga	DI	1	Dbs	DI	7				lots of mineralization of unidetifyable black sulphide within brecciated fracturing groundmass, some py seen on edges, and sph disseminated throughout.
70	76	CR	2	DI	1		0	Ga	CR	1	Cp	SUBH	0.5	Dbs		3	significant whispy DBS throughout interval, with some dark sulphide clast replacements. one mm sized subhedral cpy seen, possibly more with finegrained py.
76	80	BB	0.5	BB	3		0	Ga	CR	0.5	Cp	CR	0.5	Dbs		1	drop in py grade, blebs of sph common showing good grade. bright cpy occaisionally

Blackwater Project
Drill Summary - Mineralization

BW0363		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
80	87	BB	1	BB	2		0	Ga	DI	0.5	Dbs		1	Apy	SP	0.1	mineralization good overall, but patchy. py blebs mostly where there is some gouge material. sp blebs in blotches. in and out of DBS
87	91	DI	1	DI	1		0	Dbs		1							smaller disseminations, and less frequent sp-py.
91	95	DI	1	DI	1	SP	0.1										fine grained disseminated sph-py. trace po showing up
95	100	VN	5	DI	7	BB	2	Dbs		1							interesting veining at 96.5 with high grade py (20 % locally over 30cm), abundant sph disseminated in blebs, with po. DBS short whisps.
100	105	VN	1	DI	5	BB	2										abundant disseminated sph, with po. py in vnlts
105	109	DI	1	DI	2	BB	1	Dbs		0.5							po with sp, sometimes some fine grained py
109	112	SP	0.5	CR	3	BB	0.5	Dbs		0.5							local high grade sp, where it has replaced felsic clasts, laminations can be seen. low grade py and po, finegrained
112	116.5	VN	0.5	CR	2	BB	0.5	Dbs		0.1							decreasing grade of sph, clast replacement less frequent, with smaller component of clasts replaced. minor po with sph. minor py in vnlts
116.5	121	VN	1	DI	1	BB	0.5	Ga	CR	0.5	Dbs		0.1				some galena seen in similar style as sph above (clast replacemen), decreasing sph, occaisional vnlt with py
121	126.5	SP	0.5	DI	3	SP	0.1	Ga	VN	1	Dbs		0.1				py on fracture planes, one nice shiny galena vein, fairly high grade sph in blotchy dissemination
126.5	131	VN	2	DI	3		0	Ga	DI	1	Dbs		1				patches of disseminated sph, pretty good grade, disseminated galena, py in blebby vnlt things
131	149.3	DI	1		0		0	Dbs	GmR	2							Black unkown sulphide in band and masses in fault Guage.
149.3	152.5	DI	1	BB	3		0										Spacks of sulphide, mostly Sp. And black goo sulphide.
152.5	155.5		0	DI	1	BB	1	Sp	CR	1							
155.5	164	DI	0.5	CR	1	BB	0.5										
164	171.5		0	SP	1	BB	0.5	Grnt	BB	0.5							
171.5	175		0	SP	1	SP	1.5	Grnt		0.1							

Blackwater Project
Drill Summary - Mineralization

BW0363		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
175	182	DI	0.5	SP	0.5		0	Dbs	GmR	0.5							Spacks of sulphide, mostly Sp. And black goo sulphide.
182	191.8		0	SP	3	BB	0.1	Dbs	DEN	1							Sp along banding.
191.8	198.5	DI	0.1	SP	0.5		0										Sp in clasts, no black goo sulphides. signifigant sericite/clay alteration.
198.5	203		0	SP	3	BB	0.1	Dbs	DEN	1							Sp along banding.
203	218	DI	0.1	DI	0.1		0										
218	236	DI	0.1	SP	5		0	Dbs	SP	1							DBS is likly fine grained Sp TS: 5%. as DBS increases Sp decreases. same habit in both, filling small cavities.
236	246	DI	0.1	SP	2		0	Dbs		0.5							Decreasing TS as grain size of FLPT decreases into FT. DBS is likly fine grained Sp TS: 5%. as DBS increases Sp decreases. same habit in both, filling small cavities.
246	261	DI	0.1	BN	2		0										HAbit change of minerization from specks to along lamination or flow bands.
261	272.4		0	BN	3		0										Increased Sp but no change in habit.
272.4	273		0	SP	2		0	Apy	VN	5							Apy in fault guage crosscutting Sericite alteration
273	273.8		0	SP	0.1		0	Apy	VN	20							Apy in Qtz veins vfg to mg, in veins and in halos fracture controlled aropund Qtz veins. cross cutting sericite alteration.
273.8	284.6		0	SP	2	DI	0.1	Apy	DI	0.1							lower Sp with Sericite alteration
284.6	303.5	DI	0.1	SP	3	SUBH	1	Sp	BN	2							large grains os Po, 5mm, Sp replacing/?filling voids.
303.5	323	VN	0.5	SP	3	SUBH	0.5	Sp	BN	2	Sp	VN	0.5				Large truncated vains and small veinlet of Py and remobilized? Sp truncates banded Sp.
323	345.8	VN	0.1	SP	3	SUBH	0.5	Sp	BN	2	Py	DI	0.1	Dbs	FP	1	Dbs on fracture preferentially perpendicular to Banding, Sp along bands and as specks in courser grained intervals. small Qtz veins with Py and some Sp.
345.8	364	VN	0.1	SP	3	SUBH	0.5	Sp	BN	2	Py	DI	0.1	Dbs	FP	1	Dbs on fracture preferentially perpendicular to Banding, Sp along bands and as specks in courser grained intervals. small Qtz veins with Py and some Sp. same again.

Blackwater Project
Drill Summary - Mineralization

BW0363		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
364	381.6	VN	0.1	SP	3	SUBH	0.5	Sp	BN	2	Py	DI	0.1	Dbs	FP	1	Dbs on fracture preferentially perpendicular to Banding, Sp along bands and as specks in courser grained intervals. small Qtz veins with Py and some Sp. same again.
381.6	391	DI	0.1	SP	3	SUBH	0.5	Sp	BN	2	Py	VN	0.1	Dbs	FP	1	Dbs on fracture preferentially perpendicular to Banding, Sp along bands and as specks in courser grained intervals. small Qtz veins with Py and some Sp. yes it is still the same.
391	401	BB	1	CR	2	BB	2	Dbs	FP	3							Py cores in Po grains/aggregates.
401	414	VN	2		0	BB	3	Dbs	DEN	10							Dbs is also fracture controlled likelyin large part Po and Sp.
414	431.6	VN	2	DI	0.5	DI	5	Dbs	FP	5							Dbs is also fracture controlled likelyin large part Po and Sp.

Blackwater Project
Drill Summary - Structure

BW0363

From (m)	To (m)	Structure	Strength	Comments
0	14.8	BRKZ	2	major fracture set at 50 degrees TCA, minor set at 15
14.8	35.8	JZ	2	very comptant rock. dominant fracture set at 50
35.8	58.5	BRKZ	3	many fractures, some shardy fragments, common fracture set at around 30 degrees to CA
58.5	71.6	BRKZ	2	overall more competant core than above. wavy fractures at around 15-20 degrees to CA becomming dominant
71.6	77.2	BRKZ	3	slightly more fractured than above
77.2	77.5	FL	4	gouge, contact clear at 60
77.5	79	JZ	2	short section, very competant rock
79	84.6	BRKZ	4	gradually degrades into more broken rock, rubbly
84.6	85.1	FL	4	gouge, well healed, clear lower contact at 60 degree TCA
85.1	89	BRKZ	3	haphazard fracturing between gouge zones
89	89.6	FZ	3	somewhat poorly healed fault zone, with messy gouge material. contact not very clear, but seems to be around 60 degrees
89.6	92.5	BRKZ	5	splays fracturing of upper fault, minor gouge material.
92.5	94	JZ	4	short zone of competant rock 3 fractures
94	98	BRKZ	4	rubbly fracturing, some slightly gouged. notable fracture set at 50 degrees TCA
98	100	JZ	4	competant zone with 2-3 fractures, but some microfracturing within as well
100	101.3	FZ	1	low intensity fault zone, rubbly gouge. unknown contact angle
101.3	105.6	JZ	3	quite competant rock, with some runs of "stick rock". planar fracture set at 45 degree to CA
105.6	110.5	BRKZ	2	gradual increase in fracturing, including common low angle fractures (15 degrees TCA), wavy
110.5	116.8	FZ	1	very broken, rubbly core, some gouged bits, lost recovery, lower contact at 50? unsure of this contact
116.8	119	BRKZ	3	rough fracturing
119	122.1	BRKZ	4	shardy fragments, rough fracturing
122.1	125.9	BRKZ	3	blocky, frequent fracturing, dominant set at 45 degrees TCA
125.9	130.7	JZ	5	mainly competant long runs, with a short interval of shardy fracturing
130.7	149.3	FZ	4	major fault zone, consistant gouge; significant due to it's scale and intensity, likely is regionally extensive. upper contact at 55 degrees TCA
149.3	152.5	BRKZ	1	broken core related to above intense structure. some gouge as well, but mostly rubble
152.5	155.5	JZ	1	pretty competant core, clean fractures, dominant set at 60 degrees to CA
155.5	164	BRKZ	5	very broken core, zones of rubble, a few small blocky runs

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Blackwater Project
Drill Summary - Structure

BW0363

From (m)	To (m)	Structure	Strength	Comments
164	171.5	FZ	2	fault gouge, with rubbly sections, angle measured at 55 degrees TCA, not confident of this contact
171.5	175	JZ	3	
175	182	FL	4	guage is sand with 50% clasts to 5cm. moderate sericite/clay alteration of guage.
182	191.8	JZ	2	
191.8	198.5	FL	4	Alteration front in Fault guage between Sericite and Chlorite.
198.5	203	JZ	4	
203	218	FL	3	Fault guage and broken core.
218	240	JZ	3	
240	251.3	JZ	5	some minor faults ~30 deg to CA
251.3	252.4	BRKZ	3	minor fault 10cm
252.4	261.4	JZ	5	
261.4	272.4	BRKZ	2	
272.4	273.7	FL	5	
273.7	281.4	JZ	5	set at 70 stil present.
281.4	284	FL	1	Weak faulting with strong clay alteration along fractures, strongly broken core.
284	301	JZ	5	Several sets 70 and 10.
301	335.7	JZ	3	
335.7	337.5	FL	3	
337.5	355	JZ	1	50-70cm of core missing, fault guage, and broken core remain.
355	358	BRKZ	2	minor fault guage.
358	364.3	JZ	1	
364.3	371	BRKZ	1	
371	401	JZ	3	
401	403.3	FZ	1	mostly broken core with minor guage.
403.3	404.5	FL	5	Guage finer then 1 cm.
404.5	416.5	FZ	2	broken core and 20% Fault gauge.
416.5	417.3	FL	4	
417.3	431.6	FZ	1	10% fault guage, multiple minor faults <10cm wide.

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Blackwater Project
Drill Logs

Hole ID:	BW0364	Tenure #:	509273	Hole Diameter:	PQ	Easting:	374903.62
Depth (m):	846.5	Date Started:	21/02/2012	Casing Size:	HWT	Northing:	5893099.45
Azimuth:	135	Date Completed:	28/03/2012	Casing (m):	1	Elevation (m):	1554
Dip:	-60	Logged By:	NDh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	135	-60
50	135.2	-61.3
103	134.6	-61.7
156	138.8	-62.2
200	140.6	-62
250	143.5	-61.4
452.5	144.8	-61.4
500.5	143	-61.4
566.5	144.5	-61.4
611.5	146.2	-61.6
653.5	145	-61.6
701.5	146.2	-61.5
749.5	148	-61.8
800.5	148.9	-61.9
846.5	149.3	-60.8

Blackwater Project
Drill Summary - Lithology

BW0364

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5	OB							bouldery overburden
5	23.9	VC	volc	LAP	M	GRY	DEP	GR30	volcanoclastic unit, sub angular clasts (50:50 mafic to felsic), matrix supported, poorly sorted (unit that was previously logged as black and white lapilli tuff)
23.9	37.9	EC	volc	LAP	L	GRY	DEP	GR30+	epiclastic? clast supported unit with moderate sorting, sub rounded clasts, I think it might be a clast supported more rounded volcanoclastic unit
37.9	61	VC	volc	LAP	M	GRY	UNKN		grades back into a matrix supported, sub angular clast, volcanoclastic (black and white lapilli tuff)
61	65.2	VC	volc	LAP	M	GRY	FLT	GR10	same unit as above but fault zone, clay annealed sections throughout
65.2	140.5	EC	volc	LAP	M	GRY	UNKN		volcanoclastic unit, clasts are sr>sa, clasts are 50:50 felsic:mafic, matrix is mafic and mafic clasts are often being replaced by sph and biotite alteration oxidation along fracture planes; some granitic looking clasts within this unit that I havn't
140.5	152.5	EC	volc	LAP	M	GRY			same unit as above but more clast supported and slightly rounder clasts, clast range in size but are all lapilli sized
152.5	194.5	EC	volc	LAP	M	GRY	FLT	GR30+	volcanoclastic unit matrix supported, mafic matrix, clasts are 50:50 felsic to mafic, some fault zone throughout sections
194.5	228.2	FLPT	t	LAP	M	GRN	FLT	GR30+	felsic lapilli tuff with relict tuffaceous texture, texture obscured by alteration in place, blebby garnet throughout
228.2	244	FLPT	t	LAP	M	GRY	UNKN		felsic lapilli tuff, predominatley massive with locally relict tuffaceoustexture, alteration predominatley obcures texture and locally imparts blebby silica laminations.
244	270	FLPT	t	LAP	M	GRY	UNKN		felsic lapilli tuff, with relict tuffaceous texture. matrix supported, moderatley sorted, SR-SA 3-18mm clasts, larger clasts chloritized and locally weakly laminated. Texture weakly obscured by alt locally, silica wash make rock lighter then actually
270	302	FT	lam	LAP	M	GRY			Pervasivley siliceous, partially BB'y silica laminae, locally chaotic undulating banding, (at 285.2m overturned silica bands). Locally Bx micro and lapilli size poorly sorted. trace lathe shaped Euhedral white clay replaced Feldspar/amphibole?. local
302	305	FT	lam	LAP	M	GRY	FLT	SH	Continuation of inteval above
305	320.2	FLPT	ms	LAP	M	GRY	UNKN		Rare laminated subintervals, appears to be weak fracture separating interval above
320.2	328	FT	mas	LAP	M	GRN			Wkly laminated, occasional subrounded clast (323 m)
328	334	FT	t	CA	M	GRN	UNKN	GR30	dominantly massive, possible lapilli-block size fragment from 328.8-329.3m...may be an alteration product?)

Blackwater Project
Drill Summary - Lithology

BW0364

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
334	338	FT	lam	CA	M	GRN	ALTFR	GR10	Felsic tuff that has undergone some sort of soft-sediment deformation, laminae contorted from 336.5-337m, possibly felsic lapilli tuff? occasional clast.
338	348	FT	t	CA	M	GRY	DEP	GR30+	Laminae, less distinct then previous interval. Light grey crystal tuffaceous sections with clastic appearance throught interval, bleached silicified zones. Gradational change down zone...possibly depositional?
348	355.2	FLPT	lam	LAP	M	GRN			Somewhat varicoloured. Predominantly felsic lapilli tuff (possibly felsic tuff that has undergone intense soft sediment-like deformation?...clast-support?). Medium grey - purple bands alternate with lighter grey bands and green bands. Strongly contor
355.2	359	VC	ms	LAP	L	GRY	ALTFR	GR10	Varicoloured volcaniclastic, matrix supported unit with approximately equal felsic and mafic clasts, and clasts approximately the same size in a silicified matrix stew
359	365.4	VC	ms	LAP	VD	GRY	ALTFR	GR10	Weakly altered volcaniclastic unit that appears to be dominated by cm-sized subrounded mafic clasts with smaller mm-sized felsic clasts embodied within the weakly silicified matrix. Has clast supported appearance from 363-364 with silica eating away
365.4	374	VC	ms	LAP	L	GRY	DEP	SH	Varicoloured volcaniclastic unit, with silicified matrix and subrounded-subangular clasts. Presumably felsic clasts have been replaced by quartz or are laminated. Sharp depositional contact at 374 with felsic lapilli tuff unit
374	376.8	FLPT	ms	LAP	M	GRY	UNKN		White-grey cloudy sub-rounded quartz with chlorite, dark grey silica laminated banding contorting around clasts. Monomictic? Switch to HQ at 376.8m
376.8	377	FLPT	ms	LAP	M	GRY	ALTFR	GR10	As above, but core reduced from HQ to NQ
377	384	VC	ms	LAP	M	GRN	ALTFR	GR5	Non-laminated, polymictic. What appears to be relict plag-phyric clasts that have been altered. Similar to interval above, but with the mafic component to fall under the VC category. Matrix is light green and milled. Larger clasts are sub-rounded, wh
384	389.5	FLPT	ms	LAP	M	GRN	ALTFR	GR5	Weakly laminated, has been strongly altered and mineralized. Clasts are faint and cloudy and appear to be 100% felsic in origin. Laminations intensify from 389 to 389.5
389.5	395.4	FLPT	ms	LAP	M	GRN	ALTFR	GR10	Occasional rounded qtz clasts, may fall more into felsic tuff category, however zone has been strongly altered, and is within a fault/fracture zone.
395.4	399.9	FLPT	lam	LAP	M	GRN	ALTFR	GR5	Strongly laminated interval with brecciated felsic clasts? Laminae (matrix) undulates through interval and appears to be fine chaotic muds wrapping around clasts

Blackwater Project
Drill Summary - Lithology

BW0364

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
399.9	407.9	VC	ms	LAP	D	GRY	ALTFR	GR10	Medium grey matrix with dark grey angular clasts ranging in size from mm-scale to 20-cm. Light grey matrix - may be andesitic in origin. Larger clasts are predominantly andesite
407.9	409.2	VC	ms	LAP	M	GRN	ALTFR	GR30	May be similar to unit above? Difficult to determine because of alteration. Rounding of clasts may be the result of alteration. Minor plucked phenocrysts? within clasts that have been altered to sulphides. Wk lamination visible on some clasts
409.2	425	VC	ms	LAP	M	GRN	ALTFR	GR10	Strongly altered VC unit (could be mistaken for FLPT). Matrix supported. Clasts have been strongly altered. 409.5 = sphalerite that appears to have replaced clast (locally 10%) following laminae. Large 10 cm-sized andesite clasts more obvious at 416.
425	440.5	VC	ms	LAP	M	GRY	DEP	GR30+	Weakly altered VC unit. Predominantly mafic clasts with <25% being felsic clasts (predominantly quartz). <1 mm-sized sandy matrix - light grey. NOTE: LITHICS = ROCK FRAGMENTS.
440.5	455	VC	ms	LAP	M	GRY	DEP	GR30+	Weakly altered VC unit. Predominantly mafic clasts with <25% being felsic clasts (predominantly quartz). <1 mm-sized sandy matrix - light grey. NOTE: LITHICS = ROCK FRAGMENTS.
455	456.5	VC	lith	LAP	M	GRY	DEP	GR30+	Some what epiclastic looking interval, clasts are sub rounded, larger fraction are Qtz-rich.
456.5	471	VC	lith	BLOCK	D	GRY	ALTFR	GR30+	Locally polymictic with minor Qtz clasts present. Possiby interval of Andisite with large amount of hydrothermal breiccia overprinting.
471	490	AND	aph	LAP	D	GRY	ALTFR	GR30+	Aphanitic Andisite, with near pervasive puzzle piece breccia, locally pipes / veins of intense brecciation 10-40cm wide.
490	521.5	AND	por	LAP	D	GRY	ALTFR	GR30+	Aphanitic to Porphyritic andisite, phenocrysts of feldspar and amphibole? up to 1cm in size. local patches of aphanitic alteration (biotite???) in webs of veins.
521.5	542	VC	bx	LAP	M	GRY	ALTFR	GR30+	Contacts grade on the m scale, unit is most likely brecciated Andisite, with reworked breccia, vein material and altered Andisite comprising the "felsic" clasts", clasts of reworked breccia material, are noted @ 538.7m.
542	572.7	AND	bx	LAP	D	GRY	ALTFR	GR30+	Locally porphyritic, brecciated to possibly depositional breccia locally. >95% clasts. alteration veins between clasts are weakly to moderately bleached with weak to locally moderate chlorite alteration. clasts are rounded by alteration.

Blackwater Project
Drill Summary - Lithology

BW0364

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
572.7	577	AND	bx	LAP	MO	GRY	ALTFR	GR30+	Zone of intense hydrobreccia in Andisite, veins or pipes up to 40cm in size, strong silica replacement of breccia matrix with relic clasts and later crosscutting intnse chlorite replacement. Minor chlorite vein with mm scale strong silica halo. cross
577	614	AND	bx	LAP	D	GRY	ALTFR	SH	Lower contact, has 30cm alteration band, biotite? phenocryst destructive.
614	616.4	AND	bx	LAP	M	GRY	ALTFR	SH	Clasts are locally silica replaced with secondary hydrobreccia overprinting courser earlier breccia. Primary breccia is 70% clasts in silicified matrix with local strong chlorite alteration, secondary breccia is 20% clasts. Secondary breccia is bande
616.4	619.5	AND	mas	LAP	D	GRY	ALTFR	SH	similar to porphyritic units above.
619.5	625.2	AND	bx	LAP	M	GRY	ALTFR	SH	Similar to above breccia except no secondary breccia.
625.2	631.2	AND	por	LAP	M	GRY	DEP	SH	Massive porphyritic andisite, phenocrysts are 2-5mm silica/albite and clay altered.
631.2	641.4	VC	lith	BLOCK	M	GRY	DEP	SH	Lapilli size clasts, are andesite, white (felsic? quartz? albite?), baned and altered, reaction rims and halos are common especially with andesite clasts, but not pervasive.
641.4	660	VC	lith	LAP	M	GRY	ALTFR	GR30	Lapilli size clasts are andesite, with 5% white (felsic? Quartz altered? Albite altered?) clasts, matrix is moderately biotite and chlorite altered with 1 % chlorite veins up to 3 cm.
660	701	AND	por	LAP	M	GRY			Massive porphyritic Andesite,Phenocrysts are unaltered and are feldspar and amphibole. moderate patchy chlorite alteration and bleaching associated with stronger alteration patches. locall patches of chlorite, sericite, sulphide destructive replaceme
701	720.3	AND	por	LAP	M	GRY	FLT	SH	Massive porphyritic anesite, moderate patchy chlorite+biotite and Biotite+clay alteration. biotite + clay is softer and browner. locally 5-10% Qtz+calcite veins.
720.3	747.6	AND	por	LAP	M	GRY	FLT	GR5	Brecciated andesite, locally clast supported breccia tecture, locally porphyritic, alteration of matrix and psuedo matrix is preferential by biotite and chlorite. psuedo matrix is area of fluid alteration breaking out area of not fluid altered giving
747.6	768.7	AND	mas	FA	L	GRY	ALTFR	SH	Assumed protolith of Andesite, pervasive Qtz replacement with 1-3% garnet and 1-10% sulphide, dominately Py and Apy.
768.7	771.9	AND	volc	LAP	MO	GRY	ALTFR	GR30+	Andesite breccia macroscopic texture is preserved, compleate Qtz replacement with 1-5% garnet and 1-3% sulphide, dominately Py.
771.9	778.4	AND	mas	FA	L	GRY	ALTFR	GR30	Assumed protolith of Andesite, pervasive Qtz replacement with 1-3% garnet and 1-3% sulphide, dominately Py.

Blackwater Project
Drill Summary - Lithology

BW0364

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
778.4	792.1	AND	volc	LAP	M	GRY	FLT		Andesite breccia macroscopic texture is preserved, 50 to 80% Qtz replacement with 1-15% garnet and 1-3% sulphide, dominately Py.
792.1	841	SED	slt	FA	D	BLK	ALTFR	GR30+	black slate with, relicted bedding, fine sand to clay original sediment. Cleavage @ ~ 45 deg to CA, bedding is 30 deg to CA
841	846.5	SED	sst		M	BLCH			Argilitic beds are silicified and altered to Silica+Garnet+Chlorite+Biotite.

Blackwater Project
Drill Summary - Alteration

BW0364		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5	58.4	T	CLST	1	CLST	2	MTRX	3	MTRX	2	LIM	FC	3	HM	FR	2	strong silica in some clasts and moderate throughout matrix, fracture controlled oxidation, some clasts with clay alteration and some with weak chlorite, possilbly some weak sericite in matrix from 23.9m-37.9m
58.4	65.2	T	CLST	2	CLST	2	PATC	4	PATC	1	LIM	PERV	3	HM	FR	2	pervasive oxidation throughout clay annealed fault zone, silca throughout stronger in clasts than matrix
65.2	108.9	T	CLST	2	CLST	2	CLST	4	PATC	1	LIM	FR	2	HM	FR	2	chloite and biotite alteration both in mafic clasts and matrix, silca throughout stronger in clasts than in matrix, weak clay in clasts;possibly some weak sericite patchy in matrix
108.9	151.4	S	CLST	2	CLST	2	CLST	4	PATC	1	SIL	MTRX	3	CHL	PERV	2	same as above but no longer in oxidation zone
151.4	180.2	S	CLST	1	CLST	2	CLST	4	PATC	1	SIL	PATC	2	CHL	PERV	2	same as above but more chlorite along fractures and with mechanical clay throughout fault sections and on some fractures in competent sections with failure along fractures
180.2	194.5	S	DEF	4	FR	1	CLST	4		0	SIL	PATC	2	CHL	FR	4	fault zone with strong chlorite throughout, some clay+chlorite annealed sections
194.5	224.5	S	DEF	3	PERV	2	PATC	3	PERV	3	CHL	FR	3				pervasive sericite+clay+silica alteration, chlorite throughout (clay+chlorite annealed intervals), silica pervasive in competent sections
224.5	228.2	T	DEF	2	PERV	2	PATC	3	PERV	3	CHL	FR	2	BIOT	PATC	2	Strong Fault. Transition, bright red Hm on slickened FP's. Perv sericite-clay-silica alteration partially annealing fault gouge, chlorite weakly throughout and weak-mod on FP's. Silica perv in bx. Garnet in patchy blebs in annealed gouge and in bx'd clasts.
228.2	231	S	FR	3	FR	2	PERV	4	PERV	1	GRNT	REP	3	BIOT	PATC	2	perv silica-ser alt. Chl-Clay on FP's. Garnet Masses replacing GM as blebs with patchy BIOT.
231	246	S	FR	3	FR	2	PERV	4	PERV	1	GRNT	REP	1	BIOT	PATC	1	similar to above, Chl replaces larger clasts partially.
246	247	S	FR	2	INFILL	2	PERV	3	PATC	1	GRNT	REP	1	BIOT	PATC	1	patchy perv silica-sericite alt overprinting darker silica-BIOT alt. Chl-clay on FP's, Clay also infilling small <1mm grains in less siliceous sections. Garnet replacement blebs assoc with BIOT patches.

Blackwater Project
Drill Summary - Alteration

BW0364		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
247	270.4	S	FR	2	FC	2	PERV	4	PERV	1	GRNT	REP	3	CLY	REP	1	perv silica-sericite alt. Chl-Clay on FP's, clay fracture controlled. Garnet replacement blebs patchy. Clay replacing lathe shaped grains in clasts (feldspar replacement?)
270.4	281	S	FR	2	FR	2	PERV	4	PERV	2	GRNT	REP	1	CHL	PATC	1	Perv silica-sericite, imparting a L.green hue to the core, silica imparts white BB'y laminations, with Dark chlorite patches and chlorite coating FP's. Unknown yellow clay/sulphate on Fp's with white-gray clay.
281	286.7	S	FR	3	FR	2	PERV	4		0	GRNT	REP	1				perv silica white-D.Gray in BB'y laminations. Chlorite moderatley coating FP's.
286.7	302	S	FR	4	FR	1	PERV	4	PERV	2							perv silica and weak sericite L-M.Gray to Olive Green, occurs in laminations, locally undulating.
302	305	S	FR	4	FR	1	PERV	5	PERV	3	CHL	PERV	3				Silica overprinting sericite+chlorite
305	320.2	S	FR	4	FR	2	PERV	5	PERV	4	CHL	PERV	3				perv silica after sericite alteration, dark green chlorite alt along frac plane
320.2	328	S	FR	5	FR	2	PERV	5	PERV	3	CHL	PERV	2	ALB	REP	1	strong black-dark green chlorite alt along frac planes, weaker pervasive chlorite alt; 323 m - light pinkish alteration albite-silica?
328	338	S	FR	5	FR	1	PERV	5	PERV	3	CHL	PERV	3	SIL	REP	3	light green-grey perv sil-ser-chl alt; strong chl alteration on fx planes. Clasts replaced by silica/qtz. Appearing as boudin-like pods within laminated interval
338	347	S	FR	4	FR	1	PERV	5	PERV	4	CHL	PERV	3	SIL	REP	3	Increase in bleached white silica/clastic zones, perv chl-sil-ser altered
347	355.5	S		3		0	PERV	4	PERV	4	CHL	FR	2	SIL	REP	5	A real mess! Silica-sericite-chlorite altered. Strongly deformed/convoluted, pseudo-soft sediment deformation, with zones of clasts?, possibly post-deposition strongly silicified. Has undergone several stages of silcification
355.5	359	S	FR	5		0	PERV	4	PERV	4	SIL	CLST	3	SIL	MTRX	3	Several pulses of silicification. Dark grey silica matrix, subangular silicified clasts (felsic originally?), overprinted by silica-sericite pervasive alteration

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Blackwater Project
Drill Summary - Alteration

BW0364		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
359	365.2	S	FR	5	FR	2	MTRX	3	MTRX	2	CARB	FR	2	SIL	CLST	2	weakly altered zone with the exception of chlorite along fracture planes. 30 cm rounded silicified clasts from 360.3-360.6 and 360.7-361.m
365.2	374	S	FR	4		0	PATC	3	PATC	5	SIL	CLST	4	CHL	CLST	3	Cloudy silica-sericite patchy alteration with rounded clast pebbles and patchy dark grey silicification (368 m)
374	376.8	S	FR	4	OP	2	PATC	5	PATC	4							Silica-sericite patchy alteration. Chlorite laminae contorted around rounded quartz clasts. Anhedral clay specks appear to be late stage alteration overprinting silica-sericite alteration
376.8	377	S	FR	4	OP	1	PATC	5	PATC	4	SIL	CLST	4	CHL	DEF	3	As above....into HQ core, gradual transition into volcaniclastic unit...may just be a large clast
377	384.2	S	FR	4	OP	1	PATC	5	PATC	4	SIL	CLST	3				Silica clasts, patchy silica-sericite alteration, strong chlorite along fractures. Overprinting with small euhedral clay clasts
384.2	395.5	S	FR	3	OP	1	PERV	5	PATC	5	SIL	PATC	4	CHL	PATC	3	Very challenging to differentiate matrix from clasts. Patchy silica-sericite has been overprinted by pervasive silica. Very sparse white euhedral clay overprinting
395.5	399.9	S	FR	3	OP	1	PERV	5	PATC	4	SIL	PATC	4	CHL	DEF	4	Chlorite bands with silica-sericite patches that have been pervasively silicified
399.9	406	S	FR	3	FR	1	MTRX	4	MTRX	3							Very weakly altered. Original texture still evident in this interval. Alteration fronts above and below
406	407.9	S	FR	4	FR	1	PATC	5	MTRX	3	SIL	CLST	2				Zones intensely silicified within interval. Light grey colour becoming more prevalent, slightly bleached. Losing dark grey hue of larger clasts
407.9	409.3	S	FR	3	FR	1	PATC	5	PATC	4	SIL	CLST	4				Patchy sil-ser appears to postdate silicification of clasts, minor chlorite on fracs
409.3	411	S	FR	4	FR	1	MTRX	5	MTRX	4	CHL	DEF	3	CLY	OP	1	"Greener" zone presumably because of increase in chlorite as bands and along fracture planes.
411	412.3	S	FR	4	OP	1	CLST	4	PATC	4	CHL	CLST	2	SIL	CLST	3	Silicified & chloritized clasts have been overprinted by silica-sericite alteration

Blackwater Project
Drill Summary - Alteration

BW0364		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
412.3	416.5	S	FR	4	OP	1	PATC	4	PERV	4	CHL	CLST	2	SIL	CLST	2	Minor chlorite & quartz clast replacement. Chlorite appears to have replaced mafic minerals within andesitic clasts (416m). Patchy silicification
416.5	421.2	S	FR	4	FR	1	PATC	4	PERV	4	CHL	PATC	3	SIL	CLST	2	Occasional clay OP, mostly silica-sericite-chlorite altered
421.2	425.4	S	FR	2	OP	1	CLST	3	PERV	4	SIL	CLST	2				Pervasive silica-sericite-chlorite altered, minor clast alteration by silica
425.4	430	S	FR	4	MTRX	2	PATC	3	PATC	1	BIOT	MTRX	2	ALB	MTRX	2	Weak greyish-purple alteration of matrix to bt-albite, very minor patchy silica alteration
430	430.5	S	FR	2	MTRX	1	VN	2	VN	3	SIL	PATC	2	BIOT	MTRX	1	Quartz vein brecciated? associated with local 5% Pyrrhotite zone
430.5	435.3	S	FR	4	MTRX	1	PATC	3	PATC	3	BIOT	MTRX	1	ALB	MTRX	1	Weak biotite-albite altered matrix, patchy silicified silica-sericite alteration with strong chlorite on fracture planes.
435.3	438	S	FR	2	FR	1	PATC	2	PATC	2	CARB	FR	2	ANH	FR	2	Weakly biotite-albite altered matrix, patchy silicified silica-sericite alteration. Anhydrite-carbonate along fracture planes
438	471	S	FR	2	MTRX	1	MTRX	2	MTRX	3	CARB	FR	1	ANH	FR	3	Potentially 100% andisite clasts with variable alteration, matrix is sericite+clay+silica alteration, while 75% of clasts are unaltered andisite. Local zones of strong silica chlorite replacement up to 50cm.
471	487.7	S	VN	1	VN	2	VN	1	VN	2	CARB	FR	1	ANH	FR	2	sericite + clay+silica+chlorite alteration following hairline veinlets and zone of hydro thermal fractureing/brecciation.
487.7	490	S	VN	3	VN	2	PATC	4	VN	2	SER	FR	2				Hydrothermal breccia??? is overprinted by strong silica and chlorite alteration. increased Po in large blebs and 2cm vein.
490	521.5	S	FR	2		0		0	VN	1	BIOT	PERV	3	CHL	FC	2	Pervasive biotite alteration, weak clay alteration replaceing phenocrysts, chlorite in halos around some late veins.
521.5	542	S	PATC	3	MTRX	1		0	MTRX	2	BIOT	CLST	3	CHL	FC	1	Matrix is pervasively light coloured, moderate silica alteration, minor weak sericite and clay alteration, clasts are moderately biotite alterated.

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Blackwater Project
Drill Summary - Alteration

BW0364		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
542	573.5	S	MTRX	3	MTRX	1		0	MTRX	1	BIOT	CLST	3	CHL	PATC	3	Chlorite alteration and weak bleaching forms spider web veins and local blebs, forming breccia or psuedo breccia
573.5	577	S	VN	5	VN	1	VN	5	VN	1	BIOT	PERV	3				Biotite altered andisite is cut by large vein with intense silica and chlorite alteration associated with it.
577	614	S	MTRX	2	REP	1		0		0	BIOT	PERV	3				Clay and silica replacement of plag phenocrysts. with halos arouns breccia areas.
614	615.4	S	VN	3	REP	1	MTRX	4		0	BIOT	CLST	3	CHL	CLST	2	Strong silica alteration and replacement of matrix and some clasts, some clasts have chlorite cores with silica altered rims.
615.4	619.5	S	MTRX	1	REP	1	REP	2	MTRX	1	BIOT	PERV	3				Clay and silica replacement of plag phenocrysts. with halos arouns breccia areas.
619.5	625.2	S	VN	3	REP	1	MTRX	4		0	BIOT	CLST	3	CHL	CLST	2	Strong silica alteration and replacement of matrix and some clasts, some clasts have chlorite cores with silica altered similar it breccia interval @ 615m
625.2	631.2	S	FC	3	REP	1	REP	2		0	BIOT		3				silica and clay replaceing phenocrysts
631.2	641.5	S	FC	3	FC	3	REP	5	FC	1	BIOT	CLST	3	SIL	MTRX	2	Silica or albite is replaceing clasts, clasts have reaction rims and halos, some bleaching, alteration in halos around veins
641.5	660	S	FC	3		0	REP	4		0	BIOT	PERV	3	CHL	MTRX	2	Silica and albite replacing phencrysts, chlorite altering matrix, silca and albite replaceing 5% of clasts.
660	685.4	S	FC	3	REP	1		0		0	BIOT	REP	1	CHL	REP	1	Chlosite along fracture has associated bleaching in halos around fracture. sulphide and silica veins have halos of albite and biotite.
685.4	701	S	FC	3	REP	1		0		0	BIOT	REP	1	EPI	REX	5	patches of recrystalization by Albite, epidote, chlorite, garnet, 1-5cm in scale. and chlorite on fracture with bleached halos.
701	720.5	S	PERV	2	PATC	3		0		0	BIOT	MTRX	3				alternating patches of green- black moderate biotite+weak to moderate chlorite and brown patches of moderate biotite and moderate clay alteration. brown patches may have an association with Qtz+carbonate veins???.

Blackwater Project
Drill Summary - Alteration

BW0364		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
720.5	747.6	S	MTRX	2	REP	1		0		0	BIOT	CLST	3				Chlorite and biotite alteration in matic of breccia with dominate biotite alteration in clasts.
747.6	762	S		0		0	REX	5		0	GRNT	REX	5				Compleate pervasive replacement by Quartz and Garnet. Texture destructive.
762	768.7	S		0		0	REX	5		0	GRNT	REX	5				Compleate pervasive replacement by Quartz and Garnet. Texture destructive. very porous
768.7	771.9	S		0		0	REX	5		0	GRNT	REX	5				Compleate pervasive replacement by Quartz and Garnet. Texture non-destructive.
771.9	778.3	S		0		0	REX	5		0	GRNT	REX	5				Compleate pervasive replacement by Quartz and Garnet. Texture destructive.
778.3	792.1	S	CLST	4		0	REX	5		0	GRNT	REX	5	BIOT		3	Pervasive 50-80% replacement by Quartz and Garnet. Texture non-destructive. Biotite alteration of matrix, 5% of clasts are moderately to strongly altered by CHlorite.
792.1	841	S		0		0		0		0	BIOT	VNHL	2				Biotite halos arong calcite+qtz veins. Regional greenschist metamorphism, low slate / high shale. definitive moderate cleavage non parallel to bedding.
841	846.5	S	PATC	2		0	PATC	3		0	BIOT	PATC	2	GRNT	PATC	2	Argilitic beds are silicified and altered to Silica+Garnet+Chlorite+Biotite.

Blackwater Project
Drill Summary - Mineralization

BW0364		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	5		0		0		0										
5	14	DI	0.1	DI	0.5	DI	0.1	Grnt	BB	1	Goe		1				trace sulphides, sphalerite replacing garnet blebs, little py and po disseminated throughout=very little
14	28	DI	0	DI	0.5	DI	0.5										little to no sulphide, some po and sph disseminated throughout and as clasts replacement
28	33	DI	0.5	CR	0.1	CR	0.5	Grnt	BB	0.5	Py	BB	0.5				little to no sulphide, some py disseminated throughout, garnet blebs some with sphalerite within, trace po
33	53.2	FP	0.5	DI	0.1	DI	0.1										little to no sulphide, some py disseminate throughout, trace sph and po; one laminated clast with sulphides dominantly py in alignment with laminations, replacing clast
53.2	65.2	DI	0.8	CR	0.5	DI	1										TS~2% with disseminated py sometimes in little blebs, po disseminated, found in little blebs replacing clasts, and throughout matrix, sph as clast replacement
65.2	85.4	DI	1	CR	1	DI	1.5										slight increase in sulphides, TS3.5% with little py and po blebs throughout, sphalerite dominantly found replacing mafic clasts, some po as clasts replacement as well
85.4	91	DI	1.5	CR	1	DI	1.5										TS~4-5% with blebs of sph_py+po, little blebs of po and py also disseminated throughout, sph as clast replacement
91	102.5	DI	1.5	DI	1	DI	2										disseminated blebs of sulphides, blebby po as clast replacement and in matrix sort of as clast haloes, py also blebby throughout, sph in blebs and as clast replacement
102.5	115	DI	0.5	CR	1	DI	1										same as above for mineral style but less sulphides
115	119.5	DI	1	CR	1	DI	3	Sp	DI	0.5							same as above but increase in sulphide particularly po

Blackwater Project
Drill Summary - Mineralization

BW0364		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
119.5	126.7	DI	1	CR	1	DI	2	Sp	DI	0.5							disseminated blebs of po, py, and sph, sph and po also as clast replacement and within the matrix inbetween clasts
126.7	149.4	DI	1	DI	1	DI	1.5	Mrc	FP	0.1	Dbs	CR	0.1				dbs in some felsic clasts, py po and sph disseminated throughout, sph and po as clasts replacement as well
149.4	161.1	DI	0.5	CR	0.5	BB	1.5	Mrc	FP	0.1							py, po, and sph disseminated throughout, blebs of po and sph as clast replacement
161.1	172.7	DI	0.5	CR	0.5	BB	1	Mrc	FP	0.1							same as above but slightly less sulphides
172.7	184	DI	1	CR	0.5	BB	1.5	Mrc	FP	0.1							py and po and sph as clasts replacement, po and py also as blebby disseminations
184	194.5	DI	0.5	CR	0.5	DI	0.1	Mrc	FP	0.1							sulphides decrease, disseminated spec of py and po throughout, sph and clats replacement.
194.5	221.5	BB	0.5	BB	0.5	BB	1	Grnt	BB	1.5							blebs of sulphide po, sph and py, py also associated with ratty blebby garnet as is sph, sulphides mainly in blebbs and not at fine disseminations
221.5	224.5	DI	1	DI	0.5	DI	0.5										clay+chlorite annealed interval with fine disseminated py+sph and some po throughout, some sections of black sooty sulphide as well
224.5	229.8	DI	0.1	BB	0.1	SP	0.5	Grnt	BB	2							Py masive DI's in fault gouge. Grnt BB's replacing GM with intergrown specks of Po. Sp trace locally.
229.8	236.5	DI	0.5	DI	0.5	DI	1	Grnt	BB	1	Cp	DI	0.1	Dbs		0.1	Py Di's throughout and Massive in fault gouged areas. Sp increases in abundance with depth. Po and Po filled black sooty ulphide blebs DI. Fracture controlled black sulphides.
236.5	242	DI	0.1	DI	1	DI	0.5	Grnt	BB	0.1	Dbs	BB	0.5				unknown black sulphide blebs locally abundant. Po-Py DI' and BB's, Sp DI's and weak fracture fill locally.
242	257	FP	0.5	DI	0.1	DI	0.8	Grnt	BB	0.5	Dbs	BB	0.1				Po DI > discontinuously stringer VN'd. Py trace-minor coats FP's. Grnt patchy abundance as BB's.
257	270.4	FP	0.5	FP	0.1	BB	1	Grnt	BB	1	Py	BB	0.1	Dbs	BB	0.1	Po occurs as BB's, within Grnt BB's, and in sooty black sulphide BB's. Py coats FP's and locally BBy. Sp occurs locally with Py on FP's

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Blackwater Project
Drill Summary - Mineralization

BW0364		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
270.4	281.1	FP	0.1		0	BB	0.5	Grnt	BB	1.5							Garnet DI BB's locally square shaped, pseudomorph, replacement. trace Po BB's and minor Po intergrowth in Grnt BB's. Py trace coating on FP's with trace DI's
281.1	287	FP	0.1	SP	0.1	BB	0.5	Grnt	BB	1	Ga	FP	0.1	Dbs	BB	0.5	BB'y Grnt, with intergrown Po and weak Py. Py weak FP coating. Unknown Black sulphide BB' with Po.
287	302	VN	1	DI	0.5	BB	1	Py	FP	0.5	Dbs	BB	0.5				Black BB's of sulphide cocktails, dominatley Po. Py Vn'd and fracture coated. Sp DI BB's square shaped locally, pseudomorph, replacement. Mineralization predominatley follow laminations.
302	305	VN	1	SP	0.5	BB	1	Py	FP	0.5	Dbs	BB	0.5				As above interval
305	310	BB	1	BB	1.5	BB	0.5	Py	FP	0.5	Dbs	BB	0.5				Strongly mineralized interval, blebby reddish sphalerite with py>po
310	320.2	BB	1	BB	1	BB	0.5	Py	FP	0.5							py cubes along fx planes, sp>py>po as blebs
320.2	328	BB	0.5	BB	1	BB	0.5	Py	FP	1							Sparse blebs of Sph>Py>Po
328	334	BN	1	CR	1	BB	0.5	Py	BN	0.5	Py	FP	0.5				Fracture plane & vlt pyrite, sphalerite blebs are aggregated with clast-like appearance
334	338	BN	1	BB	1	BB	0.5	Py	BB	0.5	Py	FP	0.5				Alternating bands of pyrite-chlorite mud with white slightly clastic laminae with minor blebby sphalerite
338	347	FP	1	CR	1	BB	0.5	Py	BB	1	Py	BN	0.5	Ga	VN	0.1	Increase in "clast replacement" sphalerite mineralization, occasionally as blebs along weak laminae, pyrite banding weak, chlorite-py along fracs
347	355.5	BN	1.5	CR	1	BB	0.5	Py	FP	0.5	Sp	BB	0.5	Ga	CR	0.1	Trace galena at 350.34 m. Strongly deformed pyrite-chlorite bands with sphalerite. Occasional clasts rimmed by sphalerite. Clasts appear richer in sulphides then matrix/bands. Blebby sphalerite. A chaotic mess. Lower contact on section assays at 30
355.5	359	FP	0.5	BB	0.5	CR	1	Py	CR	0.5	Sp	BB	0.5	Po	BB	0.5	Sphalerite-pyrrhotite as blebs and clast replacement within interval of silicified vc
359	365.5	FP	0.5	CR	0.1	CR	0.5	Py	BB	0.5							Weakly mineralized, minor replacement of clasts by sphalerite-pyrrhotite with very minor blebby pyrite

Blackwater Project
Drill Summary - Mineralization

BW0364		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
365.5	374	CR	0.5	BB	1	BB	1	Ga	BB	0.1							Blebs of sphalerite-pyrrhotite within grey silica matrix . Clasts of presumably felsic affinity (banded) consist of bands of black pyrite laminae.
374	376.8	BB	1	BB	0.5	BB	0.5	Py	FP	0.5							Core Reduction from PQ to HQ @ 376.8m.
376.8	378	BB	1	BB	0.5	BB	0.5	Po	FP	0.5	Po	FP	0.5				Minor pyrite-pyrrhotite along fracture planes. Blebby sulphides within interval
378	386.5	BB	0.5	BB	0.5	BB	0.5	Dbs	CR	0.1	Py	FP	1				Po-Sph blebby mineralization within laminated interaval
386.5	390	FP	1	CR	1.5	CR	0.5	Py	VN	0.1							Increase in sphalerite (clast replacement?), may be blebby as within last interval.
390	394.5	FP	1	BB	0.5	BB	0.5	Cp	FP	0.1	Ga	FP	0.1	Po	FP	1	Strongly fx control mineralization. Black chlorite, pyrite, pyrrhotite, galena and cpy all found within interval. Best looking section of interval from 392-394m
394.5	400.2	FP	0.5	BB	0.5	BB	0.5	Py	DI	0.1	Py	BB	0.1	Po	FP	0.1	Po-Sph blebby sulphides, minor pyrite as blebs. Pyrrhotite trace along fracture planes
400.2	407.9	FP	0.1	CR	0.1	CR	1	Cp	CR	0.1	Po	FP	0.1				Mineralization concentrated around amygdule replacement primarily by pyrrhotite. Trace Cp visible at 405.4m
407.9	411	FP	0.5	CR	2	CR	1	Py	VN	0.1	Py	BB	0.5	Dbs	BN	0.1	Sphalerite replaces cm sized clast at 409.1m. Could be replacing bands of a felsic tuff unit.
411	417	FP	0.5	CR	0.5	CR	1	Po	FP	0.5	Py	DI	0.1				Sph-Po blebby mineralization, Py & Po along fracs
417	423.7	FP	0.5	CR	0.5	CR	1	Py	DI	0.1	Po	FP	0.1				Weak mineralization along frac planes. Po replaces amygdules
423.7	428	FP	1.5	BB	0.1	CR	1	Py	EU	0.1							Strong pyrite mineralization along fracture planes. Occurring as euhedral crystals at 426m.
428	440	FP	0.5	BB	0.1	CR	1										Large clast replacement at 435 m. Amygdule replacement by pyrrhotite. Pyrite along fracture planes.
440	450	FP	0.5	BB	0.1	CR	1										Po is replacing clasts, locally mixed with Py.
450	461	FP	0.5	BB	0.1	CR	1										Po is replacing clasts, locally mixed with Py.

Blackwater Project
Drill Summary - Mineralization

BW0364		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
461	471	FP	0.5	BB	0.1	CR	1	Po	EU	0.1							local patches of euhedral Po.
471	490	PERV	0.1	BB	0.1	BB	2										vfg aggregates and blebs replacing groudmass of Andisite, not within clay+serictie alteration assempblege
490	505		0		0	BB	0.1										Trace Po in ground mass.
505	521		0		0	BB	0.1										Trace Po in ground mass.
521	531		0		0	BB	0.5										Fine grained masses and blebs in clasts.
531	542.2		0		0	BB	0.5										Fine grained masses and blebs in clasts.
542.2	558		0		0	SP	0.5	Apy	SP	0.1							fg aggregates or mg aggregates focused in alteration veins.
558	572.7		0		0	BB	0.5										
572.7	577	BB	0.5		0	BB	0.5										Aggregates of po and Py.
577	588		0		0	SP	0.5										
588	605		0		0	VN	0.1										sub mm veins of Po and Qtz?? along fracture.
605	614		0		0	SP	0.1										Trace Po in matrix.
614	615.4		0		0	BB	0.1										Po in course blebs.
615.4	619.5		0		0	SP	0.1										Trace Po in matrix.
619.5	625.2		0		0	BB	0.1										Po in course blebs.
625.2	631.2		0		0	SP	0.1										Po as specks in groundmass of Andesite.
631.2	641.5	GmR	0.1	GmR	0.1	GmR	0.5	Cp	GmR	0.1							Sulphides occur in cm scales fg aggregates spacially assciated with chlorite alteration.
641.5	660	GmR	0.1		0	GmR	0.1										Sulphides occur in cm scales fg aggregates spacially assciated with chlorite alteration.
660	683		0		0	VN	0.5	Cp	VN	0.1							Veinlets of Po and Qtz/Alb with isgnifigant Cp relative to total sulphide.
683	693		0		0		0										sulphides out with Garnet+chlorite+Epidote+Albite alteration. super trace vfg Po in veinlets under microscope.
693	722.5		0		0		0										trace disseminate Po and Py under microscope

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Drill Summary - Mineralization

BW0364		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
722.5	735		0		0	SP	0.5										Po in disseminated subhedral to euhedral specks and associated with chlorite alteration in vains? and matrix alteration.
735	747.6	VN	2	VN	1	VN	0.5	Cp	VN	0.1							Sulphides are increasing down interval, in sub mm veins along fracture, locally disseminated, and assocaite with local chloritre alteration.
747.6	762	DI	5		0	DI	0.5	Cp	DI	0.1	Apy		0.5	Grnt	DI	3	TS is likly higher then estimates as much of the sulphide vfg and barely visible under the microscope.
762	768.8	DI	0.5	DI	3		0	Cp		0.1	Grnt	DI	1				Apy is dominate in zones of lower sulphide and less porosity?
768.8	771.9	DI	2		0		0	Grnt	DI	10							
771.9	778.4	DI	2	DI	0.5		0	Grnt	DI	1							
778.4	792.1	DI	1	VN	0.1		0	Grnt	DI	10							Garnet and Qartz are replacing matrix.
792.1	812	VN	1		0	DI	1										very fine grained Py is evenly disseminated, possible more Py though hard to determine oweing to grain size. Py is in finve veinlets.
812	841	VN	1		0	DI	1										very fine grained Py is evenly disseminated, possible more Py though hard to determine oweing to grain size. Py is in finve veinlets.
841	846.5		0		0	DI	1	Po	VN	1							Po is diseminated and vein dominately in less altered areas, some very fine sulphide in altered areas.

Blackwater Project
Drill Summary - Structure

BW0364

From (m)	To (m)	Structure	Strength	Comments
5	32	JZ	2	joint set, fairly competent core, joints are 40>80 dtca
32	61	JZ	3	joint set, almost a vey very weak broken zone, rough jagged joints, joints are 80>40
61	64.4	FZ	4	fault zone, clay annealed, a few sections of competent core
64.4	101.5	JZ	2	joint set, competent core, fractures are 50ish>80>30
101.5	105	BRKZ	4	moderate to strong broken zone
105	111.5	FZ	3	fault zone with clay gge throughout (mechanical), 20cm interval of clay annealed fault at 105.1
111.5	123.1	JZ	3	moderate to strong joint set, clay gge along some fractures, fracture are dominantly at 80sih dtca some at 45-55
123.1	132.3	BRKZ	3	moderate to strong broken zone, some clay gge throughout
132.3	151.4	JZ	3	joints are dominantly at 50 dtca, some at 80ish dtca and some small broken sections throughout section
151.4	160.7	BRKZ	3	moderate broken zone
160.7	163.2	FZ	4	strong fault zone with clay +chlorite annealed sections
163.2	180.2	BRKZ	2	moderate broken zone, weak clay and strong chlorite along fractures
180.2	224.5	FZ	3	moderate to strong fault, clay/chlorite annealed throughout, some lost recovery
224.5	228.2	FL	5	strong fault, clay and breccia partially annealed throughout, some lost recovery.
228.2	230.7	BRKZ	4	mod-strong broken zone
230.7	230.8	FL	4	mod-strong fault, clay and breccia partially annealled throughout.
230.8	244.2	FZ	4	mod-strong fault zone, multiple gouge rich sections with in-between broken more competent rock, lost recovery throughout.
244.2	247	BRKZ	2	weak-mod broken zone, large number of fracture sets from 10-70 dtca.
247	250.3	BRKZ	3	moderate broken zone, rock fractured at irregular angles.
250.3	251	BRKZ	4	mod-strong broken zone, with minor gouge. Partially redrilled, wahed away?
251	253	BRKZ	2	weak-mod broken zone, with numerous fracture sets from 35-80 dtca.
253	253.5	BRKZ	4	mod-strong broken zone, abundant bx rock.
253.5	257.8	JZ	3	moderate jointing at 45>35 dtca.
257.8	258.3	FL	5	>90% gouge, remainder CA-LAP sized Bx.
258.3	260.7	BRKZ	2	weak-mod broken zone, with numerous fracture sets frm 5-50 dtca.
260.7	261.1	BRKZ	3	moderatley broken zone.
261.1	263	JZ	2	joint zone at 40 dtca.

Blackwater Project
Drill Summary - Structure

BW0364

From (m)	To (m)	Structure	Strength	Comments
263	264.5	BRKZ	3	broken rock, fractured at various angles.
264.5	266.5	JZ	2	weak-moderatley jointed at 30-40 dtca.
266.5	266.8	BRKZ	3	broken zone cave in.
266.8	267.5	JZ	3	moderatley jonted at 40>50 dtca.
267.5	267.8	FL	3	moderate- abundant gouge in a partially annealed fault.
267.8	270.4	JZ	4	moderatley-strongly jointed at various angles, 50 dtca fracture set stands out.
270.4	272.3	JZ	3	multiple fracture sets 35>30>10>25 dtca.
272.3	274.4	BRKZ	4	mod-strongly broken rock, small large fragments. No Gouge.
274.4	276.7	BRKZ	3	broken rock with local competent fracture sets 50>30>40 dtca.
276.7	277.2	BRKZ	4	broken rock, with sand.
277.2	278.2	JZ	4	jointed at 30>25 dtca.
278.2	278.5	BRKZ	5	broken rock with trace gouge.
278.5	279.5	BRKZ	3	brken rock 4 at top and gradationally more competent with depth
279.5	280.3	JZ	3	jointed zone 65>30 dtca.
280.3	287.4	BRKZ	4	broken rock with trace gouge locally. small sand sized to boulder fragments.
283.7	278.4	JZ	4	Heavily fractured rock, but wholly competent and jointed @ 40>45>60>30 dtca
287.4	292.6	FL	5	chloritically gouged fault
292.6	293	FL	4	minorly mineralized yellow-green gouged fault, disctinctly at 45 dtca.
293	298	JZ	3	multiple joint sets at 40>45>10 dtca.
298	292.6	JZ	4	heavily fractured rock, with distinct jointing @ 50,60,30,45 dtca, no predominatley abundant orientation.
298	299	JZ	5	stongly jointed at 60 dtca.
299	302	JZ	3	2 distinct joint sets @ 30>20 dtca.
302	309	JZ	3	30-45 TCA fracs
309	310	BRKZ	4	wk fracs // TCA, challenging drilling, pulled rods at 210m
310	314	JZ	3	Primary joints at 40 TCA, weak joints at 10 TCA
314	318.5	BRKZ	4	Jointed parallel TCA, has appearance of broken zone as a result
318.5	319.8	JZ	2	Lower contact at 40 TCA
319.8	320.8	FZ	4	Lower contact into FT unit, gouge at upper contact

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0364

From (m)	To (m)	Structure	Strength	Comments
320.8	328	JZ	3	322.6-322.8m = anhealed fault breccia, minor broken zone from 324.8-325.4m
328	329.5	JZ	2	wkly jointed
329.5	333.3	JZ	4	strongly broken section, but joints still measurable
333.3	334.5	JZ	3	Chlorite alteartion along fracture planes at 40 degrees TCA
334.5	335.5	LY	4	Fairly consist laminae within joint zone, alternating dark grey, green and white bands (<1mm width)
335.5	335.9	BZ	4	Microbrecciated zone that appears to be rehealed
335.9	337.5	LY	4	Questionable whether this interval is ductily sheared or contorted due to soft sediment deformation. Angles chaotic and range from vertical at 336m to 225 degrees TCA at 336.25 (possibly folded), to 50 degree laminae bedding to end of interval
337.5	337.8	FZ	3	Lower contact at 40 degrees TCA, may just be broken zone?, far less contorted at lower contact
337.8	339.2	LY	4	Faint layering at approximately 60 degrees TCA, white silica boudins?
339.2	340	LY	3	wk layering/laminae
340	341.4	JZ	3	Wkly laminated within interval at approximately 60 degrees TCA
341.4	344	JZ	3	wkly laminated within interval at 65 degrees TCA
344	346.5	LY	3	Weakly layered from 50-70 degrees TCA, within minor joint zone, slightly contorted
346.5	347.5	JZ	3	Possibly secondary joint?, other joint at approximately 50 degrees TCA
347.5	350.3	LY	4	Minor joints at 15 and 40 degrees TCA, bedding irregular. Either ductily deformed or deformed through soft sediment deformation. Laminae average to 60 degrees TCA except where strongly contorted around clasts
350.3	355	LY	4	Contorted (soft sediment-like deformation) angles vary, but average approximately 70 degrees, weakly jointed within interval with strongest jointing from 351.8-352m
355	355.7	JZ	4	Fracture zone sub-parallel TCA, possibly conduit related to transition from laminated FLPT unit into non-laminated, varicolored, matrix-supported VC unit
355.7	358.7	JZ	1	One measurable fracture at 60 degrees TCA within interval, non-laminated
358.7	362	JZ	4	Fracture zone sub-parallel TCA, weak fracture set at 55 degrees TCA
362	363.9	JZ	2	primary joint set between 30-60 degrees TCA
363.9	364.9	FZ	4	Minor gouge within interval, lower contact at 40 degrees TCA, separates weakly altered VC above with altered VC below
364.9	371.3	JZ	2	Joints vary from 20-40 degrees TCA within interval, blocky
371.3	373.3	JZ	3	Primary joint set at 30 degrees TCA
373.3	374	JZ	0	Not jointed, solely hammer breaks within interval

Blackwater Project
Drill Summary - Structure

BW0364

From (m)	To (m)	Structure	Strength	Comments
374	374.1	BD	5	Depositional contact varies from 25 degrees to 60 degrees TCA
374.1	375.5	LY	3	Contorted laminae within interval wrapping around larger "felsic" clasts. Angles vary from approximately 10 degrees to 35 degrees on average. Weakly jointed at 30 degrees TCA
375.5	376.8	JZ	3	Joint zone strong at 30 degrees TCA; weakly laminated zone
376.8	389.4	JZ	3	Moderately jointed interval, more broken from 384.15-384.9m
389.4	389.7	LY	2	Laminae within short interval at 20 degrees TCA
389.7	394.4	JZ	4	Primary fault set at 10 degrees TCA. No distinct gouge, but Coated with black sulphides, chlorite, pyrite and trace chalcopyrite
394.4	395.2	JZ	2	2 sets: at 45 degrees TCA and 30 degrees TCA, loss of black sooty sulphides
395.2	395.4	LY	2	Low angle TCA faint laminae
395.5	395.7	LY	3	mm-scale laminae within FLPT unit
395.7	396	LY	2	wk layering-laminae within FLPT unit
396	396.3	JZ	1	Wk microfractured zone, separated out because of broken interval below and layering above
396.3	396.9	BRKZ	4	No measurable angle with broken zone
396.9	399.9	LY	4	"soft-sediment" style laminae ranging from approximately 25 degrees TCA to about 70 degrees TCA. Minor sub-parallel layering from 398-398.2m (very faint)
399.9	400	BD	4	Questionable contact defined by thin blebby sulphide bands
400	400.9	JZ	2	1 weak joint set at 25 degrees TCA
400.9	402.3	BRKZ	3	Broken zone, difficult to obtain valid angle measurement
402.3	404.5	JZ	2	Weakly jointed
404.5	404.7	BZ	5	Very distinct fault breccia section, sharp upper and lower contact at 35 degrees TCA (almost appears out of place)
404.7	406.6	JZ	2	Fracture-chlorite coatings primarily along 30 degrees TCA fracture surface
406.6	407.5	FL	3	Very minor gouge and slickenlines along fracture surface
407.5	410.5	JZ	3	Primary joint set at 30 degrees, secondary joint set at 60 degrees TCA, minor fracture coastings of pyrite-chlorite
410.5	417	JZ	2	20 degree TCA joints make interval appear broken, 2nd set at 50 degrees TCA
417	417.1	BD	1	Alteration front approximately subparallel TCA
417.1	419	JZ	2	Joint set at 20 degrees TCA

Blackwater Project
Drill Summary - Structure

BW0364

From (m)	To (m)	Structure	Strength	Comments
419	419.2	BZ	2	Weak fault breccia/vein breccia clasts are silicified and held together with a chlorite-pyrite matrix. Lower contact at 55 degrees TCa
419.2	421	BRKZ	3	Strongly broken interval, difficult to determine joint angle
421	423.8	JZ	2	Weakly jointed @ 45 and 25 degrees TCA
423.8	425.5	BRKZ	4	Broken zone, difficult to determine joint angle
425.5	426.8	JZ	3	Joint set from 40-50 degrees TCA, weak joint/break at 10 degrees TCA
426.8	428	BRKZ	4	Broken, no distinct joint set
428	440.5	JZ	4	Closely spaced joint zone with primary angles varying from 20-40 degrees TCA. Minor broken zones within interval
440.5	471	JZ	3	joint sets @ 40-50 and 10-20deg to CA as well. CARB-ANHY veins on 10-20 deg to CA set.
471	521	JZ	2	Joint sets @ 40-50 deg to CA.
521	542	JZ	3	Joint sets @ 40-50 and 20 deg to CA.
542	589	JZ	3	40 deg to CA is very dominate and is followed by calcite veins.
589	625	JZ	1	not many joints.
625	660	JZ	2	second weak joint set @ 20 deg to CA
660	693	JZ	3	
693	720.5	JZ	2	vains on joints second set of veins and joints @ 45 deg to CA.
720.5	722.5	FZ	3	non parallel to jointing. two intensity 3 healed fault guages one 40 cm and one 20cm thick, similar orientation.
722.5	747	JZ	2	similar to above fault.
747	747.3	FL	3	Fault Gouge of variable thickness, does not appear to be assocaited with mineralization, post mineralization.
747.3	792.1	JZ	2	set @ 30 and 15 also.
792.1	796.5	JZ	4	
796.5	797.7	BRKZ	1	
797.7	799.2	FL	2	
799.2	824.5	BRKZ	3	Several joint sets, very tightly spaced, sliken fibers on most joint surfaces. broken over very strong jointing.
824.5	826.8	FL	5	Large fault with poor recovery, broken core above and below has sliken fibers on most surfaces.
826.8	832	BRKZ	3	Several joint sets, very tightly spaced, sliken fibers on most joint surfaces. broken over very strong jointing.
832	835	JZ	5	joint sets @ 30, 30, 60, 45, often with jonts less then 3 cm apart of the same orientation.
835	846.5	JZ	3	joint sets @ 30, 30, 60, 45 two sets at 30 deg to CA.

Blackwater Project
Drill Logs

Hole ID:	BW0365	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375851.68
Depth (m):	421	Date Started:	15/02/2012	Casing Size:	HWT	Northing:	5892649.17
Azimuth:	0	Date Completed:	03/03/2012	Casing (m):	35	Elevation (m):	1612
Dip:	-90	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	287	-88
50	286.4	-87.8
100	281.8	-88.1
150	277.3	-88.1
200	264.7	-88.3
250	250.3	-88.4
300	246.8	-88.6
350	244.6	-88.1
400	235.9	-87.8
421	231.8	-88

Blackwater Project
Drill Summary - Lithology

BW0365

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	44.5	OB							
44.5	100.5	VC	ms	LAP	MO	GRY			Majority of interval is matrix supported VC, ~50matrix of intermediate composition, locally andesitic. Clasts size ranges from 1-15cm, with majority between 1-5cm. Clast comp is variable, frequent porph and, occasioanal felsic ash tuff, crystalline q
100.5	139.2	AND	mas	CA	D	GRY	FLT	SH	Largely massive, very finely porphyritic and, increasingly autobrecciated downhole.
139.2	161.9	AND	amg	CA	D	GRY			Upper 1.5m is cataclasite, locally breccia / gouge afterwardas. Competent intervals are highly amygdaloidal, with qtz +/-sulfide amygdules accounting for 10-50% volume of rock. Distinct on this account from overlying AND
161.9	165.5	AND	autbx	CA	D	GRY		GR30+	Largely autobrecciated with up to 65% biotite rich matrix, locally amygdaloidal. Majority is also brecciated, with gouge decreasing downhole. Lower boundary marked by absence of fault breccia
165.5	192	AND	autbx	CA	D	GRY	FLT	GR10	Majority of interval is ?abx texture, 40-60% matrix which is heavily biotiteized, clasts are typivcally 5-20mm wide, matrix support, angular. Occasional short amygdaloidal intervals.
192	205.2	AND	fltbx	CA	D	GRY			Majority of interval is tectonic breccia and gouge, competent pieces are auotbrecciate andesite, very occasionally amygdaloidal.
205.2	228.6	AND	por	CA	D	GRY	FLT	GR30+	Massive andesite with 1-3mm wide lath shaped phenocrysts throughout, occasionally amygdular. Locally brecciated with occasional short intervals of gouge
228.6	258	AND	fltgge	CA	MO	GRY	FLT	GR30+	~75% of interval is brecciated andesite with gouge matrix, remainder is fractured, heavily veined and heavily altered porphyritic andesite.
258	268.6	AND	por	CA	D	GRY	FLT	GR30	Massive to porphyritic andesite, phenocrysts are 1-4mm wide and lath shaped to subrounded. Locally brecciated with occasional gouge development.
268.6	298.7	AND	volc	LAP	D	GRY	UNKN		~50-60% clasts throughout, clasts typically 1-10cm wide, and angular to subrounded, occasionally quite well rounded. Pervasively amdesitic composition, and frequent large porphyritic clasts.
298.7	306.1	VC	ms	LAP	D	GRY	DEP	GR30	~95% mafic, clasts of porpyhritic andesite, with quite frequent small subrounded felsic clasts. ~60% matrix. Mafic clasts are .5-10cm wide.
306.1	337.6	AND	por	CA	D	GRY	FLT	GR10	Massive, pervasively porphyritic AND, phenocrystas are typically 2-4mm long laths, locally showing distinct trachytic orientation ~ parallel TCA. Locally VC - ?abx texture
337.6	338.7	AND	fltbx		MO	GRY	FLT	GR10	Fault breccia with gouge matrix, shouldered above and below by ~20-30cm of bleached VC/And

Blackwater Project
Drill Summary - Lithology

BW0365

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
338.7	354	AND	volc	LAP	D	GRY	ALTFR	GR30	~60-70% clasts, majority are subang-subround, with ~20% well rounded, clast supported, all andesitic.
354	384.8	VC	volc	LAP	MO	GRY	FLT	GR10	Interval is Intesnely silicified throughout, texture is extremely blurred - destroyed, could even be AND. Relict clastic texture is frequently visible however, and appears polymictic.
384.8	401	VC	plm	LAP	MO	GRY	FLT	GR30	Interval is lihtologically simialar to above and below, but texturally frequently dominated by fault brecciation and local gouge development.
401	417.8	VC	plm	LAP	MO	GRY	DEP	SH	Intensely silicified and locally chloritized and bleached ??VC. Texture is extremely blurred, but appears clastic and polymictic, ~85-90% andesitic.
417.8	421	SED	mas	FA	D	GRY	UNKN		Massive, dark - grey - bluish black siltstone, no laminations.

Blackwater Project
Drill Summary - Alteration

BW0365		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
44.5	55	T		0	PERV	3		0		0	BIOT	CLST	2	HM	FC	2	Porph and clasts frequently rich in biotite. Clay throughout as hardness 3-4.
55	83	T		0	CLST	1	PATC	2		0	HM	FC	2				Occasional porphy an clasts are bleache an soft - clay. Patchy ?sil as hard, glassy intervals, though questionable.
83	91	S	DEF	3	PERV	3		0		0	BIOT	CLST	1	CHL	FR	2	Occasioanl chlorite rich gouge, and chl on fractures. Clay throuighout as generally soft core 3-4 hardness.
91	100.5	S	DEF	3		0		0		0	CHL	FR	1				Frequently quite intense chlorite focused in and around gouge. Otherwise weak chl on fractures.
100.5	105.4	S	DEF	4		0		0		0							Largely gougy fault zone, pervasive chl in gouge
105.4	125.5	S	FR	1		0	PERV	3		0							Occasional very eakly chloritized fractures, moderately silicified throughout, increased hardness, occasional secondary silica in matrix to abx.
125.5	132.8	S	PATC	1		0	PERV	3		0	CHL	FR	2	BIOT	MTRX	2	Occasional 1-3cm wide patches of chlorite in matrix, weak chl on some fractures. Silica throughout. Biotite patchy in matrix as rusty brown hue
132.8	139.2	S	FR	1	PATC	2		0		0	CHL	PATC	1				Chl occasionally on fractures, less so downhole, also weakly in occasional centimetric patches. Clay as locally reduced hardness.
139.2	140.6	S	DEF	3		0		0		0							Cataclasite with pervasive chlorite in gouge
140.6	152	S	AMYG	2	PERV	3		0		0	BIOT	PATC	3				Clay is pervasive, core is hardness 3-4 throughout. Typically qtz amygdules are occasionally highly chloritic, with chl also very weak on fractures, and in gouge. Biotite is patchy in matrix
152	154	S	FR	4		0		0		0	BIOT	PERV	2				Rubbly interval with pervasive chloritization of fractures. Biotite common in matrix to competent pieces.
154	161.9	S	FR	2		0		0		0	BIOT	MTRX	3				Chlorite On fractures, biotite locally intense in matrix to abx texture.
161.9	165.4	S	DEF	4		0		0		0	BIOT	MTRX	2	CHL	FR	2	Chlorite p[ervasive in gouge and weak on fractures. What few competent pieces present have biotite rich matrix/
165.4	178	S	FR	2		0		0		0	BIOT	MTRX	4				Locally very intense biotite as very fine grained brown/redish hue pervasive in matrix. Weak - moderate chloritization of fractures

Blackwater Project
Drill Summary - Alteration

BW0365		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
178	183	S	FR	3		0		0		0	BIOT	MTRX	3	CHL	DEF	2	Chlorite on majority of fractures and moderate in gouge. Biotite common in matrix to abx/porph texture
183	186.6	S	FR	4		0		0		0	BIOT	MTRX	4				Intense biotite in matrix and chlorite on fractures.
186.6	193	S	FR	4		0		0		0	BIOT	MTRX	2				Intensely chloritic fractures, weak - moderate biotite in matrix.
193	198.5	S	FR	4		0		0		0	BIOT	MTRX	1				Frequently heavily chloritized fractures, weak to no biotite in matrix to abx textures.
198.5	209.2	S	FR	1		0	CLST	3		0	BIOT	MTRX	1				Occasional weak chlorite on fractures, competent pieces are intermittently silicified, and occasional reddish brown biotite in matrix.
209.2	215	S	PATC	2	PERV	3		0		0	BIOT	MTRX	1	CHL	FR	1	Core is relatively soft (~3) clay altered, frequent small patches of chlorite, often associated with phenocrysts, weak biotite alt in matrix
215	228	S	DEF	1	PATC	1	PERV	3		0	BIOT	MTRX	2				Chlorite is focused proximal to gouged intervals. Majority of competent core is moderately silicified, locally weak clay alt ?overprint. Biotite patchy throughout in matrix.
228	244	S	DEF	3	CLST	2		0		0	BIOT	MTRX	3				Majority of interval is gouge, in which chlorite is pervasive. Competent intervals are quite heavily biotite rich, and clasts in breccia are sporadically clay altered.
244	247.9	S	DEF	2	VNHL	2		0	PATC	3							Interval is patchily bleached with feint light green hue - ?sericite. Darker green chlorite restricted to well gouged intervals. Occasional centimetric vein haloes of soft white clay alt
247.9	254	S	DEF	4		0		0	PATC	2							Quite intensely chloritized gouge, competent pieces are pacthily clay ?sericite altered.
254	256	S	FR	1		0	PERV	3	PATC	2							?sericite/clay as white patches and haloes around phenocrysts. Pervasive moderate silicification.
256	257.8	S	FR	2		0		0	PERV	4							Interval is heavily bleached AND and gouge - ?sericite/clay
257.8	267.1	S	FR	1		0	PERV	3		0							Pervasive mild-moderate silicification.
267.1	275	S	PATC	3		0		0	PATC	3							Entire interval is heavily bleached, Small fronts of sericite and chlorite are visible in matrix throughout.

Blackwater Project
Drill Summary - Alteration

BW0365		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
275	297	S	FR	3		0	MTRX	3		0	BIOT	CLST	3				Matrix to VC texture is intermittently silicic, clasts are frequently brownish and hardness ~4 ?biotite.
297	328.4	S	FR	2		0	PATC	3		0	BIOT	CLST	4				Clasts are frequently biotie rich, weak to moderate chlorite on majority of fractures, and frequent patches of elevated hardnes - silica.
328.4	337.2	S	FR	2	VNHL	3	PATC	3		0	BIOT						Biotite, patchy silica and chlorite remian from previous interval, with addition of frequent soft bleached haloes around carbonate veins.
337.2	339.6	S	FR	2		0	PERV	2		0	CHL	DEF	1	UNK			Interval has a structure centre, core is bleached light grey. Trace chl in gouge and on fractures
339.6	353.5	S	FR	2		0	PATC	3		0	BIOT	CLST	4				Biotite rich clasts, chl on fractures and moderate silica intermittently.
353.5	384.5	S	PATC	3		0	PERV	5		0	CHL	FR	2				Intense, pervasive, texture destructive silicicification throughout. Centimetric patches of light-dark green ?chlorite alt sporadically throughout.
384.5	401	S	DEF	3	VNHL	2	PERV	4		0	BIOT	MTRX	1				Chloritie is frequently disseminated throughout gouge, clasts and short intervals of competent core are still intensely silicifed. ?Biotite is present as brwonish hue in matrix of competent andesitic intervals. Occasional vein haloes of soft white ?clay a
401	405.4	S	PATC	4		0	PERV	4		0							Intense sil throughout, large patches of chlorite
405.4	407.4	S	FR	1	PERV	2	PERV	4		0							?? peculiar interval, granitic texture from distance, clastic under hand lense. Still silicified, very light in hue ?clay ??
407.4	417.8	S	PATC	3	VNHL	4	PERV	4		0							Silcified throughout with exception of 1-3cm thick clay altered haloes around frequrent carbonate veinlets. Centimetric patches of chlorite throughout, overprinted by sil.
417.8	421	S	FR	1		0		0		0							Essentially unaltered, trace chl on fractures.

Blackwater Project
Drill Summary - Mineralization

BW0365		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
44.5	63.4		0		0		0	Hm	FP	2							Transitional zone, what sulfides there perhaps were are oxidize.
63.4	74		0	CR	0.1	SP	0.1	Apy	DI	0.1							Sphal is most common, as occasional millimetric ?replacement of phenocrysts in an clasts. Ars is isolated occurrence matrix. Po restricted to ~30cm interval as very fine specks.
74	100.5	VN	0.1	CR	0.5	DI	0.5										Quite frequent very fine specks of po disseminated throughout. Also sphal replacing clasts, patchy but locally intense. Py restricted to very occasional fine late stage vt's in lower 8m.
100.5	105.5	BB	0.5		0	BB	0.1										Fault gouge, py as sporadic elongate blebs in gouge, po scarce in millimetric blebs
105.5	123.4		0	GmR	0.5	DI	0.5										Po is disseminated throughout in very fine sub millimetric specks. Sphal is very patchy, locally up to 2%, but restricted to short intervals.
123.4	128.4	VN	0.1	BB	0.1	SP	2										Significant increase in concentration of po, still as very fine specks disseminated throughout. Occasional 1-2mm wide blebs of sphal and py associated with patches of chloritization.
128.4	131.5	VN	0.1		0	DI	0.5										Sparse po disseminate in groundmass.
131.5	134	VN	0.1	VN	0.5	DI	2	Sp	DI	0.5							Large amounts of po and sphal disseminated throughotout. Massive sphal + py vein at 133-133.15m.
134	139	VN	0.1	DI	0.5	DI	1										Po is evenly disseminated in very fine specks throughout. Sphal more patchy, occasional fine py vt's, late stage
139	140.7	VN	3		0		0										Fine opy vt's throughout cataclasite.
140.7	143.7		0	VN	0.5	CR	2										Sphal in occasional 1-2mm wide veinlets, po frequently forming core of qtz amygdules.
143.7	150.5	CR	0.5	GmR	1.5	CR	1										Amygdules being filled by py or po throughout, also fine specks of po in groundmass, and freequent sphal in groundmass.

Blackwater Project
Drill Summary - Mineralization

BW0365		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
150.5	154.7	FP	0.1	CR	1	CR	0.5										Sphal and po dominantly as blebs inside amygdules, py on fractures
154.7	161.9	VN	0.5	VN	0.5	SP	0.5	Sp	CR	0.1	Po	CR	0.1				Frequent 1-2mm wide sphal + py veinlets. Po and sphal as specks in matrix and filling occasional amygdules.
161.9	165	VN	3	BB	0.5		0										Fault zone with py stringers and blebs throughout. Isolated 2cm wide bleb of sphal.
165	169	SP	0.5	VN	0.5	SP	0.5	Py	VN	0.1	Sp	BB	0.5	Apy	SP	0.1	Frequent fine specks of all four common sulphides in matrix, also occasional 1-2mm wide sphal + py veinlets.
169	173.5	VN	0.1	VN	0.1	DI	0.5	Apy	SP	0.1							Po as fine specks throughout, very occasional fine arseno specks. Also isloate 2mm wide sphal + trace py veinlet.
173.5	186.5		0	SP	0.1		0	Apy		0.1	Ga		0.1				Very poorly mineralized, biotite rich interval. Very scarce specks of arseno, sphal and ?galena
186.5	193	VN	0.5	SP	0.1	BB	1	Sp	VN	0.1							Quite frequent py + sphal veinlets, Po in blebs and amygdules throughout. Trace sphal as occasional belbs/specks.
193	197	VN	2		0	DI	0.5										Heavily fracrured/brecciated with frequent fine py stringers and sporadic specks of po in matrix.
197	204.3	DI	0.1		0		0										Trace very py specks in breccia/gouge
204.3	205.9	VN	0.5		0	DI	0.5	Py	BB	0.1							Occasional 1-2mm wide py veinlets, also isolated blebs of py, fine po disseminated throughout.
205.9	217.7	VN	0.1	BB	0.1	SP	0.1										Very sparse. Isolated py veinlet, occasional specks of py on fractures. Isolated bleb of sphal and occasional fine specks of po throughout
217.7	223.3	VN	0.1	BB	0.5	BB	0.5										Occasional fine oy veinlets, fairly frequent po specks and amygdules, occasional centyimetric belebs of sphal.
223.3	230	VN	0.1	BB	0.5	SP	1.5										Frequent fine specks of po, less frequent larger blebs of sphal, and occasional fien py veinlets

Blackwater Project
Drill Summary - Mineralization

BW0365		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
230	238	VN	0.1		0	SP	1										Frequent fine specks of po in competent core, py in fine veinlets and occasional specks in gouge
238	248.6	VN	5	BB	1	SP	0.1										Interval is 90% gouge, with large amounts of py in stringers and larger veinlets.
248.6	256	DI	2	BB	1.5		0										Frequent py stringers and blebs of sphal throughout
256	266.5	VN	0.1	BB	0.5	SP	1										Scarce py in fine veinlets, frequent fine specks of po throughout, and sporadic millimetric blebs of sphal.
266.5	274	VN	4	VN	1	SP	0.5										Frequent 1-5mm wide veinlets and stringers of py, often with sphalerite
274	284.5	VN	1.5	CR	1	CR	2										Frequent 1-10cm wide py +/-po veinlets, also frequent blebby clast replacement by sphal and po.
284.5	302	FP	0.1	BB	0.5	SP	1.5										Specks of po disseminated throughout, occasional blbes of sphal ?replacing clasts.
302	331.2	VN	0.5	BB	0.1	SP	2										Very consistent mineralization, py is somewhat sporadic, appearing in 1-4mm thick irregular veinlets, often associated with carbonate, ~3 veinlets p/m. Po is very consistent as <1mm-3mm wide specks disseminated throuhgout.
331.2	337.9	VN	0.5		0	SP	1.5	Cp	VN	0.1							Frequent py in carbonate veinlets, occasionally with trace chalco. Fine specks of po disseminated throiughtout
337.9	338.5	VN	2		0		0										fault zone, py in fine networks of veinlets
338.5	352.8	VN	0.1		0	DI	1.5										Occaisonal trace py in carbonate veinlets, po disseminated throughout.
352.8	384.5	FP	0.1	SP	0.1	BB	2.5										Frequent 1-3mm wide, often elongate blebs of po, very scarce specks of sphal. Quite frequent fine crystalline py on fractures.
384.5	393.7	VN	1.5	SP	0.1	SP	0.5										Frequent fine py stringers, an irregular blebs in fault breccias, fine specks of po throughout, and very occasional sphal.
393.7	421	FP	0.1		0	DI	1										Very occasional py on fractures, still quite frequent fine specks of po, coarser and less frequent in seds.

Blackwater Project
Drill Summary - Structure

BW0365

From (m)	To (m)	Structure	Strength	Comments
44.5	60	BRKZ	3	Moderately rubbly
60	62	FL	3	Poor recovery, rubbly, moderate gouge, enhanced clay alt
62	75.4	JZ	3	Fairly frequent coarse fractures
75.4	84.6	BRKZ	3	Moderately rubbly throughout
84.6	100.5	FZ	2	Rubbly throughout with occasional intervals of gouge and palpable fault breccia.
100.5	105.4	FL	4	Fault breccia and gouge tailing off into rubble over loer 1.5m
105.4	109.7	BRKZ	3	Locally competent with frequent highly rubbly intervals.
109.7	115	JZ	2	Also joints at 5-10degTCA
115	118.5	FZ	2	Largely competent core with four discreet 10-20cm intervals of gouge and breccia.
118.5	133.5	JZ	1	Occasionally also at 10degTCA
133.5	139.2	FZ	1	Competent core with local very weak fault brecciation.
139.2	140.5	FL	5	cataclasite, breccia and gouge
140.5	143.7	JZ	3	locally quite heavily fractured.
143.7	145.8	FL	4	Fault breccia rubble and gouge.
145.8	150.4	JZ	2	Clean planar fractures.
150.4	159	FZ	3	Rubbly throughout with occasional weak gouge development.
159	161.9	JZ	2	Occasional clean planar fractures
161.9	165.4	FL	5	Cataclasite/rublle and gouge. Slickensides on fractures.
165.4	178	JZ	2	Clean planar fractures
178	178.7	FZ	2	Weak gouge and rubble
178.7	192.8	BRKZ	3	~90% of interval is rubbly/heavily fractured, no gouge.
192.8	200	FZ	4	First 1.5m is zero recovery, rubble and fault breccia with some gouge for remainder.
200	220	JZ	2	Quite frequent fractures
220	220.8	FZ	4	Brecciated with gouge in matrix
220.8	228.6	JZ	3	Quite frequent fractures
228.6	250	FZ	5	Majority of interval is cataclasite - fault breccia in dense gouge matrix.
250	253.5	FL	5	Poor recovery, fault breccia and high proportion of gouge.

Blackwater Project
Drill Summary - Structure

BW0365

From (m)	To (m)	Structure	Strength	Comments
253.5	258	FZ	4	Heavily brecciated and moderate amounts of gouge. Contact between breccia and more competent andesite visible at ~10degTCA
258	268.6	FZ	2	intermittently brecciated with local gouge development. Contacts again visible between breccia and competent core at ~10egTCA
268.6	272.6	FZ	3	Centrall 3m of interval is very rubbly with significant proportion of gouge and fauly btreccia.
272.6	304	JZ	3	frequent clean planar fractures.
304	307.3	BRKZ	2	Moderately rubbly, lower 30 cm is very rubbly
307.3	312.7	JZ	2	Joints also at ~60degTCA
312.7	317.2	FZ	1	Moderately rubbly with occasional mild brecciation
317.2	337.6	JZ	2	Also joints at 70-85degTCA
337.6	338.7	FL	4	Breccia with gouge matrix
338.7	353	JZ	3	Also joints at ~60egTCA
353	361	BRKZ	2	Largely fractured, locallt rubbly
361	364.3	BD	4	Largely rubbly, occasional fractures at ~25degTCA
364.3	384.5	JZ	3	Frequent fractures, also at 50-60degTCA.
384.5	395.5	FZ	3	Moderately brecciated, heavily fractured throughout, local mild gouge development
395.5	401	FL	4	Rubble and breccia with gouge, poor recovery
401	421	JZ	3	Frequent planar fractures, 30-50degTCA

Blackwater Project
Drill Logs

Hole ID:	BW0366	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375550.99
Depth (m):	433.43	Date Started:	25/02/2012	Casing Size:	HWT	Northing:	5892649.29
Azimuth:	0	Date Completed:	02/03/2012	Casing (m):	3	Elevation (m):	1631
Dip:	-90	Logged By:	AVe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.3	15.6	-89.6
92	283.1	-89.7
137.8	250.6	-89.6
183.5	240.9	-88.9
229.2	216.8	-87.8
275	220.5	-87.9
320.6	203.9	-87.7
366.4	222.3	-87.7
412	220.9	-86.5
433.4	219.2	-86.3

Blackwater Project
Drill Summary - Lithology

BW0366

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
4.95	81.38	AND	volc	LAP	D	GRY			Massive Andesite with volcanoclastic texture.
81.38	104.2	AND	volc	LAP	D	GRY			Andesite with volcanoclastic texture.
104.2	160.6	FT	lam	FA	L	GRN	FLT		Laminated felsic tuff. Local tectonic breccia. Fault breccia. Brecciated clasts
160.6	166.7	AND	volc	LAP	D	GRY			Monomictic volcanoclastic andesite
166.7	175.5	AND	volc	LAP	D	GRY			Monomictic andesite with volcanoclastic texture
175.5	186	VC	plm	LAP	D	GRY	DEP	GR10	Massive volcanoclastic. Polimictic clasts.
186	199.5	AND	volc	LAP	D	GRY	DEP	GR5	Monomictic andesite with volcanoclastic texture
199.5	203.7	VC	plm	LAP	D	GRY	DEP	GR10	Polimictic volcanoclastic texture
203.7	217.0	AND	volc	LAP	D	GRY	DEP	GR10	Monomictic Andesite with volcanoclastic texture
217.0	227	VC	plm	LAP	D	GRY	UNKN		Polimictic volcanoclastic.
227	233.5	VC	plm	LAP	D	GRY	FLT	GR30	Volcanosclasic with felsic texure
233.5	235.8	FT	mas		L	GRN	DEP	SH	Massive felsic tuff. Laminated felsic
235.8	272.5	VC	cgl	LAP	D	GRY	DEP	GR10	Polimictic volcanoclastic.
272.5	291.6	FT	t		L	GRY	DEP	SH	uffuceous felsic tuff.
291.6	299.7	VC	mas	LAP	D	GRY	DEP	SH	Polimictic volcanoclastic,matrix supported
299.7	306	FT	t		L	GRN	UNKN		uffuceous felsci tuff
306	314.6	FT	t		L	GRN			Massive felsic tuff
314.6	375.5	VC	plm	LAP	D	GRY	FLT	GR10	Polimictic volcanoclastic, subangular to subrounded clasts
375.5	419	VC	plm	LAP	D	GRY	DEP	GR10	Polimictic volcanoclastic, subangular to subrounded clasts
419	433.4	AND	volc	LAP	D	GRY	UNKN		Massive andesite with volcanoclastic texture

Blackwater Project
Drill Summary - Alteration

BW0366		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4.95	55.5	O	FR	2		0	MTRX	1		0	LIM	FR	2	HM	FR	2	Weak chlorite alteration. Hematite and Limonite alteration fracture controlled
55.5	81.38	S	PERV	2		0	MTRX	1	FR	2							Sericite and chlorite alteration found in fractures
81.38	104.2	S	PERV	3		0	FR	2	FR	2							Silicification found in fractures. Chlorite alteration found in fractures as well as in matrix
104.2	137.8	S	PERV	3		0	PERV	1		0							Weak silicification. Stron chlorite alteration
137.8	160.6	S	PERV	3	FR	2		0	FR	2							Chlorite alteration. Sericite alteration fracture controlled
160.6	166.7	S	PERV	3		0	PERV	1		0							Pervasive chlorite alteration.
166.7	175.5	S	PERV	3		0	PERV	1	FR	2							Pervasive chlorite alteration.
175.5	186	S	MTRX	3	CLST	2	PATC	2	CLST	2							Clay alteration found in clasts.
186	199.5	S	FR	2		0	PERV	2		0	BIOT	MTRX	2				Biotite alteration found in mafic matrix
199.5	203.7	S	PERV	3	CLST	2	PERV	2		0							Weak clay alteration found in clasts
203.7	217.0	S	FR	2		0	PERV	2		0	BIOT	MTRX	2				Biotite alteration matrix dominant
217.0	227	S	FR	2		0	PERV	3		0	BIOT	MTRX	2				Moderate Biotite alteration matrix dominant
227	233.5	S	FR	2		0	MTRX	2		0							Silicificaion aleration matrix dominant.
233.5	235.8	S	PERV	2		0	PATC	2		0							Patchy silicification. Pervasive chlorite
235.8	272.5	S	FR	2		0	MTRX	3		0	CHL	CLST	2				Chlorite alteratiion found in clasts as well as fractures
272.5	291.6	S	PERV	3		0	PATC	2		0							Pervasive Chlorite
291.6	299.7	S	FR	2		0	PERV	3		0							Chlorite alteration found in clasts
299.7	306	S	PERV	3		0	PATC	3		0							Pervasive chlorite alteration
306	314.6	S	PERV	3		0		0	FR	2							Sericite alteration found in fractures
314.6	348.1	S	PERV	3		0	PERV	3		0							Pervasive silicification alteration.
348.1	361	S	PERV	3		0	PERV	3		0							Pervasive chlorite and silicification alteration
361	375	S	FR	3		0	PERV	3	FR	2							Pervasive chlorite alt found in fractures
375	419	S	FR	3	CLST	2	PERV	3	FR	1							Pervasive silicification. Chlorite alteration found fracture controlled
419	433.4	S	FR	2		0	PERV	2		0							Chlorite found along veinlets also in fractures

Blackwater Project
Drill Summary - Mineralization

BW0366		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4.95	21.58		0		0	GmR	0.5										Po found disseminated in mafic matrix
21.58	39.1	FP	0.5		0	GmR	0.5										Po foun in mafic matrix. Po found in microfractures
39.1	48.4		0	DI	0.5	GmR	0.5										Sp found disseminated in mafic matrix.
48.4	56.99		0		0	GmR	0.5										Po found disseminated in matrix
56.99	64.9	FP	0.5	DI	0.5	GmR	0.5	Ga	FP	0.1							Galena found in fractures. Sp disseminated in matrix
64.9	81.38	FP	1	DI	1	BB	0.5										Blebby Po reaplacing clasts. Sp disseminated in mafic matrix
81.38	86.4	FP	1	DI	1	DI	1										Sp disseminated. Py found in fractures
86.4	98.6	FP	1	DI	0.5	DI	1										Disseminated Sph. Po found in veinlets. Blebby Po
98.6	105	FP	1	DI	0.5	DI	1	Ga	FP	0.1							Galena and Py found in fractures. Po and Sp found disseminated
105	118.8	FP	1	DI	2	DI	1										Sp found in microfractures.
118.8	137.5	FP	1	DI	2	DI	1	Ga	VN	0.1							Sp found in microfractures. Blebby Po
137.5	160.6	FP	1	DI	2	DI	1										Disseminated Sp. Blebby Po. Py found in fractures
160.6	166.7	FP	1		2	DI	1										Disseminated Po, Sp found disseminated
166.7	175.5	FP	0.5	DI	0.5	DI	0.5										Disseminated Po found in mafic matrix
175.5	186	DI	0.1	DI	2	CR	1										Sp disseminated in felsic matrix. Po found disseminated in felsic matrix. Po veins
186	199.5	FP	1	DI	1	DI	1										Sp and Po disseminated
199.5	206.3	FP	0.5	DI	2	DI	1										Po disseminated in clasts. Sp clast replacement
206.3	216.5	FP	0.5	CR	2	DI	1										Sp clast replacement. Po found as blebs as well replacing clasts
216.5	227	FP	1	DI	1	CR	2	Py	VN	1							Pi found in fractures as well as in veins. Po replacing clasts. Sp disseminated
227	233.5	FP	1	DI	1	DI	1										Po disseminated in mafic marix. Py found in fractures
233.5	235.8	FP	0.5	DI	2	DI	1	Ga	VN	0.1	Dbs	VN	1				Sp disseminated. Blebby Po
235.8	246.2	FP	1	DI	2	CR	2	Ga	FP	0.1							Po replacing clasts. Galen found in fractures
246.2	265.8	FP	1	DI	2	DI	2										Po and Sp disseminated in clasts as well as in mafic matrix

Blackwater Project
Drill Summary - Mineralization

BW0366		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
265.8	272.5	FP	1	DI	1	DI	1.5										Po found in clast replacement. Py found in fractures
272.5	284.7	FP	1	DI	2	DI	2	Dbs	VN	2	Po	VN	1				Po found in veinlets. Sp disseminated. Dbs
284.7	291.6	FP	1	DI	2	DI	2	Ga	DI	0.1	Dbs	VN	2				Dbs, Po and Sp disseminated.
291.6	299.7	DI	1	DI	2	CR	2										Po replacing clasts. Py disseminated in mafic matrix
299.7	306	FP	1	DI	2	DI	2	Py	DI	0.5							Po and Sp disseminated. Py vein and veinlets
306	314.6	VN	1	VN	1	DI	1	Ga	FP	0.5							Disseminated Po and Sp. Py in fractures
314.6	331.1	CR	1	DI	0.5	CR	2	Po	DI	0.5							Po disseminated in mafic matrix. Po replacing clasts
331.1	345.0	FP	1	DI	1	CR	1										Po clast replacement. Py in fractures
345.0	349.6	FP	1	DI	1	GmR	1.5	Ga	VN	0.5							Po disseminated in groundmass. Py in fractures
349.6	357.7	FP	0.5	DI	0.5	CR	0.5										Po replacing clasts.
357.7	366.7	FP	0.5	FP	2	CR	1										Po replacing clasts. Sp found in fractures
366.7	372.5	FP	0.5	CR	0.5	CR	1										Po replacing clasts
372.5	381.6	FP	1	DI	1	GmR	1										Po disseminated in groundmass. Py in fractures
381.6	395.5	VN	0.5	DI	0.5	GmR	0.5										Po replacing clasts.
395.5	414.5	FP	0.5	DI	0.5	CR	1										Po replacing clasts. Py in fractures
414.5	419	FP	0.5	DI	0.5	GmR	0.5										Disseminated Po.
419	424	FP	0.5	DI	0.1	BB	0.5										Blebby Po, Sp in fractures
424	433.4	FP	0.5	DI	0.1	DI	0.5										Po and Sph disseminated

Blackwater Project
Drill Summary - Structure

BW0366

From (m)	To (m)	Structure	Strength	Comments
4.95	24.99	JZ	2	Moderately joint zone. Fracture planes perpendicular to core axis
24.99	36.36	BRKZ	2	Moderately Broken zone
36.36	57.9	JZ	2	Moderately joint zone. Fracture planes at 45 to core axis
57.9	69.19	BRKZ	3	Broken zone with fracture planes at 45 core axis. Fault breccia at 68.50
69.19	81.38	JZ	2	Moderately joint zone
81.38	89.5	JZ	2	Moderately jointed. Fracture planes at 45 to core axis
89.5	112	FL	4	Fault breccia. Brecciated clasts.
112	121	BRKZ	2	Broken zone with local fracture planes
121	128.1	FL	4	Fault breccia. Welded clasts.
128.1	141.5	JZ	2	Moderately jointed.Flat Fracture planes
141.5	148.4	FL	4	Fault breccia.Tectonic breccia. Clay gouge. Brecciated clasts
148.4	153.2	JZ	2	Moderately jointed.
153.2	163.2	FZ	4	Fault breccia. Brecciated clasts. Clay gouge
163.2	170.0	JZ	2	Moderately jointed.
170.0	172.7	BRKZ	2	Moderately broken zone. Fracture planes parallel to the core axis
172.7	191.7	JZ	2	Moderately jointed
191.7	194.3	FL	4	Brecciated clasts. fault plane at 45 to core axis
194.3	229.4	JZ	2	Moderately jointed. Fracture planes parallel to core axis
229.4	235.5	FL	4	Clay gouge. Fault breccia
235.5	251.3	JZ	2	Moderately jointed. Flat fracture planes
251.3	255.1	BRKZ	4	Broken zone. Shear zone
255.1	267.3	JZ	2	Joint zone, fracture planes 45 to axis core
267.3	272.5	FL	4	Clay gouge, brecciated clasts.
272.5	314.6	JZ	2	Moderately joint zone. Flat fracture planes
314.6	319.2	FZ	4	Fault breccia. Clay gouge, fault plane at 50 to core axis
319.2	325.2	BRKZ	3	Broken zone with fracture planes at 80degree to core axis
325.2	346.6	JZ	2	Moderately jointed with fracture planes at 50-80 to core axis
346.6	350.3	JZ	2	Moderately jointed.

Blackwater Project
Drill Summary - Structure

BW0366

From (m)	To (m)	Structure	Strength	Comments
350.3	357.5	FZ	4	Fault breccia. Clay gouge. Brecciated clasts, fault plane at 50 to core axis
357.5	372.5	JZ	2	Moderately jointed. 50 degree to core axis
372.5	433.4	JZ	2	Moderately jointed. 80>60>20 joint types

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Blackwater Project
Drill Logs

Hole ID:	BW0367	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375101.23
Depth (m):	452.5	Date Started:	25/02/2012	Casing Size:	HWT	Northing:	5893200.06
Azimuth:	0	Date Completed:	05/03/2012	Casing (m):	4.5	Elevation (m):	1562
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
112	119.7	-89.8
175	202.3	-89.2
226	216.2	-89.2
277	190.6	-89.1
332.5	188	-88.8
382	185.7	-88.9
433	172.8	-88.8
451	178.3	-88.2

Blackwater Project
Drill Summary - Lithology

BW0367

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
4.1	81	FT	hydbx	CA	L	GRY	ALTFR	GR30+	Felsic Tuf with moderate local hydrothermal breccia.
81	149.5	FT	hydbx	CA	M	GRY	FLT	SH	Felsic Tuf with moderate local hydrothermal breccia.
149.5	181.2	FT	lam	FA	M	GRN	DEP	GR30+	Ft tuff locally banded stongly overprinted by Silica.
181.2	213	FT	hydbx	CA	L	GRY	DEP	GR30+	Course ash semi massive with cm to dm scale "bedds/bands"
213	217.4	FLPT	bx	LAP	L	GRY	DEP	GR10	short interval of breccia possible still hydrothermal breccia.
217.4	263	FT	lam	CA	L	GRY			Hydrobrecia is pervasive, from weak to strong.
263	376.7	FT	lam	CA	L	GRY			Strong pervasive Silica alteration to replacement, locally no texture.
376.7	448	FT	lam	FA	L	GRY			Pervasive silica altered to silica replaced. relitively continous laminations, locally massive ,<1m intervals.
448	452.5	FT	lam	FA	L	GRY			As above EOH

Blackwater Project
Drill Summary - Alteration

BW0367		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	31.4	O	MTRX	2	REP	4	PATC	2	PERV	2	LIM	FC	4	HM	PATC	3	Hm in patches 30cm long and preferentially along beddng. Limonite in halos around fractures.
31.4	37.4	O	FR	3	REP	5	PATC	2	PERV	2	LIM	FC	5	HM	PATC	3	clay alteratin in fault guage. Limonite in fault guage.
37.4	61.7	O	MTRX	2	FR	3	PATC	4	PERV	2	CLY	REP	5	LIM	FR	4	Haemitite replaceiung sulphide.
61.7	80.6	O	MTRX	2	REP	4	PATC	4	PERV	2	CLY	FR	2	LIM	FC	5	strong clay alteration in fault guage.
80.6	101	T	MTRX	3	MTRX	3		0	PERV	3	LIM	FC	3				Pervasive chlorite alteration in matrix
101	149.5	S	MTRX	3	MTRX	3		0	PERV	3							Pervasive chlorite alteration in matrix
149.5	166.5	S	PERV	4	FR	2	PERV	5	PERV	3							Pervasive silica is strong enough to obstruct textures in many areas.
166.5	191.5	S	MTRX	1	FR	2	PATC	2	PERV	3	CHL	FR	4	CLY	MTRX	3	Clay> Sericite > chlorite
191.5	215.3	S	MTRX	3	PATC	4		0	PERV	3	CHL	FR	2				Clay or chlorite alteration in matrix with pervasive sericite.
215.3	262	S	FR	2	PATC	1	PERV	4	CLST	3							Silica over print.
262	376.7	S	FR	3	CLST	1	PERV	5	PERV	2	GRNT	REP	2	SIL	REP	5	Silica over printing everything, locally complete replacement and texture removal.
376.7	448	S	FR	3	CLST	1	PERV	5		0	GRNT	REP	2	SIL	REP	5	Silica is overprinting all other alteration and most textures.
448	452.5	S	FR	3	CLST	1	PERV	5		0	GRNT	REP	2	SIL	REP	5	As above EOH

Blackwater Project
Drill Summary - Mineralization

BW0367		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	81	DI	0.1	BN	0.1		0										trace mineralizatio is all the has suvived oxidation. it apears similar to alteration seen in other FT and FLPT. Sp, DBS and Py
81	102	DI	0.1	EU	0.1		0	Grnt	EU	1							Euhedral Garnet along bands/fbedding. Sp in garnet and Py is euhedral, banding controlled
102	116.4	VN	0.5	DI	0.5	SP	1	Py	SP	0.1	Sp	SP	1				Sulphides filling cavities of altered feldspars? and rare cm size discontinous veins.
116.4	131.5	FP	0.5	SP	1	SP	0.5										Sulphides filling cavities of altered feldspars? and rare cm size discontinous veins.
131.5	148	FP	0.5	SP	1	SP	0.5										Sulphides filling cavities of altered feldspars? and rare cm size discontinous veins.
148	161.5	SP	0.5	SP	3		0	Dbs	SP	0.5							Sulphides filling cavities of altered feldspars? and rare cm size discontinous veins. Dbs likely Sp. rest of unit is strongly silicified
161.5	191.5		0	SP	2	EU	1										Strongly magnetic Po in euhdedral grains. distinctly zoned, possibly psuedomorphing Py
191.5	217.4	DI	0.1	BB	1	SUBH	1	Grnt	SUBH	1							Po is 1-5mm, garnet is 3 to 20mm.
217.4	246.5	DI	0.1	DI	0.1	SUBH	2	Grnt	EU	1	Cp	SP	0.1	Dbs	DEN	2	Dbs in, Sp out, trace Cpy in Po grains.
246.5	271	BB	0.5	DI	0.5	EU	2	Grnt	EU	1	Po	BB	0.5	Dbs	DEN	1	
271	333	SP	0.5	SP	2	EU	2	Grnt	EU	0.5	Dbs	DEN	1				Po appears to be associated with stronger Silicification, DBS appears to be asociated with lighter coloured areas. Sulphide assemblege is highly variable over 50cm intervals, some association with breccias (hydro thermal?).
333	354.1		0		0	EU	2	Cp	EU	0.1	Apy	MA	0.1				Po rarely has Cpy cores. trace Apy in mass. Po associated with stronger Silica alteration through this section.
354.1	375.7		0	SP	2	EU	1	Apy	SP	0.1	Dbs	SP	0.1	Grnt	EU	0.5	Po appears to be associated with stronger Silicification, DBS appears to be asociated with lighter coloured areas. Sulphide assemblege is highly variable over 50cm intervals, some association with breccias (hydro thermal?).

Blackwater Project
Drill Summary - Mineralization

BW0367		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
375.7	385.2		0	SP	1.5	SP	1	Grnt	EU	1	Ga	EU	0.1				Diseminated specks of red and black Sp, locally 5%. Galena in masses of specks in odd alteration with Sp.
385.2	408.5		0	SP	1	CR	1	Grnt	EU	0.5	Mrc	SP	0.5	Apy		0.1	Po is psuedomorphing/replaceing mineral with square cross section. matrcasite is diseminated. unknown sulphide is vfg alond fracture???
408.5	428		0	SP	1	CR	1	Grnt	EU	0.5	Mrc	SP	0.5				Po is psuedomorphing/replaceing mineral with square cross section. matrcasite is diseminated. unknown sulphide along fracture drops out all sulphide trends along laminations, total sulphide drops.
428	448		0	SP	0.5	CR	1	Grnt	EU	0.5	Cp		0.1				Po is psuedomorphing/replaceing mineral with square cross section with Cpy inclosed, locally Po replacements are "zoned" with Cpy in outer zone. Sp is locallized, in dm to m zones of 1-3%.
448	452.5		0	SP	0.5	CR	1	Grnt	EU	0.5	Cp		0.1				As above EOH

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Blackwater Project
Drill Summary - Structure

BW0367

From (m)	To (m)	Structure	Strength	Comments
4.1	33.2	JZ	3	
33.2	37	FL	5	
37	63.4	JZ	4	
63.4	70.1	FL	5	
70.1	76.9	JZ	5	
76.9	77.6	FL	4	
77.6	86	JZ	4	
86	88.5	BRKZ	2	
88.5	102	JZ	3	
102	103.2	FZ		
103.2	106.9	SZ	2	Foliated? section between to signifigant faults.
106.9	107.7	FL	5	
107.7	111.3	BRKZ	5	
111.3	146.3	JZ	3	Several short intervals of broken rock, related to low angle fracture
146.3	148	BRKZ		
148	149.5	FL	5	50% of core missing
149.5	159	BRKZ	4	
159	197.7	JZ	5	Joints at 30 and another @ 70. joints are irregular and chlorite altered.
197.7	200.5	BRKZ	5	Minor fault guage
200.5	217.4	JZ	3	
217.4	218	FL	5	
218	271	JZ	1	
271	274.5	FZ	1	some fould guage in core, minor fault.
274.5	278.5	JZ	3	
278.5	297.2	FL	4	
297.2	332.6	JZ	1	
332.6	332.6	FL	5	Small but well formed fault. guage is finner then 1mm
332.6	346	JZ	1	second set @ 70

Blackwater Project
Drill Summary - Structure

BW0367

From (m)	To (m)	Structure	Strength	Comments
346	349	BRKZ	4	some minor fault guage.
349	375.7	JZ	1	second set @ 70
375.7	392	BRKZ	3	local minor guage <3cm
392	393.1	FL	4	guage < cm clasts
393.1	413.5	JZ	3	second set @ 20
413.5	437.5	BRKZ	3	local joints @ 60
437.5	449	JZ	2	
449	452.5	FL	4	faulted core with gouge material

Blackwater Project
Drill Logs

Hole ID:	BW0368	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375626.13
Depth (m):	487.5	Date Started:	28/02/2012	Casing Size:	HWT	Northing:	5892674.44
Azimuth:	270	Date Completed:	08/03/2012	Casing (m):	3	Elevation (m):	1623
Dip:	-60	Logged By:	NLe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
50	269.2	-60
100	269.2	-60.6
150	270.7	-60.9
201	271.5	-60.7
250	272.6	-59.7
304	274.2	-58.6
350	277.2	-57.5
400	279.5	-56.1
450	280.6	-55.4
487.5	281.5	-54

Blackwater Project
Drill Summary - Lithology

BW0368

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							
3	27.8	FT			L	GRY			Oxide facies; Texture destroyed by alteration
27.8	33	FT			L	GRY			Transition facies, fresh diss'd and veined sulfides visible; texture completely destroyed by alteration
33	54	FT	mas			GRY			Same as above with more sericite and fracturing towards bottom of interval.
54	73	FT	mxtl			GRY			Felsic tuff interval with more sericite alteration along fractures and broken sections.
73	78	FT	frctz			GRY			Fault/shaer section with broken and rubbled sections.
78	84	FT	frctz			CRM			Fracture zone adjacent to previous fault/shear structures.
84	96.55	FT	frctz			GRY			Continued felsic tuff unit with strongly fractured zone adjacent to shear structure.
96.55	122.6	FLPT	volc	LAP	L	GRY			Felsic lappili tuff; strong silica/sericite alteration, subangular to subrounded fragments, 2 to 64mm size material, poorly sorted and strongly disseminated bsulfides throughout interval 4 to 7 % total...sphalerite, pyrite, pyrrhotite and dark sulphi
122.6	125.5	AND	lpt	LAP	D	GRY	UNKN	SH	Andesitic lappili tuff interval with a sharp upper contact with felsic lappili tuff; contact is broken somewhat, however, no felsic fragments in this interval. Lower contact with fault section.
125.5	127.6	FT	fltgge	FA	L	CRM	FLT	SH	Faulty zone with a sharp upper contact approximately 45 degrees TCA and lower contact approx 50 TCA.
127.6	169.5	FT	mas		M	GRY			Felsic tuff; semi-massive, very fine grained, locally bleached and strongly fractured and rubbled in sections. This interval has moderate to very strong pervassive silica and sericite alteration throughout.
169.5	175.1	FT	hydfrct		M	GRY			Felsic hydrothermal crackle breccia; with abundant pervassive silicia flooding and fracture filling; vuggy textures in places with silica and sulphide infills.
175.1	183.3	FT	mas		M	GRY			Felsic tuff unit semi-massive to locally mottled with strong to intense pervassive silica alteration and lesser pervassive sericite alteration.
183.3	185	FT	lpt	LAP	M	GRY	DEP	SH	Felsic lappili tuff; moderate to strong pervassive silica and sericite alteration overprint, massive to mottled texture, fragments generally dominantly felsic with mafic type increasing towards lower contact.
185	191.8	AND	lpt	LAP		GRY	DEP	GR30	Andesitic lappili tuff; moderate pervasive silica and biotite alteration, subangular lappili fragments 5 to 30 mm in size and strond disseminated, bleby and stringer sulphides, sph/py/po/cpy/dark sxs...TS 4 to 6%

Blackwater Project
Drill Summary - Lithology

BW0368

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
191.8	218.5	FT	volc	LAP	L	GRY			Felsic volcaniclastic tuff; Semi-massive and mottled, moderate to strongly sericite altered, weak to moderately pervassively silica altered throughout the interval. Local hydrothermal cracle brecciated sections through this interval.
218.5	228.8	AND	volc	LAP		GRY	DEP	GR30	Andesitic volcaniclastic lappili tuff; moderate pervassive silica-biotite alteration; mafic clasts dominant over felsic clasts...90%/10%; poorly sorted clasts and last metre of the interval grades from mafic rich clasts to felsic rich.
228.8	249	FT	volc						
249	263.8	VC	lpt	LAP		GRY		GR30	Volcaniclastic lapilli tuff (Altered andesite?);poorly sorted fragments, subangular to subrounded in shape, 2 to 64 mm in size, matrix is moderately pervassive silica altered and remnant chlorite/biotite fragments and textures are still preserved.
263.8	270.6	AND	lpt	LAP		GRY	ALTFR	GR30+	Dark gre to black andesitic lapilli tuff with a weak to moderate pervassive silica alteration; fragments range in size from 2 to 64 mm, subangular to subrounded; lower contact has a pseudo-fragmental texture due to apervassive silica/sericite alterat
270.6	273.4	FT	cxt	LAP		GRY	ALTFR	GR30	Felsic tuff to lapilli tuff (Altered andesite?); this interval is moderate to strongly pervassive sericite/silica altered; remnant fragments are still visble in areas.
273.4	313	AND	lpt			GRY			Andesitic lapilli tuff with pervassive biotitic hornfels throughout; matrix destructive pervassive albitic/silica/sulphate alteration;
313	323	AND	mas			GRY			Andesitic tuff to crystal tuff, semi massive looking section, fine graineed, hornfels biotite/chlorite, and trace sulphides to none.
323	369.3	AND	lpt			GRY			Andesitic lapilli tuff with moderate biotite hornfelsing, weak pervassive albite/silica matrix destructive alteration.
369.3	383.1	VC	plm	LAP		GRY	DEP		Polymictic volcaniclastic; strongly silicified, subangular to subrounded, polimictic fragments of altered mafic and felsic material.
383.1	402.7	AND	lpt	LAP		GRY			Altered andesitic lapilli tuff; moderate to strong pervassive sericite/albite/silica alteration overprinting on previous biotite hornfelsed textures.
402.7	406.8	VC	plm			GRY	DEP		Polymictic volcaniclastic; strongly silica/sericite/albite altered with clasts variably altered and zones.
406.8	424.5	FLPT	lpt	LAP		GRY	DEP	GR30	Altered andesite lapilli tuff; moderate sericite/albite/silica alteration often texture destructive; chlorite is present through much of the interval as fracture controlled and patchy.
424.5	439.5	AND	autbx	LAP		BLK	ALTFR	GR30	Altered andesitic volcaniclastic (autobreccia?); this interval has a primary biotite/albite alteration overprint.

Blackwater Project
Drill Summary - Lithology

BW0368

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
439.5	449	FT	aph	FA	M	GRY			Albite-silica altered felsic tuff (Altered andesite is the primary rock type)interval with fracture controlled chlorite and sulphides.
449	487.5	AND	flwbx			GRY	ALTFR	GR30+	Altered weakly porphyritic andesitic flows: sections of flow top breccias with a wek albite/silica altereation overprint; this entire interval has a moderate biotite hornfels.

Blackwater Project
Drill Summary - Alteration

BW0368		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	27.8	O		0	FR	2	PERV	5	PATC	2							Oxide facies; rock intensely silicified, texture destructive; moderate sericite perdominantly sulfide site halos
27.8	33	T		0	FR	2	PERV	5	PATC	3							Transition facies; alteration as above
33	54	T		0	FR	2	PERV	5	FC	1							felsic tuff unit with strong pervasive silica overprint.
54	73	S		0	FR	2	PERV	5	PERV	2							Felsic tuff unit has increase of pervasive and fracture controlled sericite alteration.
73	78	S		0	FR	3	PERV	3	FC	4							Fault/shear related section with sericite and clay related alteration.
78	84	S		0	FR	2	PERV	4	FC	3							Fracture/shear related sericite and clay alteration.
84	96.5	S		0	FC	1	PERV	4	PERV	3							Strong pervassive silica alteration and lesser sericite alteration through interval.
96.5	122.6	S		0	FC	2	PERV	4	PERV	3							Strong pervassive silica alteration throughout section.
122.6	125.8	S	FC	1	DEF	2	MTRX	2		0	BIOT	CLST	3				Andesite lappili tuff interval with fairly sharp contact between above felsic lappili tuff and lower fault contact. Alteration associated with deformation zone in lower contact area.
125.8	127.6	S	DEF	2	DEF	3		0	DEF	3							Fault zone with sericite/clay/chlorite alteration through entire interval.
127.6	155.8	S	FC	1	DEF	2	PERV	3	PERV	3							Felsic tuff; moderate pervassive sericite alteration, weak to moderate pervassive silica alt'n and weak to mod fract/shear controlled chlorite alt'n through interval.
155.8	169.5	S	FR	1		0	PERV	5		0							Felsic tuff; strong pervasive silica alteration throughout interval.
169.5	175.1	S		0	DEF	1	PERV	5	FC	1	SIL	FC	5				This interval has string to intense pervassive and crackle alteration through the interval.
175.1	185	S	FC	1		0	PERV	4	PERV	1							Strong pervassive silica alteration throughout this interval.
185	192	S	FR	1		0	PERV	4	PERV	1	BIOT	CLST	2				Strong pervassive silica alteration with weak to moderate clast controlled biotite alteration through interval.

Blackwater Project
Drill Summary - Alteration

BW0368		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
192	217.4	S	FC	1	FC	1	PERV	4	PERV	3							This interval has a moderate to strong pervassive silica overprint with moderate pervassive sericite alteration. Local chlorite along fractures and minor clay alt in crackle sections.
217.4	228.7	S		0		0	MTRX	3	MTRX	1							This interval has a weak to moderate pervassive silica/sericite alteration overprint; last few metre of the interval has a gradational alteration front to more intensity.
228.7	261.4	S	FR	2		0	PERV	3	MTRX	3							This interval has a moderate pervassive and matrix dominant sericite-silica alteration overprint throughout this interval.
261.4	270.8	S	FC	1		0	PERV	1	PERV	1							This andesitic lappili tuff interval has a weak pervassive sericite-silica alteration overprint through much of the matrix groundmass and the last 60 cm of the interval exhibits a moderate to strong sericite-silica alteration front invading the biotite ri
270.8	275.5	S	FC	1		0	PERV	3	PERV	4							
275.5	313.3	S	FC	2		0	MTRX	1		0	ALB	MTRX	2				Andesitic lapilii tuff interval with a weak to moderate pervassive-matrix destructive alteration (albite-silica type?)...weak biotite hornfels.
313.3	324.8	S	FR	1		0	PATC	1		0	ALB	PATC	1				Andesite tuff with a weak patchy albite/silica? aleration overprint...weak biotite hornfels...low sulphides present.
324.8	329	S	FC	3	FC	1	PATC	1	FC	2	ALB	PATC	1	BIOT	PERV	2	This interval has sections of chlorite-sericite alteration within shear structures..60 degrees TCA.
329	369.3	S	FC	2		0	PATC	1		0	ALB	PATC	1	BIOT	PERV	2	Andesitic lapilli tuff interval with variable pervassive matrix destructuve albite-silica alteration; weak to moderate biotite hornfels through this interval.
369.3	383.1	S		0		0	PERV	4	PERV	1							This interval has a strong pervassive silica alteration overprint on the entire interval.
383.1	402.7	S	FC	2		0	PERV	3	PERV	3							This interval has moderate pervassive sericite/silica alteration overprinting the host andesite lapilli tuff.

Blackwater Project
Drill Summary - Alteration

BW0368		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
402.7	406.8	S	FR	1		0	PERV	4	PERV	1							This interval has a strong pervassive silica alteration throughout.
406.8	424.5	S	FC	2		0	PERV	3	PERV	2	ALB		2				This interval has a weak to moderate pervassive silica/sericite/albite alteration overprint. Fracture controlled chlorite alteration also exists thoughout this interval.
424.5	439.5	S	FC	2		0	PERV	1	MTRX	1	ALB	MTRX	1				This interval has a weak pervassive matrix destructive albite/silica alteration overprint; weak fracture controlled chlorite alteration.
439.5	449	S	FR	1		0	PERV	4	PERV	1	ALB	PERV	3				This interval has a strong pervassive, texture destructive silica/albite/sericite alteration overprint with weal late chlorite fracture controlled alteration.
449	487.5	S	MTRX	2		0	MTRX	1		0	ALB	MTRX	2				This interval has a general weak albite/silica alteration overprint throughout with small sections of more or less alteration intensity.

Blackwater Project
Drill Summary - Mineralization

BW0368		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	27.8		0		0		0	Goe	PERV	1	Hm	PERV	1				Sulfide sites completely replaced by hem,goe,lim
27.8	33	DI	2	DI	0.5		0	Goe	PERV	0.5	Hm	PERV	0.5				Diss'd and veined sulfides partially oxidized; disseminations are py > sp; trace dbs
33	54	DI	2	DI	0.8		0	Goe	PERV	0.3	Hm	PERV	0.2				Abundant dark sulphides and sphalerite through interval.
54	69	DI	2	DI	1		0										Similar to above interval.
69	70.5	DI	2	DI	0.5		0										Section has a shear section present with poor core recovery.
70.5	78	DI	2	DI	0.5		0										Broken zone with local fault shears present.
78	83	DI	1.5	DI	0.5		0										Similar to previous.
83	87	DI	1.5	DI	0.8		0										Broken section with dark sulfides and sphalerite.
87	96.5	DI	1.5	DI	0.8		0										Similar mineralization style to previous interval.
96.5	122.6	DI	1	DI	3	DI	2										Abundant disseminated sulphides throughout interval spalerite/pyrrhotite and dark sulphides.
122.6	125.8	DI	2	DI	3	DI	3										Strong disseminated sulphides throughout this interval and increases adjacents to the fault. Sulphides include pyrite, spalerite and pyrrhotite.
125.8	127.6	DI	1.5	DI	2	DI	1										Strong sulphides near the upper contact area.
127.6	155.8	DI	0.3	DI	3		0										Felsic tuff; fine disseminated sph and pyrite throgh entire interval with the occasional fracture filling of sulphides...TS approx. 3%.
155.8	169.5	DI	2	DI	3		0										Sulphides occur as fine disseminated sph and py throughout with occasional massive sph-py stringers ~5 to 10 mm.
169.5	175.1	DI	1.5	DI	4		0										Sulphides occurs as disseminations and crackle fracture fill textures within a hydrothermal crackle breccia. Total sulphides approx. 4 to 6%.
175.1	184.3	DI	2.5	DI	3	DI	2										This interval has increased in pyrite content and pyyrhotote is now present with sph/py...TS is approx. 5-6%

Blackwater Project
Drill Summary - Mineralization

BW0368		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
184.3	193	DI	3.5	DI	3.5	DI	2.5	Cp	BB	0.5							Sulphides in this interval occur as disseminations, blebs and fracture fills; TS is approx. 5 - 7% py/shp/po/cpy.
193	196.3	DI	2.5	DI	1		0	Cp	DI	1							This interval contains py/cpy/sph amd trace dark sulphides as disseminations and blebs...TS is approx 4%.
196.3	205.3	DI	4	DI	1	DI	0.5	Cp	DI	0.7							This interval contains dissem., bleby and fracture filled sulphides; trace dark sulphides are present surrounding other sulphides; TS is approx. 4 to 5%.
205.3	217.5	DI	2	DI	1.5	VN	1.5										Suphides through this interval are weaker than previous interval; disseminated and fine fracture controlled py/po/sph; TS is approx. 3 - 4%.
217.5	229	DI	2	DI	3	DI	2.5	Py	VN	1	Sp	VN	0.7				Andesitic interval with sulphides occuring as disseminations, fracture fills and random blebs;sulphides include py, sph and py...TS approx. 5 to 7%.
229	245.4	DI	2	DI	2	DI	2	Py	VN	0.5	Sp		0.4				This interval contains primarily disseminated and randon fractue filling sulphides:sph/po/py TS 4 - 5%.
245.4	250.5	DI	1.5	DI	1.5	DI	1.5										This interval is similar to the previous with disseminated fine py/po/sph...TS approx. 3 to 4%.
250.5	262.5	DI	3		0	DI	3	Cp	DI	0.4							This interval is more fracture controlled and disseminated fine sulphides; pyrite, pyyrhotite and chalcopyrite...TS approx. 4 to 6%.
262.5	270.7	DI	2	DI	4	DI	3										Sulphides in this section occur as fone disseminations or blebs, suphides include sph/po/py and TS approx. 5 to 7%.
270.7	275.5	DI	3	DI	2	DI	1.5										This felsic interval has disseminated and random fracture fill sulphides; sulphides include shp/py/po...TS approx. 4 to 5%.
275.5	294	DI	2	DI	2.5	DI	2										This interval contains variable disseminated and fracture fill sulphides throughout;sulphides include po/py/sph...TS 4 - 5%

Blackwater Project
Drill Summary - Mineralization

BW0368		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
294	313	DI	2	DI	3	DI	2.5										Sulphides occur as disseminations or blebs throughout the interval; sulphides types include po/sph/py...TS approx. 4 - 6%.
313	323.5	DI	0.5	DI	0.5	DI	0.5										Trace to 1% disseminated sulphides in this interval.
323.5	346.6	DI	3	DI	3.5	DI	3.5	Cp	VN	0.5							This interval has dissem. & fractute fill sulphides throughout; sulphides include po/sph/py/cpy...TS approx. 4 - 6%.
346.6	369.3	DI	2.5	DI	2.5	DI	2	Cp		0.3							This interval contains disseminated and fracture/stringer sulphides; sulphides include py/po/sph/cpy...TS approx. 3 -5%.
369.3	383.1	DI	1.5	DI	2.5	DI	2.5										This interval contains disseminated po/sph/py throughout the interval; both altered felsic and mafic clasts contain the sulphides; TS approx. 4 - 5%.
383.1	402.7	DI	2	DI	2.5	DI	2.5										Sulphides occur as disseminations and occasional fracture fillings; Sulphide types include po/sph/py and trace cpy...TS approx. 3 -5%.
402.7	406.8	DI	2	DI	1.5	DI	2										Sulphides occur as disseminations throughout the interval; the dominant sulphides include py/po/sph...TS approx. 3 - 5%
406.8	424.5	DI	2	DI	2	DI	2										Sulphides in this interval occur as disseminations throughout and the occasional fracture filling; sulphide types includes py/po/sph and trace dark sooty sulphide...TS approx. 3 to 5%.
424.5	439.5	DI	1.5	DI	2.5	DI	3										Sulphides occur as disseminations and fracture fillings/stringers; sulphide types include py/po/sph with stringers upto 6 to 8 mm and cutting core at 30 degrees TCA...TS approx. 3 to 4%.
439.5	449	FP	3	DI	3	DI	3.5	Dbs		0.2							Sulpdides occur as disseminations and fracture fill stringers, sulphides types include py/po/sph/dbs, total sulphides approx. 4 to 5%.
449	487.5	DI	0.2		0	DI	0.2										Trace disseminanted py/po through this interval.

Blackwater Project
Drill Summary - Structure

BW0368

From (m)	To (m)	Structure	Strength	Comments
3	33	JZ	3	moderately fx'd rock from surface; c^0,25,65; fractures hosting oxidation + clay
33	60	JZ	2	This section of core has curved to sub-planar joints ranging from 45 to 60 degrees.
60	69	BRKZ	3	Similar joint characteristics to previous interval with dominant joints 45 to 50 degrees tca.
69	84	FZ	5	This fault zone has two significant fault structures with clay - sericite rubble zones at 30 and 40 degrees tca.
84	121.7	JZ	3	Moderately jointed through this interval.
121.7	122.6	JZ	4	Moderate to strongly jointed section.
122.6	125.8	JZ	4	Fairly blocky interval throughout and tectonized towards the bottom of the interval.
125.8	127.6	FL	5	Intense fault deformation strong clay/sericite/chlorite throughout.
127.6	152.3	BRKZ	4	This interval is very blockly to broken throghout with sections of strong clay/sericite shear material.
152.3	165	JZ	4	This interval has a dominant joint fracture set fairly shallow to core axis ~ 25 degrees TCA.
165	173.1	BRKZ	3	This interval is a rubble zone of reground drill core with a 20 cm clay seam at 169.3m.
173.1	173.4	CLYSEAM	2	Small 30 cm clay seam within a hydrothermal crackle breccia.
173.4	174.8	CRZ	2	Small clay crushed zone approx. 10 cm wide.
174.8	175.1	CLYSEAM	2	Clay seam is approx. 30 cm.
175.1	193	CRZ	2	Regular joint sets at 40 degrees TCA.
193	196.3	BRKZ	3	This interval has a weak shear zone shallow to core axis (20 degrees)
196.3	205.2	JZ	4	This interval has a regular joint set at 45 and 25 degrees TCA.
205.2	228	CRZ	3	Moderate amount of regular joint sets with the dominant set 25 degrees TCA.
228	231.4	FZ	2	Joint set 40 degrees TCA.
231.4	240	JZ	3	Dominant joint set approx. 25 degrees TCA.
240	252	JZ	2	Dominant joint set 30 degrees TCA.
252	256.8	JZ	2	Dominant joint set 50 degrees TCA.
256.8	258	BRKZ	4	Broken zone with joint angle of 35 degrees TCA.
258	273.1	JZ	3	Dominant joint set angle is 30 degrees TCA.
273.1	277.3	FZ	5	Fault Zone with abundant broken to crushed rock, minor clay left, tectonized core with a shear angle of approx. 20 degrees TCA.
277.3	282.4	JZ	2	Dominant joint set is 35 degrees TCA.
282.4	293	JZ	4	Dominant joint set is 45 degrees TCA.

Blackwater Project
Drill Summary - Structure

BW0368

From (m)	To (m)	Structure	Strength	Comments
293	324.8	JZ	1	Dominant fracture orientation approx. 20 TCA.
324.8	325.5	FL	4	Small fault with strong chlorite clay, rubbles core...shear planes at 40 degrees TCA.
325.5	326.8	JZ	2	Dominant joint set is 45 degrees TCA.
326.8	329	CRZ	4	Chlorite/clay/carbonate shear zone...shear approx. 25 degrees TCA.
329	343.5	JZ	3	Dominant joint orientation is 50 degrees TCA.
343.5	353.3	JZ	3	Dominant joint set is 20 degrees TCA.
353.3	355.6	BRKZ	4	Dominant joint set is 40 degrees TCA.
355.6	369.9	JZ	2	Dominant joint set is 35 degrees TCA.
369.9	378	JZ	2	This interval has a dominant joint orientation of 20 degrees TCA.
378	379.3	FL	5	Small fault with crushed clay/grit material and broken core; dominant shear orientation is approx. 20 degrees TCA.
379.3	383.7	CRZ	2	Dominant joint set is 20 degrees TCA.
383.7	386.7	BRKZ	3	The dominant joint orientation in this interval is 20 degrees TCA.
386.7	395.8	JZ	2	Dominant joint set is 40 mTCA.
395.8	423	JZ	2	Dominant joint set orientation is 50 degrees TCA.
423	423.5	BRKZ	4	Broken section; Dominant joint orientation is 60 degrees TCA.
423.5	440	JZ	1	Dominant joint set is 45 degrees TCA.
440	443	BRKZ	4	Broken and fractured section with a 25 degrees joints set.
443	447	JZ	2	Dominant joint set is 25 degrees TCA.
447	448.2	FL	5	This interval has minor clay gouge and crushed/broken core.
448.2	452	JZ	3	Fairly fractured interval with dominant joint orientation of 45 degrees TCA.
452	487.5	JZ	2	The dominant joint orientions are 20 to 30 degrees TCA.

newgold
a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0369	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375051.58
Depth (m):	536.73	Date Started:	29/02/2012	Casing Size:	HWT	Northing:	5893349.85
Azimuth:	0	Date Completed:	08/03/2012	Casing (m):	4	Elevation (m):	1534
Dip:	-90	Logged By:	LMo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	254	-89
50	253.7	-88.6
97	244.6	-88.6
149	254.7	-88.5
200	249.3	-88.4
250	254.1	-88.4
312	264.5	-88.2
350	255.5	-88.4
400	249.3	-88.5
450	246	-87.8
500	248.7	-87.8

Blackwater Project
Drill Summary - Lithology

BW0369

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							Overburden
4	38.5	FLPT	lptbx	LAP	L	GRY	DEP	GR30	Felsic lapilli tuff, angular clasts, oxidation, especially around fractures
38.5	126	FT	bx		L	GRY			Felsic tuff, with flow banded, and brecciated clasts
126	202.3	FT	flwbx		L	GRY	DEP	GR5	Felsic tuff flow banded texture. Brecciated flow banded felsic clasts
202.3	217.5	FLPT	ms	LAP	L	GRY	UNKN	GR30	Felsic lapilli tuff,locally flow banded felsic clasts
217.5	259.5	FT	flwbnd		L	GRY	UNKN		Felsic tuff flow banded texture
259.5	269.3	FLPT	ms	LAP	L	GRN	FLT	GR30	FLPT w/ some banding, some clasts; wkly-mod broken; well silicified, grn silica; ~1.0% TS, 0.5-1.0% grnt
269.3	270.3	FLPT	frctz	LAP	L	GRN	FLT	GR10	flt'd as above
270.3	279.4	FLPT	ms	LAP	L	GRY	FLT	GR10	broken zone, clastic>banded, some undulating chaotic banding, 0.5% TS
279.4	285.6	FLPT	frctz	LAP	M	GRN	FLT	GR30+	mod-strong flt, increasingly clastic w/ depth, 21cm sharp-walled qtz vn @ 281.8m
285.6	330.1	FLPT	ms	LAP	M	GRN	FLT	SH	decreasing banding w/ depth, increasing clasts w/ depth, some wk microbrx @305.7, grnt increases to 1-3cm @299-308m; sulfide increasing w/ depth w/ 1-3cm sulfide vn @328m
330.1	344	FLPT	ms	LAP	M	GRN	UNKN		increasingly faulted w/ intense gge @333m
344	372	FLPT	ms	LAP	M	GRN	UNKN		Medium GRN GRY felsic lapilli tuff with SA/SR clasts
372	391.9	FLPT	lptbx	LAP	M	GRN	ALTFR	GR10	Felsic lapilli tuff with some localized lptbx in sections; clast supported with SA/SR clasts
391.9	418.5	FLPT	cs	LAP	MO	GRY			Mottled/Medium light grey, clast suppoorted felsic lapilli tuff
418.5	435.5	FLPT	frctz	LAP	MO	GRY			Mottled grey green felsic lapilli tuff; Alteration has washed out texture but clasts are seen in sections
435.5	452.5	FLPT	ms	LAP	M	GRY			Medium light grey felsic lapilli tuff (fracturized), texture washed out due to alteration but few clasts are seen
452.5	463	FLPT	ms	LAP	M	GRY			Matrix supported felsic lapilli tuff
463	475	FLPT	ms	LAP	M	GRY	FLT	GR30+	Greenish grey felsic lapilli tuff; faulted at bottom of interval from 466m-475m; fault gge between 467.2m-475m
475	508.5	VC	plm	LAP	M	GRY			Polymictic volcaniclastics with roughly 50:50 mafic to felsic clasts
508.5	519.6	VC	plm	LAP	M	GRY	DEP	GR30+	increasing mafics, rock gradually becoming darker, places with possible hydrothermal brecciaiton/alteration coming through
519.6	527.9	VC	ms	LAP	D	GRY	DEP	GR30+	95% mafic clasts, clasts are smaller than above unit, somewhat better sorted.

Blackwater Project
Drill Summary - Lithology

BW0369

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
527.9	532.5	AND	bx		D	GRY	ALTFR	GR10	dark andesite, with fragments of brecciated andesite. very small amygdules
532.5	536.7	AND	hydbx	LAP	L	GRY	UNKN		sudden change into silica rich hydrothermal zone, with fragments of dark unsilicified AND within. Rock is very light coloured, with angular clasts, appearing felsic, but likely just very silicified, with laminations. Some zones of such strong alterat

Blackwater Project
Drill Summary - Alteration

BW0369		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	39	O		0	PERV	2		0		0	LIM	PERV	3	GRNT	REP	1	Strong limonite/goethite oxidation, especially around fractures and replacing clasts. Some garnets present, possibly replacing clasts, pervasive clay
39	58.4	T		0	PERV	2		0	PATC	1	LIM	FC	3	GRNT	REX	1	Strong limonite and goethite, especially around fractures. Pervasive clay, garnets present
58.4	73	T		0	PATC	2	PATC	2	PATC	2	LIM	FR	1	GRNT	REX	1	Decreasing oxidation, limonite/goethite only on fracture planes, patchy silica/clay/sericite
73	126	S		0	PERV	1	PERV	3	PERV	3	UNK	FR	1				Unknown yellow, clay-like mineral on some fracture planes. Pervasive silica, sericite and clay
126	202.3	S	FR	2	PERV	2	PERV	3	PERV	2							Pervasive silicisification alteration overprinting chlorite alteration
202.3	217.5	S	CLST	2	PERV	2	PERV	2	PERV	2							Chlorite alteration found in fractures as well as in felsic. Chlorite alt overprinted by silici
217.5	235.5	S	FR	2	PATC	1	PERV	2	PERV	2							Chlorite alteration fracture controlled. Silica overprinting chlorite and clay alt
235.5	244.4	S	PERV	3		0	PERV	2	PERV	2							Pervasive silicification alt overprinting pervasive chlorite alt
244.4	259.5	S	CLST	3	PATC	2	PERV	2	PATC	2							Patchy clay alt. Clast dominant chlorite alt.
259.5	269.2	S	FC	2	PATC	1	PERV	4	VNHL	1	GRNT	CLST	1				strong lt grn silica, med drk grn chl in fx>along laminae; spotty drk ratty grnt
269.2	280	S	FR	2	PATC	1	PERV	4		0	GRNT	CLST	1				
280	282.7	S	FR	3	FR	1	PERV	3		0	SIL	VN	3	GRNT	CLST	1	med grn chl on fx, 1 lg qtz vn
282.7	299	S	FR	2	PATC	1	PERV	4		0	GRNT	CLST	1				
299	311	S	FR	1	FR	1	PERV	4		0	GRNT	CLST	2				grnt 1-3cm
311	338.5	S	FR	2	FR	1	PERV	4		0	GRNT	CLST	1				
338.5	356.9	S	FR	3	PATC	2	PERV	3		0	GRNT	CLST	1				No sericite, moderate chlorite on fractures, weak patchy clay, moderate pervasive silica, garnets replacing clasts
356.9	391.9	S	FR	2	FR	1	PERV	3	MTRX	1	GRNT	CLST	2				Weak sericite in matrix, weak chlorite and clay on fracture planes, moderate pervasive silica, garnets present

Blackwater Project
Drill Summary - Alteration

BW0369		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
391.9	418.5	S	FC	1	REP	2	PERV	4	CLST	2	GRNT	CLST	1				Weak sericite in clasts, weak fracture controlled chlorite, weak clay replacing clasts, strong pervasive silica, garnets present
418.5	435.5	S	FC	2	FR	1	PERV	3	MTRX	2	CAL	INFILL	2	GRNT	CLST	1	
435.5	452.5	S	FC	1	PATC	1	PERV	4	MTRX	2	CAL	INFILL	2	GRNT	CLST	1	
452.5	463	S	FC	1	PATC	2	PERV	4	MTRX	2	CAL	INFILL	2	GRNT	CLST	1	
463	485.5	S	FC	1	FC	3	PERV	3	MTRX	2	CAL	INFILL	2	GRNT	CLST	1	strong sil alt'n becoming more patchy. fault zone with clay
485.5	496	S	PATC	2	MTRX	1	PATC	3	PATC	2	CAL	INFILL	1	GRNT		1	patchy mix of alteration, garnets increasing in frequency towards end of unit.
496	520.5	S	CLST	2	MTRX	1	MTRX	3	PERV	3	CAL	INFILL	1	GRNT	CLST	2	frequent garnet clasts. sericite alt'n more prevalent here. silica weakeing, but still making up much of the matrix
520.5	526	S		0		0	OP	2	PERV	3	CAL	INFILL	1	GRNT	CLST	1	alteration not as strong in this unit.
526	532.5	S		0		0	OP	1	CLST	2	CAL	INFILL	1	GRNT	CLST	1	alteration intensity decreasing. small clasts of sericite
532.5	536.7	S		0	CLST	1	PATC	5	PATC	2	CAL	INFILL	1	GRNT	CLST	1	suddenly extremely silicified, patches of stronger intensity silica, very hard rock, areas so strongly altered, primary textures are completely obscured.

Blackwater Project
Drill Summary - Mineralization

BW0369		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	39		0		0		0	Goe	FP	2							Goethite and limonite oxidation
39	47	DI	0.5		0		0	Goe	FP	2	Dbs	DEN	0.5				Goethite and limonite oxidation, with some DBS and py present
47	65	SP	0.5		0		0	Goe	FP	1	Dbs	DEN	0.1				Minor DBS, with some py specks. Also py specks within garnet blebs
65	84	DI	0.5	FP	0.1		0	Dbs	BB	0.5							Minor di py, esp w/ grnts, trace sph on fractures, minor DBS in some patches
84	103.5	DI	0.5	FP	0.1		0	Dbs	BB	0.5							Patchy blebs of DBS, trace sph on fractures, minor di py
103.5	103.6		0		0		0	Apy	EU	20							Euhedral arsenopyrite growing on fracture
103.6	121	DI	0.5		0	BB	0.5	Dbs	DEN	0.5							Po with garnet and on fractures with py, minor di py, minor DBS
121	139.7		0	DI	0.5	DI	1	Dbs	VN	1							Po and Sph disseminated.
139.7	152.6		0	DI	0.5	DI	1	Dbs	VN	0.5							Sp and Po disseminated.Po replacing felsic clasts
152.6	167.6		0	DI	1	DI	1	Dbs	VN	1							Po and Sph disseminated.
167.6	177.5	FP	0.5	DI	0.5	DI	0.5	Dbs	VN	1							Disseminated Sph along fllow banded clasts
177.5	189.2	FP	0.5	DI	1		0.5	Dbs	VN	0.5							Disseminated Sph. Blebby Po
189.2	202.3	FP	0.5	DI	1	DI	1	Dbs	VN	0.5							Blebby Po replacing felsic clasts
202.3	217	FP	0.5	DI	1	CR	0.5	Dbs	VN	0.5	Ga	FP	0.5	Grnt	FP	0.1	Garnet found in fractures. Sph and Po replacing clasts. Galena found in fractures
217	222.5	FP	0.5	DI	1	DI	0.5										Po adn Sph diiseminated.
222.5	232.5	FP	0.5	DI	1	DI	0.5	Dbs	VN	1							Black Dbs, Po and Sph disseminated. Po replacing clasts
232.5	238.3	FP	0.1	DI	0.5	DI	0.5										Po and Sph disseminated, Metallic Sph
238.3	259		0	DI	0.5	DI	1										Blebby Po. Disseminated Sph
259	274	DI	0.5	DI	0.1	DI	0.1	Dbs	FP	0.1							diss'd fine aggregated sub-anh py, some diss'd fine py-po intergrown w/ grnt
274	281.8	DI	0.5	DI	0.1	DI	0.1										
281.8	282	DI	0.1		0		0	Apy	VN	0.5							fine-med euh-subh apy assoc w/ qtz vn
282	296.9	DI	0.5	DI	0.5	DI	0.1	Dbs	FP	0.1							

newgold
a clear direction

Blackwater Project
Drill Summary - Mineralization

BW0369		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
296.9	307	DI	1	DI	0.5	DI	0.1	Dbs	FP	1	Py	VN	0.1				some dbs, some wk hl py vnlts
307	319	DI	1	DI	0.5		0	Dbs	FP	0.5							py intergrown w/ grnt
319	328	DI	1	DI	0.5	DI	0.1	Dbs	FP	1.5							
328	328.3	VN	7	VN	3	VN	1.5	Ga	VN	10	Cp	VN	0.5				3cm sulfide vn
328.3	343	DI	1	DI	0.5	DI	0.1	Dbs	FP	0.5							spotty bright py w/ some tarnished
343	372	DI	1	DI	0.5	DI	0.1	Dbs	DEN	0.5							Disseminated py, some in blebs and in veinlets/hairlines, some py+po co-existing with garnet, some disseminated sph
372	391.9	FP	2	FP	1	BB	0.5	Dbs	DEN	0.1	Cp	BB	0.1				Slight increase in sulphides from previous interval, py on fracture planes and some in veinlets/hairlines; shiny sph on fracture planes and some disseminated; some bleby po; trace cp and dbs
391.9	418.5	DI	1		0	BB	0.5	Dbs	DEN	0.1							Decrease in sulphides from previous interval, disseminated py; po in blebs; trace dbs
418.5	435.5	FP	1	DI	0.1	BB	0.1	Grnt	CR	0.5							Py on fracture planes, some disseminated py specks/blebs, some in calcite veinlets/infill; trace po in blebs; disseminated trace sph; garnets present as clast replacement
435.5	452.5	FP	1		0	BB	0.1	Apy	SP	1	Cp	BB	0.5	Grnt	CR	0.5	Py on fracture planes,some in calcite veinlets/infill, some tarnished py in blebs; arsenopyrite in disseminated specks, in clusters, in calcite infill; Cp in blebs, some with garnets/po; no sph; some garnets as clast replacement
452.5	463	FP	0.5		0		0	Cp	BB	0.1	Apy	SP	0.1	Grnt	CR	0.5	Significant decrease in sulphides, py on fracture planes, no sph or po, trace cp in blebs and trace apy in specks, garnets present
463	475	SP	0.1		0	BB	0.5	Grnt		0.1							somewhat spotty mineralization, py in hairline vnlts
475	487	BB	1	SP	0.1	BB	1	Grnt	CR	0.5	Dbs	LAM	0.5				py in blebby veins, and veinlets. increase in garnets
487	495	VN	0.5	BB	0.1	BB	1	Grnt	CR	2							frequent clusters of garnets
495	504	VN	1	BB	0.5	BB	2	Grnt	CR	2	Apy	SP	0.1	Cp	SP	0.1	abundant garnets. very fine grained specks of aspy. some possible bright cpy

Blackwater Project
Drill Summary - Mineralization

BW0369		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
504	514	VN	1	BB	0.5	BB	3	Grnt	CR	2	Cp	VN	1				abundant po, locally very high grade disseminated zones. some veinlets bearing pretty good grade cpy-py
514	525	VN	0.5	DI	0.1	BB	3	Grnt	CR	2							high grade po and garnets
525	530	VN	0.1		0	DI	3	Grnt	CR	0.1	Cp	SP	0.1	Apy	SP	0.1	mostly po, in fine grained disseminations, as well as bulbous blebs. traces of garnet, apy, cpy. py in hairline vnlts
530	536.7	DI	0.5		0	DI	2	Grnt		0.5							po locally high grade in small 20cm zones. overall mineralization diminishing

Blackwater Project
Drill Summary - Structure

BW0369

From (m)	To (m)	Structure	Strength	Comments
4	58.5	BRKZ	3	Broken zone, with few pieces of competent core (barely any pieces more than 50cm length), some rubble, clay gge at fractures
58.5	80.5	JZ	3	Fairly competent rock
80.5	86	BRKZ	2	Broken, blocky zone with minor clay gge on fractures
86	126	JZ	2	Joint zone, fractures 80>45>60 TCA
126	177.7	JZ	2	Fracture planes 70>40
177.7	189	FZ	4	Fault plane at 45, Clay gouge, Fault breccia locally found
189	218	JZ	2	Fracture planes 80>40
218	244.4	JZ	2	Joint zone with fractures planes 60>40 Fault breccia at 220.55
244.4	259.5	JZ	3	Steep fracture planes. Locally broken zone
259.5	263	JZ	2	wk smooth jnts c^55-70, some rough undulating
263	263.5	BRKZ	4	blocky-rubble some chl on faces
263.5	267.7	JZ	3	Fault planes at 55
267.7	270.2	BRKZ	4	Broken zone with rubble and some sandy clay gge
270.2	279.4	BRKZ	2	blocky w/ drk grn chl on fx, some rubble
279.4	281	FL	3	chlritized rubble w/ some wk sandy gge
281	284.5	BRKZ	2	chl-coated blocks>strongly jnt'd
284.5	289	JZ	3	some blocky w/ mod jnt'd
289	315.8	JZ	2	wkly jnt'd w/ some blocky
315.8	319	JZ	4	some blocky
319	326	JZ	2	CHL-COATED FX
326	328	BRKZ	3	blocky w/ some well jnt'd
328	330.1	JZ	1	
330.1	336	FL	3	blockt-rubble w/ intense gge zone @333m
336	343.9	BRKZ	3	Moderate brokenzone with some competent core <0.5m
343.9	346.9	BRKZ	1	Weak broken zone/not very broken up zone with wispy/jagged joints
346.9	356.9	BRKZ	4	Moderate to strong broken zone with some competent core <0.5m, sand/clay gge<0.5m, some rubbles
356.9	367	JZ	3	Moderate joint zone with joints mostly at 40dtca, other joints at 35 and 50 dtca

Blackwater Project
Drill Summary - Structure

BW0369

From (m)	To (m)	Structure	Strength	Comments
367	369.2	BRKZ	4	Broken zone with rubbles and sand/clay gge ~0.3m, one competent core ~0.25m
369.2	378	JZ	3	Joint zone with wispy/jagged joints betwees 20-80dtca;
378	388.3	JZ	1	Weak joint zone with mostly wispy/jagged joints; measurable joints at 80>70>40 dtca
388.3	391.9	BRKZ	4	Moderate to strong brokenzone with rubbles and sand/clay gge
391.9	406.8	JZ	3	Moderate joint zone with joints between 10-80 dtca mostly at 50dtca
406.8	419.5	JZ	2	Joint zone with localized broken zones <0.5m, wispy/jagged joints between 30-80dtca
419.5	422.5	BRKZ	3	Moderate broken zone with rubbles, sand/clay gge
422.5	429	JZ	2	Joint zone with localized broken zones; joints mostly at 40dtca, some at 60 dtca and one at 30dtca
429	433	BRKZ	1	Weak broken zone/not very broken up zone, some cpmpetent core <0.5m
433	436.3	JZ	2	Joints at 40dtca
436.3	438.3	BRKZ	4	Strong broken zone with rubbles, sand and clay gge
438.3	443	JZ	2	Joints mostly at 80dtca, some at 40/60dtca
443	447	BRKZ	3	Moderate broken zone with broken up pieces of core
447	458.1	JZ	2	Weak joint zone with localized broken zones, joints mostly at 50dtca others at 40/60dtca
458.1	463	BRKZ	1	Weak broken zone with local sections of stronger broken zones
463	466	JZ	2	Weak joints mostly at 50dtca, others at 60dtca
466	475	FZ	3	Moderate fault; fault/clay gge with some rubbles
475	484	BRKZ	4	Moderate to strong brokenzone; rubbly
484	487.3	BRKZ	2	Weak broken zone with some competent core, localized sections of stronger broken zones
487.3	490.5	JZ	3	Moderate joint zone with joints mostly at 50dtca, others at 60>70>80dtca
490.5	495.5	BRKZ	1	competant rock, but fractures are not very clean
495.5	497.5	BRKZ	3	short zone of broken up rock
497.5	525	JZ	3	joint sets at 40-50 degrees TCA. long zone of consistantly competant core
525	530.5	BRKZ	1	more frequent fractures than above. Dominant set at 45 degrees, with calcite fracture coatings
530.5	536.7	JZ	5	slightly more competant rock than above unit. Rock is very hard

Blackwater Project
Drill Logs

Hole ID:	BW0370	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375152.02
Depth (m):	569.5	Date Started:	29/02/2012	Casing Size:	HWT	Northing:	5893298.51
Azimuth:	0	Date Completed:	14/03/2012	Casing (m):	7	Elevation (m):	1546
Dip:	-90	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	222.5	-89.3
100	170.4	-89.3
151	190.1	-89
202	171.4	-89
257	164.6	-89
301	132.5	-88.4
352	134.4	-88.5
403	143.8	-88.4
451	157.4	-88.2
505	157.5	-88.4
554.5	161.4	-88

Blackwater Project
Drill Summary - Lithology

BW0370

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7	OB							Overburden
7	35.4	FLPT	lptbx	LAP	D	GRN	DEP	SH	ash rich 10 -30% lapilli. clasts srongly altered, locally appear similar to VC.
35.4	39	FLPT	lptbx	LAP	L	GRN	DEP	GR30+	Graded beds of from fine ash tuff to 80% lapilli. 50cm to 2m thick, 5 sequences.
39	75	FT	t	FA	M	GRN			massive to banded FT, with intervals of tectonic and auto breccia with minor over printing of hydrothermal breccia.
75	90	FT	lam	FA	M	GRN			Felsic tuff with local hydro thermal breccia. Pervasive banding.
90	147	FT	lam	FA	L	GRN			Laminated and locally massive (textures my be removed by Silica alteration/replacement). Pervasive fine stockwork silica veins mm scale. 2% of core.
147	184	FT	lam	FA	D	GRY			Felsic Tuff is pervasively silicified, And locally is compleeately chlorite replaced, fractures are strongly clay altered with increasing intensity near faults. local mm wide veins of hydrothermal breccia.
184	252	FT	lam	FA	L	GRY			finely laminated FT, locally contorted, possible rhyolite sequence
252	280	FT	lam	FA	L	GRY			continued sequence from above.
280	316	FLPT	lptbx	BLOCK	L	GRY			Faulted broken and gougey felsic lapilli tuff breccia, locally there are block sized laminated clasts. Strongly altered with garnet and modest sulphides.
316	341.3	FLPT	lptbx	LAP	M	GRN	FLT	SH	Felsic lapilli tuff breccia with local hydrofracture texture often lined with clay along fractures
341.3	349.7	FLPT	fltgge	LAP	M	GRN	FLT	SH	Faulted FLPT, sharp upper contact at 25 degrees and lower contact at 40 degrees. Gouge throughout. Some intact sections throughout.
349.7	389	FLPT	lptbx	LAP	M	GRN			Medium green grey FLPT. Local laminated sections. Blebby garnets with silica/serecite/chlorite alteration. Sulphides usually follow laminations. Mottled. Trace cpy.
389	458.5	FLPT	lptbx	LAP	L	GRN	ALTFR		light green grey brecciated Felsic lapilli tuff. Intense silica pulses througout. Increase chlorite on fractures and from 414.5 to 417.5m. Garnet has decreased. Cubic blebbls of po throughout. Locally laminated due to alteration? Rare silica veinlets
458.5	464.5	FLPT	fltbx	LAP	M	GRN	ALTFR	GR30	texturally obscured FLPT. Increase chlorite. Signs of straing. Consistant fractures at 40 degrees.
464.5	479.3	FLPT	lam	LAP	L	GRY	ALTFR		same as FLPT above without shearing and decrease in chlorite. 30% of interval has clasts present, the rest is obscured.

Blackwater Project
Drill Summary - Lithology

BW0370

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
479.3	489.2	FLPT	fltbx	LAP	M	GRN	ALTFR	GR30	Fault zone, increase in chlorite. Fractures range from 20 to 45 degrees. Majorit at 45 degrees. Gouge with Sp>Po.
489.2	500	FLPT	lam	LAP	L	GRY	FLT		textuarlly obscured FLPT. Light green grey. Flooded silica, Po>Sp. Decrease in chlorite, convoluted banding.
500	503.3	FLPT	fltgge	LAP	D	GRN	FLT	GR10	Faulted FLPT, increase chlorite. Broken to gouge. 45 degrees TCA upper contact. Garnets greater than sphalerite.
503.3	527.3	FLPT	hydbx	LAP	L	GRY	FLT	GR10	silicified texturally obscured FLPT. convoluted banding throughout. Incresae serecite. 1% garnets cruddy. Joints all at 50 degrees. Increase sphalerite in laminations. Is this FLPT? 100% texturally obscured.
527.3	528.2	FLPT	fltgge	LAP	M	GRY	FLT	GR5	faulted FLPT? Fault at 30 degrees to core axis. Clay gouge, slight increase in chlorite
528.2	536	FLPT	lam	LAP	L	GRY	FLT		similar to above the fault. Garnets cruddy.
536	538	FLPT	fltgge	LAP	L	GRY	FLT	GR5	Faulted, no increase in chlorite. Increase in calcite veining, might just be ara with increase calcite and rock is less competant.
538	562.9	FLPT	hydbx	LAP	L	GRY	FLT	GR30+	Increase in visiible felsic clasts 20-30%. Light grey with increase in calcite. Majority of jointing at 40. Weak to moderate sulphides. Visibile clasts commonly are laminated. Strong silica throught with convoluted bedding. Garnets 1.5%. Weaker serec
562.9	569.5	FLPT	hydfrct	LAP	L	GRY			Hydrofractured silicified FLPT. Increase in calcite veining. Weak sulphides, 1.5% garnet. Interval is locally faulted. EOH

Blackwater Project
Drill Summary - Alteration

BW0370		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	7	O		0		0		0		0							
7	34	T	PERV	4	FR	4		0	MTRX	1	CHL	CLST	5	LIM	FC	3	Clasts replaced by chlorite.
34	39	S	PERV	4	FR	4		0	MTRX	1	CHL	CLST	5				Clasts replaced by chlorite.
39	69.5	S	PERV	4	FR	4		0	MTRX	1							
69.5	75	S	PATC	3	PATC	4		0	PATC	3							
75	90	S	PATC	3	PATC	4	PATC	1	PATC	3							Sericite and Clay alteration spacially associated with Faulting and breccia.
90	147	S	PERV	3	FR	4	PERV	5		0							
147	159.4	S	PERV	4	FC	5	PERV	2	PATC	1							Strong clay alteration along fracture and locally along laminations.
159.4	163	S	PERV	3	PERV	4		0	PERV	1							Strong clay alteration relatted to fault. clay alteration is visiually corolated with intensity of fault material.
163	187	S	PERV	1	FR	3	REP	5		0							Compleate replacement by silica.
187	214	S	PATC	1		0	PERV	4		0	GRNT	REP	2				Strongly silica altered felsic tuff, garnet bearing, locally chlorite increases in intensity within bands
214	252	S	PERV	2		0	PERV	4	OP	2	GRNT	REP	1				Continued stong silica alteration, minor garnets as replacement
252	280	S	PERV	2		0	PERV	4	OP	2	GRNT	REP	1				Similar to above with strong alteration and faulting obscuring most texture
280	341.3	S	FR	2	FR	1	PERV	4	OP	2	GRNT	REP	1				Strong silica/sericite/chlorite alteration, minor garnet replacement
341.3	356	S	FR	3	FR	2	PERV	4	OP	2	GRNT	REP	1				fault zone, increase in chlorite
356	376	S	PATC	3	FR	1	PERV	4	OP	2	GRNT	REP	2				Patchy, chorite and serecite with pervasive silica. Moderate garnets throughout.
376	379	S	FR	3	FR	2	PERV	4	PATC	3	GRNT	REP	2				fault zone, increase in chlorite on fractures and clay. Trace garnets
379	389	S	FR	3	FR	1	PERV	4	PATC	3	GRNT	REP	2				very silicified mottled FLPT. Patchy serecite throughout. Strong chlorite on fractures. Garnets elongated, cruddy.
389	414.5	S	PATC	2	FR	1	PERV	4	PATC	3	GRNT	REP	1				lighter rock, increase in silica serecite. Chlorite on fractures. Hydrobrecciated unit. Sharp lower contact with increase chlorite zone below.

Blackwater Project
Drill Summary - Alteration

BW0370		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
414.5	417.5	S	PERV	4	PERV	3	PERV	3	PATC	2							small fault with increase chlorite alteation surrounding it. Decrease in garnets
417.5	458.5	S	PATC	2	FR	1	PERV	4	PATC	3	GRNT	REP	1				similar to alteration above small fault zone. Silica flooding with patchy chlorite and serecite. Garnets throughout, 1cm in size.
458.5	464.5	S	PERV	4	FR	2	PERV	3	PATC	3							shear zone, increase in chlorite
464.5	479.5	S	PATC	2	FR	1	PERV	4	PATC	2	GRNT	REP	1				strongly silicified unit, convoluted
479.5	490.2	S	PERV	4	FR	2	PERV	2	PERV	1							faut shear zone, 25-40 TCA.
490.2	500	S	PATC	2	FR	1	PERV	4	PERV	2							same as above the shear zone
500	503.3	S	PERV	5	PERV	2	PERV	1	PATC	2	GRNT	REP	2				fault zone, increase chlorite with garnets still present
503.3	527.3	S	PATC	2	FR	1	PERV	4	PATC	3	GRNT	REP	2				increase in patchy serecite. Strong silica. Garnets throughout
527.3	528.2	S	PERV	4	PERV	2	PERV	4	PATC	2							small fault zone, increase in chlorite
528.2	534.5	S	PATC	2	FR	1	PERV	4	PATC	3	GRNT	REP	1				same as above the fault
534.5	569.5	S	PATC	1	FR	2	PERV	4	PATC	1	CAL	VN	3				stronger calcite veining throughout. Locally hydrofractured.

Blackwater Project
Drill Summary - Mineralization

BW0370		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	7		0		0		0										
7	34		0	CR	1		0	Grnt	EU	0.1							Sp is exclusivelyclast replacement. Garnet is up to 2cm.
34	39		0	CR	0.5		0	Grnt	EU	0.1							garnet is less then 1mm possibly vein associated.
39	55	DI	0.1	FP	0.5	DI	0.5	Grnt	EU	0.1	Dbs	FP	1				Dbs along fractures, garnet spacially associated with breccias.
55	69.5	DI	0.1	FP	0.5	DI	0.5	Grnt	EU	0.1	Dbs	FP	1				Dbs along fractures, garnet spacially associated with breccias.
69.5	75	DI	0.1		0	DI	0.5	Grnt	EU	1	Dbs	FP	1				DBS and GArnet spacially associated with clay/sericite alteration and Po is spacially associated with stornger chlorite alteratiion. Po and DBS is along banding.
75	90	FP	0.1		0	BB	0.1	Grnt	EU	1							Garnet has halos of one to several mm white to gry.
90	147	FP	0.1	DI	1.5	DI	1	Dbs	SP	1							Stockwork silica veins are associated with 70% of the sulphide minerization. Sp and Dbs are locally diseminated specks.
147	159.4	DI	0.1		0	DI	0.5	Grnt	CG	0.1							
159.4	163		0		0		0										no visible minerization in gauft material.
163	187	DI	0.1	DI	0.5	DI	0.5										Minierization is inverse to clay alteration.
187	203	DI	0.5	DI	0.5	DI	0.5	Grnt	BB	0.1	Cp	SP	0.1	Ga	SP	0.1	good collection of sulphides, sp,po,py,cp,ga and grnt. All as clustered disseminations
203	224	DI	0.5	DI	0.5	DI	0.1	Sp	VN	0.5	Cp	DI	0.1	Dbs	DEN	0.1	sp locally in some smaller veins
224	242	DI	0.1	DI	0.1	DI	0.1	Grnt	CG	0.5							garnet in small clusters.
242	265	DI	1	DI	2	BB	0.5	Py	VN	0.1	Sp	VN	0.1	Cp	DI	0.1	Strong blebbs and clusters of spahalerite with some associated pyrite, sometimes as small veinlets, trace chalcopyrite and minor clusters of pyrrhotite
265	280	DI	1	DI	1.5	BB	0.5	Cp	DI	0.1							Glassy texture coating on top of disseminated sulphides, mostly sphalerite and pyrite, with trace chalcopyrite and minor pyrite, locally sulphides appear to follow laminations

Blackwater Project
Drill Summary - Mineralization

BW0370		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
280	300.8	DI	0.5	BB	0.5	BB	0.5	Grnt	DI	0.5							blebby garnets. Moderate sulphides. Pyrite and sphalerite following laminations in 30% of clasts.
300.8	319.4	DI	0.2	DI	0.5		0	Grnt	DI	1							Fine grain garnets.
319.4	341.3	DI	0.5	DI	0.5	DI	1	Grnt	BB	1.5							Increase in Po. Still blebby garnets.
341.3	349.7	DI	0.5	DI	0.5	DI	0.5	Grnt	BB	1							fault zone, moderate sulphides.
349.7	367	DI	0.5	DI	0.5	DI	0.5	Grnt	BB	1							moderate sulphides, garnet pressent in blebbs.
367	376.3	DI	0.5	DI	0.5	DI	0.5	Grnt	BB	1							increase in sphalerite and pyrite following laminations. Cruddy garnets 1-3cm.
376.3	389	DI	0.5	DI	0.5	DI	0.5	Cp	DI	0.1	Grnt	BB	1				Very fine grain cpy associated with po. Garnets still present 0.5
389	410.7	DI	0.1	DI	0.5	EU	1	Grnt	EU	1							euhedral Po with pyrite and rare cpy. Garnets still present
410.7	430	DI	0.1	DI	0.5	EU	1	Grnt	BB	0.5							same as above
430	449.5	DI	0.1	DI	0.5	DI	0.5	Grnt	BB	0.5							decrease in sulphides and garnet
449.5	458.5	DI	0.5	DI	0.5	DI	1	Apy	FP	0.1	Apy	VN	0.1	Grnt			similar sulphides to above, asp on fractures and veinlets.
458.5	465	DI	0.5	DI	1	DI	0.5	Grnt	BB	0.1	Apy	VN	0.1				asp found in veins, increase in sphalerite
465	479.3	BB	0.1	BB	0.5	BB	0.5	Apy	VN	0.1							Po greater than sp>py. Mostly euhedral sites ranging in size from 2-12mm. Rare silica veinlets with coarse asp
479.3	489.2	BB	0.1	BB	1	BB	0.5										increase in sphalerite through chlorite rich shear zone.
489.2	500	DI	0.1	DI	0.5	BB	0.5	Apy	VN	0.1							moderate sulphides, sphalerite following convoluted laminations.
500	503.3	DI	0.1	BB	1	BB	0.5	Grnt	BB	0.5							increase sphalerite in fault zone
503.3	527.3	DI	0.5	DI	1	DI	1	Cp	SP	0.1	Grnt	BB	0.5				po contains cpy within blebby sites
527.3	534.5	DI	0.1	DI	0.5	DI	0.5	Cp	SP	0.1	Grnt	BB	0.5				same as above
534.5	559	DI	0.1	DI	0.5	BB	0.5	Grnt	BB	1.5							decrease sulphides, increase garnets, cruddy.
559	569.5	DI	0.1	DI	0.3	DI	0.3	Grnt	BB	1.5							decrease sulphides, blebby garnet

Blackwater Project
Drill Summary - Structure

BW0370

From (m)	To (m)	Structure	Strength	Comments
0	7	BRKZ		Overburden
7	42.4	FZ	2	Numerous minor faults in other wise competant rock.
42.4	49	FL	4	gpouge clast are smaller then 1 cm
49	76	JZ	4	core is locally broken for short intervals
76	77.5	FZ	1	5cm fault @ 76m @ 70 deg to CA, 5cm fault lower intensity fault @ 77.3m @ 50deg to CA.
77.5	81.4	BRKZ	2	
81.4	119.5	JZ	3	orthogonal set @ 30deg to CA.
119.5	125.5	FZ	4	signifigant lost core, broken and rounded core.
125.5	131.8	BRKZ	3	minor faults <1cm.
131.8	133	FL	4	
133	147	BRKZ	4	
147	159.4	BRKZ	2	
159.4	163	FL	4	
163	181.5	JZ	3	
181.5	187.2	BRKZ	3	Broken rubbly core with some redrill
187.2	187.9	JZ	2	small joint set
187.9	190.6	BRKZ	3	broken coarse angular core
190.6	192.6	JZ	3	small joint set
192.6	194.5	BRKZ	2	broken core with some intact pieces
194.5	198.4	JZ	3	small joint set
198.4	199.9	BRKZ	2	small broken zone
199.9	202.8	JZ	2	wavy joint set
202.8	206.7	BRKZ	2	broken zone with some small intact pieces of core
206.7	214.5	JZ	2	
214.5	220.2	BRKZ	3	broken and fractured rock
220.2	235	JZ	3	planar jointing in laminated felsic tuff, laminations becoming much steeper to core axis
235	240	BRKZ	3	broken core with trace milled fracture surfaces
240	241	JZ	2	joint sets 60 and 30 degrees

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Blackwater Project
Drill Summary - Structure

BW0370

From (m)	To (m)	Structure	Strength	Comments
241	264	BRKZ	2	broken zone with some intact and jointed pieces, local rounded redrill
264	280	FZ	4	broken and blocky fault zone with abundant redrill, localized fault gouge
280	309	FZ	3	broken to faulted zone
309	316	FZ	5	very broken, gouge, poor recovery
316	323	JZ	3	competant core
323	326.6	BRKZ	4	broken zone
326.6	341.3	JZ	3	
341.3	349.7	FL	4	sharp contacts with fault. Fault gouge, 25 TCA upper contact, 40 tca lower contact
349.7	353.7	JZ	3	
353.7	359	FL	3	small fault, broken with gouge
359	376.2	JZ	3	competant rock
376.2	377.5	FL	4	sharp fault, upper contact has slicks and is 40TCA
377.5	415.5	JZ	3	joints at 45
415.5	417.5	FZ	4	sharp fault, small 10cm gouge zone, rehealed, increase chlorite through rehealed fault zone.
417.5	458.5	JZ	3	40-60 joints
458.5	464.5	SZ	3	shear zone, increase in chlorite. all joints 40 degrees TCA
464.5	479.2	JZ	3	25 to 55
479.2	489.2	FL	4	majority of fractures at 40. Some shears and fractures at 20 TCA.
489.2	500	JZ	3	all at 40 tca
500	503.3	FL	5	sharp 45 upper contact, gouge, increase chlorite, very broken
503.3	527.3	JZ	3	all joints at 50
527.3	528.2	FL	4	fault with gouge, almost slicks
528.2	535	JZ	3	joints at 50
535	538	FL	3	fractured zone, increase calcite veining
538	562.9	JZ	3	joints and calcite veins at 50
562.9	569.5	BRKZ	3	hydrofractured broken zone, some gouge

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Blackwater Project
Drill Logs

Hole ID:	BW0371	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375427.53
Depth (m):	591.62	Date Started:	29/02/2012	Casing Size:	HWT	Northing:	5892923.84
Azimuth:	270	Date Completed:	10/03/2012	Casing (m):	4.58	Elevation (m):	1613
Dip:	-60	Logged By:	NDh	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-60
46.03	269.5	-59.7
91.75	269.2	-60.4
137.5	267.4	-61.6
183.2	269.4	-61.4
228.6	271.2	-60.9
320.5	271.2	-59.2
411.8	271.2	-58.9
457.5	270.8	-58.2
567.2	272.8	-55.6
591.6	270	-55

Blackwater Project
Drill Summary - Lithology

BW0371

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							bouldry overburden
4	122	AND	t	LAP	D	GRY	UNKN		andesite unit wiht sections that appear massive but upon closer inspection is actually tuffaceous or brecciated, clasts and matrix are andesite; some sections throughout that are have been bleached or altered to a slightly lighter colour; 73.45 to 87
122	157	AND	t	LAP	D	GRY	FLT	GR30	andesite unit as above, alternating with a VC unit ending in a fault leading into a FLPT unit, chlorite along fractures
157	206	FT	lam		L	GRN	UNKN		felsic tuff, laminated, brecciated laminated clasts in place, almost microbrecciated?
206	279	FT	lam		L	GRN	UNKN		dominantly laminated FT, some sections where textures are obscured by alteration, also some sections of microbrecciation/brecciated laminated bits
279	342.1	FT	lam		D	GRN	UNKN		dominatley massive to laminated @50 dtca felsic tuff, locally texture moderatley-strongly obscured by silica-ser-chl alteration. Local sections of felsic bx (FLPT), and locally bx FT with felsic lithics as part of laminations. Locally laminations app
342.1	379	FT	lam		D	GRN	UNKN		dominatley strongly laminated @45-60 dtca FT. small <4m sections of Bx SA laminated clasts FLPT. Within FT locally healed laminated clast bx similar to FLPT sections.
379	391.2	FLPT	hydbx	LAP	M	GRY	UNKN		Predominatley Bx Sub-angular laminated/non-laminated clasts matrix supported with laminated (FT) sections, within the laminae are small Bx's locally.
391.2	420.1	FLPT	hydbx	LAP	M	GRY	ALTFR	GR30+	Predominatly Bx/Hydro-Bx sub-A to sub-R laminated/non-laminated clasts, matrix and clast supported, matrix locally has eaten partially through clasts, locally clast laminations appear deformed folding back upon one another, with interspersed sections
420.1	440	FT			D	GRN	ALTFR	GR30+	Grenn pervasivley silica altered, with no observable texture
440	461.3	FT			D	GRN	ALTFR	GR30+	predominatley Green silica pervasivley altered, obscuring texture, with intermittent sections of pale olive to L.Green Laminated minorly Bx'd (hydro-Bx) sections, where texture is only partially obscured by silica alteration.
461.3	473.7	FT			D	GRN	ALTFR	GR30+	Grenn pervasivley silica altered, with no observable texture. Bottom contact is gradational over a number of meters as chlorite and chalcopyrite increase in abundance and a Bx'd texture slowly becomes more apparent as Blebby silica decreases.
473.7	487.1	FLPT	hydbx	LAP	M	GRN	FLT	GR30+	top contact is chloritic and siliceous. chlorite and BB'y silica decrease with depth giving way to a perv siliceous Hydro-Bx, large clasts SA-A clast supported, smaller clast sections SR-R and matrix supported. Small section (2m) laminated, and Bx'd

Blackwater Project
Drill Summary - Lithology

BW0371

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
487.1	509.5	FLPT	hydbx	LAP	M	GRN	UNKN		silica-ser perv partially texture destructive. Laminated silica, locally trailing into laminated matrix supported (small sections of SA-A clast support jigsaw fit) SA/SR poorly sorted sections from <1mm to >10mm white (clay replaced) clasts, with ss
509.5	546	FLPT	hydbx		M	GRN	ALTFR	SH	silica-ser perv predominatley texture destructive.localized Bx Sa-SR locally jigsaw fit clast supported, and locally irregular matrix supported (Hydro-Bx). Bottom contact is a sharp alteration contact at 30-35 dtca.
546	564	AND	bx		D	GRY	ALTFR	SH	mottled Very light gray Silica BB's (clast replacement/clasts? and matrix dominant) and Dark Gray (clay/Biotite replaced clasts and non-silica altered sections <1m). top section perv silicification towards down section matrix dom silicification with
564	591.6	AND	mas	LAP	D	GRY			Massive Dark Gray-Black, with Brown BIOT, localized trace Bx, and local silica flooding creating a pseudo-Bx. small 1-2mm replaced rectangular white-brown replaced crystals (plag?). Small section of Epiclastic rounded clasts silica-chl replaced.

Blackwater Project
Drill Summary - Alteration

BW0371		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	42.9	T		0	PERV	2	PATC	2	PATC	2	LIM	FC	3	HM	FC	2	andesite unit with fracture controlled oxidation, patchy sercite and silica, weak clay pervasive throughout
42.9	73.45	S	FR	2	PERV	2	PERV	3	PATC	2	ANH	VN	1	CLY	FR	1	Andesite with chlorite, clay, some jarosite and a white mineral (anhydrite?) along fractures, pervasive/patchy sericite and silica throughout. biotite as clast replacement
73.45	86	S	FR	3	PERV	2	PERV	2	MTRX	3	ANH	VN	1	CLY	CLST	1	brecciated andesite with stronger clay and sericite throughout matrix, andesite clasts with weak clay alteration, chlorite along fractures
86	157	S	FR	3	CLST	2	PERV	3	VNHL	2	ANH	VN	1	BIOT	CLST	1	Andesite with chlorite, clay, some jarosite and a white mineral (anhydrite?) along fractures, pervasive/patchy sericite and silica throughout. biotite as clast replacement; end of interval in a fault zone with strong mechanical clay
157	238.1	S	PERV	3	PERV	2	PERV	4	PERV	3	CHL	FR	3				felsic tuff with pervasive strong silica, pervasive sericite + clay+chlorite, and chlorite along fractures
238.1	272	S	PERV	3	PERV	2	PERV	4	PERV	3	CHL	FR	4	CLY	FR	1	weak broken zone with stronger chlorite
272	279	S	PERV	2	PERV	2	PERV	4	PERV	3	CHL	FR	3	CLY	FR	1	includes a ser-chl-sulphide gouged fault zone. Speckled clay pervasive throughout.
279	296.4	S	PERV	2	FR	1	PERV	4	PERV	3	CHL	FR	4				pervasivley silicified, moderatley pervasive ser-chl, soft chl coating FP's
296.4	320.5	S	PERV	2	FR	1	PERV	4	PERV	3	CHL	FR	4				perv silicified, locally patchy silica (5).
320.5	330	S	PERV	2	CLST	1	PERV	4	PERV	3	CHL	FR	3				perv silicified. sericite-chl perv, chlorite decreasing in strenght with depth. accidental lithics encroached upon by silica but are partially clay replaced.
330	356.7	S	PERV	2	REP	1	PERV	4	PERV	3	CHL	FR	4				perv silica--sericite-chl alt. Chlorite moderate-strongly coats FP's, with weak clay locally. White clay replaces small grains locally box shaped (amphibole/feldspars??)
356.7	357.7	S	PERV	2	FC	2	PERV	4	PERV	2							perv silica-chl-ser. White clay/ser? fracture controlled and later silicified, weakly vuggy.
357.7	371	S	PERV	2	FR	1	PERV	4	PERV	3	CHL	FR	4				

Blackwater Project
Drill Summary - Alteration

BW0371		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
371	397	S	PERV	2	FR	1	PERV	4	PERV	3	CHL	FR	3	CHL	PATC	1	perv silica--sericite-chl alt. Chlorite moderate-strongly coats FP's, with weak clay locally. White clay replaces small grains locally box shaped (amphibole/feldspars??). Localized patches of chl-ser (clast replacement?)
397	406.1	S	PERV	2	FR	1	PERV	4	PERV	3	CHL	FR	2	UNK	DEF	1	fault, with large fragments and competent sections of rock similar to above. partially silicified fault gouge is L.Gray with a L.Green tint, hosting in minor amount a pinky red mineral on FP's and stretched out.
406.1	415.2	S	PERV	2	FR	3	PERV	4	PERV	3	CHL	FR	1				perv silica-sericite-chl alt. Chlorite strength gradationally decreasing with depth. Chlorite only coats select FP's while clay and unknown grungy yellow mineral weak-moderatley coat FP's. Numerous rehealed fractures with silica.
415.2	419.2	S	PATC	1	CLST	1	PERV	5	PATC	3	CHL	FR	2				Perv silica, bleaching rock. Ser-Chl patches locally (streak white). Relict Green clay/sericite? clast dominant masses and bands in laminated clasts. Relict clay clast dominant Chlorite on the few existant FP's
419.2	423.5	S	FR	2		0	PERV	5	PERV	2	SER	PATC	3	CHL	PATC	1	L.Olive background colouring to the perv silica (Sericite?). large Sp mineralized patch of Medium-Dark.Green Sericite-Chlorite mixture (streaks white).
423.5	439.5	S	FR	2		0	PERV	5	PERV	2	SER	PATC	2	CHL	PATC	1	similar to above, ser-chl patches are M.Green and locally associated with abundant Py mineralization.
439.5	445.4	S	FR	2	FR	1	PERV	5	PERV	3	SER	PATC	2	CHL	PATC	1	L.Green background colouring to the perv silica (Sericite?). M-D.Green Patchy Ser-chl (streaks white)
445.4	449.9	S	FR	3	FR	1	PERV	4	PERV	2	CHL	PATC	1				silica-ser perv obscuring texture. Chl coats Fp's and weak local silicified patches.
449.9	455.9	S	PERV	2	FR	1	PERV	5	PERV	3	CHL	FR	3				silica-ser-chl perv predominatley obscuring texture, small relict white silica replaced Bx's locally
455.9	459.1	S	FR	3		0	PERV	4	PERV	3							silica-ser perv, obscuring texture. Chlorite coating FP's
459.1	461.7	S	PATC	3		0	PERV	5	PERV	3	CHL	FR	4	CHL	PERV	2	silica-ser-chl perv. Moderate white silica laminations present, partially Bx.
461.7	473.5	S	FR	4		0	PERV	4	PERV	3							silica-ser-chl perv, obscuring texture.

Blackwater Project
Drill Summary - Alteration

BW0371		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
473.5	476	S	PATC	3		0	PERV	5	PERV	3	CHL	FR	4	UNK	PATC	1	perv silica-ser-chl, chlorite strongly pervasivley patched, and coating FP's. Unknown reddish brown pervasive patches.
476	487.5	S	FR	4		0	PERV	5	PERV	3	UNK	PATC	1				similar to above
487.5	498.5	S	FR	1	FR	3	PERV	5	PERV	3	UNK	PATC	3				fault zone. Fractured competent rock silicified fractures (healed and remobilized) silica-ser perv bleaching, Sericite imparts weak-green locally to light-gray/white colour locally. Chlorite trace on FP's, White to Gray/weak-yellow clay in-between FP's in
498.5	519	S	PERV	1	CLST	1	PERV	5	PERV	3	CHL	FR	4				Silica-ser-chl perv. Chlorite small BB's and coating FP's moderately to strongly. Small bleached zones<10cm, where clasts are white and some are clay replaced while remainder are silicified (overprinting of clay replacement by silica?)
519	535.5	S	PATC	3	FR	1	PERV	4	PERV	3	CHL	FR	4				perv silica-ser, perv patches of chl. Silica is variabley strong from 4-5. Chlorite strongly mod-strongly coats FP's, with weak clay.
535.5	546	S	FR	3		0	PERV	5	PERV	3	CHL	PATC	1				perv silica-ser, with pervasive patches of Chl. becomes increasingly L.Gray to white bleached near sharp bottom alteration contact, with blotches of Light to Dark Green Ser-Chl.
546	552	S	FR	4		0	PERV	4		0	UNK	PATC	1				Different Alt Style from above: perv and BB'y silica, L.Gray in BB's and matrix and D.Gray in Clasts. Chlorite strongly coats FP's at top, and weakens with depth. Weak patches of Brownish-Red perv min overprinted by silica (Fe-CO3?)
552	562.7	S	FR	2	CLST	4	MTRX	4		0	BIOT	CLST	4				D.Gray-Black AND clasts have gone to clay and patchy BIOT. While matrix has been completely silicified and left bhind BB's of Silica that can appear to be clasts. Less siliceous sections of AND exhibit BB'y BIOT alteration/replacement of minerals (Plag?)
562.7	564	S	FR	3	CLST	3	MTRX	4		0	BIOT	CLST	3				similar to above.

Blackwater Project
Drill Summary - Alteration

BW0371		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
564	571	S	FR	3	PERV	2	MTRX	2	REP	2	BIOT	REP	4				patches of matrix dominant silicification otherwise competent massive AND weak-mod pervasivley clay altered. lathe shaped white-brown crystals replaced by BIOT-Ser.
571	577	S	FR	3	PERV	3	MTRX	1	REP	1	BIOT	REP	4	CAL	FR	2	similar to above, silica locally in matrix, of Bx (Bx'd by silica fluids?). Calcite on FP's
577	577.7	S	CLST	3	FR	1	PERV	4	CLST	2	CHL	FR	2				perv silica altered, chl-ser clast dominant replacement. Chlorite weakly coats FP's
577.7	585.6	S	FR	3	PERV	2	MTRX	2	REP	1	BIOT	REP	4	CAL	FR	2	patches of matrix dominant silicification otherwise competent massive AND weak-mod pervasivley clay altered. lathe shaped white-brown crystals replaced by BIOT-Ser. Calcite on FP's
585.6	591.6	S	FR	3	FR	3	MTRX	2		0	BIOT	REP	3				fault zone, with chloritic/clay rich mineralized gouge. similar to above

Blackwater Project
Drill Summary - Mineralization

BW0371		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	44.1	SP	0.5	DI	0.5	SP	0.1	Hm	FP	1	Goe	FP	3				low sulphides, specs of brassy py dissemianted throughout, trace po, sphalerite as blebby disseminations
44.1	73.45	SP	0.5	DI	1	DI	1	Jaro	FP	1							specs of brassy py, po and sph in little blebs also disseminated throughout
73.45	92	DI	0.8	DI	1	DI	0.8	Jaro	FP	1							blebs of sph throughout, disseminated brassy py and po
92	132.9	DI	0.5	DI	1	DI	1	Py	VN	0.3	Jaro	FP	1				looking at fresh surfaces can see fine disseminated py, sph, and po. Jarosite along fracture possible with anydrite?
132.9	138	VN	1	VN	1	VN	0.8	Py	SP	0.5	Sp	SP	0.5				interval of a few veins with py, sph and lesser po, also specs of py and sph throughout
138	157	DI	0.5	DI	0.8	DI	1										all sulphides as small specs throughout
157	169.9	BB	1.5	BB	1	BB	1	Cp	SP	0.1	Dbs	DEN	0.5				5-7% sulphides with disseminated blebby py, po, and sph, some blebs with mixed sulphides and specs of cpy, dbs througout as well
169.9	188.9	DI	2	DI	2.5	DI	0.5	Cp	DI	0.1	Dbs	DEN	1				dissemianted sph>py>DBS>po, mostly as fine disseminations, some blebs/clusters of sulphide and some sph+py blebs in aligment with banding
188.9	206.0	DI	1	DI	2.5	DI	1.5	Dbs		0.5							decrease in dbs, and py, increase in po
206.0	221.3	DI	1.5	DI	1	DI	1.5	Dbs	DEN	0.5	Cp	SP	0.1				blebby disseminations of po, sph , and p some sooty black dbs throughout as well, a few mixed sulphide blebs with sph+po+py, sulphide is moslty disseminated however some is in alignment with laminations, and some blebs also have sooty black rim/halo
221.3	232	DI	0.8	DI	0.8	BB	1	Dbs	DEN	0.1							decrease in sulphides, mainly little blebs of po, some is sort of within and near the dbs, also disseminated py and sph throughout; some blebs of sulphide have a sooty black sulphide rim/halo around them
232	239.1	DI	0.5	DI	0.5	DI	1	Dbs	DEN	0.1							

Blackwater Project
Drill Summary - Mineralization

BW0371		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
239.1	264	DI	1.5	DI	1.5	DI	1.5	Py		0.1	Py	VN	0.5				acicular py in some sections almost dendritic but not quite, py also in euhedral ish blebs and in veinlets, sph and po also disseminated blens some with a soorty black sulphide rim/halo
264	273	BB	0.5	BB	0.5	BB	0.8	Dbs	BB	1							decrease in sulphides, blebs of mixed sulphide black sooty sulphide>py>sph, some py stringers throughout
273	273.6	BB	3	BB	3		0	Py	MA	1	Py	VN	1				BBy Patchy Sp. square-round 1.5mm BB's of Py, partially massive haloed by Sp, and minor VN material. minor black dunknown sulhpide cocktail.
273.6	279.8	FP	1	BB	0.5	BB	1				Sp	FP	0.1				Py-Sp small blebs and small <10mm fracture fill, mod coats FP's. Po BB's
279.8	281.3	FP	0.1	DI	0.1	BB	1.5										small-large BB's of Po, as well as small patches assoc with Sp.
281.3	289.5	FP	0.5	DI	0.5	DI	1	Dbs		0.1	Py	VN	0.1				trace Dbs, minor-mod Py coating FP's and weakly VN'd. Po DI's.
289.5	304.5	FP	0.5	BB	0.5	SP	0.5	Py	VN	0.5	Sp	VN	0.1	Dbs		0.1	trace-minor fracture controlled Black sulphides. VN's-Specks-BB's Py. Po BB's locally. assoc with increase in Sp BB's
304.5	315.1	VN	0.5	BB	0.1	BB	1	Dbs		0.8	Sp	VN	0.1	Po	VN	0.1	Dbs fracture controlled. Py veinlets, locally with Qtz-Sp-Po. Po Blebs-Specks.
315.1	324	VN	0.5	VN	0.5	VN	0.8	Po	BB	0.5							
324	340	BB	0.1	VN	0.1	DI	1.5	Mrc	FP	0.5	Po	VN	0.1	Sp	DI	0.5	Po-Sp DI. Py trace BB's>DI's. round masses of Mrc on FP's. Po-Sp-Py- Blk.SootySulphides are DI but also fill small fractures (crackle?) as well as intergrown masses <1mm.
340	358.4	DI	0.1	DI	0.5	DI	1.5	Mrc	FP	0.5	Py	FP	0.1				Po--Sp-Py DI. Mrc on FP's locally with Py.
358.4	375	BB	0.1	DI	0.8	DI	1	Mrc	FP	0.5	Py	DI	0.1				Py BB's with Po inclusions. Po-Sp-Pt DI.
375	378	FP	0.5	DI	0.8	DI	1.5	Po	BB	0.5							Po-Sp DI together throughout (locally intergrown small BB's/DI's). Py coating FP's.
378	386.2	BB	0.5	BB	0.5	BB	1	Py	FP	0.1	Po	DI	0.5				circular BBy Po (locally square pseudomorphed, replacement). Po minorly DI'd. Py locally BB'd, VN'd and on FP's. Sp irregular BB's.

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Blackwater Project
Drill Summary - Mineralization

BW0371		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
386.2	399.2	BB	2	BB	0.8	BB	0.1	Py	FP	0.1							fine-grained circular and amorphous to fine-med grained and whole euhedral Py BB's/crystals (partial recrystallization?), locallly patchy abundances that follow banding. Po BB's irregular/amorphous fine-grained assoc with SP. Red Amorphous Sp BB's lo
399.2	411.3	BB	1.5	BB	0.5		0	Py	FP	0.1							similar to above; Py mineralization slightly weaker/ less visiible in Gouge.
411.3	416.4	BB	1	BB	0.5	BB	0.1	Sp	DI	0.5							BB'y Py similar to above. Po BB's irregular amorphous usually assoc with red and gray metallic Sp. Red Sp is minorly DI with trace amounts of gray metallic Sp, BB'y Sp is gray metallic > red and occurs in circular BB's with both.
416.4	420	BB	0.5	BB	1	BB	2										BB'y Py similar to above. Po fine-grained BB's/DI's, discreet grains assoc with red, metallic gray and black Sp.
420	423.5	BB	5	BB	10	BB	5	Cp	FP	0.5	Mrc	FP	0.5	Sp	DI	10	Cp discontinuously fracture controlled with Py-Po and VISIBLE GOLD. Red and Black Sp in DI'd BB's throughout occasionally assoc with Po and Py. Large BB's/Patches red Sp haloing Black Sp BB's/Patches, assoc with semi-massive BB'y Py. Py is also DI'd
423.5	426	BB	2	DI	1.5	DI	7	Mrc	FP	1	Cp	SP	0.5				1-5mm BB's of Py throughout with 1mm DI BB's of Po and red Sp.
426	426.9	BB	3	BB	2	SP	1	Sp	DI	5	Cp	DI	0.5				Sp DI's and BB's following a moderate banding pattern@ 30dtca. BB'y Py following bands, and Sp of Po within SP BB's
426.9	431.5	BB	7	DI	3	BB	5	Cp	BB	0.5	Sp	BB	1	Mrc	FP	1	D's of Black Sp rimmed by red Sp, Black Sp BB's rimmed by red Sp proximal to Large patchy BB's of Py. Large BB's and aggregates of BB's appearing semi-massive fine-grained occur locally and can account for up to 50% of the rock. Small DI's of CP seen
431.5	439.9	BB	6	BB	1	BB	4	Cp	BB	0.5							1-20mm BB's and DI BB's of fine-grained Py, minorly viened. Po DI BB's. Red Sp BB's locally encasing Po.

Blackwater Project
Drill Summary - Mineralization

BW0371		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
439.9	441.1	BB	20	BB	1		0										Patchy aggregations of circular BB's. BB'y strung out red Sp.
441.1	445.3	BB	2	BB	1	BB	0.1	Py	VN	0.5							1-3mm circular BB's of Py abundant in small patches. Red Sp BB's occassionally rimming Black Sp.
445.3	451	BB	3	BB	3	BB	1	Py	FP	1							BB'y Sp locally heavily abundant, red SP BB's and red Sp rimming Black Sp BB's. Circular and irregular Py BB's 1-5mm size. irregular 1mm Po BB's throughout.
451	456	FP	0.5	BB	0.5	BB	0.5	Py	BB	0.1							DI'd BB's of Sp, Po and Py. Py coats FP's and dills small fractures. Mineralization increases with depth into next interval
456	459	FP	0.1		0	BB	5	Cp	BB	0.5		FP	1	Mrc	FP	0.5	DI'd BB's of Po, locally assoc with intergrown BB's of Cp. Red very soft mineral coating FP's locally assoc with circular radiating Mrc. Fracture controlled Py and black sooty sulphides.
459	461.7	DI	0.5		0	DI	0.5	Po	BB	0.1	Dbs	FP	0.1	Py	VN	0.5	fine sooty DI's of Po and Py. Py fills small fractures (small discont fracture veinlets?) with abundant Black sulphide mixture.
461.7	471.9	BB	0.5	BB	0.1	BB	6	Cp	BB	0.5		FP	0.1	Py	FP	0.1	DI'd BB's of Po locally with CP inclusions. CP DI'd BB's. Py assoc with FP's BB's and VN's. trace black Sp within Po BB's. unknown very sofdt red mineral coating FP's, locally with Py. Cp increases in abundance with depth.
471.9	476	BB	1.5	VN	0.1	BB	0.5	Cp	BB	1	Cp	VN	0.5				DI'd BB's of Po at top of section and dissappearing with depth, absent at 1/2 of interval. Cp BB's. Cp VN'd with Py and trace Sp.
476	487	BB	1.5	BB	0.1	BB	0.1	Cp	BB	1							DI'd BB's of Py locally following laminations, and locally with trace intergrown Po. Cp DI'd BB's and intergrown with Py BB's, and Sp BB's
487	498.6	BB	1	BB	0.1		0	Dbs	FP	1		FP	0.1	Cp	BB	0.1	Black Sulphide goo fracture controlled in fault zone, assoc with BB's /DI's of Py. BB's of Py-Sp-Cp trace locally. unknown Red very soft mineral coating FP's

Blackwater Project
Drill Summary - Mineralization

BW0371		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
498.6	514	BB	0.5	BB	1	BB	0.1	Cp	BB	0.1	Py	VN	0.5				irregular and triangular BB's of Sp-Py-Cp-B.Sulphides intergrown. Py fracture controlled veinlets>competent veinlets. Black Sulphide also Fracture controlled trace.
514	520.5	VN	0.5	BB	0.5	BB	1.5	Grnt	BB	0.1							BB's of Dark-Grayish-Brown to Black Garnet. Po BB's oriented at 40-50 dtca. Py coating FP's nd Fracture coating Veinlets. Sp BB's locally with trace amounts of Py.
520.5	525.2	DI	0.5		0		0	Py	BB	0.1							mineralization increases in strength with depth. DI'd euhedral 0.1mm crystals of Py, and 0.5mm Py BB's
525.2	546	BB	1	BB	0.5	BB	1	Py	VN	0.1							alternating sections of BB'y Po, Py and Sp. The Sp BB's are partially red rimming Black Sp.
546	550.5	BB	2		0	BB	3	Cp	BB	1	Py	VN	0.1				Po Black Clast Dominant BB's with CP. Py occurs in small sections as BB's and as FRCT veinlets.
550.5	561.9	BB	1		0	BB	2.5	Cp	BB	0.5	Cp	VN	0.1				Po Black Clast Dominant BB's with CP.
561.9	570.5	FP	0.5	BB	0.1	BB	2.5	Cp	BB	0.1	Sp	VN	0.1				trace CP in Po BB's. Po BB's (locally square and rectangular fine-grained BB's) and specks not visible throughout.
570.5	584.5	FP	0.1		0	GmR	1	Po	BB	0.1							Po throughout GM (all black sections of rock magnetic), and trace BB's. Py trace on FP's
584.5	591.6	VN	0.5		0	GmR	0.5	Py	BB	0.5							Py VN'd and BB's withing gouge of fault Bx. Po specks throughout groundmass making rock magnetic.

Blackwater Project
Drill Summary - Structure

BW0371

From (m)	To (m)	Structure	Strength	Comments
4	42.83	JZ	3	moderate joint set with fractures dominantly at 45dtca, some steeper jagged joints
42.83	75.3	JZ	4	joint set almost a weak broken zone, fractures are dominantly at 45, however many sections with random broken sections with chlorite along fractures
75.3	143.9	JZ	3	moderate joint set with some broken sections
143.9	162.5	FZ	4	fault zone with mechanical clay throughout
162.5	187.5	JZ	3	joint set, faults from 30-45, some rock flour/gge along some fractures
187.5	195.5	BRKZ	4	moderate to strong broken zone
195.5	199.1	FZ	4	moderate to strong fault zone with chlorite as deformation and clay gge throughout
199.1	238.1	JZ	2	competent core joints are dominantly at 50ish dtca, some weak broken intervals up to 20cm
238.1	246.1	BRKZ	2	weak to moderate broken zone with some clay along fractures
246.1	272.4	JZ	4	joint set (very weak broken zone with sections of competent core up to 1 m)
272.4	275.9	FL	4	fault, heavily Py-Sp mineralized on remaining competent rock. abundant gouge.
275.9	278.7	JZ	3	joint sets 30 and 70 dtca.weakly broken.
278.7	279.2	BRKZ	3	broken
279.2	285.3	JZ	3	joint sets 60,70 and 30 dtca.
285.3	286.8	BRKZ	4	Single full run (1.5m)broken zone.
286.8	306	JZ	4	multiple joint sets @ 20,25,35,45,60,75 dtca
306	321	JZ	3	joints at 50>30 dtca
321	327	JZ	2	joints at 30>40 dtca.
327	336.8	JZ	2	perfect fractures at 20 dtca, less perfect at 35 dtca.
336.8	339.2	BRKZ	3	broken zone with small competent zones of well defined 30 dtca fractures.
339.2	342	BRKZ	4	mod-strong broken zone shards and large fragments with minor gouge
342	346	JZ	3	moderatley jointed at 30 dtca, weak secondary jointing at carious angles.
346	347	LY	4	laminated FT broken at 35 dtca.
347	349.3	JZ	2	joint set at 30 dtca, and secondary at 46 dtca
349.3	350	LY	4	laminated FT at 45-48 dtca.
350	361	JZ	3	joint set 50>35 dtca.
361	379	JZ	3	joint set at 60 dtca, with secondary jointing at 50>70 dtca.

Blackwater Project
Drill Summary - Structure

BW0371

From (m)	To (m)	Structure	Strength	Comments
379	390.6	JZ	3	moderatley jointed with multiple joint sets 50>30>40>35>10 dtca.
390.6	396.9	JZ	3	moderate to moderateley strong jointing @ 40>50>20 dtca. Partially broken
396.9	397.9	FL	4	moderate-abundant mechanically broken rock, gouge and Bx moderate-abundant
397.9	399.2	BRKZ	2	competent rock, broken at various angles.
399.2	406.1	FZ	4	predominatly annealed fault with abundant gouge and large fragmented clasts (1-60mm) and competent sections in between.
406.1	414.5	JZ	4	jont sets @ 35>40 dtca, fractured>broken. heavily fractured and rehealed rock.
414.5	432.7	JZ	2	Joint zone, with multiple fracture sets 30>40>10 dtca
432.7	443.8	JZ	3	joint zone @ 50>40>25>30 dtca, with some broken rock
443.8	445	BRKZ	4	Broken/fractured siliceous rock.
445	448.8	FZ	4	BRoken/fractured with minor to moderate chloritic gouge. Increasingly competent towards bottom.
448.8	451.4	BZ	5	Sand to lapilli sized siliceous fragments in chloritic gouge.
451.4	455.3	FZ	4	abundant fractured/broken rock with sections of moderate gouge.
455.3	462.4	JZ	3	jointed with chlorite coating FP's strongly @50>60>40 dtca.
462.4	462.5	BRKZ	3	irregularly broken rock
462.5	473.2	JZ	4	variable joint zone from strength 3-5, and locally broken. Oriented fractures @ 50>60>20>70 dtca.
473.2	487	JZ	4	strongly jointed planar and irregularly. Locally parrallel jointing. Oriented @ 30>20>40>10>0 dtca.
487	493.8	FL	4	moderatley mineralized partially rehealed fault, that has locally been remobilized. Rehealed sections are fractured and held together with silica/clay. Moderate-minor gouge.
493.8	498	BRKZ	4	broken zone, where competent rock is partially rehealed fractures.
498	501.3	BRKZ	4	SIMILAR TO ABOVE, WITH COMPETENT FRACTURES @ 60>50>30 DTCA.
501.3	501.6	BRKZ	5	irregularly fractured.
501.6	505.6	JZ	4	jointed @ 45>35 dtca, locally broken.
505.6	509.1	BRKZ	4	broken zone with minor gouge locally, jointed locally @ 30>50>20 dtca.
509.1	511.7	JZ	4	Jointed @ 40>15 dtca., locally broken.
511.7	512.1	BZ	4	crushed rock, Bx=Gouge.
512.1	513.1	BRKZ	4	broken>Jointed. Jointed at low angle 20 dtca.
513.1	519.4	JZ	4	jointed strongly @ 40>15>25>0 dtca.
519.4	520.5	BRKZ	4	BRKZ 3 and increasing to 4 with depth.

Blackwater Project
Drill Summary - Structure

BW0371

From (m)	To (m)	Structure	Strength	Comments
520.5	521.4	FL	4	minor gouge, abundantly broken.
521.4	522.1	FL	4	abundant chloritic gouge with associated siliceous Bx.
522.1	524.6	FL	4	minor gouge, and abundantly broken.
524.6	525.3	BRKZ	4	
525.3	526.9	JZ	3	
526.9	527.1	FL	3	smalll joint failure fault with moderate chloritic gouge.
527.1	533.2	JZ	3	jointed 40>20 dtca. With siliceous healed fractures throughout.
533.2	534	BRKZ	3	irregularly broken minor gouge. low angle joints @ 10 dtca.
534	542.5	JZ	3	jointed @30>20>10>50 dtca.
542.5	542.9	FL	4	chloritic gouge> Bx
542.9	545.4	BRKZ	4	minor gouge, numerous fracture sets.
545.4	546	JZ	3	low angle jont zone @10 dtca.
546	546.2	CRZ	4	chloritic crush zone, abundant chloritic gouge. Heavily Py/Cp mineralized
546.2	562.7	JZ	2	strong well jointed @ 50>40>30>20 dtca.
562.7	572.5	JZ	2	jointed @55>65>25 dtca.
572.5	584.5	JZ	2	jointed @30>50>40
584.5	591.6	BZ	4	Mineralized fault Bx. Abundant gouge and Bx

Blackwater Project
Drill Logs

Hole ID:	BW0372	Tenure #:	515810	Hole Diameter:	HQ	Easting:	376126.1
Depth (m):	399	Date Started:	05/03/2012	Casing Size:	HWT	Northing:	5892674.73
Azimuth:	270	Date Completed:	13/03/2012	Casing (m):	108	Elevation (m):	1604
Dip:	-60	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-61
102	271	-61.9
200	263.5	-62.9
250	268.3	-63.2
300	276.2	-63.8
350	271.7	-64
399	270.9	-63.9

Blackwater Project
Drill Summary - Lithology

BW0372

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	108.5	OB							
108.5	119.6	AND	por		D	GRY	OXFR	GR30+	fx cont oxid'n decreasing w/ depth, drk grn chl increasing w/ depth; 1.5-5.0mm fsp lathes strongest @110-116m, wk purple hue, likely Ootsa Lake
119.6	141.3	AND	autbx		D	GRY	ALTFR	GR5	Autobrx, .5-4cm clasts w/ carb filling voids, undulating carb vns cutting some clasts .2-.5cm
141.3	147.6	AND	por		D	GRY	ALTFR	GR5	wkly autobrx'd, patchy to strong carb overprint, some fsp lathes visible
147.6	165.3	AND	bx	LAP	D	GRY	FLT	GR30	carb-vn'd and; some wk fsp lathes 1-3mm; some wk brx'n increasing w/ depth, clast-support .2-2.0cm mafic clasts w/ some wkly altered mafic matrix
165.3	175.2	AND	volc	LAP	D	GRY	ALTFR	GR30+	carb vn'd; fsp-porphyry grading into hbl-porphyry andesite, clast-supported to 165.9 transitioning to matrix supported for the rest of the interval
175.2	185.3	AND	por	LAP	D	GRY	FLT	SH	hbl-porphyry, weak vc (aggregated hbl clasts?) at 180m. No distinct orientation to hbl laths
185.3	226	AND	volc	LAP	D	GRY			Medium grey andesite matrix with dark grey subrounded amygdule-rich andesite clasts; calcite amygdules abundant from 223-226m
226	235	AND	volc	LAP	D	GRY	UNKN	GR30	As per interval above
235	264	AND	volc	LAP	D	GRY			Medium-dark grey, very weakly altered, isolated clasts of amygdule-rich andesite
264	270	AND	volc	LAP	D	GRY	UNKN	GR10	Medium grey matrix with slight purplish hue with dark grey andesite clasts. Clasts are predominantly calcite-amygdule rich, with minor plagioclase phenocrysts; matrix-supported
270	275	AND	por	CA	D	GRY	UNKN	GR30+	Medium grey with black phenocrysts of hbl. <1mm sized amygdules infilled with carbonate overprinted by silica
275	297	AND	volc	LAP	D	GRY	UNKN	GR30	Volcaniclastic unit with silica-carb infill of amygdules (occ po-py), becoming decreasingly less volcaniclastic towards end of interval; matrix-supported
297	302	AND	por	CA	D	GRY	UNKN	GR30	Hornblende phyric with silica-carbonate amygdules, bt altered
302	307.5	AND	volc	LAP	D	GRY			Minor hornblende phenocrysts, mostly volcaniclastic texture
307.5	310.7	AND	volc	LAP	D	GRY	ALTFR	GR10	Minor hornblende phenocrysts, mostly volcaniclastic texture, becoming more clast-supported towards end of interval
310.7	314	AND	fltbx	LAP	D	GRY	FLT	GR10	Andesite unit (possibly vc modifier) that has become strongly fractured and has the appearance of a weak fault breccia with a carbonate matrix
314	317	AND	frctz	LAP	D	GRY	ALTFR	GR30	Strongly fracture unit, with volcaniclastic texture
317	322.2	AND	frctz	LAP	M	GRN	ALTFR	GR30	within fractured zone, has slightly more silica and chlorite than interval above

Blackwater Project
Drill Summary - Lithology

BW0372

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
322.2	326	AND	fltbx	FA	L	GRY	ALTFR	GR10	Massive unit of light bleached-green-grey andesite??, andesite unit is above and below. Could easily be mistaken for FT unit as texture is not visible
326	334	AND	frctz	LAP	M	GRY			Fracture zone of matrix supported andesite, clasts are visible within blocks that are less fractured
334	341	AND	frctz	LAP	D	GRY	FLT	GR10	Faulted/fractured andesite, gougy through sections particularly between 337.5 and 338. May be volcanic breccia (labelled as volcaniclastic for consistency) as the matrix and clasts appear compositionally similar which would imply the unit is coherent
341	355	AND	volc	LAP	D	GRY	OXFR		Less fractured then interval above, texture easier to distinguish. Occasional rounded quartz fragment (foreign) to otherwise compositionally similar clast-matrix "volcaniclastic" andesite. Increased carbonate alteration along fracture planes
355	365.8	AND	volc	LAP	D	GRY	ALTFR	GR10	Weakly fractured. Fragmental. Clasts do not touch (applicable to sections above) as well, and appear quite homogenous in composition, "floating in the matrix". Matrix supported. May be some sort of flow-breccia or autobreccia?
365.8	369	AND	por	LAP	M	GRY	ALTFR	GR30+	Section of black hornblende phyric with medium grey albite matrix? Clasts may be obliterated. Noticeably different from intervals above and below.
369	378.5	AND	volc	LAP	D	GRY	FLT	GR30+	Competent section of core between intervals of strong fracturing. Homogenous, monomictic volcaniclastic andesite (possibly a flow breccia or autobreccia). Occasional rounded quartz clast. Type section at 374.10m. Amygdaloidal large clast at 376m. No
378.5	385.7	AND	volc	LAP	D	GRY	FLT	SH	As above, but intensely fractured with chlorite along fracture planes
385.7	387	AND	fltbx	LAP	D	GRY	FLT	GR10	Fault breccia zone with gougy matrix and subangular andesitic clasts, chlorite strong along fracture planes
387	389.2	AND	frctz	LAP	D	GRY	FLT	GR10	Zone of monomictic volcaniclastic andesite that has strong chlorite alteration along fracture surfaces
389.2	399	AND	volc	LAP	D	GRY	UNKN		Monomictic volcaniclastic andesite with strong chlorite-calcite-anhydrite along fracture planes, strongly fractured with slickensides commonly visible along fracture surfaces

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Blackwater Project
Drill Summary - Alteration

BW0372		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
108.5	114.4	T	FR	1	REP	4		0		0	LIM	FR	3	CLY	FR	2	fsp sites to clay, fx-cont oxid'n
114.4	119.6	T	FR	2	REP	1		0		0	LIM	FR	1	TALC	FR	1	decreasing fsp replacement w/ depth, some chl w/ lt grn talc on fx, wk brn goe on fx decreasing w/ depth
119.6	141.2	S	FR	2	FR	1		0		0	CARB	MTRX	2	ANH	FR	1	carbonate in autobrx void-fill b/t clasts; some carb-anh-talc fx-coating
141.2	148.7	S		0		0		0		0	CARB	PATC	4				patchy to strong carb wash ending abruptly w/ jnt-failure flt @148.7m
148.7	165	S	FR	1		0	PATC	1		0	CARB	FR	2	ANH	FR	1	carb-anhy-talc fx-coating +/- med grn chl
165	173.2	S	FR	2		0	PATC	1	FR	2	CARB	FR	2	ANH	FR	1	carb-anhy-sericite fx-coating; silicification appears to be patchy; minor clast replacement at 170.40m; hydrothermal bt giving andesite slight purplish hue
173.2	180.4	S	FR	2	FR	1	PATC	3	FR	1	BIOT	MTRX	3				Stronger purplish hue (178m strong); white patchy silica alteration increases; disappearance of carb-anh; chl-clay prominent
180.4	185.2	S	FR	4	FR	2	PATC	2	FR	1							strongly chl-alt, very friable
185.2	190	S	FR	3	FR	3	PATC	1	FR	1							clay-chl altered; gougy; fx planes
190	192	S	FR	3	FR	1	PATC	2	FR	1							patchy light grey silica altered
192	195.5	S	FR	2	FR	1	PATC	1	FR	1	BIOT	MTRX	2				weakly altered, light purplish hue=bt alteration
195.5	207.5	S	FR	3	FR	3	PATC	2	FR	1	BIOT	MTRX	3				chl-clay alt str on fx; purplish hue = bt alt
207.5	226	S	FR	1	FR	1	PATC	1		0	BIOT	MTRX	2				Weakly altered andesite VC unit, matrix slightly bleached by silica-bt = purplish grey hue; rare rounded tan-coloured quartz clast at 215.8m
226	264	S	FR	1	FR	1	PATC	2		0	BIOT	MTRX	2	CARB	FR	2	Carb-anhy fracture coating, purplish hue due to bt, rare 5mm qtz clast at 251.4m.
264	270	S	FR	1	FR	1	PATC	1		0	BIOT	MTRX	2	CARB	FR	1	Weakly biotite altered, minor carbonate along fx planes. Slight increase in silicification from 265-267, patchy 2 intensity
270	275	S	FR	1	FR	2	PATC	3		0	BIOT	MTRX	4	CARB	FR	2	Purplish hue result of bt-sil alteration
275	279	S	FR	1	FR	2	PATC	2		0	BIOT	MTRX	3	CARB	FR	3	Slight purplish hue due to bt alteration with silica
279	295.5	S	FR	1	FR	2	PATC	2		0	BIOT	MTRX	2	CARB	FR	2	Wk patchy silicification, locally 3 intensity, purplish hue from bt

Blackwater Project
Drill Summary - Alteration

BW0372		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
295.5	302	S	FR	1	FR	2	PATC	2		0	BIOT	MTRX	3	CARB	FR	1	Wk carbonate fx coating, increase of bt alteration within matrix through flow?
302	303	S	FR	1	FR	1	PATC	2		0	BIOT	FR	1	CARB	FR	1	Slightly increased sil patchy with bt, more clastic interval
303	307.5	S	FR	1	FR	1	PATC	2		0	BIOT	MTRX	2	CARB	FR	3	Very weakly altered, carbonate veining increases towards end of interval
307.5	310.7	S	FR	4	FR	3	PATC	1		0	CARB	FR	4				Gouge has str rxn to HCl, strongly chloritized along fx planes. Slight brownish colour with carbonates may be siderite? or just clay
310.7	314	S	FR	5	FR	3		0		0	CARB	FR	2				Med-dark green colour, strongly chloritized, weak carbonate alteration, does not appear to be any silicification
314	317	S	FR	3	FR	2	PATC	1		0	CARB	FR	1				Moderate chlorite on fx planes depicted by dark green colour, wk carb-clay
317	322	S	FR	5	FR	1	PATC	2		2							Strongly chloritized, dark green-black
322	326	S	FR	3	FR	3	CLST	4	CLST	4	CHL	CLST	2				Clay within gougy matrix. Silica-sericite-chlorite altered clasts
326	328.7	S	FR	4	FR	2	PATC	1	FR	1	CARB	FR	1				Alteration primarily restricted to fracture planes
328.7	330.5	S	FR	3	FR	2		0	FR	1	CARB	FR	2				Weak carbonate alteration along fracture planes. Moderate chlorite alteration, slightly weaker then previous interval
330.5	333	S	FR	4	FR	3	PATC	1	FR	1	CARB	FR	3	BIOT	MTRX	2	Strong carbonate-chlorite alteration along fracture planes.
333	336	S	FR	2	FR	1	PATC	3	FR	1	CARB	FR	2	CARB	CLST	3	Splotchy albite haloes? possibly replacing brecciated andesite clasts. wk chlorite along fracture planes, microcrystalline qtz altered
336	339	S	FR	4	FR	4	PATC	1	FR	1	CARB	FR	1	ALB	MTRX	2	Gouge zone, clasts are weakly silicified, strongly fractured with clay along fracture planes
339	355.5	S	FR	4	FR	2	PATC	2	FR	1	CARB	FR	3	ALB	MTRX	2	Less altered then previous interval (easier to break with hammer). Bt-albite altered matrix?

Blackwater Project
Drill Summary - Alteration

BW0372		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
355.5	358.5	S	FR	4	FR	2	PATC	2	FR	1	CARB	FR	1	ALB	MTRX	2	Splotchy reddish replacement (possibly iron or zinc?...wk sphalerite) within biotite-albite altered matrix...NOTE-above section has often been labelled as silica patchy...when in fact the alteration may be related more to albite
358.5	365.8	S	FR	4	FR	4	PATC	1	FR	1	CARB	FR	2	BIOT	MTRX	3	Carb-clay-chlorite along frac planes. Bt-albite (possible silica) primarily as matrix replacement.
365.8	369	S	FR	5	FR	3	PATC	2	FR	1	CARB	FR	3	BIOT	MTRX	3	Subtle alteration front at approximately 60 degrees TCA....may be depositional? More silicified then previous interval. Pyrite-chlorite strong in gouge zones
369	389.2	S	FR	5	FR	2	PATC	2	FR	1	CARB	FR	2	BIOT	MTRX	3	Carbonate-chlorite-clay alteration along fracture planes. Bt-albite matrix alteration
389.2	399	S	FR	3	FR	4	PATC	2	FR	1	CARB	FR	4	ANH	FR	2	Carb-anhydrite with minor chlorite-clay along fracture planes. Slickensided throughout interval. Anhydrite-clay alt prominent to about 392 and grades into calcite-clay alteration along fracture planes.

Blackwater Project
Drill Summary - Mineralization

BW0372		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
108.5	114.4		0		0		0	Goe	FP	10	Hm	FP	2				brn-orng goe on fx, wk red hem
114.4	119.6		0		0		0	Goe	FP	2	Jaro	FP	0.5				orng-brn goe w/ some yellow jar on fx
119.6	140.6		0		0		0										
140.6	147.7	DI	1		0		0										wk diss'd bright anh aggregated py> fine-med grn'd euh-subh bright py
147.7	165	DI	0.5		0	DI	0.5	Mrc	FP	0.1							bright py wkly diss'd; some tr tarnished po; tr mrc on fx planes
165	175	FP	0.5		0	FP	0.5	Mrc	FP	0.1							Weakly mineralized interval. Py w/ chl along fx planes; tr mrc
175	180.9	FP	1		0	FP	0.5										Slight increase in py along fx planes
180.9	190	FP	1		0	FP	0.5	Mrc		0.1							py diss on frac planes > po aggregates along frac planes
190	195	FP	0.5		0	FP	0.5	Mrc	FP	0.5							Increased mrc along fx
195	206	FP	0.5		0	FP	0.5	Po	BB	0.5							Minor Po infilling amygdules as blebs
206	226	FP	0.1		0	BB	0.5	Po	CR	0.5							Pyrrhotite as blebs within clasts and replacing amygdules
226	235	FP	0.5	CR	0.1	CR	0.5										Po replacing amygdules, wk py on fx
235	264	FP	0.1	CR	0.1	CR	0.1										Trace replacement of amygdules by po
264	278	FP	0.1	CR	0.1	CR	0.1										Very weakly mineralized, sparse pyrrhotite replacing amygdules
278	294	FP	0.1	CR	0.1	CR	0.1										As above
294	307.5	FP	0.1	CR	0.1	CR	0.1										As above
307.5	310.7	FP	0.1	BB	0.1	CR	0.1										Trace sphalerite as blebs, chlorite-pyrite along fracs
310.7	317	FP	0.1	CR	0.1	CR	0.1										Slight increaase in chlorite-pyrite fracture fill, noticeable at 313.7m
317	322	FP	0.1		0		0	Mrc	FP	0.5							No visible pyrrhotite clast-replacement, marcasite visible as "leaves" along fracture planes
322	326	FP	0.5		0		0	Py	BB	0.1	Py	VN	0.1				Strongly silicified, but poorly mineralized, trace pyrite as blebs and veinlets. About 0.5% pyrite along fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0372		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
326	327	FP	0.5		0		0	Mrc	FP	0.1							Trace marcasite as leaves along fracture planes. Pyrite predominantly on fracture planes
327	333	FP	0.1	CR	0.1	CR	0.5										pyrrhotite replaces amygdules, minor py on fx planes
333	336	FP	0.1	CR	0.5	CR	0.5	Ga	CR	0.1							Noteable clast/fracture infill within interval at 335.10 m = silica-orange sphalerite infill (early stage) with late stage infill of pyrrhotite-garnet
336	354	FP	0.1	CR	0.1	CR	0.5	Mrc	FP	0.1							Trace marcasite & pyrite along fracture planes with pyrrhotite-sphalerite occasionally replacing amygdules
354	365.8	FP	0.5	CR	0.5	CR	0.5	Py	VN	0.1							Sphalerite-pyrrhotite clast replacement. Trace pyrite veins and pyrite along fracture planes
365.8	369.5	FP	0.5	CR	0.1	CR	0.1	Py	DI	1	Po	VN	0.1	Cp	SP	0.1	Pyrite disseminations within gouge of fault breccia. Trace purple-blue irridescent copper mineral (I believe this may be covellite after chalcopyrite) along fracture plane near 368 m
369.5	389	FP	0.5	CR	0.5	CR	0.5	Py	DI	0.1	Ga	FP	0.1				Pyrite disseminations with gouge zones. Po-Sph replacing amygdules and within clasts. Galena trace within interval> appears to follow microfractures
389	399	FP	0.5	CR	0.1	CR	0.1	Py	EU	0.1							Euhedral pyrite at 391m. Trace pyrite along fracture planes with calcite-anhydrite

Blackwater Project
Drill Summary - Structure

BW0372

From (m)	To (m)	Structure	Strength	Comments
108.5	119.5	BRKZ	3	blocky, oxid'd fx decreasing w/ depth
119.5	123.6	BRKZ	3	blocky w/ carb-chl-anhy-talc fx-coating
123.6	126	FL	3	sandy clay-chl gge w/ rubble-blocky
126	142	JZ	3	wkly jnt'd (rough stepped) w/ some rubble and some blocks
142	147.4	JZ	2	smooth planar c^70 fx> rough c^45
147.4	147.7	FL	4	sandy clay-rich gge on steep joint-failure flt
147.7	162.5	JZ	3	rough, wkly undulating carb-anhy-talc coated fx w/ some wkly blocky
162.5	163.5	BRKZ	3	blocky> well jnt'd w/ carb-anhy-talc coating
163.5	165.8	JZ	2	carb-anhy-sericite-clay coating on fractures
165.8	168	BRKZ	3	weakly jointed, mostly broken, minor measurable fracs at 45
168	168.9	FL	4	Weak lower contact at 75 degrees TCA
168.9	170.6	JZ	4	blocky; weakly broken at 169m
170.6	172	BRKZ	3	no distinctly measurable contact
172	176.4	FZ	3	upper contact; gouge within interval
176.4	182.8	JZ	4	Minor clay-chlorite along fx
182.8	183.8	FL	4	Lower contact sharp, gougy, 70 degrees
183.8	184.7	JZ	4	strongly fractured
184.7	190	FZ	4	Upper contact gouge/bx at 30 degrees, lower contact sharp at 20
190	197.5	JZ	4	major joints at 65, weak at 25
197.5	200.8	FZ	3	Upper contact and lower contact at 10 degrees TCA, strong gouge along fx planes
200.8	205	JZ	3	minor clay along fx planes
205	206.7	JZ	3	subparallel TCA
206.7	226	JZ	2	Competent, weakly jointed, 55 degree primary, 25 degree secondary
226	264	JZ	2	Wkly fractured, minor broken zones. CHECK FROM 235 to 264 before EXPORT.
264	268.5	JZ	2	Very weakly fractured. Fx defined by calcite coating/vlts
268.5	268.6	FL	4	Lower contact at 40 degrees TCA, gouge zone
268.6	274.9	JZ	2	Weak joint set from 20-40 degrees TCA, calcite coating along fx planes
274.9	276.5	JZ	2	Joint zone follows calcite veinlets at low angle TCA, weak joint zone at 70 degrees TCA

Blackwater Project
Drill Summary - Structure

BW0372

From (m)	To (m)	Structure	Strength	Comments
276.5	307.5	JZ	2	Weak joint set from 30-60 degrees TCA throughout interval
307.5	310.7	JZ	3	Primary joint sets at 70 degrees TCA, secondary joints from 25-45 degrees TCA
310.7	312.3	BZ	4	Strong fault breccia zone with carbonate matrix
312.3	313.5	BRKZ	4	Strongly broken, minor gouge
313.5	315.3	JZ	4	Intense low angle TCA fracture zone, calcite coats fracture planes
315.3	319.5	BRKZ	4	Strongly broken, difficult to distinguish angles to measure
319.5	322	JZ	5	Strongly fractured, with strong chlorite alteration along fracture planes
322	326	BZ	5	Gougy, massive silica-sericite-chlorite altered andesite fragments comprise clast-component of fault breccia
326	327.2	JZ	4	Moderately jointed within larger interval of fault/fracture zone
327.2	330	BRKZ	4	Strongly broken, difficult to determine measurable angles
330	331	JZ	2	jointing at top and bottom of interval at 35 degrees TCA, calcite veins follow joints at 60 degrees TCA
331	333.7	FZ	4	Lower contact at approx 20 degrees TCA, gougy zones very broken, slickensides on fracture planes
333.7	336	JZ	2	blocky, jointed, secondary weaker joint set subparallel TCA
336	337.5	FL	4	Lower contact at 40 degrees TCA, gougy within interval
337.5	338	BZ	3	Gougy matrix with andesitic clasts
338	341	FZ	4	Fault? may just be broken zone. Consistent low angle to fracture plane within interval, chlorite-pyrite increased along fracture planes
341	345	JZ	3	Moderately jointed, angles vary from 15-35 degrees TCA
345	346.5	JZ	4	Very weakly gougy within interval, broken chlorite from fractures. Upper contact at 30 degrees TCA
346.5	348	JZ	3	Minor clay fracture fill along prominent fracture surface
348	349.5	BRKZ	4	Broken, possibly minor gouge at 348.8, one measurable angle at 40 degrees TCA
349.5	352.8	JZ	3	Prominent joint set at 15 degrees TCA, pyrrhotite veinlet at 352.4m follows fracture surface
352.8	353	FL	3	Gougy fault with pyrrhotite
353	354	JZ	3	Strong joint set at 30 degrees TCA
354	355	FZ	4	Gougy zones within broken zone. possible lower contact at 20 degrees TCA
355	360	JZ	3	Primary joint set at 10 degrees TCA
360	365	BRKZ	4	Strong broken zone, difficult to obtain angle within this interval
365	366.7	JZ	4	Primary joint set at 30 degrees TCA, secondary joint set at 60 degrees TCA

Blackwater Project
Drill Summary - Structure

BW0372

From (m)	To (m)	Structure	Strength	Comments
366.7	367.5	BZ	4	Upper contact at approximately 20 degrees TCA, difficult to tell with broken nature of rock
367.5	368.8	FZ	4	Gouge, chlorite along fracture planes...possible slickensides? Iridescent-looking pinkish-blue with chlorite on frac planes may be covellite from chalcopyrite?
368.8	378.2	JZ	3	Primary joint set at 60 degrees TCA, secondary joints at 40 degrees TCA
378.2	379.3	BRKZ	4	Lower contact at 40 degrees TCA
379.3	381	JZ	3	Fractured zone with fractures at 25 and 50 degrees TCA
381	381.5	FL	5	Fibrous-like slickensides along fault surface, no gouge, but strongly chloritized on fault plane
381.5	383.5	JZ	3	Primary joint set at 10 degrees TCA, secondary joints at 30 and 60 degrees TCA
383.5	385.7	BRKZ	4	No distinguishable prominent angle to measure, quite broken, may be part of larger faulted fracture zone
385.7	387	BZ	4	Lower contact measurable at 35 degrees TCA
387	388.9	FZ	4	Slickensides on fault surface. Difficult to get precise measurement on surface with slickensides, but appears to be approximately 30 degrees TCA
388.9	399	FZ	3	Fault zone?? slickensides visible on most fracture surfaces, different from previous interval because of increase of light blue-green anhydrite-calcite along fracture surfaces

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Blackwater Project
Drill Logs

Hole ID:	BW0373	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375651.1
Depth (m):	427	Date Started:	02/03/2012	Casing Size:	HWT	Northing:	5892649.76
Azimuth:	0	Date Completed:	06/03/2012	Casing (m):	10	Elevation (m):	1624
Dip:	-90	Logged By:	AVe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.3	184.1	-89.3
98	142.4	-88.4
137.8	179.7	-87.6
183.5	173.4	-87.5
229.2	169.2	-87.9

Blackwater Project
Drill Summary - Lithology

BW0373

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	12.5	OB							
12.5	58.52	VC	volc	LAP	D	GRY	DEP	GR30	Volcanoclastic with subangular to subrounded polimictic clasts
58.52	85.95	AND	volc	LAP	D	GRY	UNKN		Andesite with volcanoclastic texture
85.95	148.4	AND	volc	LAP	D	GRY	DEP	GR30	Andesite with volcanoclastic texture
148.4	154.5	VC	mas	LAP	D	GRY	DEP	GR30	Massive polimictic clasts
154.5	178.9	AND	volc	LAP	D	GRY	UNKN		Volcanoclastic texture
178.9	246	AND	volc	LAP	D	GRY	UNKN		Andesite with volcanoclastic texture, locally porphyritic texture

Blackwater Project
Drill Summary - Alteration

BW0373		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
12.5	53.1	O		0	PATC	1		0		0	LIM	FR	3				Limonite alteration fracture controlled
53.1	85.95	S	PERV	2	CLST	1	PERV	2		0							Chlorite alt found in fractures
85.95	111.9	S	FR	1		0	PERV	1		0							Chlorite alt fractured comtrolled
111.9	128.6	S	FR	2	PATC	1	PERV	2	PATC	1							Chlorire alt found in fractures. Patchy sericite
128.6	143.9	S	FR	2		0	PERV	1	FR	1							Chlorite alt fractured controlled. Pervasive silicification alt
143.9	175.9	S	PERV	2		0	PERV	1		0							Chlorite alteration fracture controlled
175.9	215.5	S	FR	2	PATC	2		0		0							Patchy clay alteration associated with Disseminated Sph
215.5	233.8	S	FR	2		0	PERV	2	FR	2							Sericite alt found in fractures.
233.8	246	S	FC	2	PATC	2	PERV	2	PERV	1							Small zone of flt gouge toward bottom of interval likely contains clay alteration as well.

Blackwater Project
Drill Summary - Mineralization

BW0373		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
12.5	28.74	FP	0.1	DI	0.5	DI	0.5										Po and Sph disseminated in groundmass
28.74	46.67	FP	1	CR	0.5	DI	0.1										Sph replacing clasts
46.67	58.52	FP	0.5	CR	0.5	DI	0.1										Sph replacing clasts. Po found disseminated in groundmass
58.52	70.71	FP	0.5	DI	1	DI	0.5										Po and Sph disseminated in clasts
70.71	85.95	FP	0.5	DI	1	DI	0.5										Metallic Sph disseminated, found in fractures
85.95	108.9	FP	0.5	DI	0.5	DI	0.5										Po and Sph disseminated
108.9	127.2	FP	0.1	CR	0.1	BB	0.5										Po replacing clasts. Disseminated Sph
127.2	143.9	FP	0.1	DI	0.1	DI	0.5										Disseminated Po and Sph
143.9	154.5	FP	0.1		0	BB	0.5										Po replacing clasts.
154.5	171.8	FP	0.5	DI	0.5	DI	0.5										Disseminated Po and Sph
171.8	198.5	FP	0.1	DI	0.5	DI	0.5										Disseminated Po and Sph
198.5	216.9	FP	0.1	DI	0.1	DI	0.5										Py found in fractures, Disseminated Po and Sph
216.9	230.5	FP	0.1	DI	0.1	DI	0.5										Disseminated Po and Sph
230.5	234.9	FP	0.1	DI	0.1	BB	0.5										Blebby Po, Po found in fractures.
234.9	246	BB	0.5	DI	0.1	BB	0.5										Blebs of Py and Po found in Amygdules

Blackwater Project
Drill Summary - Structure

BW0373

From (m)	To (m)	Structure	Strength	Comments
12.5	22.5	JZ	2	Joint zone 40>70
22.5	26.51	FL	3	Fault gouge, fault plane at 85
26.51	34.87	JZ	2	Joints 60>30
34.87	37.25	FL	3	Fault plane 30degree, clay gouge
37.25	44.3	JZ	2	Joints 40degree, high frecuency of joints 6/meter
44.3	49.27	BRKZ	2	Broken zone, fracture planes parallel to core axis
49.27	55.47	JZ	2	steep joints 80 degree
55.47	58.52	FL	4	Clay gouge, brecciated clasts
58.52	69.18	BRKZ	3	Blocky, rubbly rocks. Locally clay gouge
69.18	85.95	JZ	3	Joints 45>60, locally fault plane 45degree with brecciated clasts fabric
85.95	100.3	JZ	2	Joints 60>30
100.3	105	FL	4	Fault breccia, 50degree
105	128.6	JZ	2	Joint zone 60>70
128.6	133	FL	3	Fault gouge, breciated clasts 45degree fault plane
133	141.4	JZ	2	Joints 80
141.4	147.5	BRKZ	3	Broken zone blocky rocks, locally clay gouge
147.5	162.5	JZ	2	joints 60>40
162.5	165.2	FL	4	Clay gouge, brecciated clasts
165.2	177.3	JZ	2	Joints 45
177.3	195.5	JZ	2	Joints 40>60
195.5	202.5	FZ	4	Fualt zone with clay gouge, locally brecciated clasts
202.5	242	JZ	2	Joint planes 60degree
242	246	FZ	3	moderately jointed and faulted zone

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Blackwater Project
Drill Logs

Hole ID:	BW0374	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375901.29
Depth (m):	398.5	Date Started:	05/03/2012	Casing Size:	HWT	Northing:	5892649.75
Azimuth:	0	Date Completed:	12/03/2012	Casing (m):	58	Elevation (m):	1612
Dip:	-90	Logged By:	MNu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	200	-89
98	200.1	-88.5
152.5	204.6	-88.5
203.5	200.4	-88.4
251.5	190.8	-88.4
302.5	196.3	-88.2
350.5	198.8	-88.1

Blackwater Project
Drill Summary - Lithology

BW0374

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	58	OB					ALTFR		
58	63	AND	volc	LAP	M	GRY	FLT	SH	Intensely oxidized organge gouge for 30cm followed by moderately oxidized Andesite lapilli sized volcaniclastic texture
63	65.5	AND	fltgge	LAP	M	GRY	DEP	GR10	Oxidized Andesite with volcaniclastic texture intensely fault brecciated with infilling orange brown fault gouge
65.5	81.3	AND	cxt	LAP	D	GRY	FLT	SH	Crystal rich andesite with localized zones of alteration induced brecciation? giving a andesite lapilli tuff texture
81.3	82.5	AND	cxt	LAP	D	GRY	ALTFR	SH	Crystal rich andesite with alteration induced brecciation? giving a andesite lapilli volcaniclastic texture
82.5	97	AND	cxt	LAP	D	GRY	DEP	GR10	Crystal rich andesite with localized zones of alteration induced brecciation? giving a andesite lapilli tuff texture
97	109	AND	cxt	LAP	D	GRY	FLT	SH	Crystal rich with healed fracture zones; out of transition zone; lower contact marked by fault gouge
109	114.6	AND	mas	FA	P	GRN	ALTFR	SH	Fault gouge signifying alteration front of intense silica sericite alteration of andesite; alteration hosts significant alteration
114.6	116.5	AND	mcbx	CA	D	GRY	ALTFR	SH	Microbrecciated andesite with stockwork clay altered fractures hosting significant Py and Po, 3% Sulfide
116.5	122.5	AND	mas	FA	P	GRN	FLT	SH	Intense Silica Sericite alteration wiping out andesite textures
122.5	124.5	AND	fltgge	LAP	D	GRY	FLT	SH	Fault gouge and breccia separating Silica Sericite alteration from Andesite
124.5	127.5	AND	mcbx	LAP	D	GRY	DEP	GR10	Microbrecciated andesite with localized purple alteration infilling intersitices between lapilli coarse ash sized fragments
127.5	133	AND	por	LAP	D	GRY	DEP	GR10	Plag-phyric andesite with crystals altering to sericite chlorite; crystals are subhedral and makeup between 5-10% of the groundmass
133	137.5	AND	amg	LAP	D	GRY	DEP	GR30	Spherulitic amygdoloidal fragmental andesite hosted in altered matrix of purple albie?
137.5	161	AND	amg	LAP	D	PUR	DEP	GR30	Weakly amgydoloidal and cxt rich andesitic fragmental
161	166.5	AND	por	LAP	D	PUR	DEP	GR10	Plag-phyric andesite with crystals altering to sericite chlorite; crystals are subhedral and makeup between 5-10% of the groundmass
166.5	169.8	AND	amg	LAP	D	PUR	DEP	SH	15% Amygdules from 168.70-169.80m near lower contact; amygdules in this zone strongly replaced by sphalerite
169.8	174	AND	volc	LAP	D	PUR	DEP	SH	Andesitic fragmental with purple grey cement and volcaniclastic texture, autobreccia?

Blackwater Project
Drill Summary - Lithology

BW0374

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
174	178.8	AND	amg	LAP	D	PUR	DEP	GR10	Amygdular andesite, massive, some plag crystals
178.8	181.9	AND	volc	LAP	D	PUR	DEP	GR10	Andesitic fragmental with purple grey cement and volcaniclastic texture, autobreccia?
181.9	186	AND	por	LAP	D	PUR	DEP	GR10	Plag-phyric andesite with crystals altering to sericite chlorite; crystals are subhedral and makeup between 5-10% of the groundmass
186	188	AND	volc	LAP	D	PUR	DEP	GR10	Andesitic fragmental with purple grey cement and volcaniclastic texture, autobreccia?
188	196.3	AND	amg	LAP	D	PUR	DEP	GR10	Amygdular andesite, massive, some plag crystals
196.3	198.3	AND	volc	LAP	D	PUR	DEP	GR10	Andesitic fragmental with purple grey cement and volcaniclastic texture, autobreccia?
198.3	202.9	AND	por	LAP	D	PUR	DEP	SH	Plag-phyric andesite with crystals altering to sericite chlorite; crystals are subhedral and makeup between 5-10% of the groundmass
202.9	207	AND	volc	LAP	D	PUR	DEP	GR30	Andesitic fragmental with purple grey cement and volcaniclastic texture, autobreccia?
207	213.3	AND	amg	LAP	D	PUR	DEP	GR30	Mixed amygdular, volcaniclastic , crystal rich andesite
213.3	238	AND	amg	LAP	D	PUR	DEP	GR30	Amygdular crystal rich andesite
238	255	AND	bx	LAP	D	GRY	DEP	GR30	less amygdules than upper unit.
255	271.1	AND	mas	LAP	D	GRY	DEP	GR30	massive with zones of crystal rich andesite, rare amygdules
271.1	272.5	AND	amg	LAP	D	GRY	DEP	GR30	large, well formed amygdules, very round, crystal rich, hornblende laths
272.5	288	AND	bx	LAP	D	GRY	DEP	GR10	well fractured, brecciated zones, abundant calcite veining
288	307	AND	bx	LAP	D	GRY	DEP	GR30	short zones of crystal rich andesite, some places appearing massive.
307	315.5	AND	bx	LAP	D	BR	FLT	GR30	as above, but very brecciated, messy, with places of lots of grounmass. minor gouged fractures
315.5	316.5	AND	fltgge	LAP	D	BR	FLT	SH	soft gouge, brownish green, movement orientations clearly seen
316.5	322	AND	bx	LAP	D	BR	ALTFR	GR10	broken, rubbly core, highly brecciated and gougey fracturing. Non-amygdular
322	327	AND	autbx	LAP	D	GRN	DEP	GR30+	bleached andesite, pale green-grey color
327	333.3	VC	bx	LAP	M	GRY	DEP	GR30+	low confidence level of contact, contact may occur earlier. Primary textures obscurred by alteration. 90 % mafic, andesitic VC.
333.3	337.1	VC	fltbx	LAP	D	GRY	DEP	GR30+	fault zone, some gouge. litho as above

Blackwater Project
Drill Summary - Lithology

BW0374

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
337.1	350.3	VC	bx	LAP	M	GRY	ALTFR	GR30	ground mass and clasts very altered, textures difficult to distinguish. mafic rich, andesitic, brecciation with zones of microbrecciation.
350.3	372.1	VC	t	LAP	L	GRY	FLT	GR10	extremely silicified rock, very difficult to distinguish litho. Has the appearance of FLPT or FT, but brief zones of predominantly ser alteration indicate mafic. microbrecciated zones. Clasts completely obscured where sil alt'n is most intense
372.1	391.3	SED	aph		D	GRY	DEP	GR5	movement on upper fault contact evidenced by shearing. litho is very dark mudstone, massive unit. Zones if tiny "speckled" texturing. abundant albite veining and fracturing
391.3	398.5	SED	strat		D	BLK	UNKN		bedding visible at beginning of interval. mineralization appears to be somewhat following bedding. similar unit to above. very dark

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0374		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
58	59.2	O		0	INFILL	4	PERV	1		2	LIM	FC	4				
59.2	63	T	CLST	1	MTRX	1	PERV	1	CLST	1	LIM	FR	3	HM	FC	3	
63	65.5	T	CLST	1	INFILL	4	CLST	1	FC	2	LIM	FR	3	HM		2	Oxidized gouge fault breccia zone
65.5	70.5	T		0	CLST	1	PERV	2	CLST	1	BIOT	CLST	3	HM	FR	2	
70.5	81.3	T	REP	1	REP	1	PERV	2	REP	1	BIOT	PERV	3	HM	FC	2	Sericite clorite clay alteration of crystal fragments in moderately biotite altered Andesite with weak fracture controlled hematite
81.3	82.5	T	CLST	1	FR	2	PERV	3	CLST	1	BIOT	PERV	3	HM		1	Alteration induced breccia marked by fault gouge contact
82.5	97	T	FC	1	CLST	1	PERV	1		0	BIOT	PERV	3	HM	FC	1	
97	108	S	FC	2	FC	2	PERV	2	CLST	1	BIOT	PERV	4	ANK	FC	3	Ankerite-Chlorite fracture fill with local moderate clay alteration
108	109	S	FC	2	FC	3	PERV	2	CLST	1							Fracture controlled clay alteration terminating in clay gouge at the contact of alteration front
109	114.6	S	FR	2	FR	1	PERV	5	PERV	2							
114.6	116.5	S	FR	2	FC	2	PERV	4		0	BIOT	PERV	4				
116.5	122.5	S	PERV	2	FR	1	PERV	5	PERV	2							
122.5	124.5	S	CLST	1	INFILL	4	CLST	1		0							
124.5	127.5	S	MTRX	1		0	PERV	4	CLST	1	BIOT	PERV	4				Weak plag altering to sericite chlorite
127.5	133	S	CLST	1		0	PERV	4	CLST	2	BIOT	PERV	4				Moderate plag altering to sericite
133	142	S	PERV	2		0	PERV	4	CLST	1	BIOT	PERV	5				Weak chlorite sericite alteration associated with amygdules; Intense Biotite alteration
142	161	S	FR	2	FR	1	PERV	4	CLST	1	BIOT	PERV	4	ANK	FC	3	Ankerite-Chlorite fracture fill with local moderate clay alteration
161	169.8	S	CLST	1		0	PERV	4	CLST	2	BIOT	PERV	5				Crystals and amygdules weakly altering to sericite
169.8	174	S	MTRX	2		0	PERV	4	CLST	1	BIOT	PERV	4	ALB		2	Albite cement within intersitices of andesite fragments
174	178.8	S	CLST	1		0	PERV	4	CLST	1	BIOT	PERV	4	CLIN	FR	1	Fracture filling silica rich vein with clinozoisite? epidote?
178.8	186	S	CLST	2		0	PERV	4	CLST	2	BIOT	PERV	4	CAL	FR	1	Weak calcite fracture fill
186	188	S	MTRX	3		0	PERV	4	MTRX	2	BIOT	MTRX	3				
188	196.3	S	CLST	2		0	PERV	4	CLST	2	BIOT	PERV	4				

Blackwater Project
Drill Summary - Alteration

BW0374		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
196.3	198.3	S	FR	2		0	PERV	4	CLST	1	BIOT	PERV	3	ALB	MTRX	1	
198.3	202.9	S	CLST	2		0	PERV	4	CLST	2	BIOT	PERV	4	CHL	FR	1	
202.9	207	S	MTRX	2		0	PERV	4		0	BIOT	CLST	3	ALB	MTRX	2	
207	227.5	S	FR	2	FR	1	PERV	4	CLST	2	BIOT	PERV	4	CAL	FC	2	
227.5	237	S	FR	1		0	PERV	2	CLST	1	BIOT	PERV	3	CAL	FC	2	
237	240.4	S	FR	1		0	PERV	3	CLST	2	BIOT	PATC	3	CAL	FC	1	
240.4	242.7	S	FR	1	FR	2	PERV	2	CLST	1	BIOT	PERV	3	CAL	FC	2	gouge zone with clay, some calcite, sericite
242.7	245.7	S	FR	1		0	CLST	2	CLST	1	BIOT	PERV	3	CAL	FC	2	crystals altering to sil-sericite
245.7	265	S	FC	1	FR	1	CLST	1	CLST	2	BIOT	PERV	3	CAL	FC	3	zones of increased fracturing with significant calcite-ank alt'n.
265	280	S	FC	1	FR	1	PERV	2	CLST	2	BIOT	PERV	3	CAL	FC	2	
280	292	S		0		0	PERV	2	CLST	2	BIOT	PERV	4	CAL	FC	2	
292	307	S		0	FR	1	PERV	3	PERV	2	BIOT	PERV	4	CAL	FC	2	lots of biotite alt'n, ser-sil alteration fairly strong
307	317.5	S	CLST	2	FC	3	OP	1	CLST	2	BIOT	PERV	4	CAL	FC	2	fracture gouging, infilling chl and clay, ser. clasts of chl, calc-ank on fracture planes an infilling. weak sil
317.5	322	S	CLST	1	FC	2	OP	1	CLST	1	BIOT	PERV	4	CAL	FC	1	pervasive biotite prevalent. clay around gouged fractres, chl clasts
322	327	S	PERV	3	FC	1	PERV	4	PERV	2	BIOT	PERV	1	CAL	FC	2	bleached zone, with strong pervasive sil-chl alt'n. hard rock, light grey-green colour.
327	333	S	CLST	1	FR	1	PERV	3	PERV	2	BIOT	PERV	1	CAL	FC	1	
333	338	S	FC	1	FC	3	PERV	3	PERV	3	CAL	FR	1				fault gouge zone, significant clay alt'n within
338	350.7	S	FR	1	FC	1	PERV	3	PERV	4							fairly intense sericite, with increasing sil alt'n
350.7	372	S	FR	1	FR	1	PERV	5	PERV	4							rapid increase in sil alt'n; sil-ser alteration very intense, rock hard and glossy, obscuring primary textures
372	389.5	S	PERV	2	FC	1	PATC	1	PERV	2	CAL	FR	1				sudden change in alt'n styles, very little sil alt'n compared to above, some pervasive chl, ser alt'n in a "speckling" style

Blackwater Project
Drill Summary - Mineralization

BW0374		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
58	59.2		0		0		0	Hm	FP	5							
59.2	63		0		0		0	Hm	FP	2	Goe	FP	1				
63	65.5		0		0		0	Hm	FP	3	Goe	FP	1				
65.5	70.5		0		0		0	Hm	FP	2	Goe	FP	1				
70.5	81.3		0		0		0	Hm	FP	1	Goe	FP	0.5				
81.3	82.5		0		0		1	Hm	FP	0.5	Goe	FP	0.1				
82.5	85.3	FP	0.5		0		0	Hm	FP	0.5							
85.3	86.5		0.1	BB	0.5	BB	0.5	Grnt	BB	0.5	Hm	FP	0.5				Garnet SP, Po, blebs occuring in altered haloes
86.5	97	FP	0.5	SP	0.1	SP	0.5	Hm	FP	0.5	Goe	FP	0.5				
97	108	FP	0.5		0	FP	0.5										
108	109	FP	2		0		0										
109	114.6	FP	1.5		0	SP	1	Ga	VN	0.5							
114.6	116.5	SP	4	SP	2	SP	4										
116.5	122.5	SP	0.5	SP	0.5	SP	0.1										
122.5	124.5	BB	1		0		0										
124.5	127.5	FP	1	BB	1	BB	0.5										
127.5	133	BB	0.5	SP	0.1	BB	1	Cp	SP	0.1							
133	142	CR	0.1	CR	0.1	BB	0.5										
142	150	SP	0.1		0		1.5										
150	161		0	CR	0.1	BB	0.5										
161	166.5		0		0	FP	0.1										
166.5	168.7		0	CR	0.1	BB	0.5										
168.7	169.8		0	CR	1	BB	0.1										
169.8	174	SP	0.1		0		0	Cp	SP	0.1							
174	178.2		0		0	CR	0.5										
178.2	181.9		0		0	SP	0.1										
181.9	186	FP	0.5		0	CR	1										

Blackwater Project
Drill Summary - Mineralization

BW0374		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
186	188	BB	0.1		0	BB	0.5										
188	196.3	CR	0.1	CR	0.1	CR	3	Apy	CR	0.1							
196.3	198.3	CR	0.1		0	CR	0.5										
198.3	202.9	CR	0.1		0	BB	0.1										
202.9	207	FP	0.5		0	FP	0.1										
207	213.3		0	CR	0.5	BB	0.5										
213.3	224	FP	0.1		0	BB	0.5										
224	232	CR	0.1		0	BB	0.5										
232	238	VN	0.1		0	BB	1										hairline vnlts of py, po blebs and replacing amygdules
238	250	FP	0.5		0	BB	1	Cp	VN	0.5							local zones of 2-3 % po. cpy in blebby vnlts towards end of interval
250	255	VN	0.5	DI	0.1	BB	0.5	Apy	SP	0.1							infrequent amygdules completely replaced with Po
255	262	BB	0.5	DI	0.1	BB	0.5	Cp	VN	0.5							spotty mineralization. cpy in rare vnlt
262	268	SP	0.1		0	BB	0.5	Apy	SP	0.1							po very silvery in colour
268	278	SP	0.1	BB	0.5	BB	0.5	Ga	BB	0.1							amygdules occaisionally replaced with po-py-sph-ga.
278	286	VN	0.5	DI	0.1	BB	0.1	Cp	VN	0.5							maybe higher grade cpy locally, some fairly good grade veinlets bearking cpy-py.
286	289	VN	1	DI	0.1	BB	0.1	Cp	VN	0.5							veins and gougey opened fractures with good grade py and cpy.
289	297	DI	0.5	DI	0.1	BB	0.5	Cp	VN	0.1	Apy	DI	0.1				veinlets not as high grade in sulphides as above, more disseminated mineralization however
297	307	VN	0.5	DI	0.1	BB	0.5	Cp	VN	0.1	Apy	DI	0.1				aspy fine grained in diss, as well as some larger blebs
307	315	VN	0.5	DI	0.1	BB	0.1	Cp	VN	0.1	Grnt	BB	0.1				possible garnets in brown patches?.
315	322	VN	0.5	DI	0.5	BB	0.1	Cp	VN	0.5	Grnt	BB	0.1				fairly frequent veinlets with py-cpy.
322	327	VN	1	DI	0.5	BB	0.1	Cp	VN	0.5	Apy	DI	0.5				bleached andesite zone brings more mineralization, including very fine grained aspy disseminated
327	337	VN	1	DI	0.5	BB	0.1	Cp	VN	0.1							frequent calcite veinlets bearing fair grade py.
337	343	VN	1	DI	0.5	BB	1										veined py and large low grade blebs of po most prevalent

Blackwater Project
Drill Summary - Mineralization

BW0374		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
343	350	VN	1	DI	1	BB	1										increase in sulphides, especially disseminate po and sp.
350	360	BB	0.5	DI	0.5	BB	1	Cp	SP	0.1							silica alt'n brings mineralization more in bleb style, not as much disseminated
360	368	VN	1	BB	1	BB	0.5	Cp	SP	0.1							small blebs of sph, maybe preferentailly replacing crystals. occaisional veinlet cluster with good py
368	377.5	VN	1	DI	0.1	VN	3	Mrc	FP	0.1							mineralization nearly strictly in veining, large 1cm veins with massive Po. smaller mm scale py vnlts
377.5	385	VN	1	DI	0.1	VN	2										one spot where Po is also disseminated, very fine grained
385	398.5	VN	0.1	DI	0.5	BB	1										patches of diss sph. hairline py, po small blebs

Blackwater Project
Drill Summary - Structure

BW0374

From (m)	To (m)	Structure	Strength	Comments
58	63	JZ	4	Strongly fractured Andesite post overburden
63	65.5	FL	4	Fault gouge breccia zone
65.5	70.5	JZ	3	Strongly fractured andesite with hematite and limonite on fracture planes
70.5	81.3	JZ	1	
81.3	81.5	FL	5	
81.5	82.5	FZ	2	Healed alteration breccia zone induced by fault
82.5	83.5	JZ	2	
83.5	83.75	FL	4	Fault breccia and gouge
83.75	100	JZ	3	
100	103	JZ	4	
103	109	FZ	3	
109	109.2	FL	5	
109.2	114.6	JZ	3	
114.6	122.5	BRKZ	4	Intensely fractured Silica Sericite altered Andesite with weak clay on fracture surfaces
122.5	124.5	FL	5	Intense fault gouge and breccia
124.5	142	JZ	2	
142	150	BRKZ	3	Moderate ankerite chlorite fracture fill breaking up rock with seams near parallel to core axis
150	205	JZ	2	Weakly fractured Andesite
205	211	JZ	2	
211	218	JZ	2	
218	224	BRKZ	3	Strongly fractured with ankerite-calcite filled fractures
224	232.5	BRKZ	4	as above, with slight increase fracture frequency
232.5	240.4	JZ	3	minor joint set at around 20 degrees to CA. competant uni
240.4	242.8	FZ	4	gouge zone with unclear contacts, but roughly 35 degrees TCA
242.8	248.8	BRKZ	3	very broken up core, residual from fault above. dominant angle at 50
248.8	256	BRKZ	2	inconsistantly broken, with some runs of intact core. fractures are messy, various orientations
256	262	JZ	4	dominant joint set at approx 55 degreesTCA
262	274	BRKZ	1	higher frequency of fractures than above. blocky. dominant set at 55-60 degreesTCA

Blackwater Project
Drill Summary - Structure

BW0374

From (m)	To (m)	Structure	Strength	Comments
274	277.9	BRKZ	5	rubbly, minor gougey fractuing
277.9	290.5	BRKZ	1	blocky core, frequent fractures at high angles to CA, 70 and higher.
290.5	295	BRKZ	2	as above, but slightly more frequent fracturing
295	306	BRKZ	1	blocky, as above
306	315.5	FZ	1	many fractues with well healed gouge. no signs of movement in this zone, but enough gouge to call it a fault zone
315.5	316.5	FL	3	soft gouge, clear movement orientations at 35 degrees to CA
316.5	322	BRKZ	4	rubbly broken core, splay of upper fault
322	334	BRKZ	3	well broken core, with zones of shardy fragments, as well as rubble. mostly blocky well fractured rock
334	337	FZ	2	chewed up core, gouged, poorly healed, but low intensity faulting
337	349	BRKZ	2	frequent planar fractures at 30 TCA. brief zones of more intense fracturing
349	353.9	BRKZ	4	fairly rubbly, rock seems brittle
353.9	362	BRKZ	2	minor fracture set at 60 degrees TCA
362	374.5	BRKZ	4	brittle rock, shardy rubble
374.5	376	BRKZ	5	short zone of rubble, shardy
376	385.3	BRKZ	3	clean, planar fracture set at 60 degrees
385.3	387.3	BRKZ	5	some planar fractureing at 70 degrees, may not be the dominant set. various orientaitons
387.3	391	BRKZ	3	several fractures at 25 degrees TCA
391	398.5	BRKZ	4	minor fracture set at 35. clean fractures, very frequent. core well broken up, shardy

Blackwater Project
Drill Logs

Hole ID:	BW0375	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375051.91
Depth (m):	450	Date Started:	06/03/2012	Casing Size:	HWT	Northing:	5893199.75
Azimuth:	0	Date Completed:	16/03/2012	Casing (m):	3	Elevation (m):	1563
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	90.4	-89.7
103	100.1	-89.7
157	86.6	-89.5
205	90.5	-89.7
256	106.5	-89.6
310	87.4	-89.6
350	283	-89.7
433	208.3	-89.7

Blackwater Project
Drill Summary - Lithology

BW0375

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	24.6	FLPT	lptbx	LAP	M	GRY	DEP	GR30	Greyish green orange felsic lapilli tuff breccia with sub angular to sub rounded clasts, local breccia/crackle textures with the majority of clasts being laminated, small 0.5m uninterrupted banded sequence
24.6	44.5	VC	lpt	LAP	M	GRY	DEP	GR10	Strongly chlorite altered volcanoclastic? has some small more ronuded clasts and some more sub angular shards, garnet relacement and strong sil/ser/chl alteration
44.5	53.1	FLPT	lptbx	LAP	M	GRY	FLT	SH	Felsic lapilli tuff breccia bearing garnets, with locally convoluted laminations and crackle breccia texture
53.1	64	VC	lpt	LAP	M	GRY	DEP	GR30+	Strongly altered polymicitc volcanoclastics? hard to tell what the protolith is because of strong silica/sercite/chlorite alteration. Clasts are altered differently and sometimes have clay haloes with sulphides.
64	77.5	FLPT	lptbx	LAP	M	GRY			Grey orange felsic lapilli tuff breccia with local laminated intervals 20-30cm, garnet bearing with some pitted texture
77.5	154	FLPT	lptbx	LAP	M	GRY			Continued transition zone jumbled crackle felsic lapilli tuff breccia with locally uniterupted laminations, clasts can be 6-8cm wide but the majority of them are <2cm. Abundant garnet
154	199	FLPT	t	BLOCK	M	GRY			Felsic lapilli tuff breccia moves into sulphide zone at 154.2m. Locally block sized laminated clasts.
199	233.5	FLPT	t	LAP	M	GRY			Felsic lapilli tuff with closely packed clasts silica/chlorite altered matrix and laminated jumbled clasts
233.5	284	FLPT	lam	LAP	M	GRY			Felsic lapilli tuff with local hydrobreccia texture, pervasive silica, weak garnets and laminated clasts. Matrix obscured by alteration. local microbreccia texture and jigsaw clasts
284	302	FLPT	lam	LAP	M	GRY	DEP	GR10	Felsic lapilli tuff with strong silica alteration, laminated and convoluted chaotic clasts, injection textures of silica.
302	316.5	FLPT	equi	LAP	M	GRY			Felsic tuff that is well sorted pebbly and closely packed. clasts are sub-angular to sub-rounded with silica/sericite altered matrix
316.5	336.8	FT	lam	CA	M	GRY			Laminated felsic tuff with local silica injection textures, obscured primary texture.
336.8	368.5	FLPT	lpt	LAP	MO	GRY			Felsic lapilli tuff? super strongly altered with silica/sericite locally causes alteration banding weak residual tuffaceous texture, possibly obscured volcanoclastic
368.5	374.8	FLPT	ch	CA	MO	GRY			Strongly altered felsic lapilli tuff weakly brecciated glassy chert like with locally mottled banding texture

Blackwater Project
Drill Summary - Lithology

BW0375

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
374.8	409	FT	ch	CA	M	GRY			Cherty glassy banded felsic tuff strongly silica altered with little to no observable primary texture
409	450	FT	ch	CA	M	GRY			As above. Cherty strongly altered FT? alteration obscures all primary texture, minor garnet alteration. some healed fractures and local hydrofracturing. Very broken toward end of hole. Poor recovery

Blackwater Project
Drill Summary - Alteration

BW0375		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	24.5	O	PATC	1	CLST	3	PERV	3	OP	3	GRNT	CLST	2	LIM	FR	3	Silica/serciite overprint, white clay alteration of clasts, hematite and limonite on fracture planes and locally pervasive
24.5	77	T	PATC	3	CLST	2	PERV	3	OP	3	GRNT	CLST	2	LIM	FR	2	Similar to above with locally increased chlorite
77	123	T	PATC	2	CLST	2	PERV	3	OP	3	GRNT	CLST	4	LIM	FR	3	Silica/sericite overprint, abundant garnet replacing clasts, minor chlorite and continude oxidation minerals.
123	128	T	PATC	2	SPHL	2	PERV	3	OP	3	GRNT	CLST	2	LIM	FR	1	Similar to above with decrease in oxidation minerals
128	145	T	PATC	1	SPHL	2	PERV	3	OP	3	GRNT	CLST	2	LIM	FR	2	as above decreased garnet
145	154.2	T	PATC	2	INFILL	1	PERV	3	OP	2	GRNT	CLST	2	LIM	FR	1	End of transition zone, oxide minerals slowly dissapating
154.2	169	S	PATC	2	INFILL	1	PERV	3	OP	1	GRNT	CLST	2				Sulphide zone, garnets locally elongated and aligned with laminations, caly alteration as small white specks and associated with local breccia intervals. 155.7-156.8m locally increased chlorite/silica alteration
169	199	S	PATC	2		0	PERV	4	OP	1	GRNT	CLST	1				Similar to above but more silicified less observed texture within blocky broken fault zone
199	217	S	FR	2	INFILL	1	PERV	4	OP	1	GRNT	CLST	2				Strong silica alteration with sercite? hard to tell because of silica obscuring core, chlorite on fractures and some garnet
217	233.5	S	FR	1	INFILL	1	PERV	4		0							Intensifying silica, slight chlorite on fractures, garnet has dropped out, weak specks of white clay
233.5	262	S	FR	1	INFILL	1	PERV	5		0	GRNT	REP	2				Pervasive silica alteration with local injection textures obscuring texture, minor garnet replacement and specks of white clay alteration.
262	277	S	FR	3		0	PERV	4	MTRX	1	GRNT	REP	2				Continued storng silica alteration but primary textures are slighlty more visible. May be some sericite but hard to determine because of strong silica
277	302	S	FR	1		0	PERV	4	MTRX	2	GRNT	REP	2				Strong silica/sericite with sericite more apparent in the matrix, local garnets and weak chlorite on fracture planes
302	316.5	S	FR	1		0	PERV	4	MTRX	2	GRNT	REP	1				As above with fewer intances of garnet replacement
316.5	368.5	S	FR	2		0	PERV	5	MTRX	2	GRNT	REP	2				Strong silica creating local banding texture obscuring all primary texture, patchy sericite. Silica locally very intense washing out sulphides.

Blackwater Project
Drill Summary - Alteration

BW0375		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
368.5	409	S	FR	1		0	PERV	5	PATC	2	GRNT	REP	1				Intense silica alteration creating weak banding texture pathcy green sericite alteration overprinted by silica, trace chlorite on fractures. locally weakly hydrofractured. Hairline chlorite veins have small silica alteration selvedge around them.
409	450	S	FR	2		0	PERV	5	PATC	2	GRNT	REP	1				Similar to above pervasive silica with pathchy sericite overprinted by silica, chlorite locally more intense along fracture planes, minor garnet replacement as blebbs no evidence that it is replacing clasts

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Blackwater Project
Drill Summary - Mineralization

BW0375		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	24.5		0		0		0	Jaro	FP	5	Hm	FP	3	Goe	FP	2	Oxide minerals no visible sulphides
24.5	38.19	DI	1	DI	0.5		0	Jaro	FP	3	Hm	FP	3	Goe	FP	1	Pyrite intergrown with garnet and as small dissmeinations, dull sphalerite in small blebbs
38.19	56.03	DI	1	DI	0.5	SP	0.1	Jaro	FP	3	Hm	FP	3	Goe	FP	3	Slight increase in oxide minerals associated with more faulted rock
56.03	74.67	DI	0.5	DI	0.5	SP	0.1	Dbs	DEN	0.5	Jaro	FP	2	Hm	FP	1	Similar to above with DBS
74.67	93.18	SP	0.1	SP	0.1		0	Grnt	CR	3	Goe	FP	2	Jaro	FP	2	Mostly leached sulphide sites with some specks of pyrite, garnet ~3% replacing clasts
93.18	112	SP	0.1	SP	0.1		0	Dbs	DEN	0.1	Grnt	CR	5				abundant garnets and localized flowery DBS disseminations
112	130.7	BB	0.5	BB	0.1	BB	0.1	Dbs	DEN	0.1	Goe	FP	2	Jaro	FP	1.5	Sulphides centering clay alteration haloes
130.7	145	BB	0.5	BB	0.1	BB	0.1	Dbs	DEN	0.1	Goe	FP	1	Jaro	FP	1.5	Similar to above with sulphides centering clay alteration haloes
145	154.2	SP	0.1		0	BB	0.5	Grnt	CR	2							Minor pyrrhotite centering alteration haloes in distinct square shaped masses with pyrite, continued garnet replacing clasts
154.2	169	DI	0.5	DI	0.1	EU	0.5	Grnt	CR	2							Euhedral square shaped pyrrhotite masses with pyrite and trace sphalerite, garnets still abundant but sometimes lobate elongated and aligning with laminations
169	199	SP	0.1	SP	0.1	SP	0.1	Dbs	DEN	0.5	Grnt	BB	0.5				Intensely altered fault with some visible specks of sulphides
199	217	SP	0.1	SP	0.1	SP	0.1	Grnt	CR	0.5							trace sulphides as specks, minor garnet
217	233.5	SP	0.1	SP	0.1	SP	0.1	Dbs	DEN	0.5							Still trace sulphides no visible garnet, increases DBS
233.5	246.2	DI	0.5	DI	0.1	DI	1	Dbs	DI	0.5	Ga	BB	0.1	Grnt	CG	2	disseminated pyrite and square shaped pyrrhotite disseminations with trace galena forming rims around pyrrhotite
246.2	264.9	DI	0.5		0	BB	1	Dbs	DEN	0.5	Grnt	CR	2				Disseminated blebbs of pyrite and pyrrhotite, minor garnet and Dbs
264.9	277	DI	1		0	BB	1	Grnt	CR	2							Disseminated pyrite and pyrrhotite with garnet
277	284	FP	0.5		0		0	Grnt	CR	1							Fine grained pyrite in fault zone with some garnet

Blackwater Project
Drill Summary - Mineralization

BW0375		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
284	302	DI	0.5	DI	0.1	DI	0.5	Dbs	VN	0.1	Grnt	CR	2	Cp	DI	0.1	Disseminated sulphides, pyrrhotite with some chalcopyrite intergrown, spotty ragged garnets with some sulphides intergrown. DBS in one localized veinlet
302	316.5	DI	0.5		0	BB	0.5	Grnt	CR	1.5	Apy	VN	0.1	Py	VN	0.1	Weakly disseminated sulphides and garnets replacing clasts, local arseno/pyrite veinlet
316.5	332	BB	1	SP	0.1	BB	0.5	Dbs	DEN	0.1	Grnt	CR	1				Blebby disseminations of pyrite and pyrrhotite, specks of dbs and minor amounts of garnet replacing clasts
332	352	BB	0.5		0	BB	0.5	Apy	SP	0.1	Grnt	CR	1.5	Dbs	DEN	0.1	Pyrite/pyrrhotite disseminated blebbs, garnet replacing clasts locally with some specks of intergrown aresnopyrite
352	368	DI	0.1		0	BB	2	Cp	BB	0.1	Dbs	DEN	0.1	Grnt	CR	2	Pyrrhotite as square shaped replacement of pyrite with frequently intergrown chalcopyrite. other sulphides as above
368	380.5	DI	1.5	DI	0.1	DI	0.5	Dbs	DEN	0.1	Grnt	BB	0.5				Finely grained disseminated py/po weak dbs with sp and blebbs of garnets often with intergrown sulphides
380.5	399.5	DI	1.5	DI	0.1	DI	0.5	Dbs	DEN	0.1	Grnt	BB	0.5				As above
399.5	409	DI	0.5	DI	0.1	DI	0.5	Grnt	DI	0.5							Slight decrease in sulphides
409	431	DI	0.1	DI	0.1	DI	0.5	Cp	DI	0.1	Grnt	BB	0.5				Decrease in sulphides, still have intergrown garnet and sulphides mostly pyrrhotite with chalcopyrite and some py/sp
431	437	DI	0.1	DI	0.1	DI	0.5	Cp		0.1	Grnt	BB	0.5				As above with slightly more sparse disseminations
437	450	DI	0.1	DI	0.1	DI	0.3	Grnt	BB	0.5							decrease in sulphides

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Blackwater Project
Drill Summary - Structure

BW0375

From (m)	To (m)	Structure	Strength	Comments
0	43.2	JZ	3	70 and 50 degree joint sets
43.2	44.3	FL	3	small fault with gouge
44.3	51.15	JZ	3	jointing sub planar to wavy at 50 degrees
51.15	53.1	FL	4	clay altered fault gouge
53.1	77	JZ	2	joint set at 70 and 40 dgrs
77	134.2	JZ	3	jointing at 60 degrees with subset at 30 degrees
134.2	136.3	FL	2	small fault with clay gouge and healed core
136.3	144.7	JZ	2	small joint set with complements at 30
144.7	170.5	JZ	3	weak jointing at 50, 70 and 30
170.5	178	BRKZ	5	rubble redrill and small pieces of intact core (hard on drill bits)
178	180.8	JZ	2	30 and 65 degree joints
180.8	199	BRKZ	5	strong broken zone with blocky fractured and redrilled core
199	202	JZ	2	intact core with weak jointing
202	212.5	BRKZ	3	broken core
212.5	213.3	FL	3	clay gouge finely milled not well mineralized
213.3	221.3	BRKZ	3	broken core with few intact pieces
221.3	277	JZ	4	jointing at 40, 50, 30 and 60 degrees tca
277	284	FL	3	weakly mineralized broken/fault zone with milled grains and fault gouge
284	294.9	JZ	2	weak jointing at 50 and 20 degrees
294.9	296.8	FL	2	small fault with local milled grained/weak gouge
296.8	310.4	JZ	2	wavy joint set at 60 dgrs
310.4	313.3	BRKZ	3	broken blocky core with some redrill
313.3	317	JZ	3	joint set at 15 and 50
317	329.5	JZ	3	jointing at 20 and 35 degrees
329.5	332.7	FL	3	shallow angle broken core and minor fault gouge
332.7	368	JZ	4	joint set at 50 and a more steeply dipping set at 20 degrees
368	374	JZ	3	steep angle jointing at 15 degrees and wavy shallow jointing at 40 degrees
374	374.9	FL	5	fault gouge with good measureable angle between competant and faulted core

Blackwater Project
Drill Summary - Structure

BW0375

From (m)	To (m)	Structure	Strength	Comments
374.9	379.5	BRKZ	2	weak broken zone
379.5	400	JZ	2	40 and 15 degree jointing, planar and frequent
400	412.8	BRKZ	2	broken core with no measureable planes, no milled grains
412.8	418	BRKZ	3	broken and rubbly core with some competant pieces
418	433	BRKZ	5	more strongly broken zone with no recovery from 419.5-422.5
433	443	JZ	3	smooth joints at 50
443	450	BRKZ	3	broken zone, possible fault

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Blackwater Project
Drill Logs

Hole ID:	BW0376	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375653.38
Depth (m):	431.9	Date Started:	06/03/2012	Casing Size:	HWT	Northing:	5892649.51
Azimuth:	0	Date Completed:	15/03/2012	Casing (m):	20	Elevation (m):	1624
Dip:	-90	Logged By:	MYo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	142	-89
45.72	141.3	-88.4
92.05	140.3	-88.8
137.8	150.4	-87.1
183.5	164.2	-88.5
229.2	157.1	-87.9
274.9	164.7	-87.8
320.0	155.1	-87.6
365.8	170.3	-87.5

Blackwater Project
Drill Summary - Lithology

BW0376

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	20.2	OB							
20.2	53	VC	lpt	LAP	L	GRY	FLT	SH	Predominately mafics with less then 5% felsic clasts. Moderately bleached. Ox on fractures.
53	86	AND	volc	LAP	D	GRY	DEP		Volcanoclastics. moderately jointed with intermittent faults
86	150	AND	bx	LAP	MO	GRY	FLT	SH	Matrix supported andesites with zones of bleached alteration. Occasional blocks of masssive andesites. Matrix is more altered then clasts.
150	156.2	FT	lam	FA	M	GRY	FLT	SH	Darker then typical ft but with laminations. fault bounded both up and down hole. mineralization follows laminations
156.2	157	AND	fltgge		M	GRN	FLT	SH	chlorite altered gouge.
157	203.9	AND	por	LAP	D	GRY	FLT	SH	Andesites alternating between Phaneritic with feldspar laths and brecciated lapilli rich zones.
203.9	220.2	AND	flw	LAP	D	GRY	DEP	GR30	Intensely silicifed flow. increased sulfides compared to surrounding sequences
220.2	234	AND	volc	LAP	D	GRY	FLT	GR30+	Massive and volcaniclastic andesites with frequent calcite veining. Core is softer then above sequence but cal may have broken down some silicification.
234	244	AND	volc	LAP	D	GRY	FLT	GR10	Matrix supported vocaniclastics with brecciated zones
244	281	VC	lpt	LAP	M	GRY	FLT	GR30+	approx 90% mafic. Mafic rich VC. Felsics are likely secondary silica
281	290.2	AND	mas		D	GRY	FLT	GR30+	Andesites with feldspar phenocrysts. Massive plag rich flow.
290.2	300.8	AND	mas		D	GRY	FLT	GR30	Massive andesite. Intermittent faults. weakly breccia crackled texture.
300.8	315	AND	mas		D	GRY	DEP	GR30	Massive andesites with small intermittent zones of porphyritic and.
315	333.5	AND	mas		D	GRY	DEP	GR30	Massive and porpheritic andesites. Significant calcite veining.
333.5	365	AND	volc	LAP	D	GRY	DEP	GR30+	Lapilli to CA sized andesite clasts. Mechanism: Depositional vs Brecciation?
365	417	AND	volc	LAP	D	GRY	FLT	GR10	lapilli rich volcaniclastics. Frequent calcite veinlets/stockwork. Patchy silicification.
417	431.9	AND	mas		D	GRY	UNKN		Massive andesites. equigranular very fine grained.

Blackwater Project
Drill Summary - Alteration

BW0376		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
20.2	53	T	PERV	1	CLST	2	PERV	1	PERV	1	HM	FC	3				
53	61.5	S	PERV	1		0	PERV	4	PERV	1							
61.5	92.5	S	PERV	2	FC	2	PERV	2	PERV	3							
92.5	97.7	S	PERV	2	CLST	1	PATC	4	OP	1	ALB	PATC	3				Sil and alb alteration is found primarily patchy in the matrix. These patches also have increased sulfides
97.7	144	S	FC	3		0	PATC	3	OP	1							Zones of gouge are more ser and chl altered
144	150.5	S	FC	2	FC	1	PERV	4	OP	1							weakly jointed zone with clay alt on fxs
150.5	156.2	S	FC	3	FC	1	PERV	2	OP	1							rubble zone with chlorite moderate to strong on fxs
156.2	160	S	PERV	4		0		0	PERV	2							Flt gouge moderately sericitized and chloritized
160	203.9	S	FC	3	FR	1	PERV	2	OP	1							Weakly altered interval
203.9	220.2	S	FR	1	FR	1	PERV	5	OP	1							intensely silicified with significant sil infilling
220.2	234	S	FC	1	FR	1	PERV	3	OP	1							possibly minor carbonate alteration?
234	278	S	FC	1	FR	1	PERV	3	OP	1							patches with a bleached matrix. weakly altered
278	284	S	FC	2	FR	1	PERV	4	OP	1							
284	300.8	S	FC	2	FR	1	PERV	2	OP	1							weakly altered. Sil alteration could possibly be weak alb alteration
300.8	315	S	FR	1	FR	1	PERV	2	OP	1	ALB	PATC	3				Albite patchy. silification is difficult to desipher from sil.
315	346	S	FR	1	VNHL	2	PERV	2	OP	1	ALB	PERV	2				pinkish beige alteration halos around calcite veins
346	365	S	FR	1	FR	1	PERV	2	OP	1	ALB	PERV	2				Calcite veining and associated bleached clay alt not present as above
365	414	S	FR	1	VNHL	2	PERV	4	OP	1	ALB	PATC	2				Clay alteration ins pinkish beige, soft, and local to calcite veining. Silicification varies from moderate to strong in patches.
417	431.9	S	FR	1		0	PERV	2	OP	1							

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Blackwater Project
Drill Summary - Mineralization

BW0376		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
20.2	36	FP	0.5	DI	0.1		0										
36	53	DI	0.1	DI	0.5		0										
53	69	DI	0.1	CR	1.5		0										
69	84	DI	0.1	BB	0.5		0										very weakly mineralized
84	98.8	DI	0.5	BB	1	BB	2										Increased silicification associated with increased mineralization
98.8	114	DI	0.5	CR	1	CR	1.5	Cp	VN	0.1							predominately Sp and Po found as clast replacements. 1 Cp veinlet approx 2mm thick
114	149.8	VN	0.1	BB	0.5		0										Py found as broken veins in gouge.
149.8	156.2	FP	0.5	BB	2		0	Ga	VN	0.5	Dbs		0.5				Sp-Py-Ga are vein controlled and apparently originate in the same fluid.
156.2	160		0		0		0										Flt gouge no visible mineralization
160	183	FP	0.1		0	BB	0.5										Po found in isolated patches of blebs
183	194	FP	0.1		0	BB	0.5	Ga	VN	0.1							Same as above
194	198	FP	4		0	BB	0.5										Significant increase of Py in fractures and milled in gouge
198	203.9	FP	0.1		0	BB	0.1										
203.9	220.2	BB	0.5	BB	2	BB	3	Ga	VN	0.5							Sulfides associated with intense silicification. Qtz-sulfide amygdules found throughout interval
220.2	234	DI	0.1	DI	0.1		0										
234	245	VN	1	BB	2		0										Remanant py veins gouged in flts
245	264	VN	0.5	BB	1	BB	0.1	Ga	BB	0.1							Sulfides are found in inconsistant concentrations. varying from sample to sample
264	276	VN	0.5	BB	0.5	BB	0.1										inconsistant from sample to sample
276	277	VN	5	VN	2	VN	1										high grade sample
277	287.2	VN	1	BB	1		3										fracture controlled mineralization with Po also found replacing clasts
287.2	300.8	VN	1	BB	0.5		0										
300.8	315	VN	0.5	BB	0.1		0										Py found in Cal-qtz-py veinlets

Blackwater Project
Drill Summary - Mineralization

BW0376		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
315	332	VN	0.5		0		0										Py vein controlled and as fine grained disseminations
332	360	VN	0.1		0		0										approx 1 py veinlet per 5m
360	366	VN	0.5		0		0										fine grained py found as amygdules
366	378	DI	0.5	BB	0.1		0										Nearly barren interval
378	387.5	DI	0.1		0		0										
387.5	401	DI	0.1	BB	0.5		0										Sulfides found as small amygdules
401	403	VN	1	VN	2		0	Cp	VN	0.5	Ga	VN	1				mineralization veined in flt gouge
403	404	DI	0.5	DI	0.5	BB	0.5	Cp	VN	1							qtz-cpy vein running down core axis
404	418	VN	0.5	DI	0.5		1	Dbs		0.5							Predominantly Po blebs and fracture controlled Py. Significant sulfides within calcite vein at 416.60
418	431.9	DI	0.1		0		0										sulfides drop significantly

Blackwater Project
Drill Summary - Structure

BW0376

From (m)	To (m)	Structure	Strength	Comments
20.2	44	JZ	3	occasional faults
44	46.84	FL	3	
46.84	53	FZ	1	jointed with occasional flts
53	62.5	JZ	3	
62.5	72.2	FZ	3	
72.2	79.2	JZ	2	
79.2	82.7	FZ	4	
82.7	114	JZ	3	Multiple joint sets, occasional small broken zones and minor flts
114	118	FZ	4	
118	122.6	JZ	3	Multiple joint sets.
122.6	144	FZ	4	significant gouge. minor intact zones
144	147.2	JZ	1	intact with few joints. Strongly silicified
147.2	156.2	BRKZ	3	
156.2	157	FL	5	altered gouge
157	178.4	JZ	2	Irregular joint sets
178.4	182	BRKZ	2	Multiple joint angles. joints nearly parallel to core axis attribute to degree of broken core
182	192	BRKZ	2	a near parallel joint set contributes to this broken zone
192	198.1	FZ	4	Mineralization within fault
198.1	220	JZ	2	inconsistant joints
220	243.6	FZ	4	inconsistant angles
243.6	254	JZ	4	inconsistant angles
254	261.4	FZ	4	significant gouge. steep angles 60-85deg common
261.4	272.2	JZ	5	intermittent broken zones locally
272.2	284.2	JZ	4	
284.2	290.2	JZ	3	inconsistant angles
290.2	292.6	BRKZ	4	
292.6	298.1	JZ	2	Joint zone with a couple fault infilled with gouge. apeture of 1-3cm
298.1	300.9	FL	3	poor drilling

Blackwater Project
Drill Summary - Structure

BW0376

From (m)	To (m)	Structure	Strength	Comments
300.9	315	JZ	2	Joint sets of 20 and 30deg
315	361	JZ	3	
361	390	JZ	3	joint sets at 45-55deg and 25-35deg
390	391	FL	2	flt'ed with minor gouge
391	401	JZ	3	
401	402	FL	4	gouge and mineralization follow flt
402	415	JZ	2	joints 50-60deg
415	416	BRKZ	2	
416	431.9	JZ	3	Joints at 60-70deg most commonly

Blackwater Project
Drill Logs

Hole ID:	BW0377	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375001.93
Depth (m):	526	Date Started:	08/03/2012	Casing Size:	HWT	Northing:	5893349.72
Azimuth:	0	Date Completed:	17/03/2012	Casing (m):	4.5	Elevation (m):	1533
Dip:	-90	Logged By:	TOl	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	238.2	-89.4
150	221.5	-89.9
202	337.9	-89.7
250	155.3	-89.6
300	283.6	-89.8
352	279.7	-89.3
400	335.2	-89.6
451	183.1	-89.6
502	242.9	-89.5

Blackwater Project
Drill Summary - Lithology

BW0377

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2	OB							
2	62	FT	lam	FA	L	GRY			Extensive unit of laminated felsic tuff breccia with local zones of hydrothermal breccia with intense silica wash. Brecciated texture is typically jigsaw fit with parallel laminations between clasts suggesting minimal transport from original depositi
62	66	FLPT	autbx	LAP	L	GRY	ALTFR	GR30	Felsic lapilli tuff with brecciation in sections (jigsaw), some parallel laminations seen in small sections
66	77.5	FT	lam	FA	MO	GRN	ALTFR	GR10	Mottled greenish grey felsic tuff that has been quite altered, may also be classified as flpt???
77.5	87.1	FLPT	lam	LAP	M	GRN			Greenish grey felsic lapilli tuff with laminations in sections
87.1	110	FLPT	lam	LAP	L	GRY	DEP	GR30+	Light greyish white felsic lapilli tuff with very few mafic clasts (trace) scattered throughout interval; bottom contact grades into next interval
110	119.6	VC	plm	LAP	M	GRY			Medium grey polymictic volcaniclastics with 25-75 mafic to felsic clasts
119.6	146	VC	plm	LAP	MO	GRN	DEP	GR30	Mottled green grey polymictic volcaniclastics with 25-75 mafic to felsic clasts
146	177.3	FLPT	lam	LAP	MO	GRN			Felsic lapilli tuff with laminated clasts and flow banding in sections
177.3	205	FLPT	flwbnd	LAP	MO	GRN	ALTFR	GR10	Mottled greenish grey (due to alteration) felsic lapilli tuff; goes in and out of flowbanding texture and brecciated/auto brecciated texture, the auto brecciated sections have the jigsaw puzzle texture, some laminated clasts
205	208.3	FT	flwbnd	LAP	MO	GRN	ALTFR	GR10	Felsic tuff with flow banding, some fragmentation/brecciation in localized sections
208.3	217	FT	flwbnd	FA	MO	GRN	ALTFR	GR10	Flow banded felsic tuff with some fragmentation/clasts with bottom contact altering into next interval, bottom contact may also be depositional but hard to tell due to alteration
217	220.8	FLPT	lam	LAP	M	GRY	ALTFR	SH	Highly altered felsic lapilli tuff with more mafic composition in matrix/clasts, could also be highly altered/jumbled up andesite???, some laminated flow banding in sections and clasts in other sections
220.8	229.7	FT	flwbnd	LAP	M	GRN	DEP	GR30	Altered felsic tuff with flow banding in sections and fragmentation in others, some of the fragmented clasts have some mafic composition/chlorite hence darker than others
229.7	246	FLPT	lam	LAP	M	GRN	ALTFR	GR10	Felsic lapilli tuff with laminated clasts in sections, some flow banding in sections; some small localized sections with brecciated clasts; chlorite/sericite in clasts
246	263.9	FLPT	lam	LAP	M	GRN			Clast supported felsic lapilli tuff with laminated clasts, small section of flow banding at start of interval

Blackwater Project
Drill Summary - Lithology

BW0377

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
263.9	281.6	FLPT	lpt	LAP	M	GRN	DEP	GR30	Greenish grey felsic lapilli tuff with laminated clasts in sections, clast supported
281.6	297	FLPT	ms	LAP	M	GRN			Felsic lapilli tuff with less clasts than previous section: matrix supported
297	311.9	FLPT	ms	LAP	M	GRN			Felsic lapilli tuff, similar to previous interval could also be called Felsic tuff???, has small sections of lpt
311.9	336	FLPT	lpt	LAP	M	GRN			Greenish grey felsic lapilli tuff with some flow banding in sections
336	352	FLPT	flw	LAP	M	GRN	ALTFR	GR10	Matrix supported felsic lapilli tuff with some flow texture in sections; alteration has washed out texture in sections so may even be called FT??? but clasts are faintly seen in other sections
352	370	FLPT	lpt	LAP	M	GRN			Felsic lapilli tuff with more visible clasts than previous interval, some flow texture in localized sections
370	409.5	FLPT	lpt	LAP	M	GRN			Felsic lapilli tuff with lots of structure (faulting/brokenzone), texture is therefore hard to determine but clasts that have been altered are faintly seen in core that has not been badly broken up
409.5	426	FLPT	ms	LAP	M	GRY			Felsic lapilli tuff could also be FT??? clasts are hardly seen, some flow texture on localized sections
426	442	FLPT	flw	LAP	M	GRY	DEP	GR10	Felsic lapilli tuff with some flow texture, lapilli tuff breccia in sections
442	446	VC	plm	LAP	M	GRY			Polymictic volcaniclastics with less clasts at start of interval and gradually increases towards bottom of interval; roughly 75-25 ratio of mafic to felsic clasts
446	457.1	VC	plm	LAP	M	GRY	ALTFR	SH	Polymictic volcaniclastics with 75-25 mafic to felsic clasts, mafic andesite clasts
457.1	475.3	VC	ms	FA	MO	GRN	ALTFR	GR10	May be VC???, FT??? or FLPT??? hard to tell with the jumbled up alteration and silica flooding; called it VC because the interval before it was VC so it is probably highly altered VC with washed out texture
475.3	479	VC	cs	LAP	D	GRY			Clast supported Volcaniclastics??? or may be brecciated andesite??, dominantly mafic clasts with ~0.5% dispersed felsic clasts
479	494.5	VC	plm	LAP	M	GRY	DEP	GR10	Volcaniclastics with andesite mafic clasts(75) and some felsic clasts(25); bottom contact grades into next interval with clast and mafic composition gradually decreasing
494.5	502.1	FLPT	lam	LAP	M	GRN	DEP	SH	Felsic lapilli tuff with more clasts (some laminated clasts) at the top of the interval and becomes less clastic towards the bottom (could be due to alteration???)
502.1	512.2	VC	plm	LAP	M	GRY	DEP	GR30	Polymictic volcaniclastics with clasts coarsening down interval; hard to place exactly where the bottom contact to next interval due to alteration

Blackwater Project
Drill Summary - Lithology

BW0377

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
512.2	520.7	AND	flwbx	LAP	D	GRY	DEP	GR10	Andesite flow breccia with some fragments/clasts from previous interval indicating the possibility of the andesite flow picking up fragments from the previous VC interval; some porphry texture in the andesite
520.7	526	AND	mas	LAP	D	GRY			Dark greyish black/black massive andesite with some brecciation/fragmentation

Blackwater Project
Drill Summary - Alteration

BW0377		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2	13	O		0	FR	2	PERV	4	PATC	3	HM	FR	1	LIM	FR	2	Strong, pervasive silica alteration (especially strong in the matrix of brecciated zones). Sericite alteration is moderate to strong and patchy, typically following laminations. Hematite and limonite alteration is strongest on fracture planes but also present as patches throughout.
60	68	T	PATC	1	FR	2	PERV	4	PATC	4	SIL	DEF	3	HM	FR	1	As above with weak chlorite alteration as patches.
68	81	T	PATC	3	FR	1	PERV	4	PATC	3	LIM	FR	1	HM	FR	1	Strong pervasive silica, weak clay on fractures, moderate patchy/perv chlorite and some patchy sericte
81	87.2	T	CLST	3	FR	2	PERV	4	PATC	2	HM	FR	1	LIM	FR	1	Moderate chlorite in clasts, some patchy sericite, some clay on fractures and strong pervasive silica
87.2	112.6	O	PATC	2	PATC	3	PATC	3	PATC	2	LIM	FR	3	HM	FR	2	Moderate to strong oxidation zone (lim+hm on fractures and in patches), moderate pervasive silica, moderate patchy clay and some on fracture planes
112.6	119.6	T	CLST	2	FR	2	PERV	4	MTRX	1	HM	FR	1	LIM	FR	1	Weak sericite in matrix/patchy, some chlorite in clasts, strong pervasive silica, weak oxides (lim+hm) on fracture planes
119.6	121.7	T		0	CLST	1	PERV	4	CLST	3	HM	FR	1	LIM	FR	1	Sericite in clasts, weak clay in clasts, pervasive silica, some weak oxides on fracture planes
121.7	128.5	S	CLST	1	CLST	2	PERV	3	OP	4							Strong sericite as overprint/patchy overprinting clay in clasts, moderate pervasive silica, weak chlorite
128.5	146	S	PATC	4	FR	2	PERV	3	CLST	3							Moderate sericite in clasts, some clay on fractures and a few clasts, moderate to strong patchy chlorite and some in clasts/matrix (mottled alteration), moderate pervasive silica
146	160	S	PATC	3	CLST	1	PERV	4	CLST	3							Some sericite overprinting weak clay in clasts, moderate to strong pervasive silica, patchy chlorite
160	177.3	S	FR	3	CLST	3	PERV	4	CLST	4	ANK	PATC	1				Strong sericite in clasts and some in matrix(banding), some chlorite in patches and some on fracture planes, moderate clay in clasts and some on fractures, strong pervasive silica, weak brownish ankerite alteration /tinge in patches

Blackwater Project
Drill Summary - Alteration

BW0377		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
177.3	205	S	PATC	3	CLST	3	PERV	4	MTRX	4	GRNT	CLST	2				Strong pervasive silica, some clay in clasts, strong sericite in matrix, some patchy chlorite and some on fractures, garnets as clast replacement
205	208.6	S	PATC	1	FR	2	PERV	4	OP	4							Strong sericite as overprint, weak patchy chlorite, some clay on fractures, pervasive silica
208.6	229.7	S	FR	4	FR	2	PERV	3	MTRX	2	ANK	PATC	1				Weak sericite in matrix, strong dark green chlorite on fracture planes, some clay also in fractures, moderate pervasive silica
229.7	243	S	FR	3	FR	2	PATC	3	CLST	3							Sericite overprinting some clay in clasts, some clay also on fractures, moderate chlorite on fractures, some patchy silica
243	247	S	PATC	1	FR	2	PERV	3	OP	2	GRNT	CLST	1				Weak patchy chlorite with some on fracture planes , sericite as overprint, weak clay on fractures and in clasts, moderate pervasive silica and some garnets as clast replacement
247	250	S	CLST	1	PATC	2	OP	3	CLST	3	UNK	PATC	1				Sericite overprinting clay in clasts, some patchy clay and some on fractures, weak chlorite in clasts, moderate silica as overprint, some apetite?? in a patch and very weak in matrix (pinkish-red tinge-quite silicified)
250	261.1	S	MTRX	2	CLST	2	PERV	3	CLST	3							Some sericite overprinting clay in clasts, clay in clasts and some on fractures, some chlorite in matrix, some pervasive silica
261.1	275.8	S	FR	3	PATC	3	PERV	3	PATC	2							Weak patchy sericite, moderate chlorite on fractures and patchy in sections, some clay on fractures and moderate pervasive silica
275.8	289.2	S	FR	4	PATC	3	PERV	3	CLST	2							Some sericite in clasts, blueish-green chlorite on fracture planes and as overprint, patchy clay and pervasive silica
289.2	313	S	FR	3	FR	2	OP	3	OP	2							Sericite/silica as overprint, some clay on fractures, moderate chlorite on fractures as well and somewhat patchy in sections

Blackwater Project
Drill Summary - Alteration

BW0377		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
313	336	S	FR	4	FR	3	PERV	4	OP	3							Moderate sericite as overprint, strong pervasive silica, some clay on fractures, moderate to strong blueish-green chlorite on some fracture planes, and dark green on others
336	352	S	FR	4	FR	2	PERV	3	OP	2							Some sericite as overprint, some clay on fractures, strong chlorite on fracture planes with blueish-green coating (more blue than green) had earlier called it blueish green chlorite??? on fracture plane in a particular section,
352	370	S	FR	4	FR	2	PERV	4	PATC	3							Patchy sericite, clay on fractures, pervasive silica, strong chlorite on fracture planes, increase in the bluish-green pigmentation/coating on fracture planes alongside chlorite - also seen in matrix/clasts in a particular section of core
370	403	S	FR	4	PATC	3	PERV	3	PATC	1	GRNT	CLST	1				Weak patchy sericite, some pervasive silica, strong chlorite on fractures, some patchy clay and some on fractures
403	413.5	S	FR	3	PATC	3	PATC	3	OP	2	GRNT	CLST	1				Some sericite as overprint, some patchy clay and some on fractures, less chlorite on fractures than previous interval, patchy silica
413.5	434.8	S	FR	5	FR	2	PERV	3	OP	2	GRNT	REP	2				Sericite as overprint, some pervasive silica, some clay on fractures, strong dark green to black chlorite on fracture planes
434.8	446	S	FR	3	FR	2	PATC	3	OP	2	GRNT	CLST	2				Less chlorite (greenish) on fracture planes than previous interval, some patchy silica as overprint, some sericite as overprint and some clay on fracture planes
446	457.1	S	FR	3	FR	1	OP	3	CLST	1	GRNT	CLST	1				Weak sericite in clasts, some chlorite on fracture planes, some clay on fractures, silica as overprint
457.1	465	S	FR	3	FR	2	PERV	4	PATC	3	GRNT	CLST	1	CAL	PATC	1	Patchy sericite and some in clasts, some chlorite on fracture planes, clay on fractures and pervasive silica
465	475.2	S	FR	2	FR	2	PERV	4	PATC	3	CAL	PATC	3	ANK	MTRX	1	Some chlorite on fracture planes, clay on fracture planes and somewhat patchy, patchy sericite, pervasive silica and patchy calcite/some as fracture filling, some ankerite/iron carbonate in matrix (brownish alteration)

Blackwater Project
Drill Summary - Alteration

BW0377		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
475.2	479	S	FR	2	FR	1	PATC	3		0	CAL	FR	2	ANK	MTRX	2	No sericite, weak clay on fracture planes, some chlorite on fracture planes, some patchy silica, some ankerite/iron carbonate in matrix and calcite on fracture planes/as fracture fillings
479	494.5	S	CLST	2	PATC	1	PERV	4	CLST	1	CAL	FR	1	ANK	MTRX	2	Weak sericite in clasts, some weak chlorite in clasts, weak patchy clay, strong pervasive silica, calcite on fracture planes and some ankerite/iron carbonite in matrix
494.5	502.1	S	FR	3	PATC	1	PERV	3	PATC	2	CAL	VN	2				Some chlorite on fracture planes, some weak patchy sericite-chlorite in matrix, very weak patchy clay, moderate pervasive silica, some calcite in vein, on fracture planes and as fracture filling
502.1	515	S	FR	3	PATC	2	PERV	3	CLST	2	ANK	MTRX	2	CAL	FR	2	Sericite in clasts, some chlorite on fracture planes, patchy clay, moderate pervasive silica, some ankerite/iron carbonate in matrix, calcite as fracture filling/on fracture planes
515	524.5	S	FR	2	FR	2	PERV	4	VN	2	BIOT	MTRX	3	CAL	FR	2	Weak sericite associated with calcite vein/veinlet, some chlorite on fracture planes as well as some clay, strong pervasive silica and biotite in matrix, calcite as fracture filling/on fracture planes
524.5	526	S	PATC	4	PATC	2	PERV	4		0	BIOT	MTRX	3				No sericite, strong patchy chlorite, some patchy clay, pervasive silica and biotite in matrix

Blackwater Project
Drill Summary - Mineralization

BW0377		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2	13		0		0		0	Goe	FP	1	Hm	FP	1	Jaro	SP	0.5	No sulphides observed in this interval. Geothite/hematite/jarosite is strongest on fractures but also replacing specks within clasts amd patches throughout.
13	20	DI	0.5		0		0	Goe	FP	2	Hm	FP	0.5	Grnt	BB	1	First appearance of sulphide is a fine grained black (pyrite) disseminated type. Cruddy, red-brown garnet blebbs mineralizing in clasts of the breccia.
20	38	DI	0.5	DI	0.5	DI	1	Py	VN	1	Grnt	BB	0.5	Goe	FP	0.5	More sulphide species than above: disseminations of fine, red sphalerite; disseminated clusters os pyrrhotite, DBS as dendric branches off of pyrite veins. Pyrite as disseminations and veins. Dime-sized garnets, as above, in lesser abundance than abo
38	48	VN	1.5	DI	0.1	DI	0.5	Hm	FP	0.5	Dbs	DEN	0.5	Grnt	BB	0.1	Similar in mineralization as above. Less disseminations of pyrite, pyrrhotite and sphalerite. More pyrite veining.
48	52.5	SP	0.5	DI	0.1		0	Grnt	BB	5	Dbs	DEN	1				Intense garnet mineralized zone with 5 cm - sized blebbs intergrown with very fine grained pyrite crystals. Limited sphalerite disseminations. No pyrrhotite observed. DBS as dendric masses.
52.5	68	DI	0.5		0	DI	0.5	Grnt	BB	1	Dbs	DEN	1				Similar mineralization style as above with significantly less garnet than above. Pyrite intergrown with garnet.
68	87.2	DI	0.5	DI	0.5	DI	1	Dbs	DEN	2	Grnt	BB	0.1	Goe	FP	0.5	Some disseminated Py and some as specks, some disseminated sph following lamination, Po in disseminated blebs, Dbs in sections <0.5m, trace garnets
87.2	110		0		0		0	Goe	FP	2	Hm	FP	2	Jaro	SP	1	No sulphides prsent in this interval, oxides present on fracture planes and in patches (Goe+Jaro+Hm)
110	119.5	DI	0.5	DI	0.1	BB	0.5	Grnt	CR	0.1	Cp	DI	0.1	Dbs	DEN	0.1	Trace cp, sph and dbs; oxides (Goe+Hm) on fracture planes; Disseminated py and bleby po
119.5	138	VN	0.1	BB	0.5	BB	0.1	Grnt	CR	0.5	Apy	SP	0.1				Trace Apy as specks, trace po in blebs and trace py in hairline, sph in specks

Blackwater Project
Drill Summary - Mineralization

BW0377		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
138	148.1	BB	2	BB	0.5	BB	1	Apy	VN	20	Grnt	CR	1	Dbs	DEN	0.1	Significant increase in sulphides from previous interval, 0.6cm Apy vein, py in clusters/blebs and hairlines, po in disseminated blebs, sph in blebs, Garnets in clasts
148.1	164.1	VN	1		0	BB	1.5	Grnt	CR	5				Dbs	DEN	0.1	Py in hairlines/veinlets and some in blebs intergrown with po; po in disseminated blebs, no sph, significant increase in garnets as clast replacement
164.1	177.3	BB	2	BB	3	BB	2	Grnt	CR	10	Dbs	DEN	5				Significant increase in sulphides from previous interval; Py+Po intergrown with garnets, some po and py in blebs/hairlines; some sph in blebs and some shiny black sph also associated with garnets; Dbs present
177.3	196.5	FP	1		0	BB	0.5	Dbs	DEN	2	Grnt	CR	7				No sph, some po+py intergrwon with garnets, lots of garnets, some py on fractures, Dbs present
196.5	208.3	FP	0.5	BB	0.1	BB	0.5	Grnt	CR	10	Dbs	DEN	0.5				Significant decrease in sulphides, mostly garnets. trace sph, some py + po intergrown with garnets, some py on fracture planes, some Dbs
208.3	222.7	FP	1	BB	2	BB	1	Grnt	CR	5	Dbs	DEN	1				Sulphides pick up in this interval, mostly sph, some py on fracture planes and in veinlets, some bleby po and some garnets
222.7	242.2	FP	0.5	BB	10	BB	0.5	Dbs	DEN	5	Grnt	CR	3				Significant increase in sphalerite from previous interval, decrease in garnets, po and py; some Dbs present
242.2	247	SP	0.1	BB	3	BB	0.5	Dbs	DEN	0.1	Grnt	CR	3				Decrease in sulphides, trace py as specks, trace Dbs, some po intergrown with garnets
247	263.9	DI	1	DI	2	BB	0.5	Grnt	CR	3	Dbs	DEN	0.1				Disseminated py intergrown with garnets, some py of fracture planes, disseminated sph, some bleby po, trace dendritic dbs, garnets present
263.9	281.6	BB	2	DI	3	BB	5	Grnt	CR	5	Dbs	DEN	1				Slight increase in sulphides from previous interval, mostly mixed sulphides (sph+po+py) with higher percentage of po, some found in association with garnets, dbs as fracture filling, some are dendritic

Blackwater Project
Drill Summary - Mineralization

BW0377		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
281.6	289.2	FP	1	DI	2	BB	7	Grnt	CR	5	Dbs	FP	0.5				Py on fracture planes, increase in po from previous interval, disseminated sph, dbs as fracture filling, garnets present
289.2	305.9	FP	1	DI	1.5	DI	0.1	Grnt	CR	3	Dbs	DEN	0.5				Py on fracture planes, disseminated sph, trace disseminated po, garnets present as clast replacement and some dendritic Dbs
305.9	326.5	FP	2	BB	3	BB	1	Apy	VN	1	Grnt	CR	5	Dbs	FP	1	Pyrite on fracture planes and in veinlets/hairlines, bleby po, disseminated sph , lots of garnets as clast replacement, Some apy in veinlet/hairline, Dbs as fracture filling others are dendritic
326.5	336	BB	2	DI	5	BB	1.5	Grnt	CR	3	Dbs	FP	1.5	Cp	FP	0.1	Increase in sulphides from previous interval; py as blebs and on fracture planes, bleby/disseminated po, disseminated sph, Dbs as fracture filling, some disseminated and some dendritic, trace cp on fracture plane, some garnets as clast replacement
336	349.7	FP	3	DI	3	BB	1	Grnt	CR	3	Cp	FP	0.1	Apy	FP	7	Py on fracture planes and in blebs, bleby po, disseminated sph, trace Cp on fracture plane with pyrite, Apy on fracture plane and in veinlet, some dendritic Dbs and some as fracture filling
349.7	370	FP	2	DI	5	BB	1	Grnt	CR	3	Dbs	DEN	0.1				Slight decrease in sulphides, more disseminated blebs of Sph, py on fracture planes, bleby po, garnets present, trace dbs
370	391.8	BB	2	DI	1.5	BB	1	Grnt	DEN	2	Dbs	FP	0.1				Py as blebs and on fracture planes associated with po and garnets; disseminated sph, trace dbs as fracture filling
391.8	409.5	FP	2.5	DI	1	BB	1.5	Grnt	CR	2	Apy	VN	2	Dbs	DEN	0.1	Py mostly on fracture planes, some in blebs, bleby po, disseminated sph, Apy in veinlet, trace dbs
409.5	426	FP	3	DI	1.5	BB	2	Grnt	CR	2	Dbs	DEN	0.5	Cp	BB	0.1	Some py on fracture planes and some as blebs, bleby po, disseminated bleby sph, trace Cp and some Dbs as well as garnets

Blackwater Project
Drill Summary - Mineralization

BW0377		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
426	442	BB	5	DI	1	BB	2	Grnt	CR	3	Cp	BB	0.5	Dbs	DEN	1	Significant increase in sulphides - Py in blebs and on fracture planes, bleb po and sph found in association with the garnets present; some dendritic dbs and some trace Cp
442	446	BB	3		0	BB	1.5	Grnt	CR	2							Py in bles and on fracture planes, some po as disseminated blebs, no sph, some garnets present
446	457	FP	1		0	BB	0.5	Grnt	CR	1							Py on fracture planes and some found associated with the garnets and po, bleby po, no sph, some garnets
457	466	BB	1		0	BB	1	Grnt	BB	2	Dbs	DEN	1				Py in blebs and some on fracture planes, some bleby po associated with py, no sph, some garnets, dendritic dbs and some as fracture filling
466	475	BB	0.5		0	BB	1	Grnt	BB	0.5	Dbs	DEN	0.5				Po in blebs, py also in blebs both sometimes associated with garnets, dbs as fracture filling
475	479	SP	0.1		0	DI	0.1										Hardly any sulphides - trace py in specks, trace disseminated po
479	484	FP	0.1		0	DI	5	Grnt	CR	0.1							Mostly disseminated Po, trace py on fracture planes, very few garnets
484	488.5	SP	0.5		0	DI	2	Apy	SP	5	Grnt	BB	0.1				Py in specks/blebs, Apy in specks, Po in disseminated blebs
488.5	494.5	FP	0.5		0	BB	5	Grnt	CR	1	Dbs	DEN	0.5				Some Py on fracture planes, Po in blebs, some garnets as clast replacement, some dendritic dbs
494.5	502.1	FP	1	BB	0.5	BB	7	Grnt	CR	5	Dbs	DEN	0.5				Dominantly Po blebs, some sph blebs, some py on fracture planes and in hairlines, garnets present as clast replacement sometimes found in association with po, some dbs
502.1	512.2	FP	1		0	CR	10	Grnt	CR	7	Apy	SP	0.5				Slight increase in Po, Po in clasts, some as disseminated blebs, py on fracture planes, some Apy in specks, garnets as clast replacement
512.2	520.7	VN	1		0	BB	15	Grnt	CR	1							Significant increase in bleby Po, py in vein associated with calcite, some garnets as clast replacement

Blackwater Project
Drill Summary - Mineralization

BW0377		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
520.7	526	VN	0.5		0	DI	15										Disseminated po, some in specks/blebs, py in hairlines, no sph, no garnets

Blackwater Project
Drill Summary - Structure

BW0377

From (m)	To (m)	Structure	Strength	Comments
2	62	JZ	4	Joint zone with local broken zones. Oxide and minor clay on fracture planes. Silica breccia zone orientation (measured at 33 m) : 50 DTCA. Fracture sets at 40 and 25 degrees TCA.
62	65.5	JZ	3	Moderate joint zone with joints mostly at 80dtca, one at 60dtca and the other at 40 dtca
65.5	67.6	BRKZ	1	Weak broken zone, not very broken up with some competent core, no measurable joints
67.6	87	JZ	4	Moderate to strong joint zone with joints mostly at 40/80dtca, some at 60dtca
87	92.5	JZ	1	Weak jointzone with local broken zones; joints are wispy and jagged, measurable joints at 60dtca
92.5	98.5	BRKZ	5	Strong broken zone with fault/clay gge in sections < 0.5m
98.5	104.4	BRKZ	3	Moderate broken zone with some competent core <0.5m, one 0.1m section of clay gge at 101.65m
104.4	112.6	JZ	1	Weak jointzone with localized broken zones in sections, measurable joints mostly at 60dtca others at 35dtca
112.6	119.6	JZ	3	Jointzone with local sections <0.5m of broken zones, mostly wispy/jagged joints at 60>40>50 dtca
119.6	136.8	JZ	4	Moderate to strong joint zone with 2 local broken zones <0.5m; joints mostly at 40dtca others at 80>70>60>50dtca, one steep one at 15dtca
136.8	137.7	BRKZ	1	Weak broken zone
137.7	157.8	JZ	4	Strong joints mostly at 80dtca, others at 40>50>70>60dtca
157.8	177.3	JZ	4	Strong jointzone with joints mostly at 80dtca; others at 70>60>50>40 dtca
177.3	194.5	JZ	4	Dominant joints at 60dtca; others at 50>70>80dtca; 2 steep joints at 30dtca
194.5	196	BRKZ	1	Weak broken zone with competent core; not too broken up
196	222.5	JZ	3	Joint zone with localized broken zones<0.5m, joints mostly at ~50dtca; others at 30>40>60>80 dtca
222.5	232.6	JZ	2	Joint zone with localized broken zones; joints mostly at ~50dtca, others at 80>70>60dtca; some steep ones at 30 dtca
232.6	233.5	FL	3	Rubbles + clay/fault gge
233.5	236.4	BRKZ	4	Broken zone with broken up bits of core
236.4	239	BRKZ	2	Weak broken zone with local section of stronger broken zone (rubbly) <0.5m
239	239.5	FL	4	fault with rubbles +clay/fault gge
239.5	242.5	JZ	1	Weak joints with joints at 10, 30 and 50 dtca
242.5	247	BRKZ	1	Weak broken zone with local sections <0.5m of stronger broken zones
247	248	JZ	2	joints roughly at 30dtca
248	250.7	FL	1	Weak fault with some broken up bits of core + rubbles + fault/clay gge

Blackwater Project
Drill Summary - Structure

BW0377

From (m)	To (m)	Structure	Strength	Comments
250.7	256	JZ	1	Weak joint zone with jagged joints and localized brokenzones ~0.5m; Steep angles at ~10dtca and others at ~60dtca
256	258.8	FL	2	Fault with some bbroken bits of core + clay/fault gge
258.8	268.9	JZ	1	Weak joint zone with localized broken zones; measureable joints mostly at 60>50dtca, some steeper ones at 10>20>15dtca
268.9	271.9	FL	2	Fault with broken up bits of core + clay/fault gge
271.9	274	BRKZ	1	Weak broken zone/not very broken up core- no measurable joints
274	280	JZ	3	Joint zone with dominant joints at 60 dtca others at 80 dtca, steep joints at 10 and 20dtca
280	287.5	JZ	1	Weak joint zone with localized broken zones; wispy/jagged joints with very few measureable joints mostly at 30dtca, others at 20 and 60 dtca
287.5	289	JZ	3	Joints mostly at 60dtca, others at 50 and 75dtca
289	294.7	BRKZ	3	Broken zone with broken up pieces of core
294.7	313	BRKZ	2	Broken zone with some competent core <0.5m and stronger local broken zones
313	320	FL	1	Broken up core + rubbles + clay/fault gge (in small ~0.1m sections)
320	327	BRKZ	4	Moderate to strong broken zone
327	332.5	JZ	2	Joint zone with local broken zones, joints mostly at 60, others at 40>10>35>65dtca
332.5	336	BRKZ	3	Broken zone with broken up bits of core and competent core ~0.2m
336	349.7	BRKZ	3	Brokeken zone with similar structure to previous interval
349.7	355.4	BRKZ	4	Broken zone with rubbles and broken bits of core
355.4	358	JZ	3	Joints mostly at 80dtca, others at 70>50>60>25 dtca
358	370	BRKZ	2	Broken zone with local zones of stronger broken zones
370	386.5	FL	1	Weak fault with some broken up core + rubbles + clay/fault gge in small sections
386.5	388.8	JZ	2	Joints mostly at 50 dtca, others at 20/30dtca
388.8	391.8	BRKZ	3	Broken zone with local sections of stronger broken zones
391.8	392.2	FL	2	Fault with sand + clay gge
392.2	399.4	BRKZ	4	Broken zone with broken up bits of core + rubbles
399.4	407.5	FZ	4	sand gge + fault/clay gge and small pieces of rubbles
407.5	414.8	BRKZ	3	Moderate broken zone with some competent core
414.8	432.2	JZ	3	Joint zone with localized broken zones ~0.5m, joints mosty at 40 dtca, some at 30dtca others at 15/20dtca

Blackwater Project
Drill Summary - Structure

BW0377

From (m)	To (m)	Structure	Strength	Comments
432.2	446	JZ	3	Joint zone with local broken zones, joints mostly at 60dtca, others at 70>80>50>40dtca
446	456.3	JZ	3	Joints mostly at 60/80dtca, others at 75dtca and 30dtca
456.3	460	JZ	2	Joint zone with local broken zones, joints mostly at 50>60>30dtca
460	471	JZ	3	Joints mostly at 40/60dtca, others at 30>80>70 dtca
471	473	BRKZ	2	Broken zone with broken up bits of core
473	476.2	JZ	3	Joints at 40dtca, 10dtca and 80dtca
476.2	479	JZ	2	Joint zone with wispy/jagged joints and local broken zone; measurable joints at 40dtca>50dtca
479	495	JZ	3	Joint zone with 2 local brokenzones less than 0.5m; joints mostly at 60dtca, others at 80>70>40>30dtca
495	502	JZ	1	Weak joint zone with wispy/jagged joints, joints mostly at 40dtca, others at 30dtca and 60dtca
502	526	JZ	3	Moderate joint zone with some small localized broken zones; for the most part jointed, joints mostly at 50dtca, others at 80>60>70>40>30dtca

Blackwater Project
Drill Logs

Hole ID:	BW0378	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375702.87
Depth (m):	417.5	Date Started:	09/03/2012	Casing Size:	HWT	Northing:	5892651.31
Azimuth:	0	Date Completed:	17/03/2012	Casing (m):	13.5	Elevation (m):	1619
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	51.6	-89
100	60.6	-88.9
150	80.8	-89.4
200	39.9	-89.6
250	86.1	-89.2
300	102.3	-89.5
350	41.4	-88.9
400	70.1	-88.8

Blackwater Project
Drill Summary - Lithology

BW0378

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							
4	31.8	VC	plm	LAP	M	OR	DEP	GR30+	very grungy with oxide filth on rock. clasts appear to have been reworked somewhat as well as "attacked" with alteration. Groundmass speckeled with small subrounded clasts, larger clasts are subrounded to subangular
31.8	46	VC	plm	BLOCK	M	GRY			increased mafic content from above unit; larger clast sizes, a few very large (20cm) block sized clasts of crystal rich andesite
46	64	VC	plm	LAP	M	GRY	FLT	GR5	out of the block sized clast zone, into more mafic dominant, perhaps around 90% mafics. Middle of many clasts sil-ser altered, same as groundmass. clast rich, clast supported in some spots
64	76	AND	fltgge	LAP	D	GRY	FLT	GR10	gouge and rubble, dark rock, assuming it is part of the lower unit of andesite. Short runs of competant core show an intensely ser-sil altered aphanitic rock, brecciated
76	84	AND	fltbx	LAP	D	GRY	FLT	GR10	poor recovery section, with rubbly core. rock is fault brecciated, with some zones of massive dark andesite. yellow-green oxide mineral around fractures
84	94	AND	cxt		D	GRY	DEP	GR30+	dark andesite, massive, with zones of crystal rich, plagopheric. Calcite veining there but infrequent
94	109	AND	cxt		D	GRY	DEP	GR30+	dark andesite, largely crystal rich, with big near cm sized plag crystals. Calcite veining becoming more frequent, with a few planar veins larger than 1cm.
109	119.5	AND	mas	LAP	D	GRY	FLT	GR30+	speckeled alteration, dark grey andesite, with red-brown patches of alteration. Massive to brecciated, increasing brecciation and reworking towards end of interval, closer to structure. irregularly shaped small amygdules
119.5	122.5	AND	frctz		D	GRY	FLT	GR10	strongly fractured, hard to distinguish litho for this short section.
122.5	137	VC	plm	LAP	M	GRY	DEP	GR30+	many larger mafic clasts are quite rounded. occaisional more angular clast. poorly sorted. clasts look reworked, and partially sil replaced
137	158.5	AND	mas	LAP	D	GRY	DEP	GR30+	frequent subtle brecciation zones, possibly hydrothermal origin?, otherwise, fairly massive, non-amygdular, non-porphyritic
158.5	175.5	AND	mcbx	LAP	D	GRY	DEP	GR10	possible hydrobrecciaion from above carrying on. Microbrecciated in many spots. More amygdoidal patches than above unit
175.5	183.5	AND	bx	LAP	D	GRY	FLT	SH	fracture zone, with brecciation, lots of calcite on fracture planes, large plag phenos in one zone. Lower contact sharp at 43 Degrees TCA. Unfractured unit below
183.5	194.5	AND	bx	LAP	D	GRY	DEP	GR30	infrequent irregularaly shaped amygdules. many places brecciated/microbrecciated. rock a slightly lighter tone than above unit.

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Blackwater Project
Drill Summary - Lithology

BW0378

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
194.5	206.6	AND	cxt		D	GRY	DEP	GR10	amygdoidal at beginning, with plag pheons. Crystal rich throughout, large plag. rock with brownish tinge
206.6	217.8	AND	mas		D	GRY	FLT	GR30+	flow texture with some aligned phenocrysts. dark grey with brownish tinge. becoming more brecciated/microbrecciated towards end of interval
217.8	223	AND	fltbx	LAP	D	GRY	FLT	GR10	fault brecciation with abundant calcite-carb-clay veining.
223	229.5	AND	flw		D	GRY	FLT	GR10	amygdules aligned at approx 35 degreesTCA. becomes well brecciated towards end of interval
229.5	230.7	AND	fltbx	LAP	D	GRY	FLT	GR10	gouge/fault brecciated..
230.7	239.5	AND	mcbx	LAP	D	GRY	DEP	GR30+	microbrecciated to brecciated andesite.
239.5	247	AND	flw		D	GRY	DEP	GR30	very dark, flow unit andesite, only minor brecciation seen. amygdules with general alignment at 75 dTCA
247	248.5	AND	por		D	GRY	DEP	GR10	xl rich; plag pheons clear, pretty big 8 mm
248.5	258.8	AND	bx	LAP	D	GRY	DEP	GR5	massive runs, with frequent brecciateed zones. lots of replacement with sulphides in phenos; core becoming lighter in colour.
258.8	275.4	VC	ms	LAP	MO	GRY	DEP	SH	somewhat bimodal clast sizes, larger near 1cm clasts are silica rich, smaller lithics are well sorted, small sized (2-3mm). fairly abrupt upper contact
275.4	293.6	AND	por		M	GRY	FLT	SH	light coloured due to high silica content. largely porphyritic with small zones of fine brecciation. various orientations of plag phenos. some plag replaced with hornblende
293.6	298	AND	fltbx	LAP	M	GRY	FLT	GR5	into a fault zone, lots of structure. crystal rich andesite within one block, randomly oriented plag phenos.
298	313.5	VC	cs	LAP	M	GRY	DEP	GR30+	90 % mafic clasts, SA VC unit. clasts are well ser altered. Either clast supported or very close
313.5	326	VC	fltbx	LAP	M	GRN	FLT	GR10	gouge material, moving into lower intensity fault zone, with blocks of brecciated andesitic VC. A few large clasts (near 5cm).
326	329	VC	fltgge	LAP	D	GRY	FLT	GR5	muddy gouge, poorly healed.
329	336	AND	bx	LAP	D	GRY	DEP	GR30+	brecciated andesite with volc texture, especially at top. Becoming more porphyritic and unbrecciated towards bottomw
336	382.5	AND	por		D	GRY			consistantly porphry, nice clear plagioclase crystals, haphazardly oriented. Minor finely brecciated zones, small-scale
382.5	392	AND	mas		D	GRY	DEP	GR30+	mainly massive andesite, with faint crystals seen in places. brecciation increasing towards the end of interval

Blackwater Project
Drill Summary - Lithology

BW0378

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
392	397.1	AND	bx	LAP	D	GRY	FLT	GR10	fault brecciated, with brecciated andesite
397.1	399	AND	bx	LAP	D	GRY	FLT	GR10	no intense structure in this competant interval
399	405	AND	fltbx	LAP	D	GRY	FLT	GR30	busted rock, with a bit of fault gouge. litho as above
405	417.5	AND	fltgge		L	GRY	UNKN		fault gouge, with fragments appearing to be andesitic within. Core very bleached with clay alt'n. very well healed, however, quite solid in many runs. Any primary textures completely obliterated

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Blackwater Project
Drill Summary - Alteration

BW0378		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	10	O		0	MTRX	2	PERV	1		0	HM	FR	4				hemitite/iron oxide/ geothite staining on rock, other than than, relatively unaltered
10	31.9	O	CLST	1	MTRX	3	PATC	2	CLST	2	HM	FR	4				some distinct ser clasts. brief patches of sil alt'n. strong clay especially around broken core
31.9	41.7	T		0	MTRX	1	PERV	2	PERV	2	HM	FR	1				sharp contact from very prevalent oxide faceies, to more subtle transitional facies. Groundmass sil-ser altered
41.7	47.7	T	CLST	1	MTRX	2	PATC	3	PERV	2	HM	FR	1	ALB	PATC	2	lightly ser-sil altered, with patches of bleached more intense sil alt'n, with albite
47.7	55	T		0	MTRX	1	PERV	2	PERV	2	HM	FR	1				sil-ser alt'n of groundmass continues, with clasts lightly altered as well
55	62.5	T		0	FR	3	PERV	2	PERV	2	HM	FR	2				increased intensity of hem and clay alt'n here.
62.5	71	T	CLST	1	FC	3	PERV	2	PERV	2	HM	FR	1				gouge with moderate clay
71	76	T	PERV	2	FC	1	PERV	2	PERV	1	HM	FR	1				short zone of pervasive dark green chl alt'n in broken rock
76	94	T	FR	1	FR	2	OP	1	PERV	1							into dark andesite, weak overall alt'n, late stage oxide yellow-green oxide mineral on several fracture planes.
94	105	S	FR	1	FR	2	PERV	2	PERV	2							increase in pervasive sil alt'n, especially towards bottom of unit. transitional facies ends
105	113.5	S	FR	1	FR	2	OP	2	PERV	2	UNK	PATC	2				unkown red-brown alteration mineral here locally, in a few patches. could be siderite? or other iron carbonate?
113.5	122	S	FR	1	FR	2	OP	1	PERV	3							yellow-green clay on many fracture planes. strong ser alt'n, speckeled texture
122	124	S	FR	2	FC	3	OP	1	PERV	2							fault gouge zone, with soft clay.
124	137	S	FR	1	MTRX	2	OP	3	PERV	2							somewhat harder core due to moderate sil alt'n. White clay on fracture planes. also small specks of clay in matrix. Sil partially replacing some clasts
137	145.5	S	FR	1	MTRX	1	OP	3	PERV	2							hard rock from silica overprinting
145.5	169	S		0	FR	2	PERV	3	PERV	2							rock quite hard from perv silica alt'n. Some patches of more sericite
169	194.5	S		0	FR	2	PERV	3	PATC	3							higher ser alt'n in patchy zones
194.5	207	S	VNHL	2	FR	1	PERV	3	PATC	2	SIL	VNHL	3				veins with assemblage of sulphide mineralization, with vein haloed sil-chl, with sil pervasing further outward

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Blackwater Project
Drill Summary - Alteration

BW0378		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
207	211	S	VNHL	2		0	PERV	3	PERV	2	SIL	VNHL	3	BIOT	PATC	1	rock is pretty hard with sil alt'n. Patchy biotite alt'n, weak
211	219	S	FR	1	FR	1	PERV	3	PATC	2	BIOT	PATC	1				hard rock, weak biot
219	223	S	FR	1	FC	2	PATC	3	PATC	2	BIOT	PATC	1	CARB	PATC	1	fracturing with quite a bit of clay, carb within
223	238	S	FR	1	FC	2	PERV	3	PERV	2	BIOT	PATC	1				pretty much as above. slightly less biot
238	242	S	FR	1	FR	1	OP	3	PERV	2	CARB	FR	1				hard rock, strong sil overprinting
242	251.5	S	FR	2	FC	2	PERV	3	PERV	2	CARB	FR	1				increasing perv silica
251.5	275.3	S	FR	2	FR	1	PERV	4	CLST	2							strong pervasive silica, but not destructive. sericite clasts within VC unit
275.3	292	S	FR	2	FR	1	PERV	4	PERV	2							strong silica content continuing in andesite litho
292	306	S	FR	2	FC	2	MTRX	4	CLST	3							rock quite hard, especially groundmass, from silica alt'n. lots of clasts highly ser altered
306	311.5	S	PERV	2	FC	2	MTRX	3	CLST	2							chl alteration becoming more pervasive
311.5	321	S	PERV	4	FC	3	OP	2	CLST	2							transitioning to more chl altered, with fracture controlled chl-cly alteration destroying primary textures.
321	333	S	PERV	3	FC	2	MTRX	3	CLST	2	BIOT	PERV	1				pervasive dark green chl.
333	352	S	PERV	2	FR	1	PERV	4	PERV	2	CAL	VN	1	BIOT	PATC	1	hard rock. brownish patches with weak biot alt'n. very dark green pervasive chl
352	358.8	S	PERV	2		0	PERV	3	PERV	2	CAL	VN	1	BIOT	PERV	1	rock still quite hard with sil alt'n. slight increase in chl
358.8	377	S	VNHL	3		0	PATC	4	PERV	2							patchy strong sil alt'n. chl occurring as vein halos, and replacing clasts, giving a mottled alteration trend
377	392	S	VNHL	3	FR	1	PATC	3	PERV	2	BIOT	PERV	1	CAL	FR	1	fairly hard rock continuing with the patchy pervasive sil alt'n. brownish tinge due to biot, frequent haloing with chl
392	397	S	PATC	2	FR	3	PATC	2	PERV	1	BIOT	PERV	2	CAL	FR	2	abundant calc-clay fracturing, especially where core is rubbly. pervasive biotite, particularly haloing some vnlts
397	404	S	VNHL	2	FR	2	OP	1	PERV	2	BIOT	PERV	2	CAL	FR	2	browning from biotite continuing, slightly stronger
404	417.5	S	PERV	3	PERV	5	PERV	2	PERV	4	CAL	PERV	2	BIOT	PERV	2	lots of gouged, core, some areas a thick solid clay, some areas are almost sandy. intense clay, lots of ser-chl. calcite throughout

Blackwater Project
Drill Summary - Mineralization

BW0378		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	20		0		0		0										sulphide barren
20	31		0		0		0										as above
31	40	BB	0.1	DI	0.1		0	Ga	SP	0.1							trace sulphides popping up. possible galena seen
40	49	VN	0.1	BB	0.1		0										very fine hairline vnlt with py seen. Also on a fracture plane
49	55	BB	0.1	CR	0.5		0	Apy	DI	0.1							sphalerite partially replacing some clasts
55	70	BB	0.1		0		0										trace py found in gouge
70	80	BB	0.5		0		0										more gouge with minor py
80	87	DI	0.1	DI	0.1		0										trace py disseminated, and on occaisional fracture, sph trace
87	97	BB	0.1	DI	0.1		0	Apy	BB	0.1							bleb of py in a fracture. few blebs of apy bright silver
97	104	DI	0.1	DI	0.1	BB	0.1										first small bleb of po seen.
104	119.5		0	DI	0.1	BB	0.5	Apy	SP	0.1							very little sulphides, small blebs Po popping up towards bottom
119.5	129	VN	0.1	DI	0.1	BB	0.5										bit of an increase of Po in volc litho. rare vnlt with py
129	138		0	DI	0.1	BB	0.5										weaker sulphides than above.
138	149.5	DI	0.1	DI	0.1	BB	0.5										minor blebs of silvery po, trace py associated
149.5	164		0		0	BB	0.1										barren
164	169		0	BB	0.1	BB	0.1										black sph and silvery po beginning to replace amygdules in blebs
169	175	BB	0.1	BB	0.5	BB	1										more frequent amygdule replacement with mainly black sph+po
175	183.5		0	BB	0.1	BB	0.1										drop in sulphides
183.5	190		0	BB	0.5		0.5										increasing po-sph in veins and amygdule replacement
190	201		0	VN	0.5	BB	1										veins bearing good grade sp-po. po also replacing large amygdules partially.
201	206.5		0	BB	0.5	BB	0.5										occaisional bleb of sph-Po
206.5	214	DI	0.1	DI	1	BB	2										mineralization increased, disseminated/blebby Po, with associated sph. trace py

newgold
a clear direction

Blackwater Project
Drill Summary - Mineralization

BW0378		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
214	220.4	VN	0.1	DI	1	BB	1										po blebs, with associated sph disseminated around. hairline py vnlts
220.4	229	VN	0.5	DI	2	BB	2										good sph-po mineralization, 3-4% locally. disseminated, po liking to replace amygdules. minor veined py
229	238	VN	0.1	DI	3	BB	1										lots of diss sph. po associated but in lesser quantities
238	242.6	DI	0.5	DI	1	BB	0.5										section with a drop in mineralization
242.6	248	VN	2	DI	1	BB	1	Cp	VN	0.1							frequent py vnlts and blebby disseminations.
248	258.8	VN	2	DI	3	BB	2	Cp	VN	0.1							high grade sections, up to 5 % sph locally, section with crosscutting py veinlets up to 5% locally.
258.8	267	VN	2	CG	1	BB	1	Py	EU	0.5							in VC litho, mineralization still good, sph in clasts within matrix, po blebs silver to brassy. Some euhedral py on fracture planes, cubes
267	275.5	VN	2	CG	1	BB	2	Cp	VN	0.1							as above, with increased po. one blebby vein(?) or bleb with high grade po-py... seems to be bound by fine fractures
275.5	275.7		0		0		0										cave. NOT SAMPLED
275.7	283	BB	2	BB	2	BB	2	Cp	VN	0.1							mineralization occurring in high grade "blotches". also vnlts of py with trace cpy
283	289	SUBH	1	DI	0.5	VN	3	Cp	VN	0.1							blotchy, blebby veining with very high grade Po. Some subhedral Py within one of these Po veins seen.
289	291.5	DI	0.5	DI	3		2										interval of very high grade disseminated sph, with disseminated po as well as in blebs
291.5	293.5	DI	0.5	DI	0.5	BB	1	Apy	SP	0.1							drop in mineralization in this interval. core not as dark as above
293.5	297.5	DI	3	DI	0.5	BB	0.1	Cp	DI	0.5	Apy	DI	0.5				very nice py mineralization, fine grained in a sheared zone. accompanying cpy and aspy. Many fracture planes/surfaces with shiny euhedral py crystals. Looks like a good route for Au mineralization
297.5	304	VN	1	DI	0.5	BB	0.5	Cp	DI	0.1							py lingering in veins and fracture planes.

Blackwater Project
Drill Summary - Mineralization

BW0378		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
304	313	VN	1	DI	0.5	BB	1	Cp	BB	0.1							py in small vnlts and some fracture planes.
313	319.5	VN	2	DI	0.1	BB	0.1										mainly just py seen, in vnlts - very fine grained dull
319.5	328	DI	1	DI	0.5		0.5										low grade mineraliztion overall
328	340	BB	0.5	BB	0.5	BB	0.1										mainly small blebs with minor py and sph
340	350	VN	0.5	BB	0.5	BB	1										fair grade po in dark little blebs. py vnlts infrequent. sph with po
350	358	VN	0.1	DI	0.5	VN	0.5	Cp	VN	0.1							hairline vnlts with trace cpy-py. po in larger vnlts. shiny brown sph seen in on hairline vnlt, also disseminated
358	367		0	DI	0.1	DI	0.1										trace sulphides
367	371	VN	0.5	DI	0.1	DI	0.1	Cp	VN	0.5							good py with bright cpy in a vnlt at 370.3m. Another vnlt seen with similar composition, but lower grade
371	377	VN	0.1	VN	0.1	VN	0.1										trace sulphides. Possible trace cpy
377	388	VN	0.1	DI	0.1	VN	0.5										up to 1% po locally, in some good grade vnlts.
388	394	VN	0.5	DI	0.1	VN	0.5	Cp	VN	0.5							py vnlt's with minor bright yellow cpy within.
394	402	VN	0.1	DI	0.1	BB	0.1										trace sulphides
402	417.5	DI	0.1	DI	0.1		0										lots of clay gouge, maybe minor dark fine grained py, but not amounting to too much

Blackwater Project
Drill Summary - Structure

BW0378

From (m)	To (m)	Structure	Strength	Comments
0	7.3	BRKZ	3	chunky core
7.3	9.5	JZ	4	wavy fractures
9.5	21.7	BRKZ	4	chunky core, very broken up. low confidence on measured angle
21.7	24.7	BRKZ	2	still chunky core, but some longer runs
24.7	31.9	BRKZ	5	rubbly core with minor gouge, poorly healed fractures.
31.9	44	BRKZ	2	major fracture set at 60, minor one at 30
44	52.6	BRKZ	3	blocky
52.6	62.65	BRKZ	2	good runs, but most fractures are rubbly
62.65	69	FZ	3	well gouged, poorly healed. upper contact pretty clear at 50 degrees
69	76	FZ	1	rubbly core with minor gouge, wrecked rock from upper fault
76	83.5	BRKZ	5	rubbled core, poor recovery
83.5	92.9	BRKZ	3	inconsistant competancy, some good runs, with zones of highly fractured rock
92.9	105.2	BRKZ	2	clear fracture sets at 50 and 35 degrees to CA. core fairly competnat
105.2	112	BRKZ	1	minor joint set at 30 dTCA. competant zone
112	119.5	BRKZ	3	minor set at 60 dTCA. fair competency
119.5	121.5	BRKZ	5	rubbly core
121.5	123.7	FZ	3	moderately healed fault gouge, soft. some slicks at 40 degrees TCA
123.7	126.7	BRKZ	3	some minor gouge on fractues, but mosly fairly competant rock. minor fracture set at 55 degrees
126.7	129.5	BRKZ	5	very rubbly, shardy. some fractures at low angles to CA
129.5	138.5	BRKZ	3	major set at around 50, minor at 35, maybe another minor set at 20-30. Broken rock around small fault
138.5	139	FL	4	small fault, at 35dTCa. gouged, moderately healed, pebbles within gouge
139	141	BRKZ	3	broken zone around fault
141	143.3	JZ	3	clean fracture at 60, rougher fracture at 35
143.3	153.4	BRKZ	2	frequent clean planar fractures at consistantly 35.
153.4	153.6	FZ	1	very short piece of fracture gouging, no movement evident upper contact 45, not equal to lower contact at around 65 TCA.
153.6	164.5	BRKZ	2	fairly competant, with clean planar fracturing
164.5	174.5	JZ	3	competant zone. joints varying from 20-40 mostly. clean planar fractures

Blackwater Project
Drill Summary - Structure

BW0378

From (m)	To (m)	Structure	Strength	Comments
174.5	178	BRKZ	2	no real dominant fracture orientation
178	182.6	BRKZ	4	many rubbly zones, with some more competant runs in between. no clear orientation, but clean fracture measured at 20
182.6	195.3	BRKZ	2	several clean fractures measured at 20 degrees
195.3	218.5	JZ	2	three main joint sets, 35, 50 and 20 d TCA.
218.5	220.4	FZ	1	fault breccia unit, with carbonate, minor gouge. structure at 10d TCA
220.4	222.4	BRKZ	3	nearly every fracture at a different angle, but 15 degrees fracture seems to be most opened up
222.4	223	FL	2	small block of soft gouge at 35dTCA. core around is broken/minor gouging
223	229	BRKZ	2	variety of orientations, angles measured from 15-35 degrees, with minor set at 60-70
229	230.8	FZ	3	crumbly gouging, some blocks as well
230.8	249.3	JZ	5	several fractures developing at 60-70 dTCA. One 8 degree fracture seen here again, very clean fracture.
249.3	252.8	FZ	2	gouge with angleTCA at approx15-20 degrees
252.8	269	JZ	5	quite a few joints, many orientations, dominant one appears at 35. 8 degree joints here as well
269	272.5	BRKZ	2	many (4 or 5) low angle fractures measuring from 8-15 degree tca
272.5	274.7	FZ	3	orientation of minor gouge bit unclear, but many residual fractures around 30-35 dTCA. rubbly section
274.7	278.5	BRKZ	2	sets at 30, 10 dTCA
278.5	278.7	BRKZ	5	cave
278.7	283.2	BRKZ	3	inconsistant fracturing, rough fracturing, shardy. measurable fracture at 15
283.2	293.5	JZ	3	minor set at approx 45 deg TCA
293.5	299.3	FZ	3	rubble with gouge. Very clear shear plane measured at exactly 23 degrees TCA
299.3	305.5	BRKZ	4	highly fractured, rough non-planar fracturing for most part
305.5	314.5	BRKZ	5	rubble with blocks
314.5	316	BRKZ	2	blocky, rough fractures
316	318.7	FZ	2	a bit of soft gouge amidst rubble. no measurable planes
318.7	323.4	FZ	1	rubble, with minor gouge
323.4	326.1	BRKZ	3	blocky, rough fractures
326.1	328.4	FZ	4	soft gouge, upper gouge contact at approx 65, lower gouge contact unclear.
328.4	331	BRKZ	4	very broken rock, some rubble, rough fracturing

Blackwater Project
Drill Summary - Structure

BW0378

From (m)	To (m)	Structure	Strength	Comments
331	333.1	BRKZ	5	rubble. shardy
333.1	336.3	BRKZ	4	seems to be equally dominant sets at 30 and 60. shardy fragments
336.3	339.7	JZ	4	dominant joint set from 30 to 45
339.7	344.5	BRKZ	1	fairly competant zone. no consistant fracture orientation
344.5	352	BRKZ	2	fractures at varying angles, but one set from 55-70 degrees seems more prevalent
352	357	BRKZ	1	pretty competant rock with dominant fracture set at approx 55 deg TCA
357	361.5	JZ	4	competant rock. fracture set as above
361.5	365.5	BRKZ	3	minor fracture set at 35-45 degrees seems to be breaking the rock more
365.5	368	JZ	4	minor set at 40
368	368.3	BRKZ	4	short zone of very broken rock
368.3	377	BRKZ	1	perhaps another joint set at 70 deg TCA
377	392.1	BRKZ	1	minor set at around 30 deg TCA
392.1	397.1	FZ	1	rubbly, chewed up core
397.1	399	JZ	4	short interval of very competant rock. minor fracture set at 40 deg TCA
399	402	FZ	2	rubbly, sandy core.
402	405	BRKZ	3	minor fracture set at 25 deg TCA
405	417.5	FZ	4	large, significant fault gouge, structure seems to be approx at 60 degrees TCA, but not confident of this. Gouge is well healed, to very well healed in some runs, with core very solid to the poke, but clay rich

Blackwater Project
Drill Logs

Hole ID:	BW0379	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375451.38
Depth (m):	431.9	Date Started:	10/03/2012	Casing Size:	HWT	Northing:	5892899.27
Azimuth:	0	Date Completed:	17/03/2012	Casing (m):	4.1	Elevation (m):	1613
Dip:	-90	Logged By:	SCa	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	156	-89
49.38	155.2	-88.8
92.05	136.2	-88.7
140.8	132.5	-88.4
183.5	143	-88.2
229.2	141.9	-88.1
285.6	168.6	-87.9
323.7	148.6	-88
369.4	170.6	-88
418.2	165.4	-87.8

Blackwater Project
Drill Summary - Lithology

BW0379

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	0.2	OB					UNKN	SH	OB, Bx rock similar and dis-similar to the unit below
0.2	12.97	FLPT	hydbx	LAP	L	GRY	ALTFR	GR30+	Pervasivley silicified L.Gray rock, Bx SA/SR clast supported>matrix supported jigsaw fit, around veins and joints (hydro-Bx). small sections of Darker clastic rock (AND?), and bottom 2 meters is in an out AND in-between silica/high-mineralization sec
12.97	15.2	AND	bx	LAP	D	GRY	DEP	GR10	1-6mm SA/SR D.Gray clasts closely spaced matrix supported moderatley sorted. Gradationally overlying plag porphyritic AND. (flow top BX?)
15.2	19.2	AND	mas		D	GRY	ALTFR	GR30	Massive sub-hedral to euhedral plag porphyritic AND. Gradational silica flooded alteration contact.
19.2	21.4	FLPT	bx	CA	M	GRY	ALTFR	GR10	Silica Flooded and Bleached, strongly mineralized.1-3mm SR moderatley to well sorted L.Gray clay replaced clasts supported by M.Gray siliceous matrix. Lower section is a fault-Bx, with chloritic peripheries. (Altered AND?)
21.4	25.2	AND	bx	LAP	D	GRY	ALTFR	GR10	1-10mm SA/SR poorly sorted D.Gray clastssupported by a weakly bleached siliceous matrix.
25.2	42.3	AND	bx	LAP	D	GRY	ALTFR	GR30+	1-60mm clasts SA/SR poorly sorted tight fittin Bx, locally jigsaw fit, in a D.Gray matrix. Plag porphyritic (1mm crystals), in clasts and GM, with small sections (<0.5m) of Massive plag porphyritic AND adjacent to Jigsaw fit Bx. (INTERP; small Flows
42.3	56.02	FLPT	bx	LAP	M	GRN	ALTFR	SH	Silica Flooded and bleached. 1-10mm SA/SR clasts. majority of rock; clast size is 1-3mm SR L.Gray clay replaced clasts supported by a silica-ser matrix. Small sections of larger clasts exhibit weak lamination of rock, a tight clast supported poorly s
56.02	79	AND	bx	LAP	D	GRY			1-65mm D.Gray-Black massive/plag-porphyritic clasts supported by a weakly siliceous matrix. With equal sized sections of massive plag porphyritic (1-2mm crystals) rock.
79	84.6	AND	bx	LAP	D	GRY	ALTFR	GR30	continuation of above, increasingly Bx'd and GM moderatley replaced by SP. Bottom contact, is a small gouged fault, where siliceous alteration begins.
84.6	89.35	VC	bx	LAP	L	GRY	UNKN	GR30+	2-40mm clasts in a silicified matrix locally all clasts ser-chl replaced, predominatly dark clasts clay replaced and light clasts (pseudoclasts?) silica replaced, supported by a L.Gray siliceous matrix. As matrix % decreases near bottom contact clast
89.35	92.45	AND	mas	LAP	D	GRY	DEP	SH	2->80mm clasts, Poorly sorted sub-rounded (weakly sub-angular in top section) matrix supported Bxabove and below a Mass fine-grained AND. Bottom contact is a sharp, marked by colour change, decrease in clast size and increasing matrix %.

Blackwater Project
Drill Summary - Lithology

BW0379

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
92.45	109.5	AND	volc	LAP	M	GRY	UNKN	GR30+	1->90mm clasts, poorly sorted sub-angular to angular alternatley clay/Ser-chl replaced mafic clasts some of which are plag porphyritic (Some clasts and BB's of silica), sitting an a medium to light gray silicified matrix.
109.5	121.5	AND	volc	LAP	D	GRY	UNKN	GR30+	1->60mm clasts, poorly sorted sub-rounded mafic D.Gray-Black massive and plag-porphyritic clasts in a D.Gray matrix, locally appears matrix has eaten away at clasts. Bottom section becomes more angular and less matrix supported grading into massive p
121.5	129.4	AND	mas		D	GRY	UNKN	GR10	massive plag porphyritic (4-6mm crystals,1-5%)
129.4	133.4	AND	bx	LAP	D	GRY	ALTFR	SH	1-30mm D.Gray-Black massive and amygdaloidal clasts, locally moderatley/poorly sorted, sub-rounded to sub-angular in a D.Gray matrix. Sharp bottom alteration contact @ 30-35 dtca.
133.4	134.8	AND			L	GRY	ALTFR	SH	perv silicified texture destroyed section in between 2 AND's. above contact sharp @30-35 dtca, below contact sharp at unknown angle. Alteration of in-situ rock or dyke?
134.8	151.4	AND	bx	LAP	D	GRY	DEP	GR30+	1-30mm D.Gray-Black massive and amygdaloidal clasts, locally moderatley/poorly sorted, sub-rounded to sub-angular in a D.Gray matrix. Minor clay replaced lathe shaped amphiboles. 40mm felsic dyke @80 dtca, darkened chill margins and wall rock Bx with
151.4	165	AND	mas		D	GRY			massive plag porphyritic (4-7mm crystals, 5-10%), minor lathe shaped clay replaced amphiboles.
165	180.8	AND	mas		D	GRY	DEP	GR30	Continuation of above, bottom contact becomes massiv BIOT perv alteration, into an amygdaloidal Plag porphyritic AND, ending when the plag crystals dissappear
180.8	207.4	AND	amg	LAP	D	GRY	UNKN	GR30	strongly amygdaloidal AND (avg 2mm circular, but ranging from 1-15mm circular to elongate), weakly plag porphyritic (plag grains are locally rounded) locally fluid Bx, irregularly sub-rounded clasts in a silica rich D.Gray matrix. Locally Qtz Bx's se
207.4	230	AND	bx	LAP	D	GRY			1-6mm sub-rounded D.Gray-Black clasts in a siliceous D.Gray matrix (silica fluidized matrix Bx'ing rock?), small massive sections that are moderatley amygdaloidal (avging 3mm ranging 2-10mm circular, weakly irregular), some clasts throughout are amyg
230	250	AND	bx	LAP	D	GRY	UNKN	GR30+	continuation of above, silica-albite alteration eats away at rock Bx'ing it.

Blackwater Project
Drill Summary - Lithology

BW0379

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
250	316.1	AND	bx	LAP	D	GRY	ALTFR	GR10	Silica-Albite alteration fluids Bx'ing rock but grading into competent massive, weak to moderatley amygdaloidal (silica/sulphide fill), and moderate to strongly black lathe shape amphibole phyric (2-8mm, 2-5%. Hornblende?). amphiboles are locally tra
316.1	322.3	AND	bx	LAP	M	GRY	ALTFR	SH	Perv silicified, locally patches of relict softer rock. rounded to sub-rounded 2-50mm clasts, silica destroying part of original texture. Sharp alteration contact @50 dtca, silica BB's reach ~5mm into AND VC.
322.3	325	AND	volc	LAP	D	GRY	ALTFR	GR10	D.Gray matrix supported rounded to sub-angular 1-50mm D.Gray-black clasts poorly sorted, grading into perv-silica-chl at bottom contact, with silica BB's neaqr contact.
325	337.0	AND	bx	LAP	M	GRY	FLT	GR30	patchy locally perv silica-chl L.Green-Grey to D.Green patches. rounded to sub-rounded poorly sorted.
337.0	347.2	AND	mas		D	GRY	ALTFR	GR10	massive D.Gray-purply lathe shaped amphibole (Hornblende?) Porphyry, grading into a plag porphyry with depth. magma differentiating. Bottom contact heavily Py BB'd and VN'd, and grades into silica-chl rock.
347.2	361	FT	lam		M	GRY			perv silicified Light to M.Green-Grey with white clay DI's throughout. Weak fluid flow texture locally, seperating silica sericite into small bands @ 25 dtca.
361	410	FT	lam		L	GRN			continuation of above. Moderatley laminated, perv silica-ser, locally seperated in bands.
410	431.9	FT	lam		L	GRN			continuation of above.

Blackwater Project
Drill Summary - Alteration

BW0379

From (m)	To (m)	Oxide Facies	Chlorite Style	Chlorite Int	Clay Style	Clay Int	Silica Style	Silica Int	Sericite Style	Sericite Int	Alteration 1 Code	Alteration 1 Style	Alteration 1 Int	Alteration 2 Code	Alteration 2 Style	Alteration 2 Int	Comments
0.2	12.97	T	PATC	2	CLST	4	MTRX	4	CLST	2	UNK	ISSOLL	2	LIM	FC	3	matrix dominant to pervasive silicification, clasts are L.Green Clay/Ser? replacement? Patchy Chlorite marks the end of the silicified zone. Black silica overprinted unknown BB's and haloing clasts. Fracture controlled orange to red Limonite/Limonitic-clay
12.97	18.5	T	FR	1	FR	2	REP	2	REP	2	BIOT	REP	2	LIM	FR	3	silica-ser replacing feldspars. BIOT small BB's of replacement in GM. Limonite (goethite) coating FP's
18.5	21.3	T	FC	3	CLST	4	MTRX	4		0	CLY	FR	2	LIM	FC	2	White to L.Gray Clay replacing clasts in a M.Gray silicified matrix. FP's moderatley coated with Chl, and chloritic gouge in fault--Bx gouge. Limonite weak-moderatley coating FP's and with ckay replaces a major component of gouge.
21.3	26	S	FC	2	FR	2	MTRX	3		0	CLY	CLST	1				Silica patchy matrix dominant and BB'y. Chlorite fracture controlled on joints and veinlets, locally small BB's in siliceous matrix. clay on FP's and weakly replacing white to L.Gray clasts in silicified patches.
26	39.2	S	FC	4	FR	2	PATC	1		0	CLY	CLST	3	CLY	REP	1	minor patches of silica, matrix dominant. Chlorite strongly fracture controlled and decreases in strength with depth. BIOT weak rep. Clay replaces clasts, coats FP's and replaces Horneblende. L.Gray yellow sulfate weakly coating FP's
39.2	42.6	S	FR	2	CLST	2	MTRX	3	MTRX	1	CLY	FR	2				silica comes in as small cm sized BB's then as patches, into matrix dominant with sericite and with clay clast replacement. Clay and chl alternatingly on FP's
42.6	56.02	S	PATC	3	CLST	2	PERV	4	PERV	3	SER	PATC	2				Large patches of Chlorite throughout, small patches of Ser (the 2 are seperate). Silica-Ser Perv (and locally seperated by laminations in clasts). Small sections where clasts have been replaced by L.Gray to white clay.
56.02	62	S	FR	2	FR	2	PATC	1	REP	1	BIOT	REP	1				silica patch @59.5m, otherwise non-siliceous. Chl coats FP's moderatley. BIOT replacement of small grains.
62	75	S	FR	1	FR	1	VN	1	REP	1	BIOT	REP	1	SIL	PERV	1	similar to above, silica VN'd and BB's part of a strongly healed BX'd zone (mobilized zone, BX'ing Silica vein?). Micro-crystalline Qtz.

Blackwater Project
Drill Summary - Alteration

BW0379		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
75	84	S	FR	2	FR	4	PERV	1	REP	1	BIOT	REP	1				similar to above, minus silica. Yellow, Green and White clays on FP's.
84	89	S		0	CLST	2	MTRX	4	CLST	3	UNK	SPHL	3				matrix dom silicification, locally silica replaces some clasts, and overprints white sulphide halos. Sericite/clay replaces clasts.
89	92.45	S	FR	3	PERV	2	MTRX	1		0	BIOT	REP	2				top and bottom of section silica is moderatley matrix dominant, while in middle of unit (massive it is pervasivley clay, with BIOT rep.
92.45	102.5	S	CLST	1	CLST	3	MTRX	4	CLST	3							matrix dom silicification. Ser replaces select clasts, while clay-chl replace darker clasts.
102.5	108.8	S	CLST	1	FR	1	MTRX	4	CLST	4	UNK	FR	2				matrix dominant silicification, with Ser-chl clast replacement. Black very soft mineral on FP's locally strongly with Py.
108.8	120.5	S	PATC	2	CLST	3	PATC	2		0	CLY	PATC	2	CLY	FR	1	egg-white clay weakly on FP's, clay partially replacing clasts. Chlorite-clay patches and fracture controlled near top of section. patches of silica locally, and pervasive micro-crystalline..
120.5	133.4	S	REP	1	FR	4	PATC	1		0	BIOT	REP	1	SIL	PERV	1	weak patchy BB's of silica, Pervasive microcrystalline silica.. Chlorite locally replaces Plag grains and weakly GM. weak to strong yellow clay, and white accessory clay on FP's.
133.4	134.8	S	FR	1	VN	2	PERV	4	PERV	1							silica perv and texture dest, with ser. chl weakly coats FP's
134.8	151	S	FR	3	CLST	2	PATC	1		0	SIL	AMYG	1	BIOT	REP	1	weak patchy matrix dom silicification, weak silica amyg filler, and micro-crystalline pervasive. Chlorite variably coating FP's from moderate to strong. clay replaced amphiboles.
151	159.9	S	FR	3	FR	4	PERV	2		0	BIOT	REP	3				Pervasive microcrystalline silica. chlorite coats FP's, and pervasive. Strong Yellow clay on top of Chl on FP's. BIOT GMR
159.9	162.2	S	FC	5		0	PERV	2		0	BIOT	REP	3				Pervasive microcrystalline silica. BIOT coating FP's, assoc with the large Py vein, and abundant crush (crush assoc with movement along vein weakness?)

Blackwater Project
Drill Summary - Alteration

BW0379		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
162.2	174.8	S	FR	2	FR	5	PERV	2		0	BIOT	PATC	3				massive, micro-crystalline pervasivley silicified. BIOT patchy GMR. FP's coated very strongly by swelline yellow clay.
174.8	180.5	S	FR	3		0	PERV	2		0	BIOT	PATC	5				microcrystalline perv silicification. BIOT patchy perv GM alteration.
180.5	199.9	S	FR	2	CLST	2	PERV	2		0	ALB	MTRX	2	SIL	PATC	2	patches up to 50cm of silica, that has Bx'd the core (@15 dtca). Perv micro-crystalline silica. Silica filling amygdules. Silica/Albite Medium-Dark.Gray matrix dominant alteration (silica/albite has come into rock and eaten away at it, creating a pseudo-Bx). BIOT patchy clast/GM dominant, none in silica/albite matrix
199.9	213	S	FR	2	CLST	2	PERV	2		0	ALB	MTRX	2	SIL	AMYG	3	similar to above. Yellow clay weakly to moderatley coating FP's
213	226	S	FR	4	CLST	2	PERV	2		0	ALB	MTRX	2	SIL	AMYG	2	similar to above, stronger chlorite coating FP's and locally patchy pervasive.
226	235	S	FR	4	CLST	2	PERV	2		0	ALB	MTRX	2	BIOT	PATC	1	similar to above, NO amyg's, Weak to non-existant BIOT.
235	250.5	S	FR	4	CLST	2	PERV	2		0	ALB	MTRX	2	SIL	AMYG	2	perv micro-crystalline Qtz. silica-albite matrix dominant, causing Bx'n of rock, leaving amygdaloidal clasts throughout. Sulphide > silica infill amygdules, silica rims the periphery with sulphides inside (or wholly sulphide filled). Chl coat FP's and locally perv. Patchy BIOT in black clasts.
250.5	272.2	S	FC	4	REP	2	PERV	2		0	ALB	MTRX	3	BIOT	PATC	3	pervasive micro-crystalline silica. Albite>>Silica M.Gray Patches and Matrix dominant. Clay replacing amphiboles (Hornblende replacement?). Hardness 3.5 clay-BIOT mix replacing clasts.
272.2	290.5	S	FR	4	REP	3	PERV	3		0	ALB	MTRX	1	BIOT	PERV	2	micro-crystalline silica pervasive, ALB-silica mix in Bx zones. amphiboles clay replaced, while the GM they reside in is D.Gray/purple and seems weakly hematitic to unaltered.
290.5	307.8	S	FR	4	REP	3	PERV	2		0	BIOT	PERV	2	ALB	MTRX	1	similar to above, except only trace to non-existant Bx for albite to come in. Yellow clay on FP's
307.8	316.1	S	FR	3	REP	2	PERV	2		0	BIOT	PATC	3	ALB	MTRX	1	similar to above.

Blackwater Project
Drill Summary - Alteration

BW0379		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
316.1	322.3	S	FR	3	PATC	3	PERV	4	PATC	3							Green-Gray bleached rock. pervasivley silicified and weakly sericitic (L.Green), with patcy ser>>chl mixtures and larger patches of more relict clay rich sections.
322.3	325	S	FR	3		0	PERV	2		0	BIOT	CLST	1				perv micro-crystalline silica. small patch of silica partially perv and largely BB'd
325	337.0	S	PATC	3	REP	2	PERV	4	PERV	3	SIL	VN	1	CHL	FR	4	Pervasive silica-ser with patches of chlorite throughout. Chlorite patches associated with clay replacement of small grains/Bx. Small patches of relict Hornblende phyric rock.
337.0	347.3	S	FR	3	REP	2	PERV	2		0	SER	REP	1	CHL	REP	1	perv micro-crystalline silica, and locally BB'y. Chl mod-strong fracture coat. weak BIOT. Clay replacing Black amphiboles. Grading into ser-chl replacement of plag crystals.
347.3	360.5	S	FR	3	OP	3	PERV	3	PATC	4	SIL	VN	1	SIL	PATC	5	L.Green silica-ser pervasive, silica sericite fractions locally seperated into laminations,and around Qtz veins silica is perv 5, while throughout it is only moderatley pervasive. Chlorite coats FP's, and occurs in patchy distribution with sericite. White clay BB's overprinting.
360.5	380	S	FR	3	VNHL	2	PERV	5	PERV	4	SIL	VN	2				perv silica-ser, ser/silica fractions can be seperated partially in laminations making softer sericite rich bands and harder silica rich bands. Strong white clay Qtz-APy vein alteration halo @366.1m.
380	406	S	FR	2		0	PERV	5	PERV	4	SIL	VN	1				similar to above.
406	431.9	S	FR	3		0	PERV	4	PERV	3							similar to above.

Blackwater Project
Drill Summary - Mineralization

BW0379		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0.2	13	VN	0.5	BB	0.5		0	Dbs	BB	1	Dbs	DEN	0.5	Ga	VN	0.1	transition zone. Vuggy Py Veinlets with minor Ga and black oxidation product (was Sp/Ga?). BS (Black Sulphides) fracture controlled weak dendritic, Black BB's overprinted by Silica (BS?).
13	18.2	BB	0.1	SP	0.5	SP	0.1										Specks of Py adn Po. Sp DI'd BB's throughout, rectangular, square adn circular (replacement of feldspar/amphibole?)
18.2	20.2	VN	0.5	VN	0.1	BB	0.1	Dbs	DEN	1	Dbs	BB	1	Py	BB	1	DI'd BB's of Py and BS. trace BB's of Po assoc with BS's. and fracture controlled DBS. Py and Sp in a veinlet together, while Py also is in fracture controlled veinlets.
20.2	28	VN	0.5	BB	0.1	BB	0.1	Py	BB	1							DI'd BB's of Py with trace Po and Sp. Py fracture coating veinlets.
28	39.1	VN	0.5	BB	0.1	SP	0.5	Py	BB	1							DI'd square and irregular BB's of Py, BB'y Py also partially halos clasts. Po specks in clasts and massive AND.
39.1	42.5	BB	2	BB	0.5	BB	1										BB's of Py and Po, Po dominatley in clasts, Py in clasts and matrix.
42.5	56.02	VN	1	VN	0.5	BB	2	Ga	VN	1	Sp	BB	0.5	Py	BB	1	DI'd BB's of Py, Po, and BS locally Po rich. Up section strongly veined with Ga-Py-Sp, and down section veins dissappear until bottom of section where DBS is as abundant as 4 %. Po decreases with depth.
56.02	64.7	FP	0.1	GmR	3	GmR	3										irregular clast/massive dominant groundmass replacement. Po also BB'y locally.
64.7	76	BB	0.5	GmR	1.5	GmR	0.5										similar to above, however Po decreases with depth till non-existant and Py increases in its stead
76	79	DI	0.1		0	SP	0.1	Apy	SP	0.1							APy and Po specks throughout. Py 1mm DI's locally.
79	84.5	VN	0.1	GmR	2	SP	0.1										Po specks trhoughout, Sp replacing GM in small irregular BB's, Py VN'd

Blackwater Project
Drill Summary - Mineralization

BW0379		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
84.5	89	VN	0.5	BB	1	BB	0.1	Dbs	DEN	0.5	Dbs	BB	1				VN'd BB'y and sooty Py. Po BB's assoc with BS's and Py. BS>>Py BB's and together haloed by white silica overprinted haloes. DBS fracture controlled and weakly dendritic. Irregular red Sp BB's elongate locally.
89	92.4	BB	0.1	GmR	1	GmR	1										Sp-Po GMR throughout the massive section and mafic clasts.
92.4	102.5	BB	2	BB	1	BB	1	Py	VN	1							top of section Black Sp BB's grading into smaller red Sp BB's mid section and Larger 5mm BB's with Po BB's bottom of section. Po BB's throughout. Py Veining strong.
102.5	108.7	VN	1	VN	0.5	BB	1	Py	BB	3	Dbs	DEN	0.5	Sp	BB	1	DI'd BB's of sooty Py, red Sp and Po. fracture controlled DBS. moderate Py veining, locally with black and red Sp (red Sp on outside of veinlet black on inside adjacent Py).
108.7	112.2	BB	0.5	GmR	1	SP	0.1										Sp clast BB'y GM replacement. Py irregular BB's around silica patches.
112.2	121.6	VN	0.1	GmR	3	SP	1	Py	BB	0.1	Sp	VN	0.1				Red Sp BB's and clast>GMR>VN'd. Py VN'd with Sp and coating FP's. Po specks throughout, locally BB's, and specks associated with Sp mineralization.
121.6	133.2	BB	0.1	BB	0.5	SP	1	Ga	BB	0.1	Po	BB	0.5				Po-Sp-Ga elongate BB's near top and bottom of section. Sp weak BB'y replacement in GM. Po specks trhoughout rock, locally not visible. Po BB's throughout bottom of section.
133.2	134.8	VN	5	BB	0.5	BB	1.5	Dbs	DEN	2							small hairline fractures filled with BS (DBS). Strongly Py veined. Sp BB's.
134.8	140.8	FP	0.1	BB	2	BB	1										BB'y red Sp and Po, Po commonly occurs within the Sp BB's. Py coating FP's
140.8	149.6	VN	0.5	GmR	0.5	BB	0.5	Po	SP	1	Sp	VN	0.1				red Sp, BB's and GMR, Black Sp assoc with Py as BB's in FRCT VN's. Po BB's locally, and Specks of Po throughout. Sp decreases ina bundance with depth.
149.6	165	VN	0.1	GmR	1	SP	1										FRCT veinlets and Veins of Py, background Po, specks.

Blackwater Project
Drill Summary - Mineralization

BW0379		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
165	175	VN	0.1	GmR	1	SP	0.5	Po	BB	0.1	Po	BB	0.1				FRCT veinlets of Py. BB's of Po and Py throughout, a Sp enriched GM, locally BB'y Sp.
175	178		0	GmR	1	SP	0.5	Po	BB	0.5							similar to above,
178	193	VN	3	BB	0.5	BB	5	Py	MA	1							BB's of Po throughout but predominatley partial amyg filler with silica, locally Sp assoc with Po BB's. Py is strongly veined and fracture coated, locally Py also occurs as massive GMR that encompasses Po amygs.
193	213.5	VN	1	BB	0.5	BB	2	Py	BB	0.5							similar to above, Py occurs with Po in BB's
213.5	224.8	VN	1		0	BB	2	Viv	VN	0.5							green prismatic almost fibrous locally > blue vivianite on FP's and in veinlets with chlorite and py. Po BB's and GMR.
224.8	236.6	VN	2		0	BB	2	Py	GmR	0.5							moderate Py veining, Py BB's and Weak semi-massive GMR. Po BB's and weak GMR throughout.
236.6	250	GmR	2	VN	0.1	SP	0.5	Po	BB	0.5	Py	VN	1				moderate Py veining, and Groundmass replacement lcoally large masses. Po/Py BB's infilling amygs.
250	272.3	VN	1.5	GmR	1	BB	2.5	Po	SP	1	Py	BB	0.5	Cp	BB	0.1	moderate Po infilling amygs, locally intergrown with Py. Po specks throughout. Po-Py-CP veinlets, Py moderatley veined. Py BB's locally with trace CP. Sp within Albitic-siliceous Matrix, (not to be mistaken with BIOT within D.Gray-Black clast portio
272.3	275.6	VN	0.5		0	BB	2	Py	BB	0.5							Po>Py amyg filling BB's, both locally intergrown. Po partial replacement of amphiboles.
275.6	290.5	VN	0.5		0	BB	2	Cp	BB	0.5	Cp	VN	0.1	Py	BB	0.5	Po BB's infilling amyg's and replacing amphiboles, intergrown with minor amounts of CP. CP veined with Py.
290.5	307.8	VN	3	VN	0.1	VN	0.5	Cp	VN	1	Cp	BB	0.1	Po	BB	1.5	Py-Cp-Qtz-Po-Sp veined together, and Py-Cp-Qtz veined seperate almost parallel to core axis. Po BB's infill amygs locally with CP intergrown. Galena veined with Sp and CP.

Blackwater Project
Drill Summary - Mineralization

BW0379		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
307.8	316.1	VN	0.5	GmR	0.5	BB	1.5	Py	FP	0.1	Cp	BB	0.1				Sp trace to minorly replacing GM locally. ovoid BB's of Po, locally intergrown with trace CP. Py VN'd>FP coating.
316.1	322.3	BB	1	BB	0.1	BB	0.5	Py	FP	0.1	Py	FP	0.1	Cp	BB	0.1	Py BB's locally replacing GM, and incorporating Po. Po BB's throughout and lcoally incorporating CP. Py caots FP's and small 0.5mm veinlets.
322.3	325	CR	0.5		0	CR	3	Cp	CR	0.1							Po-Py-Cp fine-grained>>BB'y D.Gray-black clast replacement.
325	329.7	BB	0.5		0	BB	2	Py	FP	0.1	Cp	BB	0.1				Po DI'd fined-grained BB's, larger Py BB's clast dominant. Py coating FP's. Trace CP in Po BB's locally.
329.7	337	GmR	0.5		0	BB	1.5	Py	VN	0.5	Cp	VN	0.1	Py	FP	0.1	Py is GMR inside patches of clay rich alteration. Py CP and Qtz also veined together. Po clast replacement BB"s, and BB's throughout.
337	347	VN	2	BB	0.1	BB	3	Cp	BB	0.1							BB's of fine-grained Po throughout, locally appear to be replacement of minerals, Hornblende and Plag and clasts? Larger BB's may be intergrown with CP. Py is moderatley veined, large BB's assoc with veins, and FP coating.
347	360.5	VN	0.5	VN	0.1	SP	0.5	Py	FP	0.5	Py	BB	3				DI'd Py BB's throughout locally large (40-100mm) semi-massive, with intergrown specks of Po. Py veining occurs at a low angle to core axis x-cutting Qtz veins and Bx's the core. Py also occurs in the vugs in Qtz veins, and coating FP's. trace Sp BB's
360.5	366.4	BB	0.5	BB	0.1	BB	1	Po	VN	0.5	Py	VN	0.1	Apy	EU	0.1	DI'd irregularly positioned rectangular BB's of Po-Py throughout (squished spherulits/amygs? micro-fracture fill? or replacement of amphiboles of feldspar?). Qtz-Po moderatley veined, weak Po veining without Qtz, Py trace in Qtz-veinlets. Euhedral bi
366.4	371.2	BB	2		0	BB	3	Po	VN	0.5	Cp	VN	0.1	Cp	VN	0.1	similar to above, stronger mineralization, trace CP in Qtz-Po veinlet.

Blackwater Project
Drill Summary - Mineralization

BW0379		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
371.2	379.5	BB	1	VN	0.5	BB	1.5	Po	VN	0.5	Py	VN	1	Py	FP	0.1	similar to above, including; Py-Po intergrown FRCT VNLT's locally rimmed by red Sp, round red Sp BB's locally, anad locally square to rectangular BB's of intergrown Po-Py.
379.5	390.8	BB	0.5	VN	0.5	BB	1	Sp	BB	0.1	Py	VN	0.1	Po	VN	0.5	similar to above.
390.8	405.8	BB	1	VN	0.1	BB	0.1	Po	VN	0.1	Py	VN	0.1	Py	FP	0.1	similar to above, however proximal to fault Py BB's can get more square to circular then lathe/rectangular shaped.
405.8	422.6	VN	0.1	BB	0.1	BB	0.5	Dbs	DEN	0.1	Py	FP	0.1	Sp	VN	0.1	similar to above, with BS's weakly dendritic filling small fractures
422.6	431.9	VN	0.1	BB	0.3	BB	0.5	Dbs	DEN	0.1	Py	FP	0.1	Py	BB	0.1	similar to above

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0379

From (m)	To (m)	Structure	Strength	Comments
0.2	4.2	BRKZ	2	irregularly broken.
4.2	5.45	FL	3	limonitic gouge with broken fragments.
5.45	8.7	BRKZ	2	broken zone with joints at 15>60 dtca.
8.7	12.9	BRKZ	2	broken zone with joints at 55>45 dtca.
12.9	20.25	JZ	2	moderatley jointed @30>20>60>10 dtca.
20.25	21	FL	5	Bx supported by chloritic gouge on either end and in-between is clay dominant gouge with small fragments.
21	46.6	JZ	2	jointed @45>10>70 dtca.
46.6	48.2	BRKZ	2	broken with fracture sets at 10>0 dtca.
48.2	58.3	JZ	2	jointed @45>10>5>60 dtca.
58.3	59.5	JZ	4	strongly jointed at 5 dtca.
59.5	65.5	JZ	2	jointed @5>20>45 dtca.
65.5	79	JZ	2	jointed @55>60>70 dtca.
79	84.1	JZ	2	jointed @ 35>10>40 dtca
84.1	85.85	FZ	3	small faults mineralized, and gouge rich.
85.85	89.7	JZ	2	Jointed @ 65>30>10 dtca.
89.7	90.7	FZ	3	abundant gouge and abundant rock fragments, one gouged fault in-particular chloritic and @ 50 dtca.
90.7	98.2	JZ	2	jointed @5>50>70 dtca.
98.2	98.5	FL	1	small fault sinistrally displacing 2 halves of a mafic clast 5mm
98.5	103.4	JZ	3	jointed @ 25-30>40 dtca.
103.4	105.8	BRKZ	4	irregularly broken, with minor gouge.
105.8	114.4	JZ	3	jointed @ 35>30>60 dtca.
114.4	119.9	JZ	3	jointed @ 5>>60>50 dtca.
119.9	120.1	BRKZ	3	fractured rock with minor gouge.
120.1	140.7	JZ	2	55>10>45 dtca, locally parrallel jointing.
140.7	142.4	FL	4	chloritic gouge abundant fault, yop of fault @ 30 dtca.
142.4	144.2	BRKZ	2	minor gouge
144.2	160.9	JZ	3	jointed @ 40>50>20>0 dtca.
160.9	161.5	FL	3	faulted along a series of Py veins, heavily chloritic

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0379

From (m)	To (m)	Structure	Strength	Comments
161.5	173	JZ	4	mod-strongly jointed @ 0>30>60 dtca. Heavily swelled yellow clay on FP's
173	181	JZ	3	jointed @ 30>60 dtca.
181	181.1	BRKZ	3	chloritically fractured rock
181.1	185	JZ	2	jointed @ 0>90
185	197.1	JZ	2	strongly competent, jont zone 1-2. jointed @ 50>80>0
197.1	200	JZ	3	jointed @ 2 (0-30, strongest 0) > 55 dtca.
200	224	JZ	2	weak-mod to moderate jointing. Jointed @ 5 (0-20) >50>70 dtca.
224	236.6	JZ	2	jointed @ 25 (20-30) >50>70 dtca.
236.6	247	JZ	2	jointed @ 60>70>20>45 dtca.
247	249.8	BRKZ	3	numerous fracture sets @ 15,25,30,35,40,50,60,70 dtca.
249.8	268	JZ	2	jointed @15>30>10 dtca.
268	294	JZ	2	jointed @ 55(55, 50, 70 dtca) > 30>10>40>0
294	294.3	FL	3	small brecciated chloritic gouge fault only 20mm wide, trailing into a BRKZ.
294.3	307.8	JZ	2	jointed @ 5 (0,5,10,15) >>30>40>35>50 dtca.
307.8	309.4	BRKZ	2	heavily chloritic (joint failure?)
309.4	321.8	JZ	2	jointed 60>80>15>35, locally fault increasing in angle (listric? 5-->25 dtca)
321.8	322.3	BRKZ	2	
322.3	336.6	JZ	2	jointed @ 40>50>60>25>70 dtca
336.6	337.0	FL	5	Chloritic gouged Fault bottom contact @ 45 dtca.
337.0	342.3	JZ	2	jointed @ 55>10 dtca.
342.3	342.5	BRKZ	2	minor gouge.
342.5	354.3	JZ	2	jointed @ 5>60 dtca.
354.3	356.5	BRKZ	4	fractured rock.
356.5	358.8	JZ	1	20-25 dtca.
358.8	359.5	BRKZ	1	weakly irregularly broken rock @ 15 dtca.
359.5	360.4	FL	4	moderatley gouged fault with abundant siliceous-sericitic rock Bx, mechanical Bx'n of the rock, late stage?.
360.4	363.3	BRKZ	2	irregularly broken rock, @ 50>30 dtca.
363.3	372.5	JZ	1	jointed @ 25-35 >60>40 dtca.

Blackwater Project
Drill Summary - Structure

BW0379

From (m)	To (m)	Structure	Strength	Comments
372.5	374	LY	3	silica-ser laminations @ 35 dtca.
374	380.5	JZ	2	jointed @ 0-10 > 15 dtca
380.5	392.2	JZ	1	joint zone, increasing in strength proximal to bottom contact. chloritic FP's jointed @ 20 (10,20,30) dtca, while late non-chloritic FP's jointed @ 50 dtca.
392.2	397	FZ	3	locally moderate-strong mechanical silica-ser Bx and gouge, joints @ 0-15 dtca.
397	405.8	JZ	2	jointed @ 20-30 dtca.
405.8	420.7	JZ	2	jointed @ 5 (5>10>0) > 60>70 dtca
420.7	423	JZ	4	jointed > broken @ 5 (0-10 dtca) >>40
423	426.7	JZ	3	jointed @ 20>15>55>70 dtca.
426.7	431.9	BRKZ	3	jointed @ 25>20 dtca.

Blackwater Project
Drill Logs

Hole ID:	BW0380	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375951.07
Depth (m):	430	Date Started:	12/03/2012	Casing Size:	HWT	Northing:	5892649.39
Azimuth:	0	Date Completed:	24/03/2012	Casing (m):	70.5	Elevation (m):	1613
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	246	-89
100	245.4	-88.8
151	251.5	-88.6
202	251.5	-88.2
256	244.7	-88.3
301	247.2	-88
352	248.4	-88.3
400	249.9	-88.1
430	251.7	-88

Blackwater Project
Drill Summary - Lithology

BW0380

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	79	OB							Overburden
79	89.5	FT	lptbx	LAP	L	GRY	DEP	GR10	Laminated felsic lapilli tuff. Locally brecciated.
89.5	113.5	AND	volc	LAP	D	GRY	UNKN		Massive andesite.Locally quartz crystal rich
113.5	134.5	AND	por	LAP	D	GRY	DEP	SH	Massive porphyritic Andesite. Feldspar crystals
134.5	159	FT	mas	FA	L	CRM	UNKN		Locally laminated Felsic Tuff. Locally brecciated.
159	179.8	AND	mon	LAP	D	GRY	DEP	GR5	Massive porphyritic Andesite. Locally Feldspar crystals
179.8	185.5	FT	mas		L	GRY	ALTFR		No structure visible. Bleached unti. Locally laminated
185.5	203.5	AND	por	LAP	D	GRY			Massive porphyritic Andesite. Amygdular carbonate. carbonate veins
203.5	241	AND	mon	LAP	D	GRY	UNKN		Massive porphyritic texture.Amygdular carbonate.
241	286	AND	mas	LAP	D	GRY			Massive porphyritic texture.Amygdular texture
286	357.8	AND	mon	LAP	D	GRY			Massive monomictic Andesite.Locally brecciated.
357.8	388	AND	mas	LAP	D	GRY			Brecciated Andesite.Locally Bleached out andesite
388	411	AND	mon	LAP	D	GRY	FLT	GR30+	Brecciated Andesite. Bleached out andesite. No texture visible.
411	430	SED	mas		D	GRY	UNKN		Massive sed unit. Mudstone??. bedding at 60 to core axis.

Blackwater Project
Drill Summary - Alteration

BW0380		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
79	101.5	O	PERV	1	PATC	1		0	PERV	2	LIM	FR	3	HM	FC	2	Strong oxidation alteration fractured controlled. Limonite and hematite alt occurring in fractures
101.5	113.5	O	PATC	1	PATC	2		0	FR	2	LIM	FR	2				Limonite alt found in fractures.
113.5	134.5	T	FR	1		0	PATC	1	FR	2	LIM	FR	1				Chlorite alteration found in fractures. Limonite alt found in fractures
134.5	159	O	PERV	1	PATC	2	PERV	2	PERV	2	LIM	PERV	2	HM	FC	2	Patchy clay alt found in halos. Hematite and limonite alt found in fractures
159	179.8	S	FR	2	PATC	2	PERV	2	FR	2							Patchy clay alt. Sericite alt found in fractures. Silica overprinting chlorite and sericite
179.8	185.5	S	PERV	2		0	PERV	3	PERV	3							Pervasive silica alt overprinting chlorite and sericite alt.
185.5	203.5	S	PERV	2		0	PERV	3	FR	2							Silica alt overprinting sericite. patch silica acurring as halos
203.5	241	S	PATC	2		0	PATC	2	FC	2	BIOT	PERV	2				Silica alt overprinting chlorite. Patchy chlorite with sericite. Locally Mafic clasts chloritized
241	286	S	FR	2	PATC	2	PERV	2	PERV	2	BIOT	PERV	3				Pervasive biotite alteration. Sericite alt found in fractures
286	326.5	S	FR	2		0	PATC	2	FR	2							Sericite alt found in fractures. Patchy silica alt. Chlorite alt found in mafic clasts
326.5	330	S	FR	2		0	PATC	1	PERV	2							Strong pervasive sericite alteration. Chlorite alt found in fractures
330	341.5	S	FR	2		0	PATC	2	PERV	2							Pervasive sericite alt. Patchy silica alt overprinting sericite alt
341.5	346	S	FR	2		0	PATC	2	PERV	3							Pervasive sericite alt. Chlorite alt found in fractures
346	357.8	S	FC	2	PATC	1	PATC	2	PERV	3							Patchy silica. Pervasive sericite. Patchy clay alt
357.8	382	S	FR	2		0	PERV	3	PERV	3							Pervasive silica alt overprinting sericite alt. Bleached out looking
382	388	S	FR	2		0	PERV	2	PATC	2	BIOT	MTRX	2				Silica overprinting biotite alt.
388	411	S	FR	2		0	PATC	2	PERV	3							Pervasive sericite alt overprinted by silica alt
411	430	S		0	PATC	1		0	FR	2							Sericite alt dominant found in fractures associated with calcite veins

Blackwater Project
Drill Summary - Mineralization

BW0380		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
79	92.5	FP	0.1		0	DI	0.1	Hm	FP	1							Hematite found in fractures
92.5	101.5		0		0	DI	0.1										Disseminated Po. Hematite found in fractures
101.5	113.5	FP	0.5		0	DI	0.1										Disseminated Po. Py found in fractures
113.5	134.5		0		0	DI	0.5										Py replacing clasts. Blebby Po
134.5	145.5		0	DI	0.1	DI	0.1										Disseminated Po and Sph.
145.5	155.5	FP	0.5	DI	1	DI	0.5										Py found in fractures. Disseminated Sph. Sph found in microfractures
155.5	169.9	FP	0.1	DI	0.5	BB	0.5										Disseminated Sph. Blebby Po. locally brecciated andesite with Po filling in
169.9	179.7	FP	0.1	DI	0.1	BB	0.5	Po	DI	0.1							blebby Po. Disseminated Sph. Py found in fractures
179.7	185.5	FP	0.5	DI	1	DI	1										Dissemnated Sph and Po. Py found in fractures
185.5	203.5	FP	0.1	DI	0.1	BB	0.5										Blebby po, Po and Sph replacing clasts
203.5	223	FP	0.1	DI	0.1	BB	0.5										Blebby Po.Po replacing clasts. Py in fractures
223	241	FP	0.1	DI	1	CR	1	Po	DI	0.1							Po replacing clasts. Py in fractures.Locally Blebby Po
241	251.2	FP	0.1	DI	0.5	DI	0.5	Po	BB	0.1							Blebby Po. Po replacing clasts.Disseminated Sph
251.2	269.8	FP	0.1	DI	0.5	BB	0.5										Blebby Po. Metallic Sph found in fractures.
269.8	286	FP	0.1	DI	0.5	DI	0.5										Disseminated Po and Sph.
286	305.1	FP	0.1	DI	0.5	BB	1										Disseminated Sph. Blebby Po
305.1	326.5	FP	0.1	DI	0.5	DI	1	Po	CR	0.1							Blebby Po. Po replacing clasts. Disseminated Sph
326.5	330	FP	0.5	DI	0.1	DI	1	Apy	VN	0.1							Disseminated Po. Arsenopyrite found in fracture-veins. Disseminated Py found in clay gouge
330	342.7	FP	0.1	DI	0.5	BB	1										Blebby Po. Disseminated Sph.
342.7	357.8	FP	0.1	DI	0.1	BB	1										Disseminated Sph. Late stage Py found in fractures
357.8	376.2	FP	0.1	DI	0.5	DI	0.5										Fine Py found in fractures. Disseminated Po in clay gouge
376.2	388	FP	0.1	DI	0.1	DI	0.5										Po replacing clasts. Disseminated Sph
388	406	FP	0.5	DI	0.5	CR	0.5										Po replacing clasts. Py found disseminated in clay gouge. Py veinlets
406	411	FP	0.1	DI	0.1	DI	0.1										Disseminated Po and Sph in clay gouge.

Blackwater Project

Drill Summary - Mineralization

BW0380		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
411	422.5	DI	0.1		0	DI	0.1	Py	VN	0.1							Disseminated Py. Po found in fractures
422.5	430	FP	0.1		0	FP	0.1										Po found in microfractures. Hairlines Po

Blackwater Project
Drill Summary - Structure

BW0380

From (m)	To (m)	Structure	Strength	Comments
79	83.68	FZ	2	Brecciated clasts. Fault clay gauge
83.68	113.5	JZ	2	Joints 40>70
113.5	131.5	JZ	2	Joints 70
131.5	134.5	FZ	4	Brecciated clasts. Clay gouge
134.5	142	JZ	2	Joints 40
142	146.5	BRKZ	3	Rubble fragments. Moderately broken
146.5	154	JZ	2	Joints- 70
154	163	FL	4	Brecciated clasts,clay fault gouge
163	178	JZ	3	two joint sets 40>60
178	191.5	FZ	4	Shear zone. Rubble clasts. Brecciated clasts. Locally clay gouge
191.5	203.5	JZ	2	Joint zone, moderately broken. Two joint sets 40>70
203.5	241	JZ	2	Two joint sets 70>40. Locally shear zone at 238m
241	286	JZ	2	Two joint sets 40>70. Locally brecciated
286	329.5	JZ	2	Joint zone, two joint sets 70>40. Locally clay gouge at 290,323
329.5	331	FL	4	Fault plane 40. Clay gouge.Brecciated clasts
331	357.8	JZ	2	two joint sets40>70
357.8	388	FZ	4	Clay gouge. Fault breccia. Locally competent brecciated clasts
388	411	FZ	4	Brecciated Andesite. Clay gouge. Mineralized clay gouge.
411	430	BD		Bedding at 60-70 to core axis.

Blackwater Project
Drill Logs

Hole ID:	BW0381	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374901
Depth (m):	408.5	Date Started:	13/03/2012	Casing Size:	HWT	Northing:	5893250.1
Azimuth:	0	Date Completed:	23/03/2012	Casing (m):	3	Elevation (m):	1538
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	168.9	-89
100	204.2	-88.8
150	208.5	-89.2
200	182.9	-89.4
250	187.3	-89.1
299	213.9	-89.2
350	226	-89.6
400	177.5	-89.8
408.5	165.3	-89.4

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Blackwater Project
Drill Summary - Lithology

BW0381

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.9	OB							Oxidized volcaniclastic unit.
4.9	32.5	VC	lith	LAP	M	GRY	ALTFR	GR30+	Polymictic, primarily "black and white" volcaniclastic unit. Matrix light grey, sand-sized matrix, gives the appearance of being clast supported locally. clast size ranges from approximately 0.5 cm to 15 cm in diameter. Andesite clasts have had plag
32.5	46.5	VC	lith	LAP	M	GRY	FLT	SH	As above, but into a more bleached zone, with an increased appearance of lightly chloritized clasts
46.5	65.5	VC	lith	LAP	M	GRY	FLT	SH	Strongly fractured zone. FeOx strong on fx throughout interval, gougy sections. Labelled as clast-supported, although consists of fine-sandy matrix with cm-sized clasts.
65.5	68.9	VC	lith	LAP	M	GRY	FLT	SH	Medium grey bleached with light greenish-yellow clay. Polymictic with sand-sized matrix, has appearance of being clast-supported
68.9	77	VC	lith	LAP	M	GRY	ALTFR	GR10	Medium grey, polymictic sand-sized matrix. Cm-sized clasts of andesite
77	80.8	VC	lith	LAP	M	GRY	UNKN		Medium-light grey. Matrix-supported with weak clast-supported intervals. Sand-sized matrix
80.8	100	VC	frctz	LAP	M	GRY	UNKN		Strongly fractured and faulted VC unit. Polymictic, gougy matrix
100	108	AND	volc	LAP	D	GRY	ALTFR	GR30+	Homogenous clasts. cm-sized clasts with mm-sized clasts in a light grey matrix (purplish tinge), relict hbl within matrix. Amygdules within andesitic clasts have been replaced by Po
108	112.5	AND	frctz	LAP	D	GRY	FLT	GR10	As above but with the introduction of rounded qtz clasts. 20 cm andesitic clast at 109.5m
112.5	118	VC	ms	LAP	M	GRY	UNKN		LARGE CLASTS!! Primarily 10 cm+ clasts within a finer matrix...close to being clast-supported in sections. Mixture of andesitic and felsic clasts. Felsic clasts are laminated
118	127	VC	frctz	LAP	L	GRY	ALTFR	GR30+	Clay has annealed (not gougy), volcaniclastic textural appearance, varicoloured. Mafic clasts defined by pyrrhotite replacement of amygdules. Strong silicification of fragments
127	135.5	VC	ms	LAP	L	GRY	DEP	GR30+	Felsic-dominant VC unit that has been strongly altered by quartz-sericite. Laminated clast = example of felsic unit @ 130.4m
135.5	139.2	VC	ms	LAP	M	GRY	ALTFR	GR30	5cm + sized andesitic clatss with finer 1-3 cm clasts felsic clasts. Medium grey silicified matrix

Blackwater Project
Drill Summary - Lithology

BW0381

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
139.2	154.9	VC	ms	LAP	L	GRY	ALTFR	GR30+	Light grey-green strongly altered felsic-dominant VC unit. More laminated clasts visible then andesitic clasts, but that may be due to alteration.
154.9	156.5	VC	ms	LAP	M	GRY	ALTFR	GR30	Mafic dominant VC unit, alteration possibly due to unit difference? Silicified matrix. Pyrrhotite replacing phenos/amygduels
156.5	163.2	AND	volc	LAP	D	GRY	FLT	GR10	Very dark andesitic unit, abundant pyrrhotite replacing amygdules and phenocrysts within andesit clasts
163.2	169.5	VC	cs	LAP	M	GRY	UNKN		Predominantly clast-supported mafic clasts with microcrystalline qtz clasts.
169.5	177.5	VC	plm	LAP	M	GRY	ALTFR	GR10	Matrix supported. Polimictic volcanoclastic texture. Locally subrounded quartz clasts
177.5	185.5	VC	plm	LAP	M	GRY	ALTFR	GR5	Bleached matrix. Polimict mafic dominant clasts. Angular clasts
185.5	189	AND	mas	LAP	D	GRY	ALTFR	GR10	Massive Andesite unit with volcanoclastic texture.
189	210.5	VC	plm	LAP	M	GRY	UNKN		Coarse-matrix, matrix-supported volcaniclastic unit.Andesite felisc tuff clasts dominant. 60 cm+ amygdaloidal andesite clast at 204
210.5	242	VC	plm	LAP	M	GRY	UNKN		As above, unit appears to have clast supported texture, but is matrix-supported. Light grey silt with finer <1mm sized clasts define matrix. Clast size at ~2mm+. Large clasts --> 15 cm felsic fine-grained felsic clast at 208m, 8 cm porphyritic andes
242	245.5	VC	plm	LAP	M	GRY	FLT	SH	Interval consists of medium grey matrix with mixture of brownish grey clasts, white clasts and dark grey clasts.
245.5	247.1	VC	fltbx	LAP	M	GRY	FLT	SH	Zone of fault breccia, strongly chloritized, gougy. Can't determine percentages of clasts accurately, so went with 50:50 ratio as per intervals above and below
247.1	255.1	VC	frctz	LAP	M	GRY	FLT	SH	Matrix-supported. Mix of felsic and mafic clasts. Strongly fractured. Weak gouge along fracture planes
255.1	274.6	VC	plm	LAP	M	GRY	ALTFR	GR5	Polymictic, mixture of andesitic clasts, microcrystalline quartz clasts and sericitized clasts. Lack of laminated clasts throughout interval and DBS-filled clasts. Andesitic clasts are both porphyritic and amygdaloidal. Laminated clasts visible from
274.6	278.4	VC	lith	LAP	D	GRY	ALTFR	GR10	Polymictic "darker section". 276.20-276.70m could be considered 50:50 mafic-felsic. As per most of hole, could be "clast-support" if the matrix was considered to only be mud. Including silt & fine sand...unit is actually closer to being matrix-suppor

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Blackwater Project
Drill Summary - Lithology

BW0381

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
278.4	299	VC	plm	LAP	M	GRY	UNKN		Polymictic, matrix supported. Sections almost appear "clast-supported"." 50:50 mafic:felsic. Microcrystalline grey-white quartz, dark grey mafic clasts. Haloed clasts from 285-287m. Occasional laminated clast. Hornblende within matrix of VC unit. Goo
299	300.5	VC	plm	LAP	M	GRY	DEP	GR30	Polymictic, 50:50, matrix:felsic. Silica-sericite-clay matrix.
300.5	307.4	VC	plm	LAP	M	GRY	FLT	GR10	Polymictic, more felsic then previous interval. Silica-sericite-clay matrix with silicified clasts
307.4	317	VC	frctz	LAP	M	GRY	FLT	SH	Mix of felsic:mafic clasts...somewhere between 50-75% felsic clasts
317	318.6	VC	fltbx	LAP	D	GRY	FLT	SH	Slight increase in mafic clasts? darker fragments more visible. Strongly fractured & gougy. Strong chlorite-clay alteration
318.6	319.7	VC	fltbx	LAP	L	GRY	FLT	SH	Fault breccia consisting of predominantly silicified & chloritized clasts (may be both felsic and mafic) with clay-chlorite-sericite altered matrix.
319.7	321.7	AND	fltbx		D	GRY	FLT	SH	Andesitic block caught within fault zone. Massive clast? that has been strongly chloritized. Diffiult to make out original texture (presumably mafic volcaniclastic). Carbonate-clay-chlorite are shot throughout interval as fracture coatings/veinlets
321.7	324.1	VC	fltgge	LAP	D	GRY	FLT	SH	Dark green black, VERY strongly chloritized. Polymictic volcaniclastic blocks faintly sporadic through fault gouge/breccia zone
324.1	325.1	VC	fltgge	LAP	M	GRY	ALTFR	SH	Strongly faulted zone with chloritized gougy matrix and subrounded clasts of andesite and quartz
325.1	328.3	AND	volc	LAP	D	GRY	ALTFR	GR30	Strong fracture zone with subrounded dark grey clasts within lighter bluish grey matrix. Appears to be completely andesite-type matrix with andesitic clasts. Possibly large block within fault zone
328.3	329.3	VC	plm	LAP	M	GRY	FLT	GR30	Strongly fractured zone of olcaniclastic unit, gougy at approximately 328.5
329.3	333	VC	fltbx	LAP	M	GRY	FLT		Chloritized slickensides abundant along fracture planes. Mix of mafic and felsic clasts within chlorizited gouge matrix. Large andesitic block from 349.50-350.9m
333	349.4	VC	fltbx	LAP	M	GRY	ALTFR	GR30	Strongly faulted and fracture zone with abundant clay matrix. Minor carbonate and strong chlorite along fracture planes. Larger, less altered andesitic clast from 339.1-339.9m.
349.4	350.9	AND	fltbx	LAP	D	GRY	ALTFR	SH	Andesitic block within faulted zone. Volcaniclastic texture (faint). Strongly chloritized. Lower contact at 30 degrees defined by calcite veinlet

Blackwater Project
Drill Summary - Lithology

BW0381

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
350.9	353	VC	frctz	LAP	M	GRY	FLT	SH	Into more distinguishable 50 felsic: 50 mafic VC unit. Matrix supported, sub-rounded clasts. Gouge within matrix (weak fault breccia zone...microfractures). Polymictic with microcrystalline qtz & andesitic clasts
353	363.5	VC	ms	LAP	M	GRY	UNKN		50 mafic: 50 felsic, poorly-sorted, matrix-supported, sub-rounded clasts. Increased mineralization within interval (arsenopyrite as trace specks and veinlets)
363.5	373.5	VC	lith	LAP	M	GRY	ALTFR	GR5	Polymictic, 50 felsic: 50 mafic (andesitic clasts), poorly sorted, clasts range from angular to rounded (subanglar to subrounded). Only 1 block-sized fragment (11 cm andesite at 367m)
373.5	378.2	VC	lith	LAP	L	GRY	ALTFR	GR5	Very light grey coloured. Polymictic, strongly silicified, clasts have been chewed away, rounded and locally embayed due to silica flooding. Appears to be an increase in laminated clasts (felsic-dominated?). Maximum clast size 4 cm.
378.2	386.4	VC	lith	BLOCK	M	GRY	INTR	GR5	Block-sized clasts up to 42 cm. Polymictic, poorly sorted, clast-supported (silica chewed away at clasts?...borderline, could still be classified as matrix-supported).
386.4	389.5	AND	bx	LAP	D	GRY	DEP	SH	Dark grey, brecciated andesite. Clast composition consists of weak porphyritic texture. Clasts are difficult to distinguish from matrix when wet. Clasts are completely andesitic in composition. Unit has been silicified (quite hard) with a bt-albite m
389.5	391.1	VC	lith	LAP	M	GRY	DEP	SH	Possibly large volcaniclastic unit within brecciated andesite (chilled margin in previous andesitic interval). Polymictic, subangular-subrounded, mix of felsic and mafic clasts. Max clast size 3 cm. Silica-clay matrix
391.1	408.5	AND	bx	LAP	D	GRY	UNKN		Porphyritic andesite clasts up to 30 cm in diameter within a finer grained bt-albite altered matrix. Cherty fragment (chalcedony) at 404.7m

Blackwater Project
Drill Summary - Alteration

BW0381		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4.9	14	T		0	FR	3	PATC	3	MTRX	3	CLY	INFILL	2	SIL	CLST	2	Matrix has been selectively silicified and sericite-altered. Subrounded-rounded qtz clasts appear secondary (giving clast-support appearance) to primary weakly altered andesitic clasts and silicified FLPT clasts. Andesite clasts have been very weakly altered-unaltered
14	32.5	T		0	MTRX	3	PATC	3	MTRX	3	SIL	CLST	2	LIM	FR	3	Matrix has been selectively silicified and sericite-altered. Subrounded-rounded qtz clasts appear secondary (giving clast-support appearance) to primary weakly altered andesitic clasts and silicified FLPT clasts. No Goethite on fracture planes. 15 cm grey silica clast at 21.7m
32.5	46.5	T	MTRX	2	MTRX	4	PATC	3	MTRX	3	SIL	CLST	2				Yellowish-green chlorite-sericite-clay altered matrix that has been overprinted by silica-sericite alteration. Felsic clasts are silicified.
46.5	66	T		0	MTRX	5	PATC	3	PATC	3	LIM	FC	5				Strongly clay-limonite altered, has undergone intense hydrofracturing. Clasts are bleached orange from 53.5-54.5m. Strong FeOx influence
66	69	T	MTRX	2	MTRX	4	PATC	3	PATC	3	LIM	FR	1	ANH	FR	2	Minor anhydrite on fracture surfaces. Anhydrite may be influencing the yellowish-green colour seen in the matrix of this unit? Interesting beige clay visible at 68.5m
69	83.8	T	FR	1	MTRX	3	PATC	3	PATC	3	LIM	FR	2	CLY	FR	2	Increased chlorite along fracs with clay-sericite. Felsic clasts strongly silicified, mafic clasts weakly silicified, patchy sil-ser throughout interval
83.8	87.5	T	FR	3	FR	3	CLST	3	PATC	4							Fault brecciated zone with silicified clasts in a sericite-clay matrix with fracture controlled chlorite
87.5	89.5	T	FR	2	FR	4	PATC	3	PATC	3	LIM	FR	2				Orangish-yellow FeOx clay? along fractures, minor chlorite on fx planes
89.5	100	T	FR	2	FR	4	PATC	3	PATC	3	CLY	MTRX	3	SIL	CLST	2	Strong yellowish-orange clay on fx planes. Clasts have been silicified. Clay altered matrix that has been silicified
100	110.7	T	FR	3	FR	3	PERV	3	MTRX	3	LIM	FR	2	CLY	MTRX	1	Weakly clay-bt alb altered matrix that has been pervasively silcificied
110.7	112	T	MTRX	2	MTRX	5	CLST	1	MTRX	4	CARB	MTRX	4				Carb-sericite-clay altered...mostly gouge with silica clasts

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Blackwater Project
Drill Summary - Alteration

BW0381		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
112	117.5	T	FR	2	MTRX	3	PATC	2	PATC	3	CLY	FR	3	LIM	FR	3	Clay-rich matrix, silica altered clasts, patchy silica-sericite alteration through interval
117.5	122.5	T	FR	1	MTRX	5	PATC	3	MTRX	3	LIM	FR	3				Tan coloured clay matrix with andesitic, microcrystalline silica, and laminated clasts. Clay is no longer gougy and appears to have been silicified in patches
122.5	126	T	FR	1	MTRX	3	CLST	4	FR	4	LIM	FR	3	SER	CLST	1	Microfractured silicified zone. Last matrix/gouge then previous interval, stronger silicification. Hydrothermally altered. FeOx + sericite along frac planes
126	135.5	S	FR	1	FR	1	PATC	4	PATC	4	SER	FR	3	LIM	FR	1	Strongly sericite-qtz altered. Qtz-yellowish FeOx or sulphate on fracture planes. Occasional rounded qtz clasts which appear late to the main volcaniclastic event
135.5	140	S	FR	2	FR	2	PATC	4	MTRX	3	SIL	CLST	1				Mafic-dominated VC unit with silica-sericite matrix. Minor chlorite on fracs
140	141.3	S	FR	2	FR	2	PATC	3	CLST	4	SIL	MTRX	4				White milky silica matrix, influx of laminated clasts within interval
141.3	143.5	S	FR	3	FR	1	PATC	4	PATC	4	SIL	CLST	1				Clasts visible within interval. Sil-ser altered. Minor sil clasts. Greenish colour
143.5	149	S	FR	2	FR	2	PERV	4	PERV	4	SIL	CLST	1	SER	CLST	1	Texture mostly obliterated. Grey silica-sericite wash
149	154.8	S	FR	2	FR	1	PERV	4	PERV	4	SIL	CLST	1				Textures slightly more evident then previous interal. Green silica-sericite wash
154.8	163.5	S	FR	2	MTRX	1	PATC	2	FR	1	BIOT	MTRX	2				Silicified andesite. Wk bt alteration within matrix
163.5	170	S	FR	3	FR	2	CLST	3	MTRX	3	SIL	PATC	2				Clast-supported VC unit. Clasts have been replaced by silica
170	177.5	S	FR	2	FR	2	CLST	2	MTRX	2							Chlorite alteration found in fractures. Silicified felsic clasts. Clay alteration found in matrix
177.5	185.5	S	CLST	2	MTRX	2	PATC	2	MTRX	2	SIL	CLST	2				Chlorite alteration found in mafic clasts. Silica overprinting chlorite alt. Patchy silica found in matrix
185.5	189.5	S	FR	2		0	PERV	3		0	BIOT	MTRX	3				Biotite alt found in matrix. Silisica alt overprinting biotite alt. Chlorite alt found in fractures
189.5	210.5	S	FR	3	PATC	2	PATC	3	CLST	2	SIL	CLST	2				Chlorite alt found in fractures. Clay alt found surrounding mafic clasts as halos. Locally patch clay alt. Patchy Pink silica.

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Blackwater Project
Drill Summary - Alteration

BW0381		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
210.5	214.7	S	FR	2	MTRX	2	PATC	3	MTRX	2	SIL	CLST	2				Weak sericite-clay altered matrix. Chlorite along fractures. Minor silicification of clasts (rounded lt grey qtz fragments ~1mm - 1cm in diameter)...possibly just felsic clats.
214.7	217.1	S	FR	3	FR	4	PATC	3	FR	3	SER	MTRX	2	CLY	MTRX	2	Weak sericite-clay altered matrix. Chlorite-sericite along fracs
217.1	228.3	S	FR	1	MTRX	2	PATC	3	MTRX	3	CARB	FR	1	CAL	FR	1	Weak clay-sericite altered matrix, patchy silicification. Minor carbonate-chlorite-sericite along fracture planes. Fizzes at 227.7m with HCl
228.3	231.3	S	FR	2	MTRX	3	PATC	4	MTRX	3	CLY	FR	2	CARB	FR	2	Bleached white, sil-sericite altered matrix with increase in felsic/silica clasts. Noticed increase in garnetiferous clasts with silica haloes around clasts
231.3	242	S	FR	2	MTRX	2	PATC	3	MTRX	2	CARB	FR	1	SIL	CLST	2	Light grey silica-sericite altered. Grainy appearance from 237.5-240m
242	255.5	S	FR	4	MTRX	2	PATC	3	MTRX	2	CARB	FR	1	SIL	CLST	2	As above. Matrix dominantly clay-fine grained silica. Selectively silicified. Wk Clay within clast at 242.9m (probably missed uphole as well)
255.5	274.1	S	FR	2	FR	3	PATC	3	MTRX	2	SIL	MTRX	2	CLY	MTRX	2	Increased silicified clasts. Clay still prominent along fracture planes. Matrix consists of fine grained silica-clay. Unit has been selectively silicified (andesite clasts not quite as silicified). Clay clast replacement at 272.3
274.1	278.4	S	FR	2	MTRX	3	MTRX	3	MTRX	3	SIL	PATC	2	CLY	FR	3	Microcrystalline silica, clay altered matrix. Trace biotite within andesitic clasts. Occasional microcrystalline quartz fragments
278.4	283.4	S	FR	2	MTRX	4	MTRX	2	MTRX	3	SIL	CLST	3	SIL	PATC	2	Silica-clay matrix, minor sericite. Sericitization and silicification of occasional clasts
283.4	289.2	S	FR	2	MTRX	4	PATC	3	MTRX	4	SIL	MTRX	3	SIL	CLST	2	Matrix more pronounced then previous interval due to appearance of yellowish clay and white clay around clasts
289.2	299	S	FR	4	MTRX	3	MTRX	3	MTRX	3	CLY	FR	2	SIL	CLST	2	Increased chlorite along fracture planes. Grey silica-sericite-clay matrix. Minor microcrystalline quartz clasts.

Blackwater Project
Drill Summary - Alteration

BW0381		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
299	308.3	S	FR	3	MTRX	3	MTRX	3	MTRX	2	CLY	CLST	1	SIL	CLST	2	Microcrystalline silica + clay matrix with weaker clast replacement by silica (total clast & haloes), weak sericite (light greenish-soft) & yellowish clay (with pyrrhotie & sphalerite in mafic clasts)
308.3	317	S	FR	3	MTRX	3	MTRX	3	MTRX	3	CLY	FR	2	SIL	CLST	3	Silica-sericite-clay matrix with silica replaced clasts, minor yellowish clay clast replacement and clay within microfractures. Chlorite stronger along fracture planes
317	318.6	S	PERV	4	PERV	4	CLST	1	CLST	1							Fault breccia composed primarily of chlorite-clay. Occasional silicified clast. Very gougy
318.6	319.7	S	FC	1	MTRX	4	CLST	4	MTRX	3							Dominantly silicified clasts with clay-sericite matrix. Clast-supported fault breccia. Full of silicified clasts
319.7	321.1	S	PERV	5	FC	2		0	FC	1	CARB	FR	2	BIOT	MTRX	1	Strongly chloritized, clay-carbonate fracture controlled alteration. Non-magnetic (mentioned by geotechs). Minor calcite stringers
321.1	323.9	S	PERV	5	MTRX	4	CLST	2	MTRX	1	SER	CLST	1				Occasional sericite-qtz altered clasts. VERY CHLORITIZED! Increasd pyrite mineralization with black chlorite zones
323.9	324.6	S	PERV	4	FR	3	CLST	3	FC	1	CHL	FR	4				Strongly chloritized (as per interval above). Silicified chunks from 324.6-323.1m. Chloritized slickensides at 325.1m
324.6	328.2	S	FR	4	MTRX	2	MTRX	2	MTRX	1	CLY	FR	1	BIOT	MTRX	1	Strong chlorite alteration - minor yellow clay along fracture planes. Silica-clay-sericite weak alteration of matrix.
328.2	329	S	FR	3	MTRX	3	CLST	4	MTRX	1	SER	CLST	1				Clay altered matrix. Mix of silica & sericite altered clasts. Weaker chlorite along fracture planes then above and below. Good mineralization within gougy zones
329	332.6	S	FR	4	MTRX	3	CLST	2	CLST	2	SER	MTRX	1				Silica-sericite altered clasts within gougy chloritized matrix
332.6	339.2	S	MTRX	2	MTRX	4	CLST	3	MTRX	2	CARB	MTRX	1	SER	CLST	1	Clay>chlorite_carb altered matrix within fault breccia zone. Silica-sericite clasts
339.2	340.2	S	MTRX	2	FR	2	PATC	1	FR	1	CAL	VN	3	CHL	FR	3	Calcte veinlets strung throughout andesitic block. Blackish-purple chlorite replacing matrix of andesite. Chlorite along fracture planes

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Blackwater Project
Drill Summary - Alteration

BW0381		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
340.2	349.4	S	FR	3	MTRX	3	PATC	4	CLST	2	CAL	VN	1	CARB	FR	1	Patchy silicification within interval. Calcite veinlets scattered throughout section. Clay increases within gougy zones. Clay-silica matrix with sericite-qtz replaced clasts
349.4	350.9	S	FR	2	FR	2	PATC	1	FR	1	CHL	PERV	2	CAL	VN	3	Pervasively chloritized andesite block with calcite veinlets strung throughout section. Chlorite-calcite-sericite-clay along fracture planes
350.9	353	S	FR	2	MTRX	3	PATC	3	FR	1	CAL	VN	2	SIL	CLST	3	Silicified clasts within white carb-clay altered microfractured fault zone (near lower contact of fault zone). Patchy silicification
353	361.2	S	FR	2	FR	3	CLST	3	MTRX	1	CAL	VN	2	CAL	FR	3	Clay matrix with silicified clasts. Calcite along fracture planes
361.2	373.5	S	FR	1	MTRX	3	CLST	3	MTRX	2	SIL	MTRX	3	SER	CLST	2	Silica-clay matrix. Texture still preserved. Clasts have been replaced by silica>sericite>chlorite>clay. Fracture coatings consist of clay>sericite>calcite>chloite
373.5	379.5	S	REP	2	FR	1	PERV	4	PERV	4	SIL	CLST	4	SIL	MTRX	5	Several pulses of silicification through interval has destroyed texture of rock. Clay matrix has been completely replaced with silica. Both a lighter beige patchy, grainy silica matrix and a white milky silica matrix are visible throughout inteval. Andesite clasts are scarce and are probably zones where chlorite intensity increases. Both dark grey silica and white crystalline silica clasts are seen within interval
379.5	386.5	S	CLST	2	MTRX	2	MTRX	2	CLST	2	SIL	CLST	4	SIL	PATC	3	Light grey and white silica matrix less prominent. Less altered then previous interval...more mafic dominant? Andesitic clasts in higher abundance. Difficult to distinguish matrix from clasts because of alteration.
386.5	389.4	S	MTRX	1	MTRX	2	PATC	1	FR	1	BIOT	MTRX	2	ALB	MTRX	2	Bt-alb-clay altered brecciated andesite with patchy microcrystalline silicification. Minimal-absent chlorite. Clay has replaced phenocrysts within andesitic blocks
389.4	391.2	S	FR	1	MTRX	2	MTRX	2	MTRX	1	CAL	VN	1	SIL	CLST	3	Clay-fine silica matrix, dominantly silica replacing clasts. Minor clay and sericite clast replacement. Trace calcite veinlets (389.70m)

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Drill Summary - Alteration

BW0381		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
391.2	399	S	VN	1	MTRX	3	MTRX	1	MTRX	1	BIOT	MTRX	2	ALB	MTRX	2	Bt-albite altered interval, weakly silicified. Trace calcite veinlets. Albite-biotite-sericite-clay altered
399	408.5	S	PATC	3	MTRX	2	PATC	2	PATC	3	CAL	VN	1	ALB	MTRX	3	Bt-albite altered interval, weakly silicified. Calcite veinlets trace along fractures. Chlorite veinlets minimal throughout zone (400m). What appears to be a cherty-type clast at 404.5 m (microcrystalline), layered. Patchy silica-chlorite-sericite altered zones throughout interval

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Blackwater Project
Drill Summary - Mineralization

BW0381		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4.9	14	FP	0.1		0	BB	1	Py	DI	0.1	Goe	FP	0.5	Hm	FP	1	Fine po and py blebs appear to post-date deposition of VC unit. Trace Cpy seen in cut section at 8.5 m.
14	24	FP	0.1	CR	0.1	BB	0.5	Py	DI	0.1	Hm	FP	1	Py	DI	0.1	Weakly mineralized interval, Trace Po wrapping around clasts at 16.5m. Trace Galena
24	33.5	FP	0.1	CR	0.5	CR	1	Py	DI	0.1	Hm	FP	0.5	Sp	CR	0.1	Increase in reddish sphalerite clasts (with minor Po). Pyrrhotite replaces amygdules within andesitic clasts
33.5	45.5	FP	0.5	CR	0.1	CR	1	Py	DI	0.1	Hm	FP	0.1				Pyrrhotite replacing amygdules within andesitic (black/dark grey) clasts
45.5	47	FP	0.1	GmR	2	BB	0.5	Hm	FP	0.5							Strong rotten egg smell (sphalerite within gouge). Sphalerite with FeOx? as gouge within fault zone
47	53.6	FP	0.1	CR	0.1	BB	0.5	Hm	FP	0.5	Goe	FP	0.5	Py	DI	0.1	Goethite-hematite strong along fracture planes
53.6	65.5	FP	0.1	CR	0.1	BB	0.5	Hm	FP	1	Py	DI	0.1	Goe	FP	0.1	Minor goethite-hematite along fracture planes, strongly clay altered
65.5	69	FP	0.1	CR	0.1	CR	0.5	Py	EU	0.1							Weak clasts replacement pyrrhotite of amygdules within andesitic clasts
69	84	FP	0.5	CR	0.1	CR	0.5										Clast replacement pyrrhotite of amygdules within andesitic clasts
84	100	FP	0.5	CR	0.1	CR	0.5										Black pyrite-chlorite alteration along fracture planes. Po replacement within andesitic clasts
100	107.9	FP	0.5		0	CR	1	Po	VN	0.1							Strong pyrrhotite replacement of amygdules within andesitic unit.
107.9	112	FP	0.1	CR	0.1	CR	0.5										Weakly mineralized carbonaceous fault
112	117.5	FP	0.1	CR	0.1	CR	0.5										Po replaces amygdules within andesitic clasts
117.5	127	DI	0.5	CR	0.1	CR	0.1	Sp	CR	0.1	Grnt	CR	0.1				Po clast replacement within andesitic clasts. Trace andesitic clasts.
127	132	DI	0.1	CR	0.5	CR	0.1	Grnt	CR	0.5							Albite alteration haloes surround garnets within interval. Pyrrhotite replacement within andesitic clasts
132	134	DI	0.1	CR	0.5	CR	0.1	Grnt	CR	0.1							Laminated, microfractured zone with minor sphalerite, pyrrhotite

Blackwater Project
Drill Summary - Mineralization

BW0381		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
134	135	FP	0.1	CR	1	CR	0.5	Grnt	CR	0.5							Large clast replacement at 134.5m by Garnet-Sphalerite
135	139.2	FP	0.5	CR	0.5	CR	0.5										Po & sph replacement
139.2	142	BN	0.5	CR	0.1	CR	1										Strong clast replacement by pyrrhotite in waxy, strongly sericite-altered interval
142	154.5	FP	0.1	CR	0.1	CR	0.5	Grnt	CR	0.1	Po	BN	0.1				Felsic-rich interval with clast replacement by garnet
154.5	163.5	FP	0.1	CR	0.1	CR	1.5	Po	FP	0.1							Strong Po replacement of amygdules
163.5	169.5	FP	0.1	CR	0.5	CR	1	Grnt	CR	0.1							Garnet clast replacement at 168.9m
169.5	177.5	FP	0.1	CR	0.1	CR	0.5	Po	FP	0.1							Po and Sph replacing clasts. Po found in fractures.
177.5	185	FP	0.1	CR	0.5	DI	0.5										Disseminated Po in bleached matrix. Sph replacing clhoritized clasts
185	188.5	FP	0.1	CR	0.1	CR	0.5	Po	DI	0.5							Disseminated Po. Po replacing mafic clasts.
188.5	204.5	FP	0.1	CR	0.5	CR	0.5	Po	DI	0.1							Po and Sph replacing mafic clasts. Disseminated Po in matrix
204.5	210.5	FP	0.1	CR	0.5	CR	0.5	Po	DI	0.1							Po and Sph replacing mafic clasts. Blebby Po
210.5	227	FP	0.1	CR	0.5	CR	0.5	Py	SP	0.1	Py	BN	0.1				Pyrrhotite-sphalerite pheno-amygdule replacement primarily within the andesitic clasts. Trace pyrite within bands and specks of felsic clasts
227	233	FP	0.5	CR	1	CR	0.5	Py	GmR	0.1	Grnt	CR	0.5				Garnet-sphalerite-pyrrhotite clast replacement (uncertain if garnets were originally in clast or secondary from metasomatic alteration...not prominent in interval above or below). Trace pyrite visible within the groundmass. Pyrrhotite and sphalerite
233	242	FP	0.1	CR	0.5	CR	0.5	Py	GmR	0.1	Dbs	DEN	0.1				DBS within felsic clast at 241 m. Pyrrhotite-sphalerite replace amygdules within andesitic clasts
242	245.5	FP	0.1	CR	0.5	CR	0.5	Py	GmR	0.1	Po	BB	0.1				Sphalerite and pyrrhotite replace phenos and amygdules within mafic clasts. Trace pyrite along fracture planes and as groundmass replacement

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Drill Summary - Mineralization

BW0381		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
245.5	255.1	FP	1	CR	0.1	CR	0.5	Py	GmR	0.1							Increased pyrite within gouge sections (groundmass replacement). Particularly noticeable from 245.5-247.5m
255.1	260.1	FP	0.5	CR	0.5	CR	0.5	Py	GmR	0.1	Po	BB	0.1				Sphalerite & Pyrrhotite replacement of amygdules and phenocrysts within andesitic clasts
260.1	274.6	FP	0.1	CR	0.5	CR	0.5	Cp	CR	0.1	Po	BB	0.1				Replacement of amygdules and phenocrysts by sphalerite and pyrrhotite within interval. 267.3m, trace chalcopyrite visible with pyrrhotite
274.6	278.4	FP	0.1	CR	0.5	CR	1										Increased andesite within interval = increased pyrrhotite
278.4	284.7	FP	0.1	CR	0.5	CR	0.5	Po	BB	0.5							Po-Sph clast replacement of amyg-phenos. Blebby overprint with Po
284.7	299	FP	0.5	CR	0.5	CR	0.5	Dbs	DEN	0.1	Py	VN	0.1	Apy	VN	0.1	Felsic clast with DBS at 294.8m. What appears to be trace arsenopyrite at 294.5m along fracture plane at 80 degrees TCA (should be a spike in As from 293-294m)
299	303	FP	0.1	CR	0.5	CR	0.5	Po	BB	0.1							Po-Sph clast replacement within andesitic clasts. Blebby pyrrhotite overprints both felsic and mafic clasts
303	308.3	FP	0.5	CR	0.5	CR	0.5	Po	BB	0.1							As above, decrease in felsic clasts. Incresae in pyrite along fractures subsituting for clay up-hole
308.3	318.6	FP	1	CR	0.1	CR	0.1	Po	VN	0.1							Increased pyrite along fracture planes with chlorite alteration. Decrease in mafic clasts and corresponding decrease in pyrrhotite-sphalerite clast replacement
318.6	319.7	GmR	0.1		0		0										Trace pyrite within Qtz-clay fault breccia
319.7	321.1	FP	1		0	VN	0.1										Pyrite mineralization along fracture planes and within gouge
321.1	323.8	DI	1		0	CR	0.1	Py	DI	0.5							Pyrite increased within gougy zones and as disseminations.
323.8	339.1	FP	0.5	CR	0.1	CR	0.1	Py	VN	0.1							Trace pyrite veinlets. Pyrite with chlorite along fracture planes

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Drill Summary - Mineralization

BW0381		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
339.1	340	FP	0.1	CR	0.1	CR	0.5										Increased andesite=increased pyrrhotite clast replacement within fault block
340	349.4	FP	0.5	CR	0.1	CR	0.1	Py	VN	0.1							Pyrite with chlorite along fracture planes
349.4	350.9	FP	0.1	CR	0.1	CR	0.5	Py	VN	0.1							Pyrrhotite clast-replacemenet within andesites
350.9	355.5	FP	0.5	CR	0.5	CR	0.5	Py	VN	0.1							Increased mineralization. Sph-Po clasts cross-cut by thin pyrite veinlets within interval.
355.5	363.5	FP	0.5	CR	0.5	CR	0.5	Apy	VN	0.1	Py	VN	0.1	Apy	SP	0.1	Trace arsenopyrite specks. Veinlets at 357.5m & 362m. Pyrite veinlets strung throughout interval. Pyrite along fracture planes
363.5	372.1	FP	0.1	CR	0.5	CR	0.5	Cp	CR	0.1	Apy	SP	0.1				Trace arsenopyrite specks. Pyrrhotite-sphalerite clast replacement within andesitic clasts
372.1	378.9	FP	0.1	CR	0.1	CR	0.1	Py	BN	0.5	Sp	VN	0.1	Py	VN	0.1	Pyrite in the form of bands and vinlets within interval. Less po-sph then previous intervals
378.9	386.4	SP	0.1	CR	0.5	CR	1	Apy	SP	0.1	Po	VN	0.1				Increased Pyrrhotite & sphalerite within interval. Trace Arsenopyrite visible
386.4	389.5	SP	0.1	CR	0.5	CR	1										Po & sph replacement
389.5	391.1	SP	0.1	CR	0.1	CR	0.5	Apy	SP	0.1							Trace arsenopyrite within VC unit
391.1	398	SP	0.1	CR	0.5	CR	0.5										Replacement of clasts by Po & Sph
398	408.5	VN	0.1	CR	0.1	CR	1	Apy	SP	0.1	Apy	VN	0.1	Po	VN	0.1	Trace arsenopyrite specks. Apy veinlet at 398.9m (covered in veins section). Scarce pyrite, arsenopyrite and pyrrhoite veinlets

Blackwater Project
Drill Summary - Structure

BW0381

From (m)	To (m)	Structure	Strength	Comments
4.9	13.2	JZ	2	One joint set varies from 15-35 degrees TCA, secondary joint set is at approximately 60 degrees TCA
13.2	13.35	FL	3	Minor gouge. Goethite on fracture planes
13.35	32.9	JZ	3	3 joint sets: 45, 30, and 60 degrees TCa
32.9	33	BD	2	Approximate alteration boundary contact into a more yellowish clay altered zone
33	45.5	JZ	3	3 joint sets: 45, 30, and 60 degrees TCA
45.5	46.5	BZ	4	Strong limonite-sphalerite fracture-stained fault breccia. Upper contact at 40 degrees TCA. Reamed piece of core at lower contact
46.5	48	VZ	2	Microfractured (consider making this a category) "veined" limonite matrix fractured between clasts
48	50.1	JZ	3	Goethite-hematite fracture coating (has mossy type appearance with goethite rimming hematite).
50.1	53	BRKZ	2	Bad drilling, rounded core, unable to determine joint set angles
53	53.3	JZ	1	Weakly jointed (short interval), microfractured
53.3	54.4	FZ	3	Limonite gouge, minor fault, broken zones within interval
54.4	59.5	JZ	4	Closely spaced joint zone within larger faulted/altered interval
59.5	62.1	JZ	4	Joint set with low angles (causing zone to look more like a broken zone)
62.1	62.2	FL	4	Yellowish clay gouge fault
62.2	63.75	BRKZ	3	Strongly broken, yellowish-orange clay along fracture surfaces
63.75	65.5	JZ	3	Limonite-clay prominent along fracture surfaces
65.5	74.2	JZ	1	Blocky, massive
74.2	75	FZ	3	Clay-FeOx gouge along sub-parallel fracture/fault zone
75	80.8	JZ	2	Primary jointing at 40 degrees TCA, weak secondary jointing at 10 degrees TCA (at 78m)
80.8	81.8	FL	4	Dominantly gouge with minor rounded pebbles..somewhat of a fault breccia. Sharp upper contact at 40 degrees TCA
81.8	83.2	BRKZ	4	Continutation of fault zone without gouge
83.2	84.3	JZ	3	2 joint sets - 25 and 50 degrees TCA
84.3	85.3	BZ	2	Clay-chlorite rich fault breccia, fractures at 35 degrees TCA
85.3	86.4	JZ	3	Joints between 50-60 degrees TCA
86.4	89	FZ	3	Lower contact gougy at 89 metres after a broken section. 87.5 m = gougy, angle about 50 degrees TCA
89	90	BRKZ	3	Broken zone of core...possibly part of fault zone
90	91.9	JZ	3	Lower contact at 60 degrees TCA, angles difficult to measure

Blackwater Project
Drill Summary - Structure

BW0381

From (m)	To (m)	Structure	Strength	Comments
91.9	94.8	FZ	4	Re-drill from 92-93 (talked to driller, not cave), joint set at 30 degrees TCA
94.8	94.9	FL	3	3 cm fault gouge at 94.8m with tiny rounded clasts
94.9	97.5	BZ	4	Clay rich fault breccia with silica clasts.
97.5	100	FL	5	Gougy fault zone; recovery of cuttings (no core) from 99.5-100. Very gougy, silckensided pieces of broken rock from 97.5-98m
100	105.3	JZ	2	Weakly jointed. More broken at start and end of run, but possibly from hitting on core barrel...rock generally blocky otherwise
105.3	105.8	FL	4	Slickensides on upper contact at 30 degrees TCA
105.8	108.7	JZ	2	Weakly jointed, hammer breaks make core look as though fractured at 60 degrees TCA...may follow weak secondary jointing
108.7	110.8	JZ	4	Joint set at 20 degrees TCA, very minor gouge on frac surface
110.8	111.2	FL	5	upper and lower contact at 30 degrees TCA. Slickensides strong along fault plane at 110.8. Slickensides exposed at 10 degrees TCA
111.2	112	FZ	3	Lower contact at approximately 10 degrees TCA, minor fault breccia within interval
112	116.3	JZ	2	Weak joint zone at 25 degrees TCA
116.3	118.2	BRKZ	3	Broken zone...clay altered on fracs
118.2	118.8	JZ	2	Weakly jointed interval, clay matrix. Has been affected by meteoric water
118.8	119.1	FL	3	Gouge along lower contact, broken fragments
119.1	122.4	BRKZ	4	Broken zone, measurements obtainable on joints at 15 and 25 degrees TCA
122.4	124.5	JZ	4	Joint set at 30-40 degrees TCA, strong microfracturing through zone with clay along fracs
124.5	127	BRKZ	4	Strongly broken, minor gouge. Lower contact with joint zone (end of large interval of fault zone/broken zone)
127	133	JZ	1	Very weakly jointed, solid. Microfracturing of rock due to strong sericite alteration
133	135.5	JZ	2	Tan-green sericite-chlorite- clay follow fracture surface
135.5	150	JZ	2	Joint sets from 10-30 degrees & 60 degrees TCA
150	151	FL	3	Upper contact gougy, lower contact into fractured zone at 15 degrees TCA
151	154.5	JZ	2	Joint sets at 15 and 45 degrees TCA, minor gouge/ vlt following 15 degree TCA structure at 152.5
154.5	156.5	BRKZ	4	Strongly broken zone, gradational between green sericite-qtz altered interval above and dark grey andesitic interval below
156.5	158	BRKZ	3	Continuation of broken zone above but with slightly less intensity

Blackwater Project
Drill Summary - Structure

BW0381

From (m)	To (m)	Structure	Strength	Comments
158	162	JZ	3	Moderately jointed at low angle TCA, chlorite-sericite on fracs
162	163.4	FL	5	Slickenlines on upper contact of fault, subvertical fault structure?
163.4	164.5	BRKZ	3	Broken zone, minimal gouge, no visible slickenlines
164.5	169.5	BRKZ	4	Jointing between 10-30 degrees from 168.5-169.5. Interval below is gougy and broken for 0.5m (FL).
169.5	210.5	JZ	2	two joint sets 40>60
210.5	214.7	JZ	2	45 degree joint set > 60 degree joint set
214.7	217.2	JZ	3	Lower angle joint (20 degree TCA), makes zone appear to be broken zone, slightly higher intensity. Chlorite-clay on fx.
217.2	242	JZ	2	50 degree joint set more prominent then 20 degree joint set, but 20 degree joint set containt more intense fracture coatings.
242	245.5	JZ	2	Weakly jointed
245.5	247.1	FL	4	Upper contact at 50 degrees TCA, lower contact at 60 degrees TCA
247.1	255.1	FZ	3	Approximate angle of lower contact
255.1	260.1	JZ	3	20 degree TCA joints > 40 degree joints
260.1	261	FZ	3	Upper contact at 20 degrees TCA. Lower contact = weak fault breccai
261	267.1	JZ	4	Joints 30 degrees > 55 degrees. Weak fracture coatings of chlorite
267.1	269.1	JZ	2	40 degree structure > 60 degree structure
269.1	270.8	JZ	3	Blocky at 60 degrees TCA. Weaker jointing at 40 degrees TCA.
270.8	277	JZ	2	Blocky, weakly jointed. 60 degree joints more prominent then 40 degree joint sets. 40 degree joint sets have more intense fracture coatings. 20 degree fracture surface visible at 270m.
277	281.9	JZ	3	Appearance of 20 degree TCA fracture surface (more prominent). Additional fracture surface at 60 degree TCA
281.9	284.7	JZ	1	Microfractures filled with clay at 50 degrees TCA...only other breaks within core are hammer breaks
284.7	297.4	JZ	3	Joint sets at 10-20 degrees TCA and 35 degrees TCA. Increased fracturing as a result of decreased fracture angle
297.4	297.5	FL	5	Gouge zone. Very small fault
297.5	299	JZ	3	Joint sets at 10, 30 and 50 degree TCA
299	304.5	JZ	3	Joint sets at 20, 35 and 70 degrees TCA
304.5	305	FL	4	Gouge along fault surface, broken
305	308.3	JZ	3	Joints at 15 and 30 degrees TCA...gives core "broken zone" appearance
308.3	317	FZ	3	Strong chlorite along fractures, minor gouge.

Blackwater Project
Drill Summary - Structure

BW0381

From (m)	To (m)	Structure	Strength	Comments
317	318.6	FZ	4	Gougy, broken, increase pyrite-chlorite. Lower contact at 60 degrees TCA
318.6	319.7	BZ	4	White-grey. Lower contact at approximately 50 degrees TCA. Homogenous with silicified clasts and grey clay matrix. Weaker mineralization then fault zones above and below
319.7	321.2	BZ	4	Purple-andesitic fault breccia with carbonate veining between chlorite-pyrite altered fragments
321.2	325.1	FZ	5	Mix of fault breccia, gouge, and broken blocks of core. Lower contact approximately 60 degrees TCA...difficult to obtain accurate angle. Strongly chloritized with disseminated pyrite
325.1	328.6	JZ	4	Joints at 70 and 25 degrees TCA. Weak slickensides seen along fracture surfaces.Minimal fault gouge.
328.6	340.8	FZ	4	2 definite angles of fault movement (2 sets of slickensides at 331). Faults at 60 and 25 degrees TCA. Zones of fault breccia and fault gouge within interval
340.8	343.1	JZ	3	Joint sets at 15, 35 and 60 degrees TCA
343.1	346.2	BZ	4	Lower and upper contacts of fault breccia at 15 degrees TCA
346.2	347.3	BZ	4	Calcite-vein-rich fault breccia. Lower contact at 30 degrees TCA
347.3	349.5	BZ	3	Lower contact approximate at 40 degrees TCA, punctuated by calcite veinlet and transition into andesitic block
349.5	350.9	BZ	3	Calcite veinlets follow intensely fractured, chloritized andesite block
350.9	353.1	BZ	4	Gouge follows 15 degree fault plane. Additional weaker fracture surface at 65 degrees TCA
353.1	357.8	FZ	3	Intensely microfractured VC unit. Calcite-clay-sericite follow fracture surfaces. Slicks along fault surface. Minimal gouge
357.8	361.2	JZ	3	Dominant fracture set between 20 and 30 degrees. Secondary fracture set at 60 degrees TCA
361.2	372.1	JZ	2	Prominent fracture set at 25 degrees TCA, secondary joint set at 45 degrees TCA
372.1	386.4	JZ	1	Strongly silicified interval with weak joints visible at 60, 45 and 20 degrees TCA
386.4	386.5	CM	2	Questionable chill margin with volcaniclastic unit above and brecciated andesite below
386.5	389.4	JZ	1	Weakly jointed (hammer break required...1.5 m solid runs) with pyrrhotite along fracture planes
389.4	389.5	BD	2	Depositional, scoured contact of vc-textured andesite (uphole) and clast-supported 50:50 VC downhole. May be large 1.5m block of VC caught within andesite
389.5	391.1	JZ	1	Joints at 45 degrees TCA. Microfractures at 389.80m at 20 degrees TCA.
391.1	391.2	BD	2	Planar contact at 35 degrees TCA (sharp) between VC unit above and AND unit below
391.2	408.5	JZ	1	Weakly jointed at 35 (trace pyrite veinlets). 60 degree TCA joints weak. Stick core. Hammer breaks

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a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0382	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375102.96
Depth (m):	527.5	Date Started:	14/03/2012	Casing Size:	HWT	Northing:	5893298.61
Azimuth:	0	Date Completed:	29/03/2012	Casing (m):	4.5	Elevation (m):	1544
Dip:	-90	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	94.8	-89.4
108	122.5	-89.9
150	250.8	-89.8
200	176.5	-88.9
250	350.5	-88.3
300	343.1	-88.4
352	340.4	-88.5
400	342.7	-88.5
450	178.8	-88.8
502	14	-89

Blackwater Project
Drill Summary - Lithology

BW0382

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							Overburden.Casing drove to 4.5m
3	46.7	VC	volc	BLOCK	M	GRY	DEP	GR30+	Medium grey orange VC. 50-50 angular clasts in a silica rich matrix supported unit. Majority of felsic clasts contain laminations. Green clay clast replacement common. Garnets begin at 30m. Sulphides contain
46.7	85	FLPT	lpt	LAP	L	GRY			Light grey FLPT with limonite on fractures. 60% laminated clasts. Majority of clasts are subangular. Light grey matrix with strong clay clast replacement. Stronger serecite/chlorite alteration than previous VC unit. 1% Mafic clasts. Hydofractured.
85	133	FLPT	lith	BLOCK	M	GRY			Medium green grey silica/serecite/chlorite altered FLPT. No oxides. Some larger laminated clasts up to 25cm. Garnets replacing clasts throughout. Faulting and broken zones.
133	151.8	FLPT	fltbx	BLOCK	M	GRY	FLT	GR30+	Faulted FLPT. Increase in chlorite. Local dark laminated sections. Sphalerite greater than Py.
151.8	160.3	FLPT	ms	BLOCK	M	GRY	FLT	SH	Silicified and chlorite altered FLPT. Majorty of clasts are laminated. Sheared textures. Strong chlorite on fractures and replacing selective clasts.
160.3	182.5	FLPT	fltgge	LAP	D	GRN	FLT	GR30	Major fault with very poor recovery, redrill and stick clay gouge. Intense chlorite and milled clasts. Steep angle to core axis, 0 to 15 degrees. Gradationaly becomes more chlorite rich. Transition to AND at 182.5m?
182.5	217.5	FT	fltbx	FA	D	GRY	FLT	GR30	Extremely faulted interval. More mafic than previous interval within the fault. More competant downhole. Textures obscured. Fine grain biotite? Gradational upper contact with FLPT.
217.5	297	FT	lam	FA	M	GRY	DEP	GR30+	Dark grey silicified lamiated Felsic Tuff. Sphalerite commonly follows laminations. Strong chlorite on fractures. Moderate serecite. Garnets start back up at 250.5m. Cruddy garnets up to 3cm. At 284 m laminations become more foliated in appearance.
297	311	VC	volc	LAP	M	GRY	DEP	GR30+	Light grey green Volcaniclastic unit. 25% mafic clasts. No laminations, however strong serecite silica with ghostly clasts througout. Laminations above VC interval are more broken and foiliated?
311	334	FLPT	frctz	BLOCK	M	GRY	FLT	GR10	Medium grey green FLPT. Local laminated intervals. 100% felsic clasts that are laminated. Broken to fualted throughout.
334	345.5	FT	bx	BLOCK	M	GRY	DEP	GR30+	Brecciated FLPT. Locally brecciated. Very silicified, greenish-grey with redish tint
345.5	399	FLPT	volc	BLOCK	M	GRY	DEP	GR30+	60% texturally obscured FLPT. Majority of clasts are pale green-grey with laminations. Sub angular clasts, serecite/silica flooded. Garnets present. First sign of calcite veins are seen at 346m.

Blackwater Project
Drill Summary - Lithology

BW0382

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
399	427	VC	volc	BLOCK	M	GRY			Decrease in laminated clasts. Increase in chlorite rich clasts. Possible FLPT? Not typical texture of fresh looking FLPT.
427	527.5	FLPT	volc	LAP	M	GRY	DEP		as above, but not really any mafic clasts (1 mafic? clast at 507.3m), felsic unit with clastic texture with decrease in chloritic clasts from previous interval, some sections where textures are obscured by alteration, still some laminated clasts; not

Blackwater Project
Drill Summary - Alteration

BW0382		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	27.7	T	CLST	3	PERV	2	PERV	3	PERV	3	CLY	CLST	2	LIM	PATC	4	Strong limonote on fractures and patchy througout. Strong clast replaced with clay. Serecite in matrix with moderate pervasive silica. Garnets throughout.
27.7	85	T	PERV	3	CLST	3	PERV	3	PERV	4	LIM	PATC	3	GRNT	PATC	2	Flooded silica in some spots. Hydothermal alteration. Strong clay clast replacement from 47-49m. Green chlorite? waxy clast replacement throughout as well. Alteration albite? halos around sooty black sulphide sites.
85	97.9	S	PATC	3	PATC	2	PERV	4	PATC	3							similar to above with no oxides
97.9	100.2	S	PERV	5	PERV	2	CLST	1	PERV	2							Fault zone, gouge with intense chlorite alteration. Milled clasts rich in silica. No garnets present.
100.2	135	S	PERV	3	FR	2	PERV	4	PATC	3	CHL	FR	3	SIL	CLST	3	Garnet clast replacement common. Strong chlorite throughout with pervasive silica.
135	160.2	S	PERV	4	FR	2	PERV	3	PATC	2	GRNT	PATC	2				Faulted section, increase in chlorite with moderate silica alteration
160.2	182.7	S	PERV	4	PERV	3	CLST	2	PATC	2							intense chlorite through fault/gouge zone
182.7	200	S	PERV	4	FR	2	PERV	4	PERV	2	GRNT	REP	2				Strong chlorite within the fault zone, possible very fine grain biotite in the competant core below the fault.
200	250.8	S	PERV	3	FR	2	PERV	4	PERV	3	CHL	FR	4	GRNT	PATC	1	Pervasive silica, silica creating laminations?? Trace garnets. Moderate serecite. Very strong chlorite on fractures. No calcite.
250.8	297	S	PERV	3	FR	1	PERV	4	PERV	3	GRNT	PATC	3				Garnets are back starting at 250.8m. Laminations with serecite and silica throughout. Some silica alteration flows around garnets.
297	305.5	S	PERV	3	PERV	2	PERV	3	PERV	3	GRNT	PATC	2				Decrease in silica. Come clasts replaced by chlorite. Blebby garnet.
305.5	334	S	PERV	3	FR	2	PERV	4	PERV	3	GRNT	PATC	2				blocky and faulty, serecite silica flooding. Weaker chlorite on fractures compared to above and below
334	345	S	PERV	4	FR	2	PERV	4	PERV	3	GRNT	PATC	1	CHL	FR	4	Increase chlorite pervasivly and fracture controlled. Firest appearance of waxy yellowish-brown clays in fractures. Silica serecite still strong

Blackwater Project
Drill Summary - Alteration

BW0382		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
345	399	S	PERV	3	FR	2	PERV	4	PERV	3	GRNT	PATC	1	CHL	FR	1	Decrease in chlorite on fractures except for broken and faulted intervals. Flooding of serecite and silica throughout.
399	427	S	PERV	3	FR	1	PERV	4	PERV	3	GRNT	PATC	2	CHL	FR	3	similar to above with increase clasts replaced by chlore. Dark green chlorite on majority of fractures.
427	473.8	S	PERV	2	FR	1	PERV	4	PERV	3	GRNT	PATC	2	SER	VNHL	1	fracture controlled sericite, pervasive silica>sericite>chlorite; weak clay and calcite along fractures, calcite veinlets also present
473.8	527.5	S	CLST	2	FR	1	PERV	4	PERV	3	GRNT	PATC	1	SER	VNHL	1	pervasive silica>sericite>>chlorite; mechanical clay in fault zone, calcite veinlets and along fracture planes; weak chlorite along fractures and weak chlorite altering clasts

Blackwater Project
Drill Summary - Mineralization

BW0382		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	19.48	DI	0.1	DI	0.5		0	Dbs	DEN	0.1							weak sulphides in moderataly oxidized zone. DBS is throughout with patchy sphalerite.
19.48	39.1	BB	0.5	BB	1		0	Dbs	BB	0.5	Grnt	BB	0.5				increase in sphalerite
39.1	63.4	DI	1	DI	2		0	Dbs	DEN	3	Grnt	BB	0.5				significant increse in DBS, blebby to dendritic. White alteration halos around sooty black sulphides.
63.4	86.5	DI	1	DI	1.5		0	Dbs	DEN	1.5							moderate diss pyrite in veins and disseminations. DBS decrease but still moderate throughout. Diss sphalerite
86.5	109.5	BB	0.5	BB	1.5	BB	0.5	Dbs	DEN	2	Grnt	BB	2				garnets replacing clasts. stronger DBS at top of interval, decreasing downhole.
109.5	125.3	BB	0.5	BB	1.5	BB	0.5	Dbs	DEN	0.5	Grnt	BB	1				stronger sphlarite. garnet replacing clasts.
125.3	144.8	BB	0.5	BB	1		0	Dbs	DEN	0.5	Grnt	BB	0.5				similar to above
144.8	160.6	DI	1	DEN	2		0	Dbs	DEN	1							increase in DBS
160.6	182.5	DI	1	DI	0.5		0										fault zone, moderate ground up sulphides throughout fault
182.5	201.5	DI	1	DI	1		0			0							more mafic unit with increase in sphalerite mineralization
201.5	217.2	DI	0.5	DI	1.5	DI	0.5	Dbs	DI	0.1	Mrc	FP	1				Marcasite on fractures. Stronger sphalerite compared to pyrite and DBS
217.2	236.5	DI	0.5	LAM	2.5	BB	0.5	Dbs	DEN	0.5	Grnt	BB	0.1				sphalerite commonly following laminations. Euhedral po found 1-2mm. Specks of DBS
236.5	253.2	DI	0.5	DI	2.5	EU	1	Dbs	EU	0.1							no garnets until downhole. Euhedral Po, 2-4mm with black pyrite halos.
253.2	269	DI	0.3	DI	2	EU	0.5	Dbs	DEN	0.5	Grnt	BB	2				increase in garnets. euhedral Po with moderate to strong Sphalerite
269	286.9	DI	0.5	DI	2.5	DI	0.5	Dbs	DEN	1.5	Grnt	BB	1.5				moderate sulphides, sphalerite commonly following laminations
286.9	303	DI	0.5	DI	2	DI	0.5	Dbs	DEN	2.5							same as above
303	311	DI	1	DI	1	DI	0.5										no dbs

Blackwater Project
Drill Summary - Mineralization

BW0382		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
311	334	DI	0.1	DI	0.5		0	Grnt	BB	0.5							silicified but decrease in sulphides, increase next interval with increase in chlorite and pyrite veining to core axis
334	344	VN	3	DI	0.5	DI	0.1										increase in pyrite veining
344	368.6	DI	0.5	DI	1.5	DI	0.5	Grnt	DI	1.5							increase in disseminated sphalerite and garnet.
368.6	386.6	DI	0.5	DI	1	DI	1	Py	FP	0.5	Grnt	DI	1				decrease in sphalerite, increase in chlorite and pyrrhotite. Garnets still present. Rare pyrite fractures with calcite
386.6	399	DI	0.5	DI	0.5	DI	0.5	Grnt	DI	1							slight decrease in sulphides
399	424.1	DI	0.5	DI	0.5	DI	0.5	Apy	VN	0.1	Grnt	BB	2				nice Apy vein 1cm at 413.9m. Increase in blebby garnet. Moderate sulphides, DBS in felsic clasts (only one at 425.2m depth)
424.1	440.5	SP	0.1		0	DI	1	Grnt	BB	1	Dbs		0.1				significan decrease in sulphides, specs of brassy py throughout, dissemianted po with sooty black sulphide rims(in log as DBS), ratty blebs of garnet throughotu
440.5	473.9	SP	0.1	SP	0.1	DI	1.5	Grnt	BB	2	Dbs		0.1				same as above, slightly more po and garnet, trace py and sph as little specs
473.9	495.5	BB	1	DI	0.1	BB	1	Dbs		0.5	Grnt		1				less disseminated sulphide, sulphides are more in little cluster/blebs with sooty black sulphide rims; 1% of ratty garnet blebs
495.5	527.5	DI	0.1	DI	0.1	DI	0.5	Dbs		0.1	Grnt	BB	1.5				trace sulphides throughout, a few blebs of py and po with sooty black sulphide; some fine disseminations of sulphides as well; 1.5% ratty garnet blebs (patchy)

Blackwater Project
Drill Summary - Structure

BW0382

From (m)	To (m)	Structure	Strength	Comments
3	40.7	JZ	3	majority of jz at 60 degrees TCA
40.7	41	CLYSEAM	3	small clay seem, 100 clay sharp upper and lower contacts
41	97.9	JZ	3	local broken zones 50-70
97.9	100.2	FL	4	sharp contact, 40 degrees TCA. Gouge with intense chlorite stringers throughout
100.2	135	BRKZ	3	broken and competant core over 40m. Majority of jointing at 45-65
135	151.8	BRKZ	4	broken zone, blocky ground
151.8	160.2	JZ	3	competant core before major fault below
160.2	187	FL	5	major fault with poor recovery, gouge and redrill. Parallel to core axis.
187	196	BRKZ	4	broken zones, 40 tca joints
196	200	FL	4	very broken core, part of upper fault
200	202	JZ	3	jointed rock
202	217.2	BRKZ	4	very broken, possible large fault zone
217.2	259	JZ	3	Competant rock, locally broken with minor gouge zones <20cms. 45 TCA upper part of interval, joints becoming steeper dowhhole approaching 25-35 TCA.
259	261	BRKZ	3	broken zone, partly due to rods being stuck and redrill lots
261	268	JZ	3	many joints almost parallel to core axis, 2nd set of joints at 60
268	281.4	JZ	3	30-60 majority JZ.
281.4	284	BRKZ	3	steep fracture creating broken core
284	297.8	JZ	3	
297.8	299.5	BRKZ	3	Competant core
299.5	311.7	JZ	3	30 and 60 TCA
311.7	322.4	FZ	4	moderate fault/broken zone, 30 tca, slicks seen at 319.5m
322.4	332.5	BRKZ	3	broken core, 40 TCA
332.5	333.8	FL	3	small fault, but chlorite increases after fault. 30 TCA
333.8	344	JZ	2	pyrite veiing parallel to core axis, increase in blocky areas
344	370	JZ	3	
370	375	JZ	4	some joints steeper, buy joint set all at 40. very broken
375	385.5	JZ	3	

Blackwater Project
Drill Summary - Structure

BW0382

From (m)	To (m)	Structure	Strength	Comments
385.5	387	BRKZ	3	broken zone most likley due to steep fractures in hole. Broken for 2 meters. Intense chlorite on fractures
387	428.5	JZ	3	flatter joints,60 to 40
428.5	448.2	JZ	4	joints range from 30-60, weak broken sections throughout interval up to 1m but dominantly jointed
448.2	449.7	FZ	5	fault, clay+chlorite annealed
449.7	453.6	JZ	3	joints mainly at 45 dtca
453.6	473.8	FZ	3	moderate to strongly faulted interval with gge throughout, few competent sections up to 20cm
473.8	500.5	FZ	3	moderate fault zone with clay and chlorite gge throughout alternating with moe annealed but almost competen sections with high fracture density (almost like a annealed/healed fault) both alternating in ~2m intervervals
500.5	527.5	BRKZ	2	weak to moderate broken zone with sections of competent core up to 1m; some mechanical clay along fractures

Blackwater Project
Drill Logs

Hole ID:	BW0383	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375551.68
Depth (m):	417.58	Date Started:	15/03/2012	Casing Size:	HWT	Northing:	5892996.79
Azimuth:	0	Date Completed:	26/03/2012	Casing (m):	20	Elevation (m):	1586
Dip:	-90	Logged By:	MYo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	22.3	-89.8
91.44	301.9	-89.5
182.9	280.3	-89.4
228.6	264.5	-89.1
274.3	214.8	-89
323.1	221.1	-88.4
365.8	218.5	-88.2
411.5	221.9	-88.1

Blackwater Project
Drill Summary - Lithology

BW0383

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7.62	OB							
7.62	24.38	VC	volc	LAP	L	GRY	FLT	GR10	Felsic dominated VC. Fracture controlled oxidation. Ox also found patchy.
24.38	29.5	AND	volc	LAP	M	GRY	FLT	SH	Medium grey andesites. Weakly bleached. Significant faulting with gouge.
29.5	39.75	VC	volc	LAP	M	GRY	DEP	GR30	Felsic rich VC with infrequent blocks. Clast occasionally porphyritic.
39.75	51	AND	volc	LAP	D	GRY	UNKN	GR10	Volcaniclastic andesite. Matrix supported. Matrix is lighter and more altered then clasts.
51	68	AND	fltgge		D	GRY	UNKN	GR30+	Andesite flows with small amygdules, qtz infilling. aphanitic zones with 1mm sized plag being visible. moderate faulting within interval. fault controlled fluids may contribute to clay alteration in additon to fault gouge.
68	76.2	AND	volc	LAP	M	GRY	FLT	GR30+	Vocaniclastic andesite. broken zone. Massive clasts dominant with occasional porphyritic clasts. Matrix supported.
76.2	84	VC	fltgge	LAP	M	GRN	FLT	GR30+	strongly faulted zone between andesites and flpt. significant gouge. Strong chl alteration.
84	118.9	FLPT	volc	LAP	MO	GRN	FLT	GR30+	FLPT with nearly all clasts comprised of FT occasionaly up to Block sized. Primarilly clast supported. Moderate to strong silicification.
118.9	138	FT	lam	CA	L	GRN	UNKN		Faulted zone of FT. Lithology is hard do differentiate due to significant broken core and gouge. small intact pieces appear to be Ft. Band tones of green are interpreted as sericite and chlorite alteration. Small cavities in core appear to be a re
138	183	FT	mas	CA	L	GRN	DEP		Massive FT with small zones being laminated. moderate to strongly silicified.
183	196	FT	lam	CA	L	GRN	ALTFR	GR30+	Laminated FT with strong chl on fxs.
196	207	VC	volc	CA	MO	GRN	ALTFR	GR30+	Transition to Andesites. Entire interval appears to be an alteration front
207	224	AND	flw		D	GRY	UNKN	GR30+	Andesites with patchy bleaching/alteration. Amydules and feldspar phenocrysts. Phenos up to 2mm
224	232	AND	volc	LAP	D	GRY	UNKN		Volcaiclastic andesites with significant faulting and chlorite alteration.
232	271	AND	flw		D	GRY	FLT	GR30	Aphanitic Andesite flows. Plagioclase and hornblend visible in small less altered patches. Strongly Chloritized on fxs and gouge. Patchy bleached zones.
271	302	FT	mas	CA	L	GRN	DEP	GR30+	FT with significant faulting and broken zones. structurally intermittent gouge and flt breccias. Massive with little texture.
302	361.6	FT	mas	CA	L	GRN	FLT	SH	Light olive green felsic tuffs. intermittent broken zones. massive with little distinct texture. Chl on fxs. Ser pervasive. moderate to strongly silicified

Blackwater Project
Drill Summary - Lithology

BW0383

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
361.6	414.2	AND	mas		D	GRY	FLT	SH	Massive andesite with small slightly bleached zones. Massive with a slight porphyritic texture being visible in the weakly bleached zones. Highly mineralized
414.2	417.6	FT	mas	CA	L	GRY	UNKN		Massive FT with trace mineralization. strongly silicified.

Blackwater Project
Drill Summary - Alteration

BW0383		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
7.62	21.6	T	PATC	1	FC	3	PERV	1	OP	1	HM	FR	4	LIM	PATC	3	Limonite found patchy and on fx planes.
21.6	24.38	O	PATC	0	FC	2		0		0	HM	FC	3	LIM	PATC	3	Completely oxidized obliterating original textures.
24.38	39.75	T		0	FC	2	PERV	2	OP	2	HM	FC	3	LIM	FC	3	Weakly altered interval with oxidation staining on fractures and fracture walls.
39.75	54	S	FR	1	FR	1	PATC	2	OP	1							Significant gouge that has been moderately chlorite altered. Silicification becomes stronger down hole
54	65	S	PATC	3	FR	3	PERV	4		0							Chlorite found moderate in gouge and on fxs. yellowish brown clay alteration on fxs.
65	74	S	FC	3	FR	1	PERV	3		0	LIM	FR	1				Chlorite significant in gouge and on fxs. trace limonite on some fxs.
74	84	S	PATC	4	FC	1	PATC	2	OP	2							Fluids passing through fault may have contributed to chl and clay alteration within gouge.
84	121	S	FC	3	FC	1	PERV	3	OP	2							moderate to strong chlorite on fxs, replacing clasts, and banded in tuffs. Sericite is lighter green and pervasive. Silicification may be carrying impurities creating a green coloration.
121	138	S	DEF	3	FC	1	PERV	3	OP	2							Faulted zone with poor recovery. Chlorite strong on fxs and in gouge. Sericite seems to be overprinting and found moderately in patches. Entire interval appears to have been silicified prior to faulting
138	155	S	FC	2	DEF	1	PERV	2	OP	2							Chlorite strong on fxs and pervasive throughout
155	159.2	S	FC	2	PERV	4	DEF	2	OP	2							Strongly bleached and clay altered. Milled qtz as a remnant of weak to moderate silicification?
159.2	182	S	FC	3	FR	1	PERV	1	OP	2							Chlorite fx controlled and pervasive.
182	208	S	FC	3	FR	1	PERV	1	OP	2							Same as above
208	225	S	FC	3	REP	1	PERV	1	OP	1							Clay alteration on fxs and infilling amygdules also replacing fine grained feldspars.
225	231.5	S	FC	3	FR	1	PERV	2	OP	1							
231.5	241.5	S	DEF	4	FR	1	PERV	1	OP	1							Strong chlorite in gouge and on fxs.
241.5	271	S	FC	3	PATC	2	PERV	1	OP	1							Bleached alteration in patches possibly clay or Sericite? Chlorite strong in gouge and on fxs.

Blackwater Project
Drill Summary - Alteration

BW0383		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
271	295.5	S	FC	2	FR	1	PERV	1	OP	2							Chlorite on fxs and in patches; possibly pervasive?
295.5	302	S	FC	1	FC	1	PERV	1	OP	1							same as above w/ less chlorite.
302	361.6	S	FC	1	FC	1	PERV	4	PERV	2							Core becomes strongly silicified with clay along some micro-fractures and as specks possibly replacing a remnant clast. Chlorite on fxs
361.6	414.2	S	FC	1		0	PERV	4	PERV	1							Chl on fxs and as small specks of replacement. moderate to stongly silicified with associated mineralization
414.2	417.6	S		0		0	PERV	4	PERV	2							Weak sericite overprinted by strong silicification.

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Blackwater Project
Drill Summary - Mineralization

BW0383		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
7.28	43		0	SP	0.1		0										Infrequent Sp fine grained to larger blebs. Pits in core may be due to dissolution of sulfides
43	45	FP	1	FP	3		0										Fault zone with significant increase in Sp and PY. Sulfides found in gouge and as fracture controlled stringers and veinlets
45	81		0	SP	0.5		0										Specks of Sp. fine grained.
81	93	VN	1	BB	2		0										Fracture controlled py, also found as blebs. Sp is found as blebs and disseminated primarily in the matrix.
93	109	VN	0.5	BB	1		0	Dbs		0.1							Fracture controlled mineralization. Py predominantly on fractures and as veinlets. Sp disseminated and as blebs.
109	128	VN	0.5	BB	1	BB	0.5	Dbs		0.1							Same mineralization as below
128	153	EU	0.5	BB	2		0	Dbs		0.1							Py found as subhedral crystals and coating the inside of cavities. Sp as blebs
153	167.3	VN	0.1	BB	3		0	Dbs		0.1							Sp blebs up to 3mm predominant. Py frequently found in same blebs as Sp
167.3	182	VN	1	BB	1		0	Dbs		0.5							Py as Blebs and fracture controlled. Sulfides also found coating inside of cavities
182	208	BB	0.5	BB	1.5		0	Dbs		0.1							Cavities appear to be a result of the dissolution of sulfides.
208	227	VN	0.5	BB	1		0										Py primarily fracture controlled/veined w/ qtz and sp. Sp disseminated as Blebs with occasional small zones having elevated percentages; up to 5%.
227	241	VN	0.5	BB	0.1		0										
241	262	BB	1	BB	0.1		0										Py blebs and on fxs.
262	271	VN	0.5	BB	0.1		0										Py primarily on fxs and as veinlets.
271	279	VN	0.5	BB	0.5		0	Dbs		0.1							Py fracture controlled and blebs. Sp red and black varieties
279	301	VN	0.5	SP	0.1		0	Dbs		0.1							Py fracture controlled and blebs.
301	308	DI	1	SP	0.5	BB	0.1	Dbs		0.1							qtz-py-sp veinlets at 1/m

Blackwater Project
Drill Summary - Mineralization

BW0383		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
308	326	DI	0.5	BB	0.5	BB	0.1	Dbs		0.1							Sp blebs have a red halo; leaching?. Py disseminations have bleached halo. Qtz-Py-Sp veinlets
326	342	DI	0.5	SP	0.5	BB	0.1	Dbs		0.1	Cp	VN	0.1				Same styles as above
342	361.6	DI	0.5	SP	1		0	Dbs		0.1							Sulfides found as blebs/disseminations with bleached alteration halos
361.6	388.5	DI	1	DI	2	BB	0.1										Py and Sp found in veinlets, disseminated, and as blebs.
388.5	414.2	DI	4	DI	2	BB	0.5										multiple styles of min. Veined and disseminated are predominent for Py. Sp is disseminated/blebs
414.2	417.6	DI	0.5	DI	0.1		0										disseminated Py and Sp

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Blackwater Project
Drill Summary - Structure

BW0383

From (m)	To (m)	Structure	Strength	Comments
7.62	21.6	JZ	4	60>15
21.6	31.5	FZ	4	Significant zones of gouge with small intact areas between gouge
31.5	43	JZ	3	occasional joints near parallel to core axis
43	67	FZ	2	jointed core with faults approx. every run. typical fault has 3-30cm of gouge. fault contact range between 20-35deg typically
67	85	FL	4	possibly 30deg to core axis?
85	97.7	FZ	3	Faulted zone with approxiately half of interval being gouge. Some intact core between flts
97.7	106.4	JZ	4	55-65deg joints are most prevalent
106.4	118.9	FZ	3	Several fractures down core axis. gouge washed out.
118.9	121	JZ	3	
121	141.8	FL	5	Significant gouge washed out. poor recovery
141.8	160	FL	5	lower contact measured at 70deg
160	182	JZ	5	55>15
182	191	JZ	5	Same as above
191	193.6	FL	5	Significant gouge.
193.6	204.6	JZ	4	inconsistant joint angles
204.6	211	FZ	3	15-20deg
211	223.4	BRKZ	3	broken with approx 50% of interval being jointed between broken zones. Steep Angles to core axis.
223.4	227.5	FL	4	Significant chlorite in gouge
227.5	231	JZ	3	
231	254.5	FZ	4	
254.5	264	JZ	2	faults with 1-3cm of gouge occasionally
264	268	BRKZ	2	
268	271	FL	5	
271	287	FZ	3	Faulted with signifciant healed flt breccias. occasional intact core
287	316.2	BRKZ	4	broken with small zones of intact core with moderate jointing
316.2	317	FL	4	low recovery. gouge
317	327.2	BRKZ	3	joint set at 15deg. other joints appear to be inconsistant

Blackwater Project
Drill Summary - Structure

BW0383

From (m)	To (m)	Structure	Strength	Comments
327.2	242.3	JZ	2	additional joint sets may be present but point measurement needed for accurate data
342.3	352.3	BRKZ	3	
352.3	358.8	JZ	2	
358.8	360	FL	2	
360	361.6	JZ	2	
361.6	361.7	FL	4	Contact ft/and
361.7	375.1	JZ	2	
375.1	375.9	FL	3	
375.9	417.6	JZ	2	35deg and 60deg joint sets

Blackwater Project
Drill Logs

Hole ID:	BW0384	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374951.47
Depth (m):	380.5	Date Started:	16/03/2012	Casing Size:	HWT	Northing:	5893199.84
Azimuth:	0	Date Completed:	24/03/2012	Casing (m):	3	Elevation (m):	1551
Dip:	-90	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50.5	233.3	-89.1
100	284.2	-89
145.5	174.5	-89
200	164.3	-89.3
250	212.4	-89
300	202.2	-88.4
352	203.6	-88.4
380.5	195.4	-88.3

Blackwater Project
Drill Summary - Lithology

BW0384

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
3	35	VC	cs	LAP	MO	GRY	FLT	GR30	~95% clasts in medium-coarse sand matrix. Clasts are ~50-80% felsic, are typically .5-5cm wide, but up to 15cm wide bombs. Wide variety of clast liths, felsic clasts are typically very fine grained, occasionally laminated, and often with an millinmie
35	73.55	VC	cs	LAP	MO	GRY	FLT	GR10	Majority of interval is moderately brecciated and rubbly, locally with sandy gouge development. Less damaged intervals show polymictic VC, ~15-40% mafic clasts, ~85-95% clasts, largely clast supported. Occasional laminated felsic clasts .
73.55	114	VC	plm	LAP	MO	GRY	DEP	GR30+	80-90% clasts, 20-40% of which are felsic, occasionally laminated but typically massive and very fine grained. Mafics also typically massive, occasional porphyritc. Upper 10m has frequent bomb sized clasts.
114	167	VC	plm	LAP	MO	GRY	UNKN		85-95% clasts, typically ~50-50 mafic - felsic ration, with local variations. Clasts are rounded-subangular, typically subrounded. Dominantly clast supported but locally matrix supported. Polymictic, clasts are typically massive and .5-5cm wide, but
167	192.3	VC	plm	LAP	MO	GRY	FLT	GR10	Rubbly to gougy VC proximal with a structure. ~50% of intevral is competent. ~60-80% clasts vs matrix. Clasts are typically 1-6cm wide, polymictic - occasionally laminated felsic, porphy mafic but typically massive. Largely clast support but locally
192.3	202	VC	fltgge	LAP	MO	GRN	FLT	SH	Majority of interval is fault rock - gouge with occasinal brecciated clasts. Occasional short competent intervals are polymictic VC, ~70% clasts but matrix supported, clasts typically 0.5-1.5cm wide.
202	358.5	VC	ms	LAP	MO	GRY	UNKN		70-80% clasts, matrix support throughout. Clasts are ~50-50 felsic to mafic, but varies up to 75-25 either way, felsics can be laminated or massive, and mafics occasionally porph. Clast size typically varies between 0.5-5cm, with occasional intervals
358.5	379	AND	volc	LAP	D	GRY	UNKN		Interval is dominantly andesitic, with three disitinct 10-30cm intervals of polymictic VC. Andesite is typically clastic, angular fragments in ash matrix. VC intervals are similar to overlying VC unit, ~50-50felsic -mafic, rounded-subangular, poorly

Blackwater Project
Drill Summary - Alteration

BW0384		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	25.4	T		0	CLST	2	PATC	2		0	HM	FC	2				Silica is patchy, and frequently clast dominant. Clay is intermittent as soft white haloes and occasionally complete replacement of clasts. Orange Fe oxide on most fractures.
25.4	33.3	T		0		0	PERV	4		0	HM	FR	1				Pervasive silicification, orange Fe oxide on majority of fracture surfaces.
33.3	36.5	O		0	PERV	2		0		0	HM	PATC	4				All competent core is relatively soft, and frequent clasts are soft white clay. Orange Fe oxide haloeing all fractures and locally pervasive.
36.5	52	S		0	DEF	2	CLST	3	CLST	2							Frequent zoning in silicified clasts, less frequent but still accounting for ~5-10% of clasts is very soft pale pistachio green ?sericite. Also frequent yellowish white clay alt in sandy gouge
52	67	S	DEF	1	FR	3	CLST	4		0	CLY	CLST	2				Sandy gouge is occasionally weakly chloritic. Heavily fractured interval and majority of fractures are coated in pale yellowish ?clay mineral, hardness ~3.5-4. Felsic clasts are pervasivley silicified, while mafics are ?clay altered - soft with very soft white phenocrysts.
67	68.3	O		0		0	CLST	3		0	HM	DEF	4				Very gougy interval, ++Fe oxide throughout, Occasional un-oxidized clasts are silicified.
68.3	73.55	S	DEF	3		0	CLST	3	DEF	2							Gougy interval, gouge is pale yellowy green to mmedium forest green, ?sericite and chlorite? Competent clasts are largely silicified.
73.55	88	S		0		0	PERV	3	PATC	2							Pervasive silicification (glassy veneer and elevated hardness, but not at all texture destructive), patchy matrix dominant pale geenish ?sericite.
88	89.8	S		0		0	PERV	3	PERV	4							Entire interval with exception of occasional mafic clasts is pale green sericite alt. Mafic clasts are comletely untouched by ser. Sil is pervasive.

Blackwater Project
Drill Summary - Alteration

BW0384		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
89.8	110	S	FR	2		0	PERV	3		0							Consistent mild-mod sil, most intense in felsic clasts, but present throughout. Chlorite intermittently on frractures, particuallrly evident in more rubbly intervals, occasionally permeaing competent core in more fractured intervals.
110	119	S	PATC	3		0	PERV	4	PATC	2							Pervasive intense but not texture destructive sil. Also majority of iterval is moderately washed with pale-medium dark green chlorite +/- sericite.
119	149.6	S	FR	1		0	PERV	4		0							Pervasive intense but not texture destructive sil, very hard, glassy sheen on core. Very occasional trace chlorite on fractures.
149.6	176	S	FR	4		0	PERV	4		0	CHL	CLST	1	CHL	DEF	3	Chlorite is pervasive on fractures and in gougy intervals, also very occasionally discolouring clasts. Sil is still pervasive throughout.
176	192.2	S	FR	3	FR	2	PERV	4		0	CHL	DEF	4				Competent core is pervasively silicifed, texture is largely impecale, but locally slightly obscured. Fractures are mostly chloritic, but frequently overprinted by soft grungy yellow ?clay. Frequent gouge is pervasively chloritic.
192.2	194.5	S	DEF	3		0		0	PATC	3							Intensely gougey interval, pervasive moderate chlorite and 5-15cm wide patches of white sericitic alt
194.5	202	S	FR	3	FR	1	PERV	3		0	CHL	DEF	1				Majority of fratcures chloritic, occasionally with soft yellow ?clay. Sil is near pervasive, but mafic clasts are frequently unaffected. Occasional gouge is chlorite rich.
202	260.3	S	FR	3		0	PERV	4		0	CHL	CLST	1				Pervasively silicified, though texture is impeccable, and occasional large mafic clasts are unaffected.
260.3	271	S	FR	3		0	PERV	4	CLST	1	CHL	CLST	2				Pervasive intense sil, with exception of vary occasional mafic clasts. Chlorite on fractures throughout. Occasional quite heavily chloritized clasts, and scarce sericite in clasts, sometimes with chlorite.

Blackwater Project
Drill Summary - Alteration

BW0384		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
271	274.5	S	FR	3		0	PERV	4	CLST	1	CHL	PATC	3				Pervasive intense sil (not texture destructive), chlorite on fracture planes throughout, occasional sericitic clasts, two dsitnict 10cm wide patches of quite intense chl+ser+sil alteration with sharp alt front contacts with surrounding rock.
274.5	312.5	S	FR	2		0	PERV	4	CLST	1	CHL	CLST	2				Pervasive intense sil, chlorite on fractures and occasionally in smaller clasts, also sericite in occasional clasts.
312.5	336	S	FR	2	VNHL	2	PERV	4	CLST	1	CHL	CLST	2				Pervasive silicification, approaching texture destructive sil5 in occasional short intervals (eg 308-308.5m). Chlorite on fractures, and sporadically staining clasts.Very occasional sericitized clasts. Occasional (1-3p/m) chlorite-calcite veinlets with centimetric haloes of intensely bleached, slightly softer ?clay alt.
336	358.4	S	CLST	3	VNHL	2	PERV	4	PATC	3	CHL	FR	1				Fracture plane chlorite is significantly reduced. Still pervasive sil. Occasional 5-15cm wide patches of intensely bleached ?sericitic alt. Occasional clasts completely discoloured by chlorite.
358.4	379	S	FR	2		0	PERV	3		0	BIOT	MTRX	3	CHL	CLST	1	Silicified throughout. Andesitic intervals have pervasive and quite extensive biotite alt in matrix. Weak chl on fractures and occasional weak chl in clasts restricted to VC intervals.

Blackwater Project
Drill Summary - Mineralization

BW0384		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	17.6	VN	0.1	BB	0.5	SP	0.5	Grnt	CR	0.5							Garnets are sporadic throughout, 2-5mm wide. Sphal and short acicular ?DBS associated with clay alt. Po disseminated in fine specks throughout.
17.6	25.9		0	SP	0.1	SP	0.5	Grnt	CR	0.1							Vey scarce sphal in fine specks, isolated occurrence of garnet, and sporadic patches of fine po
25.9	33.5	CR	0.1	BB	0.5	SP	1	Grnt	CR	0.1							Isolated occurrence of py replacing a clast in very fine specks. Po and sphal common throughout in specks and millimetric blebs, sphal often completely replacing small clasts.
33.5	34.7	DI	3		0		0										Fault zone, largely oxidized but un-oxidized intervals of breccia are heavily mineralized with dense disseminated py
34.7	36.8		0		0		0										Heavily oxidized
36.8	50	SP	0.1	BB	0.5	SP	0.5	Grnt	CR	0.5							trace py in isolated patches, also trace py associated with one of the big garnets. Po and sphal sporadic throughout. Garnets as 1-5cm wide ??clast replacements.
50	66		0		0	SP	0.1										Essentially inert, very scarce fine specks of po.
66	70	BB	1.5		0		0										More intensely deformed interval, frequent centimetric blotches of fine py disseminated throughout.
70	76.4		0	BB	0.1	SP	0.1										Occasional fine specks of po and millimetric blebs of sphal, typically in matrix.
76.4	80.6		0	BB	0.1	SP	0.5										Quite frequent clusters of fine po specks, occasional sphal in millimetric blebs.
80.6	87.9		0	BB	0.5	SP	1	Ga	SP	0.1							Frequent po as fine specks in matrix and ?replacing sporadic clasts. Sphal most commonly in clasts, frequently occurring together, isolated occurrence of very fine specks of gal.
87.9	89.6		0		0		0										Utterly dead, absence of sulphides directly coincident with pervasive sericite alt.

Blackwater Project
Drill Summary - Mineralization

BW0384		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
89.6	92.1		0	BB	0.1	SP	1										frequent fine to millimetric specks of po, in matrix and clasts, occasionally associated with sphal
92.1	126.3	CR	0.1	BB	0.5	SP	1	Po		0.5							Frequent fine specks and millimetric blebs of po and sphal disseminated throughout matrix, less frequently replacing clasts. Very occasional clasts with fine specks of py .
126.3	155.8	VN	0.1	BB	0.5	SP	1	Plag	CR	0.5							Very similar to above with addition of occasional planar 1-2mm wide py veinlets. Also isolated felsic clast with py tracjing laminations
155.8	167	VN	0.1	BB	1.5	SP	0.5	Po	CR	0.1							Very sparce fine py veinlets subparallel TCA. Frequent 1-3mm wide irregular blebs of sphal, also frequent fine specks of po in clasts.
167	174	VN	0.1	BB	0.1	SP	0.1										Isolated very fine py veinlet, very sparse sphal and po in fine specks and blebs
174	185	SP	0.1	CR	0.5	SP	0.1										Mafic clasts increasigly being replaced by sphal, occasionally with fine po, and in isolated isnstance py
185	191.8		0	CR	1.5	CR	0.5										Sphal and occasionally po very common as millinetric specks replacing mafic clasts exclusively, locally quite intense.
191.8	194.5		0		0		0										Gouge, no (visible to the naked ey) sulfides.
194.5	206		0	CR	0.1	SP	0.5	Po	CR	0.5							Majority of sulifes are replacing clasts, typically but not exclusively mafic ones. Po also quite common as fine specks in matrix.
206	220	SP	0.1	DI	1	DI	1										frequent fine specks of po and sphal disseminated throughout, often most dense in mafic clasts, but can be found in matrix and felsics alike. Also occasional trace py
220	246.5	VN	0.5	DI	1	DI	1	Cp	SP	0.1	Po	BB	0.5	Py	BB	0.1	Similar density of disseminated po and sphal to overlying interval, with addition of frequent irregularly shaped centimetric blebs of py + po, occasionally also with sphal and trace chalco. Quite frequent fine py veinlets. Also occasional fine garnet

Blackwater Project
Drill Summary - Mineralization

BW0384		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
246.5	258.7	VN	0.1	CR	1	CR	0.5	Po	DI	0.5							Mafic clasts are frequently partially replaced by a combination of sphal + po in fine specks and blebs, po also common as fine specks disseminated throughut. Occasional (1p/m) very fine planar py veinlets.
258.7	275.5	VN	0.1	CR	1.5	CR	1	Po	DI	0.5	Dbs	DEN	0.1				Mafic clasts frequently largely replaced by sphal with fine specks of po, po also disseminated throughout matrix in specks and millimetric blebs. Occasional fine late stage py veinlets. Felsic clasts now frequently have moderately well developed DBS.
275.5	286.8	VN	0.1	CR	1	CR	1	Po	DI	0.5	Dbs	DEN	0.5				Majority of larger felsic clasts have well devloped DBS, occasionally with visible py. Mafic clasts are extensively replaced by po and sphal together. Po disseminated in fine specks throughout matrix. Occasional fine late stage py veinlets.
286.8	297	VN	0.1	CR	0.5	CR	1.5	Po	DI	0.5	Dbs	DEN	0.1				Mafic clasts largely replaced with po and slightly less common sphal. Po disseminated throughout natrix in fine specks. Occasional fine late stage py veinlets. Trace DBS in occasional felsic clasts.
297	320.3	VN	0.5	CR	1	CR	1	Po	DI	1							Quite frequent very fine late stage py veinlets, also a larger vein of sooty py/chloritic ?gouge at 300-301m. Mafic clasts very frequently largely replaced by sphal + po. Po also disseminated throughout matrix in fine specks.
320.3	336	VN	0.1	CR	0.5	CR	1	Dbs	CR	0.5	Po	BB	1.5				felsic clasts frequently show quite well developed DBS. Mafic clasts dominated by po with lesser sphal. Po also present in 1-5mm wide blebs ?complete clast replacement. Also occasional fine late stage py veinlets, and trace py on fractures.
336	358.4		0	CR	0.5	CR	0.5	Dbs	CR	0.1	Po	DI	0.5				Very similar minerlaiztion style to preceding interval, but lower densities of po and DBS. DBS still locally very well developed, but rare.

Blackwater Project
Drill Summary - Mineralization

BW0384

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
358.4	379	VN	0.5	DI	0.5	BB	1	Ga	VN	0.1							Very fine sphal patchily disseminated throughout matrix, po dominantly as millimetric blebs infilling amygdules. Frequent fine late stage py veinlets, with isolated occurrence of trace galena.

Blackwater Project
Drill Summary - Structure

BW0384

From (m)	To (m)	Structure	Strength	Comments
3	33.5	JZ	4	Frequent fractures, most commonly at 45, but also frequently at 80, 30 and various angles between.
33.5	35	FL	4	Breccia and gouge, sharp upper contact at 25degTCA
35	65.5	FZ	2	Largely rubbly with fairly frequent sandy gouge, high fracture density and frequent brecciation.
65.5	73.55	FZ	4	Moderate amounts of sandy gouge, pervasively brecciated.
73.55	93.7	JZ	2	Occasional fractures, 40-60degTCA
93.7	108.4	BRKZ	2	Intermittently rubbly, remainder is weakly jointed at 40-60degTCA
108.4	151.9	JZ	2	Fairly frequent planar fractures at 30-50degTCA
151.9	157.2	BRKZ	2	Joint zone continues but with frequent 20-40cm long intervals of rubble.
157.2	160.4	FZ	2	Moderately rubbly, occasionally sandy gouge, good planar 10cm thick gouge band at 25degTCA at 158.5m
160.4	164.7	JZ	3	Quite heavily fractured.
164.7	169	FL	3	Largely rubbly, highly fractured, 30cm of bona fide fault gouge.
169	192.2	FZ	2	Rubbly core with occasional 50-100cm long competent intervals, frequent short intervals of sandy gouge and washed out core. High fracture density, typically at 5-15degTCA
192.2	202	FL	4	Upper and lower 2m of interval are intensely brecciated with ++ gouge matrix. Central portion is rubbly, heavily fractured, but only with occasional weak gouge.
202	227	JZ	2	Occasional planar joint at 45-65degTCA
227	246.2	JZ	4	Frequent planar fractures, wide variety of angles.
246.2	249.7	BRKZ	3	Rubbly throughout, no evidence of gouge.
249.7	379	JZ	2	Angles from 40-60degTCA

Blackwater Project
Drill Logs

Hole ID:	BW0385	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375101.88
Depth (m):	464.15	Date Started:	18/03/2012	Casing Size:	HWT	Northing:	5893351.17
Azimuth:	0	Date Completed:	01/04/2012	Casing (m):	4	Elevation (m):	1536
Dip:	-90	Logged By:	TOl	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	242.1	-89.5
100	227.5	-89.3
152.5	206.2	-89.1
202	331.4	-88.7
253	342.7	-88.5
304	356.9	-88.8
352	18.7	-89
400	39.8	-89.5
451	38.7	-89.3

Blackwater Project
Drill Summary - Lithology

BW0385

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							Overburden
4	13	FLPT	cs	LAP	L	GRN	FLT	GR5	Light greenish grey, clast supported felsic lapilli tuff
13	19.8	FLPT	cs	LAP	L	GRN	DEP	SH	Faulted felsic lapilli tuff - Weak to moderate fault with broken up bits of core + rubbles + sand/clay gge
19.8	42.9	VC	plm	LAP	M	GRN	FLT	GR10	Medium greenish grey polymictic volcaniclastics???, may also be highly altered FLPT????down to 48m and the colour change (darker-more mafic composition)/difference from the previous interval may be due to alteration
42.9	44.87	VC	plm	LAP	M	GRN	DEP	GR30	Faulted volcaniclastics - Moderate fault with broken bits of core + fault/clay gge
44.87	58	VC	plm	LAP	M	GRN			Polymictic volcaniclastics with mafic clasts > felsic clasts
58	73.22	VC	plm	LAP	M	GRN			Polymictic volcaniclastics with similarities to previous interval only that clasts are mostly sub angular
73.22	95.8	VC	plm	LAP	M	GRN	DEP	GR30+	Volcaniclastics with local bleached out/altered secions, 75-25 mafic to felsic ratio with the mafic clasts decreasing gradationally towards bottom of interval; bottom contact may be depositional or altered (due to sharp colour change in the core fro
95.8	113	FLPT	flwbnd	LAP	M	GRN			Felsic lapilli tuff with some flow banding in sections and some brecciation in localized sections
113	135.5	FLPT	lam	LAP	M	GRN	UNKN		Greenish grey felsic lapilli tuff with some laminated clasts in sections and some convoluted flow banding in sesction
135.5	141	FT	ms	LAP	M	GRN	DEP	GR30+	Felsic tuff??? may also be altered/washed out felsic lapilli tuff???, clasts become visible towards bottom of interval and grades to next interval
141	153	VC	plm	LAP	M	GRN			Polymictic volcaniclastics with 75-25 mafic to felsic clasts
153	212.5	VC	plm	LAP	M	GRN			Greyish green polymictic volcaniclastics with SA/SR clasts, 75-25 mafic to felsic clasts (similar to previous interval).Around 183-193m, clasts are felsic dominant, with presence of garnet blebs.
212.5	218.6	FT	lam	FA	M	GRN	DEP	GR10	Short felsic tuff unit, with banded ash fall/flow. Strong qtz-ser-chl alteration
218.6	267	VC	plm	LAP	M	GRN			Volcanoclastis, with equal clasts, grading to mafic dominant clasts. Clasts show some alignment, possibly welded/flow-banded. Continued strong qtz-ser-chl alteration.
267	306.5	FT	a	FA	M	GRN	UNKN		Felsic tuff, strongly silicified, with clay-sericite alteration, some chlorite. Consistently banded, with some areas of convoluted banding.
306.5	464.2	FLPT	lpt	LAP	M	GRN	UNKN		Strongly altered and obscured felsic lapilli tuff, identified by short, rare, unaltered intervals.

Blackwater Project
Drill Summary - Alteration

BW0385		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	13	T	CLST	2	PATC	3	PERV	3	CLST	1	HM	FR	2	LIM	FR	2	Weak sericite in clasts, some chlorite in clasts, patchy clay, moderate pervasive silica, some oxides (hm+lim) on fracture planes and some patchy, few garnets as clast replacement
13	27.3	T	CLST	3	FR	2	PERV	3	MTRX	2	HM	FC	1	LIM	FC	1	Some sericite in matrix, moderate chlorite in clasts, some clay on fracture planes, moderate pervasive silica, weak oxides on some fracture planes
27.3	44.87	S	CLST	4	FR	3	PERV	3	CLST	3							Strong chlorite in clasts,moderate clay on fractures, some pervasive silica, some sericite in clasts
44.87	58	S	CLST	4	FR	3	PERV	3	CLST	2							Some sericite in clasts, pervasive silica, some clay on fractures, strong chlorite in clasts and weak on fracture planes
58	73.22	S	CLST	3	FR	2	PERV	3	MTRX	1							Weak sericite in marix and in clasts, some pervasive silica, some clay on fractures and some patchy, some chlorite on fracture planes and some in clasts
73.22	95.8	S	FR	4	FR	3	PERV	3	CLST	1	GRNT	CLST	2				Weak sericite in clasts, strong chlorie on fracture planes, some in clasts and some patchy in matrix, moderate pervasive silica, some clay on fractures and in clasts, some form haloes around clasts, Garnets as clast replacement
95.8	113	S	CLST	3	FR	2	PERV	4	MTRX	2	GRNT	CLST	1				Strong pervasive silica, some clay on fractures, weak sericite in matrix and some in clasts, chlorite dominant in clasts and on fracture planes
113	135.5	S	FR	3	FR	1	PERV	4	CLST	2	GRNT	CLST	1				Moderate chlorite on fracture planes and some patchy, sericite in clasts, strong pervasive silica and very weak clay on fracture planes
135.5	145	S	FR	2	FR	2	OP	4	MTRX	1							Weak chlorite on fracture planes, weak sericite in matrix, silica as overprint, some clay on fracture planes
145	153	S	FR	4	FR	2	OP	3	CLST	2	GRNT	CLST	1				Moderate silica as overprint, strong dark green chlorite on fracture planes, some in clasts and patchy in matrix, some sericite in clasts, and some clay on fracture planes/ patchy in sections

Blackwater Project
Drill Summary - Alteration

BW0385		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
153	164.5	S	CLST	3	FR	2	OP	3	CLST	2	GRNT	CLST	1				Some sericite overprinting clay in clasts, moderate chlorite in clasts, clay on fracture planes and some in clasts, moderate silica as overprint
164.5	177	S	FR	4	FR	2	OP	3	CLST	2	GRNT	CLST	1				Very similar alteration to previous interval, increase in chlorite on fracture planes and in clasts (dark green)
177	183	S	PERV	4		0	PERV	4	PERV	2	GRNT	CLST	1				Pervasive chlorite, strongest in clasts and on fractures. Moderate to strong pervasive qtz-ser
183	248	S	PERV	3	MTRX	1	PERV	3	PERV	3	GRNT	CLST	2				Increase in garnets, with increase in felsic material. Weaker, but still pervasive chlorite, silica, strong pervasive sericite
248	267	S	PERV	4	PERV	1	PERV	3	PERV	3	TOUR	VN	1				Strong increase in pervasive chlorite, especially strong in fault gge. Pervasive qtz-ser-clay. One tourmaline veinlet, black, ascicular crystals.
267	306.5	S	FR	2	PERV	2	PERV	5	PERV	4	GRNT	REX	1				Strong silicification, pervasive clay-sericite, chlorite on fractures, occasional garnets
306.5	382	S	PATC	2	PERV	2	PERV	4	PERV	4	CHL	FR	3	GRNT	PATC	2	Strong pervasive qtz-ser-cly, with patchy chlorite, stronger on fractures. Patchy clusters of garnet.
382	404	S	FR	1	PERV	1	PATC	3	PATC	2	GRNT		2	CAL	FR	1	Calcite on fractures begins, reduced alteration - less silica, sericite, clay and chlorite - but still texture obscured rock
404	464.2	S	PATC	1	PATC	1	PERV	4	PATC	1	GRNT	PATC	1	CAL	FR	1	Strong silica, weak if any sericite-clay, patchy weak chlorite. Calcite on fractures, sometimes euhedral blades. Patchy spots of garnet.

Blackwater Project
Drill Summary - Mineralization

BW0385		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	13	BB	0.1	BB	0.5		0	Dbs	DEN	0.5	Grnt	CR	0.5				Trace py in blebs, some sph blebs, no po, few garnets and some dbs
13	27.3		0	BB	1	CR	0.5										No py, bleby sph, po in clasts
27.3	42.9	VN	0.1	BB	1.5	CR	1	Apy	VN	0.1							Trace py and Apy in hairline, some bleby sph, some po in clasts
42.9	48		0	BB	1	DI	0.1	Dbs	DEN	0.5							No py, trace po, bleby sph, some dendritic dbs
48	58		0	BB	1	DI	0.5										No py, bleby sph, some disseminated po
58	73.22	VN	1	BB	2		0	Dbs	DEN	0.1	Ga	VN	1				Some py in veinlet/hairline, bleby sph and some in clasts/veinlets, no po, trace dbs, Galena in veinlet
73.22	85	SP	0.5	BB	2	CR	0.1	Dbs	DEN	0.1							Sph in blebs and some in clasts, py in specks, trace dendritic dbs and trace po in clasts, no garnets and some leached sulphide sites
85	95.8	BB	0.5	BB	2	CR	0.1	Dbs	DEN	0.5	Grnt	CR	2				Trace po in mafic clasts, some garnets as clast replacement, sph in blebs and in clasts, py in blebs, some dendritic dbs
95.8	113		0	BB	1		0	Grnt	CR	1							No py or po, some sph in blebs, and garnets as clast replacement
113	127	FP	0.5	BB	0.5		0	Grnt	CR	0.1							Py on fracture planes and sph in blebs; no po; trace garnets
127	135.5	FP	0.5	BB	0.5		0	Grnt	CR	1							Sulphide percentage same as previous interval; increase in garnets as clast replacement
135.5	141	FP	0.1	BB	3		0										Mostly bleby Sph, some trace py on frature planes
141	153	FP	0.1	BB	2.5	DI	0.1	Grnt		2							Trace Py on fracture planes, some bleby sph and some in clasts, trace disseminated po; garnets present
153	164.5	FP	0.5	CR	2		0	Grnt	CR	1							Some py on fracture planes, sph in clasts and a few blebs, no po, garnets as clast replacement
164.5	177	FP	0.5	CR	2	CR	0.1	Apy	FP	5							Some Apy on a fracture plane alongside calcite crystals, some py on fracture planes, sph in clasts and as blebs, trace po in clasts as well and garnets a sclast replacement

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Blackwater Project
Drill Summary - Mineralization

BW0385		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
177	193	DI	0.5	CR	0.5	CR	0.5										Weak di py, sph replacing occasional clasts, blebby brown po replacing clasts
193	211	FP	0.5	DI	0.5	CR	1	Grnt	CR	1							Garnet, often with po, replacing clasts. Py on fractures, weak di sph
211	219	FP	0.1	BN	1.5	BB	0.1	Grnt	BB	0.5							Increase in sph, mostly following flow-banding of FT. Trace py, po. Occasional blebby garnet.
219	229	DI	0.5	CR	0.5	CR	0.5										Minor po and sph replacing occasional clasts, minor di py
229	248.5	SP	0.1	BN	0.5		0	Grnt	BB	0.5	Dbs	DEN	0.5				Some banded sph/DBS, trace py, small occasional blebs of garnet
248.5	251	DI	0.5	BB	0.1		0	Apy	DI	0.5							Minor di py and arspy, trace sph
251	267	DI	0.5	BB	0.5	BB	1	Ga	DI	0.1							Minor di po, py and (possibly) galena. More evident on fresh surfaces. Occasional blebs of sph.
267	281	FP	0.5	BN	0.5	DI	0.5	Ga	VN	0.1	Dbs	DEN	1				Minor di po, py. DBS and sphal follow FT banding. Trace gal found on fresh surfaces.
281	309	DI	0.5	BN	0.5	VN	0.5	Apy	DI	0.5	Ga	VN	0.1	Dbs	BN	1	Minor di py, po and arspy, with occasional veinlets of po+py+sph. Also banded sph and DBS
309	342	FP	0.5	BB	0.5	DI	0.1	Dbs	BN	0.5							Banded DBS, with blebby sph, di po and py
342	367	DI	0.5	DI	0.5	DI	0.5	Dbs	BN	0.5	Ga	FP	0.1				Blotchy DBS and sphal, minor di py and po, with a patch of euhedral galena and some galena on fractures
367	385	FP	0.5	DI	1	BB	0.5	Dbs	DI	1	Ga	FP	0.1				Di DBS (sooty sulphide) with sphal, minor di py, po often with garnet
385	404	FP	0.5	DI	1	DI	0.1	Dbs	DI	1.5							Increased DBS, with decreased po. Minor py on fractures and in veins. Sph with DBS
404	464.2	DI	0.5		0	DI	0.1	Dbs	DEN	1							Reduced total sulphides. Some DBS, patchy, dendritic. Minor di py, esp on fractures, trace po.

Blackwater Project
Drill Summary - Structure

BW0385

From (m)	To (m)	Structure	Strength	Comments
0	13	BRKZ	3	Broken zone with some localized stronger broken zones with sand/clay gge
13	19.8	FL	2	Weak to moderate fault with rubbles + broken bits of core + sand/clay gge
19.8	38	JZ	2	Weak joint zone with local broken zones; wispy/jagged joints mostly at 70dtca, others at 60/15dtca
38	42.9	BRKZ	3	Broken zone with broken up bits of core
42.9	44.87	FL	3	Moderate fault with broken bits of core + clay/fault gge
44.87	48	BRKZ	2	Weak broken zone with broken bits of core and some competent pieces of core
48	58	FL	1	Broken zone (5)/fault zone (1); in and out of sections of strong broken zones/faults with fault/clay gge in small sections and broken bits of core in others; some competent core <0.5m with clay/fault gge attached to ends of core
58	73.22	JZ	3	Joint zone with local strong broken zones (broken bits of core + sand gge); dominant joints mostly at 60dtca, others at 50>70>40dtca
73.22	88.85	BRKZ	3	Moderate to strong broken zone with some competent core <0.5m and some local strong broken zones with sand/clay gge
88.85	107	BRKZ	2	Weak broken zone with local sections of strong broken zones
107	113	JZ	2	Weak joint zone with wispy/jagged joints, mostly steep joints 20>30dtca; others at 70dtca
113	115	JZ	2	Joint zone similar to previous interval, wispy/jagged joints at 20/60/80dtca
115	129.2	BRKZ	3	Broken zone with broken bits of core + rubbles
129.2	141	BRKZ	4	Broken bits of core +sand/clay gge (one small section ~0.1m)
141	145	FL	4	Fault with clay/fault gge and small peces of rubbles/core
145	150.1	BRKZ	3	Moderate broken zone with broken bits of core
150.1	151	JZ	3	Joints at 60>80dtca
151	153	BRKZ	3	Moderate broken zone
153	158.7	BRKZ	3	Broken bits of core + rubbles
158.7	161	JZ	2	Joints mostly at 70 dtca, steep ones at 30dtca
161	163.8	BRKZ	4	Broken bits of core + rubbles +clay on fractures
163.8	172	JZ	1	Weak joint zone with local broken zones and wispy/jagged joints; dominants joints at 50dtca, others at 50>20>30dtca
172	177	BRKZ	3	Broken zone with rubbles
177	195	FZ	3	Fault zone, with some clay gge on fractures

Blackwater Project
Drill Summary - Structure

BW0385

From (m)	To (m)	Structure	Strength	Comments
195	236.5	BRKZ	4	Fairly broken, with segments <1m of competent core. Sandy clay gge, esp on fractures
236.5	255	FZ	5	Very broken, rubbly rock, with short intervals (<20cm) of strong clay gge
255	322	BRKZ	2	Weakly broken zone
322	349	FZ	4	Fault zone, with intervals of clay gge and rubbly/broken rock. No core longer than 40cm.
349	392	BRKZ	3	Broken zone, with some stretches of jointed rock, but rough fractures throughout
392	415	JZ	3	Some jointing, also some broken rock with rough fractures. Fractures are 60>45 degrees TCA
415	439	FZ	4	Fault zone, with many intervals of rubble and clay gge, partially healed in sections, brecciated.
439	464.2	BRKZ	3	Moderately broken zone, some jointed rock, predominantly rough, irregular fractures.

Blackwater Project
Drill Logs

Hole ID:	BW0386	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375350.7
Depth (m):	541.93	Date Started:	17/03/2012	Casing Size:	HWT	Northing:	5892899.09
Azimuth:	0	Date Completed:	29/03/2012	Casing (m):	3.05	Elevation (m):	1613
Dip:	-90	Logged By:	SCa	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	250	-88
46.33	249.8	-87.6
92.05	240.1	-87.5
137.2	234.3	-87.4
183.5	226.7	-87.3
228.6	235.7	-86.9
274.9	237.8	-86.9
320.0	240.4	-86.6
366.4	242.5	-86.3
411.5	238.1	-86.5
457.8	234	-86.3
502.9	227.1	-86.4
540.1	228.4	-86.1

Blackwater Project
Drill Summary - Lithology

BW0386

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2.78	OB							OB, broken rock, no mud.
2.78	18.4	FLPT	bx	LAP	VL	GRY	UNKN	GR10	Very Light. Gray clay replaced clasts (majority laminated, some with Qtz eyes, were a flow banded rhyolite?), in a Light Gray matrix. Orange due to clast and fracture controlled oxidation. Subsequent series of poorly sorted sub-angular to angular sma
18.4	36.5	FLPT	ms	LAP	M	GRY	ALTFR	GR30	Lapilli size clay replaced clasts oriented @50 dtca, in a Medium to L.Gray silicified matrix. with intermittednt sections of clay replaced clast micro-Bx (ranging from 0.1-2mm clasts rounded.
36.5	51.7	FLPT	bx	LAP	M	GRY	ALTFR	GR30+	0.1-lapilli size partially clay replaced Very Light.Gray clasts, in a silicified M.Gray matrix. locally clast supported, and locally matrix supported. trace laminated clast Bx'n. Appears chaotic, silica fluids intrude clasts and Bx matrix locally.
51.7	57.8	VC	ms	LAP	M	GRY	UNKN	GR10	poorly sorted silica flooded VC, 95:5 Mafic:Felsic sub-rounded increasingly clastic towards bottom contact.
57.8	63.1	AND	bx	LAP	D	GRY	UNKN	GR30	poorly sorted SA-SR D.Gray-black clasts in a D.Gray matrix.
63.1	74	AND	bx	LAP	M	GRY	FLT	GR30+	altered AND,bleaching increasing with depth, obscuring clasts.
74	88	FLPT	bx	LAP	VL	GRY			Poorly sorted smaller clasts sub-rounded matrix supported, while larger laminated clasts (Rhyolite Qtz-eye flow-banded clasts) sub-angular matrix to clast supported. (high Energy fall or pyroclastic flow deposit?)
88	89.2	FLPT	bx	LAP	L	GRY	DEP	GR30	continution of above. Gradational bottom contact, combination of mixing of felsics with mafics and alteration products.
89.2	106.2	VC	bx	LAP	D	GRY	ALTFR	GR30	Varied sections of VC from mafic dom mod sorted fine-grained 100:0 to poorly to mod sorted 60:40 to 0:100 with laminated clasts. Ending in a shear fault that was partially rehealed by silica/sulphides and moved again, rock underneath is silica altere
106.2	110.2	VC		LAP	M	GRY	ALTFR	GR30	silica bleached rock, with abundant DI'd needle-like Py. Alteration of above/below?
110.2	114.7	VC	bx	LAP	D	GRY	FLT	GR30+	D.Gray-black sub-rounded clsts poorly sorted, supported by a D.Gray matrix. Terminating in a 2m heavily chloritic gouged fault.
114.7	141	AND	mas		D	GRN	UNKN		D.Gray-black massive amygdaloidal AND, Amygdules abundant near top of section and decrease with depth. Locally Bx SA, jigsaw fit.
141	148.4	AND	mas		D	GRY	DEP	SH	massive plag porphyry with amygs. top of section is moderatley aligned feldspars and enlarged amygs, ~ 3m down less aligned and more random. Bottom of unit becomes a fine-grained Bx.

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Blackwater Project
Drill Summary - Lithology

BW0386

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
148.4	164	VC	bx	LAP	M	GRY			poorly sorted sub-rounded (alteration rounding?) clastic chl-silica blasted rock. sections of 75:25 silica-chl-ser replaced and sections of 100:0 chl-silica replaced.
164	177.4	VC	bx	LAP	D	GRN	ALTFR	GR30+	continuation of above. poorly sorted sub-rounded (alteration rounding?) clastic chl-silica blasted rock. sections of 75:25 silica-chl-ser replaced and sections of 100:0 chl-silica replaced.
177.4	205	FT	mcbx	CA	L	GRN	UNKN	GR30+	fine-grained predom texture obscured with white to L.Green irregular clasts locally, in a siliceous-sericitic matrix, that is locally weakly laminated. (Alteration product?)
205	230	FT	lam	LAP	L	GRY			mod-strong L.Gray and L.Green-Gray laminations @ 60 dtca, locally undulating and/or bent around small indistinct Qtz BB's. Local zones of Bx, with Qtz matrix. Sulphides square and rectaungular (replacing feldspars?).
230	241.4	FT	mcbx	CA	L	GRY			fine-grained predom texture obscured, small white to L.Green clasts locally? in a siliceous-sericitic matrix with faint laminations locally.
241.4	305.9	FT	mcbx	FA	L	GRY			continuation of above; very fine-grained, majority of grains 0.1-0.5mm or unobservable, but locally clasts may range to as large as 20mm, in a silica-ser L.Gray-Green GM. Locally faint to weak laminations.
305.9	353.2	FT	mcbx	CA	L	GRY			same as above
353.2	355.9	FT	lam	LAP	L	GRY			felsic tuff breccia, can sort of see laminations within the clasts however they are kinda fuzzy as they are obscured by alteration; may be a flpt but more likely a brecciated ft
355.9	384.7	FT	lam	LAP	L	GRY			brecciated felsic tuff, laminated intervals and laminations in clasts
384.7	422	FT	lam	LAP	L	GRY			brecciated felsic tuff with sections that are obscured by alteration, broken rock,
422	429	FLPT	bx	LAP	L	GRY	FLT	GR30	felsic lapilli tuff with brecciated texture, sulphdes increase and it is also a faulted zone
429	452.9	FT	mas		L	GRY	FLT	GR30	massive felsic unit, textures likely obscured by alteration, no relict texture visible either
452.9	487.4	FT	lam	LAP	L	GRY	FLT	GR30+	felsic tuff, laminations throughout, some brecciated sections with laminated clasts, local microbrecciated sections as well
487.4	503	FLPT	bx	LAP	L	GRY			felsic lapilli tuff, brecciated and microbrecciated sections; laminations are within clasts, but only a few clasts with laminations
503	541.9	FLPT	lam	LAP	L	GRY	UNKN		Laminated felsic tuff. Brecciated lapilli clasts.Locally completely massive flow

Blackwater Project
Drill Summary - Alteration

BW0386		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2.78	9.75	T		0	CLST	2	PERV	4	PERV	1	LIM	FC	3	HM	FC	1	silica pervasive, replacing matrix and most clasts (laminated ones rhyolitic in com[position anyways) weak clay clast replacement. Light to dark orange Limonite on FP's and fracture controlled.
9.75	27.8	T		0	CLST	4	MTRX	3	CLST	1	LIM	FC	3	HM	FC	2	matrix dom silicification, while clasts are white to L.Green Clay maybe sericite. Limonite and HM fracture controlled.
27.8	49	T	PATC	1	CLST	4	MTRX	4	PATC	2	LIM	FC	3	HM	FC	1	similar to above. Laminated clasts locally clay/silica replaced in seperate laminations. Small patches of Sericite-chl. Black alteration outlines defining differences between clay and silica alteration.
49	50.8	T	PATC	1	CLST	2	MTRX	4	PATC	2	LIM	FC	3	SIL	OP	3	similar to above, with white wulphide haloes overprinted by silica.
50.8	57.7	S	PATC	1	CLST	5	ISSOLL	3	PATC	2	CLY	SPHL	4	SIL	OP	1	silica locally BB'y and overprinting white sulphide alt haloes. Clay replaces clasts and GM (PERV?) as well as white clay sulphide alteration haloes. White clay on FP's, and locally Blue streaking D.Brown.
57.7	61.5	S	FR	1	CLST	4		0		0							AND, with a hardness 5-5.5 matrix and clay replaced clasts of hardness 3.5. weak clay/chlorite on FP's, grades into a bleached unit.
61.5	71	S	CLST	2	PERV	4	PATC	1	CLST	2	CLY	SPHL	2				gradationally bleached AND, clasts have gone to ser-chl and with depth to clay. whole rock clay altered, and small patches of silica.
71	80	S		0	FR	3	PERV	3		0	CLY	CLST	2	CLY	SPHL	2	silica pervasive (clasts rhyolitiic so siliceous anyways), whith partially clay replaced clasts locally, as well as white clay sulphide alteration haloes that are predominatley overprinted with silica.
80	89.2	S		0	FR	3	PERV	3		0	CLY	CLST	2	CLY	SPHL	1	similar to above.
89.2	95.2	S	PATC	1	PERV	3	PATC	2		0	CLY	ISSOLL	2				Perv clay alt, with patches of silica-chl. White clay occurs as thin dissolution bands around clasts and across core.
95.2	99.85	S	PATC	1	PERV	3	PATC	1		0	CLY	FR	2				Perv clay alt, and white clay on FP's. Chlorite-silica patchy

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Blackwater Project
Drill Summary - Alteration

BW0386		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
99.85	106.2	S	FR	2	CLST	3	CLST	2		0	SIL	PATC	2				clay replaces mafic clasts, while silica replaces felsic clasts and small patchy BB's in matrix.
106.2	110.3	S		0	FR	1	PERV	4		0							perv silica obscuring texture?. trace white clay on FP's with sulphides.
110.3	113.4	S	FR	2	CLST	2	PERV	1		0	BIOT	CLST	2				BIOt-clay clast dom alteration, with weak-mod chl on FP's. Micro-crystalline silica perv, gradationally decreases from top contact.
113.4	114.8	S	PERV	5	PERV	5		0		0							Fault Gouge. PERV Clay/Chl
114.8	115.5	S	PERV	3	FR	1	PERV	4		0							perv silica, with small BB's of Chl throughout, and patches of Chl coating Fp's
115.5	127.9	S	FC	3		0	PERV	2		0	BIOT	PERV	2	SIL	AMYG	2	Micro-crystalline silica Perv and patches, silica fill amygs with sulphides. chlorite coating Fp's and partially Perv around fractures. perv BIOt
127.9	148.4	S	FR	3	FR	3	PERV	3		0	BIOT	PERV	2	SIL	AMYG	2	micro-crystalline perv silica, and silica amyg filler with sulphides. Chl coats Fp's with thin coatings of yellow-green brittle clay.
148.4	153.2	S	FR	4		0	PERV	4		0							Perv silica 3-4. Chlorite D.Green to D.Green-Black with sulphides coating FP's.
153.2	167	S	FC	3		0	PERV	4	PERV	3	CHL	PATC	2				Perv silica-ser (where clasts present in clasts and matrix, where no clasts simply pervasive) with patches of Perv chl. Chl coating FP's.
167	173.3	S	FC	5		0	PERV	3	PATC	1	CHL	PATC	4				D.Green rock. Chlorite Strongly Fracture controlled, and patches throughout, replacing GM and clasts. While silica is strongly microcrystalline perv, with sections of patch.
173.3	178	S	FC	4	FC	1	PERV	4	PERV	2	CHL	PATC	3				pervasive silica-ser, overprinting chl patches, and locally obliterative L.Gray patches. Chlorite mod-strongly coats FP's.
178	205	S	FR	3	FR	1	PERV	4	PERV	3	CHL	PATC	1	SER	CLST	2	silica-ser pervasive, sericite alaso occur in small semi-rectangular (0.5-1mm) patches/feldspar-rep? Chl coats Fp's and small patches locally as sulphide haols. Egg-white lcay on FP's locally.

Blackwater Project
Drill Summary - Alteration

BW0386		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
205	226	S	FR	3		0	PERV	5	PERV	3							silica-ser perv, L.gray silica and L.green-grey silica-ser seperated into laminations. Fine-chl coating FP's with Py on top of it.
226	241.4	S	FR	3		0	PERV	4	PERV	2							perv silica-ser throughout, silica and sericite fractions are partially seperated in patches/bands/BB's. fine-coarse chl coating FP's
241.4	266.2	S	FR	4		0	PERV	4	PERV	3							similar to above.
266.2	303.4	S	FR	4		0	PERV	4	PERV	3							similar to above, stronger silica across laminations (4-5)
303.4	336.9	S	FR	3	FR	1	PERV	4	PERV	3	SER	SPHL	1				same as above, slightly weaker chlorite along fractures
336.9	356.9	S	FR	4	FR	1	PERV	4	PERV	3	SER	VNHL	1				same as above, fracture controlled sericite
356.9	398	S	FR	2	FR	1	PERV	5	PERV	3	SER	VNHL	1				strongly silicified, pervasive sericite, moderate chlorite and weak clay along fractures; some sericite fracture controlled/ haloes around veinlets
398	419	S	FR	3	FR	1	PERV	4	PERV	3	SER	VNHL	1				broken zone with rock flour/ mechanical clay along fractures, slightly stronger chlorite along fractures, pervasively silicified
419	431.5	S	PATC	4	FR	1	PERV	4	PERV	2	SER	VNHL	1				strong mechanical clay in interval, chlorite/clay annealed in sections, pervasive silicificaiton (chlorite and clay gge throughout fault zone)
431.5	452.9	S	FR	3	PERV	1	PERV	4	PERV	2	SER	VNHL	1	CHL	PERV	1	pervasive silica, sericite, chlorite alteration, strong chlorite along fractures,
452.9	462.4	S	FR	2	PERV	1	PERV	5	PERV	3	SER	VNHL	1				pervasive silica, sericite and chlorite, fracture controlled sericite (VNCH = fracture controlled in previous intervals as well)
462.4	475	S	FR	4	PERV	1	PERV	4	PERV	2	SER	VNHL	1	CHL	PERV	3	faulted and broken core, moderate to strong chlorite pervasive and on fractures, some mechanical caly/chlorite annealed sections
475	488	S	FR	2	PERV	1	PERV	4	PERV	3	SER	VNHL	1				fracture controlled sericite, pervasive silica, chlorite along fractures,
488	492.9	S	FR	2	PERV	1	PERV	4	PERV	2	SER	VNHL	1	UNK	PERV	2	same as above, unknown alteration is a pinkish colour, I think it is sercite? but may be hematite or something else?

Blackwater Project
Drill Summary - Alteration

BW0386		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
492.9	503	S	FR	2	PERV	1	PERV	4	PERV	3	SER	VNHL	1	UNK	PATC	1	silica-ser pervasive, chlorite weak along fractures, some mechanical clay throughout faulted sections; patchy unknown pink alteration, sericite fracture controlled
503	510.5	S	FR	2	PATC	2	PERV	4	PERV	2							Chlorite alt found in fractures. Patchy clay found in lapilli clasts. Pervasive silica alt overprinting sericite and clay alt
510.5	541.9	S	FR	2	PATC	2	PERV	4	PERV	2							Pervasive silica throughtout overprinting sericite and clay alt

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Blackwater Project
Drill Summary - Mineralization

BW0386		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2.78	14.5	BB	1.5		0		0	Dbs	BB	3	Dbs	DEN	2	Goe	FP	5	BB's of square and round Py, as well as BB'es of square and round BS's (BS's = Black Sulphides), and locally specks of Py in BS's. BS's are needle-like rectangular (possible replacement of plag/amphiboles?) and locally dendritic/micro-fracture fill.
14.5	18.9	BB	5	BB	0.1		0	Dbs	BB	3	Dbs	DEN	0.5	Goe	FP	3	BB's of square and round Py partially sooty. BS's are needle-like rectangular (micro-fracture fill?) and dendritic weakly.
18.9	27.6	BB	2	BB	0.1		0	Dbs	BB	4	Dbs	DEN	1.5	Goe	FP	3	BB's of square and round BS's with Py. DB's needle-like rectangular and dendritic weakly.
27.6	36.2	BB	1		0		0	Dbs	BB	1.5	Dbs	DEN	1	Goe	FP	6	similar to above.
36.2	50.8	BB	1.5	BB	0.5		0	Dbs	BB	1	Dbs	DEN	3	Goe	FP	3	similar to above. Strongly fracture fill and dendritic
50.8	59.8	BB	4		0		0	Dbs	BB	3	Dbs	DEN	0.5	Py	FP	0.5	similar to above. Py possibly marcasite coating FP's.
59.8	63.1	FP	0.1	BB	0.5		0										DI'd BB's of red Sp, Py coating FP's.
63.1	70	BB	1.5	BB	1		0	Dbs	BB	1	Dbs	DEN	0.1	Py	VN	0.1	irregular BB's of Py-Sp-BS's, locally rimming clasts.
70	89.2	BB	1	BB	0.5		0	Dbs	BB	1	Dbs	DEN	1.5	Sp	VN	0.1	BB's of Py and sooty Py as well as BS's and BS-Py combinations. Py fills small fractures as well as BS's filling fractures and dendritic. BS's also occur as needle-like rectangular throughout.
89.2	101	FP	0.1	BB	1	SP	0.5	Py	VN	0.1	Py	BB	0.1				Red and Blk Sp BB's with inclusions of Py. Po BB's and Specks throuighout. Py coats Fp's and small 1mm veinlets.
101	106	BB	0.1	CR	1.5	CR	2										Po-Sp round BB's partially replacing mafic clasts.
106	110.5	FP	1.5	FP	0.5		0	Py	DI	4	Dbs	DEN	0.5	Sp	VN	0.3	subhedral to euhedral Py coating FP's, with or without Sp red-black opaque coating. Py-Sp veined from FRCT to large healed fault vein. Py DI'd rectangular needle-like fine-grained, and DI'd BB's.
110.5	113.4	CR	2	CR	0.1	CR	0.1										Py fine-grained clast replacement. Po-Sp BB's in clasts (amyg filler?).
113.4	115.5	VN	0.5		0	DI	0.1	Py	DI	0.1							Fault, VN'd Py on periphery of Fault, competent rock, has DI'd Py.

Blackwater Project
Drill Summary - Mineralization

BW0386		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
115.5	118.4	BB	1	GmR	0.1	BB	0.1	Py		0.1							Py and Po BB's filling amygs. Py VN'd
118.4	127	VN	0.1	GmR	3	BB	1	Py	BB	0.1	Cp	BB	0.1				Po and Py BB's filling amygs with trace CP, with trace amounts of metallic black Sp. Py VN'd. Red Sp rimming Black metallic Sp BB's in GM, Red Sp replacing GM, locally as abundant as 10%.
127	145	VN	0.1	GmR	2	BB	0.8	Po	VN	0.1	Sp	VN	0.1				Red Sp reaplacing GM, variable. Po BB's (infill amygs..?). Py-Black metallic Sp veinlets. Po replacing plag grains. Po-Sp crackle, irregular 0.1mm veinlets throughout core.
145	148.4	BB	1	GmR	0.5	BB	1	Py	VN	0.1	Sp	VN	0.1				alternating Po BB's to Py BB's. Py-black metallic Sp veinlet.
148.4	163.3	FP	1	BB	1	DI	1	Py	DI	4	Py	SP	2	Dbs	DEN	0.1	pervasive Py Clast replacement specks and BB's > speckes in matrix. FP's thinly coated and locally coated by subhedral glomerates of Py crystals. Po DI's with needle-like Py DI's. Fractured controlled DBS.
163.3	167.5	DI	5	BB	0.5	DI	0.5	Py	FP	1				Dbs	DEN	0.5	pervasive Py specks in matrix but strongest in clasts, with Po DI's. Py coats FP's and veined, with fracture controlled BS's.
167.5	177.5	DI	6	BB	1.5	DI	0.5	Viv	FP	0.5	Mrc	FP	0.5	Py	VN	0.5	L.Green prismatic translucent vivianite, with trace L.Blue vivianite on chloritic FP's. radiating Mrc with Black sulphide goo on FP's, locally trace Py. Py, Sp, and po DI'd and DI'd BB's throughout. (5-10%).
177.5	187.4	DI	5	BB	0.1	DI	0.1	Py	FP	0.1	Mrc	FP	0.1	Dbs	DEN	0.1	DI's of Py and Po, with small section of red Sp BB's. Py and Mrc on FP's
187.4	204.2	DI	1	BB	0.5	DI	3	Py	FP	0.5	Dbs	DEN	0.1				very fine-grained brassy euhedral Py coating FP's. Po and Py DI's as well as small BB's intergrown with Sp.
204.2	222.2	VN	0.5	BB	0.1	DI	3	Py	FP	0.5							DI'd Po, throughout, locally replacement of rectangular adn square crystals (replacing plag?). Py, FP caoting and VN'd
222.2	240.7	BB	0.5	BB	0.1	DI	2	Py	FP	0.5	Py	VN	0.5	Cp	VN	0.1	similar to above.

Blackwater Project
Drill Summary - Mineralization

BW0386		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
240.7	257	DI	1.5	DI	0.1	DI	0.5	Py	VN	0.1	Py	FP	0.1	Py	BB	0.1	Py DI'd throughout as square and/or rectangular needle-like finegrained DI's. small Po DI's/BB's locally. moderate Py BB's locally. circular SP DI's/Specks are locally abundant, otherwise <trace.
257	275.3	DI	1	BB	0.5	DI	1	Py	VN	0.5	Py	FP	0.1				alternating between Po and Py dominant DI's. Py VN'd and trace FP coat.
275.3	287	DI	1	BB	0.1	DI	1	Py	VN	0.5	Py	FP	0.1	Sp	VN	0.1	similar to above. Qtz-Py-Sp-Apy in veins, Apy is euhedral rectangular crystals, while SP is black metallic.
287	300.4	DI	0.1	BB	0.1	DI	1	Py	VN	0.5	Mrc	FP	0.1				qtz-py-sp-po veinlets, disseminated little blebs of po with some sph, py some disseminated by dominantly in veinlets
300.4	317.9	DI	1	DI	1	DI	1	Py	VN	0.5	Mrc	FP	0.1	Cp	VN	0.1	same veinlets as above some with trace cpy; fine disseminations of py, little blebs of sph, po and py, some mixed sulphide blebs; sericite? halos around some blebs of sulphides
317.9	333.3	BB	1	BB	1.3	BB	1	Py	VN	0.5	Mrc	FP	0.1				py as blebs and veined, po and sph also in little blebs some mixed sulphide blebs also present; sulphides are aligned with laminations in some sections
333.3	340	DI	1.3	DI	0.5	DI	1	Py	VN	0.5	Mrc	FP	0.1				similar style to above, py as specs and finer disseminations, less sph but still in little blebs, po also in little blebs
340	355.9	DI	1	DI	1	DI	2	Mrc	FP	0.1	Cp	VN	0.1	Dbs	DEN	0.5	increase in sulphides, po>sph>py disseminated throughout, sph is reddish dominantly in little blebs also mixed within/surround po, po in little belbs surrounded by rim of sooty black sulphide, dbs throughout as well
355.9	374.5	DI	0.5	DI	0.5	DI	1	Cp	DI	0.3	Stb	FP	0.1	Py	VN	0.5	decrease in sulphides slighlty, cpy in little blebs/disseminations locally throughout interval, at 358.4m depth cpy on fracture plane with acicular stibnite, cpy also found in little bleb with po, sph as little blebs

Blackwater Project
Drill Summary - Mineralization

BW0386		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
374.5	384.7	DI	1	DI	0.5	DI	0.5	Cp	VN	0.1							pyrite as fine brassy disseminations throughout, decrease in sph and po blebs
384.7	391.5	DI	1	BB	0.5	DI	0.5										little blebs of po, py and sph, some specs of brassy py, sooty sulphide rim around some blebs,
391.5	408.3	DI	0.5	DI	0.1	DI	0.5										decrease in sulphides, little specs of py and po throughout, some mixed little blebs with both po and py
408.3	412.4	DI	0.8	DI	0.5	DI	0.8										black sooty sulphides, dissemianted py, po and sph, slightly increased sulphides than previous interval, local mixed cluster of py, sph and po
412.4	412.5	VN	5	VN	1	VN	1.5	Mrc	FP	1							vein with 7% sulphides py>>po>sph
412.5	422.6	BB	1	BB	1	BB	0.8	Dbs		0.5							some disseminated blebs but mostly local clusters of sph blebs, py blebs and po blebs with sooty black sulphide (dbs but some as blebs); some mixed cluster with po and py > sph as well
422.6	431.5	DI	3	DI	2.5	DI	1.5	Cp	BB	0.5	Dbs		0.5				as above not dendritic but black sooty sulphide throughout, disseminated py, sph, po throughout with local clusters of sph, py, po, cpy; in faulted section there is sulphide rich gge dominantly sooty sulphide with specs of brassy py
431.5	439.7	BB	2.5	DI	1	BB	2										brassy py and po in little blebs disseminated throughout, some sphalerite, clusters of py and po as well, sooty sulphide rims around sulphides
439.7	443.5	BB	3	BB	1.5	BB	2.5	Mrc	FP	0.1							same as above, ~5% disseminated little blebs, 2% of sulphides in clusters, sooty sulphide rims throughotu
443.5	454	BB	2	BB	1	BB	2.5										~5% TS, same as above but slightly less sulphides *py and po and sph in blebs, some clusters, sooty black sulphide rims throughout
454	467	DI	1	DEN	1	DI	0.5										significant decrease in sulphids, specs of brassy py, sph and po also disseminated throughout
467	473.8	DI	1.5	DI	0.5	DI	0.8	Dbs		1							sooty black sulphide stringers and rims around disseminated py, sph, and po; py in stringers, disseminated and in little clusters

Blackwater Project
Drill Summary - Mineralization

BW0386		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
473.8	487	DI	1	DI	0.5	DI	0.5	Dbs	VN	0.5							same as above but decrease in sulphides; sulphides disseminated and not in clusters
487	503	DI	0.8	DI	0.5	DI	1	Dbs	VN	1							dissemianted py, po, and sph, some little blebs of sph+py+po; dbs as sooty black sulphide stringers and rims around some disseminated sulphides
503	511.2	FP	0.5	DI	1	DI	1	Dbs	VN	0.5							Disseminated Po+Sph throghout. Blebby Po found in lapilli clasts.Py found in fractures
511.2	513.8	FP	0.1	DI	2	DI	2	Cp	DI	0.1							Py found in fractures. Disseminated Po+Sp+Cpy. Locally Po replacing lapilli clasts
513.8	526.7	FP	0.1	DI	1	DI	1	Cp	DI	0.1	Dbs	VN	0.5				Disseminated Sph+Cph+Po throughout, Po hairlines. DBS stringers,Disseminated Sph along lamination structure
526.7	541.9	FP	0.5	DI	0.5	DI	0.5	Dbs		0.1							Disseminated Sph+Po, py found in fractures. Po hairlines

Blackwater Project
Drill Summary - Structure

BW0386

From (m)	To (m)	Structure	Strength	Comments
2.78	49.8	JZ	2	jointed @ 45 (35-60 dtca) > 10 dtca.
49.8	51.2	JZ	3	jointed @ 0-20 dtca.
51.2	54.15	JZ	3	jointed from 30-60 dtca.
54.15	54.35	FL	3	gouge and fragmental
54.35	68.2	JZ	3	numerous jointing angles 55, 30,20,10 dtca all equal....?
68.2	77.5	FZ	4	gouge rich sequences in-between larger solid clay rich sections. Fragments mineralized but not gouge.
77.5	88	JZ	3	numerous jointing angles 0,20,30,35,40,45,50,55,60 dtca. Averaged out at 45 dtca....
88	90.23	JZ	3	jointed @ 45 and 20 dtca.
90.23	90.4	FL	3	sharp fault bounded on either side @ 26 dtca, with gouge on either FP and fragments and minor gouge in-between.
90.4	91.9	JZ	3	jointed @40>20>60 dtca.
91.9	92.1	FL	3	sharp fault bounded on either side @ 30 dtca. abundant gouge.
92.1	96.8	JZ	3	jointed @ 50>>25 dtca.
96.8	102	JZ	3	jointed @ 15 (0-25) dtca.
102	106	JZ	3	randomly jointed from 25-70 dtca.
106	106.3	FL	3	ancient fault healed by silica-and sulphides (Sp-Py), and reactivated @ 15 and 30 dtca.
106.3	113.4	BRKZ	2	jointed @ 0 and 45 dtca.
113.4	114.4	FL	5	chloritic-clay STRONG gouged fault.
114.4	114.6	BRKZ	2	
114.6	114.8	FL	5	chloritic-clay STRONGLY gouged fault
114.8	118	BRKZ	3	broken rock
118	122.9	JZ	3	random, from 0-40 dtca.
122.9	123.4	BRKZ	4	chloritic broken zones, with intermittent JZ's @ 40 dtca.
123.4	132.1	JZ	2	50 (45-60 dtca).
132.1	150	JZ	2	jointed @ 35>50>20 dtca.
150	150.7	FL	3	heavily chloritic and mineralized @ 15 dtca.
150.7	153.5	JZ	2	jointed @ 30>50 dtca.
153.5	153.6	FL	2	joint failure Bx with gouge.

Blackwater Project
Drill Summary - Structure

BW0386

From (m)	To (m)	Structure	Strength	Comments
153.6	163.3	JZ	2	jointed @50>30 dtca.
163.3	175.7	JZ	3	jointed @ 10 (5-20 dtca) >60-70 dtca.
175.7	181.1	BRKZ	4	broken/crushed rock with minor to moderate gouge with intermittent joint sets
181.1	188.6	JZ	3	jointed @15 (10-15) > 40 dtca.
188.6	188.9	FL	3	partially silica/clay healed, and partially remobilized.
188.9	198.1	JZ	3	jointed from 15-50 dtca.
198.1	198.7	BRKZ	4	Fault? moderate gouge and fracture controlled chlorite coating rock.
198.7	202.1	JZ	3	jointed @30-50 dtca.
202.1	203.3	FL	4	fragmental with abundant chloritic gouge.
203.3	212	JZ	2	jointed @ 15-30 dtca > 40 dtca.
212	212.7	BRKZ	3	broken zone with minor gouge.
212.7	223	JZ	1	jointed @ 65 (65-70) > 20 (15-35 dtca)
223	226.1	JZ	3	jointed @ 5 (5-10) > 40>35 dtca.
226.1	237.1	JZ	2	jointed @ 40 (40-45) > 20 (15-30) dtca.
237.1	237.6	BRKZ	3	fragmental with minor chloritic gouge.
237.6	240	JZ	3	jointed @ 30 (20-40) dtca.
240	250.5	JZ	3	jointed >Broken 40>0>70 dtca.
250.5	251.5	BRKZ	4	broken rock, NO Gouge.
251.5	261	JZ	3	jointed> Broken Jointed @ 60 (50-70) > 15 (0-25) dtca.
261	261.2	BRKZ	5	small rock fragments.
261.2	264	BRKZ	3	broken rock, partially redrilled.
264	266.9	JZ	2	jointed @ 35 (25-45) > 5 dtca.
266.9	267.1	FL	3	moinor gouge.
267.1	276.9	JZ	2	
276.9	277.2	BRKZ	4	highly broken rock. NO Gouge.
277.2	278	BRKZ	3	broken, and fragmental.
278	284	JZ	2	jointed @ 50 (40-60) > 5 dtca.
284	300.8	BRKZ	2	weak to moderate broken zone, strong chlorite along fractures

Blackwater Project
Drill Summary - Structure

BW0386

From (m)	To (m)	Structure	Strength	Comments
300.8	336	JZ	2	joints 40-60 dtca, 1 or 2 that are more 30 dtca
336	340	BRKZ	2	weak broken zone
340	394	JZ	3	mostly competent core, joints are between 40-60 but dominantly at 50 dtca; some local weakly broken zones up to 50 cm
394	407	BRKZ	3	moderate broken zone wiht some clay along fractures
407	424.8	BRKZ	2	interval has 2 meter broken zones alternating with 2 meter competent core zones
424.8	431.5	FZ	3	moderate fualt zone with clay and chlorite gge throughout
431.5	451.4	BRKZ	2	weak broken zone with sections up to 50cm of competent core, some gge on fractures
451.4	452.9	FZ	3	moderate fault zone, clay and chlorite gge throughout
452.9	462.4	JZ	4	strongly jointed (weakly broken) zone; joints are dominantly at 50, rough jagged joints at steeper angles > than joints at 50 dtca
462.4	467	FZ	4	fault zone, strong clay+chlorite gge, annealed in some places
467	477.6	BRKZ	2	weak to moderate broken zone, leading into a faulted zone
477.6	500.3	FZ	3	moderate fault zone with competent sections up to 40cm, clay+chlorite gge throughout, some annealed sections
500.3	503.3	JZ	2	jointed section with fractures at 80ish dtca
503.3	511.5	JZ	3	Moderately jointed. Locally sheared zone 40 to core axis
511.5	541.9	FZ	4	Faulted zone, brecciated clasts, Clay gouge. Fault breccia. Fault planes 80

Blackwater Project
Drill Logs

Hole ID:	BW0387	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375751.5
Depth (m):	416.5	Date Started:	17/03/2012	Casing Size:	HWT	Northing:	5892647.77
Azimuth:	0	Date Completed:	24/03/2012	Casing (m):	13.5	Elevation (m):	1615
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	111.1	-89.2
100	118.2	-88.6
151	120.5	-88.8
200	141.8	-88.6
250	137.5	-88.1
300	133.7	-88.4
350	147.6	-88.4
400	155.8	-87.9

Blackwater Project
Drill Summary - Lithology

BW0387

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10.9	OB							
10.9	26.5	VC	ms	LAP	M	GRY	DEP	GR30	mostly mafic clasts, andesite clasts within are polymictic. moderate to poorly sorted
26.5	50	VC	ms	BLOCK	M	GRY	DEP		vast majority of clasts are mafic, with many large (block) clasts being porphyritic andesite.
50	67	VC	ms	BLOCK	M	GRY	FLT	GR10	nearly 100% andesite clasts, although may be different andesites. matrix rich. Block clasts are infrequent, mostly lapilli sized. Poorly sorted.
67	99	VC	ms	LAP	M	GRY	FLT	GR30+	lower contact hard to precisely located due to broken/rubbled core over large area. Broken core all throughout interval, litho is moderate to poorly sorted. clasts not quite reaching block sized. 80-90% mafic clasts
99	110.3	AND	fltgge	LAP	M	BR	FLT	GR5	fault gouge, back into oxide facies. Short competant runs indicate a porphyritic andesite
110.3	118.1	AND	por	LAP	D	GRY	FLT	SH	porphyritic AND, with elongated plag crystals, with fine brecciation towards end of interval
118.1	128.8	AND	mas		D	BR	FLT	SH	massive mainly aphanitic andesite, with small aglomerated of sulphides (perhaps totally replacing small amygdules).
128.8	141.7	AND	por		D	GRY	FLT	GR10	waning in and out of visiible plag crystals in porph andesite. Xls up to cm in scale.
141.7	143	AND	fltgge		D	GRY	FLT	GR10	abundant gouge, amidst rubble
143	159	AND	bx		D	GRY	FLT	GR5	brecciated, calcite veining common, stockwork-like in places. Small amygdular zones, with equally small porphyritic zones with elonaged plag phenos
159	163	AND	fltgge		D	GRY	FLT	SH	lots of gouge/rubble. gouge is brownish - dark grey
163	183.5	AND	mas		D	GRY	DEP	GR10	small zone of fault brecciation at top of interval, into massive andesite. Very small amygdular zones irregularaly shaped.
183.5	197	AND	por		D	GRY	FLT	GR30	larger zones of porph andesite with interspaced massive andesite. A bit of fine-scale brecciation
197	205	AND	fltbx		D	GRY	FLT	GR10	very broken up, fault brecciation with minor gouge. Plenty of soft clay on FP
205	210	AND	fltbx		D	GRY	DEP	GR30	runs of competant rock, with local gouge brecciation. litho is mainly a massive dark andesite. Non-amygduloidal
210	225.3	AND	mas		D	GRY	FLT	GR10	hydrobrecciated small zones, with porphyritic zones. Rock becomes very broken up at bottom half of unit
225.3	252	AND	mas		D	GRY	DEP	GR30+	massive to brecciated andesite. Zones where it becomes quite coarse grained. Perhaps in center of thick flow (?). Small patches of porphyritic plag phenos

Blackwater Project
Drill Summary - Lithology

BW0387

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
252	272.8	AND	flw		D	GRY	DEP	GR30+	andesite flow unit, brecciated at top, into porphyritic andesite with haphazard plag pheon orientation. Towards bottom becomes more massive.
272.8	293	AND	mas		D	GRY	ALTFR	GR30	massive to porphyritic zone, plag phenos, sometimes altered to sericite. Zone of late brecciation with associated moderate bleaching alteration
293	303	AND	bx		M	GRN	ALTFR	GR30	chl altered to green colour. brecciated
303	322	AND	por		D	GRY	DEP	GR30+	porphyritic, flow textures, places where plag phenos
322	365	AND	por		D	GRY	DEP	GR30+	plag phenos, sometimes altered away, showing at least local alignment flow textures. Short zones of brecciation.
365	393	AND	por		D	GRY	ALTFR	GR30	plagopheric porphyritic andesite, flow textured, becoming more massive, then brecciated
393	413.5	AND	fltbx		M	GRN	ALTFR	GR10	very green rock, with intense fault structuring. Fault breccia, surrounding fault gouge, with volcanoclastic texture at bottom
413.5	416.5	AND	bx		D	GRY	UNKN		brecciated andesite, volc texture, darker than above rock.

Blackwater Project
Drill Summary - Alteration

BW0387		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10.9	24	O	CLST	1	FR	2	OP	2	PERV	3	HM	FR	4	GRNT	REP	2	moderate sericite pervasive alt'n, fairly weak sil. plenty of iron oxide on fracture planes, with geothite. One clast nearly entirely eaten away by dark brown garnets, in vug-style.
24	38	O	CLST	1	MTRX	3	OP	1	PERV	3	HM	FR	3				still oxide facies, but iron oxide on fracture planes not as intense towards bottom. patches where clay in matrix is strong.
38	44	T	CLST	1	MTRX	2	OP	1	PERV	3	HM	FR	2				into transitional facies
44	50	T	PERV	2	FC	3	PATC	2	PERV	2	HM	FR	1				hemitite dissappearing from fracture planes, pervasive sil-ser alt'n patches.
50	60.5	S	FC	4	FC	2	PATC	1	PERV	2							into S facies. highly broken core, with dark green chl alt'n abundant.
60.5	66.5	S	PERV	3	FC	2	OP	3	PERV	2							moderate overall alt'n, dark green chl on fractures most prevalent
66.5	79	S	FC	3	FC	3	OP	2	CLST	3							sericite replacing clasts, as well as in gouge with chl-clay. dark green chl on many clasts, but not as frequent as previously seen
79	94	S	PERV	2	FC	2	OP	2	CLST	3							moderate chl-ser alt'n most prevalent
94	102	S	PERV	2	FC	3	OP	2	PERV	3							very broken rock with minor gouge, clay-ser-chl rich
102	104.2	S	PERV	2	FC	5	OP	1	PERV	3							gouge, with intense clay
104.2	110.3	O	PERV	2	FC	5		0	PERV	3	HM	FC	3				as above, with sharp occurrance of iron oxide, hematite in gouge and on fractures
110.3	116	T	FR	1	FC	2	PERV	3	PERV	3	HM	FR	1				light oxide mineral continuing on frature planes, as well as some very soft white clay. Rock quite hard, with sil alt'n, associted ser
116	126.5	T	FR	2	FR	2	PERV	3	PERV	2	HM	PERV	2				light oxide mineral still on some fracture planes. Rusty purple-brown pervasive hemitite beginning to appear in andesite. soft white clay on fractures. Section of very broken core, with dark green chl
126.5	136	S	PERV	1	FR	1	PERV	3	MTRX	2	HM	PERV	1				purplish-brown/red hem pervasive alt'n continuing weaker than above. very hard rock with pervasive sil. minor chl

Blackwater Project
Drill Summary - Alteration

BW0387		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
136	141.7	S	PERV	2	FC	2	OP	3	MTRX	1							rock fairly hard from moderate sil alt'n. non destructive alteration,
141.7	145	S	PERV	1	FC	4	OP	3	MTRX	1							clay within fault gouge
145	149.7	S	FR	2	FC	2	OP	3	MTRX	2	HM	FR	1				weak hemitite on fracture planes
149.7	159	S	FR	2	FC	1	OP	2	MTRX	2	CAL	FR	2				losing some sil alt'n
159	166	S	FR	2	FC	3	OP	2	MTRX	2	CAL	FR	2				moderate clay in gouge material
166	199	S	FR	2	FC	2	OP	3	MTRX	2	CAL	FR	2				similar to above. Rock consistantly pretty hard from sil alt'n
199	206	S	FR	1	FR	3	PATC	3	MTRX	2	CAL	FR	2	BIOT	PATC	1	very soft white clay on fractures. brownish patches with biotite alt'n.
206	221	S	FR	2	FR	2	PATC	4	MTRX	2	CAL	FR	1	BIOT	PATC	1	similar to above, slightly stronger silica, patchy
221	235	S	FR	2	FR	1	PATC	4	MTRX	2	CAL	MTRX	1				hard rock from patchy silica and overprint.
235	242.5	S	FR	2	FC	3	PATC	4	MTRX	2	CAL	FR	1				some clay gouge zones
242.5	257	S	FR	1	MTRX	1	PERV	4	CLST	2	CAL	FR	1				silica becomeing more pervasive, giving a slightly lighter grey color to the rock, and quite hard
257	272.8	S	FR	2		0	PATC	4	MTRX	2							strong patchy sil alt'n continues, patchy, with overprint as well
272.8	289	S	PATC	2		0	PATC	3	MTRX	2	CAL	FR	1	BIOT	PATC	2	patchy sections of chl-sil-biot. Rock loosing hardnes
289	292	S	FR	1	FR	1	PERV	4	PERV	3	ANK	VNHL	2	BIOT	PATC	1	blueish hue to rock from pervasive sil-ser alt'n. Sharp lower alt'n front
292	298	S	PERV	4	PATC	2	OP	3	PERV	2							sharp upper alt'n front, becoming suddenly more chl altered, with sil, and patchy clay
298	302	S	FR	2	PATC	2	PATC	3	PERV	3							patchy sil-clay alt'n, with pervasive moderate ser pretty much throughout
302	314	S	FR	1	PATC	1	OP	3	PERV	3	CAL	FR	1				moderate patchy sil overprint
314	360	S	PATC	2	FC	1	OP	3	PERV	2	BIOT	PATC	1				non-destructive moderate to low intensity alteration. Patchy chl alt'n, fairly rare. Patchy weak biot alt'n in places
360	388	S	CLST	3	MTRX	1	OP	2	PERV	1	BIOT	PATC	2	ALB	INFILL	1	more chl altered than previously seen, brownish hue due to biot

Blackwater Project
Drill Summary - Alteration

BW0387		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
388	393.1	S	PATC	3	FC	2	PATC	3	PATC	3	BIOT	PATC	1	CAL	FR	1	alteration style very patchy through this interval, nearing fault zone
393.1	404.5	S	PERV	3	PERV	4	PATC	2	PERV	4							gouge material with pervasive ser=cly-chl. Chl more in patches, with some places intensely green chl, with others more clay and ser
404.5	413.5	S	PERV	4	MTRX	3	OP	3	PERV	4							similar to above, though with more competant core, we have more of a sil overprint
413.5	416.5	S	PERV	3	MTRX	2	PATC	3	CLST	2	BIOT	PATC	1				seems to be out of fault-influenced alteration

Blackwater Project
Drill Summary - Mineralization

BW0387		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10.9	16		0	DI	0.1		0	Goe	FP	1							very fine grained brown sph with metallic lustre.
16	17		0		0		0	Grnt	EU	2							dark brown garnets within vug-like thing, euhedral, small
17	25.5		0	DI	0.1		0	Goe	FP	0.5							geothite on fracture planes continues, much less than above
25.5	29.5		0	BB	0.1		0	Goe	FP	0.1	Hm	FP	0.5	Cp	BB	0.1	one small bleb in a clast (possible amygdule replacement) with sph-gal-cpy trace.
29.5	31		0	DI	0.5		0	Grnt		0.1	Hm	FP	0.5	Ga	BB	0.1	a few blebs of sph-gal-cpy as above here and there. sph may be in patchy disseminations as well.
31	37		0	DI	0.5		0	Hm	FP	0.5							some light brown sph in disseminations, with very dark, nearly black sph crystallized in some opened fractures (vug-like).
37	44.5		0	CR	0.5		0	Hm	FP	0.5							sph seen beginning to replace clasts- light to dark brown. brown-rusty hemitite continuing on fractures
44.5	53	VN	0.5	CR	0.5		0	Hm	FP	0.5							sph weakly disseminated in some mafic clasts. rare py vnlt
53	60	VN	0.5	CR	0.5		0										vnlt seen with euhedral py octahedra. sph disseminated in mafic clasts
60	69	VN	1	CR	0.5		0										frequent vnlt's with py, one area in gouge with good fine grained py, perhaps some dark diss sulphides in there as well. sph fair grade disseminated
69	79	FP	0.5	DI	1		0										frequent mafic clasts with moderated sph disseminated within
79	87	FP	0.5	DI	0.5		0										as above, weaker disseminated sph than above interval
87	95	FP	0.5	DI	0.5		0										as above
95	102.5	FP	0.5	DI	0.5		0										some fine grained py seen in rubbly, slightly gougey core. Likely not amounting to too much
102.5	110.2	LAM	0.5	DI	0.5		0	Cp	VN	0.1	Ga	VN	0.1	Dbs	DI	1	very high gouge percentage, with visible vnlts within with py-ga-cpy. some fine grained dark sulphides within gouge as well

Blackwater Project
Drill Summary - Mineralization

BW0387		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
110.2	119		0	DI	0.5		0										fine grained sph disseminated within groundmass towards end of interval. other sulphides barren
119	124	DI	0.5	DI	0.5	DI	0.1										disseminated sulphides of equal percentages in andesite. Possible trace aspy?
124	127	DI	1	DI	0.5	DI	0.5										zone of larger disseminated blebs, and more frequent
127	139	DI	0.5	DI	0.5	DI	1										disseminated little blebs of sulphides within andesite. Moderate to low frequency
139	143.5	DI	2	DI	0.5	DI	0.1										fault gouge with fine grained yellow to dark py, other dark sulphides possible within.
143.5	146.5	FP	0.1	DI	0.1		0										trace sulphides through this interval
146.5	153	VN	1	DI	1	DI	0.5										fine grained disseminated po with sph. Py in vnlts, with calcite and on fracture planes.
153	157	FP	0.5	BB	2	BB	1										sph and po from above increasing in size of agglomerations, to bleb sized
157	159	DI	1	DI	3	BB	2										zone with high grade sulphides, in fine grained diss mostly
159	166.6	DI	5	DI	3	BB	0.1										Po staying out of the structure, but lots of py, very fine grained, to clustering disseminated all throughout the gouge material. some sph within as well. Possibly other fine grained sulphides such as Gal
166.6	172	VN	2	DI	2	BB	0.5	Cp	VN	0.1							py fine grained mainly in gouged veins, or local gougey structuring. sph disseminated in local high grade patches. cpy on a fracture coated vein, with slickensides
172	178	DI	1	DI	1	BB	1										sulphides disseminated in equal abundances throughout
178	184	DI	1	DI	2	BB	1										disseminated blebs of sulphides. Po replacing occaisional amygdule
184	196	DI	0.5	DI	0.5	BB	0.5										interval drops off in sulphide grade
196	202	DI	0.5	BB	1	BB	0.5										spotty mineralizaiton of sph, locally good grade, with zones of relatively barren min. local small gouged bit with good py.

Blackwater Project
Drill Summary - Mineralization

BW0387		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
202	211	DI	5	DI	2	BB	1	Cp	VN	0.1							gouged core with high grade py-sph disseminated within gouge material. local blebs of po
211	220	VN	1	DI	3	BB	0.5										disseminated sph in disseminated patches. high grade locally, and fair grade overall
220	227	FP	1	DI	2	DI	2										good grade disseminated sph, py common on fractures
227	236	VN	1	DI	3	DI	2										local very high grade disseminated sph-po. vnlts with high grade py
236	245	DI	2	DI	1	DI	1										sph and po dropped off, but py increased as it is carried in gouged material
245	252	DI	1	DI	1	DI	1	Apy	DI	0.1							as above with less py, and possible aspy seen with po-py disseminations
252	256	DI	1	DI	3	DI	2										local patches of high grade sph-po, with disseminated py
256	266	FP	0.5	DI	2	DI	1										py grade dropping off. Sph fairly strongly disseminated in patches.
266	277	FP	0.5	DI	1	DI	0.5										sph locally can be good grade, patches are scarse. Py in structure
277	287	VN	0.5	DI	0.5	DI	0.5	Cp	VN	0.1							one fine speck of cpy in with shoddy po vnlt
287	294	VN	1	DI	1	DI	1										around 2% overall sulphides
294	301	VN	1	DI	0.5	DI	0.5	Apy	SP	0.1							py in vnlts common, and on fracture planes. disseminated patches of sph-po
301	310	VN	1	DI	2	DI	2										blotchy vnlts with py. high grade sections of disseminated sph-po
310	317	VN	0.5	DI	0.5	DI	0.5										around 1 % total sulphides
317	321	VN	2	DI	0.5	BB	1										good grade py in hydrothermal fluid channels and branching stockwork veining. Po also kicking around in good sized blebs
321	332	VN	0.5	DI	0.1	BB	1										a couple vnlts with py, sph low grade diss, po in fairly frequent blebs

Blackwater Project
Drill Summary - Mineralization

BW0387		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
332	341	VN	0.5	DI	0.1	FP	0.5										some Po on fracture planes. Rare vnlts with fine grained py.
341	346.8	VN	0.5	DI	0.1	DI	0.5										as above
346.8	347	DI	1	DI	2		0	Apy	PERV	10	Cp	PERV	8	Ga	PERV	5	small piece of core, feels quite heavy, with high grade aspy-cpy-gal. Sheared piece(?)
347	355	FP	2	DI	0.5	DI	0.5										fine grained py, disseminated and on many fracture planes, fairly high grade, though hard to see
355	365	FP	0.5	DI	0.1	DI	0.5										decreased sulphides
365	378	VN	0.5	DI	0.1	DI	1										local zones of 1-2% fine grained po
378	387	VN	0.1	DI	0.1	BB	0.5										some po blebs following a shoddy vein
387	393	VN	0.5	DI	0.1	DI	0.1										rare messy calcite vnlt bearing py. trace other sulphides
393	405	DI	3	DI	0.5	DI	0.1										lots of gouge, fault brecciated core, structure intense, with fine grained yellow py, also fine grained dark sulphides, likely mostly py
405	416.5	DI	1	DI	0.5	DI	0.5										infrequent vnlt of yellow py, as well as small vnlts with dark py, dying off near end of hole. Sph-po picking up slightly near end of hole, minor

Blackwater Project
Drill Summary - Structure

BW0387

From (m)	To (m)	Structure	Strength	Comments
10.9	15	BRKZ	3	somewhat blocky rock. Major fracture set at 65, minor at around 45 degrees
15	20.8	BRKZ	2	more competant, but similar as above
20.8	23.5	BRKZ	4	chunky core, fracture sets constant at around 60 and 45 deg TCA
23.5	37.6	BRKZ	3	blocky, chunky rock; fracture sets at 60, 45 and 35
37.6	42	JZ	5	competant rock, similar sets as above, but less of the 60 deg orienation
42	43	BRKZ	2	blocky
43	47.2	JZ	4	main joint set at 50-60 deg TCa. Fractures not very planar.
47.2	61.7	BRKZ	5	extended zone of very rubbly, broken core.
61.7	66.3	BRKZ	3	unclear dominant fracture set. approx 45 - rough estimate
66.3	70	FZ	2	gouged and rubbly, lost recovery
70	87	BRKZ	5	rubbly, highly broken rock for a long interval, some minor 10cm or so local gouged areas
87	95.4	BRKZ	3	many parallel fracutres with close spacing, mostly from 30-45 deg TCA
95.4	103.6	FZ	3	rubbly, consistantly mashed up core for long interval. Some gouged sections
103.6	110.3	FZ	4	major gouged and fault-brecciated section, gouged healed well in some cases, other cases not so good. lower shear contact pretty clear at around 40 deg TCA
110.3	118.1	BRKZ	3	major fracture set at 65-75 degree TCA, minor set around 45-50 deg
118.1	124.1	BRKZ	5	rubbly core, somewhat shardy fractures
124.1	126.8	BRKZ	1	fractures seem to be consistant spectrum from 45-75 deg TCA
126.8	128.8	BRKZ	3	short zone of comparativly broken rock
128.8	141.7	JZ	2	very dominant set at 35 deg TCA
141.7	143.2	FZ	3	section of fault gouge
143.2	149.8	BRKZ	5	very broken, nearly rubbly core
149.8	158.9	JZ	4	joint sets at 50 and 30 deg TCA
158.9	163	FZ	4	contacts are rubbled away. lots of gouge
163	166.3	FZ	2	some gouge, interspaced with broken core
166.3	167.7	BRKZ	4	short interval of non-gouge containing
167.7	169	FZ	2	fragmental gouging, orientation not planar
169	181.5	BRKZ	1	quite competant rock, with small zones of heavier fracturing lumped in

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Blackwater Project
Drill Summary - Structure

BW0387

From (m)	To (m)	Structure	Strength	Comments
181.5	193.6	JZ	2	good competant rock, with joint sets at 70 and 40 deg TCA
193.6	199	BRKZ	4	increasingly broken/chunky rock
199	205	FZ	2	chunky/rubbly rock with gouge. weak fault zone
205	208.1	JZ	4	short zone of competant rock, main fracture angles at 40 deg TCA
208.1	209.7	FZ	2	fault breccia/fault gouge zone with fragmental gouging. heavily gouged material well healed
209.7	217.6	JZ	4	joint sets at around 70 and 30 deg TCA
217.6	225.2	FZ	1	very shardy fracturing, with some crushed up rock as well. minor gouge, if any
225.2	227.6	BRKZ	4	highly fractured, shardy fragments
227.6	239.8	JZ	2	varying fractures, 40 deg TCA seems to be slightly more prominent
239.8	242.5	FZ	3	broken rock around gouge structure; hard to get an orientation
242.5	249	BRKZ	4	very broken/blocky core
249	253	BRKZ	3	blocky core, varying fracture orientaitons
253	260.5	BRKZ	1	dominant fracture set around 45-50 degTCA
260.5	273.2	JZ	3	major sets at 60 and 40 degTCA
273.2	274.4	FZ	4	clay matrix gouge, with rubble mixed in, pebbly. contact orientations rough, unmeasurable
274.4	281.5	BRKZ	3	varying fracture orientation, and unconsistant style, except for set at 40 deg TCA
281.5	292	JZ	3	small zones of increased structure, but overall competant joint zone. Joint sets at 30 and 60, average
292	299.5	BRKZ	4	highly fractured rock
299.5	301	BRKZ	3	shardy fractures, a lot at 20-30 deg TCA
301	317	JZ	2	joint sets at 40 and 70 deg TCA. Competant core
317	320.7	BRKZ	1	fractured/highly broken, angles of 30-45 common
320.7	339	JZ	3	competant core with many planar fractures at 55. Seems to be another minor set at 50-55 (opposite direction)
339	339.4	SZ	3	gouge 1-2 cms above lower fracture plane, with structure alt'n up to 339m
339.4	350	JZ	2	competant rock, major joint set at 60 deg TCA
350	367	JZ	5	places where core is fractured up
367	369.7	BRKZ	3	heavy fracturing, with common fracture planes at 50
369.7	373.8	JZ	4	joint set at 50, minor at 15(?)
373.8	377.5	BRKZ	3	rubbly sections

Blackwater Project
Drill Summary - Structure

BW0387

From (m)	To (m)	Structure	Strength	Comments
377.5	382.6	JZ	3	minor set at 15 degTCa
382.6	393.7	JZ	5	some areas with quite a bit of fractures, but for the most part fractures are planar and clean, at 35-45 deg TCA major set
393.7	398.7	BZ	4	fault breccia quite intense, lots of gouge suspending fragments
398.7	401.5	FZ	5	some intense fault, gouged, perhaps still a fault breccia, clay rich
401.5	413.5	BZ	4	extensive fault breccia, some gouge rich zones, significant scale faulting
413.5	416.5	BRKZ	2	minor set at 25 deg TCA. getting out of the fault structure

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Blackwater Project
Drill Logs

Hole ID:	BW0388	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375001.54
Depth (m):	365.5	Date Started:	23/03/2012	Casing Size:	HWT	Northing:	5893249.14
Azimuth:	0	Date Completed:	01/04/2012	Casing (m):	3	Elevation (m):	1553
Dip:	-90	Logged By:	Other	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	59.6	-89
100	57.9	-89.4
151	54.1	-89.5
200.5	56.3	-88.9
250	44.4	-88.9
299.5	47.6	-88.9
352	75.6	-88.7
364	67.1	-88.8

Blackwater Project
Drill Summary - Lithology

BW0388

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							Shallow overburden. Sumps appear to have had subcrop if snow was absent
3	27.5	FLPT	lith	LAP	L	GRY	ALTFR	GR30+	OXIDE ZONE. Interval of FLPT, fairly consistent throughout interval with clay altered ash clasts and silica rich matrix. Clasts are occasionally laminated. Clasts up to 30 cm in diameter, but predominantly 0.5-2cm. Clasts consist of white-grey lamina
27.5	71	FLPT	lith	LAP	L	GRY	UNKN		TRANSITION ZONE. As above. Mineralization appears both as sulphides and oxides
71	97.7	FLPT	lith	LAP	L	GRY	ALTFR	GR10	Medium green-beige. Subrounded-subangular clasts. Moderately-poorly sorted. 100% felsic clasts. Medium grey silica matrix with white-grey silica after clay altered clasts. Trace garnets & DBS over entire interval. FeOx along fracture planes
97.7	121.7	FLPT	lith	LAP	L	GRY	ALTFR	GR30+	SULPHIDE ZONE. Subrounded-subangular clasts. Medium green-beige. Moderately-poorly sorted. 100% felsic clasts. Silica>sericite>chlorite>clay alteration. Garnets locally up to 1%. Light grey silica matrix, white-green silica after clay altered clasts.
121.7	122	VC	lith	LAP	L	GRY	ALTFR	GR30+	As above, with the excpetion of a 2cm plag-phyric andesitic clast visible within the interval. 95% felsic clasts.
122	125.5	FLPT	lith	LAP	L	GRY	ALTFR	GR30	Subrounded-subangular clasts (clasts up to 30 cm diameter). Medium green. Moderately-poorly sorted. 100% felsic clasts, weakly laminated clasts. Silica>sericite>chlorite>clay alteration. Garnets locally up to 1%. Light grey silica matrix, white-green
125.5	128.7	FLPT	lam	LAP	L	GRY	DEP	SH	Laminated interval of FLPT with brecciated tuffaceous clasts and chlorite-sericite mud layers
128.7	132	VC	lith	LAP	L	GRY	DEP	GR30+	~10% andesitic clasts within predominantly green-grey felsic clast dominated unit. Andesitic clasts are plag-phyric
132	135.8	FLPT	lith	LAP	L	GRY	DEP	GR30+	Medium green-grey. Poorly sorted. Textural destruction by silica-sericite-chlorite. 1% sphalerite clast replacement (trace pyrrhotite).
135.8	152.5	VC	lith	LAP	M	GRN	ALTFR	GR10	Dark green. Polymictic, poorly sorted. 75% felsic clasts: 25% mafic clasts. Strongly chlorite-sericite-quartz altered. 0.5% Pyrrhoite-Sphalerite replacement within mafic clasts. Andesitic clasts = plag-phyric. Depositional/alteration lower contact?
152.5	156	FLPT	lith	LAP	L	GRY	ALTFR	GR10	Light grey-beige matrix with white subangular clasts. No visible andesitic clasts. Fractured/alteration front at upper contact
156	169.8	FLPT	lith	LAP	L	GRY	FLT	GR30+	Max clast size 11 cm. 100% felsic clasts. Poorly sorted...Alteration locally gives the appearance of moderate-good sorting within unit. Clasts are dominantly microcrystalline.

Blackwater Project
Drill Summary - Lithology

BW0388

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
169.8	181	FLPT	lith	LAP	L	GRY	FLT	GR30+	As per interval above (matrix-supported as well). More structural influence...fault gouge & intense fracuring. Layering faint within some of the clasts (181.8 m)
181	193	FLPT	lith	LAP	L	GRY	FLT	GR30	As per interval above, but with less structural influence. Jointed, occasional fault with gouge. No visible plag, hbl phenos or amygdules or replacement of pheno/amyg to indicate mafic clasts
193	205.5	VC	plm	LAP	MO	GRY	FLT	SH	Polymictic volcanoclastic, matrix supported. Some silicified clasts. Fault bound on either side.
205.5	312.3	VC	por	LAP	L	GRY	UNKN		More altered, felsic dominant VC. Texurally similar to above VC unit, with more altered clasts and matrix.
312.3	365.5	FT	lam	FA	L	GRY	UNKN		Felsic tuff, laminated,with fold convolutions in ash. Some brecciation. Strongly silicified

Blackwater Project
Drill Summary - Alteration

BW0388		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	27.45	O	CLST	1	CLST	4	MTRX	4	CLST	3	SIL	CLST	3	LIM	FC	4	Strong FeOx along fracture planes.White clay has replaced tuffaceous & laminated clasts. Light grey silica matrix, also found in laminated clasts (silica mud). Occasional clasts have a light green tinge (sericite-chlorite alteration). Red hematite visible on frac from 9.8-11m. Fracture controlled (subparallel TCA) dark brown-red (under scope), black without microscope FeOx (looks similar to MnO)
27.45	71.8	T	CLST	2	CLST	4	MTRX	4	CLST	2	SIL	CLST	3	LIM	FC	3	Patchy silica overprints a dominantly clay>sericite=quartz>chlorite clast altered, silica matrix altered interval. Limonite is strong along fracture planes. Light pink haloes visible around clasts scarce throughout interval and strong at 46 & 70.8m (hematite-type coating)
71.8	74.4	T	CLST	2	CLST	3	MTRX	4	CLST	3	SIL	CLST	3	LIM	FC	4	Silica after clay-sericite altered clasts (white). Light grey silica matrix. Limonite-clay along fracture planes
74.4	82.9	T	PATC	3	CLST	3	PATC	4	PATC	3	SIL	CLST	3	LIM	FR	1	Strongly chlorite-sericite-quartz altered interval with partial texture desruction. Light pink-white haloes around sulphide zones = possibly quartz-hematite?
82.9	97.7	T	CLST	2	CLST	4	MTRX	4	CLST	3	SIL	CLST	4	LIM	FC	3	Not as texturally destructive as previous interval. Less chlorite. Light grey silica matrix. Increase in white-beige silica after clay clast fragments. Light pink hematite haloes scarce within interval
97.7	110.7	S	PATC	2	CLST	4	MTRX	4	PATC	3	SIL	CLST	4	CLY	FR	4	Clay-sericite-pyrite alteration along fracture planes replaces Fe-Oxi alteration along fracs within sulphide zone. Alteration front at lower contact at approx 80 degrees TCA (unit still the same)
110.7	115	S	PATC	4	CLST	2	PATC	5	PATC	4	SIL	OP	2	CLY	FR	3	Grey clay (rich with pyrite) along fx planes. Dark grey cloudy silica overprint (112.8 m). Partial texture destruction (patchy silicification....locally pervasive)
115	116.7	S	CLST	1	CLST	4	CLST	3	CLST	3	SIL	MTRX	4	CLY	FR	3	Clay-sericite-pyrite along fx planes. Silica after clay altered clasts. Grey silica matrix. Weak clay overprint.

Blackwater Project
Drill Summary - Alteration

BW0388		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
116.7	123.7	S	PERV	4	FR	2	PERV	5	PERV	5	SIL	PATC	3				Silica-sericite-chlorite pervasive alteration. Texture obliterated. Weaker mineralization then intervals above and below. Patchy silicification faintly visible beneath pervasive alteration as cloudy zones
123.7	125.5	S	CLST	2	CLST	3	MTRX	4	CLST	3	SIL	CLST	2	CLY	FR	1	Texture visible (destructive in intervals above and below). Silica after clay altered clasts. Silica altered matrix. Occasional clasts altered by chlorite and sericite
125.5	127	S	REP	4	CLST	1	PERV	5	REP	4	SIL	CLST	2				Chlorite-sericite laminated bands (FT?) between brecciated zones of Ash (tuff)-rich FLPT. Chlorite-sercite replacing fine-grained mud? (in previous logs, had put these "type-sections" as deformation? aleration styles)
127	132	S	PATC	3	CLST	2	PATC	4	PATC	4	SIL	MTRX	3	SIL	CLST	3	Patchy silica-sericite-chlorite alteration (silica after clay replaced clasts)
132	136.6	S	CLST	4	FR	2	PATC	4	CLST	4	SIL	CLST	2	CLY	CLST	1	Green sericite-chlorite alteration of clasts. Patchy silica (does not alter mafic clasts) through interval.
136.6	153	S	PERV	4	CLST	1	PATC	4	PERV	4	SIL	CLST	2	CLY	FR	2	Pervasive chlorite-sericite altered (cloudy green). Andesitic clasts relatively fresh (plag-phyric, scratchable). Silica after clay altered clasts. Patchy silica overprint
153	156	S	PATC	2	CLST	2	PATC	4	PATC	3	CLY	FR	3	CLY	CLST	2	Beige. Patchy chlorite-sericite alteration. Patchy silica alteration.
156	169.8	S	PERV	3	FR	1	PERV	4	PERV	4	CLY	CLST	2	SIL	CLST	2	Pervasive silica-sericite-chlorite alteration. Chlorite increases along fracture planes with minimal clay. Silica after clay altered clasts still weakly visible.
169.8	181	S	PERV	3	FR	3	PERV	4	PERV	4	CLY	CLST	1	SIL	CLST	1	Strong clay on fault surfaces. Weak silica after clay altered clasts. Pervasively silica-sericite-chlorite altered (giving greenish grey colour)
181	193	S	PATC	3	FR	2	PATC	4	PATC	4	SER	CLST	2	CHL	CLST	2	Patchy silica-sericite-chlorite ateration. Texture less detroyed then previous strongly faulted interval. Trace white silica after clay clast dominant replacement. Several class are medium-dark green chlorite-sericite altered
193	205.5	S	FR	2		0	CLST	2	CLST	1							Fairly fresh VC, some silicified clasts, chlorite on fractures

Blackwater Project
Drill Summary - Alteration

BW0388		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
205.5	312.3	S	CLST	2	MTRX	2	PATC	3	CLST	3	CHL	FR	3				Increase in sericite, clay and silica alteration, with more felsic clasts. Some chloritzed clasts, and chlorite on fracures.
312.3	328	S	FR	1	FR	1	PERV	5	PERV	2	GRNT	PATC	3				Strong pervasive silica, probably with clay and sericite. Garnet blebs, and sometimes following flowbanding of FT.
328	365.5	S	FC	2	PATC	1	PATC	4	PATC	1	GRNT	PATC	1				Moderate to strong in patches.Some fracture controlled chlorite,possibly sericite

Blackwater Project
Drill Summary - Mineralization

BW0388		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	16		0		0		0	Hm	FP	1	Goe	FP	1				No visible pyrite, sphalerite or pyrrhotite. All sulphide minerals within interval have oxidized to hematite, goethite and limonite. Trace garnet crystals within interval
16	27.5		0		0		0	Hm	FP	1	Goe	FP	0.5				Minerals within interval have oxidized to hematite and goethite. Trace garnets within interval
27.5	37.5	SP	0.1	BB	0.5	SP	0.1	Hm	FP	0.5	Goe	FP	0.1	Grnt	CR	0.5	Good concentration of DBS & Garnet within interval. Rotten egg smell indicative of sphalerite with garnets. Mostly blebby within interval . Light pink iron haloes around garnets
37.5	47	CR	0.5	BB	0.5	SP	0.1	Hm	FP	0.5	Goe	FP	0.1	Grnt	CR	0.1	Hematite-goethite along fracture planes = oxidation of pyrite. DBS high from 36-37.5m, 42-42.5m, and 46-47m
47	52	SP	0.1	BB	0.5	SP	0.1	Hm	FP	0.5	Goe	FP	0.1	Grnt	CR	0.1	Strong limonite coating along fractures. Trace DBS, garnets, sphalerite
52	61	CR	0.5	CR	0.5	SP	0.1	Grnt	CR	0.5	Hm	FP	0.1	Dbs	DEN	0.5	Specks of Apy visible at 60.5m. DBS consistent throughout interval. Dark grey-greeen casts = sericite-pyrite-chlorite clast replacement
61	71.9	CR	0.1	CR	0.5	SP	0.1	Grnt	CR	0.5	Dbs	DEN	1	Hm	FP	0.1	Increased DBS witin interval with garnet-sphalerite clast replacement
71.9	74.4	CR	0.1	CR	0.5	SP	0.1	Goe	FP	0.5	Dbs	DEN	0.1	Grnt	CR	0.5	Goethite along fracture planes.
74.4	82	FP	0.5	CR	0.5	SP	0.1	Grnt	CR	0.5	Py	VN	0.1	Py	CR	0.5	Increased pyrite within grey-green chlorite-quartz altered clasts and bands. Garnet-sphalerite clast replacement through interval, possibly an overprint
82	97.7	SP	0.1	CR	0.1	SP	0.1	Grnt	CR	0.1	Dbs	DEN	0.1	Hm	FP	0.5	Increased DBS from 85-85.5m, 94.4-96m
97.7	110.7	CR	0.5	CR	0.5	SP	0.1	Grnt	CR	0.5	Dbs	DEN	0.1	Py	FP	0.5	Increasd garnets within interval. Garnets with sphalerite as clast replacement (appears to overprint FLPT lith). Hematite/Goethite = pyrite within sulphide zone
110.7	116.7	FP	0.5	CR	0.5	CR	0.5	Grnt	CR	0.5	Py	CR	0.5	Dbs	DEN	0.1	Grey pyrite-clay gouge along fracture planes. Increase in pyrrhotite-sphalerite, slight decrease in garnets through interval

Blackwater Project
Drill Summary - Mineralization

BW0388		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
116.7	121.8	VN	0.1	CR	0.1	CR	0.1	Grnt	CR	0.1	Py	CR	0.5	Py	FP	0.5	Alteration has masked the mineralization within the interval. Dark grey silica clasts consist of fine pyrite. Trace garnet-sphalerite-pyrrhotite clast replacement
121.8	125.5	VN	0.1	CR	0.5	CR	0.5	Grnt	CR	0.5	Dbs	DEN	0.1	Grnt	CR	0.1	Clast replacement by Po=Sph>Py=Garnet
125.5	136.9	FP	0.5	CR	0.5	CR	0.5	Grnt	CR	0.1	Py	VN	0.1				Clast replacement Po-Sph-Garnet-Py
136.9	152.5	VN	0.1	CR	0.5	CR	1	Py	FP	0.1							Clast replacement Po>Sph. Pyrite along fracture planes and as small veinlets
152.5	156	FP	0.1	CR	0.1	CR	0.1	Py	VN	0.1							Weakly mineralized and very weakly altered
156	169.8	FP	0.5	CR	0.5	CR	0.5	Grnt	CR	1	Py	VN	0.1				Garnet>Sph=Po clast replacement
169.8	181	FP	0.5	CR	1	CR	0.5	Grnt	CR	1.5	Py	VN	0.1				Increase in garnet min through interval. Increasd sphalerite within faulted interval
181	193	FP	0.1	CR	1	CR	0.5	Grnt	CR	1							Locally hgh garnet-sphalerite within interval. 186-188m texture destroyed, slight decreased in min
193	205.5	FP	0.5	CR	1	DI	0.5										Sph in clasts, py on fractures, po replacing clasts and di in matrix
205.5	222	FP	0.1		0	DI	1.5	Grnt	BB	1							Po and garnet replacing clasts, often together, some di po, py on fractures
222	240	VN	0.5		0	VN	1.5	Grnt	BB	0.5							Massive po and some euhedal py in messy veins/fracture infill. Blebby garnet, minor di po
240	258	DI	1		0	DI	1	Grnt	CR	0.5	Apy	VN	0.1	Po	CR	0.5	One vein/fracture coating with granular arsenopyrite; garnet, often with po, replacing clasts; di po and py
258	278	DI	1		0	DI	1	Grnt	CR	0.5	Po	CR	0.5				Di po and py, with garnet and po together, replacing clasts
278	312.3	DI	1		0	DI	1	Grnt	CR	0.5	Po	CR	0.5				Di po and py, with garnet and po replacing clasts
312.3	328	DI	1.5		0	DI	1	Dbs	DEN	0.5							Di py>po, with some DBS
328	365.5	DI	0.5		0	DI	0.1	Dbs	DEN	0.1							Minor py,trace po, occasional spots with DBS

Blackwater Project
Drill Summary - Structure

BW0388

From (m)	To (m)	Structure	Strength	Comments
3	4.85	JZ	4	Strongly jointed. Influenced by meteoric water. Str FeOx
4.85	4.9	FL	5	Gouge zone. FeOx
4.9	5.35	JZ	3	Joints between 25 and 30 degrees TCA. Str FeOx
5.35	5.4	FL	5	Gouge. FeOx
5.4	7.3	JZ	3	Joints at 30 > 60 TCA. Str FeOx...increasd Goethite
7.3	10.2	BRKZ	4	Possibly just a strongly jointed zone influenced by 15 degree TCA fractures. 30 degree joints > 15 degree joints
10.2	16.7	JZ	3	Joints between 30-60 degrees TCA. FeOx
16.7	17.7	FL	5	Str Lim-Goethite-Hem along fracture surface. Criss-cross pattern of fractures. Gougy upper contact and lower contact
17.7	25	JZ	3	20-35 degree joints > 55-60 degree jonts. FeOx str along fracs
25	25.8	BZ	3	Strongly oxidized (microfractures). Minimal gouge. Orange FeOx stained.
25.8	25.95	FL	5	Gouge zone. Lower contact at 60 degrees TCA
25.95	37.7	JZ	2	Joints 30 > 60 degrees TCA. Fractures have FeOx coat
37.7	38.25	BRKZ	3	BRKZ/JZ at 15 degrees TCA, str FeOx coating
38.25	45.7	JZ	3	Str FeOx coat along fracturs
45.7	70	JZ	2	Joints 30 > 60> 15. Joints at lower angle TCA appear to be more intensely fractured b/c of drill angle
70	71.88	JZ	2	Dominant frac = 20 degrees TCA. Clay > sericite > FeOx along fracs
71.88	73.7	JZ	3	Joints at 20-25 degrees TCA > 35 degree TCA. Increased FeOx along fracs
73.7	76.6	JZ	2	55 degree TCA joints > 15-20 degree TCA clay-FeOx coated fracs
76.6	78.7	JZ	2	Joints subparallel TCA within interval
78.7	83.2	JZ	1	40 degree joints > 15 degree joints. minimal FeOx on joints
83.2	89.5	JZ	2	15 degree TCA joints > 45 degree TCA joints. Joints at 15 degrees strong FeOx coating (increased goethite)
89.5	92	JZ	1	50 degree TCA joints > 15 degree joints TCA within interval. Weak FeOx on fracs
92	97.7	JZ	2	Joints at 15 degree TCA > 30 degree TCA joints. Strog FeOx along fracs. Microfractured at 93.7m & 94.7m
97.7	109.2	JZ	1	45 degree TCA joints > 10-15 degree TCA joints
109.2	114.7	JZ	2	20 degree TCA > 60 degree TCA joints
114.7	118.9	FZ	3	Dominant joint at 5 degrees TCA > 30 degree TCA joint. Broken Zone (stronger joint zone). Slickensides on surface at 118.4m
118.9	125.5	FZ	2	20 degree > 50 degree TCA joints

Blackwater Project
Drill Summary - Structure

BW0388

From (m)	To (m)	Structure	Strength	Comments
125.5	127	LY	3	Laminated interval. Laminae between 60-70 degrees TCA. Weakly jointed. Brecciated within laminated interval.
127	128.9	JZ	2	20 degree joints > 50 degree joints
128.9	130	BRKZ	2	Subparallel TCA joint zone
130	130.6	JZ	1	Lower contact at 30 degrees TCA
130.6	130.8	FL	3	Lower conact at 40 degrees. Minimal gouge...broken
130.8	132	JZ	3	40 degree TCA primary joint. Minor clay along joints
132	134.5	FZ	2	Minimal gouge along fault surface. Subparallel TCA
134.5	136.9	JZ	3	70 degree > 40 degree >10 degree joints. 10 degree joint from approx 135.2-135.5m
136.9	152	JZ	2	Primary joints approx 50 degree TCA. Minor chlorite-clay on fracs
152	153.9	FZ	3	Minimal gouge along fracture plane. Classified as fault because of gouge.
153.9	157.8	JZ	4	50 degree joints > 20 degree joints
157.8	159.2	JZ	4	Minor clay along fractures. Not intense enough to be considered a broken zone
159.2	161.7	BRKZ	4	No gouge. Strongly broken, 15-20 degree TCA breaks in core
161.7	165.1	FZ	3	Sharp upper contact at 10 degrees. Gouge along fault surface
165.1	167.5	JZ	3	Primary joints at 50 degrees TCA
167.5	169.8	JZ	4	Joints from 15-25 degrees TCA, influenced by fault downhole
169.8	172	BRKZ	4	Strongly broken, no visible gouge. approximately subparallel TCA
172	179.7	FZ	4	No sharp upper or lower contact. Bad recovery through interval. Difficult to get good angle to measure. 179.5 = possible contact at bottom of run
179.7	180.7	BRKZ	4	Approximate angle to broken zone (could still consider part of FZ, but no visible gouge)
180.7	181.5	FZ	4	Fault breccia..gougy matrix
181.5	183.3	BRKZ	4	No visible gouge within interval
183.3	184.4	FZ	4	Gouge along fault planes, strongly broken
184.4	186.2	BRKZ	4	No gouge, strongly broken with the exception of a 30 cm piece of competent core at 184.7
186.2	186.3	FL	4	Gouge on fault plane
186.3	188.2	JZ	3	60 degree joints > 15 degree. No visible gouge on frac surface
188.2	193	FZ	3	Questionable lower contact at 20 degrees. Gouge at 188.15m
193	200.5	JZ	3	Moderate joint zone, with fractures 80>45 degrees TCA

Blackwater Project
Drill Summary - Structure

BW0388

From (m)	To (m)	Structure	Strength	Comments
200.5	205.5	BRKZ	3	Broken zone, just uphole of fault with gge
205.5	205.7	FL	4	Fault with rehealing clay gge
205.7	240	JZ	4	60>80>45 degree fractures TCA, some small intervals of broken, rubbly rock
240	268.5	BRKZ	3	Moderately broken zone, with fractures predominantly 45>60>80 degrees TCA. Some areas are more jointed, some areas are somewhat rubbly.
268.5	276.5	JZ	2	Some jointing, fractures ~60 TCA
276.5	277	FL	4	Short faut,with clay gge
277	334	JZ	2	Joint zone, 80>45 degree TCA fractures
334	365.5	FZ	3	Fault zone, with rubbly/clay gge intervals,and broken rock in between

Blackwater Project
Drill Logs

Hole ID:	BW0389	Tenure #:	515810	Hole Diameter:	HQ	Easting:	376002.28
Depth (m):	415	Date Started:	24/03/2012	Casing Size:	HWT	Northing:	5892649.84
Azimuth:	0	Date Completed:	05/04/2012	Casing (m):	88.5	Elevation (m):	1613
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
151	15.9	-89.9
199	165.5	-89.9
250	331.4	-89.7
300	211.8	-89.5
369	185.1	-89.2
398.5	169.9	-89.6

Blackwater Project
Drill Summary - Lithology

BW0389

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	95.5	OB							Overburden
95.5	161.5	AND	mas	LAP	D	GRY	UNKN		Massive andesite with porphyritic texture and locally volcanoclastic texture.
161.5	191.5	AND	volc	LAP	D	GRY			Massive Andesite, locally porphyritic texture
191.5	217.5	AND	mas	LAP	D	GRY	DEP	GR10	Massive andesite with volcanoclastic texture, monomictic,
217.5	223.5	VC	plm	LAP	D	GRY	DEP	GR10	Polymictic volcanoclastic. laminated subangular clasts.
223.5	235	AND	mon	LAP	D	GRY	UNKN		Massive monomictic andesite, locally brecciated andesite clasts
235	250	AND	mon	LAP	D	GRY			Massive andesite with volcanoclastic texture. locally bleached out no primary texture visble
250	268.3	AND	volc	LAP	D	GRY	DEP	GR10	Massive andesite with volcanoclastic texture.
268.3	275.7	FT	flwbnd		L	GRN	DEP	SH	Massive laminated felsic tuff. Locally flow banded
275.7	287.5	AND	volc	LAP	D	GRY	UNKN		Massive andesite with volcanoclastic texture, subangular fragments
287.5	313	AND	mas	LAP	D	GRY			Massive andesite with volcanoclastic texture, locally brecciated andesite clasts
313	337	AND	mon	LAP	D	GRY			Massive andesite with volcanoclastic texture, brecciated andesite clasts
337	366	AND	mon	LAP	D	GRY			Monomictic massive andesite, locally brecciated. Hydrothermal breccia
366	377.5	VC	plm	LAP	M	GRY	ALTFR	GR30+	Polymictic volcanoclastic unit, matrix supported, laminated felsic clasts
377.5	398.5	VC	plm	LAP	L	GRN			silica-ser perv predom obscuring texture. Locally relict rock is grayish black and relict texture is mafic dom poorly sorted with siliceous felsic clasts.

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0389		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
95.5	110.5	O		0		0	PATC	1	FR	2	LIM	FR	3	BIOT	PERV	2	Limonite alt found in fractures,Pervasive biotite alt.Patchy silica
110.5	138	T	FR	2	PATC	2	PATC	2	PATC	3	LIM	FR	2	BIOT	PERV	2	Pervasive biotite alt found in mafic matrix. Patchy clay alt. Sericite halos
138	157	S	FR	2	PATC	3	PATC	1	PERV	3	BIOT	PERV	2				Pervasive biotite alt.Clay alt in halos surrounding sericite altered clasts
157	161.5	S	FR	2		0	PATC	1	PERV	2							Chlorite alt found in brecciated clasts. Sericite found in broken fragments
161.5	186.3	S	FR	2		0	PERV	1	FR	2	BIOT	MTRX	2				Biotite alt found in matrix. Sericite and Chlorite alt found in fractures
186.3	191.5	S	FR	2		0	PERV	2	FR	2	BIOT		2				Biotite alt found in matrix. Weak silica alt
191.5	207.4	S	FR	2		0	PATC	2	PATC	2	BIOT		2				Pervasive biotite alt, patchy silica alt, sericite found in fractures
207.4	216.7	S	FR	3	PATC	2	PATC	2	PATC	2	BIOT	PERV	2				patchy clay alt, sericite-chlorite alt found in fractures, pervasive silica overprinting
216.7	223	S	CLST	2		0	PATC	1	PATC	2	BIOT	MTRX	2				Biotite alt found in matrix, chlorite alt found in mafic clasts
223	240	S	FR	2	PATC	2	PERV	2	FR	2	BIOT	MTRX	2				Biotite alt found in matrix, pervasive silica overprinting biotite - patchy clay alt
240	242.5	S	FR	2		0	PERV	3	PERV	2							Pervasive sericite alt, silica overprinting sericte
242.5	246	S	FR	2		0	PERV	2	FR	2	BIOT	MTRX	2				Pervasive biotite alt, silica overprinting sericte alt
246	250	S	FC	2	PATC	1	PERV	2	PERV	3	BIOT	MTRX	2				Biotite alt found in matrix, silica overprinting biotite alt
250	259	S	FR	3		0	PERV	3	PERV	2	BIOT	MTRX	2				Pervasive biotite alt found in matrix, spotty sericte-chlorite alt
259	268.3	S	FR	2		0	PERV	2	PATC	2	BIOT	MTRX	2				Biotite alt found in matrix, sericite-chlorite alt found in fractures
268.3	275.7	S	FR	2		0	PERV	4	PERV	3							Pervasive silica-sericite alt. sericite-silica baneded
275.7	287.5	S	FR	2	PATC	2	PATC	2	PATC	2							Spotty clay alt, chlorite alt found in fractures
287.5	313	S	FR	3		0	PATC	2	FR	2	BIOT	MTRX	2				Pervasive biotite alt found in matrix, patchy silica found as secondary quartz, chlorite-sericte alt found in fractures
313	337	S	FR	2		0	PERV	4	PERV	2							Pervasive silica alt, chlorite-sericite alt found in fractures

Blackwater Project
Drill Summary - Alteration

BW0389		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
337	357	S	FR	2	PATC	1	PERV	2	FR	2	BIOT	MTRX	2				Biotite alt found in matrix, Pervasive silica alt.
357	366	S	PERV	2		0	PERV	3	FR	2	BIOT	MTRX	3				Pervasive silica alt, sericite-chlorite alt found fracture controlled
366	377.5	S	CLST	2		0	PERV	3	FR	1							Pervasive silica alt, chlorite alt found in mafic clasts, silicified felsic clasts
377.5	398.5	S	CLST	2	VN	2	PERV	4	PERV	1	SER	PERV	1	CAL	VN	2	Pervasive silica-ser alt, chl caot FP's and replaces BB's/Clasts throughout. White clay/calcite veining that has locally Bx'd rock

Blackwater Project
Drill Summary - Mineralization

BW0389		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
95.5	113.8		0		0	BB	0.1	Grnt	DI	0.1	Goe	FP	0.1				Disseminated garnets.Uneven blebby Po. Goethite found in fractures
113.8	131.4	FP	0.5	DI	0.1	DI	0.5										Disseminated Po and Sph. Blebby Sph
131.4	146.1	FP	0.5	DI	0.5	DI	0.5										Disseminated Po and Sph, fine Py found in fractures
146.1	151	FP	0.1	DI	0.1	DI	0.5										Disseminated Po, Py in fractures. blebby Po
151	161.5	DI	0.5		0	DI	0.1										Disseminated Py in clay gouge, Blebby Po found in brecciated clasts
161.5	162.2	DI	0.1		0	DI	0.1										Disseminated Po and Py in clay gouge
162.2	180.5	FP	0.1	DI	0.1	BB	0.5										Blebby Po, Disseminated Sph
180.5	191.5	FP	0.1	DI	0.1	BB	0.1	Cp		0.1							Disseminated Chalcopyrite in fractures. Blebby Po
191.5	207.4	FP	0.1	DI	0.1	DI	0.5	Cp	DI	0.1							Disseminated Po-Cpy in matrix, Locally blebby Po
207.4	215	FP	0.1	DI	0.1	DI	1	Cp	DI	0.1	Po	CR	0.5				Disseminated Po in fine mafic matrix, Po replacing clasts
215	223	FP	0.1	DI	0.1	CR	0.5										Po replacing mafic clasts. Fine Py found in fractures
223	240	FP	0.5	DI	0.5	DI	0.5	Cp	DI	0.1							Disseminated Po-Sph, Locally Po replacing clasts, Py-Cpy found in fractures
240	250	FP	0.5	DI	1	DI	1	Cp	DI	0.1							Disseminated Po-Sph, Po-Sph hairlines
250	268.3	FP	0.1	DI	0.5	DI	0.5										Disseminated Po-Sph in matrix, Blebby Po. Po-Py hairlines
268.3	275.7	FP	0.5	DI	0.5	BB	0.5										Disseminated Po-Sph throughout, Po-Sph hairlines
275.7	287.5	FP	0.5	DI	0.5	DI	0.5										Disseminated Po-Sph, Blebby Po
287.5	313	FP	0.1	DI	0.1	DI	0.1										Disseminated Po-Sph, Po hairlines
313	337	FP	0.5	DI	0.1	DI	0.5										Py in fractures, Disseminated Po in brecciated mafic clasts, Locally blebby Po
337	341.8	FP	0.5	DI	0.5	DI	0.5										Disseminated Po-Sph, Po replacing clasts
341.8	357	FP	0.1	DI	0.1	CR	0.5										Po replacing clasts, Py in fractures
357	365.5	FP	0.5	DI	1	DI	1	Ga		0.1							Disseminated Sph-Po throughout, Po hairlines, Po veinlets. Galena specks
365.5	377.5	FP	0.1	DI	0.5	DI	0.5										Disseminated Po-Sph throughout, Po-Sph replacing mafic clasts

Blackwater Project

Drill Summary - Mineralization

BW0389

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
377.5	398.5	VN	0.5	BB	0.5	BB	0.5	Sp	VN	0.1	Py	BB	0.5				Di'd Py-Sp-Py throughout, Py and Sp locally fracture fil (fault matrix, crackle?)l and VN'd.

Blackwater Project
Drill Summary - Structure

BW0389

From (m)	To (m)	Structure	Strength	Comments
95.5	129.2	JZ	3	Moderately jointed, two sets of joints 40>60. Locally broken zones
129.2	151	BRKZ	3	Broken zone, locally jointed 40, open fractures
151	163	FL	4	Brecciated clasts. Fault breccia. Fault plane 40
163	185.5	BRKZ	3	Broken zone, locally brecciated clasts. Fault plane 60 at 179.20
185.5	191.5	JZ	2	Moderately jointed, two sets of joints 40>60
191.5	204.5	JZ	2	Moderately jointed
204.5	207	FL	4	Faulted zone, locally clay gouge, fault plane 70, brecciated clasts
207	214.8	JZ	3	Moderately jointed, main joint set 30
214.8	216.7	FZ	4	Fault breccia, brecciated clasts
216.7	235	JZ	3	Two joint sets 40>60
235	250	BRKZ	3	Moderately broken, locally brecciated clasts
250	283	JZ	3	Moderately jointed, two sets of joints 40>60
283	287.5	FZ	2	Blocky, locally clay gouge, brecciated clasts
287.5	313	FZ	3	Brecciated andesite, locally clay gouge
313	337	BRKZ	3	Broken zone, locally clay gouge, brecciated clasts, fault plane 50
337	357	JZ	3	Moderately jointed, blocky
357	359.5	FL	4	Fault breccia, brecciated clasts, clay gouge, fault plane 60
359.5	377.5	JZ	3	Moderately jointed
377.5	378.5	BRKZ	2	brokena t irregular angles.
378.5	381.5	BRKZ	4	strongly broken rock at irregular angles.
381.5	384.3	FZ	3	broken, and partially healed by clay/calcite, Bx.
384.3	387	JZ	3	jointed, @ 30-35 dtca, locally broken. Healed Bx, with Bx'd calcite/clay veins.
387	389.5	BRKZ	4	abunantly broken, with minor red Sp rich gouge locally.
389.5	392.8	BRKZ	3	broken, rock, with intermittent clay/calcite healed Bx'.
392.8	394.2	JZ		stick rock
394.2	395.8	FL	4	abundantly broken, with abundant gray clay gouge (mechanical)
395.8	398.5	BRKZ	3	broken zone, increasing in strength with depth.

Blackwater Project
Drill Logs

Hole ID:	BW0390	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375351.57
Depth (m):	410.5	Date Started:	25/03/2012	Casing Size:	HWT	Northing:	5893200.29
Azimuth:	0	Date Completed:	02/04/2012	Casing (m):	4	Elevation (m):	1566
Dip:	-90	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	125	-89
49	124.6	-88.9
100	144.7	-89
150	108.9	-89.1
200	116.1	-88.8
250	132.3	-88.9
301	9.7	-89
350.5	134.8	-89.5
400	148	-89.1

Blackwater Project
Drill Summary - Lithology

BW0390

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							
4	14.3	AND	autbx		D	GRY	DEP		Largely autobrecciated andesite, clasts are frequently amydaloidal, very occasional with lath shaped feldspar phenocrysts.
14.3	47.8	VC	ms	LAP	MO	GRN	DEP	SH	Frequently rubbly and locally gougy VC. Patchy and quite intense chlorite and sericite alt frequently obscure primary lith. Typically 30-50% clasts, with clasts subangular-angular, and ranging in size from 0.5-4cm, although with occasional bombs up t
47.8	55.3	AND	amg		D	GRY	DEP	SH	Fine porphyritic with pheno's typically 1-2mm wide. Amygdules also smaller than typical for andesite, 0.5-1mm. Locally brecciated. ??large clast.
55.3	69.9	FLPT	lpt	LAP	MO	GRN	FLT	GR10	Pervasively chlorite and sericite alt, frequently rubbly and locally gougy ??FLPT. Could be VC. ~50-60% clasts, clasts are typically 0.505cm wide, subangular-subrounded, very occasionally weakly laminated but usually massive and aphanitic. Lower 3m h
69.9	85.3	AND	volc	LAP	D	GRY	FLT	GR30	Volcaniclastic to fine autobrecciated andesite. Clasts in VC texture intervals are 0.5-6cm wide and angular, ~50-50 clasts-matrix. Autobreccias are much finer, with clasts typially 0.2-0.8cm wide.
85.3	130	VC	fltbx	LAP	MO	GRN		GR10	Intevral is 70% fault rock, heavily bleached, intense sericite and chlorite alt. Highly fragmental fault breccia in gouge matrix. Classification as VC is based on intervals of competent core of polymictic, clastic and highly locally bleached VC, ~60-
130	152.5	VC	ms	LAP	MO	GRY			Polymicitc VC. Majority is matrix supported but short intervals are distinctly clast supported (eg. 139-140.5m). Clasts are angular-subrounded, typically between 1-5cm wide, ~60% mafic, but locally up to 75% felsic. Clasts are typically massive, but
152.5	229.5	FLPT	lpt	LAP	MO	GRN			Majority of interval is clast supported VC rock, clasts are typically ang-subangular lapilli sized clasts with fine internal laminations (~<1mm thick), laminae are often convoluted. Lith 2 FT ?represent large clasts, present as up to 1.5m thick inte
229.5	262	FT	lam	FA	MO	GRN			Very rubbly, locally brecciated and gougy interval. Majority is finely laminated FT, with short intervals of fine breccia consisting of 1-5mm wide fragments. Occasional intervals of ?FLPT, consisting of lapilli size ang-subang clasts, typically highl
262	266.6	FT	fltgge		MO	GRN	FLT	GR10	Cataclasite, fault breccia in highly chloritic gouge matrix. Largest clasts in breccia are 4cm wide, and ++sil massive ?FT.

Blackwater Project
Drill Summary - Lithology

BW0390

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
266.6	289.2	FT	lam	FA	M	GRY	UNKN		Heavily silicified ?FT. Fine (1mm wide) locally convoluted laminations throughout, defined by variations in shade - ?chlorite content, and intermittently highlighted by prefererence of sulphides for certain layers.
289.2	294	FT	fltbx		MO	GRN	FLT		Fault breccia with gouge matrix throughout, clasts a FT, massive-laminated.
294	300	FLPT	cs	LAP	MO	GRN	FLT	GR30	Intensely altered, borderline texture destructive sil and chl. Clastic texture is still evident however, clasts typically 0.5-5cm wide laminated FT, anggular - subangular.
300	321	FLPT	fltbx	LAP	MO	GRN	FLT	GR30	Interval is rubbly throughout, locally competent fault breccia with gouge matrix. Competent pieces are composed of heavily altered FLPT, angular laminated clasts, locally with fine brecciated texture distinct from the fault breccia.
321	410.5	FLPT	lpt	LAP	MO	GRN			Clastic to finely brecciated, clasts range in size from 2mm-5cm (?up to 1m), are typically angular subangular, occasionally subrounded. Frequent intervals of massive-lmainated FT ?large clasts. Texture is heavily masked by intense alteration througho

Blackwater Project
Drill Summary - Alteration

BW0390		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	15	T	CLST	2		0		0		0	HM	FR	4				Fe oxide coating all fractures, only rarely permeating matrix. Amydgules and occasional phenocrysts frequently mildly chloritic.
15	50	S	PATC	3		0	PERV	3	CLST	4	SER	PATC	3	CHL	DEF	4	Heavily altered interval, large majority of interval is moderately silicifed - hard and glassy. Sericite is most pronounced in the frequent felsic clasts giving bleached white aspect, but also present throughout as flaky flecks of white and bleaching. Chlorite is intermitently present as greenish hue in matrix, and occasionally as dark green in isolated clasts, and always present as dark green in gouge.
50	55.3	S	PATC	2		0	PERV	3		0	BIOT	MTRX	3				Pervasive mild-moderate silicificatio. Chlorite as 2-7cm wide patches of eint dark greenish hue. Matrix to autobreccia texture carries pervasive pinkish hue - ?biotite.
55.3	69.9	S	PERV	3		0	PATC	2	CLST	4	CHL	CLST	2				Heavily altered interval, intermittently silicified, large majority of clasts are creamy white ?sericite with varying amounts of darker green ?chlorite creating wispy bands within them. Entire interval has green-grey hue produced by ?pervasive chlorite of varying intensity.
69.9	85.3	S	PATC	1		0	PERV	3		0	BIOT	MTRX	3	CHL	FR	2	Homogenously altered interval. Moderate silicification and feint pinkish biotite pervasive in matrix. Weak chloritization of fratcure planes, and occasional centimetric patchs of chlorite alt in goundmss.
85.3	97.8	S	PERV	4		0	PATC	3	PERV	4							Fault zone with pervasive intense sericite - chlorite bleaching, competent pieces of core are moderately silicifed.
97.8	103	S	DEF	4		0	PATC	1		0	CHL	FR	4				Sericite drops out sharply, gouge is pervasively highly chloritic, and fratcure planes in occasional compotent intervals are also highly chloritic. Only very localised silicification.

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0390		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
103	107.5	S	PATC	3		0	CLST	4	PERV	4							Entire interval is sericite rich, very pale green-creamy white, clasts in fault breccia are pervasively silicified. Chlorite is sporadic, locally intense in some clasts and in patches of goge in upper 2m.
107.5	130	S	DEF	4		0	PATC	2	CLST	1	CHL	FR	3				Intervals is largely gouge, which is pervasively chloritic, chlorite is also pervasive on fractures in competent intervals. Sericite is scarce, ?present as whiteish soft mineral occasionally replacing small clasts in competent intervals.
130	152	S	FR	4		0	PERV	3	CLST	1	CHL	CLST	2				Near pervasive moderate silicification, occasional mafic clasts are unaffected. Chlorite is pervasive and quite intense on fractures, and very intense in sporadic isolated clasts.
152	161	S	CLST	4		0	PERV	4	CLST	4	CHL	FR	3				Pervasively ser - chl - qtz altered. Sericite is very dominant in smaller framents, chlorite on fractures and following laminae in larger clasts. Sil is throughout.
161	223	S	PERV	4		0	PERV	4	CLST	3	CHL	FR	4				Pervasive silica - chlorite altered, mottled medium - dark green hue throughout, frequently outlining laminations in clasts by varying intensity. Sericite alt is most evident in smaller fragments, also following laminae in clasts.
223	266.8	S	PERV	4		0	PATC	3	DEF	3	CHL	FR	4	SER	PATC	3	Pervasively rubbly fault zone with sericite in sandy gouge and pacthy in competent pieces. Chlorite is evident throughout, coating fractures and patchy in competent pieces. Sil is modertae to intense throughout.
266.8	289.2	S	FR	4		0	PERV	5	FR	3	CHL	PATC	3				Pervasive intense sil, chlorite on all fractures and intermittently following laminae in groundmass. Sericite is found on fine hairline fractures, and as occaisonally as fine white flakes in matrix.
289.2	294	S	DEF	4		0		0	DEF	3							Gouge zone, pervasively chloritic and locally quite intense sericite mineralization.

Blackwater Project
Drill Summary - Alteration

BW0390		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
294	320.5	S	PATC	4		0	PERV	4	CLST	3	CHL	FR	3	CHL	DEF	2	Intermittently gougy interval, gouge is pervasivley chloritic. Competent core is intensely silicifed, with patchy chlorite frequently following laminations in clasts. Sericite is frequently present replacing finer clasts.
320.5	365	S	PATC	4		0	PERV	4	PATC	2	SER	VNHL	2	CHL	FR	4	Pervasive intense silicification, core is glassy and ++hard with quite frequent qtz veinlets. Veinlets frequently have 1-3mm thick haloes of white ?sericite, which is also present sporadically throughout. Patchy chlorite throughout gorundmass and following vague laminae in clasts.
365	370	S	PATC	2		0	PERV	4	PERV	1							Interval is noticeably less chloritic and sericitic than surrounding intervals, still strongly silicified - alteration change coincident with eleveated sulphide content.
370	410.5	S	PATC	4		0	PERV	4	PATC	2	CHL	FR	3				Homogenous, strongly silicified with near pervaive chlorite which frequently highlights laminae.

Blackwater Project
Drill Summary - Mineralization

BW0390		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	14.7		0		0	SP	0.5										Occasional very fine specks of po disseminated throughout.
14.7	28.35	VN	0.1	CR	0.1	DI	0.5	Dbs	CR	0.1							Still occasional fine specks of po throughout. Py in very scarce fine veinlets. Sphal and DBS restricted to isolated clasts.
28.35	29	VN	0.5	SP	0.1		0	Dbs		0.5							Largely felsic interval with patchy well developed DBS associated with 1-2mm thick py stringers. Occasional fine specks of sphal.
29	35.5	VN	0.5	SP	0.1	SP	0.1										Occasional fine specks of po and sphal, and occasional chunky (2-4mm wide) py veinlets.
35.5	50	VN	0.1	SP	1	SP	0.1	Dbs	DEN	0.5	Mrc	FP	0.1				Sphal is locally quite intense, in patches of spherical millimetric specks, sometimes associated with trace po. Py in occasional fine veinlets. Marcasite on some fracture planes.DBS is very patchy, and consits of combination of sooty py and sphal.
50	55.3		0	DI	0.1	DI	0.1										Majority of interval is unmineralized, upper 1m has occasional patches of fine disseminated po and sphal.
55.3	67	VN	0.5	BB	1	SP	0.1	Dbs	DEN	0.5							Millimetric blebs of sphal disseminated throughout, frequent fine py stringers, often associated with moderately well developed DBS. Occasional very fine specks of po.
67	70		0	BB	1		0										Sphal as millimetric blebs, decreasing in density downhole.
70	85.7		0	VN	0.1	DI	0.1										Po very sparsely disseminated in very fine specks. Sphal restricted to isolated centimetric vein/bleb at 72.4m and very occasional millimetric blebs over bottom 3m.
85.7	90.5	VN	0.5	DI	0.5	SP	0.5	Sp	BB	0.5							Frequent fine py stringers in fault breccia, often associated with finely disseminated sphal in gouge. Sphal also present associated with po as millimetric blebs in clasts of fault breccia.

Blackwater Project
Drill Summary - Mineralization

BW0390		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
90.5	100	VN	0.5		0		0	Py	DI	0.5							'veined' py in this interval is irregular 1-3mm wide vaguely planar bands of sooty py in fault gouge. Gouge also has fine py sparsely disseminated throughout
100	109.4	DI	0.1	CR	0.1	CR	0.1										Trace fine sooty black ?py disseminated in gouge. Occasional clasts being replaced by fine sphal +/- po specks.
109.4	113.5	VN	0.5	CR	0.1	CR	0.1										Frequent fine (1-3mm) py veinlets. Sphal and po very sporadic, but locally intense replacing clasts.
113.5	130	BB	0.1	CR	0.1	CR	0.1	Py	DI	0.1							Trace very fine py disseminated in gouge, also very occasional 0.2-0.5cm wide blebs of py. Sphal and po as clast replacement, millimetric specks, sphal>po.
130	138	VN	0.1	CR	0.5	CR	0.5	Po	DI	0.1							Scarce py in veinlets, typically 1mm wide, isolated 3mm wide veinlet. Clasts are patchily replaced by millimetric specks of sphal and po, often intimately intergrown.
138	152.5	VN	0.1	CR	1.5	CR	0.5	Po	DI	0.1							Similar style of mineralization to above interval, but more intense, sphal is occasionally totally replacing mafic clasts, and following laminae in felsics.
152.5	157.4	SP	0.1	SP	1	SP	1.5	Po	EU	0.1	Dbs	DEN	0.1				Locally very dense patches of millimetric, occasional euhedral po intergrown with sphal specks. Very scarce py. Trace DBS.
157.4	163	SP	0.5	SP	1	SP	0.5	Dbs	DEN	1							Frequent short (1-3mm) strands of DBS, locally intense and forming longer more continuous dendritic structures. Also Frequent, locally dense millimetric specks of sphal>py and po.
163	164	SP	0.5	SP	2	SP	1.5	Dbs	DEN	0.1							Locally extremely dense clsuters of millimetric mixed sulphides, sphal>po>py>short strands of DBS
164	176.3	DEN	0.5	SP	1.5	SP	2	Dbs	DEN	0.5							Heavily mineralized, DBS is patchy, ranging from 1-20mm long branching strands, with large one associated with visible pyrite. Sphal and po disseminated troughout in 1-2mm wide specks, po occasional cubic - euhedral.

Blackwater Project
Drill Summary - Mineralization

BW0390		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
176.3	188.5	VN	0.1	SP	1	SP	1	Dbs	DEN	0.1							Frequent, locally dense patches of millimetric sphal and po disseminated throughout, often intergrown. Trace py in very fine veinlets, occasionally associated with DBS.
188.5	201	VN	0.1	SP	0.5	SP	0.5	Dbs	DEN	0.1							Identical style of mineralization to above intervals, but significant reduction in density.
201	223.5	VN	0.5	SP	0.5	DI	1	Dbs	DEN	0.5	Po	VN	0.1				DBS present throughout, typically in short (2-5m) strands, but locally forming well developed centimetric dendrites, occasionally visibly connecting with fine py stringers. Po in millimetric specks throughout, and occasionally in discontiunous blebby
223.5	229	DI	0.5	SP	0.1	SP	0.1	Dbs	DEN	0.1							Po and sphal only rarely present as fine specks, py patchy and disseminated as millimetric specks. Occasional short DBS strands.
229	235.4	DI	1	SP	0.1	SP	0.1	Dbs	SP	0.1							Py here is as very fine sooty black stringers and masses in gouge. Trace Po, sphal and DBS disseminated in competent clasts.
235.4	254	VN	0.1	DI	0.5	SP	0.1	Dbs	DEN	0.5							Py in occasional very fine stringers and fracture coatings, also isolated 4mm thick veinlet. Sphal, po and DBS scattered sporadically throughout.
254	263.6	VN	0.1	SP	0.1	DI	0.5	Dbs	DEN	0.5							DBS is Patchy, proably <0.5% on average, often associated with fine py stringers. Po much more common than sphal, both appearing as millimetric specks disseminated throughout.
263.6	266.6	DI	2		0	BB	0.5										Very gougy interval with sooty back sulfide and pyrite disseminated and in poorly defined stringes throughout. Po in occasional large blebs associated with py.
266.6	289.5	SP	0.1	SP	0.1	DI	1	Dbs	DEN	0.5	Cp	VN	0.1				Frequent, locally quite dense millimetric specks of po, occasionally with trace py and sphal, disseminated throughout. DBS is patchy, locally quite dense, typically in 5-15mm long strands. Isolated chalco + po veinlets at 277.1m

Blackwater Project
Drill Summary - Mineralization

BW0390		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
289.5	294.2	BN	1		0	DI	0.1										Occasional 5-10mm wide bands of sooty black sulfide ?py in gouge. Trace po.
294.2	301	BB	0.5		0	SP	0.5	Dbs	DEN	1							Locally very dense, millimetric specks of po and py, and typically short but occasioanlly quite long strands of DBS.
301	314.5	SP	0.5		0	SP	0.1	Dbs	DEN	0.5							Quite evenly distributed short strand DBS and fine specks of po and py.
314.5	322.3	DI	0.5		0	SP	0.1	Dbs	DEN	1	Py	SP	0.1	Apy	VN	0.1	'disseminated' py is sooty black py in gouge zone. Competent core is quite dense with hort strand DBS, trace po and py in fine specks. Isolated qtz veinlets with py and arseno.
322.3	327.8	SP	0.1		0		0	Dbs	DEN	0.5							Trace py in disseminated specks, low concentration of short strnad DBS
327.8	334	DEN	0.5		0	SP	0.1	Dbs	DEN	1	Ga	VN	0.1				Locally quite dense patches of DBS, visible as py in larger strands. Trace po in fine specks, quite numerous fine qtz veinlets with trace galena +/- py.
334	346	SUBH	0.5		0	BB	1	Apy	BB	0.1	Dbs	DEN	0.1				Minerlaizatio nstyle changes, DBS is much less common,, restricted to occasional short strands. Po>py>srseno in 2-5mm wide sub-euhedral blebs disseminated throughout.
346	359.5	EU	0.1		0	BB	0.5	Dbs	DEN	0.1							Frequent 1-4mm wide blebs of po, less frequent (0.1-0.3?%) 2-4mm wide ehedral py cubes, patchy weak DBS
359.5	364.4	SUBH	0.5		0	BB	1	Dbs	DEN	0.1							frequent 3-10mm wode blebs of po, and less frequent sub-euhedral 3-6mm wide py disseminated throughout. DBS is scarce but can be quite well developed, forming weakly branching strands up to 6cm long.
364.4	368.5	BB	2.5		0	BB	1	Dbs	DEN	0.1							Relatively intense mineralization, very dense 5-15cm wide patches of py blebs, frequent isolated 5-8mm wide po blebs, trace DBS, and fine specks of py and po disseminated throughout.

Blackwater Project
Drill Summary - Mineralization

BW0390		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
368.5	400.3	SUBH	0.5		0	BB	0.5	Dbs	DEN	0.1	Py	VN	0.1	Cp	VN	0.1	Quite evenly distributed 3-7mm wide sub-euhedral blebs of py and po, patchy weak DBS locally visible as py, and trace py +/- chalco in fine qtz veinlets.
400.3	410.5	SP	0.1		0	VN	0.1	Dbs	SP	0.1							Sulfide density decreases quite markedly, occasional fine sooty black specks ?py and very scarce short strand DBS. Isolated qtz veinlet with ~30% po.

Blackwater Project
Drill Summary - Structure

BW0390

From (m)	To (m)	Structure	Strength	Comments
4	13.8	JZ	2	frequent fractures at 40degTCA
13.8	15.4	BRKZ	3	Highly fractured.
15.4	25.2	FZ	5	Very rubbly, frequentr short intervals of gougy clay.
25.2	30	JZ	2	Occasional clean fractures. 27.7-28 is rubble.
30	44.2	FZ	3	Rubbly throughout with occasional short (5-15cm) intervals of fault breccia with minor gouge.
44.2	62.5	BRKZ	2	Locally rubbly, otherwise quite heavily fractured.
62.5	68.3	FZ	4	Rubbly throughout, quite frequent sandy gouge, and fault breccias.
68.3	75	BRKZ	3	Heavily fractured incompetent core, locally rubbly.
75	82	JZ	3	Frequently jointed, locally rubbly.
82	83.5	FL	3	Very rubbly, moderately well developed gouge throughout.
83.5	85.6	BRKZ	3	moderately rubbly, no gouge.
85.6	109	FL	5	Fault breccia with well developed gouge matrix throughout - cataclasite.
109	115.9	FZ	4	Very rubbly, with frequent intervals of rubble and goigy fault breccia.
115.9	130	FL	5	Fault rock, breccia with gouge matrix.
130	157	BRKZ	2	Interval is mostly moderately jointed, but frequent 10-50cm intervals are rubble. No gouge or evidence of structure.
157	171	JZ	3	Frequent fractures between 5-35degTCA
171	190	BRKZ	2	Frequent 1m intervals of heavily fractured core, seperated by intervals with regular joints at ~45degTCA
190	221.5	FZ	2	Intermttently rubbly, with generally high density of hairline fractures. Occasional 1-5cm thick intervals of fault breccia with gouge.
221.5	229.5	FZ	3	Very rubbly throughout, weak sandy gouge.
229.5	236.5	FL	4	Rubly throughout with moderate sandy gouge. Upper and lower 60cm is well developed fault breccia with gouge matrix and sulphide stringers at ~40degTCA
236.5	250	FZ	3	Rubbly throughout, what few competent pieces there are are heavily fractured. Intermittent weak sandy gouge.
250	256.3	BRKZ	3	Rubbly throughout, no gouge.
256.3	263.5	FZ	3	Rubbly trhroughout with short intervals of fault breccia in gouge matrix, generally high density of hairline fractures.
263.5	266.6	FL	4	Fault rock, fault breccia in gouge matrix.
266.6	272.5	FZ	1	Moderately rubbly, relatively high hairline fracture density, short interval of poorly developed breccia at 270.5m

Blackwater Project
Drill Summary - Structure

BW0390

From (m)	To (m)	Structure	Strength	Comments
272.5	289.2	JZ	3	Frequent fractures, tyically ~35degTCA
289.2	294	FL	4	Fault breccia and gouge.
294	300	BRKZ	3	Moderately rubbly throughout but no gouge.
300	322	FZ	4	Rubbly throughout with locally very poor recovery, also occasional 10-40cm intervals of breccia and gouge.
322	327	BRKZ	4	Rubbly throughout
327	340.5	JZ	3	Frdequent fractures, locally rubbly
340.5	354	BRKZ	3	Intermittently rubbly, otherwise quite heavily jointed, very occasional weak gouge development. angles typically 40 or 10 degTCA
354	359.5	FZ	4	Very rubbly throughout with patchy weak sandy gouge development
359.5	379.8	JZ	3	Quite frequent joints at 30-50degTCA
379.8	381	FZ	3	Rubbly throughout, lower 25cm is fault beccia and gouge.
381	401	JZ	3	Frequent joints at 25-50degTCA
401	410.5	BRKZ	3	Intermittently rubly and heavily fractured.

Blackwater Project
Drill Logs

Hole ID:	BW0391	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375727.04
Depth (m):	401.5	Date Started:	24/03/2012	Casing Size:	HWT	Northing:	5892674.73
Azimuth:	270	Date Completed:	01/04/2012	Casing (m):	22	Elevation (m):	1615
Dip:	-60	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	270	-62
50	272.4	-62.2
100	271	-63.2
150	270.9	-63.9
253.4	272.2	-64
259	273.3	-64.7
300	272.9	-65.2
351	275.1	-65.2
401.5	272.6	-65.4

Blackwater Project
Drill Summary - Lithology

BW0391

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	8.2	OB							Overburden
8.2	44.5	VC	plm	LAP	M	GRY	DEP	GR10	Massive polyimictic volcanoclastic. Subangular to subrounded clasts. Clast supported. Felsic dominant
44.5	97	AND	volc	LAP	D	GRY	FLT		Andesite with volcanoclastic texture, locally brecciated andesite.
97	105.8	VC	mas	LAP	M	GRY	UNKN		Polymictic volcanoclastic. Mafic clast dominant.Andesitic clasts, secondary quartz
105.8	157.1	VC	plm	LAP	M	GRY	DEP		Mafic clast dominant. Polymictic volcanoclastic unit. Majority of clasts are porphirityc andesite
157.1	166	AND	volc	LAP	D	GRY	UNKN	GR10	Andesite with volcanoclastic texture.Secondary quartz.
166	175	AND	volc	LAP	M	GRY			Andesite with volcanoclastic texture. Locally volcanoclastic unit with mafic dominant clast at 172.5-175
175	183.6	AND	volc	LAP	D	GRY	DEP	GR10	Massive andesite with volcanoclastic texture. Locally brecciated
183.6	238	AND	mon	LAP	M	GRY	UNKN		Massive volcanoclastic unit. 90% of clasts are mafic. Rounded felsic clasts sporadically occurring
238	292	AND	mon	LAP	D	GRY	DEP	GR10	Massive andesite with volcanoclastic texture
292	293	AND	mas	LAP	D	GRY	FLT	SH	Massive andesite with volcanoclastic texture
293	296	AND	fltbx	LAP	D	GRY	FLT	SH	Faulted Andesite dominantly fault gouge and breccia
296	299.3	AND	mas	LAP	D	GRY	FLT	SH	Massive andesite with volcanoclastic texture
299.3	301.5	AND	flwbx	LAP	D	GRY	DEP	SH	Faulted Andesite dominantly fault gouge and breccia
301.5	308	AND	mas	LAP	D	GRY	DEP	SH	Massive andesite with volcanoclastic texture
308	317	AND	amg	LAP	D	GRY	DEP	GR10	Amygdoloidal andesite with weak plag fragments
317	326.1	AND	mas	LAP	D	GRY	DEP	GR10	Massive andesite with volcanoclastic texture
326.1	341.5	AND	mcbx	LAP	D	GRY	FLT	SH	Strongly fractured AND with VC texture hosting clay gouge and weak calcite on fracutre surfaces
341.5	347.5	AND	fltbx	LAP	M	GRY	DEP	SH	Intense clay gouge formation and breccia within fault zone
347.5	383	AND	mas		M	GRN	DEP	GR10	Bleached altered massive AND following intense faulting; moderately fractured and weakly mineralized.
383	401.5	VC	plm	LAP	M	GRY			Volcaniclastic Andesite with differentially altered clast of AND and Crystal Rich AND; EOH 401.5m

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Blackwater Project
Drill Summary - Alteration

BW0391		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
8.2	40	O		0		0		0		0	LIM		3				Limonite alt found in fractures as well as in matrix.
40	68.5	T		0	PATC	2		0	PERV	2	LIM		1				Limonite alt found in fractures. Pervasive sericite alt found in mafic clasts. Patchy clay alt found as halos
68.5	97	T	FR	1	PATC	1	PATC	2	MTRX	1	LIM	FR	2	BIOT	MTRX	2	Biotite alt matrix dominant. patchy silica found as halos as well as matrix dominant
97	108	S	CLST	2		0	PATC	1	PERV	3							Pervasive Sericite, chlorite alt in mafic clasts.
108	157	S	FR	2	PATC	1	PATC	1	PERV	3	BIOT	MTRX	2				Biotite alt matrix dominant. it increases intensity down hole. Patchy silica.
157	166.7	S	FR	2		0	PATC	2	MTRX	2	BIOT	MTRX	3				Biotite alt found in matrix. Chlorite alt found in fractures
166.7	178	S	FR	2	PATC	2	PATC	2	PATC	2	BIOT	MTRX	2				Patchy clay alt. Chlorite alt found in fractures. Patchy silica
178	215.5	S	FR	3	PATC	2	PATC	2	PATC	2	BIOT	MTRX	2				Pervasive biotite found in matrix. Patchy silica
215.5	223	S	FR	2	PATC	2	PERV	2	PATC	2	BIOT	MTRX	2				Biotite alt found in matrix. Patchy clay alteration. Silica overprinting biotite and clay alt
223	238	S	FR	3		0	PERV	2	PATC	1	BIOT	MTRX	2				Biotite alt matrix dominant, chlorite alt found in fractures
238	250.3	S	FR	2		0	PATC	1	FR	1	BIOT	MTRX	1				Biotite alt found in matrix, patchy silica overprinting biotite alt
250.3	266.9	S	FR	2	PERV	4	PERV	2	PERV	2	BIOT	MTRX	3				Biotite alt found in matrix. Pervasive clay alt overprinting biotite alt. Weak silica alt
266.9	293	S	FR	2		0	PATC	1	PATC	2	BIOT	MTRX	2				Sericite-chlorite alt found in fractures, biotite alt found in matrix
293	296	S		0	MTRX	4	CLST	1		0	BIOT	CLST	2				Intense gouge and clay alteration
296	299.3	S	FC	1	FC	1	PATC	1		0	BIOT	PERV	3				Sericite-chlorite alt found in fractures, biotite alt found in matrix
299.3	301.5	S	FC	1	MTRX	4	CLST	1		0	BIOT	CLST	2				Intense gouge and clay alteration
301.5	308	S	FC	2	FC	1	PATC	1	CLST	1	BIOT	PERV	3				Sericite-chlorite alt found in fractures, biotite alt found in matrix
308	317	S	FC	2	FC	1	PATC	2	CLST	2	BIOT	PERV	2	CLIN	FC	1	Patchy sericite and chlorite alteration with chlorite clinozoisite on fractures
317	326.1	S	PATC	2		0	PERV	2	PATC	2	BIOT	PERV	2				Patchy sericite and chlorite alteration with chlorite clinozoisite on fractures

Blackwater Project
Drill Summary - Alteration

BW0391		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
326.1	341.5	S	FR	1	FC	3	PERV	2	PATC	1	BIOT	PERV	2	CAL	FC	1	Fractured AND with caly and weak calcite locally
341.5	347	S		0	PERV	5	CLST	1		0	BIOT	CLST	1				AND fault zone with entrained clasts of weakly biotite altered AND
347	383	S	PERV	2		0	PERV	3	PERV	1							Bleached chlorite silica altered AND; notably increased sulphide
383	401.5	S	FC	1		0	PERV	1	CLST	1	BIOT	CLST	3				

Blackwater Project
Drill Summary - Mineralization

BW0391		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
8.2	40		0		0	SP	0.1	Goe	FP	0.5							Disseminated Py, leaching forming halos.
40	59.41	FP	0.5	CR	0.5	CR	0.5										Py found in fractures, Po and Sph replacing mafic clasts. Disseminated Po en matrix.
59.41	78.05	FP	0.1	CR	0.5	CR	0.5										Po and Sph replacing mafic clasts. Py found in fractures.
78.05	97	FP	0.5	CR	0.5	CR	0.5	Ga	FP	0.1							Po and Sph replacing clasts. py in fractures. galena found in fractures
97	108	FP	0.5	CR	0.5	CR	0.5	Po	DI	0.1							Disseminated Po in clay gouge. Po replacing mafic clasts.
108	115	DI	0.5	DI	0.5	CR	0.5										Disseminated Py found in clay gouge.
115	131.5	FP	0.1	DI	0.5	CR	0.5	Cp	FP	0.1							Fine Py found in fractures. Disseminated Po and Sph in matrix. Sph and Po replacing mafic clasts. Po and Sph hairlines
131.5	148	FP	0.5	DI	0.5	CR	1	Ga	FP	0.1							Po replacing mafic clasts. Po hairlines. Euhedral galena found in fractures.
148	157	FP	0.5	DI	0.5	DI	0.5										Po and Sph replacing clasts. Po blebs. Py found in fractures. Disseminated Sph in matrix
157	166.7	FP	0.1	DI	0.5	CR	0.5										Disseminated Shp in fine mafic matrix. Po replacing clasts
166.7	178	FP	0.1	DI	0.1	CR	0.5										Disseminated Po and Sph in fine mafic matrix. Po hairlines
178	192	FP	0.1	DI	0.1	DI	0.1										Disseminated Po and Sph in fine mafic matrix
192	205	FP	0.5	DI	0.1	CR	0.5	Po	FP	0.1							Po replacing clasts. Disseminated Po in fractures.
205	219.9	FP	0.5	CR	1	CR	0.5										Po and Sph replacing clasts.Disseminated Po and Sph in matrix
219.9	238	FP	0.5	DI	1	CR	0.5										Disseminated Po and sph. Sph and Po replacing clasts
238	251	FP	0.5	DI	0.5	DI	0.5										Disseminated Po and Sph, Py in fractures
251	269.5	FP	0.5	DI	0.5	DI	1										Disseminated Po, locally blebby po, Py found in fractures
269.5	274.9	FP	0.1	DI	0.1	DI	0.5										Disseminated Po and Sph in mafic matrix
274.9	293	FP	0.1	DI	0.1	DI	0.1										Disseminated Po-Sph, Py fractures

Blackwater Project
Drill Summary - Mineralization

BW0391		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
293	296		0		0		0										Fault zone
296	299.3	FP	0.1		0	BB	0.5										
299.3	301.5		0		0		0										Fault zone
301.5	328	FP	0.5		0	BB	1										Mineralization replacing amygdoloids
328	341.5		0		0	BB	0.5										
341.5	347.5		0		0		0										Fault zone no mineralization
347.5	355	FP	0.5	FP	1	BB	1.5										
355	383	FP	0.5	BB	0.1	BB	1.5										
383	401.5		0		0	BB	1										

Blackwater Project
Drill Summary - Structure

BW0391

From (m)	To (m)	Structure	Strength	Comments
8.2	40.5	JZ	3	Moderately jointed, two joint sets 40>60
40.5	43	FL	3	Clay gouge. Brecciated clasts
43	66	JZ	2	Moderately jointed. two joint sets 30>50
66	80.5	FZ	3	Brecciated clasts. Clay gouge. Fault breccia
80.5	97	JZ	2	Moderately broken, locally broken zones.
97	98.5	FL	3	Faulted zone, clay gouge
98.5	108	FZ	2	Moderately broken, locally fault breccia,
108	115	FZ	3	Clay gouge, Brecciated clasts.
115	145.3	JZ	2	Moderately jointed, two joint sets 40>70
145.3	154.6	BRKZ	2	Broken zone, locally clay gouge
154.6	178	FZ	3	Fault planes 30, locally competent core. clay gouge, brecciated clasts
178	209	JZ	2	Moderately jointed
209	214	BRKZ	3	Broken zone, locally clay gouge
214	219.8	JZ	2	Moderately jointed
219.8	232.8	FZ	3	Fault plane 50 at 219.80, broken zone, clay gouge, brecciated clasts
232.8	238	JZ	3	40>60 Moderately jointed
238	263.5	FZ	4	Faulted zone, clay gouge, locally brecciated clasts, competent fault breccia
263.5	275.5	BRKZ	3	Broken zone, locally clay gouge
275.5	293	FZ	4	strongly jointed, locally clay gouge
293	296	FL	5	Intense gouge
296	299.3	BRKZ	4	Shattered rock between faults
299.3	301.5	FL	5	Intense Gouge
301.5	326.1	JZ	4	Strongly fractured andesite with chlorite and calc sulphate on fractures
326.1	341.5	BRKZ	4	Strongly fractured zone with clay gouge forming on fractures
341.5	347.5	FL	5	Intense gouge zones punctuated by bleached AND
347.5	361	BRKZ	3	local gouge zones within intensely fractured silica Breccia
361	375	JZ	4	
375	375.6	FL	5	Intense gouge

Blackwater Project
Drill Summary - Structure

BW0391

From (m)	To (m)	Structure	Strength	Comments
375.6	383	JZ	4	Strongly fractured AND
383	401.5	JZ	3	

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Blackwater Project
Drill Logs

Hole ID:	BW0392	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375450.73
Depth (m):	398.37	Date Started:	26/03/2012	Casing Size:	HWT	Northing:	5892995.82
Azimuth:	0	Date Completed:	02/04/2012	Casing (m):	8.8	Elevation (m):	1600
Dip:	-90	Logged By:	BRe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46	41.8	-89.9
91.8	12.1	-89.9
137.5	123.1	-89.5
183	127.3	-89.6
229	154.7	-89.2
274.6	126.5	-89.8
320	186.8	-88.9
366	156.1	-89.9

Blackwater Project
Drill Summary - Lithology

BW0392

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7.08	OB							
7.08	15.55	VC	volc	LAP	D	GRY	FLT	SH	Large clasts in amatrix of finer clasts and ash, possible fluid breccia of matrix.
15.55	28.3	FLPT	volc	LAP	L	WH	DEP	GR30	large clasts (1-3cm) in a matrix of ash and fine clast (<3mm), possible fluid breccia.
28.3	58.1	VC	volc	BLOCK	D	GRY	DEP	GR30+	variable felsic and mafic, small intervals <20cm of 90% felsic clasts with larger intervals of mafic rich clasts. some possible fluid breccia in matrix.
58.1	65.1	FLPT	volc	BLOCK	L	GRN	ALTFR	GR30+	local ash to crystal tuff intervals? large clasts? >30cm, clast supported in lapilli sections, common clasts with weak chlorite alteration rims
65.1	72	VC	volc	BLOCK	MO	BR	FLT	GR30	mafic clasts are typically smaller then felsic clasts, clasts my be altered to give the appearence of being multiple lithologies.
72	85.8	FLPT	volc	LAP	M	GRN	ALTFR	GR30+	50% clasts, clasts are varible chlorite or silica altered.
85.8	108.5	VC	volc	BLOCK	M	GRN	ALTFR	GR30+	Composition is variable from 25-75% mafic clasts, over all trend of decreasing mafic clasts after the first few metres, but is cyclic.
108.5	147.4	FLPT	volc	BLOCK	L	GRN	DEP	GR30+	dominately felsic tuff with 20% clasts, moderate secondary brecciation, secondary breccia has qtz matrix and 40% clasts, ,1cm.
147.4	189.4	FLPT	bx	BLOCK	L	GRN	DEP	GR30+	laminations are no longer present, locally clast supported, rare blocks, dominate clast size < 1cm.
189.4	211.7	FLPT	bx	LAP	L	GRN	FLT	GR30+	Laminated interval with secondary breccia with qtz matrix.
211.7	275	FLPT	bx	LAP	L	GRN			FLPT and secondary breccia, secondary breccia has silica rich matrix.
275	398.4	FLPT	bx	LAP	L	GRN			lamintaed over 75% of unit, lamination s are locally convoluted.

Blackwater Project
Drill Summary - Alteration

BW0392		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	7.08	O		0		0		0		0							
7.08	15.65	T	PERV	1	FR	3	CLST	4		0	LIM	FR	4	HM	FR	4	LImonite and hemitite on fractures and joints. some clasts are strongly alter to replaced by silica
15.65	28.3	T		0		0	MTRX	5		0	SIL	CLST	4	LIM	FC	3	Intense silca alteration through out the matrix stronger where clast size is less then 0.5mm
28.3	58.1	T	CLST	3	REP	5	PERV	2		0	BIOT	PERV	3	LIM	FR	2	Rare clasts are clay replace with intense chlorite and spalerite halos. Rare clasts are silica replaced
58.1	65.1	T	PERV	1		0	PERV	4		0	BIOT	PATC	4	LIM	FR	2	Pervasive chlorite alteration is weak with some clast moderatly altered by chlorite, limonite on fracture surfaces. rare patches of strong biotite alteration being overprinted by silica???
65.1	71.9	T	PATC	2		0	PERV	4		0	BIOT	PATC	3	LIM	FR	1	Patchy (30cm intervals) biotite alteration being replaced by silica alteration.
71.9	85.8	T	PATC	3		0	PERV	3		0	CHL	CLST	3	LIM	FR	2	Clasts of Ft are preferentiall altered by chlorite, some clasts are moderately replaced by chlorite.
85.8	108.5	T	CLST	4	REP	3	MTRX	3	CLST	0	LIM	FR	1	BIOT	PERV	3	rare clasts are moderately replaced by chlorite, felsic clasts are preferentially alter by Chlorite over biotite.
108.5	131.6	S	FR	3		0	PERV	3		0	CHL	PATC	2				Patchy chlorite alteration somewhat following laminations
131.6	138.6	S	DEF	4		0	PERV	2		0	CHL	FC	3				moderate chlorite alteration of faul gouge and along and around fractures. silica martix in secondary breccia
138.6	189.4	S	PERV	1	FR	1	PERV	3		0	CHL	REP	3	SIL	REP	3	30% of clasts replaced by chlorite or silica. fewer chlorite replace clast toward end of interval, more silica replaced. silica martix in secondary breccia
189.4	211.7	S	PERV	1	FR	1	PERV	3		0	CHL	PATC	3	SIL	REP	3	similar to above with out chloritized clasts.
211.7	275	S	PERV	1		0	PERV	3	PERV	1	CHL	FC	2	SIL	REP	3	pervasive sericte along laminations, Chlorite on fracture and fracture halos, silica replaceing clasts.
275	289.5	S	FR	2		0	PERV	2	PERV	2	CHL	FC	2				Chlorite around fracture alters 1% of the core, Sericite is along laminations.
289.5	320	S	FR	1	FR	2	PERV	2	PERV	3	CLY	MTRX	1				Sericite along fracture and in courser grained? more permiable? patches. Chlorite and sericte on fracture mutually inversely proportional.

Blackwater Project
Drill Summary - Alteration

BW0392		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
320	339	S	FR	2	FR	2	PERV	2	PERV	3	CHL	PERV	1				Chlorite and sericte on fracture mutually inversely proportional.
339	345.2	S		0		0	PERV	4	PERV	3							Pervasive strong silica alteration, texture non-destructive.
345.2	358	S	PERV	0	FR	1	PERV	3	PERV	2	CHL	FR	2				Chlorite and sericte on fracture mutually inversely proportional.
358	373	S	FR	1	REP	1	PERV	3	PERV	3							clay replaceing crystals?
373	398.4	S	FR	2	FR	2	PERV	3	PERV	3	CLY	REP	2				clay replaceing crystals and along fractures.

Blackwater Project
Drill Summary - Mineralization

BW0392		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	7.08		0		0		0										Overburden
7.08	15.65	DI	0.1	CR	1		0										Sp forms weak bands in clasts, some in matrix as halos around clasts.
15.65	28.1	DI	0.1	DEN	3		0	Sp	DI	1							Black dendritic SP and disseminated red Sp, red Sp locally forms bands replacing clasts, trace Py may have been higher before oxidation.
28.1	45		0	CR	2	CR	2										Po and Sp is intermingled as clast replacement Sp also forms clast halos.
45	58.1		0	CR	2	CR	2										Po and Sp is intermingled as clast replacement Sp also forms clast halos.
58.1	65.1		0	DI	1	DI	0.5										Sp and Po aggregates in local patches of 3-5% sulphide.
65.1	72		0	DI	2		1										Aggregates of Sp and Po preferentially disseminated in felsic clasts.
72	85.8	SP	0.5	SP	3	SP	1	Cp	SP	0.1							Cpy is inter grown with Py, sulphide occur as Aggregates of grains.
85.8	108.5	SP	0.5	SP	3	CR	2										Po and some Sp replaceing clasts, Sp and Py in matrix.
108.5	118		0	SP	3	CR	2										Po is along foliation and concentrated in clasts, Sp is along foliation stronger in matix
118	130.3		0	SP	1	SP	2										sulphides are along foliation.
130.3	138.6	VN	3	SP	1		0										Sp is in disseminated specks, and Py in veins. mineralization style changes with fault.
138.6	147.4	DI	0.1	VN	1		0	Apy	DI	0.1	Dbs	DEN	2				Sp in 5mm veinswich are off set.
147.4	156.5	CR	1	CR	2	CR	0.5	Dbs	DEN	3							Py and Po in voids of clast or replalceing clast. Dbs on clast/gran/crystal boundries?
156.5	159.1	EU	1	CR	2	CR	0.5	Dbs		2							Similar to above except, Py is euhedral very bright.
159.1	180.4	SP	1	CR	1	CR	1	Dbs		2							top of interval Py>Po bottom of interval Po>Py, similar to above.
180.4	182.4	DI	4	DI	0.5		0										most Py is sooty sulphide. no Po in fault area.
182.4	189.4	DI	0.5	DI	0.1	SP	1.5	Dbs	DEN	1							Dbs is tendrils around Po and rare Po + Sp cores.

Blackwater Project
Drill Summary - Mineralization

BW0392		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
189.4	196	DI	3	SP	0.5	DI	0.1	Dbs		1.5							Minimal Po in fault zone, Py is in blades, Sp is locally 5% over 10cm, absent other areas.
196	211.7	DI	3		0	DI	0.5	Dbs	DEN	1	Py	VN	1				Some po in aggregates with Py, mm scal py veins
211.7	224.5	DI	0.5		0	DI	3	Dbs	DEN	1							Aggregates of Po and Py.
224.5	233.5	EU	1		0	DI	2	Dbs		1.5							Shiney euhedral Py
233.5	248.5	DI	1		0	DI	2	Dbs	DEN	1.5							tarnished Py and Po in agggrageates, anheral py.
248.5	249.8	DI	1		0	DI	2	Dbs	DEN	1.5	Cp		1				
249.8	254.6	EU	1	VN	0.1	DI	2	Dbs		1.5	Cp	DI	0.1	Grnt	CR	0.5	Euhedral Py vns up to 5mm of Py+Po+Sp.
254.6	264	DI	1	VN	0.1	DI	2	Dbs	DEN	1.5	Cp		0.1				1mm veins of Po+Py
264	272	DI	2	VN	0.1	DI	0.5	Dbs	DEN	1.5							
272	277	GmR	3		0	SP	0.1	Py	EU	1	Dbs	FC	0.5	Py	CR	0.1	Euhedral Py appears later then vfg aggregate is matrix, local rare possible clast replacement
277	277.6	GmR	5		0		0										Sooty Py in gouge of fault.
277.6	285.3	SP	2		0	SP	0.5	Dbs	FC	2	Py	VN	0.1	Cp	SP	0.1	Dbs is often in short blades and specks, with fg py intergrown. Py in veins with QTZ.
285.3	286.7		0		0		0										dead fault Gouge
286.7	298.3	DI	2		0	SP	0.1	Dbs	FP	0.5	Py	VN	0.5	Cp	DI	0.1	vfg cpy and py in aggregates.
298.3	306.4	DI	1		0		0	Cp	VN	0.1	Apy	VN	0.1				Cpy with trace Apy in qtz veins. Cpy is actually 0.2 - 0.3 %
306.4	320.3	DI	1.5		0		0	Dbs	FP	1.5							Cpy out.
320.3	331.7	DI	1	DI	0.1		0	Dbs	FP	0.5	Cp		0.1	Sp		0.1	Cpy > Sp. vfg cpy and Sp in aggregates with Py
331.7	333	DI	1	DI	0.1		0	Dbs	FP	0.1							Cpy out, Sp remains, dbs decreasing.
333	344.7	DI	1		0		0										All sulphides but Py disspear,
344.7	358	DI	0.5	DI	0.1	DI	1	Cp	DI	0.1	Apy	DI	0.1				
358	366	DI	0.5	DI	0.1	DI	0.5	Cp	DI	0.1	Dbs	FP	1				Sulphides occur as aggregates with Dbs on fracture. Sooty sulphide mineralization in fault 5 cm thick @ 363.1m.
366	375.5		0		0	DI	1	Dbs	FP	1							

Blackwater Project

Drill Summary - Mineralization

BW0392		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
375.5	398.4	DI	1		0	DI	0.1	Py	VN	0.1	Dbs	FP	0.1				Locally Py is 10% in fault gouge. mineralized fault gouge @ 381.8m, 383.6m, 390.0m.

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Drill Summary - Structure

BW0392

From (m)	To (m)	Structure	Strength	Comments
7.08	15.65	JZ	4	joints sets at 45 and 30.
15.65	15.85	FL	5	10cm of clay gouge and 10cm of cm scale clasts.
15.85	71.5	JZ	3	joints sets at 45 and 30.
71.5	78.7	BRKZ	3	
78.7	96.8	JZ	4	joint set @ 50 and 20 deg to CA.
96.8	97.6	FL	4	2-3 faults 5-20cm thick all parallel.
97.6	126.4	JZ	2	Joints also at 20 deg to CA.
126.4	131.6	BRKZ	3	
131.6	138.6	FZ	5	0-5 deg to CA. 5 - 10 cm thick.
138.6	143	JZ	1	
143	146	BRKZ	3	
146	176.4	JZ	2	joints @ 30.
176.4	176.5	FL	4	
176.5	180.4	JZ	2	joints @ 30.
180.4	184.4	FZ	5	3 faults 10 to 30cm thick. all parallel.
184.4	189.3	JZ	2	
189.3	195	FZ	5	40 cm of fault gouge and numerous smaller fault of various orientations.
195	211.7	JZ	3	several minor faults <1cm of gouge.
211.7	263.6	JZ	2	local broken croe around near vertical fracture.
263.6	268	FZ	2	several short intervals os fault gouge.
268	277.3	JZ	5	joints at 50.
277.3	277.5	FL	5	sooty sulphides in 5 cm of gouge
277.5	285.2	JZ	2	joints 2 20 deg to CA
285.2	287.7	FL	5	70 cm of gouge in two intervals
287.7	297.5	JZ	2	
297.5	303.5	BRKZ	4	
303.5	310	JZ	2	
310	316.8	BRKZ	3	minor fault gouge

Blackwater Project
Drill Summary - Structure

BW0392

From (m)	To (m)	Structure	Strength	Comments
316.8	347.4	JZ	2	joints @ 20 and 5 deg to CA
347.4	358	BRKZ	2	joints @ 30 and 10
358	363.1	JZ	3	joints at 20
363.1	363.2	FL	4	minerized with sooty sulphide.
363.2	375.5	JZ	3	joints @ 20
375.5	389.8	FZ	4	Several fault gouges, up to 10% sooty sulphide in gouge. mineralized gouge @ 381.8m and 383.7m
389.8	390.1	FL	5	mineralized fault gouge. grain size < 1cm
390.1	398.4	FZ	3	

Blackwater Project
Drill Logs

Hole ID:	BW0393	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375001.06
Depth (m):	398.5	Date Started:	29/03/2012	Casing Size:	HWT	Northing:	5893299.17
Azimuth:	0	Date Completed:	05/04/2012	Casing (m):	4.5	Elevation (m):	1544
Dip:	-90	Logged By:	NLe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	46.7	-89.6
160	349.6	-89.5
202	332.8	-89.5
250	6.8	-89.4
304	1.7	-89.8
350	204.8	-89.7
382	2.9	-89.7

Blackwater Project
Drill Summary - Lithology

BW0393

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.5	OB							
4.5	65.5	FLPT	lptbx	LAP	L	GRY			felsic lapilli tuff, some clasts with laminations; poorly sorted, brecciated
65.5	115.7	FLPT	lptbx	LAP	M	GRY			felsic lapilli tuff-brecciated; pockets of microbrecciation, local laminated sections
115.7	201	FLPT	mcbx	LAP	M	GRY			same as above, a few sections that are obscured by alteration, relict banding and relict clastic texture in these obscured intervals; also locally laminated sections up to 20 cm
201	236	FT	lam		M	GRN	FLT	GR30+	laminated felsic tuff with local tuffaceous textures
236	289	FLPT	lpt	LAP	M	GRN			felsic lapilli tuff, some chloritized clasts, some sericitized clasts; goes from ft to flpt over a fault zone
289	306.6	FT	lam		M	GRN			laminated felsic tuff with blebs of ratty garnet throughout,
306.6	398.5	FLPT	lpt	LAP	M	GRN			felsic lapilli tuff, some chloritized clasts, local laminated sections up to 10-20cm ; some darker grey silicified clasts as well

Blackwater Project
Drill Summary - Alteration

BW0393		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4.5	47.5	T	PATC	1	CLST	2	PERV	4	PERV	3	CLY	PERV	1	HM	FC	3	trasition zone: pervasive, silica and sericite; clay +sericite alteration in clasts, moderate fracture controlled oxidation (hematite and limonite)
47.5	106.7	T	CLST	2	CLST	2	PERV	4	PERV	3	CLY	PERV	1	HM	FC	2	same as above but weak chlorite in some clasts as well; oxidation decreased a little
106.7	180	S	PERV	2	FR	1	PERV	4	PERV	3	CLY	PERV	1	GRNT		1	slightly stronger chlorite, pervasive silica and sericite, some clay along fractures, ratty blebby garnet throughout
180	200	S	PERV	2	FR	1	PERV	4	PERV	3	SER	VNHL	1	GRNT		1	pervasive sericite, silica, and chlorite, some fracture controlled sericite and weak clay along fractures
200	242	S	PERV	3	FR	1	PERV	4	PERV	2	SER	VNHL	1			1	same as above, weaker sericite and stronger chlorite; moderate to strong mechanical clay
242	289	S	CLST	2	FR	2	PERV	4	PERV	2	SER	VNHL	1	GRNT		1	pervasive silica>sericite>chlorite; chloritized clasts, some fracture controlled sericite; garnets throughout - weaker than previous intervals
289	308.5	S	PATC	3	FR	1	PERV	4	PERV	2	SER	VN	1	GRNT		1	
308.5	326.2	S	PATC	2	FR	1	PERV	4	PERV	3	SER	VNHL	1	GRNT		1	pervasive silica and sericite, patchy chlorite (some within laminations); chlorite also within clasts and moderate along fractures
326.2	336.2	S	PATC	2	FR	1	PERV	4	PERV	3	CHL	FR	3	SER	VNHL	1	increase in chlorite and mechanical clay through fault/broken zone
336.3	398.5	S	PATC	2	FR	1	PERV	4	PERV	2	CHL	FR	2	CHL	CLST	1	pervasive silica and sericite, patchy chlorite; some clasts chlorite altered and some silica altered

Blackwater Project
Drill Summary - Mineralization

BW0393		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4.5	30.2	SP	0.1		0		0	Dbs	DI	0.5	Grnt	BB	1				trace py as fine brassy disseminations; ratty blebs of garnet with some disseminated sulphide, disseminate black sooty sulphides
30.2	57.1	DI	0.5	DI	0.5	DI	0.1	Dbs	DI	1.5	Grnt	BB	2				black sooty sulphide (DBS) both disseminated and dendritic; disseminated sph and py throughout,
57.1	72.1	DI	0.1	DI	0.1		0	Dbs	DI	0.5	Grnt		0.5				decrease in sulphides but same as previous intervals
72.1	83.1	CR	0.5	DI	0.1	DI	0.1	Dbs	DI	0.5	Grnt	BB	3				increase in ratty garnet, in (up to) cobble sized clusters
83.1	88.6	DI	0.5	DI	0.5		0	Dbs	DI	0.8	Grnt		1				disseminated sph and py, sooty black sulphide disseminated and in stringers; ratty garnet blebs
88.6	105.8	DI	0.5	DI	1		0	Dbs	DI	1	Grnt	BB	1				slight increase in sulphides; py and po sometime found replacing garnet blebs
105.8	147.8	DI	1	DI	1.3	DI	0.5	Dbs		1.5	Grnt	BB	2				disseminated py, sph, and po; stringers of dbs and black sooty sulphide disseminated throughout; sulphides are almost in clusters throughout interval
147.8	158	DI	0.8	DI	1	CR	0.5	Dbs		1	Grnt	BB	1.5				po and py sometimes found within garnet blebs, same as above
158	176.5	DI	0.5	DI	1	DI	0.3	Dbs		1.5	Grnt	BB	1.5				disseminated sph>>py and po, black sooty sulphide stringers and dissemianted (DBS); ratty blebs of garnet some with specs py and po
176.5	206	DI	0.5	DI	1.3	DI	0.3	Dbs		1.5	Grnt	BB	2	Po	CR	0.3	same as above, more garnet throughout interval
206	222.3	DI	0.8	DI	2	CR	0.5	Dbs		1.5	Grnt	BB	1				increase in disseminated sph, some mixed sulphide blebs with sph+po+py, po also found within ratty garnet blebs
222.3	237.8	DI	0.5	DI	1.5	CR	0.5	Dbs		1	Grnt	BB	1.5				decrease in overall sulphides, same sulphide styles as previous interval
237.8	264	DI	0.5	DI	0.5	DI	1.5	Dbs		0.5	Grnt	BB	0.5				
264	281	DI	0.5	DI	0.8	BB	2	Dbs		1	Grnt	BB	1				little blebs of po disseminated throughout; disseminated sph and py; black sooty sulphides some dendritic and some disseminated throughout, some sooty sulphide rims around po blebs as well

Blackwater Project
Drill Summary - Mineralization

BW0393		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
281	305.5	DI	0.5	DI	0.5	DI	1.5	Dbs	DEN	0.5	Grnt	BB	1.3				slight decreaase in sulphides, dbs in little dendritic stringers; increase in garnet blebs
305.5	315	DI	0.1	DI	0.1	DI	0.5	Dbs	DEN	0.1	Grnt	BB	0.8				same as above, significant decrease in sulphides
315	331	BB	0.5	BB	0.5	BB	1.5	Dbs		0.1	Grnt	BB	0.5				sulphides in little blebs; some mixed blebs with po and py with a sooty black sulphide rim; decrease in ratty garnet blebs,
331	339	DI	0.1	DI	0.1	DI	1	Dbs		0.1	Grnt	BB	1				low sulphides, just little specs here and there...dominantly just po disseminated throughout, some py and po still in garnet blebs
339	343.7	BB	1.5	DI	0.5		1	Dbs		0.5	Grnt	BB	1				py >po, some sooty as well; po and sph still disseminated throughoutl; clusters of py and sooty black sulphide with some po
343.7	368	DI	1	DI	0.1	DI	1.5	Dbs	DEN	0.5	Grnt		1.5	Apy	DI	0.1	specs of apy throughout, cpy within some garnet blebs with py and po; dbs found within some silicified clasts
368	398.5	DI	1	DI	0.5	DI	0.5	Dbs	DEN	0.1	Grnt	BB	1				Aggregates of pyrite and sphalerite in small clots, fine grained garnet, trace garnet and minot pyrrhotite associated with pyrite

Blackwater Project
Drill Summary - Structure

BW0393

From (m)	To (m)	Structure	Strength	Comments
4.5	112.6	JZ	3	joints range from 30-55 dtca, a few that are steeper and closer to 80 dtca
112.6	123	JZ	4	same as above, slightly stronger jointed (almost weakly borken locally)
123	125.3	FZ	3	moderate fault zone
125.3	149	JZ	3	weak to moderate joint zone; joints range from 30-55 dtca, local weak broken zones
149	154.5	FZ	3	fault zone with clay+chlorite gge throughout; annealed in sections; some more broken pieces
154.5	168.5	JZ	2	joints range from 30-45
168.5	170.3	BRKZ	4	moderate to strong broken zone with gge throughout
170.3	191.5	JZ	3	joint set with fractures ranging from 30-50dtca, a few local broken intervals
191.5	227.4	BRKZ	3	moderate to strong broken zone with local fault gge on fractures
227.4	243.9	FZ	4	fault zone with clay+chlorite gge along fractures
243.9	261.9	FL	2	weak fault zone with gge on some fractures, some highly fracture sections and some competent sections
261.9	277.2	JZ	3	joints set, fractures range from 30-55 dtca; two local broken zones up to 1 m; one at 265m and one at 275m
277.2	287.7	JZ	2	joints 30-50 dtca, competent core
287.7	305.5	JZ	3	joint set with local weak broken sections up to 30cm
305.5	308.5	FZ	2	weakly faulted interval, gge along fractures
308.5	319	JZ	2	weak to moderate joint set with with local broken pieces; fractured dominantly at 30 dtca, some at steeper ~80 dtca
319	320.5	FZ	3	moderate fault zone
320.5	323	BRKZ	3	moderate broken zone, little gge along fracturesn
323	336.1	JZ	2	joint set, competent core; fractures range from 30-55
336.1	345.2	BRKZ	3	moderate to strong broken zone with a few competent sections; gge along fractures
345.2	361	FZ	3	moderate fault zone with clay+chlorite gge throughout; some annealed sections up to 20cm
361	369	JZ	2	joint set; competent core with fractured ranging from 45-60 dtca
369	378	BRKZ	2	Weak broken zone with some competant pieces
378	398.5	FZ	3	Large broken section with local fault milled grains, redrill and very poor recovery (sometimes none 392.5-397)

Blackwater Project
Drill Logs

Hole ID:	BW0394	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375201.81
Depth (m):	415.14	Date Started:	29/03/2012	Casing Size:	HWT	Northing:	5892899.31
Azimuth:	0	Date Completed:	04/04/2012	Casing (m):	5	Elevation (m):	1603
Dip:	-90	Logged By:	NDh	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.33	218.1	-89.3
92.05	239.5	-89.5
137.8	205.5	-89.5
186.5	222	-89.3
232.3	230.7	-89.2
274.9	228.7	-89.4
320.7	203.6	-89.2
366.4	229.9	-89.2
412.1	220	-88.8

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Drill Summary - Lithology

BW0394

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	8.22	OB							
8.22	38.6	FT	lam		L	GRY	DEP	GR10	felsic tuff with relict banding and relict clastic texture, fracture controlled limonite and hematite throughout
38.6	47.3	FLPT	lptbx	LAP	L	GRY	DEP	GR5	felsic lapillit tuff-breccia; some laminated clasts, some pockets of microbrecciation
47.3	68.6	FLPT	lptbx	LAP	L	GRY	DEP	GR10	alternating btw flpt and vc, flpt is same as previous interval, vc has dominantly mafic clasts, chlorite alteration in some clasts
68.6	86	FLPT	lptbx	LAP	L	GRY	DEP		flpt breccia- some laminated clasts, some pockets of microbrecciation, may be a few (3-5) mafic clasts (light in colour but possibly have phenocrysts in them)
86	113.9	FLPT	lptbx	LAP	L	GRY	DEP	GR10	Locally microbrecciated FLPT with local laminated intervals and bleached (unaltered?/obliterated?) intervals.
113.9	118	FLPT	lam	LAP	M	GRN	DEP	GR30	Laminated felsic tuff with brecciated subrounded fragments of cream cloured clay altered clasts; moderate increase in chlorite alteration; ubiquitous laminated intervals throughtout
118	127.3	FT	lam		M	GRN			Med Green Felsic tuff with intermittent microbrecciated clay altered interlaminated intervals hosting a faulted zone from 123.40m - 125.20m
127.3	150	FLPT	cs	LAP	L	CRM	DEP	GR10	Pale cream green fine clastic lapilli tuff breccia with subtle shifts if chlorite and sericite; polymictic
150	153.7	FT	lam		M	GRN			Weakly laminated and moderately chlorite altered FT with moderate specks of Po
153.7	168.1	FLPT	cs	LAP	M	CRM	DEP	SH	Medium to cream green coloured laminated lapilli tuff breccia locally microbrecciated
168.1	180.7	FT	lam	LAP	M	GRN	DEP	GR30	Weakly chloritized and laminated FT with local microbreccaited interlaminated intervals
180.7	196.4	FLPT	lam	LAP	M	GRN	DEP	GR30	Hydrothermally brecciated laminated FT with local patches of bleached microbreccia
196.4	212.6	FLPT	lam	LAP	L	GRN	DEP	SH	Differentially altered green and yellow laminated FT hydrothermally brecciated into FLPT; fragments are polymictic and consist of massive and laminated clasts
212.6	219	FT	mas		L	CRM	DEP	SH	Massive silicified FT; pale brown well mineralized, no descernably preserved texture
219	224.3	FLPT	bx		L	GRN			Convoluted and laminated hydrothermally brecciated laminated tuff with differentially altered polymictic massive and laminated fragments
224.3	237	FLPT	bx	LAP	L	GRY	DEP	GR30	Hydrobrecciated laminated FT with convoulted patches of weak chlorite alteration and patches of intense silica-chlorite-sericite alteration locally brecciating the FT

Blackwater Project
Drill Summary - Lithology

BW0394

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
237	248.8	FLPT	bx	LAP	M	GRN	DEP	GR30	Strong convoluted patches of chlorite alteration mixed with convoluted patches of laminated silica sericite altered FT; 1% Po, 0.5% Py
248.8	273.9	FLPT	bx	LAP	L	CRM	DEP	GR30	Laminated clay and sericite altered clasts of FT hosted is intense silica sericite alteration; Clasts are subrounded due to hydrothermal consumption of protolith
273.9	313.0	FLPT	bx	LAP	L	GRY	DEP	GR30	Laminated clay and sericite altered clasts of FT hosted is intense silica chlorite sericite alteration; Clasts are subrounded due to hydrothermal consumption of protolith
313.0	325.6	FLPT	mas	LAP	L	GRY	DEP	GR30	Texture obliterated FLPT replaced with Chlorite-Silica-Sericite alteration, massive appearance with relict laminated felsic clasts
325.6	335.4	FLPT	bx	LAP	L	GRN	DEP	GR10	FLPT intensely altered by silicia and sericite and weakly altered by chlorite patchy specks of sulphide.
335.4	345.0	FLPT	fltbx	LAP	L	GRY	DEP	GR10	Moderate brittle fault fracture zone, intense silica-sericite alteration obliterating textures
345.0	352	FLPT	bx	LAP	L	GRY	DEP	GR10	Intensely silica sericite altered FLPT; trace relict laminated clasts within intense sericite silica alteration matrix
352	362	FLPT	fltbx	LAP	L	GRY	FLT	GR10	Moderate brittle fault fracture zone, intense silica-sericite alteration obliterating textures
362	374	FLPT	bx	LAP	L	GRY	FLT	SH	Local brittle fracture zones, intense silica sericite alteration, some relict laminated FT clast textures preserved
374	380.4	FLPT	fltbx	LAP	L	GRY	DEP	SH	Moderate to strong brittle fracturing with moderate to strong sericitic fault gouge and breccia; Intense silica sericite
380.4	399.2	FLPT	bx	LAP	L	GRN	FLT	SH	Weak hematite?kspar? alteration with stong to intense silica sericite occuring in patches within matrix of intense silica sericite chlortite alteration.
399.2	401	FLPT	fltgge						Intense sericitic gouge due to fault, weak sooty sulphide mixed in with gouge
401	415.1	FLPT	bx	LAP	M	GRY	DEP		Laminated sericite-chlorite altered protolith with patches of microbrecciated silica clay altered FT and patches of silica sericite alteration all overprinted by silica giving a convoluted fragmental appearance

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Blackwater Project
Drill Summary - Alteration

BW0394		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
8.22	38.6	O	PATC	1	PATC	1	PERV	4	PERV	3				HM	FC	2	oxidation facies; limonite and hematite along fractures; pervasive silica,sericite
38.6	60.6	T	CLST	2	CLST	1	PERV	4	PERV	3	CLY	PERV	1	HM	FC	2	fracture controlled oxidation; pervasive silica, sericite, chlorite and clay alteration in clasts; pervasive sericite and
60.6	86	S	CLST	2	CLST	1	PERV	4	PERV	3	CLY	PERV	1	SER	VNHL	1	same as above with no more oxidation, some fracture controlled sericite
86	107	S	PATC	1	CLST	1	PERV	4	PERV	3	CLY	FC	1	SER	CLST	1	Dominantly pervasive silica, sericite alteration with local bleached clay altered intervals and patches
107	127.3	S	PERV	2	CLST	3	PERV	3	PERV	2	CLY	FC	1				Patchy Clay altered laminated clasts with intermittent patches of silica chlorite sericite alteration
127.3	135.7	S	PATC	1	CLST	4	PERV	4	CLST	4							Fine felsic tuff fragmental dominantly sericitized and clay altered with pervasive overprinting silica alteration
135.7	144	S	PATC	2	CLST	4	PERV	4	PERV	3							Same as previous weak increase in chlorite alteration
144	150	S	PATC	1	CLST	3	PERV	4	PERV	4							Subtle increase in clay altered patches and sericite; Alteration is Olive green and texture destructive
150	153.7	S	PERV	3		0	PERV	4	PERV	2							Increased chlorite alteration of laminated FT
153.7	168.1	S	PERV	3	CLST	1	PERV	4	PERV	3							Moderate Chlorite with weak clay alteration of laminated brecciated fragments
168.1	180.7	S	PERV	3	CLST	1	PERV	4	PERV	2							Moderate Chlorite with weak sericite and even weaker clay overprinted by strong to intense silica
180.7	194.6	S	PERV	3	CLST	2	PERV	4	PERV	3							Increased sericite and clay alteration as a result of brecciated laminated FT fragments; intense silica overprint
194.6	212.3	S	CLST	1	CLST	4	PERV	4	PERV	3							Sericite and Clay alteration more predominant within clasts with weak chlorite throughout and intrusive intense Silica permeating fragments and matrix
212.3	219	S	CLST	1		0	PERV	5	PERV	3							Intense obliterative silica alteration wiping out textures and giving a clean massive appearance containing rare entrained chlorite altered fragments

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Blackwater Project
Drill Summary - Alteration

BW0394		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
219	224.3	S	CLST	2	CLST	3	PERV	5	CLST	3							weak to moderate sericite, clay, chlorite alteration permeating clasting and giving a convoluted fragmental appearance with intense silica alteration permeating throughout
224.3	237	S	CLST	2	CLST	1	PERV	4	PERV	2	CHL	FR	1	CHL	MTRX	1	Moderate chlorite alteration within matrix and weak clay-sericite alteration of clasts
237	248.8	S	PATC	3		0	PERV	4	MTRX	3	CHL	MTRX	1	CHL	FR	1	Strong patches of chlorite alteration giving core a convoluted appearance moderate sericite and intense silica alteration
248.8	273	S	MTRX	2	CLST	2	PERV	4	MTRX	3	SIL	MTRX	3				Moderately sericitized and clay altered laminated FT clasts hosted in silica sericite matrix
273	279	S	PATC	3	CLST	3	PERV	4	CLST	3	KSPR	PERV	2				Patchy Chlorite alteration amongst strongly clay-sericite altered Laminated felsic clasts overprinted with weak to moderate pink K-feldspar? alteration and intense silica
279	313.0	S	MTRX	2	CLST	2	PERV	4	MTRX	3	CHL	FC	1	SER	CLST	2	Moderately sericitized and clay altered laminated FT clasts hosted in silica sericite matrix
313.0	325.6	S	PERV	2	CLST	1	PERV	4	PERV	3							Texture obliterated FLPT replaced with Chlorite-Silica-Sericite
325.6	335.4	S	PERV	2	CLST	1	PERV	4	PERV	3							Same as previous texture obliterated FLPT replaced with Chlorite-Silica-Sericite
335.4	345.0	S	PERV	2	FC	2	PERV	3	PERV	4	CHL	FC	2				Brittle fractures with moderate chlorite and clay on surfaces
345.0	352.1	S	PERV	2	CLST	1	PERV	4	PERV	3	CHL		2				Strongly silicified and moderately chlorite-sericitized
352.1	362	S	PERV	3	FC	3	PERV	3	PERV	3	SER	FC	3				Pervasive strong silica sericite alteration with a mild chloritic wash; sericite clay on brittle fractures
362	374	S	PERV	3	CLST	1	PERV	4	PERV	3	SER	FC	2				Moderate chlorite wash over pervasive silica sericite alteration with weak relict clay silica altered clasts of FT
374	380.4	S	PERV	3	FC	3	PERV	5	PERV	4	SER	FC	3				Pervasive silica sericite alteration with moderate sericite clay gouge forming on strong brttle fractures and with local clay gouge zones

Blackwater Project
Drill Summary - Alteration

BW0394		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
380.4	399	S	PERV	2	CLST	2	PERV	4	PERV	3	HM	PERV	1	CHL	PATC	2	Weak hematite?Kspar?alteration on clasts with moderate chloritized patches and local sericite silica convoluted patches
399	401	S	PERV	3	PERV	5		0	PERV	4							Intense sericitic fault gouge
401	415.1	S	PERV	3	CLST	3	PERV	4	PERV	2							Patchy chlorite and silica clay altered clasts of felsic fragmental hydrobreccia; grey silica sericite perdominates towards bottom

Blackwater Project
Drill Summary - Mineralization

BW0394		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
8.22	36.44		0		0		0										oxide zone, sulphide casts (vugs where sulphides used to exist)
36.44	65	SP	0.1		0		0	Dbs		2							some specs of brassy py throughout, very finely disseminated; black sooty sulphide disseminated throughout
68.6	84.9	DI	2.5	DI	2.5	DI	2	Dbs	DI	2.5	Py	VN	0.5				8-10% sulphides; py as dissemination and in stringers; black sooty sulphide in little blebby disseminations and in stringers and as rims around sulphide; sphalerite as disseminations sometimes aligned with laminations in felsic clasts and laminated s
84.9	93.6	BB	3	SP	1	SP	0	Dbs	DI	2							
93.6	107	BB	3	SP	1.5		0	Dbs	DEN	2.5	Apy	SP	0.1				
107	109.2	BB	1.5		2.5	SP	0	Dbs	DEN	1.5							
109.2	114.7	BB	2.5	SP	0.5		0	Dbs	DEN	3							
114.7	127.3	SP	1	BB	2.5		0	Dbs	DEN	0.5							
127.3	135.6	BB	3	SP	1	SP	0.5	Dbs	DEN	2							
135.6	150	BB	0.5	SP	1	SP	5	Dbs	SP	0.5	Cp	SP	0.1				
150	153.7	SP	0.1		0	SP	5										
153.7	168.1	BB	1	SP	0.5	SP	3	Dbs	DEN	0.5							
168.1	180.7	DI	1	SP	2	BB	3	Dbs	DEN	0.5	Cp	SP	0.5				
180.7	196.4	SP	0.5	SP	0.5	BB	5	Dbs	DEN	0.5							
196.4	210.9	DEN	0.5		0	BB	4	Dbs	DEN	1	Cp	SP	0.5				
210.9	212.9	SP	1	SP	1		6	Dbs	SP	0.5							
212.9	219	SP	0.5	DEN	0.5	SP	3.5	Dbs	DEN	0.5	Cp	SP	0.5				
219	223.1	SP	0.1	SP	0.5	SP	3	Dbs	DEN	0.5	Cp	SP	0.5				
223.1	224.3	SP	0.5	SP	0.5		2	Dbs	SP	0.1	Dbs	SP	0.1				
224.3	237	BB	0.5	SP	0.1	BB	1										
237	248.8	BB	1.5		0	BB	0.5	Dbs		0.5							

Blackwater Project
Drill Summary - Mineralization

BW0394		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
248.8	251	BB	1		0	BB	0.5	Dbs	BB	1.5	Cp	SP	0.1				
251	258	SP	0.5		0	BB	1	Dbs	DEN	0.5							
258	260	BB	1		0	BB	0.1	Dbs	DEN	2							
260	273	BB	0.5		0	BB	2	Dbs		0.5							
273	279	SP	1		0	BB	0.5	Dbs	DEN	1	Cp	SP	0.5				
279	287.5	SP	0.5		0	SP	2	Dbs	DEN	0.5	Cp	SP	0.1				
287.5	291	BB	1		0	SP	0.5	Dbs	DEN	1.5	Cp	SP	0.5				
291	301	DEN	0.5		0		2	Dbs	DEN	0.5	Cp	SP	0.1				
301	313	SP	0.5		0	BB	1	Dbs	DEN	0.1	Cp	SP	0.1				
313	325.6	SP	0.5		0	BB	2	Cp	SP	0.5	Dbs	DEN	0.1				
325.6	335.4	SP	0.1	SP	0.1		1	Dbs	SP	0.5	Cp	SP	0.1				
335.4	345.0	FP	1.5		0		0	Dbs	FP	1	Cp	SP	0.1				Moderate mineralization hosted in brittle fractures likely due proximal faulting
345.0	352.0	DEN	0.5	SP	0.1		0	Dbs	DEN	0.5							
352.0	362	DEN	1.5		0		0.1	Dbs	DEN	0.5							
362	382	SP	0.5		0	SP	0.5	Dbs	DEN	0.1							
382	399.2	FP	0.5	SP	0.1	SP	0.5	Cp	SP	0.1	Dbs	DEN	0.1	Py	SP	0.1	
399.2	410	SP	0.5	SP	0.5	BB	0.5	Po	VN	0.5							
410	415.1	DEN	0.5		0	VN	0.5	Po	SP	1							

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Blackwater Project
Drill Summary - Structure

BW0394

From (m)	To (m)	Structure	Strength	Comments
8.22	26	JZ	3	joint set with small intervals of broken section with gge up to 50cm
26	29.05	FZ	2	fault zone, some annealed sections with competent pieces in it;
29.05	50.4	JZ	2	fractures range from 45-55 some at 80sih dtca
50.4	51	FL	3	fault zone with strong clay gge
51	86	JZ	2	fractures range from 45-55, some at steeper angle, 80dtca; competent core
86	93.57	JZ	2	fractures range from 30 to 55
93.57	95.09	FL	1	Weakly faulted zone with moderate clay alteration
95.09	113.9	JZ	2	Fractures occuring at 35 and 55 to core axis
113.9	123.4	JZ	2	
123.4	125.2	FZ	2	Weak gouge formation associated with dense fracture sets
125.2	150	JZ	1	
150	153.7	LY		
153.7	168.1	JZ	1	
168.1	200	JZ	2	
200	224	JZ	2	
224	230	JZ	1	
230	251	JZ	2	
251	274	JZ	2	
274	313.0	JZ	2	moderate fractures occuring subparallel to core axis
313.0	325.6	JZ	2	Fractures shallow to core axis
325.6	335.4	JZ	2	
335.4	345.0	SZ	3	Brittle shear fracture zone; sulphates likely leached depositing pyrite and clay
345.0	352.0	JZ	2	Weak fracture zone
352.0	362	SZ	3	Brittle shear fracture zone with weak sericite clay gouge on fracture planes
362	365.6	BRKZ	3	
365.6	369.4	FZ	3	moderate brittle fractures with local clay gouge
369.4	374	BRKZ	3	Rock is fractured and broken up by conjugate shallow fracture sets
374	380.4	FZ	4	Intense brittle fractures with moderate to strong sericitic gouge on fractures.

Blackwater Project
Drill Summary - Structure

BW0394

From (m)	To (m)	Structure	Strength	Comments
380.4	399	JZ	4	local broken zones within an interval of moderate to strong jointing.
399	401	FL	5	Intense sericitic and possibly pyritic gouge subparallel to core axis
401	415.1	JZ	2	

Blackwater Project
Drill Logs

Hole ID:	BW0395	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375001.67
Depth (m):	371	Date Started:	31/01/2012	Casing Size:	HWT	Northing:	5893099.71
Azimuth:	0	Date Completed:	08/04/2012	Casing (m):	2	Elevation (m):	1567
Dip:	-90	Logged By:	BBo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	102	-89
54	101.8	-88.8
150.5	141.5	-88.5
213.5	136.2	-88.6
250	150.5	-88.4
300	138.4	-88.2
365	136.9	-87.1

Blackwater Project
Drill Summary - Lithology

BW0395

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3.5	OB							Cored overburden material.
3.5	5.2	VC	plm	LAP	M	GRY			Oxide zone in this interval with strong texture distructive limonite throughoutand clay content...no sulphides present.
5.2	41.5	VC	plm	LAP	M	GRY			Transition zone in this interval with moderate to weak limonite along fractures and clay altered sections. The lithology is a volcanoclastic polymictic breccia with mixed felsic and mafic fragments, poorly sorted, subangular to subrounded, lapilli s
41.5	63	VC	plm	LAP		GRY			Transition zone in this interval with similar weak fracture controlled oxidation along fractures, with a very strong oxidation section associated to fault section from 41.5 to 41.5 metres. Mafic to felsic fragments are becoming more abundant down th
63	99	VC	plm	LAP	M	GRY			Transition zone ending at 85.6 metres. Lithology is still a poorly sorted polymictic volcaniclastic breccia with mafic to felsic fragment ratio of approximately 50:50, the unit now has the fine garnet grains and aggregates in the groundmass; sulphid
99	150	VC	plm	LAP	D	GRY			Sulphide zone with minor sulphides throughout interval (po/sph/py/cpy - total sulphides approx. 0.5 - 0.75%); Lithology is the same as previous description with more garnets occuring and chalcopyrite occuring more with blebby pyrrhotite.
150	175	VC	plm	LAP		GRY			Volcaniclaststic polymictic breccia, poorly sorted, subangular to subrounded, mafic & felsic fragments 50:50 distribution, generally averaging 5 to 20 mm in size; weak disseminanted sulphides to 1% (po/py/+-sph/+-cpy) with abundant fine disseminated
175	207.6	VC	plm	LAP	M	GRY	ALTFR	GR30	Volcaniclastic polymictic breccia, poorly sorted, subangular to subrounded, mafi & felsic frags 50:50 distribution, frag size averaging 5 to 25 mm in size, weak pervasive silica+/-gypsum alteration in the groundamass, garnets throughout (fine dissemi
207.6	221.5	FT	lam	FA	P	BLCH			Light grey, very fine grained to aphanitic, often mottled in texture to partially laminated (remnants), interval is strongly silica flooded/altered felsic tuff unit with local dark brown garnets present and disseminated to blebby sulphides...sulphide
221.5	249.5	FT	lam	FA	MO	GRY	ALTFR	GR30	Medium light grey, aphanitic, often mottled to laminanted (remnants), strongly silica flooded, altered felsic tuff.
249.5	254.5	FLPT	lpt	LAP	MO	GRY	FLT	GR30	Greyish - green, fine grained to aphanitic, silica/sericite/chlorite altered, tectonized felsic lapilli tuff.

Blackwater Project
Drill Summary - Lithology

BW0395

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
254.5	297.5	FLPT	lpt	LAP	M	GRY	FLT	GR10	Grey to greenish-grey coloured, fine grained to aphanitic, silica/sericite altered felsic lapilli tuff unit. This interval has both fragment sections and laminated sections through the interval.
297.5	314.5	FLPT	lpt	LAP	M	GRY			This interval is a strongly silica altered felsic latilli tuff unit...the rock has had pervassive texture destructive silica flooding and a sulphate alteration overprint (gypsum/anhydrite).
314.5	320	FLPT	lpt	LAP	MO	GRY			Strong silica pervasive alteration throughout interval, texture destructive alteration with mottled textures, remnant fragments and laminantions through interval. Groundmass is aphanitic generally and is completely alteration controlled along fractu
320	359	FT	lam	FA		GRY			Strong pervasive silica alterationthroughout interval, often textute destructive and may be mottled locally, remnant bedding laminations still preserved in most of the interval.
359	365	FT	lam	FA		GRY	DEP	GR30	Moderate to strong pervasive silica altered finely laminated to bedded ash tuff. This interval has sections of well defined ash to silty laminations well preserved to mottled alteration distorted banding.
365	367.5	VC	volc	LAP		GRY	DEP	GR30	Medium to dark grey, mottled, pervasive silica altered polylithic volcaniclastic breccia. This interval exhibits frandom fragments of mafic and felsic composition within a partially texture destructive silica flooded matrix. This interval looks mor
367.5	371	AND	mas			BLK			Dark grey to black, medium to fine grained, hornfelsed, biotite rich, brecciated to massive andesite. This interval sharply ends a a strong fault section for 1 metre drillers mentioned hole is tightening.

Blackwater Project
Drill Summary - Alteration

BW0395		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.5	5.2	O		0	PERV	3		0		0							Moderate to strong oxidation overprint throughout this interval, limonite and clay through out.
5.2	15.6	T	Rep	1	MTRX	1	MTRX	1	MTRX	1							This interval has a weak matrix dominant alteration overprint by silica, clay and lesser sericite; oxidation is generally fracture controled with areas of stronger oxidation associated with clay fractured portions.
15.6	17.4	T		0	PERV	3		0		0							Section of moderate oxidation overprinting interval, lomonite and clay both fracture controlled and pervative texture destructive.
17.4	34.5	T	Rep	1	PERV	1	MTRX	1	MTRX	1							This interval has a weak pervasive matrix dominant silica/sericite/clay alteration overprint; oxidation along fractures persists, however, is weakening to depth.
34.5	63	T		0	FC	1	MTRX	1		0							This interval is similar to the previous description, however, a strong oxidation zone exists at 41.5 to 43.3 metre fault structure with clay and limonite.
63	85.5	T		0	FC	1	MTRX	1		0							This interval is similar to previous description, however, transition zone ends at 85.5 metres.
85.5	99	S	FC	1	FC	1	MTRX	1		0							Same as previous interval, however, slightly more garnets in the interval and sulphides are slightly higher in concentration (po/sph/py approx. 0.3 to 0.5%).
99	150	S	FC	2	FC	1	MTRX	1		0							Similar to previous interval, however, garnets and sulphides are in this interval...total sulphides now 0.5 to 0.75%.
150	175	S	FC	1	FC	1	MTRX	1		0							Similar to previous with abundant fine garnets and pyrrhotite dominant sulphide type.
175	207.6	S	FC	1	FC	1	MTRX	1		0	GYP	MTRX	1				Again similar to previous description, silica/gypsum matrix dominant alteration, chlorite fracture controlled and abundant garnets.
207.6	221.5	S	FC	1		0	PERV	4	PERV	2	GYP	PATC	1				Strong, texture destructive silica alteration overprinting a felsic tuff interval. This interval also includes weak pervasive gypsum alteration and random garnets.

Blackwater Project
Drill Summary - Alteration

BW0395		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
221.5	249.5	S	FC	1	FC	1	PERV	4	PERV	1							Very strong pervasive silica alteration overprint in this interval, texture destructive alteration in sections and garnets are present through the entire interval.
249.5	258	S	Def	2	Def	1	PERV	3	Def	2							Alteration occurs as pervasive flooding by silica/sericite and alteration overprint due to shear deformation (chlorite/clay).
258	292	S	FC	1	FC	2	PERV	4	Def	2	ANH	OP	2				This interval contains a moderate to strong pervasive silica alteration overprint to the felsic lapilli tuff and overprinting this interval is a localized tectonic shearing. This shearing has associated sericite +/- clay sections. locally a weak pervasi
292	297.8	S		0	Def	3	PERV	2	Def	3							Fault structure with sericite/silica/clay alteration within a sandy,grit, rubble materiaal ending in a 25 cm hematite clay gouge zone.
297.8	314.5	S		0		0	PERV	5	PERV	1	ANH	OP	1				Very strong texture destructive pervasive silica alteration throughout this interval. Localized areas of anyhyrite pervasive alteration overprint randomly through this interval.
314.5	320	S		0		0	PERV	4		0	ANH	OP	1				Strong pervasive silica alteration with patched sulphate (anhydrite?) alteration overprinting through interval.
320	359	S	FC	1		0	PERV	3	PERV	1	ANH	OP	1				Moderate pervasive silica/sericite alteration throughout the interval with weak patchy pervasive sulphate (anhydrite?) alteration overprinting the silica type.
359	367.5	S	FC	1		0	PERV	4	PERV	1	BIOT	PERV	1				Strong pervasive silica alteration throughout interval with sections of texture destructive portions.
367.5	371	S	FC	3		0	PERV	1	PERV	1	BIOT	PERV	4				This interval has a strong hydrothermal biotite alteration overprint with lesser chlorite fracture controlled alteration.

Blackwater Project
Drill Summary - Alteration

BW0395		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.5	5.2	O		0	PERV	3		0		0							Moderate to strong oxidation overprint throughout this interval, limonite and clay through out.
5.2	15.6	T	Rep	1	MTRX	1	MTRX	1	MTRX	1							This interval has a weak matrix dominant alteration overprint by silica, clay and lesser sericite; oxidation is generally fracture controled with areas of stronger oxidation associated with clay fractured portions.
15.6	17.4	T		0	PERV	3		0		0							Section of moderate oxidation overprinting interval, lomonite and clay both fracture controlled and pervative texture destructive.
17.4	34.5	T	Rep	1	PERV	1	MTRX	1	MTRX	1							This interval has a weak pervasive matrix dominant silica/sericite/clay alteration overprint; oxidation along fractures persists, however, is weakening to depth.
34.5	63	T		0	FC	1	MTRX	1		0							This interval is similar to the previous description, however, a strong oxidation zone exists at 41.5 to 43.3 metre fault structure with clay and limonite.
63	85.5	T		0	FC	1	MTRX	1		0							This interval is similar to previous description, however, transition zone ends at 85.5 metres.
85.5	99	S	FC	1	FC	1	MTRX	1		0							Same as previous interval, however, slightly more garnets in the interval and sulphides are slightly higher in concentration (po/sph/py approx. 0.3 to 0.5%).
99	150	S	FC	2	FC	1	MTRX	1		0							Similar to previous interval, however, garnets and sulphides are in this interval...total sulphides now 0.5 to 0.75%.
150	175	S	FC	1	FC	1	MTRX	1		0							Similar to previous with abundant fine garnets and pyrrhotite dominant sulphide type.
175	207.6	S	FC	1	FC	1	MTRX	1		0	GYP	MTRX	1				Again similar to previous description, silica/gypsum matrix dominant alteration, chlorite fracture controlled and abundant garnets.
207.6	221.5	S	FC	1		0	PERV	4	PERV	2	GYP	PATC	1				Strong, texture destructive silica alteration overprinting a felsic tuff interval. This interval also includes weak pervasive gypsum alteration and random garnets.

Blackwater Project
Drill Summary - Alteration

BW0395		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
221.5	249.5	S	FC	1	FC	1	PERV	4	PERV	1							Very strong pervasive silica alteration overprint in this interval, texture destructive alteration in sections and garnets are present through the entire interval.
249.5	258	S	Def	2	Def	1	PERV	3	Def	2							Alteration occurs as pervasive flooding by silica/sericite and alteration overprint due to shear deformation (chlorite/clay).
258	292	S	FC	1	FC	2	PERV	4	Def	2	ANH	OP	2				This interval contains a moderate to strong pervasive silica alteration overprint to the felsic lapilli tuff and overprinting this interval is a localized tectonic shearing. This shearing has associated sericite +/- clay sections. locally a weak pervasi
292	297.8	S		0	Def	3	PERV	2	Def	3							Fault structure with sericite/silica/clay alteration within a sandy,grit, rubble materiaal ending in a 25 cm hematite clay gouge zone.
297.8	314.5	S		0		0	PERV	5	PERV	1	ANH	OP	1				Very strong texture destructive pervasive silica alteration throughout this interval. Localized areas of anyhyrite pervasive alteration overprint randomly through this interval.
314.5	320	S		0		0	PERV	4		0	ANH	OP	1				Strong pervasive silica alteration with patched sulphate (anhydrite?) alteration overprinting through interval.
320	359	S	FC	1		0	PERV	3	PERV	1	ANH	OP	1				Moderate pervasive silica/sericite alteration throughout the interval with weak patchy pervasive sulphate (anhydrite?) alteration overprinting the silica type.
359	367.5	S	FC	1		0	PERV	4	PERV	1	BIOT	PERV	1				Strong pervasive silica alteration throughout interval with sections of texture destructive portions.
367.5	371	S	FC	3		0	PERV	1	PERV	1	BIOT	PERV	4				This interval has a strong hydrothermal biotite alteration overprint with lesser chlorite fracture controlled alteration.

Blackwater Project
Drill Summary - Structure

BW0395

From (m)	To (m)	Structure	Strength	Comments
5.2	15.7	JZ	2	Regular joint set at 45 degrees TCA through interval.
15.7	17.3	JZ	3	Similar to previous, however, this interval has a moderate pervasive limonite/clay alteration overprint.
17.3	34.5	JZ	2	This interval has two dominant joint sets; 25 and 45 degrees TCA.
34.5	41.3	JZ	3	Regular joint sets at 20 and 45 degrees TCA.
41.3	43.5	FL	5	Strong oxidized clay-limonite fault gouge/breccia cutting the core at 30 degrees TCA.
43.5	57	JZ	3	regular joint sets with limonite oxidation alone fracture/joint planes at 20 and 40 degrees TCA.
57	57.8	BRKZ	5	Oxidized broken and rubbled zone...fractures at 15 degrees TCA present.
57.8	83.15	JZ	2	Regular joint sets at 20 and 40 degrees TCA through interval.
83.15	98.2	JZ	1	Regular joint sets are 15 to 35 degrees TCA through the interval.
98.2	115.2	JZ	2	Regular joint sets at 20 and 50 degrees TCA.
115.2	115.6	SZ	3	Weak chlorite clay rich shear structure...broken core over the interval.
115.6	120.7	JZ	3	Regular joint sets at 15 and 50 degrees TCA.
120.7	121	CLYSEAM	3	Small clay shear structure with clay gouge and chlorite cutting core at approx. 40 degrees TCA.
121	126.2	JZ	2	Joint sets at 50 and 65 degrees TCA.
126.2	127.3	BRKZ	4	Blocky and broken zone with minor clay/chlorite gouge and fracture/shear planes at 50 degrees TCA.
127.3	150	JZ	2	Regular joint sets at 20 and 45 degress TCA.
150	217.3	JZ	2	regular joint sets at 15 & 45 degrees TCA.
217.3	219.5	BRKZ	3	Broken zone with near parallel fractures TCA (5 degrees TCA).
219.5	243.5	JZ	1	Dominant joint sets are 10 & 45 degrees TCA.
243.5	251.6	JZ	2	Dominant joint set is 40 degrees TCA.
251.6	258	BRKZ	3	Dominant joint sets are 30 & 45 degrees TCA.
258	263.5	BRKZ	3	This interval has a moderate to strong jointing/shear fabric overprint resulting in a broken section throughout. The dominant joint/shear fabric is 20 to 40 degrees TCA.
263.5	280	JZ	3	Dominant joint sets are 25 & 50 degrees TCA.
280	290	BRKZ	3	Moderate to strong broken zone with dominant fracture/joint set of 30 degrees TCA.
290	297.5	FL	5	Strong fault structure consisting of sand/grit and hematitic clay gouge.
297.5	314.5	JZ	1	Regular joint sets at 20 and 45 degrees TCA.
314.5	344	JZ	2	Regular joint sets at 25 & 50 degrees TCA.

Blackwater Project
Drill Summary - Structure

BW0395

From (m)	To (m)	Structure	Strength	Comments
344	359	JZ	3	This interval has joint sets at 10 & 45 degrees TCA.
359	370	JZ	3	Regular joint sets at 40 & 20 degrees TCA.
370	371	FL	4	Moderate to strong clay/chlorite fault...sand and rubble with some clay gouge...drillers mentiond hole tight.

Blackwater Project
Drill Logs

Hole ID:	BW0396	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375101.32
Depth (m):	374.5	Date Started:	01/04/2012	Casing Size:	HWT	Northing:	5893249.28
Azimuth:	0	Date Completed:	09/04/2012	Casing (m):	4	Elevation (m):	1554
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	150.5	-89.4
118	202.5	-89.6
151	327.2	-89.8
202	219.9	-89.5
250	182.3	-89.2
324	105.6	-88.7
374	180.8	-88.5

Blackwater Project
Drill Summary - Lithology

BW0396

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.2	OB							Overburden
4.2	22.42	FLPT	lam	LAP	L	GRY	DEP	GR10	Massive felsic lapilli tuff, laminated felsic clasts, locally breacciated clasts
22.42	64.4	VC	ms	LAP	M	GRY	DEP	GR10	Polymictic volcanoclastic unit, laminated clasts. matrix supported, locally felisc clast dominant
64.4	105	AND	mas	LAP	M	GRY	UNKN		Massive andesite, locally flow silica felsic tuff looking, no primay texture visible althouh theres some black spots where primary texture of andesite is visible
105	173	VC	lam		M	GRY			Felsic tuff/VC?? - could be anything. Alteration obscures primary texture - some laminations and clastic texture can be observed. Strong silica, moderate to strong chlorite following laminations. Laminations typically at 30 degrees TCA.
173	204	FT	lam		M	GRY			Mystery Rock - extremely altered - high silicification and chloritization leaving only a banded texture. Could be altered VC? Had many people come in and try and give an opinion and getting mixed responses. As above - predominant texture is laminated
204	256	FT	lam		M	GRY			Laminated FT with some evidence of brecciation. Highly altered - high silica-sericite and moderate chlorite alteration.
256	279	FT	bx	LAP	MO	GRY	DEP	GR30+	A mottled grey green laminated felsic tuff with brecciated intervals. Fragments are chlorite and clay altered, poorly sorted, matrix supported, lapilli sized (on clast that is block at 274.5 meters).
279	289	FT	lam	LAP	M	GRY	UNKN		Similar to above with a more laminated texture - still brecciated with lapilli sized fragments with more silica sericite alteration than above. Fragment boundaries are fuzzy - still distinct, clast supported - ? hydrobreccia?. Laminations are still
289	326	FT	bx	LAP	M	GRY	UNKN		Medium-light grey FT unit with occasional zones of white milky bleaching and medium greenish grey chlorite alteration. Brecciation presumably due to fluids. Fragment boundaries are indistinct. Laminations are mm-scale and are dark grey to white in co
326	329.5	FT	bx	LAP	M	GRY	ALTFR	GR10	Cracked skin texture, possibly caused by sulphate alteration (anhydrite?). Brecciated, loss of laminated appearanced (disappears at approximately 325 m). Indistinct boundaries between clasts (alteration-related).
329.5	340	FT	lam	LAP	M	GRY	UNKN		Laminated, weakly brecciated, pale green sericite "clasts" with medium grey silica matrix and white albite clasts. Patchy alteration
340	344.4	FT	lam	LAP	M	GRY	ALTFR	SH	As above. Brecciated (possibly some sort of hydrobx as per intervals uphole). White-light green "clasts" with fuzzy boundaries.

Blackwater Project
Drill Summary - Lithology

BW0396

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
344.4	347.2	FT	lam	LAP	M	GRY	FLT	SH	Darker grey then previous interval. Strong black-dark green chlorite along fracture planes. Medium green sericite (possibly chlorite as well?) laminae within interval
347.2	353.2	FT	frctz	LAP	D	GRY	FLT	SH	Interval of strongly laminated, weakly brecciated, strongly faulted FT. Laminae consist of dark grey and black (chlorite).
353.2	358.3	FT	lam	LAP	M	GRY	FLT	SH	Laminated, strongly silicified, medium-dark grey felsic tuff, weakly brecciated. Black-dark green chlorite-pyrite along fractures
358.3	362.3	FT	frctz	LAP	M	GRN	FLT	SH	Gougy zone. Greyish green. Intense chlorite-sericite along fracs. Minor silicified pebbles within fault
362.3	374.5	FT	lam	LAP	M	GRN	UNKN		Greyish green. Patchy zones of medium grey intense silicification, matrix-dominant. Laminae at steeper angle TCA within interval.

Blackwater Project
Drill Summary - Alteration

BW0396		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4.2	34	O	FR	2	PATC	3	PATC	2	PERV	3	SER	CLST	2	LIM	FR	3	Limonite alt foud in fractures, sericite-chlorite alt found in clasts, patchy clay alt found in felsic clasts
34	48.07	O	FR	3	PATC	2	PERV	2	CLST	3	LIM	FR	2				Limonite alt found in fractures, sericite-chlorite found in clasts
48.07	65.5	T	FR	3	PATC	3	PERV	3	PERV	3	LIM	FR	1				Limonite alt found in fractures, patchy clay found in clasts
65.5	77	T	PERV	2		0	PERV	3	PERV	3	LIM	FR	1				Limonite alt found in fractures, pervasive sericite-chlorite alt
77	80	S	PERV	3	PATC	2	PERV	3	PERV	3							Pervasice chlorite-sericite alt overprinted by silica alt
80	105	T	PERV	3	PATC	2	PERV	3	FR	3	LIM	FR	1				Weak limonite alt, siluca overprinting chlorite alt
105	114.5	S	PATC	2	FR	2	PERV	3	PERV	2	CHL	FR	1				Strong, pervasive silical and moderate chlorite as patches. Pervasive light green sericite throughout. Mechanical clay on fracture planes, some chlorite on fractures in the clay gouge.
114.5	136	S	PERV	3	FR	2	PERV	4	PATC	2	CHL	FR	2				Stronger silica than above. Alteration obscures primary texture (some laminations and some clasts observed). Light yellow/green, patchy light sericite, pervasive to patchy chlorite alteration, stronger than above. Clay as a beige fracture coating. Alteration still obscuring primary texture. Laminations still present controlling or resulting from alteration.
136	149	S	PATC	3	FR	3	PERV	4	PATC	2	CHL	FR	2	CLY	PATC	1	Similar alteration as above but more patchy with bleached out zones. Preserved texture is lamiated to clastic. Patches of clay specks throughout. Coulor ranges from light grey white to medium-dark grey.
149	173	S	PATC	4	FR	1	PERV	4	PATC	2	CHL	FR	3				Light yellow-green sericite patches, strong chlorite alteration patches, and greater chlorite on fracture planes than above. Less clay on fracture planes than above.
173	184	S	PATC	2	FR	3	PERV	4	PATC	3	CHL	FR	1				Similar to above with less chlorite patches than above, greater sericite than above. A pale yellow-grey clay on fracture planes. Weak chlorite on fracture planes.

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Drill Summary - Alteration

BW0396		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
184	200	S	PERV	3	FR	2	PERV	4	PATC	2	CHL	FR	1				Similar to above. Patchy sericite alteration of altering bands in laminations, pervasive chlorite, greater chlorite on fractures than above.
200	204	S	PERV	2	FR	3	PERV	4	PATC	1	CHL	FR	3				Less sericite than above. More chlorite on fracture planes than above. Moderate clay on fracture planes with chlorite.
204	215	S	PERV	2	FR	2	PERV	4	PATC	2	CHL	FR	1	CHL	PATC	3	Sericite patches following laminations, pervasive sil. Mechanical clay on fractures, chlorite is pervasive and patchy around sulphide mineralization. Chlorite also weakly on fractures.
215	225	S	PATC	2	FR	1	PERV	4	PATC	3	CHL	FR	2	CLY	PATC	2	Less chlorite than above - more sericite. Some patchy clay throughout.
225	243	S	PERV	3	FR	3	PERV	4	PATC	2	CHL	FR	2	CHL		2	similar to above with more chlorite.
243	265	S	PERV	3	MTRX	3	PERV	3	PATC	2	CHL	FR	4	CHL	CLST	1	Chlorite and clay on fracture planes. Clay also in matrix of fragmented intervals - also a soapy green alteration of some clasts. Chlorite is pervasive, stong on fractures and altering a few clasts.
265	279	S	FR	3	FR	1	MTRX	3	CLST	1	CHL	CLST	3	CHL	PATC	2	Lith is more clastic than above. Chlorite is stong in clasts and on fracture planes, weak clay on fracture planes. Alteration varies depending on texture: Where laminated silica is pervasive and sericite is patchy. Where fragmental/brecciated clay and silica are in the matrix and chlorite and clay atleration of clasts. WHere laminated sericite-silica following laminations.
279	289	S	FR	2	FR	1	PERV	3	PATC	4	CLY	CLST	1	SIL	MTRX	4	Sericite as patches throughout - especially where brecciated and following laminations.Stronger sericte than above. Weaker chlorite than above. More pervasive silica than above, but where brecciated matrix is especially silica rich. Clay is weakly on fracture surfaces with chlorite, clay also altering form fragments.

Blackwater Project
Drill Summary - Alteration

BW0396		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
289	303.5	S	FR	3	FR	2	PERV	4	PATC	4	CLY	OP	1	SIL	MTRX	4	Questionable milky white halos of albite? around garnets. Matrix consists of a medium-dark grey silica. Clasts are milky (albite-silica?) and light-medium green (sericite). White (kaolinite?) clay overprint as small euhedral crystals...possibly late stage alteration
303.5	310.8	S	FR	3	FR	2	PERV	3	PATC	3	CLY	OP	1	SIL	MTRX	2	Increased grey silica-sericite zones. Less milky white albite? then previous interval. Questionable whether or not FLPT through interval, or the result of alteration. Light green, possibly weak epidote at 307.70m
310.8	311.3	S	FR	2	FR	1	PERV	3	CLST	5	ALB	CLST	2				Light greenish sericite (possibly with plag) altered zone, garnetiferous through interval
311.3	316	S	FR	2	FR	1	MTRX	4	PATC	4	SIL	PATC	2	CLY	OP	2	Strongly silicified matrix. Appears to be clast-supported interval, with increased sericite alteration of clasts. Clast boundaries are indistinct. White clay subhedral overprint. Cloudy milky silica-albite clast-dominant sections between grey silica matrix and green sericite-altered clasts
316	325	S	FR	1	FR	1	MTRX	4	PATC	4	CAL	FR	2	CLY	OP	2	Calcite along fracture planes appears to have replaced chlorite?
325	330.6	S	FR	1	FR	2	PERV	4	PATC	3	ANH	OP	2	ALB	PATC	2	Interval defined by overprint of scaly-like alteration (sulphate...anhydrite?). Calcite-pyrite fracture/veinlet at 325.2m. Albite haloes consist of milky-cloudy zones at 326.7 & 327.3m. Overprint of white powdery clay specks (possibly kaolinite)
330.6	337	S	FR	1	FR	2	PERV	4	PATC	4	ALB	PATC	2	SIL	MTRX	3	Unknown sky blue alteration mineral at 332m, 336.70m, and 337.90m. White clay overprint. Pervasively silicified. Patchy light green alteration zones (clasts?) within laminated bands. Medium grey silica matrix. Milky albite haloes surround garnets. 335.7m = round (cross-section) mineral that appears to be some sort of amphibole...possibly actinolite

Blackwater Project
Drill Summary - Alteration

BW0396		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
337	344.4	S		0	OP	1	PERV	4	PATC	4	SIL	MTRX	3	ALB	PATC	1	Light green sericite "clasts" brecciated by a medium grey silica, possibly white silica & occasional white albite patches. White clay overprint as euhedral clasts
344.4	347.2	S	FR	3	FR	2	PERV	4	PATC	4	CLY	OP	1				Sharp alteration contact uphole at 40 degrees TCA. Increased chlorite along fracture planes (absent in previous interval uphole) to dark green-black
347.2	355	S	FC	4	FR	2	PATC	3	PATC	5	CLY	OP	1				White-yellow clay with chlorite along fracture planes. Chlorite is very strong within interval, appearing as pseudo-laminae, but presumably still fracture controlled
355	359.6	S	FR	3	FR	2	PERV	5	PATC	4	CARB	FR	1	CLY	OP	1	White clay overprint. Strong "soft-sed deformation" appearing silica-sericite alteration. Possible albit patch at approximately 357.10m
359.6	362.2	S	FR	4	FR	2	PATC	3	PERV	5	CARB	FR	1				Strongly sericite-chlorite altered (light green to medium green). Pebble sized fragments of grey silica altered rock
362.2	374.5	S	FR	5	FR	2	PATC	4	PATC	4	SIL	MTRX	2				Medium green dominantly sericite-altered. Patchy silicification with a medium grey silica matrix. Yellowish clay (possibly sulphate) at 374.5 m EOH

Blackwater Project
Drill Summary - Mineralization

BW0396

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
4.2	22.42	FP	0.1	DI	0.1	DI	0.1	Grnt	DI	0.5							Disseminated massive garnets throughout, Py disseminated in matrix, ocasional Sph specks
22.42	37.9	DI	0.1	DI	0.1	DI	0.1	Grnt	DI	0.5							Disseminated garnets throughout, trace of disseminated Sph, Po
37.9	45	DI	0.1		0	DI	0.1										Disseminated Sph-Po
45	60.64	FP	0.1	DI	0.5	DI	0.5										Py found in fractures, Disseminated SPh-Po throughout
60.64	76	FP	0.1	DI	0.1	DI	0.5										Py in fractures,locally blebby Po
76	80.5	FP	0.5	DI	0.1	BB	0.5	Ga	DI	0.1	Po	VN	0.1				Po hairlines, disseminated Po-sph, disseminated galena
80.5	94.47	FP	0.5	DI	0.1	BB	0.5	Grnt	DI	0.1							Disseminated garnets, Py in fractures.
94.47	104.5	FP	0.5	DI	0.5	DI	0.5	Grnt	DI	0.1	Ga	DI	0.1				Py found in fractures, disseminated Po-Sph
104.5	114.3	DI	0.5	DI	0.5	DI	0.5										Pyrite, red sphalerite and pyrrhotite disseminations. Pyrite as 1-2 mm subhedral - euhedral black disseminations. Some minor f.g. black sulphide in gouge.
114.3	133	DI	0.5	DI	0.1	DI	0.5	Grnt	CG	1.5	Mrc	FP	0.1				Similar as above. With coarse grained garnet aggregates (1-2 cm in diameter). Not evenly distributed throughout core but as clusters. Some occuring with Po. Marcasite on fractures.
173	198	VN	0.5	DI	0.5	DI	1.5	Grnt	GmR	0.5	Ga	SP	0.1	Mrc	FP	0.1	Pyrite not really as veins but small discontinuous stringers - likely filling microfractures. Pyrrhotite is the most abundant sulphide, present as 1-2 mm disseminations throughout - often occuring with sphalerite and galena. Garnet as anheadral blebb
198	204	BB	0.5	DI	0.1	DI	1.5	Mrc	FP	0.5	Grnt	GmR	0.5				Similar style of alteration as above. Less sphalalerite observed. Greater marcasite on fractures. Pyrite more as disseminations/blebbs than veinlets. Garnet as above - as irregularily shaped aggregates, intergrown with clear silica blebbs (2mm) - pre

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Blackwater Project
Drill Summary - Mineralization

BW0396		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
204	225.3	DI	0.5	DI	1.5	DI	1.5	Grnt	BB	1							Fine grained black pyrite disseminations, pyrrhotite replacing 1 cm disseminations of euhedral cubic pyrite. Sphalerite disseminations and rims on pyrrhotite replacements.
225.3	243	DI	0.5	DI	0.5	DI	2	Grnt	BB	1.5							Irregular blebs of garnet some as strung out blebs parallel to laminations. Same style of pyrrhotite mineralization as above - more frequent. Red sphalerite disseminations - less than above.
243	266	DI	0.1		0	DI	2	Grnt	BB	0.1							Less garnet than above and below. Pyrrhotite replaceing euhedral grains of disseminated pyrite. Pyrite? as very fin grained black disseminations. No sphalerite observed in this interval.
266	279	DI	0.1	DI	0.5	DI	1.5	Grnt	BB	0.5							similar style of alteration as above with more abundant blebs of garnet (some intergrown with pyrrhotite) and red sphalerite disseminations. Sphalerite, pyrrhotite and garnet also mineralizing clasts where brecciated.
279	293	EU	0.1	BB	0.5	BB	1	Grnt	CG	0.5	Py	FP	0.1	Apy	SP	0.1	Coarse-grained garnets (1-5cm) with milky white plagioclase-quartz coronas/halos. Sphalerite blebby within garnet haloes. Pyrrhotite has replaced euhedral pyrite crystals. Pyrite mineralization with chlorite along fracture planes. Possible Apy speck
293	307.3	FP	0.5	BB	0.1	BB	0.5	Grnt	CG	0.5				Apy	SP	0.1	As above, with a decrease in pyrrhotite. Possible Apy speck at 293.4m. Increased pyrite along fracture planes
307.3	310.9	FP	0.5	BB	0.1	BB	0.5	Grnt	CG	0.1	Py	EU	0.1	Py	VN	0.5	Pyrite increased along fracture planes, stockworking at 307.60m, clast replacement by pyrrhotite of euhedral pyrite decreased
310.9	320.4	FP	0.5	BB	0.1	BB	0.5	Grnt	CG	0.5	Py	VN	0.1	Py	BB	0.5	Blebby pyrite throughout interval in dark grey silica zones. Trace pyrite veins. Pyrrhotite has predominantly replaced euhedral pyrite. Coarse-grained garnets with trace sphalerite

Blackwater Project
Drill Summary - Mineralization

BW0396		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
320.4	325	BB	0.5	BB	0.5	BB	0.5	Grnt	CG	0.1	Py	EU	0.1	Py	FP	0.1	Blebby acicular pyrite mineralization throughout interval with sphalerite. Trace sphalerite found within within garnets. Pyrrhotite has replaced euhedral pyrite.
325	329.4	BB	0.5	BB	0.1	BB	0.5	Grnt	CG	0.1	Py	EU	0.1				Sulphide mineralization decreased (presumably in the form of sulphate instead...anhydrite). Pyrrhotite as blebs and replacement of euhedral pyrite
329.4	330.6	BB	0.5	BB	0.5	BB	0.5	Grnt	CG	0.5	Py	SUBH	0.1				Pyrrhotite after pyrite becoming more subhedral in interval. Garnet intensity increasing
330.6	340	BB	0.5	BB	0.5	BB	0.5	Grnt	CG	0.5	Py	SUBH	0.1	Py	EU	0.1	Coarse grained garnets. Subhedral Py > Euhedral Py. Pyrrhotite has replaced pyrite. Blebby sulphides consist of sphalerite and pyrite
340	344.4	BB	0.5	BB	0.5	BB	0.5	Grnt	CG	0.5	Py	VN	0.1	Po	VN	0.1	Trace coarse-grained garnets. Blebby Po has replaced subhedral pyrite. Trace pyrite-po veinlets
344.4	350.5	FP	1	BB	0.1	BB	0.5	Grnt	CG	0.1	Py	SUBH	0.1	Py	BB	0.1	Increased pyrite along fracture planes with chlorite
350.5	353.3	FP	0.5	BB	0.5	BB	0.1	Py		0.1							Increased sphalerite at 353.0m. Pyrite along fracture planes with chlorite. Decrease in Po through interval
353.3	359.6	FP	0.1	BB	0.1	BB	0.5	Grnt	CG	0.5	Py	SUBH	0.1	Py	EU	0.1	Weakly mineralized. Blebby pyrrhotite replacing subhedral and euhedral pyrite
359.6	374.5	FP	0.5	BB	0.1	BB	0.5	Grnt	CG	0.1	Py	EU	0.1				Po recplacement of euhedral pyrite. Weakly mineralized. Trace garnets with sphalerite blebs.

Blackwater Project
Drill Summary - Structure

BW0396

From (m)	To (m)	Structure	Strength	Comments
4.2	64.5	JZ	2	Jointed zone, 60>40
64.5	77	FZ	3	Faulted zone, clay gouge, brecciated clasts
77	88.27	BRKZ	3	Broken zone, locally brecciared clasts.
88.27	106	JZ	2	jointed zone, joints at 40 core axis
106	115	FZ	3	Fault zone with intervals of broken core and clay gouge (with cm scale fragments in a light yellow-white clay). Some sulphide mineralization in gouge, f.g. black sulphide (sphal + pyrite ?) Late silica vein at 113.5 m at 60 degrees TCA.
115	138.5	JZ	3	JZ with fractures at 45 and 60 DTCA. Some zones of redrill
138.5	155	JZ	4	As above with minor, local broken zones. Chlorite on fracture planes.
155	166.5	BRKZ	3	BZ with local zones of competant core (less than 30 cm)
166.5	171.5	JZ	4	Joint zone with main orientation strongly at 0-10 DTCA
171.5	173	FL	3	Fault with clay gouge bounded by broken core. No evidence of late mineralization observed.
173	182.5	JZ	5	Joint zone 5, and 30 DTCA
182.5	185	FL	4	Fault at 50 DTCA, with gouge and black sulphide goo near the sharp contact between gouge and competant core
185	189	BRKZ	4	Broken zone near fault - some minor redrill
189	202.1	JZ	3	Joint zone with jointing at 30 and 60 - chlorite and marcasite on fractures
202.1	210	BZ	3	broken zone with some intervals of competant core (less than .50 cm)
210	225	JZ	3	Joints at 40 and 10 DTCA
225	228	FL	2	small fault at 20 DTCA - minor clay gouge
228	244	JZ	3	joints at 35 and 15 DTCA
244	255.6	BRKZ	4	Broken zone with many fractures at 45 DTCA
255.6	257.8	JZ	3	Joint zone with fractures at 20
257.8	265.5	BZ	3	BZ with intervals of competant core - fractures at 25-35 DTCA
265.5	290	JZ	4	joint zone with local broken zones and jointing at 30 and 20 DTCA
290	295	JZ	2	Joint zone, 60-70 degrees TCA. Weakly jointed
295	303.3	JZ	3	Joints at 40-50 degrees TCA > joints at 15 degrees TCA
303.3	303.5	FL	3	Chlorite, minor gouge along fault plane. Slickensides visible on plane
303.5	309.3	JZ	2	Joints at 50 TCA > small joint zone 307.60-308m @ 10 TCA
309.3	310.3	BRKZ	3	Strongly broken. Upper contact @ 40 degrees TCA. No visible gouge

Blackwater Project
Drill Summary - Structure

BW0396

From (m)	To (m)	Structure	Strength	Comments
310.3	320	JZ	2	Joints from 20-40 degrees TCA. Chlorite along fractures
320	326	JZ	3	50 degree TCA fracs > 80 & 10 degree TCA fracs. Fracs at 10 and 80 degree have calcite coating
326	330.6	JZ	2	40 TCA > 70 TCA joints. Strongly silicified, joints are not prominent. Joints contain calcite-sericite-anhydrite coating
330.6	330.8	FL	4	Fault? Competent and weakly jointed on other side of structure. No measurable contact angle, upper break and lower break vertical TCA
330.8	340	JZ	3	30 TCA > 70 TCA joints
340	347.2	JZ	2	40 TCA > 70 TCA joints
347.2	352.2	FZ	3	Minor gouge. 50 TCA Upper contact.
352.2	352.9	JZ	4	Joint zone. Possibly still part of fault zone
352.9	358.3	JZ	4	60 TCA > 30 TCA joints
358.3	360.1	BRKZ	4	20 TCA joints, no visible gouge
360.1	362.3	FZ	4	Strong upper contact at 50 TCA. Indistinguishable lower contact
362.3	374.5	JZ	3	20 TCA joints > 50 TCA joints. Strongly jointed

Blackwater Project
Drill Logs

Hole ID:	BW0397	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375251.07
Depth (m):	215.75	Date Started:	02/04/2012	Casing Size:	HWT	Northing:	5893400.01
Azimuth:	0	Date Completed:	05/04/2012	Casing (m):	6	Elevation (m):	1531
Dip:	-90	Logged By:	LMo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	107	-89
52	106.5	-88.7
100	95.6	-89
200	120.2	-89

Blackwater Project
Drill Summary - Lithology

BW0397

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	8	OB							Overburden
8	56	FLPT	lptbx	LAP	L	GRY			Felsic lapilli tuff, larger clasts of bedded ash tuff, strongly broken up, fairly unaltered
56	215.8	FLPT	lpt	LAP	M	GRN	FLT	GR30+	Felsic lapilli tuff, clasts are sometimes obscured by strong pervasive sericite-chlorite, with patchy moderate silica.

Blackwater Project
Drill Summary - Alteration

BW0397		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
8	31	T		0	PERV	2	CLST	1		0	LIM	FC	3				Patchy, fracture controlled limonite in transition zone. Weak pervasive clay, though may be primary. Some silicified clasts in bx areas
31	54	S		0	PERV	2	CLST	1		0							Weak, pervasive clay, weak silica on brecciated clasts
54	198	S	FC	3	PERV	1	PATC	3	PERV	3	CHL	CLST	3				Strong pervasive sericite, with patchy moderate silica, probably pervasive, but overprinted clay, and moderate chlorite on fracture planes, and replacing some clasts.
198	215.8	S	PERV	2	PATC	2	PATC	2	PERV	2	CHL	FC	4				patchy zones with more pervasive light coloured clay alt'n. Dark green chl strong on fractures,

Blackwater Project
Drill Summary - Mineralization

BW0397		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
8	31	DI	0.1	BB	0.1		0	Dbs	DEN	0.5	Goe	FP	3				Goethite with limonite, fracture controlled. Denditic DBS, sometimes with visible py, occasionally with sphal.
31	58	FP	0.5	BB	0.1		0	Dbs	DEN	1							DBS sometimes with sphal, also with py, py also on fractures
58	103.3	BB	0.5	CR	4	DI	0.1										Intense di - mostly replacing clasts, occasionally veined - sphal, sometimes with py
103.3	128	DI	0.1	CR	2	DI	0.1	Apy	SP	0.1							Less sphal, but still consistent, often replacing clasts, sometimes on fractures. Trace py and po, with some specks of arspy.
128	134	DI	0.5	CR	3	CR	0.5										Minor po and py, increase sphal, esp replacing clsasts
134	167	FP	0.5	DI	4		0	Ga	DI	0.5	Dbs	DI	0.5				Strong di sphal, with minor gal, and some DBS. Py is fracture controlled - sometimes on fracture plans, sometimes banded within fault gge
167	198	FP	0.5	CR	2		0	Dbs	DI	0.1	Cp	SP	0.1				Less sphal, mostly replacing clasts, minor py, especially on fractures. Trace DBS. Occasional specks on chalcopyrite.
198	215.8	FP	0.5	CR	1		0	Dbs	BB	0.5	Apy	SP	0.1				in last couple meters of hole, dark sulphide blebs, almost aligned in laminations, but very round small spots of what appears to be sph-py-aspy with perhaps gal(?). fine grained

Blackwater Project
Drill Summary - Structure

BW0397

From (m)	To (m)	Structure	Strength	Comments
8	77.5	FZ	4	Fault zone, with frequent intervals of clay gge and rubble
77.5	90	BRKZ	3	Irregularly broken zone, with intervals of rubbly/shardy rock, with some areas of joint rock.
90	130.5	JZ	3	Joint zone, with fractures 30>45 degrees TCA
130.5	131.4	FL	4	Short fault with rubble and clay gge
131.4	142	JZ	2	Joint zone, fractures 30>45 degrees TCA
142	198	FZ	4	Fault zone, with many long intervals of fault gge and rubble, with broken rock in between
198	215.8	FZ	3	rubbly rock, very broken up sections with minor gouge

Blackwater Project
Drill Logs

Hole ID:	BW0398	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375551.42
Depth (m):	406	Date Started:	01/04/2012	Casing Size:	HWT	Northing:	5892898.51
Azimuth:	0	Date Completed:	08/04/2012	Casing (m):	4.5	Elevation (m):	1603
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	275	-88
50	274.7	-87.6
100	264.9	-87.9
150	254.6	-88.3
202	252	-88.3
250	237.3	-88.1
301	229.8	-87.6
350	227.5	-87.5
406	217.5	-87.2

Blackwater Project
Drill Summary - Lithology

BW0398

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2.5	OB							
2.5	19.87	VC	plm	LAP	M	GRY	DEP	GR30	Polymictic andesite fragment rich volcaniclastic with differential alteration of mafic clasts hosted in silicified grey purple matrix; Weak hemtite on fractures and local gouge
19.87	44.7	VC	plm	LAP	M	GRY	FLT	GR30+	Polymictic Andesitic fragmental rich VC, with dominant clay clast alteration and patches of sericite clast alteration in L-M.Gray matrix.
44.7	55	VC	hydbx	LAP	L	GRN	FLT	GR30+	silica bleached. hydroBx? locally small <=2mm rounded matrix supported clasts and locally weakly laminated jigsawfit matrix/clast supported clasts. Altered VC/AND? or primary FLPT?
55	61.7	AND	mas		D	GRY	DEP	GR30+	Massive AND plag>hornblende porphyry. Top contact is faulted, while bottom contact is competent gradationally clastic.
61.7	108	AND	volc	LAP	D	GRY	ALTFR	GR30	Andesitic fragmental, plag and/or hornblende porphyritic clasts as well as m,assive textureless clasts M-D.Gray purply very-fine-grained matrix supported. Hornblende crystals throughout and locally rich (Ash-Crystal Tuff sections?)
108	119.5	AND	bx	LAP	M	GRY	ALTFR	GR30+	ALTERATION of above, pervasive clay alteration bleaching rock to a Medium to medium light gray. clasts have been bleached L.Gray-white where present.
119.5	168	AND			L	GRY			ALTERATION OF ABOVE???? Texture obscured by silica-ser-chl alteration. Early Faulting structure that has since been completely healed, with chl, clay and silica, and since locally re-activated. (May be altered product of any number/series of Lith's
168	232	AND			L	GRY			Continuation of above. Texture obscured by silica-ser alt.
232	289	AND			L	GRY			Continuation of above. Texture obscured by silica-ser alt.
289	357	AND			L	GRY			Continuation of above. Texture destroyed by silica-ser alt. Less green than above, (less sericite?)
357	377.6	AND			L	GRY	ALTFR	GR30	Continuation of above. Texture destroyed by silica-ser alt. Locally perv chl.
377.6	390	AND	mas		D	GRN	UNKN	GR30+	Pervasive silica-chl altered, with local traces of relict abundant silica-sulphide filled amyg's. Unknown bottom contact undiscernible due to alteration of protolith.
390	395	AND	mas		D	GRN	ALTFR	GR10	Pervasive silica-chl altered, with weak relict clay/mica replaced faint plag phenos. Bottom contact fulidized undulating silica-albite band @ ~45 dtca.
395	401.5	AND	bx	LAP	M	GRY	FLT	GR10	Medium Gray Matrix dom silica-albite? alt. With L-M.Green clasts chl-ser replaced clasts, possibly pseudoclasts brought on by alteration. Bottom contact is a weakly gouged Bx silica altered fault.

Blackwater Project
Drill Summary - Lithology

BW0398

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
401.5	406	FT	bx	LAP	L	GRN			Silica-ser Bleached rock, strongly fractured. Weak laminatiosn and laminated SA clasts.

Blackwater Project
Drill Summary - Alteration

BW0398		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2.5	19.87	T	FR	1	FC	1	PERV	3	CLST	1	BIOT	CLST	2	HM	FC	1	Biotite and silicified andesitic clasts
19.87	31.25	T	FR	1	CLST	3	MTRX	2	CLST	2	BIOT	CLST	1	HM	FC	1	Clasts; clay replaced, with ser replacing plag, and locally ser wholly rep clasts (Felsic clasts?). micro-crystalline silica in matrix. Limonite and Hm Fracture controlled.
31.25	45	T	FC	4	FC	3		0		0	LIM	FC	1				Chloritic/clay fault gouge, locally with traces of Limonite.
45	52.7	T		0	FR	1	PERV	4	PERV	2	LIM	FC	2				Bleached Zone. White and L.Green perv silica-ser alt. Orange Lim weak-mod coats FP's with trace clay.
52.7	55	T	FC	1	FC	2		0	FC	2	LIM	FC	1				Fault Gouge; L.Green to white Sericite and partially Limonite oxidized clays in gouge and on Bx FP's
55	60.5	T	FR	1	FR	3	PERV	2	REP	2	SER	FR	1				microcrystalline perv silica. White Ser partially replacing plag crystals, and L.Green Ser coating FP's. Oxidized clay on FP's. Chlorite weakly coats FP's
60.5	75	S	FR	2	CLST	3	MTRX	2	FR	2	SER	REP	1				microcrystalline matrix dom silica. White Ser partially replacing plag crystals, and L.Green Ser coating FP's. Clay clast rep. Chlorite weak-mod coats FP's
75	90	S	FC	4	FC	2	MTRX	2		0	CLY	CLST	2				micro-crystalline matrix dom silica. Chl coats FP's and Fracture controlled with clay in Fault gouge.
90	108.5	S	FC	4	CLST	3	MTRX	2		0	SIL	PATC	2				micro-crystalline matrix dom silica, Red patchy JASPER Bands with inclusions of sulphides (Py). chl is fracture controlled and weakly perv around fractures in rock. clay replaces clasts. Heavy Sp rep and min, unable to distinguish any biotitic alt?
108.5	119.5	S	FC	1	PERV	4	PATC	1	FC	1							Altered AND. Perv clay alt, with small silica rich patches.
119.5	144.2	S	FC	2	PATC	2	PERV	4	PERV	3	SIL	MTRX	2	SIL	INFILL	1	Bleached rock. 3 stages of alteration; perv silica-ser alteration (followed by faulting), silica alteration healing fault matrix and prismatic partial vug fill (geodes with prismatic translucent Qtz), and then a mineralization stage which brought sulphide
144.2	151	S	FC	2	FC	1	PERV	4	PERV	3	SIL	MTRX	2	SIL	INFILL	1	Bleached rock similar to above.
151	174.4	S	FR	2	FC	1	PERV	4	PERV	3							Bleached rock, similar to above; No healed fault structures.
174.4	190.9	S	FR	2	FC	1	PERV	4	PERV	3							Bleached rock; similar to above.

Blackwater Project
Drill Summary - Alteration

BW0398		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
190.9	202.7	S	FR	2	FC	1	PERV	4	PERV	2							Bleached rock; similar to above; gradationally weaker Ser alt from above (L.Gray>L.Green). Chl lining Py veinlets.
202.7	218.3	S	FR	3	FC	2	PERV	4	PERV	2							Bleached Rock; similar to above; chlorite and white clay filling FP's. White-L.Gray clay assoc with weak/healed fractures trhoguhout.
218.3	232	S	FC	3	FC	4	PERV	4	PERV	3	HM	FC	1				Bleached Rock; similar to above; Strong fault zone, white - L.Gray clay rich gouge, brown-red oxide in fault gouge locally. Chl coats FP's and with clay is gouge.
232	249.2	S	FC	3	FC	3	PERV	4	PERV	3	HM	FC	1				similar to above.
249.2	263.4	S	FR	3	FC	1	PERV	4	PERV	3							Bleached Rock; perv silica-ser L.Green-gray alt. perv chl and locally flaky chl on FP's.
263.4	270.4	S	FR	3	FC	1	PERV	4	PERV	2	CHL	PATC	2				Bleached Rock; similar to above; with local patches of perv chl alteration.
270.4	283	S	FC	4	FC	1	PERV	4	PERV	2							Bleached Rock; similar to above; Fault zone, gouge, and crush is chloritic.
283	300.3	S	FR	3		0	PERV	4	PERV	3	HM	FR	1				Bleached Rock; L.Gray-Green perv silica-ser. Flaky D.Green-Black Chl on Fp's with Red Hm.
300.3	315	S	FR	3		0	PERV	4	PERV	3							Bleached Rock; L.Gray-Green perv silica-ser alt. M-D.Green Chl coats FP's, local weak flaky D.Green-Black Chl.
315	319.5	S	FR	3		0	PERV	4	PERV	3	HM	FR	1				Bleached Rock; L.Gray-Green perv silica-ser. Flaky D.Green-Black Chl on Fp's with Red Hm.
319.5	337	S	FR	2		0	PERV	4	PERV	3							Bleached Rock; L.Gray-Green perv silica-ser alt. M-D.Green Chl coats FP's, local weak flaky D.Green-Black Chl.
337	357	S	FR	2	FR	1	PERV	4	PERV	3	HM	FR	2	CHL	PATC	1	Bleached Rock; L.Gray-Green perv silica-ser. Flaky D.Green-Black Chl on Fp's with Red Hm. Olive clay on FP's locally. Local patchy perv Chl.
357	369	S	FR	2	FR	2	PERV	4	PERV	3	CHL	PERV	2	HM	FR	1	Bleached Rock; M.Gray-M-L.Green perv silica-ser-chl. Weak red Hm on FPs locally.

Blackwater Project
Drill Summary - Alteration

BW0398		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
369	377.6	S	FR	2		0	PERV	4	PERV	3	HM	FR	2	LIM	FR	1	Bleached Rock; L.Gray- L.Green perv silica-ser. chl on Fp's locally growing in preffered orientation (slickensides). Black dessication crack appearance oxides on Fp's (oxides?), trace brown limonite, and minor Hm.
377.6	388.5	S	PERV	4	PERV	1	PERV	2	PERV	2	ALB	PERV	2	SIL	AMYG	1	Chloritized rock, perv Chl-Silica/Albite-ser. relict texture with silica filled amygs.
388.5	398.2	S	PERV	4	FC	1	PERV	2	REP	2	ALB	PERV	2	SIL	PATC	1	similar to above; Patches of silica/albite alt, bottom contact a fluidized undulating band of sil/alb alt. Pale-white 3.5 mica/clay replacing plag phenos locally.
398.2	406	S		0	FC	1	PERV	4	PERV	2							Bleached Rock, with silica-ser perv. Small siliceous fractures throughout laminations (stockwork laminations.... Hydro-Bx). Creamy white clay fracture controlled.

Blackwater Project
Drill Summary - Mineralization

BW0398		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2.5	19.87	FP	0.5		0	SP	0.5	Hm	FP	0.5							Pyrite filled fractures altering to hematite; local specks of Po
19.87	31.3	SP	0.1	GmR	0.5		0	Goe	FP	0.5	Hm	FP	0.1				red Sp BB's rimming AND clasts and throughout. Trace Sp's of Py.
31.3	45	BB	0.5		0		0	Py	DI	0.1	Goe	FP	0.1				Py BB's in Fault Gouge, and Di Py throughout, locally subhedral.
45	49.5	BB	0.1	BB	1	BB	0.5	Dbs	BB	0.5	Goe	FP	0.5				Sp BB's and filling small discontinuous Fractures. Po Py and BS's (Black Sulphides) intergrown BB's and filling small discontinuous fractures
49.5	55.3	DI	0.1	BB	0.1	BB	0.1										Milled clasts with above mineralization. Fault gouge, has fin-grained DI'd Py throughout (milled grains?)
55.3	60.5	VN	0.5	GmR	0.1	BB	0.5	Po	CR	0.5		FP	1				Orange oxidized Fe-rich clays on FP's. Po BB's throughout, locally GMR, and replacing clasts near bottom of section.
60.5	81	VN	1	CR	2	CR	3	Sp	VN	0.1	Apy	VN	0.1	Cp	BB	0.1	Intergrown Po and red Sp predominatley rep-clasts, as large BB's. Po stand-alone BB's and specks in GM, locally Cp intergrown in Po BB's. Py regular and irregularly cont/discont veinlets throughout. Single Py vein at 65.7m assoc with fault that Bx's
81	92.5	VN	3	CR	1	BB	1										Py Veined throughout but strongest in chloritic gouge, where milled veinlets occur. Patchy BB's of Sp rim clasts in non-faulted rock, with locally intergrown Po. Po BB's partially infill amygs with silica and trace black opaque Sp.
92.5	106.2	BB	1.5	CR	3	BB	2	Py	VN	0.5	Sp	VN	0.1				DI'd BB's of Po and Py. Py BB's locally associated with Red Jasper. 3% Sp Clast replacement/rimming > BB's. Py VN'd, and locally with Sp.
106.2	110	DI	5	BB	0.5	DI	1	Py	VN	0.5	Sp	VN	0.1				square shaped DI'd BB's of Py predom localized around fault/veining structures, and euhedral DI'd fine-grained Py in chloritic Fault gouge. Py-Sp veined. Po background Specks-DI's-BB's

Blackwater Project
Drill Summary - Mineralization

BW0398		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
110	119.5	VN	1	VN	1		0	Py	BB	2.5							strong clay alteration making it hard to see sulphides. dull bronze Py BB's and Vn's, locally with Black opaque Sp. The VN's appear locally to be filling early fault matrix, healing the fault? secondarily healing the fault?
119.5	122	DI	0.5	BB	2.5		0										Red and black opaque Sp BB's and DI's locally aligned and following a lamination? Py DI'd BB's irregular shape and scarce.
122	137.2	BB	1	BB	0.1		0	Py	FP	1	Dbs	DEN	0.1				in competent rock Py is irregular DI'd BB's within fault zones however it follows fractures and lines the Bx as fine-grained masses and euhedral DI's. Trace Black Sulphides weakly dendritic in competent non-Bx'd rock.
137.2	138.8	BB	7	GmR	2		0										patchy mottled alteration. rounded BB's of tarnished Py with red Sp GMR BB's.
138.8	150.5	DI	2	DI	1		0	Py	VN	0.1	Sp	VN	0.5				Square-rectangular-irregular BB's of Black Sp rimmed by red Sp, locally assoc with square Py. DI'd BB's of Square-irregular Py. SP-Py veinlets. locally assoc with faulting.
150.5	160.5	DI	2	DI	1	DI	0.5	Dbs	DI	0.1							DI'd BB's of Py locally intergrown with red or black Sp. Py and Sp weakly FRCT veined. Black DI's of BS's and Po.
160.5	174.4	DI	1	DI	1.5	DI	1.5	Dbs	DI	0.5							similar to above, with a decrease in Py adn an increase in Sp, Po and BS. Po and BS are predom needle-like.
174.4	190.2	VN	1	DI	0.5	DI	0.5	Po	DI	1	Sp	VN	0.1				DI'd Py-Po-Sp throughout, Py between 1-4%. Py-Sp fracture fill veinlets.
190.2	193	DI	0.5	DI	3	DI	0.5	Py	VN	0.5	Sp	VN	0.1				DI'd Sp-Py-Po, throughout, locally intergrown, and red Sp rimming black opaque Sp. thin veinlets of Py-Sp.

Blackwater Project
Drill Summary - Mineralization

BW0398		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
193	208.5	DI	0.5	DI	1	DI	2	Py	VN	0.5	Sp	VN	0.1	Dbs	DI	0.5	DI'd Po-BS-Py-Sp, throughout, locally intergrown BB's. Py veines, and surrounding veins is large amounts of DI'd Py. BS DI's are needle-like and assoc with Po.
208.5	224.5	DI	2	DI	0.1	DI	0.5	Py	VN	0.5							DI'd Py-Po-Sp, throughout, locally Py euhedral and locally Py euhedral squares with fin-grained Py rep. Py FRCT veins.
224.5	246.9	DI	1		0	DI	0.5	Py	VN	0.5							DI'd Py-Po, throughout, locally Py black and needle-like, and locally Po fine-grained rep DI'd BB's (replacing sub-hedral Py?). FRCT Py veinlets and hairline veinlets.
246.9	258.6	VN	0.5	DI	1.5	DI	1	Py	DI	0.1							DI'd Sp-Po-Py, throughout, red Sp, fine-grained DI'd BB's Po, minor Po-Sp intergrowth. Py VN'd.
258.6	269.8	DI	0.3	DI	0.8	DI	1.5	Py	FP	0.1							DI'd Po-Sp-Py, throughout, red and opaque black Sp, fine-grained Po DI'd BB's intergrown with minor Py, sequences of variably abundances. Py hairline veinlets trace, and Py coating FP's.
269.8	274.3	VN	0.1	DI	2	DI	0.5	Py	DI	0.1							DI'd Sp-Po, throughout, black and red intergrown SP DI'd BB's. Py FRCt VN's.
274.3	285.7	VN	1	BB	0.1	BB	0.5	Py	BB	1							Lathe shaped intergrowths of Sp-Py-Po. BB's Py throughout. hairline to 1mm thick Py FRCT veinlets, throughout.
285.7	295.1	DI	3	BB	0.5	DI	0.7	Py	FP	0.5	Py	BB	0.5	Po	BB	0.5	Filiform (needle-like) Py DI's with fine-grained Po inclusions. Irregular DI'd BB's of Py-Po-Sp, throughlout. Fine-grained euhedral to botryoidal Py on FP's
295.1	300.3	BB	0.5	BB	0.1	BB	0.5	Py	FP	1	Hm	FP	0.5	Py	DI	0.5	Weak Filiform (needle-like) Py DI's with fine-grained Po inclusions. DI'd BB's of Po-Py-Sp, throughout. Fine-grained Py coating FP's, locally with red Hm.

Blackwater Project
Drill Summary - Mineralization

BW0398		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
300.3	320.2	DI	1	FP	0.1	DI	0.5	Viv	FP	0.5	Py	BB	0.1	Po	BB	0.1	minor Py-Po BB's locally, fine-grained Po and Py specks in intergrown BB's. Py DI's and DI'd fine-grained replacement of square and hexagonal crystals, with small specks of Po. L.Blue to L.Green prismatic to sheeted FP caoting vivianite.
320.2	336	DI	1	DI	0.1	DI	0.5	Py	BB	0.1	Po	BB	0.5	Py	VN	0.1	Weak Filiform (needle-like) Py DI's with fine-grained Po inclusions. DI'd BB's of Po-Py-Sp, throughout. Fine-grained Py caoting FP's.
336	357	DI	1.5	VN	0.5	DI	1	Viv	FP	0.5	Hm	FP	0.5	Py	FP	0.5	Weak locally strong Filiform (needle-like) Py DI's with fine-grained Po inclusions. DI'd BB's of Po-Py, throughout. Fine-grained Py caoting FP's. L.Blue to L.Green Vivianite flaky and prismatic locally coating FP's. Py-Sp-Qtz stockwork veinlets local
357	373	DI	3		0	BB	1.5	Viv	FP	0.5	Py	VN	0.5	Py	FP	0.5	mod-strong Filiform (needle-like) Py DI's, throughout. Po-Py BB's locally abundant. L.Blue to L.Green flattened sheets of Vivianite on FP's. CP VN'd.
373	377.6	BB	0.5		0	BB	1.5	Hm	FP	0.1	Py	DI	0.1				weak Filiform Py (needle-like), locally. BB's of fine-grained Po with minor Py grains. Red HM on FP's, locally.
377.6	385.2	VN	1.5		0	GmR	1	Py	GmR	2.5	Apy	VN	0.1	Cp	VN	0.1	Py and Po specks Replacing GM, throughout, but locally more abundant (up to 10-15%, as matrix supporting Bx). Py veining from 30 to 70 dtca.
385.2	398.2	VN	1.5	VN	0.1	GmR	1	Py	GmR	2	Apy	VN	0.1	Cp	VN	0.1	similar to above.
398.2	401.5	GmR	1	DI	0.5	GmR	2	Mrc	FP	0.5							Po-Py specks replacing GM, throughout. Po-with Sp rimming replacing clasts. Mrc locally fan-shaped radiating on FP's.
401.5	406	VN	0.1	VN	0.1		0	Apy	DI	0.1	Cp	VN	0.1				Py-Apy fine-grained DI's localized in Fractures/VN's.

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0398

From (m)	To (m)	Structure	Strength	Comments
0	19.87	JZ	3	Local gouge at 8.20m
19.87	20.5	BRKZ	3	broken clay rich.
20.5	28.65	JZ	3	jointed @ 10 (10-15) > 40 dtca. with small <2cm sections of gouge, joint failure faults?
28.65	29	FL	3	small gouge rich fault @ 50 dtca
29	31.8	JZ	3	jointed at 10 dtca and partially irregular/broken.
31.8	37	BZ	5	gouge with m inor Bx. FULL RECOVERY.
37	43.2	FL	4	Broken rock/Bx, with minor gouge. BAD RECOVERY
43.2	44.5	BZ	5	Gouge with minor Bx. FULL RECOVERY.
44.5	49.5	BRKZ	4	minor to mod gouge, amongst drilled/rounded rubble. Strong ALT ZONE.
49.5	55.3	BZ	5	Gouge with minor-mod Bx. FULL RECOVERY.
55.3	56	JZ	3	jointed @ 45 dtca.
56	56.2	FL	3	Abundant gouge and Bx.
56.2	56.7	JZ	4	Jointed @ 50 dtca.
56.7	65.7	JZ	3	Jointed @ 50 (40-65) > 30 dtca.
65.7	65.8	BZ	4	chloritic gouge with small<3mm Bx.
65.8	76.5	JZ	3	Jointed @ 55>5 dtca.
76.5	78	BRKZ	3	chloritic with minor chl gouge.
78	79.5	JZ	2	Jointed @ 55 dtca.
79.5	80.6	BRKZ	2	Some lost recovery.
80.6	83.7	FL	4	Broken chl rock and mod chl gouge
83.7	87.5	FL	4	intermittent chl gouge and competent rock.
87.5	91.8	FZ	4	intermittent blocks of rock and chl gouge & Bx. (Late Fault with milled sulphides).
91.8	92.5	BRKZ	2	broken
92.5	95.2	JZ	3	jointed 60-70 dtca.
95.2	95.35	FL	3	chloritic Bx and gouge.
95.35	99.1	JZ	3	locally broken, with minor chloritic gouge.
99.1	99.5	FL	3	chloritic mineralized gouge fault.
99.5	99.75	BRKZ	1	broken chlorite rich rock.

Blackwater Project
Drill Summary - Structure

BW0398

From (m)	To (m)	Structure	Strength	Comments
99.75	100.6	BZ	4	chloritic gouge/Bx. Mineralized.
100.6	103.7	BRKZ	3	locally broken, locally jointed..
103.7	104	BRKZ	3	chloritic Bx with gouge minor chl gouge.
104	106	BRKZ	2	locally broken> locally jointed.
106	107.1	BZ	4	chl gouge/Bx, mineralized.
107.1	109.2	JZ	3	jointed 55>15 dtca.
109.2	119.5	FZ	4	numerous faults 5-15 dtca. Gray gouged/Bx with milled sulphides. With intermittent broken/jointed rock @ 55 dtca.
119.5	123.8	BRKZ	2	broken rock with joint like vugs, partially healed early faulting????????
123.8	127.1	BZ	4	chl/clay gouge Bx'd fault intact. partially solidified locally.
127.1	130.6	BZ	4	SILICA HEALED EARLY FAULT. Early fault with large blocks and smaller lapilli sized Bx, sealed together with silica. Small to large vugs left behind partially lined/infilled with prismatic translucent silica.
130.6	144.7	FZ	4	remobilized broken rock and locally chl/clay gouge and Bx.
144.7	150.6	BZ	4	SILICA HEALED EARLY FAULT. similar to above healed fault, with partially remobilized chl/clay later refaulting @ 0-5 dtca..
150.6	160	JZ	2	jointed @ 55>30>5 dtca.
160	160.5	JZ	4	jointed @ 0-5 dtca.
160.5	164	JZ	2	partially healed fractures @ 50-60 dtca and jointing @ 45 dtca.
164	164.1	CRZ	5	small Bx rock.
164.1	175.6	JZ	3	Partially healed fractures. Jointing @ 50 (40-55) > 0-5 > 30 > 70 dtca.
175.6	175.7	FL	3	euhedral mieralized Py chl fault gouge.
175.7	178.6	FL	1	EARLY SILICA/CLAY HEALED fault, jointed @ 25-45 dtca
178.6	179.4	BRKZ	3	
179.4	190.5	JZ	4	jointed @ 60>10 dtca.
190.5	202.8	JZ	3	Jointed @ 50>15 dtca.
202.8	205.6	FL	2	Small ~5-10 dtca Bx chl 1.5cm wide fault.
205.6	206	CRZ	4	Bx, broken rock.
206	208.2	JZ	4	jointed @ 50>5 dtca.
208.2	208.9	FL	2	Small ~5-10 dtca Bx chl 2cm wide fault.

Blackwater Project
Drill Summary - Structure

BW0398

From (m)	To (m)	Structure	Strength	Comments
208.9	209	FL	3	crushed clay-chl gouged Bx.
209	210.6	FL	2	Small ~15 dtca bx chl 2cm wide fault.
210.6	210.8	FL	3	chl-clay gouge supporting Bx.
210.8	212.5	FL	2	Small ~10-15 dtca Bx chl gouge 2cm wide fault.
212.5	214.6	FL	2	SILICA HEALED but locally Broken , later jointed @ 20-50 dtca.
214.6	215.9	CRZ	4	crush Bx, with blocks of partially healed fault inside.
215.9	217.5	JZ	4	Jointed @ 50>10 dtca.
217.5	218.3	BRKZ	4	minor gouge locally.
218.3	222.4	FL	4	Ser/Clay gouge with minor Hm staining clays, supporting Bx perv alt sil-ser rock.
222.4	223.6	BRKZ	4	minor- mod gouge.
223.6	225.5	BRKZ	2	broken zone, with local jointing @ 15-55 dtca.
225.5	226.8	FL	2	SILICA HEALED fault, jointed @ 0-15 dtca.
226.8	227.6	BRKZ	4	broken rock, partially reactivated earlier fault system.
227.6	228.5	JZ	4	
228.5	230.4	BZ	4	clay gouge supporting Rounded to SA Bx.
230.4	236.1	FZ	3	BRoken locally gouged rock, numerouse faults @ 20 dtca.
236.1	237	BZ	5	chl-clay gouged Bx.
237	239	FZ	2	HEALED faults, later jointed @ 30 dtca, locally broken.
239	244.9	FZ	4	clay gouged and locally broken.
244.9	246.3	JZ	4	Jointed @ 0 and 45 dtca.
246.3	249.2	BRKZ	4	Lost recovery, highly broken.
249.2	256	JZ	3	Jointed @ 60>30>0 dtca.
256	266	JZ	2	Jointed @ 25 (10-30) > 60 dtca.
266	270.4	JZ	3	Jointed @ 20-40 dtca.
270.4	272.5	BRKZ	4	Broken with clay.
272.5	274.7	BRKZ	3	Broken rock with moderate jointing @ 30 dtca.
274.7	276.2	BRKZ	5	
276.2	279	JZ	4	locally broken

Blackwater Project
Drill Summary - Structure

BW0398

From (m)	To (m)	Structure	Strength	Comments
279	280	FL	2	Small 2cm bx fault snaking at a low angle to core axis.
280	280.8	JZ	4	Jointed @ 60>30 dtca.
280.8	281.2	BRKZ	4	
281.2	283	JZ	4	Jojnted @ 0 and 45 dtca.
283	289	JZ	2	Jointed @ 20-70 dtca.
289	291.3	JZ	2	Variable Jointing 5, 20, 35, 40, 50, 55, 60, 70. strongest joint set is 60 dtca.
291.3	299	JZ	2	Jointed @ 2 (0-5) > 15 > 60 dtca.
299	329	JZ	2	Variable Jointing from 10-70 dtca, strongest 50 dtca.
329	339	JZ	2	Jointed @ 60>45>30 dtca.
339	348	JZ	1	Jointed @ 20-40 dtca.
348	358	JZ	1	Jointed @ 55-70 dtca.
358	371.5	JZ	2	Jointed @ 60 (50-65) > 35 > 10 dtca.
371.5	377	JZ	2	Jointed @ 75 (70-80) > 30 dtca.
377	390.7	JZ	3	Locally weakly broken. Jointed @ 60, 50, 40, 30 dtca.
390.7	392.1	BRKZ	2	broken parallel to core axis, with jointing @ 50 dtca.
392.1	392.6	FL	3	moderate chloritic gouge, with minor white to yellow clay.
392.6	400.1	JZ	2	Jointed @ 40 dtca.
400.1	401.7	FL	4	Moderate chloritic gouge with crush, into moderate siliceous-ser gouge with crush @ 12 dtca.
401.7	404	BRKZ	3	BRoken zone with well defined jointing from 30-50 dtca.
404	406	BRKZ	4	abundantly fractured and broken rock.

Blackwater Project
Drill Logs

Hole ID:	BW0399	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375451.29
Depth (m):	421	Date Started:	02/04/2012	Casing Size:	HWT	Northing:	5893198.88
Azimuth:	0	Date Completed:	11/04/2012	Casing (m):	6.5	Elevation (m):	1561
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	100	-89
52	100.1	-88.6
101.5	92.6	-88.9
150	132.6	-89
202	128	-89
250	104.6	-89.1
301	119.5	-89.3
350.5	132.8	-89.5
400	181.2	-89.4
421	150.7	-89.3

Blackwater Project
Drill Summary - Lithology

BW0399

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7	OB							Till and boulders, sampled from 5m onward
7	26.2	VC	ms	LAP	M	GRY	FLT	GR5	Light to medium grey mixed volcanoclastic unit with dominantly felsic clasts in a finer grained andesitic matrix, locally textures are amygdaloidal. Clasts are sub-angular with local rounding and jigsaw fit pseudo-breccia texture.
26.2	45.3	FLPT	lptbx	LAP	L	GRY	FLT	GR5	Medium grey to cream colored locally faulted felsic lapilli tuff with weak breccia texture. Silica/sericite alteration is fairly strong.
45.3	83.15	AND	autbx	CA	D	GRY	FLT	GR5	Dark grey to black calcite veined andesite with locally clastic texture, semi-massive, weak sercite alteration of matrix
83.15	96.5	FLPT	lptbx	LAP	M	GRY	DEP	GR10	Medium grey green felsic lapilli tuff with local breccia texture, often clasts are obscured by strong alteration, local clay replacement of clasts, grades into volcanoclastic sequence over 5-10cm
96.5	102	VC	plm	LAP	M	GRY	FLT	GR5	Grey volcanoclastic unit grading out of the felsic lapilli tuff and fault bound at the lower contact. Polymictic mix of rounded to sub angular felsic clasts, chlorite altered oval shaped clasts and finer grained mafic clasts making up most of the mat
102	143.5	AND	fltbx	LAP	MO	GRY	FLT	GR5	Fault contact into what I am interpreting as an andesite sequence with locally altered zones with obscured texture. Unit is heavily faulted with clay gouge and local hydrothermal breccias.
143.5	190	VC	plm	LAP	M	GRY			Andesite grades into volcanoclastic unit with fault breccia, volcanoclastic unit is variably altered with some locally obscured texture. Clasts are moderately sorted with a mix of sub rounded to subangular felsic and mafic clasts, locally the unit ca
190	230.5	VC	plm	LAP	M	GRY			Polymictic volcanoclastic with andular glass-like shardy looking chlorite altered clasts, felsic clasts are more sub-rounded and much smaller, alteration obscures most of the primary texture as well as intense fault gouge
230.5	280	VC	plm	LAP	M	GRY			Volcanoclastic unit as above with local hydrofracturing, continued fault gouge and strong alteration. Clasts are made up of chlorite altered angular shards, rounded finer grained felsic clasts, and medium sized sub angular clasts replaced with sulphi
280	394.5	VC	plm	LAP	M	GRY	FLT	GR5	Altered and faulted volcanoclastics with local hydrofracturing, fault gouge and scaley texture. Locally over 40-50cm we observe a less clastic texture where fine grained intervals 10-12cm in length are seperated by small brecciations or clusters of c
394.5	421	AND	por	LAP	D	GRY			10cm gouge seperating overlying volcanoclastics from dark grey to black porphyritic calcite bearing andesite, tabular feldspars are easily discernable. Unit is weakly horfelsed and contains mostly sphalerite mineralization

Blackwater Project
Drill Summary - Alteration

BW0399		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
7	22.1	T	FR	2	CLST	2	PERV	2	PATC	2	LIM	FR	1	HM	FR	1	Weak to moderate silica/sericite/chlorite alteration, locally clasts are replaced with white colored clay, minor oxide minerals present on fracture planes
22.1	45.3	S	FR	1	CLST	3	PERV	4	OP	2							Silica/sericite flooded flpt with trace chlorite on fractures, and weak clay replacement of clasts (albite?)
45.3	83.15	S	FR	1		0		0	MTRX	1	CAL	VN	3				Weakly altered andesite with sericite alteration of matrix and weak chlorite along fractures. Calcite veining throughout more intense where sericite is weaker (vice-versa)
83.15	96.5	S	FR	1	CLST	2	PERV	3	OP	2							Silica/sercite/chlorite alteration and white clay (albite) altering clasts
96.5	99.5	S	CLST	2		0	CLST	2	MTRX	2							Silica altered clasts, chlorite altered clasts in polymictic volcanoclastic, sericite altering the matrix
99.5	107.7	S	FR	1		0		0	MTRX	1							Weakly sericite altered volcanoclastics grading into more andesitic rocks.
107.7	126	S	FR	1		0	PERV	4	PERV	3							Strong silica alteration obscuring texture, strong clay gouge, local fault breccia
126	130	S	FR	2		0	PATC	1	MTRX	1							Weakly altered interval with slight increase in chlorite
130	136.3	S		0		0	PERV	5	PERV	3							Intense silica alteration in fault breccia and gouge, all primary texture completely obscured
136.3	143	S	FR	1		0	PATC	1	MTRX	1	CAL	VN	3				Weakly altered with slight sercite and chlorite alteration, calcite veining reoccurs, unit still storngly broken and crushed
143	152	S	MTRX	2		0	CLST	2	MTRX	2							Matrix dominant sercite and chlorite with silica altered clasts
152	161	S	MTRX	2		0	PERV	2	MTRX	3							matrix dominant chlorite and sercite alteration with silica overprint, clay as a result of deformation
161	164	S	FR	2		0	PERV	4	PERV	3							Strong silica/sercite/chlorite alteration obscuring primary texture, core is also very faulted with abundant clay gouge
164	180.5	S	MTRX	2		0	CLST	2	MTRX	2							Silica becomes more clast dominant still good sercite and chlorite in matrix

Blackwater Project
Drill Summary - Alteration

BW0399		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
180.5	199.5	S	FR	2		0	PERV	4	OP	3							Pervasive silica alteration obscuring texture, sericite overprint and chlorite on fractures
199.5	230	S	FR	2		0	PERV	4	OP	2							Strong silica alteration obscuring primary texture, relict ghost clasts are visible, sericite overprint although mostly obscured by silica or fault gouge. Chlorite present on fractures and gives a green hue to the core.
230	280	S	FR	3		0	PERV	4	OP	2	HM	FR	1				Strong silica/sericite/chlorite alteration with silica locally up to an intensity 5 obscuring all primary texture. Faulting produces strong clay gouge, trace red staining downhole on fractures probably hematite?
280	301	S	FR	2		0	PERV	4	OP	2	HM	FR	1				Strong silica alteration, chlorite observed on fractures, trace hematite red staining on fracture planes
301	311.6	S	FR	3		0	PERV	2	OP	1							Decreased silica increased chlorite associated with broken gouge
311.6	317	S	FR	2		0	PERV	4	OP	1							Increased silica alteration and local hydrofracturing
317	329.7	S	FR	2		0	PERV	2	OP	1							Slight decrease in alteraiton but still locally faulted
329.7	340	S	FR	2		0	PERV	3	OP	1							Moderate alteration with lots of structure and good mineralization
340	384	S	FR	3		0	PERV	4	OP	2							Strong silica leaving ghost clast textures behind, moderate chlorite on fractures sericite overprinted by silica
384	394.5	S	FR	1		0	MTRX	1	MTRX	2							Weak silica and sercite altering matrix, unit contains abundant fault gouge
394.5	421	S	FR	1		0		0		0	BIOT	PATC	1	CAL	VN	3	Patchy biotite altered andesite with minor chlorite alteration and calcite veining

Blackwater Project
Drill Summary - Mineralization

BW0399		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
7	21.3	DI	1	DI	1.5	DI	0.5	Ga	DI	0.1	Dbs	DEN	0.1				Sulphides are disseminated throughout clasts in small aggregates of sphalerite and galena as well as pyrite pyrrhotite, locally DBs is observed following fractures
21.3	45.3	DI	0.5	DI	0.5	DI	0.5	Dbs	DEN	1.5	Ga		0.1				Increased DBs, continued sulphide disseminations with some finer grained pyrite and sphalerit associated with fault zone, trace galena
45.3	58	DI	0.5	DI	1	DI	0.5	Py	VN	0.5							Pyrite sphalerite and pyrrhotite disseminations as well as small pyrite veinlets
58	65	DI	1	DI	1.5	DI	0.5										Disseminated aggregates and clusters of sulphides often with euhedral pyrite, red sphalerite and modest pyrrhotite
65	81	DI	0.1	BB	0.5	DI	0.5										Weak sulphides with sphalerite being the most abundant. This is interval more intensely altered with calcite veins
81	97	DI	0.5	DI	0.5	DI	0.5	Dbs	DEN	1	Mrc	FP	0.1				Disseminated sulphides in small clusters and hairline veinlets, associated with vugs. trace maracasite along fractures
97	107.8	DI	0.1	DI	0.1	DI	0.5										Weak sulphides mostly pyrrhotite in oval shaped masses
107.8	112	SP	0.5	CR	0.5	DI	0.1	Dbs	DEN	0.1							Specks of fine grained pyrite in fault gouge, small aggregates of dark red sphalerite replacing clasts
112	127	DI	0.5	DI	0.5	DI	0.5	Dbs	BB	0.1							Fault gouge with some specks of fine grained pyrite, local clusters of dark black to red sphalerite, trace pyrrhotite and local DBS in masses
127	136.4	SP	0.5	SP	0.5		0										Specks of pyrite and fine grained sphalerite in fault gouge
136.4	143	VN	0.1	BB	0.1	DI	0.1										Crushed calcite bearing fault gouge with trace sulphides
143	153	BB	0.5	CR	2	BB	0.5	Cp	DI	0.1							Blebbs of pyrite with associated trace chalcopyrite, red colored sphalerite replacing clasts, minor pyrrhotite

Blackwater Project
Drill Summary - Mineralization

BW0399		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
153	165.5	DI	0.5	CR	1.5	DI	0.1	Ga	DI	0.1	Dbs		0.1				Disseminated and blebby clusters of sulphides, appearance of trace galena with sphalerite
165.5	180.5	DI	0.5	CR	1.5	CR	0.5	Py	VN	0.1							Mostly clast replacement of sphalerite, disseminated and veined pyrite, minor pyrrhotite
180.5	190	DI	1	BB	1.5	DI	0.5	Dbs	DEN	0.1							Strongly altered and faulted core with fine grained and blebbs of sulphides, red sphalerite, pyrite as disseminations and veins, sulphides are often dark fine grained and locally occur in laminae
190	202	DI	0.5	VN	0.5	DI	0.5	Py	VN	0.1							Minor pyrite in veinlets and as blebbs, veinlets are often surrounded by black sphalerite, minor pyrrhotite disseminated throughout
202	214	CR	0.5	CR	1	CR	0.5	Sp	VN	0.1	Ga	BB	0.1				Sphalerite as veinlets (black) and replacing clasts (red), disseminated blebbs of pyrite and pyrrhotite
214	230.5	DI	1.5	CR	1	DI	0.1	Cp	DI	0.1							Disseminated pyrite with trace chalcopyrite, zoned black/red sphalerite replacing clasts
230.5	239	BB	2	BB	0.5	BB	0.5	Dbs	DEN	0.5							Pyrite as oval shaped aggregates throughout core, sphalerite as blebbs with associated pyrite, minor dbs
239	257	DI	2	BB	0.5	BB	0.5	Dbs	DEN	0.5							Strong faulting with associated sulphides, abundant pyrite, minot sphalerite and pyrrhotite and acicular or phillifom DBS
257	274	DI	1.5	BB	1	BB	0.5	Dbs	DEN	1							As above with increased DBS
274	291	DI	0.5	DI	1	DI	1	Dbs	DI	0.5							Mix of sulphides replacing ghost clasts, pyrrhotite, sphalerite dominant
291	308	DI	1	CR	1.5	CR	1										Sulphides replacing clasts and throughout fault gouge
308	324	CR	0.5	CR	1.5	CR	0.5	Apy	VN	0.1							Good sulphide ineralization replacing clasts, arsenopyrite as nice euhedral crystals in small veinlet
324	340	CR	1	CR	1.5	CR	0.5	Apy	VN	0.1							Similar to above, majority of sulphides replacing clasts, locally fine grained and as specks in fault gouge

Blackwater Project
Drill Summary - Mineralization

BW0399		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
340	350	DI	1.5	CR	1.5	CR	0.5	Cp	SP	0.1	Dbs	DEN	0.1				Pyrite as specks in fault gouge and as disseminations and minor veins in more competant core, complemented by sphalerite most often replacing clasts with some pyrrhotite and trace chalcopyrite
350	367	CR	1	CR	1.5	CR	0.5	Cp	SP	0.1							Sulphides mostly replacing clasts and as hairline veins, specks of chalcopyrite
367	383	DI	1	CR	1	CR	0.5	Cp	SP	0.1							Pyrite specks and disseminations in fault gouge, black and red sphalerite replacing clasts often zoned with chalcopyrite in the centre with minor pyrrhotite
383	394	DI	0.1	CR	1	CR	1										Fault gouge much less mineralized possibly cutting grade, pyrrhotite and sphalerite replacing clasts
394	406	DI	0.5	DI	1	CR	0.5	Cp	VN	0.1	Sp	VN	0.1				Sphalerite as red masses and disseminations, pyrite as minor dissminations and in one large black sphalerite vein with trace chalcopyrite
406	421	DI	1	DI	1.5	DI	1	Cp	DI	0.1							Abundant sulphides euhedral pyrite disseminations, red blebby agregates of sphalerite, trace chalcopyrite and good pyrrhotite throughout

Blackwater Project
Drill Summary - Structure

BW0399

From (m)	To (m)	Structure	Strength	Comments
7	25.6	BRKZ	1	weak broken zone, with visible joint set 20 degrees tca
25.6	26.2	FL	5	Strong grey fault gouge seperating two lithologic units, good angle able to be measured
26.2	36	JZ	2	weak jointing at 40 and 20 degrees
36	38	FL	3	Broken fault gouge with some annealed clay gouge and local hydrofracturing
38	45.1	JZ	2	Weak joint set
45.1	49	FL	2	Healed and non healed fault gouge with some broken core between
49	57.5	JZ	2	weak joint set at 20 and wavy jointing at 30 degrees
57.5	57.7	FL	2	Healed fault gouge
57.7	60	BRKZ	3	broken zone with trace amounts of milled grains on fractures
60	63.7	JZ	3	jointing at 20 degrees, sub-planar
63.7	74.5	BRKZ	3	broken core with some competant pieces scattered throughout
74.5	116.5	FZ	4	Fault zone with a few individual strongly clay gouged areas
116.5	139.8	FZ	5	Intensely crushed fault gouge
139.8	165.2	FZ	3	Strongly broken and crushed fault zone with abundant fault gouge
165.2	172.4	BRKZ	3	broken zone with some milled grains
172.4	197	FZ	5	Intensely faulted and crushed core, some annealed fault gouge
197	201	JZ	2	joint set at 40 degrees
201	210.8	FL	5	Mineralized faulting with abundant clay gouge
210.8	214.4	BRKZ	2	Weakly broken zone
214.4	218.8	FZ	3	Fault gouge locally with competant/broken core
218.8	223.4	JZ	3	Weak jointing and some broken core
223.4	225	FL	2	Small fault with clay gouge and milled grains
225	237	JZ	3	jointing and 40 and 30 degrees
237	249.3	FZ	4	Faulted broken and gouge zone, strongest part of fault from 243.5-245
249.3	254.5	BRKZ	4	Strong broken zone between faults
254.5	258.8	FL	4	Strong fault gouge and healed fault gouge
258.8	268.3	JZ	3	wavy joint sets at 15 and 40 degrees
268.3	274	BRKZ	3	Broken core with chlorite on fractures

Blackwater Project
Drill Summary - Structure

BW0399

From (m)	To (m)	Structure	Strength	Comments
274	278.4	JZ	3	Joint set at 40 degrees with traces of chlorite and clay on fractures
278.4	280	FL	3	Fault gouge and minor crushed rock
280	302.4	BRKZ	3	Broken zone with a few competant pieces of core
302.4	310.4	FZ	3	Fault zone with gouge and largely broken core
310.4	340	BRKZ	3	Largely broken core with some milled grains and competant rock <1m in length
340	347.5	FL	4	Strong fault gouge
347.5	370	JZ	3	joint sets predominantly at 30 but also at 20 degrees
370	378.4	BRKZ	2	Broken core with <50% competant pieces
378.4	380.5	BZ	4	Strong fault breccia with gougey matrix
380.5	391	FZ	3	Fault zone with abundant broken/crushed core and fault gouge
391	394.5	BRKZ	2	small broken zone between faulting
394.5	394.7	FL	2	Small fault contact between volcanoclastics and andesite unit
394.7	421	JZ	3	Planar joint set at 60 degrees

Blackwater Project
Drill Logs

Hole ID:	BW0400	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375252.42
Depth (m):	414.83	Date Started:	02/04/2012	Casing Size:	HWT	Northing:	5892999.71
Azimuth:	0	Date Completed:	09/04/2012	Casing (m):	3	Elevation (m):	1599
Dip:	-90	Logged By:	BRe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	272.9	-89.6
94.8	226.2	-89.4
137.5	223.7	-89.1
183.2	225.1	-89.5
228.9	216.3	-89.2
274.6	204.5	-88.6
320.3	208.8	-88
366.1	216.2	-87.4
411.8	214.5	-87

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Blackwater Project
Drill Summary - Lithology

BW0400

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2	OB							Over burden
2	10.5	VC	bx	LAP	M	GRY	ALTFR	GR10	Dominately mafic clasts in a fluid breccia, weakly foliated, matrix supported breccia. Rare banded chloite alted felsic clasts. Breccia intensity grades on the dm scale
10.5	15.7	VC	bx	LAP	MO	GRY	DEP	GR30+	interbedded felsic and vc beds, possibly bands of alteration.
15.7	137	FLPT	bx	BLOCK	MO	GRY			Massive clastics, local hydrothermal breccia over m scale intervals.
137	175	FLPT	bx	LAP	M	GRN	DEP	GR30+	volcanoclastic texture is overprinted by texture destructive silica alteration, clastics are matrix supported, 90% of clasts are < 1cm.
175	189.3	FLPT	lam	LAP	M	GRN	FLT	SH	Laminated FT with texture destructive silica sericite inducing localized microbreccia, clasts are mostly clast support with local matrix supported zones
189.3	195.4	FLPT	frctz	LAP	M	GRN	DEP	GR10	Intense brittle fracture zone with localized sericitic clay breccia
195.4	202	FLPT	obsalt	LAP	M	GRY	DEP	SH	Texture destroyed massive aphanitic FLPT with weak occasional patches of sericite altered microbrecciated clasts
202	215.6	FT	lam	LAP	M	GRN	DEP	GR30	Laminated FT with interlaminated alteration bands and localized patches of hydrobrecciated micro breccia
215.6	229	FLPT	lam	LAP	M	GRN	DEP	GR10	Moderately chlorite altered hydrobrecciated laminated FT with interlaminated and matrix hosted silica sericite alteration and weak local clay altered felsic clasts
229	243.6	FLPT	lam	LAP	M	GRN	DEP	GR10	Locally texture destroyed hydrobrecciated laminar FT; moderate chlorite, clasts altered to chlorite sericite within grey green convoluted sericite silica bands
243.6	259	FLPT	lam	BLOCK	M	GRY	DEP	GR30	Mottled texture destructive silica sericite wash over Lapilli to block sized felsic lapilli tuff breccia
259	275	FLPT	obsalt	LAP	M	GRY	DEP	GR30	Locally texture destructive alteration flooding lapilli sized laminar felsic breccia fragments
275	312	FLPT	obsalt	LAP	MO	GRN	DEP	GR10	Lapilli fragments with zones being laminated/laminated clasts and other zones have been obscured by alteration creating a massive appearance locally.
312	318	FLPT	lam	LAP	MO	GRY	DEP	GR10	Same as above with more dark grey and laminated texture
318	323	FLPT	lam	LAP	M	GRN	UNKN		Predominately laminated green and grey felsic tuff/lapilli tuff. small clastic zones with a Volcaniclastic or possibly Brecciated texture
323	375	FT	lam	CA	M	GRN	UNKN		Grades from flpt to ft with laminations throughout. fine grained sulfides frequently follow alteration laminations.
375	414.8	FT	lam	CA	M	GRN			light various shades of green and grey laminations. patches of brecciation interpretted as healed faults breccias.

Blackwater Project
Drill Summary - Alteration

BW0400		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	10.5	T	CLST	3	PERV	1	CLST	3		0	LIM	FR	1	BIOT	CLST	3	banded felsic clasts are locally moderately chlorite altered, 10% of clasts are silica alted, andesite clast are moderately biotite altered.
10.5	22.4	T		0	REP	3	MTRX	3	PERV	3	BIOT	CLST	3		FC	3	Mafic clasts are moderately biotite altered, moderste sericite along fine grained banding, clay replacement of crystals and small fragments.
22.4	33.4	T		0	REP	5		0	PERV	3	LIM	FC	5				Clay alteration compleatly replaces some clasts and short intervals of core. ~ 1% of core is unoxidized.
33.4	89	T		0	REP	3	PERV	4	PERV	3	LIM	FR	2				Strong silica alteration, moderate sericite along laminations, caly alteration of some clasts and crystals.
89	111.5	S		0	PERV	3		0	PERV	3							Sulphide zone, Sericite along laminations pervasive clay alteration, and local replacement of crystals.
111.5	137	S		0	FR	3	MTRX	3	PERV	3							Pervasive clay alteration up hole, decreases intensity down hole throught interval. Silica alteration of banded sections increases down hole. Sericite alteration of banded sections similar to top of hole increases.
137	175	S	FR	3	REP	2	PERV	3	PATC	2							Silica alteration appears to have consistant intensity though not alway texture destructive, never compleatly texture destructive.
175	189.3	S	FR	3	CLST	1	PERV	3	PATC	2							Laminated and interlaminated Silica sericite alteration within Hydrobrecciated FT causing localized clay altered microbreccia some patchy texture destructive alteration.
189.3	195.4	S	FC	3	FC	1	CLST	3	FC	3							Sericite-clay gouge within fault induced fracture zone
195.4	202	S	PERV	2		0	PERV	4	PERV	2							Intense texture destructive silica sericite alteration.
202	215.6	S	PERV	3	CLST	2	PERV	3	PERV	2							Moderate chlorite altered laminated FT with local clay altered hydrobrecciated fragmental and pervasive overprinting silica alteration
215.6	229	S	PERV	3	CLST	1	PERV	4	PERV	3	CHL	FR	3				Weak clay alteration of FLPT clasts with moderate chlorite sericte alteration overprinted by intense silica alteration

Blackwater Project
Drill Summary - Alteration

BW0400		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
229	243.5	S	PERV	3	CLST	1	PERV	5	PERV	4							Weak clay alteration of FLPT clasts with strong chlorite sericte alteration overprinted by intense silica alteration causing localized texture destruction
243.5	274	S	PERV	3	CLST	2	PERV	4	PERV	3	SIL	CLST	4				Pervasive silica sericite chlorite alteration with weak local pale green silica clay alteration of laminar FLPT fragments
274	295	S	PATC	3	CLST	1	PERV	4	PERV	3	CHL	FR	4				Strongly silicified with laminated grey (Sil) and green (Chl & Ser). Chlorite is stongest on fxs.
295	313	S	PATC	3		0	PERV	4	PERV	3	CHL	FR	4				Same as above without any clay alteration of clasts
313	319	S	PATC	1		0	PERV	5	PERV	3							Intensly silicified grey with some green FLPT. Weak Chl on fxs and in patches.
319	330	S	PATC	1	CLST	1	PERV	4	PERV	3	CHL	FR	2				Strongly silicified. Chl patches and on fxs. <1mm sized rectangular clay specks appear to be remenant feldspars.
330	343	S	PATC	2	CLST	1	PERV	5	PERV	3	CHL	FR	2				Same as above
343	375	S	PATC	3		0	PERV	5	PERV	3	CHL	FR	2				Banded grey (sil) and green (Ser and Chl) with patches of dark green chl. chl also on fxs.
375	396	S	PATC	2		0	PERV	5	PATC	3	CHL	FR	2				Intensely silicified with banded green chl and ser. Chl on approx half of fractures.
396	404	S	PATC	2	FC	2	PERV	5	PATC	3	CHL		1				same as above with white clay on fractures and fx controlled
404	414.8	S	PATC	2		0	PERV	5	PATC	3	CHL	FR	3				Patchy chlorite and Sericite . Strongly silicified

Blackwater Project
Drill Summary - Mineralization

BW0400		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2	10.7		0	MA	1		0										Disseminated and small aggregates in matrix.
10.7	20.2		1	DI	1		0	Dbs	DEN	2							Dbs arround aggregates of Sp and Py
20.2	33.4		0		0		0	Dbs		0.1							Dbs in onclaves of unoxidised material.
33.4	38		0	DI	1		0	Dbs	DEN	3							Dbs is locally strongly oxidized.
38	55	DI	1		0		0	Dbs	DEN	1		DEN	2	Ga	EU	0.1	Dbs is locally strongly oxidized. 2% unknown mineral is sooty sulphide.
55	74	DI	1		0		0	Dbs	DEN	1		DEN	2				Dbs is locally strongly oxidized. 2% unknown mineral is sooty sulphide.
74	89	DI	1		0		0	Dbs	DEN	1		DEN	2				Dbs is locally strongly oxidized. 2% unknown mineral is sooty sulphide.
89	99.3	DI	2	DI	2		0										mm scale aggregates of Sp and Py,
99.3	118	DI	2	DI	2		0	Dbs	DEN	1	Ga	VN	0.1	Grnt	SP	0.1	mm scale aggregates of Sp and Py, Dbs along fractue around aggregates. Sooty sulphides are part of Py, Ga in veins with Py and Sooty sulphides
118	137	DI	2	DI	2		0	Dbs	DEN	1	Sp	VN	0.1				mm scale aggregates of Sp and Py, Dbs along fractue around aggregates. Sooty sulphides are part of Py, Sp in veins with Py and Sooty sulphides
137	145.1	DI	0.1	BB	0.5	BB	1	Dbs		0.5							Po , Py and Sp in blebs and rare clast replacement, with Dbs, on fracture and dendritic.
145.1	146.5		0		0		0										Sooty sulphide, Sp and Py in fault Gouge.
146.5	154	DI	0.1	BB	0.5	BB	1	Dbs		0.5							Po , Py and Sp in blebs and rare clast replacement, with Dbs, on fracture and dendritic.
154	171		0.1	DI	1	BB	1	Dbs	DEN	0.5	Ga	DEN	0.1				Po , Py and Sp in blebs and rare clast replacement, with Dbs, on fracture and dendritic. Ga in habit very similar to Dbs.
171	177.8	VN	0.5	BB	0.5	BB	0.5	Cp	SP	0.1							Py blebs and wisps with blebs of sphalerite and 0.1% Cpy occurring in specks
177.8	189.3	SP	0.1		0	BB	1	Cp	SP	0.1							Po occurring in blebs with local specks of Py
189.3	193	FC	3		0		0										Fracture filling pyrite within brittle fracture zone.
193	202	DEN	1	BB	1	BB	1.5	Dbs	DEN	0.5							Blebs and wisps of Py with blebs of Po and Sp within intense silica sericite zone

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Blackwater Project
Drill Summary - Mineralization

BW0400		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
202	206	BB	1	BB	0.5	BB	1	Cp	SP	0.1	Dbs	DEN	0.1				
206	215.4	SP	1	SP	1.5		0	Dbs	DEN	0.5							Minor blebs and specks of pyrite with minor wisps of DBs
215.4	219.5	SP	1	BB	0.5	BB	1	Dbs	DEN	0.5							Specks and blebs and wisps of Pyrite with weak associated Dbs, weak blebs of SP associated with clusters of Pyritic wisps and Po blebs
219.5	227	DEN	2	SP	0.5	SP	0.5	Dbs	DEN	0.5							
227	243.5	SP	0.5	SP	0.5	BB	2	Cp	SP	0.1	Apy	FC	0.1				Trace Cpy associated with pyrrohotite blebs and Apy on fracture surfaces
243.5	256.7	BB	0.5	BB	0.5	BB	2	Dbs	DEN	0.5	Cp	SP	0.1				
256.7	274	SP	0.5	SP	0.5	BB	1	Dbs	DEN	0.5							
274	290	SP	0.5	SP	1	BB	0.5	Dbs	DEN	0.5							Sulfides increase locally where grey translucent silica is present.
290	313	SP	0.5	BB	0.5	BB	1	Dbs	DEN	0.1							
313	330	SP	0.5	SP	0.5	BB	1	Dbs	DEN	0.1							Mineralization appears to be fracture controlled with some minor veinlets. Higher concentations locally.
330	337	SP	1	SP	0.5	SP	1	Dbs	DEN	0.5							Black sulfides,fine grained Py and Po following microfractures and alteration laminations
337	345	SP	1	BB	0.1	BB	1	Dbs	DEN	0.1							decrease in fine grained Fe sulfides following laminations
345	353	SP	1	SP	0.1	BB	1	Dbs	DEN	0.1							patches with accicular Py(replacement). Increase in fine grained sulfides following laminations.
353	375	VN	0.5	SP	0.1	BB	1.5	Dbs	DEN	0.5	Cp	BB	0.1	Apy	BB	0.1	Py found as qtz-py-po veinlets and as specks/blebs. Asp and Cpy found as traces locally.
375	395	VN	0.5	BB	0.5	BB	1	Dbs	DEN	0.1							Py on some fxs and as stringer veinlets. Sp found in high density locally. Po blebs throughout
395	414.8	SP	0.5	SP	0.5	BB	0.5	Dbs	DEN	0.1	Cp	SP	0.1				Large black blebs with sulfides are unknown. Locked into silica making scratching difficult. Possibly Bt.

Blackwater Project
Drill Summary - Structure

BW0400

From (m)	To (m)	Structure	Strength	Comments
2	52.1	JZ	2	joints at 45
52.1	53	FL	5	Fault gouge is 50% matrix clasts up to 2cm some sulphide minerization by sooty sulphide, moderate patchy limonite in gouge.
53	114.9	JZ	3	joints @ 60, minor fault gouge (strongly clay altered) <3cm, in several intervals.
114.9	137	JZ	4	joints at 30, 45 and 75.
137	145.1	BRKZ	5	minor gouge in zone.
145.1	146.5	FL	5	Gouge is 50% clay fraction, clast milled and <1.5cm.
146.5	171	JZ	5	joints at 50, 30
171	189.3	JZ	3	
189.3	195.4	BZ	4	Pronounced tectonism within intense sericitic clay fault induced fracture zone
195.4	202	BRKZ	4	Structure induced broken zone; Local clay fault gouge at 201.47
202	215.6	JZ	3	
215.6	218	BRKZ	3	Strong fracture zone due to subparallel fracture sets
218	225.2	JZ	3	
225.2	229.3	BRKZ	3	Fracture zone induced by low angle fractures to core axis and drilling
229.3	234	JZ	2	
234	238	BRKZ	3	Fracture zone induced by low angle fractures and drilling
238	254	JZ	2	
254	274	JZ	3	
274	290	JZ	2	45deg joint set more prevalent then a 25deg joint set
290	290.6	FL	4	
290.6	295.5	BZ	2	joints also at 10-15deg contributing to the broken nature of the interval
297.3	299.0	FL	4	
299.0	308.6	JZ	3	25-35 deg joints with occasional joints at 15deg TCA
308.6	314.3	JZ	3	Joints also at 10-15deg TCA
314.3	330	JZ	3	
330	356	JZ	2	joints angles are fairly irregular but seem to be predominately 45-50deg
356	366	JZ	3	

Blackwater Project
Drill Summary - Structure

BW0400

From (m)	To (m)	Structure	Strength	Comments
366	375	JZ	3	multiple joint sets! also at 15deg attributing to broken nature of interval.
375	392	JZ	3	joint sets at 15-20, 45-55, and 70.
392	396.8	BZ	2	
396.8	397.8	FL	2	core is microfractured with clay alteration along fractures
397.8	414.8	JZ	3	

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Blackwater Project
Drill Logs

Hole ID:	BW0401	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375099.48
Depth (m):	447.14	Date Started:	05/04/2012	Casing Size:	HWT	Northing:	5892899.91
Azimuth:	0	Date Completed:	15/04/2012	Casing (m):	40	Elevation (m):	1582
Dip:	-90	Logged By:	MNu	Drill Contractor:	Paycore	Survey Method:	DGPS

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.33	232.6	-89.8
92.05	163	-89.4
137.8	181.7	-89.7
183.5	315.5	-89.9
229.2	158.2	-89.7
274.9	153.9	-89.8
320.7	171.5	-89.4
367.6	166.1	-89
412.1	170.1	-88.9
447.1	171.97	-88

Blackwater Project
Drill Summary - Lithology

BW0401

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	33.8	OB							
33.8	44	FLPT	lam	LAP	L	CRM	ALTFR	GR30	Oxidized matrix supported microbrecciated and bleached felsic laminar fragmental; moderate hematite/goetite on fractures well mineralized with spotty sooty sulphide
44	55.5	FLPT	lam	LAP	P	CRM	DEP	GR10	Transitional, clast supported, laminar, brecciated felsic chlorite sericite silica altered fragmental; 10% matrix cement; Well mineralized with Dbs, Pyrite and Chalco
55.5	80.1	FLPT	lam	LAP	L	GRN	DEP	GR30	Laminar cobble sized clasts of felsic fragmental hosted in finer matrix of lapilli sized clay altered fragments; 10% matrix cement; Welll mineralized
80.1	100	FLPT	lam	LAP	M	GRN	DEP	GR30	Laminated equigranular clay and chlorite sericite altered clasts mixed with aphanitic silica sericite altered clasts in a clast supported matrix held together with approximately 25% silica sericite chlorite cement
100	180	FLPT	lam	LAP	M	GRN			Medium grey-green felsic lapilli tuff with subangular to subrounded, polymictic felsic clasts (chlorite-clay altered, aphanitic silica, banded silica sericite). The matrix is fragmental with an aphanitic silica groundmass. Poorly sorted, variably cla
180	245	FLPT	lam	LAP	M	GRN			Medium grey-green felsic lapilli tuff with laminated sections. Polymictic felsic clasts. Some clasts altered by chlorite. Serecite alteration is strong. Very silicified.
245	355.2	FT	lam	CA	M	GRN	ALTFR	GR30+	laminated FT, rock darkening in tone, olive green, very hard with abundant sil alt'n. Occaisional small inclusion of a FLPT fragment where the laminations meander around.
355.2	435.3	VC	ms	LAP	MO	GRY			Polymictic, matrix supported volcanoclastic. Patchy silica alteration, faulted with strong chlorite at 361.5-364.7.
435.3	447.1	AND	volc	LAP	D	GRY			Andesite, volcanoclastic texture at top of interval, becoming porphyritic at end of hole. Typical calcite>talc infilling fractures, some silicification and hydrothermal biotite alteration.

Blackwater Project
Drill Summary - Alteration

BW0401		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
33.8	44	O		0	CLST	4	PERV	3	PERV	3	LIM	FR	4	HM	FR	3	Oxidized FLPT fragmental with pervasive oxidation of fracture planes
44	55.5	T	CLST	2	CLST	3	PERV	4	CLST	4	LIM	FR	2	HM	FR	1	Transitional FLPT with weak hematite and limonite on fracture places; Moderate to strong sericite-chlorite alteration of clasts and matrix with moderate pale cream coloured clay alteration of finer fragments
55.5	80.1	S	CLST	3	CLST	2	PERV	4	CLST	4	SER	MTRX	1	CHL	FR	2	Sulphide zone starts; Moderate chlorite alteration of laminar fragments with moderate to strong sericite alteration of fragments and cement; Weak to moderate clay alteration of finer fragments
80.1	100	S	CLST	4	CLST	1	PERV	4	CLST	3	CHL	MTRX	2	SER	MTRX	2	Moderate to strong chlorite sericite alteration of clasts with weak pale clay alteration of fragments and weak to moderate silica sericite alteration cement between fragments
100	145	S	CLST	4	CLST	1	MTRX	4	CLST	2	CHL	MTRX	2	SIL	CLST	2	Weak white to pale grey clay alteration of clasts. Moderate to strong chlorite alteration of clasts and patchy in the matrix. Chlorite alteration varying slightly over a couple of meters. Sericite alteration is weak in both the clasts and matrix. Silica alteration is strong in the matrix and moderate to strong in clasts.
145	180	S	PERV	3	FR	2	PERV	4	PATC	2	CHL	FR	4				Moderate to strong, pervasive chlorite alteration. Alteration obscuring primary texture of the rock over small intervals. Strong, pervasive silica and weak to moderate, patchy sericite alteration. Clay alteration on fracture/vein halos as a soft white-pale green. Chlorite on fracture planes and infill in gouge zones.
180	245	S	PERV	3	FR	1	PERV	4	PATC	3	CHL	FR	4				Very silicified unit. Strong serecite. Texturally obscured locally. 50% of interval is laminated. Strong chlorite on fractures. Increase chlorite in fault at 209 to 215m.
245	356	S	PERV	3	FR	1	PERV	4	PATC	3	CHL	FR	3	SIL	OP	5	very hard rock, silica overprint very strong. small specks of clay in matrix. Slight increase in chl as we go deeper
356	361.8	S	FR	3	PATC	1	PATC	3		0							Weak patchy possible clay, especially in matrix, moderate patchy silica, moderate to strong chlorite on fractures.

Blackwater Project
Drill Summary - Alteration

BW0401		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
361.8	363.7	S	FC	5	DEF	2	CLST	2		0							Short fault zone with strong pervasive chlorite in gge/fractured material.Weak silica in some clasts
363.7	435.3	S	FR	3	PATC	1	PATC	3	PATC	1	ALB	PATC	1				Patchy weak sericite, clay and possibly albite. Patchy moderate silica, especially in clasts
435.3	447.1	S		0		0	PERV	2		0	BIOT	PERV	3	CAL	INFILL	2	Pervasive moderate silica, pervasive moderate to strong hydrothermal biotite, some calcite>talc infilling fractures.

Blackwater Project
Drill Summary - Mineralization

BW0401		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
33.8	44	BB	1		0		0	Dbs	BB	5	Goe	FP	1	Hm	FP	2	Dendritic blebs of sooty sulphide with wisps of DBs and moderate hematite/goethite on fracture planes.
44	55.5	DEN	2	SP	0.5	BB	0.5	Dbs	DEN	5	Cp	SP	0.1	Ga	SP	0.1	FLPT dominated by wisps and blebs of sooty pyrite and Dbs with trace specks of chalcopyrite and galena
55.5	74	BB	4	SP	1	BB	1	Dbs	DEN	1.5	Cp	SP	0.1	Ga	SP	0.1	
74	78	BB	3	SP	1	BB	0.5	Dbs	DEN	1	Ga	SP	0.1				
78	93.5	BB	2	SP	0.5	BB	1	Dbs	DEN	2	Ga	SP	0.1				
93.5	100	BB	0.5	BB	1	BB	2	Dbs	DEN	0.5	Ga	SP	0.1				
100	118.9	BB	1	BB	1	BB	1.5	Dbs	DEN	0.5	Ga	SP	0.1				Blebby pyrite,sphalerite, po. sooty black sulphides throughout.
118.9	145.1	BB	1.5	BB	1	BB	1.5	Dbs	DEN	0.1	Ga	SP	0.1				similiar to above, less sphalerite. Decrease in DBS
145.1	163.4	DI	2	BB	0.5	BB	0.5	Dbs									decrease in Po. Increase sulphides through fault zone.
163.4	185	DI	1	BB	0.5	BB	1										decrease in sulphides downhole. Sulphides more fine grain.
185	208.7	DI	0.5	DI	1	DI	1.5	Cp	DI	0.1	Dbs	DEN	0.5				trace cpy found with all disseminated Po. Usually associated on rim of Po grain. Darker edges for all sulphides. Dbs present.
208.7	235.9	DI	1	DI	1.5	DI	0.5	Cp	DI	0.1	Sp	BB	0.5	Dbs	DEN	0.5	increase in blebby red sphalerite. Cpy still present with po but decreasing dowhole. Minor hairline veinlets of black pyrite and sphalerite. Sulphides increase with increase in chlorite.
235.9	245.5	BB	1	BB	1.5	BB	0.5	Cp	SP	0.1	Py	DI	0.5				blebby pyrite with increase in chlorite. Associated specks of Cpy seen. Still strong sphalerite
245.5	254.3	BB	1	DI	2	BB	1	Cp	DI	0.1							strong disseminated red-brown sph. cpy associated with sph, usually with darker sph. moderate py, and fairly large occaisional blebs po
254.3	263	BB	0.5	DI	3	BB	1	Cp	SP	0.5							abundant diss sph usually following laminations. A few vnlts with dark sph, and usually cpy. Cpy also in blebs with po
263	271	BB	0.5	DI	2	BB	1	Cp	SP	0.1							mineralization styles as above, lower grade

Blackwater Project
Drill Summary - Mineralization

BW0401		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
271	280	BB	0.5	DI	2	BB	1	Cp	SP	0.1	Apy	BB	0.1				as above, sph mineralization in patchy disseminations. 1 bleb of aspy seen
280	289	FP	0.5	DI	3	BB	1	Cp	SP	0.1							higher grade sph in patchy disseminations.
289	298	DI	1	DI	2	BB	1	Cp	SP	0.1							a bit more py associated with the sph especially towards end of interval.
298	321.9	FP	0.5	BB	1	BB	1.5										
321.9	339.9	FP	0.5	BB	1	BB	1										slight decrease in sulphides from above
339.9	356	BB	1	BB	2.5	BB	0.5	Dbs	DEN	1							increase in sphalerite with chlorite. DBS returning up to 1%
356	384	FP	0.5	CR	1	DI	1.5	Apy	FP	0.1							Di po, often with sphal in clasts, py and po in occasional veins, py also on fractures. Trace arspy on occasional fractures
384	420	FP	0.5	CR	0.1	DI	1										Py on fractures, sometimes in veinlets, di po, trace sphal in occasional clasts
420	435.3	FP	0.5		0	DI	1										Di po, with some py coating fractures. No visible sphal.
435.3	447.1	VN	0.5	DI	0.5	DI	1										Minor py in veinlets and on some fractures. Weak di sphal, with di po.

Blackwater Project
Drill Summary - Structure

BW0401

From (m)	To (m)	Structure	Strength	Comments
33.8	54	JZ	2	
54	80.1	JZ	3	
80.1	100	JZ	2	
100	136.2	JZ	3	joint zone with fractures at 10-25 and 40 DTCA
136.2	154.8	BZ	3	moderate broken zone
154.8	171	FZ	4	fault zone with clay healed gouge and broken intervals. Gouge is mineralized with a fine grained, dull black sulphide. Fragments are subrounded and mineralized with disseminated sulphide.
171	185	JZ	5	Strong joint zone with intermittent broken zones. Jointing at 40 and lesser at 20
185	210	JZ	3	30 to 60 degrees jointing is found.
210	215.6	FZ	3	Fault zone, sharp upper contact with gouge. Then broken and jointed into two clay gouge sections from 213 to 215m
215.6	217.3	JZ	3	
217.3	220	SZ	3	shear zone, fractured, competant
220	246.2	JZ	3	jointed, majority are at 40 degrees.
246.2	251.4	BRKZ	3	inconsistant broken core, with interspaced competant runs
251.4	269	JZ	3	pretty competant rock, planar jointing at various angles from 25-50 dTCA, near 50 most dominant
269	275.5	SZ	3	lots of fractures becoming rubble in places, with gouge in some
275.5	286.4	JZ	2	minor joint set at 35. Competant zone
286.4	291	FZ	3	broken, with short interspaced runs of poorly healed gouge
291	311.1	JZ	4	well jointed with several low angle joints (5-15), with minor set at 40 deg TCA
311.1	313.0	FL	3	gouge upper contact, steep joints below creating fractured. Slicks present
313.0	326.7	JZ	3	10-20, also fracture set at 50. Strong chlorite on fractures. locally broken. No slicks.
326.7	328.5	BRKZ	3	steeper joints, broken zone created
328.5	331.2	JZ	3	i
331.2	333.2	BZ	3	fault breccia, gouge, one angle, small fault zone
333.2	361	JZ	3	local broken zones
361	363.7	FL	4	Short fault with strong, chloritic clay gge
363.7	420	JZ	3	Joint zone, with local broken zones. Fractures are 20>60 TCA
420	432.2	BRKZ	4	Broken zone, with rubble and clay gge

Blackwater Project
Drill Summary - Structure

BW0401

From (m)	To (m)	Structure	Strength	Comments
432.2	437.1	FL	4	Fault with lots of re-healed clay gge and brecciated rock
437.1	447.1	JZ	2	Joint zone, joints predominantly 40-45 degrees TCA

Blackwater Project
Drill Logs

Hole ID:	BW0402	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375601.58
Depth (m):	433.5	Date Started:	05/04/2012	Casing Size:	HWT	Northing:	5892950.06
Azimuth:	0	Date Completed:	13/04/2012	Casing (m):	3	Elevation (m):	1593
Dip:	-90	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	84	-89
50	83.3	-88.2
100	78	-88.3
150	83.5	-87.9
200	87.9	-88
250	99.7	-87.9
300	97.2	-87.8
350	111.6	-87.4
400	108.2	-89.4
433.5	111.7	-87.3

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Drill Summary - Lithology

BW0402

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							Overburden.
4	19.5	VC	volc	LAP	M	GRY	DEP	GR5	Medium grey VC unit with oxidation predominantly on fractures. Clay replacing clasts. Strong DBS.
19.5	46.3	FT	lam	LAP	M	OR	DEP	GR30	Orange grey laminted Felsic Tuff. Local sections of VC. Unit has pervasive limonite. Lamination approx 40 TCA.
46.3	85.1	VC	volc	BLOCK		GRY	DEP		Moderately silicfied VC. 50-50 mafic to felsic. Increase in clast size. Matrix supported.
85.1	108.6	VC	fltbx	BLOCK	D	GRY	FLT	SH	Broken zone, with major fault. VC textures seen in intact zones. Major fault from 103-108.7 is 100% gouge.
108.6	133	VC	volc	BLOCK	M	GRY	FLT	GR10	Back into VC after the fault with interesting interval of FLPT. Alteration contact showing that the mafic rich VC is being altered to appear like FLPT. This can be seen at 124.3 to 127.6m. Lower fault contact
133	140.2	VC	fltbx	LAP	D	GRN	DEP	GR10	Fault zone VC. Lower contact rock changes into FLTP. Gouge, with broken zones.
140.2	152	FLPT		LAP	M	GRY			Light green grey clast supported FLPT. 20% of clasts are laminated.
152	156	FLPT	fltbx	LAP	M	GRN	FLT	GR10	faulted FLPT. Possibly altered mafic volcaniclastsics. Strong serecite/clay alteration.
156	160.8	AND	volc	LAP	D	GRY	FLT	GR5	Dark grey/brown mafic rich volcaniclastic. Andesite. Matrix supported. faulted lower contact. More felsic groundmass
160.8	183	FLPT	fltbx	LAP	M	GRN	FLT	GR10	Very faulted zone. Felsic unit, locally chlorite rich. Gouge with broken zones, some intact zones. Texturally obscured.
183	193	FT		CA	M	GRY			Texturally obscure felsic tuff. Possbily altered mafics? Strong chlorite on fractures. Diss sphalerite and pyrite. Nice blebby sulphides at 192m.
193	315	FT		CA	M	GRY	ALTFR	GR30+	Texturally obscured unit. Strong serecite and silica alteration. Moderate to strong chlorite on fractures. Hematite on fractures from 215 to 237. Local laminations present. Disseminated sphalerite with pyrite throughout. 5%.
315	321	FT	lam	CA	M	GRY			Very similar to above, however laminations now present. 30-40 TCA.
321	400.5	FT	lam	LAP	M	GRY	ALTFR	GR30+	Increase in chlroite. 40-50% of unit has laminations. Increase in hematite on fractures. Increase in sulphides with chlorite
400.5	433.5	AND	volc	LAP	M	GRY			Gradational alteration change in andesite. Matrix supported, angular clasts in a silica/serecite rich matrix. Biotite alteration, chlorite alteration and hematite on fractures. Pyrite veining increasing.

Blackwater Project
Drill Summary - Alteration

BW0402		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	19.5	T	PERV	2	PERV	3	PERV	3	PERV	3	LIM	FR	3				Strong limonite on fractures. Pervasive in some places.
19.5	46.3	T	PERV	2	PERV	4	PERV	2	PERV	3	LIM	PERV	4				Pervasive sections of limonite, FeOx. Most intense from 19.5 to 28.0m. Strong serecite and clay alteration. Weak silica
46.3	76.5	T	PERV	2	PERV	4	PERV	2	PERV	3	LIM	FR	3				Decrease in FeOx as transition out of FT and into VC. Strong clay and serecite alteration
76.5	108.6	S	PERV	3	PERV	4	PERV	2	PERV	3							broken to gouge zone. Strong clay content in fault zone. Increase in chlorite
108.6	124.3	S	PERV	4	PERV	4	PERV	2	PERV	2							Increase in chlorite/clay through fault zones
124.3	127	S	PERV	3	PERV	4	PERV	3	PERV	4							FLPT zone with serecite/clay bleaching
127	140.2	S	PERV	4	PERV	2	PERV	2	PERV	2							back into mafic rich volcanics. Increase chlorite, decrease serecite
140.2	156	S	FR	3	PERV	2	PERV	3	PERV	4							FLPT, strong serecite silica zone
156	160.8	S	PERV	4	PERV	3	PERV	2	PERV	1							Andesitic unit. Increase in chlorite
160.8	183	S	PERV	3	PERV	3	PERV	2	PERV	4							fault zone, strong chlorite clay serecite alteration.
183	214.5	S	FR	3	FR	1	PERV	4	PERV	4							texturally obscured felsic tuff. Strong serecite and silica alteration. Strong chlorite on fractures.
214.5	237	S	FR	4	PERV	2	PERV	4	PERV	3	HM	FR	3				Increase in chlorite on fractures. Also hematite present on fractures. Strong serecite/silica alteration.
237	272	S	FR	4	PERV	2	PERV	4	PERV	3							same as above but no hematite on fractures
272	324	S	FR	3	FR	1	PERV	4	PERV	3	HM	FR	1				Strong silica/serecite. Minor hematite on fractures from 307 to 316. Chlorite on fractures.
324	400.5	S	FR	3	FR	1	PERV	3	PERV	3	CHL	PERV	2	HM	FR	3	Slight decrease in silica. Strong serectite and increase in chlorite. Increase in hematite on fracture planes.
400.5	433.5	S	FR	2	PERV	2	MTRX	3	MTRX	3	HM	FR	3	CHL	FR	2	Light grey matrix. Serecite and silica alteration. Strong hematite and chlorite on fractures. Biotite alteration replacing clats.

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Blackwater Project
Drill Summary - Mineralization

BW0402		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	19.5	DI	2	DI	0.1		0	Dbs	DEN	3							strong dbs. Sulphide gouge on some fracture surfaces.
19.5	45.9	DI	0.1		0		0	Dbs	DEN	0.5							decrease in sulphides through oxidized zone. Numerous vacant sulphide sites. Trace pyrite
45.9	61	DI	2	CR	2	CR	2	Dbs	DEN	1	Py	FP	1				strong sulphies, Increase in sphalerite and po. Clast replacement.
61	64	DI	0.5	DI	0.1	DI	0.5										decrease in sulphides with larger clasts size.
64	85	DI	0.5	CR	0.5	CR	0.5	Grnt	CR	1							increase in garnet clast replacement, po and sp still strong
85	103	DI	0.5	DI	0.1	DI	0.1	Sp	CR	0.5							decrease in sulphides
103	120	DI	2	DI	2	DI	0.5										major fault zone, sulphides throughout.
120	133	DI	0.5	DI	0.5	DI	0.5	Py	BB	0.5	Sp	BB	0.3	Dbs	DEN	0.5	some sections with increase blebby pyrite
133	140.2	DI	1	DI	1		0										fault zone, sulphdies through fault
140.2	156	DI	0.1	DI	2.5		0	Dbs	DEN	0.5							increase in dbs and diss sphalerite in felsic rock.
156	160.8	DI	0.5	CR	0.5		0										mafic unit, decrease in sulphides
160.8	183	DI	1.5	DI	1.5		0										fault zone, black sulphides throughout
183	193	DI	0.5	DI	2		0	Py	BB	0.5							majority of sulphides are disseminated. Blebby in places. One large bleb, 4cm at 192m.
193	217	DI	2	DI	3	DI	1.5										strong disseminate sphalerite with pyrite and pyhrrotite. Blebby in places.
217	240.2	DI	2	DI	3.5	DI	0.5										slight decrease in po
240.2	262	DI	1	DI	3.5	DI	0.5										
262	272	DI	0.5	DI	1.5	DI	0.5										decrease in sulphides
272	297	DI	2	DI	2.5	DI	0.5	Dbs	DEN	0.5							Moderate to strong sulphides. DBS present.
297	318	DI	1	DI	2	DI	0.5	Dbs	DEN	0.5	Sp	BB	0.5	Py	BB	0.5	decrease in pyrite. Minor DBS
318	343.5	DI	2	DI	2	DI	0.5	Dbs	DEN	0.5	Py	BB	1	Sp	BB	0.5	Blebby pyrite and sphalerite associated together. Po throughout. Rare veins of sulphides.
343.5	361	DI	2.5	DI	2	DI	0.5	Dbs	DEN	0.5	Sp	BB	0.5	Py	BB	0.5	Increase in diss sulphides. Should care good grade
361	378.7	DI	2	DI	2	DI	0.5	Py	BB	1	Sp	BB	1				strong blebby sulpides with diss sphalerite and pyrite

Blackwater Project
Drill Summary - Mineralization

BW0402		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
378.7	400.5	DI	1.5	DI	1.5	DI	0.5	Dbs	DEN	0.1							slight decrease in sulphides before approaching lower alteration contact with andesite
400.5	408	DI	1.5	DI	2	BB	1.5										increase in Po
408	426	VN	1.5	DI	3	DI	1.5										increase in po and sphalerite. Diss sphaleite throughout
426	433.5	VN	0.5	CR	1	DI	0.5										moderate clast replace sphalerite

Blackwater Project
Drill Summary - Structure

BW0402

From (m)	To (m)	Structure	Strength	Comments
4	86.3	JZ	2	Majority of joints 60 TCA. Locally broken.
86.3	90.5	FL	4	Small fault, intense gouge.
90.5	103	FZ	3	Broken zone approaching major fault below
103	108.7	FL	5	Major fault, gouge, 50 TCA
108.7	120	FZ	4	Some intact zones, some zones with strong clay gouge with large, 1-4 cm milled clasts
120	133	BRKZ	3	broken zone
133	138.2	FL	5	slicks present, gouge, finely broken, crumbly
138.2	150.3	BRKZ	3	broken zone
150.3	183	FZ	5	major fault zone, clay gouge, some broken zones, some competant core. 30 degrees to core axis. Slicks present
183	199.5	JZ	3	30 and 50 joints are at
199.5	203	BRKZ	3	broken zone
203	206	JZ	3	
206	214.5	FZ	3	small fault zone, minor gouge
214.5	279.3	JZ	3	majority of jointing is steep. However lots from 40-60 as well. Locally broken.
279.3	280	CLYSEAM	4	small fault, clay seam, sharp contact, gouge
280	322	JZ	3	jointing at 50. Becoming steeper downhole.
322	400.5	JZ	3	jointing at 30 and 70. Broken zones occure when joints become steeper.
400.5	433.5	JZ	3	some broken zones and steeper fractures

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Blackwater Project
Drill Logs

Hole ID:	BW0403	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375201.39
Depth (m):	356.5	Date Started:	05/04/2012	Casing Size:	HWT	Northing:	5893299.56
Azimuth:	0	Date Completed:	14/04/2012	Casing (m):	8	Elevation (m):	1546
Dip:	-90	Logged By:	CML	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	358.8	-89.2
106	325.5	-88.6
150	351.3	-87.9
202	332.3	-87.7
298	356.6	-87.7
352	257.7	-87.8

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Blackwater Project
Drill Summary - Lithology

BW0403

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.5	OB							
5.5	14	FT	bx	LAP	L	GRY	OXFR	GR30+	Some hydrobrx in broken FT w/ some banding; well broken w/ flt gge sporatically throughout; fx-cont orng-brn goe; clotty sp w/ fine grn's bright py> dbs
14	37	FT	bx	LAP	L	GRY	UNKN		continuation of above w/ no oxid'n and w/ some wk drk grn chl on fx
37	38.5	FT	bx	LAP	L	GRY	OXFR	GR30	as above
38.5	44.5	FT	fltbx	LAP	L	GRY	DEP	GR10	wk goe along fx in flt gge, some clay, mod silicified
44.5	54	FT	fltbx	LAP	MO	GRY	OXFR	GR10	well broken, wk goe on fx, some chloritized fragments 3-7mm strongest @46-48m
54	82	FT	lam	LAP	M	GRN	ALTFR	GR10	well faulted, banded w/ some chl increasing w/ depth on fx; some increased sp w/ depth
82	97	FT	lam	LAP	D	GRN	UNKN		strong increase in chl and sp, well broken-wkly flt'd, banded (possible evidence for bleaching of AND)
97	98.8	FT	lam	LAP	D	GRN	DEP	GR5	as above
98.8	101.3	FT	hydbx	LAP	L	GRY	UNKN	GR10	hydrobrx, .3-1cm clasts ~30% w/ distinct laminar texture; 5% TS py>sp>>po
101.3	114.1	FT	lam	FA	D	GRN	DEP	GR5	banded (some chaotic) w/ mod-strong chl along laminae, alt front @106.7m w/ some increased chl, scant grnt, some flt'ing @104m and 110m broken b/t flts
114.1	115	FT	hydbx	LAP	L	GRY	UNKN	GR10	hydrobrx, .3-1cm clasts ~30% w/ distinct laminar texture; 3% TS py>sp>>po
115	140	FT	lam	FA	M	GRN	UNKN		laminar, some chaotic, alternating chl intensity, some wk jnt-failure flting
140	179	FT	lam	FA	M	GRN	FLT	GR10	laminar w/ drk grn chl, some wk brx'n; well broken, some gge, v.poor recovery, sp-po dominant sulfide
179	209	FT	lam	LAP	M	GRN	FLT	GR10	laminar, some undulated banding, wkly jnt'd; some wk rehealed brx
209	217	FT	lam	LAP	M	GRN	UNKN		laminar w/ drk grn chl, some wk brx'n; well broken, some gge
217	220.8	FT	bx	BLOCK	MO	GRN	DEP	SH	1-50cm laminateded fragments against chloritized fragmental, mineralization cut at clast boundries, clasts more silicified than matrix
220.8	226	FT	bx	LAP	M	BLU	FLT	GR5	blue-grn chl along bands w/ some fragmental text ending in flt c^35
226	242	FT	frctz	LAP	M	GRN	FLT	GR30	faulted banded, brx'd FT w/ mod drk grn chl; wk sulfide (0.5-1.0%)
242	264	FT	lam	LAP	M	GRN	UNKN		mod broken w/o gge, 1.0-3.0% TS sp>py>po; drk grn chl strongest on fx and along laminae
264	266.5	FT	lam	LAP	M	GRN	DEP	GR30+	as above, grading from laminar-dominant to fragmental-dominant
266.5	279	FLPT	cs	LAP	M	GRN	FLT	GR30	fragmental>laminar w/ ~20% laminated clasts 2-5cm, ~10% chloritized clasts 1-3cm generally clast-supported

Blackwater Project
Drill Summary - Lithology

BW0403

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
279	289	FLPT	fltgge	LAP	M	GRN	UNKN		faulted as above
289	298.6	FLPT	frctz	LAP	M	GRY	ALTFR	GR10	fragmental texture, some laminar clasts, well broken, some flt gge; mod-well silicified
298.6	305	FLPT	frctz	LAP	M	GRY	ALTFR	GR10	as above w/ some yellow-grn clay on fx
305	308.5	FLPT	frctz	LAP	M	GRY	FLT		some healed flt brx @310m, fragmental text, some laminar clasts, well broken w/ some flt gge; mod-well silicified
308.5	319	FT	bx	LAP	M	GRY	FLT		semi-competent interval w/ drk grn chl, mod-strong silica
319	325	FLPT	frctz	LAP	M	GRN	DEP	GR30	well flt'd, fragmental text, some laminar clasts, well broken w/ some flt gge; mod-well silicified
325	327	FT	lam	FA	M	GRN	UNKN		laminar, decreased sulfide from above, blocky
327	351.5	FLPT	bx	LAP	M	GRY	UNKN		fragmental>laminar, locally strong chl and silica; wk-mod flting throughout
351.5	356.5	FT	frctz		M	GRN			As above, Broken all to hell. EOH! Drilling was tough and we were concerned about getting stuck

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Blackwater Project
Drill Summary - Alteration

BW0403		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.5	14	T		0	FR	1	PERV	4	PERV	2	LIM	FC	1				wk lt gry ser assoc w/ strong perv silica flooding
14	23.5	S	FC	1	REP	1	PERV	4	PERV	2							some wk grk grn chl increasing w/ depth
23.5	29.7	S	FC	2		0	PATC	4	PERV	2							silica strongest in patchy blebs 1-10cm
29.7	37	S	FC	2		0	PERV	3	PERV	2							decrease in silica intensity from above
37	38.5	S	FR	1		0	PERV	3	PERV	2							as above
38.5	51	T	FR	1	FR	1	PERV	4	PERV	2	LIM	FC	1				v.wk fx-cont oxid'n some chl throughout
51	54	T	FR	2	FR	1	PERV	4	PERV	2	LIM	FC	1				as above w/ some increased chl
54	85	S	FR	2		0	PERV	4	PERV	2							chl along fx and some wk clast replacement
85	97	S	PATC	3		0	PATC	4	PATC	1							increased chl on fx, banded along laminae, some patchy chl blotches
97	98.8	S	PATC	3		0	PATC	4	PATC	1							as above
98.8	101.3	S	FR	1		0	MTRX	4	CLST	2							silica strongest in matrix of hydrorx, well bleached
101.3	110.4	S	PATC	4		0	PERV	3	PATC	1							strong chl along laminae and on fx
110.4	114.1	S	PATC	2		0	PERV	4	PATC	1	GRNT	PATC	1				increased silica, decreased chl from above
114.1	115	S	FR	1		0	MTRX	4	CLST	2							silica strongest in matrix of hydrobrx, well bleached
115	125.5	S	FR	3		0	PERV	4	PATC	1	GRNT	PATC	2				drk grn chl, strong perv silica
125.5	127.2	S	FR	3		0	PERV	4	PATC	1	GRNT	PATC	1				decrease in chl from above
127.2	140	S	FR	3		0	PERV	4	PATC	1	GRNT	PATC	1				drk grn chl, scant grnt
140	172	S	FR	3		0	PERV	4	PATC	1	GRNT	PATC	1				drk grn chl along fx and along laminations
172	175	S	FR	2		0	PERV	4	PERV	2							wkly increased bleaching w/ some wk brx text
175	178.8	S	PATC	3		0	PERV	4	FR	1	GRNT	PATC	1				drk grn chl
178.8	182.7	S	FR	2		0	PERV	4	PERV	2	GRNT	PATC	1				some bleaching, some wk drk grn chl on fx
182.7	194.5	S	FR	3		0	PERV	3	PATC	1							drk blue-grn chl on fx
194.5	197	S	FR	3		0	PERV	5	PATC	1							intense silica
197	217	S	FR	3		0	PERV	4	PATC	1	GRNT	PATC	1				drk grn chl on fx and along bands
217	220.8	S	FC	1		0	CLST	5	CLST	3							block-sized clastsstrongly silicifed and well bleached
220.8	226.5	S	FR	3		0	PERV	4	PATC	1							drk blue-grn chl along fx and laminae
226.5	256	S	FR	2		0	PERV	4	PATC	1	GRNT	PATC	1				drk grn chl-dominant

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Blackwater Project
Drill Summary - Alteration

BW0403		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
256	265	S	FR	2		0	PERV	4	CLST	2							wk well bleached micro-brx clasts
265	275	S	FR	3	CLST	1	PATC	3	PATC	1							some wk clay replacement of clasts, drk grn chl on clasts
275	289	S	FR	3		0	PERV	4	PATC	1							strong silica, drk grn chl on fx
289	292.6	S	FR	3		0	PERV	4	PATC	3							v.drk grn chl on fx
292.6	298.6	S	PATC	1		0	PERV	4	PATC	2							spotty disseminations of drk grn chl throughout, scant chl on fx
298.6	306	S	PATC	2	FR	2	PERV	4	PATC	2							grn-yellow clay on fx
306	310.3	S	FR	3	FR	1	PERV	4	PATC	3							some grn chl on fx, wk yellow-grn clay
310.3	321	S	FR	3		0	PERV	5	PATC	2							intense silica flooding
321	324	S	PATC	4		0	PERV	4	PATC	2							strong drk grn chl throughout
324	327	S	FR	3		0	PERV	5	PATC	1							intense silica flooding
327	345	S	FR	3		0	PERV	4	PATC	2							drk grn chl
345	356.5	S	FR	4		0	PERV	4	PATC	2	GRNT	PATC	1				as above

Blackwater Project
Drill Summary - Mineralization

BW0403		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.5	14	SP	0.5	BB	1		0	Dbs	FP	0.5	Goe	FP	1				orng-brn goe on fx, blebby brn-blk sp w/ fine bright py within, some wk dbs along fx
14	17	VN	1	BB	1		0	Dbs	VN	0.5	Ga	SP	0.1				undulating discontinuous HL py-dbs vnlts, some v.wk ga intergrown
17	25.3	DI	0.5	BB	0.5		0	Dbs	FP	0.1							some wk spotty .5mm py disseminations w/ wk sp bbs
25.3	37	DI	1	BB	0.5		0	Dbs	FP	0.5	Py	FP	0.5				some py diss'd w/ some along fx
37	38.5	DI	1	BB	0.5		0	Dbs	FP	0.5	Py	FP	0.5				as above
38.5	43.25	DI	0.5	BB	1		0	Goe	FP	0.1							red-brn sp bbs, tr lt brn goe on fx
43.25	46	VN	0.5	DI	0.5		0	Sp	VN	0.5	Goe	FP	0.1				wk discontinuous .2mm vnlts c^55
46	51	SP	0.1	DI	0.1		0	Goe	FP	0.1							
51	56.3	DI	0.5	DI	1		0	Goe	FP	0.1							wk diss'd sp w/ some fine bright py
56.3	76.3	SP	0.1	DI	0.5		0										
76.3	86	DI	0.5	DI	3	DI	0.1										increased sp in med disseminations
86	91	SP	0.5	DI	5	DI	0.1	Dbs	DEN	0.1							sp along bands, in wk bbs, some diss'd
91	97	SP	0.5	DI	3	DI	0.1	Dbs	DEN	0.1							as above
97	98.8	SP	0.5	DI	3	DI	0.1	Dbs	DEN	0.1							continuation of above
98.8	101.3	DI	3	DI	2	DI	0.1										py>sp>>po in fine discontinuous HL stringers and .1-.3mm disseminations
101.3	105	DI	0.5	DI	0.5		0										.1-.3mm bright py and red-brn to metallic sp disseminations
105	106	DI	1	DI	1		0										as above
106	110.4	DI	0.1	DI	0.5		0										
110.4	114.1	FP	0.5	FP	0.5		0	Ga	FP	0.1							py and sp as discontinuous fx-fill, some v.wk ga on fx @110.5
114.1	115	DI	3	DI	2		0										py>sp in fine discontinuous HL stringers and .1-.3mm disseminations
115	125	DI	0.5	DI	1		0										discontinuous sp>py stringers
125	127	DI	1	DI	2		0	Ga	DI	0.1							as above w/ some wk disseminations and tr ga w/ sp

Blackwater Project
Drill Summary - Mineralization

BW0403		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
127	136	DI	0.5	DI	1		0										discontinuous sp>py stringers
136	151	DI	0.1	DI	0.5		0										
151	153	DI	0.5	DI	1		0	Ga	DI	0.1							intergrown sp-py w/ tr specks of ga
153	159.7	DI	0.1	DI	0.5		0										
159.7	175	FP	0.5	BB	1	DI	0.1										some bright sub-anh py aggregations on fx
175	190	SP	0.5	DI	1	DI	1										intergrown sp-po-py along laminae
190	194.3	DI	1	DI	3	DI	1										intergrown sp-po-py along laminae and in HL microfx
194.3	196.8	DI	0.1	DI	0.5	DI	0.1										
196.8	206	DI	1	DI	3	DI	2										intergrown sp-po-py along laminae and in HL microfx
206	215	DI	0.5	DI	0.5	DI	0.5										
215	220.8	DI	0.5	DI	1	DI	0.5	Dbs	DEN	0.1	Ga		0.1				in matrix, dbs-py-sp stringers ending at clast boundaries where py-sp disseminations dominate, some v.wk fine ga in matrix
220.8	226.5	DI	1	DI	1.5	DI	0.5										clotty fine-med disseminations
226.5	245	DI	0.5	DI	1	DI	0.5										
245	262	DI	1.5	DI	2.5	DI	1.5										spotty diss'd mixed sulfide, some finer disseminations along laminae
262	270	DI	0.5	DI	2	DI	1.5										intergrown sp-po w/ some wk py
270	281.5	DI	0.5	DI	1	DI	1										wk anh aggregated po
281.5	284.5	DI	0.1	DI	0.5		0.1	Apy	EU	0.5							fine-med grn'd euh-subh apy in flt zone
284.5	291.7	DI	0.5	DI	1	DI	0.1										splashy sp w/ wkly tarnished anh py intergrown, scant po
291.7	295.6	DI	0.5	DI	0.5	DI	0.1										
295.6	297.6	SP	0.1	SP	0.1		0										
297.6	307	DI	0.5	DI	0.5	DI	0.1										
307	314	DI	1.5	DI	0.5	DI	0.1	Py	FP	0.5							some .5-1mm py>sp disseminations, some subh aggregated py on fx
314	320.3	DI	2.5	DI	0.5	DI	0.1										aggregated subh py disseminations
320.3	320.5	DI	2	DI	0.1	DI	0.1	Apy	EU	0.5							disseminated euh apy xtls

Blackwater Project
Drill Summary - Mineralization

BW0403		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
320.5	324	DI	1	DI	0.1	DI	0.1										
324	335	FP	2	DI	0.1	DI	0.5										anh aggregated py along fx-planes
335	340	FP	1	DI	0.5	DI	0.1	Py	DI	0.5							wk py disseminations, w/ some anh aggregates on fx
340	356.5	FP	1.5	DI	0.1	DI	0.5										as above

Blackwater Project
Drill Summary - Structure

BW0403

From (m)	To (m)	Structure	Strength	Comments
5.5	14.3	BRKZ	5	intense broken zone, blocky-rubble w/ some local clay-rich sand gge; oxid'd to 14m
14.3	17.6	JZ	2	wkly jnt'd interval in flt/brkn zone
17.6	23	FL	3	rubble w/ gge and some blocky
23	27.4	BRKZ	3	blocky w/ some rubble; chl-coated fx
27.4	37	FL	4	gge w/ rubble> blocky
37	43.6	FL	4	as above
43.6	47.7	BRKZ	3	blocky w/ some v.wk goe fx-coating
47.7	51	FL	4	rubble/gge>blocky w/ some v.wk goe on fx, some wk chl
51	59.5	BRKZ	3	blocky w/ some rubble, wk drk grn chl on fx
59.5	76.5	FL	4	sandy clay gge w/ rubble, drk grn chl, some wk blocks
76.5	104	BRKZ	3	blocky w/ some v.wk rubble; drk grn chl on fx
104	105.3	FL	3	chlt'z'd rubble w/ some wk sandy clay-rich gge
105.3	109.8	BRKZ	4	blocky w/ some rubble
109.8	110.4	FL	4	strong sandy clay gge, measurement taken from bottom of interval
110.4	124.9	JZ	3	steep jnts w/ some c^55
124.9	137	BRKZ	4	blocky w/ some rubble
137	179	BRKZ	5	rubble w/ blocks, scant gge
179	209	JZ	3	c^55>c^25 w/ some wk blocks
209	215.3	FL	3	rubble w/ some blocks and sandy>clay-rich gge
215.3	226.5	JZ	3	chl-coated fx
226.5	242	FL	3	blocky-rubbe w/ some wk gge, measurement take on upper flt ctc
242	255	BRKZ	3	some competent w/ blocky-rubble
255	263.5	JZ	3	drk grn chl on rough fx
263.5	265	BRKZ	4	large jagged chloritized blocks
265	271.5	JZ	3	mod jnt'd w/ some blocky
271.5	276.1	FL	3	sandy clay gge w/ blocky-rubble bounding, measure taken at center of interval adjacent to strongest gge
276.1	279	JZ	2	wkly jnt'd w/ drk grn chl
279	289	FL	4	rubble-gge, blocky w/ some redrill

Blackwater Project
Drill Summary - Structure

BW0403

From (m)	To (m)	Structure	Strength	Comments
289	293.5	BRKZ	3	blocky w/ some wk rubble
293.5	305	FL	3	wk clay gge on jnts throughout broken zone
305	307	BRKZ	4	blocky w/ rubble
307	313.3	JZ	3	rough stepped steep chl-coated fx
313.3	322	BRKZ	3	blocky w/ rubble, some wkly competent
322	323.9	FL	3	strong clay-sand gge w/ rubble-blocky
323.9	329	BRKZ	3	blocky w/ chl on faces
329	332.1	JZ	1	rough chl-coated fx
332.1	332.7	FL	5	intense sandy clay gge
332.7	350.3	FL	2	blocky w/ some rubble and wk gge
350.3	356.5	FL	4	blocky-rubble

Blackwater Project
Drill Logs

Hole ID:	BW0404	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375352.75
Depth (m):	484	Date Started:	05/04/2012	Casing Size:	HWT	Northing:	5893399.9
Azimuth:	0	Date Completed:	16/04/2012	Casing (m):	13	Elevation (m):	1531
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	125.3	-88.8
100	99	-88.8
150	93.8	-88.9
200.5	72.9	-89.3
250	87.6	-89
300	92.6	-89.2
350	121.7	-89.3
400	113.4	-89.4
454	154.3	-88.9

Blackwater Project
Drill Summary - Lithology

BW0404

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6	OB							
6	61	VC	lpt	LAP	L	GRY	FLT	GR10	moderate to well sorted VC with FLPT texture, over 90 percent felsic clasts. matrix very fine grained silica. cherty in places, and frequently in and out of gouge,
61	84	FLPT	bx	LAP	L	GRY	DEP	GR30	light grey-cream coloured rock, cherty where more broken. some small zones may be bordering on VC texture. silica matrix
84	109.5	VC	lpt	LAP	L	GRY	DEP	GR10	similar appearance as above, but less laminated clasts, and possible altered mafic rocks. Difficult to distinguish litho due to strong sil-chl alt'n. light grey-cream to green coloured. 95% felsic clasts, matrix supported.
109.5	175	FLPT	bx	LAP	L	GRY	DEP	GR30+	clast rich, light grey-green FLPT, zones of jigsaw-brecciation, and zones of brecciation with sil-chl matrix. As with above units, very difficult to distinguish original litho through all the heavy alteration
175	248	FT	bx		L	GRY	DEP	GR30+	laminated FT, with microbrecciation. Interstratified small sections of FLPT with sharp contacts. Rock quite light green-grey coloured. Some zones of very brecciated FT
248	275	FLPT	lam	LAP	L	GRY	DEP	GR30+	hard to distinguish clast boundaries, alteration obscurred.
275	350	VC	ms	LAP	M	GRY	DEP	GR30+	appears darker green than above; clasts appear to be more polymictic than above unit, although very obscured by alt'n. clasts altered by ser-chl as well as silica
350	447	VC	ms	LAP	M	GRN	DEP	GR30+	more mafic content, still clast obscurred by alteration. very green from chl alt'n
447	454	VC	ms	LAP	M	GRY	DEP	GR30+	increasing mafic content, andesite clasts, poorly sorted
454	469	AND	volc	BLOCK	D	GRY	FLT	GR10	andesite clast in what appears to be andesitic matrix. Some block sized clasts. Andesite with infrequent amygdules
469	484	AND	mas		D	GRY	UNKN		massive andesite, fairly coarse grained, infrequent amygdules

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Blackwater Project
Drill Summary - Alteration

BW0404		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
6	13	O	MTRX	1	MTRX	3	PERV	3	PERV	2	HM	FC	3				fairly bright orange hm fracture controlled. rock grey-green with sil-ser alt'n and minor chl. chl in matrix and clast replacement
13	18	T	MTRX	1	MTRX	3	PERV	3	PERV	2	HM	FR	1				weaker hem alt'n, with sharp bottom boundary into fresh rock. Other alt'n styles as above
18	33.5	S	MTRX	1	CLST	3	MTRX	4	PERV	3							strong silica in matrix, rock hard and grey-creamy pale green
33.5	45	S	CLST	2	CLST	3	PERV	3	CLST	3	CHL	MTRX	2				rock becoming a bit more green with increased chl alt'n in matrix, as well as increased chl clast replacement, accompanied by clay-ser
45	60.8	S	CLST	1	FC	4	PERV	3	PERV	2	CLY	CLST	3	CHL	MTRX	3	stronger chl in matrix with sil, resulting in hard green rock. Quite a bit of clay gouging and cherty in broken zones.
60.8	85	S	MTRX	1	FC	2	PERV	4	PATC	1							very strong silica alt'n, with slight green tinge in localized places from weak ser-chl alt'n
85	109.8	S	MTRX	2	FC	2	PERV	4	PERV	2	CHL	CLST	3				occaisional strongly chl altered clast, with increased ser-chl alt'n in matrix, giving rock slightly greener colour
109.8	125.5	S	MTRX	2	FC	4	PERV	4	PERV	2	CHL	CLST	2				similar as above, with increased fracture controlled clay alt'n
125.5	140	S	MTRX	3	FC	3	PERV	3	PERV	2	CHL	CLST	3	CHL	FR	2	noticable increase in chl alt'n, particularly around the well mineralized core, interstitially pervasive, as well as on fracture planes
140	175	S	PERV	2	FC	2	PERV	4	PERV	2	CHL	CLST	1	CLY	INFILL	2	some yellowish clay infill in places, somewhat cherty where core is more broken. Moderate to strong silica with chl making rock light grey-green
175	186	S	PERV	2	FC	2	PERV	4	PERV	1	SIL	OP	5				rock is extremely hard in places, very difficult to scratch. pale green-grey sil-chl alt'n continues
186	190.2	S	PERV	2	FC	3	PERV	3	PERV	2	SIL	OP	5				strong sil overprint as above, with slightly more ser-chl altered, giving a pale green colour

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Blackwater Project
Drill Summary - Alteration

BW0404		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
190.2	215.6	S	PATC	1	FC	3	PERV	4	PATC	2	SIL	OP	5	UNK	PATC	2	very hard, highly silicified, intense silica overprint, leaving rock very hard. a bit of cherty/sandy material on FP's. one patch of unknown dark blueish grey alt'n, banded with a bit of chl. small patches of chl, otherwise absent
215.6	240	S	PERV	3	FC	2	PERV	4	PATC	1	SIL	CLST	3	SIL	OP	4	sudden increase in chl, gradually building in intensity to being moderate to strong, although rock is still very hard due to continuing strong silica
240	259	S	PERV	2	FC	2	PERV	3	PATC	2	SIL	OP	4	CHL	FR	3	strong silica alt'n fading out a bit, with chl becoming stronger
259	272.5	S	PERV	3	FC	1	PERV	3	PERV	3	SIL	OP	4	CHL	FR	5	dark green chl on fracture planes, pervasive chl as well, somewhat patchy. rock is quite green, also hard with strong sil op
272.5	283	S	PERV	3	FC	1	PERV	2	PATC	4	SIL	OP	3	CHL	FR	4	very dark chl with hemitite on fracture planes, patchy ser-chl, scratching easy with a weakening sil overprint
283	310	S	PERV	3	FC	1	PERV	3	PATC	4	SIL	OP	3	CHL	FR	4	hemitite seems to be gone. very green colour on fractures, gouge with mainly chl, minor clay. sil alteration still giving rock some hardness
310	340	S	PERV	3	MTRX	1	PERV	3	PATC	3	SIL	OP	2	CHL	FR	5	very dark green chl on fracture planes, with moderate perv chl. weakening sil, sericite pervalent. Bright red hem on FP's
340	368	S	CLST	3	MTRX	1	PERV	3	PERV	4	CHL	FR	5				intense dark green chl on fracture planes, soft sericite pervasively speckled, and replacing clasts with chl
368	397	S	CLST	4	MTRX	1	PATC	3	PERV	4	CHL	FR	5	HM	FR	2	very green rock due to extensive clast replacement of chl, as well as every fracture with very dark green chl. rock not very hard, sil alt'n moderate to weak, patchy
397	418	S	PATC	3	MTRX	1	PATC	2	PATC	3	CHL	FR	4	HM	FR	2	moderate ser-sil alt'n, patchy chl.
418	440	S	PATC	2	MTRX	1	PATC	4	PATC	4	CHL	FR	5	HM	FR	1	rock becoming fairly hard from stronger sil alt'n. weaker chl except very strong on fractures. Minor calcite within gouge material
440	463	S	PATC	2	FC	1	PATC	4	PERV	3	CHL	FR	3				chl on fracture planes and in gouge, but decreasing towards end of interval. patchy hard sil with sericite.

Blackwater Project
Drill Summary - Alteration

BW0404		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
463	484	S	PATC	3	FC	1	OP	3	PATC	1	BIOT	PATC	1				into andesite litho, chl moderate on fracture planes, continuing. patches of hard sil overprint

Blackwater Project
Drill Summary - Mineralization

BW0404		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
6	19		0	BB	0.5		0	Grnt	BB	0.1							minor sph accompanied by trace sph
19	31	CR	0.5	BB	0.5		0	Dbs	DI	0.5							dark sulphides along shear fracture, likely mostly py. Dark fine grained py pseudomorphs(?) of tourmalines(?), and blebby clast replacement.
31	50	CR	0.1	BB	0.5		0	Grnt	BB	0.1	Dbs		0.1				infrequent patches of sph blebs, minor garnet with sph.
50	61.4		0	BB	2		0	Ga	VN	0.5							patches of sph becoming locally high grade, up to 10-15% locally. gal shear vein in gouge at 56.5 with nice euhedral crystals
61.4	74	FP	0.5	FP	1		0	Dbs	DEN	1	Apy	SP	0.1				DBS common, consisting of dark nearly black sph, brigh py, perhaps trace cpy(?), visible on a fracture plane
74	86	FP	2	FP	2		0	Dbs	DEN	2	Apy	SP	0.1	Cp	SP	0.1	becoming well mineralized on many fracture planes, some glimmering with euhedral py in a sph backsplash. Dbs common
86	109	DI	2	DI	3	DI	0.1	Sp	CR	3	Dbs	DEN	2				very mineralized, with abundant clast replacement and disseminated sph, mostly very dark coloured sph, nearly black, possibly galena in places. dbs common
109	121	DI	0.5	DI	2	DI	0.1	Sp	CR	2	Dbs	DEN	1	Ga	FP	0.5	sph clast replacement not as common as above, but still pretty good. Dbs common. The odd galena on fracture plane
121	129	DI	0.5	DI	1		0	Dbs	DEN	1	Ga	FP	0.5				sulphides dying off a bit more
129	130	MA	20	VN	5	BB	1	Ga	VN	0.5	Cp	VN	0.5				massive py with interbedded silica bands, py showing a kind of crackling texture within silica. minor amounts of po with py. sph-gal-cpy in small vnlts around the area
130	139	FP	1	VN	5	SP	0.1	Ga	VN	0.1	Dbs	DEN	0.1	Cp	VN	0.5	veins of very dark sph, as well as very light sph. light brown sph vein at 134.6 quite thick. Dark sph vein running sub-parallel TCA. py on fracture coatings
139	151	DI	1	DI	2		0	Ga	SP	0.1	Cp	SP	0.1	Dbs	DEN	0.5	disseminated sulphides, majority sph. Sph sometimes in blebby style following laminations.

Blackwater Project
Drill Summary - Mineralization

BW0404		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
151	152	VN	5	VN	12		0	Ga	VN	3	Cp	VN	2				very high grade sph-py-gal-cpy vein at 151.8m. seems to be structure controlled
152	164	FP	0.5	FP	0.5		0	Dbs	DEN	0.1	Grnt	BB	0.1				sulphides dropped off sharply, only minor amounts of sph disseminated, and py on some fracture planes. one chear vein(?) chl rich, with possible dark sulphides within, not overly significant. Small brown garnet seen
164	172	DI	0.1	DI	0.5		0	Grnt	BB	0.1							minor sulphides. Trace garnets with sph, replacing clasts
172	185.5	DI	0.5	VN	0.5		0	Dbs	VN	0.5							as above, with a few sheared veins, with smeared grey possibly sulphides within. minor sph disseminated
185.5	197	VN	0.5	BB	0.5		0	Apy	SP	0.1							py in little vnlts, possibly with trace cpy(?). aspy seen one speck. minerals very minor.
197	206	BB	0.5	BB	0.1		0	Grnt	CR	0.1	Apy	BB	0.1				small black blobs of dark sulphides, likely very fine grained py with sph, aspy possibly. Not all that common
206	215	FP	0.1	DI	0.1		0										poor grade
215	227.5	VN	0.5	BB	0.1		0	Grnt	CR	0.1							small garnets(?) grey-brown colour. minor py in vlnts and fracture planes
227.5	234	FP	0.1	DI	1		0										one brief interval with good disseminated sph, then sph in a few little vnlts. minor py on fracture planes, with possible marcasite?
234	241	FP	0.1	DI	0.5		0	Apy	VN	0.5							spotty sph disseminations, one qtz vein with minor aspy within, and surronding the vein
241	255	FP	0.1	DI	0.5		0										not well mineralized, except for intervals of disseminated sph, occurring with little blebs of ser
255	260	FP	0.1	DI	0.5		0	Dbs		0.1							as above, with some hairline sph vnlts, and a little bit of whispy DBS
260	269.5	FP	0.5	BB	0.5	BB	0.5	Dbs		0.5							py fairly frequent on fracture planes, sph with some po in disseminated blebs, whispy DBS common

Blackwater Project
Drill Summary - Mineralization

BW0404		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
269.5	274	FP	0.5	VN	1	BB	0.5	Dbs		2	Sp	VN	0.5	Cp	VN	0.1	good DBS at beginning of interval, appears to be composed of py-sph. A couple qtz vnlts with good sph-aspy-cpy.
274	283	FP	0.5	DI	3	BB	1	Cp	DI	0.1	Apy	VN	0.1	Dbs		0.5	blotches of disseminated sph good grade overall, very high grade locally. accompanied by some po and specks of cpy here and there. DBS good
283	290	FP	0.5	BB	2	BB	1	Dbs		0.1							sph in blebby disseminations with po. Could be some sulphides within fault gouge, but does not appear to be significant, perhaps a bit of py
290	305	DI	0.5	BB	1	BB	0.5	Cp	SP	0.1	Dbs		0.1				bit of a decrease in grade, although fault gouge could carry some sulphides. blebby, sometimes clast replacement sph with associated po. minor py on fracture planes and also becoming more in disseminations. Cpy specks seen disseminated within matrix
305	316	DI	1	DI	2	BB	0.5	Cp	DI	0.5	Ga	VN	0.1				breccia gouge material beginning to carry some sulphides, particularly py and dark brown sph. Also decent cpy with these
316	325	DI	1	DI	3	BB	1	Py	FP	0.5	Sp	VN	2	Cp	VN	0.5	good overall sulphides, more po than py. Cpy seen in some hairline vnlts
325	333	DI	2	DI	3	BB	2	Cp	DI	0.5							very good sulphides, with a few patches of sph with good cpy within. equal po and py, py showing up more locally quite bright
333	341	VN	1	DI	2	BB	1	Cp		0.1							bit of a decrease in sulphides, similar style as above
341	352	DI	2	SP	3	BB	2	Cp	SP	0.5							mineralization kicked up, with locally good bright disseminate py, po=py, disseminated sph good
352	365	DI	1	BB	2	BB	2	Cp	SP	0.1							disseminated sulphides, sph and po usually in more homogenous blebs, while py appearing a bit more streaky.
365	376	DI	1	BB	2	BB	2	Cp	SP	0.1							Po blebs becoming larger

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Drill Summary - Mineralization

BW0404		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
376	386	FP	2	DI	2	BB	4	Cp	SP	0.1							very significant large Po blebs, sph rimming these blebs, and disseminated around. Py in fracture coatings and fracture brecciation.
386	397	DI	1	BB	2	BB	5	Cp	SP	0.5							very frequent large blebs of Po, commonly with specks of cpy within the blebs. sph blebby as well but less frequent.
397	404.5	DI	1	DI	2	DI	2	Py	FP	0.5	Mrc	FP	0.5	Dbs	VN	1	blebs of py, also fine grained disseminated with sph, some po. Po mosly in large blebs, fairly high grade in spots. whispy DBS
404.5	413	BB	3	BB	3	BB	3	Cp	SP	0.5	Apy	SP	0.1				large to very large blebs, with abundant po+/-sph+/-py-cpy all within these blebs. Bleb sizes up to 5cm seen. Trace aspy seen (?). Possibly cpy mixed with py-sph, definitely within some po blebs
413	422.5	CR	3	BB	2	CR	3	Cp	BB	1	Ga	VN	0.5	Dbs	DI	0.5	very large blebs, some blebs showing clear clast replacement, frequent clasts have been replaced with sulphides. Cpy mineralization becoming more blebby an frequent. one vnlt with high grade galena
422.5	432	BB	1	CR	2	CR	5	Cp	BB	2	Dbs	DI	0.5				Very good sulphide mineraliztion, very large, frequent blebs/clast replacement of po sph and py. even cpy in fairly large sized blebs. small DBS within matrix
432	440	CR	3	CR	3	CR	3	Cp	BB	0.5	Dbs	DEN	1				similar mineralization style as above, with approximately equal abundances of py, sph and po. DBS picking up near end, in frequent small whisps
440	450	CR	3	BB	2	BB	2	Py	VN	2	Cp	SP	0.5				sulphides around 10 percent overall, similar style as above. seems to be more py
450	457	BB	3	BB	3	BB	2	Cp	SP	0.1							plenty of py vnlts. sulphide mineralization still high grade blebby, but smaller blebs
457	469	DI	5	DI	3	BB	1										locally very high grade py with sph, disseminated, finer grained than previous styles. A few py vnlts as well.
469	484	DI	1	DI	1	BB	0.5										mineralization dropping off significantly, minor sulphides towards end of interval

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Blackwater Project
Drill Summary - Structure

BW0404

From (m)	To (m)	Structure	Strength	Comments
6	61.4	FZ	3	fairly consistantly broken/gouge/rubbly rock. Continuously in and out of fault gouge, white clay rich. most structure at 40 deg TCA
61.4	69.3	JZ	3	competant rock, with minor fracture set at 10 deg TCA, making some zones appear more fractured
69.3	79.3	BRKZ	4	quite broken, rubbly rock, varous fracture angles, rough fracturing
79.3	79.6	FL	4	gouge, clear lower contact at 25 deg TCA
79.6	84	BRKZ	1	cleanest fracture at 25 deg TCA, other orientations rough
84	94	FZ	3	highly fractured, some gouge, most fractures roughly at 35 deg TCA
94	102.7	JZ	2	competant joint zone, joint orientation clear at 30
102.7	109.8	BRKZ	3	fracture orientations continuing from above
109.8	115.5	FZ	4	very cherty gouge, rogh fractures, rough fracturing. very uncompetant
115.5	120	BRKZ	3	broken, cherty rough fracturing
120	124	FZ	2	rough fracturing with sandy/cherty gouge on all the fracture planes
124	124.9	BRKZ	3	short zone rough fractures
124.9	127	FZ	3	rough gouge, sandy, some moderately healed runs
127	132.5	BRKZ	3	some shardy fracutring, well broken, some angles measurable 50-60 deg TCA
132.5	134.6	FZ	2	sandy gouge, fairly well healed, with intense fracturing and rubble
134.6	142.3	BRKZ	4	very broken/busted chunky core. various fracture angles, not consistant
142.3	145.4	JZ	4	competent zone with some roughly planar fractures at 20-30 deg TCA mostly
145.4	158.2	BRKZ	5	very busted, chunky broken core, minor sandy gouge every now and then. no consistant measurement
158.2	159.8	JZ	2	brief zone of unfractured rock
159.8	160.5	FZ	3	short gouge zone
160.5	163	BRKZ	4	rubbly, chunky core
163	164.8	JZ	4	clean fracture plane measured at 10 deg TCA.
164.8	172.6	FZ	4	all rubble. gouge may have been washed away
172.6	176.5	FZ	3	intensely fractured, with a bit of gouge in between fractures
176.5	182	BRKZ	4	chunky, busted core
182	187.5	BRKZ	3	broken and chunky, mostly rough fracturing, but some planar measurable fractures at 35-45 deg TCA
187.5	198	FZ	3	busted, chunky rubbly core. hard to find a run longer than 10 cms. A bit of gouge

Blackwater Project
Drill Summary - Structure

BW0404

From (m)	To (m)	Structure	Strength	Comments
198	202	BRKZ	4	chunky, lots of fracturing
202	205.9	JZ	4	most competant rock in a while. Joint set at 30, with another set at very low angle TCA, around 5-10
205.9	210.2	BRKZ	2	lots of low angle fracutring, but various angles. core is shardy
210.2	211.2	JZ	2	short zone of few fractures
211.2	218.3	BRKZ	4	busted up core, rough fracturing, some rubble with a minor amout of sandy gouge
218.3	221	BRKZ	2	fairly competant, although fractures are quite rough
221	223	BZ	3	healed fault breccia and shear gouge, with shear orientations at 40 deg TCA.
223	229	BRKZ	3	highly fractured core, with consistant set at 40 deg TCA
229	234.5	FZ	4	very intensely fractured with alot of shard-like fragments. A bit of gouge
234.5	242.5	BRKZ	3	very busted up, but some decent length runs
242.5	247.3	FZ	4	similar style as above FZ 4
247.3	262.3	BRKZ	3	broken zone, some brief zones with more competant runs, but for the most part highly fractured, rough fracturing, various angles
262.3	264.5	JZ	4	fairly competant, joint sets not well defined, measured at 15 and 50 degTCA
264.5	266.5	BRKZ	3	gradually becoming more broken, rubbly
266.5	269.5	JZ	5	joint zone with quite a bit of fracturing, dominant set at 40-50 deg TCA
269.5	279.5	JZ	3	stretches with relatively few fractures, then brief zones with increase in fractures. Overall fairly competant
279.5	279.6	SZ	4	gouge against competant rock, clear angle taken
279.6	283	BRKZ	3	blocky fracturing
283	286	FZ	4	upper contact with breccia gouge measured at 35. Breccia gouge, then breccia, then broken
286	294	BRKZ	4	broken rock, rough fracturing
294	300.4	FZ	4	mixed bag of very broken rock, interspaced with gouge, some poorly healed, some well healed, then ending with more of a breccia-gouge. Gouge contacts measured at 50
300.4	308.5	BRKZ	3	busted rock, various fracture angles
308.5	311.3	JZ	4	joint sets at 30 and 50 deg TCA. some rough fractures
311.3	312	FZ	4	well defined upper contact at 30 deg TCA. Brief gouge zone, with sub rounded fragments within
312	315	BRKZ	5	heavily fractured, busted up core
315	316.3	BZ	3	sporatic fault breccia zone with good mineralization in groundmass
316.3	326.8	JZ	4	joint sets at 30-40 deg and 50-55 deg TCA

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Drill Summary - Structure

BW0404

From (m)	To (m)	Structure	Strength	Comments
326.8	327.5	BZ	2	short breccia zone, broken core
327.5	330.3	BRKZ	2	fairly competant rock, but a few rough fractures, including some low angles TCA, 10-20 deg
330.3	332	BRKZ	3	a bit more broken/busted up
332	332.7	FZ	4	brief gouge zone, lower contact roughly 65
332.7	338.5	BRKZ	4	mainly rubbly, with a few short competant runs
338.5	351.7	JZ	5	quite a few joints, as well as internal healed fractures, main set at 35-40 degTCA, with another set closer to 60 deg TCa
351.7	354	BRKZ	3	heavily broken zone, varying fracture orientations, block
354	364.8	JZ	3	frequent fractures with TCA at 40-50 deg, local zones of broken shards
364.8	365.2	SZ	4	slickenslides on upper and lower contact with poorly healed gouge
365.2	383.7	BRKZ	3	frequent joints with TCA at 35-40 deg
383.7	399.7	JZ	3	Competant long runs, well defined joint set with 50-55 deg TCA
399.7	401.4	BRKZ	2	rough fracturing, varying from 40-55 degTCA
401.4	401.5	FZ	4	small zone of laminated gouge, subrounded fragments within. Upper contact with slickensides, sub-parallel TCA, indicating dip-slip
401.5	404.5	BRKZ	2	quite a few low angle fractures, leaving shard-like fragments
404.5	406	JZ	2	breif zone with few fractures
406	409.5	BRKZ	2	blocky fracturing, with low angle fractures still most dominant, with minor set at around 40 deg TCA
409.5	415	BRKZ	1	gradually more competant, with many parallel fracturing at 35-40 deg TCA
415	428.4	JZ	3	minor joint set a 20 deg TCA, and 30 deg TCA. fairly competant rock
428.4	429.4	BZ	4	slicks on upper contact appear to be oblique TCA, fault breccia zone with gouge healed fracturing, fairly angular fragments. Also with calcite and fairly well mineralized
429.4	430.7	JZ	5	competant but well jointed brief zone
430.7	434.2	FZ	2	very rubbly, then broken
434.2	438.8	JZ	4	rough jointing, only one set somewhat clear around 60 degTCA
438.8	444.6	BRKZ	2	broken, with some long runs as well. joint sets at 35-40 deg TCA, and 65 deg TCA
444.6	445.7	FZ	4	gouge, then fault breccia zone, well mineralized. chl rich gouge
445.7	451.4	BRKZ	2	plenty of fractures from 25-30 deg leaving shard-like fragments.
451.4	460.8	JZ	3	planar jointing, many with calcite fracture coatings, sets at 20-30, then around 50 degTCA

Blackwater Project
Drill Summary - Structure

BW0404

From (m)	To (m)	Structure	Strength	Comments
460.8	461.6	BRKZ	4	very broken, rubbly, minor gouge annealing some fractures
461.6	467.5	JZ	3	planar jointing, commonly around 50 deg TCA
467.5	469	FZ	4	massive gouge, with some sub-rounded fragments within. contacts broken and unclear, but roughly around 50 deg TCA
469	473.1	BRKZ	3	frequent sections with busted up core
473.1	484	JZ	2	quite planar jointing, many joints with fracture coatings of calcite. orientations vary, with set around 25-35 deg TCA, another set around 50 deg TCA

Blackwater Project
Drill Logs

Hole ID:	BW0405	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375150.76
Depth (m):	467	Date Started:	10/04/2012	Casing Size:	HWT	Northing:	5893100.01
Azimuth:	0	Date Completed:	17/04/2012	Casing (m):	2.5	Elevation (m):	1584
Dip:	-90	Logged By:	Other	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
102.5	183.8	-89.9
160	209.9	-89.5
200	205.8	-89.4
303.5	197.5	-88.8
350	187.5	-88.8
405.5	188	-88
453.5	189.3	-87.8

Blackwater Project
Drill Summary - Lithology

BW0405

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour	Bottom Contact Nature	Bottom Contact Type	Comments
2	5.7	AND	lpt	LAP		DEP	GR30	Andesitic lapilli fragmental with a weak to moderate pervasive silica alteration to the groundmass matrix towards the lower contact. Oxidation on broken surfaces and fracture planes.
5.7	6.2	VC	volc	LAP		ALTFR	GR30	Silica altered volcaniclastic fragmental with mafic fragments dominant over felsic clasts, matrix suported in a silica altered medium; Mafic frags 90% to felsic frags 10%; Oxidation pervasive and dominant along fractures and broken sections.
6.2	20.5	VC	volc	LAP		ALTFR	GR30	This interval is a moderate to strong pervasive silica altered volcaniclastic rich fragmental unit, alteration has mineralogically altered the mafic fragments throughout this interval, however, remnant "Islands" of less altered sections exist through
20.5	33.75	FLPT	lpt	LAP		ALTFR	GR30	This interval is a silica - clay altered felsic lapilli fragmental; felsic fragments occur throughout the interval, fragments are matrix supported, subangular to subrounded, poorly sorted and may contain laminations in some of the clasts. Oxidation
33.75	49.5	AND	lpt	LAP		ALTFR	GR30	Andesitic lapilli fragmental with a weak to moderate pervasive silica alteration to the groundmass matrix towards the upper and lower contacts. Oxidation occurs on broken sections and fracture planes.
49.5	59.1	VC	lpt	LAP		ALTFR	GR30	Again a seilica - clay altered felsic rich volcaniclastic fragmental unit,locally through this interval is remnant mafic fragments present that a chloritized somewhat suggesting of the mafic component to this units protolith! Oxidation occurs on bro
59.1	69.8	AND	lpt	LAP		ALTFR	GR30	Andesite lapilli fragmental with a weak to moderate pervasive silica alteration to the groundmass matrix towards the upper and lower contacts. Oxidation occurs on broken sections and fracture planes.
69.8	75.5	VC	volc	LAP		ALTFR	GR30	Volcaniclastic moderate to strong silica-clay altered felsic rich fragmental unit, local mafic fragments present adjacent to upper contact area, oxidtation on fractures and broken zones.
75.5	85.45	VC	volc	LAP		ALTFR	GR30	Strong silica altered volcaniclastic fragmental unit, texture destructive alteration, strong oxidation in broken and fracture areas; transition sulphides occurin this interval.
85.45	90.5	VC	volc	LAP		DEP	GR30	Similar to previous description, however, this interval has a weaker silica-clay alteration overprint.

Blackwater Project
Drill Summary - Lithology

BW0405

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour	Bottom Contact Nature	Bottom Contact Type	Comments
90.5	96	VC	volc	LAP		DEP	GR30	Weak pervasive silica altered volacaniclastic fragmental with lapilli sized mafic subangular to subrounded clasts in a silica matrix; Mafic fragments 95% to felsic fragments 5%.
96	120	VC	volc	LAP		DEP	GR30	Volcaniclastic section with moderate pervasive silica-albite-chlorite alteration throughout, often texture destructive and giving pseudo-fragmental textures; sections of the interval have well defined fragments and sections of laminations to banding
120	169.7	VC	volc	LAP		DEP	GR30	Similar to previous description with increasing amount of banded to laminated sections through the interval; chlorite is still a dominant component in this alteration style.
169.7	190.5	VC	volc	LAP		ALTFR	GR30	Volcaniclastic interval with moderate pervasive, texture destructive silica-chlorite alteration overprint, fragments are mafic dominant (75% mafic to 25% felsic) and many fragments that look felsic may be altered due to alteration over print.
190.5	239	VC	volc	LAP		ALTFR	GR30	Moderate to strong pervasive silica-sericite-chlorite alteration overprinting a volcaniclastic lapilli tuff fragmental; Chlorite occurs as wispy patches, fracture fillings and replacing mafic fragments.
239	284	VC	volc	LAP		ALTFR	GR30	Strong pervasive silica-sericite altered volcaniclastic fragmental, fragments are poorly sorted, subangular to subrounded in shape, randomly distributed though the interval; sulphides are geneerally increasing down the hole in this interval...
284	347	FLPT	lpt	LAP		ALTFR	GR30	Very strong silica-sericite altered "felsic lapilli tuff" unit with polimictic fragment remnants, poorly sorted fragments and mottle in texture. The entire interval varies with alteration intensity and how visible the fragments are from bbox to box.
347	414	FLPT	lpt	LAP		ALTFR	GR30	Strong to intense silica-sericite+/-chlorite altered lapilli tuff unit with remnant polimictic fragments, poorly sorted, subangular to subrounded and usually mottled and highly altered. Chlorite occurs through this interval as zones of increasing ser
414	420.6	VC	volc	LAP		ALTFR	GR30	Strong pervasive silica-sericite+/-chlorite altered volcaniclastic polimictic fragmental, poorly sorted, subangular to subrounded, matrix supported, generally lapilli sized fragments in a matrix silica-sericite altered matrix.
420.6	467	VC	volc	LAP		ALTFR	GR30	This interval has a very strong to intense pervasive silica alteration (texture destructive) overprint...local remnant fragments are occasionally visible when the drill core is cut by the core saw for inspection. These fragments are generally comple

Blackwater Project
Drill Summary - Alteration

BW0405		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2	6.2	O		0	FC	1	PERV	2		0							This interval has a weak to moderate pervasive silica alteration within the matrix material that supports the lapilli fragments. Oxidation occurs throughout the interval in broken areas and fracture planes.
6.2	33.75	O		0	PERV	2	PERV	3		0							This interval has a moderate pervasive silica - clay alteration overprint throughout...remnant trace sulphides occur in local spots as trace pyrite...oxidation dominants interval.
33.75	49.5	O		0	FC	1	PERV	2		0							This interval has a weak to moderate pervasive silica alteration overprint in the areas of the upper and lower contacts. Oxidation is still dominant along broken sections and fracture planes.
49.5	59.1	O		0	PERV	2	PERV	3		0							This interval has a modeerate pervasive silica-clay alteration overprint throughout...remnant trace sulphides occur locally as trace pyrite...oxidation persists along fracture planes and broke sections.
59.1	69.8	O		0	FC	1	PERV	1		0							This interval has weak pervasive silica alteration adjacent to upper and lower contacts of this interval...oxidation persists on broken core sections and fracture planes.
69.8	82.5	O		0	OP	2	PERV	3		0							This interval has a moderate pervasive silica alteration overprint with a oxidation related clay alteration overprint.
82.5	90.5	T		0	OP	2	PERV	3		0							This interval is similar to the previous, however, this is the section where the transition sulphide zone occurs; sulphides are pyrite and dbs as disseminations, blebs and dendritic fracture fills...total sulphides 2.0 - 4.0%.
90.5	96	S	FR	1		0	MTRX	2		0							This interval has a weak to moderate pervasive, matrix dominant alteration overprint.
96	120	S	REP	2		0	PERV	1		0	ALB		2				This volcaniclastic alteration interval has a weak to moderate pervasive, texture destructive, albite/kspar/chlorite+-silica alteration overprint; the entire interval is dominated by the alteration wash and the associated chlorite.

Blackwater Project
Drill Summary - Alteration

BW0405		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
120	163	S	REP	2		0	PERV	1		0	ALB		2				This interval is similar to the previous description, however, this section does have more laminated or banded sections and a moderate silica flooded section at 145.0 to 147.5 metres with associated sulphides.
163	171.9	S	FC	2		0	PERV	3	PERV	1	ALB	PERV	1				This interval has a weak to moderate pervasive silica-chlorite-sericite alteration overprinting the interval...this interval also is broken and locally sheared.
171.9	180.5	S	FC	1		0	PERV	4	PERV	1							This interval has a texture destructive silica-chlorite aleration overprint, with nearly total destruction of primary textures in most areas...chlorite tends to be fracture controlled.
180.5	190.5	S	FC	2		0	PERV	3	PATC	2	ALB	PERV	1				This interval has a weak to moderate pervasive silica-sericite alteration overprint with local shears present through the interval and associated chlorite alteration.
190.5	239	S	REP	2		0	MTRX	3	PERV	2	ALB	PATC	1				This interval has a moderate to strong pervasive and matrix dominant silica-sericite and possible albite/kspar alteration overprint...chlorite continues to be present as replacing fragment or fracture fillings.
239	267	S	REP	2		0	PERV	3	PERV	2	KSPR	PERV	1				This interval has a moderate pervasive silica-sericite alteration overprint throughout with chlorite occuring as alteration replacements with mafic fragments; local areas of textute destructive silica-sericite flooding in the interval.
267	284	S	FR	1		0	PERV	4	PERV	2	KSPR	PERV	1				This interval is similar to theprevious description, however, the silica-sericite alteration is strongerthrough this interval and more textute destruction overall...sulphides are about the same concentrations.
284	316.5	S	FR	1		0	PERV	4	PERV	2	ALB	PERV	1				This interval has a very strong pervasive silica-sericite+/-chlorite pervasive alteration overprint...local pseudo-fragmental to texture destructive alteration throughout the interval. Chlorite is patcy locally and usually in fracture planes.

Blackwater Project
Drill Summary - Alteration

BW0405		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
316.5	318.5	S	FC	2		0	PERV	4	PERV	1							This interval has a very strong pervasive silica-chlorite+/-sericite alteration overprint...complete texture destructive type alteration type.
318.5	347	S	FC	1		0	PERV	4	PERV	2							This interval has a very strong pervasive silica-sericite+/-chlorite alteration overprint...local pseudo-fragmental to texture destructive type alteration.
347	351	S	FC	2		0	PERV	4	PERV	2							This interval is similar to previous description, however, interval has a slightly higher chlorite content overall...perhaps more sulphides also present.
351	370	S	FC	1		0	PERV	4	PERV	2							This interval has a very strong pervasive silica-sericite alteration overprint...texture destructive and mottled type alteration textures...locally fuzzy fragment outlines randomly through this interval.
370	395	S	FC	2		0	PERV	3	PERV	2	GYP	PATC	1				This interval has a strong pervasive silica-sericite-chlorite alteration overprint...fragments are becoming more visible in this style of aleration overprint...sulphides have also increased in concentration.
395	414	S	FR	1		0	PERV	4	PERV	2							This interval has a very strong pervasive silical-sericite alteration overprint...fragments are very mottled and distorted through this interval (texture destructive alteration).
414	420.6	S	FR	2		0	PERV	4	PERV	2							This interval has a strong prevasive silica-sericite+/-chlorite alteration overprint...mottled, texture destructive alteration.
420.6	467	S	FR	2		0	PERV	5	PERV	1							This interval has very strong pervasive silica-sericite alteration with fracture controlled chlorite alteration...occasional remnant fragment visible in saw cut core surfaces.

Blackwater Project
Drill Summary - Mineralization

BW0405		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	82.5	SP	0.1		0		0	Dbs		0.1							Trace "Islands" of sulphides where oxidation is not occurring in the more felsic intervals...sulphides as pyrite & dbs.
82.5	90.5	DI	2.5		0		0	Dbs		1							This interval is the start and end of the transition sulphide zone with associated pyrite and dbs mineralization.
90.5	96	DI	1		0	DI	2										This interval has weak to moderate disseminated pyrite and pyrrhotite as disseminations and blebs...total sulphides 2.0 to 3.0%.
96	120	DI	0.5	SP	0.3	DI	2.5										This interval contains weak to moderate sulphides throughout as disseminations, specks and blebs...sulphide types include pyrrhotite, pyrite and lesser sphalerite...total sulphides approx. 2.5 to 3.0 %.
120	169.7	DI	0.5	SP	0.2	DI	0.5										This interval has weak disseminated sulphides throughout, however, a small interval at 145.0 to 147.5 metres has a increased silica flooding with high py/sph/po 2.5 to 3.5%.
169.7	184	DI	0.3	SP	0.2	DI	0.5										This interval has weak disseminated sulphides...sulphide types include pyrrhotite, pyrite and lesser sphalerite...total sulphides approx. 0.5 to 1.0%.
184	190.5	DI	0.1	DI	0.3	DI	0.5										This interval is similar to the previouswith weak sulphides overall...pyrrhotite is the dominant sulphide type.
190.5	239	DI	1	SP	0.5	DI	2	Grnt	BB	2							This interval has the most abundant sulphides overall since the start of the hole...sulphide types are pyrrhotite, pyrite, sphalerite and trce chalcopyrite...total sulphides approx. 2.5 to 3.5%.
239	267	DI	1.5	DI	1.3	DI	1.5	Ga	SP	0.1	Dbs	DEN	0.1				This interval contains moderate to strong disseminated to bleby sulphides throughout; dominant sulphides include po/py/sph and lesser galena and dbs...total sulphides approx. 3.0 to 4.5%.

Blackwater Project
Drill Summary - Mineralization

BW0405		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
267	284	DI	0.8	DI	0.7	DI	1.3										This interval has the same sulphide types as the previous description, however, sulphides have decreased in concentration overall...total sulphides are approx. 2.0 to 3.5% (po/py/sph).
284	318.5	DI	1.5	SP	0.3	DI	1.3	Cp	SP	0.1							This interval has moderate disseminated sulphides throughout...dominant sulphides include pyrite & pyrrhotite with lesser sphalerite and chalcopyrite...total sulphides 2.0 - 3.0%.
318.5	342.5	DI	1.3	SP	0.3	DI	1.8	Cp	SP	0.3							This interval has moderate to strong disseminated sulphides throughout...dominant sulphide type include pyrrhotite, pyrite and sphalerite with lesser chalcopyrite...total sulphides 2.5 - 3.5%.
342.5	347	BB	2	SP	0.1	DI	0.2	Cp	SP	0.3							This interval has moderate disseminated and blebby pyrite throughout, with lesser disseminated pyrrhotite and chalcoprite...total sulphides 2.0 - 2.5 %.
347	351	DI	1.8	DI	0.5	DI	2	Cp	DI	0.3	Ga	SP	0.1				This interval has moderate disseminated and blebby sulphides throughout the interval...dominant sulphides include pyrite & pyrrhotite with lesser sphalerite, galena and chalcopyrite...total sulphides apprx. 3 to 4%.
351	370	DI	0.5	DI	1.3	DI	1.5	Ga	SP	0.1							This interval has moderate disseminated sulphides throughout...dominant sulphides includes pyrrhotite & sphalerite with lesser pyrite & galena...total sulphides 2 - 3%.
370	395	DI	2	DI	1	DI	2	Ga	SP	0.5	Cp	DI	0.3				This interval has strong disseminated sulphides and fine fracture fill pyrite...sulphides include doninant pyrite/pyrrhotite/shpalerite and lesser chalcopyrite and galena...total sulphides approx. 4 to 6%.
395	420.6	DEN	1.3	DI	1	DI	2	Ga	SP	0.2	Cp	SP	0.1				This interval has moderate to strong disseminated sulphides with fine fracture fill pyrite...sulphides include po/py/sph/gal/cpy.

Blackwater Project
Drill Summary - Mineralization

BW0405		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
420.6	455	DI	1.3	DI	1.5	DI	3	Ga	SP	0.3	Cp	SP	0.2	Grnt	BB	0.5	This interval has moderate to strong disseminated sulphides throughout, dominant sulphides include po/py/sph and lesser galena & cpy.
455	467	DI	0.8	DI	1	DI	1	Ga	SP	0.2	Cp	SP	0.1				Similar to previous description, howevr, this interval has weaker sulphides than previous...total sulphides 2.5 to 3.5%.

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a clear direction

Blackwater Project
Drill Summary - Structure

BW0405

From (m)	To (m)	Structure	Strength	Comments
2	12	JZ	3	Dominant joint sets are 25 & 45 degrees TCA.
12	32	JZ	2	Dominant joint sets are 25 & 40 degrees TCA.
32	51	JZ	3	Dominant joint sets are 25 & 40 degrees TCA.
51	58	JZ	2	Dominant joint set is 40 degrees TCA.
58	62.7	BRKZ	3	Dominant joint set is 45 degrees TCA.
62.7	73.5	JZ	3	Dominant joint set is 40 degrees TCA.
73.5	92	JZ	2	Dominant joint sets are 15 & 35 degrees TCA.
92	95.8	JZ	3	Dominant joint sets are 20 & 45 degrees TCA.
95.8	96.35	CRZ	3	Crushed and broken zone with minor oxidation present.
96.35	111	JZ	2	Dominant joint sets are 20 & 40 degrees TCA.
111	115.5	JZ	4	Dominant joint sets are 15 & 55 degrees.
115.5	118.5	JZ	2	Dominant joint sets are 20 & 45 degrees TCA.
118.5	123	JZ	3	Dominant joint sets are 15 & 45 degrees TCA.
123	126.2	JZ	2	Dominant joint sets are 20 & 40 degrees TCA.
126.2	130	JZ	4	Dominant joint sets are 20 & 60 degrees TCA.
130	163.5	JZ	3	Dominant joint sets are 25 & 45 degrees TCA.
163.5	169.7	BRKZ	3	Dominant fracture/joint orientations are 20 & 40 degrees TCA.
169.7	180.7	JZ	2	Dominant joint sets are 20 & 40 degrees TCA.
180.7	190.5	BRKZ	2	This section has local shears at 20 degees TCA.
190.5	196.6	JZ	1	Dominant joint is 45 to 50 degrees.
196.6	199	JZ	3	Dominant joint sets are 20 & 35 degrees TCA.
199	211.7	JZ	1	Dominant joint sets are 20 & 40 degrees TCA.
211.7	239	JZ	2	Dominant joint stes are 20, 40 & 60 degrees TCA.
239	248	JZ	1	Dominant joint sets are 55 degrees TCA.
248	255.5	JZ	2	Dominant joint sets are 15 & 40 degrees TCA.
255.5	256.8	BRKZ	3	Dominant joint sets are 0 & 60 degrees TCA
256.8	257.1	CLYSEAM	3	Slickensides present indicating a dip-slip normal fault!!!
257.1	268	JZ	2	Dominant joint sets are 30 & 40 TCA.

Blackwater Project
Drill Summary - Structure

BW0405

From (m)	To (m)	Structure	Strength	Comments
268	275	JZ	4	Dominant joint sets are 25 & 55 degrees TCA.
275	283.8	JZ	2	Dominant joint sets are 25 & 50 degreed TCA.
283.8	310	JZ	1	Dominant joint sets are 15 & 30 degrees TCA.
310	316.4	JZ	2	Dominant joint sets are 15 & 45 degrees TCA.
316.4	318.6	BRKZ	3	Dominant joint sets are 10 & 70 degrees TCA.
318.6	325.7	JZ	1	Dominant joints sets are 20 & 45 degrees TCA.
325.7	329.3	JZ	2	Dominant joint sets are 30 & 43 degrees TCA.
329.3	345.4	JZ	1	Dominantjoint sets are 10 & 30 degrees TCA.
345.4	390	JZ	3	Doninant joint sets are 15 & 50 degrees TCA.
390	393	JZ	1	Dominant joint set is 30 degrees TCA.
393	405	JZ	3	Dominant joint sets are 15 & 45 degrees TCA.
405	413	BRKZ	3	Dominant joint orientation is 20 degrees TCA.
413	417.5	JZ	2	Dominant joint set is 25 degrees TCA.
417.5	432	JZ	4	Dominant joint sets are 25 & 40 degrees TCA.
432	435.5	BRKZ	3	Dominant joint orientation is 20 degrees TCA.
435.5	448.2	JZ	2	Doininant joint sets are 10 & 30 degrees TCA.
448.2	449	CLYSEAM	2	Weal clay seam at 20 degrees TCA.
449	462.5	JZ	2	Dominant joint sets are 20 & 50 degrees TCA.
462.5	467	JZ	4	Dominant joint set 20 degrees TCA.

Blackwater Project
Drill Logs

Hole ID:	BW0406	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375651.65
Depth (m):	230.6	Date Started:	08/04/2012	Casing Size:	HWT	Northing:	5892899.33
Azimuth:	0	Date Completed:	13/04/2012	Casing (m):	3	Elevation (m):	1592
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	266.2	-88.5
100	249.7	-88.5
150	260.1	-88.6
200	244	-88.6

Blackwater Project
Drill Summary - Lithology

BW0406

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3.5	OB							
3.5	42	FLPT	bx		M	GRY			silica Bleached / limonite Oxidized (ALTERATION of below?? AND??). perv silica alt front and patchy clay alteration fronts, alternating oxidation/transition states, oxidized zones stronger laminations/clastic nature (oxidation following more permeabl
42	78	FLPT	bx		M	GRY	UNKN	GR30	continuation of above.
78	83.2	AND	volc	LAP	M	GRY	ALTFR	GR30+	Silica/clay bleached rock. Clasts clay replaced, supported by a silica altered matrix. Strong alteration fades as VC-AND texture beneath appears.
83.2	96.1	AND	volc	LAP	D	GRY	ALTFR	GR30+	silica mtx locally clast rep. weakly amygdaloidal and/or plag phyric D.Gray Clasts, and small (1mm) <1% felsic fragments (possibly silica BB's?) supported by a M-D.Gray silica replaced matrix. Small patches of perv silica alt with DI'd BB's of sulphi
96.1	113	AND			M	GRY	ALTFR	GR30+	silica Bleached perv, obscuring texture clasts and matrix, only trace sections of relict AND texture simialr to above.
113	119	AND	mas		D	GRY	UNKN	GR30+	Massive D.Gray-Brown Massive AND, hornblende phyric, throughout; silica filled amygs, locally. Unknown gradational change into plag-phyric
119	124.2	AND	mas		D	GRY	DEP	GR30	Massive D.Gray AND, Plag-phyric, patchy; silica filled amygs, locally. Bx begins @ bottom.
124.2	148.6	AND	volc	LAP	D	GRY	FLT	SH	M.Gray matrix supporting D.Gray AND clasts (1-300mm), locally small silica replaced clasts, and small (1mm) felsic fragments (possibly silica BB's?). Clasts:Matrix ~50:50, Very Poorly sorted ranging from 1-300mm in size, either; aphanitic, amygdaloid
148.6	168.7	AND	fltgge	LAP	D	GRY	FLT	SH	Fault gouge and Fault Bx, locally texture destroyed silica alteration, but grading back into volcaniclastic matrix supported AND.
168.7	199	AND	volc	LAP	D	GRY	FLT	GR30+	M.Gray matrix supporting D.Gray AND clasts, locally small siliceous clasts (felsic?) 1-2%. Clasts:Matrix 50:50, very poorly sorted ranging from 1-150mm clasts.
199	224.1	AND	fltgge	CA	M	YLW	FLT	SH	Strong Fault Bx. Small Sub-rounded lithics of Volcaniclastic AND. Abundant yellow clay alteration in fault gouge overprinting chlorite.
224.1	230.6	AND	volc	LAP	D	GRY			similar Volcaniclastic AND to above.

Blackwater Project
Drill Summary - Alteration

BW0406		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.5	6.4	O		0	PERV	3	PERV	3	PERV	2	CLY	CLST	3	LIM	REP	3	Oxide zone; DI'd BB's of Limonite/Hm replacing sulphides. Lim fracture controlled. Clay alt pervasive assoc with oxides, overprinting silica.
6.4	12.4	T		0	PATC	3	PERV	4	PATC	3	CLY	CLST	2	LIM	REP	2	sequence of oxide and transition zone. Oxide similar to above, but transition zone is black sulphides locally overprinter or fine-grained with silica.
12.4	15.05	O		0	PERV	4	PERV	2	PERV	1	CLY	CLST	3	LIM	PERV	4	Oxide zone; Perv orange limonite alt. Lim/Hm on FP's. mod-strong clay alt, overprinting silica (retrograde alt of silica?).
15.05	30.2	T		0	PATC	3	PERV	4	PATC	2	CLY	CLST	3	LIM	PATC	3	sequence of oxide and transition zone. Patchy occurrence of perv Limonite, coincident with strong perv clay alt constituting oxide zone. perv silica-ser alteration front (locally fronted against clay alt, in an undualting pattern with silica veinlets cutting into clay zone) with minor clay alt in small BB's/patches, following fractures and replacing clasts hosting irrgular stringy black sulphides overprinted by silica (fine-grained Py in silica?) constituting transition zone. Ending with an undu
30.2	42.5	T		0	PERV	4	PERV	3	PATC	1	CLY	CLST	3	LIM	PATC	3	similar to above.
42.5	57.98	T		0	PERV	3	PERV	4	PATC	1	CLY	CLST	3	LIM	PATC	2	similar to above.
57.98	74.15	T		0	OP	3	PERV	5	PATC	1	CLY	PATC	2	LIM	FC	5	Trace Py, predominatly oxide zone. Perv silica alt obscuring all texture. Trace Sericite colouring in perv patches. Minor-moderate clay perv alt locally. DI'd white clay OP. Strong Orange-Brown-Black Limonite stain on FP's and around FP's. Hm minor on FP's.
74.15	78	T		0	PATC	2	PERV	3	PATC	1	UNK	SPHL	2	LIM	FC	3	Moderate Orange-Black Lim on FP's, locally Fracture controlled fractionation of oxides (haloing fractures; beginning with white wash stripping sulphides then precipitating black pervasive oxide, next jarosite, finally clay alt.). bands of silica alternating with bands of silica-clay-ser. weak-mod white sulphide alt haloes overprinted predom by silica.

Blackwater Project
Drill Summary - Alteration

BW0406		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
78	83.4	T		0	CLST	4	MTRX	4	PATC	1	UNK	SPHL	2	LIM	FC	3	similar to above; Clasts are wholly replaced by tan-white Clay with sulphides.
83.4	96.3	S	CLST	2	CLST	3	MTRX	3	CLST	1	SIL	CLST	2	SIL	PATC	2	matrix dominant silicification, partially-fully replacing clasts, locally. Silica also patchy perv alt, similar to the FLPT above. Clasts are clay-chl-whiteMica reaplaced, with silica infilling amygs in clasts.
96.3	113.5	S	FC	1	FC	1	PERV	4	PATC	2	CLY	OP	2				Bleached Silica Perv section, with relict less silicified small <50cm sections similar to above. chlorite-clay in fault gouge. Weak-mod DI'd white clay OP.
113.5	118	S	FR	3	REP	2	PERV	2	REP	2	SIL	AMYG	1	BIOT	PERV	1	microcrystalline perv silica, as well as matrix fill in hydro-Bx, and amyg filler when present. Mod chl on FP's, and Sericite fracture controlled replacement of GM and HB, with clay.
118	124.3	S	FR	3	REP	2	PERV	2	REP	2	SIL	AMYG	2	BIOT	PERV	1	similar to above; chl perv patches with clay OP. Off-white mica and clay replacing plag...
124.3	136	S	FR	2	CLST	4	MTRX	2	MTRX	1	SIL	AMYG	1	BIOT	PATC	1	Micro-crystalline Silica and weak white mica alteration of matrix, possibly albite? Clay replaces clasts, with local Sp alteration. Chl weak-mod Fracture coating. Slightly purply patchy Mtrx, BIOT alt?
136	140.2	S	FR	2	OP	3	MTRX	2	MTRX	2	CLY	CLST	3	SER	REP	2	similar to above; Clay OP small grains possibly feldspars in matrix. Patchy clast dominant chl alt, as well as on FP's
140.2	148.6	S	FR	2	CLST	4	MTRX	3	MTRX	1	CLY	OP	2	BIOT	PATC	1	similar to above; silica increasing with proximity to fault
148.6	151.6	S	FC	4	FC	5	PERV	3	FC	2							Fault Gouge.
151.6	160.2	S	FR	2	FC	4	PERV	4	PERV	3							Fault Gouge supporting Perv silica-ser alt, obscuring Bx original texture.
160.2	170	S	FC	4	CLST	3	MTRX	3		0	CLY	FC	2	BIOT	PATC	1	
170	179.5	S	FR	3	CLST	3	MTRX	2	MTRX	1	BIOT	PATC	1	CLY	OP	3	
179.5	182.5	S	FC	5	FC	3	PERV	4	PERV	2							pervasive silica-ser alt obscuring texture. Chlorite-clay strongly gouged.
182.5	197.6	S	FR	4	CLST	3	MTRX	2	MTRX	1	ALB	MTRX	2	BIOT	PATC	3	matrix dominant silica-albite-ser, locally albite-sil bands cutting across core. Clay-BIOT clast dominant alteration.

Blackwater Project
Drill Summary - Alteration

BW0406		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
197.6	200.5	S	FC	3	FC	3	PERV	4	PERV	2							silica-ser alt obscuring texture, amongst chloritic-clay gouge.
200.5	218.5	S	FC	4	FC	5		0	FC	2	HM	FC	2				small competent section with alt simialr to above. Fault Gouge, originally chloritic with a yellow clay Over-print. Weak Hm stain on select FP's.
218.5	224.1	S	FC	3	FC	4		0	FC	2							Fault gouge, with lithics similar to competent rock alt above. Fault gouge is mopderatley chloritic with white and gray clay, possibly white micas.
224.1	230.6	S	FR	1	FR	5	MTRX	2	MTRX	1	ALB	MTRX	2	BIOT	PATC	1	competent rock, matrix dom silica-albite. Clay replaced clasts, Major fracture coating/filling Moderate Yellow clay (Sulfate?).

Blackwater Project
Drill Summary - Mineralization

BW0406		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3.5	6.4		0		0		0	Goe	FP	3	Hm	BB	0.5				Fracture controlled patch pervasive Limonite (Goethite), as well as fracture coating darker orange-black goethite. Hm is weakly fractue controlled but usually small sulphide rep BB's.
6.4	12.4	DI	1.5		0		0	Dbs	DEN	2	Goe	PERV	5	Hm	BB	0.1	Patchy pervasive Orange Goe. Fracture controlled Orange-black Goethite. DI'd BB's of irregular to square euhedral fine-grained replacement Py, throughout transition patches. With Dendritic to microfracture filling BS's (Black Sulphides).
12.4	15.05		0		0		0	Goe	PERV	10	Hm	FP	0.1	Goe	FP	1	Oxidized; Pervasive Orange Limonite alt. Trace red Hm on FP's with abundant Orange-black Goe
15.05	25	BB	1		0		0	Goe	PERV	4	Hm	FP	0.1	Dbs	DEN	2	Sequence of Oxide and Transition. Oxide is Patchy Orange Perv Goethite, with Orange-Black Goethite on FP's and trace red Hm. Transition zone has small BB's of fine-grained Py haloed by soft black unknown sulphides (microcrystalline Py with silica?),
25	42	BB	1.5		0		0	Goe	PERV	4	Hm	FP	0.1	Dbs	DEN	3	Similar to above; increase in number of microcrystalline black sulphide rimming sulphides, locally being replaced by Jarosite.
42	58.8	BB	1.5	BB	1	BB	0.1	Dbs	DEN	2.5	Jaro	BB	0.5	Goe	FP	3	DI'd BB's of sooty Py and locally Sp, throughout, assoc with Black unknown min (fine-grained sulphides in silica?). Dendritic to microfracture fill BS's, throughout. Oxides coating FP's Fracture controlled and weakly pervasive locally. Jarosite Fract
58.8	69.2	BB	0.1		0		0	Goe	FP	5	Goe	VN	1	Hm	FP	1	Fracture controlled Goe, throughout with Hm locally. Large Vuggy Goethite Vein. Trace section of sulphide.
69.2	74.5	BB	0.5		0		0	Ga	EU	0.5	Goe	FP	4	Jaro	BB	0.1	similar to above; larger sulphide patches, with DI'd Euhedral Ga on FP's locally, microfracture fill/ Dendritic BS's
74.5	83.4	BB	1.5	BB	2		0	Dbs	DEN	1.5	Jaro	BB	0.1	Goe	FP	1	DI'd BB's of Sp, Py and BS's; locally patchy abundance, throughout. Microfracture fill and Dendritic BS's. Goethite FP coat. Jarosite BB's OP sulphide halos.

Blackwater Project
Drill Summary - Mineralization

BW0406		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
83.4	96.3	BB	2.5	GmR	0.5	BB	1	Dbs	DEN	0.1	Py	FP	0.5				DI'd BB's of Py and Po, throughout, greater abundance in clasts. Py coating FP's as sub-hedral aggregates and in fault gouge. Small patches of silica alt, similar to above with similar to above mineralization.
96.3	113.5	BB	1	BB	2	BB	0.5	Dbs	DEN	0.5	Py	VN	0.1	Sp	VN	0.1	BB's of red Sp locally intergrown with Po, patchy abundance. Microfracture fill adn Dendritic BS's. Py DI'd BB's, and VN'd. Sp-Py veined near bottom of section.
113.5	118	BB	0.5	BB	0.5	BB	0.5	Py	FP	0.5	Po	SP	0.5	Py	SP	0.5	crystal Replacement BB's of Sp, Py, Po; throughout. Sp and Po increase with depth. Po and Py specks, throguhout. Py coating FP's.
118	124.3	FP	0.1	GmR	1	BB	0.1	Py	VN	0.1	Sp	VN	0.1	Py	SP	0.1	crystal replacement BB's pf Sp, Po and Py, locally. GM rep BB's of red Sp. Py FP coat and VN'd with minor Sp.
124.3	148.6	CR	0.5	CR	1	CR	0.5	Py	FP	0.1	Py	VN	0.1				BB's of clast rep Sp and Po, throughout. Py rimming and replacing clast pervasivley. Py FP coat and VN'd.
148.6	151.6	BB	0.5	CR	0.1	CR	0.1										Fault Breccia supported by gouge; BB'y Py in gouge, with SP and Po in lithics, simialr to above.
151.6	160.1	DI	1.5	BB	1		0										DI'd Euhedral Py in Fault gouge, with BB'y red mottled red-brown Sp in perv silica-ser altered lithics.
160.1	170	VN	1	BB	1	BB	0.5	Py	FP	0.5							VN'd/FP coating Py. BB's and amyg filler Po. Red SP BB's DI'd, throughout.
170	198	BB	0.1	BB	1	BB	0.5	Py	FP	0.1	Py	VN	0.1				VN'd/FP coating Py. BB's of red Sp dominatley replacing clasts, with intergrowths of Po, and weakly Py.
198	218.5	DI	1	BB	0.1	BB	0.1	Apy	BB	0.1							Fault Gouge, with DI'd Py, throughout. Dark Gray-Black zones with increased Py and mixed sulphides.
218.5	230.6	BB	0.1	CR	0.5	BB	1	Apy	VN	0.1							Py weakly DI'd BB's. BB'y Po, throughout, but dominatley in clasts. Singular Qtz-Apy veinlet.

Blackwater Project
Drill Summary - Structure

BW0406

From (m)	To (m)	Structure	Strength	Comments
3.5	39	JZ	1	Jointed @ 30, 25, 20, 40, 15, 55, 60 dtca, and weakly broken stick rock.
39	60.95	JZ	1	Jointed @ dtca, and weakly broken stick rock.
60.95	61.1	BZ	2	small oxidized gouge Bx-fault competent core @ 40 dtca (taken off most proximal joint).
61.1	61.42	BRKZ	1	broken stick rock.
61.42	61.95	BZ	3	Rounded clast dominant supported by minor to moderate oxidized fault gouge matrix.
61.95	63.18	JZ	2	Jointed @ 50-60 dtca, locally broken
63.18	63.4	BZ	1	Weak Rounded clast dominant supported by minor oxidized fault gouge.
63.4	64.5	JZ	2	Weakly jointed>Broken @ 35, 30 dtca.
64.5	64.75	BZ	2	Angular clast supported trace oxidized/vugged matrix.
64.75	65.45	BZ	1	Abundantly Fractured, healed competent rock.
65.45	66.1	VZ	3	Large Vein cutting across a competently fractured rock similar to above. Angled from 5-15 dtca along ints edges.
66.1	68.6	JZ	2	Jointed @ 20, 30, 40, 45 dtca, weakly broken.
68.6	68.68	BZ	3	Strongly Lim oxidized fault gouge supporting weak SR-SA Bx. Sharply @ 30 dtca.
68.68	71.6	JZ	3	Jointed @ 15, 20, 25, dtca.
71.6	74	BRKZ	1	Broken>>Jointed.
74	82.6	JZ	2	Jointed @ 5,15,20,30,35,40,40,50,65 dtca
82.6	82.7	FL	2	Oxidized fault gouge. (Joint failure?)
82.7	87.5	JZ	2	Jointed @ 30, 35 dtca.
87.5	87.58	FL	1	1cm gouge Joint failure fault
87.58	88.22	JZ	1	Jointed @ 40-50 dtca.
88.22	88.57	FL	1	1cm gouged Joint failure fault.
88.57	89.82	JZ	1	
89.82	89.95	FL	1	1cm gouged Joint failure fault.
89.95	91	JZ	1	Jointed @ 40-55 dtca.
91	92	JZ	2	Jointed @ 0-5 dtca.
92	97.05	JZ	2	Jointed @ 60, 30 dtca.
97.05	97.2	FL	3	broken zone with minor-moderate gouge.
97.2	99.1	JZ	3	Jointed>Broken @ 30, 35, 65 dtca.

Blackwater Project
Drill Summary - Structure

BW0406

From (m)	To (m)	Structure	Strength	Comments
99.1	99.7	BRKZ	3	broken, with minor gouge .
99.7	100.7	BZ	4	competent Bx, held together by chloritic gouge matrix,
100.7	102.1	JZ	4	Stongly Jointed >Broken.
102.1	103	JZ	2	Jointed @ 25,30,35,55 dtca.
103	105	JZ	4	Jointed from 0-20 dtca >Broken.
105	114.1	JZ	3	Jointed @ 15, 30, 50, 60, 75 dtca.
114.1	114.3	FL	3	BRoken rock, with moderate chloritic gouge.
114.3	119	JZ	2	Jointed @ 5, 25, 30, 35, 50, 65, 75, 80 dtca, no prefferred orientation.
119	120.5	BRKZ	2	broken, weakly jointed.
120.5	121	BRKZ	3	Broken, NO gouge.
121	122.1	JZ	3	Joint zone, with local BRKZ, and small Joint failure fault 0.5cm of gouge on FP.
122.1	130.8	JZ	2	Jointed @ 50-55 dtca, also broken equal to Jointed.
130.8	131	FL	1	Small 1cm chloritic mineralized fault @ 15 dtca.
131	133.1	JZ	2	
133.1	133.2	FL	1	weak gouge, BRKZ.
133.2	134.2	VZ	2	moderate Py Veins causing rock to Break.
134.2	136.7	BRKZ	3	broken
136.7	145.1	JZ	4	Jointed @ 55-60 > 10-25 dtca.
145.1	148.6	FL	2	Small localized faults @# 15 dtca, with jointing @ 50 dtca.
148.6	151.7	FL	5	Sharply faulted, Abundant Fault Gouge, competent.
151.7	154.3	BZ	5	Continuation of above, but sub-R Bx supported by abundant Fault gouge.
154.3	155.5	BZ	4	heavily fractured silicified rock, locally Bx supported by fault gouge.
155.5	161.6	BZ	5	
161.6	162.4	FL	3	small competent core zone, with jointing= irregular breaks. small low angle to core axis fault
162.4	164	BZ	4	clasts/lithics held together by gouge.
164	165.2	BRKZ	3	broken, with trace chloritic gouge.
165.2	168.7	BZ	4	clasts/lithics held together by chloritic gouge. Bottom contact is @ 25 dtca.
168.7	170.1	JZ	2	Jointed @ 20-30 dtca.

Blackwater Project
Drill Summary - Structure

BW0406

From (m)	To (m)	Structure	Strength	Comments
170.1	170.2	FL	2	Broken rock with minor gouge.
170.2	174.3	JZ	3	Jointed @ 40-55 dtca.
174.3	174.7	FL	3	Broken rock with moderate chloritic gouge.
174.7	176.6	BRKZ	3	Broken rock.
176.6	178.8	JZ	3	Jointed @ 30-70 dtca.
178.8	179.7	FL	4	broken fault with moderate to major chloritic gouge.
179.7	182.8	FZ	4	small faults and broken zones, with joints @ 35 dtca.
182.8	188.6	JZ	2	Jointed @ 15, 20, 30, 35, 40 dtca.
188.6	198.1	FZ	4	Broken zone with minor gouge locally.
198.1	224	BZ	5	Predominatly gouged, supporting small rounded lithics averaging 1mm in size. Bottom contact and some jointing with in at 45 dtca.
224	226	JZ	3	Jointed @ 10, 30, 50, 55 dtca, and locallt broken.
226	226.1	FL	1	Small 1.2cm fault sharply @ 55 dtca. (Joint Failure?)
226.1	226.7	JZ	3	
226.7	226.8	BZ	3	Gray-Brown gouge supporting AND Volc lithics.
226.8	230.5	JZ	4	Jointed @ 5 dtca, and weakly broken.
230.5	230.6	FL	3	Gouged fault, unknown terminus.

newgold
a clear direction

Blackwater Project
Drill Logs

Hole ID:	BW0407	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375200.26
Depth (m):	367	Date Started:	09/04/2012	Casing Size:	HWT	Northing:	5893248.81
Azimuth:	0	Date Completed:	15/04/2012	Casing (m):	4	Elevation (m):	1557
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	343.2	-89.9
151	262.8	-89.8
200	215.8	-89.9
251	155.8	-89.7
310	206.1	-89.2
364	234	-89

Blackwater Project
Drill Summary - Lithology

BW0407

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB					DEP		
4	23.5	FLPT	ms	LAP	VL	GRY	UNKN		Medium grey silica ash matrix with mm-sized fragments of larger primarily laminated clasts. Weakly altered, as texture is still distinct.
23.5	24.5	FLPT	ms	LAP	VL	GRY	ALTFR	GR30+	As per interval above. Matrix-supported with clasts up to 20 cm in diameter. Matrix consists of silica.
24.5	29	VC	ms	LAP	L	GRY	ALTFR	GR10	Mixing zone. Trace andesitic clasts. Similar to unit above. Could potentially term FLPT unit. Matrix supported. First distinguishable andesitic clast visible at 25.8m. Clasts up to 20 cm in diameter
29	31.3	VC	ms	LAP	L	GRN	FLT	SH	Matrix-supported. Moderately-sorted. Fine grey silica matrix. Primarily laminated clasts. Mix of fault/alteration front at lower interval (oxidation zone).
31.3	33.7	VC	frctz	LAP	MO	OR	FLT	SH	Strongly oxidized interval with an equal portion of felsic and mafic clasts. Andesitic clasts are dark grey and amygdaloidal
33.7	63.6	VC	ms	LAP	M	GRN	ALTFR	GR10	Chloritized interval of matrix-supported 50:50 VC. Matrix is a cloudy grey silica. Andesitic clasts are medium-dark grey, have been chewed away and are amygdaloidal. Laminated clasts are light green (sericitized). Clasts up to 15 cm in diameter
63.6	70.2	VC	ms	LAP	M	GRY	ALTFR	GR10	Medium dark grey, more mafic-dominant (less visible laminated clasts). Matrix-supported. Andesitic clasts are dark grey-black. Few laminated clasts, mostly microcrystalline qtz (replacing felsics?).
70.2	79	VC	ms	LAP	M	GRY	ALTFR	SH	As above, but more silicified, with increased texture destruction. Sharp lower alteration front at 60 TCA
79	83.5	VC	frctz	LAP	M	GRY	FLT	GR10	Increase in felsic laminated clasts. Occasional andesitic clasts. Matrix-supported. Strongly broken. Silica matrix
83.5	104	FLPT	lam	BLOCK	M	GRN	ALTFR	GR30+	Laminated clasts touching within interval (clast-support). Clasts have been sericite-altered with black bands). Felsic? Mafic downhole, but generally less laminated. Clasts up to 1m in diameter
104	111	VC	ms	LAP	M	GRY	ALTFR	GR10	Grey matrix with black chloritized andesite clasts. 1m interval of a laminated FLPT (uphole derived?) from 105-106
111	115.5	VC	ms	LAP	D	GRN	ALTFR	GR30+	Mix of laminated FLPT clasts with occasional black-green chlorite altered mafic clasts. Matrix is silica rich.
115.5	121.3	VC	lam	LAP	D	GRY	ALTFR	GR10	Consisting of mafic laminated clasts? Black laminae (thinking mudstone...sed?). Matrix-supported. Grey silica, albite? altered matrix

Blackwater Project
Drill Summary - Lithology

BW0407

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
121.3	140.2	FLPT	lam	LAP	L	GRN	ALTFR	GR10	Felsic? possibly intermediate composition? Has been str chlorite-sericite altered. Consists of occasional laminated clasts. Light green matrix
140.2	145.8	VC	ms	LAP	M	GRY	ALTFR	GR10	Mixing zone? Grey haloed mafic clasts? within silica matrix. Light green laminated clasts. Clast size up to approximately 5 cm
146	150.1	VC	cxt	LAP	M	GRY	ALTFR	GR5	Albite-Kspar altered? Weak alignment due to alteration? Very dark (mafic origin?) Clasts very faint. More of a crystal-rich tuff then a typical Lapilli VC unit.
150.1	151.8	VC	plm	LAP	M	GRN	ALTFR	GR10	Back into chlorite-sericite altered more distinct VC unit. Secondary rounded qtz (felsic clasts?). Dominantly chloritized mafic appearing clasts within matrix-supported VC unit
151.8	159.9	VC	lam	LAP	M	GRY	UNKN		Strongly kpar-albite altered interval of VC? Clasts are ghost-like, difficult to pick out the boundaries. Presumably the same as interval above, but with a different alteration package. Faint lamination/orientation of feldpsar alteration minerals? Ap
159.9	162.1	VC	frctz	LAP	D	GRY	ALTFR	GR10	Clasts visible within interval. White cruddy clay matrix with chl-ser altered
162.1	164.6	VC	ms	LAP	D	GRY	FLT	GR10	Short joint zone interval with weakly laminated clasts (strongly chloritized...mafic?). Matrix-sypported.
164.6	173.3	VC	frctz	LAP	D	GRY	ALTFR	GR10	Very chloritic. Clasts faintly visible. Matrix-supported. Textural destruction
173.3	179	VC	ms	LAP	M	GRY	FLT	GR10	Texturally destroyed (albite-silica?). Unable to determine whether clasts are mafic or felsic. Faint, chewed outlines to clasts
179	183	VC	frctz	LAP	M	GRY	FLT	SH	Texturally destroyed. Strongly faulted. Very chlorite altered along fracture planes. Sericite-silica over albite? of competent pieces of core
183	200.5	VC	ms	LAP	M	GRY	ALTFR	GR10	Texturally destroyed VC unit. Faint laminated bands (clast??) at 195 and 198 m.
200.5	223	VC	frctz	LAP	M	GRY	FLT	GR10	Strongly faulted. White felsic? clasts visible within interval (208.8m) ash like-in nature. Greenish subrounded chloritized clasts. Microcrystalline qtz? / albitized clast visible at 208m
223	226.8	VC	frctz	LAP	M	GRN	FLT	GR10	Massive, texturally destroyed. Original VC?? Uncertain
226.8	233.7	FT	lam	LAP	M	GRN	FLT	GR10	Intermediate, strongly laminated unit (falls under FT??). Appears pseudo sedimentary. Weakly brecciated...mud clasts?? from soft sed deformation (silica)
233.7	252.8	FT	lam	LAP	M	GRN	ALTFR	GR10	Similar to unit above but strongly fractured
252.8	253.7	VC	bx	LAP	M	GRN	FLT	SH	Evidence of weak felsic? white mm-sized clasts as matrix at 253m. Sphalerite appears to be replacing clasts...mafic? Texture obscured by fluids?? Has mineralization and alteration replaced clasts??
253.7	264.9	VC	bx	LAP	M	GRN	ALTFR	GR30	As above, but within faulted interval

Blackwater Project
Drill Summary - Lithology

BW0407

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
264.9	271.3	VC	lam	LAP	M	GRN	FLT	GR30+	Laminated clasts within interval. Dark blue-green chlorite replacing subrounded clasts
271.3	277	VC	ms	LAP	M	GRN	UNKN		Chlorite rich fragmental unit. 275.7m Po-sph rich clast poss replacing amygdaloidal andesite (decided to use VC unit)
277	284.5	VC	ms	LAP	M	GRN	FLT	GR30	Texture obliterated. Chlorite-sericite altered. Silica clasts, chloritized clasts. Difficult to determine percentage mafics vs felsics.
284.5	293	VC	frctz	LAP	M	GRN	FLT	SH	Texture obliterated. Chlorite-sericite altered clasts, as well as po-sph replacing clasts (VC?). Grey silica mud clasts. Fault gouge at lower contact
293	296	VC	ms	LAP	M	GRN	ALTFR	GR5	Texture destructive. Matrix-supported. Occasional mafic clasts? determined by increased chlorite-po-sph. Strongly silicified
296	300.2	VC	ms	LAP	M	GRN	ALTFR	GR5	Approximately 50% dark green chlorite clasts (mafic?). Texture destructive, less silicified then interval uphole. Increased sulphides wtihin interval
300.2	301.8	FT	bx	LAP	M	GRN	ALTFR	GR5	Laminated through interval. No distinctive dark green chlorite clasts or aggregated (clast?) sulphide replacement
301.8	302.8	VC	ms	LAP	M	GRN	ALTFR	GR10	Texture destructive. Grainy sulphide-rich (po-sph) blebs presumed to be mafic clasts? Less laminated then interval uphole. May be the result of alteration?
302.8	305	FT	lam	LAP	M	GRN	ALTFR	SH	Brecciated, laminae consistant. Textural destruction by silica-sericite alteration. No distinctive chloritized clasts.
305	305.6	VC	ms	LAP	M	GRN	ALTFR	GR5	Medium grey. Greenish chloritized clasts = mafics? Grey matrix. Laminations absent
305.6	308.5	FT	lam	LAP	M	GRN	ALTFR	GR30	No vis chl or min-shaped clasts. Laminated, brecciated. Sph follow laminae
308.5	310.4	VC	mas	LAP	M	GRY	ALTFR	GR10	Texturally destroyed. Appears almost massive. Chloritized clasts/fragments. Weakly laminated green chlorite-sericite shards.
310.4	314	FT	lam	LAP	M	GRN	ALTFR	SH	Light green-grey laminated. Laminae have been replaced by silica, sericite & silica
314	323	FLPT	bx	LAP	M	GRN	UNKN		Green (5GY 6/1) & grey (N5) laminae. Strongly altered. White clay altered clasts at 318.9m
323	334.7	FLPT	bx	LAP	M	GRY	ALTFR	GR10	Green-grey. Clast size to 12 cm of plag phyric beige felsic clast? Primarily laminated FT. Sulphides replacing outlining clasts? near 328.5m. Grey silicified clasts.
334.7	337	VC	bx	LAP	M	GRY	ALTFR	GR10	Called VC in interval bc of possible mafic-looking clasts replaced with sulphides through interval. This may be the result of less chlorite alteration
337	343	FT	lam	LAP	M	GRN	FLT	GR30	Laminated FT. Matrix-supported, weakly brecciated, locally massive.
343	367	FT	frctz	LAP	M	GRN	UNKN		Greenish grey. Strongly fractured and faulted, weakly laminated and brecciated.

Blackwater Project
Drill Summary - Alteration

BW0407		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	23.5	T	FR	1	CLST	4	PATC	3	CLST	3	LIM	FR	3				Orange limonite restricted to fracture planes. Primarily sericite-clay altered. Weak silica ashy matrix. Weak chlorite along fracture plane along fault at 18.8m
23.5	24.5	T	FR	1	CLST	4	PATC	3	CLST	3	LIM	FR	2	CLY	FR	3	As above, less limonite on fracs. Strongly clay altered.
24.5	27.4	T	PATC	3	CLST	3	PATC	4	PATC	4	LIM	FR	1	CLY	FR	1	Increasing green sericite-chlorite alteration (patchy). Zone of mixing with the appearance of andesitic clasts.
27.4	29	T	FR	2	CLST	3	PATC	4	PATC	3	CLY	FR	3	SER	FR	2	Increased limonite along fracture planes. Patchy silica-sericite altered. Clay-sericite increased along fracture planes
29	31.3	T	PERV	2	CLST	3	PATC	4	PERV	4	CHL	FR	4	SIL	CLST	2	Medium green sericite-chlorite-silica altered. Clasts faintly visible
31.3	33.7	T	CLST	1	FR	5	PATC	4	PERV	3	LIM	FR	4	CHL	FR	1	Strongly oxidized interval (fault?, meteoric influence). Orange-red-yellow lim on fracture surfaces). Chlorite minimal-absent.
33.7	57	T	PATC	3	FR	2	PATC	3	PERV	3	CHL	FR	3	SIL	CLST	2	Sericite-chlorite-silica altered (medium green colour) with strong chlorite along fx planes. Weak lim from 51.8-56m (weak faults, meteoric influence)
57	63.6	S	PATC	3	FR	2	PATC	4	PERV	3	CHL	FR	3				Sericite-chlorite-silica altered
63.6	70.2	S	FR	2	FR	2	PATC	3	PATC	3	BIOT	PATC	2	SER	CLST	2	Weak albite-biotite alteration of matrix with silica-sericite. Chlorite restricted to fracture planes
70.2	79	S	FR	3	FR	2	PATC	4	PATC	4	BIOT	MTRX	2	ALB	MTRX	2	Silica-sericite with minor albite-biotite alteration of the matrix.
79	84	S	FR	4	CLST	4	PATC	4	PATC	3	CLY	FR	2	CHL	PATC	1	Back to light green sericite-chlorite-silica alteration
84	104	S	CLST	3	FR	2	PERV	4	PATC	3	CHL	FR	4				Pervasive silicification of light-medium green strongly laminated clast-supported FLPT unit.
104	105	S	CLST	3	FR	1	MTRX	2	CLST	3	ALB	MTRX	2	BIOT	MTRX	2	Interval without laminated clasts. Volcaniclastic texture more evident. Andesitic clasts have been altered by sericite-chlorite
105	106	S	CLST	3		0	PERV	4	CLST	3							Pervasive silicification of light-medium green strongly laminated clast-supported FLPT unit.
106	110.5	S	CLST	3	FR	2	MTRX	2	CLST	2	ALB	MTRX	2	BIOT	MTRX	2	Texture visible within VC unit. Grey matrix (alb-bt?), clasts have been replaced by dark chlorite-sericite

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Blackwater Project
Drill Summary - Alteration

BW0407		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
110.5	116.1	S	PATC	3	FR	3	PERV	4	PATC	4	CHL	FR	4	ALB	CLST	2	Bleached green (compared to dark grey in interval above and below). Silica-sericite-chlorite altered. Strong chlorite along fracture planes within fault zone. Clasts have been replaced by cloudy white albite
116.1	121.3	S	CLST	4	CLST	2	CLST	4	MTRX	2	SIL	PATC	4	CHL	FR	3	Black bands with dark grey bands consist of chlorite-silica. Clay within clasts at 117 m (filling amygdules with pyrrhotite?)
121.3	140.2	S	PATC	3	CLST	3	PATC	5	PERV	4	SIL	CLST	4	CHL	FR	3	Medium-light green with bleached clay altered subintervals. Silicification is generally pervasive, particularly within laminated intervals. White-bleached zones = more clay altered
140.2	145.9	S	PATC	3	FR	1	PERV	4	PATC	3	CHL	FR	2	CLY	FR	2	Medium green with black haloed "ghost clasts" (possibly just products of alteration). Gritty appearance overprinting core result of silica-sericite? Slight decrease in chlorite-clay along fracture planes. Alteration front at 40 degrees TCA
145.9	158.4	S	MTRX	5	OP	2	PERV	3	MTRX	4	CHL	FR	4	KSPR	PATC	3	Pinkish kspar? patchy alteration with possible hydothermal bt-chl (black specks...possibly replaced by sphalerite?) with grey cloudy albite alt? Overprinted by pervasive silica and clay.
158.4	159.9	S	PERV	3	FR	2	CLST	2	PERV	4	ALB	PATC	2				Dusty blue-green chlorite on fracture planes. Strongly sericite-chlorite-silica altered (medium-dark green) with clay visible on fx planes
159.9	162.1	S	FR	3	REP	2	PERV	4	PERV	4	ALB	PATC	1				Weakly albite altered?? Albite (greyish tinge)...possibly silica-sericite? uncertain
162.1	164.6	S	FR	4	PATC	2	PERV	4	PERV	4	ALB	PATC	1				Bluish green chlorite along fx planes
164.6	173.3	S	FR	5	FR	2	PERV	3	PERV	3							Dusty bluish green chlorite on fracture planes
173.3	179	S	FR	3	REP	2	PERV	4	PERV	4	ALB	PATC	3				Black-dark green chlorite along fracture planes. Silica-sericite overprinting patchy grey cloudy albite? alteration
179	183	S	FR	5	FR	4	CLST	4	CLST	4	CHL	CLST	3	ALB	PATC	2	Patchy albite alteration overprinted by silica-sericite-clay
183	192.3	S	PERV	4	REP	3	PERV	4	PERV	4	HM	FR	2	CHL	FR	4	Intensely chloritized. Chlorite has replaced laminated bands within interval

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Blackwater Project
Drill Summary - Alteration

BW0407		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
192.3	200.5	S	PERV	4	REP	3	PERV	4	PERV	4	CHL	FR	4	ALB	PATC	3	Greyish outline of albite altered "ghost-clasts" with green silica-sericite matrix?? Faint pink kspar??
200.5	207	S	PERV	3	REP	2	CLST	4	CLST	4	CHL	FR	5	ALB	PATC	1	Green-grey silica altered. Dark green chlorite on fracture planes. Uncertain about albite alteration wtihin interval
207	226.8	S	PERV	3	FC	3	CLST	4	CLST	4	CHL	FR	5				Dark green-black chlorite along fracture planes to 221 (bluish-green downhole)
226.8	233.5	S	CLST	4	FR	2	CLST	4	CLST	4	CHL	FR	5				Green chlorite-sericite alteration bands with crystalline qtz brecciated bands. Soft-sed like
233.5	252.8	S	PERV	4	FR	2	PATC	4	PERV	4	CHL	FR	4				Silica pods (boudin-like appearance...dark grey) within green silica-sericite altered unit
252.8	253.7	S	PERV	4	FR	4	PATC	4	PERV	4	CHL	FR	5				Fault zone, strong mechanical clay alteration. Greenish-grey, very weakly laminated
253.7	269.8	S	CLST	4	REP	4	PATC	3	CLST	4	CHL	FR	4	SIL	MTRX	4	White clay replacement of phenos. Chlorite-sericite altered clasts, silica latered matrix. Texture faintly visible
269.8	277	S	CLST	4	REP	4	PATC	3	CLST	4	CHL	FR	5	SIL	CLST	3	As above, but not fractured and faulted...less clay on fracs
277	292.9	S	PERV	4	REP	4	PERV	4	PERV	4	CHL	FR	5	SIL	CLST	3	Silicified, textureless, green silica-sericite-chl altered blks, blue-green chl on fx. Grey silica clast alteration. Grey silica bands
292.9	296.5	S	PATC	2	FR	2	PERV	5	PERV	4	CHL	FR	3				Strongly silicified. Sericite altered clasts. Non laminated, decrease in dark green chl
296.5	298.2	S	CLST	4	REP	3	MTRX	4	PATC	4	CHL	FR	3	CLY	FR	2	Dark green chl clasts, Grey silica-sericite matrix. White clay overprint
298.2	305.2	S	FR	4	REP	2	PERV	5	PATC	4	CHL	PATC	2				Medium green. Glassy, porcelainous appearance. White clay specks as overprint. Laminated through part of interval
305.2	310.8	S	CLST	3	REP	2	PATC	4	PERV	5	CHL	FR	4	CHL	PATC	2	Dark green chl clasts. Medium grey silica-sericite altred matrix
310.8	323	S	CLST	2	REP	2	PATC	4	PATC	4	CHL	FR	2	CLY	FR	2	Chlorite-sericite laminae. Clay replacement of phenos?. Porcelainous in sections of stronger laminae (medium grey silica clasts)

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Blackwater Project
Drill Summary - Alteration

BW0407		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
323	337	S	CLST	2	REP	2	PATC	4	PATC	4	CHL	FR	4	CLY	FR	2	Increased chlorite coating along fracture planes (bluish-green). Green Sericite-chlorite clast replacement (possibly fiamme) (angular shards). Grey sericite-silica alteration patchy
337	342.5	S	CLST	3	REP	3	PERV	4	PATC	4	CHL	FR	3	SIL	CLST	3	Bluish green chlorite along fracs. More laminated. Alternating bands of medium-dark green laminae with medium grey silica bands. Pervasive silica overprint. Yellowish clay noted at 338.4..possibly sulphate
342.5	367	S	CLST	4	FR	4	PERV	5	PATC	3	CHL	FR	3	HM	CLST	1	Strongly fracture and faulted throughout interval. Clay-chlorite within gouge and along fracture planes. Dominantly dark green on fractures plane with minor blue-green chl. Wk pink hem??? at 353.2m following laminae

Blackwater Project
Drill Summary - Mineralization

BW0407		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	10	FP	0.5	SP	0.5	BB	0.1	Hm	FP	0.5	Dbs	DEN	0.5				Strong red hematite along frac planes with black goo consisting of pyrite. DBS consists of red sphalerite and minor pyrite and pyrrhotite
10	12.5	FP	1.5	SP	0.1	BB	0.1	Cp	BB	0.5	Dbs	DEN	1	Ga	SP	0.1	Disseminated yellow chalcopyrite focused along veins and fractures. Increased mineralization (dark grey goo) pyrite along fracture planes. DBS consists of trace sphalerite, pyrrhotite and galena.
12.5	19.5	FP	1	SP	0.5	BB	0.1	Dbs	DEN	1	Ga	SP	0.1				Black dendritic sulphides throughout interval consisting of sph, gal, po, and py. Fine black pyrite strong along fracture planes.
19.5	20.1	FP	1	SP	0.5	BB	0.1	Apy	SP	0.1	Ga	DI	0.5	Py	DI	1	Strongly mineralized interval consisting of disseminated pyrite replacing laminae within FLPT clasts. Specks of galena > arsenopyrite strong at 19.6m.
20.1	23.5	FP	0.5	SP	0.5	BB	0.1	Hm	FP	0.1	Dbs	DEN	0.1	Sp	FP	0.1	Blebby black-red sphalerite mixed with DBS define interval.
23.5	29	FP	0.1	BB	1	BB	1	Dbs	DEN	0.5	Hm	FP	0.1	Goe	FP	0.1	DBS scattered within felsic clasts. Po, sph blebs are sporadic through interval. Hem along fracs from 27.5-28.8m
29	31.3	FP	0.1	BB	0.5	BB	0.5	Dbs	DEN	0.1							Minimal mineralization within interval, primarily as blebby sulphides
31.3	33.7	FP	0.1	BB	0.1	BB	0.1	Hm	FP	1							Mineralization restricted to fracture plane hematite (replacing pyrite and chlorite)
33.7	42.4	FP	0.1	BB	1	BB	1	Py	BB	0.1							Blebby sulphides, most notable within andesitic clasts. Minimal blebs within matrix
42.4	47	FP	0.1	BB	1	BB	1	Ga	SP	0.1							Galena as specks and along fracture planes (60 degrees).
47	63.6	FP	0.1	BB	1	BB	1	Hm	FP	0.1							Sphalerite & Pyrrhotite as blebs replacing amygdules and speckled within the matrix
63.6	70.2	FP	0.1	BB	1	BB	1										As above
70.2	79	FP	0.5	BB	1	BB	1	Ga	SP	0.1	Ga	VN	0.1				As above, but with the appearance of galena
79	84	FP	0.1	BB	0.5	BB	1										Decreased sphalerite within interval

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Blackwater Project
Drill Summary - Mineralization

BW0407		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
84	104	FP	0.5	BB	0.5	BB	0.5	Dbs	DEN	0.1							Mineralization weak within laminated clasts and increased within brecciated zones
104	111	FP	0.1	BB	0.5	CR	1										Solid pyrrhotite replacing black clasts.
111	116.1	FP	0.1	BB	0.5	BB	0.5										Weakly mineralized, strongly silicified.
116.1	121.3	FP	0.5	CR	0.5	CR	1	Ga	SP	0.1							Sphalerite & Pyrrhotite are found dominantly within the black chloritized laminae
121.3	130	FP	0.5	BB	0.5	BB	0.5	Dbs	DEN	0.5	Mrc	FP	0.1	Ga	SP	0.1	DBS within interval. 122m = marcasite along fracture planes. Blebby sulphides dominantly in grey & white bands and not so much within green chlorite-sericite bands
130	130.5	VN	0.5	BB	0.1	BB	0.1	Dbs	DEN	1	Ga	SP	0.5				DBS-rich interval. Trace galena specks visible. DBS preferentially within less silcified bands (not as visibile within cloudy silica bands)
130.5	140.5	FP	0.1	BB	0.5	BB	0.5	Dbs	DEN	0.5							Blebs of pyrrhotite and sphalerite found with DBS within interval. DBS locally up to 1%
140.5	146	FP	0.1	BB	0.1	BB	0.5	Py	SP	0.1							Sparsely mineralized interval
146	159.9	FP	0.1	CR	0.5	BB	1.5	Py	VN	0.1							Pyrrhotite-sphalerite found with black mineral, possibly chlorite-hydrothermal biotite.
159.9	162.1	FP	0.1	BB	0.1	BB	0.5	Mrc	FP	0.1							Weakly mineralized interval. Strongly silica-sericite-chlorite altered
162.1	164.6	FP	0.1	BB	1.5	BB	0.5										Sph-Po blebs. Fine pyrite along fx planes with chlorite
164.6	173.3	FP	0.5	BB	0.1	BB	0.1	Mrc	FP	0.5							Pyrite along fx planes
173.3	179	FP	0.5	BB	0.5	BB	1	Py	SUBH	1	Py	VN	0.1				Subhedral pyrite with thin veined stringers of pyrite within interval. Po as blebs replacing subhedral py
179	183	FP	1	BB	0.1	BB	0.5	Py	BB	0.1							Pyrite increased along fracture planes
183	192.3	FP	0.1	BB	0.5	BB	1	Py	BB	0.1	Hm	FP	0.1	Py	SUBH	0.5	Less pyrite visible on fracture planes. Red hematite? "cake" along fx
192.3	200.5	FP	0.5	BB	0.5	BB	1	Py	SUBH	1	Py	VN	0.1				Pyrite veins/bands within interval. Blebby pyrite, po, sph
200.5	207	FP	0.1	BB	0.5	BB	0.5	Py	BB	0.1							Mineralization restricted to blocks within faulted interval

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Blackwater Project
Drill Summary - Mineralization

BW0407		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
207	221	FP	0.5	BB	0.1	BB	0.1	Ga	SP	0.1							Galena specks at 216 m. Mineralization restricted to fault blocks
221	226.8	FP	0.5	BB	0.1	BB	0.1	Py	VN	0.1							Trace pyrite with qtz along veinlets
226.8	233.5	FP	0.5	BB	1	BB	1	Py	VN	0.1	Py	DI	0.1				Min follows laminae
233.5	251	FP	1	BB	0.1	BB	0.1	Py	BB	0.1	Py	SUBH	0.1				Min mostly in gouge and on fracs. Increase in Po (clast-replacement) at 241m, but otherwise very weak min
251	253.5	FP	0.5	CR	1	BB	0.5	Py	EU	0.1	Sp	BB	0.1				Pseudo-clasts replaced by sph. Euh py vis at 251.2m
253.5	265	FP	0.5	BB	0.1	BB	0.5	Py	SUBH	0.5	Py	BB	0.5				Weak min
265	277	FP	0.1	BB	0.5	BB	1	Py	BB	0.5	Py	VN	0.1				Shredded Po at 272.8m. Po clast replacement at 275.5m
277	284.4	FP	0.1	BB	0.1	BB	0.1	Py	BB	0.1	Py	FP	0.1				Weak min within faulted interval
284.4	296	BB	0.5	BB	0.5	BB	0.5	Po	CR	0.1	Sp	CR	0.1	Py	FP	0.1	Clast replacement of mafics? at 294.5m
296	308.5	BB	0.5	BB	1	CR	1	Py	EU	0.1	Py	SUBH	0.1	Py	FP	0.1	Po replace subhedral and euhedral Py. Sph, Py as blebs replacing mafic clasts
308.5	310.4	BB	0.5	CR	0.5	CR	1	Py	SUBH	0.1	Py	EU	0.5	Py	FP	0.1	Euhedral py str visible along fx (poss vein @ 309.9m). Eu py replacing clasts?
310.4	319.9	BB	0.5	CR	0.5	CR	1	Py	SUBH	0.5	Py	EU	0.5	Ga	SP	0.1	Subhedral and euhedral pyrite masses. Sph along laminae
319.9	322	BB	0.5	BB	0.5	CR	1	Py	SUBH	0.5	Py	EU	0.1	Py	FP	0.1	As above
322	325	BB	0.5	BB	0.5	CR	1.5	Dbs	VN	0.5	Py	EU	0.1	Py	SUBH	0.1	Decreased laminae. Increased in Fine mm-scaled dendritic black sulphides. Sphalerite blebs follow laminae at 323m. Po & Py blebs replace subhedral and euhedral pyrite.
325	334.8	BB	0.5	BB	0.1	BB	0.1	Dbs	BB	0.1	Py	FP	0.1	Py	SUBH	0.5	Increase in subhedral and euhedral pyrite. Less magnetic. Trace dark black sulphides (possibly mostly galena)
334.8	337	BB	0.5	CR	0.5	CR	0.5	Py	EU	0.1	Py	SUBH	0.1				Increase in Po blebs replacing pyrite and sphalerite replacing clasts

Blackwater Project
Drill Summary - Mineralization

BW0407		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
337	351	BB	0.1	BB	0.5	BB	1	Mrc	FP	0.1	Ga	SP	0.1	Grnt	CG	0.1	Appearance of first garnet at 337.7m. Garnet train? at 341m @ ~25 degrees TCA (appear to line up). Trace galena surrounding poss grnt @ 337.7m. Reddish sphal blebs. Po-py in veinlets through interval. Garnets along calc-silica vein @ 339m. Sph (stink
351	367	FP	0.5	BB	0.5	BB	0.1	Sp	DI	0.5	Py	SUBH	0.1	Py	EU	0.1	Fine black pyrite within gouge and grey qtz zones. Trace garnets through interval

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Drill Summary - Structure

BW0407

From (m)	To (m)	Structure	Strength	Comments
4	11.1	JZ	3	Joints at 10 and 50 degrees TCA
11.1	12.1	FZ	4	25 degree upper contact, gougy within interval
12.1	13.8	JZ	3	Joints at 50 and 15 degrees TCA
13.8	14.1	FL	4	30 degree lower contact
14.1	18.8	JZ	3	50 TCA > 70 TCA > 10 TCA
18.8	18.9	FL	2	Weak gouge along fault plane
18.9	19.75	JZ	4	Joint at 30 TCA, well mineralized along joints
19.75	20.1	FL	4	Upper contact at 60 degree TCA & lower contact at 50 degree TCA, gougy, sulphide-rich
20.1	23.5	JZ	3	Joints at 20 and 50 degrees TCA
23.5	27.15	JZ	3	Joints @ 15 > joints at 50 degrees TCA
27.15	29	FZ	3	Weak fault zone. Influence from meteoric fluids as the interval is strongly oxidized
29	31.3	JZ	3	Joints @ 40 & 60 TCA
31.3	34	FZ	4	Lower contact and upper contact @ 20 degrees TCA. Strongly oxidized within interval. Minor gouge. Slickensides visible at 33.7m. Weak fault breccia from 33.7-34m
34	51.7	JZ	2	Joints at 30 and 60 degrees TCA. Minor chlorite on fracture planes and trace oxide.
51.7	52.7	FL	2	Weak fault, minimal gouge along fracture planes. Lower contact at 20 degrees TCA
52.7	63.6	JZ	3	Joints at 50 and 60 degrees TCA > joints at 40 degree TCA
63.6	65.5	JZ	4	Joints at 30 degrees > 10 degree joints. Mineralized at 65.50 m with galena
65.5	67	BRKZ	3	Strongly broken, no visible gouge. Rough measurement
67	68.5	JZ	3	Joints at 30 and 60 degrees TCA
68.5	73	JZ	4	Joints at 50 and 15 degrees. Joints at 50 degrees cut joints at lower angle. Fracture plane mineralized with Galena vein at 72.5 & 73m.
73	75.5	JZ	3	Joints at 50 degrees TCA > joints at 10 degrees TCA
75.5	75.65	FL	2	Slicks on fault surface. No gouge
75.65	78.8	JZ	3	Dominant angle at 60 TCA, weak 20 and 10 TCA joints
78.8	78.85	FL	5	Clay-chlorite gouge
78.85	81.05	JZ	5	Joints at 50 and 20 TCA. Strongly broken
81.05	81.9	FZ	4	Gougy upper and lower contact. Slickenslides on fracture planes with minor gouge. Gougy at upper and lower contact

Blackwater Project
Drill Summary - Structure

BW0407

From (m)	To (m)	Structure	Strength	Comments
81.9	84.5	JZ	4	Joints at 20 and 40-50 degrees TCA
84.5	97	JZ	3	Primary joint set from 40-50 degrees, secondary set at 20 degrees TCA
97	98.5	JZ	4	Primary set at 30 degrees TCA. Green chlorite along fx
98.5	107.7	JZ	3	Joints from 20-30 and 50 degrees TCA
107.7	107.8	FL	2	Minor gouge. Difficult to determine angle of fault
107.8	111	JZ	3	Primary joint set at 40 degrees TCA
111	111.1	CRZ	4	Lower contact at 40 degrees TCA, no visible gouge
111.1	114.2	FZ	3	Lower contact @ 75 degrees TCA. Slickenslided planes within interval at 20 degrees TCA. Minor gouge
114.2	123.9	JZ	3	Primary joint set between 20 & 30 degrees TCA
123.9	124	FL	5	Lower contact @ 40 degrees TCA
124	131.1	JZ	3	Joints from 40-50 and 20-30 degrees TCA
131.1	138	JZ	4	20-30 & 50-60 degree TCA joints
138	150.8	JZ	2	40-50 TCA > 10 TCA joints
150.8	154	JZ	4	Joints vary from 15-30 degrees TCA within interval. Minor secondary joints at 50 TCA
154	157.8	JZ	3	50 > 30 > 10 TCA joints
157.8	159.9	JZ	3	Joints at 15 and 45 TCA
159.9	162.1	FZ	3	Lower contact at 20 degrees TCA. Gougy at lower contact. Medium green chlorite
162.1	164.7	JZ	4	Dominant angle at 20 degrees TCA. Low angle TCA joint makes interval looks more like a broken zone
164.7	165.2	BRKZ	4	Strongly broken. No prominent angle to measure
165.2	165.3	VZ	3	Clear crystalline qtz. Non-mineralized. Chlorite bound
165.3	166.9	BRKZ	4	Strongly broken, no distinct angle to measure. Bluish-green chlorite on fracture planes
166.9	173.3	FZ	3	Minor gouge. Chlorite along fracture planes. Surrounds broken zone uphole
173.3	179	JZ	4	Joints primarily at 15 degrees TCA > 30 degree TCA joints
179	183	FZ	4	Lower contact at 30 degrees TCA, gougy with good py min & chl within zone, minor hem
183	192.3	JZ	4	20 degree joints > 35 degree joints. Flaky red hematite along fx planes
192.3	200.5	JZ	2	70 degree joint > 40 degree joint
200.5	223	FZ	4	Upper contact questionable at 50 degree TCA. Uncertain angle of fault (mostly subparallel?? TCA). Fault breccias within zone consisting of minor sulphide. Very broken. poor recovery

Blackwater Project
Drill Summary - Structure

BW0407

From (m)	To (m)	Structure	Strength	Comments
223	226.8	FZ	4	Lower contact at 40 degrees TCA. Strongly broken within interval
226.8	230	JZ	3	40 TCA joints > 20 TCA joints
230	232	JZ	4	Joints at 10 degrees TCA > 40 degrees TCA
232	233.5	JZ	3	Joints primarily at 30 degrees TCA
233.5	251	FZ	4	Strongly broken. Gougy within interval. Average at 30 TCA
251	253.7	JZ	3	Joints from 20-40 TCA
253.7	265	FZ	4	Questionable lower contact @ 10 TCA @ 264.8m.
265	269.8	BRKZ	4	Priminent angle at 10 TCA. Additiontal fractures at 40 TCA
269.8	277	JZ	4	Joints from 20-40 TCA
277	278.9	JZ	4	Joint zone as interval uphole. Qtz-pyrite veins follow joints
278.9	281	JZ	3	Clay-chlorite on fx
281	283.8	FZ	3	Minor clay gouge. Blue-green chlorite (283m)
283.8	285.6	JZ	3	Joints at 50 and 20 TCA. Blue-green chlorite on fx
285.6	285.7	FL	4	Lower contact at 60 TCA, gougy
285.7	286.5	BRKZ	3	Both blue-green and black chl vis on fx
286.5	289.4	JZ	4	Joints at 50 and 10 TCA
289.4	291.5	BRKZ	4	Joint vis at 290.6 @ 40 TCA, most jointing/breaks at low angle TCA. No vis gouge. Both dark green and blue-green chl vis on fx
291.5	292.9	FZ	4	Lower gouge contact sharp at 40 TCA. Normal fault?
292.9	312.2	JZ	2	Joints b/w 40-60 TCA, follow laminae. Dark green chl on fx. Weak 2nd joint at 15 TCA
312.2	314.5	JZ	3	Primary joint set at 20 TCA
314.5	320	JZ	3	Joints at 40 and 10-20 TCA
320	320.1	FL	2	Healed fault? Would be reverse fault? if core is properly located within box.
320.1	323.5	JZ	3	Joints at 40 and 10-20 TCA
323.5	329.8	JZ	3	Joints at 50 and 20 TCA. Frac coating on 20 TCA joints
329.8	331	FZ	3	Lower gougy contact at end of run. Chlorite>black pyrite>hematite within gouge
331	333.8	BRKZ	3	Joints at about 20 TCA. Dark green chl on fx
333.8	342.6	JZ	3	Joints at 30, 10 and 50 TCA

Blackwater Project
Drill Summary - Structure

BW0407

From (m)	To (m)	Structure	Strength	Comments
342.6	345	BRKZ	3	Moderately broken, no visible gouge.
345	367	FZ	3	Fractures from 40-60 TCA & 10-20 TCA. Pyrite & chlorite along fracs. Gougy pyrite and chlorite

Blackwater Project
Drill Logs

Hole ID:	BW0408	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375151.8
Depth (m):	449.89	Date Started:	09/04/2012	Casing Size:	HWT	Northing:	5892999.92
Azimuth:	0	Date Completed:	16/04/2012	Casing (m):	0	Elevation (m):	1592
Dip:	-90	Logged By:	MYo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.02	260.7	-89.9
91.74	259.9	-90
137.5	279.8	-89.9
228.6	254.9	-89.8
274.3	236	-89.7
320.3	217.5	-89.1
366.1	218	-89.4
411.8	188.1	-88.9
449.9	175	-88.5

Blackwater Project
Drill Summary - Lithology

BW0408

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.66	OB							
5.66	97	FLPT	volc	LAP	L	GRY	OXFR	SH	Bleached flpt with fracture controlled oxidation. Sulfides appear to be washed out of interval. Weakly clay altered.
97	108	VC	volc	LAP	L	GRY			VC with significant sulfides as soon as oxidation zone ends. 98% felsic Cast and matrix supported is variable and inconsistant.
108	147	VC	cs	LAP	L	GRY	DEP		Same as above with more matrix supported zones. occasional laminated blocks/patches. Sulfides diminish down hole. moderately silicified with clay replacing some clasts
147	176	FLPT	cs	LAP	L	GRY	DEP	GR30+	FLPT with some patches/blocks being laminated. various shades of green and beige. clasts frequently laminated.
176	216.5	VC	volc	LAP	L	GRN	DEP	GR30	The FLPT and VC units above are very similar and appear to be the same unit. 1-2% Chloritized clasts are assumed to be of mafic protolith making this a VC by our current classification system.
216.5	279	FLPT	volc	LAP	L	GRN			Flpt with various shades of green alteration and grey silicification. both clast and matrix supported. Gradational from above VC. Chlorite altered clasts dissipate at VC/FLPT transition. Becomes more laminated down hole.
279	331	FLPT	volc	LAP	L	GRN			alteration obscures protolith moderate to significantly. light to dark green and grey FLPT.
331	399.6	FT	bx	LAP	L	GRN			FT grades from FLPT. Ft is fragmental possibly of a brecciating mechanism. zones are banded other zones are more massive.
399.6	449.9	FT	bx	LAP	L	GRN	UNKN		Texture destructive alteration obscuring what appears to be a FT. Occasioonlly clasts are visible and appear brecciated.

Blackwater Project
Drill Summary - Alteration

BW0408		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.66	94	T		0	CLST	2	PATC	2	PERV	3	HM	FC	2	LIM	FC	2	Oxidation is fracture controlled and selective.
94	108	S	CLST	3		0	PERV	3	PATC	2	ALB	SPHL	3				weak to moderate Sil. Bleached halos around sulfides interpretted as Albite alt.
108	134	S	PATC	2	CLST	2	PERV	3	PATC	2	ALB	SPHL	3				Bleached halo around sulfides (albite?). Light to dark green interp as Ser and Chl alt. Occasional soft and bleached clay altered clasts.
134	180	S	PATC	3	CLST	2	PERV	4	PATC	1							Silica overprinting Chlorite and Sericite. Patches being very bleached/soft interp as clay alt; (sericite not overprinted by Sil?)
180	201	S	PATC	3		0	PERV	4	PATC	1	CHL	FR	3				Chl on fxs, patchy and as clast replacements. Strong sil
201	204	S	PATC	4		0	PERV	4	PATC	2	CHL	FR	4				Chl alteration increases around a significant Sulfide vein
204	224	S	CLST	3		0	PERV	4	PATC	2	CHL	FR	3				Bleached clasts are though to be ser. dark green clasts chl. Sil overprinting
224	279	S	PATC	2		0	PERV	4	PATC	3	CHL	FR	3				
279	331	S	PATC	2		0	PERV	4	PATC	2	CHL	FR	3				Sericite silica alteration w/ chlorite on fxs and occasionally in patches.
331	399.6	S	PATC	2		0	PERV	5	PATC	3	CHL	FR	3				Sericite chlorite silica altered. selective and banded styles attributing to a patchy appearance.
399.6	418.9	S	PATC	3		0	PERV	4	PATC	3	CHL	FR	3				moderate to strong ser chl sil altered FT. occasionally banded.
418.9	420.1	S		0		0	PERV	4	PERV	1	HM	FC	1				unusual interval of alteration. Bleached. Sil overprinting. Weak rose/red alteration presumably HM. Vuggy with drussy qtz
420.1	449.9	S	PATC	2		0	PERV	4	PATC	2	CHL	FR	2				"glassy" silica flooding interval.

Blackwater Project
Drill Summary - Mineralization

BW0408		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.66	29.26		0		0		0	Dbs		0.1							small patch with black dendritic sulfides
29.26	46.02	BB	0.1		0		0	Dbs		0.1							Trace Py found in black sulfide blebs locally
46.02	71		0		0		0										Hematite in Alteration tab
71	73	SP	2		0		0	Dbs		0.5							Py and black sooty Py in unoxidized portions of core
73	83		0		0		0										moderately ox. no mineralization
83	93.5	SP	0.5		0		0	Dbs		0.5							Mineralization is within patches that are not oxidized
93.5	108	BB	1		0	BB	1	Dbs		0.5	Ga	VN	0.5				Py blebs have bleached halos; possibly albite alteration. Occasionally Py veinlets.
108	135	BB	3	SP	0.5	BB	1	Dbs		0.5							Py occasionaly Euhedral within Vuggs. Py tarnished almost to black in spots
135	155	BB	2	SP	1	BB	0.5	Dbs		0.5	Ga	VN	0.5				
155	163.3	BB	0.5	SP	1.5	BB	0.5	Dbs		0.1							Sp as specks and blebs. hairline fractures/veinlets with sulfides evidence of fracture controlled mineralization?
163.3	171	BB	0.5	SP	0.5	BB	1	Dbs		0.5							Po blebs up to 1cm. Predominately fine grained sulfides within matrix
171	176.2	BB	1	SP	0.5	SP	0.1	Dbs		0.1							Multiple styles of mineralization. disseminated and blebs typically
176.2	201.4	BB	0.5	BB	0.5	BB	1	Ga	SP	0.1							locally concentrations of sp increase to 5-10% but over very short intervals
201.4	202	VN	20	VN	5		0	Ga	VN	5	Cp	VN	3				All minerals from interval are found with a vein that has infilled between clasts
202	219	FG	0.1	SP	0.5	BB	1										Sp and Po occasionally within the same bleb
219	239	BB	1	SP	0.1		0	Dbs		0.5							
239	245	BB	1		0		0	Dbs		0.1							Needle like (acicular) PY grading into DBS.
245	255.3	BB	1	SP	0.5	BB	1	Dbs		0.1							Fine grained to bleb sized mineralization
255.3	270.5	VN	1	SP	0.5	BB	0.5	Dbs		0.1							Py found as Qtz-Py veins and disseminated.
270.5	280.7	FG	0.1	SP	0.5	BB	1	Dbs		0.1							Sphalerite have black halos/DBS associates. Fine grained?

Blackwater Project
Drill Summary - Mineralization

BW0408		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
280.7	296	FG	0.1	SP	0.5	BB	0.5	Dbs		0.5							Po and Sp typically found with black (fine grained?) sulfides
296	311.4	FC	0.1	BB	1.5	BB	0.5	Dbs		0.5							Sulfides increase in matrix
311.4	325	BB	1	BB	0.5	FG	0.1	Dbs		0.1							Py found as blebs with sphalerite around edges
325	346.2	BB	0.5	BB	1	BB	1	Dbs		0.5							multiple styles of mineralization for Sp.
346.2	364.5	VN	0.5	BB	1.5	BB	0.5	Dbs		0.5							Significant black sulfides (fine grained py and sp?)
364.5	385.9	BB	0.5	BB	3	BB	1	Dbs		0.1							Sphalerite found in higher concentrations locally.
385.9	398.1	BB	0.5	BB	1.5	BB	1	Dbs		1	Ga	VN	0.1				Lots of black sulfides (specks/dendritic
398.1	413.5	FG	0.1	SP	1.5	BB	0.5	Dbs		0.1							
413.5	418.9	VN	0.5	SP	1	BB	1	Dbs		0.1							Increased mineralization throughout interval with sharp spikes in % locally. Sp-py veinlet running down core axis at 417.5m
418.9	420	FC	0.1		0		0										Reddish coloration interpreted as possibly HM alteration may be a result of the dissolution of Sp
420	436	FG	0.1	SP	1.5	BB	1	Dbs		0.5							Distribution of mineras is inconsistant in interval being elevated (up to 5-6%) locally
436	449.9	VN	0.5	BB	2	BB	1										Sp-Po replacement blebs

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Blackwater Project
Drill Summary - Structure

BW0408

From (m)	To (m)	Structure	Strength	Comments
5.66	59	JZ	3	Multiple joint sets 30-40deg and 15-20deg
59	72.4	JZ	4	15deg and 40deg. intermittent flts with apertures 1-15cm
72.4	93.5	FZ	2	flts with strongly milled and gouge rock. intact/jointed core between faults.
93.5	108	JZ	3	
108	148.3	JZ	3	joint sets at 50 and 30 deg TCA
148.3	169	JZ	4	Occasional small weak broken zones within joint zone (up to 30cm)
169	177.9	JZ	3	
177.9	178.9	FL	3	weakly healed flt breccia
178.9	215.2	JZ	3	
215.2	226.9	FZ	3	
226.9	262.4	JZ	3	
262.4	265.1	JZ	5	
265.1	279	JZ	3	
279	300.8	JZ	3	45>20
300.8	304.9	FL	4	Low recover. significant gouge
304.9	323.4	BRKZ	2	Broken and jointed zone
323.4	338.3	JZ	2	
338.3	338.7	BZ	3	
338.7	347	JZ	3	
347	358.3	JZ	3	
358.3	360.4	BZ	3	
360.4	396.1	JZ	3	joints typically 30-40deg tca
396.1	404.9	JZ	3	same as above
404.9	409.7	BRKZ	3	
409.7	428.2	JZ	3	Some fractures running down core axis at approx 15deg
428.2	431.9	BRKZ	2	
431.9	449.9	JZ	3	

Blackwater Project
Drill Logs

Hole ID:	BW0409	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375551.45
Depth (m):	383.5	Date Started:	11/04/2012	Casing Size:	HWT	Northing:	5893196.39
Azimuth:	0	Date Completed:	16/04/2012	Casing (m):	7.5	Elevation (m):	1555
Dip:	-90	Logged By:	RAb	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-87
50	195.7	-87.3
100	201.8	-88
157	201.9	-87.6
202	204.4	-87.8
250	202	-87.7
301	218.7	-88.3
352	190.3	-88.3
383.5	201.7	-88.1

Blackwater Project
Drill Summary - Lithology

BW0409

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.8	OB							Till gravel and boulders in overburden ending abruptly in oxide stained core
5.8	18	FLPT	lam	LAP	L	GRY	FLT	GR10	Light grey felsic lapilli tuff with laminated clasts, sericite silca altered matrix, clay altered clasts and broken breccia lapilli tuff texture
18	20.1	AND	equi	LAP	M	GRY	FLT	GR5	Dark grey andesite with clastic texture, some chlorite alteration of subrounded clasts with finer grained matrix.
20.1	21.9	AND	mon	LAP	L	GRY	FLT	GR5	Altered andesite light in color clasts are more angular and weakly brecciated, fault bound on either side, small interval with increased mineralization
21.9	32.5	AND	equi	LAP	M	GRY	FLT	GR30+	Dark grey andesitic unit with weak clastic texture, fine grained aphanitic matrix, locally altered and weakly autobrecciated
32.5	54	VC	plm	LAP	L	GRY			Light grey green altered volcanoclastic unit, clasts are either medium grained mineralized clasts, shardy chlorite altered clasts and smaller more rounded felsic clasts
54	119.5	VC	plm	BLOCK	L	GRY	FLT	GR5	Altered and faulted volcanoclastics, polymictic and poorly sorted, clasts are dominantly mafic with ~25% being laminated felsic clasts, andesite clasts can be block size sometimes 50cm large, locally clasts are clay altered or sulphide replaced, smal
119.5	151.8	AND	mon	LAP	D	GRY	FLT	GR30	Dark grey to black calcite/chlorite/sericite/silica altered andesite unit, strongly faulted with abundant fault gouge
151.8	276	VC	plm	LAP	L	GRY			Altered polymicitc volcanoclastics, clasts can be chlorite altered, replaced by sulphides, laminated felsics and sub-rounded andesites
276	300	AND	mon	LAP	D	GRY			Dark grey calcite veined andesite with weak autobreccia texture, locally faulted and weakly altered.
300	313	AND	por	CA	D	GRY			Dark grey porhyritic andesite with some calcite veinlets
313	333	AND	bx	LAP	D	GRY			Dark grey brecciated andesite with volcaniclastic like texture (andesite VC???), 100% andesite mafic clasts with slightly lighter matrix (making clasts distinct); some calcite veinlets/stockwork present
333	367	AND	mon	LAP	MO	GRY			Mottled (dark grey/brown/green) andesite with significant increase in calcite veining/stockwork; brecciated in some sections
367	383.5	AND	mon	LAP	MO	GRY			Mottled brown/green/dark grey andesite with localized autobreccia in sections; less calcite veining/stockwork than previous interval

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Blackwater Project
Drill Summary - Alteration

BW0409		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.8	8.5	O		0	CLST	3	PERV	1	OP	2	LIM	FR	3				Oxidation zone, moderate limonite staining, clay altered clasts and weak sercite silica
8.5	21.4	T	PATC	2	CLST	2	PERV	2	OP	2	LIM	FR	1				Slight increase in silica and chlorite, limonite observed in trace amounts on fractures
21.4	32.4	S	FR	1		0		0	MTRX	1							Weaky sericitized matrix
32.4	54	S	FR	1	CLST	2	PERV	3	OP	2							Clast dominant white (albite?) clay alteration, pervasive silica alteration and sericite overprint
54	63.6	S	FR	1	CLST	2	PERV	3	OP	2							As above
63.6	66.5	S	FR	1		0	MTRX	1	MTRX	1							Weak silica/sericite altering matrix
66.5	108	S	FR	2	CLST	1	MTRX	1	MTRX	2							Chlorite on fractures and locally altering clasts, sericite and silica weakly in the matrix
108	120	S	FR	1	CLST	2	PERV	3	MTRX	2							Increased silica alteration
120	138.2	S	FR	3		0		0	MTRX	1	CAL	VN	1				Silica drops out, chlorite increase especially on fractures, weak calcite veining obsered, trace sericite altering matrix
138.2	148	S	CLST	2	CLST	2	PERV	3	MTRX	2							Chlorite altered clasts and weakly on fractures, sericite and silica dominantly in matrix
148	164	S	FR	1		0		0	MTRX	2							Sericite altering the matrix, weak chlorite on fractures
164	276	S	CLST	2	CLST	1	PERV	3	OP	2							Moderate silica obscuring matrix and locally obscuring clasts, sericite overprint, chlorite replaced clasts and sometimes cream colored clay
276	300	S		0		0	MTRX	1	MTRX	1	BIOT	PATC	1	CAL	VN	3	Weak alteration of matrix (silica/sericite), patchy speckled biotite alteration, calcite veining
300	313	S	FR	1	PATC	2	PERV	3	MTRX	1	BIOT	PATC	1	CAL	VN	1	Moderate pervasive silica, weak biotite, some clacite in veinlets, weak patchy clay in matrix, very weak chlorite on fractures and weak sericite in matrix
313	333	S	FR	1	PATC	3	PERV	3	VN	1	BIOT	PATC	1	CAL	VN	1	Weak sericite in veinlets, moderate pervasive silica (in clasts as well), moderate patchy clay, weak biotite and calcite in veinlets

Blackwater Project
Drill Summary - Alteration

BW0409		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
333	367	S		0	PATC	3	CLST	3	VN	2	BIOT	PATC	1	CAL	VN	3	No chlorite, some sericite in veinlets, some patchy clay, moderate silica, weak biotite, moderate calcite in veins, moderate ankerite/iron carbonate in matrix (brownish alteration)
367	383.5	S	MTRX	2	MTRX	1	PERV	3	VN	1	BIOT	PATC	1	CAL	VN	2	Weak sericite in calcite veinlets, some patchy chlorite in matrix, some patchy clay, moderate pervasive silica, weak biotite in small sections, calcite in veins and some ankerite/iron carbonte in matrix

newgold
a clear direction

Blackwater Project
Drill Summary - Mineralization

BW0409		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.8	8.5		0		0		0	Goe	FP	5	Jaro	FP	1				Oxide minerals staining fractures and weakly pervading core
8.5	21.4	DI	0.5	BB	1		0	Dbs	DEN	0.1							Dark grey sooty sphalerite often with some pyrite, trace Dbs
21.4	32.5	SP	0.1	SP	0.1		0										Trace pyrite and sphalerite
32.5	51	CR	1	CR	2.5	CR	0.5	Dbs	DEN	0.5							Sulphides as blebby aggregates replacing clasts and sooty dbs. Sphalerite is a unique purple color
51	75	DI	0.5	BB	1.5	BB	0.5	Dbs	DEN	1							Sulphides as aggregates and replacing clasts, dbs snakes its way through core in random orientations
75	97	CR	0.5	CR	1	CR	0.1										Sulphides decrease as unit becomes less altered and more mafic, sphalerite replacing clasts with trace pyrrhotite and minor pyrite
97	108	CR	0.5	CR	0.5	CR	0.5										Weak sulphides replacing clasts
108	119	BB	1	BB	1	CR	0.5	Dbs	DEN	1							Increased alteration and sulphides with abundant dbs
119	130	DI	0.1	DI	0.1	DI	0.5										Trace sulphides in andesite unit with influx of calcite/chlorite
130	150	DI	0.1	BB	0.5	DI	0.1	Dbs		0.1							Trace sulphides, with minor sphalerite
150	164	DI	0.5	CR	1.5	CR	0.5	Dbs		0.1							Sphalerite and pyrrhotite replacing clasts, pyrite locally with fault gouge, trace DBS
164	178	CR	0.5	CR	1.5	CR	1	Dbs	DEN	1							Increased sulphides mostly replacing clasts except for DBS
178	196	CR	1	CR	2	CR	1	Dbs	DEN	0.5							As above
196	215	CR	1.5	CR	2	CR	1	Dbs	DEN	1							Abundant sulphides often laminated and zoned within clasts, DBS where it pleases
215	228	DI	1.5	CR	2	DI	1	Dbs	DEN	0.5	Ga	DI	0.1				As above with trace galena, pyrite bright and brassy and locally euhedral
228	243	CR	1	CR	1	CR	1	Dbs	DEN	1							Sulphides mostly replacing clasts with DBS locally as spidery veinlets and disseminations
243	260	CR	1	CR	2	CR	1	Dbs	DEN	0.5							Sulphides replacing clasts with DBS that is locally acicular

Blackwater Project
Drill Summary - Mineralization

BW0409		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
260	280	SP	0.5	CR	0.5	CR	0.1	Hm	FP	0.1							Fine grained sooty sulphides in fault gouge grading into andesite, trace hematite on a few fracture planes
280	286	DI	0.1	BB	0.5	DI	0.1										Weak sulphides
286	292	VN	4	BB	0.5	DI	0.5										Intense pyrite vein zone with nice euhedral crystals, minor sphalerite
292	300	DI	0.1	DI	0.1	DI	0.1										Weak sulphides as calcite veining resumes
300	313	FP	0.5	VN	0.1	BB	1										Py on fracture planes; bleby Po; Sph in veinlet; calcite in veinlets
313	333	BB	1	CR	1	BB	1.5										Py in blebs/patches in matrix alonst like irregular veins/veinlets; Disseminated/bleby Po; Shiny black and red sph in clasts; calcite in veinlets
333	367	FP	1		0	BB	1										Py on fracture planes and as disseminated specks; bleby Po; Increased calcite in veinlets/stockwork
367	383.5	VN	0.5	GmR	1	BB	2										Py in veinlets ; Sph as ground mass replacement, some in veinlet with py and some shiny/black sph as clast replacement; Po in blebs, in veinlet and some disseminated; Calcite veinlets present

Blackwater Project
Drill Summary - Structure

BW0409

From (m)	To (m)	Structure	Strength	Comments
5.8	15.2	BRKZ	5	broken core with minor annealed fault gouge
15.2	16.7	FL	3	Fault gouge with local fault breccia
16.7	32.5	BRKZ	5	Strongly broken core with some fault gouge
32.5	41.5	FZ	3	Fault gouge with some broken redrill
41.5	52	BRKZ	3	Broken zone with minor fault gouge and some competant pieces
52	82	FZ	4	Strongly crushed and clay altered fault gouge
82	92.3	JZ	2	Weak jointing at 30 degrees
92.3	94	BRKZ	3	Broken zone
94	98.1	JZ	2	jointing at 20 and 60 degrees
98.1	104.5	FZ	3	Broken core fault gouge and redrill
104.5	119.6	BRKZ	3	Broken core with redrill and trace milled grains on fractures
119.6	144	FZ	4	fault zone with crushed rock and fault gouge
144	151.5	BRKZ	3	Damage zone around fault
151.5	248.5	JZ	4	Low angle and steeper 60 degree joint sets
248.5	277	FZ	5	Strong fault gouge with minor shear, evidence of movement dipping between 30 and 35 degrees to core axis
277	300	JZ	3	Wavy joint set at 30 degrees and more planar at 40 degrees
300	326	JZ	3	Joints mostly at 60dtca others at 80>55>30>40 dtca
326	332.5	JZ	2	Weak jointzone with localized broken zones; wispy/jagged joints mostly at 30 and 40dtca
332.5	346.4	JZ	3	Wispy/jagged joints mostly at 80dtca others at 60dtca
346.4	359.5	JZ	2	Weak joint zone with joints mostly at 30dtca, some at 50>40dtca
359.5	383.5	JZ	4	Strong joint zone with joints mostly at 70dtca others at 60>80>50dtca, a few steep ones at 30/40dtca

Blackwater Project
Drill Logs

Hole ID:	BW0410	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375850.69
Depth (m):	404.5	Date Started:	12/04/2012	Casing Size:	HWT	Northing:	5892899.62
Azimuth:	0	Date Completed:	20/04/2012	Casing (m):	28.5	Elevation (m):	1576
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	265	-87
50	260.5	-86.5
100	254.4	-86.4
150	244.6	-85.6
200	239.5	-85.6
250	245.6	-85.2
300	239.1	-84.3
350	235.3	-84.2
400	230.4	-84.6

Blackwater Project
Drill Summary - Lithology

BW0410

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	32.48	OB					DEP	GR10	Very poorly sorted Till, from 29m on Till appears oxidized similar to bedrock.
32.48	98.15	FT	obsalt		L	GRY			Very fine-grained perv silica-clay-ser-limonite alteration obscuring most of ioriginal texture. Square to lathe shaped clay/white-mica replaced crystals (Feldspars), throughout. Small intervals of less alteration are weakly laminated. Crystal Tuff?
98.15	160	FT	obsalt		L	GRY	UNKN	GR30+	Continuation of above.
160	188.5	FT	lam		L	GRY	DEP	GR30+	Competent Light Gray moderatley laminated weakly undular locally. Heavily mineralized with Patches of Orange Oxidation.
188.5	199	FLPT	flwbx	LAP	L	GRY	UNKN	GR30+	Flow Top PYROCLASTIC or EFFUSIVE? RHYOLITE/DACITE? Oddly Bx'd Very Poorly sorted (ranging from 1mm to block size) locally laminated, with clasts dissolving into moderatley undulating laminar flowbands in matrix, and clasts. Relict replaced feldspars
199	204	FT	lam		L	GRY	UNKN	GR30	Flow competent laminar RHYOLITE/DACITE? PYROCLASTIC or EFFUSIVE Flow? Well defined competent Laminations weakly undular locally, (Flow Influence, of some sort?). Small <1mm grains of Ser-clay replaced crystals (Feldspars?), small Qtz grains (Qtz Eyes
204	231.5	FT	mas		L	GRY	ALTFR	GR30+	Massive Tuffaceous unit, with abundant rectangular to square shaped crystals (Feldspars) replaced by mixed sulphides. Faint almost indescernible laminations, locally.
231.5	272	FT	mas		L	GRY	DEP	GR30	Massive Tuffaceous unit, with abundant rectangular to square shaped crystals (Feldspars) repalced by Ser-Clay. Faint almost indescernible laminations, locally.
272	286	FT	lam		M	GRY			Competent Rock with moderate Laminations @ 40 dtca, weak undulations, locally. Hosting Clay-ser and Sulphide replaced square-rectangular crystals (Feldspars).
286	299	FT	lam		M	GRY	ALTFR	GR30+	Ciontinuation of above, Alteration slowly obscures texture with depth.
299	315.2	FT	obsalt		M	GRY	FLT	GR30+	Bands of L.Green Sericite, and Perv Silica-Ser and BB'y patches of L.Gray Silica + or - Chlorite. Bottom Fault contact with siliceous-ser alteration grading out.
315.2	327.1	AND	por		D	GRY	ALTFR	GR30+	Phenocrysts of Hb, throughout, locally coincident with Feldspar. Large sections of silica filled amygdules. Weak clastic texture locally. Weakly Bx'd AND Flow..? Strong Silica alteration beneath grading into VC.
327.1	346.8	VC	ms	LAP	M	GRY	UNKN	GR30+	Moderatley sorted Felsic Dominant Rounded siliceous Clasts and Sub-rounded lithics, with sub-rounded D.Gray-Black mafics supported by a M.Gray matrix. Grading into a Dark alteration and into Silica-Sericite + or - chlorite alteration amongs the fault

Blackwater Project
Drill Summary - Lithology

BW0410

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
346.8	361	VC	ms	BLOCK	D	GRY			Block Size AND clasts of Hornblende-phyric/Amygdaloidal/Massive/ Lithics and Smaller Lapilli size Felsic rounded silica replaced Clasts/Lithics, supported by a M.Gray matrix with small ANd fragments.
361	366.8	VC	ms	LAP	L	GRY	FLT	SH	Moderatley sorted Felsic Dominant Rounded siliceous Clasts and Sub-rounded lithics, with sub-rounded D.Gray-Black mafics supported by a M.Gray matrix. Terminating in a sharp fault Bx.
366.8	380.5	AND	fltbx		D	GRY	FLT	GR30+	Fault Bx, supported by chloritic gouge, with poorly sorted Bx, and competent blocks of Plag/Hornblende phyric AND.
380.5	385.1	AND	bx	LAP	D	GRY	DEP	GR10	Bx ANd, possibly flow top. Locally Calcite Bx'ing rock, and 100% clay/BIOT replacement of clasts within calcite Vein-Bx/Hydro-Bx. Bx grades into a porphyritic AND.
385.1	392.5	AND	mas		D	GRY	DEP	GR10	Plag Porphyritic AND. Strongly Calcite VN'd and Sericite replacing plag crystals.
392.5	404.5	AND	amg	LAP	D	GRY			Hornblende phyric patchy amygdaloidal AND with locally aligned jigsaw fit clasts oriented @ 35 dtca (Flow Bx).

Blackwater Project
Drill Summary - Alteration

BW0410		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
32.48	37.5	O		0	PERV	5	PERV	3	PERV	2	LIM	PERV	4				Perv oxidized clay-liminite-silica-ser rock. As well as DI'd BB's of oxide where Sulphides would have been.
37.5	40.6	O		0	FC	3	PERV	4	PERV	2	CLY	PERV	2	LIM	FC	4	Perv silica-clay-ser fragments supported by clay and clay rich limonite. Clay rep of DI'd crystals (square-lathe shaped, feldspars?)
40.6	53.45	O		0	PERV	4	PERV	3	PERV	2	LIM	PERV	4	CLY	REP	3	Perv oxidized Clay-Lim-Silica-Ser, throughout. Clay rep of DI'd crystals (square-lathe shaped, feldspars?)
53.45	55.4	O		0	FC	3	PERV	4	PERV	2	CLY	PERV	2	LIM	FC	4	Perv silica-clay-ser fragments supported by clay and clay rich limonite. Clay rep of DI'd crystals (square-lathe shaped, feldspars?)
55.4	64.5	O		0	PERV	3	PERV	4	PERV	2	CLY	REP	3	LIM	PERV	3	Perv silica-lim-clay-ser, throughout. Locally Hm is replacing DI'd sulphides.
64.5	85.96	O		0	PERV	4	PERV	4	PERV	2	CLY	REP	4	LIM	PERV	5	Perv Limonite-Clay-Silica-Sericite, throughout. Clay replacing DI'd crystals (Round-square-lathe shaped, Feldspars?)
85.96	98.15	T		0	PERV	3	PERV	4	PERV	2	CLY	REP	4	LIM	PERV	3	Intermittent Patches of Perv Limonite-Silica-Clay-Sericite and patchy Perv Silica-Ser-Clay. Locally DI'd Hm filled vugs, where Hm replaced sulphides.
98.15	115.8	T		0	PERV	3	PERV	4	PERV	2	CLY	REP	4	LIM	PERV	3	Intermittent Patches of Perv Limonite-Silica-Clay-Sericite and patchy Perv Silica-Ser-Clay. Locally DI'd Hm filled vugs, where Hm replaced sulphides. Unknown yellow to greenish overprinting surrounding oxidized sulphide BB's.
115.8	146	O		0	PERV	3	PERV	4	PERV	2	CLY	REP	4	LIM	PERV	4	Perv Limonite-Silica-Clay-Ser, throughout. Black to Orange Goethite on FP's, with Red Hm. Clay rep of circular to square to lathe shaped crystals (Feldspars?).
146	160	T		0	PERV	3	PERV	4	PERV	2	CLY	REP	3	LIM	PERV	3	Intermittent Patches of Perv Limonite-Silica-Clay-Sericite and patchy Perv Silica-Ser-Clay.
160	188.5	T		0	PATC	3	PERV	4	PERV	2	LIM	PATC	2	LIM	FC	2	Intermittent Patches of Perv Limonite-Clay-Silica-Sericite and patchy Perv Silica-Ser with patchy clay following Laminations. Clay alt strongest in Oxidized patches.
188.5	199	T		0	PATC	4	PATC	4	PERV	2	LIM	FC	1				Patches of Clay alteration, generally clasts, and matrix inbetween Flow band patches of Silica alt.

Blackwater Project
Drill Summary - Alteration

BW0410		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
199	203.2	T		0	PATC	1	PERV	4	PERV	2	LIM	FC	2	CLY	REP	3	Perv Silica-Ser alteration, With patches of Lim-Clay fracture controlled alteration. Silica follows laminations L.Gray and M.Gray.
203.2	207.1	O		0	PERV	3	PERV	4	PERV	2	LIM	PERV	2	LIM	FC	4	Perv Silica-Clay-Lim-Ser alt. With Fracture controlled Lim and Hm on FP's. Clay replacing crystals strongly.
207.1	208.1	O		0	FC	4	PERV	3	PERV	1	LIM	FC	4				Fault Zone, with Clay-Limonite replaced gouge.
208.1	209.5	O		0	PERV	3	PERV	4	PERV	2	LIM	PERV	2	LIM	FC	4	Perv Silica-Clay-Lim-Ser alt. With Fracture controlled Lim and Hm on FP's. Clay replacing crystals strongly.
209.5	212.3	T		0	PERV	2	PERV	4	PERV	2	LIM	PERV	2	LIM	FC	3	Perv Silica-Clay-Lim-Ser alt. With Fracture controlled Lim and Hm on FP's. Clay replacing crystals strongly.
212.3	231.5	T		0	FC	2	PERV	4	PERV	3	LIM	FR	1	ALB	SPHL	2	Perv Silica-Ser alt, with Lim on FP's and white clay Fracture controlled. Egg-white Albite sulphide halos, locally.
231.5	239.8	T		0	FC	2	PERV	4	PERV	3	LIM	FR	1	ALB	SPHL	1	Perv Silica-Ser alt, with Lim on FP's and white clay Fracture controlled. trace local Albite sulphide haloes. L.Green Sericite replacing (Feldspar?) crystals.
239.8	251.9	T		0	FC	1	PERV	4	PERV	3	LIM	FR	2	ALB	SPHL	3	Perv Silica-Ser alt, with Lim on FP's and white clay Fracture controlled. Albite sulphide haloes, locally abundant. White Clay replacing (Feldspar?) crystals.
251.9	272	S		0	FC	2	PERV	4	PERV	3	ALB	SPHL	2	CLY	REP	2	Perv Silica-Ser alt, with white fracture controlled clay. Albite sulphide haloes. White clay replacing crystals (Feldspar), and locally overprinted with silica.
272	286	S	FR	2	FC	3	PERV	4	PERV	4	CLY	REP	3	CHL	PATC	1	Laminated Silica-Ser with small patches of Chl and chl on Fp's. White clay replacing crystals (Feldspars), and locally overprinted by silica.
286	293	S	FR	2	FC	3	PERV	4	PERV	4	CLY	REP	3	CHL	PATC	1	same as above.
293	299	S	FR	3	FC	2	PERV	4	PERV	4	SER	REP	2	CHL	PATC	1	Laminated Silica-Ser with small patches of Chl and chl on Fp's. L.Green Sericite replacing crystals (Feldspars).
299	310.8	S	FR	4	FC	2	PATC	3	BN	5	SIL	PERV	3	SER	PERV	3	Similar to above; increase in chl on FP's, locally slicks. Sections of strong Ser banding, with patchy BB'y and banded Silica.
310.8	315.5	S	BN	3	FC	4	PATC	2	BN	3	HM	FC	1				Fault Gouge Bx, with bands of chl and ser, and trace Hm.

Blackwater Project
Drill Summary - Alteration

BW0410		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
315.5	327.1	S	FR	4	REP	4	PERV	2	PERV	1	BIOT	PATC	1	SIL	AMYG	3	Microcrystalline Perv Silica-Ser. Clay rep of Hornblende and Plag phenos. Strong Chl on FP's. Silica filling amygs
327.1	349.9	S	PATC	4	FC	3	PATC	4	PATC	3	CHL	FR	4	SER	BN	1	Alternating alteration obscured rock and fault, with small sections of VC. Patches of either chl-ser, with weak silica or Silica-ser with weak chl, obscuring texture. Faults are clay gouge. Local Sericite bands.
349.9	358	S	FR	3	REP	2	PERV	4	PATC	2	SER	PERV	1				Silica-Ser Felsic clast dominant and matrix, mafic clasts are clay replaced. Crystals in Mafic clasts replaced by clay. patches of Sericite possibly somne chlorite.
358	366.8	S	FR	3	REP	2	PERV	4	PATC	2	SER	PERV	1	GRNT	OP	2	Silica-Ser Felsic clast dominant and matrix, mafic clasts are clay replaced. Patches of Ser, and BB's of Grnt OP other features.
366.8	372.9	S	FR	4	REP	4	PERV	1	PERV	1	CLY	FC	4				Weak Micro-crystalline Silica. Clay replacing fault gouge with chl, and clay replacing Hornblende.
372.9	385.1	S		0	PERV	4	FC	1	FC	2	CAL	FC	4				Strongly calcite fractured/VN'd, Clay alteration strongly around calcite veining. Sericite and silica locally associated with fracture controlled calcite veins.
385.1	392.5	S	FC	1	PATC	2	PERV	2	PERV	1	CAL	FC	3				Perv silica and replacing feldspars. Fracture controlled Calcite and chlorite. clay alt around calcite veinlets.
392.5	404.5	S	FC	2	PATC	2	PERV	1	FC	1	SIL	MTRX	2	SIL	AMYG	1	Perv microcrystalline silica, silica stronger in flow-Bx matrix, and infills amygs with Po. Patchy clay around Calcite veinlets.

Blackwater Project
Drill Summary - Mineralization

BW0410		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
32.48	59		0		0		0	Goe	PERV	9	Goe	FC	1				Orange Oxide staining Perv and Fracture dcontrolled.
59	64.5		0		0		0	Goe	PERV	6	Jaro	FC	0.5	Goe	FC	1	Orange Oxide staining Perv and Fracture dcontrolled. Yellow oxide locally fracture controlled. Red Hm replacing DI'd sulphides, locally.
64.5	85.96		0		0		0	Goe	PERV	9	Goe	FC	1				Orange Oxide staining Perv and Fracture dcontrolled.
85.96	98.15	BB	3	BB	0.5		0	Ga	BB	0.5	Goe	PERV	6	Goe	FC	0.7	Patchy Oxide and Sulphide zones. Oxide zones similar to above. Sulphide zones; sooty Py-Sp-Ga BB's surrounded by Very-fine-grained black Py Haloes. DBS's Fracture Microftracture fill and Dendritic.
98.15	106.3	BB	8	BB	0.5		0	Ga	BB	4	Goe	FC	2	Hm	FC	0.5	Fracture Controlled Oxidation and Haloing Fractures. Black Sulphides BB'y haloing other sulphides and Dendritic/micro-fracture fill. Sooty Py-Ga-Sp intergrown BB's.
106.3	115.8	BB	1		0		0	Ga	BB	0.5	Goe	PERV	5	Goe	FC	1	Patchy Sulphide amongst patches of strong oxides. Oxide zones similar to those above, sulphide zones similar to above.
115.8	146		0		0		0	Goe	PERV	10	Goe	FC	2	Hm	FC	1	Total Oxidation staining rock pervasivley Orange. Black and organe Goe with red Hm on FP's.
146	160.8	BB	1	BB	0.1		0	Ga	BB	0.5	Goe	PERV	3	Hm	FC	0.5	Patchy Sulphide amongst patches of strong oxides. Oxide zones similar to those above, sulphide zones similar to above.
160.8	177	BB	2	BB	0.1		0	Ga	BB	1	Ga	VN	0.1	Py	VN	0.5	DI'd BB's of Py-Ga-Sp, weakly vugged locally, and moderatley surrounded by Black Sulphide Haloes throughout. Py-Ga Vein material following Laminae, similar to DBS.
177	178.4	VN	8	VN	0.5		0	Ga	VN	7	Py	BB	1	Ga	BB	0.7	Similar to above; Vein Zone; Py-Ga-Qtz-CPy-Sp Vein ~25-30cm wide Vein Bx zone, and Veining throughout. (High Ag?)
178.4	188.7	BB	1.5	BB	0.1		0	Ga	BB	0.7	Py	VN	1	Goe	FC	2	DI'd BB's of Py-Ga-Sp, weakly vugged locally, and strongly surrounded by Black Sulphide Haloes throughout. Py-Ga Vein material following Laminae, similar to DBS.

Blackwater Project
Drill Summary - Mineralization

BW0410		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
188.7	199	BB	1.5	BB	0.5		0	Ga	BB	1	Py	VN	0.5	Goe	FC	0.5	DI'd BB's of Py-Ga-Sp, throughout, locally filling matrix. Py discontinuous veinlets FRCT.
199	203.2	BB	1	BB	0.5		0	Ga	BB	0.1	Py	VN	0.5	Sp	VN	0.1	DI'd BB's of Py-Sp-Ga, throughout. Veinlets of Py and Py-Sp.
203.2	209.5		0		0		0	Goe	PERV	3	Goe	FC	4	Hm	FP	0.5	Fault controlled oxidationof rock. Perv Lim stain and strong Lim coating FP's.
209.5	212.2	BB	0.1	BB	0.5		0	Goe	FP	1	Goe	PERV	0.5				Di'd BB's of Black sulphides Sp-Py possibly Ga. Goe on FP's.
212.2	231.5	BB	1	BB	1		0	Dbs	DEN	1	Ga	VN	0.1	Goe	FC	0.1	Seperated Fractions! seperated sctions of DI'd BB's and crystal rep BB's of Py and/or Sp, intermittently with DBS dendritic microfracture fill and BB'y dendrites. Locally, Di'd BB's surropund by Alb Halo.
231.5	244.9	FC	1	BB	0.5		0	Goe	FP	0.7	Ga	FP	0.1	Py	FP	0.1	WEll Fracture controlled and hairline veined Sulphides. Black DBS and Py-Ga.
244.9	251.9	BB	2	BB	0.5		0	Ga	BB	0.1	Goe	FP	0.1	Dbs	DEN	0.1	DI'd BB's of Py-Sp-Ga, weak hairline veining Py-Sp-Ga.
251.9	261.3	BB	0.5	BB	1		0	Ga	VN	0.1	Py	VN	0.1				Fine DI'd BB's of Sp and Py, with weak Py-Ga VN'ing.
261.3	265.8	BB	0.5	BB	1		0	Ga	FP	0.1	Py	FP	0.1	Grnt	BB	0.1	Similar to above; with trace BB'y Garnets
265.8	268.5	BB	0.5	BB	0.5		0	Grnt	BB	1	Dbs	DEN	1				Di'd BB's of Py and Sp, locally; fine DI'd BB's of Garnet, throughout. Dendritic DBS.
268.5	282.4	BB	0.7	BB	0.1	BB	0.5	Grnt	BB	1	Grnt	VN	0.1	Dbs	DEN	0.1	Di'd BB's and larger BB's of Garnet, throughout. Di'd BBs of Py and weakly Sp. Larger BB's of Po.
282.4	296	BB	0.1	BB	1	BB	0.1										DI'd BB's or Sp, Py and Po. Po-Py intergrown BB's. locally replacing crystals.
296	310.9	BB	0.5	BB	5	BB	0.5	Py	VN	0.1	Ga	VN	0.1	Dbs	DEN	0.5	Banded aggregates of DI'd BB's of Sp, with small Py specks intergrown, and Black Sulphide BB's. Large BB's of intergrown Po-Py. Scattered DBS.
310.9	315.5	BB	1.5	BB	1		0										Mineralized Fault Gouge/Bx. With Euhedral Py DI's and larger fin-grained BB's, throughout. Sp BB's, throughout.
315.5	326.8	BB	0.1	BB	0.1	BB	0.1	Ga	BB	0.1	Py	VN	0.1				trace DI'd BB's of Py-Po-Sp-Ga, usually as Amygdule fill. Weak Py veining.

Blackwater Project
Drill Summary - Mineralization

BW0410		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
326.8	349.9	FC	1	FC	0.5	BB	0.1	Py	BB	0.5	Ga	FC	0.5	Sp	BB	0.5	DI'd BB's of Py and Po, locally, and euhedral DI's of Py, locally. Fracture filling Veinlets and crackle Py-Sp, and fault matrix replacement Py. Large BB's of Py and black Sp, in faults.
349.9	361	VN	0.7	CR	0.1	BB	2	Grnt	CR	0.5							BB's of Po within Clasts, and ser-chl patches. Strong Py VN'ing, and encircling blocks. red Sp locally replacing crystals in AND clasts. Garnets partially replacing felsic clasts, pre-deposition?
361	366.8	FC	0.5		0	BB	0.1	Grnt	BB	0.5							BB's of Po in clasts, and ser-chl patches. Weak Fracture controlled Py veining, Garnet BB's.
366.8	372.9	FC	1.5	BB	0.5	BB	0.1										minorred Sp and trace Po rep Hornblende. Py irregular Fracture controlled vainlets.
372.9	385.1	BB	0.1	BB	0.1	BB	0.7										BB'y Po, Py and Sp.
385.1	392	BB	0.1		0	SP	1										Small specks of Po, throughout. Trace BB's of Py, localy.
392	404.5		0		0	BB	1.5	Mrc	FP	0.1							BB's of Po filling amygs and replacing Hornblende crystals. Trace Mrc on Fp's.

Blackwater Project
Drill Summary - Structure

BW0410

From (m)	To (m)	Structure	Strength	Comments
32.48	33.1	CLYSEAM	4	Top of unit, Broken Bedrock, mixed in with gouge, aligned @ 45 dtca.
33.1	34.06	CLYSEAM	1	clay altered/weathered and broken.
34.06	34.12	FL	2	Bx, oxidized clay rich fault.
34.12	34.7	JZ	4	broken and jointed, with clay on FP's @ 40 dtca.
34.7	35	CLYSEAM	3	Broken clay/limonite altered rock.
35	37.5	CLYSEAM	1	Weakly mechanically broken strongly clay altered rock.
37.5	39.4	BZ	3	Fault Bx, with silica-ser-clay-lim altered rock fragments in a clay matrix. Bottom contact @ 20 dtca.
39.4	40.6	JZ	2	weak joint zone, with minor breaks.
40.6	41.2	BRKZ	3	Mechanically irregularly broken.
41.2	45	BRKZ	2	Broken rock, with no regular jointing, but multiple clay filled seams @ 30 dtca.
45	53.3	BRKZ	1	locally mechanically broken rock, with the odd Joint @ 40-45 dtca, and a 2cm wide clay seam @ 50 dtca @ 52.05m.
53.3	55.2	BZ	4	Broken fragments poorly sorted rounded supported by oxidized fault gouge.
55.2	102	JZ	1	Jointed @ 45-65 > 10-20 dtca. numerous mechanical brakes.
102	105.5	JZ	1	Jointed @ 45-65 > 10-20 dtca. numerous mechanical brakes.
105.5	140.3	JZ	1	Jointed @ 20(5-30) > 40 dtca.
140.3	142.2	BRKZ	1	Broken at odd angles and irregularly jointed with small fault gouge (Joint failure faults), Jointed locally @ 40 dtca.
142.2	142.4	BZ	1	Small Fault Breccia locally following core axis.
142.4	146.5	BRKZ	1	Broken at odd angles and irregularly jointed with small fault gouge (Joint failure faults), Jointed locally @ 40 dtca.
146.5	146.8	VZ	4	2.5cm wide veinlet at low angle to core axis, Vuggy, with small wall rock inclusions.
146.8	163	JZ	2	Jointed @ 30-60 dtca, greatest 40-45 dtca.
163	168.3	JZ	2	Jointed and weakly broken.
168.3	169.2	BRKZ	3	broken.
169.2	175.8	JZ	3	Jointed @ 30 and 40 dtca.
175.8	177.4	BRKZ	4	Broken and strongly jointed @ 30 dtca.
177.4	178.5	VZ	4	Vein Breccia, Broken within and around, Possibly vein coming through fault Bx?
178.5	181	BRKZ	4	Low angle to core axis jointing, abundantly broken
181	183.4	BRKZ	1	broken, weakly jointed

Blackwater Project
Drill Summary - Structure

BW0410

From (m)	To (m)	Structure	Strength	Comments
183.4	185.5	BZ	4	Fault Bx with Jointing @ 10 dtca.
185.5	187.1	BRKZ	1	competent irregularly fractured.
187.1	188.7	FL	4	Gouged, broken fault. Weak oxidation.
188.7	192.4	JZ	2	Weakly Jointed and broken, @ 45 dtca.
192.4	192.8	CRZ	3	crushed rock.
192.8	197.2	JZ	3	Jointed @ 40> 25 dtca, and weak fault gouge locally on joint surface.
197.2	200.5	FZ	4	Heavily Broken with minor-mod gouge. Joints @ 45 dtca.
200.5	203.3	FZ	3	Moderatley broken, with joint sets @ 45 and 35 dtca.
203.3	207.1	FZ	4	Moderatley to heavily Broken with joint sets @ 20 adn 40 dtca.
207.1	208.1	BZ	5	Oxidized Fault Bx, rounded clasts of variable sizes supported by lominitic gouge.
208.1	209	JZ	1	Jointed
209	209.3	BRKZ	4	Jointed @ low angle to core axis strongly and subsequently broken irregularly.
209.3	228.4	JZ	2	Jointed @ 45 (40-60) > 30 dtca
228.4	231	BRKZ	4	Broken, strongly chipped zone. Jointed @ 35 and low angle to core axis.
231	245.3	JZ	4	Moderatley Jointed and Broken, locally
245.3	246.3	FL	4	Fault with broken rock and gouge.
246.3	247	BRKZ	2	brken irregularly.
247	249.7	JZ	3	Jointed @ 15 (10-20) dtca >> 50
249.7	252	BZ	4	gradational fault Bx, with rounded circular clasts supported by fault gouge, Sharply @ 25 dtca, and gradational on either side.
252	253.4	JZ	2	gradationally jointed out of fault, @ 2 dtca, locally secondary joints @ 50 dtca.
253.4	255.1	FL	4	minor gouge and abundant broken, shardy core.
255.1	258.6	JZ	5	Strongly Jointed at varying angles.
258.6	261.4	BRKZ	4	irregularly broken and jointed.
261.4	262	BZ	4	Irregular shear zone, with broken rock held together by gouge, at low angle to corwe axis
262	265.4	BZ	5	Strong shard Bx, with fault gouge.
265.4	269.4	JZ	3	Jointed @ 60>45 dtca.
269.4	274.2	JZ	5	Strongly Jointed at low angles to core axis.

Blackwater Project
Drill Summary - Structure

BW0410

From (m)	To (m)	Structure	Strength	Comments
274.2	281	JZ	4	Jointed and Laminated @ 40 dtca. Second joint set @ 15 dtca.
281	281.5	BZ	5	Abundant goue supporting roundedd lithics.
281.5	282.2	BZ	3	Breccia supported by gouge in teh middle of the core.
282.2	283.3	JZ	3	Healed fractured rock jointed @ 40 dtca.
283.3	286.4	JZ	5	Strongly Jointed averaging @ 50 dtca. moderatley irregular fractures.
286.4	286.7	BRKZ	5	Broken/crushed rock
286.7	291.5	JZ	4	Jointed strongly @ low angle to core axis
291.5	295.3	BZ	4	Fault Breccia, Silica-ser angular clasts/shards supporting one another locally gouge supported
295.3	302.3	JZ	3	Strongly Jointed @ 55 dtca with STRONGLY developed Chloritic slickens, and secondary jointing @ 25 dtca.
302.3	304.3	FZ	4	fractured and shardy rock.
304.3	310.8	JZ	3	Strongly Joiunted @ 25-30 dtca, and weakly 5-10 dtca.
310.8	315.3	BZ	5	Alteration banded Fault Breccia, with a sharp upper contact @ 10 dtca.
315.3	316.4	JZ	3	moderatley jointed and broken
316.4	316.5	BZ	4	Small Fault Bx.
316.5	319.1	JZ	4	Moderatley Jointed, with Gouge on certain Joints @ 20 dtca.
319.1	319.8	BRKZ	3	BRoken core.
319.8	321.8	JZ	3	Jointed.
321.8	326.5	FZ	4	Faulted/Broken with minor Gouge.
326.5	328.8	FZ	3	Weakly broken, and fractured.
328.8	331.2	FZ	1	Weak fault zone, at 40 dtca, with jointing in competent rock @ 25 dtca.
331.2	338.9	JZ	3	Jointed and locally healed Broken zones.
338.9	349	BRKZ	1	weak broken stick rock.
349	349.9	BZ	3	Healed Fault Bx.
349.9	358	JZ	2	moderate Jointing @ 45 dtca.
358	366.8	JZ	4	Jointed and broken.
366.8	380.5	BZ	5	Strongly Gouged Fault Bx, with small competent blocks.
380.5	383.7	VZ	2	Calcite veining Bxing rock.
383.7	384.3	BZ	4	Fault Bx, with calcite in gouge.

Blackwater Project
Drill Summary - Structure

BW0410

From (m)	To (m)	Structure	Strength	Comments
384.3	388.3	JZ	3	Jointed strongly clacite veined weakly broken.
388.3	391.6	FZ	3	Clay altered small faults.
391.6	394.5	JZ	4	Jointed due to calcite veining.
394.5	404.5	JZ	3	Jointed @ 30 > 55 dtca, due to calcite veining.

Blackwater Project
Drill Logs

Hole ID:	BW0411	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375401.3
Depth (m):	263.79	Date Started:	13/04/2012	Casing Size:	HWT	Northing:	5893498.45
Azimuth:	0	Date Completed:	23/04/2012	Casing (m):	50	Elevation (m):	1515
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	310.1	-89.4
150	236.8	-89.9
211	11	-89.6
250	15.4	-89.6

Blackwater Project
Drill Summary - Lithology

BW0411

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							Overburden
3	76	FLPT	fltgge	LAP	L	GRY	FLT	GR30	very light grey, cherty FLPT, majority of this is massive clay gouge zones very soft and muddy, zones where fragmental breccia, sub angular.
76	116.3	FLPT	bx	LAP	L	GRN	DEP	GR30	fragmantal rock with 50 sub-angular clasts, matric is <mm clasts, locally clasts are laminated.
116.3	128.3	EC	plm	LAP	D	GRY	FLT	SH	moderate to well sorted course sandstone to pebble conglomerate, clast supported. normally graded
128.3	222	AND	mas		M	GRY	FLT	GR30+	Massive andesite, medium grained, amgydules over intervals of several meters, several amgdoidal intervals.
222	222.9	EC	plm	LAP	M	GRY	DEP	GR10	moderate to well sorted course sandstone to pebble conglomerate, clast supported. normally graded
222.9	248.5	VC	bx	BLOCK	L	GRY			Angular strongly silicified with short intervals/lenses of course sandstone, locally excellent bedding, some bedding in VC.
248.5	258.7	EC	plm	LAP	M	GRY	DEP	GR10	moderate to well sorted course sandstone to pebble conglomerate, clast supported. normally graded
258.7	263.8	VC	bx	BLOCK	L	GRY			Angular strongly silicified with short intervals/lenses of course sandstone, locally excellent bedding, some bedding in VC.

Blackwater Project
Drill Summary - Alteration

BW0411		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	6	T		0	FR	3	PERV	1		0	HM	FR	2				no oxide zone, some transitional zone with weak orange hemitite on fractures
6	40	S		0	FR	3	PERV	2	PATC	1							cherty, otherwise weakly altered
40	76	S		0	FR	5	CLST	1	PATC	1							massive clay gouge interval
76	116.3	S	CLST	3	FR	2		0	PATC	3	CLY	PERV	3				
116.3	128.3	S	PERV	2	MTRX	3		0	PERV	3							Clay alteration of fault gouge and along fracture of clasts in gouge.
128.3	152	S		0	VN	3	INFILL	1	PERV	3							Pervasisve sericite alteration in matrix of breccias and psuedo breccia. Silica infilling amgdules.
152	162	S	VN	1	VN	3	INFILL	1	PERV	2							Pervasisve sericite alteration in matrix of andesite, rare psuedo breccia and decreased magntism on MPP. Silica infilling amgdules.
162	185.8	S	FR	2	VN	3	INFILL	1	PERV	3	UNK	VN	3	CHL	PATC	2	Pervasisve sericite alteration in matrix of breccias and psuedo breccia. Silica infilling amgdules. Jasper Qtz in veins.
185.8	187	S		0	PERV	3		0	PERV	4							moderate to strong clay alteration and sericite alteration in proximity to minor fault.
187	218	S		0		0	INFILL	1	PERV	3							Pervasisve sericite alteration in matrix of breccias and psuedo breccia. Silica infilling amgdules.
218	220.2	S	FC	3	FC	2		0	PERV	3							chlorite and clay alteration locally around seperate shear intervals.
220.2	220.7	S		0		0	REP	4	PERV	3							short interval of VC alter to resemble FLPT, several alteration fronts are present.
220.7	243	S	CLST	3	VN	2	CLST	3	CLST	3	SER	MTRX	3				Clasts are variably replaced by sericite or silica or chlorite. 5% of core has Psuedo-breccia with sericite matrix.
243	248.5	S		0	VN	3	PERV	4	PERV	3							Pervasive silica replacement of clasts and matrix, texture non-destructive.
248.5	263.8	S		0		0	PERV	3	PERV	3							

Blackwater Project
Drill Summary - Mineralization

BW0411		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	15		0		0		0	Dbs	DEN	0.5							minor sulphides. a few DBS whisps
15	30		0	DI	0.5		0	Dbs	DEN	0.5	Grnt	SP	0.1				a few DBS streaks, rare speck of sph, one or two small garnet clusters seen
30	50		0	DI	0.5		0	Dbs	DEN	0.5	Grnt	SP	0.1				DBS streaks within the gouge, unknown content, but does not amount to much.
50	70		0	DI	0.5		0	Dbs	DEN	0.5	Grnt		0.1				as above
70	81	DI	0.5	CR	0.5		0	Dbs	DEN	0.5							increasing Sooty grey sulphide with Sp and Py associated.
81	95		0.5	CR	1		0	Dbs	DEN	0.5	Grnt	SP	0.1				Sp replacement of clasts.
95	116.5	DEN	0.5	LAM	1		0	Dbs	DEN	0.5							20% Sp over 20cm @ 104.5m
116.5	129.8	VN	0.5	VN	0.1		0	Apy	VN	0.5	Cp	VN	0.1	SoSu	DI	1	Several veins <3cm thick of Py +/- Sp +/- Apy +/- Cpy.
129.8	152	DI	0.5		0	DI	0.5	Mag		0.5	Unk	VN	0.1				Disseminated Py and Po often on amgdule margins. Jasper Qtz and magnitite.
152	170	DI	0.5	DI	0.5	DI	0.5	Cp	DI	0.1							Disseminated Py, Sp, Po and Cpy often on amgdule margins.
170	185.8		0		0	DI	3	Cp	DI	0.1							Disseminated Po and Cpy often on amgdule margins. Spacial association between patchy chlorite and Cpy mineralization.
185.8	196.1		0		0	INFILL	5										Po infilling Amgdules
196.1	208.5	INFILL	1		0	INFILL	2	Po	VN	1							Po and Py infilling Amgdules
208.5	218.1	INFILL	0.5		0	INFILL	2	Po	DI	0.5	Py	VN	0.5				Po and Py infilling Amgdules
218.1	219.1		0		0		0										
219.1	219.8		0		0		0	Dbs	DEN	0.1	Grnt	EU	1				
219.8	248.5	DI	0.1	DI	0.1		0	Grnt	EU	1							
248.5	263.8	DI	0.1	DI	0.1		0										Mineralization in rare clasts.

Blackwater Project
Drill Summary - Structure

BW0411

From (m)	To (m)	Structure	Strength	Comments
0	42	FZ	3	very broken, with gouge on fractures, rubbly. Horrible recovery, this interval fits in 4 boxes
42	76	FZ	5	massive clay gouge. Some small local areas where more of a fault breccia, but for most part very soft gouge
76	116.5	JZ	5	Joints sets @ 45 and 20
116.5	118.3	JZ	3	
118.3	118.3	FL	1	slicken fibers with a rake angle of 90 deg to dip direction.
118.3	129.8	FZ	5	aditional liniation @ 60 and 5 deg to CA.
129.8	140.5	JZ	3	high angle fractures hosting increased carb + clay coatings; c^25,45-50,65
140.5	178.6	JZ	1	weakly fx'd rock c^65 predominant; trace carb coatings; c^20,45,65
178.6	179.3	FL	3	minor fault; pebble to minor clay gouge
179.3	191.7	JZ	3	increased carb veining at variable orientations; c^25,45,0; c^45 hosting 0.5 py veinlet at 181.8m
191.7	214.8	JZ	2	carb coatings preferential to high angle fracutres, py pref. to low angle fx's; c^0-10,25,40
214.8	222.1	FL	4	moderately crushed/milled rock; clay gouge w/ sooty/crushed sulfide
222.1	259.6	JZ	1	very weakly fx'd rock w/ trace carb coatings; c^0,30,60
259.6	263	JZ	4	joints @ 45, 10
263	263.8	JZ	1	very weakly fx'd rock w/ trace carb coatings; c^0,30,60

Blackwater Project
Drill Logs

Hole ID:	BW0412	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375702.39
Depth (m):	460.95	Date Started:	13/04/2012	Casing Size:	HWT	Northing:	5892949.96
Azimuth:	0	Date Completed:	21/04/2012	Casing (m):	18	Elevation (m):	1580
Dip:	-90	Logged By:	TWi	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	310.1	-89.4
100	223.3	-88.5
150	233.5	-88.5
200	222.8	-88.4
250	212.3	-88.8
252	226.4	-88.4
300	222	-88.1
350	220.2	-88.4
400	228.8	-88
445	232.6	-87

Blackwater Project
Drill Summary - Lithology

BW0412

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	19	OB							
19	40	FT	lam	LAP	L	GRY			Light grey-orange oxidized FT. Laminations present. Vacant sulphide sites. Strong goethite/limonite on fractures. Minor hematite
40	73.5	FT	lam	LAP	L	GRY			Transitions zone, light grey-orange FT. Strong limonite on fractures. Strong clay alteration. Black sooty sulphides, vuggy with DBS.
73.5	134.2	FT	obsalt	LAP	L	GRY	FLT		Light-medium grey texturally obscured felsic tuff. Small faulting from 96 to 98 meters. Strong clay/serecite/silica alteration. 5% TS. Faulted lower contact with increase chlorite below. 20 TCA fault.
134.2	179	FT	obsalt	LAP	L	GRY	ALTFR	GR30+	Light grey, strong clay altered texture obliterated FT. Broken to faulted throughout. Steep faults, 20 TCA. Majority of sulphides are 4% DBS, 1% pyrite.
179	198.5	FT	lam	LAP	M	GRY	FLT	GR10	Increase in visible laminations. Increase in chlorite. Slightly brecciated. Blebby sulphides with DBS. Fracture and fault zones. Darker green than above.
198.5	247	FT	fltgge	LAP	M	GRN	FLT	GR30+	Strong fault zone, competant intervals of FT. Sulphide "goo" in the fault gouge. Faults are steep. Broken core. Slicks present at 234.5
247	302	FT	lam	LAP	M	GRN		SH	Strong fractured zone after fault. Medium green grey FT. Strong silica/serecite/chlorite
302	312	FT	fltgge	LAP	M	GRN	FLT	SH	Major fault, 30 TCA. Clay gouge, competant rehealed. Sulphide stringers throughout. Sharp upper and lower contacts. Broken above and below major fault
312	404.5	FT	lam	LAP	M	GRN	ALTFR	GR30	same as above the fault, slightly broken, strong sphalerite associated with increase chlorite.Strong hematite on fractures begins at 345m. Veining begins at 337m. Gradational change into unit with 5% visible clasts.
404.5	442.7	VC	lam	LAP	M	GRY	DEP	GR30	Very similar to unit above. Rare % percent of unit has clasts. Angular 1-3 cm clast are usually chlorite altered. Alteration flow textures around clast. Sulphides strong, following laminations, blebby.
442.7	461	VC	plm	BLOCK	M	GRY			Medium grey-brown matrix supported polymictic VC. 90% clasts in a silica rich matrix. Majority of clasts are andesitic in composition, brown biotite/serecite alteration in clasts. 30cm gradational alteration upper contact.

Blackwater Project
Drill Summary - Alteration

BW0412		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
19	52.5	O		0	PERV	5	PERV	2	PERV	2	LIM	PERV	4				Strong pervasive limonite. Vacant sulphide sites. Strong clay replacement, moderate serecite.
52.5	79.7	T		0	PERV	4	PERV	3	PERV	2	LIM	FC	3				Decrease in limonite, increase in sulphides. Sulphides have milky white alteration halos.
79.7	92.5	S		0	PERV	3	PERV	3	PERV	2	CLIN	SPHL	3	ALB	SPHL	1	Strong clay alteration. Sulphides halos throughout.
92.5	114.1	S		0	PERV	3	PERV	4	PERV	2	CLY	FC	3	CLY	SPHL	1	Increase in clay through fault zone. Sulphide halos decrease.
114.1	156.5	S		0	PERV	3	PERV	4	PERV	3							increase in silica. Still no chlorite present
156.5	195	S	PERV	2	FC	2	PERV	4	PERV	3	CHL	FR	3				Chlorite now present. Strong chlorite on fractures. Clay increase in fault zones.
195	247	S	PERV	3	PERV	4	PERV	3	PERV	3							stronger clay and chlorite through fault zone
247	302	S	PERV	3	FC	2	PERV	4	PERV	2							decrease in clay, strong blue green chlorite on fractures.
302	310	S	PERV	4	PERV	4	PERV	3	PERV	2							fault zone, strong clay/chlorite
310	337	S	PERV	3	FC	2	PERV	4	PERV	3	CHL	FC	2				out of fault, strong silica serecite. Chlorite on fractures. Vivianite on fractres
337	442	S	PERV	2	FR	2	PERV	4	PERV	3	HM	FC	4	CHL	FC	4	Similar to above, strong hematite on fractures, Serecite and Silica equal throughout. Patchy chlorite. Rare chlorite rich clasts.
442	461	S	CLST	3	FC	2	MTRX	3	CLST	4	BIOT	CLST	3				Silica rich matrix, biotite/serecite altered clasts. Stronger clay zonation around fractures.

Blackwater Project
Drill Summary - Mineralization

BW0412		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
52	59	DI	2	DI	0.1	DI	0.1	Dbs	DEN	3							strong dbs, vacant sulphide sites where pyrite is oxidized out.
59	72.6	DI	0.5		0		0	Dbs	DEN	0.5							increase oxidation, interval with less sulphides. Black sooty pyrite seen with black halos.
72.6	87	DI	1	BB	2	DI	0.1	Dbs	DEN	4							increase in sphalerite. Black f.g. sulphides with white alteration halos. Intense DBS. Pyrite with black sulphide halos.
87	107	DEN	3	DI	1	DI	0.1	Dbs	DEN	2							strong sulphides. Increase sphalerite in fault zone. DBS throughout
107	114	DI	2	DI	1.5	DI	0.1	Dbs	DEN	2							intense sulphides, sphalerite associtate with diss pyrite. Black sooty pyrite seen as well. DBS present.
114	135.5	DI	0.5	DI	1		0	Dbs	DEN	4							strong dbs. very bleached unit with diss pyrite and sphalerite.
135.5	165.5	DI	0.5	DI	1.5		0	Dbs	DEN	3.5							slight increase in chlorite. Still strong dbs with sphalerite and diss pyrite.
165.5	183	BB	1.5	BB	1		0	Dbs	DEN	2							increase in pyrite and blebby sphalerite, slight decrease in DBS
183	196	BB	1.5	BB	1	DI	0.1	Dbs	DEN	1.5	Ga	VN	0.1				strong sphalerite with pyrite. 1mm vein of sphalerite with galena.
196	229	DI	1.5	DI	1.5		0	Dbs	DEN	0.5							decrease in sulphides, some sulphide stringers in faulted gouge.
229	259	DI	2	DI	2	DI	0.1	Dbs	DEN	1.5							increase in chlorite with sphalerite. DBS increases
259	285	DI	1	DI	1	DI	0.5	Dbs	DEN	0.1							decrease in sulphides
285	302	DI	2	DI	3	DI	0.5	Dbs	DEN	0.5							increase in sphalerite with pyrite approaching fault
302	310	DI	2	DI	2		0.1										fault zone, sulphide stringers
310	320	DI	1.5	DI	1.5	DI	0.5	Dbs	DEN	0.3							slight decrease in sphalerite, still disseminated
320	349	DI	1.5	DI	2	DI	0.5	Dbs	DEN	0.5	Py	VN	0.5	Sp	VN	0.5	Strong disseminated sulphides with first appearance of veins. 1-5mm veinlets. DBS present. Sulphides following laminations.
349	382	DI	1	DI	2	DI	0.5	Dbs	DEN	0.5	Sp	VN	0.5	Py	VN	0.5	slight decrease in sulphides, blebby py>sp veins
382	407	DI	1	DI	2	DI	0.5	Dbs	DEN	0.5							stong diss sulphides with rare veins.

Blackwater Project
Drill Summary - Mineralization

BW0412		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
407	421	DI	1	DI	1	DI	2	Dbs	DEN	0.5							increase in po.
421	442	DI	2	DI	2	DI	0.5	Dbs	DEN	0.1	Py	VN	0.5	Sp	VN	0.5	increase in diss pyrite. Veins present
442	461	DI	0.1	CR	0.5	DI	0.5										moderate po, decrease in all sulphides

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Blackwater Project
Drill Summary - Structure

BW0412

From (m)	To (m)	Structure	Strength	Comments
19	95.9	JZ	3	majority of joints are at 40. Range from 30 to 70.
95.9	98	FL	3	small fault, moderate gouge. Brecciated
98	101.5	JZ	3	
101.5	108.7	FZ	3	sheared, brecciated fault zone, strain seen.
108.7	124	JZ	3	shallower joint set
124	128	BRKZ	3	
128	134.3	JZ	3	
134.3	135.3	FL	4	sharp fault contacts, 20 TCA, gouge
135.3	150.8	JZ	2	not many joints. good stick rock.
150.8	154.4	BRKZ	3	broken core
154.4	160	JZ	2	
160	162.3	BRKZ	3	broken
162.3	165.4	JZ	2	
165.4	179.8	FZ	3	Steep joints with slicks. Some competant zones, broken zones.Sheared, fracture textures on core
179.8	184.1	JZ	3	
184.1	188.4	FL	4	clay gouge, sharp contact 60 TCA. Increase in chlorite below fault.
188.4	198.3	JZ	3	locally broken.
198.3	204.7	FL	4	fault gouge, 25TCA
204.7	214.4	BRKZ	3	very broken core
214.4	246.3	FZ	4	strong fault zone, center of fault with strongest gouge and slicks would be 234.3m Gouge, sulphide gouge.
246.3	302	BRKZ	3	broken core after fault
302	310	FZ	5	major fault, clay gouge, sharp upper and lower contacts. Sulphides throughout
310	320	JZ	3	competant, some shearing, 30 TCA
320	410.5	JZ	3	majority of jointing at 30. Competant core. Local broken.
410.5	415	BRKZ	3	broken zone
415	422	JZ	3	
422	430.3	BRKZ	3	broken zone, steeper fractures
430.3	461	JZ	3	stong black chlorite on fractures

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Blackwater Project
Drill Logs

Hole ID:	BW0413	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375001.72
Depth (m):	240.79	Date Started:	16/04/2012	Casing Size:	HWT	Northing:	5892900.9
Azimuth:	0	Date Completed:	21/04/2012	Casing (m):	34	Elevation (m):	1584
Dip:	-90	Logged By:	LMo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
49.38	178.2	-88.9
92.05	180.1	-88.9
137.8	182.6	-88.5
183.5	168.1	-88
239.9	166.1	-88.1

Blackwater Project
Drill Summary - Lithology

BW0413

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	34	OB							OB
34	67.7	VC	plm	LAP	MO	GRY	DEP	GR10	Volcanoclastic, matrix supported, clasts are sub-angular to sub-rounded. Patchy silica alteration, with some clasts clay or chlorite altered.
67.7	137	FLPT	lpt	LAP	L	GRY	FLT	GR30+	Felsic lapilli tuff, occasional mafic/chloritized clasts. Pervasivev qtz-ser alteration.
137	167	FT	lam	FA	M	GRN	DEP	GR30	Felsic tuff, banded with local brecciation. Fault contact with above lithology.
167	240.8	FLPT	lptbx	LAP	M	GRN			Felsic lapilli tuff/breccia, with hydrofractured textures. Colour is blue-green, with strong pervasive silica.

Blackwater Project
Drill Summary - Alteration

BW0413		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
34.14	35.9	O		0	PERV	1		0		0	LIM	FC	3				Fracture controlled to pervasive limonite
35.9	67.7	T	CLST	2	CLST	2	PERV	3		0	LIM	FC	2	GRNT	PATC	1	Limonite coating and bleeding out from fractures. Moderate, pervasive silica, with chlorite and clay sometimes replacing clasts. Patches of fine-grained disseminated garnet, plus some garnet blebs with clay.
67.7	109.1	T	CLST	1	CLST	2	PATC	3	PATC	2	LIM	FC	2	GRNT	REP	2	Clay replacing clasts, rare chloritized clasts with patchy moderate silica. Limonite on fractures. Blebby garnet, mostly replacing clasts.
109.1	137	S	CLST	1	CLST	1	PERV	3	MTRX	3	GRNT	SUBH	1	CHL	FR	2	Chlorite and clay replacing some clasts, chlorite also on fractures. Pervasive qtz-ser. Blebby garnets.
137	167	S	FR	2	PERV	1	PERV	4	PERV	3	GRNT	SUBH	1				Ratty/blebby garnets, chlorite on fractures, pervasive silica, sericite and probably clay
167	191.1	S	FR	2	CLST	1	PERV	3	PERV	3	GRNT	SUBH	1				Moderate pervasive qtz-ser flooding, occasional clay altered clasts. Ratty garnets.
191.1	240.8	S	FR	2		0	PERV	5	PERV	3	GRNT	SUBH	1				Strong pervasive silica with sericite, chlorite on fractures, some ratty garnets.

Blackwater Project
Drill Summary - Mineralization

BW0413		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
34.14	35.9		0		0		0	Goe	FC	5							Fracture controlled goethite and limonite, in oxide zone.
35.9	55	DI	0.5	BB	0.1	BB	0.5										Trace sphal in blebs with garnet/po, minor blebby po, minor py, di and on fractures.
55	73	DI	0.5		0	DI	0.1	Apy	SP	0.1	Dbs	DEN	2				Minor di py, trace po in blebs, specks of arsenopyrite visible on fresh surfaces. DBS in more felsic areas
73	91	DI	0.5		0		0	Dbs	DEN	4							2-4% DBS, minor di py
91	105		0.5		0		0.1	Dbs	DEN	2							Somewhat less DBS than uphole, minor py and po
105	137	DI	0.5	BB	0.1	DI	0.5	Dbs	DEN	1	Cp	BB	0.1				Trace sphal, trace chalcopyrite, minor py often with garnet. Additional di py>po
137	167	DI	0.5	BB	0.1	DI	0.5	Dbs	DEN	2							Minor di po and py, some DBS. Py espeically on fractures.
167	206	DI	1		0		0	Dbs	DEN	1.5							Minor di py, with up to 1.5% DBS
206	240.8	DI	0.5		0		0	Dbs	DEN	1	Apy	EU	1				Minor di py, esp on fractures; weak DBS; 2 arspy veins, with qtz. One arspy vein is crushed, with fault gge and sooty sulphide.

Blackwater Project
Drill Summary - Structure

BW0413

From (m)	To (m)	Structure	Strength	Comments
34.14	39	BRKZ	2	Weakly broken zone
39	116	JZ	3	Joint zone, with locally broken zones. Angle TCA 45>60>20
116	137	FZ	4	Moderate to strong fault zone, with rubble and clay gge
137	142	JZ	2	Joint zone, between faulted/broken zones
142	202.8	BRKZ	3	Weakly broken zones, some areas are locally rubbly with clay gge on fractures, jointed rock fractures are 60>45 degrees TCA
202.8	240.8	FZ	4	Rubbly fault zone, with some clay gge

Blackwater Project
Drill Logs

Hole ID:	BW0414	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375250.64
Depth (m):	383.5	Date Started:	14/04/2012	Casing Size:	HWT	Northing:	5893300.14
Azimuth:	0	Date Completed:	20/04/2012	Casing (m):	6	Elevation (m):	1546
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	298.6	-89
160	313.4	-89.2
211	294.9	-89.4
253	318.3	-89.1
304	314.9	-88.9
358	301.8	-89.1

Blackwater Project
Drill Summary - Lithology

BW0414

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							casing to 6m, OB to 4m
4	7	VC	frctz	LAP	D	BR	OXFR	GR10	strong oxid'd flt at top of hole
7	18.5	VC	frctz	LAP	L	GRY	OXFR	GR30	transition zone material; polymictic fragmental, bleached to different shades of gry, some banding in clasts, some zonation, clay replacement common in clasts fine-coarse angular fragmental matrix
18.5	31	VC	frctz	LAP	L	GRY	FLT	SH	continuation of above, clasts appear chaotic in that neither lighter nor darker clasts are pereferentially larger or smaller, or more or less angular
31	61.6	VC	fltgge		L	GRY	ALTFR	SH	Intense sand clay-rich flt gge, some wk chl increasing w/ depth, some competent blocks 1-10 cm (<30% total mass)
61.6	71.5	FLPT	fltgge		D	GRN	FLT	GR30	at c^10 ctc, strong drk grn chl w/ drk sooty py-sp vns in gge, drk grn chl common; lithology obscured in gge
71.5	86.5	FLPT	frctz	LAP	M	GRN	UNKN		wk fragmental ghost texture, drk grn chl on fx; 5-7% diss'd py>sp-po
86.5	172	FT	lam	LAP	M	GRN			Massive flow-laminated felsic, locally brecciated felsic clasts
172	182.5	FT	flwbx	LAP	M	GRN			Flow-laminated felsic, same as above-
182.5	241	FLPT	ms	LAP	L	GRN	DEP		Felsic lapilli clasts-locally flow banded-brecciated felsic clasts
241	298	FLPT	ms	LAP	M	GRN	DEP		Matrix dominant with laminated lapilli clasts. Dark chloritized clasts?
298	363	FLPT	flwbnd	LAP	M	GRN	DEP		Flow banded, ocasional felsic lapilli clasts
363	383.5	FLPT	ms	LAP	M	GRN	UNKN		Matrix supported-laminated felsic lapilli clasts

Blackwater Project
Drill Summary - Alteration

BW0414		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	7	O		0	PERV	3	PATC	2		0	LIM	FC	4				v.strong orng-brn goe on fx
7	18.4	T		0	CLST	3	PATC	2	PERV	2	LIM	FC	1	ALB	CLST	2	some clast-assoc albite, mod clay clast replacement
18.4	61.6	S		0	PERV	3	CLST	1	PERV	2							clay clast replacement w/ some grn-gry clay in flt gge, wk silica in some clasts
61.6	68.5	S	PERV	3	PERV	2	CLST	1	PATC	1							fine-grn'd v. drk grn chl banded in clay gge w/ sulfide increase
68.5	80.1	S	FC	3	PERV	2	PATC	1	CLST	2							pale yellow-grn clay throughout, drk grn chl on fx
80.1	82	S	FR	2	PATC	1	PATC	2	VNHL	2							wk fx-centric serecitic halos .2/.5//10
82	114.3	S	PERV	3	PATC	2	PATC	1	FR	2							Pervasive chlorite alteration, patchy clay alt, weak silica alt
114.3	139	S	PERV	3	PATC	2	PERV	2	PERV	2							Pervasive sericite-chlorite alt, patchy clay alt
139	142.5	S	FR	1	PERV	3	PATC	1	PERV	3							Pervasive clay-sericite alt throughout
142.5	152.5	S	PERV	3	PATC	2	PATC	2	PERV	2							Pervasive chlorite-sericite alt throughout, patchy silica alt
152.5	172	S	PERV	3	PATC	3	PERV	2	PERV	2							Pervasive chlorite-sericite alt, patchy clay found replacing ghost clasts, sericite found in fractures
172	188	S	PERV	3	CLST	2	PATC	1	PERV	2							Pervasive chlorite-sericite alt, Patchy clay alt found in felsic clasts
188	193	S	FR	1	PERV	4	PATC	1	FR	2							Pervasive clay alt- sericite alt found in fractures
193	195.2	S	PERV	3	PATC	3	PATC	3	PERV	3							Strong chlorite alt-clay alt overprinting chlorite alt
195.2	201	S	FR	1	PERV	4	PATC	1	PERV	2							Patchy silica alt-pervasive clay alt -clast dominant
201	220	S	PERV	3	PERV	4	PERV	3	FR	3							Pervasive clay alt found in bands as well in matrix, silica-chlorite banded
220	241	S	PERV	3	PATC	2	PATC	3	FR	3							Patchy silica alt, pervasive chlorite-sericite alt overprinting silica
241	286	S	FR	2	CLST	2	PERV	2	PERV	3	SIL	MTRX	2				Patchy pink silica-hematite found in matrix.Pervasive sericite alt. Chlorite alt found in clasts as well as in fractures
286	298.8	S	FR	2	PATC	2	PERV	3	PERV	3							Pervasive sericite alt-silica overprinting sericite alt-patchy clay found in matrix-chlorite found in felsic clasts

Blackwater Project
Drill Summary - Alteration

BW0414		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
298.8	363.9	S	FR	2	PATC	1	PERV	3	PERV	3							Pervasive banded sericite-silica alt-chlorite found in fractures
363.9	383.5	S	FR	2	CLST	2	MTRX	3	CLST	3							Sericite alet found in clasts-silica alt matrix dominant

Blackwater Project
Drill Summary - Mineralization

BW0414		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	7		0		0		0	Goe	FP	15							drk brn-orng goe along fx, some blk-brn in jnt failure gge
7	10.2	DI	0.1		0		0	Goe	FP	3							wk lt orng-brn goe on fx, some scant diss'd bright py
10.2	14.5	DI	0.1		0		0	Goe	FP	10							as above w/ increased goe in gge
14.5	18.4	DI	0.1	DI	0.1		0	Goe	FP	1							scant drk blk-brn sp along clast boundaries
18.4	28	DI	0.1	DI	3		0										blk sp disseminations 1-1.5mm preferential (tho not exclusive to) in clasts
28	34	SP	0.1	DI	3		0										random blk sp diss'd, 1-1.5mm
34	38.5	BB	1	DI	1		0										with increased flt intensity, clotty sooty-tarnished py bbs w/ lesser sp
38.5	52	DI	1.5	DI	0.5		0	Dbs	DEN	1							.5-1mm tarnished aggregated py disseminations, fine HL blk dbs fx-fills, some in clasts, some cutting clasts
52	61.4	DI	1		0		0										wk 1-2mm tarnished aggregated attenuated py disseminations
61.4	67	VN	3	VN	0.5	VN	0.5										fine sooty py w/ some tarnished and fine sp in discontinuous vns cutting flt gge
67	71.5	DI	3	DI	1	DI	0.5										.5-1mm diss'd mixed sulfide w/ py-dominant
71.5	79	DI	5	DI	1	DI	2	Ga	DI	0.1							strong .5-1mm diss'd mixed sulfide w/ py-dominant
79	103	FP	0.5	DI	2	DI	1	Grnt	DI	0.1							Disseminated Po-Sph throughout, Py in fractures
103	119.8	FP	0.5	DI	2	DI	1										Po-Sph disseminated, fine Py in fractures, Po hairlines
119.8	139	FP	0.5	DI	2	DI	1	Dbs	VN	0.5							Sph-Po disseminated throughout, Py in fractures-DBS disseminated. Po hairlines
139	148	FP	0.1	DI	0.5	DI	0.5										Po-Sph disseminated, Locally blebby Po
148	152.5	FP	0.5	DI	1	DI	1										Po-Sph disseminated- Py found in fractures
152.5	172	FP	0.5	DI	2	DI	1	Grnt	DI	0.1							Po-Sph disseminated throughout- Sph-Po disseminated along banded alteration, Garnet mass
172	187	FP	0.5	DI	1	DI	1	Apy	FP	0.1							Disseminated Sph-Po throughout, Arsenopyrite in fractures
187	193	FP	0.1	DI	0.1	DI	0.5	Apy	FP	0.5							Disseminated Sph-Po, Apy found in fractures. Quartz vein with fine Apy

Blackwater Project
Drill Summary - Mineralization

BW0414		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
193	201	FP	0.1		0	DI	0.5	Apy	FP	0.1							Decreasing sulphides, Apy disseminated
201	220	FP	0.5	DI	0.1	DI	1										Disseminated Po along banding, Locally Blebby Po
220	241	FP	0.5	DI	0.5	CR	1										Po replacing clasts, Disseminated Po-Py in fractures
241	253	FP	0.5	DI	0.1	DI	0.5										Po-Sph disseminated, Py in fractures, sporadically Blebby Po
253	269.5	FP	0.5	DI	0.1	DI	1	Apy	FP	0.1							Disseminated Po-Sph Po>Sph, py in fractures, Po reaplacing chloritized clasts
269.5	286.3	FP	0.5	DI	0.5	DI	1	Apy	FP	0.5							Apy found in fracture planes as well as in clay gouge?, Po disseminated throughout
286.3	298	FP	0.1	DI	0.1	BB	0.5										Blebby Po throughout- Py in fractures
298	314	FP	0.5	DI	0.5	DI	1										Po-Sph disseminated-Py fractures-increasing towards the bottom of hole, locally Po replacing laminated clasts
314	329.9	FP	0.5	DI	1	DI	1										Po-Sph disseminated Sph increasing
329.9	346.6	FP	0.5	DI	1	DI	1										Disseminated Po-Sph throughout-following banded alt teture, locally blebby Po
346.6	363.9	FP	0.5	DI	0.5	DI	1										Disseminated Po-Sph throughout-Po hairlines
363.9	383.5	FP	0.5	DI	1	DI	1										Po-Sph disseminated. Po-Sph replacing felsic clasts

Blackwater Project
Drill Summary - Structure

BW0414

From (m)	To (m)	Structure	Strength	Comments
4	31	FL	3	blocky-rubble dominant w/ some wk sandy clay gge along joint failures, oxid near surface
31	49	FL	4	increased sandy yelloy-gry-grn clay-rich gge to rubble ratio
49	71.5	FL	5	intense clay>sand gge w/ some rounded fragments 1-5cm, measure taken @61.6m and reflects dominant orientation
71.5	77.5	BRKZ	3	steep, rough, high angle jagged blocks w/ drk grn chl on fx
77.5	79	JZ	3	steep, rough, high angle jnts w/ drk grn chl on fx
79	139	JZ	3	Two joint sets 40>80
139	152.5	FZ	4	Brecciated clasts-fault breccia-clay gouge
152.5	172	JZ	3	joint zone , blocky-rubbly fragments,
172	241	JZ	3	two joint sets 40>80, locally blocky
241	247	BRKZ	3	Broken zone with local clay gouge
247	266	JZ	3	Two joint zones 50>30
266	277	BRKZ	3	Blocky-rubble some sandy clay gouge
277	285.1	JZ	3	Joint set, locally sandy gouge
285.1	286.3	BRKZ	3	Broken zone with local clay gouge, fracture plane 60
286.3	383.5	JZ	3	Joint zone-locally clay gouge

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Blackwater Project
Drill Logs

Hole ID:	BW0415	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375401.57
Depth (m):	376.1	Date Started:	16/04/2012	Casing Size:	HWT	Northing:	5893249.29
Azimuth:	0	Date Completed:	22/04/2012	Casing (m):	10	Elevation (m):	1557
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	299.3	-89
100	260.3	-89
151	261.6	-89
200	265.3	-89
250	289.3	-89
300	300.1	-88.8
360	245.4	-88.6

Blackwater Project
Drill Summary - Lithology

BW0415

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10	OB							
10	35.5	VC	plm	LAP	M	GRN	FLT	GR10	Greenish Grey with dark greenish gray zones (large clasts). Silica-sericite-clay matrix with chlorite, sericite and silica altered clasts. Clast-support interval from 20.7-22m.
35.5	50.2	VC	frctz	LAP	L	GRY	FLT	GR10	Greenish grey with strongly bleached white silica after clay altered clasts. Close to being clast-supported. Predominantly felsic clasts. Occasionally laminated
50.2	59	AND	volc	LAP	D	GRY	UNKN		Wk alt and.VC texture. Monomictic. Silica-clay matrix
59	62.8	AND	frctz	LAP	D	GRY	FLT	GR10	Clast? or different unit...uncertain. Possibly andesite blocks within VC unit
62.8	80.8	AND	volc	LAP	D	GRY	ALTFR	GR10	VC texture with amygdaloidal clasts. May be a large block within volcaniclastic unit
80.8	86.1	VC	obsalt	LAP	L	GRY	FLT	GR30	Bleached matrix-supported felsic-rich unit with laminated clasts. Occasional chloritized clast which may be mafic in nature
86.1	97.2	AND	volc	LAP	M	GRY	ALTFR	GR5	Matrix-supported clastic textured andesite. Clay-albite altered matrix? Occasional felsic clast section (91.6-91.8m)
97.2	101.7	VC	ms	LAP	M	GRY	UNKN		Green silica-clay-sericite matrix. 101.2-101.6 & 101.8-102.0m = andesitic clasts within VC unit.
101.7	157.4	VC	ms	LAP	M	GRY	ALTFR	GR10	Silica-clay matrix. Andesitic blocks within VC unit up to 3m (115-118m). Greyish matrix, primarily dark grey blocks. Bleached zones within andesite more of a greenish colour 119-124m
157.4	174	VC	ms	LAP	VL	GRY	FLT	GR30	Light grey-green altered matrix with angular green clasts (pumice-fiamme?). Evidence of laminated clasts eaten by sph & po. Light green silica-sericite-matrix.
174	179.5	VC	frctz	LAP	M	GRY	FLT	GR10	Light grey-green gouge, strong clay. Volcaniclastic blocks within gougy matrix rich in chlorite and clay.
179.5	206.5	VC	plm	LAP	M	GRY	FLT	GR10	Silica-clay matrix. Chlorite-sericite altered clasts. Pyrrhotite-galena trace within veinlets. Bluish-green chlorite on fx planes 1% pyrrhotite clast replacement.
206.5	233.1	VC	fltbx	LAP	M	GRY	FLT	GR10	Strong fault breccia. Green-grey, minor black clay-chlorite +/- pyrite within gouge. Silicified clasts rounded and held together by gouge. Up to 1% pyrite within gouge. Trace pyrrhotite within blocks.
233.1	235.5	VC	ms	LAP	M	GRY	FLT	GR10	Medium green chlorite-sericite altered clasts. Green-grey silica-sericite altered matrix. 1% Pyrrhotite clast replacement. Trace sphalerite, 0.5% pyrite as blebs
235.5	241.2	VC	frctz	LAP	M	GRY	FLT	GR10	Fault breccia. Greyish-green gouge. Silicified clasts. Dark green chl also visible within fx. Up to 1% pyrite within gouge. Trace galena. Red hematite coating becomes prevalent along fx planes @ 239.5m

Blackwater Project
Drill Summary - Lithology

BW0415

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
241.2	243.8	VC	plm	LAP	M	GRY	FLT	GR10	Greyish-green matrix with green sericite-chlorite altered clasts. Matrix-supported, moderately sorted. Clast-rich.
243.8	245.1	VC	fltbx	LAP	M	GRY	FLT	GR10	Fault breccia. Black-dark green gougy matrix with red hematite on fx planes. Silica altered clasts. Slickensides noted parallel TCA (strike-slip component)
245.1	252.7	VC	plm	LAP	M	GRY	FLT	GR10	Grey silica matrix with light green angular shards. Moderately sorted. Strong red hematite coating on fracture planes with dark black chlorite and clusters of pyrite cubes along fx planes (0.5%). Trace pyrrhotite replacement of clasts
252.7	255.7	VC	fltbx	LAP	D	GRY	FLT	GR5	Medium grey with faint greenish bands within clasts. Fault breccia with matrix consisting primarily of goet-chl gouge. Fault breccia from 250-.4-250.6253-253.40m, 254.5-255.7m
255.7	260.4	VC	obsalt	LAP	M	GRY	FLT	SH	Medium greenish grey. Texture has been obliterated by alteration and mineralization. Clasts that were visible uphole are no longer distinct. Chlorite-sericite laminated clast? @ 257.5m ~20cm in diameter & @ 259.50m - 8cm in diamter. Laminae @ 60 TCA
260.4	296	VC	fltbx	LAP	M	GRY	FLT	GR30	Strongly faulted zone. Dark green chlorite gouge with grey blocks of texture-obscured VC between gougy zones. Within VC blocks, mafic clasts are defined as dark grey plag-phyric? (with clay replacement of plag overprinted by silica). Felsic clasts ar
296	311.6	VC	frctz	LAP	L	GRY	FLT	GR10	Mix between broken zone and gouge zones. Blue-green chlorite on fractures, trace visible hematite-goethite on fx planes. Strongly clay altered. Trace pyrrhotite. 1% pyrite within gouge and in clasts
311.6	340	VC	plm	LAP	M	GRY	FLT	GR10	Medium grey-green. Mafic clasts have a bluish-grey tinge. Poorly sorted, faint relict texture visible. 75% mafic, 25% felsic (assuming greenish clasts may have originally been pumiceous). Black-red hematite-goethite-chlorite on fx planes. Strongly si
340	345.8	VC	frctz	LAP	M	GRY	FLT	GR10	Faulted interval of blocks of unit above with chlorite-hematite-goethite along fx planes. Euhedral pyrite (0.5%) on fx planes. Pyrrhotite (1%) replacing euhedral pyrite within core (excluding fracs)
345.8	356.2	VC	plm	LAP	M	GRY	FLT	GR10	Medium grey-green. Strong black chlorite-hematite-goethite on fx planes with pyrite. Trace arsenopyrite through interval. 10 cm wide qtz-Apy vein at 50 TCA @ 356.00m. Approximately 1% pyrrhotite blebs replacing subhedral clasts.

Blackwater Project
Drill Summary - Lithology

BW0415

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
356.2	360.5	VC	frctz	LAP	M	GRY	FLT	GR10	Strongly faulted zone with strong hematite-goethite on fx plane & as gouge holding together medium greyish green VC faulted clasts. ~0.5% euhedral pyrite on fx planes
360.5	367	VC	plm	LAP	M	GRY	UNKN		Medium grey-green. Poorly sorted, mafic-rich. Lithic-rich (close to being clast supported). Silica>clay matrix. Clasts are chl-sericite altered. Hematite-goethite on fx planes. 1% pyrrhotite blebs and replacing subhedral & euhedral pyrite
367	372.6	VC	ms	LAP	M	GRY	FLT	GR30	Medium grey-green. Clasts are dark green and pyrrhotite replaced
372.6	374.6	VC	frctz	LAP	M	GRY	FLT	SH	Gougy, clay-chlorite altered fault zone with volcaniclastic fragments containing po. Dark green chlorite on frx with goethite
374.6	376.1	FT	mas		M	GRY	UNKN		Light green, far less magnetic then intervals uphole. Decrease in mineralization through interval. Clay-altered crystals through interval. Light grey clay, with decreased chlorite on fx planes

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Blackwater Project
Drill Summary - Alteration

BW0415		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10	17	T	FR	2	MTRX	3	MTRX	3	MTRX	3	SIL	CLST	3	SER	CLST	3	Limonite along fx planes with chlorite-clay
17	46.8	T	CLST	2	MTRX	3	MTRX	3	MTRX	3	SIL	CLST	3	SER	CLST	3	Silica-sericite-clay altered matrix (greyish) with white & grey altered silica clasts, as well as dark green sericite-chlorite altered clasts. Albite silica haloes around sulphides.
46.8	50.8	S	CLST	1	REP	4	MTRX	4	MTRX	2	SIL	CLST	3	SER	CLST	2	Bleached white clasts (silica after clay). Grey silica matrix. Occasional green sericite-wk chlorite altered clasts
50.8	59	S	PERV	3	MTRX	3	MTRX	2	MTRX	1	BIOT	CLST	4	CARB	PATC	3	Dark grey-purple carbonate-chlorite-biotite altered clasts with silica-clay-hematite matrix
59	83	S	PERV	3	MTRX	3	MTRX	2	MTRX	1	BIOT	CLST	4	CARB	PATC	5	Purplish clay-silica matrix with darker grey andesitic clasts. Appears to fizz locally in both clasts & matrix. Strong RXN to HCL
86.1	86.4	S	CLST	2	REP	3	PATC	3	CLST	2	CAL	FC	2	CLY	MTRX	3	Greyish silica-clay matrix. Clasts are predominantly white silica after clay. Chlorite-sericite altered clasts sparse from 83.7-84.1m
86.4	89.5	S	PERV	3	REP	3	MTRX	2	MTRX	2	CARB	PATC	3	CAL	FC	3	Occasional sericite-chl altered clasts (dominantly bt). Purple-silica-clay hem? matrix. Rxn to HCl is patchy within interval
89.5	97.2	S	PERV	3	MTRX	3	MTRX	2	MTRX	1	BIOT	CLST	3	CARB	PATC	2	Weak calcite along fx. Purple silica-clay altered matrix. Bt-altered clasts
97.2	108.7	S	FR	3	FR	3	MTRX	4	PATC	3	SIL	CLST	3				Greyish-green silica matrix with grey and white silica clasts. Green chlorite altered clasts
108.7	109.7	S	PERV	2	MTRX	3	MTRX	2	MTRX	2	BIOT	CLST	3	SIL	AMYG	1	Purplish grey andesite, brecciated.
109.7	115	S	FR	2	FR	3	MTRX	4	MTRX	3	SIL	CLST	2	CLY	REP	1	Weak alteration of clasts by ser-chl. Stronger white sil alt of clasts. Greyish-green sil-ser matrix
115	118.3	S	PERV	2	MTRX	3	MTRX	2	MTRX	2	BIOT	CLST	3	SIL	AMYG	1	Purplish-grey altered andesite. Silica infilling amygdules
118.3	125	S	FR	1	REP	4	MTRX	3	MTRX	3	CHL	FC	3				White-light green clay altered clasts, gives appearance of pervasive clay alt. Vein zone strongy chl alt from 125-125.5 (CHL 4)
125	157.5	S	CLST	2	MTRX	3	MTRX	4	MTRX	3	CHL	FR	4	CLY	FR	4	Occasional hyd bt alt'd clasts. Light-Medium grey sericite-silica matrix. Bluish green chl w/ clay on fx planes.

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Blackwater Project
Drill Summary - Alteration

BW0415		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
157.5	173.5	S	CLST	4	FR	2	MTRX	4	CLST	4	CHL	FR	4	SIL	CLST	3	Altered greenish angular clasts within garnet-rich zone (fiamme??). Light grey-beige silica-sericite-clay matrix
173.5	179.5	S	FC	3	FC	4	CLST	3	CLST	3							Silica-sericite altered clasts within chl-clay altered matrix
179.5	206.5	S	FR	4	MTRX	2	MTRX	3	MTRX	3	SIL	CLST	2	CHL	CLST	3	Silica-sericite-chlorite altered. Laminated clast up to 15cm (195.3m). Silica-clay matrix. Weakly chlorite altered mafic clasts. Trace sericite light green altered clasts
206.5	233.1	S	PERV	5	MTRX	5	CLST	3	CLST	2	SER	MTRX	3				Fault gouge zone with strong chlorite-clay in the matrix. Blue-green chlorite on fx planes 223.00-226.5m.
233.1	239.5	S	FR	3	MTRX	3	MTRX	3	MTRX	2							Black chlorite/goethite? on fx plane. Silica-sericite-chlorite altered
239.5	252.7	S	FC	4	FC	3	PERV	3	CLST	5	HM	FC	3	CLY	MTRX	3	Black chlorite-goethite on fx planes. Light green sericite altered pumice clasts.
252.7	260.4	S	PATC	3	MTRX	2	PERV	4	PERV	4	ALB	CLST	1				Greenish grey with cloudy (albite??) altered clasts following 60 degree laminae within interval. Interval has been pervasively silicificed.
260.4	307	S	FC	4	FC	5	CLST	2	CLST	3							Clay-chlorite altered gouge with occasional pyrite gouge zones and clasts of silica-sericite altered VC supported by the fault gouge within the interval
307	352	S	FC	4	MTRX	3	PATC	3	PERV	5	SER	CLST	3	HM	FC	4	Strongly sericite-altered (greyish-green), silica patchy (still scratchable in most places with a knife). Bluish grey sericite altered clasts throughout interval. Intense hematite-goethite (strongly slickensided) on fault surface/fx planes)
352	367	S	FC	4	MTRX	2	PATC	4	CLST	4	SIL	MTRX	3	HM	FC	4	Sil-hem-chl coated fractured. Clasts have been strongly sericite-chlorite altered medium green
367	374.7	S	FC	5	MTRX	2	PATC	4	CLST	3							Str Chl alt on fx planes. Patchy sil through interval.
374.7	376.1	S	FC	3	FC	3	PERV	4	PERV	5	CLY	REP	3				Light green strongly sericite-chl altered. Clay altered crystals (plag?). Greyish altered clast? alteration halo around fault? from 374.65-374.75m

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Blackwater Project
Drill Summary - Mineralization

BW0415		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10	17	FC	1	CR	0.1	CR	0.5	Py	VN	0.1	Ga	SP	0.1	Py	DI	0.1	Pyrite stringer veinlets with trace pyrrhotite. Black pyrite-chlorite-limonite along fracture planes
17	29	FC	1	CR	0.5	CR	0.5	Py	DI	0.5	Ga	SP	0.1				Black sphalerite blebs. Sphalerite-Po veinlet at 16.9m (expect spike in grade from 16-17m). Galena specks noted @ 21m.
29	35.5	FC	0.5	CR	0.5	CR	0.5	Dbs	CR	0.5	Py	DI	0.1				DBS mimic clast shape. Grey Py gouge on fx. Py diss within matrix
35.5	46.8	FC	1.5	CR	0.1	CR	0.1	Py	VN	0.1							Increased sph @ 46.5m. Black-grey py-rich gouge
46.8	50.2	FC	0.5		0	CR	0.1	Py	DI	0.1							Weakly mineralized, strongly silicified interval.Vn stckwork @ 48.9m
50.2	59	FC	0.1	CR	0.5	CR	0.5										Weakly mineralized. Trace py, po & sph
59	62.1	FC	0.5	CR	0.5	CR	0.1										Wk min. Py restricted to fx planes
62.1	83	FC	0.1	CR	0.1	CR	0.1										"Dead" andesite. Trace min
83	86.2	VN	0.5	VN	0.5	VN	0.5	Py	DI	0.1	Ga	VN	0.1				Py as diss & stringer vlts. Sph=Po>Ga=Py @ 88.0m
86.2	97.1	FC	0.1	CR	0.5	CR	0.5	Py	VN	0.1							Increased within VC interval from 92.5-93.5
97.1	102.5	DI	0.5	CR	0.5	CR	1	Py	VN	0.1	Ga	SP	0.1				Increased clast replacement within VC unit
102.5	108.7	DI	0.5	CR	0.1	CR	0.1	Py	BB	0.5	Dbs	VN	0.5	Py	FP	0.1	DBS running subparallel TCA. Galena-Po veinlet @ 106m
108.7	109.7	FP	0.1	CR	0.5	CR	0.1										Sph clast replacement. Minimal Po. Quartz still within amygdules
109.7	115	DI	0.5	CR	0.5	CR	0.5	Py	FC	0.5	Py	VN	0.1				Pyrrhotite within white chewed silica clasts
115	118.3	FP	0.1	CR	0.5	CR	0.1										Clast replacement of rounded clasts of andesite replaced by sph
118.3	125	DI	0.1	BB	0.1	BB	0.1	Py	BB	0.1							Blebby sulphides within interval
125	147	FC	0.1	CR	0.5	CR	0.1	Py	VN	0.1	Py	CR	0.5	Ga	SP	0.1	Mineralization replaces mafic clasts primarily
147	152.3	CR	0.1	CR	1	CR	0.5	Ga	SP	0.1							Trace galena. Pyrite on fx. Min replacing large brecciated andesite clasts
152.3	157.3	DI	0.1	CR	0.5	CR	0.5	Py	VN	0.1							Po-Sph clast replacement. Trace pyrite veinlets
157.3	159.5	DI	0.1	CR	1	CR	0.5	Grnt	CR	0.1							Trace garnets through interval with silica halo.
159.5	175	FP	0.1	CR	1	CR	0.5	Ga	SP	0.1							Trace galena specks. Most clasts replaced by Sph

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Blackwater Project
Drill Summary - Mineralization

BW0415		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
175	179.5	FC	0.5	VN	1	BB	0.5	Ga	VN	1	Sp	BB	0.5	Apy	FC	0.1	Galena veins dominate within fault breccia zone. Measurable slickenside within faulted zone @ 50 TCA. Possible Aspy mass @ 174m
179.5	206.5	FC	0.5	CR	0.5	CR	1	Py	EU	0.1							Trace euhedral pyrite (192m) within clasts. Dominantly po & sph clast replacement (mafics).
206.5	220	DI	1	DI	1	DI	0.5	Py	CR	0.1	Po	CR	0.1	Sp	CR	0.1	Disseminated pyrite within grey-black zones of gouge containing disseminated sph, py and po
220	239.5	DI	0.5	CR	0.5	CR	1	Py	FC	0.5	Goe	FP	0.1	Hm	FP	0.1	Trace red hematite and black goethite on FP
239.5	253.5	FP	1	CR	1	CR	1	Hm	FP	0.5	Goe	FP	0.5	Py	EU	0.1	Euhedral pyrite along fracture planes (whitish...may be marcasite?)
253.5	260.4	BB	1	BB	0.1	BB	1.5	Py	VN	0.1	Hm	FP	0.1	Goe	FP	0.1	Increased pyrrhotite blebs within interval (possibly clast replacement, since text has been obliterated). Decrease in sph within interval
260.4	275.6	GOU	1	BB	0.1	BB	0.1	Py	SP	0.1							Py-gouge primary min type. Occasional specks of pyrite within clasts and faulted blocks; po, and sph as blebs within blocks of core
275.6	278.6	MA	0.5	VN	0.1	VN	0.1	Py	VN	0.5	Py	BB	0.1				Pyrite-rich interval with brassy-black veins @ 275.6m & 278m. Pyrite blebs aggregated as silvery masses throughout interval on non-gougy competent texture obscured core
278.6	293.5	GOU	1	GOU	0.5	BB	0.1	Py	MA	0.5							Pyrite-rich gouge with aggregates masses of blebby pyrite
293.5	307	FP	0.5	BB	0.1	BB	0.1	Py	MA	0.5	Py	GOU	0.5				Weak-absent po within interval. Fine pyrite within gouge. Euhedral pyrite on fx. Masses of pyrite blebs visible within VC blocks
307	325.9	EU	0.5	BB	0.1	BB	1	Py	FC	0.1	Hm	FP	1	Goe	FC	1	Strong goethite-hemaite on fx planes
325.9	340	EU	1	BB	0.1	BB	0.5	Mrc	FP	0.1	Hm	FP	0.5	Goe	FC	0.5	Po turns to marcasite on fx planes. Trigonal py on fx planes.
340	356.2	EU	0.5	BB	0.1	BB	1	Mrc	FP	0.1	Hm	FP	0.5	Goe	FC	0.5	Po turning to marcasite on fx planes. Trigonal py on fx planes.
356.2	360.5	EU	0.5	BB	0.1	BB	1.5	Apy	VN	0.1	Apy	SP	0.1				Euhedral (trigonal) py on fx planes. Apy-Qtz 10 cm qtz vein within interval

Blackwater Project
Drill Summary - Mineralization

BW0415		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
360.5	370	EU	1	BB	0.1	BB	1	Hm	FP	0.5	Goe	FC	0.5				Euhedral (trigonal) py on fx planes
370	374.6	SUBH	0.5	BB	0.5	BB	1	Hm	FP	0.1	Goe	FC	0.1				Locally high sphalerite (371.5m). Po replaces subhedral py
374.6	376.1	FP	0.1	BB	0.1	BB	0.1	Dbs	VN	0.5							Trace DBS. Sphalerite within DBS veinlets

Blackwater Project
Drill Summary - Structure

BW0415

From (m)	To (m)	Structure	Strength	Comments
10	12	JZ	3	Hematite along fx planes
12	18	FZ	4	Weakly gougy. Slickensides visible at 12.80m indicating steep normal fault movement
18	35.5	JZ	2	Weakly jointed
35.5	37.4	FZ	3	Gougy within upper contact
37.4	50.4	FZ	4	Several annhealed fault breccias within interval. Shear vein-zone @48m
50.4	58.7	JZ	4	Calcite veinlets follow fractures
58.7	62	FZ	2	Low contact @ 60. Minor gouge, black-purple chlorite altered frac planes
62	81.3	JZ	1	Massive andesite. Calcite along fracture planes from 20-30 degrees
81.3	83	JZ	2	White calcite along fx planes
83	83.7	FL	3	Gouge zone. Bleached FLPT/VC unit below, andesite above
83.7	85.3	JZ	3	Calcite-clay on fracture planes
85.3	86.4	FL	3	Gouge at upper contact. Calcite along fracture planes. Strongly broken
86.4	87.9	JZ	2	Calcite veinlets along weak fx
87.9	88.7	JZ	4	Calcite veinlets along fracture plane running subparallel TCA
88.7	90.7	JZ	4	Chlorite along fx planes
90.7	97.1	JZ	3	Joitns from 30-40 TCA & 50-60 TCA
97.1	97.2	BD	2	Weak alteration/clast? contact with andesite (uphole) and VC downhole
97.2	98.15	JZ	2	Weakly jointed @ 30 TCA (measured @ 98m mark)
98.15	98.5	FL	4	Pyrite-chlorite gouge. Upper contact @ 70 TCA, very friable
98.5	102.5	JZ	2	Joints from 70-80 TCA
102.5	108	JZ	2	Clay-chl on fx
108	109.6	JZ	4	Parallel fracs @ 25 TCA
109.6	111.7	FZ	4	Upper contact @ 20 TCA, lower contact @ 50 TCA
111.7	114.5	JZ	4	Dark green chlorite-clay with pyrite
114.5	116	FZ	5	Upper contact @ 50 TCA
116	118.3	BRKZ	4	Broken zones approximating fractures @ 20 and 60 TCA
118.3	124.3	FZ	3	Lower contact @ 50 TCA (pyrite-chlorite rich). Clay altered, fractured and bleached through interval
124.3	129	BRKZ	4	Chl on fx, both blue-green and black variety (Py-rich). Mechanical clay on fx. No strong gouge within interval

Blackwater Project
Drill Summary - Structure

BW0415

From (m)	To (m)	Structure	Strength	Comments
129	131	FZ	4	Clay-rich gouge, minor fault breccia
131	133.4	JZ	3	Pyrite-chlorite on fx.
133.4	133.9	FZ	4	Clay-chlorite rich gouge. Upper contact @ 30 TCA
133.9	138.2	JZ	4	Most fx @ 20 TCA
138.2	138.5	FL	4	Gougy pyrite-calcite-clay
138.5	139.7	FZ	2	Slicks, minimal gouge, consistent at 20 TCA
139.7	142.3	JZ	3	Joints @ 20 and 50 TCA. Questionable @ 142m whether clay is function of drilling or gouge from fault
142.3	144.3	JZ	1	V. wkly jointed, chl on fx. Second fx @ 50 TCA
144.3	147	BRKZ	3	Broken zone @ low angle TCA
147	149.5	JZ	2	Joints @ 40 and 10-20 TCA
149.5	150	BRKZ		Minerlized galena vein/fx coating within interval
150	152.5	JZ	4	Low angle JZ @ 10 TCA, black-green chl-clay on fx
152.5	161.2	JZ	2	Clay-chl on fx planes
161.2	161.5	BRKZ	4	Broken zone, clay-chl
161.5	162.2	FZ	4	Upper and lower contacts measurable @ 20 TCA
162.2	165.9	JZ	3	Chl-coated joints from 15-30 TCA
165.9	166.5	JZ	4	Joints @ 50 and 20 TCA
166.5	169.3	FZ	4	Low angle contact @ 20 TCA
169.3	174.1	JZ	2	Chl -clay on fx
174.1	179	FZ	4	Gougy. Fault breccia with broken zones. Angles between 30-50 TCA. Pyrite-Galena rich section at 178.40m
179	203.5	JZ	3	15-20 > 30-40 > 50 joints within interval. Chl-clay prominent on fx sets
203.5	206.8	BRKZ	4	Joints dominant @ 20 TCA
206.8	223.2	BZ	5	Questionable upper contact @ 20 TCA & lower contact @ 60 TCA. Grey-green fault gouge with rounded VC clasts within gouge
223.2	226.3	BRKZ	4	Weak gouge @ start of run 224.5m. Dominant frac angle @ 30 TCA
226.3	231.3	BZ	4	No definitive lower contact within interval.
231.3	236.3	JZ	3	Blue green chl on fx...angle from 40-60 TCA
236.3	239.3	BZ	4	No def angle to measure. Black-dark green chl on fx. Strongly silicified clasts within faulted interval

Blackwater Project
Drill Summary - Structure

BW0415

From (m)	To (m)	Structure	Strength	Comments
239.3	241.2	BZ	4	Questionable lower contact @ 30 TCA. Slickensides noted perpendicular TCA on fx surface with strong hematite coating. Strike-slip faulting?
241.2	243.7	JZ	3	Dark-green black with red hem along fx
243.7	245.1	BZ	3	Sharp lower contact.
245.1	252.8	JZ	3	Red hematite dominant @ 20 TCA frac surface with dark green-black chlorite and pyrite masses
252.8	256.7	BZ	3	Slickensides on fx surface @ 253.30m subparallel TCA, normal faulting? Slickensides on fracture plane at 255.25m perpendicular TCA indicating strike-slip movement
256.7	260.4	JZ	3	Joints from 20-30 & 50 TCA, black-chlorite coated
260.4	260.5	FL	5	Chlorite gouge zone. Upper contact @ 30 TCA
260.5	267	BZ	3	Weak fault breccia. Competent clasts from 265.3-267m
267	271.2	BZ	4	Fault zone upper contact runs at approximately 5 TCA. Could be considered fault gouge with fault rock. Lower contact at approx 20 TCA
271.2	272	BZ	3	Weak, rehealed flt bx? Dominant angle at 40 TCA for fracs within interval
272	272.5	BRKZ	4	Broken zone, no gouge
272.5	274	BZ	4	Clay rich fault breccia
274	277.1	FZ	3	Gouge along 40 TCA flt plane @ 276.15m
277.1	278.1	JZ	3	Blue-green chl on joints @ 30 TCA, secondary joints @ 60 TCA
278.1	279.5	BZ	3	Clay-rich fault breccia. Po, py diss within matrix of gouge
279.5	281.6	BRKZ	4	Chl-coated fracs at 20 & 40 TCA
281.6	289.5	FZ	4	Fault breccia dominant within interval. Fault block from 286-286.6m. Strong grey-white clay. When pushed with knife, clay has a bluish tinge (minor chl from clasts?)
289.5	301.8	BRKZ	3	Broken zone separated by fault zones on either side
301.8	303.3	FZ	3	Minor gouge and blocks of VZ within fault zone
303.3	311.8	FZ	4	Gougy, fractured, fault bx
311.8	318	JZ	4	50-60 TCA joints
318	325.8	JZ	3	Joints @ 10 and 50 TCA
325.8	326.3	BZ	4	Chlorite gouge-rich flt bx with broken VC clasts
326.3	332.5	JZ	4	Chlorite-slickensides on frac surface at 331.80m, running parallel TCA
332.5	336.9	JZ	3	Joints from 60-70 TCA & 15 TCA. Coated with hematite-goethite-pyrite & chlorite

Blackwater Project
Drill Summary - Structure

BW0415

From (m)	To (m)	Structure	Strength	Comments
336.9	342.1	JZ	4	Hematite-chlorite-goethite on fracture planes with euhedral pyrite masses
342.1	345.9	FZ	4	Lower contact @ 20 TCA. Fault bx within interval
345.9	356.2	JZ	3	Chlorite-hematite-goethite on fracs with brassy pyrite. Joints @ 15 and 30 TCA
356.2	360.5	FZ	4	Strong hematite-goethite alteration within interval. Fine disseminated pyrrhotite within gougy zones
360.5	367	JZ	3	Joints from 40-50 TCA
367	372.7	JZ	4	Joints @ 10 & 60 TCA. Joints at 10 TCA make the core appear as a brkz
372.7	374.7	FZ	4	50 dTCA lower contact separating VC uphole & FT downhole
374.7	376.1	JZ	2	Prominent joints @ 20 TCA

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Drill Logs

Hole ID:	BW0416	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375451.27
Depth (m):	352	Date Started:	16/04/2012	Casing Size:	HWT	Northing:	5893399.42
Azimuth:	0	Date Completed:	20/04/2012	Casing (m):	4.5	Elevation (m):	1530
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-88
50	57.1	-87.8
100	53.2	-88
150	60.6	-88
200	67	-88.3
250	69.9	-87.9
300	72.4	-88.5
350	78.2	-88.2

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Drill Summary - Lithology

BW0416

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6.7	OB							
6.7	25.6	FLPT	ms	LAP	L	GRY	FLT	GR10	average 1cm clasts, light coloured, some faint laminations in clasts. Dark oxide frequenting fractures
25.6	29.8	VC	ms	LAP	M	GRN	DEP	GR10	sudden change to a darker, somewhat green to blue-grey rock with faint clasts visible through heavy alt'n. Appears to be mostly mafic. Upper contact a short fault gouge zone
29.8	45.8	AND	volc		M	GRY	FLT	GR10	volcanoclastic texture, into more massive andesite(?). Adjacent holes have this litho as well. Moderate to dark bluish black, fairly coarse grained. Short interval of massive andesite, then volc texture again, with bleached(?) zones or perhaps inters
45.8	50	VC	ms	LAP	L	GRY	FLT	GR10	more of a bleached VC, with increased clay alt'n, giving lighter tone
50	55.9	FLPT	fltbx	LAP	L	GRY	FLT	GR10	fault zone with lots of light coloured clay gouge, cherty. FLPT fragments
55.9	69	FLPT	ms	LAP	L	GRY	DEP	GR30+	immature FLPT, with clear laminated matrix locally, with laminated clasts as well. microbrecciated clasts
69	107.5	VC	ms	LAP	M	GRY	DEP	GR10	gradually increasing in mafic content, and rock darkening to a medium grey-green
107.5	126	VC	ms	LAP	M	GRY	FLT	GR10	more well sorted than above, overall similar clast size, same colour as above, perhaps a bit darker tone. Some laminated clasts. Bottom contact a weak fault
126	172	FLPT	lam	LAP	L	GRY	FLT	GR10	laminated clasts, local laminations in matrix, pale green-grey to light grey. Chaotic clastic environment. Lower contact in faulted zone
172	179.6	VC	lam	LAP	M	GRY	DEP	GR30+	transitional litho zone, with rare mafic clast popping up here and there; gradually increasing in frequency, a bit darker green
179.6	292.5	VC	plm	LAP	M	GRN			moderate green-grey tone, fairly clast rich in places, perhaps even clast supported in zones(?). Many different clast types
292.5	304	VC	plm	LAP	D	GRY	FLT	GR10	quickly into much more mafic content VC, quite dark overall, grey-green becoming more clast-rich towards end, with quite a few quartz clasts
304	316	AND	fltbx	LAP	D	GRY	FLT	GR30	fault gouge, completely mafic dominated, Andesite volcanoclastic texture, quite dark
316	352	AND	mas		D	GRY	UNKN		massive andesite, becoming amygdaloidal and continuing until EOH. Locally aligned elongated amygdules

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Blackwater Project
Drill Summary - Alteration

BW0416		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	25.6	T		0	FC	2	PERV	3	MTRX	1	HM	FC	3				geothite strong on fractures, as well as some moderate orange hemitite. light grey, moderately hard rock.
25.6	40	S	PERV	2	FC	1	OP	1	PERV	4	BIOT	PATC	1				suddenly into intensely ser altered with minor chl. Weak patchy brownish biotite as well.
40	45.5	S	PERV	3	MTRX	2	OP	1	PERV	3	BIOT	PATC	1	CHL	FR	3	increased chl especially on fracture planes, moderately dark green. Light grey clay specks in matrix increasing in frequency towards end of interval
45.5	50.7	S	PATC	2	FC	4	PERV	1	PATC	2							clay gouge, very cherty, some patchy sericite in more competant runs, as well as clast-like chl blotches
50.7	69.8	S		0	MTRX	4	OP	1	PATC	1							very light grey clay, dominant in matrix, cherty on fractures. weak sil overprint
69.8	80	S	CLST	2	MTRX	2	PERV	2	PERV	2							moderate pervasive ser-sil alt'n, with some clast replacement chl alt'n
80	100	S	PATC	2	MTRX	2	PATC	2	PERV	3	CHL	CLST	3	CHL	FR	1	moderate green perv chl common
100	121	S	PATC	3	MTRX	2	PATC	2	PERV	3	CHL	CLST	3	CHL	FR	3	increased chl on fracture planes. Rock slightly harder
121	127	S	PATC	2	MTRX	2	PERV	3	PERV	3	SER	CLST	2	CHL	CLST	2	moderate overall alt'n, slightly weaker chl on fractures
127	159	S	PATC	2	MTRX	2	PERV	4	PERV	2	CHL	CLST	2	SIL	OP	3	rock quite a bit harder from strong sil overprint, and pervasive silica
159	171	S	PATC	1	MTRX	2	PERV	4	PATC	2	CHL	CLST	1	SIL	OP	3	nearly no chl alt'n seen
171	199	S	PERV	3	MTRX	1	PATC	1	PERV	3	CHL	FR	4	CHL	CLST	4	sudden strong chl alt'n with associated decrease in sil
199	221	S	PERV	3	MTRX	1	PATC	2	PATC	3	CHL	FR	5	CHL	CLST	4	very dark green, almost black chl alt'n on fractures
221	250	T	CLST	4	MTRX	1	PERV	2	PERV	2	CHL	FR	5	HM	FR	1	very dark chl on fracture planes,
250	254	S	CLST	5	MTRX	1	PATC	3	PERV	3	CHL	FR	5				not many fracture planes, hence no hemitite seen on any
254	257	T	CLST	5	MTRX	1	PATC	3	PERV	3	CHL	FR	5	HM	FR	1	as above with some hemitite and geothite on fracture planes
257	268	S	CLST	5	MTRX	1	PATC	3	PERV	3	CHL	FR	5				as above with no oxide minerals
268	271	T	CLST	5	MTRX	1	PATC	3	PERV	3	CHL	FR	5	HM		3	as above, with fairly strong hemite and geothite on FP's
271	292.5	S	PERV	2	MTRX	1	PERV	2	PATC	3	CHL	CLST	4	CHL	FR	4	weakening chl alt'n clast replacement and on fracture planes
292.5	295	S	PERV	3		0	PERV	2	PERV	3	CHL	FR	1				chl alt'n dropping off, in favour of sericite

Blackwater Project
Drill Summary - Alteration

BW0416		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
295	302.5	S	PERV	3		0	OP	2	PERV	3	CHL	FR	3				pale green core from moderate chl-ser alt'n. still decently hard with sil overprint
302.5	313	S	FC	3	FC	3	PERV	1	FC	4							gouge material, with lots of sericite and chl
313	352	S	FR	2		0	OP	2	PERV	2	BIOT	PATC	1				massive andesite, with brown biotite patches, moderate harness

Blackwater Project
Drill Summary - Mineralization

BW0416		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
6.7	15		0		0		0	Dbs	DEN	1							fair amount of sooty dark fine grained sulphides
15	27		0		0		0	Dbs	DEN	0.5							very sooty dark sulphides, less common than above
27	29		1		0		0	Dbs	DEN	0.1							one spot in annealed fault gouge with good grade fine py
29	44		0		0		0										no sulphides seen
44	50.5		0	VN	1		0	Dbs	DEN	1	Ga	VN	1				a couple high grade sph-gal vnlt's/fracture coatings. Several sph hairline vlnts. little sph blebs. DBS picking up suddenly
50.5	65		0	BB	0.1		0	Dbs	DEN	0.5							minor sph blebs, little bits of DBS here and there, low grade
65	79	DI	0.1	DI	0.1	DI	0.1	Dbs	DEN	0.1							traces of fine grained disseminated sulphides near end of interval, including Po
79	96	DI	0.1	CR	0.5		0	Ga	DI	0.1							trace galena seen, metallic, black
96	110	FP	0.1	CR	0.5		0										very minor overall sulphides. Bit of py on fractures
110	124	FP	0.1	CR	0.5		0	Dbs	DEN	0.5							minor DBS in hairline vnlts
124	137		0	CR	0.1		0	Dbs	VN	0.1							very minor sulphides
137	146		0		0		0	Dbs	BB	0.1							barren. Rare dark sulphide bleb
146	162		0		0		0	Dbs	BB	0.1							as above
162	170		0.1		0.5		0	Dbs	DEN	0.1							minor sph, trace other sulphides
170	175	VN	1	VN	0.5		0	Dbs	DEN	1	Apy	VN	2				high grade semi-massive aspy-py-sph in chl gouge. Good DBS around, appears py-rich, likely more high grade chl gouge that has been washed out of this poor recovery seam
175	180	DI	0.1	CR	0.1	DI	0.1	Dbs	DEN	0.1							minor overall sulphides
180	182	DI	0.5	DI	2	DI	0.1	Cp	CR	0.1							sudden increase in sulphides, trace cpy in with clast replacement sph
182	199	DI	2	DI	3	DI	1	Cp	CR	0.1							increasing grade from above
199	210	DI	1	DI	3	BB	3	Cp	FP	0.1							increased Po. Also increase in greenish yellow py euhedral on fracture planes. Other sulphides good grade

Blackwater Project
Drill Summary - Mineralization

BW0416		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
210	224	DI	1	DI	3	BB	2	Cp	FP	0.1							sulphides abundances pretty much as above, with increasing sph-py vnlt's
224	233	VN	1	CR	5	BB	3	Cp	SP	0.1							very high grade sph replacing clasts, blebs of Po, trace of cpy in with sph
233	243	VN	2		3	BB	3	Cp	SP	0.1							As above, with perhaps a percent more py on vnlts and FP's, and a percent less sph
243	251	VN	2	CR	2	BB	1										quite a bit of structure controlled (vnlts/fractures/breccia veins) mineralization in this interval
251	260	VN	2	CR	1	BB	2	Cp	SP	0.1	Apy	VN	2				py in shoddy vnlts and on FP's; sph clast replacement and fine grained disseminated, Po blebs, trace cpy(?). High grade aspy vein with quartz. Local specks of disseminated aspy around this vein
260	270	VN	1	CR	3	BB	2	Cp	SP	0.1							similar mineralization style as above, with less overall grade. Trace cpy(?)
270	279	VN	2	CR	1	BB	3										py also in clast replacement with sph. Po blebs increasing in size and frequency towards end of interval
279	287	VN	1	CR	2	BB	3	Cp	SP	0.5							sph with po blebs and clast replacement
287	292	EU	1	CR	2	BB	2	Cp	SP	0.1							py vnlts as well as euhedral on FP's
292	303	VN	1	CR	1	BB	1										sulphides decreasing in grade overall
303	311	LAM	2	LAM	2		0										gouge material, modest grade sulphides smeared within, mainly py-sph
311	320	DI	0.5	DI	1	BB	1										into andesite, a bit of disseminated py, sph in patches around 1 % overall
320	330		0		0	BB	0.5										po blebs, bright within massive andesite
330	352		0		0	BB	0.5										As above

Blackwater Project
Drill Summary - Structure

BW0416

From (m)	To (m)	Structure	Strength	Comments
0	22	BRKZ	2	rough fracturing, the odd fracture with a bit of gouge/crush on it. rough joint orientation at 40 deg TCA
22	40	BRKZ	4	various fracture orientaitons, very broken/busted up core
40	45.2	BRKZ	1	pretty competant zones, with interstitial busted up core, joint orientations at roughly 40 and 65 deg TCA
45.2	45.4	FL	4	short strong gouge zone. chl-clay. orientation roughly 45 deg TCA
45.4	50.5	BRKZ	4	rubbly, then broken with rough fracturing. Some clay annealed fractures
50.5	56.1	FZ	4	very cherty, sandy gouge, some clay. Pretty big interval of consistantly gouged/ brecciated. Bottom contact against competant core at 25 deg TCA
56.1	65.1	BRKZ	4	very broken core with shard-like fragments
65.1	68.3	JZ	3	relatively competant core, many joints at 40 deg TCA, some good planar jointing
68.3	73	BRKZ	5	increasing broken fragments, to nearly rubble and some gouge
73	79.5	BRKZ	2	fairly competant, but quite rough fractures. apporximate joint sets at 30-40 deg TCA, and around 65 deg TCA
79.5	88	BRKZ	2	fairly competant, but hard to measure frequent rough fractures;
88	92.3	FZ	2	low intensity fault, with some gouge and broken rock. lower contact rough, but measured around 40 deg TCA
92.3	101.3	BRKZ	3	blocky/busted fracturing, various angles. rough fracturing
101.3	104.5	FZ	2	broken/rubble; minor gouge. unclear contacts
104.5	114.5	BRKZ	4	very broken rock, except near the end, where it becomes briefly more competant
114.5	115.6	FZ	2	gouge/broken
115.6	121	BRKZ	2	various fracture angles. some clay-annealed fractures, very small; overall fairly competant with pretty long runs average
121	127	BRKZ	4	very broken, with minor gouge
127	140	JZ	1	rare fracturing, but measured many at low angle TCA, close to 15 deg
140	158.4	JZ	2	more jointing than above, but still quite competant. some 15 deg joints, but also a set measured at 30-35 degTCA
158.4	161.5	BRKZ	4	zone of quite broken rock, nearing rubble
161.5	164.5	JZ	3	brief competant zone
164.5	175.5	FZ	3	some annealed gouge, sandy gouge and broken rock
175.5	179.8	JZ	4	joint sets at 25-35 deg and around 50 deg TCA
179.8	182.5	BRKZ	4	well broken up, somewhat shard-like fragments, perhaps from frequent 25-30 deg TCA fractures
182.5	189.4	JZ	3	joint sets at roughly 50 and 20 deg TCa

Blackwater Project
Drill Summary - Structure

BW0416

From (m)	To (m)	Structure	Strength	Comments
189.4	197.5	FZ	4	annealed chl rich gouge/fault breccia with interspaced broken rock
197.5	207	JZ	4	Low angle fractures @ ~5 deg TCA make it appear more broken than it is.
207	216	JZ	5	dominant joint set at 50 deg TCA. Quite a bit of jointing.
216	223	JZ	2	few planar jointing at dominantly 40 deg TCA
223	239	JZ	3	joint sets at 40-45 deg and roughly 20 deg TCA
239	246.5	JZ	5	sections of broken rock, mostly joint zone with many joints at 35 deg TCA
246.5	248.5	BRKZ	2	broken zone with breccia veining, orientation of bx vning at 30-40 deg TCA
248.5	254.5	JZ	3	joints mainly at 30 deg TCA. maybe a minor set at around 50 deg tCA
254.5	256	BRKZ	3	well busted up core, with varying angles TCA
256	268	JZ	2	major joint set at 30 deg TCA
268	271	BRKZ	3	broken/rubbly, also looks to have had weathering effects to it(?)
271	298	JZ	5	joint zone with interspaced zones of broken rock. various angles
298	302.5	BRKZ	4	very broken, with a few low angle fractures at 15 deg TCA, with a major set at 50
302.5	307	BZ	4	fault breccia zone, significant gouge, with fragments suspended within, sub rounded. orientation at approx 35 deg TCA
307	311.3	FZ	5	significant fault gouge, sparse rounded fragments suspended within
311.3	313	BZ	3	fault breccia, significant gouge
313	352	JZ	1	stick rock to the end of the hole. some fractures with calcite fracture coatings on them, average orientations at around 45 deg, perhaps another minor set at 30 deg TCA

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Blackwater Project
Drill Logs

Hole ID:	BW0417	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375651.29
Depth (m):	378.5	Date Started:	16/04/2012	Casing Size:	HWT	Northing:	5893199.38
Azimuth:	0	Date Completed:	21/04/2012	Casing (m):	9.1	Elevation (m):	1549
Dip:	-90	Logged By:	TOl	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	347.7	-89.9
100	125.3	-88.9
150	348.4	-88.9
199	130	-89.3
250	144.5	-89
301	141.8	-89.5
352	122.5	-89.4

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Blackwater Project
Drill Summary - Lithology

BW0417

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	8	OB							Overburden : Rubbles + Clay/Sand gge
8	35	VC	mon	FA	MO	GRY			Mottled dark grey/greenish volcaniclastics
35	64	VC	plm	LAP	MO	GRY			Intermediate to mafic volcaniclastics with dominantly mafic clasts; patchy alteration
64	83	VC	plm	BLOCK	MO	GRN			Same as previous interval; blocky/boulder sized andesite clasts
83	100	FLPT	lptbx	LAP	L	GRN	FLT	GR10	Felsic lapilli tuff (may be brecciated felsic tuff???) a few laminated clasts in sections; bottom contact is faulted and grades into next interval
100	103.9	VC	plm	LAP	M	GRN	DEP	SH	Polymictic volcaniclastics with roughly 50-50 mafic to felsic clasts; sharp bottom contact
103.9	113	VC	plm	BLOCK	D	GRY	FLT	GR5	Dark grey/greyish black volcaniclastics with dominantly mafic- blocky andesite clasts, ~80-20 mafic to felsic clasts
113	152	VC	plm	LAP	MO	GRN	ALTFR	GR5	Volcaniclastics with mottled alteration; goes in and out of mafic cmposition in small sections at top of interval then goes int a light greenish grey (Felsic lapilli tuff/felsic tuff looking with a very few scattered mafic clasts) but may be altered/
152	167	AND	bx	LAP	D	GRY	FLT	SH	Brecciated andesite; faulted (fault gge + some competent core <0.5m) in sections; bottom contact is sharp with the fault at an angle of ~55dtca to the surface of a competent core
167	190	AND	por	CA	M	GRY			Porphyritic greyish black andesite with some local autobreccia in sections; calcite veinlets/hairlines present
190	210.1	AND	amg	CA	D	GRY	ALTFR	SH	Dark grey/greyish black andesite, amygoloidal in sections and brecciated in some sections
210.1	230	AND	amg	CA	D	GRY			Amygoloidal andesite, some auto brecciation in local sections; Increase in calcite veining
230	242	AND	por	CA	D	GRY			Porphyritic andesite with very few amygdules in small sections, calcite veinlets/hairlines present
242	273	AND	por	CA	MO	GRY			Porphyritic andesite,brecciated/auto brecciated in sections, amygoloids in small sections; patchy alteration, some bleaching/washing out around calcite veins/veinlets
273	307	AND	por	CA	MO	GRY			Altered dark grey/brownish porphyritic andesite with amygloids; increase in calcite veinlets/hairlines from previous interval; patchy alteration
307	336	AND	por	CA	MO	GRY			Altered dark grey porphyritic andesite with brownish greenish patchy alteration in sections

Blackwater Project
Drill Summary - Lithology

BW0417

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
336	362	AND	por	CA	D	GRY	FLT	GR5	Porphyritic andesite with increased calcite veining from previous interval
362	371.7	FT	fltgge	CA	M	GRN	FLT	GR10	Faulted/strongly broken felsic tuff??? With fault gge +broken up bits of core; bottom contact is a combination of fault and alteration
371.7	374.5	AND	por	CA	D	GRY			Porphyritic greyish black andesite, locally faulted/broken with fault gge

Blackwater Project
Drill Summary - Alteration

BW0417		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	13	O	CLST	1	FR	2	OP	3	MTRX	2	HM	FR	3	LIM	FR	2	Oxide zone : Some sericite in matrix,very weak chlorite in some clasts, some limonite+hematite+clay on fracture planes, silica overprint
13	19	T	CLST	2	FR	2	OP	2	MTRX	2	LIM		1				Transition zone: Sericite in matrix, chlorite in clasts, clay on fracture planes, weak silica as overprint, trace oxides present
19	32.6	S	OP	3	PATC	3	PATC	2	MTRX	2							Some chlorite as overprint, patchy clay and silica ateration, some sericite in matrix
32.6	44	S	OP	4	PATC	3	PATC	2	MTRX	1							Chlorite dominant alteration as overprint; patchy silica and clay, weak sericite
44	64.47	S	FR	2	FR	2	OP	3	MTRX	1							Weak sericite in matrix, some chlorite and clay on fracture planes, silica as overprint
64.47	71	S	CLST	2	FR	2	OP	3	CLST	2							Some sericite and chlorite in clasts, some chlorite on fracture planes, clay on fracture planes and silica as overprint
71	83	S	FR	3	CLST	2	OP	3	MTRX	1							Sericite in matrix, chlorite on fracture planes and some in clasts, clay in clasts, Silica as overprint
83	100	S	FR	3	FR	2	OP	3	CLST	3							Moderate sericite in clasts, chlorite on fracture planes and some patchy in clasts and matrix, clay on fracture planes and silica as overprint
100	103.9	S	CLST	3	FR	3	PERV	3	CLST	2							Less sericite in clasts than previous section, some chlorite in clasts and fracture planes alongside clay, some pervasive silica
103.9	113	S	OP	4	PATC	3	PATC	4		0							No sericite, strong chlorite as overprint/fracture planes, patchy clay and strong patchy silica
113	115	S	FR	2	FR	2	OP	3	CLST	2							Weak sericite in clasts, some chlorite on fracture planes, some clay on fracture planes and some silica as overprint
115	117	S	FR	3	FR	3	OP	4		0							Moderate chlorite and clay on fracture planes, some silica as overprint
117	152	S	PATC	2	PATC	4	PATC	2	CLST	3							Some sericite in clasts, chlorite on fracture planes, strong patchy clay and weak silica

Blackwater Project
Drill Summary - Alteration

BW0417		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
152	167.5	S	FR	4	PATC	3	PATC	3		0							No sericite, strong chlorite on fracture planes, patchy clay and patchy silica
167.5	172.8	S	FR	3	FR	2	OP	3		0	CAL	FC	1				Very weak fracture controlled calcite, some chlorite + clay on fracture planes, silica as overprint
172.8	191	S	FR	2	PATC	3	PERV	4	INFILL	1	CAL	VN	2	ANK	PATC	1	Some calcite in veinlets/hairlines and fractures, weak patchy ankerite/iron carbonate staining in small sections, weak chlorite on fracture planes, some patchy clay and weak sericite as infill in porphry spaces
191	210.1	S	FR	2	PATC	2	PERV	4	MTRX	1							Weak sericite in matrix, patchy clay, pervasive silica, chlorite on fracture planes
210.1	230	S	FR	2	FR	1	PERV	4	MTRX	1							Very similar alteration to previous interval, decrease in clay found mostly on fracture planes
230	239.9	S	FR	3	FR	1	PERV	3	MTRX	1							Reduced silica, increased chlorite on fracture planes, weak sericite in matrix, clay on fracture planes
239.9	271	S	FR	3	FR	1	PERV	4	MTRX	1							Weak sericite in matrix, clay and chlorite on fracture planes, strong pervasive silica
271	278	S	FR	2	FR	1	PERV	4	MTRX	1							Slight decrease in chlorite on fracture planes, weak clay on fracture planes, strong pervasive silica
278	307	S	FR	2	PATC	1	PERV	3	MTRX	1							Patchy clay, slight decrease in silica, weak sericite in matrix, some chlorite on fracture planes
307	331	S	MTRX	2	PATC	2	PERV	3	MTRX	1	ANK	PATC	2				Some chlorite in matrix and on a few fracture planes, weak patchy clay, moderate pervasive silica and some patchy ankerite/iron carbonate (brownish discolouration)
331	360	S	MTRX	3	FR	1	PERV	4	MTRX	1	ANH	PATC	3				Some chlorite in matrix and in calcite veins/veinlets, very weak clay on fracture planes, strong pervasive silica and moderate ankerite/iron carbonate alteration in patchy sections
360	362	S	FR	2	FR	1	PERV	4	MTRX	1	ANK	MTRX	2				Weak sericite in matrix, some chlorite on fracture planes, very weak clay on fracture planes, strong pervasive silica and some ankerite in matrix

Blackwater Project
Drill Summary - Alteration

BW0417		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
362	371.7	S	FR	3	FR	3	OP	3	MTRX	3							Some sericite in matrix, moderate to strong chlorite on fracture planes, clay on fracture planes, moderate silica as overprint
371.7	374.5	S	FR	3	FR	3	OP	3		0							Chlorite on fracture planes, some patchy clay and some on fracture planes, some silica as overprint

Blackwater Project
Drill Summary - Mineralization

BW0417		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
13	19	SP	0.1		0		0										Trace Sph
19	25.36	BB	0.5	BB	0.1		0										Bleby Py and some scattered specks; bleby Sph; no Po
25.36	35.5	VN	1.5	BB	2	BB	0.1	Dbs	DEN	1							Py in stringers - random/cross cutting; Sph in blebs; Po in disseminated blebs; Dendritic Dbs present
35.5	49	DI	1	BB	1.5	BB	0.5	Dbs	DEN	0.5	Grnt	CR	0.1				Disseminated Py, some in stringers; bleby Sph; bleby Po; some Dbs present; Trace garnets (~0.5-1mm)as clast replacement
49	61	VN	1	BB	1	BB	0.5	Dbs	DEN	0.1							Py in stringers and some Sph found in some stringers; bleby Po and bleby Sph; Dbs present
61	71	BB	1.5	BB	2	BB	0.1	Dbs	DEN	0.5							Bleby sulphides - some py found on fracture planes;trace Po; some Dbs present
71	83	BB	1	CR	1	BB	0.5										Bleby/disseminated Py; Sph as clast replacement and in some cases are seen just around the edges of the clasts, some in blebs; Bleby Po
83	100	BB	0.5	BB	0.5	BB	0.1	Dbs	DEN	1	Apy	VN	0.5				Py in blebs, some sph in blebs and some in specks, some Dbs, Apy in veinlet, trace Po in blebs
100	103.9	SP	0.5	CR	0.1	CR	0.5	Dbs	DEN	0.1							Trace Dbs, trace Sph in clasts, some Po in clasts and some speckled Py
103.9	113	BB	1	GmR	0.5	CR	0.5										Bleby Py and some on fracture planes, some Sph replacing ground mass, some Po in clasts
113	152	BB	2	BB	1.5	BB	0.5	Dbs	DEN	1	Apy	VN	1				Py in blebs, hairlines, specks and in some clasts; bleby Po and Sph, Apy in vein, Dbs present
152	172.7	VN	1	BB	0.5	BB	1										Bleby Po and Sph, Py in veinlets/stringers
172.7	191	VN	0.5		0	BB	1										Bleby/fine grained Po, Py in veinlets/stringers and specks
191	210.1	VN	0.5	GmR	1	BB	2	Mrc	FP	0.1	Apy	VN	5				Apy in huge vein; Py in hairlines/veinlets in association with calcite, Sph as ground mass replacement/in blebs and veinlets, Disseminated Po/some replacing amygdules and in blebs
210.1	229	VN	0.5		0		1										Mostly Po in amygdules/blebs and some disseminated, py in veinlets

Blackwater Project
Drill Summary - Mineralization

BW0417		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
229	236	VN	0.5		0	VN	2	Apy	VN	5	Cp	VN	0.1				Py+Apy+Po+Cp in huge vein, some disseminated Po
236	264	VN	0.1		0	DI	1										Trace py associated with calcite veinlets/hairlines; some disseminated/fine grained Po
264	278	VN	0.5		0	VN	3	Cp	VN	0.1							Po+Py+Cp in huge vein; some py in stringers and some disseminated Po
278	307	VN	0.5		0	DI	1										Py in veinlets associated with calcite veinlets, Disseminated Po
307	336	VN	0.1	VN	0.1	BB	0.5										Bleby Po, trace Py and trace Sph in some calcite veinlets
336	362	VN	0.1		0	BB	0.5										Trace py in calcite veinlets/hairlines, some bleby/fine grained Po
362	371.7	DI	1.5	BB	2		0	Apy	VN	0.5							Disseminated/bleby Py, Sph in blebs, Apy in veinlet
371.7	374.5	VN	0.5		0	DI	0.1										Very low sulphides - some Py associated with calcite veins/veinlets, trace disseminated Po

Blackwater Project
Drill Summary - Structure

BW0417

From (m)	To (m)	Structure	Strength	Comments
0	20	BRKZ	3	Broken zone with local sections of stronger broken zones/sand gge < 0.5m
20	26.2	FL	4	Fault/clay gge with competent core ~1m in between interval
26.2	31.8	JZ	2	Joint zone with a 0.5m section of fault/clay gge between core at an angle of ~40dtca
31.8	50.4	FZ	3	Fault zone: broken up core + fault/clay gge
50.4	62.5	JZ	3	Joints mostly at 70dtca; others at 80>60 dtca; steep ones at 30/40dtca
62.5	73	JZ	2	Weak joint zone with wispy and jagged joints at 60/70dtca; some steep ones at 30/20/10dtca; some fault/clay gge on fracture planes
73	82	JZ	3	Joints mostly at 70dtca, some at 60/50dtca and a few steep ones at 30/40/10dtca
82	85	BRKZ	2	Broken zone with broken up core and rubbles
85	108	JZ	1	Joint zone with local sections of strong broken zones/faults (~0.5-1m sections); joints mostly at 40dtca others at 50>70>20dtca
108	151.6	FZ	4	Fault/clay gge + broken bits of core
151.6	166.9	FZ	3	Fault/clay gge + broken up core + competent core <0.5m; fault is at an angle of abut 55dtca to competent core of next structural interval
166.9	182	JZ	3	Joints mostly at 50dtca others at 60>40>30 dtca
182	191	JZ	4	Strong joints mostly at 60dtca others at 50>70dtca; one steep one at 30dtca
191	211	JZ	4	Strong joints mostly at 60dtca others at 40>70dtca; steep ones at 30>20dtca
211	229	JZ	3	Joint zone with local broken zones~0.2m ; joints mostly at 40dtca others at 60>70 >50 dtca
229	252	JZ	4	Joints mostly at 60dtca, others at 50>40>70dtca
252	271	JZ	3	Joint zone with local broken sections ~0.1m; joints mostly at 50dtca; others at 60>80dtca, steep ones at ~30dtca
271	279	JZ	4	Joints mostly at 70dtca; one at 60dtca and the others 40>50 dtca
279	295	JZ	2	Joint set with local strong broken zones; wispy/jagged joints mostly at ~60dtca, others at 40/50dtca
295	307	JZ	3	Joint zone with local broken zones; joints dominantly at 40dtca others at 50>60>70dtca
307	336	JZ	3	Joint zone with a few local broken zones <0.5m, joints mostly at 60dtca some at 50>40 dtca
336	355	JZ	4	Strong joints mostly at 60/70dtca, others at 50/30/40dtca
355	362	JZ	3	Joints mostly at 60dtca, steep ones at 30/20/10dtca
362	370.2	FZ	3	Fault gge + broken bits of core
370.2	374.5	JZ	2	Weak joint zone with wispy/ jagged joints and local broken/faulted zones; joints mostly at 60dtca, others at 60/30/80dtca

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Blackwater Project
Drill Logs

Hole ID:	BW0418	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375051.04
Depth (m):	361.49	Date Started:	16/04/2012	Casing Size:	HWT	Northing:	5893000.12
Azimuth:	0	Date Completed:	21/04/2012	Casing (m):	0	Elevation (m):	1582
Dip:	-90	Logged By:	MYo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	217.2	-89.9
91.44	14.8	-89.9
137.2	34	-89.9
182.9	138.7	-89.7
228.6	156.4	-89.6
274.3	266.5	-89.3
320.0	166.5	-89
359.7	171.6	-89.1

Blackwater Project
Drill Summary - Lithology

BW0418

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10.39	OB							
10.39	27.43	VC	lpt	LAP	MO	GRN	DEP	GR30	weakly altered portions of core are mafic dominant. Alteration front create a felsic dominant appearance!
27.43	64.01	VC	lam	LAP	L	GRN			likely altered mafics. Alteration obscuring protolith
64.01	107.4	VC	lpt	LAP	MO	GRN	DEP	GR30	Fragmental Volcanicclastic. 2% chlorite replaced clasts assumed to be mafic origin. Strongly altered zone obscuring the protolith
107.4	114.8	VC	volc	LAP	MO	GRN	DEP	GR10	Fragmental Vocaniclastics with silica flooding of the matrix. Possibly hydrothermal brecciation.
114.8	152	VC	volc	LAP	L	GRN			bleached/felsic dominated VC. 1-2% chlorite clasts. laminated/massive locally; possibly blocks or alteration obscuring texture.
152	234.2	VC	obsalt	LAP	L	GRN			altered fragmental unit with chlorite replacing of clasts; 1% chl clasts. occasionally laminated clasts and massive textureless alteration
234.2	336	FT	obsalt		L	GRN			altered massive unit with primary textures destroyed by alteration. Protolith unknown.mottled light green and grey.
336	361.5	VC	volc	LAP	MO	GRN			Various shades of green and grey mottled VC. Chlorite and sericite alt.

Blackwater Project
Drill Summary - Alteration

BW0418		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10.39	27.43	T	CLST	2	CLST	3	PATC	2	PERV	3	LIM	PATC	2	HM	FR	3	fracture controlled ox. Sulfides found typically in dissolution cavities. Bleached alteration of intermediate/mafic rxs. Sil and Clay attributed to the bleaching. Increased clay likely due to meteoric waters.
27.43	56.7	T	CLST	2	CLST	2	PATC	3	PERV	3	LIM	PATC	2	HM	FR	3	Clay replacing clast and found pervasive with sil occasionally overprinting .
56.7	67.03	S	PATC	2	CLST	3	PERV	3	PERV	2							Chl becoming patchy. Sil overprinting
67.03	114.2	S	CLST	3	PATC	3	PERV	4	PERV	3							Chlorite found in patches and replacing clasts. Sil is strongly pervasive; intense within matrix from 107.40-114.80m; possibly hydrothermal breccia? clay/sericite replaced clasts
114.2	164.4	S	CLST	3		0	PERV	4	PERV	3							Ser-Chl overprinted by sil.
164.4	234.2	S	FR	3		0	PERV	4	PERV	3							Patchy Chl. Overprinted by Sil.
234.2	335.4	S	PATC	3		0	PERV	4	PATC	3	CHL	FR	3				Ser-Chl-Sil seems is patchy with grey silica patches without ser/chl
335.4	361.5	S	CLST	3		0	MTRX	3	CLST	3	CHL	FR	3				Weaker Silicification has presumably left primary texture unobscured.

Blackwater Project
Drill Summary - Mineralization

BW0418		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10.39	30.48		0		0		0	Grnt	BB	1	Dbs		0.1				
30.48	44.3	BB	1		0		0	Grnt	BB	1	Dbs		0.5	Apy	FG	0.1	Py found in dissolution vuggs
44.3	56.3	BB	1	BB	0.5		0	Grnt	BB	0.5	Dbs		1	Apy	FG	0.1	
56.3	64	BB	2	BB	0.5		0	Grnt	BB	0.5	Dbs		0.5				Py found as stringer veinlets and blebs
64	96.01	BB	1.5	DI	0.5		0	Dbs	DEN	4							Pyrite found in DBS. DBs also as stringers and and blebs
96.01	115.8	BB	3	SP	0.5		0	Dbs	DEN	0.5							Py from fine grained to blebs. Dbs increasing down interval
115.8	137	VN	4	SP	1		0	Dbs	DEN	1							large Py blebs clustered in a planer shape (suedo-veined) likely due to relic permeability/fractures.
137	149.4	VN	3	VN	0.5		0	Dbs		1.5	Cp	VN	0.5	Ga	DI	0.1	Interaval has PY-Cpy veins occasionally. disseminated py sp and ga.
149.4	166.6	VN	2	SP	0.5	BB	0.5	Dbs		3							Py found as veins and
166.6	207.5	BB	0.5	BB	0.5	BB	0.5	Dbs		0.5	Grnt	BB	0.1				garnets locally
207.5	251.5	DI	0.5	DI	0.1	BB	0.1	Dbs		0.5							Predominantly DBS/fine grained sulfides
251.5	277.4	DI	1	SP	0.1	BB	0.1	Dbs		0.5							
277.4	298.2	BB	1	SP	0.5	BB	0.1	Dbs		1							Py found in dissolution vuggs.
298.2	317	DI	0.5	BB	1	BB	1	Cp	FG	0.1	Dbs		0.1				Cpy found in traces within other sulfide blebs
317	336	BB	1	BB	0.5	BB	0.5	Dbs		0.1							Py as blebs and stringers
336	361.5	DI	1	BB	1	BB	0.5										Py fine grained and veined/fracture coatings

Blackwater Project
Drill Summary - Structure

BW0418

From (m)	To (m)	Structure	Strength	Comments
0	64	JZ	3	
64	133.9	JZ	3	
133.9	179.2	FZ	3	broken with gouge locally. intact/moderately jointed between faults.
179.2	179.9	BZ	3	
179.9	237.7	JZ	3	joints at various angles tca. several joints running at 10deg creating attributing to mechanically broken zones
237.7	247.6	BRKZ	2	broken with moderately jointed zones between broken core.
247.6	259.1	JZ	3	
259.1	262.3	BRKZ	3	several joint sets; one running down core axis
262.3	297.2	JZ	4	multiple joint sets. one set running down core axis.
297.2	302.2	BRKZ	4	
302.2	333.3	JZ	3	35-45deg TCA seems to be most prevalent
333.3	337.8	BRKZ	3	joints running down core axis. significant mechanical breaking of core likely
337.8	343	JZ	3	
343	346.2	FZ	3	broken core with small zone of gouge; some intact core within interval
346.2	355	JZ	3	
355	361.5	FL	4	

Blackwater Project
Drill Logs

Hole ID:	BW0419	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375251.89
Depth (m):	430	Date Started:	21/04/2012	Casing Size:	HW	Northing:	5893099.41
Azimuth:	0	Date Completed:	01/05/2012	Casing (m):	2	Elevation (m):	1586
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
49	47.7	-88.6
100	320.4	-88.5
155	83.1	-89.6
198	93.6	-88.5
202	280.1	-88.4
250	288.9	-88.9
301	272.6	-88.7
352	234.8	-88.7

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Blackwater Project
Drill Summary - Lithology

BW0419

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
2	25.7	AND	autbx		D	GRY	DEP	GR30	Homogenous, finely fragmental andesite, largely rubbly. No distinct pheno's or amygdules.
25.7	32.5	FLPT	cs	LAP	L	GRY	UNKN		~80-90& clasts, clasts are angular - subangular, 2-40mm wide, frequently laminated. Lower contact lies in interval of lost core.
32.5	37.4	VC	ms	LAP	D	GRY	UNKN		Polymicitc VC, clasts are typically aphanitic and massive with wide variety of shades of grey, occasionally weakly laminated. Typically 2-30mm wide, subangualr - subrounded, morphologically distinct from above interval.
37.4	57.85	FLPT	cs	LAP	L	GRY	DEP	GR10	~80-90& clasts, clasts are angular - subangular, 2-40mm wide, frequently laminated. Lower contact lies in interval of lost core.
57.85	74.7	VC	ms	LAP	MO	GRY			Interval of mixed fragmental rocks, majority is largely andesitic matrix supported with ~15% small felsic frgments. Upper 5m is more matrix supported and ~60% mafic.
74.7	79	FLPT	cs	LAP	L	GRY	DEP	GR30	~80-90& clasts, clasts are angular - subangular, 2-40mm wide, frequently laminated. Lower contact lies in interval of lost core.
79	114	VC	ms	LAP	D	GRY	DEP	GR10	Polymicitc VC, clasts are typically aphanitic and massive with wide variety of shades of grey, occasionally weakly laminated. Typically 2-30mm wide, subangualr - subrounded, morphologically distinct from above interval.
114	196	FLPT	cs	BLOCK	D	GRY			Clasts range in size from 1-3mm wide breccias to 50cm wide interbally fragmented laminated blocks. Hbx texture is present as mosaic fit fragments of 2-20mm wide angular clasts.
196	223.6	FLPT	cs	BLOCK	MO	GRY	ALTFR	GR30+	pervasive stong silica alteration obsures 90% of texture
223.6	265	FLPT	cs	BLOCK	MO	GRY	DEP	GR30+	Clast supported blocks with vc tecture, crosscutting hydrothermal breccia has <1cm clasts and silica matrix.
265	343	FLPT	lam	BLOCK	L	GRY	ALTFR	GR30+	Sub roundeed clasts with lamination bending around them, very large blocks of primarily tuffacious material and unit is actuall 90% clasts, of boulder size.
343	401	FLPT	lam	BLOCK	L	GRY	ALTFR	GR30+	Strong silica alteration is texture destructive, locally clastsic texture can be seen, laminatons on m scale are also visibale
401	430	FLPT	lam	BLOCK	L	GRY			Silica alteration decreases in intensity, locally obscures texture, Breccia texture is can faintly be seen through out unit.

Blackwater Project
Drill Summary - Alteration

BW0419		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2	25.5	S	FR	1		0	PERV	1		0							Occasional weak chloritic alt with clacite on fractures, trace sil as fine flecks disseminated throughout matrix.
25.5	32.5	T		0	CLST	3	PERV	4	PATC	3							Pervasive strong silica, smaller clasts are freequently soft white clay altered, and pale greenish grey sericite is present patchily throughout.
32.5	37.5	S		0		0	PERV	4		0							Pervasive strong sil, some clasts have haloe of white silica, wheraes remainder is not discloured, but unifromly hard and glassy.
37.5	57.8	T		0	CLST	3	PATC	3	PATC	2							Locally strong silica, smaller clasts are frequently soft white clay altered, and pale greenish grey sericite is present patchily throughout.
57.8	74.5	S	FR	4		0	PATC	2	PERV	1							Frequent fractures are pervasively chloritic, and short gougy intervals are also highly chloritic. Sil alt is patchy, typically forming matrix, but locally also affecting clasts. Trace ?sericite is visible as fine soft white flecks disseminated throughout.
74.5	79	S	FR	1	CLST	3	PERV	3	CLST	3							Clasta are variously softish white clay - pale pistachio green sericite. Matrix and remainder of clasts are quite stringly silicified thougfh texture is absolutely intact. Occasional fractures in gougy zones are chlorititc.
79	114.5	S	FR	3		0	MTRX	3	PERV	1	CHL	CLST	2				Alt is consitient throughout interval. Matrix si near pervasively silicifed, mafic clasts are either ?unaltered or chloritized. Sericite is sporadically present throughout as fine disseminated white flecks. Fractures are typically moderately chloritic.
114.5	121	S	PATC	2	CLST	1	PERV	3	CLST	3							Patchily bleached, clasts are typically creamy white pale green sericite alt, occasioanally soft white clay. Pervasive moderate sil, not texture destructive at all, patchy chlorite.
121	154.4	S	CLST	3		0	PERV	4	PATC	1	CHL	FR	3				Strong sil alt, though texture close to pristine. Chlorite is focussed in certain layers in clasts, locally very intense. Trace sericite visibble in occasional centimetric 'windows' in sil-chl alt.

Blackwater Project
Drill Summary - Alteration

BW0419		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
154.4	176	S	CLST	3		0	PERV	4	PATC	2	CHL	FR	3				Strong sil alt, though texture close to pristine. Chlorite is focussed in certain layers in clasts, locally very intense. Quite frequent 2-7cm wide patches of sericite visible in 'windows' in sil-chl alt associated with finer hydrobreccia textures..
176	196	S	PATC	2	PATC	1	PERV	4	PERV	2	CHL	FR	3				Strong, locally texture destructive sil alt overprinting mild pervasive ?ser - chl alteration giving mottled green-grey hue to core. Occasional 3-10cm wide patches of quite strong clay alt producing creamy white clasts.
196	265	S	PATC	3	CLST	1	PERV	4	PERV	2	CHL	FR	3				silica alteration overprints other alterations.
265	278.5	S	FR	3		0	PERV	4	BN	3							chlorite and sericite along lamination with strong silica in matrix of breccia local fine cross cutting angular breccia.
278.5	285	S	FR	3	PERV	0	REP	5		0							texture destructive silica alteration.
285	319	S	FR	3		0	PERV	4	BN	3							chlorite and sericite along lamination with strong silica in matrix of breccia local fine cross cutting angular breccia.
319	332	S	FR	3		0	PERV	4	BN	2							clasts in crusscutting breccia are locally white, silica altered
332	343	S	FR	3	FR	4	PERV	4	PERV	2							strong clay alteration along some fracture, chlorite on others, locally clay alteration along grain boundries.
343	351.5	S	FR	3	FR	4	PERV	4	PERV	2							strong clay alteration along some fracture, chlorite on others, locally clay alteration along grain boundries. Texture destructive silica replacement and alteration.
351.5	412.8	S	FR	3	FR	3	PERV	5	PERV	2							chlorite alteration along fracture, locally clay alteration along grain boundries. Texture destructive silica replacement and alteration.
412.8	415	S	FR	2	PERV	4		0	PERV	4							Strong sericite and clay alteration in fault zone.
415	430	S	FR	3	FR	3	PERV	4	PERV	2							chlorite alteration along fracture, locally clay alteration along grain boundries. Texture destructive silica replacement and alteration.

Blackwater Project
Drill Summary - Mineralization

BW0419		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2	27		0		0	DI	0.1										Trace po disseminated throughout in rarely visible specks.
27	32.5		0		0		0	Dbs	DEN	0.1	Hm	FC	0.5				Occasional moderately well develooped strands of DBS. Fe oxide on and around fractures.
32.5	37.5		0		0	SP	0.1	Grnt	CR	0.1	Hm	FP	0.1				Occasional very fine magnetic specks, trace Haem on fractures. Occasinal mottled creamy - resinous black clast - ?decomposing garnets.
37.5	57.8	SUBH	0.1		0	SUBH	0.1	Dbs	DI	0.5	Hm	FC	0.5				Consistently dissemoinated 1-5cm long strands of DBS with no preffered orientation. Patchy intervals with 2-3mm wide cubic py and po, often partially oxidized leaving voids.
57.8	74.5	CR	0.1	CR	0.1	SP	0.1	Grnt	CR	0.1							Sporadic small clasts being replaced by variously garnet, py, red sphal and po. Po also in scarce very fine specks.
74.5	79	SP	0.1	DI	1		0	Dbs	DI	0.5							Millimetric sooty balc to sphaleritic blebs and stringers throughout, also occasional fine specks of pyrite, all replacing matrix and clasts alike. Sooty blebs are often associated with short strands of DBS
79	90		0	CR	0.5		0										Sparsely mineralized, sphal is typically partially replacing mafic clasts, very occasionally quite extensively.
90	98	FP	0.1	CR	0.5	SP	0.1	Py	GOU	0.1							Quite frequent but sparse and patchy fine py on fractures and disseminated in gouge. Occasional sphal and trace po replacing mafic clasts.
98	114.5		0	CR	0.5		0										Occasional 1-4mm wide blebs of sphal replacing clasts, usually mafics but occasionally following laminae in felsic clasts.
114.5	123.5	SP	0.1	CR	0.1	SP	0.1	Dbs	DI	2.5							SHort strands (5-30mm) of DBS disseminated throughout, very occasionally with visible py in their hearts. Trace po in clusters of fine specks, occasioanl sphal following laminations in clasts.

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Blackwater Project
Drill Summary - Mineralization

BW0419		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
123.5	135	DI	0.5	SP	0.1	SP	0.1	Dbs	DI	1							DBS is in short (2-10mm long) strands disseminated throughout, also present as millimetric sooty blebs. Py is associated with DBS as millimetric specks/blebs.
135	155	SP	0.1	CR	0.1	SP	0.5	Dbs	DI	0.5							DBS steadily decreasing in density downhole, forming short (2-5mm) strands. Po in millimetric irregular blebs, sphal and py very scarce
155	160	FP	0.1	SP	0.1	SP	0.5	Ga	FP	0.1							Quite frequent clusters of fine Po specks, very occasionally with sphal. Occasional fracture planes have fine galena>py
160	167.7	SP	0.1	SP	0.1	SP	0.5	Dbs	DEN	0.5	Py	VN	0.1				Fine specks of Po >py>sphal disseminated sparsely throughout. Also patchy DBS, locally associated with very fine py veinlets.
167.7	179	BB	1	SP	0.5	SP	0.1	Dbs	DEN	1.5							Increasingly mineralized downhole. Long strands of DBS throughout, locally following laminae in clasts. 1-4mm wide irregular blebs of py, smaller sphal and trace po disseminated throughout, matrix and clasts alike.
179	196	BB	0.5	BB	0.5	BB	1.5	Dbs	DEN	1	Py	DI	0.5	Py	VN	0.5	Heavily mineralized. Frequent 1-4mm wide blebs of sub-uehedral po>sphal>py, Short - medium length strands of DBS scattered throughout, locally thick and well developed. Fresh broken surfaces show dine py disseminated throughout. Veined py is rare, bu
196	209.5	BB	2		0	BB	1	Dbs	DEN	2	Apy	EU	0.1	Py	CR	1	increasing sulphide, is increasingly clast replacment. EU vfg Ap in blebs with Sp, possible Ga.
209.5	223	BB	2		0	BB	1	Dbs	DEN	2	Apy	EU	0.1	Py	DI	1	
223	240	BB	2		0	BB	1	Dbs	DEN	2				Py	VN	1	Py in discontinous Vains, possible strain related.
240	253	BB	1	BB	1	BB	1	Dbs	DEN	1	Apy	EU	0.1	Ga	BB	0.1	vfg Ap in blebs with Sp
253	268	BN	1	BN	2		0	Dbs	DEN	2	Py	VN	0.1				py and sp along banding.
268	278.5	BN	1	BN	2		0	Dbs	DEN	2	Py	VN	0.1				Dbs habit resembles that of biotite blades.
278.5	288	BB	1	BB	1	BB	1	Dbs	DEN	2	Py	VN	0.1				aggregates fo Sp, Py, Po.

Blackwater Project
Drill Summary - Mineralization

BW0419		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
288	294	BB	2	BB	0.5	BB	1	Dbs	DEN	1	Py	VN	0.1				increaseing Po. Sp is 2-3% locally over 30cm absent in other short intervals.
294	319	BB	1	BB	0.5	BB	1	Dbs	DEN	1	Py	VN	0.1				decreasing TS
319	341.5		0		0	BB	2	Dbs	DEN	1	Py	VN	0.1				Po in blebs with fien dbs halos or blebs with dendritic tendrals.
341.5	349.5	BB	1	BB	0.5	BB	2	Dbs	DEN	1	Apy	VN	0.1	Sp	VN	0.1	Veinlets of Py, Apy, and Sp. Py, Sp, Po and dbs in blebs.
349.5	370	BB	1	BB	2	BB	0.5	Dbs	DEN	1	Apy	BB	0.1	Py	VN	0.1	Veinlets of Py. Blebs of Sp, Py, Po and trace Apy.
370	398	BB	1	BB	2	BB	0.5	Dbs	DEN	0.5	Apy		0.1	Py	VN	0.1	Veinlets of Py. Blebs of Sp, Py, Po and trace Apy. decreasing dbs
398	415	BB	0.5	BB	2	BB	1	Dbs	DEN	0.5				Py	VN	0.1	Decreaseing Py and increasing Po, silica alteration is decreasing.Dbs is decreasing.
415	430	BB	0.5	BB	2	BB	1	Dbs	DEN	0.5	Py	VN	0.1				Decreaseing Py and increasing Po, silica alteration is decreasing.Dbs is decreasing. Dbs is 0.2% in last m to EOH.

Blackwater Project
Drill Summary - Structure

BW0419

From (m)	To (m)	Structure	Strength	Comments
2	19.7	BRKZ	3	Intermittently rubbly, otherwise fractured.
19.7	21	FZ	2	Weak fault breccia development, rubbly
21	26	BRKZ	3	Moderately rubbly throughout.
26	34	JZ	3	Jointed, locally somewhat rubbly.
34	43	BRKZ	4	Upper 6m is ~10% recovery - no evidence of structure but could be washed away fault. Otherwise broken.
43	58	JZ	3	Quite heavily jointed throughout.
58	63.4	FZ	3	Rubbly throughout with minor gouyge development and locally quite intense fracturing.
63.4	68	JZ	4	Heabily jointed, borderline broken.
68	77.5	FZ	4	Rubbly throughout, frequently moderate gouge development and high fractured ensity.
77.5	86	JZ	3	Moderately jointed
86	91	FZ	3	Very rubbly throughout but only trace gouge, ?washed out?
91	97	JZ	2	30-60degTCA
97	106.5	BRKZ	3	Rubbly throughout, no evidence of structure
106.5	126.5	JZ	2	50-60degTCA
126.5	131	BRKZ	2	Moderately rubbly
131	135	JZ	2	45-60degTCA
135	153.6	BRKZ	4	Locally very rubbly, ~70% rubble in total, occasional very weak gouge development
153.6	166.7	JZ	2	Occasional clean planar fractures
166.7	173	FZ	3	Rubbly throughout with occasional weak gouge development, majority of gouge is between 170.5-171.5m
173	196	JZ	2	Fractures at 15-40degTCA
196	252	JZ	3	joints @ 20, 50 and 70 deg to CA, locally broken core from joint interaction.
252	252.5	FL	4	Sooty sulphides in fault gouge.
252.5	331	JZ	2	joints @ 10, 30,60.
331	341.5	JZ	4	Joints @ 15, 30.
341.5	342	FL	4	Fault gouge is 50% clasts, milled, gouge is silt to clay
342	359	JZ	2	joints @ 20, 40.
359	380.3	JZ	1	joints @ 30, 50, 80.
380.3	384.1	JZ	4	joints @ 0 and 40, locally broken core.

Blackwater Project
Drill Summary - Structure

BW0419

From (m)	To (m)	Structure	Strength	Comments
384.1	412.8	JZ	1	joints @ 30, 50, 80.
412.8	415	FL	3	fault gouge is sericite and clay altered.
415	430	JZ	3	joints @5 and 30

Blackwater Project
Drill Logs

Hole ID:	BW0420	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375751.55
Depth (m):	400	Date Started:	20/04/2012	Casing Size:	HWT	Northing:	5892899.9
Azimuth:	0	Date Completed:	25/04/2012	Casing (m):	9	Elevation (m):	1584
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-87.5
55	212	-87.5
100	199.8	-87.2
151	206.4	-86.9
200	197.9	-86.5
250	195.4	-86.6
300	191.1	-86.2
350	199.2	-86.2
400	192.9	-85.6

Blackwater Project
Drill Summary - Lithology

BW0420

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	15	OB							Block sized clasts of AN, FT and VC. WEakly supported by washed away muds.
15	69.2	FT	lam		VL	GRY			Moderatley-Strongly Laminated (@ 45, 70 dtca and locally weakly undulating) crystal-rich rock (Feldspars?). Rock pervasivley silicified and later oxidized and broken down to clay. Crystals clay-ser altered and locally weathered leaving vugs.
69.2	104.6	FT	mas		L	GRY			Massive Strongly Oxidized Clay alteration of a highly siliceous rock. Possible weathered out square shaped crystals.
104.6	148	FLPT	bx	LAP	VL	GRY	ALTFR	GR30+	Irregularly Bx'd, and sub-rounded to rounded, locally laminated clasts and massive irregularly laminated blocks (flow bands?). Has subhedral rounded- square and rectangular sulphide or ser/clay replaced crystals. Original texture obscured by silicifi
148	229.6	FT	obsalt		M	GRY	FLT	SH	Perv silicca-Ser Poswsibly +/- chl, obscuring texture. DI'd BB's of Sp-Py, moderatley faulted. Small Siliceous BB's (Possibly Qtz Eyes?)
229.6	230.5	FT	fltgge		M	GRY	FLT	SH	Fault gouge, felsic in color.
230.5	262.7	AND	volc	BLOCK	M	GRY	FLT	GR30	Volcaniclastic andesite. Flow textures. Block size clasts of amygdoidal andesite. Faulted lower contact. 40 TCA. Locally increase in silica alteration, once at 254.5m and 1m above lower fault.
262.7	297.1	AND	obsalt	LAP	M	GRY			Light green grey altered andesite. Rare chlortite clasts at upper contact. Unit could possibly be FT. Strong chlorite on fractures. Laminations present due to alteration?. Increase in sulphides. Faulted upper contact. Local broken and clay seams thro
297.1	304.5	VC	fltgge		M	GRY	FLT	SH	Fault sharp contact. Infering the contact between andesite and VC below within the very altered zone to be at this fault. 50 TCA.
304.5	310.2	VC	obsalt		M	GRY	ALTFR	GR30	Strongly silicified altered VC. Gradational lower contact into VC. locally laminated.
310.2	367.1	VC	volc	LAP	M	GRY	FLT	GR30	Medium grey clast supported VC. Upper contact is alteration. Large fault begins at 327.5 TCA. 90 mafic clasts. Majority of clasts are rounded. Clasts range from 0.3 to 5cm. Shearing begins before lower fault. Major lower fault into andesite.
367.1	400	AND	mas	BLOCK	M	GRY			Massive andesite, with calcite/po filled amygdules. Local sections porphyritic. 2-3 10mm calcite veins per meter.

Blackwater Project
Drill Summary - Alteration

BW0420		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
15	41	O		0	PERV	3	PERV	4	PERV	2	LIM	PERV	4	CLY	REP	3	Pervasivley weathered/oxidized siliceous rock with crystals that have gone to clay. Pervasive clay and limonite alteration that locally follows banding. Fault sections are large clay seams.
41	47.8	O		0	FC	3	PERV	5	PERV	1	LIM	FC	2	HM	FC	2	More resistant M.Gray Pervasivley silicified rock, that has been fractures/faulted moderatley, allowing Lim and Hm to Oxidize material within fractures.
47.8	53.1	O		0	PERV	3	PERV	4	PERV	2	LIM	PERV	4	CLY	REP	3	Pervasivley weathered/oxidized siliceous rock with crystals that have gone to clay. Pervasive clay and limonite alteration that locally follows banding. Fault sections are large clay seams.
53.1	67.4	O		0	FC	3	PERV	5	PERV	2	LIM	FC	5	HM	FC	3	Pervasivley silicified weakly Sericitic L.Greenish-Gray. Fractured, and Black Goe, Orange Lim and Red Hm Strongly coat All FP's and fill all Fractures. Clay replaces crystals.
67.4	87.6	O		0	PERV	5	PERV	4	PERV	2	LIM	PERV	5	HM	PATC	3	Pervasivley Clay-Lim-Silica altered, clay overprinting silica. Limonite is pervasivley staining rock, and patches of perv Pinkish-red Hm staining.
87.6	92.9	O		0	PERV	3	PERV	4	PERV	2	LIM	PERV	4	CLY	REP	3	Pervasivley weathered/oxidized siliceous rock with crystals that have gone to clay. Pervasive clay and limonite alteration that locally follows banding. Fault sections are large clay seams.
92.9	101.2	O		0	FC	4	PERV	4	PERV	2	CLY	PERV	3	CLY	REP	3	Perv weathered/oxidized siliceous rock with crystals that have gone to clay. Faulted zone with strong Limonite and clay gouge, and perv clay/lim alteration.
101.2	104.6	T		0	FC	4	PERV	4	PERV	2	CLY	PERV	3	CLY	REP	3	similar to above. WEak amounts of BS's and Pyrite mineralization in small patches.
104.6	108.8	T		0	PATC	4	PATC	4	PERV	3	LIM	PATC	1	CLY	REP	2	Perv silica-clay alteration. Pathches of Limonite. Clay and/or sericite replacing crystals < Sphalerite. Silica alterations is locally stronger in massive clasts, while irregular weak laminations are increasingly clay altered. White Sulphide Haloes.
108.8	132	S		0	PATC	4	PERV	4	PERV	3	ALB	SPHL	3	CLY	REP	2	Similar to above, but no oxidation.

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Blackwater Project
Drill Summary - Alteration

BW0420		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
132	148	S		0	FC	4	PERV	4	PATC	4	CLY	PATC	2	CLY	REP	1	Perv Silica, with patches of Strong L.Green Sericite. Patches of weak clay alt, and clay strongly Fracture controlled (Fault). Weak Clay/ser rep of crystals, stronger sulphide rep of crystals. Fault, fracture controlled clay.
148	157	S		0	FC	4	PERV	5	PERV	4	ALB	SPHL	4				Perv Silica-Ser (L.Green-Gray), with strong White Sulphide Haloes. Fault, Fracture controlled clay.
157	168.3	S		0	FC	2	PERV	5	PERV	4	ALB	SPHL	1				similar to above.
168.3	182.0	S	FC	2	FC	3	PERV	4	PERV	4							Perv Silica-Ser, locally patches/BB's/Bands of L.Green Sericite. M-D.Green chl on FP's, and weakly Fracture controlled. Clay replacing gouge, and moderatley fracture controlled.
182.0	206	S	FC	3	FC	1	PERV	5	PERV	4	ALB	SPHL	1				similar toa bove.
206	229.6	S	FC	3	FC	1	PERV	4	PERV	3	ALB	SPHL					similar to above, very silicified with increase in sulphides.
229.6	230.5	S	PERV	2	PERV	5	PERV	2	PERV	2							fault
230.5	236	S	PERV	3	FC	3	MTRX	3	CLST	3							andesite, increase in serecite/bitotite alteration. Silica rich matrix.
236	262.7	S	PERV	3	FC	2	PERV	2	PERV	3							medium grey brown andesite, serecite, silica throughout. Clay increase in faults and fractures. No calcite. Occasional pulses of silica.
262.7	310.2	S	FC	3	FC	2	PERV	4	PERV	3							strong increase in silica. Strong chlorite on fractures. Redish clay at 287.9 and 296.0, hem? within clay/fault gouge. Increase in sphalerite and pyrite, dbs. Large fault within this alteration package at 297m.
310.2	352.6	S	PERV	3	FC	2	PERV	3	CLST	2	CHL	FC	3				strong chlorite on fractures.
352.6	369.2	S	PERV	4	MTRX	4	CLST	3	PERV	2							Clay, mechanical in fault zone, rare silica clasts
369.2	400	S	PERV	3	FC	1	PERV	3	PERV	3	BIOT	PERV	2	CAL	VN	3	typical andesite, serecite/biotite? alteration. Calcite veins throughout

Blackwater Project
Drill Summary - Mineralization

BW0420		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
15	41		0		0		0	Goe	PERV	15							Patchy and banded Perv Limonite stain (Goe + possibly Jarosite)
41	47.8		0		0		0	Goe	FC	4	Hm	FC	0.5	Hm	DI	0.1	Fracture controlled Oxidation, of Orange Limonite and weak Hm. Hm also replaces some Vuggy DI's (replacing DI'd sulphides?)
47.8	53.1		0		0		0	Goe	PERV	20							Patchy and banded Perv Limonite stain (Goe + possibly Jarosite)
53.1	67.4		0		0		0	Goe	FC	7	Hm	FC	2				Fractured rock, Orange>Black Goe filling Fractures and coating FP's, locally with moderate Hm.
67.4	92.9		0		0		0	Goe	PERV	20	Hm	PATC	3				Perv Orange Limonite (Goe + possibly Jaro) stain, locally stronger. Pinkish-red Hm patches, and weakly coating select FP's.
92.9	101.5		0		0		0	Goe	PERV	20	Hm	FC	0.5				Fault zone, with Orange Goetite (Goetite + possibly Jarosite) gouge, and fracture controlled Goe (Orange and Black) and Hm in competent rock/Bx.
101.5	104.6	BB	0.1	BB	0.1		0	Goe	PERV	8							Small patch of Sooty BB's of Py and Sp, amongst Perv altered Orange Goe stained rock, with Black and Orange Goe on FP's.
104.6	108.8	FP	0.5	DI	4		0	Goe	PATC	1	Dbs	STR	0.5				DI'd Black Sp, throughout, replacing square to rectangular crystals? Py amalgamations circular coating FP's, tarnished and Sooty locally.
108.8	124	DI	1	DI	4		0	Dbs	STR	1	Py	FP	0.5	Py	FC	0.5	Black thin discontinuous stringers of BS's (Black Sulphides). Regularly DI'd Square to rectangular Black weakly red rimmed Sp, and Square Py.
124	132	DI	0.7	DI	3		0	Dbs	DEN	0.5	Dbs	STR	0.5				Patches of abundant Black thin dendritic sulhpides. DBS stringers similar to above, DI's similar to above.
132	148	DI	1	DI	2		0	Py	FP	0.5	Dbs	FC	0.5				Patches of Stronger mineralization; Py sooty Di's and filliform (needle-like) patchy DI's. Black Sp DI's. BB's of Py-Sp Black SP rimmed by red Sp. Irregular micro-fracture fill BS's.
148	157	FP	1	DI	1.5		0	Dbs	STR	0.1							White Haloes around Sulphides locally. Di'd Py and Sp, strong fine-grained Py sheets coating FP's.

Blackwater Project
Drill Summary - Mineralization

BW0420		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
157	168.4	DI	0.5	DI	2.5		0	Dbs	FC	0.1	Py	FP	0.1	Py	BB	0.1	similar to above; irregular thin DBS, micro-fracture controlled. this Sp sheets on select FP's. BB's of Py, locally.
168.4	196	DI	1	DI	2		0	Dbs	DEN	0.5	Py	FP	0.1				strong disseminated sulphides, moderate dbs. Still strong clay alteration
196	204	DI	3	DI	0.5		0	Dbs	DEN	0.5							very fine grain needle like pyrite? Dbs present
204	230.5	DI	4	DI	2		0	Dbs	DEN	0.1							increase in diss pyrite. Fine grain, needle like. Strong sphalerite
230.5	236	STR	0.5	SP	0.5	SP	0.1										decrease in sulphides.
236	262.7	DI	0.5	DI	0.1	AMYG	1										po filled amygdules
262.7	276	DI	2	DI	3	DI	0.1	Dbs	DEN	1.5							increase in sulphides iwth strong silica alterations
276	296.5	DI	1	DI	1		0	Dbs	DEN	1							slight decrease in sulphides, sulphides in the fault
296.5	310.2	DI	1	DI	2.5	DI	0.1										Sp>Py, diss
310.2	333	DI	1	BB	2	BB	0.5	Py	VN	0.5							sphalerite is blebby and veinlets. Pyrite veinlets also seen.
333	352.6	VN	1	BB	1.5	BB	0.5										blebby pyrite and sphalerite. Increase in pyrite veining.
352.6	369	DI	2	DI	1		0.1										fault gouge, sulphides throughout
369	400	DI	0.1	BB	0.5	AMYG	2.5	Apy	AMYG	0.1							Po, and Asp increase. Majority replacing amgygdules.

Blackwater Project
Drill Summary - Structure

BW0420

From (m)	To (m)	Structure	Strength	Comments
15	16.5	BRKZ	3	Top of hole, Broken zone.
16.5	17	BRKZ	1	stick rock, irregular fracture.
17	19.6	FL	4	Small mud supported faults @40 dtca, and strongly broken.
19.6	24.05	JZ	4	Strongly Jointed, weakly irregular, and locally Broken with crush.
24.05	31.3	FZ	2	Joint zone @ 55 dtca, with small faults @ 15 dtca.
31.3	33	CLYSEAM	3	numerous clay seams amongst clay altered rock.
33	41.25	JZ	3	Moderatley Jointed.
41.25	48.5	BZ	4	Fault Bx strongly gouged. locally competent Fracture zones, in-between.
48.5	49.72	BRKZ	2	irregularly broken fracture planes.
49.72	49.85	CLYSEAM	3	Swelling Clay seam @ 30 dtca.
49.85	56.8	JZ	3	Moderatley Jointed locally strongly.
56.8	58.6	JZ	4	Jointed strongly at 20, and 30 dtca. Strongly Hm, Goe oxidized FP's.
58.6	59.57	BZ	5	Fractured Rock, small Fragments supported by Clay Fault Gouge.
59.57	62.06	JZ	3	Strongly Fractured rock, Jointed @ 20, and 30 dtca.
62.06	66.6	BZ	5	Abundant Clay Gouge supporting small rounded Bx. Local competent sections are strongly fractured.
66.6	72.5	JZ	2	Jointed @ 45, 70 > 60>15 dtca.
72.5	75	BRKZ	2	Irregular Fractures, and small seections of Broken rock.
75	82	JZ	2	Jointed @ 70 > 45 dtca, and locally irregularly broken.
82	83.5	BRKZ	2	Weakly Jointed, perv clay rock that has been broken.
83.5	87.85	JZ	3	Jointed @ 45=50 dtca, and locally broken, mechanically?
87.85	88.15	BZ	3	Small clay gouged fault supporting rounded fragments.
88.15	88.6	BRKZ	3	broken irregularly.
88.6	92.9	JZ	1	Jointed @ 40 and 50 dtca.
92.9	103	BZ	4	Partially healed Fault Bx, Healed sections are intact with oxidie and silica matrix. Activated sections are clay rich and strongly oxidized.
103	106.2	JZ	2	jointing 2 60 dtca and with depth decreasing to 20 dtca.
106.2	107.5	JZ	4	jointed 2 10 and 50 dtca, and moderatley broken.
107.5	109.5	JZ	4	jointed 2 60 >50.40 dtca.

Blackwater Project
Drill Summary - Structure

BW0420

From (m)	To (m)	Structure	Strength	Comments
109.5	111.3	FZ	2	low angle to core axis clay altered fault, gouge abundant, with competent irregularly broken sections.
111.3	127	JZ	3	locally broken
127	127.6	FL	2	small fault, fault gouge
127.6	146.2	BRKZ	3	locally competant
146.2	149	FL	4	small fault, strong gouge
149	154.5	JZ	3	competant, strong clay alteration
154.5	157	FL	4	Fault, strong clay replacement
157	179.5	BRKZ	3	broken core
179.5	229.6	JZ	2	mostly competant rock, some sharp joints, locally broken
229.6	230.5	FL	5	sharp contact, slicks on upper contact. Slips parrallel to core axis. Gouge.
230.5	237	JZ	2	locally broken
237	243.5	FL	4	strong fault, gouge
243.5	262.7	JZ	2	rare jointing in competant andesite
262.7	263.4	FL	4	fault contact between andesite above and FT below
263.4	273.8	BRKZ	3	broken
273.8	275.7	FL	3	small fault, slick parallel to core axis
275.7	287.6	BRKZ	3	broken to competant
287.6	288	FL	3	small fault gouge, sharp contact with hematite?
288	297.1	JZ	3	jointed with local clay seams
297.1	304.4	FL	4	sharp contact into fault. Gouge, broken,
304.4	327	JZ	3	fairly competant core, local broken sections
327	338	FL	4	strong fault, sheared in the upper portion of fault, 45 TCA.
338	352.7	BRKZ	3	broken zone, local clay gouge.
352.7	369.3	FL	5	Large fault, gouge, with local blocks. 20TCA upper contact, 50TCA lower contact. Contact between andesite and VC above
369.3	397	JZ	3	irregular jointing
397	400	BRKZ	3	broken zone.

Blackwater Project
Drill Logs

Hole ID:	BW0421	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375352.01
Depth (m):	413.5	Date Started:	20/04/2012	Casing Size:	HWT	Northing:	5893300.03
Azimuth:	0	Date Completed:	26/04/2012	Casing (m):	3	Elevation (m):	1549
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-88
55	294.5	-88.3
106	79	-89.2
154	87.7	-88.7
199	80.4	-88.9
250	89.8	-88.8
350	105.3	-88.5
400	110.5	-88.9
413	132.9	-88.2

Blackwater Project
Drill Summary - Lithology

BW0421

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							
3	37.2	VC	ms	LAP	M	GRN	FLT	GR30	Felsic dominant-matrix supported-
37.2	61.2	AND	mas	LAP	D	GRY	DEP	GR30	Massive-andesite locally volcanoclastc texture
61.2	77.8	VC	ms	LAP	M	GRN	DEP	GR10	Felsic dominant-matrix supported-polymitic volcanoclastic
77.8	105.5	AND	mas	LAP	D	GRY	DEP	GR10	Massive andesite with volcanoclastic teture,
105.5	184	VC	ms	LAP	MO	GRY	UNKN		Poorly sorted, mafic domnant clasts-matrix supported
184	253	VC	plm	LAP	M	GRN	UNKN		Poorly sorted-felsic dominant clasts-matrix supported
253	283	VC	bx	LAP	M	GRN	UNKN		Breacciated unit-completely altered hard to distinguish clasts
283	358	VC	plm	LAP	M	GRN			Fragmental-felsic dominant unit-matrix supported-locally brecciated
358	413.5	VC	ms	LAP	M	GRN			Matrix supported-mafic dominant clasts-locally laminated felsic clasts-

Blackwater Project
Drill Summary - Alteration

BW0421		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	10	O	CLST	2	PATC	3	PATC	2	PERV	3	LIM	FR	2				Patchy clay alt found in clasts, pervasive sericite alt-patchy silica
10	37	S	CLST	2	PATC	2	PATC	2	PERV	3							Patchy clay alt found in clasts, chlorite alt found in clasts, patchy silica alt
37	61.2	S	FR	2		0	PATC	2	PATC	2							Patchy slica-chlorite alt in fractures
61.2	77.8	S	CLST	2	CLST	2	PATC	2	PERV	3							Silica alt found in clasts, chlorite alt in clasts-sericite found in matrx
77.8	105.5	S	FR	1		0		0	MTRX	2	BIOT	PATC	1				Patchy biotite alt-sericite alt found in matrix
105.5	112.9	S	FR	2	PATC	3	PERV	2	PERV	3							Pervasive silica overprinting clay alt-sericite, patchy clay alt
112.9	121	S	CLST	3	MTRX	3	PERV	2	MTRX	3							patchy clay-chlorite clast dominant
121	133	S	FR	2	PATC	1	PATC	1	PERV	3							Patchy slica-pervasive sercite-chlorte found in fractures
133	140	S		0	PATC	3	PERV	2	PERV	3							Patch clay-pervasive silica alt overprinting clay alt and sericite
140	159	S	PERV	2	CLST	1	PERV	3	PERV	3							Clay alt found in clasts-pervasive sericite alt-chlorite found in clasts overprnted by silica
159	184	S	CLST	2	PATC	2	PERV	2	PERV	3							Pervasive silica overprinting sericite alt-patchy clay alt
184	227.5	S	FR	2	PATC	2	PERV	2	PERV	3							Patchy clay alt found in clasts-chlorite alt in fractures
227.5	253	S	FR	3	PATC	1	PATC	2	PERV	3							Patchy silica alt-chlorite in fractures-pervasive sericite
253	293.5	S	FC	2	PATC	2	PATC	2	PERV	3							Patch silica-clay alt. Pervasive sericite alt, chlorite found in fractures
293.5	325.2	S	CLST	3		0	PATC	2	PERV	3							Patchy silica alt-chlorite alt found in clasts as well as in fractures-
325.2	358	S	CLST	3		0	PATC	3	PERV	3	HM	FC	2				Hematite alt on fractures-pervasive sericite 1lt-patch silica
358	386.4	S	PERV	2		0	PATC	2	PERV	3	HM	FR	2				Patchy silica alt found as secondary quartz-pervasive sericite alt-chlorite alt found in fractures
386.4	401.5	S	PERV	3		0	PATC	2	PERV	3	HM	FR	2				Hematite alt found in fractures-Pervasive chlorite alt found in clasts-matrix-pervasive sericite alt
401.5	413.5	S	PERV	3		0	PATC	2	PERV	3	HM	FR	2				Patch silica-pervasive chlorite found in matrix-fractures.-hematite alt on fractures

Blackwater Project
Drill Summary - Mineralization

BW0421		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	21.28	FP	0.5	DI	1	DI	1	Dbs	VN	0.5							DBs in matrix,Po-Sph disseminated. Po replacing clasts
21.28	37.2	FP	0.5	DI	1	DI	2										Disseminated Po-Sph throughout-Po replacng clasts
37.2	61.2	FP	0.1	DI	0.1	DI	0.1										trace Po-Sph disseminated
61.2	73.26	FP	0.5	DI	1	DI	2										Po-Sph disseminated in matrix-Po replacing clasts
73.26	105.5	FP	0.1		0	DI	0.1										Blebby Po-Py in fractures
105.5	113	DI	0.5	DI	1	DI	1	Ga	FP	0.1							Galena found in fracture planes, Po-Sph disseminated
113	121	FP	0.5	CR	1	DI	1										Po-Sph replacing clasts-Po disseminated in matrix
121	133	FP	0.5	DI	1	DI	1	Py	CR	0.5							Po replacing clasts-Po-Sph disseminated in matrix
133	141	FP	0.5	CR	1	DI	1										Po-Sph replacing clasts-Po disseminated throughout
141	160.5	DI	0.5	CR	1	CR	1										Po-Sph reaplcing clasts- Sph dissemianted in felsic laminated clasts
160.5	184	FP	0.5	CR	1	CR	1	Po	DI	0.5							Sph-Po replacing clasts-Po disseminated in matrix
184	203.3	FP	0.5	DI	1	CR	1										Po replacing clasts-Po-Sph disseminated, py in fractures
203.3	220	FP	0.5	DI	1	CR	1.5										Po replacing clasts-SphPo disseminated, py in fractures
220	232	FC	0.5	DI	1	CR	1.5	Sp	STR	0.5							Stringers of Sp in felsic clasts- Po-Sp disseminated
232	253	FP	1	DI	1.5	DI	1.5										Sp-Po disseminated throughout-
253	260.1	FP	0.5	DI	1.5	DI	1										Po-Sp disseminated througout-
260.1	273.5	DI	0.1	DI	1	DI	1										Sp-Po disseminated throughout-brecciated mineralized clasts
273.5	293.5	FP	0.5	DI	1	DI	1	Apy	FP	0.1	Cp	VN	0.1				Po-Sp disseminated- Apy found in fractures-chalcopyrite found in veins
293.5	308.8	FP	0.5	DI	1.5	DI	1.5										Sp-Po disseminated throughout-Po-Sp hairlines-stringers
308.8	325.2	FP	1	DI	1.5	CR	1										Sp-Po disseminated-Po replacing clasts-fine pyrite on fractures
325.2	343.3	FP	1	DI	1	DI	1	Po	CR	0.5							Po-Sp disseminated-Po replacing clasts-Po-Sp stringers and hairlines

Blackwater Project
Drill Summary - Mineralization

BW0421		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
343.3	358	DI	1	DI	1	CR	2	Apy	FP	0.1							Apy in fractures-Po-Sp disseminated throughout-Po replacing mafic clasts
358	376.6	FP	0.5	DI	1	CR	1.5	Apy	FP	0.1							Trace Apy on fractures, Po-Sph replacing clasts-
376.6	403	FP	0.5	DI	1	CR	1.5										Py in fractures-Sp-Po replacing clasts-Po-Sp disseminated throughout
403	413.5	FP	0.5	DI	1	CR	1										Disseminated Sp throughout-Po replacing clasts

Blackwater Project
Drill Summary - Structure

BW0421

From (m)	To (m)	Structure	Strength	Comments
3	73.26	JZ	3	Two main joint zones 40>60 local broken zones
73.26	178	JZ	3	Two main jont sets 40>60
178	181	BRKZ	3	Broken zone with local clay gouge in it
181	226	JZ	3	Two main joint sets 35>60
226	242.5	FL	3	Clay gouge-brecciated clasts
242.5	253	JZ	2	joint set at 40 core axis
253	260.1	JZ	3	joint set 30 to core axis
260.1	271	FL	3	clay gouge-brecciated clasts
271	284.3	BRKZ	2	broken zone with local clay gouge
284.3	293.5	JZ	2	join set at 60 core axis
293.5	317.8	JZ	3	main joint set at 50-locally brecciated clasts but competent core generally
317.8	325.2	FL	4	Fault zone-brecciated clasts-clay gouge
325.2	358	JZ	3	main joint set-
358	403	JZ	3	joint set at 70
403	413.5	JZ	3	joint set, locally blocky-broken zones

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Blackwater Project
Drill Logs

Hole ID:	BW0422	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375551.35
Depth (m):	335.5	Date Started:	21/04/2012	Casing Size:	HWT	Northing:	5893398.58
Azimuth:	0	Date Completed:	01/05/2012	Casing (m):	4.5	Elevation (m):	1530
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	91.1	-89.2
100	111.6	-89.6
151	83.1	-89.6
200	71.9	-89
251.5	122.5	-89
301	114.1	-89.2
335.5	155.7	-89

Blackwater Project
Drill Summary - Lithology

BW0422

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.2	OB							
4.2	26.9	VC	plm	LAP	L	GRY	FLT	GR10	very polymictic, brecciated, very poorly sorted. Fairly coarse grained matrix, mostly fairly small clast size with sporatic larger clasts, almost bimodal. becoming very bleached towards end
26.9	43	AND	fltbx		D	GRY	FLT	GR10	fault bound andesite, dark grey, with local pale green-grey bleaching. Small zones of amygdules, but mainly massive
43	59.5	VC	plm	BLOCK	M	GRY	DEP	GR30+	very bleached at beginning, with local dark clasts(?) of andesite, then into a very fragmental, clastic, lithic rich VC. Very poorly sorted with blocks of andesite among felsic-mafic mix. Catastrophic-looking, clasts anywhere from angular to rounded
59.5	67.5	VC	plm	LAP	M	GRN	FLT	GR10	gradually becoming slightly better sorted, and perhaps more felsic(?) lots of small gouged bits. Also generally sub-rounded clasts
67.5	68.7	AND	bx		D	GRY	FLT	GR10	lower boundary cut off by fragmental fault gouge, with quite a bit of rounded fragments
68.7	79	VC	plm	LAP	L	GRN	DEP	GR30	felsic dominant, poor to moderately sorted, brecciated, pale green-grey
79	120	VC	plm	LAP	M	GRN	DEP	GR30+	coarser matrix, pale yellow-green-grey. Most mafic clasts are larger than the felsics
120	135	VC	volc	BLOCK	L	GRN	DEP	GR30+	less then 10% clasts are moderately chloritized and weakly to moderately banded, minor faulting. clorite replacement of small clasts 2mm in size.
135	178	VC	volc	LAP	M	GRN	DEP	GR30+	textureally very similar to above, increasing chlorite alteration, on fracture and of clasts.
178	206.5	VC	volc	LAP	L	GRN	DEP	GR30+	Alligned angular clast, possibly secondary brecciation, similar ot above with less alteration obscuring texture, bedded on dm scale, aligned clasts define foliation.
206.5	215	VC	volc	LAP	M	GRY	DEP	GR30+	Alligned angular clast, possibly secondary brecciation, similar ot above little to noalteration obscuring texture, increasingly mafic, bedded on dm scale, aligned clasts define foliation.
215	226.2	AND	volc	LAP	M	GRY	DEP	GR30+	
226.2	247	VC	volc	BLOCK	L	GRY	DEP	GR30+	
247	335.5	AND	amg		M	GRY			Massive Andesite with silica infilled vesicales.

newgold
a clear direction

Blackwater Project
Drill Summary - Alteration

BW0422		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	13	O		0	Mtd	4	Per	2	Per	3	CLY	FP	4				pale green grey alt'n in rock
13	17.5	T		0	Mtd	4	Per	2	Per	3	CLY	FP	5				as above, slightly more cly on fractures
17.5	31	S		0	Mtd	4	OP	3	Per	3	CLY	FP	5				quite a bit of white cherty clay on fracture planes, and in gouge material
31	43	S	Per	1	Mtd	3	FP	4	Per	3	SIL	OP	3				decreasing amount of clay on fractures, rock getting slightly harder
43	59.5	S		0	Mtd	4	Per	4	Per	3	CLY	FP	2				hard pervasive sil strong, suddenly
59.5	68	S	Per	2	Mtd	3	Per	3	Per	2	CLY	FP	3				moderate overall alt'n
68	101	S	Per	2	Mtd	3	Pat	2	Per	2	CLY	FP	4				more patchy sil alt'n, still plenty of sandy clay on fractures, and clay gouge
101	118	S	Per	2	Mtd	4	Pat	3	Per	3	CHL	FP	3	CHL	Cld	2	stronger clay in matrix towards end. "Speckled" clast replacement chl, replicing fine lithics
118	135	S	Cld	3	Mtd	4		0	Per	3	CHL	FP	5				decreasing clay alteration down hole increasing chlorite.
135	147	S	Pat	4		0	Pat	2	Pat	3	CHL	FP	5	CHL	Cld	3	Strong pathcy chlorite alteration obscures, clast alteration locally.
147	168	S	Cld	3	Mtd	2		0	Mtd	2	CHL	FP	5				clay and sericite alteration on margins of qtz grains in matrix.
168	181	S	Cld	3	Mtd	2		0	Mtd	2	CHL	FP	5	CHL	FP	4	fracture controlled chlorite alteration locally obsurces chlorite alteration of clasts.
181	215	S	Cld	3	Mtd	2		0	Mtd	2	CHL	FP	5				clay and sericite alteration on margins of qtz grains in matrix.
215	226.8	S		0	FP	2		0	Mtd	4							
226.8	247	S	FP	2	Mtd	2	Cld	5	Mtd	4	CHL	Cld	3	SIL	Mtd	2	Silica in matrix and replacing some clasts.
247	335.5	S	FP	2	Mtd	2		0	Mtd	4							Sericite altereation for Psuedo Breccia texture.

Blackwater Project
Drill Summary - Alteration

BW0422		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	13	O		0	MTRX	4	PERV	2	PERV	3	CLY	FR	4				pale green grey alt'n in rock
13	17.5	T		0	MTRX	4	PERV	2	PERV	3	CLY	FR	5				as above, slightly more cly on fractures
17.5	31	S		0	MTRX	4	OP	3	PERV	3	CLY	FR	5				quite a bit of white cherty clay on fracture planes, and in gouge material
31	43	S	PERV	1	MTRX	3	FR	4	PERV	3	SIL	OP	3				decreasing amount of clay on fractures, rock getting slightly harder
43	59.5	S		0	MTRX	4	PERV	4	PERV	3	CLY	FR	2				hard pervasive sil strong, suddenly
59.5	68	S	PERV	2	MTRX	3	PERV	3	PERV	2	CLY	FR	3				moderate overall alt'n
68	101	S	PERV	2	MTRX	3	PATC	2	PERV	2	CLY	FR	4				more patchy sil alt'n, still plenty of sandy clay on fractures, and clay gouge
101	118	S	PERV	2	MTRX	4	PATC	3	PERV	3	CHL	FR	3	CHL	CLST	2	stronger clay in matrix towards end. "Speckled" clast replacement chl, replicing fine lithics
118	135	S	CLST	3	MTRX	4		0	PERV	3	CHL	FR	5				decreasing clay alteration down hole increasing chlorite.
135	147	S	PATC	4		0	PATC	2	PATC	3	CHL	FR	5	CHL	CLST	3	Strong pathcy chlorite alteration obscures, clast alteration locally.
147	168	S	CLST	3	MTRX	2		0	MTRX	2	CHL	FR	5				clay and sericite alteration on margins of qtz grains in matrix.
168	181	S	CLST	3	MTRX	2		0	MTRX	2	CHL	FR	5	CHL	FR	4	fracture controlled chlorite alteration locally obsurces chlorite alteration of clasts.
181	215	S	CLST	3	MTRX	2		0	MTRX	2	CHL	FR	5				clay and sericite alteration on margins of qtz grains in matrix.
215	226.8	S		0	FR	2		0	MTRX	4							
226.8	247	S	FR	2	MTRX	2	CLST	5	MTRX	4	CHL	CLST	3	SIL	MTRX	2	Silica in matrix and replacing some clasts.
247	335.5	S	FR	2	MTRX	2		0	MTRX	4							Sericite altereation for Psuedo Breccia texture.

Blackwater Project
Drill Summary - Structure

BW0422

From (m)	To (m)	Structure	Strength	Comments
0	19	BRKZ	3	rough fracturing, unclear orientations
19	27.7	FZ	4	significant gouge, with some rubbly, broken rock
27.7	37.7	BZ	3	broken, rubbly rock, with annelaed fragments, fault brecciation. Somewhat consistant orientation measured at 20 deg TCA
37.7	42	BRKZ	3	quite broken, busted up rock, various orientations
42	42.6	FL	5	laminated gouge, with edge slicks, oriented clearly at 70 deg tCA
42.6	46.7	BRKZ	3	gradually becoming more competant rock
46.7	60.6	JZ	3	mostly fairly competant rock, with local failure zones, dominant angle at 20, with minor set around 50
60.6	63.7	BRKZ	2	becoming more broken
63.7	65.5	BZ	2	weakly brecciated zone, annealed fragments with rough orientation at 25 deg TCA
65.5	68.6	BRKZ	4	very busted up
68.6	69.2	FZ	5	significant gouge, with good laminations at 30
69.2	76.4	BRKZ	5	very broken, with little gouged fractures
76.4	76.6	FL	3	breccia vein at 20 deg showing crosscutting displacement at 70 deg TCA, displaced approx 8 mm
76.6	79.8	BRKZ	4	quite busted up/rubbly core with shard-fragments
79.8	82	FZ	2	some sandy gouge, seems to be at low angle TCA, calling it at 20 deg tCA
82	93	BRKZ	4	some very low angle fracturing, then core variously fracutred and rubbled
93	96.4	JZ	3	planar joint measured at 60 deg TCA
96.4	100.9	BRKZ	3	broken, rubbly in places
100.9	102.1	JZ	3	one planar fracture measured at 35
102.1	105.9	BRKZ	3	broken, rough fracturing
105.9	106.4	FL	4	short soft gouge interval. Fault breccia on either side
106.4	109.5	BRKZ	2	fairly competant, with mostly rough fracturing
109.5	111.5	BRKZ	4	rough fractures
111.5	112	BZ	3	some gouge, brecciated with angular fragments
112	117.5	JZ	4	interspaced quite broken material. Not confident with 55 deg measuremtn
117.5	122.7	FZ	3	50% clasts in gouge, clasts are angular to sub rounded.
122.7	131	JZ	3	joints @ 30, 50.

Blackwater Project
Drill Summary - Structure

BW0422

From (m)	To (m)	Structure	Strength	Comments
131	133.3	FZ	3	50% fault gouge, 50% clasts in gouge, clasts are milled in a clay silt matrix.
133.3	135	JZ	3	joints @ 30, 50.
135	165.7	JZ	3	joints @ 30, 70.
165.7	168	FZ	2	
168	174.7	JZ	4	joints @ 30, 45, 70
174.7	175	FL	2	sooty sulphide in fault gouge.
175	180	JZ	4	joints @ 30, 45, 70
181	214	JZ	2	joints @ 20, 20, 30. joints @ 20 and 20 are orthogonal to each other and rotated approx. 90 deg about CA to one another. creatig an intersecting lineation orthogonal to CA.
214	218.5	FL	4	Silt to clay gouge, clasts are 50%, milled to Sub rounded.
218.5	224.8	JZ	2	joints @ 20, 60
224.8	244	FZ	2	40% fault gouge, Clasts are SA to locally milled. 70% clasts. py and Sp in 1 cm vn.
244	335.5	JZ	1	joints @ 30 and 45.

Blackwater Project
Drill Logs

Hole ID:	BW0423	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375001.72
Depth (m):	395.33	Date Started:	21/04/2012	Casing Size:	HWT	Northing:	5892899.48
Azimuth:	0	Date Completed:	01/05/2012	Casing (m):	34	Elevation (m):	1584
Dip:	-90	Logged By:	LMo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.33	198	-89.6
92.05	220.3	-89.8
137.8	154.1	-89.5
183.5	213.5	-89.1
229.2	147.7	-88.4
274.9	150.2	-88
320.7	165.9	-86.9
365.8	160.4	-86.2
395.3	160.9	-86

Blackwater Project
Drill Summary - Lithology

BW0423

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	34.13	OB							Overburden - block sized clasts with sandy matrix
34.13	57	VC	plm	LAP	M	GRY	DEP	GR10	Mafic dominant volcanoclastic, matrix supported.
57	131.5	FLPT	lptbx	LAP	L	GRY	DEP	GR30+	Felsic lapilli tuff bx, with hydrothermal fracturing and silica infill, creating microbreccias in fluid pathways. Strongly brecciated (tectonic?) with silic flooding the matrix.
131.5	170	FT	lam	FA	M	GRN			Felsic tuff, sometimes auto-brecciated, mostly banded (may be alteration banding), strongly silicified
170	261	FLPT	lpt	LAP	M	GRN			Felsic lapilli tuff, matrix dominanted. Strong pervasive qtz-ser+/-overprinted clay
261	282.4	VC	plm	LAP	MO	GRY	ALTFR	GR30	Fragmental, brecciated, intensely silicifed interval. occaiosnal relatively fresh "clasts" are andesitic, moajority is massive to finely laminated silica. Intermittently gougy.
282.4	296	AND	autbx	LAP	D	GRY	ALTFR	GR30	Massive fragmental - autobrecciated andesite, very sparse lath shaped phenocrysts.
296	340.5	AND	obsalt		MO	GRN			Texture destroyed massive - laminated silica altertaion rock. Presumably andesite , upper contact with fragmental andesite is a rpaid altertaion front. Loccally relict ?hydro breccia textures of 2-20mm wide angular-subrrounded fragemnts in mosaic bre
340.5	358	AND	fltbx		MO	GRN	ALTFR	GR10	~50% of interval is fault breccia with chloritic gouge matrix. Competent intervals are as above, intense texture destrucitve silicified andesite, locally gragmental - laminated.
358	395.3	AND	por		D	GRY			Massive, very dark, andesite, fine feldspar phyric, locally autobrecciated - massive.

Blackwater Project
Drill Summary - Alteration

BW0423		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
34.13	38.5	O		0	PERV	2		0		0	LIM	PATC	3				Fracture controlled to pervasive limonite, with moderate pervasive clay.
38.5	66.25	T	CLST	1	CLST	2	PATC	1		0	LIM	FC	3	GRNT	CLST	2	Fracture controlled limonite, with clay/chlorite or garnet replacing clasts (clay often with garnet or chlorite).
66.25	112	T	CLST	1	CLST	3	PERV	5		0	LIM	FC	2	GRNT	SUBH	3	1-5% local garnets, especially on the edges of altered clasts, strong silica, esp in matrix, with some unsilicified clay/albite clasts. Fracture controlled limonite.
112	131.5	S	CLST	1	CLST	2	PERV	5	PATC	1	GRNT	SUBH	1				Some ratty garnets, with occasional clay or chlorite altered clasts, patchy sericite, and strong pervasive silica
131.5	170	S	FR	1	PATC	1	PERV	5	PERV	3	GRNT	SUBH	1				Weak, dusty chlorite on some fractures, strong pervasive sillica, probably overprinting clay and sericite. Ratty garnets
170	230	S	FR	1	CLST	1	PERV	4	PERV	3	GRNT	PATC	1				Dusty chlorite on fractures, with clay replacing some clasts, probably pervasive sericite, silica overprinting all. Occasional blebs of ratty garnet, sometimes concentrated along fractures.
230	260	S	PATC	2	CLST	1	PERV	5	PERV	3	GRNT	PATC	1	CHL	FR	3	Pervasive intense, largely texture destructive banded silica throughout. Various shades of mottled green ser-chl alt throughout, often highlighting laminae in silica. Occasional centimetric patches of hydro bx texture with small creamy white ?clay alt in clasts. Quite frequent 1-4mm wide rotten garnets.
260	276	S	FR	3		0	PERV	5	PATC	1	CHL	DEF	4	CHL	CLST	2	Still intensely silicified, but feint relict fragmental texture is evident. Fractures and gouge are pervasively chloritic. Occasional clasts have weak greenish hue of chl-ser alt. Markedly darker in overall hue than above.
276	282.4	S	PATC	3		0	PERV	5	PATC	3	CHL	FR	3				Intense texture destructive silicification with pervasive mottled green chl-ser alteration, locally highlighting silica banding. Fractures are moderately chloritic throughout.
282.4	296	S	FR	4		0	PERV	4		0	BIOT	MTRX	2				Strongly silicified throughout, matrix typically has quite large amounts of brown biotite (+/-sphal). Fractures strongly chloritized

Blackwater Project
Drill Summary - Alteration

BW0423		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
296	340.5	S	PATC	3		0	PERV	5	PATC	2	CHL	FR	3				Pervasive intense texture destructive silica alteration, locally with convoluted laminations highlighted by variations in green - grey hue. Fractures are pervasively chloritic.
340.5	358	S	DEF	4		0	PATC	5	PATC	2	CHL	PATC	3				Gougy intervals are highly chloritic, often with fine sericite along fractures. Competent intervals are pervasively silicified, intense and texture destructive, with varying amounts of chlorite-sericite alt creating striking mottled and swirlsing colour variations.
358	395.3	S	PATC	1		0	PATC	2	PATC	1	BIOT	MTRX	2				Locally strong, but often absent never texture destructive silica alteration. Chlorite and sericite are absent from 85% of core, present as 10-40cm wide haloes of quite intense alteration/bleaching around carbonate veins/fracture networks. Mtrix to brecciated intervals is typically quite rich in purple-brown ?biotite

Blackwater Project
Drill Summary - Mineralization

BW0423		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
34.13	38.5		0		0		0	Goe	FC	5							Goethite/limonite on fractures.
38.5	57	BB	0.5		0	CR	0.5	Goe	FC	3							Weak blebbly py, with po replacing some clasts
57	131.5	DI	1		0		0	Dbs	DEN	3							DBS locally 1-5%, with minor di py.
131.5	170	DI	0.5		0	DI	0.1	Dbs	DEN	2							Weak di py, also on some fractures, with trace po and 1-5% DBS, often in stringers cross-cutting FT banding
170	184	DI	0.5		0	DI	0.5	Dbs	DEN	2							Slight increase in po, with minor di py and DBS
184	193	DI	0.5		0	DI	0.5	Dbs	DEN	1	Apy	VN	0.5				Some arspy on fractures and veined with qtz, minor di po and py, with some DBS
193	230	DI	0.5		0	DI	0.5	Dbs	DEN	2							Minor di py and po, 1-3% DBS
230	256	DI	0.1		0	DI	0.5	Py	VN	0.1	Grnt	BB	0.5	Dbs	DEN	0.5	Very fine po>py disseminated throughout, frequently overgrowing thr rotten garnets. Occasional fine planar py veinlets. Quite frequent but patchy short strands of DBS
256	269		0	SP	0.1	DI	0.5	Dbs	DEN	0.1	Py	VN	0.1	Grnt	BB	0.5	Quite frequent millimetric specks po > sphal, po also frequently appearing to overgrow centimetric ratty garnets. Very occasional fine py veinlets, and slightly more frequent poorly developed DBS
269	276	VN	0.5	SP	0.1	BB	0.5	Grnt	BB	0.1							Increased frequency of py veinlets, often within gouged intervals. Sparse specks and blebs of po>py>sphal. Isolated occurrence of po filling amygdules
276	283	VN	0.5	SP	0.1	SP	0.5	Dbs	DEN	0.5	Py	BB	0.1				Garnets drop out. DBS is 0.1-0.5%, locally moderately well developed. Specks and blebs of Po>py>sphal
283	293.5		0	DI	0.5	DI	1										Very fine po disseminated evenly throughout, patchy trace sphal.
293.5	296	VN	0.5	DI	0.1	DI	0.5										Short interval immediately above alteration front distinguished by sharply increased py veinlet density, veinlets are 1-2mm wide and planar at 35degTCA. 40cm above alt front po density increases very sharply to ~2%.

Blackwater Project
Drill Summary - Mineralization

BW0423		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
296	317.5	VN	0.5	BB	1	BB	1	Po	VN	0.1							Occasional fine and occasionally larger (up to 8mm wide) py +/- po veinlets, somewhat irreguar. Millimetric blebs of po and sphal distributed evenly throughout.
317.5	320	VN	1	BB	0.5	SP	0.5	Cp	BB	1.5							Short interval distinguished by frequent irregualr patches of chalco blebs, typically 3-6mm wide but up to 3cm. Also frequent py veinlets and disseminated po + sphal in specks/blebs
320	339	VN	2.5	BB	0.5	BB	1	Dbs	DEN	0.5							Frequent 2-10mm wide vuggy pyrite veinlets, sporadic DBS, pervasive background of millimetric (occasionally centimetric) po and sphal blebs. Vuggy pyrite decreases somewhat below 327m.
339	340.5	VN	0.5	SP	0.1	DI	1	Cp	VN	0.5	Dbs	DI	0.5				Occasional 1-3mm wide low angle py + chalco veinlets. Po + DBS + trace sphal disseminated throughout.
340.5	358	VN	1.5	BB	0.5	DI	1	Dbs	DI	0.5	Py	GOU	1.5				Gougy intervals are highly pyritic, with fine py disseminated loosely throughout. Competent intervals have frequent planr - anastamosing (?two generations) 1-3mm wide py veins, locally weakly vuggy. Competent intervals also have background of fine po
358	395.3	VN	0.5		0	DI	0.5										Quite frequent 1mm wide late stage py +/- calcite veinlets. Very fine po disseminated somewhat patchily throughout.

Blackwater Project
Drill Summary - Structure

BW0423

From (m)	To (m)	Structure	Strength	Comments
34.13	97	JZ	2	Joint zone with locally rough fractures, 60>30 degrees TCA
97	115	BRKZ	3	Broken zone with predominantly rough/gge fractures. Blocky to rubble.
115	180	BRKZ	1	Weakly broken zone with rough fractures and areas of rubble. Local areas of stick rock
180	193	FZ	3	Moderate fault zone with lots of rubble and some clay gge, esp on fractures.
193	215	BRKZ	2	Weak to moderate broken zone, with local rubble and clay gge and consistently rough, irregular fractures.
215	242	BRKZ	4	Strongly broken zone, lots of rubble and shards of silicified rock, some clay gge on fractures
242	247.6	JZ	3	Quite heavily fractured core, difference between surrounding intervals ?driller skilll?
247.6	260.5	BRKZ	4	poor recovery, very rubbly
260.5	274	FZ	4	Rubbly throughout with frequne short gougy intervals and weak sandy gouge scattered on fracture planes throughout
274	283.5	FL	1	Largely competent, weakly jointed core, but with occasional 5-10cm intervals of fault breccia in gouge.
283.5	291	BRKZ	3	Moderately rubbly core, no measurable joint sets.
291	298.7	JZ	2	Moderately fractured, angles vary from 0-45 dgeTCA
298.7	299.7	FL	3	Heavily fractured with moderate amounts of sandy gouge and small amount of competent fault breccia in gouge matrix.
299.7	310	JZ	3	Locally quite heavily fractured, wide variety of angles, dominantly ~30-45degTCA
310	314.4	FZ	3	Locally rubbly, patches of high fracture density/poorly developed fault breccia
314.4	340.5	JZ	3	Locally rubbly, otherwise weakly jointed.
340.5	343.5	FL	4	Fault breccia withe large amounts of highly chloritic gouge
343.5	352	JZ	3	Quite frequent planar fractures at 20-30degTCA
352	358	FZ	3	Intermittently brecciated, high fracture density, locally gougy.
358	395.3	JZ	2	Occasional clean planar fractures, locally modewrately rubbly

Blackwater Project
Drill Logs

Hole ID:	BW0424	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375751.4
Depth (m):	358	Date Started:	21/04/2012	Casing Size:	HWT	Northing:	5893198.26
Azimuth:	0	Date Completed:	26/04/2012	Casing (m):	5	Elevation (m):	1543
Dip:	-90	Logged By:	NLe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	202.9	-89.4
100	216.8	-89.3
150	138	-89.8
202	168.3	-90
250	169.3	-89.3
300	220.2	-89.4
352	163.2	-89.6

Blackwater Project
Drill Summary - Lithology

BW0424

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9	OB							
9	30	FT	lam		L	GRY			Laminated ash tuff w/ intense sericite/clay alteration; 1-2% dbs as <1cm whisps and veinlets
30	59.5	FT	lam		L	GRY			Laminated ash tuff w/ intense sericite/clay alteration; 1-2% dbs as <1cm whisps and veinlets
59.5	95	VC	cs	LAP	M	GRY	DEP	SH	Poorly sorted clast supported polymictic vc; sulfides concentrated in felsic clasts, ~ 1% dbs, 2% sp, trace py
95	139	AND	obsalt		D	GRY			Massive and w/ weak (obscured by alt.) porphyritic and amygdoidal textures; large intensely altered/mineralized zone 111.8-134m
139	150.1	AND	obsalt		D	GRY	FLT	SH	Massive and w/ weak (obscured by alt.) porphyritic and amygdoidal textures; large intensely altered/mineralized zone 111.8-134m
150.1	169.9	VC	cs	LAP	D	GRN	FLT	SH	Poorly sorted polymictic VC, clast supported
169.9	231	AND	amg		D	GRY			Massive to amygdoidal andesite; upper portions w/ py diss's (usually po); at depth diss's turning to po; TS 2-3%
231	283	AND	amg		D	GRY			Continuation of previous interval; massive to weakly amyg. AND; entire interval faulted, drilling down sub-vertical mineralized fault
283	352	AND	amg		D	GRY			Amygdoidal AND w/ moderate faulting (w/ intense py > po mineralization); moderate carb veining w/ trace py

Blackwater Project
Drill Summary - Alteration

BW0424		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9	17.2	O		0	PERV	4	PERV	4	PERV	4							Oxide facies; intense silicification and sericite alteration
17.2	17.4	T		0	PERV	4	PERV	4	PERV	4							Very narrow transition facies; boundary in weak clay fault gouge
17.4	30	S		0	PERV	4	PERV	4	PERV	4							Sulfide facies; intesnse silicification and clay/sericite alteration
30	59.5	S		0	PERV	4	PERV	4	PERV	4							Bleached (as above) FT; intense alteration, clay/sericite + silica
59.5	94.8	S	CLST	2	PERV	2	PERV	3	PERV	3							Altered vc; matrix intensely silicified w/ minor chl; felsic mafic clasts altered to clay chl respectively
94.8	111.8	S	PERV	3	PERV	3	PERV	3	PERV	3							moderate-intensely altered and; alteration texture destructive w/ relict porphyritic/amygdoidal texture visible; pervasive chl + sericite/clay + silica altered
111.8	133.8	S	PATC	3	PATC	2	PERV	4	PATC	2							intensely silicified and; protolith textures completely destroyed by alteration; patchy/blotchy chl + sericite alteration w/ intense pervasive silica, rock very hard
133.8	138	S	PERV	3	PERV	3	PERV	3	PERV	3							moderate-intensely altered and; alteration texture destructive w/ relict porphyritic/amygdoidal texture visible; pervasive chl + sericite/clay + silica altered
138	150.1	S	PERV	3	PERV	3	PERV	3	PERV	3							moderate-intensely altered and; alteration texture destructive w/ relict porphyritic/amygdoidal texture visible; pervasive chl + sericite/clay + silica altered
150.1	169.9	S	CLST	4	CLST	2	PERV	4	CLST	2							Pervasive silica flooding of clast and matrix; chl altered mafic clasts w/ minor sericite/clay altered felsic clasts
169.9	200.5	S	PERV	2	AMYG	1	PERV	4	AMYG	1							Strongly silicified, sericite constrained to amygdule halos; sooty light green chl on fractures; pervasive reddish clay?(sphalerite?)
200.5	231	S	PERV	2	AMYG	1	PERV	4	AMYG	1	CARB	VN	3				alteration as above, with carbonate veining
231	283	S	PERV	2	AMYG	1	PERV	4	AMYG	1							Altereation as above w/ no carbonate veins; entire interval fault gouge
283	328.3	S	PERV	2	PERV	3	PERV	1	AMYG	1							Clay + weak silica altered amygdoidal AND; moderate carb veining

Blackwater Project
Drill Summary - Alteration

BW0424		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
328.3	352	S	PERV	2	PERV	1	PERV	3	AMYG	1							Increased intensity silica alteration; rock more competent than upper AND; carb veining w/ trace py

Blackwater Project
Drill Summary - Mineralization

BW0424		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9	17.2		0		0		0	Goe	PERV	5	Hm	FC	1				Intense oxidation; pervasive oxide predominantly goe w/ hem fracture coatings
17.2	30	DI	0.1	DI	2		0	Dbs	STR	3							DBS stringers aligned with foliation c^35
30	59.5	DI	0.1	DI	2		0	Dbs	STR	3							DBS stringers aligned with foliation c^35; 1.5% diss'd sp; trace large 1-2cm sp agglomerations
59.5	94.8	DI	0.1	DI	2		0	Dbs	STR	2							Slight decrease in dbs % from previous section; stringers thicker in this zone however; patchy diss's of 2-6mm sp
94.8	111.8		0		0		0	Dbs	STR	0.5							Minor dbs stringers visible in this altered (lighter in colour) andesite; no other sulfide minerals visible
111.8	133.8	DI	3	DI	3		0	Dbs	STR	2							Intensely silicified aldesite w/ strong subhedral diss's of py>sp (cubic, sp after py?); moderate dbs
133.8	139	FC	0.1		0	DI	1	Apy	FC	0.1							Weak diss'd po; weak late py/marcasite on fractures w/ trace apy
139	157.5	FC	0.1		0	DI	1	Apy	FC	0.1							Weak diss'd po; weak late py/marcasite on fractures w/ trace apy
157.5	166.4	DI	0.5	CR	1		0										Weaky py diss's in matrix and clasts; minor sp predominantly in mafic clasts
166.4	169.9	VN	5		0		0										Fault zone w/ minor milled sulfide; bottom of fault massive vuggy py 4cm wide, possibly offset pre-existing vein
169.9	200.1	DI	2	DI	1	DI	0.1										Py > sp amygdule fill; minor py veining w/ intense chl + clay
200.1	231	VN	0.1	DI	0.5	DI	1										weakly mineralized (diss'd po) andesite w/ trace py veinlets
231	300.2	GOU	5	DI	0.1	DI	0.1	Apy	GOU	1							intense py in fault gouge; entire run drilled down sub-vertical mineralized fault; py + trace sp in gouge; locally moderate apy
300.2	328.5	GOU	5	GOU	2	DI	0.1										Fault gouge w/ intense (locally 10%) py > sp mineralizatoin; weak diss'd po in wall rock
328.5	353	VN	0.5		0	DI	1										Trace diss'd po w/ weak py in carb veining

Blackwater Project
Drill Summary - Structure

BW0424

From (m)	To (m)	Structure	Strength	Comments
9	30	FL	2	Weakly faulted rock w/ zones of minor clay gouge
30	59.5	FL	3	Moderately faulted bleached FT; contact between FT and VC at end of interval
59.5	132.2	JZ	3	mod'tly fx'd rock; c^30,45,0; weak chl + clay fracture coatings
132.2	133.8	FL	5	fault w/ clay gouge; weak sooty py?
133.8	150.8	JZ	3	weakly fx'd rock; c^20,40,55
150.8	158.8	FL	3	moderate fault zone, blocky to clay gouge; minor milled/crushed sulfide in clay gouge zonef
158.8	166.2	JZ	3	moderately fractured rock; c^30,70 w/ weak chl + clay > py fracture coatings
166.2	172.5	FL	2	moderately faulted rock with blocky - clay gouge; minor milled sulfide locally
172.5	191.3	JZ	3	fractured rock; c^0,15,30,70 w/ weak chl + py(marcasite?) coatings
191.3	231	FZ	3	Fault zone w/ zones of competent rock and moderately healed clay gouge; minor sulfide in clay gouge zones
231	283	FL	5	Drilling down sub-vertical mineralized fault (thickness?); intense clay gouge/milled/crushed rock w/ intense py > sp > apy mineralization
283	300.2	JZ	4	mod. to intensely fx'd rock; c^20,30-35 w/ moderate carb + clay coatings
300.2	328.5	FL	5	sub-vertical fault w/ intense clay (milled/crushed) rock; intense py > sp mineralization
328.5	353	JZ	2	weakly fx'd rock; increased silica alteration making rock more competent; c^ 40,60 w/ weak carb + clay coatings

Blackwater Project
Drill Logs

Hole ID:	BW0425	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375801.82
Depth (m):	418	Date Started:	21/04/2012	Casing Size:	HWT	Northing:	5892949.92
Azimuth:	0	Date Completed:	29/04/2012	Casing (m):	16	Elevation (m):	1574
Dip:	-90	Logged By:	CCu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	244.3	-89.2
100	215.5	-89.4
150	203.3	-89.4
200	191.4	-89.3
256	207.3	-89.4
301	209.5	-89.1
352	188.9	-89.1
400	181.4	-88.9
418	179.5	-88.4

Blackwater Project
Drill Summary - Lithology

BW0425

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	16	OB							
16	71	FT	lam	CA	L	GRY	DEP	GR30+	laminated FT, laminations generally 55 deg, locally lower angle TCA
71	152	FT	lam	CA	L	GRY	DEP	GR30+	clear laminations as above, few qtz eyes seen(?)
152	240	FT	a	CA	L	GRY			similar as above, but laminations are not as clearly defined. very small grain size
240	247.3	FT	obsalt	CA	L	GRY	FLT	SH	Massive texture destroyed silica sericte altered FT with moderate specks of sulfide and moderate DBs in stringers
247.3	250	FT	frctz	LAP	L	GRY	DEP	SH	Sheared and structurally fractured Ft with moderate to strong clay along fracture seams and local dark sooty sulfide
250	257.5	FT	obsalt	CA	L	GRY	FLT	SH	Massive texture destroyed silica sericite altered FT; Specular Ashy appearance with mm size ashy specks; moderate sulfide in fractures and as specks
257.5	265	FT	fltbx	LAP	L	GRY	FLT	SH	Intense brittle fracturing of FT with clay alteration along interstices; moderate to strong silica sericite alteration with moderate sphalerite occuring as specks
265	289	FT	obsalt	CA	L	GRY	DEP	SH	Massive texture destroyed silica sericite altered FT; Specular ashy appearance; local rubble and insitu breccia zones with weak clay and gouge on fracture surfaces
289	306	FT	obsalt	CA	L	GRY	FLT	SH	Massive texture destroyed silica sericite altered FT; Specular ashy appearance; Moderately fractured with weak clay on fractures
306	320.7	FT	obsalt	LAP	L	GRY	DEP	SH	Strongly faulted and fractured FT with strong infilling clay along fracture seams
320.7	328	FT	mas	CA	L	GRY	FLT	SH	Massive texture destroyed silica sericite altered FT; local clay on fractures; Very well mineralized
328	329.5	FT	fltbx	LAP	L	GRN	DEP	SH	Fine fault microbrecciated FT with patches of sooty sulphide, stringers of pyrite, and patches of galena
329.5	341.5	FT	mas	CA	L	GRN	FLT	SH	Massive texture destroyed silica sericite altered FT; local clay on fractures; Very well mineralized
341.5	343.7	FT	fltbx	LAP	L	GRY	DEP	SH	Fine fault microbrecciated FT hosted in a sericite clay chlorite matrix
343.7	353.4	FT	frctz		L	GRY	DEP	GR10	Massive texture destroyed silica sericite altered FT moderate fracturing with weak clay on fracutre planes; Strongly mineralized with sphalerite, Dbs, and pyrite
353.4	391	FT	fltbx		L	GRY	UNKN		Texturally destroyed felsic, silicic, clay altered and bleached FT. Minor hematite satining in small sections. Low to moderate chlorite on fractures. Possible banding ? in some sections.
391	418	FT	fltbx	FA	L	GRY	FLT		Texturally destroyed, sverely faulted, light to moderate chloritization. Light hematite staining. Very altered. 1-4% mineralization, average = 2%.

Blackwater Project
Drill Summary - Alteration

BW0425		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
16	41	T		0	MTRX	4	PERV	3	PERV	3	CLY	FR	4	HM	FR	4	clay strong on fractures
41	58	T		0	MTRX	4	PERV	2	PERV	2	CLY	FR	5	HM	FR	3	lots of gouge, intense cly
58	71	T		0	MTRX	3	PATC	4	PERV	2	CLY	FR	4	HM		3	locally very hard, strongly silicified rock. still abundant clay
71	75.8	T		0	MTRX	4	PATC	4	PERV	2	HM	FR	3	CLY	FR	4	strong sil overprint in local zones
75.8	80	T		0	MTRX	3	PERV	4	PERV	2	CLY	FC	3	SIL	OP	3	very hard grey silica, hemitite in zones
80	110	T		0	MTRX	3	PATC	4	PERV	3	HM	FC	3	CLY	FC	5	hemitite zones, some zones with no hem
110	130	T		0	MTRX	4	PERV	4	PERV	2	HM	FC	2	CLY	FC	5	hemitite zones as above
130	151	T		0	MTRX	4	PERV	4	PERV	2	HM	FR	1	CLY	FC	5	decreasing amounts of hemitite
151	178	T		0	PERV	4	PATC	4	PERV	3	HM	FC	2	CLY	FC	3	patchy hard sil alt'n, heavy clay
178	212	T		0	PERV	3	PATC	4	PERV	3	HM	FC	1	CLY	FC	2	small patches of hem alt'n here and there. Stronger patchy sil alt'n, very hard rock in places
212	224.5	S	PATC	2	SPHL	3	PERV	5	PATC	2							Pervasive texture destructive silicification, patchy grrenish - cream wash of ser-chl throughout. Sulphide blebs frequently have millimetric spherical haloes of bleached ?clay alt.
224.5	240	S	PATC	2		0	PERV	5	PATC	2							Pervasive texture destructive sil alt, patchy mottled green - grey ser-chl alt.
240	247.3	S	PERV	2		0	PERV	5	PERV	3							Pevasive texture destructive silica sericite
247.3	250	S	PERV	2	MTRX	4	CLST	2	PERV	2							
250	257.5	S	PERV	2		0	PERV	4	PERV	3							
257.5	265	S	PERV	2	FC	4	CLST	3	PERV	3	HM	PATC	1				
265	279	S	PERV	2	FR	2	PERV	4	PERV	3							
279	280.7	S	PERV	2	MTRX	3	PERV	3	PERV	2							
280.7	291	S	PERV	3	FC	3	PERV	4	PERV	3							
291	306	S	PERV	3	FC	2	PERV	4	PERV	3	CHL	FR	2				
306	320.7	S	PERV	2	MTRX	4	CLST	3	CLST	3	HM	PATC	1				
320.7	328	S	PERV	2	FC	1	PERV	4	PERV	3							
328	329.5	S	PATC	2	MTRX	3	CLST	1	PERV	3	SER	CLST	2				

Blackwater Project
Drill Summary - Alteration

BW0425		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
329.5	341.5	S	PERV	2	FC	2	PERV	4	PERV	3	CHL	FR	2				
341.5	343.7	S	CLST	1	MTRX	4	CLST	1	CLST	1							
343.7	353.4	S	PERV	1	FC	1	PERV	4	PERV	2	CHL	FR	1				
353.4	370	S	FC	1	PERV	3	PERV	3	PERV	3							Low chlorite on fractures, pervasive sericite throughout, moderate silicification, very clay altererd and bleached.
370	379	S	FC	1	PERV	3	PERV	2	PERV	2	HM	PATC	1				Slightly less silica and sericite, hematite staining weak and rare.
379	388	S	FC	2	PERV	3	PERV	3	PERV	3							Stronger chlorite silica and sericite than above.
388	391	S	FC	3	FC	4	PERV	3	PERV	3							Increased chlorite and clay due to gouge.
391	393.3	S	FC	3	PERV	4	PERV	2	PERV	2							Texturally destoyed. Majority of alteration seems to be clay - abundant in matrix. Lightly silicified, lightly chloritized in fracs. Hem stain is less than 1 in this interval.
393.3	400.6	S	FC	3	PERV	5	CLST	2	PERV	4	HM	PATC	1				Strongly clay altered in both matrix and clasts. Silicified clasts. Moderate chloite in fracs. Well sericitized. Light hematite staining but slightly sronger than unit above.
400.6	408	S	FC	2	PERV	3	PERV	2	PERV	3							Overall lower alteration than above. Silica value stays the same but sitches from clasts to pervasive in compotent core.
408	410.3	S	PATC	4	PERV	5	CLST	3	PERV	4							Chlorite increases and become patchy in this gouge section, clasts are silicified, sericite and clay are strong.
410.3	416.4	S	FC	2	PERV	3	PERV	4	PERV	3							Ser, Clay and Chl drop a bit and silicification stroger in compotent core.
416.4	418	S	PERV	3	PERV	5	CLST	3	PERV	4							Well silicified clasts, strongly sercitized and clay altered gouge. Gouge is uniformly green from Chkl, no chl in clasts.

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Blackwater Project
Drill Summary - Mineralization

BW0425		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	28		0		0		0	Goe	FC	0.1							barren for sulphides
28	37		0		0		0	Dbs	VN	0.1							black sooty DBS, orange hem common
37	48		0		0		0	Dbs	VN	0.1							as above
48	56.5		0		0		0	Goe	FC	0.1							similar as above, a bit more geothite and hemitite
56.5	66		0		0		0	Goe	FC	0.1							As above
66	74		0		0		0	Dbs	BB	0.1							sooty, blebby DBS
74	83		0		0		0	Dbs	LAM	0.1	Goe	FC	0.1				sooty DBS folowing a lamination or two, minor goethite
83	92		0.1		0.1		0	Dbs		0.5							increasing amount of sooty DBS, or perhaps oxidized dark fine grained sulphides (MnO?)
92	109		0.1		0.1		0	Dbs		0.5							similar as above
109	120	DI	2	DI	2	SP	0.1	Dbs	DEN	3	Ga	CG	0.5				fine grained py, also some euhedral py crystals with fine grained DBS. Galena seen in coarse grained specks
120	133	DI	2	DI	2	SP	0.1	Dbs	DEN	3	Ga		0.1				as above, with slightly more zones where sulphides are oxidized out
133	146	DI	2	DI	3	SP	0.1	Dbs	DEN	5							DBS high grade, quite a bit of sph. Euhedral cubes of py, with fine grained black sph(?) haloes
146	158	DI	1	DI	2	SP	0.1	Dbs	DEN	5	Ga	CG	0.1				patches where sulpihdes are oxidized out. DBS seems to be sometimes patches of mainly py, then other times patches of fine grained sph. Trace Po, trace gal
158	174	DI	2	DI	2		0	Dbs	DEN	5							similar as above
174	187		1	DI	2		0	Dbs	DEN	3							DBS dropping off a bit
187	202	EU	1	DI	2		0	Dbs	DEN	2							haloes of sph around euhedral py xls.
202	209	EU	1	DI	2		0	Dbs	DEN	1							up to 2 % DBS locally,
209	226	VN	0.5	SP	0.5	BB	1	Dbs	DEN	2	Py	BB	1				Consistent strong sulphide mineraliztion. DBS is locally very well developed, forming 1-3mm thick fronds. Millimetric blebs/specks of po = py >sphal are disseminated throughout, and occasional irregular blebby veinlets of py at 20degTCA

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Blackwater Project
Drill Summary - Mineralization

BW0425		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
226	243	BB	1.5	SP	1		0	Dbs	DEN	2	Py	VN	0.1				Mineralization is identical in style in similar in density to above interval, but po is absent and py more common in blebs. Still strong, locally very well devloped DBS
243	247.3	BB	1	SP	1	BB	0.5	Dbs	DEN	2							
247.3	250		0		0		0	SoSu	FG	0.5	SoSu	BB	1				Sooty black sulfhide on fracture planes ithin structurally fractured zone
250	257.5	BB	1.5		0.5	BB	0.1	Dbs	DEN	1							
257.5	265		0	SP	3	BB	0.5	SoSu	FC	1	SoSu	BB	0.5				
265	279	SP	0.5	BB	2	SP	0.1	Dbs	FC	0.5	Dbs	BB	0.5				
279	280.7		0.5		0		0										
280.7	291	BB	0.5	SP	1.5	BB	0.5										
291	306		0	SP	1	SP	0.5	SoSu	STR	0.5							
306	320.7	BB	0.5	BB	2	SP	0.5	SoSu		1.5							
320.7	328	SP	1	SP	2	BB	0.5	Dbs	DEN	1	SoSu	PATC	0.5				
328	329.5	SP	1	SP	2	BB	0.5	Dbs	DEN	1	Ga	PATC	1	SoSu	PATC	2	
329.5	341.5	STR	2	SP	2	SP	0.5	Dbs	DEN	0.5	Ga	SP	0.5	Cp	SP	0.1	
341.5	343.7		0		0		0	SoSu	PATC	0.5							
343.7	353.4	SP	0.5	SP	2		0	Dbs	STR	0.5							
353.4	358	FC	0.3	SP	0.1		0	Dbs	SP	0.1							Low sulphides, small ammount of fine grained Py on fracs and fe specks, fe small specks of Sp, few small DBS specks.
358	360	FC	0.2	VN	0.5		0	Py	VN	0.5	Dbs	SP	0.2	Ga	VN	0.1	Only Py on fracs and Low DBS specks in most of core. Large cross section of Sp+Py+Galena at 359.6m.
360	368.5	FC	0.1		0		0	Hm	PATC	0.1							Only very slight Py on fine fracs (occasional) and Light patches of Hematite (occasional).
368.5	372.4	FC	0.1		0		0	Hm	PATC	0.1							Low minerals, same as above.
372.4	380	FC	0.5	SP	0.5	SP	0.2	Dbs	SP	0.2	Hm	PATC	0.1	Py	SP	0.2	Sulphides increase, Py in fracs and specks, Sp in spekcs and fe sm blebs, hem patch as before.

Blackwater Project
Drill Summary - Mineralization

BW0425		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
380	383	VN	0.7	VN	1.5	SP	0.1	Cp	VN	0.2							All sulphides are veined except minor Py in fracs. @380.60m large vein section of Sp + Chalc , other veins of Sp +Py
383	391	FC	0.3	SP	0.5		0	Dbs	SP	0.1							\Mostly specks of Sp in matrix, minor Py on fracs and DBS in matrix as spcks.
391	393.3	SP	0.1	BB	0.3	SP	0.1	Dbs	SP	0.2	Sp	SP	0.1				Low mineralization. TS<1% Couple Blebs of majority Sp with fine Py & Po trace.
393.3	395.5	DI	3	BB	1		0	Dbs	PATC	0.5	Py	CG	0.5				Interval contains well mineralized fault gouge. Py is finely dissem plus seam of coarse crystals. Sp blebs in gouge. Fine specks of DBS.
395.5	400.6	SP	0.2	SP	0.1		0	Dbs	SP	0.1							Only very fine specks of Sulphides in gouge.
400.6	406	SP	0.3	SP	0.5		0	Dbs		0.2							same style of mineralization as gouge unit just above
406	408	SP	1.5	SP	2	SP	0.1	Dbs	SP	0.5							Slighly larger and more dense areas of mineralization. Sp dominant, disseminated specks of Py, Po magnetism light inside Sp and Py clusters.
408	410.4	SP	0.5		0		0										Only very fine Py in this gouge. No sulphides noticeable along chloritized fractures.
410.4	414.5	SP	0.1		0		0										only trace Py found
414.5	416.4	FC	1		0		0	Dbs	SP	0.1							Fairly regular occurence of fine tarnished Py in frcas. Few small speck of DBS?
416.4	418		0		0		0	Dbs	SP	0.1							Possible DBS in ~10cm section of gouge.

Blackwater Project
Drill Summary - Structure

BW0425

From (m)	To (m)	Structure	Strength	Comments
16	20.8	FZ	4	sandy gouge, fairly well healed, top a bit more broken, possibly affected by weathering
20.8	33.2	BRKZ	3	well broken rock, rough fractures, light coloured sandy clay on many fractures. Locally very broken
33.2	41	JZ	4	influenced quite a bit from weathering
41	47.5	FZ	3	rough sandy gouge, locally broken
47.5	57.4	FZ	4	sandy gouge, locally broken
57.4	63	JZ	4	some rough fractures, but most joints at roughly 60 deg TCA
63	76	JZ	2	jointing similar orientation to laminations, around 35 deg TCA
76	79.7	BRKZ	2	some rough fracturing, some rubble. Joints at 30 and 50 deg TCA
79.7	85.4	JZ	1	competant rock, dominant jointing at 60 deg TCA
85.4	86	FZ	2	short rubbly, gouge zone
86	87.1	JZ	2	short competant zone
87.1	89.2	BZ	4	clear upper and lower contacts at 25 deg TCA. breccia zone, then sandy, well healed gouge
89.2	150	JZ	2	consistntly competant rock, no real dominant joint set, but a good one at 60, perhaps another minor set at 40
150	166	JZ	2	main joint set at 50 to 55 deg TCA, minor set at 30 deg TCA
166	167.8	FZ	2	wash out, very little recovery, assume it was gouge. Lower contact measurable at 45 deg TCA
167.8	175.3	JZ	2	various planar joints from 40 to 60 deg TCA
175.3	176.5	BRKZ	2	rough fracturing with hemitite stain onthem
176.5	196	JZ	3	major set at 50 deg TCA, minor set at 15-25 deg TCA. becoming more broken at end
196	197.4	FZ	2	fairly weak fault zone, chunky, sandy gouge with annealed fragments, then broken
197.4	201.3	BRKZ	4	broken, very shard-like rubble
201.3	211	FZ	2	Frequent planar fractures, moerately rubbly, locally fault breccia with weak sandy gouge development
211	240	JZ	2	Occasional clean planar joints, typically oriented 45degTCA.
240	247.3	JZ	2	
247.3	250	FZ	3	Structure induced fracture zone
250	257.5	JZ	3	
257.5	265	FZ	3	Structurally induced fracture zone
265	267	JZ	3	
267	274	BRKZ	4	Broken fracture zone with local gouge and clay on fracture surfaces

Blackwater Project
Drill Summary - Structure

BW0425

From (m)	To (m)	Structure	Strength	Comments
274	279	JZ	4	Weak clay and clay gouge on fracture surfaces
279	280.7	FZ	3	Moderate structurally induced fracturing with clay alteration along seams
280.7	283	BRKZ	4	Broken zone with weak to moderate clay on fractures
283	291	JZ	4	strong jointing with local clay gouge on fracture surfaces
291	306	BRKZ	3	
306	316	FZ	4	Moderate to strong clay gouge on fractures with local intervals of fault gouge
316	320.7	FZ	3	
320.7	328	JZ	3	
328	329.5	FZ	4	Cemented fault breccia and moderate to strong clay
329.5	341.5	BRKZ	3	
341.5	343.7	FZ	4	
343.7	353.4	BRKZ	3	
353.4	361.5	BRKZ	3	
361.5	375	FZ	3	Moderately faulted section, some gouge, some healed gouge, very broken. With few compotent sections.
375	388	JZ	3	Appears to be 2 joint sets. Predom at 30dtca, with lesser 40dtca jointing.
388	391	FZ	4	Severly broken core with some gouge and lots of healed fault.
391	393.4	JZ	2	Weakly jointed and heavily fractured. Joints at 30dtca.
393.4	400.6	FL	5	Fault with 80% gouge, 20% fault breccia clasts. Bottom contact is at 30dtca. A few chl seams and fractures throught partially healed fault are at 30dtca. Moderately rounded fault breccia clasts of FT? Bleached, clay altered and silicified in sections.
400.6	408	JZ	3	Moderately jointed and broken, jointing primarily at 30dtca, ith some jointing at 40dtca.
408	410.4	FL	4	Slightly less gouge and more fault breccia clasts than previous fault. angle to core unknown.
410.4	416.5	JZ	4	Primary jointing at top of interval is 30dtca, also subvertical jagged fractures here. This followed by smaller sction lower down, of 50dtca jointing.
416.5	418	FL	5	90% gouge, 10% fault breccia clasts of FT. Sandy textured gouge.

Blackwater Project
Drill Logs

Hole ID:	BW0426	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374902.34
Depth (m):	367.59	Date Started:	23/04/2012	Casing Size:	HWT	Northing:	5893000.97
Azimuth:	0	Date Completed:	27/04/2012	Casing (m):	26.52	Elevation (m):	1563
Dip:	-90	Logged By:	MYo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.02	187.4	-89.7
91.44	160.7	-89.8
137.5	223.7	-89.3
182.9	214.2	-89
228.6	167	-88.9
274.6	215.3	-88.7
320.3	236.2	-88.5
366	203.7	-88.7

Blackwater Project
Drill Summary - Lithology

BW0426

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	26.52	OB							No recovery due to inproper casing installation method
26.52	47.65	VC	volc	LAP	M	GRY	ALTFR	GR30	VC with patchy bleached clay alteration. Felsic clasts. Oxidation is fracture controlled to patchy.
47.65	95.1	AND	obsalt	LAP	M	GRY	FLT	SH	Fragmental andesite obscured by Chlorite and Sil alteration. relic clast occasionally distingishable through alteration
95.1	112.1	AND	fltbx	LAP	M	GRY	FLT	GR30	Faulted; same as above.
112.1	180.1	VC	volc	LAP	M	GRY	DEP		Polymictic mafic dominant fragmental. Approx 80-85% mafic.
180.1	310.8	VC	volc	LAP	M	GRY	DEP	SH	Same fragmental VC as above
310.8	320.9	AND	mas		D	BLK	DEP	SH	Silicified and biotite altered andesite, mostly massive with some local amygdules.
320.9	367.6	VC	ms	LAP	D	GRY	UNKN		Homogenous poorly sorted, ungraded VC. Clasts are typically 1-4cm wide massive felsics, occasioanally laminated, occasionally andesitic, in matrix of medium sand - ash sized mafic material. Quite frequent large andesiticf blocks (10-100cmwide).

Blackwater Project
Drill Summary - Alteration

BW0426		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
26.52	47.55	O		0	PATC	2	PATC	4	PERV	1	LIM	FR	3	HM	FR	3	Sil alteration may possibly be Albite alteration.
47.55	95.1	T	PERV	2		0	PERV	2	PERV	1	HM	FR	2				alteration obscuring primary textures
95.1	101.5	T	PERV	2		0		0	PERV	1	LIM	PATC	3	HM	FC	2	
101.5	111.6	S	PERV	2		0	CLST	2	PERV	1							Wealy silicified prior to being milled during faulting
111.6	206.1	S	PATC	1	CLST	2	PERV	4	PATC	1							Sil overprinting ser and clay alteration
206.1	222	S	PATC	3		0	PERV	5	PERV	2							Silica flooding. increased Ser and Chl
222	310.8	S	FR	2		0	PERV	4	PERV	1							strong pervasive silicification
310.8	320.9	S	FR	1	INFILL	1	PATC	4		0	BIOT	PATC	3				Moderate to strong, patchy to pervasive silica, patchy biotite alteration, clay infilling occasional fractures and amygdules, clay on fractures sometimes with weak chlorite.
320.9	367.6	S	PATC	1		0	PERV	4		0	CHL	CLST	2				Pervasive strong but not texture destructive sili alt, core is hardness 7 and glassy with impeccable preservation of texture. Occasional 4-10cm wide patches of strong chloritization, and quite frequent strong chloritization of clasts (~1/30 clasts)

Blackwater Project
Drill Summary - Mineralization

BW0426		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
47.55	95.1	BB	0.1	BB	0.5	BB	0.1	Grnt	BB	0.5							Sulfide blebs frequently have a weak bleached halo
95.1	112.1	FG	0.1	FG	0.1		0										
112.1	140.5	FG	0.1	FG	0.1	CR	1	Grnt		0.5	Dbs	CR	0.1				Dbs within some clasts; may be in matrix but difficult to see because of dark coloration
140.5	180.1	VN	0.5	FG	0.1	CR	1.5	Grnt		0.5	Dbs	CR	0.1				Dbs same as above. Py veinlets infrequent
180.1	212.1	FG	0.1	FG	0.1	BB	1	Grnt		0.5							
212.1	222	FG	0.1	VN	0.5	BB	0.5	Grnt	BB	0.5	Dbs		0.1	Cp	FG	0.1	Increased sulfide species in alteration zone. Sp found in a veinlet and fine grained
222	310.9	FG	0.1	FG	0.1	CR	1	Grnt	BB	0.5	Mrc	FC	0.1				
310.9	320.9		0	DI	0.5	PATC	0.1										Trace patches of po, with minor di sphal, esp infilling amygdules/vugs and a few specks observed on fractures
320.9	367.6	VN	0.1	CR	0.1	DI	0.5	Apy	FP	0.1							Very fine (<1mm) specks of po disseminated throughout, occasionally in larger (1-2mm) blebs. Isolated py veinlet at 335m. Very fine specks of sphal disseminated through large andesitic blocks. Very occasional trace Ars on late stage fractrures.

Blackwater Project
Drill Summary - Structure

BW0426

From (m)	To (m)	Structure	Strength	Comments
26.52	35.6	BRKZ	3	
35.6	95.1	JZ	4	Multiple joint sets. joints running down core axis make for increased mechanical breaks
95.1	122.2	FZ	4	
122.2	146.4	JZ	2	
146.4	151.2	FZ	4	faulted with poor recover.
151.2	190.7	JZ	3	
190.7	192.5	FL	2	broken with minor flt gouge
192.5	222.8	JZ	3	
222.8	226.7	BRKZ	2	
226.7	228.9	JZ	3	
228.9	289.9	FZ	1	several fault with 1-5cm aperture infilled with gouge
289.9	308.7	JZ	3	
308.7	309.2	FL	3	Short fault with clay gge
309.2	320.9	JZ	3	Joint zone, with fractures 45>60 degrees TCA
320.9	367.6	JZ	0	Definition of stick rock

Blackwater Project
Drill Logs

Hole ID:	BW0427	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375300.64
Depth (m):	424	Date Started:	24/04/2012	Casing Size:	HWT	Northing:	5893500.67
Azimuth:	0	Date Completed:	12/05/2012	Casing (m):	46.5	Elevation (m):	1514
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	321.6	-89
100	305.3	-89.2
150	327.6	-88.5
200	344.7	-88.1
250	358.8	-88.4
300	344.5	-88.5
350	300.5	-88.1
400	295.3	-87.7
424	281.8	-86.5

Blackwater Project
Drill Summary - Lithology

BW0427

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	13	OB							Polymictic over burden
13	65	VC	volc	BLOCK	L	GRY	ALTFR	GR30	Clast supported strongly altered, FLPT clasts are banded.
65	116.5	VC	volc	LAP	L	GRY	FLT	GR10	10% of clasts are chloritized, minerization is almost exclusively clast replacemnt, sulphide replaced clasts are not chloritized.
116.5	139.5	VC	fltbx	LAP	L	GRY	ALTFR	GR30	Very similar to above Lithology is FAult zone 75% faulted material, well developed clay gouge with milled clasts. Lower contact is irregular alteration front in intense fault gouge.
139.5	149	AND	fltbx	LAP	D	GRY			Typical blackwater volcanoclastic andisite, moderate patchy alteration of clasts in some fault gouge, strong pervasive sericite alteration. Unit is a fault zone 50% fault material, well developed clay gouge with milled clasts.
149	191	AND	flw		L	GRY			Massive andesite, intervals of amygdules, strong sericite alteration developing local Psuedo breccia.
191	209.7	AND	mas		M		UNKN	GR30	Continuation of above; Massive AND, moderatley amygdaloidal locally abundant, moderated silica fill amygs and perv, off red-pink Feldspar locally (possibly Fe-CO3 alt or more potassic feldspar?), Small <0.5m Bx sections with ghost like clasts due to
209.7	234.6	AND	mas		D	GRY	FLT	SH	Massive AND, moderatley to strongly porphyritic Feldspar>Hornblende, Moderatley calcite-ser-(Talc?) Veining.
234.6	242.5	AND	bx	LAP	D	GRY	ALTFR	GR30+	Heavily altered AND, silica-ser-chl patches, anc calcite veining. Moderatley silicified M.Gray matrix eroding clast boundaries and supporting D.Gray-Black clasts some of which are amygdaloidal. Moderate Faulting. Bottom contact is a gradational silic
242.5	257.5	AND	obsalt	LAP	L	GRN	ALTFR	GR10	Structurally controlle silica-ser alt obscuring texture, bottom alt contact sharp gradation.
257.5	273.8	AND	bx	LAP	D	GRY	DEP	GR30	non-competent stock rock D.Gray-Black BX SR AND, feldspar-phyric clasts in D.Gray matrix.
273.8	284	AND	mas		D	GRY			D.Gray-Black Plag porphyritic AND.
284	292	AND	por		D	GRY	FLT	GR30+	Dark grey-black andesite with purple hue, plag phyric and locally brecciated with calcite stringers/veinlets through interval, faulted from 289.7m-292m
292	296.5	VC	plm	LAP	D	GRY	ALTFR	GR10	Dark grey polymictic volcaniclastics; mafic dominant with roughly 50-50 clasts to mafic ratio
296.5	307	VC	obsalt	LAP	MO	GRN			Bleached/altered green-grey volcaniclastics; chlorite in clasts
307	331	VC	plm	LAP	MO	GRN			Bleached Ser Sil matrix with Chl replacement of clasts.

Blackwater Project
Drill Summary - Lithology

BW0427

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
331	370	VC	plm	LAP	MO	GRN	FLT	SH	Bleached grey sericite-silica matrix with dark green sericite-chlorite (white streak) clasts. When cut by saw blade, the white streak of abundant sericite (possibly with clay in matrix) is visible
370	373	VC	frctz	LAP	MO	GRN	UNKN		Strongly fractured and faulted equivalent above. Strong chlorite along fx planes.
373	408.8	VC	plm	LAP	MO	GRN	FLT	SH	Light-medium grey sericite-silica matrix with angular alt'd ser-chl clasts. Locally clast supported and faulted.
408.8	424	AND	aph	LAP	D	GRY	UNKN		Dominantly fine-grained, strongly faulted andesite with wk bx texture. From 416.5-417.00 may be mudstone unit of SEDS package. Weakly hbl porphyritic

Blackwater Project
Drill Summary - Alteration

BW0427		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10	22	T	PERV	1	PERV	5		0	PERV	1							
22	65	S	CLST	2	CLST	2	MTRX	5	CLST	2	SIL	CLST	2				Strong silica alteration/replacement/primary of matrix in crosscutting (hydrothermal/vein) breccia
65	135.5	S	CLST	4		0	MTRX	5	CLST	3							Silica alteration of the matrix is texture destructive.
135.5	149	S	CLST	3	PATC	3		0	MTRX	4	CHL	MTRX	1				Strong pervasive sericite alteration of matrix in Andisite volcanoclastic texture, not if fault gouge/matrix.
149	191	S	FR	3	PATC	3		0	MTRX	4							Strong pervasive serite alteration locally developes psuedo breccia texture. patchy clay alteration bleaches core.
191	198.7	S	FC	2	PATC	3	PATC	3	MTRX	1	SIL	AMYG	2	CAL	VN	3	Strongly Veined Rock; APy-Silica Veining in patches, with it comes clay-silica-ser-chl alteration to surrounding rock. Calcite4 Veining as well, coating Joints (Late-stage).
198.7	217	S	FR	2	MTRX	2	PERV	3	MTRX	2	SIL	AMYG	3	CAL	VN	2	Moderate Microcrystalline Perv Silica, as well as silica amyg filler. Sericite-clay replacement, throughout. Calcite Moderatley veined with locally assoc with Green Chl. Local Joint sets have stronger D.Green slicken lined Chlorite.
217	238.1	S	FC	1	PATC	2	PERV	3	MTRX	1	SIL	AMYG	1	CAL	VN	4	Moderate Microcrystalline Perv Silica, as well as silica amyg filler. Sericite-clay replacement, throughout. Calcite Moderatley veined with locally assoc with Green Chl-chl.Brown BIOT patches locally amongst unsilicified rock. Leaching around calcite veins has caused formation of clays.
238.1	239.5	S	BN	3	FC	2	PERV	3	PERV	4							Stong Sericite-Silica alt obscuring texture. Withbands of BB'y sulphides and banded chl.
239.5	243	S	FC	2	CLST	3	MTRX	3	MTRX	2	CAL	VN	2				Matrix dom silica-ser alt. Clay replacing dark clasts. Calcite veining.
243	257.5	S	PATC	2	FC	4	PERV	4	PERV	3							Altered AND, D.Gray silica BB's with L.Gray silica BB's in a stew of green Ser-silica-chl.
257.5	273.8	S	CLST	2	REP	3	MTRX	2	MTRX	2	CAL	FC	2				Silica-Ser matrix dom, clay-chl rep clasts, with clay rep feldsparsin clasts. Calcite on FP's

Blackwater Project
Drill Summary - Alteration

BW0427		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
273.8	289.7	S	MTRX	1	REP	3	MTRX	2	MTRX	2							Clay replaces plag phenos, light purple hue caused by a combination of silica, sericite and possibly chlorite
289.7	296.5	S	CLST	2	REP	2	MTRX	2	MTRX	2				CAL	FC	2	Clay replaced phenos visible towards 294m, clasts are sericite altered
296.5	307	S	CLST	3	REP	1	MTRX	4	CLST	4	HM	FR	1	CHL	FC	4	Dark green sericite chlorite altered ghost like clasts within cloudy grey silica matrix, Red hematite, chlorite on fracture planes
307	331	S	CLST	4	REP	1	MTRX	4	MTRX	3	SER	CLST	5				Dark green clast replacements interpreted as Chl. Ser Sil matrix
331	373	S	CLST	3	REP	2	MTRX	4	MTRX	3	SER	CLST	5	SIL	VN	1	Light grey sericite-silica-clay altered matrix with dark green sericite>chlorite altered clasts. Same unit as above. Weak silica veins? light grey visible at 356.5m
373	408.8	S	CLST	3	REP	2	MTRX	4	MTRX	3	SER	CLST	5	CHL	FR	5	As above.
408.8	424	S	FC	5	FC	3	MTRX	2	MTRX	1	CAL	FC	4				Dark grey weakly altered sericite matrix with strong fracture controlled calcite. Trace red hematite from 292.8-293m

Blackwater Project
Drill Summary - Mineralization

BW0427		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
13	29.5	DI	1		0		0	SoSu	DI	1							
29.5	30		0	CR	1		0	SoSu	DI	5							Sooty sulphide in clay fault gouge.
30	52	CR	0.5	CR	1		0	SoSu	CR	1	Sp	VN	0.1	Py	VN	0.1	trace Py ans Sp in Qtz vein
52	65	CR	0.5	CR	1		0	SoSu	CR	1	Sp	VN	0.1	Py	VN	0.1	trace Py ans Sp in Qtz vein
65	85	CR	0.5	CR	1		0	SoSu	CR	1	Dbs	BB	0.5				sooty sulphide, is decreasing dbs is increasing, both likely Py.
85	103	CR	0.5	CR	1		0	Dbs	BB	1							most mineralization is clast replacement, matrix minerization is in fine clasts.
103	116.5	CR	0.5	CR	2		0	Dbs	BB	1							increasing Sp, most mineralization is clast replacement, fine grained is in fine clasts.
116.5	139.5	CR	0.5	CR	1		0	Dbs	BB	0.5							Not signifigant sulphide minerization seen in fault gouge.
139.5	149	EU	0.1		0		0										Rare Euhedral pyrite grains in AND.
149	160.5	FP	0.1		0	BB	0.5	Apy	VN	0.1							Minor Po BB's, locally. Py on FP's assoc with Calcite, and locally BB's within APy VN. APy Veinlet, with strong APy DI's surrounding.
160.5	165.2	VN	0.1		0	DI	2	Py	BB	0.5	Mrc	FP	0.1	Apy	DI	0.1	DI'd BB's of Po, locally Py BB's associated with Jasper and silica. Py-Ca VN'ing, locally. Amorphous Mrc on FP's, locally.
165.2	191.5	DI	0.5		0	DI	1	Py	VN	0.5	Apy	DI	0.1				DI'd specks euhedral DI's and BB's of Po and Py. Py Veined, and BB's increase in abundance with vein proximity. Trace DI's of APy. Py increases with depth as Po decreases.
191.5	194	BB	0.5		0		0	Apy	VN	5	Apy	DI	3	Py	FP	0.1	Large APy-Qtz Veins, with minor anhedral Py BB's within. Proximal to veins is strong APy DI's. euhedral small amalgamations of Py assoc with Ca on FP's (veinlets?)
194	206	FP	0.5		0	DI	1	Apy	VN	0.1							amorphous DI'd BB's and amyg filler Po. Small euhedral Py amalgamations on CA coated Joints. singular Qtz-Apy veinlet.

Blackwater Project
Drill Summary - Mineralization

BW0427		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
206	217	BB	0.5		0	BB	1.5	Po	VN	0.1	Py	FP	0.5				moderate sized amorphous DI'd BB's and amyg filler Po, and amorphous DI'd BB's of Py. Py on Ca coated FP's.
217	238	VN	0.1		0	DI	0.5	Ga	DI	0.1							DI's, SP's and DI'd BB's of Po, locally intergrown with Ga (Ga-replacing). Py VN'd with and without Ca.
238	239.2	VN	5		0	VN	5										Banded BB's of Py and intergrown Po with abundant chl and ser, in a Large amorphous vein.
239.2	243	VN	0.1		0	DI	0.5										DI'd Po and trace Py veining.
243	257.5	FP	0.1	BB	0.1	BB	0.5	Grnt	BB	0.5							Min decreased in laminated zones. Grnt rich interval 253-254m.
257.5	271	FP	0.1	BB	0.1	AMYG	0.5										Mineralization restricted to trace Py with calcite and Po with amygs.
271	289.7	FP	0.1	BB	0.1	BB	1.5	Apy	DI	0.1							APy up to 1% from 281-282m, Po blebs may be following locations of phenocrysts and amygdules, Apy also seen from 284-284.5m
289.7	296.5	FP	0.1	CR	0.1	BB	0.5	Py	GOU	0.1							Py gge up to 0.5% from 287-289.3m, weakly mineralized interval
296.5	307	BB	1	BB	1	BB	1	Py	FP	0.5	Hm	FP	0.5	Mrc	FP	0.1	Octahedral py found with brick red hematite along frac planes, blebs possibly clast replacement, Sph=Py=Po>Ga intergrown speckled/globular/elongated throughout interval
307	331	VN	0.5	BB	2	BB	1	Apy	FG	0.1							Py veinlets infrequent
331	373	VN	0.5	BB	1.5	BB	1.5	Apy	SP	0.1	Ga	VN	0.1	Mrc	FP	0.1	Strongly mineralized interval. Reddish sphalerite blebs intergrown with po. Py found as veinlets through interval
373	408.9	VN	0.5	BB	1.5	BB	1	Ga	VN	0.1	Apy	SP	0.1				Galena coated along fx planes. Decreased po blebs. Similar to above.
408.9	424		0		0	BB	0.1										Trace po. Locally very weakly magnetic

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Blackwater Project
Drill Summary - Structure

BW0427

From (m)	To (m)	Structure	Strength	Comments
13	22.3	BRKZ	3	
22.3	24.61	FL	4	moderate gouge, 50% clasts < 1cm
24.61	29.5	JZ	4	joint set @ 5, 30, 60-70 DTCA
29.5	30	FL	5	Gouge is silt to clay, majority is lost. 10% sooty sulphide in gouge.
30	42	JZ	4	joint set @ 5, 30, 60-70 DTCA
42	43	FL	3	75% of gouge washed away, remaining is 50% clasts, sand to silt matrix.
43	50	JZ	4	
50	50.4	FL	2	Gouge is 75% clasts, SA, <3cm.
50.4	53.5	JZ	4	
53.5	58.3	FL	3	most of core lost
58.3	58.7	FL	5	Gougr is 50 clasts, milled <5mm.
58.7	61	JZ	3	
61	62.4	FZ	4	several faults at various orientations. larges is at 30 to CA
62.4	70.2	JZ	4	joints @ 5, 30
70.2	70.4	FZ	1	fault gouge is silt to sand and angular clasts.
70.4	77.5	JZ	3	joints @ 20, 60
77.5	82	FZ	3	50% fault material in interval, fault gouge is 50% clasts, milled in a clay-silt matrix.
82	116.5	JZ	3	joints @ 30, 60.
116.5	149.5	FZ	5	30% fault material ininterval, gouge is clay to fine sand, clasts are milled to angular.
149.5	191	JZ	2	joints @ 30, 60.
191	193.2	VZ	2	APy and Silica flooding rock, broken at irregular angles.
193.2	198.5	JZ	3	Jointed @ 30>40 dtca.
198.5	198.7	FL	1	Small fault, with large clasts, matrix filled with clays and calcite, and slickens on Fp grown @ 40 gamma.
198.7	220.1	JZ	2	Jointing @ 40 (30-40) > 60 (50-65) dtca. lower angles dominated by calcite on joints, while higher angles dominated by mineralization on joints.
220.1	221.9	FL	3	Faulted rock, with strong ser-chla lteration and calcite veining.
221.9	224.2	JZ	4	Strongly Jointed Calcite veined, locally broken.
224.2	224.4	FL	3	Strongly calcite veined/clay gouged Fault.

Blackwater Project
Drill Summary - Structure

BW0427

From (m)	To (m)	Structure	Strength	Comments
224.4	234.6	JZ	3	Variably Jointed (from 10-70 dtca, strongest orientatiosn from 50-70 dtca ~60) Calcite Veined rock, calcite on joints.
234.6	237.3	BZ	4	competent fault-Bx, unknow dtca. clay gouge supporting rounded lithics of AND.
237.3	239.5	JZ	4	Alteration Extension of fault zone, healed by silica-ser-chl alt.
239.5	240.7	FL	4	Bx and sand-sized milled grains with minor clay.
240.7	243.3	FL	3	Broken rock extension of fault.
243.3	252	FL	4	Fault Bx, with moderate clay-chl-ser matrix supporting milled coars sand to small gravel lithics, amongst competent larger sections possobly large boulders?
252	257.5	FL	4	same as above. Bottom contact @ 40 dtca.
257.5	259	FZ	4	Un-bleached fraction of fault.
259	286	JZ	3	Jointed @ 45 (40-50) > 20 dtca, locally following calcite vienlets.
287.4	289.7	JZ	2	Joints dominantly at 50dtca
289.7	292	FL	2	Fault/clay gge + broken up core
292	296.5	JZ	2	Joint zone with local broken zones, dominant joints at 50dtca
296.5	301.5	BRKZ	3	Broken zone with rubbles and broken core
301.5	307	JZ	2	Random angles at 50,30,60 and 70 dtca
307	310	JZ	3	
310	315.8	JZ	2	primarily in tact with serveral mechanical breaks
315.8	318.4	FZ	2	several gouged zones between weakly jointed core
318.4	323.6	JZ	2	joints also at 70
323.6	334	JZ	3	joints typically 20-35deg
334	370.2	JZ	3	Joint sets @ 30, 50 and 70 dTCA
370.2	373	FZ	3	Chl-coated fx planes, strongly fractured, clay within matrix. Low angle TCA faults
373	376.2	BRKZ	3	Chl-coated fx. Medium-dark green coating
376.2	384.5	JZ	3	Joints at 10 and 50 dTCA
384.5	392.4	JZ	3	Joints at 70, 50 and 30 dTCA
392.4	396.3	BRKZ	3	Chl on fx planes, strongly broken
396.3	397.7	FL	4	Lower contact at 30 dTCA. Pyrite-clay-chl gouge
397.7	399.5	JZ	3	chl coated fx

Blackwater Project
Drill Summary - Structure

BW0427

From (m)	To (m)	Structure	Strength	Comments
399.5	401.3	FZ	2	Chl slickensides on fx plane
401.3	408.9	JZ	3	40 & 20 dTCA chl coated joints
408.9	424	FZ	4	Sharp upper contact @ 40 dTCA

Blackwater Project
Drill Logs

Hole ID:	BW0428	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375502.11
Depth (m):	352	Date Started:	23/04/2012	Casing Size:	HWT	Northing:	5893249.41
Azimuth:	0	Date Completed:	29/04/2012	Casing (m):	14.1	Elevation (m):	1551
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	263.8	-89.9
100	353.8	-89.9
156	347.4	-89.7
200	212.2	-89.7
256	240.3	-89.3
303	204.1	-89.5
352	282.3	-89.4

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Blackwater Project
Drill Summary - Lithology

BW0428

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	14.1	OB							Silty-matrix, well sorted (equal distribution of clast size) within competent till unit.
14.1	31.95	VC	ms	LAP	M	GRN	FLT	SH	Both white & green altered clasts. Laminated clasts through interval. Silica after clay altered clasts. Max clast size up to 7cm. Clast-size averages about 1cm. Occasional andesitic clasts
31.95	40	VC	fltgge	LAP	M		FLT	GR10	Medium-dark grey. Strongly faulted. Predominantly mafic. Lacks visible white felsic clasts uphole and calcite veins/carbonate alteration downhole. May just be section of andesite with VC texture
40	65.5	AND	frctz	LAP	D	PUR	FLT	GR30	Dark grey-purple, strongly carbonate altered, weakly brecciated andesite. Zones with intense calcite veining has slight purplish tinge (hematite+bt?), Greenish gry zones = sericite?
65.5	72	VC	frctz	LAP	M	PUR	FLT	GR10	Medium grey-purple, strongly faulted. Lacking carbonate/calcite alteration of andesitic interval. Chlorite gouge matrix
72	74	VC	plm		M	BLU	FLT	GR10	Medium grey with slight bluish tinge noted @ 73m. Matrix supported, subrounded clasts (sericite-altered clasts)
74	77.5	VC	fltbx	LAP	M	GRN	FLT	SH	Chlorite-pyrite-clay gouge holds together rounded clasts of volcaniclastic unit
77.5	84.7	VC	plm	LAP	M	GRN	FLT	SH	Greyish green silica-clay matrix with subrounded-subangular clasts ranging from mm-size to 7cm (felsic clast @ 83.3m)
84.7	89.5	VC	fltbx	LAP	M		FLT	SH	Grey, gouge-rich with fine sand. Lower contact @ 90m @ 30 dTCA. 1m blocks of VC textured block @ 88.6m.
89.5	92.1	VC	ms	LAP	M		FLT	GR10	Dominantly andesitic blocks within interval. Zone from 91-7-92.1m of sandy matrix light-medium grey matrix with polymictic texture consisting of approximately 50% mafic & 50% felsic clasts. Silica-clay matrix
92.1	94.6	AND	volc	LAP	D	PUR	FLT	GR30+	"Pseudo-clastic" volcaniclastic texture. Has aphanitic-type appearance when wet. Faint purplish hue from bt & sph
94.6	97.1	VC	ms	LAP	D	PUR	UNKN	SH	Dark grey polymictic, predominantly matrix supported. Large clast of andesite below?
97.1	98.4	AND	volc	LAP	D	PUR	UNKN	SH	Possibly large andesitic clast within VC unit (garnets??...has proper shape)
98.4	102	VC	plm		D		ALTFR	SH	Dark grey, large andesitic clasts within interval. Silica-clay matrix with minor carbonate
102	106.3	VC	plm		M		FLT	SH	Medium-light grey, silica-clay matrix. Polymictic texture, predominantly mafic clasts. Clasts are mm to cm-sized (no large blocks within interval). Clasts have been sericite-altered

Blackwater Project
Drill Summary - Lithology

BW0428

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
106.3	113	VC	fltbx	LAP	L	GRN	FLT	SH	Bleached greenish-grey. Fault breccia zone (matrix holding fault blocks & fragments). Fragments/clasts/blocks consist of matrix-supported polymictic VC unit. Slickensides are visible along fx planes (strike-slip fault slicks)
113	128.8	AND	fltgge	LAP	D		FLT	SH	Carbonate-clay gouge zone of broken VC, dominantly andesitic in composition.
128.8	147.5	VC	ms	BLOCK	D		UNKN		Matrix-clast supported VC unit with andesitic blocks up to 1m (141.30m). Larger andestic clasts have quartz filled amygdules and reddish sphalerite blebs (possibly replacing plag phenos)
147.5	170.5	VC	ms	BLOCK	D	GRY	UNKN		Medium grey with some green, matrix support fault breccia with healed gouge to 155m. A few ~1cm wide sulphide bands scattered throughout. Silica Clay matrix. Chl on frac planes. Wk Calcite veins from 156-164m.
170.5	185.4	VC	ms	BLOCK	D	GRY	UNKN		Medium grey grading to green volcaniclastic. Mostly mafic clasts but increased felsic clasts compared to previous (up hole). Icreased abundance of large blocks.
185.4	199	VC	ms	BLOCK	D	GRY	UNKN		Medium grey/green, Matrix support, Large blocks, Some large laminated felsic clasts, grn chl fracs.
199	215	VC	ms	BLOCK	M	GRN	UNKN		Lighter green matrix support volcaniclastic, large blocks, some large felsic laminated clasts.
215	239	VC	ms	BLOCK	M	GRN	DEP	GR30+	Medium green volcaniclastic with abundant large laminated clasts ranging from Large lepilli to blocks. Well chloritized. Silica clay matrix. Matrix supported. Some small areas of healed gouge near bottom of interval.
239	274	VC	ms	LAP	M	GRN	UNKN		Clast size decreased to lapilli, lower appearance of the previous large laminated clasts, This interval has weak-moderate fault gouge, both healed and unconsolidate gouge.
274	298.5	VC	ms	LAP	M	GRN	FLT	SH	Medium green volcaniclastic continued from above with increased mineralization. Section ends at 30dtca fault with sandy clay gouge. Lapilli sized clasts. Fewer laminated clasts than above in unit.
298.5	302.5	VC	ms	LAP	M	GRN	DEP	SH	Same as above with more matrix, fewer large clasts.
302.5	314.6	AND	volc	BLOCK	D	GRY	FLT	SH	Volcaniclastic andesite unit with 98% andesite clasts as blocks and lapilli. Matrix support breccia. Interspesed small section of green VC found above and below.
314.6	319	AND	fltbx	BLOCK	D	GRY	FLT	SH	Same as Andesite unit above but faulted.
319	331	VC	ms	LAP	M	GRN	UNKN		Strongly faulted medium green volcaniclastic, matrix support.
331	335.7	VC	ms	LAP	M	GRY	FLT	SH	Unit continued from above, becomes increasingly broken until bottom in gouge.

Blackwater Project
Drill Summary - Lithology

BW0428

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
335.7	338.6	AND	ms	LAP	D	GRY	UNKN		Fairly fresh andesite breccia with few small felsic clasts, mostly andesite clasts, matrix support, silica-clay matrix. Broken zone, bottom contact lost in rubble but appears not very gradational.
338.6	341.4	VC	ms	LAP	L	GRY	ALTFR	SH	New unit of heavily altered VC with lapilli sized clasts. Clasts are predom felsic, rounded, clay altered. Few mafic clasts are pref chloritized. Some alignment of rounded clasts.
341.4	352	VC	ms	LAP	M	GRY	UNKN		Small section of previous unit near top of current unit. Current unit is andesitic volcaniclastic. Matrix supported, silica-clay matrix. Lapilli adesite clasts. EOH

Blackwater Project
Drill Summary - Alteration

BW0428		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
14.1	16.4	T		0	FR	4	PATC	4	PERV	4	LIM	FR	4	SIL	CLST	2	Orange limonite on fx planes
16.4	29.5	S	FC	2	REP	4	PATC	4	PERV	4	SER	CLST	2	SIL	CLST	2	Greyish clay gouge
29.5	31.95	S	FC	2	REP	4	PATC	4	PERV	4	SER	CLST	2	SIL	CLST	2	Greyish
31.95	40	S	FC	5	FC	5	PATC	3	PERV	3	CHL	PERV	3				Strongly clay-chlorite altered. Gouge contains trace pyrite
40	65.5	S	PERV	4	FC	5	PATC	2	MTRX	4	CHL	FC	4	CARB	PERV	5	Biotite-hematite altered clasts/bx fragments within strongly carbonate-sericite altered andesite. Pseudo "intrusive" texture from 47.5-49m possibly caused by alteration
65.5	84.75	S	CLST	3	REP	2	PATC	4	PERV	3	SER	CLST	3	CLY	FR	3	Sericite-chlorite alt'd clasts with sil-alt'd clasts. Bluish grey tinge to rock from 72-74m. 82-84.75m
84.75	90	S	FC	3	FC	5	PATC	3	FR	3	SIL	CLST	3				Abundant clay within fault zone. Sandy from 86.5-88m. VC fragments within fault are weakly silicified
90	102	S	FC	4	FC	4	PATC	2	MTRX	3	SIL	MTRX	3	CARB	PERV	3	Dominantly VC unit with large andesitic blocks that have been bt-ser-carb alt'd. Polymictic VC unit has sil-clay wk carb alt'd matrix
102	113	S	FC	3	FC	4	PATC	4	PATC	3	SIL	CLST	2	SER	CLST	2	Light greenish-grey silica-clay-sericite matrix with DBS stringers. Clasts have been altered by silica and sericite. Clay is high within faulted intervals
113	122.5	S	FC	2	FC	5	CLST	1	PATC	2	BIOT	CLST	1	CARB	FC	3	Seam of chlorite at 119.5m, otherwise fracture controlled. 1 weak silica-alt'd clast 121m. Slickensides appear very shiny, almost glittery...could be pyrophyllite or sericite-illite...some sort of clay-muscovite? Calcite veining & carbonate alt increased
122.5	130.3	S	FC	3	FC	4	CLST	1	FC	3							Gougy, fault breccia zone. Occasional silica matrix-dominant block within fault zone. Clay-sericite str within gouge, occ chlorite. Chl slicks visible on fx planes
130.3	147.5	S	FC	3	FC	3	PATC	3	PATC	1	SER	CLST	2				Laminated felsic clasts strongly silicified. Light grey silica-clay matrix. Patchy silicified zones. 140.3m = milky white silica bleached zone. Bluish-green alt'd sericite clasts
147.5	156	S	FR	2	FC	3	PATC	2	CLST	2							Alteration clay in seams, partially healed by silica. Some moderately silicified compotent core. Weak-moderate chl on fracture planes.

Blackwater Project
Drill Summary - Alteration

BW0428		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
156	164	S	FR	2	PATC	1	PATC	2	MTRX	1							Interval broken out due to presence of carbonate veins. same alteration as above - weaker ser/sil
164	174	S	FR	1	MTRX	1	PATC	2	MTRX	1							Same as above, slightly less chlorite.
174	185.4	S	PATC	3	PATC	2	CLST	3	CLST	2							Preferential silicification of felsic clasts. Some clay replacement in clasts. Increased chlorite on facture planes and in clasts.
185.4	199	S	PATC	2	PATC	1	CLST	2	CLST	2							Sericitization of some small clasts. Slight decrease in chl of clasts and fracs. Sil of felsic clasts.
199	215.5	S	PATC	3	PATC	1	CLST	3	CLST	3							Increased seri in clasts and sil in clasts and increased chlorite in boht clasts and fracs.
215.5	230	S	PATC	3	PATC	2	CLST	3	CLST	3	SIL	MTRX	2	CHL	FC	3	Moderate alteration of clasts by sericite and silica, low clay and silica alteration of matrix. Chlorite moderate throughout in frac control marix and laminated clasts.
230	248	S	PATC	3	PATC	3	CLST	2	CLST	3	SIL	MTRX	1	CHL	FC	4	Same as above with slight increase in frac control chl and shightly less silica in matrix and clasts. Increase in clay martix, healed faults.
248	274	S	PATC	3	PATC	4	CLST	2	CLST	3	SIL	MTRX	1	CHL	FC	3	Same as previous interval with further clay matrix increase and slight chl decrease.
274	302.5	S	FC	3	MTRX	3	CLST	2	PATC	3	HM	FC	1	CHL	FC	3	Moderate alteration. Patchy Sericite, Frac Chl & Patchy Chl. Weak Sil, Moderate clay in matrix.
302.5	316.9	S	FC	2	PATC	4	CLST	2	PATC	2	BIOT	CLST	1				Increased clay alteration of matrix, only in small intervals of green VC inside faulted area. Andesite is fairly fresh with silicified small felsic clasts and minor biotite alteration of mafic clasts.
316.9	331	S	FC	4	FC	5	CLST	2	PATC	4							Very altered in fault zone. Abundant clay gouge plus clay in matrix.
331	335.7	S	FC	4	FC	3	PATC	2	PATC	4	BIOT	CLST	1				Same as above with slightly less clay.
335.7	338.6	S	FC	2	FC	2	PATC	2	PATC	2	BIOT	CLST	1				Alteration weakens in andesite. Low chl, tace Bio on clasts.

Blackwater Project
Drill Summary - Alteration

BW0428		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
338.6	341.4	S	FC	2	PERV	4	CLST	3	PERV	4	CHL	MTRX	2				Heavily altered and bleached volcaniclastsic, heavily clay altered with moderate-low silicification. Clay in matrix. Chlorite stronger on fracs than in matrix. Chl streaks in matrix.
341.4	352	S	FC	1	PERV	2	PERV	1	PATC	2							Very lightly altered section of adesite volcaniclastic. Fairly fresh, chlorite lighter than previous units of same rock.

Blackwater Project
Drill Summary - Mineralization

BW0428		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
14.1	16.4	GOU	1	CR	0.1	BB	0.1	Dbs	DEN	1							Limonite-pyrite within gouge & along fx planes. Black DBS veined @ 30 & 50 dTCA
16.4	29.5	GOU	0.5	CR	0.5	VN	0.1	Dbs	DEN	0.5	Dbs	BB	0.1	Py	FP	0.1	Dark black sulphide as dendritic veins through interval
29.5	31.95	GOU	0.5	CR	0.5	VN	0.1	Dbs	DEN	0.5	Dbs	BB	0.1	Py	FP	0.1	As above
31.95	40	GOU	0.1	CR	0.5	CR	0.5										Very weakly mineralized within interval. Chlorite-clay gouge with trace pyrite
40	50.5	FP	0.1	CR	0.5	AMYG	0.5										Brownish-red sphalerite replaces clasts. Po replaces amygdules within andesite brecciated fragments. Miniscule pyrrhotite grains
50.5	65	FP	0.1	CR	0.5	AMYG	0.5										As above
65	72	CR	0.5	CR	0.5		0										Clast replacement by pyrite at 65.1m. No visible pyrrhotite
72	82	FP	0.1	CR	1	CR	0.5										Red sph replaces clasts
82	84.7	FP	1	CR	1	CR	0.5	Dbs	VN	0.5	Py	BB	0.5				Fine pyrite on frac planes with chl. DBS as "gash-like" veins and more prominent "sheeted-like" veins @ 25 & 50 dTCA respectively
84.7	91.8	FP	0.1	CR	0.5	AMYG	0.5										Po-Sph replaces clasts within interval. Po replaces amyg in andesite
91.8	98.4		0	CR	0.5	CR	0.1										No visible pyrite. Sphalerite & pyrrhotite replace andesitic brecciated clasts
98.4	102	FP	0.1	CR	0.5	CR	0.5										Pyrite vis on fx. Occasional clast replacement by sph & po
102	106.3	FP	1	CR	1	CR	0.5	Dbs	STR	0.5							DBS appears to follow matrix within interval
106.3	113	FP	0.5	CR	0.5	CR	0.1	Dbs	STR	0.1	Py	VN	0.1	Py	GOU	0.1	Decrease in DBS within matrix. Faulted zone. Trace pyrite veinlets within interval and gouge.
113	128.8	GOU	0.1	CR	0.5	CR	0.5										Sph-Po clast replacement of andesitic clasts
128.8	142.5	FP	0.5	CR	1	CR	0.5	Py	VN	0.1							Sph-Po clast replacement within mafic clasts. Sphalerite bleeding141.20m around andesitic clast
142.5	147.5	FP	0.5	BB	1	BB	1	Dbs	STR	0.5	Mrc	FP	0.1				j

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Drill Summary - Mineralization

BW0428		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
147.5	156	VN	1	BB	0.5	BB	0.5	Py	FC	0.1							151.2-153m series of veins in healed gouge, range 3mm-1cm py/sph veining. Frac controlled py on surfaces. Blebs of po&sp throughout.
156	164		0		0	SP	0.1										calcite veined throughout. only trace Po found
164	174	FC	0.5	BB	0.1	BB	1										Py on fracture planes, Po in blebs throughout - low ammount, Sph in spceks and occasionally in clasts.
174	185.4	FC	0.5	BB	0.5	BB	1	Dbs	DEN	0.5							Increased Po and Sp clast replace/blebs.
185.4	192	FC	0.2	SP	0.2	SP	0.5	Sp	VN	0.1							Same as above with slightly less sulphide, absence of DBS
192	198	FC	0.3	BB	1.5	BB	1										Increased Sp/Po of clasts plus belebs.
198	214.4	FC	0.4	BB	3	BB	1										Sp increase in bleb and clast replace. Po same as above. Good Py on frac at 199.5m
214.4	230.5	SP	0.1	BB	3	BB	2	Dbs	DEN	0.5							Abundant Sp both clast replace and blebs, appears to follow clast laminations. Po as blebs throughout. Trace Py specks. Low DBS as very short streaks.
230.5	248	FC	0.5	BB	2.5	CR	3	Dbs	DEN	0.5							Same as above with slightly more Po and Py, less Sp. Po dominating clast replacement. Sp domanatiing blebs.
248	257.5	FC	0.5	BB	1.5	BB	1	Py	BB	0.5	Py	GOU	0.1				Increase of Py, appearance as blebs up to 4mm, Py in fracs, Py minor in gouge. No DBS seen. Lower Po and Sp values compared to above interval.
257.5	264	FC	0.5	SP	0.5	BB	1	Py	BB	0.5							Same as above with lower spalerite.
264	274	FC	0.5	BB	1.5	SP	0.5	Py	BB	1.5	Cp	VN	0.1				Increased Py occurence as Blebs up to 1cm, Sp throughout, 2mm calco/Py vein at 272.5m.
274	283	FC	1	CR	3	BB	3	Hm	FC	0.2	Dbs	DEN	0.1				Abundant Clast replacing and blebs of Sphalerite, Large blebs and specks of Po, Large 20dtca fracture fill of Py with Hem and Goethite.
283	298.5	FC	0.5	BB	3	BB	1.5	Hm	FC	0.1	Py	BB	1.5				Less fracture control Py than above, more large belebs of Py, Sp same as above, Less Po, same Hematite
298.5	302.5	FC	0.5	BB	2.5	BB	1										TS~4% Sp Blebs, less sulphides overall.

Blackwater Project
Drill Summary - Mineralization

BW0428		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
302.5	314.7	FC	2.5	BB	1	SP	0.5										Large increase in Py in fractures. Less Po in blebs/clasts, Sp equal proportions to above but decreases at~311m
314.7	319	FC	2	BB	0.5	BB	0.5	Py	GOU	2							Fine euhedral cubic Py in fault gouge, slight decrease in Sp, and Po.
319	320	DI	3	BB	1.5		0	Dbs	BB	3							Gouge has disseminated Py with large blebs of Sp and low Po.
320	326.6	DI	1.5	BB	0.5		0	Dbs	BB	0.5							Sulphides lower than above, mineralization is more patchy than above.
326.6	334.8	FC	1	BB	0.5	BB	0.5	Cp	VN	0.2							Nice ~3mm veinlet of Py + Sp + Chalco
334.8	335.7	VN	0.5	BB	1		0										Mineralization weakening, rare small Py veinlets, no visible Py in gouge. Sp as blebs in gouge and clasts. No Po found.
335.7	338.6	FC	0.5	BB	1		0										Mineralization same as above, maybe slightly more Py and Sp, not much.
338.6	341.4	VN	0.5	VN	0.5		0										Weak mineralization contained in veinlets of Py and Sp.
341.4	352	VN	0.3	VN	0.2		0	Sp	SP	0.1							Very weakly mineralized with small Py+Sp veinlets/stringers in broken core. Plus tiny Sp specks in clasts.

Blackwater Project
Drill Summary - Structure

BW0428

From (m)	To (m)	Structure	Strength	Comments
14.1	18	FZ	3	Lower contact @ 30 dTCA. Fine light grey pyrite-rich gouge. Black DBS stringers within zone
18	29.5	JZ	3	Prominent joint set @ 30 TCA. Joint set @ 10 dTCA @ 19m
29.5	31.95	JZ	3	Lower contact into gouge zone @ 60 dTCA
31.95	44.5	FZ	4	Gougy lower contact. Questionable at 80 dTCA
44.5	49	JZ	4	Calcite coated fractures from 30-40. May be a large fault block
49	72	FZ	4	Lower contact @ 20 dTCA. Good angle @ 65.5m = 60 dTCA.
72	76.1	JZ	3	Joint set from 20-30 dTCA
76.1	77.5	BZ	3	Rough contact @ 77.5m = 30 dTCA
77.5	84.7	JZ	2	Weakly fractured. From 83.8-84.7, frac set // TCA. Fracs measurable from 20-40 dTCA
84.7	90	FL	5	Gougy, challenging drilling poor recovery. Sand recovered from 86.5-88m. Lower contact @ 30 dTCA
90	92.25	JZ	3	Joints @ 20-50 dTCA
92.25	94.1	JZ	4	Calcite-anhydrite (gypsum?) along ffx planes
94.1	94.6	FL	4	Lower contact. Brownish gouge with trace calcite vein fragments (wk fizz with HCl)
94.6	97.1	JZ	4	Calcite on fx. Dominant angle @ 30 dTCA
97.1	102	JZ	3	30-40 dTCA. Calcite, lt green stain on fx. Faint horizontal slickensides @ 99.20m
102	106.3	JZ	3	Joints @ 30 dTCA & 40-50 dTCA, no visible calcite on fx
106.3	112.9	FZ	4	Gougy. Fault bx zones. Lt greenish-grey. Slickensides are subvertical on fx plane parallel TCA (60 degrees tCA from parallel fx plane). Possibly strike-slip with dip-slip component
112.9	119.5	FZ	5	Slickensides subvertical to vertical on horizontal fx plane
119.5	120	BZ	4	Calcite reappears, slickensides sub-horizontal. Strike-slip
120	124.6	BRKZ	4	Chlorite minor on fx plane. Minor calcite, disappears @ 122.50m. Minor sericite, anhydrtie/gypsum on fx plane
124.6	129.7	FZ	4	Slickensides @ 20 degrees to plane of subparallel tCA fracs (strike-slip)
129.7	133.3	JZ	4	Strongly jointed w/ fx coat
133.3	133.7	FL	4	Gouge-rich @ low angle TCA. Difficult to get precise measurement
133.7	137.4	JZ	3	Chl-clay on fx
137.4	143.1	JZ	3	Chl-clay on fx
143.1	146.5	JZ	4	Fx @ 40-50 dTCA
146.5	147.7	BRKZ	3	Py min on fx w/ chl, subparallel TCA.

Blackwater Project
Drill Summary - Structure

BW0428

From (m)	To (m)	Structure	Strength	Comments
147.7	170.5	BZ	3	Moderate fault breccia with small areas of healed fault gouge. Some compotent core, areas of heavy fracture.
170.5	205.8	BRKZ	2	Moderately broken zone, mostly compotent core, no regularity to fractures.
205.8	214.4	JZ	2	Weakly jointed at 20 and 40 dtca
214.4	227.5	JZ	2	Weak joint zone with predom 30dtca joints
227.5	240	FZ	2	Weakly faulted with healed gouge sections, some jointing at 30dtca continued from above. @229.2 slicken-side on 30dtca frac, vertical striations, @230.5 slicken-side on 30dtca frac, vetical striations.
240	248	JZ	2	Weak jointing at 40 and 20dtca, small ammount of well healed fault gouge, @245m slicken-side on sub-vert frac, nearly horizontal striations.
248	257.6	FZ	3	Weka fault zone begins with ~3m of severly broken core leading into clay fault gouge with moderate chlorite, some small sections of healed gouge near bottom of interval, bottom fault contact abrupt at 30dtca
257.6	264	JZ	3	moderately jointed at 30dtca
264	266.5	FZ	3	Moderately faulted interval begins with healed fault gouge, some sections of unconsolidated gouge.
266.5	274	JZ	2	Weakly jointed zone with predom 30dtca joints, few small sections of well healed gouge.
274	286.2	JZ	3	Same as above. With slightly more joints ansd slightly steeper.
286.2	288.9	FL	3	Moderate small fault starts with clay gouge at 40 dtca, broken section, ends with gouge at 30dtca.
288.9	314.6	JZ	3	Moderate joint zone with primary joints at 20dtca and secondary joints at 40dtca. Some small sections of both clay gouge and healed faults.
314.6	331	FZ	5	Strong fault zone begins with 1m clay gouge at 20dtca, very fractured rubble zones, futher clay gouge to sandy clay gouge, very little compotent core.
331	341.5	FZ	5	Fault continued from above.
341.5	352	FZ	4	Moderate-strong fault zone with very broken core and small gouge sections.

Blackwater Project
Drill Logs

Hole ID:	BW0429	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375800.58
Depth (m):	395.5	Date Started:	25/04/2012	Casing Size:	HWT	Northing:	5892850.72
Azimuth:	0	Date Completed:	02/05/2012	Casing (m):	30	Elevation (m):	1587
Dip:	-90	Logged By:	MNu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-88
52	278.8	-88.1
100	280.3	-88.1
150	290.5	-88.7
200.5	278.3	-88.7
250	276.2	-88.8
301	268.5	-88.6
350.5	249.8	-88.9
395.5	256	-88.6

Blackwater Project
Drill Summary - Lithology

BW0429

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	25	OB							
25	32	FT	obsalt		P	CRM	ALTFR	GR30	Specks of clay alteration giving an ashy appearance; Pitted with pyrite casts and bleached; limonite and hematite fracture filled silica sericite altered felsic tuff; moderate fracture filling limonite clay gouge
32	64.4	FT	obsalt		P	GRN	FLT	SH	Specks of clay alteration giving an ashy appearance; Pitted with pyrite casts and moderately to strongly fractured with hairline hematite and hematite blebs; intense texture destructive silica sericite; local fracture filing clay gouge
64.4	65.4	FT	fltgge	LAP	P	CRM	FLT	SH	Intense bleached hematite and limonite clay gouge with rare sulfur? covered breccia fragments
65.4	71.6	FT	obsalt		P	GRN	ALTFR	SH	Specks of clay alteration giving an ashy appearance; Pitted with pyrite casts and moderately to strongly fractured with hairline hematite and hematite blebs; intense texture destructive silica sericite; local fracture filling clay gouge
71.6	89.5	FT	obsalt		P	GRN	ALTFR	SH	Moderate Limonite alteration consiting of hematite and goetite with localized bleached clay alteration; Pitted py clasts altered to hematite
89.5	114.5	FT	obsalt		P	GRN	ALTFR	SH	Limonite alteration gives away hematite dominant regime; Hematite filled fractures are partially weathered out giving a vuggy appearance; Unit is still riddled with pyrite casts and stringers of hematite alteration
114.5	117	FT	obsalt		M	OR	ALTFR	SH	Intense limonite alteration with hematite occuring in discrete patches likely associated with clasts?; Pyrite casts altered to hematite.
117	146.1	FT	obsalt		P	GRN	ALTFR		Crackle fractured pitted FT interspersed with texture obscured mottled FT; Mottled FT result of black Iron staining haloes around pyrite sulphide casts.
146.1	157	FT	obsalt		M	OR	FLT	SH	Strongly limonite altered FT with strong hematite alteration of pyrite casts along with hematite along fractures; Unit terminates in fault.
157	158.5	FT	fltgge		M	OR	ALTFR	SH	Intense limonite hematite altered clay fault gouge
158.5	166	FT	obsalt		P	GRN	ALTFR	SH	Crackle fractured with hematite and mottled with black iron altered haloes around pyrite sulfide casts; Lithology is still texture destroyed but unit is strongly spotted by sulfide casts and fractures.
166	168.7	FT	obsalt		P	GRY	FLT	SH	Start of Hypogene sulfide zone; Mottled black iron stain forming sulfide pit centric haloes with wisps of chlorite sericite alteration and abundant fracture filling pyrite.
168.7	172.7	FT	fltbx	LAP	P	GRY	DEP	SH	Intense clay gouge and fault breccia with moderate to strong sooty sulfide and specks of sphalerite; Gouge is fairly competent with bands of pale chlorite sercite alteration and pulverized sulfide

Blackwater Project
Drill Summary - Lithology

BW0429

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
172.7	196.4	FT	obsalt		P	GRY	ALTFR	GR10	Texture destroyed Silica Sercite altered FT with spotty silica clay altered haloes enveloping sulfide grains; locally fractured with clay on fracture faces; Patchy alteration over 0.5m intervals gives the appearance of FLPT
196.4	198	FT	obsalt	LAP	P	GRY	DEP	SH	Texture obliterated FT with strong fracturing and intense gouge along fracture surfaces; Moderate to strong mineralization of FT fragments
198	214.4	FT	lam		P	GRY	ALTFR	GR10	Weakly laminated texture destroyed silica sericite altered FT with spotty silica clay altered haloes enveloping sulphide grains and giving a spotty appearance; Strongly mineralized with Pyrite DBS and Sphalerite
214.4	230.5	FT	lam		P	GRY	ALTFR	GR10	Massive weakly laminated silica sericite altered FT with strong DBs pyrite and sphalerite alteration
230.5	233	FT	obsalt			GRY	ALTFR	GR10	Weakly laminated texture destroyed silica sericite altered FT with spotty silica clay altered haloes enveloping sulphide grains and giving a spotty appearance; Strongly mineralized with Sphalerite Pyrite and DBs
233	247	FT	mas		P	GRY	ALTFR	GR10	Texture obliterated massive silica sericite altered F; Stonrgly mineralized with Spahalerite, Pyrite and DBs; locally fractured with weak clay on fracture surfaces
247	275.5	FT	mas		P	GRY	FLT	SH	Texture obliterated massive silica sericite altered FT; strongly mineralized with sphalerite, pyrite, pyrrhotite, and trace galena and chalcopyrite.
275.5	281	FT	obsalt		P	GRN	DEP	SH	Fractured and fault brecciated FT; Moderately to strongly gouge altered coating fracture faces.
281	297	VC	por	LAP	M	GRY	FLT	SH	Matrix supported polymictic felsic volcaniclastic; localized fracturing with weak clay coatings mafic fragments consist of crystal rich andesite hosted in obliterative silica altered matrix
297	309.3	VC	plm	LAP	M	GRY	DEP	SH	Fault brecciated silica altered VC with strong fracture filling clay chlorite occuring as breccia infill.
309.3	315.5	VC	mon	LAP	M	GRY	FLT	SH	Andesitic fragmental volcaniclastic with cuviplanar angular fragments of crystal rich andesitie and clasts of silica sericite alteration; moderately mineralized; locally fractured with clay on surfaces
315.5	333.3	VC	fltbx	LAP	M	GRY	DEP	SH	Intense fault brecciated Vocaniclastic and gouge; moderate interstitial pyrite and patches of sooty sulphide with rounded volcaniclastic fragments in matrix
333.3	367	AND	por	LAP	D	GRY	DEP	GR10	Plag porphyritic biotite altered Andesite with moderate calcite filled fractures and local intervals of healed andesitic fragmental

Blackwater Project
Drill Summary - Lithology

BW0429

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
367	395.5	AND	amg	LAP	P	GRY	DEP	GR10	Amydoloidal and locally fragmental Andesite; Stong biotite alteration with moderate silica and weak sercite; Stongly mineralizad with Po and trace Cpy;EOH 395.5-Past target and only trace mineralization.

Blackwater Project
Drill Summary - Alteration

BW0429		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
25	32	O		0	FC	3	PERV	2	PERV	2	LIM	FC	4	HM	FR	1	
32	64.4	O		0	FC	2	PERV	3	PERV	3	LIM	FC	3	HM	FC	3	
64.4	65.4	O		0	INFILL	5	CLST	1	CLST	1	LIM	FC	3	HM	FC	3	Intense bleached clay gouge with seams of hematite and limonite crosscutting the material
65.4	71.6	O		0	FC	2	PERV	3	PERV	3	LIM	FC	3	HM	FC	3	Clay and hematite altered specks infilling pyrite casts
71.6	89.5	O		0	FC	2	PERV	4	PERV	3	LIM	PATC	3	HM	REP	2	
89.5	114.5	O		0	FC	1	PERV	4	PERV	3	HM	FC	3	HM	PATC	2	
114.5	117	O		0	PERV	3		0		0	LIM	PERV	4	HM	PATC	3	
117	146.1	T	PATC	1	PATC	2	PERV	3	PERV	2	SER	PATC	3	HM	FC	2	Iron rich silica haloes enveloping sulphide casts giving black spotty appearance interspersed with oxidized fracture filling hematite and limonite along structurally induced crackle breccia zones
146.1	157	O		0	PERV	3	SPHL	2	PATC	2	LIM	PERV	5	HM	PATC	3	Intense limonite alteration coating unit with sulphide casts occuring in bleached silica haloes and altering to hematite; and moderate hematite goetite occuring along fracture planes
157	158.5	O		0	PERV	5		0		0	LIM	PERV	5	HM	PERV	3	Intense limonite hematite gouge clay
158.5	166	T	PATC	1	PATC	2	PERV	3	PERV	2	SER	PATC	3	HM	FC	2	Crackle brecciated and hematite limonite altered fracture fill within texture oblitereated silica sericite alteration interspersed with spotty silica iron enveloped sulphide casts
166	168.7	S	PATC	1	FC	2	PERV	3	PERV	3	SIL	SPHL	2				Patchy chlorite sericite chlorite with spotty black sil haloes around sulphide grains
168.7	172.7	S	CLST	2	MTRX	4	CLST	3	CLST	3	SER	MTRX	3				Silica sericite altered fragments within silica sericite clay altered gouge matrix
172.7	196.4	S	PERV	1	FC	3	PERV	4	PERV	3	CLY	SPHL	2	SIL	SPHL	2	Pervasive silica sericite alteration wiith weak clay on fracture surfaces and moderate silica clay alteration enveloping suphide grains; Local clay gouge resulting from localized faulting
196.4	198	S	PERV	1	MTRX	4	CLST	2	PERV	3	SER	MTRX	2				Faulted clay sericite altered matrix with clasts of sericite silica altered FT

Blackwater Project
Drill Summary - Alteration

BW0429		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
198	214.4	S		0	SPHL	3	PERV	4	PERV	3							Pervasive silica sericite alteration with patchy clay sericite altered haloes around sulphide grains
214.4	238.7	S	PERV	2	SPHL	2	PERV	4	PERV	3	CLY	FC	1				Local clay silica centric altered haloes around sulphides within massive texture destructive silica sericite altered FT
238.7	240	S	PERV	1	FC	3	CLST	3	PERV	2							Fractured zone with interstitial clay
240	275.5	S	PERV	1	FC	3	PERV	4	PERV	3							Pervasive texture destroyed silica sericite alteration with moderate fracture coating clay.
275.5	281	S	FC	2	FC	3	CLST	3	PERV	3	SER	FC	2				Moderately faulted brecciated silica sericite altered FT with moderate intersitial fracture hosted clay.
281	297	S	CLST	2	FC	2	PERV	4		0	BIOT	CLST	1				Grey Albite? Silica altered matrix hosting chlorite and weakly biotite altered angular fragments
297	309.3	S	INFILL	3	MTRX	4	CLST	3	MTRX	3	SER	CLST	2				Silica sericite altered fault brecciated clasts hosted in clay sericite clay matrix fracture infill; local matrix supported stringers and patches of chlorite.
309.3	315.5	S	CLST	2	FC	2	PERV	4	MTRX	3	BIOT	CLST	2				Biotite altered andesitic fragments along with chlorite sericite altered fragments in an intensely altered silica sericite matrix
315.5	332.2	S	MTRX	2	MTRX	4	CLST	1	MTRX	2	BIOT	CLST	2				Weakly biotite silica altered fragments of andesite held together in a claygouge cement with weak, local chlorite sericite alteration
332.2	333.5	S	MTRX	2	MTRX	4	CLST	1	MTRX	2	BIOT	CLST	2	CAL	PERV	4	Same alteration as previous but with intense extensive calcite veining and patching
333.5	367	S	FR	2	FC	1	PERV	4	PATC	1	CAL	FC	3	BIOT	PATC	4	Strongly patchy biotite altered andesite with moderate calcite fracture filling and weak chlorite sericte alteration along fractures and sericite altering plagioclase.
367	395.5	S	FC	2	FC	1	PERV	4	FC	1	BIOT	PATC	4	CAL	FC	1	Strongly patchy biotite altered andesite with weak calcite fracture filling; Weak chlorite sericte and clay alteration along fractures; Moderate silica sericite flooding at bottom of hole

Blackwater Project
Drill Summary - Mineralization

BW0429		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
25	32.5		0		0		0	Hm	SP	3	Hm	STR	2				
32.5	64.4		0		0		0	Hm	SP	3	Hm	STR	2				
64.4	65.4		0		0		0	Hm	STR	3	Unk	SP	1				Rare specks of bright yellow sulfur? casts
65.4	71.6		0		0		0	Hm	SP	3	Hm	STR	3				
71.6	89.5		0		0		0	Hm	SP	2	Hm	STR	1	Goe	FC	1	
89.5	114.5		0		0		0	Hm	SP	3	Hm	STR	3	Goe	FC	2	
114.5	117		0		0		0	Hm	PATC	5	Goe	FC	1				
117	146.1	SP	0.5		0		0	Hm	SP	2	Hm	STR	2	Goe	FC	1	Black sooty sulhide haloes around subhedral pyrite casts transitionally mixed with oxidized fracture silling hematite stringers and casts
146.1	157		0		0		0	Hm	SP	3	Hm	STR	0.5	Goe	FC	1	
157	158.5		0		0		0	Hm	PATC	7	Goe	PATC	1				
158.5	166	SP	0.5		0		0	Hm	PATC	3	Hm	SP	1	Goe	FC	1	
166	168.7	SP	3		0	SP	0.5	Dbs	DEN	2	SoSu	PATC	3				
168.7	172.7	SP	5	PATC	3	SP	0.5	SoSu	BN	10							
172.7	196.4	SP	2	SP	3	SP	1	SoSu	PATC	2	Dbs	STR	1				
196.4	198		0	BB	1		0	SoSu	FC	1.5							
198	214.4	BB	3	BB	1.5	BB	0.5	Dbs	DEN	1.5	Ga	BB	0.5				
214.4	230.5	SP	2	SP	2		1	Dbs	DEN	1	Ga	PATC	1				
230.5	233	SP	1.5	SP	3	BB	1	Dbs	DEN	1	Ga	SP	0.5				
233	238.7	STR	0.5	SP	2	BB	1	SoSu	STR	1							
238.7	240		0	SP	1		0.5	SoSu	STR	0.5							
240	258	STR	1.5	SP	3	SP	0.5	Ga	SP	0.5	Dbs	STR	1.5				
258	258.7		0	SP	2		0										
258.7	275.5	FC	2	SP	2	SP	0.5	Dbs	STR	1							
275.5	281	FG	1	SP	0.5		0	SoSu	FC	0.5							

Blackwater Project
Drill Summary - Mineralization

BW0429		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
281	297	FC	1	SP	1	FC	0.5	Cp	BB	0.5	Py	FG	0.5				Fine grained blebs of fracture controlled pyrite with patches of chalcopyrite and sphalerite; Impressive fracture filling blebs of chalcopyrite @291m
297	309.3	SP	0.1	SP	0.1	SP	0.1	SoSu	PATC	1	Dbs	STR	0.1				
309.3	315.5	PATC	1.5	SP	1.5	BB	1										
315.5	333.3	PATC	0.5		0		0	SoSu	PATC	5							
333.3	367		0		0	BB	1										
367	392.5	FC	0.5		0	BB	1	Cp	SP	0.1							
392.5	395.5	FC	1	SP	1	BB	1	Cp	SP	0.1							

newgold
a clear direction

Blackwater Project
Drill Summary - Structure

BW0429

From (m)	To (m)	Structure	Strength	Comments
25	31	FL	4	
31	47	JZ	2	
47	49.5	JZ	3	
49.5	60.5	JZ	3	
60.5	62.3	BRKZ	3	
62.3	64.4	JZ	2	
64.4	65.4	FL	5	
65.4	71.2	JZ	3	
71.2	81.8	JZ	3	
81.8	82.7	FL	4	
82.7	113.3	JZ	3	
113.3	157	JZ	2	
157	158.5	FL	5	
158.5	168.7	JZ	4	
168.7	173	FL	4	
173	185	BRKZ	4	
185	185.3	FL	5	
185.3	196.4	JZ	4	
196.4	198	FL	4	
198	229	JZ	2	
229	238.7	JZ	3	
238.7	240	FL	4	
240	258	JZ	3	
258	258.7	FL	4	
258.7	275.5	JZ	4	
275.5	281	FZ	4	
281	297	JZ	2	
297	309.3	FZ	4	Sheared clay gouge and fault breccia

Blackwater Project
Drill Summary - Structure

BW0429

From (m)	To (m)	Structure	Strength	Comments
309.3	315.5	JZ	3	
315.5	333.3	FL	5	
333.3	367	JZ	3	
367	395.5	JZ	3	

Blackwater Project
Drill Logs

Hole ID:	BW0430	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375901.61
Depth (m):	373	Date Started:	26/04/2012	Casing Size:	HWT	Northing:	5893149.65
Azimuth:	0	Date Completed:	30/04/2012	Casing (m):	18	Elevation (m):	1537
Dip:	-90	Logged By:	NLe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
49	216.5	-88.8
100	215	-88.6
151	219.6	-88.7
202	213.6	-88.5
250	196.5	-88.5
300	199.9	-88.4
352	191.1	-88.2
373	196.1	-88.1

Blackwater Project
Drill Summary - Lithology

BW0430

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	16	OB							
16	78	FLPT	cs	LAP	L	GRY	DEP	GR30	Clast supported felsic fragmental, intensely altered locally banded (texture completely destroyed)
78	99	AND	mas		D	GRY			Massive - amygdoidal andesite; intesely silicified/bleached, dark green perv. chl
99	197	AND	mas		D	GRY			Massive - amygdoidal andesite, strongly silicified (non-texture destructive); qtz + weak po amygule fill; weak carb and silica veinlets
197	242.7	AND	mas		D	GRY	DEP	SH	Massive amygdoidal andesite, moderately silicified w/ qtz + po amygdule fill
242.7	257.8	VC	ms	LAP	M	GRY	DEP	SH	Polymictic volcaniclastic matrix supported breccia; matrix fine grained ash(?) now silica flooded
257.8	274	AND	mas		D	GRY			Massive amygdoidal andesite; intensely altered/silicified w moderate mineralization under bottom of fault
274	367.5	AND	mas		D	GRY			Presuably massive andesite; rock completely altered and mineralized, litho interpolated from neighboring holes and upper andesite in this hole
367.5	373	AND	mas		D	GRY			EOH; Weakly altered massive andesite w/ minor diss'd po and carb veining

Blackwater Project
Drill Summary - Alteration

BW0430		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
16	34.9	O		0	PERV	4	PERV	1	PERV	4							bleached flpt completely oxidized
34.9	68	T	PATC	2	PERV	2	PERV	3	PERV	2							Fx controlled oxidation only; bleached/ silicified rock, texture 90% destroyed; patchy dark green chl
68	84.8	S	PATC	2	PERV	2	PERV	3	PERV	2							Bleached/ silicified rock; texutre 90% destroyed; patchy dark green chl
84.8	90	S	PERV	4	PERV	2	PERV	2	AMYG	3							Amygdules have py + qtz infilling w/ clay + sericite altered rims; pervasite moderate chl + sericite alteration w/ weak silica
90	104	S	PERV	3	AMYG	3	PERV	4	PERV	4							Texture destructive chl + clay + silica alteration; light-dark green chl pervasite; rims of sulfide diss's leached
104	197	S	PERV	1	VNSV	2	PERV	4	PERV	1							Weakly altered massive andesite; py + po amygdule filling; weak carb and trace qtz veinlets; mod. to intense clay altered vein selvages around carb. veins
197	242.7	S	PERV	1	VNSV	2	PERV	2	PERV	1							moderately altered massive andesite, qtz+ po amydgule fill, carb veining w/ intense clay altered selvages (2-15mm); weak silicification
242.7	266.2	S	PATC	3	PERV	2	PERV	3	CLST	1	CHL	CLST	5				Polymictic breccia w/ moderate silica flooding and clay/sericite alteration of matrix; clast supported intense chl alteration and sulfide mineralization
266.2	274	S	PERV	2	FR	1	PERV	4	PERV	1							Pervasively chl + silica altered AND(?); unit under fault zone
274	316.7	S		0	PERV	1	PERV	5	PERV	1							Intensely silicified rock; silica flooding laminated texture with concordant reddish sp mineralization; fault gouge w/ qtz + apy running parallel to core axis
316.7	341.2	S	PATC	3	PERV	1	PERV	5	PERV	1							Silica intensity same as above, addition of moderate-intense patchy chl alteration; alternating narrow zones of moderately more intense silica and chlorite
341.2	346.6	S	FR	1	AMYG	2	PERV	3		0							Relatively weakly altered andesite; 1mm blebs (amygdule fill?) of clay + silica (possibly garnet); weak pervasive silica w/ moderate clay, non-texture destructive alteration

Blackwater Project
Drill Summary - Alteration

BW0430		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
346.6	367.5	S	PATC	3	PERV	1	PERV	5	PERV	1							Fluid flow laminated alteration texture w/ alternating silica and chl relative intensities
367.5	373	S	PERV	1	PERV	3	PERV	2	PERV	3	CARB	VN	3				EOH; Moderately altered andesite w/ carb +/- jarosite veinlets/fracture coatings

Blackwater Project
Drill Summary - Mineralization

BW0430		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	34.9		0		0		0	Goe	PERV	2	Hm	PERV	2				Oxidized rock; py diss's causing pervasive oxidation, late fracture controlled py also completely oxidized
34.9	68	DI	1.5	DI	1.5		0	Goe	FC	1	Hm	FC	1				sulfide diss's (py + sp) fresh, sulfide on fractures completely oxidized
68	79	DI	1.5	DI	1.5		0	Dbs	WIS	0.5							Sulfide diss's sub-hedral py > sp; weak dbs, weak veined py + sp
79	90	DI	0.1	DI	0.1	DI	0.1	Dbs	VN	1.5							sulfide diss's dissapear, increased dbs at variable orientation
90	104	DI	2	DI	2	DI	0.1	Dbs	WIS	1							sub-hedral sulfide diss's py + sp (equally split); weak wispy dbs at variable orientations and weak py + sp veinlets
104	197	DI	0.1		0	DI	1										Trace diss'd sub-hedral py; moderate diss'd po w/ minor late py on fractures
197	242.7	DI	0.1		0	DI	1										trace diss'd and veined py + sp; moderate diss'd po
242.7	266.2	GOU	1.5	CR	1	DI	0.5	Sp	VN	0.5							Fault zone w/ moderate py + sp as crushed gouge and massive veinlets and clots; sp > py replacing selected clasts; trace diss'd po throughout
266.2	294.8	VN	0.5	DI	2	DI	0.1	Sp	VN	1.5	Dbs	WIS	0.5				Moderate diss'd sp blebs > po; whispy dbs; narrow veinlets of py + sp; larger veins of dark brown sp with reddish brown sp haloes
294.8	317	GOU	2	DI	5	DI	1	Apy	VN	2							Intense reddish brown sp concordant to silica flooding laminated texture; veined qtz + octahedral apy (vein roughly 50/50 qtz to apy); weak diss'd po
317	341.2	DI	3	DI	4	DI	1.5	Apy	VN	0.5	Dbs	STR	0.5				intensely mineralized rock; dark sulfide (py + po) dusted (diss'd) throughout rock in patches; diss'd reddish brown sphalerite; weak veined qtz + apy; trace large 3cm blebs of py + apy
341.2	346.6	BB	1		0	DI	2										weak elongated clusters of pyrite w/ moderate diss'd po

Blackwater Project
Drill Summary - Mineralization

BW0430		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
346.6	367.5	DI	3	DI	4	DI	1.5	Apy	VN	0.5	Dbs	STR	0.5				intensely mineralized rock; dark sulfide (py + po) dusted (diss'd) throughout rock in patches; diss'd reddish brown sphalerite; weak veined qtz + apy; trace large 3cm blebs of py + apy
367.5	373	DI	0.1		0	DI	1										EOH; Mineralization/alteration drops off substantially; trace diss'd py with moderate diss'd po

Blackwater Project
Drill Summary - Structure

BW0430

From (m)	To (m)	Structure	Strength	Comments
16	32.5	JZ	3	Moderately fx'd rock, rock intensely altered and destroyed by near-surface realated degredation
32.5	51.2	JZ	3	moderately fx'd rock; c^5,40,75
51.2	71.5	JZ	2	moderately fx'd rock; c^0,15,30,55; oxidation preferential to lower ange fracture
71.5	78	FL	3	moderately faulted w/ blocky to clay gouge
78	88.3	JZ	1	weakly fx'd rock; c^40 w/ weak chl + py coatings
88.3	90.2	FL	3	fault w/ blocky rubble to clay gouge
90.2	102.2	JZ	2	moderately jointed rock, c^0,65 w/ weak chl + py coatings
102.2	116.7	FL	2	Weakly faulted zone w/ clay gouge at top and bottom of fault zone; blocky rubble in core of fault
116.7	168.9	JZ	2	moderately fractured rock; c^20-30,65
168.9	170	FL	4	Crushed/milled pebble to clay gouge; minor py in gouge
170	197	JZ	1	weakly fx'd competent rock; c^40-45,55
197	242.8	JZ	2	c^24,40; weakly fx'd rock w/ carb + clay coatings
242.8	291.4	FZ	2	Fault zone w/ 80% competent core, 20% pebble-clay gouge w/ intense py mineralization (py + sp + apy)
291.4	317	FL	5	Intensely mineralized sub-vertical fault, clay to pebble gouge w/ rare intervals of competent core; sub-vertical qtz + apy vein at running along core axis with fault
317	373	JZ	3	EOH; Moderately fx'd rock c^30,60,0

Blackwater Project
Drill Logs

Hole ID:	BW0431	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375451.94
Depth (m):	388	Date Started:	26/04/2012	Casing Size:	HWT	Northing:	5893300.56
Azimuth:	0	Date Completed:	02/05/2012	Casing (m):	10.5	Elevation (m):	1547
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	314.9	-89.6
100	258.1	-89.3
150	238.2	-89
200	218.4	-89.2
250	256.5	-88.5
300	233.3	-88.7
347.5	239.9	-88.1
388	211.4	-88.4

Blackwater Project
Drill Summary - Lithology

BW0431

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
10.1	25.5	VC	volc	LAP	M	GRN	DEP	GR30	Matrix dominant-felsic dominant clast-subrounded felsic clasts-
25.5	53.7	AND	mas		D	GRY	FLT	GR10	Massive andesite- locally with volcanoclastic texture
53.7	76	VC	plm	LAP		GRN	FLT		Volcanoclastic unit dominant-matrix supported-mafic dominant-3m interval andesite
76	91.1	AND	mas		D	GRY	UNKN		Massive aphanytic texture-carbonate veins
91.1	112	AND	mon	LAP	D	GRY			Monomictic volcanoclastic-andesite clasts,-brecciated andesite??
112	138.2	VC	plm	LAP	M	GRN	DEP	GR10	Matrix dominant-mafic clast dominant-angular clasts
138.2	154	AND	mon	LAP	D	GRY	FLT	GR10	Massive-monomictic andesite-brecciated andesite-volcanoclastic texture
154	163	VC	plm	LAP	M	GRN	UNKN		Matrix supported-mafic dominant-mafic clast dominant
163	212.5	VC	plm	LAP	M	GRN	DEP		Matrix supported-mafic dominant clasts-angular clasts-locally laminated clasts
212.5	296.5	VC	mas	LAP	M	GRN	UNKN		Matrix supported-mafic clasts-angular clasts
296.5	344.5	VC	plm	LAP	M	GRN			Matrix supported-mafic dominant-locally brecciated
344.5	368.2	VC	plm	LAP	M	GRN	DEP	GR30	Matrix supported-mafic clast dominant
368.2	388	AND	mas	LAP	D	GRY			Massive andesite with volcanoclastic texture, locally brecciated-angular clasts

Blackwater Project
Drill Summary - Alteration

BW0431		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10.1	25.32	T	CLST	2	CLST	1	PATC	2	PERV	3	HM	FR	2				Pervasive sericite-chlorite found in mafic clasts. patchy silica in felsic clasts-silica found in matrix. Hematite on fractures
25.32	53.7	S	PATC	2		0		0	PATC	1							Patchy chlorite-sericite alt
53.7	57	S	CLST	2	CLST	1		0	PERV	3							completely chloritized mafic clasts-pervasive sericite alt
57	71	S	CLST	2	PATC	1		0	PATC	2							chlorite alt found in clasts-patchy sericite alt
71	76	S	CLST	2	CLST	3	PERV	2	PERV	3							Pervasive silica overprinting clay alt-chlorite alt found in clasts
76	91	S	PATC	1		0		0		0							patchy sericite0chlorite on fractures
91	109	S	PERV	2	PATC	2	PATC	2	CLST	3							Patchy clay alt found in clasts-chlorite alt found in matrix
109	129	S	CLST	2		0	PATC	2	PERV	3							Patchy silica found as secondary quartz-chlorite found in clasts
129	138.4	S	CLST	2	CLST	1	PERV	3	PERV	3							Pervasive silica overprinting clay-chlorite alt
138.4	151.5	S	FR	3		0	PATC	1	PATC	2							Patchy silica alt-chlorite found in fractures- patchy sericite
151.5	163	S	CLST	2	PATC	2	PERV	2	PERV	3							Pervasive silica overprinting clay-chlorite alt-pervasive sericite
163	167.5	S	CLST	2	PATC	2	PATC	1	PERV	3							Pervasive sericite-patchy clay alt found in clasts-chlorite in clasts
167.5	184	S	CLST	2	PATC	2	PATC	1	PERV	3							Patchy silica alt-chlorite in fractures as well as in mafic clasts
184	192.5	S	CLST	3	PATC	3	PATC	1	PERV	4							Pervasive sericite-patchy clay found in clasts-patchy silica
192.5	209.5	S	CLST	3	PATC	2	CLST	2	MTRX	2							Chlorite dominant in clasts-patchy clay-sericite found in matrix
209.5	220	S	CLST	2	CLST	1	PATC	1	CLST	2							Sericite found in clasts-chlorite in clasts-patchy silica
220	237	S	FR	2	PATC	2		0	PERV	2							Chlorite found in fractures-patchy clay alt
237	251.5	S	CLST	2	PATC	2	PATC	1	PERV	2							Patchy clay found in clasts-pervasive sericite-chlorite in fractures
251.5	296.5	S	CLST	3		0	PERV	3	PERV	3							Pervasive silica alt-chlorite in fractures-sericite alt in matrix

Blackwater Project
Drill Summary - Alteration

BW0431		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
296.5	344.5	S	PERV	3		0	PATC	2	PERV	3							Pervasive chlorite alt-patchy silica- gets more chloritic towards the bottom-less silica alt
344.5	362.5	S	PERV	3		0	PATC	1	PERV	3							Pervasive chlorite alt found in fractures as well as in matrix-patchy silica
362.5	380	S	FR	2		0	PATC	2	PATC	2							Patchy silica-decreasing sericite alt intensity as well as chlorite alt
380	388	S	FR	1		0	PATC	1	MTRX	1							Patchy silica found in halos-fractures-Weak sericite alt in matrix

Blackwater Project
Drill Summary - Mineralization

BW0431		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10.1	25.32	DI	0.1	DI	0.5	DI	0.5	Dbs	VN	1	Ga	FP	0.1				DBs found in felsic clasts. Sp-Po disseminated throughout
25.32	41.59	DI	0.1		0	DI	0.1										Ocasional Po blebs-Py specks
41.59	53.7	FP	0.1		0	DI	0.1										same as above-ocasional po blebs
53.7	58	DI	0.1	DI	1	DI	0.5										Sp disseminated in felsic clasts
58	76	DI	0.1	CR	0.5	CR	0.5										Po-Sp replacing clasts.
76	91.1	FP	0.5	DI	0.1	DI	0.5										Po disseminated throughout
91.1	109	FP	0.5	DI	0.5	CR	0.5										Po replacing clasts-Py found in fractures
109	125.6	FP	0.5	CR	0.5	DI	0.1										Sp replacing clasts-Po disseminated0Fine Py in fractures
125.6	138.4	FP	0.5	DI	1	DI	1										Po-Sp replacing clasts. Po-Sp disseminated
138.4	151	FP	0.5	DI	0.5	DI	0.5	Py	DI	0.5							Disseminated Po-Sp throughout-Po-Sp replacing clasts. Disseminated Py
151	163	FP	0.5	CR	1	DI	1										Po-Sp replacing clasts-Disseminated Po-Sp
163	167.5	FP	0.5	DI	1	DI	1										Po-Sp disseminated-Po-Sp replacing clasts, py on fractures
167.5	177.5	FP	0.5	CR	0.5	DI	1.5										Py on fractures-Sp-Po replacing clasts-Blebby Po locally
177.5	192.5	FP	0.5	DI	1.5	DI	1.5										Po-Sp disseminated throughout- Po-Sp replacing clasts
192.5	202.9	FP	0.5	CR	1	DI	1.5										Po-Sp replacing clasts-Py on fractures-
202.9	209.5	FP	0.5	CR	1	DI	1.5										Po-Sp disseminated. Po Sp replacing clasts-Disseminated Po in matrix
209.5	220	FP	0.1	DI	0.5	BB	1										Po Blebs-Py on fractures-Sp replacing mafic clasts
220	238	DI	1	CR	0.5	CR	0.5										Disseminated Py in clay gouge-brecciated clasts-Po-Sp reaplacing clasts
238	257.9	FP	0.5	DI	2	DI	1										Py on fractures-Po-Sp disseminated throughout-Sp replacing clasts-Sp sorrounding chloritized clasts
257.9	264.3	FP	0.5	DI	1.5	DI	1										Po-Sp disseminated throughout- Po -Sp replacing clasts, py on fractures

Blackwater Project
Drill Summary - Mineralization

BW0431		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
264.3	265.3		0	DI	0.1	DI	0.1	Apy	VN	0.5							Disseminated Po-Sp, Quartz-Apy vein parallel to core axis
265.3	289	FP	0.5	DI	1.5	DI	1										Po-Sp replacing clasts-Po-Sp disseminated throughout
289	296.5	FP	0.5	DI	1	DI	1										Py on fractures- Sp-Po disseminated throughout
296.5	310.8	FP	0.5	DI	1	DI	1	Apy	VNHL	0.5							Disseminated Po-Sp- Apy found in halo veins-Py on fractures
310.8	330.5	FP	0.5	DI	1	DI	1										Po-Sp disseminated throughout-Po-Sp replacing chloritized clasts
330.5	335.5	FP	0.5	DI	1	DI	1										Disseminated Po-Sp.Sp replacing brecciated clasts
335.5	340.3	DI	0.1	DI	0.5	DI	0.5										Disseminated Py, Po-Sp replacing brecciated clasts-Sp disseminated in clay gouge
340.3	355	FP	0.5	DI	1	DI	1										Disseminated Po-Sp, Po-Sp replacing clasts. Py on fractures
355	368.5	FP	0.5	DI	1	DI	1										Disseminated Po-Sp. decreasing sulphides
368.5	379.3	FP	0.5	DI	1	BB	1										Blebby Po- Sp-Po dissemianted throughout-Fine Py on fractures
379.3	388	FP	0.5	CR	0.1	BB	0.5										Sulphides dropped off-Blebby Po-occasional Sp replacing angular andesistic clasts

Blackwater Project
Drill Summary - Structure

BW0431

From (m)	To (m)	Structure	Strength	Comments
10.1	56.5	JZ	3	Joint zone-60 core axis
56.5	59.5	FL	3	Clay gouge-brecciated clasts
59.5	65.5	BRKZ	3	Blocky-rubbly fragments-locally gougy rocks
65.5	109	JZ	2	Two main joint sets 50-70
109	163	JZ	3	Joint zone-60 core axis
163	220.9	JZ	3	Joint zone-50 to core axis
220.9	244	FZ	3	Brecciated clasts-clay gouge
244	296.5	JZ		two main joint sets 60>40. locally brecciated towards the bottom
296.5	335.8	JZ	3	joint zone. joints at 50 TCA- locally brecciated clasts
335.8	340.2	FL	4	Clay gouge-brecciated clasts
340.2	358	JZ	2	Joint zone-fracture planes at 30 ca
358	364.5	BRKZ	3	Blocky-rubble fragments-locally gougy rocks
364.5	388	JZ	3	Joint zone-tow main joint sets 40>60

Blackwater Project
Drill Logs

Hole ID:	BW0432	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374952.11
Depth (m):	396.24	Date Started:	27/04/2012	Casing Size:	HWT	Northing:	5893050.69
Azimuth:	0	Date Completed:	03/05/2012	Casing (m):	7	Elevation (m):	1564
Dip:	-90	Logged By:	TJo	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	237.1	-89.6
91.44	184.7	-89.7
137.2	185	-89.6
195.1	204	-89.5
228.6	212	-89.2
274.3	217.2	-89
320.0	191.3	-88.6
396.2	200	-88.1

Blackwater Project
Drill Summary - Lithology

BW0432

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	7.8	OB							
7.8	155	EC	plm	LAP	D	GRY	FLT	GR30+	Moderate - well sorted fragmental volcancoclastic. ~60-70% felsic clasts, but composition varies from porphyritic andesite, massive mafic, massive felsic, lamminated felsic. Majority of clasts are fine crystallione (?secondary) quartz. Clasts sizes r
155	169	EC	fltgge		MO	GRY			Highly clay rich fault breccia in gouge matrix, ~80% gouge. Competent pieces are overlying EC material.
169	201	VC	plm	LAP	D	GRY	ALTFR	GR30	Polymicitc volcanoclastic, ~50-50 clasts - matrix, matrix supported throughout. Clasts are typically 5-50mm wide, subangular - subrounded, and compositionally varied from porph andesite, occasional laminated felsic, massive felsic and mafics. No evid
201	214	VC	obsalt	LAP	MO	GRN			Interval is largely texture obscured by intense silicification. relict clastic textures visible locally including a ~40cm interval of relatively fresh polymictic VC at 217m bounded above and below by alteration fronts.
214	243.3	VC	obsalt	LAP	MO	GRN	DEP	GR30	Pervasive intense silicification obscures large majority of primary texture, but relict VC texture is locally evident. 'Texture obscured' intervals are laminated to massive, and occcasionally show hydrobreccia mosaic fit texture.
243.3	326	AND	obsalt	FA	MO	GRN			Pervasive intense texture destructive silica alteration. Massive with only very occasional feint laminations picked out by variations in greenish hue. Conspicuously, relict clastic textures are absolutelty absent - ??altered andesite.
326	347	AND	obsalt		D	GRY		GR30	Medium-dark grey AND??? - intensely silicified and obscured by alteration with a massive texture. Some small, local intervals having a laminated texture. Disseminated mineralization with some DBS.
347	396.2	VC	obsalt	LAP	M	GRY			Medium grey to green VC?? - fragmental/obscured by alteration. Variably clast supported, lapilli szed fragments. Fragments are polymictic - banded to massive and altered to a medium to light grey-green. Some laminated intervals and patchy darker grey

Blackwater Project
Drill Summary - Alteration

BW0432		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
7.8	51	O		0		0	PERV	4		0	HM	FR	3	HM	DEF	4	Haematite pervasive on fractures, throughout gouge and patchy throughout. Un-oxidized material is pervasively silicified, hardness 6-7, though texture is preserved impeccably.
51	68	T		0	DEF	2	PERV	4		0	HM	FR	3	HM	DEF	3	As above, but occasional sulphides = transition zone.
68	102.5	T	FR	1		0	PERV	3		0	CHL	CLST	2	HM	FR	1	Silicification is pervasive with the exception of occasional mafic clasts which are relatively soft. Occasional mafic clasts are also highly chloritic, and chloritic clasts are also silicified. Fracture planes are dominantly haematitic, but occasionally mixed with patchy chlorite.
102.5	120	S	CLST	1	CLST	1	PERV	4		0	CHL	FR	2				Pervasive strong silica alteration, although texture is impeccable. Very scarce mafic clasts with moderate chlorite alteration, and even less common strongly clay altered clasts (114.1-114.3m). Weak chlorite on fractures.
120	135	S	FR	4		0	PERV	3		0	CHL	CLST	1				Near pervasive (some mafic clasts are unaffected) silica alteration. Hevaily fractured interval with pervasive strong chloritization of fracture planes.
135	144.8	S	FR	2	CLST	1	PERV	3		0	CHL	CLST	2				Moderate sil throughout, occasional mafics and small patches of core are relatively soft. Weak - moderate chlorite on fractures. Occasional patches in which small clasts are quite frequently clay altered.
144.8	155	S	FR	4		0	PERV	3		0	CHL	DEF	2				Moderately silicified, pervasively chloritic fractures and occasional intervals of chloritic gouge.
155	169	S	DEF	4		0	CLST	1		0							Interval is fault rock in highly chloritic gouge matrix. Clasts are silicified, as are the very occasional competent pieces.
169	201	S	FR	3		0	PERV	4		0	CHL	CLST	1	CHL	DEF	2	Pervasive strong silicification, chlorite on fractures, in occasional short gougy intervals, and very occasionally replacing mafic clasts.Gougy intervals are pervasively chloritic.

Blackwater Project
Drill Summary - Alteration

BW0432		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
201	214	S	PATC	3		0	PERV	5	PATC	3	CHL	DEF	3				Sharp alt front at 201m. Intense largely texture destructive silicification, locally banded - fragmental textures. Occasional relict VC textures visible. Fractures are moderately chloritc. Mottled pale-dark green chlorite-sericte alteration throughout, highlighting banding and producing 'swirls' of colour. Fault breccia and gouge is quite highly chloritic.
214	243.3	S	PATC	3		0	PERV	5	PATC	3							Intense texture destructive silicification with sericite-chlorite alt producing banding and swirls of varying shades of green. Fractures are chloritic, with quite frequent sericitic hairline fractures.
243.3	268.2	S	PERV	3		0	PERV	5	PERV	3	CHL	FR	4				Pervasive very much homogenous intense texture destructive silica alteration. Alos very even pervasive ser-ccl alteration, with only small local variations, defining sparse feint laminae. Chlorite on fractures.
268.2	289.5	S	PERV	1		0	PERV	5	VNHL	1	CHL	FR	3				Pervasive texture destructive silica alteration. Reduced intensity of chl-ser alteration is evidenced by marked darkening in colour from overlying interval. Ser stil evident as 2-6mm wide planar features. Chlorite on fractures.
289.5	291	S	DEF	4		0		0	DEF	3							Interval of fault breccia and gouge, pervasive strong chlorite alt with dense netowks of fine fractures coated in aple sericite.
291	308	S	PERV	3		0	PERV	5	PERV	1	CHL	FR	3				Pervasive intense texture destructive silicification, also pervasive dark greenish hue. Fine flakes of sericite speckled throughout. Fractures are pervasively chloritic.
308	347	S	PERV	1		0	PERV	5	PERV	1	CHL	FR	3	BIOT	SPHL	1	Pervasive intense texture destructive silicification with very weak vague dark greenish hue - weak chlorite. Occasional fine flecks of ?sericite on fresh broken surfaces. Chlorite on fractures.

Blackwater Project
Drill Summary - Alteration

BW0432		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
347	376	S	CLST	1	CLST	1	PERV	4	MTRX	2	CHL	FR	2	SER	CLST	1	Pervasive silica alteration that obscures the primary texture in some intervals. Sericite alteration is weakly in the matrix and lesser in clasts. Weak chlorite alteration of clasts and moderate to weak on fracture planes. Weak clay alteration of clasts.
376	396.2	S	FR	2	PATC	2	PERV	4	PATC	2	CHL	PATC	3	BIOT	SPHL	1	Texture is obscured by alteration more so than above - strong, pervasive silica. Moderate chlorite alteration throughout, sericite and clay alteration patches. Biotite alteration rimming garnet.

Blackwater Project
Drill Summary - Mineralization

BW0432		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	51		0		0		0	Hm	FC	5							Haematite on all fractures, in gouge, and flecked throughout.
51	73.2		0	DI	0.1	DI	0.1	Hm	FC	4							Veru scarce fine flecks of po and occasional sphal disseminated throughout silicified matrix. Fractures and gouge are still pervasively haemiattic.
73.2	82	VN	0.1	DI	0.1	DI	0.5	Po	CR	0.1							Occasional fine bright py veinlets, trace sphal and po disseminated in very fine specks throughout, occasional clasts quite extensively replaced by po.
82	109.5	VN	0.5	VN	0.1	DI	0.5	Po	CR	0.1	Sp	DI	0.1				As above but with increased frequency of sulphide veinlets, quite frequent fine, irregualr py +/- sphalerite veinlets worming through matrix.
109.5	130	VN	0.1	DI	0.1	DI	0.5	Po	CR	0.5	Py	BB	0.1				Sulphide veins are scarce, but locally large (ie, 110-111m), subparallel TCA and py+trace sphal. Po is still dominant sulphide, disseminated throughout in <1mm-3mm wide specks. Trace sphal + py also disseminatd througout, always closely associated.
130	155	FP	0.1	CR	0.1	DI	0.5										Venlets have died out, Still trace po in <1mm-3mm wide specks disseminated throughout, occasional andesitic clasts being partially replaced by sphal.
155	169	DI	0.1		0		0										Virtually unmineralized fualt, prolonged searching amongst gouge will reveal occasional fine specks of pyrite.
169	201	VN	0.1	SP	0.1	DI	1	Mrc	FP	0.1	Apy	FP	0.1	Po	CR	0.5	Fine po disseminated in 1-3mm wide specks/blebs throughout, also occasionally replacing clasts with trace sphal. Very occasional late stage py veinlets, crusty marcasite on some fractures, isolated occurrence of trace arseno on a fracture plane
201	216		0	BB	0.5	SP	0.5	Grnt	BB	3							Frequent 2-1-mm wide garnets. Millimetric specks of sphal and po disseminated throughout. Gouge is conspicuously inert.

Blackwater Project
Drill Summary - Mineralization

BW0432		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
216	224.6	SP	0.1		0	SP	0.5	Grnt	BB	5	Dbs	DI	0.1				Frequent 5-50mm wide encrustations of ratty broken down garnets, often intergrown with po. Vey fine po also disseminated throughout, with very occasional py. Trace DBS.
224.6	235.5	PATC	0.1		0	DI	0.5	Dbs	PATC	0.1	Grnt	BB	2.5				Frequent 2-30mm wide blebs of ratty garnet, sometimes associated with po. Fine po sparsely disseminated throughout. Very localisesd but quite dense py +/- po, filling breccia matrices. Trace patchy DBS.
235.5	238.4	PATC	0.5	SP	0.5	SP	0.5	Dbs	PATC	0.5	Grnt	BB	2	Py	VN	0.1	Garnets are similar to above, slightly lower density. Disseminated fine po and patches of fine py in breccias and clusters of rose pink sphal in millimetric blebs. Isolated 1mm wide py veinlet.
238.4	257.7	SP	0.1		0	DI	2.5	Grnt	SP	0.5	Py	VN	0.1	Apy		0.1	Very consistent millimetric specks/ blebs of po disseminated throughout, often with distinct spherical morphology - ?amygdaloidal? Trace py +/- ?chalco in very fine specks. Quite frequent fine (1-3mm wide) rotten black garnets. Isolated 2mm wide py +
257.7	263.5	SP	0.1		0	DI	1.5	Grnt	BB	2	Cp	SP	0.1				Frequent highly irregualr encrustations of ratty garnet, fine po dissemianted throughout with fine trace py + chalco.
263.5	271	SP	0.1		0	DI	2	Grnt	BB	2							Frequent millimetric specks/blebs of po disseminated throughout, often in ?amygdaloidal form. Trace fine py, frequent 1-8mm wide resinous ratty garnets.
271	285.5	FP	0.1		0	DI	0.5	Grnt	BB	0.5							Gradual decrease in minerlaization from overlying interval - same style. 1-3mm wide specks of po and garnet disseminated throughout, occasional fine pyrite on late stage fractures.
285.5	300		0		0	SP	0.1	Grnt	BB	0.5							Very scarce po in very fine specks, occasional millimetric garnets.

Blackwater Project
Drill Summary - Mineralization

BW0432		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
300	303	BB	0.5	BB	0.5	BB	1.5	Grnt	BB	1.5							Peculiar well minerlaized interval, no teural differences with surrounding inert core. Py and sphal as blebs and patches around large irregular belbs of po, often closely associated with rattu garnets.
303	326		0		0	SP	0.5	Grnt	SP	0.5							Highly homogenous core, very fine specks of po and garnets disseminated throughout. Nothing else.
326	340		0		0	DI	0.5	Grnt	CG	2	Mrc	FP	0.5	Cp	SP	0.1	Garnet as black-brown coarse grained blebs intergrown with specks of po and cpy. Po as fine disseminated specks and with garnet. Trace cpy with garnet and po. Mrc on fracture planes with chlorite. No pyrite and sphalerite observed.
340	360		0		0	BB	1.5	Grnt	CR	2	Mrc	FP	0.5	Po	VN	0.5	Garnet as clast replacement with biotite. Increase in po and cpy - both as blebbs (some intergrown with clast replacement garnets) and controlled by microfractures. Po as veinlets at 343.5 meters - 1 mm thick and multidirectional with sharp sides.
360	375		0		0	BB	1	Grnt	CR	2	Mrc	FP	0.1	Cp	SP	0.1	Lesser cpy and po than above. Garnet as above. DBS present as dentric, hariline veinliets - fracture controlled?.
375	396.2		0	DI	0.1	DI	1	Cp	DI	0.5	Grnt	CG	1.5	Mrc	FP	0.1	Similar style in alteration as above.

Blackwater Project
Drill Summary - Structure

BW0432

From (m)	To (m)	Structure	Strength	Comments
7.8	30.5	JZ	2	Moderately jointed.
30.5	32	FL	3	Moderately brecciated with intermittent oxidized gouge.
32	39.3	JZ	2	Moderately jointed
39.3	41.3	FL	3	Moderately brecciated with intermittent oxidized gouge.
41.3	55.3	FL	3	~half of interval is hevaily oxidized fault breccia and gouge, remainder is heavily fractured.
55.3	120	JZ	4	Locally heavily fractured, moderately jointed, no gouge or real frault breccia.
120	125	BRKZ	2	Moderately rubbly throughout, no evidence of faulting.
125	154	BRKZ	2	Intermittently rubbly, otherwise jointed.
154	169	FL	5	Upper 1m is increaingly fractured - brecciated, remainder is ++clay rich gouge with occasional clasts of breccia.
169	182.3	JZ	3	Quite heavily jointed, locally rubbly
182.3	195	FZ	3	Moderately rubbly throughout with intermittent 20-40cm thick intervals of breccia with gouge matrix shouldered by elevated fracture density.
195	213	FZ	4	Frequently brecciated and gougy with remainder quite heavily fracrtured rubble.
213	232	JZ	1	Occasional clean planar fractures.
232	245	FZ	2	Intermittently rubbly, locally high fracture density locally forming mild fault breccia. Local weak gouge development.
245	255	JZ	2	Occasional rough fractures at high angle TCA, less frequent fractures at 1--20degTCA.
255	276.5	BRKZ	2	Frequently rubbly, otheriwse quite heavily jointed.
276.5	289.5	JZ	4	Quite heavily jointed, joints at either 15-30, 0r 60-70degTCA.
289.5	291.5	FL	4	Fault breccia in gouge matrix, shouldered by rubble.
291.5	308	JZ	3	Frequent joints, locally rubbly, 45-70degTCA, occasional joints at 5degTCA.
308	321	BRKZ	3	Modertaley rubbly throughout. Probably just more heavily jointed - no gouge, just lots of clean fractures.
321	324.3	JZ	2	Occasional clean planar fractures at ~20dgeTCA
324.3	341	JZ	4	Moderately jointed at 50 and 10 DTCA with local broken zones.
341	391	JZ	3	Moderately jointed with less BZ than above.
391	396.2	JZ	4	Joint zone with broken zones. Fractures at 45 and 20 DTCA

Blackwater Project
Drill Logs

Hole ID:	BW0433	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375701.57
Depth (m):	349	Date Started:	29/04/2012	Casing Size:	HWT	Northing:	5893249.86
Azimuth:	0	Date Completed:	04/05/2012	Casing (m):	5.5	Elevation (m):	1539
Dip:	-90	Logged By:	BBo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
56	297	-88.5
106	251.7	-88.8
150	267.9	-88.6
206	277.9	-88.3
250	296.8	-88.8
305.5	270.1	-88.6
349	253	-88.9

newgold
a clear direction

Blackwater Project
Drill Summary - Lithology

BW0433

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	16	OB							
16	32	AND	volc	LAP	M	GRY		GR30	Dark grey andesitic volcaniclastic fragmental unit, predominantly mafic fragments, poorly sorted, in a fine grit/sandy matrix, weakly altered and locally broken and sheared.
32	56	VC	volc	LAP	L	GRY		GR30	Light grey coloured, sericite-slica-clay altered volcaniclastic fragmental unit, dominantly felsic type fragments with lesser mafic fragments within an altered fine grained sandy/gritty matrix...
56	65	AND	volc	LAP		GRY	FLT	GR30	Dark grey to grey, andesitic volcaniclastic fragmental, subangular to subrounded fragments, within a weakly silica-chlorite altered matrix of finer granualar material. Sect6ions of interval is broken and sheared with clay/chlorite rich sections.
65	78.7	VC	volc	LAP		GRY	ALTFR	GR30	Light greenish-grey, sericite-clay+/-silica altered volcaniclastic fragmental, subangular to subrounded fragments, 5 to 20 mm in size. This interval has numerous sections of broken to rubbled clay sheared areas.
78.7	89	VC	volc	LAP	M	GRY	FLT	GR30	Medium to dark grey, mafic rich volcaniclastic fragmental, fragments up to 15 cm in size, subangilar to subrounded in shape, matrix supported by a salt and pepper felsic & mafic rich sand-grit, weakly silicified and chlorite altered.
89	98.6	AND	mas			GRY	ALTFR	GR30	Dark grey to black, frine to medium grained, semi-massive, amygdaloidal andesite flow with local volcaniclastic sections.
98.6	116.5	VC	volc	LAP		GRY	FLT	GR30	Light to medium grey, sericite-chlorite+/-clay altered volcaniclastic fragmental, felsic fragments dominant over mafic frags (F75% : M25%).
116.5	119.5	AND	volc	LAP	D	GRY	FLT	GR30	Medium grey to dark grey, weakly silicified and chlorite altered andesitic volcaniclastic unit. This interval is sandwiched between an upper and lower shear/fault structure.
119.5	124	AND	fltbx	LAP	M	GRY	FLT	GR30	Greenish-grey coloured, andesitic fault breccia with a sericite-chlorite-clay rich matrix.
124	133.6	AND	volc	LAP	M	GRY	ALTFR	GR30	Dark grey to black, andesitic volcaniclastic fragmental unit, predominantly mafic fragments within a weak silica altered sand to gritty mafic rich matrix.
133.6	153	VC	volc	LAP	M	GRY	ALTFR	GR30	Medium to light grey, altered volcaniclastic fragmental, dominantly felsic rich fragments over mafic fragments (F90% to M10%) and fragments are subangular to subrounded, poorly sorted and fragments range in size from 5 to 25 mm .

Blackwater Project
Drill Summary - Lithology

BW0433

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
153	160	AND	volc	LAP	D	GRY	FLT	GR30	Dark grey andesitic volcaniclastic fragmental unit, weak pervasive silica altereation throughout with weak fracture controlled chlorite. Upper and lower contacts are fault or shear related.
160	164.8	AND	volc	LAP	M	GRY	FLT	GR30	This interval is a fault zone within the andesitic volcaniclastic fragmental...very poor recovery and clay gouge material present for approx. 30 cm.
164.8	191.5	AND	flw		D	GRY	DEP	GR30	Dark grey to black plagioclase phyric, amygdaloidal, andesite flow with abundant late calcite veinlets.
191.5	247	AND	flw		D	GRY	DEP	GR30	Dark grey to black, fine to medium grained, plagioclase phyric, locally amygdaloidal andesite flows. This interval has late carbonate+/-anhydrite veinlets cutting the interval throughout...generally increasing down hole.
247	269	AND	flw		M	GRY	DEP	GR30	Dark grey-black to medium brrownish-grey coloured, semi-massive, plagioclase phyric, locally amygdaloidal, altered andesitic flow(s). This interval has numerous late carbonate-anhydrite stringers/veinlets cutting the section...local crackle textures
269	331	AND	flw		D	GRY	FLT	GR10	Dark grey-brown to grey-green, plagioclase phyric, locally amygdaloidal, altered andesitic flow. This interval has late carbonate and anhydrite veinlets cutting the
331	332.3	AND	fltbx		M	GRY	ALTFR	GR30	Dark grey-green, sheared andesite fault zone...interval is partially silicified and chlorite clay altered.
332.3	346.5	AND	aph		L	GRY	UNKN	GR30	Grey-green to light grey coloured silica altered andesite, texture destructive, locally broken or highly fractured with chlorite on fractire planes.
346.5	349	AND	equi		D	BR			Dark greyish-brown coloured, moderately techtonized and sheared equigranular andesite with late carbonate stringers over printing the interval.

Blackwater Project
Drill Summary - Alteration

BW0433		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
16	32	S	FC	1	FR	1		0	FC	1							This interval has a weak fracture/shear related sericite/chlorite/clay alteration overprint.
32	56	S		0	DEF	2	PERV	1	PERV	3							This interval has a weak to moderate pervasive sericite/silica/clay alteration overprint with sections of broken/sheared areas.
56	65	S	FC	1	FC	1	PERV	1	PERV	1							This interval has a weak silica-chlorite alteration with local areas of sericite+/-clay alteration often associated with ftactures or pervasive style.
65	78.7	S		0	FC	3	PERV	1	PERV	3							This interval has a moderate pervasive and shear related sericite-clay-silica alteration overprint.
78.7	89	S	FC	1		0	PERV	1		0							This interval has a weal pervasive silica alteration overprint and lesser chlorite fracture controlled alteration.
89	98.6	S	FC	1		0	PERV	1		0							This interval is similar in alteration style as to the previous description.
98.6	116.5	S	FC	1	PERV	1	PERV	1	PERV	3							This interval has a moderate pervasive sericite-clay+/-chlorite alteration overprint.
116.5	119.5	S	FC	1		0	PERV	2		0							This interval has a pervasive silica alteration overprint and lesser fracture controlled chlorite alteration.
119.5	124	S	PERV	3	PERV	3		0	PERV	1							This interval has a weak to moderate pervasive chlorite-clay-sericite alteration overprint in the fault.
124	133	S	FC	1		0	PERV	1		0							This interval has a weak pervasive silica alteration overprint and a weak fracture controlled chlorite.
133	153	S	FC	1	PERV	1	PERV	1	PERV	3							This interval has a weak to moderate pervasive sericite-clay-silica+/-chlorite alteration overprint.
153	160	S	FC	1		0	PERV	1		0							This interval has a weak pervasive silica alteration overprint and a weak fracture controlled chlorite.
160	164.8	S	FC	2		0	PERV	1	PATC	1							This interval has a mix of weak pervasive silica/sericite alteration and weak chlorite overprint.
164.8	191.7	S	FC	1		0	PERV	1		0							This interval has a weak pervasive silica alteration overprint.

Blackwater Project
Drill Summary - Alteration

BW0433		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
191.7	247	S	FC	1		0	PERV	1	PATC	1	CARB	PERV	1				This interval has a weap pervasive carbonate alteration overprint and a very weak silica alteration in places. Chlorite occurs as fracture coating locally.
247	269	S		0		0	PERV	1	PERV	1	CARB	PERV	2				This inerval is similar to the previous, however, the carbonate alteration is more weak to moderate intensity.
269	331	S	EU	1		0	PATC	1	PERV	1	CARB	PERV	1				This interval has weak pervasive sericite-carbonate alteration and local chlorite fracture controlled alteration.
331	332.3	S	DEF	2	DEF	1	PERV	2	FC	1							This faulted interval has associated sericite/chlorite/clay and silica alteration overprinting.
332.3	346.5	S	FC	1		0	PERV	3	PERV	1							This interval has a moderate pervasive silica alteration overprint with fracture controlled chlorite along fracture planes.
346.5	349	S	FC	1		0		0		0	CARB	FC	1				This interval has a weak fracture controlled chlorite-carbonate alteration overprint

Blackwater Project
Drill Summary - Mineralization

BW0433		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	32	FC	0.2	SP	0.1		0										This interval has trace to 0.2% fracture fill pyrite and sphalerite.
32	56	INFILL	0.8	DI	0.5	DI	0.7	Dbs	DEN	0.4							This interval has moderate sulphides throughout the interval...as po/sph/py/dbs...total sulphides ~ 2 to 3 %.
56	65	DI	0.3	DI	0.2		0	Ga	SP	0.1							This interval has sulphides occuring as disseminations and fracture fills...sulphides types include py/sph/galena...total sulphides approx. 0.5 - 0.7%.
65	78.7	DI	0.5	DI	0.8		0	Ga	SP	0.3	Dbs	DEN	0.3				This interval has sulphides occuring as disseminations, specks, fracture fills and dendritic micro veinlets...sulphide types include sph/py/galena/dbs...total sulphides approx. 2 - 3 %.
78.7	89	DI	0.2	DI	0.6		0.2	Ga	DI	0.5							This interval has 1 to 2% sulphides as disseminations, speck and fine fracture fills...sulphides types includes sph/py/galena/po.
89	98.6	DI	0.4	DI	0.8	DI	0.3	Ga	SP	0.3							This interval has 1 - 2% sulphides as disseminations, speck and fine fracture fillings...sulphide types include sph/galena/py/po.
98.6	116.5	INFILL	0.8	DI	1.3		0	Dbs	DEN	0.4	Ga	DI	0.3				This interval has 2 - 3% sulphides are disseminations, speck or fine fracture fills...sulphide types include sph/py/dbs/galena.
116.5	119.5	DI	0.1	DI	0.1		0										This interval has trace sulphides present.
119.5	124	BB	1.3	DI	2		0										This interval has 2 - 3% sulphides as blebs and disseminations...dominant sulphide types are pyrite and sphalerite.
124	133.6	DI	0.3	DI	0.1	DI	0.1	Dbs	DEN	0.1							This interval has weak disseminated sulphides (py/sph/po/dbs)...total sulphides approx. 1.0%.
133.6	153	DI	0.8	DI	0.8	DI	0.5	Ga	SP	0.2	Dbs	DEN	0.2				This interval has moderate sulphides (py/sph/po/galena/dbs) as disseminations, specks and fine fracture fills...total sulphides approx. 3.0 - 4.0%.

Blackwater Project
Drill Summary - Mineralization

BW0433		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
153	160	DI	0.3	DI	0.3	DI	0.3	Ga	SP	0.1							This interval has weak sulphides (py/sph/po/galena)...total sulphides 1.0 - 2.0 %
160	164.8	DI	1	DI	0.3	DI	0.4										This interval has weak disseminated or bleby sulphides (py/sph/po)...total sulphides 1.0 - 2.0 %)
164.8	191.7	DI	0.4		0	DI	0.2										This interval has weak disseminated py/po with a total sulphides of 0.5 to 1.0 %.
191.7	247	INFILL	0.6	DI	0.3	DI	0.7										This interval has weak to moderate disseminated and fine fracture infill sulphides (py/po/sph...total sulphides approx. 1.0 to 2.0 %.
247	269	DI	0.6	DI	0.3	DI	0.7										This interval has sulphides fracture fills, disseminations and specks (py/po/sph)...total sulphides approx. 0.75 to 1.5 %.
269	331	FC	0.2	SP	0.1	DI	0.3										This interval has very weak sulphides overall approx. 0.2 - 0.4 % as disseminations and fine fracture fillings...sulphides types include po/py/sph...local sulphide vein at 302.6 metres.
331	332.3	DI	1.5	BB	0.8	DI	1.5										This fault interval has moderate sulphide present as bleb, disseminations, milled grains and minor fracture fills...total sulphides include py/po/sph with a total sulphides of 3.0 - 4.0 %.
332.3	346.5	DI	0.3	DI	0.4	DI	0.3										This interval has weak disseminated py/po/sph...total sulphides up to 1.0%.
346.5	349	DI	0.3	SP	0.1	DI	0.2										This interval has very weak disseminated sulphides over the interval.

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Blackwater Project
Drill Summary - Structure

BW0433

From (m)	To (m)	Structure	Strength	Comments
16	17.5	BRKZ	3	Broken zone with clay sections upto 2 - 3 cm thick and oriented 35 degrees TCA.
17.5	22	JZ	3	Dominant joint sets are 35 & 25 degrees TCA.
22	29.5	BRKZ	4	Broken zone with clay seams at 35 degrees TCA.
29.5	35.3	JZ	3	Dominant joint set is 50 degrees TCA.
35.3	40.3	BRKZ	4	Broken zone with clay/rubble zones at 40 degrees TCA.
40.3	46.7	JZ	4	Dominant joint set is 15 degrees TCA.
46.7	48.4	BRKZ	3	Broken zone with dominant shear angle 45 degrees TCA.
48.4	54.2	JZ	3	Joint zone with dominant joint set of 50 degrees TCA...local clay broken zones through this interval.
54.2	55	FL	2	Small fault cutting the core at 50 degrees TCAcontains fault breccia material with sericite-clay gouge.
55	60.3	JZ	3	Joint zone with dominant joint set at 30 degrees TCA.
60.3	69	BRKZ	3	Broken zone with clay rich and rubbled sections through interval...dominant fracture orientation is 50 degrees TCA.
69	77.3	JZ	3	Dominant joint sets are 40 & 50 degrees TCA.
77.3	80.7	BRKZ	3	Broken zone has a dominant joint set of 40 degrees TCA.
80.7	88.7	JZ	3	Dominant joint set is 45 degrees TCA.
88.7	89.7	BRKZ	3	Dominant joint set is 45 degrees TCA.
89.7	111.8	JZ	2	Dominant joint sets are 40 & 50 degrees TCA.
111.8	119.5	BRKZ	3	Dominant joint sets are 30 & 60 degrees TCA.
119.5	124	BZ	4	Dominant shear orientation within the fault breccia is 45 degrees TCA.
124	160	BRKZ	3	Dominant joint sets are 25 to 60 degrees TCA.
160	164.8	FZ	3	Fault zone with dominant shear orientation 40 degrees TCA.
164.8	184	JZ	2	Dominant joint sets are 20 and 45 degrees TCA.
184	190	JZ	4	Dominant joint sets are 30 and 50 degrees TCA.
190	224.4	JZ	2	Dominant joint set is 45 degrees TCA.
224.4	233.3	JZ	3	Dominant joint set is 40 degrees TCA.
233.3	242	JZ	2	Dominant joint sets are 35 & 50 degrees TCA.
242	245	BRKZ	3	Dominant joint set/shear orientation is 45 degrees TCA.
245	257	JZ	2	Dominant joint sets are 50 & 65 degrees TCA.

Blackwater Project
Drill Summary - Structure

BW0433

From (m)	To (m)	Structure	Strength	Comments
257	269	JZ	1	Dominant joint set is 45 degrees TCA.
269	325	JZ	1	Dominant joint sets for this interval is 35 & 55 degrees TCA.
325	331.7	JZ	3	Dominant joint sets are 40 & 55 degrees TCA.
331.7	349	JZ	3	Dominant joint set is 50 degrees TCA.

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Blackwater Project
Drill Logs

Hole ID:	BW0434	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374901.36
Depth (m):	353.57	Date Started:	01/05/2012	Casing Size:	HWT	Northing:	5893149.27
Azimuth:	0	Date Completed:	06/05/2012	Casing (m):	3	Elevation (m):	1547
Dip:	-90	Logged By:	KOI	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
91.44	194.3	-88.8
137.2	189.9	-88.1
182.9	167	-88.4
228.6	175.1	-87.8
320.1	332.7	-87.9
353.6	174.2	-88

Blackwater Project
Drill Summary - Lithology

BW0434

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2	OB							
2	38	EC	plm	LAP	M	GRY			Polymictic EC/VC rock. Variously clast - matrix supported, typically 80-90% clasts. Clasts are rounded-subangular, very much polymictic, locally with crude sorting.
38	166	EC	plm	LAP	M	GRY			EC/?VC Continuation of above unit. Generally poor - moderate sorting, clasts are well rounded-subangular, very much polymictic (including 1 ?diorite clast at 64.4m - pyroxen + hornblend phenos). Clasts are 5-100mm wide, typically 10-40mm. Majority is
166	258	EC	plm	LAP	M	GRY			EC/VC. Essentially continuation of above, with subtle reduction in proportion of well rounded clasts. Broad 5-10m scale sorting, varies from 50% - 95% clasts, and clast size will vary , some intervals average 5cm, otheres 0.5cm. EC on account of weak
258	267.6	VC	plm	BLOCK	M	GRY	DEP	SH	VC - similar to above with slighly more angular clasts. Moderate sorting within this interval - zones of block clast concentrations with intermittent zones of block sized clasts free intervals. The matrix is a fine grained clastic of similar litholog
267.6	268	FT	lam	FA	L	GRY	DEP	SH	A true laminated felsic tuff with quartz eyes and fiamme - sharp upper and lower contacts. Shoud make for a marker horizion in this VC unit! Laminations at ~50 DTCA.
268	310	VC	plm	BLOCK	M	GRY	DEP	SH	VC - similar to above with slighly more angular clasts. Moderate sorting within this interval - zones of block clast concentrations with intermittent zones of block sized clasts free intervals. The matrix is a fine grained clastic of similar litholog
310	353.6	VC	plm	BLOCK	M	GRY	UNKN		VC as above - weak internal sorting. Weak minerallization. Some small bleached out sections (<30 cm)

Blackwater Project
Drill Summary - Alteration

BW0434		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2	45	T		0	CLST	1	PATC	3		0	HM	FC	2				Fault zones and fractures are consistently rich in Fe oxides (haematite and ghoethite). Occasional clasts are strongly clay altered, majority of interval is silicified to some extent, with majority of clasts consisting of fine quartz, but quite frequent clasts are unaffected.
45	53.5	T	CLST	2	MTRX	3	PATC	4		0	HM	FC	2				Near pervasive moderate silica alt. Matrix and fine networks of fractures also frequently have yellow-white clay alt (?smectite). Quite frequent clasts with medium green chlorite alt.
53.5	78.7	T	CLST	2	FR	1	PERV	4		0	HM	FR	2				Strong sil throughout, occasional chloritic clasts, Fe oxide fractures. Frequent soft moist clay on fractures.
78.7	89	S		0	DEF	3	PATC	3		0							Fault zone, clasts and short competent intervals are strongly silicified. Gouge and fracture planes rich in dirty yellow clay, also 1cm band of vivid blue gouge ??
89	116.5	S	FR	3		0	PERV	4	PATC	2	CHL	CLST	1				Pervasive strong silica alteration, locally very slightly blurring texture in matrix. Intermittent 5-30cm wide intervals of pale cream-yellow sericite/clay bleaching. Chlorite on fractures throughout, and occasional well chloritized clasts.
116.5	128.5	S	FR	3	DEF	3	PERV	4	CLST	2	CHL	CLST	1				Intermittently faulted interval. Faults are pervasively bleached with yellow ?smectite clay, alos present on some fractures. Quite frequent smaller clasts are strongly sericitized, and occasional clasts are chloritic. Un-faulted intervals are strongly silicified.
128.5	166	S	FR	3	FR	1	PERV	4		0	CHL	CLST	2				Pervasive strong silicification, locally blurring clast sutures in matrix. Occasional clasts are well chloritized, as are majority of fractures. Occasional intervals feature off yellow clay (?smectite) on fractures.
166	245	S	FR	3	CLST	1	PERV	4		0	CHL	PATC	1				Very much homogenous interval, pervasive strong silica alteration, only locally beginning to obscure texture, with the exception of occasional softer clay altered andesitic clasts. Chlorite on fractures, occasional clasts, and in infrequnet 5-10cm wide patches..

Blackwater Project
Drill Summary - Alteration

BW0434		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
245	310	S	FR	2	CLST	2	PERV	4	CLST	1	CHL	CLST	1				Similar in alteration style as above - very homogenous. Relatively unaltered rock.
310	353.6	S	FR	3	CLST	1	CLST	4	PATC	1	SIL	PERV	3	CHL	CLST	1	Similar to above with strong silicifiaction of clasts and matrix. Some sil/ser alteration patches forming small (<30cm) bleached zones. Chlorite on fractures and weaker in clasts. Some clay on fractures and weakly in clasts.

Blackwater Project
Drill Summary - Mineralization

BW0434		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2	38		0		0	DI	0.5	Hm	FC	1	Goe	FC	0.5				Frequent 1-3mm wide specks of po disseminated throughout. Observed in a fine narrowe elipsoid veinlet cross-cutting a secondary clay clast at 27.5m
38	49	SP	0.1		0	SP	0.1	Grnt	BB	0.1	Hm	FP	0.5				Very scarce po and py disseminated in fine specks, occasional fine rotten garnets.
49	55	DI	0.5		0	DI	0.5	Grnt	BB	0.5	Hm	FP	0.5				Occasional 5-10mm wide garnets associated with po +/- py. Also occasional fractures with fine py , and sporadic intervals of disseminated py +/- po +/- ?marcasit.
55	79	SP	0.1		0	SP	0.1	Grnt	BB	0.1	Hm	FP	0.5				Very scarce fine specks of po and py disseminated throughout. Occasional fine rattu garnets.
79	90	SP	0.1		0	CR	1.5										Clast are frequently speckled with fine po, occasional fine specks of py.
90	97	FP	0.1	CR	0.5	CR	1.5	Sp	FP	0.1							Clasts frequently being partially replaced by po +/- sphal, fractures planes with trace sphal +/- py
97	116.5		0	CR	0.1	CR	0.5	Mrc	FP	0.1	Po	DI	0.1				Quite frequent small clasts being partailly replaced by po, and very rarely sphal. Occasional marcasite rosettes on fractures. Very fine specks of po disseminated throughout
116.5	123.5		0		0		0	SoSu	GOU	0.5							Quite frquent stringers of sooty black sulphide in fault gouge.
123.5	163		0	CR	0.1	CR	0.5	Mrc	FP	0.1	Sp	FP	0.1				Sparse mineralization throughout, po is frequently partially replacing clasts, sphalerite very occasionally replacing andesitic clasts. Trace marcasite and even scarcewr sphal on fracture planes.
163	179	CR	0.5	SP	0.1	CR	1	Po	DI	0.5	Dbs	CR	0.1	Py	VN	0.1	Mafic clasts are frequently partially replaced by fine specks of po _/- trace sphal, while felsic clasts are mineralized with combination of DBS and dark brassy py. Occasional 1-2mm wide planar py veinlets.

Blackwater Project
Drill Summary - Mineralization

BW0434		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
179	217		0	CR	0.1	CR	0.5	Po	DI	0.5	Mrc	FP	0.1				Clasts are frequently partially replaced by po +/- trace sphal, occasionally quite extensive replacment. Also fine specks and clusters of specks of po disseminated throughout. Fractures quite often have a little marcasit in millimetric rossettes.
217	225	VN	0.5	CR	0.1	CR	0.5	Po	DI	0.5	Mrc	FP	0.1				Very weak fault zone with quite frequent fine py veinlets at variety of angles (10-40degTCA), locally forming fine spiderwebs. Background of po and sphal replacing clasts, disseminated po, and marcasite on fractures.
225	245	CR	0.1	CR	0.1	CR	1	Po	DI	0.5	Mrc	FP	0.1				Mafic clasts are frequently being partially replaced by Po +/- trace sphal, and ?brassy py (?non-magnetic po?). Trace marcasite rosettes on fractures.
245	285.4	CR	0.1		0	CR	0.5	Po	DI	0.5	Mrc	FP	0.1				Weak mineraization - homogenous mineralization through this interval. Mineralization prefering mafic clasts.
285.4	285.6	MA	40	MA	5	MA	5	Cp	MA	20							Massive sulphide vein with intergrown patches of sulphide species.
285.6	310	CR	0.1	CR	0.1	CR	0.5	Po	DI	0.5	Mrc	FP	0.1				Weak mineralization with mafic clasts replaced with po and py.
310	353.6		0	CR	0.1	CR	1	Mrc	FP	0.1							Weak mineralization - mostly Po as clast replacement and weakly rimming some clasts - typically mafic clasts. Some sphalerite disseminations in clasts.

Blackwater Project
Drill Summary - Structure

BW0434

From (m)	To (m)	Structure	Strength	Comments
2	9.5	JZ	2	Weak - moderately fractured.
9.5	12.2	FZ	3	Oxidized rubble with sharp brecciated upper contact at ~15degTCA
12.2	23.5	JZ	2	Moderately jointed
23.5	36.5	FZ	1	Essentially a joint zone but with occasional short rubbly intervals, occasional sparse gougy material on fractures, and locally quite high fracture density.
36.5	66	JZ	3	Frequent fractures at 30-50degTCA
66	68	FL	4	Fault breccia and gouge
68	79	JZ	3	Frequent fractures at 30-50degTCA
79	89.7	FL	3	Very rubbly throughout with moderate amounts of gouge coating fractures, locally brecciated.
89.7	97.3	JZ	2	Occasional clean ffractures
97.3	100.5	FL	2	Very rubbly throughout with small amounts of gouge scattered throughout and on fractures,
100.5	107	BRKZ	2	Moderately rubbly
107	116.5	JZ	2	Quite frequent fractures, variety of angles, dominantly 40-50degTCA
116.5	127.5	FL	4	~65% of interval is fault breccia in ++ gouge matrix. 123.5-126.5 is impeccabale, un-fractured stick rock. Upper and lower contacts sharp at 40deg (upper) and 25deg(lower)
127.5	147.2	JZ	2	Occasional joints, typically quite steep, but also often at 20-30degTCA
147.2	158.4	BRKZ	2	Moderately rubbly/heavily jointed.
158.4	159	FL	4	Short interval of fault breccia in gouge matrix.
159	166	JZ	3	Quite frequnet joints at 40-50degTCA
166	217	JZ	2	Clean planar fractures.
217	222.5	FZ	1	Two short (20cm) intervals of weak faukt breccia, trace gouge on some fractures.
222.5	245	JZ	2	Occasionalk fractures
245	310	JZ	1	20 and 40 DTCA - very weak and occasional fractures. Extremey competant core.
310	353.6	JZ	4	20 and 40 DTCA. More frequent jointing than above with intermittent broken zones. Mechanical clay on fracture planes. Moderate to strong chlorite.

Blackwater Project
Drill Logs

Hole ID:	BW0435	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375801.69
Depth (m):	510	Date Started:	30/04/2012	Casing Size:	HWT	Northing:	5893149.93
Azimuth:	0	Date Completed:	08/05/2012	Casing (m):	12	Elevation (m):	1545
Dip:	-90	Logged By:	NLe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	247.8	-89.2
100	250.3	-89.6
151	285.2	-89.3
200	275.2	-89.7
250	231.2	-89.3
301	248.7	-89.4
355	255.5	-88.9
400	243.5	-88.7
500	242.9	-88

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Blackwater Project
Drill Summary - Lithology

BW0435

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.3	OB							
5.3	87	FT	lam		L	GRY			Laminated (silica alteration) FT; possibly altered VC or FLPT (rare windows through alteration showing fragmental texture)
87	123.5	FT	lam		L	GRY			Laminated (silica alteration) FT; possibly altered VC or FLPT (rare windows through alteration showing fragmental texture)
123.5	167	AND	obsalt		L	GRY			Texture completely obstructed by alteration; colour change (light green) and absence of laminations may indicate lith change; mineralization mostly unchanged with the exemtion of additional dbs and diss'd sp
167	178.5	AND	obsalt		L	GRN			Bleached out/altered Andesite??? May be FT due to the flow banded texture/banding in sections and some of the mineralization follows that pattern as well; light green with weak jointing, local faulting/broken up sections ~0.5m-1m
178.5	181.3	AND	mas		M	GRY			Medium grey/green Andesite, mafic composition begins to come back; ~0.4m faulted section
181.3	188.5	AND	obsalt		M	GRN			Previous interval gradually alters into this light to medium green andesite; weakly jointed with local broken zone sections
188.5	199	AND	bx		M	GRY			Brecciated medium to dark grey Andesite; Locally faulted in ~0.5m sections or less
199	228	AND	bx		D	GRY			Brecciated dark grey Andesite with amygdules in sections; locally broken/faulted in sections, some sections <0.5m and one section ~1m
228	235	VC	plm		M	GRY			Medium to dark grey polymictic volcaniclastics with SA/SR clasts; Dominantly mafic clasts with ~2% felsic clasts in particular section
235	242	AND	bx		D	GRY			Dark grey brecciated Andesite; locally faulted/broken sections < 0.5m and one section ~1.5m
242	258.1	AND	bx		D	GRY	ALTFR	GR10	Brecciated dark grey Andesite, locally mottled colours in sections due to alteration
258.1	268	AND	obsalt		L	GRN			Light-medium green altered Andesite; Silica-sericite alteration
268	283	AND	obsalt		M	GRN			Medium green-grey altered andesite; silica-sericite alteration
283	295.7	AND	obsalt		M	GRN	ALTFR	GR5	Altered medium green-grey andesite with localized brecciation in sections
295.7	299	AND	fltgge		D	GRY			Faulted mafic andesite with broken bits of core + sand/clay gge
299	315	AND	bx		D	GRY			Dark grey andesite with clay and chlorite
315	321.5	AND	bx		D	GRY			Dark grey brecciated Andesite with very small sections with auto breccia, dominantly chlorite altered

Blackwater Project
Drill Summary - Lithology

BW0435

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
321.5	329.5	AND	por		D	GRY	ALTFR	GR10	Dark grey porphyritic andesite with chlorite and clay on fracture planes, brecciated in small local sections
329.5	340	AND	obsalt		L	GRN			Light green-grey altered andesite (dominantly silica-sericte); local broken/faulted sections
340	349	AND	obsalt		L	GRN			Light green-grey silica-sericite altered andesite; chlorite and weak clay on fracture planes
349	367.3	AND	fltgge		L	GRN			Fault/clay/sand gge + rubbles held together in some cases by clay/sand gge + very few small bits of competent core
367.3	391	AND	obsalt		M	GRN			Silica-sericite altered medium green-grey andesite; some chlorite and clay on fracture planes
391	416.5	AND	obsalt		L	GRN			Light green-grey, faulted, silica-sericite altered andesite, weak chlorite, texture obscured by alteration and faulting; fault/clay/sand gge + broken bits of core/rubbles compact/held together in some cases by clay/sand gge + competent core ~0.2m
416.5	446.5	AND	obsalt		M	GRY			Medium green-grey altered andesite, more mafic than previous interval/less silica-sericite altered, no texture whatsoever has been washed out by alteration, moderate to strong chlorite on fracture planes
446.5	482	AND	obsalt		M	GRY			Medium grey altered andesite with faint greenish tinge in small sections; silica-sericite altered with chlorite on fracture planes; texture washed out by alteration; 30/40dtca mineral allignment
482	494	AND	obsalt		M	GRY			Lithology and description is same as previous interval above
494	505	AND	obsalt		M	GRN	FLT	GR30	Light to medium greenish grey altered and faulted andesite; fault/clay gge + rubbles
505	509.5	AND	fltgge		D	GRY			Greyish black faulted andesite; fault/clay gge +broken bits of core

Blackwater Project
Drill Summary - Alteration

BW0435		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.3	48.1	O		0	PERV	1	PERV	5		0							Intensely silicified, bleached and oxidized rock; silica alteration banding - texture destructive
48.1	58.9	T		0	PERV	1	PERV	5		0							Intensely silicified and bleached; silica alteration forming contorted banding, sometimes nice laminae
58.9	87	S		0	PERV	1	PERV	5		0							Intensely silicified, bleached rock, silica alteration forming contorted banding; rare local alteration windows showing fragmental texture - altered VC?
87	123.5	S		0	PERV	1	PERV	5		0							as above
123.5	167	O	PERV	1	PERV	1	PERV	5		0							Silica alteration banding/laminated texture not present; intensely silicified w/ minor chl + clay altered andesite(?)
167	178.5	S	FR	2	PERV	1	OP	3	MTRX	1							weak overall alteration; moderate silica as overprint, weak sericite in matrix, weak chlorite on fracture planes
178.5	181.3	S	FR	3	FR	2	PERV	4		0							Moderate chlorite and clay on fracture planes, pervasive silica
181.3	188.5	S	FR	3	FR	1	OP	3	MTRX	1							Very weak sericite in matrix, some chlorite and clay on fracture planes, silica as overprint
188.5	199	S	FR	4	FR	2	PERV	4		0							Strong chlorite and weak clay on fracture planes, pervasive silica
199	228	S	FR	2	FR	3	PERV	4		0							Chlorite and clay on fracture planes,pervasive silica
228	235	S	CLST	2	INFILL	1	PERV	4	MTRX	1							Very weak sericite in matrix, weak chlorite in clasts, weak clay as infill and pervasive silica
235	242	S	FR	4	FR	2	PERV	4		0							Strong chlorite on fracture planes, strong pervasive silica, weak clay on fracture planes
242	258.1	S	FR	3	FR	2	PERV	4	PATC	2							Patchy sericite seen in mottled sections, chlorite and clay on fracture planes, pervasive silica
258.1	295.7	S	FR	3	FR	2	PERV	4	PATC	4	HM	FC	2				Patchy sericite, some chlorite and clay on fracture planes; pervasive silica; Hematite on fracture planes (reddish coating on a few fracture planes)
295.7	315	S	FR	4	FR	3	PERV	3		0							Chlorite + clay alteration, some pervasive silica in sections and some patchy silica in sections
315	321.5	S	FR	4	FR	2	PERV	3		0							Dominantly chlorite alteration on fracture planes, weak clay and prevasive silica

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Drill Summary - Alteration

BW0435		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
321.5	329.5	S	FR	4	FR	3	PERV	3		0							Chlorite + clay on fracture planes (stronger chlorite than clay), moderate pervasive silica
329.5	340	S	FR	3	FR	2	PERV	4	OP	4							Strong sericite-silica alteration, some chlorite on fracture planes and weak clay on fracture planes
340	349	S	FR	2	FR	1	PERV	4	OP	4							Strong sericite-silica alteration as above, weak chlorite on fracture planes and very weak clay on fracture planes
349	367.3	S	FR	2	FR	3	PATC	2	OP	4	HM	FC	2				Strong sericite over print, weak chlorite, patchy silica and some clay; hematite on fracture plane of broken bit of core (reddish coating)???
367.3	377	S	FR	3	FR	3	PERV	3	OP	3							Sericite overprint, chlorite + clay on fracture planes, moderate pervasive silica
377	391	S	FR	4	FR	3	PERV	3	OP	3							Slight increase in chlorite on fracture planes, clay on fracture planes, sericite overprint and moderate pervasive silica
391	404	S	FR	1	PATC	3	PERV	4	OP	3							Sericite as overprint, pervasive silica looks patchy in sections, patchy clay and some at infill, very weak chlorite on fracture planes of broken bits of core
404	418	S	FR	2	PATC	3	PERV	4	OP	3							Chlorite slightly increased from previous interval, weak on fracture planes of broken bits of core and in some gougy sections, patchy clay and silica, sericite as overprint
418	425.5	S	FR	3	FR	2	PERV	3	OP	2							Moderate chlorite + clay on fracture planes, pervasive silica, weaker sericite than previous interval
425.5	437	S	FR	2	FR	1	PERV	3	OP	2							Weak clay and chlorite on fracture planes, some pervasive silica and sericite as overprint
437	446	S	FR	4	FR	2	PERV	4	OP	1							Weak sericite as overprint, strong pervasive silica, weak clay on fracture planes and strong chlorite (very dark green verging on black) on fracture planes
446	452.5	S	FR	3	FR	2	PERV	4	PATC	3							Chlorite on fracture planes and some patchy areas on core, weak clay on fracture planes, patchy sericite and pervasive silica

Blackwater Project
Drill Summary - Alteration

BW0435		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
452.5	461.5	S	FR	2	FR	2	PERV	4	PATC	2							Slight decrease in chlorite on fracture planes (chlorite found on a some fracture planes not all), weak clay on fracture planes, strong pervasive silica
461.5	482	S	FR	3	FR	1	PERV	4	PATC	2							Patchy sericite, bliuish-green chlorite on fracture planes, very weak clay on fracture planes, strong pervasive silica
482	494	S	FR	3	FR	2	PERV	4	PATC	2							Weak patchy sericite, some chlorite on fracture planes, slightly more clay on fracture planes than previous interval, strong pervasive silica
494	505	S	FR	3	PATC	3	PATC	3	OP	3							Some sericite as overprint, chlorite on fracture planes of broken bits of core, patchy clay and silica
505	509.5	S	FR	1	PATC	2	PATC	3	PATC	1	CAL	FR	1				Weak sericite and chlorite; some patchy clay and silica, weak calcite on fracture planes of broken bits of core

Blackwater Project
Drill Summary - Mineralization

BW0435		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.3	48.1		0		0		0	Goe	DI	3	Hm	DI	1				Sulfide sites (diss's and veins) completely oxidized
48.1	58.9	DI	2		0		0	Goe	FC	1	Hm	FC	0.5	Dbs	VN	0.1	Diss'd sulfide sites mostly still fresh, oxidation favoring fractures; minor DBS mostly oxidized
58.9	86	DI	3		0		0	Py	VN	1	Dbs	VN	1				Strongly mineralized rock; py as diss's, dbs and veined; subhedral diss'd py most prominent mineralization, veined and whispy py
86	123.5	DI	3	VN	2		0	Sp	DI	1							sub-hedral diss's of py + sp; veined sp + weak py, weak DBS stringers
123.5	167	DI	3	DI	2		0	Sp	VN	0.5	Dbs	WIS	1				up to 5% locally diss'd subhedral py + sp; large gaudy bright py veins ~1cm; increased intensity dbs stringers at variable orientations
167	178.5	DI	2	DI	3		0	Dbs	WIS	1							Disseminated Sph+Py with some in vein/stringers, wispy Dbs
178.5	181.3	DI	2	DI	3		0										Sph>Py (disseminated, in vein/stringers)
181.3	188.5	DI	3	DI	5		0	Dbs	WIS	1.5							Sph and Py in blebs, disseminated and in stringers, wispy Dbs
188.5	199	VN	2	DI	3		0										Disseminated Sph and osme as GMR, Py in veinlets/vein/bleby clusters
199	228	STR	1.5	VN	0.5	BB	1										Py in stringers/veinlets and in blebs, Po in blebs, Sph in blebs and in veinlets
228	235	DI	0.1	BB	1	DI	2										Po and Sph in disseminated blebs, trace disseminated Py
235	242	BB	1.5	BB	1	BB	0.5										Py in blebs/stringers, Sph in blebs, disseminated Po in blebs
242	258.1	STR	1	BB	0.5	BB	0.5										Py in stringers/on fracture planes/replacing amygdules, Po in blebs, Sph in blebs/specks
258.1	268	STR	2	DI	3	BB	0.1	Dbs	STR	0.5	Apy	SP	0.5				Disseminated Sph in blebs/on fracture planes, Py in stringers/veinlets, Dbs stringers, Apy in specks/veinlet, trace bleby Po

Blackwater Project
Drill Summary - Mineralization

BW0435		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
268	283	BB	1	BB	5	BB	1.5	Dbs	DEN	1	Apy	VN	1	Cp	VN	0.1	Sph in blebs/clusters/veinlets, Po in blebs, dendritic/wispy Dbs, Py in blebs/veinlets/stringers/fracture planes, Apy in vein/veinlets, trace Cp in vein
283	295.7	FP	2	DI	3	BB	0.5	Dbs	DEN	0.5							Disseminated Sph in blebs/veinlet, Py on fracture planes/stringers/veinlet, Po in blebs/veinlet, dendritic Dbs
295.7	299	BB	0.1		0		0										Trace Py in blebs
299	315	STR	1	BB	0.5	BB	1.5	Apy	VN	0.5							Po in blebs, Py in stringers/irregular veinlets/fracture planes, Sph in blebs, Apy in veinlet
315	321.5	FP	1	GmR	0.5	BB	0.5										Py on fracture planes/blebs/in vein, Po in blebs, Sph as ground mass replacement
321.5	329.5	STR	0.5	BB	0.1	FG	0.1	Apy	BB	0.1							Py in stringers, trace fine grained Po, trace Sph in blebs/cluster, trace Apy in bleb/cluster
329.5	340	BB	2.5	DI	3	BB	0.1	Cp	VN	0.5	Apy	SP	0.1				Disseminated blebs of Sph, Py in in specks/blebs and some on fracture planes, Dbs stringers, some Cp in veinlets, Trace Po in blebs and trace Apy as specks
340	349	BB	1.5	BB	3	BB	0.1	Dbs	WIS	0.5							Some disseminated Sph and some in blebs, Py in blebs and specks, some wispy Dbs and a few dendritic ones, trace bleby Po
349	367.3	SP	1	DI	2		0	Dbs	BN	1							Disseminated Sph, Some Py in blebs and others in specks, bands of black sulphides in fault gge
367.3	377	BB	1	BB	2.5	BB	0.1	Dbs	WIS	0.5							Bleby Sph and some disseminated and in stringers, bleby/disseminated Py, wispy/dendritic/stringer like Dbs, trace bleby Po
377	391	DI	2	DI	3.5		0	Dbs	WIS	1							Increased sulphides; disseminated Sph in blebs, Py in blebs/disseminated/stringers, wispy/dendritic Dbs
391	416.5	SP	2	DI	3		0	Dbs	BN	1							Fault zone with Sph (in blebs/some disseminated)>Py (specks/blebs/on fracture planes), black sulphides present in gouge

Blackwater Project
Drill Summary - Mineralization

BW0435		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
416.5	425.5	BB	2	DI	3	BB	0.5	Apy	SP	0.1	Cp	BB	0.1	Dbs	WIS	0.1	Sph in disseminated blebs, Py in blebs/specks and on fracture planes, bleby Po, Trace Apy(specks), Cp(bleb) and Dbs
425.5	437	SP	1	DI	3.5		2	Apy	SP	0.5	Cp	FP	0.1	Dbs	WIS	0.5	Py in specks and blebs also fine grained on fracture planes, increase in bleby Po, Apy in specks, trace Cp on fracture plane, some Dbs present, disseminated Sph and some in blebs (alligned/banded 50dtca)
437	443	SP	1	DI	3	BB	2	Dbs	WIS	0.1							Sph in blebs and disseminated, Po in blebs, Py in specks/blebs and finegrained on fracture plane, trace Dbs
443	446.5	BB	1.5	DI	3.5	BB	2	Apy	SP	0.5	Dbs	WIS	0.5				Bleby Po, Sph in blebs/disseminated, Py in blebs and specks, Apy in blebs and specks, some Dbs present; mineralization seems to be banded/alligned in sections (50dtca allignment)
446.5	461.5	BB	1	DI	3	BB	1.5	Dbs	WIS	0.5	Ga	SP	0.1	Cp	STR	0.1	Disseminated/bleby Sph, bleby Po, bleby Py some on fracture planes and in stringers, wispy Dbs, trace galena and chalcopyrite
461.5	473	FG	0.5	DI	2	DI	1	Dbs	WIS	0.5	Grnt	DI	1				Some bleby and some disseminated Po, disseminated Sph, fine grained Py on fracture planes and some in stringers, some Dbs and garnets
473	478	DI	2	DI	3	BB	1	Dbs	WIS	0.1	Apy	SP	0.1				Disseminated Sph, disseminated Py some on fracture planed and in stringers, bleby Po, trace Apy and Dbs
478	482	DI	1.5	BB	3.5	BB	2	Ga	FP	1	Dbs	WIS	1	Cp	FP	0.5	Bleby Po, disseminated/bleby Sph, Py disseminated/ some on fracture planes/ in stringers, Some galena on fracture planed and some in specks, Dbs present and some Cp on fracture planes
482	494	FP	0.5	DI	2	DI	1	Dbs	WIS	0.1	Ga	SP	0.1	Grnt	BB	0.5	Py on fracture planes and in specks, Po in blebs, disseminalted/bleby Sph, trace Dbs and galiena in specks, some small sized garnets seen with clay rims
494	505	SP	0.1	DI	0.5	BB	0.1	Grnt	BB	0.1							Weak sulphides, trace Py and Po, some disseminated Sph, garnets???
505	509.5	FP	0.1		0	DI	0.5										Some disseminated Po and trace Py on fracture plane

Blackwater Project
Drill Summary - Structure

BW0435

From (m)	To (m)	Structure	Strength	Comments
5.3	18.8	FL	3	Strong clay gouge, influence of surficial related weathering?
18.8	52.3	JZ	2	c^0,20,50; moderately fx'd rock, fractures hosting intense oxidation
52.3	63.1	FL	2	Fault zone with intermittent clay gouge hosting strong mineralization; zones of blocky rubble
63.1	87.4	JZ	4	Strongly fx'd rock with minor clay seams hosting milled sulfides; c^35,45,0
87.4	121.1	FZ	3	Fault zone with moderate clay gouge and competent zones; clay gouge hosting milled sulfide
121.1	154.1	JZ	3	Moderately fx'd rock; c^0,40 w/ weak chl + clay coatings
154.1	167	FZ	3	Fault zone with moderate-strong clay gouge w/ less competent core to blocky rubble
167	170.5	BRKZ	5	Strong broken zone with some competent core
170.5	196.8	JZ	2	Weak joint zone with localized broken zones; Wispy/jagged joints mostly at 60dtca others at 50>70>80 dtca
196.8	200.2	FL	2	Weak fault with fault/clay gge + broken up core + very little competent core
200.2	206.5	JZ	2	local fault/broken zones <0.5m; joints mostly at 60dtca others at 50>40dtca
206.5	217	JZ	4	Strong jointing; joints mostly at 60dtca others at 70>50dtca and some steep ones at 40>50dtca
217	239	JZ	3	Joint zone with clay local broken zones ~0.1m and clay on fracture planes, joints dominantly at 60dtca others at 70>40>30dtca
239	241	FL	4	Fault/clay gge + broken bits of core + competent core ~0.2m
241	243	JZ	2	Joints mostly at 40dtca others at 60dtca
243	248	BRKZ	3	Moderate broken zone
248	250	JZ	1	Weak joints with random joints at 45/55/60dtca
250	253.8	FL	2	Fault/clay gge+ broken bits of core + some competent core
253.8	271	JZ	2	Joint zone with local broken zones / faults <0.5m; joints mostly at 50dtca others at 40/30/60dtca
271	280	JZ	4	Joints mostly at 40dtca others at 50>65dtca
280	295.7	JZ	3	Joint zone with local broken zones ~0.5m; joints mostly at 60dtca others at 70>50>40dtca
295.7	299	FL	2	Fault/clay gge + broken bits of core
299	302	JZ	2	Joints at random angles 50/40/60dtca
302	304	BRKZ	2	Broken bits of core + some competent core but no measurable joints
304	333	JZ	3	Joint zone with local broken zones; wispy/jagged joints mostly at 40dtca others at 60>35>80dtca
333	340	BRKZ	2	Broken zone with broken bits of core + some competent core with no measurable joints
340	346.5	JZ	2	Wispy/jagged joints mostly at 40dtca others at 50>60>30dtca

Blackwater Project
Drill Summary - Structure

BW0435

From (m)	To (m)	Structure	Strength	Comments
346.5	349	BRKZ	4	Broken bits of core with fault/clay gge on fractures
349	367.3	FZ	4	Fault/clay/sand gge + rubbles held together in some cases by clay/sand gge + very few small bits of competent core
367.3	374.3	JZ	3	Competent core with weak to moderate jointing (wispy/jagged); joints mostly at 50/70dtca, some steep ones at 30dtca
374.3	388	JZ	2	Weak joint zone with stronger local broken zones; joinst mostly at 40dtca others at 30>50>70dtca
388	391	BRKZ	4	Broken zone with broken up bits of core and some clay/fault gge on fractures
391	416.5	FZ	3	Fault/clay/sand gge + broken bits of core/rubbles compact/held together in some cases by clay/sand gge + competent core in sections~0.2m
416.5	425.5	BRKZ	3	Moderate brokenzone with local sections of stronger brokenzons/faults, was able to get 2 angle measurements off competent core 30/50dtca
425.5	437	JZ	3	Joints are dominantly at steep angles to the core axis 30 dtca and others at 40/50dtca
437	443.5	JZ	2	Weak to moderate joint zone with local brokenzones, joints mostly at 40dtca others at 30/70dtca
443.5	446.5	JZ	3	Joints at 40/70dtca some steep ones at 20dtca
446.5	464.5	JZ	2	Weak to moderate joint zone with local sections of broken/faulted sections; joints dominantly at 40/30dtca others at 50>20>60dtca
464.5	473	BRKZ	3	Moderate broken zone with broken bits of core and very few competent core; was able to get 1 dominant angle measurements off competent core ~40dtca
473	478	JZ	2	Joint zone with local section of brokenzone <0.5m; joints dominantly at 50/40dtca others at 60>30>20 dtca
478	481.3	JZ	3	Joints dominantly at 70dtca others at 50/65/30dtca
481.3	484	BRKZ	2	Weak to moderate broken zone
484	494	JZ	2	Ranom angles, dominantly steep ones at 30>25>15dtca othera at 50/40dtca
494	509.5	FZ	3	Fault/clay gge + rubbles +broken bits of core

Blackwater Project
Drill Logs

Hole ID:	BW0436	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375651.42
Depth (m):	346.5	Date Started:	03/05/2012	Casing Size:	HWT	Northing:	5893400.23
Azimuth:	0	Date Completed:	06/05/2012	Casing (m):	18	Elevation (m):	1525
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
51	31.9	-89.1
101	35.9	-88.5
154	50	-88.5
201	42.5	-88.7
252	70.8	-88.6
300	65	-88.8
346.5	71.7	-89.2

Blackwater Project
Drill Summary - Lithology

BW0436

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4	OB							Blocky D.Gray subcrop/OB of AND.
4	12.3	VC	ms	LAP	M	GRY	FLT	GR30	M-D.Gray, subedral to euhedral rectangular Hornblende, moderateley perv silica alteration of fine-grained groundmass, locally Bx, by fluids, clastic natrure increases with depth (apparent silica rep clastsand mafic clasts) Patchy chl-ser, Red Jasper
12.3	20.15	VC	bx		L	GRY	ALTFR	GR30	Faulted perv silicified, clast dominant, matrix supported, polymictic mafic clasts; chl-replaced/plag-phyric/massive, SA/SR rounding increased due to matrix alteration, Large plag-phyric boulder >1m within.
20.15	26.8	VC	a	LAP	VL	GRY	DEP	GR30+	clay-ser-chl alteration of ash to sand-sized matrix, supporting rounded clay/chl/ser reaplaced clasts and clay replaced elongate clasts (Fiamme, flattened porous clasts/shards such as pumice, later compelteely replaced by clay) oriented @ 55 dtca.
26.8	30.5	VC	bx	LAP	L	GRY	FLT	GR30	Altered Int/Mafic? Very-L.Gray clasts in a M.Gray matrix, 5% clasts M.Gray Int/Mafic, Bimodal clast size; 2-3mm and >35mm, clasts dominatley massive/textureless, but may be laminated, partial clay rep of clasts, matrix silicified. Bottom contact grad
30.5	37.51	AND	bx	LAP	M	GRY	FLT	GR30	M.Gray matrix and clasts, similar to above, texture obscured by colour. (No laminated clasts seen). Bottom contact is a gradational litho change in fault material (Alteration?)
37.51	60.8	VC	bx	LAP	L	GRY			Altered Int/Mafic? Very-L.Gray clasts in a M.Gray matrix, 5% clasts M.Gray Int/Mafic, Bimodal clast size; 2-3mm and >35mm, clasts dominatley massive/textureless, but may be laminated, partial clay rep of clasts, matrix silicified. Possibly alteration
60.8	64.75	AND	bx	LAP	D	GRY	DEP	GR10	Bx AND (possibly fluid Bx'd?), D.Gray abundantly feldspar phyric (<= to 1mm) and amygdaloidal clasts in a M.Gray siliceous matrix, silica fills amygs, clay replaces feldspars, chl-clay replacing clasts, poorly sorted from 1mm to Lapilli size clasts.
64.75	81	VC	bx	LAP	M	GRY	DEP	GR30+	Bx randomly oreiented calsts, int/mafic clasts abundantly feldspar phyric similar to aobve, felsic/int clasts silica-ser replaced, supported by an ash sized silica rep matrix. Bottom contact gradational.
81	90	AND	bx	LAP	D	GRY	DEP	GR30+	Grayish Black Lapilli to Block sized silica filled amygdaloidal > Feldspar-Phyric (<= to 1mm feldspars) clasts in a D.Gray siliceous matrix. Bottom contact is a gradational increase in matrix abundance to ~50:50 Clast:Matrix.

Blackwater Project
Drill Summary - Lithology

BW0436

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
90	94.3	VC	t	LAP	M	GRY	DEP	GR10	M-D.Gray Ash to Sand sized matrix supporting Angular to sub-angular clay-replaced D.Gray-Black textureless clasts (some weakly elongate, possibly squished.. Fiamme?), and white to L.Green siliceous-sericitic clasts/BB's SA-SR. Bottom contact is a wea
94.3	98.4	VC	t	LAP	L	GRN	DEP	GR30+	L.Gray-Green Ash sized matrix supporting flattened SA/SR fiamme? Mafic/Int clay-ser-chl-replaced, and rounded white siliceous clasts, Abundant white <=to 1mm Feldspar in Matrix. (Feldspar Fiamme Ash Tuff?). Bottom contact exhibits increase in crystal
98.4	115	AND	bx	LAP	D	GRY	FLT	SH	Bx Lapilli to Block sized Amygdaloidal weakly feldspar-phyric locally D.Gray clasts supported by a siliceous M.Gray matrix that partially eats away the clast margins locally, variable alteration locally obscuring texture.
115	148.9	AND	bx	LAP	D	GRY	DEP	SH	Tectonically and Fluid Bx'd AND, Grayish Black moderatley feldspar-phyric clasts in a heavily siliceous matrix weak jigsaw fit, locally 90:10 clasts some more apparent then others (alt differences) Grayish black to D.Gray strong jigsaw fit SA, some c
148.9	167	VC	ms	LAP	D	GRY	FLT	GR30+	STructurally controlled Silica-ser-clay altered rock, locally obscuring majority of texture. 2-6mm clasts D.Gray-Black SA-SR clasts > Gray-White Siliceous SR clasts and BB's, supported by a siliceous M-D.Gray matrix.
167	226	AND	mas		D	GRY	DEP	GR30+	Massive, siliceous BIOT-Clay-Chl-Ser alteration throughout, fine-grained <1mm Feldspars and HB throughout, locally one more abundant then other, weakly amygdaloidal silica filled and locally strongly amygdaloidal, calcite veined with ser-chl. Bottom
226	265.5	AND	mas		D	GRY	UNKN	SH	Top of unit is aligned Bx and amygdules @ ~50 dtca (Flow Top?), grading into an abundantly Feldspar-phyric Massive D.Gray-Black AND. Calcite Veining.
265.5	269	AND	mas		D	GRY	UNKN	SH	D.Gray-Black Massive AND with round to elongate oval calcite-sulphide filled amygdules aligned @ ~50 dtca, and fine-grained (<1mm) Hornblende-phyric throughout. BIOT-Clay-Chl alt, Calcite Veining.
269	346.5	AND	por		D	GRY			D.Gray-Black/Brown feldspar-phyric extrememly abundantly (almost equigranular; 0.5-2mm Feldspars, ~50% of rock). Locally amygdaloidal; calcite>silica filled. Calcite VN'd

Blackwater Project
Drill Summary - Alteration

BW0436		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4	12.3	O	REP	2	FR	2	PERV	3	PERV	2	SIL	FC	3	CAL	FC	2	Perv Silica, with clay replacing small black amphiboles. Red Jasper adn White calcite filling small hydrothermal fractures. Joints coated by Orange to yellow Limonite (Goethite+ Jarosite). Chlorite replacing small BB's and amphiboles.
12.3	19.9	T	PATC	2	FC	4	PERV	2	PERV	4							Perv Sericite-Silica, soft!. Faulted and gouge is L.Gray-Green/white clay/sericite. Clay replacing feldspars in clasts.
19.9	26.9	S	REP	2	PERV	4		0	PERV	4							Perv Sericite-Clay alteration, with clay-ser-chl alteration of larger clasts and fiamme.
26.9	30.6	S	CLST	1	CLST	2	MTRX	4	CLST	3	CLY	FC	4	SER	MTRX	1	Matrix dom M.Gray silica with minor sericite. Clasts are relictly siliceous and being replaced partially by Sericite and clay, with minor chlorite. gouge Clay-Ser rich.
30.6	37.5	S	PERV	1	PERV	2	PERV	1	PERV	3	CLY	FC	2				Silica Perv but stronger in matrix. Sericite-Clay perv. Clay Gouge.
37.5	56.05	S	CLST	1	CLST	3	MTRX	4	CLST	3	SIL	CLST	3	CLY	FC	5	Matrix dom silica with strongly siliceous clasts partially replaced with ser-clay-chl. Strong Faulting wth alternating Clay-Ser gouge and Clay-Chl gouge.
56.05	62.2	S	CLST	2	FR	2	PERV	3	PERV	3	CHL	PERV	1	SER	CLST	2	Perv Silica-Ser-chl alteration with Ser-chl replacing small clasts/patchy fragments. Chlorite and clay on FP's.
62.2	66.3	S	PERV	3	PERV	2	PERV	2	REP	3							Perv Chl-Clay-Silica, chl slightly patch locally increased abundance. Sericite and clay replacing feldspar phenos.
66.3	81	S	FR	3	CLST	2	MTRX	3	REP	2	CHL	CLST	2	SER	MTRX	1	Silica-Ser matrix dom, and replacing select clasts. Clay-chl replacing mafic/int clasts with ser replacing feldspar phenos in said clasts. Chl on FP's, and clay-chl gouge.
81	90	S	CLST	3	CLST	3	MTRX	2	MTRX	2	SIL	AMYG	2				Matrix dominant M.Gray Silica-Ser, Silica infilling amygs in clasts. Chl-clay weakly ser replacing clasts. Chl-clay Gouge.
90	94.4	S	FR	5	CLST	4	MTRX	2	MTRX	1							Matrix dom M.Gray silica-ser, and siliceous BB's/Felsic clasts. Forest Green Chl coating FP's. Clay replacing clasts.

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Blackwater Project
Drill Summary - Alteration

BW0436		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
94.4	100	S	FR	2	CLST	3	MTRX	3	PERV	4	SER	CLST	3				Matrix dom (matrix dominant component so Perv) Ser-Silica alt, with silica also replacing clasts with clay and small sand sized grains. Chl on FP's decreasing in strength with depth.
100	104.4	S	FR	3	CLST	1	PATC	4	PATC	2	SIL	AMYG	2				Patches of Silica-ser eating away at Mafic clasts. Clasts are partly siliceous with some clay replacement. Chl on FP's locally.
104.4	109	S	FR	5	CLST	3	MTRX	3	MTRX	2	SIL	AMYG	3	CHL	PATC	3	Silica-ser matrix dominant. Clay replaces clasts as does chl in patchy abundances. Calcite veining weak.
109	114.5	S	FR	2	PERV	3	PERV	1	PERV	2	CAL	AMYG	1	CAL	VN	2	Perv clay-ser alt, with siliceous BB's. Calcite VN'd>infill amygs. Chlorite on FP's locally possibly ser-chl mixture.
114.5	122.3	S	FR	3	CLST	3	MTRX	4	MTRX	2	CHL	CLST	2	CAL	VN	1	Silica fluid Bx, matrix materaial with ser, and locally encroaches upon clasts obscuring borders. Clasts are clay-chl-ser replaced.
122.3	138.4	S	FR	5	CLST	4	MTRX	2	MTRX	1	CAL	VN	1	CHL	CLST	2	AMtrix and clasts similar composition, but matrix has been silicified weakly, while clasts have been clay replaced locally with minor to abundant chl. Chl coats FP's strongly.
138.4	149	S	FC	4	CLST	3	MTRX	3	MTRX	2	CAL	VN	1	CHL	CLST	3	Similar to above; faulted; increase in silica, clay-chl gouge.
149	167	S	PATC	3	FC	4	MTRX	4	PATC	3	CHL	FC	3	SER	FC	3	Matrix dom silica, locally Perv with weak ser. Patches/clast-rep ser-chl. Clay-ser chl Fracture controlled and gouged.
167	189.4	S	PATC	1	REP	2	PERV	1	PERV	1	TALC	VN	1	BIOT	REP	3	weak microcrystalline perv silica. BIOT-Sulphides replacing fragments and Hornblende. weak clay perv replacement. Calcite Veining, locally with L.Green Talc?
189.4	201.5	S	VN	2	PERV	1	PERV	2	PERV	2	CAL	VN	3	BIOT	PERV	2	Bleached rock, microcrystalline perv silica. Perv Ser-Clay-BIOT. Calcite Veined, lcoally with sulphides and weak chl. sulphide-chl veinlets.
201.5	210.5	S		0	PERV	1	PERV	2	PERV	1	SIL	AMYG	2	CAL	AMYG	2	Perv microcrystalline silica, as well as silica-calcite amyg filler. Ser-clay weak GM replacement. Calcite Veining.

Blackwater Project
Drill Summary - Alteration

BW0436		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
210.5	222.5	S		0	PERV	1	PERV	1	PERV	1	SIL	AMYG	1	CAL	AMYG	2	similar to above, increase calcite veining which leads to decrease in silica and increase in clay, \especially surrounding ccalcite veinlets.
222.5	233.5	S	PATC	1	PATC	1	PERV	3	PATC	2	SIL	AMYG	2	CAL	AMYG	2	similar to above; small bleached section in middle that is moderatley siliceous-sericitic with small amounts of patchy chl.
233.5	256.5	S		0	VNHL	3	PERV	1	PERV	1	SIL	AMYG	1	CAL	AMYG	1	similar to above; no bleached siliceous section.
256.5	277.5	S	PATC	1	VNHL	1	PERV	2	PERV	1	SIL	AMYG	1	CAL	AMYG	3	similar toa bove; calcite>silica amyg filler, BIOT-clay replacing crystals locally.
277.5	310.2	S	PATC	2	VNHL	1	PERV	2	PERV	1	SIL	AMYG	1	SIL	VN	1	similar to above
310.2	346.5	S	VN	1	VNHL	1	PERV	2	PERV	1	SIL	VN	1	CAL	VN	3	similar to above.

Blackwater Project
Drill Summary - Mineralization

BW0436		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4	12		0		0		0	Goe	FP	5							Orange Goe on FP's
12	28	VN	1	STR	0.1	SP	0.1	Ga	FC	0.1	Dbs	DEN	0.5	Py	FC	0.1	0.1-0.5mm Stringers partially dendritic of BS's, Sp. Ga coats Fractures locally with Py. Py VN'd.
28	30.5	FC	0.5	FC	0.1		0	Ga	FC	0.1							similar to above, minus Sp stringers and Py veinlets.
30.5	37.5	VN	0.1		0		0	Dbs	DEN	1							DBS, locally with BB's of Py. Py VN'd
37.5	56	FC	0.5	BB	1		0	Dbs	BB	0.5							BB's of Sp within gouge and lithics. Sooty Py Fracture controlled iwthin gouge, asoc with BS's.
56	60.2		0		0		0	Dbs	DEN	0.1							Weakly mineralized unit, trace DBS.
60.2	62.2	STR	0.1	STR	0.1		0	Dbs	STR	0.5							Stringers of BS > Sp > Py.
62.2	81	SP	0.1		0	SP	0.1										Specks of Py in siliceous GM, and Specks of Po in mafi/int clasts.
81	90	SP	0.1	BB	0.1	BB	0.5										BB's of red Sp replacing select feldspars, locally with specks of Py. Po BB's locally replacing feldspar and in GM.
90	109	FP	0.1	VN	0.1	SP	0.1	Py	VN	0.1							Specks of Po in mafic material. Py locally fine-grained euhedral amalgamations on FP's as well as small FRCT veinlets with Sp.
109	138.4	VN	0.5	VN	0.1	VN	0.1	Ga	VN	0.1	Py	FP	0.1				fined-grained euhedral Py amalgamations on FP's, Py Veinlets, Py-Po-Sp-Ga Veinlets.
138.4	148.9	VN	0.1		0	BB	0.5										Specks and BB's of Po. Py veinlets in gouge.
148.9	156	VN	0.1	DI	1	BB	0.1	Ga	VN	0.1	Ga	DI	0.1				DI'd BB's of red Sp. Small DI's of Ga locally, as well as in small veinlets with Sp in the gouge. Py fills fractures. Po BB's increase in abundance with depth.
156	167.5	EU	0.1	DI	0.5	BB	0.1	Ga	VN	0.1							simialr to above, <Sp, Euhedral BB's of Py.
167.5	173	VN	0.5	VN	0.1	BB	1	Py	BB	0.1							BB's of Po partially-fully replacing boxes of Py, with relict Py in-situ. Ca-Py-Po-Sp veinlets.
173	201	VN	0.5	VN	0.1	BB	0.5	Po	VN	0.1	Py	BB	0.1				DI'd and chl-ca fluid assoc BB's of Po. BB's of Py locally. Py-Po-Ca-Chl-Sp Veined.
201	233.6	BB	0.1		0	BB	0.5	Po	VN	0.1							BB's of Po minor locally as well as Py. Ca-Po veinlets.
233.6	261.5	VN	0.1		0	DI	0.1										TrceDi's of Po. Trace Py in Ca veinlets.

Blackwater Project
Drill Summary - Mineralization

BW0436		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
261.5	269.5	VN	0.1		0	BB	1										Po BB's filling amygs and fluid structures assoc with Ca and Chl.
269.5	310.2	VN	0.1	VN	0.1	BB	0.5	Py	FC	0.1							Po BB's throughout, with Py and Py-Ca veining, locally incorporating Sp. FC Py.
310.2	346.5	VN	0.1		0	BB	1										Po BB's and GMR throughout, locally abundant, also fracture controlled with Calcite.

Blackwater Project
Drill Summary - Structure

BW0436

From (m)	To (m)	Structure	Strength	Comments
4	17.5	FL	4	Strong Broken Zone, lapilli sized clasts, locally with coarse sand sized crush/milled grains and minor clay.
17.5	20.2	BRKZ	3	Moderate Broken Zone, with minor clay and sand sized milled grains, locally.
21.5	26.9	JZ	3	Jointed @ 30>>60 dtca, and locally broken.
26.9	27.05	BZ	3	Fault Bx.
27.05	27.7	BRKZ	2	weakly broken at irregualr angles and @ 30 dtca.
27.7	28	BZ	2	weak Fault Bx.
28	29.5	BRKZ	1	Irregular broken joints.
29.5	54	BZ	5	Strongly Faulted, Fault gouge supporting coarse-sand to gravel sized milled/rounded grains. Small competent sections with jointing and small faults @ 40 dtca.
54	83	FL	4	Broken rock and sections of clay/coarse-sand gouge. Strong visible fault @ 15 dtca.
83	87.4	JZ	2	Stick rock Bx-AND Jointed @ 30 dtca.
87.4	91.25	BZ	5	SA-R <= to 10mm Lithics supported by sand grains and moderate clay gouge. Abundant broken rock.
91.25	93.2	BRKZ	4	Irregularly broken rock.
93.2	94.7	JZ	4	Low angle to core axis jointing, chl coated Joints.
94.7	95	FL	4	Broken rock and crushed rock, sand sized angular shards.
95	97.52	JZ	4	Jointed @ 5 and 50 dtca, & patrially broken throughout.
97.52	104	FZ	4	Moderatley Broken irregularly rock, amopngs a number of smallish (`0.5m) Fault Bx's.
104	108.4	JZ	4	Strongly Jointed @ 25 dtca > parralel to core axis and 50 dtca. chl coated Joints.
108.4	110	FL	4	Sharp fault with top contact @ 45 dtca, with chloritic clay-gouge supporting small rounded grains. Predominatley broken.
110	112.4	JZ	3	Jointed > Broken
112.4	114	BRKZ	4	Broken parralel to core axis.
114	115.4	BZ	4	SA-SR grains supported by clay and sand, competent core.
115.4	118.3	BRKZ	4	Broken strongly healed rock, that is locally jointed @ 60 dtca.
118.3	119.1	BZ	5	clay-chl gouged supporting milled SR-R grains. Sharp bottom contact @ 35 dtca.
119.1	122.9	JZ	4	Jointed @ 60 > 25 dtca, locally broken.
122.9	123	BZ	2	milled rounded grains supported by gray clay-chl
123	127	JZ	2	Jointed @ 50>35 dtca.
127	127.4	BZ	2	SR clasts of variable size held together by minor-moderate clay.

Blackwater Project
Drill Summary - Structure

BW0436

From (m)	To (m)	Structure	Strength	Comments
127.4	138.5	JZ	3	Jointed @ 15>30 dtca, chl coating joints.
138.5	155.5	FZ	5	Fault Breccia; SR-R lithics supported by chl-clay gouge, small competent sections in-between.
155.5	164.6	JZ	5	Weak Fault zone exhibitin locall <0.5m competent fault-bx sections, Strongly Jointed @ 50 > 40 dtca
164.6	167.5	BZ	5	Fault-Bx, SA lithic dominant on edges inwards to a matrix dominant Rounded lithic center.
167.5	167.9	JZ	1	Stick Rock
167.9	168	BZ	5	Clay supporting fine rounded grains. Gouge dominant.
168	212.6	JZ	3	Jointed locally with calcite on joints @ 55 (50-60) > 30 (20-35) dtca.
212.6	215	VZ	2	Strong Calcite Veining and clay alteation leading to mechanical destruction when drilled.
215	281	JZ	2	Jointed @ 50 (45-55) > 65 (60-70) dtca. locally variable.
281	312	JZ	2	Jointed @ 50 (50-60) > 40 (40-45) dtca. locally broken along calcite veins,
312	346.5	JZ	2	Jointed @ 40 (30-45) = 60 (50-65) dtca.

Blackwater Project
Drill Logs

Hole ID:	BW0437	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375351.66
Depth (m):	400	Date Started:	01/05/2012	Casing Size:	HWT	Northing:	5893099.12
Azimuth:	0	Date Completed:	07/05/2012	Casing (m):	9.5	Elevation (m):	1585
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
49	350.1	-89.1
98	336	-89.2
151	350.8	-89.2
199	309.4	-88.4
252	302.2	-88.6
298	278.1	-88.6
349	258.4	-89.1
400	286	-88.6

Blackwater Project
Drill Summary - Lithology

BW0437

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.2	OB							Blocky-sandy rocks
4.2	47.5	FLPT	ms	LAP	L	GRN	DEP	GR10	Felsic lapilli tuff-matrix supported-laminated clasts
47.5	55	VC	mon	LAP	M	GRY	DEP	GR10	Matrix supported- mafic dominant clasts-Angular to subangular clasts
55	73.5	FLPT	flwbnd	LAP	L	GRN	DEP	GR5	Lapilli clast size-locally flow banded texture-locally brecciated felisc clasts-matrix dominant-local texture destroyed
73.5	124	VC	mas	LAP	M	GRY	UNKN		Massive-poorly sorted-majority of clasts are andesitic-local laminated clasts.matrix supported
124	211	VC	ms	LAP	M	GRY	UNKN		mafic clast dominant-matrix supported-Less dominant laminated felsic clasts-Local original texture no visible obscured by alteration completely silicified
211	264.5	FLPT	lptbx	LAP	MO	GRY	ALTFR	GR30	Strongly silica-sericite altered poorly sorted lapilli tuff unit. Fragments range in size from 4mm to over 64mm...
264.5	301	FLPT	lam	LAP	L	GRN	ALTFR	GR30+	Silica-sericite altered felsic lapilli tuff with SA/SR clasts, some banding/laminations dominantly at 40dtca in sections and 30dtca in others
301	331	FLPT	t	LAP	MO	GRN	DEP	GR30	Mottled greenish grey banded/laminated felsic lapilli tuff, strongly silica-sericite altered with some of the texture washed out by alteration in sections, a few laminated clasts and small localized breccia; some convoluted/undulating bands in sectio
331	400	FT	lam	LAP	MO	GRN			Mottled

Blackwater Project
Drill Summary - Alteration

BW0437		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
4.2	22	O		0	PATC	1	MTRX	3	CLST	2	SIL	PATC	2	LIM	FR	2	Sericite found in lapilli clasts-patchy clay alt-silica matrix dominant-pink alt?? found as halos, locally in matrix-Limonite alt in fractures
22	28.6	O		0	PATC	2	MTRX	3	PERV	3	LIM	FR	2	SIL	SPHL	2	Sulphide halos alt-pervasive sericite alt-ptachy clay alt found
28.6	46	O		0	PATC	1	PERV	3	PERV	3	LIM	FR	2	SIL	SPHL	2	Sulphide halos alt-patchy clay alt-pervasive sericite-pervasive silica alt
46	55	T	FR	1	PATC	1	PATC	2	PATC	2	LIM	FR	1				Patchy sericite alt-chlorite founf in fractures-patchy silica
55	61	S	FR	2	CLST	2	MTRX	3	PERV	3							Pervasive Sericite alt- silica alt found in matrix-patchy clay on felsic clasts
61	73.5	S	FR	2	PATC	1	PERV	4	PERV	3							Pervasive silica alt-patchy clay alt found in clasts-chlorite on fractures
73.5	86.5	S	FR	3		0	PATC	3	PATC	2							Patchy sericite alt-silica found as secondary quartz as well as in groundmass-chlorite in fractures
86.5	103	S	CLST	3	PATC	1	PERV	3	CLST	2							Patchy sericite alt-chlorite replacing clasts-patchy clay alt found in clasts
103	124	S	FR	3	CLST	2	PATC	3	CLST	2							Sericite found in clasts-chlorite found in clasts-fracture planes-patchy silica
124	131	S	FR	2	PATC	2	PERV	3	PERV	3							Sericite-silica flow banded-pervasive silica alt-Cllay alt foun in clasts overprinted by silica
131	157.9	T	FR	3	CLST	2	CLST	3	CLST	3	LIM	FR	2				Limonite alt in fractures-Sericite-clay in clasts-chlorite found in fractures-clasts comepletely silicified-banded silica clasts
157.9	193	S	FR	2	PATC	1	PERV	4	PERV	3	HM	FR	1				Hematite staining alt in clay gouge-Peravsive silica flowded-overprinting patchy clat alt-no texture visible-weak chlorite alt in fractures
193	211	S	FR	2	PATC	1	PERV	3	PERV	3							Pervasive silica alt found in matrix-sericite alt in clasts-patchy clay found in clasts overprinted by silica-locally obscured texture by pervasive silica-sericite alt

Blackwater Project
Drill Summary - Alteration

BW0437		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
211	264.5	S	FR	1		0	PERV	4	PERV	2							This interval has a strong pervasive silica-sericite alteration overprint. Areas of strong texture destructive alteration...occasional pseudofragmental textures present.
264.5	284.2	S	FR	2		0	PERV	4	PERV	2							Strong pervasive silica, some pervasive sericite, some chlorite on fracture planes and no clay; banding sees and increase/decrease in silica-sericite in other words some are more sericite than siliica some are more sericite
284.2	316	S	FR	4		0	PERV	4	PERV	2							Strong silica and chlorite alterations, alternating bands of silica/sericite alterations
316	331	S	FR	1		0	PERV	5	PERV	2							Strong seperation between silca and sericte alterations in the banded sections
331	400	S	FR	2		0	PERV	4	PERV	2							Strong silica. weak to moderate Chl and Ser

Blackwater Project
Drill Summary - Mineralization

BW0437		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4.2	31.22		0		0	VN	0.5	Dbs	DEN	2							DBs disseminated-Po stringers-Dbs are found in felsic clasts
31.22	47.5		0	DI	0.5	VN	1	Dbs	DEN	1							DBS disseminated throughout-Po-Sp disseminated
47.5	55	FP	0.5	CR	0.5	CR	0.5										Po-Sp replacing mafic clasts, py on fractures
55	64.18	FP	0.5	DI	0.5	DI	0.5	Ga	FP	0.1	Dbs		1				DBs disseminated-Galena on fractures-Py on fractures
64.18	73.5	FP	0.1	DI	1	DI	0.5										Disseminated Po-Sp throughout
73.5	88.74	FP	0.5	CR	1	CR	1	Ga	VN	0.5							Galena veins-Py on fractures-Po-Sp replacing clasts
88.74	103	FP	0.1	CR	1	CR	1										PO-Sp mainly replacing clasts-
103	113.5	FP	0.1	CR	1	CR	1										Po-Sp reaplacing clasts-Locally Disseminated Po
113.5	124	FP	0.5	DI	1	CR	1	Grnt	CR	0.1							Garnets replacing mafic clast at 121.5m-Disseminated Po-Sp-Po-Sp replacing clasts
124	130	FP	0.1	CR	1.5	CR	1.5	Dbs		0.5							DBS on clasts-Sp-Po replacing clasts
130	149.5	FP	0.1	CR	1	CR	1										Po-Sp replacing clasts.Locally Po-Sp found in groundmass
149.5	158	FP	0.1	CR	0.5	CR	0.5										Po-Sp replacing clasts
158	175	FP	0.5	DI	0.5	DI	0.5	Grnt	CR	0.1							Po-Sp disseminated throughout-
175	193.7	FP	0.1	CR	0.5	CR	0.5										Po-Sp replacing clast-Py in fractures
193.7	211	FP	0.5	CR	1	CR	1	Grnt	CR	0.1	Dbs	CR	0.1				Galena replacing clasts-DBs found in laminated felsic clasts-Py on fractures. Sp-Po replacing mafic clasts
211	264.5	BB	1.8	DI	0.7	DI	2.5	Dbs	SP	0.1							vvsf
264.5	281.5	VN	0.1		0	BB	2.5	Cp	BB	0.1	Py	BB	0.1	Cp	VN	0.1	Irregular blebs of po > bx po with intergrowths of cpy, py
281.5	302.5	VN	0.1	BB	0.5	BB	2	Cp	BB	0.1	Py	BB	0.5	Cp	VN	0.1	As above, but with reddish sph & less po. Increase in py blebs
302.5	319	VN	0.1	BB	0.5	BB	2	Cp	BB	0.1	Py	BB	0.5	Cp	VN	0.5	As above, but increased Cp in veins
319	330	VN	0.1	BB	0.5	BB	1.5	Cp	BB	0.1	Py	BB	0.1	Cp	VN	0.1	Intergrowths of Po with Cp & Py. Cross-like shape @ 324.5m
330	400	VN	0.1	DI	0.5	BB	2	Dbs		0.5	Cp	FG	0.1				Black blebs with various sulfides increasing down hole

Blackwater Project
Drill Summary - Structure

BW0437

From (m)	To (m)	Structure	Strength	Comments
4.2	46	JZ	2	Joint zone-main joint set at 60 core axis
46	67	JZ	3	joint zone,, main joint set at 40 TCA
67	71	BRKZ	3	Broken zone-rubble clasts
71	115	JZ	3	Joint zone-two main joint sets-50>30-locally broken gougy zones
115	124	BRKZ	3	Broken zone-less competent core than jointed zone-locally jointed
124	174.2	JZ	3	jointed zone-two main joint sets 50>80 joints get steep down hole
174.2	188.7	BRKZ	3	Broken zone-rubble-chewed up fragments- locally gougy pieces-brecciated clasts within clay gouge
188.7	211	JZ	3	one main joint set 60TCA
211	264.5	JZ	1	Dominant joint sets are 35 % 50 degrees TCA.
264.5	280	JZ	3	Dominant joints at 60dtca others at 50dtca
280	287.5	JZ	2	Joints moatly at 60/50dtca, steep ones at 5/15/30dtca
287.5	291.5	JZ	3	Joints at 60dtca
291.5	314.5	JZ	2	Joint dominantly at 50dtca, some at 60dtca and the steep ones are at 10/20/30dtca
314.5	342.6	JZ	3	Joints at 70/60dtca
342.6	345.3	BZ	3	
345.3	385	JZ	3	joints predominantly 35deg
385	400	JZ	4	joints running down core axis

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Blackwater Project
Drill Logs

Hole ID:	BW0438	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374951.56
Depth (m):	377.04	Date Started:	01/05/2012	Casing Size:	HWT	Northing:	5892949.67
Azimuth:	0	Date Completed:	10/05/2012	Casing (m):	10	Elevation (m):	1573
Dip:	-90	Logged By:	CCu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	123.5	-88.9
92.05	131.9	-88.9
140.8	127.5	-88.5
189.6	140.7	-88
232.3	127.7	-87.3
278	132.3	-86.8
320.7	133.9	-86.8
366.3	142.2	-86.7

Blackwater Project
Drill Summary - Lithology

BW0438

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	26.7	OB							overburden
26.7	54	VC	ms	BLOCK	MO	GRY			Subrounded, polymictic (50 mf/50 fl), matrix supported volcaniclastic. Matrix is a medium to dark grey fine grained clastic. Oxide Zone - oxide on fractures and clast dominant.
54	92	VC	ms	BLOCK	MO	GRY			As above with occasional block sized clasts (increasing with depth).
92	157	VC	ms	LAP	MO	GRY			Similar to above with sub-angular to sub-rounded clasts and predominantly felsic clasts - bleached zones and garnet at depth. Majority is matrix supported, matrix is silicified and made up of fine grained clasts.
157	193	FT	bx	LAP	M	GRN			zones of possible FLPT? or perhaps brecciated FT. Either way, grades into a more massive laminated FT. Very wavy laminations throughout, with sometimes clasts sitting within matrix. Laminations bending around these clasts
193	264	FLPT	lam	LAP	M	GRN			zones of FT(?) laminated matrix; some areas weakly brecciated; pale green-grey. Matrix supported. Moderate alteration obscurring in some areas. Fades in and out of FT and tuffaceous texture
264	315.5	FLPT	lam	LAP	M	GRY			moderate to poorly sorted, some places clast supported. Places where matrix is clearly laminated. In and out of light grey to forest green colour
315.5	325.2	AND	bx		D	GRY			brecciated, very dark very fine grained, local zones of cracked breccia with silica groundmass
325.2	326.2	VC	ms	LAP	D	GRY			fragmental rock with some rounded felsic clasts, sub-rounded clasts, andesite matrix, dark rock
326.2	327.4	VC	cs	LAP	MO	GRY			sharp contact into very felsic-rich fragmental and brecciated with increasing dark fine grained andesite clasts towards bottom of interval. Plag-hornfels rich with broken xls
327.4	328.2	AND	volc		D	GRY			brecciated with one or two 5cm sized felsic fragmental rock clasts (or xenoliths?) within. Sharp edges between very dark andesite and light coloured felsic. Some cooling columnar style jointing seen within litho
328.2	329.8	AND	flw		BA	GRY			fine grainede andesite flow with some interstratified very felsic fragmental units. Andesite has coarser crystles in middle of thicker flow unit, as well as some columnar jointing. Top of felsic units are knife-edge sharp contacts, with bottom of uni
329.8	364	AND	bx		D	GRY			very dark, brecciated and volcanoclastic texture at top of unit, then into more massive andesite, medium grained in zones, non-amygdular, non-plagopheric

Blackwater Project
Drill Summary - Lithology

BW0438

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
364	377.0	AND	bx		D	GRY			zones of very brecciated andesite, some volc texture zones, and then zones with subtle plag phenos. Brownish patches from biotite alt'n

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Blackwater Project
Drill Summary - Alteration

BW0438		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
26.7	50	O	CLST	1	FR	3	CLST	4		0	SIL	MTRX	3	BIOT	CLST	1	OXIDE ZONE: strong silica alteration of felsic clasts and moderate in matrix. Chlorite alteration of mf clasts, bt in mf clasts. Limonite on fractcures and within clasts. Clay on fracture planes - surficial weathering product?
50	103	T	CLST	2	FR	1	PERV	3	CLST	1	SIL	CLST	4	BIOT	CLST	1	TRANSITION ZONE: less oxide than above - restricted to fracture planes. Chlorite alteration of clasts, also strong silica and weak sericite of felsic clasts. Some bt alteration of mafic clasts. Clay alteration of clasts and mechanical clay on fractures.
103	114	S	FR	4	FR	3	CLST	3	CLST	1	CHL	CLST	1	CLY	CLST	1	Dusty green/blue chlorite on fractures and green chlorite alteration patches. Silica alteration is moderate to strong of felsic/bleached clasts and the matrix. Occasional sericite or clay alteration of clasts.
114	151	S	PATC	4	FR	2	CLST	4	PATC	1	SIL	MTRX	4	SIL	PATC	2	Increase in chlorite - blue-green on fractures (with marcasite). Patchy bleached zones with a lighter colour, stronger silica and sericite, faint laminations and green, soft, soapy clay altered clasts.
151	160	S	FR	3	CLST	1	PERV	4	PATC	1	SIL	OP	5	CHL	PATC	1	very hard rock, pale greenish colour with patchy chl
160	193	S	FR	3		0	PERV	3	PATC	1	SIL	OP	5	CHL	PATC	2	stronger chl overall, somewhat within laminations in matrix
193	203	S	CLST	2	FC	2	PERV	4	PATC	2	CHL	FR	3	SIL	OP	5	very hard rock, some fracturing with a bit of white-yellow clay
203	220.5	S	CLST	2	FC	4	PERV	4	PERV	2	SER	FR	2	CHL	FR	2	greyish-green chl-ser on FP's, still very hard rock where ungouged. Lots of grimy clay on numerous fractures. Some small clay clasts in matrix
220.5	233	S	CLST	1	PATC	3	PATC	5	PERV	2	CHL	FR	1	CHL	MTRX	2	extremely hard. Patchy alt'n; pale green colour with some chl in laminated matrix
233	235	S	FC	1	FC	5	PERV	4	PERV	1	HM	FC	1				gouge; white-yellowish clay abundant; fragments within gouge strongly sil altered. Bright orange-red hemitite within gouge, fracture plane controlled
235	262	S	FR	2	FC	2	PATC	5	PERV	2	CHL	CLST	3	CLY	CLST	2	very hard sil altered, with some sericite, infrequent chl clasts very chl rich, white clay on every small hairline fracture

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Blackwater Project
Drill Summary - Alteration

BW0438		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
262	296	S	PATC	2	FC	3	MTRX	4	MTRX	3	CHL	CLST	3	CLY	CLST	2	patchy pervasive zones of dark chl
296	304	S	PATC	4	FC	2	PATC	3	PATC	3	CLY	CLST	2	SIL	OP	3	very patchy alteration styles with some strong dark green chl.
304	315.4	S	PATC	2	FC	1	PERV	5	PATC	3	CHL	FR	1	SIL	OP	5	very hard, very silica flooded with patches of blue-green ser-chl
315.4	321.7	S	PERV	1		0	OP	5	PERV	2							relatively unaltered rock, except a very intense sil OP, very hard glossy stick-rock
321.7	329.8	S	PERV	1		0	OP	5	PERV	1	SIL	PERV	4				felsic units within andesite are strongly pervasively sil altered, other rock with intense sil OP
329.8	337	S	PERV	1	FC	1	OP	5	PERV	1							similar as alteration in above andesite
337	370	S	PATC	3	FC	3	OP	3	PATC	2	SER	FR	3	CHL	FR	2	patches of clay gouge, with one zone of pale green chl-ser alt'n. Also some ser-chl on fracture planes
370	377.0	S	PATC	3	FC	3	OP	3	PATC	2	SER	FR	3	CHL	FR	2	as above with patchy moderate biotite alt'n

Blackwater Project
Drill Summary - Mineralization

BW0438		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
26.7	50		0		0		0	Jar	FP	2	Goe	FP	0.5				Jarosite on fractures and lesser in clasts. Geothite on fractures.
50	75	CR	0.5		0	CR	1.5	Jar	FP	0.1							First appearance of sulphide - significantly less jarosite. Pyrrhotite mineralizing within clasts (both felsic and mafic) within laminations and phenocrysts/amygdules.
75	93	CR	0.1		0	CR	1	Jar	FP	0.1							similar to above with lesser po and py. Po also rimming clasts.
93	112	CR	1		0	CR	2	Jar	FP	0.1							Pyrite and pyrrhotite mineralizing clasts - occuring together
112	130	CR	1	DI	0.1	CR	1.5	Mrc	FP	0.1							similar to above - no jarosite. Specks of red sphalerite disseminations.
130	152	VN	0.1		0	CR	1	Mrc	FP	0.1	Grnt	CR	2				Appearance of reddish-brown garnets mineralizing clasts as aggregates of anhedral crystals. Decrease in sulphide mineralization from above, pyrrhotite still mineralizing in clasts. One pyrite vein at 137.5 m
152	158	FP	0.1	CR	0.1	CR	1	Grnt	CR	1							Po replacing mostly mafic clasts, garnets replacing mostly felsics.
158	172	VN	0.5	DI	0.1	BB	0.5	Grnt	CR	1	Dbs	VN	1				py in shoddy vnlts and on fracture planes. sph in whispy disseminations. garnets as above, DBS locally in high grade in dendritic vnlts
172	186	VN	0.5	DI	0.1	BB	0.1	Grnt	CR	0.5	Dbs		0.5				some py in streaky blebs with garnets. Po in small blebs. Sph in light disseminations, garnets in mosly small clusters, with some larger ones. DBS in sporatic occurrances
186	204	SP	0.1	CR	0.1	BB	0.1	Grnt	CR	2							py in small streaky specks with garnets. garnet clusters quite frequent, some pretty large and amourphous (possibly not exclusively clast replacement?)
204	223	SP	0.1	CR	0.5	BB	0.1	Grnt	CR	1							as above, but garnet clusters a bit smaller and less frequent. Slighly more sph
223	234	SP	0.1	CR	0.5	BB	0.1	Grnt	CR	1	Dbs	VN	0.5				As above with DBS in small patches

Blackwater Project
Drill Summary - Mineralization

BW0438		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
234	245	SP	0.1	CR	0.5	BB	0.1	Grnt	CR	1	Dbs	VN	0.5				As above
245	255	SP	0.1	CR	0.5	BB	0.1	Grnt	CR	3	Dbs	VN	0.5				Sulphides as above, garnets very frequent, local patches of abundant large clusters, traces of py-sph-po with these clusters. Local garnets up to 5-7%
255	264	SP	0.1	CR	0.5	BB	0.1	Grnt	CR	0.5	Dbs	VN	0.1				As above with garnets smaller and dropping in frequency
264	274	SP	0.1	DI	0.5	DI	1	Grnt	CR	0.5							sph streaks in matrix. Po disseminated with sph and fine grained, usually in dark chl, a bit with garnets
274	282	SP	0.1	CR	0.5	BB	1	Grnt	CR	2							garnets more frequent, and getting large, locally may be up to 5%
282	293.7	SP	0.1	CR	0.5	BB	1	Grnt	CR	7							sulphides as above, garnets very abundant, browish purple garnets, replacing clasts and in matrix, late stage generation, locally may be up to 15%. mostly 2-8mm's
293.7	298	SP	0.1	CR	0.5	BB	1	Grnt	CR	3	Cp	SP	0.1				sulphides as above with trace cpy. Garnets decreasing slightly to 3%
298	306	BB	0.5	BB	1	BB	1	Grnt	CR	2	Cp	SP	0.5				some blebby sulphides. Cpy rimming garnets and intergrown with sph.
306	313	SP	0.1	DI	0.5	BB	0.5	Grnt	CR	3							Po with garnets a lot of time. garnets locally up to 5%, frequent small clusters
313	321	DI	1	DI	0.5	DI	1	Grnt	CR	0.1							py and po in some little blebby vnlts. Trace garnets
321	331	DI	1	DI	1	DI	2										all sulphides mineralization style in fine grained disseminated, with some in small vnlts
331	340	VN	1	DI	0.5	BB	1										py mainly in blebby vnlts
340	354.6	SP	0.5	DI	0.5	DI	1										Py in small bright blebs, sometimes with Py
354.6	355.5	FCN	1	DI	0.5	BB	0.5										Py in some fracture gouge
355.5	363	SP	0.1	DI	0.1	DI	0.5										sulphides decreasing to minor amounts
363	377.0	FCN	0.5	CR	0.1	VN	0.5										some fine grained py with calcite, Po in a few shoddy vnlts and rare bleb

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Blackwater Project
Drill Summary - Structure

BW0438

From (m)	To (m)	Structure	Strength	Comments
26.7	89	JZ	3	Fractures at 15 and 30 DTCA.
89	92	JZ	5	Joint zone with weak clay gouge at 15 DTCA and intermittent broken zones.
92	151	JZ	5	Joint zone and intermittent broken zones with chl and cly on fracture planes. Slicks on fracture planes. Fracture sets at 10, 30, and 45 DTCA.
151	151.4	FL	4	Fault - clay gouge with deep green chloritic clay. Low confidence on angle TCA.
151.4	157.3	JZ	4	minor set at 50 deg TCA
157.3	165.5	BRKZ	4	very broken core, local zones of rubble
165.5	182.3	JZ	4	minor set at 40-50 deg TCA. locally some more busted zones
182.3	188.2	BRKZ	5	very broken and rubbly rock. minor gouge, a bit of fracture infill with yellowish clay gouge
188.2	197.8	JZ	5	joint sets at 35 and 45 deg TCA
197.8	204.8	BRKZ	2	frequent rough fracturing at 25 deg TCA, some core fragments looking shard-like
204.8	208.7	BRKZ	4	busted core from blocky to rubbly.
208.7	209.4	FZ	3	gouge, gritty clay. Upper and lower contacts around 45 deg TCA.
209.4	216.2	BRKZ	5	very rubbly core, with small bits of gritty gouge on some fractures. Also short runs of more competant core, infrequent
216.2	220.7	BRKZ	3	busted up core, some rubble, some planar fractures measured at 50
220.7	228	JZ	3	planar jointing mainly at 45 deg TCA. minor set at 25
228	233	JZ	5	much more jointing and fracturing with a little bit of rubble here and there. joint sets similar as above
233	234.7	FZ	4	clay rich gouge. Small rounded fragments within. soft. lower contact at 20 deg TCA low confidence with this measurement
234.7	248.4	JZ	5	lots of jointing, with small zones of quite broken rock. major set at 50 minor at 15-20 deg TCA
248.4	248.8	FL	3	small fault zone with many sub-rounded fragments within somewhat soft clay gouge. lower contact at 45 deg TCA
248.8	255.3	JZ	4	frequent jointing, minor sets at 20 and 70 deg TCA
255.3	259	JZ	5	gradually increasing in structure intensity to a more broken rock
259	262	BRKZ	2	low intensity broken zone above fault
262	266.5	FZ	3	gritty gouge, then broken, then more gouge. Sub-rounded fragments in gouge. Contact angles 15-20 deg TCA, low confidence with this orientation
266.5	303	JZ	3	major joint set at 30-40 deg, minor set at 15-20

Blackwater Project
Drill Summary - Structure

BW0438

From (m)	To (m)	Structure	Strength	Comments
303	314	JZ	3	a fair amount of jointing, dominant at around 30 deg TCA
314	336	JZ	1	stick rock, with a few joints at 30 deg TCA, very planar
336	340.9	FZ	2	weak fault zone, with fault brecciation, broken rock, rubble and a bit of clay gouge, gritty
340.9	370.9	JZ	2	majority is stick rock, with small zones of more broken material.
370.9	377.0	BZ	3	fault breccia zone with gritty clay groundmass. Sub-angular fragments suspended within clay material.

Blackwater Project
Drill Logs

Hole ID:	BW0439	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375901.31
Depth (m):	384	Date Started:	03/05/2012	Casing Size:	HWT	Northing:	5892950.7
Azimuth:	0	Date Completed:	09/05/2012	Casing (m):	33	Elevation (m):	1565
Dip:	-90	Logged By:	KOr	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
51	271.3	-88.5
105	277.9	-88
150	276.4	-88.2
204	276.1	-88
252	272.1	-87.9
303	268.2	-88
351	258.1	-88
384	247	-87.8

Blackwater Project
Drill Summary - Lithology

BW0439

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	40	OB							
40	84	FT	obsalt	FA	L	GRY	UNKN		Light grey with light orange limonite fractures plus minor black goethite patches on fractues and minor patchy red Hem staining. Py casts abundant. Heavily clay altered core. Not very silicified (soft). Well oxidized. Minor small sections of gou
84	89.8	FT	obsalt	FA	L	GRY	FLT	SH	Same unit as above, texture destroyed, bleached, clay altered, Lim+minor goeth. Py casts, Compotent, Bottom contact is small fault at ~40dtca.
89.8	119.5	FT	obsalt	FA	L	GRY	ALTFR	SH	Alt obscured, txtr destroyed, Same as above with less overall Lim. Light / medium grey is primary colour. Minor Hem in facrs, fault brecciated, compotent, Py casts, filled with grey clay? and yellow clay?
119.5	138.5	FT	obsalt	FA	M	OR	OXFR	GR30+	Back into more heavily limonitized core, very yellow / orange mottling, compotent core, bottom contact is gracdational - leading into transition zone with decreasing Lim.
138.5	165	FT	obsalt	FA	L	GRY	UNKN		Core transitions into grey, Lim steady decrease, through interval, Lim still on fracs down to 150.5m. Interval begins in healed fault brecc, Sulphides and oxides present (transition). Sections of black haloes around Py casts and section of cream /
165	187.5	FT	obsalt	FA	L	GRY			Light grey. Texture destroyed. Clay altered and bleached.
187.5	197	FT	obsalt	FA	M	GRY	ALTFR	GR10	Slightly darker grey than above. Texture destroyed. Clay altered and bleached.
197	210	FT	obsalt	FA	L	GRY	UNKN		Back to light grey. Interesting patterns, probably alteration patterns, not primary.
210	216	FT	obsalt	FA	M	GRY	UNKN		Slightly darker grey again.
216	225	FT	obsalt	FA	L	GRY	ALTFR	GR30	Light grey. Clay altered and bleached. Texture destroyed.
225	233.5	FT	obsalt	FA	MO	GRY	ALTFR	GR10	Light blue bands of silicification in competent core and pale blue tint to rounded clasts in fault breccia in a matrix of pale yellow clay gouge.
233.5	249	FT	obsalt	FA	L	GRY	UNKN		Light grey texture destroyed clay altered. Minor pale yellow clay in frac areas.
249	262.5	FT	obsalt	FA	L	GRY	ALTFR	GR30+	Light grey green. Texture destroyed. Alteration banding.
262.5	274.8	FT	obsalt	FA	M	GRY	FLT	GR5	Slightly more chloritic than above, slightly darker colour.
274.8	286.2	FT	obsalt	FA	MO	GRN	FLT	SH	Unit begins and ends in fualt gouge. Bottom contact sharp at 20dtca. Gouge is light beige with slight orange hue. Colour is mottled between medium green grey to light green/beige.
286.2	297	FT	obsalt	FA	M	GRN	UNKN		Texture destroyed. Heavily altered. Silica/sericite/clay banding is more swirling and mottled.

Blackwater Project
Drill Summary - Lithology

BW0439

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
297	306.1	FT	obsalt	FA	M	GRN	FLT	SH	Texture destroyed. Heavily altered. Chl increasing.
306.1	312.7	FT	obsalt	FA	MO	GRN	ALTFR	GR10	Silica sericite clay alteration front gradation at bottom. Same unit as above + fault gouge. Gouge heaviest at top - grading into partial heal gouge + brecc - grading to heavy fractured & healed. Moderately chloritic.
312.7	323.7	VC	ms	LAP	MO	GRY	FLT	SH	Begining grades out of sil-ser-clay alt into fairly fresh andesitic volcaniclastic. AND VC beins slightly purple altered with occasional clasts, grades into medium grey fresh AND - grades to green ser/chl clay altered VC. Clast size decreases close
323.7	331	VC	fltbx	LAP	MO	GRY	ALTFR	GR5	Bleached section from 327.4-331m.
331	346	VC	por	FA	D	GRY	UNKN		Large lapilli sized andesite clasts. Both amygduloidal and porphyritic andesite clasts. Dark grey/purple/blue. Matrix support.
346	369.2	AND	por	CA	D	GRY	DEP	SH	Dark grey/dark purple prophyritic andesite with sections of amygduloids. Amygduloids are filled with silica and Po.
369.2	372.2	VC	plm	LAP	MO	GRY	UNKN		Medium blue-grey polymictic VC. ~75% felsic clasts, moderately well sorted. Up to 1 cm diameter. Felsic clasts generally larger than mafic. Clay/mud matrix seam at ~371m. Top contact appears depositional at ~35dtca.
372.2	376	VC	mon	LAP	M	GRY	FLT	SH	Darke grey andesite VC in healed fault?? / broken zone. Bottom contact at ~10dtca.
376	384	AND	amg	FA	D	GRY	UNKN		Back into dark grey amygduloidal andesite. Same as unit at 346-369.2m. EOH

Blackwater Project
Drill Summary - Alteration

BW0439		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
40	50.9	O		0	PERV	4	PATC	1	PERV	2	LIM	FC	3	HM	PATC	1	Strongly clay altered due to weathering of felspar and phyllosilicates (Ser). Strongly oxidized with abundant Limonite and lesser Goethite and Hematite. This unit broken out to represent upper strongly weathered zone, (Core is not compotent, same litho units follows with more compotent core).
50.9	57	O		0	PERV	4	PATC	2	PERV	2	LIM	FC	3	HM	PATC	2	Same as interval above with stronger Hem satined fractures (abundant but small fracs). More compotent core than above. Some small gouge and healed fault breccia. Py casts.
57	72.3	O		0	PERV	4	PATC	2	PERV	2	LIM	FC	2	HM	PATC	2	Roughly same as above with slightly less Lim alteration. This sectionn has more abundant medium grey clasts of orig material healed in brecc. Py casts.
72.3	84	O		0	PERV	4	PATC	2	PERV	2	LIM	FC	2				Same as above, Hem absent. Py casts. Geothite on fracs.
84	89.9	O		0	PERV	4	PATC	2	PERV	2	LIM	FC	2				Weak limonite, strong clay & ser. Minor black goethite on frcas.
89.9	119.5	O		0	PERV	4	PATC	1	PERV	2	LIM	FC	1	HM	FC	1	Most core in this interval has less prevasive Lim than previous units. Core is medium grey. Few sections have Lim up to 3. Minor hem on frcatures - very fine. Py casts filled with grey clay or yellow clay.
119.5	138.5	O		0	PERV	4	PATC	1	PERV	2	LIM	FC	3	HM		1	Back into more heavy Lim core, very yellow / orange mottling. Minor Hem fine in fracs.
138.5	165	T		0	PERV	4	PERV	2	PERV	2	LIM	FC	1				Limonite fading out in upper section, slightly more silicious.
165	187.5	S		0	PERV	4	PATC	2	PERV	2							Clay altered and bleached. Light-moderate silicification.
187.5	197	S	PERV	1	PERV	5	PATC	2	PERV	2							Alteration destroyed texture (also above in transition zone). Slight Chlorite alteration causing colour tone difference between alteration units broken out here.
197	210	S		0	PERV	4	BN	3	PERV	2	SIL	BN	3				Back to light grey tone (lack of chl). Patches of wavy silica banding.
210	216	S	PERV	1	PERV	5	PATC	2	PERV	2							Slightly darker again due to trace chl alteration. Higher clay due to fault.

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Blackwater Project
Drill Summary - Alteration

BW0439		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
216	225	S		0	PERV	4	PATC	2	PERV	2	CLY	FC	1				
225	233.5	S		0	PERV	4	BN	2	PERV	2	SIL	PERV	4	CLY	FC	3	Pale blue silica banding in competent core and pervasive in fault breccia clasts. Increased clay due to gouge / alteration in fractures.
233.5	249	S		0	PATC	4	PATC	4	PERV	2	CLY	FC	2				Patchy silicification of the core and patchy clay alteration of matrix.
249	262.5	S	PERV	2	PERV	4	PATC	3	BN	3	CLY	BN	2				Weak-moderate banding of silica-sericite-clay. Mottled appearance throughout. Patchy silicification.
262.5	274.8	S	PATC	3	PERV	4	PATC	3	PATC	3	CLY	FC	2				Stronger silicification. Frac controlled clay. Well altered by silica sericite and clay.
274.8	286.2	S	PATC	3	PERV	4	PATC	4	PATC	3	CLY	FC	1	CLY	DEF	1	Heavy clay alteration in gouge. Heavy silica sericite alteration is streaky. Moderate chlorite.
286.2	297	S	PATC	3	PERV	3	PERV	5	PATC	3	SIL	BN	2	SER	BN	2	Strongly silicified. Still with silica-sericite-clay banding.
297	306.1	S	PATC	3	PERV	3	PATC	2	PATC	3	SIL						Moderate-strong alteration throughout destroys texture.
306.1	312.7	S	PATC	3	PATC	4	PATC	1	PATC	3	CLY	DEF	3				Deformation clay as well as alteration clay.
312.7	323.7	S	PATC	3	PATC	4	PATC	3	PATC	4	CLY	DEF	1				
323.7	331	S	PATC	3	PERV	3	PATC	1	PERV	3							
331	346	S	PATC	2	PATC	1	PERV	2	PATC	2							Fairly fresh.
346	369.2	S	FC	2	PERV	1	PERV	2	PATC	1	CHL	MTRX	1				Fairly fresh.
369.2	372.2	S	FC	1	MTRX	2	PERV	2	CLST	1							Sericite in felsic clasts.
372.2	376	S	FC	3	PERV	3	PATC	1	PATC	1							Higher chlorite and clay in healed fault.
376	384	S	FC	3	AMYG	1	AMYG	2	AMYG	2	SIL	MTRX	1				Silica and possibly clay or sericite in amygduals. Too soft to be ilica only, but ome crytal of ilica in amygduals.

Blackwater Project
Drill Summary - Mineralization

BW0439		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
40	84		0		0		0										No mineralization in this section.
84	138.5		0		0		0										No mineralization in this section. Mineralization begins below.
138.5	165	SP	0.1	BB	2		0	Dbs	STR	2.5	Py	SP	0.5				Mineralization dominated by DBS stringers (very fine frac fill?). Sp occurs in specks throughout. Py in some Sp blebs. Some specks appear as sooty fine material, sooty Py?
165	187.5	SP	1	VN	0.2		0	Dbs	STR	1.5							DBS stringers and sooty Py specks. Also 2 small ~1mm veinlets of Sp+Py+Ga. Bright fine grained Py on fracs near bottom of interval.
187.5	197	SP	1.8	VN	0.5		0	Dbs	STR	1	Py	VN	0.8				DBS decreased from above. Veins of vitreous Sp+Py at 187.75, 196.5, 196.9m Sp and sooty Py specks.
197	210	SP	1	SP	0.5		0	Dbs	STR	2	Py	VN	0.2	Sp	VN	0.5	DBS stringers, sooty Py and Sp specks, Veins of Sp + sooty Py + hard dark blue mineral @ 206m, veins lacking blue mineral at 204.7 and 204.8m
210	216	SP	0.2	SP	0.1		0	Dbs	STR	0.7							TS~1%
216	225	SP	0.2	SP	1		0	Dbs	STR	1.5							Trace sooty Py in specks. DBS in specks and stringers. Sp in speck.
225	235		0	SP	3	SP	0.1	Dbs	SP	2	Sp	VN	0.5				Abundant Sp specks in competent core and gouge. Few small sp veinlets. DBS specks.
235	249	SP	0.2	SP	0.5		0	Dbs	SP	0.5	Dbs	STR	0.3				TS<1.5%
249	262.5	SP	1	SP	0.5	SP	0.1	Dbs	STR	3	Py	FC	0.5				TS~4%
262.5	274.8	SP	0.5	SP	1	SP	0.5	Dbs	STR	2							TS~4%. Slightly higher Sp and lower DBS than above.
274.8	286.2	SP	0.2	SP	2.5	SP	0.2	Dbs	SP	1.5	Apy	VN	0.2				Areas of high Sp spekcs. Veinlet with Arseno at 285.1m.
286.2	297	SP	0.5	SP	4	SP	0.2	Dbs	STR	0.5	Apy						Small veinlet with arseno at 297.5m. Areas of high concentration (up to 15%) red Sp.
297	306.1	FC	0.3	BB	3		0	Dbs	SP	1.5	Ga	VN	0.2	Apy	SP	0.1	TS~5.5%. Red Sp belbs throughout. SPh/DBS/Sooty Py veinlets. Couple stringers with Ga+Ar+Chalc.
306.1	312.7	FG	0.5	BB	3		0	Dbs	STR	1	Dbs	SP	0.5				TS~5.5%
312.7	323.7	STR	0.5	CR	1.5		0	Dbs	FG	1							TS!3%

Blackwater Project
Drill Summary - Mineralization

BW0439		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
323.7	331	STR	0.8	SP	1		0	Dbs	STR	0.5							TS~2.25%
331	346	FC	2	SP	1	VN	2	Cp	VN	1	Sp	VN	0.2	Ga	VN	0.1	Majority of mineral is 2-4mm veins of Po>Py>Cp>Sp. Small veinlets containing Ga and specks of Arseno. Specks of Sp in some clasts.
346	362	FC	0.3	FC	0.1	FC	2.5	Sp	SP	0.3							TS~3%
362	369.2	FC	0.1		0	FC	0.4										T~0.5%
369.2	373.2	FC	0.3		0	FC	0.7	Unk	BB	0.1							Po+Py in subvert veinlet runs through unit. Appearance of red/orange oxidation in bleb in veinlet and on 1 fracture surface near sulphide.
373.2	376	FC	0.5		0	FC	2										
376	384	FC	0.5	FC	0.2	FC	1										Sulphides in veinlets.

Blackwater Project
Drill Summary - Structure

BW0439

From (m)	To (m)	Structure	Strength	Comments
40	50.9	BRKZ	5	Upper weathered zone, core not compotent.
50.9	64.6	JZ	2	Weakly jointed in two sets, one at 40, one at 50dtca.
64.6	68.4	FL	4	Fault, top contact angle unknown, bottom contact at 15dtca.
68.4	84	JZ	3	Predominant joint set at 40dtca, may be lesser joints at 50 and 60 dtca. Subvert frca at 79.5-80m.
84	90.7	JZ	3	Same as above.
90.7	93.1	BRKZ	3	Moderate jointing at 50dtca
93.1	101.4	JZ	2	Weak jointing at 30dtca, compotent.
101.4	138.2	JZ	2	Weakly jointed at 30-50dtca, majority at 40dtca.
138.2	156.2	BRKZ	1	Mostly compotent
156.2	158	JZ	4	abundant fractures at 20dtca
158	165	JZ	3	Weakly jointed.
165	187.5	JZ	3	Weakly jointed.
187.5	197	BRKZ	3	Moderately broken with minor gouge? or severe akteration.
197	210	JZ	2	Primary jointing at 40dtca, lesser at 30dtca.
210	217	FZ	1	Weak fault zone, brittle fractured down to 214m with minor clay. Gouge from 214-215m. followed by more fracture.
217	225	JZ	2	weakly jointed at 30dtca.
225	230.1	BRKZ	2	weakly broken, mostly competent
230.1	235	FZ	3	Partially silica healed fault b breccia. Sub rounded clasts in yellow clay matrix. Martrix support bercc.
235	237.8	BRKZ	4	Moderate to severe broken zone. Abundant rough subvertical fractures.
237.8	244.7	JZ	3	moderate joint set at 30dtca.
244.7	249	BRKZ	2	Weak broken zone. Some small gouge sections, some small sections of competent core, some rubble zones.
249	256.3	BRKZ	3	Broken zone extended from above.
256.3	258.2	FL	2	weak fault, clast support.
258.2	263.6	JZ	2	Primary at 50dtca with secondary at 70 and 30 dcta.
263.6	274.8	FZ	3	Moderate fault zone with abundant rubble zones and healed fault.
274.8	297	FZ	2	Slightly weaker fz than above (continued from above). Some sections of competent core. Rubble zones. Small sections of healed gouge and fault breccia.
297	303.2	JZ	2	weak jointing at 40 and 50dtca

Blackwater Project
Drill Summary - Structure

BW0439

From (m)	To (m)	Structure	Strength	Comments
303.2	306.1	BRKZ	3	moderate broken zone
306.1	331.3	FZ	4	Strong fault zone. Multiple faulting events. Gouge for 1st meter, followed by broken zone, followed by small section of competent altered core,. Healed flt brecc from 315.8-319.7. Followed by fine gouge with small clasts from 319.7-320.9m, next gouge
331.3	346	BRKZ	1	weak broken zone, mostly competent core
346	369	BZ	2	Weakly broken zone, sections of whole core less than 1m, small gouge seams are present. No regular orientation of fracs.
369	372	JZ	3	
372	378.4	FZ	2	Weak fault zone, minor gouge, mostly healed.
378.4	384	JZ	2	

Blackwater Project
Drill Logs

Hole ID:	BW0440	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375900.79
Depth (m):	380.5	Date Started:	02/05/2012	Casing Size:	HWT	Northing:	5892849.39
Azimuth:	0	Date Completed:	08/05/2012	Casing (m):	45	Elevation (m):	1578
Dip:	-90	Logged By:	MNu	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	306.2	-88.8
151	308.2	-88.9
205	316.1	-88.7
301	5.3	-88.5
358	346	-88.6

Blackwater Project
Drill Summary - Lithology

BW0440

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	44.5	OB					DEP	SH	
44.5	183	FT	lam	CA	P	CRM	DEP	GR10	Tightly lamintaed moderately oxidized ash rich felsic tuff with strong limonite and weak to moderate goetite on fractures; moderately pitted with oxidized sulphide casts
183	192.8	FT	lam	CA	P	CRM	ALTFR	GR10	Tightly laminated moderately tostrongly oxidized felsic tuff with moderate to strong limonite and weak to moderate goetite on fractures; moderately pitted with oxidized sulphide casts; unit is very uniform; Likely clay altered silica sericite FT
192.8	211.5	FT	lam	CA	P	CRM	ALTFR	SH	Texture destroyed silica sericite clay altered laminated felsic tuff with moderate iron oxide and clay altered haloes around sulphide patches.
211.5	241	FT	lam	CA	P	YLW	FLT	SH	Texture destroyed silica sericite clay altered laminated felsic tuff with moderate clay altered haloes around sulphide patches
241	278.5	FT	obsalt	CA	P	GRY	FLT	GR5	Texturally obscured FT. Locally laminated. Sections with intense clay altered zones. Strong increase in sulphides. Interesting red coloration in clay zones. Hematite?
278.5	380.5	AND	por	BLOCK	M	GRY			Porphyritic andesite with local sections of calcite filled amygdules. Calcite veining. Decrease in sulphides. Faulted upper contact at 25 degrees.

Blackwater Project
Drill Summary - Alteration

BW0440		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
44.5	53.5	O		0	MTRX	3	MTRX	1	MTRX	1	CLY	FR	3	LIM	PERV	4	Oxidized clay altered weakly silicified felsic tuff with strong oxidizing limonite and weak goetite on fractures
53.5	183	O		0	MTRX	3	MTRX	1	MTRX	1	CLY	FR	2	LIM	FC	3	
183	192.8	O		0	MTRX	4	MTRX	1	MTRX	2	CLY	FR	2	LIM	FC	3	Intense texture destructive silica sericite altered FT oxidized and altered to clay; moderate to strong clay alteration of sericite with weak to moderate clay on fracture faces; Moderate to strong limonite on stringers and fracture surfaces with moderate limonite altered pits
192.8	211.5	T		0	MTRX	2	MTRX	3	MTRX	2	CLY	FR	1	LIM	FC	2	Transitional oxide sulphide facies with moderate limonite fracture coatings and goetite and clay sulphide haloes
211.5	230	S		1	SPHL	2	PERV	3	MTRX	3	CLY	FC	1				Hypogene sulfide zone with weak to moderate clay altered haloes around sulphides; Intense texture destructive silica sericite
230	278.5	S	FC	2	PERV	3	PERV	3	MTRX	3	CLY	PATC	3				Strong clay alteration throughout. Pervasive from 242 to 245.5m. Moderate silica.
278.5	380.5	S	PERV	3	FC	2	PERV	2	PATC	1	BIOT	PERV	3	CAL	VN	4	Typical andesite, calcite veins, calcite filled amygdules. Clay and chlorite on fractures. Strong biotite.

Blackwater Project
Drill Summary - Mineralization

BW0440		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
44.5	55.3		0		0		0	Hm	FC	1	Goe	STR	2				
55.3	70.88		0		0		0	Hm	FC	2	Goe	STR	2				
70.88	100		0		0		0	Hm	FC	2	Goe	STR	2				
100	183		0		0		0	Hm	FC	1	Goe	STR	1	Goe	FC	1	Uniformly oxidized and limonite altered FT with local patches of Goetite occuring as fracture fillings and stringers
183	192.8		0		0		0	Hm	FC	1	Goe	STR	2	Goe	FC	2	Moderate increase in Goetite fracture fillings and stringers
192.8	211.5	BB	1.5		0		0	Goe	PATC	2							Goetite sulphide haloes around pyrite blebs and specks
211.5	230	BB	3	BB	2		0	Dbs	STR	1	Ga	SP	0.1				Strong specks and patches of Py, Sp, Ga with moderate stringers of Dbs
230	243.2	DI	1	DI	3		0	Dbs	DEN	1							strong diss sphalerite. Moderate DBS.
243.2	257.8	DI	1	DI	3		0	Dbs	DEN	0.5	Hm	DI	0.1				diss hematite in fault/clay zone
257.8	278.3	DI	1	DI	1.5		0	Dbs	DEN	0.5							decrease in sulphides approaching fault and lower andesite unit
278.3	304	BB	0.5	SP	0.1	AMYG	0.5	Ga	AMYG	0.1							calcite filled amygdules with galena and po
304	331	SP	0.5		0	SP	0.5										trace sulphides
331	364	BB	0.5		0	BB	0.5										moderate sulphides. Blebby to veins.
364	380.5	DI	0.1		0	BB	0.1										Weak sulphdies

Blackwater Project
Drill Summary - Structure

BW0440

From (m)	To (m)	Structure	Strength	Comments
44.5	55.3	FZ	3	Moderate faultgouge and strongly fractured through upper oxide zone below the overburden
55.3	100	JZ	3	Laminated texture migrates from 55 to approximately 30 to 15 degrees to core axis
100	172	JZ	3	Weak relict silica sericite laminations. Uniform fracture sets 50 to core axis
172	172.5	FL	4	
172.5	183	JZ	2	
183	212.6	JZ	3	
212.6	230	JZ	3	Weak to moderate clay on fractures
230	241	BRKZ	3	broken core
241	244.4	FL	4	100 Clay
244.4	254.4	BRKZ	3	
254.4	256.3	FL	3	fault gouge, sharp contacts, 30 degrees
256.3	266.8	BRKZ	3	broken core
266.8	269.4	FL	3	fault with gouge, broken above and below
269.4	278	BRKZ	3	
278	281.5	FL	4	fault contact
281.5	285	BRKZ	3	broken
285	300	BRKZ	2	
300	317	JZ	3	mostly flat lying joints
317	380.5	JZ	3	locally broken

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Blackwater Project
Drill Logs

Hole ID:	BW0441	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375551.29
Depth (m):	139	Date Started:	03/05/2012	Casing Size:	HWT	Northing:	5893299.96
Azimuth:	0	Date Completed:	05/05/2012	Casing (m):	10	Elevation (m):	1541
Dip:	-90	Logged By:	AVe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-89
50	65.5	-88.4

Blackwater Project
Drill Summary - Lithology

BW0441

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9	OB							Sandy-blocky
9	22.5	VC	plm	LAP	L	GRN	FLT	GR5	Matrix supported-mafic clast dominant-angular clasts-Locally texture no visible due to perva silica alt
22.5	88	AND	cxt	LAP	D	GRY	UNKN		Massive andesite grades to andesite crystal rich and then grades to andesite volcanoclastic texture
88	97	VC	plm	LAP	M	GRN			Mafic dominant clast unit-matrix supported-locally felsic laminated clasts-
97	98.5	VC	plm	LAP	M	GRY	UNKN		As above
98.5	106.5	VC							CAVE material. Sandy drill cuttings
106.5	139	VC	plm	LAP	D	GRY	UNKN		Mafic-dominant. Less bleached then interval uphole. Mafic clasts are more distinct. Light grey matrix with lapilli-sized andesite fragments up to 20 cm. Laminated clasts from 135-136m.

Blackwater Project
Drill Summary - Alteration

BW0441		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9	22.3	O	CLST	2	PATC	2	PATC	2	PERV	2	LIM	FR	2				Limonite alt foun on fractures-pervasive sericite alt foun in matrix-Chlorite alt in mafic clasts
22.3	51	T	MTRX	2		0	PATC	1	PATC	1							Chlorite alt in mafic matrix-locally chlorite in fractures
51	74.5	S	CLST	2	PATC	1	CLST	2	PERV	3							Patchy clay alt found in clasts-pervasive sericite alt locally washing out no original texture visible, silica found in clasts
74.5	88	S	FR	1		0	PATC	1	FR	1							Patchy silica found as secondary quartz asocciated with carbonated veins-Chlorite in fractures
88	97	S	CLST	2	PATC	2	CLST	2	PERV	2							Patchy silica found as clast replacements-Pervasive sericite locally no texture visible-Chlorite in calsts
97	106.5	S	CLST	2	PATC	2	CLST	2	PERV	2							As above
106.5	139	S	FC	4	CLST	2	CLST	2	CLST	2	SIL	MTRX	1	CLY	MTRX	1	Silica-clay matrix with silica, sericite & clay altered clasts. Chlorite strong along fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0441		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9	22.5		0	FP	1	DEN	1										Sp found in fractures-Desndritic Po-
22.5	36.2	FP	0.1	VN	0.1	DI	0.1	Apy	FP	0.1							Sp-Po vein at 24m-Po disseminated throughout
36.2	52	FP	0.1		0	DI	0.1										same as above-Po disseminated very local not visible Po blebs just a bit magenetic core
52	75	FP	0.5	DI	1	DI	1	Po	CR	0.5	Ga	FP	0.1				Euhedral galena found on fractures at 53-55m-galena disseminated in gougy rocks-Po-Sp replacing clasts-Sp Disseminated throughout
75	85	FP	0.1		0	FP	0.1										Po-Py found in fractures planes-Locallu Po disseminated-generally sulphides dropped
85	97	FP	0.5	DI	1	CR	1	Ga		0.1							Po-Sp replacing felsic clasts-Blebby Po-Po-Sp disseminated in matrix-galena found on fractures
97	106.5	FP	0.5	DI	1	CR	1										As above
106.5	119.5	FP	0.5	CR	1	CR	0.5										Weakly mineralized interval. Po & Py found within andesitic clasts
119.5	139	FP	0.5	CR	1	CR	0.5										As above

Blackwater Project
Drill Summary - Structure

BW0441

From (m)	To (m)	Structure	Strength	Comments
9	36.2	BRKZ	3	broken zone-rubble0blocky fragments-locally brecciated clasts-still competent core no gouge visible
36.2	52.1	JZ	2	jointed zone-two main joint sets-40>50
52.1	56	FL	3	clay gouge-brecciated clasts-slikenslides on fractures
56	88	JZ	3	joint zone- main joint set at 60 TCA-locally brecciated clasts at 68.5-69.5
88	94	FZ	3	fault zone-fault breccia-brecciated clasts in clay gouge-competent core within gouge blocks
94	98.5	FZ	3	As above, strongly jointed
98.5	103	FL	5	CAVE
103	111	FZ	4	Strongly faulted. Gougy zones @ 107m, 109m. Mix between faut bx, gouge & broken zones. Questionable lower contact @ 10 degrees? Paralleling fault for bottom half of drillhole
111	114.4	JZ	2	primary joint @ 60 dTCA. Possibly large block within fault zone
114.4	118.2	FZ	3	Fault zone paralleling CA? Again difficult to determine with 100% certainty. Strongly broken, minor gouge
118.2	128.5	FZ	4	Gouge along fracture planes @ 10, 20 and 40 dTCA. Strongly broken. Uncertain measurement
128.5	136.3	FZ	3	Broken zone with less fractured blocks up to 1m within fault/shear zone. Measurable joints at 10 dTCA at 133m. Possibly structure controlling strong faulting within interval
136.3	139	FZ	5	No measurable angle. Strongly faulted. Gouge, rubble and re-drill. Caused hole to be abandoned

Blackwater Project
Drill Logs

Hole ID:	BW0442	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375302.07
Depth (m):	394.72	Date Started:	03/05/2012	Casing Size:	HWT	Northing:	5893050.19
Azimuth:	0	Date Completed:	09/05/2012	Casing (m):	10	Elevation (m):	1593
Dip:	-90	Logged By:	CCu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	120.8	-89.3
91.44	125.7	-89.2
137.2	155.2	-89
182.9	75.6	-89.3
228.6	154.1	-89.7
274.3	163.4	-88.6
320.0	183.6	-88.9
365.8	184.8	-89
394.7	186.5	-88.8

Blackwater Project
Drill Summary - Lithology

BW0442

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	4.57	OB							overburden
4.57	90	VC	obsalt	LAP	MO	WH			Medium grey, VC with predominantly mafic clasts. Moderately sorted, lapilli sized, matrix supported. Most of interval is bleached out resembling FLPT with patches of relatively unaltered material revealing protolith as VC.
90	191.5	VC	obsalt	LAP	M	GRN			As above but more altered. Looks like FLPT but in context calling it VC, altered.
191.5	213	FLPT	bx	LAP	M	GRN	DEP	GR30+	patches of obscurring alt'n. Pale grey to olive-green colour. Small clast sizes
213	259	FT	lam		M	GRN			laminated, local microbrecciation; laminations generally planar with mall sections of wavy laminations. Alt'n obscurred patches; quite green colour
259	394.7	FT	lam		M	GRN			locally brecciated with FLPT texture, and small sub-meter zones of FLPT, but mainly a well laminated FT, sometimes wavy, but mostly planar. Mainly quite green

Blackwater Project
Drill Summary - Alteration

BW0442		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9.8	16.8	O		0	CLST	2	MTRX	5	CLST	2	SIL	CLST	3	LIM	FR	2	extremely bleached out VC, white in colour. The matrix is extrememly silicified and textureless. Clasts are softer and appear banded. Garnets mineralizing some clasts.
16.8	20.5	O		0	CLST	1	MTRX	3	MTRX	3	SIL	CLST	2	LIM	FR	3	Relatively unaltered VC.
20.5	32.5	T		0	CLST	2	MTRX	4	CLST	2	SIL	CLST	2	LIM	FR	1	less oxide than above. Bleached out VC - highly altered.
32.5	40	T	PATC	1	CLST	2	PERV	4	CLST	0	LIM	PATC	2	LIM	FR	3	More oxide than above - greater sericite, no biotite observed.
40	68.5	T	PATC	2	CLST	2	MTRX	5	CLST	3	CLY	FR	3	SIL	CLST	3	More intense silica and clay than above. Similar alteration.
68.5	81	S	PATC	2	CLST	2	PERV	4	PATC	3	CHL	FR	2	CLY	FR	1	Transistion zone - similar to above with no oxide on fracture places.
81	111.5	S	FR	3	FR	2	PERV	4	PATC	2	SIL	MTRX	4	CHL	CLST	3	Relatively unaltered compared to bounding intervals. Greater chlorite alteration and less bleached out - protolith is easily distinguished as VC.
111.5	127	S	PATC	1	FR	2	PERV	4	PATC	3	SIL	MTRX	5	CLY	CLST	2	Bleached out - less chlorite than above, lighter in colour with some zones that are completely bleached out and texture destroyed - out of context one could call it FLPT - chlorite increasing with depth.
127	169	S	PATC	2	FR	2	PERV	4	CLST	3	SIL	MTRX	5	CHL	FR	3	Strongly altered, bleached VC. Strong silica alteration with moderate chlorite and sericite (varying within this interval). Locally texture destroyed, microbrecciated and weakly laminated.
169	191.5	S	FR	3	CLST	2	PERV	4	CLST	2	CHL	PATC	3	CHL	VNHL	2	Similar to above with an increase in the texture destroyed zones. More chlorite than above.
191.5	202	S	PATC	2	PATC	3	PATC	5	PATC	2	SIL	OP	5	CHL	FR	3	patchy alt'n, very hard from intense sil overprinting. Greenish-yellow clay pervasive with ser and sil- patchy
202	230	S	PATC	2	PATC	2	PATC	4	PATC	2	SIL	OP	5	CLY	FC	3	more consistant chl alt'n, lower frequency of intense sil patches, same yellowish clay in fractures, soft when no silica overprinting
230	252	S	PATC	2	PATC	2	PATC	4	PATC	2	SIL	OP	5	CLY	FC	3	as above, chl alt'n on fracture planes a bit more blue in hue

Blackwater Project
Drill Summary - Alteration

BW0442		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
252	255.8	S	PATC	2	PATC	2	PERV	4	PERV	2	SIL	OP	4	CHL	FR	1	short alteration front with increased pervasive silica (as opposed to patchy)
255.8	260.5	S	PATC	2	PATC	2	PATC	4	PERV	3	SIL	OP	3	CHL	FR	2	weakening sil overprint
260.5	270	S	PERV	3	CLST	1	MTRX	3	PERV	3	CHL	FR	4	CLY	FC	1	hard rock, moderate green with consistant pervasive chl-ser under sil overprint
270	280	S	PERV	3	FC	3	PATC	3	PERV	3	SER	FR	4	CHL	FR	5	more broken rock with some clay in annealed fractures. Chl rich on fracture planes. Moderate pervasive chl-ser alt'n
280	297	S	PATC	3	CLST	1	PATC	3	PERV	2	CHL	FR	3	SIL	OP	5	hard rock, pale pistachio green, chl-sil in laminated matrix
297	320	S	PERV	3	CLST	2	PERV	3	PERV	2	CHL	FR	4	SIL	OP	5	hard rock sill, quite green, consistant. Small clay clast patches
320	394.7	S	VNHL	2	CLST	1	PERV	4	PERV	2	CHL	MTRX	1	CHL	FR	3	patches of texture-obscurring silica, very hard rock, brittle fracturing from intense silica. Occaisional vein with moderate chl haloing

Blackwater Project
Drill Summary - Mineralization

BW0442		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
4.57	20.5		0		0		0	Grnt	CR	0.1	Jaro	PATC	3	Goe	FP	0.5	Oxide zone - no sulphide observed. Some minor garnets scattered in clasts. Jarosite on fractures and in patches. Geothite in fracture planes.
20.5	39.5	DI	0.1	DI	0.5		0	Jaro	PATC	3	Goe	FP	0.5	Dbs	DEN	1	Transition zone - first appearance of sulphide. Disseminated to blebby pyrite and red sphalerite. Patchy and fracture controlled oxides - dendric to fracture controlled DBS
39.5	68.5	BB	1	DI	0.5	DI	0.1	Jaro	PATC	4	Goe	FP	0.5	Dbs	DEN	2.5	More sulphide and oxide than above. Similar style.
68.5	93	DEN	0.5	DI	0.1	CR	1	Dbs	DEN	1.5							Sulphide zone - significant increase in Po - po and py with DBS and Po as clast replacement with sphalerite. DBS predominantly in clasts.
93	111	CR	0.1	CR	0.5	CR	1.5	Dbs	DEN	0.5							More sphalerite and po that above - both mineralizing in clasts (both felsic and mafic). Less DBS than above.
111	127	DI	0.5	DI	0.5	DI	0.5	Dbs	DEN	1							More py than above - as disseminations. Sphalerite and po disseminations throughout. Greater DBS than above - cutting both clasts and matrix alike - seems to be fracture controlled (micro fractures/tension cracks). Decrease in Po mineralization.
127	157	BB	0.5	DI	0.5	DI	1.5	Dbs	DEN	1	Mrc	FP	0.1				Sulphide disseminated throughout - predominantly Po and DBS with minor red sphalerite and pyrite disseminations. DBS as discontinuous hairline veinlets with dendric branches. Chlorite is associtated with py blebbs.
157	188	VN	1	SP	0.1	DI	1	Dbs	DEN	1							similar to above with lesser sphal and greater pyrite. Py as veinlets with DBS branches and chlorite association. Veinlets are sub-parallel at 50 DTCA and ~1-2mm wide
188	191.5	VN	1.5		0	DI	1	Dbs	DEN	1							Similar to above, no sphalerite observed. Increase in pyrite veining.
191.5	207	VN	0.5	DI	0.1	BB	0.5	Dbs	DEN	3							py in shoddy vnlts and opened fractures. high grade DBS in dendritic and planar vnlts, DBS quite easily streaked by abrasion of drill bit

Blackwater Project
Drill Summary - Mineralization

BW0442		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
207	220	VN	0.5	BB	0.1	BB	1	Dbs	DEN	1							Py in small vnlts and fractures. po in small blebs, fairly frequent. sph trace blebs. DBS in short vnlts, lower grade than above
220	233	FC	0.5	BB	0.5	BB	0.5	Dbs	DEN	0.5							total sulphides approx 1-2%, minor amounts of each.
233	242	VN	0.5	LAM	1	BB	0.5	Dbs	DEN	0.5							as above, with sph increasing in small vnlts, as well as following laminations, partuclarly qtz-rich laminations, along edges of these
242	260	VN	0.5	VN	1	BB	0.5	Dbs	DEN	0.5							As above, but sph not as clearly following laminations, increased py
260	270	CG	1	DI	0.5	BB	0.5	Dbs	DEN	1							spotty overall mineraliztion
270	279	SP	1	DI	0.5	SP	0.1	Dbs	DEN	1							streaky sph in diss following some laminations. blotchy DBS
279	286	VN	1	DI	0.5	BB	0.1	Dbs	DEN	1							rare bleb of Po. sooty DBS
286	290	VN	1	DI	0.5	BB	0.1	Dbs	DEN	0.5							increase in Py vnlts. some sph rimming other sulphide blebs
290	298	VN	1	DI	1	BB	1	Dbs	DEN	2							mins picking up, frequent small blebs of Po. DBS in good grade patches
298	307	CG	1	DI	0.5	BB	1	Dbs	VN	2							DBS in more of a veined style. coarse grained py
307	316	CG	1	DI	1	BB	2	Dbs	VN	2							DBS in sooty blebs and vnlts. sph patchy disseminations
316	330	CG	2	DI	1	BB	2	Dbs	VN	1							Small frequent blebs of Po and Py, overall sulphides around 5%, with local higher grades. One bx vein with dark brassy py
330	341	VN	2	DI	1	BB	1	Dbs	BB	1							Py in fractures and veins, veins with dark brassy Py becoming fairly common, mostly blotchy looking. Sph patches. DBS sooty and blebby. Dark chl typically haloing py vnlts
341	352	DI	2	DI	1	DI	1	Dbs	BB	1							mineralization dark and fine grained within matrix mostly, with occaisional Py vnlt.

Blackwater Project
Drill Summary - Mineralization

BW0442		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
352	363.5	BB	2	DI	0.5	VN	2	Dbs	VN	0.5							Py in blebby vnlts and disseminated, sometimes replacing a clast. Po diss and veined (thick 1.5cm vein @ 352.9m), and diss in small blebs. DBS in small hairline vnlts
363.5	370	DI	0.5	DI	0.5	DI	0.5	Dbs	VN	0.1							quite a significant drop in sulphides, spotty patches with diss Py>sph>po. Rare py-sph vnlt
370	379	DI	1	DI	0.5	DI	1	Dbs	VN	0.1							Min style as above with a few patches of fair grade Py-Po, spotty. Vnlts with mainly Py+/-Sph high grade, but very small
379	390	DI	1	DI	0.5	DI	0.5	Dbs	BB	0.5							patches of spotty Py-Po with DBS, sooty.
390	394.7	DI	0.5	DI	0.5	DI	0.5	Dbs	BB	0.1							lower sulphide grade than above

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Drill Summary - Structure

BW0442

From (m)	To (m)	Structure	Strength	Comments
4.67	16.4	JZ	4	50 and 20 DTCA - moderate jointing with local, minor broken zones.
16.4	16.6	CLYSEAM	3	clay seam - orientation unknown
16.6	37.5	JZ	3	40 and 15 DTCA - moderate jointing with some slickensides at depth
37.5	61.5	JZ	5	50 and 15 DTCA - jointing with broken zones
61.5	61.6	FL	2	FAULT - 50 DTA, clay gouge
61.6	98	JZ	3	less oxide than above - joint zone with jointing at 40 DTCA
98	129.5	BRKZ	3	Broken zone with intermittent joint zones. Jointing at 50 and 15 DTCA
129.5	136	BRKZ	4	Broken zone with minor clay gouge remnants. Fractures at 10 and 45 DTCA.
136	192	JZ	3	Joint zone with fractures at 45 and 15 DTCA
192	207	JZ	1	rare natural fracture seen. dominant joint set at 40 deg TCa
207	213.4	FZ	2	broken/rubble, then minor gouge, then broken/rubble. Some clay gouge infilling fracture brecciation
213.4	216.8	JZ	3	major set at 35-40 deg TCA
216.8	219.5	FZ	3	very broken/rubbly with some gouge. contact angles not clear
219.5	231.5	JZ	4	main joint set at 50, with another joint set a very low angle TCA (around 4 deg), some fractures curved as well. local small broken zone
231.5	240	BRKZ	4	very broken rock with kind of blocky fragments
240	247	BRKZ	5	very broken/crushed and rubbly
247	250.3	BRKZ	4	broken rock with blocky fragments. sharp contact with more competant rock below @ 35 deg TCA
250.3	270	JZ	2	planar jointing mainly at 25-35 deg TCA
270	275.8	BRKZ	3	many fractures at low angle TCA, around 15 deg. Minor joint set at around 50 deg TCA. Small breccia-veining on these 15 deg orientations, with chl rich matrix. Typically slickensides as well
275.8	279	BRKZ	5	rubble zone with some clay annealed fractures. Also a bit of chl gouge
279	297.3	JZ	2	competant joint zone at dominantly 35 deg TCA, with minor set at around 50 deg. Occaisional very low angle TCA fracture, near 10 deg
297.3	306	JZ	4	as above, with signfiicantly more jointing. blocky
306	316.4	JZ	2	as above, less jointing
316.4	319.5	JZ	5	short zone of frequent jointing, minor set at very low angle TCA
319.5	326	JZ	3	other joint sets at 45 deg and 10-15 deg TCA
326	340.4	JZ	5	as above, with more jointing, and some brittle broken zones. Quite brittle jointing

Blackwater Project
Drill Summary - Structure

BW0442

From (m)	To (m)	Structure	Strength	Comments
340.4	362.7	JZ	2	very planar jointing, from 35-45 deg TCA most dominant
362.7	364.2	BRKZ	2	short broken zone above fault
364.2	366.4	FZ	2	rough sandy gouge with some subrounded fragments within gouge, lots of rubble and broken rock. low intensity fault. one contact at 10 deg measured, low confidence for this measurment
366.4	376.2	BRKZ	3	chunky, highly fractured rock
376.2	380	JZ	4	very planar, brittle jointing sets at 50-60 deg TCA, and around 25
380	388	BRKZ	5	very broken and rubbly
388	390.9	JZ	3	joint sets at 10 and 50 deg TCA. Short competant zone
390.9	394.7	BRKZ	4	broken and somewhat rubbly, moreso toward end of hole.

Blackwater Project
Drill Logs

Hole ID:	BW0443	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375801.92
Depth (m):	251.5	Date Started:	05/05/2012	Casing Size:	HWT	Northing:	5893250.16
Azimuth:	0	Date Completed:	09/05/2012	Casing (m):	7	Elevation (m):	1533
Dip:	-90	Logged By:	BBo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
109	250.6	-88.5
155	249	-88.3
206	238.2	-88.1

Blackwater Project
Drill Summary - Lithology

BW0443

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	13	OB							Overburden
13	15.7	AND	volc	LAP	D	GRY	ALTFR	GR30	Dark grey-green coloured, weakly silicified andesitic volcaniclastic fragmental.
15.7	37.7	VC	volc	LAP	P	GRY	ALTFR	GR30	Sericite+/-silica altered volcaniclastic fragmental unit, matrix supported with a sericite altered matrix and local chlorite altered fragments remaining when not sericite altered.
37.7	47	AND	volc	LAP	D	GRY	ALTFR	GR30	Medium to dark grey coloured, weakly silicified and chlorite altered andesitic volcaniclastic fragmental unit...matrix supported fragments and poorly sorted.
47	77.3	VC	volc	LAP	M	GRY	ALTFR	GR30	Silica+/-sericite altered volcaniclastic fragmental unit, both mafic and altered clasts, matrix supported, poorly sorted and locally faulted.
77.3	91	VC	volc	LAP	L	GRY	ALTFR	GR30	Pale greenish coloured sericite altered volcaniclastic fragmental unit, matrix supported fragments. poorly sorted and subanglular to subrounded. The larger fragments are generally chloritized mafic type.
91	122.5	VC	volc	LAP	M	GRY	ALTFR	GR30	Medium grey coloured silica altered volcaniclastic fragmental unit.
122.5	134.5	VC	aph		L	CRM	ALTFR	GR10	Strong sericite-silica-clay altered vocaniclastic? Interval has a total texture destructive alteration.
134.5	150	VC	volc	LAP	D	GRY	DEP	GR30	Dark grey to black coloured, mafic dominant volcaniclastic fragmental unit, poorly sorted, subangular to subrounded and generally clast supported. Mafic fragments are generally 5 mm to 100 mm plus in size with the matric infill material a finer mixt
150	179.5	AND	volc	LAP	D	GRY	DEP		Dark grey to black, hornfelsed, volcaniclastic fragmnetal andesite unit, fragments are subangular to subrounded, poorly sorted and range in size from 4mm to 100mm.
179.5	217.8	AND	amg		D	GRY	ALTFR	SH	Dark grey-green, semi-massive, amygdaloidal, plagioclase phyrite andsesite flows.
217.8	251.5	AND	frctz		P	GRY	ALTFR	GR30	Pale greenish-grey coloured, silica-sericite altered and fault/sheared andesite protolith...this interval has a moderate to strong fault/shear zone.

Blackwater Project
Drill Summary - Alteration

BW0443		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
13	15.7	T	PERV	1		0	PERV	1		0							This interval has a weak pervasive silica-chlorite alteration overprint.
15.7	27	T	PATC	1	PERV	1	PERV	1	PERV	3							This interval has a moderate pervasive sericite alteration overprint.
27	37.7	S	PATC	1	PERV	1	PERV	1	PERV	3							Same as previous description, however, interval is now in sulphige zone.
37.7	47	S	PERV	1		0	PERV	1		0							This interval has weak pervasive silica and chlorite alteration.
47	77.3	S	PERV	2	DEF	1	PERV	1	PERV	2							This interval has a mix of pervasive sericite/chlorite and silica altered sections.
77.3	91	S	REP	1	DEF	1	PERV	1	PERV	3							This interval has a moderate sericite alteration overprint as the dominant alteration.
91	122.5	S	PERV	1		0	PERV	1	MTRX	1							This interval has a dominant weak pervasive silica alteration overprint.
122.5	134.5	S		0	PERV	2	PERV	3	PERV	4							This interval has complete texture destructive alteration overprinting with no protolith textures left visible.
134.5	150	S	PERV	1		0	PERV	1	MTRX	1							This interval has a weak silica-sericite pervasive matric dominated alteration overprint.
150	179.5	S	FC	2		0		0		0							This interval has a weak hornfels overprint with a weak fracture controlled chlorite alteration.
179.5	217.8	S	FC	2		0		0		0							This interval has a weak fracture controlled chlorite alteration.
217.8	251.5	S	FC	1	DEF	3	PERV	3	PERV	2							This interval has a moderate pervasive silica-sericite alteration overprint with associated clay alteration within fault/shear related sections.

Blackwater Project
Drill Summary - Mineralization

BW0443		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
13	15.7		0		0	DI	0.3										Trace disseminated pyrrhotite.
15.7	37.7	INFILL	1	SP	0.3		0	Dbs	BB	0.7							Sulphides consist of py/dbs/sph...total sulphides 1 to 2%.
37.7	47	INFILL	0.2	SP	0.1		0										Trace sulphides.
47	77.3	DI	0.8	DI	0.5	DI	0.5	Dbs	DI	0.2	Ga	SP	0.2				Total sulphides 2 to 3%...py/sph/dbs/galena/po.
77.3	91	DI	2	DI	1	DI	0.5	Dbs	DI	0.4	Ga	SP	0.2				Total sulphides 4 to 5%...py/dbs/sph/ga/po.
91	122.5	DI	1.8	DI	1	DI	0.5	Ga	SP	0.4							Total sulphides 3 to 4%...py/sph/po/ga...also a number of massive sulphide type veins and veilets occur in this interval.
122.5	134.5	DI	0.5	DI	0.3		0	Dbs	INFILL	0.3							Weak disseminated and micro fracture fill sulphides...approx. 1%...py/sph/dbs.
134.5	150	DI	0.1	SP	0.2	DI	0.1										Trace sulphides present through this interval.
150	179.5	DI	0.1	SP	0.2	DI	0.2										This interval has trace to weak disseminanted sulphides...total sulphides 0.2%...po/sph/py.
179.5	217.8	DI	0.2	SP	0.3	DI	0.2										Trace to weak fine disseminated sulphides...total sulphides 1 to 2% (py/po/sph).
217.8	251.5	DI	0.7	DI	0.8	DI	0.3										This inetrval has fine disseminated sulphides and minor fracture filling sulphides...total sulphides approx. 1 to 2% (py/po/sph).

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Blackwater Project
Drill Summary - Structure

BW0443

From (m)	To (m)	Structure	Strength	Comments
24.2	26.5	BRKZ	3	Dominant joint set is 10 degrees TCA.
26.5	38.1	JZ	2	Dominant joint sets are 30 & 50 degrees TCA.
38.1	46.1	BRKZ	2	Dominant joint sets are 30 & 40 degrees TCA.
46.1	50.5	JZ	3	Dominant joint sets are 20 & 45 degrees TCA.
50.5	54.7	JZ	3	Dominant joint set is 20 degrees TCA.
54.7	56.9	FL	3	Lower contact on the fault is 20 degrees TCA.
56.9	97	FZ	4	Dominant joint sets at 20 & 45 degrees TCA...numerous small clay altered shears present through this interval at 40 degrees TCA.
97	104	JZ	2	Dominant joint sets are 20 & 45 degrees TCA.
104	107.8	JZ	3	Dominant joint sets are 15 & 40 degrees TCA.
107.8	114.6	JZ	2	Dominant joint sets are 30 & 50 degrees TCA.
114.6	118.7	JZ	3	Dominant joint set is 45 degrees TCA.
118.7	122.5	JZ	4	Dominant joint sets are 20 & 40 degrees TCA.
122.5	137.3	JZ	2	Dominant joint sets are 15 & 40 degrees TCA.
137.3	139.5	JZ	3	Dominant joint sets are 15 & 30 degrees TCA.
139.5	145.5	JZ	2	Dominant joint sets at 60 & 70 degrees TCA.
145.5	148.3	JZ	3	Dominant joint set is 45 degrees TCA.
148.3	169.8	JZ	2	Dominant joint sets are 20 & 40 degrees TCA.
169.8	174.1	JZ	4	Dominant joint sets are 25 & 40 degrees TCA.
174.1	178.5	JZ	3	Dominant fracture set is 40 degrees TCA.
178.5	179	FL	1	Fault/shear orientation is 40 degrees TCA.
179	210.5	JZ	2	Dominant joint sets are 30 & 45 degrees TCA.
210.5	215.5	JZ	4	Dominant joint set is 30 degrees TCA.
215.5	218.5	JZ	3	Dominanr joint set is 30 degrees TCA.
218.5	247.2	CRZ	4	Dominant joint set is 50 degrees TCA.
247.2	251.5	JZ	3	Dominant joint sets are 15 & 65 degrees TCA.

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Blackwater Project
Drill Logs

Hole ID:	BW0444	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375801.44
Depth (m):	340	Date Started:	07/05/2012	Casing Size:	HWT	Northing:	5893298.66
Azimuth:	0	Date Completed:	14/05/2012	Casing (m):	10	Elevation (m):	1532
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	177.9	-89.2
100	149.8	-89.7
200.5	139	-89.3
250	215.8	-89
301	236.1	-89.4

Blackwater Project
Drill Summary - Lithology

BW0444

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10	OB							Dark brown sandy, oxidized clasts
10	25.5	VC	ms	LAP	L	GRY	ALTFR	GR30+	Light grey matrix with light green, dark grey, and white clasts. Lithic-rich. Purplish matrix with green subrounded clasts - alteration zone from 14.5-15.30m; zone cute by pyrite-chlorite stringers. Occasional laminated clasts. Clast size within lapi
25.5	38.5	VC	ms	LAP	M	GRY	ALTFR	GR10	Medium grey matrix with dark grey andesitic clasts.
38.5	84	VC	ms	BLOCK	M	GRY	ALTFR	GR30+	Medium-dark grey matrix with dark grey andesitic clasts. <10% matrix within interval. Possibly formerly clast-supported or andesite, but silica-clay fluids have chewed clasts leaving a "matrix-support" appearance to unit. Occasional felsic clasts?..l
84	94	VC	ms	LAP	L	GRY	ALTFR	GR30+	Medium-light grey-green with clasts up to 10 cm in size. Dominantly matrix-supported. Gradational alteration into strongly bleached interval below
94	103.5	VC	ms	LAP	L	GRN	ALTFR	GR30+	Light greenish-grey, possibly rehealed fault breccia or hydrothermal bx. Strongly clay altered clasts with greenish sericite altered matrix
103.5	110.7	VC	ms	BLOCK	M	GRY	FLT	SH	Mafic-dom. Greyish silica matrix. Clasts up to 25cm in size and dom andesite
110.7	115	VC	frctz	LAP	L	GRN	ALTFR	GR30+	Bleached zone. Fault Bx? possibly HBX. Clay-rich. Alteration controlled by structure
115	116.6	VC	ms	LAP	M	GRY	ALTFR	GR10	Zone of andesite-rich VC caused by alteration around faulted zone
116.6	118.8	AND	amg	BLOCK	M	GRY	FLT	SH	Densely-packed amygdules within brecciated andesite interval, strongly fractured
118.8	121.6	VC	frctz	LAP	L	GRN	FLT	GR10	Strongly altered interval. Possibly part of andesite unit below?
121.6	128	AND	frctz	LAP	M	GRY	FLT	GR10	Dominantly andesitic in composition with grey silica matrix, possibly 1% felsic clasts
128	133.7	VC	fltbx	LAP	L	GRY	FLT	GR10	Dominantly angular clasts, lapilli sized. Possibly completely andesitic in composition and just affected by alteration/structure
133.7	152.5	AND	frctz	LAP	M	GRY	UNKN		Brecciated / volcaniclastic texture throughout interval. Clasts are dominantly clay-after plag phyric. Amygdules scarce
152.5	177.5	AND	frctz	LAP	D	GRY	FLT	SH	Strong fracture zone/fault zone. Interval consists of jigsaw fit porphyritic clay after plag pheno andesite clasts. Alteration from 156-159 with silica enrichment makes unit appear to fit more under the mafic-dom VC category
177.5	186.4	AND	frctz		D	GRY	FLT	GR30+	Dark grey, strongly faultedand fractured. Zone defined by calcite amygdules
186.4	191.5	AND	por	LAP	D	GRY	FLT	GR30+	Dark grey. Plag>hbl phyric. Apparent brecciation possibly caused by aggregates of hbl crystals.

Blackwater Project
Drill Summary - Lithology

BW0444

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
191.5	206.6	AND	amg		D	GRY	ALTFR	GR5	Calcite amygdaloidal with minor silica. Amygdules densely spaced from 192-194m and appear to have orientation perpendicular tCA. Porphyritic sections more noticeable outside of amygdaloidal sections. Phenocryst composition dominantly plag/clay, with
206.6	213	AND	obsalt		M	GRN	FLT	SH	Texture obliterated andesite? Bleached medium greenish-grey. Possible evidence of alteration covering porphyritic texture at 211.20m where tabular outlines of possible phenos are clouded over by alteration
213	215.4	AND	fltgge		D	GRY	UNKN		Strongly faulted andesite. Calcite-clay-chlorite altered
215.4	215.8	AND	fltgge		L	GRY	UNKN		Strongly altered fault breccia/fault gouge
215.8	223.5	AND	obsalt		L	GRY	FLT	SH	Light grey. Faulted. Strongly broken. Silica-sericite altered.
223.5	242.5	AND	fltgge		M	GRY	UNKN		Strongly faulted. Gougy.
242.5	244	AND					UNKN		Presumable andesite. 1.5m of no core recovery
244	245.1	AND	obsalt		M	GRY	FLT	SH	Chl-clay rich fault bx zone with py min
245.1	246.1	AND	obsalt		L	GRN	ALTFR		Medium green-grey strongly altered andesite (possibly rehealed fault breccia)...influenced by flt zone. Wk laminated appearance to interval. Plag? aligned at about 40 dTCA
246.1	295	AND	por		D	GRY	UNKN		Dark grey porphyritic andesite (plag-phyric dominantly). Locally brecciated with rounded dark grey-black clasts? textureless prime example visible from 278-279m
295	328	AND	por	LAP	D	GRY	FLT	GR30+	Dominantly plag-phyric andesite, locally brecciated. Clasts are distinctly rounded within interval and are easier to define within zones of increased alteration. Dark grey andesite intervals have oval-like clasts? aphanitic and mm-sizze in scale. Pla
328	331	VC	frctz	LAP	M	GRY	FLT	SH	Str fx zone. Medium grey silica-sericite-clay matrix with sericite altered clasts. Mineralization is dominantly clast replacement. Clast colours are dark green, red (sphal), and dark grey (andesite)
331	340	VC	plm	LAP	D	GRY	UNKN		Dom clast-support (po-rich andesite) with medium-light grey matrix. Specks of white clay altered mm-sized fragments (clasts?) and rounded silica mm-sized light coloured clasts.

Blackwater Project
Drill Summary - Alteration

BW0444		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10	26	T	CLST	2	REP	4	MTRX	3	PATC	4	LIM	FC		HM	FC	2	Strong brownish limonite along fx planes with minor hematite. Light green sericite alteration patchy with rounded dark grey qtz clasts. Matrix consists of silica-clay. Zone of purple matrix-green clasts from 14.5-15.3m. Clay alteration intense from 18.4-20m. Clay-sericite-silica alteration make interval appear more felsic then the interval presumably is. Mafic-dominant donwhole
26	37	S	FC	2	REP	4	MTRX	3	CLST	4	CLY	REP	4	CLY	FC	3	Silica matrix. White-yellow clay replaces clasts...possibly plag phenos within matrix. Light green sericite clast replacement. Sericite may also be replacing andesitic clasts (poss chlorite as well)
37	42	S	CLST	2	REP	5	MTRX	2	CLST	3	HM	FC	3				Reddish hematite-jasper fracture-controlled within groundmass between large andesitic blocks. Andesite blocks have yellow clay replacing phenocrysts within interval.
42	76	S	CLST	2	REP	4	MTRX	3	CLST	3	SIL	AMYG	2				White clay replaces phenocrysts within andesitic clasts. Amygdules have been infilled by quartz. Light grey qtz is dominant composition of matrix throughout interval. Light green sericite alteration of clasts visible locally. Noticed clast alignment at approximately 60 degrees TCa
76	84	S	CLST	2	REP	4	MTRX	3	CLST	3	SIL	AMYG	2				similar to above.
84	94	S	CLST	2	REP	4	MTRX	4	CLST	3	SER	MTRX	3	CHL	FR	1	similar to above, yellow clay overprint evenly distributed throughout, with grayish-green silica-ser matrix.
94	103.5	S	CLST	2	CLST	4	MTRX	4	CLST	4	CLY	FC	4				gray silica matrix, strong clay visible in white clasts and green angular ser-chl clasts.
103.5	110.7	S	CLST	2	CLST	3	MTRX	3	CLST	3	CLY	FC	4				Less bleached then above
110.7	116.3	S	CLST	2	CLST	4	MTRX	4	CLST	4	CLY	FC	4				Fractured zone. Bleaching parallels structure
116.3	119	S	CLST	4	FC	3	AMYG	4	MTRX	2	SIL	MTRX	3				densley packed silica filled amygs within chloritized block sized clasts.
119	121.6	S	CLST	2	CLST	4	MTRX	4	CLST	4	CLY	FC	4				similar to 112 interval.
121.6	128	S	CLST	2	FC	4	MTRX	3	MTRX	2	CLY	REP	2				Clay replaces phenos. Greyish silica-sericite matrix
128	142	S	CLST	2	CLST	4	MTRX	4	CLST	4	CLY	FC	4				Strongly faulted interval. Clay-rich

Blackwater Project
Drill Summary - Alteration

BW0444		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
142	152.5	S	FC	4	FC	4	MTRX	2	MTRX	2							Minor silica in matrix. Strongly fractured and faulted, clay-rich. Black green-black chlorite on fx planes
152.5	180	S	FC	2	FC	4	MTRX	2	MTRX	2	CAL	VN	3	CAL	FC	4	Str rxn to HCl. Dom within matrix (frac controlled)
180	206.6	S	FC	3	FC	3	MTRX	2	MTRX	2	CLY	REP	2	CAL	AMYG	4	Replacement of amygdules by calcite defines interval. Tracehematite at 187m, related to euhedral py?
206.6	213	S	PERV	3	FC	3	PATC	3	PERV	4	CHL	FC	3				Bleached greenish = strong sericite-chlorite pervasive alt. Silica locally intense. Dark green chl intense on fx planes @ low angle TCA
213	215.4	S	FC	5	FC	5	CLST	1	FC	4							Fault gouge. Strongly chlorite-clay-calcite altered +/- sericite
215.4	223.3	S	FC	2	FC	4	PATC	3	PERV	4	GRNT	EU	3				Interval deifined by black-dark brown garnet speckled appearance to strongly broken pieces of sericite-silica altered core with strong clay on fx planes
223.3	237	S	FC	3	FC	5	CLST	3	CLST	4	CAL	FC	1				Gougy. Strongly broken. Chlorite-clay-pyrite altered
237	242.5	S	FC	2	FC	4	PATC	3	PERV	3	GRNT	EU	3				Garnets visible on broken pieces of sericite-silica altered rock. Chlorite-clay strongly fx controlled
242.5	244	S		0		0		0		0							NO CORE RECOVERED WITHIN INTERVAL
244	246.1	S	PERV	2	FC	4	PATC	2	PERV	4							Str ser alt
246.1	295	S	FC	3	REP	2	MTRX	2	MTRX	3	CAL	FC	3				Completely rounded/oval-like alteration (black, textureless) "clasts" in subintervals within main interval (278-279m)
295	327	S	FC	3	REP	2	MTRX	2	MTRX	3	CAL	FC	3	BIOT	CLST	2	As above. Silica patchy zones from 317-319.5m. Hornfelsing of clasts? bt-sericite altered mafic clasts dark round oval-like
327	340	S	FC	2	CLST	2	MTRX	3	MTRX	3	SER	CLST	4	CHL	CLST	2	Greyish silica-sericite altered matrix. Str sericite altered clasts +/- chlorite (mafic clasts)

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Blackwater Project
Drill Summary - Mineralization

BW0444		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10	26	FC	0.5	BB	1	BB	0.1	Dbs	VN	1	Goe	FP	0.5	Hm	FP	0.5	Locally high pyrite within gougy zones. DBS as Py-chl veins from 14.5-15.3m. Black sphalerite (reddish brown streak) found as blebs
26	37	FC	0.5	BB	0.5	BB	0.5	Py	GOU	0.1							Clay-pyrite gouge. Reddish sphalerite & brassy po blebs
37	42	FC	0.1	BB	0.1	BB	1	Hm	GmR	0.5							Reddish hemaite-jasper within groundmass of andesite vc-texture
42	51	FC	0.1	BB	0.1	BB	0.5	Hm	GmR	0.1							Weakly mineralized
51	63	FC	0.1	BB	0.1	BB	1	Hm	GmR	0.1	Ga	FC	0.1	Dbs	GmR	0.1	Increased Po within interval. Galena>py>po fc vein? at 53.7m @ 30 dTCA
63	76	FC	0.1	BB	0.1	BB	1										As above, but with decrease in jasper-hematite
76	84	FC	0.1	BB	0.1	BB	0.5										As above, with less Po
84	94	FC	0.1	FC	0.5	CR	0.5	Sp	BB	0.1	Dbs	DEN	0.1				Trace DBS. Sph found bounding clasts from 86-87m
94	103.5	FC	0.5	BB	1	BB	0.1	Dbs	DEN	0.1							Blebby sphalerite throughout interval, black in colour
103.5	110.7	FC	0.1	BB	0.1	BB	0.5										Weakly mineralized
110.7	115	FC	0.1	BB	0.5	BB	0.1										Blebby sph dominant from113.5-114.5m
115	118.8	FC	0.1	BB	0.1	BB	0.1										Weakly-non-mineralized interval
118.8	121.6	FC	0.1	BB	0.5	AMYG	0.5										Minor po seen replacing amygs @ 119.5m
121.6	128	FC	0.1	BB	0.1	BB	0.5										blebby po poss infill amyg
128	133.6	FC	0.5	BB	0.5	BB	0.1										Increased py within gouge
133.6	144.8	FC	0.1	BB	0.1	BB	1										str rxn to magnet..increase in po
144.8	152.5	FC	0.1	BB	0.1	BB	1.5										Po vis @ 145m
152.5	162.4	FC	0.5	BB	0.5	BB	1										Increase in Py along fx (see 156.7m). Decrease in po
162.4	181	FC	0.5	BB	0.5	BB	1										As above
181	186.2	FC	0.1	BB	0.5	BB	0.5	Py	EU	0.1	Py	GOU	0.1				Weakly mineralized
186.2	192	FC	0.5	BB	0.5	BB	1										Min increase of py on fx planes
192	206.6	FC	0.1	BB	0.5	BB	1										As above, but with less vis py on fx planes

Blackwater Project
Drill Summary - Mineralization

BW0444

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
206.7	213	FG	0.5	BB	1.5	BB	0.1	Ga	FC	0.1	Dbs	BB	0.5				Fine brassy pyrite visible within dark black sulphide blebs. High intensity of sphalerite through interval and trace pyrrhotite. Galena vein? at 211.7m
213	215.4	GOU	0.1		0	GOU	0.1										Trace mineralization (wk response to magnet)
215.8	223.3	GOU	1	BB	1	BB	0.1	Grnt	MA	1.5	Sp	VN	0.1	Py	SP	0.1	Black sphalerite haloed by masses of garnets. 2 cm thick pyrite gouge vein @ 223.3m
223.3	237	GOU	0.5	BB	0.5	BB	0.1	Grnt	MA	0.1							Minimal garnet & sphalerite on blocky pieces of core. Pyrite with chlorite in gouge
237	242.5	GOU	0.1	BB	1	BB	0.1	Grnt	MA	0.5							Garnet masses with sphalerite on broken pieces of silica-sericite altered core
242.5	244		0		0		0										NO RECOVERED CORE
244	245.1	GOU	1	SP	0.1	SP	0.1										Pyrite-rich gouge interval. Trace specks of pyrrhotite & sphalerite on broken pebble-sized clasts within fault zone
245.1	246.1	FP	0.1	BB	1	BB	0.1										Red sphal-rich interval within green sericite-silica-chlorite altered unit
246.1	263.5	FP	0.1	BB	0.1	BB	0.5										Pyrrhotite visible as blebby masses within porphyritic andesite
263.5	305.5	FP	0.1	BB	0.1	BB	0.5	Po	VN	0.1							As above but with the presence of Po +/- calcite veinlets. Black blobs drying to whitish-grey may be grnt-bt-chlorite altered/hornfelsed clasts/brecciated fragments
305.5	327.8	FP	0.1	BB	0.1	BB	1										Similar to above, but with intervals of higher magnetism
327.8	331	VN	0.5	BB	1	CR	1										Po-min focused with clasts. Sph min as blebs in both clasts and matrix
331	340	FC	0.5	BB	0.1	CR	1.5	Ga	INFILL	0.1	Grnt	CR	1				Dark brown garnets observed in clast at 334m. Pyrite has octahedral crystal form

Blackwater Project
Drill Summary - Structure

BW0444

From (m)	To (m)	Structure	Strength	Comments
10	14.5	JZ	3	Joints @ 50 and 20 dTCA. Joints coated with orange limonite
14.5	15.25	VZ	3	Pyrite-chlorite stringers up to 2% locally from 60-70 dTCA
15.25	15.35	FL	5	Pyrite/sulphide rich fault bounded by Jointed VC unit with stringers of Chl-sulphide
15.35	16	VZ	3	Zone of black-dark green pyrite-chlorite (poss DBS) stringers at approximately 50 dTCA, gougy at 15.95m
16	18.3	FZ	3	Pyrite-limonite on fx planes, gougy@ 16.80m, vein zone from 16.80-17.00m
18.3	20	BZ	4	Questionable lower contact. Brown-grey limonite rich matrix with gougy sulphide clasts
20	25	JZ	4	Joints from 30-50 dTCA. Minor limonite-sulphide gouge
25	27	FZ	3	Zone of strongly frac'd VC with gougy fault bx zones
27	30.25	JZ	3	Clay along fx planes, strongly fractured
30.25	30.4	FL	5	Gouge-rich fault. Lower contact sharp at 50 dTCA
30.4	34	JZ	4	Lower contact @ 45 dTCA. Clay rich matrix...causes rock to be strongly friable
34	34.4	FZ	3	Gougy matrix, friable. Lower contact @ 50 dTCA
34.4	35	JZ	4	Clay-rich matrix
35	35.1	FZ	5	Upper contact at approximately 40 dTCA
35.1	35.5	BRKZ	4	Strongly broken, no gouge. Related to fault
35.5	36.6	JZ	4	Clay-rich matrix. Friable as a result of clay
36.6	47.4	JZ	3	Joints @ 20 & 50 dTCA
47.4	49.6	JZ	3	Joint set sub-parallel TCA
49.6	51.25	JZ	3	Py-clay along fx planes
51.25	53	FL	4	Lower contact @ 20 dTCA
53	55.3	JZ	3	Primary joint set at 30 dTCA
55.3	55.5	FL	3	Slicks on flt plane subparalleling CA
55.5	57	JZ	3	Joints @ 30 & 70 dTCA, clay matrix
57	59.5	BZ	3	Lower contact @ ~15dTCA. slicks along planes with clay & py
59.5	64.3	JZ	4	Joint zone with slickensides along fracture planes. Fx from 40-50 dTCA
64.3	70	JZ	4	Joints from 50-60 dTCA, minor clay seams within interval
70	76	JZ	2	Joints from 50-70 dTCA. Weakly jointed
76	79	JZ	3	Joints @ 10 and 60 dTCa

Blackwater Project
Drill Summary - Structure

BW0444

From (m)	To (m)	Structure	Strength	Comments
79	79.9	FZ	3	Minor gouge within fractured interval. Measurable gouge contact @ 79.40m
79.9	82.5	JZ	3	Minor gouge @ 81.2m
82.5	83.3	FZ	4	Slicks on fx plane @ 20 dTCA
83.3	88	JZ	3	Chlorite on fx planes
88	89.5	FZ	4	Lower contact @ 70 dTCA, upper contact @ approx 20 dTCA
89.5	92	JZ	3	Chlorite on fx planes
92	94.2	BRKZ	4	Pyrite-chlorite on fx planes
94.2	95.7	BZ	4	Fault breccia, gouge-rich, strongly friable
95.7	103.1	BZ	2	Rehealed fault bx?
103.1	110.7	JZ	4	Strongly jointed, major set at 10 dTCA, wk @ 30 dTCA
110.7	115	BZ	3	Lower contact approx @ 40 dTCA. gougy from 112-113.7m. Rest of interval = more clast dominant
115	116.9	JZ	4	Chl-clay on fx planes
116.9	119	FZ	3	Minor gouge within interval. Blocks up to 1m between gougy zones
119	121.5	BZ	3	Measurable plane @ 20 dTCA @ 120.1m. Rehealed fault bx? strongly bleached
121.5	122.3	FZ	3	Lower contact @ approx 30 dTCA. Strongly broken
122.3	124.8	JZ	4	Joints @ 30 & 60 dTCA
124.8	134	FZ	4	Questionable lower contact @ 20 dTCA. Bleached. Dominantly fault breccia through interval
134	142	JZ	4	Joints between 20 & 40 dTCA
142	144.8	FZ	4	Upper contact @ 20 dTCA. Abundant gouge through interval, minor flt bx
144.8	147.9	JZ	3	Major joint set sub-parallel TCA
147.9	150.3	FZ	3	Slickensides visible on fx plane @ 148m. Strongly broken with minor gouge.
150.3	152.7	BRKZ	4	Fx planes from 10-20 dTCA. Very minor to absent gouge
152.7	157.3	BRKZ	4	Strongly broken, no prominent angle to measure
157.3	162.4	FZ	4	Lower contact sharp @ 40 dTCA
162.4	164.5	JZ	3	Joints primarily @ 30 dTCA, calcite vlts follow joints
164.5	169.3	FZ	4	Gouge and rubble/re-drill within fault.
169.3	171.5	BRKZ	4	Questionable frac breaks @ approx 30 dTCA
171.5	174	JZ	4	Joints @ 50 & 20 dTCA, calicte & chlorite coated

Blackwater Project
Drill Summary - Structure

BW0444

From (m)	To (m)	Structure	Strength	Comments
174	176.2	BRKZ	4	Joints predominantly at low angle TCA = strongly broken
176.2	177.6	JZ	3	Joints from 40-50 dTCA
177.6	178.2	BRKZ	3	Strongly broken,chl coated fracs
178.2	180.8	FZ	4	Fault zone, dom angle @ 50 dTCA, measurable @ 180.35m
180.8	182	JZ	4	Chl-calcite coated joints
182	185.5	FZ	3	Lower contact @ 10 TCA? Gouge-rich sections with more competent 0.5m intervals of fractured rock. 60 dTCA contactsvisible @ 183.8m
185.5	186.5	BRKZ	3	Calcite-chl on fx plane. Appears broken b/c of low angle TCA
186.5	191	JZ	4	Dominant angle @ 50 dTCA, calc-chl on fx
191	191.5	FL	4	Gouge with broken block at 191.4m has angle of 70 dTCA. Calcite-pyrite-clay within fault zone
191.5	206.2	JZ	3	Fx planes @ 30 & 55 dTCA
206.2	206.7	FL	3	Lower contact approx 50 dTCA. Strongly broken. Clay-chl altered. Dark green-black chl?..poss just clay
206.7	208.7	BRKZ	4	One measurable joint set at 40 dTCA
208.7	208.8	FL	5	Solid gouge. Questionable contact @ 15 dTCA
208.8	212.2	BRKZ	4	Joints @ 10 & 30-40 dTCA. Minor chl on fx plane, with clay
212.2	212.5	FL	4	Upper contact @ 40 dTCA, gouge within zone
212.5	213	JZ	3	Joints at 40 dTCA
213	216.8	FZ	5	Upper contact @ 40 dTCA. Relatively unaltered zone b/w bleached zones above and below
216.8	223.3	BRKZ	5	Strongly broken, minimal gouge. part of fault zone
223.3	237	FZ	5	Gouge-rich abundant chlorite and clay. Brecciated clasts within gouge (flt bx). Angles of approx 10 dTCA from 235-236m
237	239	BRKZ	5	Strongly broken pieces of silica-sericite altered core. Absent gouge
239	242.5	FZ	5	Mix of fault gouge and broken pieces of core. Drilling struggles through fault zone
242.5	244	FZ	5	No core recovered through presumably continuation of fault zone
244	245.1	FZ	5	Lower contact questionable at 30 dTCA (angle of joints below fltz zone)
245.1	251	JZ	3	Predominant joint set (calcite-coated fx) @ 40 dTCA. Joints also at 20 & 30 dTCA
251	295	JZ	2	Weakly jointed, blocky. Joints @ 20-30 & 50-60 dTCA. Calcite-coated fx planes
295	327.9	JZ	2	Joints are calcite coated and range from 20-40 dTCA
327.9	331	BRKZ	4	Strongly chlorite coated joints (wk chlorite on joints up hole). Calcite absent

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Drill Summary - Structure

BW0444

From (m)	To (m)	Structure	Strength	Comments
331	340	JZ	3	Joints from 40-60 dTCA

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Blackwater Project
Drill Logs

Hole ID:	BW0445	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374951.8
Depth (m):	324.92	Date Started:	06/05/2012	Casing Size:	HWT	Northing:	5893148.66
Azimuth:	0	Date Completed:	12/05/2012	Casing (m):	3	Elevation (m):	1556
Dip:	-90	Logged By:	KOI	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	270.4	-89.5
91.44	254.3	-89.6
137.2	269.3	-89.7
182.9	242.2	-89.4
228.6	216.1	-89.2
274.3	208.8	-88.6

Blackwater Project
Drill Summary - Lithology

BW0445

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2	OB							OVERBURDEN - containing peices of underlying bedrock
2	63	VC	cs	LAP	M	GRY			Medium to dark grey volcaniclastic, polymictic and clast supported (locally matrix supported). The matrix is silicified and is a light grey, composing of fine casts. Clasts are commonly elongated at 50 DTCA.
63	175	VC	cs	LAP	M	GRY			Medium to dark grey volcaniclastic, polymictic and clast supported (locally matrix supported). The matrix is silicified and is a light grey, composing of fine casts and crystal fragments (plagioclase). Clasts are commonly elongated at 50 DTCA. Simila
175	215	VC	cs	LAP	M	GRY			Medium to dark grey volcaniclastic, polymictic and clast supported (locally matrix supported). The matrix is silicified and is a light grey, composing of fine casts and crystal fragments (plagioclase). Clasts are commonly elongated at 50 DTCA. Simila
215	237	VC	cs	BLOCK	M	GRY			Similar to above with infrequent block sized clasts. Clast supported with local zones of matrix supported VC. Clasts are aub-angular to subrounded, 50% mafic and include banded felsic/bleached clasts, massive felsic/bleached clasts, aphanitic mafic/a
237	261	VC	cs	BLOCK	M	GRY			same as above with greater abundance of mafic clasts.
261	283	VC	cs	BLOCK	M	GRY			same as above with lesser abundance of mafic clasts.
283	312.5	VC	cs	LAP	M	GRY			as above with no block sized clasts. Better sorting than above.
312.5	324.9	VC	obsalt	LAP	M	GRY	UNKN		VC/FLPT? - Chlorite, sericite, silica altered fragmental (VC or 2ndary breccia?) with intermittent fine (mm scale) laminations.

Blackwater Project
Drill Summary - Alteration

BW0445		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2	15	O	CLST	1	CLST	3	MTRX	4		0	SIL	MTRX	3	LIM	FR	5	oxide zone - strong limonite. Strong sil of matrix and felsic clasts, clay alteration of clasts (mostly mafic)
15	35	T	CLST	2	CLST	3	MTRX	4		0	SIL	CLST	3	LIM	FR	3	similar to above but tranny zone
35	46	T	CLST	2	CLST	3	MTRX	4		0	SIL	CLST	3	LIM	FR	4	as above with stronger limonite alteration
46	78	T	CLST	2	CLST	1	CLST	3		0	SIL	MTRX	3	CHL	FR	1	Chlorite on fractures, oxide patches and on fractures
78	103	S	CLST	2	FR	2	CLST	4	PATC	2	SIL	MTRX	4	CHL	FR	2	sulphide zone - strong silicification of some clasts and the matrix, patchy sericite clay alteration. Chlorite alteration of some mafic clasts and coating fractures.
103	115	S	CLST	3	FR	2	CLST	4	PATC	1	SIL	MTRX	4	CHL	FR	4	As above with greater chlorite atleration.
115	175	S	CLST	3	CLST	2	CLST	4		0	CHL	CLST	3	CLY	FR	2	no chlorite observed. homogenouse alteration throughout. Silica altered clasts are a smokey grey with whiter rims. Biotite alteration of some of the fine grained mafic clasts.
175	206	S	FR	4	FR	2	CLST	4		0	SIL	MTRX	3	CHL	CLST	2	similar to above - more chlorite than above
206	215	S	FR	3	FR	2	CLST	4	MTRX	1	SIL	MTRX	2	SIL	PATC	2	as above with silica alteration patches of pervasive silica wash
215	250	S	CLST	3	FR	2	CLST	4	CLST	0	SIL	MTRX	3	CHL	FR	3	Strong silica alteration, chlorite on clasts and fractures. clay on fractures. biotite alteration of mafic clasts.
250	282	S	CLST	4	FR	4	CLST	3		0	SIL	MTRX	4	BIOT	CLST	3	greater chlorite and clay than above.
282	312	S	FR	2	CLST	1	CLST	4		0	BIOT	CLST	2	CHL	CLST	1	Silica alteration concentrated in felsic/bleached clasts, biotite restricted to mafic clasts. Chlorite alteration altering both felsic and mafic clasts. Clay alteration of clasts forming a soapy green.
312	324.9	S	PERV	3		0	PERV	4	PATC	2	GRNT	CLST	1	CHL	FC	1	Chlorite sericite silica alteration - could be altered VC or FLPT. Pervasive chlorite silica with patchy sericite (clasts and laminations).

Blackwater Project
Drill Summary - Mineralization

BW0445

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
2	15		0		0		0	Jaro	FP	2	Jaro	GmR	0.5	Goe	FP	0.5	no sulphide observed. jarosite and geothite on fracture planes. jarosite in matrix
15	35	CR	0.1	CR	0.5	CR	0.5	Grnt	CR	1							all mineralization as clast replacement - sulphides also intergrown with cruddy, brown garnet aggregates.
35	46		0		0	CR	0.1	Grnt	CR	0.5	Jaro	PERV	10				significant decrease in sulphide mineralization. Po and garnet as clast replacement. Very strong oxide.
46	62		0	CR	0.5	CR	1	Grnt	CR	0.5	Jaro	PATC	3				no pyrite observed. sphalerite and pyrrhotite as disseminations in clasts. garnet as clast replacement (cruddy brown sometimes intergrown with sulphides). Patchy to pervasive jarosite
62	78		0	CR	0.5	CR	1	Grnt	CR	0.5	Jaro	PATC	3				no pyrite observed. sphalerite and pyrrhotite as disseminations in clasts. garnet as clast replacement (cruddy brown sometimes intergrown with sulphides). Patchy to pervasive jarosite
78	100	CR	0.5	CR	2	CR	1.5	Mrc	FP	0.1							no garnet observed. spahlerite, pyrite and pyrrhotite mineralizing clasts - often occuring together. sphal occuring as both red and black. Sulphide mineralization concentrated in mafic clasts over felsic.
100	115	CR	0.5	CR	2	CR	1.5	Mrc	FP	0.1							as above - some euhedral pyrite disseminations in mafic clasts.
115	140	CR	0.1	CR	1.5	CR	1.5	Mrc	FP	0.1							mineralization similar to above. sulphide in clasts - typically occuring together.
140	175	CR	0.1	CR	0.5	CR	2	Mrc	FP	0.1							Less sphal than above.
175	190		0		0	CR	1	Po	DI	0.5	Grnt	CR	0.5	Mrc	FP	0.5	no pyrite oberved. po disseminations and clast replacement. weak garnet as clast replacement.
190	215		0	CR	0.5	CR	1	Mrc	FP	0.1	Grnt	CR	0.1				similar to above with lesser po and garnet. weak sphal mineralizing in mafic clasts.
215	238		0		0		1	Dbs	CR	1.5							DBS as dendric disseminations in felsic/bleached clasts. Po mineralization concentrated in mafic clasts (disseminated and replacing phenocrysts of plagioclase)

Blackwater Project
Drill Summary - Mineralization

BW0445		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
238	255		0		0	CR	1.5	Dbs	CR	0.5							similar to above with lesser DBS.
255	283		0		0	CR	1	Dbs	CR	0.1							as above - even lesser dbs.
283	312		0	CR	0.1	CR	1	Mrc	FC	0.1							weak, homogeneous mineralization. Po and sp resttricted to clasts - typically the mafic clasts. Marcasite on on fracture planes with chlorite.
312	324.9	BB	0.5		0	BB	1.5	Ga	CG	1	Dbs	DEN	0.5				Blebby py and po, cruddy brown garnet. fine DBS.

Blackwater Project
Drill Summary - Structure

BW0445

From (m)	To (m)	Structure	Strength	Comments
2	32	JZ	3	moderate joint zone with fractures at 50 DTCA. Jarosite and geothite on fractures.
32	53	FZ	4	15 and 50 DTCA - fault zone with clay gouge with sub-rounded clasts and heavily oxidized. Intermittent joint and broken zones.
53	59.5	BZ	2	20 and 50 DTCA broken zone with jointed core within.
59.5	94	JZ	3	45 and 10 DTCA. jointed core.
94	112	BRKZ	3	Broken zone
112	113	FL	3	clay gouge with strong chlorite. oientation unknown.
113	122.5	JZ	4	joint zone with intermittent broken zones. Fractures at 40 and 10 DTCA
122.5	123	FL	2	gouge - unknown orientation. Chloritic.
123	140.5	JZ	3	45 and 10 DTCA. Joint zone with local broken zones.
140.5	155.5	JZ	2	joint zone with less fractures than above.
155.5	175	FL	1	30, 15 and 45 DTCA. Mostly competant core with local zones of clay gouse (<5 cm thick) with chlorite and marcasite within.
175	192.5	JZ	2	joint zone
192.5	206	FZ	4	Fault zone with clay gouge and broken zones - orientation measured at 206 m at 60 DTCA.
206	250	JZ	2	joint zone with rare fractures
250	259	BRKZ	4	broken zone with chlorite and clay on fractures
259	284	JZ	2	50 and 20 DTCA fracture sets - rare fractures.
284	290.2	JZ	5	10 and 50 DTCA. joint zone with broken zones and clay on chlorite on fracture planes.
290.2	305.2	FL	3	Fault with grey clay gouge - no mineralization observed. Upper fault contact at 15 DTCA, lower contact at 45 DTCA.
305.2	324.9	JZ	3	20 and 60 DTCA, joint zone infrequent fractures but some weak boken zones.

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Blackwater Project
Drill Logs

Hole ID:	BW0446	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375697.94
Depth (m):	72	Date Started:	06/05/2012	Casing Size:	HWT	Northing:	5893400.66
Azimuth:	0	Date Completed:	08/05/2012	Casing (m):	21	Elevation (m):	1525
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
54	358.7	-88.8

Blackwater Project
Drill Summary - Lithology

BW0446

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	1	OB							No clay/mud, simply blocks of D.Gray AND, in-situ???
1	11.3	AND	volc	LAP	M	GRY	DEP	GR30+	Grayish-Black SA/SR feldspar-phyric poorly sorted clasts in a M.Gray matrix, Increase in matrix with depth. Red Jasper and white calcite Fracture controlled.
11.3	18.7	VC	t	LAP	L	GRY	DEP	GR30+	L.Gray-Green Ash to coars-sand size silica-ser rep matrix supporting elongate flattened (Fiamme?) clay rep clasts dominatly mafic, as well as abundant <1mm white subhedral-euhedral feldspars, With depth Clasts gradationally become less elongate and m
18.7	28.7	VC	ms	LAP	M	GRY	FLT	GR30+	M-D.Gray rock, Locally siliceous clasts with chl (altered mafics? or felsic?), weak laminations in clasts locally, Poor-moderate sorting troughout. Bottom contact faulted into heavy silica-ser alt (bottom unit more altered version of this unit?)
28.7	47	VC	ms	LAP	L	GRY	ALTFR	GR30	L.Green-Grayish heavily structure controlled unit, strong silica-ser replaced matrix supporting clay-ser-chl replaced clasts (90%) and D.Gray Silica replaced calsts (10%), select clasts weakly laminated with mineralization following and locally trach
47	71	VC	ms	LAP	M	GRY	ALTFR	GR30	Similar to above; strong clay-chl-ser rep of select clasts (more mfaic/int), locally bands of silica (hydrothermal fluid flow and Bx'n. blocks of mafic/int remain partially unaltered and are M-D.Gray.
71	72	VC	ms	LAP	M	GRY			Less altered, clasts are lapilli to block size M-D.Gray feldspar-phyric mafic/int rock, supported by L-M.Gray sand to small-gravel size, partially felsic? or seems felsic as product of alteration.

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Blackwater Project
Drill Summary - Alteration

BW0446		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
1	7.3	O	PATC	2	PATC	2	PERV	2	REP	2	LIM	FC	3	SIL	FC	2	Fracture controlled oxidation, Goe and Jaro. PAtchy chl alt, dom clasts. feldspars ser-clay rep, locally in clay patches are ser-chl replaced. Red Jasper Fracture controlled. irregularly patchy/Perv Hm throughout with magnetite.
7.3	11	T	PATC	2	PATC	2	PERV	2	REP	2	LIM	FC	3	CLY	FC	2	Increasingly siliceous compared to above; black-orange Lim on FP's. Patches of clay alteration with chl replacing crystals.
11	19.6	T	CLST	2	FC	2	PERV	4	PERV	3	SER	CLST	3	LIM	FC	3	Perv mtrx dom, locally clast rep silica-ser. Ser-chl-clay replacing clasts and fiamme, as well as small grains. Clay fracture controlled and as gouge.
19.6	30.2	S	PATC	2	FC	4	PATC	2	PERV	2	CLY	CLST	1	SER	CLST	1	Silica locally clast dom, and/or matrix dom. chl matrix dom patches. Clay FC. Ser-chl-Clay replacing select clasts.
30.2	46.8	S	PATC	3	CLST	3	MTRX	4	CLST	4	CLY	FC	4	SER	PATC	2	Matrix dominant silica, and moderate sericite. Clast dominant Ser-Clay-Chl. Ser-Chl patches throughout, small and large.
46.8	57	S	CLST	3	CLST	3	MTRX	4	CLST	3	CLY	FC	4	SER	MTRX	2	Silica-Ser rep matrix, and silica locally as alteration fluid structure obscuring all texture. Clasts Clay-Ser-Chl replaced.
57	72	S	CLST	2	CLST	2	MTRX	4	CLST	3	CLY	FC	4	SER	MTRX	2	similar to above, less chlorite

Blackwater Project
Drill Summary - Mineralization

BW0446		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
1	7.3		0		0		0	Mag	DI	4	Goe	FC	5	Jaro	FC	2	Metallic DI'd magnetite throughout, with irregularly patchy perv Hm throughout, following magnetite. Goe-Jaro on FP's.
7.3	18.7	STR	0.1	BB	0.1		0	Dbs	DEN	0.5	Goe	FC	2	Jaro	FC	1	DI'd BB's of Sp. Py assoc with DBS fracture controlled dendritic locally.
18.7	28.5	SP	0.5		0		0										0.1mm DI'd specks of Py.
28.5	54	STR	0.1	BB	1		0	Py	BB	0.1	Dbs	DEN	0.1				Di'd BB's of Sp, Sp clast replacement BB's locally aligned in perferred orientation. DBS and Py stringers.
54	72	STR	0.1	BB	1		0	Sp	STR	0.1	Dbs	DEN	0.1				similar to above.

Blackwater Project
Drill Summary - Structure

BW0446

From (m)	To (m)	Structure	Strength	Comments
1	4	JZ	4	Jointed @ 60> 10 dtca.weakly broken.
4	7.7	JZ	5	Jointed @ 10, 15, 20, 30 dtca. locally broken with minor gouge.
7.7	11.2	JZ	3	Jointed @ 25> 55 dtca.
11.2	11.45	BZ	4	rounded lithics in equal amount to clay gouge top contact @# 30 dtca.
11.45	14.4	JZ	3	Jointed @ 55 dtca, and locally broken.
14.4	14.45	FL	2	partially healed coarse sand sized fault Bx.
14.45	15.2	JZ	3	Jointed @ 60>20 dtca.
15.2	16.5	BRKZ	5	Strongly fractured, low angles to core axis.
16.5	17.04	JZ	3	Jointed @ 10, 35, 40, 50, dtca
17.04	17.15	CRZ	3	shards of crushed rock with soem clay.
17.15	19.6	JZ	4	Jointed @ 15 (10-20) > 50 (50-55) dtca.
19.6	20.1	BZ	4	rounded lithics supporteed by chloritic gouge.
20.1	27	FZ	3	Fault zone with minor gouge locally, and minor jointing @ 55>20 dtca.
27	72	FZ	4	Fault Bx zone, alternating Fault Bx and competent broken rock and jointed @ 30-35 dtca.

Blackwater Project
Drill Logs

Hole ID:	BW0447	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375452.77
Depth (m):	400	Date Started:	07/05/2012	Casing Size:	HWT	Northing:	5893099.3
Azimuth:	0	Date Completed:	15/05/2012	Casing (m):	9.14	Elevation (m):	1579
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	231.8	-88.9
100	213.8	-89.5
157	243	-88.7
205	226.3	-88.5
252	193.9	-88.7
301	179.4	-89.1
349	183.7	-89.2
400	220.4	-88

Blackwater Project
Drill Summary - Lithology

BW0447

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	12.56	OB							
12.56	53	AND	volc	LAP	M	GRY	FLT	GR30	Fragmental andesite weak to moderately altered.
53	91.8	FLPT	volc	LAP	M	GRN	FLT	GR30	Light green fragmental FLPT. occasional mafic clasts. Possibly an altered andesite? Significant faulting
91.8	161.2	VC	volc	LAP	M	GRY	ALTFR	GR30+	Predominantly mafics. Patchy bleaching likely from alteration.
161.2	220	VC	obsalt	LAP	L	GRY	FLT	GR30+	Appears to be the same unit as above with stronger alteration. Bottom contact arbitrary, faulted/altered.
220	265	VC	ms	LAP	M	GRN			Ser-Silica-Chl pseudoclasts (borders partially obscured by alt), SA trace laminated clasts (ser and silica fractions seperated by laminations), supported by silica-ser matrix, 50:50 to 25:75 Clast:Matrix ratio. Strongly altered, unknown mafic:felsic
265	311.5	VC	ms	LAP		GRY	FLT	GR30+	same as above.
311.5	350	FT	lam	LAP	M	GRY			Perv silica altered laminated @ 35 dtca rock. Laminations locally Bx'd. Laminations may selectly be Ser altered.
350	400	FT	lam	LAP	M	GRY			Greenish grey pervasively silica-sericite altered FT? unit. Texture has been obliterated by intense silica solution. Sulphides are minimal-absent through most of the interval.

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Blackwater Project
Drill Summary - Alteration

BW0447		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
12.56	53	S	PATC	2	PATC	1	PATC	2	PATC	2							Patchy weak alteration occasionally attributing to a green/bleached appearance
53	91	S	FC	2	FC	1	PERV	1	PERV	2							moderately Ser and Chl altered.
91	161.2	S	PATC	2	FR	1	PATC	2	PATC	2							Patchy alteration. alteration increasing along fractures and within the matrix
161.2	220	S	PATC	2	PATC	2	PATC	1	PERV	4							Pervasive Ser with chlorite primarily in flt gouge and on fxs. Sil is weak and patchy
220	244.5	S	FR	3	FR	1	PATC	4	CLST	4	SER	PATC	4	SER	FR	2	Silica locally pervasive (clasts and matrix), Sericite and Silica dominate rock as patches of ser-silica and silica, throughout. Sericite L-D.Green rep clasts. Chl moderatley coats FP's with clay and sericite.
244.5	265	S	FR	3	FR	1	PATC	4	CLST	4	SER	PATC	4	SER	FR	3	simialr to above, increased ser on FP's, L.Green to gray, Brownish red Hm in fault gouge and weakly on FP's
265	273.7	S	FR	3	FC	3	PERV	4	PERV	4	SER	CLST	4				Weakly faulted locally; Perv silica-ser, throughout. L.Yellow-white clay (sticks to tongue) gouge and fracture controlled clay.
273.7	305.5	S	FR	3	FR	2	PERV	4	PERV	4	SER	CLST	4	GRNT	PATC	1	simialr to above, silica perv matrix and clasts, clasts dominatly ser rep L-D.Green. Small garnet patches locally L-D-resinous-brown. Chl-ser-clay on FP's
305.5	311.5	S	FR	3	FC	4	PERV	4	PERV	4							Fault; L.Yellow to white clay gouge, supporting siliceous fragments. Chlorite weak-mod coat well developed FP's. Silica perv to fragments, with moderate sericite.
311.5	318	S	FR	3	FC	1	PERV	4	PERV	4							L.Gray-Green perv silica-ser, platy, gives a granular texture to rock, and obscures laminations, decreasing in strength with deptha s silica strength increases. M-Green-Blue Chlorite coating FP's
318	335.4	S	FR	3	FR	3	PERV	5	BN	3	SER	PATC	3				Perv L-M.Gray silica, ser occurs in select laminae and patchy perv abundances. L.Green clay (sticks to tongue) assoc with chl on FP's locally.
335.4	341.7	S	FR	3	FC	4	PERV	4	PERV	3							fault; L.Yellow to white clay gouge supporting perv silica-ser fragments.

Blackwater Project
Drill Summary - Alteration

BW0447

From (m)	To (m)	Oxide Facies	Chlorite Style	Chlorite Int	Clay Style	Clay Int	Silica Style	Silica Int	Sericite Style	Sericite Int	Alteration 1 Code	Alteration 1 Style	Alteration 1 Int	Alteration 2 Code	Alteration 2 Style	Alteration 2 Int	Comments
341.7	400	S	FR	4	FC	3	PERV	5	PERV	4							Alt has completely washed rock and obscured texture. Brecciation textures visible from 386-392m = light grey cloudy rounded "clasts" within greenish-grey sil-ser wash. Clay alteration on fx planes = mechanical from fault movement. 381-382m = light grey si

Blackwater Project
Drill Summary - Mineralization

BW0447		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
12.56	48.8	FG	0.5	FG	0.5	BB	1										
48.8	91	FG	0.5	FG	0.5	BB	0.1	Dbs		0.1							Py fine grained and as veinlets
91	99.3	FG	0.1	BB	0.5	BB	0.5										
99.3	130.1	FG	1	FG	0.1	BB	0.1										Py increases in flt gouge
130.1	145	FG	0.5	BB	0.1	BB	0.1										
145	161.2	VN	0.5	FG	0.1	BB	0.1										Py veinlets/fracture coatings
161.2	196.2	FG	1	BB	0.5	BB	0.1	Dbs		0.1							Py increases in gouge
196.2	200.5	FG	2		0.1	BB	0.1	Dbs		0.1							small interval with increased black sulfides (Py?) in gouge
200.5	215.5	BB	1	BB	0.1		0.1	Dbs		0.5							Py is variable with increases locally
215.5	220	BB	2	BB	0.1	BB	0.5	Dbs	STR	0.5	Py	FP	0.5				fine-grained larger irregular BB's of Py and DI'd Py, throughout. Filliform Py BB's in clasts, locally. Small DBS stringers assoc with smaller DI'd Py. Terace Po intergrown with Py (replacing?)
220	233	BB	2.5	BB	0.1	BB	0.1	Dbs	STR	2	Py	FP	0.5	Py	STR	0.1	similar to above, increase DBS.
233	235.1	BB	1.5		0	BB	3	Dbs	STR	0.5	Cp	BB	0.1	Py	FP	0.5	similar to above but dominatley Po, with interggrown Cp.
235.1	244.5	BB	2.5		0	BB	0.1	Dbs	STR	0.5	Py	FP	0.5	Py	VN	0.1	Py BB's irregular to well formed cubes, alamgamations of finer-grains of Py and euhedral cubes, with trace Po locally. Small discontinuous DBS. CP>Py veinlet.
244.5	257.5	BB	0.5		0	BB	0.1	Dbs	STR	0.1	Py	EU	1.5	Py	FP	0.1	increasingly ordered Py, BB's are dominatly euhedral Py cubes, and DBS has almost dissappeared, only existing as small discontinuous hairline stringers. Hm fracrute controlled and FG.
257.5	305.5	BB	3	BB	0.1	BB	0.5	Py	EU	0.5	Dbs	STR	1	Mrc	FP	0.5	Py BB's throughout, fine-grained amalgamations irregualr to well formed cubes, smaller DI'd euhedral Py. Po and Sp may locally be intergrown with Py. DBS in small discontinuous hairline stringers. Mrc amorphous disks on FP's. L-brown to D.resinous br
305.5	311.5	BB	2		0		0	Py	EU	0.5							fault; similar to above NO Po and Sp.

Blackwater Project
Drill Summary - Mineralization

BW0447		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
311.5	335.5	DI	1.5	VN	0.1		0	Py	VN	0.1	Mrc	FP	0.1				Di'd Py subhedral to euhedral, sooty, throughout. black metallic Sp veinlet @ 333.02m with Py. L-M.Gray silica bands bring in Py BB's as abundant as 10% following a trend of 40 dtca.
335.5	341.7	BB	0.5		0		0	SoSu	BB	2	Mrc	FP	0.5				Fault; Sooty Py and unknown sooty sulphide on fFP's and BB's in fault. Mrc on FP's.
341.7	366	DI	0.5		0	DI	1.5	Grnt	BB	0.8	Mrc	FP	0.1	Dbs	DEN	0.1	L.Brown > D.Brown-resinous Garnet BB's of various sizes. Di'd BB's of Py and Po. Py stringers.
366	375	BB	0.5		0	DI	1	Grnt	BB	0.8	Cp	STR	0.1	Py	STR	0.1	similar to above; Cp in Py stringer.
375	387	DI	2		0	DI	1	Grnt	BB	0.1	Dbs	DEN	1.5	Py	FP	0.1	throughout. Small sections of Gray Silica with a drastic jump in sulphiides, increased; DBS, Py, Po. Py-Qtz veinlets.
387	400	DI	0.1		0	DI	0.1	Dbs	DEN	0.1	Py	FP	0.1				small patches of DI'd Py-Po and Den DBS.

Blackwater Project
Drill Summary - Structure

BW0447

From (m)	To (m)	Structure	Strength	Comments
12.56	48.8	FZ	2	Intact/jointed core with small intervals being faulted w/ gouge.
48.8	64.4	FL	5	Significant gouge
64.4	99.4	FZ	3	Intact/jointed core with frequent flts
99.4	130.1	FL	5	Significant gouge. poor recovery
130.1	139	FZ	3	
139	151	FZ	4	blocks of intact core
151	161.2	JZ	4	joints at 35 and 20deg TCA
161.2	204.4	FL	5	Significant gouge
204.4	212.3	JZ	4	jointed with small broken sections
212.3	219	BRKZ	3	Small zones of gouge/faults
219	221	BZ	4	rounded lithics supported by M.Green gouge.
221	231.1	FZ	4	Fault zone, with minor gouge locally, but strongly irregularly broken, and local intact jointed zones<1m @ 30>45 dtca.
231.1	233.2	JZ	3	Jointed moderatley @ 45>30 dtca.
233.2	233.5	BRKZ	3	broken irregularyl near end of run, possibly artifact of drill.
233.5	238	JZ	3	Jointed @ 50, 30, 20 dtca.
238	240.2	BRKZ	3	irregularly broken, and redrilled by drill.
240.2	257	FZ	4	Strongly broken, with moderate gouge locally. Jointed locally @ 25 and 50 dtca, with small <1m intact blocks.
257	259	JZ	5	Jointed @ 10> 30 > 50 dtca.
259	263.5	JZ	4	Joiinted @ 70>40>0 dtca.
263.5	269	JZ	5	Jointed @ 10>40 dtca, and partialy broken/
269	269.8	BRKZ	4	irregularly fractured.
269.8	271.9	JZ	4	Jointed @ 40 > 10 dtca.
271.9	273.7	BZ	3	fragmental Fault-Bx, with bottom contact @ 25 dtca
273.7	277.6	JZ	4	Jointed @ 15>30 dtca.
277.6	286.0	JZ	3	Jointed @ 50=10 dtca.
286.0	286.1	SZ	3	Sheared @ 45 dtca.
286.1	287.5	JZ	1	Jointed weakly @ 45 dtca.

Blackwater Project
Drill Summary - Structure

BW0447

From (m)	To (m)	Structure	Strength	Comments
287.5	288.8	FL	4	fault with top contact @ 40 dtca, broken and brecciated in gouge.
288.8	292	JZ	5	Strongly jointed and broken, jointed @ 30 and 60 dtca.
292	292.1	BRKZ	3	irregularly broken.
292.1	295.9	JZ	4	Jointed @ 10-20 >30 dtca.
295.9	297.5	CRZ	4	Crushed and fractured rock, with jointing @ 20 dtca.
297.5	305.4	JZ	3	Jointed @ 10 > 40 dtca.
305.4	306.2	BZ	3	partially intact fault-Bx.
306.2	311.4	FL	4	Abundant broken rock and moderate gouge.
311.4	316.5	JZ	4	Jointed @ 25> 10 dtca.
316.5	317.8	JZ	3	Jointed @ 45> 35 dtca.
317.8	318.0	BZ	3	fault-Bx @ 35 dtca.
318.0	322.5	JZ	3	Jointed @ 35>45 dtca.
322.5	324.2	JZ	4	Jointed @ 0 > 40 dtca, and broken.
324.2	326.5	BRKZ	4	strongly fractured/crushed rock with fractures @ 5 dtca.
326.5	335.4	JZ	4	Jointed 2 10> 45 dtca.
335.4	341.7	FL	4	moderatley faulted, intact at top and broken in teh middle, minor fault gouge locally.
341.7	350	JZ	4	Jointed @ 15>50 dtca.
350	352.3	JZ	4	Jointing following laminae from about through most of interval. Secondary joint set at approx 50 dTCA
352.3	359.4	JZ	3	Joints follow veinlets, weakly chl coated. Secondary joint set at 10 dTCA from 358.20-358.8m
359.4	361	FL	3	Weak gouge within broken zone
361	378.5	JZ	3	Joints from 50-60 dTCA as well as 30 dTCA. Brkz from 373.8-374.1m
378.5	382.8	JZ	4	Joints chl-coated at 70 and 30 dTCA.
382.8	383.8	BRKZ	4	Strongly broken, no distinct measurable angle to measure. Chl-clay on fx surface
383.8	392	JZ	3	Chl on fx from 20-30 dTCA as well as 50 dTCA. Locally more intensely fractured within interval
392	392.5	FL	4	Lower contact @ 30 dTCA. Chl-clay within fault
392.5	400	JZ	5	Strongly jointed. Clay-chl on fx planes. Possibly weak fault (397.5m). Secondary joint set @ 30 dTCA

Blackwater Project
Drill Logs

Hole ID:	BW0448	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375700.89
Depth (m):	327	Date Started:	08/05/2012	Casing Size:	HWT	Northing:	5893401.34
Azimuth:	0	Date Completed:	12/05/2012	Casing (m):	4.5	Elevation (m):	1525
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
51	96.2	-87.8
102	83.4	-88
150	68.8	-88.1
201	61.3	-87.8
252	75	-87.1
300	63.4	-87.8
327	64.1	-86.9

Blackwater Project
Drill Summary - Lithology

BW0448

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							No recovery prior to 3m.
3	14.1	AND	volc	LAP	D	GRY	FLT	GR30	D.Gray-Black massive looking, BB'y silica, pseudoclastic/clastic. Jasper and calcite locally Fracture contrtolled. Bottom contact ends in a fault.
14.1	21.7	VC	t	LAP	L	GRY	DEP	GR10	L.Gray-Green silica-ser rep ash to coarse-sand sized matrix supporting clay-ser rep clasts averaging 3-4mm in width, some elongate weakly others block all SA, Top of section and bottom of section have more larger clasts averaging 1-2cm.
21.7	32.5	VC	ms	LAP	M	GRY	FLT	GR30+	M.Gray silica matrix supporting D.Gray clasts some siliceous, and others partly clay-ser and/or chl replaced. Clay-ser BB's appear to be felsic BB's/clasts. Bottom contact structurally controlled? alteration?
32.5	54.2	VC	ms	LAP	L	GRY	ALTFR	GR30+	Bottom contact is with AND VC, and is structurally controlled silica-ser alternating with more primary D.Gray-Black Lapilli to block size clasts From 46.9 to 54m . Rounded poorly sorted, silica-ser matrix dom with patches of ser-chl and clasts are cl
54.2	60	VC	ms	LAP	D	GRY	FLT	GR10	Partially alteration obscured int/mafic rock, with minor lapilli sized clasts in matrix of similar composition with small fragments <2mm and small clay-ser replaced plag crystals. Bottom contact is a fault/alteration contact.
60	81.2	VC	ms	LAP	L	GRY	FLT	GR30+	clay-ser-chl rep SR poorly sorted clasts in a silica weak ser matrix, heavily faulted, locally patches of clay-ser or silica-ser obscuring texture. (Hydro-Bx of more mafic/int rock?). Bottom contact faulted/alteration zone, ~3m with interfinering of
81.2	106	AND	bx	LAP	D	GRY	ALTFR	GR30+	Bx'd SA>SR Strongly Jigsaw fit poorly sorted Lapilli to Block sized matrix supported weakly amygdaloidal/plag-phyric AND clasts.
106	130	VC	ms	BLOCK	D	GRY	FLT	GR30+	M.Gray-L.Green Siliceous feldspar phyric matrix supporting M-D.Gray SA/SR feldspar-phyric Block size clasts and lapilli size siliceous clasts (altered clasts.pseudo-felsic clasts?). Bottom contact chosen in fault, for on other side of fault there is
130	157.8	VC	ms	BLOCK	D	GRY	ALTFR	GR30	L.Gray/white-L.Green Siliceous matrix supporting Angular to sub-rounded M-D.Gray Massive and feldspar-phyric Lapilli to Block size clasts, unlike above no siliceous clasts. Less siliceous rock below constrained by less structure.
157.8	163.2	AND	bx	BLOCK	D	GRY	DEP	GR30	M-D.Gray weakly siliceous matrix supporting D.Gray SA/SR Lapilli to Block sized moderatley jigsaw fit weakly amygdaloidal clasts. Less altered version of below, constrained by weaker structure.
163.2	189	AND	mas		D	GRY	UNKN	GR30+	Strongly calcite veined AND, Feldspar-phyric (30-50%) locally, locally obscured by alt, amygdaloidal locally; CA>Silica fill.

Blackwater Project
Drill Summary - Lithology

BW0448

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
189	237	AND	mas		D	GRY	UNKN	GR30+	Strongly calcite veined AND, Feldspar-phyric (variable amount, hard to see) locally, locally obscured by alt, can be white to L.Brown/Pink, locally amygdaloidal Ca>Silica fill.
237	243.2	AND	mas		D	GRY	UNKN	GR30	Strongly calcite veined AND, Strongly amygdaloidal (10-30%), locally aligned @ 55 dtca, feldspar phyric weakly, subhedral crystsls.
243.2	268.1	AND	mas		D	GRY	DEP	GR10	Strongly calcite veined AND, Feldspar-phyric (10-30%) 1-3mm crystals, and Hornblende-phyric, possibly biotite. crystals locally less-apparent, clay alt around/assoc with calcite veins makes feldpsars highyl visible. Bottom contact is a matrix support
268.1	292.5	AND	mas		D	GRY	UNKN	GR30	Strongly calcite veined AND, moderatley feldspar or hornblende locally phyric, locally amygdaloidal. Top contact is a poorly sorted matrix supported angular to rounded AND grading into massive. Numerous events of AND.
292.5	327	AND	mas		D	GRY			Moderatley calcite veined AND, abundantley Feldspar-phyric (10-30%) 1-3mm crystals, Hornblende-phyric, possibly biotite, fine-grained feldspar rich GM. locally non-apparent, clay alt around/assoc with calcite veins makes feldspars highly visible.

Blackwater Project
Drill Summary - Alteration

BW0448		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	14	T	REP	2	FC	4	PERV	3	PERV	2	SIL	FC	1	CAL	FC	1	Calcite, microcrystalline pervasive with sericite-chlorite locally replacing crystals and small clasts especially around fractures. Clay limonite on fx planes and within fault gouge. Red Jasper = fx controlled
14	21.7	T	CLST	2	CLST	2	MTRX	3	CLST	4	SER	MTRX	2	LIM	FC	2	Certain clasts siliceous, but locally replaced by sericite-clay and weak chlorite. Matrix replaced by silica-sericite
21.7	24	T	PATC	3	FR	2	PERV	3	MTRX	2	LIM	FC	2				Grey silica matrix with white silica clasts. Minor lim on fx
24	32.5	S	PATC	2	FR	2	PERV	3	MTRX	2	CLY	CLST	2				As above. Sericite-clay, small replacement patches
32.5	54	S	PATC	2	CLST	2	MTRX	4	MTRX	2	SER	CLST	4	SER	PATC	2	Faulted zones with more clay. 2 sub-intervals weakly altered from 48.28-49m & 51.5-53m, alteration of sub-intervals similar to grey silica alteration style
54	60	S	PERV	2	FC	3	MTRX	1	PERV	2	CHL	FR	2				Soft Rock, dominatly ser-chl replaced weakly silicified. Fault gouge clay-ser-chl replaced.
60	81.2	S	CLST	2	CLST	2	MTRX	4	CLST	4	SER	MTRX	2	CLY	FC	3	Sericite-Clay-Chl clasts replacement within a silica-ser matrix, locally patches of silica or clay-ser obscure texture. Gradational from 73.2-81.2m into unit below intermittent less altered sections. Clay-ser gouge.
81.2	86.4	S	CLST	3	CLST	2	MTRX	2	FC	3	SIL	AMYG	1	SER	CLST	2	White to L.Gray-Green Clay-Ser-Chl Gouge and fracture coating. silica both matrix rep and filling amygs in clasts. white streaking D.Green clasts (Chl-Ser-Clay mix?)
86.4	91	S	CLST	2	CLST	1	MTRX	3	CLST	2	SER	FC	2	CHL	FC	2	Bleached rock, matrix locally strongly siliceous but overall moderate matrix dom dilicification. Ser-clay locally abundant in clasts, but chl-clay dominant clast rep. ser-chl-clay gouge.
91	97	S	FC	2	FC	2	MTRX	2	FC	2	SIL	AMYG	1	CHL	FR	4	Matrix dominant silica, FP and gouge controlled ser-clay-chl. M. Green Chl Strongly coats FP's
97	107.6	S	CLST	2	FC	2	MTRX	2	FC	2	CHL	FR	3	CAL	CLST	2	Interimittent chl-ser gouge and along FP's, some siliceous clasts. Weak Carbonate fracture controlled and calcte veined.

Blackwater Project
Drill Summary - Alteration

BW0448		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
107.6	125.3	S	CLST	3	CLST	2	MTRX	4	CLST	2	SER	MTRX	2	CHL	FR	3	Strong matrix dom Silicia Alt, Pervasive Chl replacing clasts with ser-clay, Sericite-Clay blebs alteration. Weak clast dominant fracture controlled carbonate and weak calcite veining.
125.3	138.9	S	FC	3	FC	4	MTRX	4	MTRX	2	CAL	CLST	3	CLY	CLST	2	Fault, with Strong Clay-ser-chl gouge. Matrix silica-ser rep. Clasts Calcite-clay rep, amygs calcite rep as well.
138.9	157.8	S	FC	2	FC	3	MTRX	4	MTRX	2	CAL	CLST	3	CLY	CLST	2	similar to above, locally ser replaces smaller clasts. Weaker faulting with less chl-ser alteration.
157.8	163.2	S		0	CLST	2	MTRX	1	CLST	1	CLY	FC	2	CAL	CLST	2	Weak silica in matrix. weak-mod clay-calcite rep of clasts. minor faulting clay gouge.
163.2	186	S		0	PERV	2	AMYG	1		0	CLY	VNHL	3	CAL	VNHL	3	Clay pervasive in Groundmass and replacing feldspar phenos. CAlcite is abundant throughout, fracture controlled veinlets and veinlets > vein centric alteration zones with clay > filling amygs with silica.
186	235.2	S	PATC	1	VNHL	2	MTRX	1	FC	1	CAL	VN	3	CLY	MTRX	2	Abundant Calcite Veins throughout surrounded by Clays. Sparce, patchy Chl.
235.2	236.9	S		0	VNHL	5	MTRX	3		0	CAL	VN	5				Calcite>Quartz vein breccia, Ca>Qtz matrix supporting rounded lithics, and peripheral to veins is clay altered.
236.9	243.4	S		0	VNHL	2	PERV	1	MTRX	1	SIL	AMYG	3	CAL	AMYG	2	Quartz>Calcite amyg fill supported by mafics, Calcite veins with clay peripherals.
243.4	248.5	S	FR	1	VNHL	2	VN	2	FC	1	CAL	VN	3	SIL	PERV	2	Calcite>Qtz amyg fill
248.5	249.4	S		0	PERV	5		0	REP	4	CAL	VN	1	ANH	VN	3	Pervasice clay alt, with D.Green ser possibly some chl replacing subhedral amphiboles. anhydrite>calcite in veins.
249.4	268.1	S		0	VNHL	3	PERV	1	FC	1	CLY	PERV	2	CAL	VN	3	
268.1	281.5	S		0	PATC	4	AMYG	3	FC	1	SIL	PATC	1	CAL	VN	3	Matrix dom silica in Bx contact and amyg filler. Clay patchy rep clasts, and patchy perv, strongest around calcite veinlets. clay rep of hornblende phenos.
281.5	306	S		0	REP	3	PERV	2	FC	1	CLY	VNHL	2	CLY	VN	2	
306	327	S	VN	1	REP	3	PERV	2		0	CLY	PATC	3				similar to above.

Blackwater Project
Drill Summary - Mineralization

BW0448		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	9		0		0		0	Mag	BB	5	Goe	FP	2	Hm	PERV	1	metallic gray-black magnetite throughout, associated with weak perv Hm stain. Chlorite weakly pervasive with clays and silica.
9	21.9	FP	0.1	BB	0.5		0	Sp	STR	0.5	Dbs	DEN	0.5	Py	STR	0.5	Stringers of BS's, Py and Sp. BB's of Sp locally abundant and locally are replacing what appears to be rectangular crystals.
21.9	24	STR	0.1		0		0	Goe	FP	0.5	Jaro	FP	0.1				thin <0.5mm Py stringers // to core axis.
24	32.5	STR	0.1	STR	0.1		0										Red-black Sp stringer.
32.5	48.5	BB	0.1	BB	1.5	BB	0.1	Py	FP	0.1	Dbs	STR	0.1	Sp	STR	0.1	BB's of Sp dominantly within clasts with minor Py cubes and specks-BB's of Po, locally Sp in clasts is aligned with laminations. Sp also locally abundant in matrix as irregular to rectangular BB's (rep?)
48.5	60		0	BB	0.1	VN	0.1										Blebs of Red-black Sp in matrix, small veins of Po
60	81.2		0	BB	1.5		0	Sp	STR	0.1							Blk>Red Spalerite, Sp stringer within fault, Sp locally abundant up to 5%
81.2	103.3		0	STR	0.1		0										Red Sp stringer.
103.3	120	FP	0.1	STR	0.1	STR	0.1	Py	BB	0.1	Sp	BB	0.1				Po-Sp stringer with Sp clasts
120	130.5	BB	0.5	BB	1		0	Py	VN	0.1	Py	STR	0.1				1-2% Py in Veins, Stringers and BB, 0.5% Sp stringers and BB
130.5	138.2		0	SP	0.1		0										Specks of Sp.
138.2	163	BB	0.5	STR	0.1	BB	0.1	Apy	VN	0.1	Sp	VN	0.1	Py	VN	0.5	Py and Sp BB's throughout, Large Vein 340mm Apy>Sp>Py, 0.5% Py local veinelet
163	189	BB	0.1	BB	0.1	BB	0.5	Py	VN	0.1							BB's of 0.5% Po, Py>Sp BB's
189	218.5		0	BB	0.5	BB	0.1	Sp	FP	0.1							Red>Blk Spalerite BB's, Po BB.
218.5	243.1	FC	0.5	BB	0.5	BB	0.1	Py	STR	0.1	Py	EU	0.1				0.5% Py on FC's, brassy/yellow Py stringers, euhedral Py crystals, Local Po>Sp blebs.
243.1	268.1	EU	0.1		0	BB	0.5	Py	BB	0.1							Di'd euhedral Py locally, Po BB's locally minor throughout, Po BB's in Ca veinlets.
268.1	279	STR	0.1	BB	0.5	SP	3	Po	BB	2							BB's of Po within clasts and filling amygs, Po specks in GM throughout. Sp BB's filling amygs with Po. Py Stringers locally, with trace Po.

Blackwater Project
Drill Summary - Mineralization

BW0448		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
279	324.6	STR	0.1		0	STR	0.1	Po	BB	0.1							Py-Po hariline veinlets within a calcite veinlet. Po BB's local.
324.6	327	VN	0.5		0	BB	5										irregular BB's throughout, Py in small veinlets/ calcite veinlets.

Blackwater Project
Drill Summary - Structure

BW0448

From (m)	To (m)	Structure	Strength	Comments
3	8.1	JZ	5	Jointed @ 30=60 >45>5 dtca.
8.1	9.8	FL	4	gouged fault moderatley oxidized.
9.8	12	JZ	4	Jointed @ 55 = 30 >. 10 dtca.
12	12.25	FL	4	clay-ser-chl gouge MINERALIZED Py.
12.25	13.75	JZ	5	Broken and jointed @ 60 dtca.
13.75	14.1	BZ	4	clay-ser-limonite gouge supporting rounded small lithic fragments.
14.1	15.15	JZ	3	Jointed>Broken, 20 dtca.
15.15	15.4	FL	3	Moderate small fault @ 30 dtca.
15.4	20.88	JZ	3	Jointed @ 60>45>30>20 dtca, 45,30,20 dtca are all limonite coated 60 dtca, has no fracture coating (late stage)
20.88	20.96	BZ	3	Ser-Clay gouge supporting rounded lithic fragments.
20.96	23.12	JZ	5	Jointed @ 20 and 45 dtca, and broken.
23.12	23.3	FL	3	clay-ser gouge supporting small lithics.
23.3	24	JZ	5	Jointed and broken @ 45 dtca.
24	24.2	BZ	4	Rounded lithics supported by clay-ser gouge.
24.2	25.9	BRKZ	4	Broken and locally low angle to core axis joints.
25.9	26.9	FZ	3	moderate clay-ser gouge and broken rock
26.9	29	JZ	4	Jointed @ 30> 45 dtca, and weakly broken.
29	31.5	JZ	5	Strongly Jointed and moderatley broken.
31.5	34	FZ	4	broken, with minor to moderate gouge locally.
34	38.24	BZ	5	fault Bx white to lightgreen clay-ser gouge supporting rounded lithics.
38.24	45.35	FZ	3	Fautl zone, joint section with jointing @ 40 and 10 dtca.
45.35	89.3	FZ	5	Intermittent fault Bx and blocks of strongly jointed partially broken rock.
89.3	91.8	FZ	3	Intermittently faulted, and jointed.
91.8	94.85	JZ	5	StrongJointing, chl coated FP's. @ 15, 25, 65 dtca.
94.85	102.2	FZ	4	Fault Bx with poorly sorted rounded clasts supported by clay-ser-chl gouge. Lapilli to block sized rounded lithics.
102.2	104.8	JZ	5	Jointed @ 55 (50-60) > 30 dtca.
104.8	106.4	BZ	5	poorly sorted roundedn lithics supported by clay-ser-chl gouge.
106.4	112.8	JZ	5	Stongly Jointed and broken.

Blackwater Project
Drill Summary - Structure

BW0448

From (m)	To (m)	Structure	Strength	Comments
112.8	114.1	FL	4	lithics and abundant clay-ser-chl gouge.
114.1	117.6	JZ	4	strongly Jointed @ numerous angles.
117.6	118.1	FL	3	weak fault Bx.
118.1	120.6	JZ	4	Moderatley to strongly jointed, locally with gouge on FP.
120.6	121.6	BRKZ	4	irregularly broken, trace gouge locally.
121.6	125.4	JZ	2	WEakly Jointed @ 30 adn 60 dtca, and weakly irregular breaks
125.4	125.9	BZ	2	Weak Fault Bx, minimal to no movement, but Bx and partial gouge supporting clasts.
125.9	127.5	JZ	5	Stongly Jointed and moderatley broken.
127.5	130.7	FL	5	strong fault increasing gouge and lack on competency to center/bottom of fault
130.7	131.3	BRKZ	1	Irregualr fractureing of stick rock. (block within a fault?)
131.3	132	BRKZ	4	irregularly broken rock.
132	133.2	JZ	3	Moderate jointing @ 30 dtca.
133.2	138.9	FL	5	Broken rock, and abundant gouge.
138.9	143.2	JZ	3	Jointed @ 40>>50 and 30 dtca.
143.2	152	BZ	4	Fault Bx with rounded Lapilli size lithics supported by gouge, and intermittent small competent blocks.
152	154	JZ	4	Jointed @ 45 (40-55) dtca. Locally broken.
154	154.3	BRKZ	4	Stongly Jointed @ 45 dtca, and broken.
154.3	155.1	JZ	4	Strongly jointed/Broken @ 45 dtca.
155.1	155.1	FL	2	Fault gouge with APy veining @ 60 dtca
155.1	155.9	JZ	4	Jointed @ 50 dtca.
155.9	157.8	BZ	1	Stick rock that has been weakly Bx'd and rehealed. Fractures are sharp @ 50 and 60 dtca, with chl slickens running @ gamma of 65-80.
157.8	160.3	JZ	2	jointed @ 50 dtca.
160.3	162.8	BZ	2	weak fault Bx, dominatly gouge, partially healed rock.
162.8	168.2	JZ	3	Jointed @ 30 adn 50 dtca.
168.2	168.9	VZ	3	STrong irregualr calcite veining fracturing rock.
168.9	189	JZ	3	Jointed with small broken sections <0.25m. Jointed @ 60 and 30 dtca. locally 45.
189	232	JZ	3	Moderatley jointed @ 30 adn 50 dtca.

Blackwater Project
Drill Summary - Structure

BW0448

From (m)	To (m)	Structure	Strength	Comments
232	235.2	VZ	1	oddly broken due to strong calcite veining.
235.2	236.9	VZ	4	Clacite>Qtz vein breccia supporting sub-rounded lithics.
236.9	249	JZ	3	moderatley jointed and weakly broken.
249	266.2	JZ	3	Jointed locally along calcite veinlets.
266.2	266.5	FL	5	MGreen gouge, with small shards.
266.5	267.6	BRKZ	3	wekaly irregularly broken.
267.6	327	JZ	3	jointed @ 45-60 dtca.

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Blackwater Project
Drill Logs

Hole ID:	BW0449	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375501.64
Depth (m):	353.5	Date Started:	09/05/2012	Casing Size:	HWT	Northing:	5893500
Azimuth:	0	Date Completed:	14/05/2012	Casing (m):	5	Elevation (m):	1513
Dip:	-90	Logged By:	TOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	198.8	-88.6
100	220.9	-88.7
154	201.3	-88.4
200.5	189.3	-88.6
253	197.7	-88.8
302.5	201	-89.6
350	192	-89.1

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Blackwater Project
Drill Summary - Lithology

BW0449

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5	OB							Overburden
5	22.8	VC	plm	BLOCK	D	GRY	FLT	GR5	Polymictic medium to dark grey volcaniclastics with greenish hue, mostly mafic andesite clasts (porphyritic in some cases amygoloidal in others), some chlorite in clasts
22.8	35.5	VC	plm	LAP	M	GRN	UNKN		Polymictic altered volcaniclastics, some sections are more matrix supported than others, less mafic clasts than previous interval
35.5	43	VC	fltgge	LAP	M	GRN			Similar lithology to previous interval but faulted with fault/clay gge + broken up core
43	88	VC	plm	LAP	L	GRN	ALTFR	GR30	Bleached/altered light green-grey-whitish volcaniclastics, lapilli sized clasts with very few(~5) blocky laminated clasts distributed randomly throughout interval, clast-matrix and mafic-felsic ratios are roughly estimated hard to tell exactly due to
88	108	VC	plm	LAP	M	GRN			Highly altered volcaniclastics, looks more clast supported than previous interval, texture is faint and has been washed out in sections by alteration
108	112.9	VC	plm	LAP	M	GRN	ALTFR	GR30+	Light to medium green grey polymictic volcaniclastics; texture obscured by alteration, similar to interval above
112.9	128.8	VC	plm	LAP	M	GRY	ALTFR	GR30+	Medium grey fault brecciated volcaniclastics, with roughly 75-25 clasts to matrix ratio with dominantly mafic clasts
128.8	155.5	AND	por	CA	D	GRY			Dark grey porphyritic andesite with amygdules in very small sections, irregular calcite veinlets and some on fracture planes; interval is dominantly fault brecciated
155.5	171	AND	amg	CA	D	GRY			Dark grey amygoloidal andesite with calcite replacing amygdules and in 2 huge veins circular veins and some fracture controlled calcite
171	183	AND	amg	LAP	D	GRY			Dark grey andesite brecciated in sections with calcite replacing amygdules in sections, Calcite veinlets/hairlines/stockwork
183	202.6	AND	bx	LAP	D	GRY	FLT	GR10	Dark grey brecciated (for the most part) andesite, porphyritic looking texture in sections, fracture controlled calcite, some calcite veins/veinlets
202.6	212	AND	obsalt	LAP	L	GRN			Light green-grey highly altered andesite, texture washed out by alteration, silica-sericite altered with some chlorite
212	229.8	AND	obsalt	LAP	L	GRN	ALTFR	GR5	Light green-grey andesite with mottled alteration, and washed out texture in sections, some hydrothermal/fluid brecciation can be seen on sections
229.8	235.2	VC	ms	LAP	M	GRY	UNKN		Medium grey volcaniclastics with dominantly mafic andesite clasts, 90-10 matrix-clasts ratio, some hematite staining in matrix in sections and also found in clasts through out interval

Blackwater Project
Drill Summary - Lithology

BW0449

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
235.2	242.1	VC	cs	LAP	MO	GRN	UNKN		Mottled green-grey clast supported volcaniclatsics, 25-75 matrix to clast ratio and 50-50 felsic-matrix clasts, the edges of some clasts have been obscured by alteration so some ghost clasts are seen in sections
242.1	251.8	VC	ms	LAP	D	GRY	DEP	GR30+	Medium to dark grey matrix supported volcaniclastics; roughly 90-10 matrix - clasts ratio and dominantly mafic clasts; fault breccia/faulted in sections
251.8	253.8	AND	bx	LAP	D	GRY	DEP	GR10	Brecciated andesite with reworked SA/SR clasts, jigsaw fit in some sections but with reworked clasts
253.8	261	AND	por	CA	D	GRY			Dark grey massive/porphyritic andesite
261	273	AND	amg	CA	D	GRN	DEP	GR30+	Dark grey - black amygoloidal andesite with calcite in amygdules
273	287	AND	amg	CA	D	GRY	UNKN		Dark grey amygoloidal andesite with amygdules that are larger in size than previous interval, some of the calcite filled amygdules are seen to have been silicified completely or partially
287	303	AND	por	LAP	D	GRY			Medium to dark grey porphyritic andesite with patchy greenish/brownish hue in sections; localized small brecciated sections
303	322	AND	por	LAP	D	GRY			Dark grey porphyritic (plag. Phyric) andesite with locally brecciated small sections; calcite filled (some completely silicified, others not) amygdules begin to reappear in sections towards bottom of interval
322	353.5	AND	por	CA	M	GRY			Medium to dark grey porphyritic andesite with brownish hue in sections, local sections with calcite filled amygdules which become more frequent, larger and elongated downhole possibly indicating flow direction

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Blackwater Project
Drill Summary - Alteration

BW0449		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.5	23	T	CLST	2	CLST	2	MTRX	3	CLST	2	HM	FR	2	LIM	FR	2	Sericite in clasts and in matrix, chlorite and clay in clasts, silica in matrix and some in a few clasts, oxides on fracture planes amd in select clasts
23	41.5	T	CLST	2	FR	2	CLST	3	MTRX	2	HM	FR	2	LIM	FR	1	Transition zone ends at 29m; sericite mostly in matrix and in some clasts, chlorite in clasts and weak on fracture planes, clay in fracture planes and in clasts, silica as some sort of overprint found in both clasts and matrix, oxides on very few fracture planes
41.5	88	S	CLST	3	FR	3	OP	3	MTRX	4	CHL	FR	1	CLY	CLST	2	Strong sericite in matrix, chlorite in clasts, clay on fracture planes and some in matrix, silica as overprint
88	108	S	CLST	3	FC	3	PATC	4	MTRX	3	CHL	FR	2				Sericite in matrix and in clasts, chlorite in clasts and weak on fracture planes, strong patchy silica
108	113.8	S	CLST	2	CLST	3	OP	3	MTRX	3							Some sericite in matrix, some silica as overprint, chlorite and clay in clasts
113.8	127	S	MTRX	2	FR	3	PATC	2		0							Weak chlorite in matrix, clay on fracture planes, patchy silica
127	128.8	S	CLST	2	FR	2	PATC	2	OP	2							Weak sericite as overprint, weak chlorite in clasts, clay on fracture planes an patchy silica
128.8	155.5	S	FR	1	REP	2	PATC	3	MTRX	1	CAL	FC	2				Very weak sericite in matrix, weak chlorite on some fracture planes, clay replacing plag phenos, some patchy silica and fracture controlled calcite, some in veinlets
155.5	171	S	MTRX	1	REP	2	OP	3	MTRX	1	CAL	VN	3	CAL	AMYG	2	Weak sericite and chlorite in matrix, some clay as replacement, silica as overprint, calcite in veins, fracture controlled and in amygdules
171	183	S	MTRX	1	PATC	2	PATC	3	MTRX	1	CAL	VN	3				Very weak sericite and chlorite, patchy clay and silica, calcite in veinlets and on fracture planes
183	202.6	S	MTRX	1	PATC	2	PATC	3	MTRX	1	CAL	VN	2	ANK	MTRX	1	Weak ankerite/iron carbonate (brownish hue) in matrix, calcite in veins/veinlets, patchy clay and silica, weak sericite and chlorite in matrix
202.6	212	S	CLST	2	CLST	2	PERV	3	MTRX	3							Sericite in matrix along side silica, sericite-clay in clasts, and chlorite in some clasts as well

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Blackwater Project
Drill Summary - Alteration

BW0449		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
212	229.8	S	FR	2	CLST	1	PATC	3	MTRX	3	SER	CLST	3				Sericite in matrix and in clasts, weak clay in clasts, patchy silica, weak chlorite in some clasts
229.8	235	S	CLST	2	FR	1	PATC	3	MTRX	2	HM	MTRX	2	CAL	INFILL	2	Hematite in matrix (reddish looking discolouration in matrix), calcite as infill in fractures, in veinlets and on fracture planes, chlorite in clasts, very weak clay on fracture planes, some patchy silica andsericite in matrix and a few clasts
235	252	S	FR	2	CLST	1	PERV	3	CLST	3	CAL	INFILL	2	SER	MTRX	2	Sericite in clasts and matrix, weak clay in clasts/fractures, some chlorite on fracture planes, pervasive silica, calcite as infill in veinlets/stringers and on fracture planes
252	253.8	S	CLST	2	FR	1	PERV	4	MTRX	1							Sericite in matrix, some chlorite in clasts, very weak clay on fracture planes, strong prevasive silica
253.8	261	S	MTRX	1	REP	2	PERV	4	MTRX	1	CAL	FR	1				Weak sericite and chlorite in matrix, calcite on fracture planes and in veinlets, strong pervasive silica and clay as replacement in matrix/clasts
261	287	S	MTRX	1	PATC	2	PATC	3	MTRX	1	CAL	AMYG	3				Calcite in amygdules, patchy silica and clay, weak sericite and chlorite
287	303	S	MTRX	1	PATC	2	PATC	3	MTRX	2	CAL	INFILL	2	CLY	REP	1	Weak sericite and chlorite in matrix, patchy clay and silica, calcite as infill in fractures and on fracture planes, some clay replacing plag crystals, weak biotite in matrix
303	322	S	MTRX	2	REP	3	PATC	3	MTRX	1	CAL	INFILL	2	BIOT	MTRX	1	Calcite infill in fractures/in veinlets/stringers, clay replacing plag crystals, some biotite/ankerite/iron carb in matrix, patchy silica, slightly more chlorite in matrix than prev interval
322	343	S	MTRX	2	REP	3	PATC	3	MTRX	1	CAL	AMYG	3	BIOT	MTRX	1	Slightly more chlorite in matrix than sericite, calcite in amygdules, veinlets and hairlines with very weak sricite-chlorite in some, patchy silica and clay in sections, clay replacing feldspars, biotite/ankerite/iron carb in matrix resulting in brownish tinge in sections???
343	353.5	S	MTRX	1	REP	2	PATC	3	MTRX	1	CAL	VN	2	BIOT	MTRX	1	Weak sericite and chlorite in matrix and in veinlets/hairlines, calcite as infill in veinlets and hairlines, patchy silica, clay replacing some plag crystals, brownish hue possibly due to biotite/ankerite/iron carb in matrix

Blackwater Project
Drill Summary - Mineralization

BW0449		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.5	23	SP	0.1	BB	0.1	BB	0.1										Trace sulphides overall; Po as blebs in andesite clasts, Py as specks and bleby Sph
23	32.5	SP	0.1	CR	1	FG	0.5										Trace py as specks, bleby sph in clasts and some as clast replacement, Fine grained Po also foud in clasts with Sph
32.5	43	SP	0.1	BB	1	BB	0.1	Ga	FP	0.1	SoSu	BB	1				Trace galena on fracture plane, trace Py and Po, some bleby Sp and bleby black sulphides
43	56.5		0	BB	1		0	SoSu	BB	1.5							Mostly bleby black sulphides and sphalerite
56.5	77.5	SP	0.1	BB	2	CR	0.1	SoSu	BB	1.5							Slight increase in sulphides from previous interval, Sph bleby and found in clasts alongside some trace Po, trace Py specks and bleby black sulphides
77.5	89.5		0	BB	1		0	SoSu	BB	1							Reduced sulphides from previous interval, bleby black sulphides and Sph, some leached sulphide sites
89.5	97		0	BB	1		0	SoSu	BB	1.5							Bleby black sulphides, bleby Sph and some in clasts
97	108	FP	0.1	BB	0.5		0	SoSu	BB	1							Trace Py on fracture planes, bleby Sph and some in clasts, bleby black sulphides
108	113		0	BB	0.5	DI	0.1	SoSu	BB	0.5							Some bleby Sph and black sulphides, trace disseminated Po in clasts
113.5	130	FP	1	BB	0.1	DI	0.5	SoSu	BB	0.1							Nice euhedral pyrite crystals on fracture planes, some bleby sph and disseminated Po
130	155.5	BB	0.1		0	BB	1										Trace Py in blebs, mostly Po in blebs and finegrained
155.5	171	SP	0.5		0	BB	1										Po in blebs and in vein, Py in specks and in vein along with calcite
171	187		0		0	FG	1										Fine grained/disseminated Po
187	202.6		0		0	BB	0.5										some bleby/fine grained Po
202.6	212	VN	0.5	BB	0.5		0	Apy	VN	2							Some bleby Sph, Py in vein/veinlets, Apy in vein/veinlets/as specks
212	229.8	BB	0.5	DI	1		0	Dbs	WIS	0.5							Disseminated Sph, Py in blebs/specks/on fracture planes, wispy Dbs
229.8	239	BB	0.1	BB	0.1	DI	0.1	Hm	CR	1							Trace sulphides throughout interval, Hm in clasts/as clast replacement

Blackwater Project
Drill Summary - Mineralization

BW0449		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
239	253.8	BB	0.5	BB	0.5	BB	0.5	Hm	CR	0.1	Ga	SP	0.5				Low mineralization, bleby py, sph and po, trace hm in clasts???
253.8	261		0		0	BB	1										Only Po blebs are seen in this interval
261	273		0	AMYG	0.1	AMYG	1.5	Ga	VN	0.5							Po in amygdules along with calcite and Sph in some, in others the Po completely replaces the amygdules, some Po in blebs as well, vuggy galena vein/veinlet
273	287		0		0	AMYG	2										Po alongside calcite in some amygdules, in other cases Po completely replaces calcite in amgdules
287	303	VN	0.1		0	BB	2	Ga	VN	1.5							Bleby po, trace Py; and galena in 2 calcite + galena vein and a veinlet
303	322	PATC	0.5	PATC	0.5	BB	1										Po in blebs, patchy sph found alongside Po in a big bleb of calcite fracture filling??(probably a large amygdule), patchy Sph also found with patchy dull/tarnished Py
322	338.5	VN	0.5		0	BB	0.5	Ga	VN	0.1							Py in vein, galena seen in veinlet along with calcite and as specks, bleby Po
338.5	353.5	BB	0.1		0	BB	0.5										Trace py bleb, bleby Po; low sulphides overall in this interval

Blackwater Project
Drill Summary - Structure

BW0449

From (m)	To (m)	Structure	Strength	Comments
0	5.5	BRKZ	1	Rubbles + broken core
5.5	22.8	JZ	3	Joint zone with local broken zones < 0.5m, joints mostly at 60dtca others at 50>40>30 dtca
22.8	35.5	JZ	2	Weak joint zone with wispy/jagged joints and local broken/faulted sections ~0.5m, measurable angles at 40/20/10/70dtca
35.5	43	FZ	3	Fault/clay gge + rubbles + broken up core (compact/held together in some sections by gge)
43	46	JZ	2	Joints at 40/70/30dtca
46	48.37	BRKZ	2	Broken up core
48.37	51	JZ	3	Moderate jointzone with joints at 60/30dtca
51	54	JZ	2	Wispy/jagged joints ~70dtca, local broken zones in small sections
54	55.6	FL	2	Fault/clay gge + broken core
55.6	63	BRKZ	2	Broken zone with broken up core and some competent pieces of core with fault gge in small sections, was able to get a few angles off competent core 50>60>40dtca
63	88	JZ	3	Joint zone with local broken/faulted sections, joints at 50>40>60dtca, some steep ones at 20/30dtca
88	108	JZ	3	Joints dominantly at 60/50dtca, steep ones at 40/20dtca, local brokenzones with clay gge in sections and attached to ends of core
108	113.8	JZ	2	Joint zone with local broken zones; joints dominantly at 60dtca, others at 40>30dtca
113.8	133.8	BZ	3	Fault breccia - broken bits of core/rubbles held compactly together by fault/clay gge, weak joints - measurable angles were mostly 60dtca others to 50/30dtca
133.8	153	JZ	1	Very weak jointzone/brokenzone, with some competent core in sections and broken zones/small faults/fault breccia on various small sections throughout interval
153	155	BZ	4	Fault breccia with competent core with, joints at 60/70dtca
155	171	JZ	3	moderate to strong joint zone with joints dominantly at 60/70dtca, others at 50/40/30/20dtca
171	183	JZ	2	Joint zone with local broken zones, joints dominantly at 50dtca and others at 40/20dtca
183	196	JZ	3	Joint at 60/50dtca, steep ones at 20/30dtca
196	212	JZ	2	Joint zone with local broken/faulted sections; joints mostly at 60dtca, others at 50/70dtca steep angles at 40/30/20dtca
212	224	JZ	2	Weak joint zone with localized broken/faulted small sections; joints mostly at 40dtca others at 50/60dtca
224	242	JZ	3	Joints dominantly at 40dtca others at 50>30>60>20>10dtca
242	250.5	BZ	3	Fault breccia with fault/clay gge holding clasts compactly together and some fault/clay gge in sections
250.5	261	JZ	3	Joint zone with joints dominantly at 40dtca, others at 50/60dtca

Blackwater Project
Drill Summary - Structure

BW0449

From (m)	To (m)	Structure	Strength	Comments
261	293	JZ	4	Strong joint zone with joints dominantly at 50/60dtca others at 70>40>30>20dtca
293	322	JZ	3	Joints mosly at 50dtca, others at 60>40>70>30dtca
322	353.5	JZ	3	Joints at 50/70dtca others at 60>45>40dtca

Blackwater Project
Drill Logs

Hole ID:	BW0450	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376000.57
Depth (m):	363	Date Started:	10/05/2012	Casing Size:	HWT	Northing:	5892950.28
Azimuth:	0	Date Completed:	16/05/2012	Casing (m):	66.4	Elevation (m):	1559
Dip:	-90	Logged By:	KOr	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
51	217.1	-89.2
114	242.7	-89.7
156	284.4	-89.8
201	123.9	-89.9
252	189.2	-89.7
300	354.4	-89.5
351	76.3	-89.3
363	70.8	-89.4

Blackwater Project
Drill Summary - Lithology

BW0450

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	69.1	OB							
69.1	85.5	FT	obsalt	FA	P	YLW	ALTFR	GR5	Texture destroyed by alteration. Pale yellow grey colour is banded at ~35dtca. Sulphides absent, only oxides. (oxide zone)
85.5	93.4	FT	obsalt	FA	L	GRY	ALTFR	GR30	Only small patches of yellow coloured alteration (limonite). Original texture destroyed. Banding of grey silica/clay alteration. Sulphides and oxides present (transition).
93.4	103	FT	obsalt	FA	P	YLW	ALTFR	GR10	Back into heavier Lim alteration, overall pale yellow colour. Sulphides absent. Oxide zone.
103	112.1	FT	obsalt	FA	L	GRY	ALTFR	SH	Transition zone. Short sections alternating back and forth, of units described above. Units are: Yellow Limonitic laminted core which is heavily oxidized. Second unit is lacking yellow limonite, has some sulphides plus oxidation halos around sulph
112.1	132	FT	obsalt	FA	L	GRY	ALTFR	GR30+	Same as above. End of yellow limonite alteration.
132	219	FT	obsalt	FA	MO	GRY	DEP	GR30+	Texture destroyed by alteration. Yellow/orange oxide alteration no longer present. Banding less extensive than previous (localized).
219	236.3	AND	obsalt	LAP	D	GRY	DEP	SH	Massive andesite, with local intervals of volcanoclastic texture. Alteration often causes uneven blreaching.
236.3	246.9	VC	plm	LAP	M	GRY	FLT	GR10	Volcanoclastic, mostly mafic clasts, blue-grey matrix
246.9	363	FT	obsalt	FA	L	GRY			Felsic tuff, massive, light grey/green/blue, with di sph and DBS.

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Blackwater Project
Drill Summary - Alteration

BW0450		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
69.1	85.5	O		0	PERV	3	BN	2	REP	3	CLY	REP	1	LIM	BN	4	Banding of silica clay and limonite. Sericite appears to be replacing some fine grains. weakly silicified overall. no chlorite
85.5	93.4	T		0	PERV	3	BN	3	INFILL	2	LIM	BN	1				Slightly more silicious. Less limonite, no clay in vugs/casts. Banding of silica and clay, small specks of sericite filling small sapces.
93.4	103	T		0	PERV	3	BN	2	REP	3	CLY	DEF	1	LIM	BN	4	Same as 69.1-85.5, slightly more silica, slight less Hem.
103	112.1	T		0	PERV	3	PERV	3	INFILL	3	LIM	PATC	1	SIL	BN	2	Alternating short sections of units described above. Laminated alteration throughout.
112.1	132	T		0	PERV	3	PERV	4	PATC	4	LIM	PATC	1	SIL	BN	2	Same as above. With stronger sericite and clay and Hem. Limonite/hematite alteration tapers-out at the end of this interval.
132	139	S	PERV	2	PERV	3	PERV	3	PATC	4	SER	PERV	2	CLY	SPHL	2	Absence of yellow/orange alterations. Early in the interval - sulphide halos are unknown black/dark grey alteration. Later in the interval halos are cream coloured clay/silica alteration.
139	153	S	PATC	1	PERV	3	PERV	2	PATC	4	CLY	FC	3				Some cream/light yellow fracture controlled clay. local banding of alteration. Sulphide halos absent.
153	160	S	PATC	1	PERV	2	PATC	3	BN	5							Prominent swirl patterns of alteration, havily sercitized, clay altered and moderately silicified.
160	218.8	S		0	PERV	3	PERV	2	PATC	3							Pervasive ser-cly, with weaker silica.
218.8	222.8	S	FR	2	FR	2	PERV	3		0							Pervasive moderate silica with some chlorite on fractures
222.8	246.9	S	CLST	2	CLST	2	PATC	2	MTRX	2							Chlorite and clay replacing clasts, with possible sliica and sericite in the matrix
246.9	363	S	FR	1	PERV	3	PERV	3	PERV	3	GRNT	SUBH	1				Pervasive qtz-ser-cly with weak chlorite on fractures. Some ratty garnets.

Blackwater Project
Drill Summary - Mineralization

BW0450		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
69.1	85.5		0		0		0	Goe	FC	0.5							Oxide zone, no sulphides present.
85.5	93.4	EU	0.2		0	SP	0.1	Dbs	STR	1	Py	SP	0.3				Transition zone. Sulphides still present in vugs and DBS stringers. Euhedral Py in vugs with specks of Po. Sooty Py specks and blebs. DBS stringers, TS~<2
93.4	103		0		0		0										Oxidized, no sulphides found.
103	112.1	BB	0.5		0	BB	0.2	Dbs	DEN	0.8	Py	SP	0.2	Py	FC	0.1	Traces of Py om frac surface, Py+Po in vugs in grey unit. DBS in grey unit. Specks of sooty Py. Trace ArsenoPy in some black halo casts. TS<2%
112.1	132	SP	0.2		0		0	Dbs	STR	1	Goe	FC	0.2				TS<1.5%
132	139	SP	0.3	BB	0.3	SP	0.1	Dbs	STR	0.8	Py	VN	0.1	Sp	VN	0.2	TS~2%
139	153.4	SP	0.5	BB	2		0	Dbs	STR	2.5	Ga	VN	0.1				TS~5%, small Ga crystals in veinlet.
153.4	160	SP	1	SP	0.5		0	Dbs	STR	0.3	Py	VN	0.1	Py	VN	0.1	TS~2.2%
160	163.5	VN	1	DI	3	VN	0.1	Apy	DI	0.5	Dbs	DEN	2				Strong di DBS and sphal, metallic/dark sphal concentrated on fractures, also veined with py and trace po. Specks of subhedral arspy.
163.5	177	FC	1	VN	1	BB	0.5	Dbs	DEN	1							Di and especially veined py and sphal, di DBS, minor blebs of po
177	186	VN	1.5	VN	2.5	BB	1	Dbs	DEN	1							Increased py and sphal veins, with larger blebs of po and some di DBS
186	201	FP	0.5	DI	1	BB	0.5	Dbs	DEN	1							Minor py, po and DBS with di sphal mostly on fractures
201	218.8	FP	0.5	DI	3	DI	0.1	Dbs	DI	5	Cp	BB	0.1				Strong DBS surrounding and bleeding out from sphal grains - roughly follows banding of FT. Trace chalco visible, with py on fractures.
218.8	226.5	FP	0.5	CR	3		0	Apy	FP	0.1							Sphal often replacing clasts or phenocrysts, py and arspy on fractures
226.5	246.9	VN	0.5	VN	0.1		0	Apy	VN	0.1	Mrc	FP	0.1				Veinlets of py, with one 15mm vein of sph>py>arspy @ 239.8m depth. Marcasite on fractures
246.9	267	DI	0.1	BB	1		0	Dbs	DEN	4	Grnt	SUBH	0.5				Strong DBS with some sphal, py on fractures, some ratty garnets

Blackwater Project
Drill Summary - Mineralization

BW0450		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
267	319	DI	0.5	DI	0.1	BB	0.5	Apy	SUBH	0.1	Dbs	DEN	1	Mrc	FP	0.1	Blebby po, with minor py, trace arspy and sphal, Weak DBS, some marcasite on fractures
319	363	DI	0.1		0	DI	0.1	Dbs	SP	0.5							Major drop off of sulphides, trace py, po and minor spots of DBS.

Blackwater Project
Drill Summary - Structure

BW0450

From (m)	To (m)	Structure	Strength	Comments
69.1	127.5	JZ	2	Weak jointing at 30dtca throughout with strong jointing at 40dtca just below 78m.
127.5	141	JZ	2	Weak jointing throughout at ~20dtca. Rubble sections and sections of competent core common.
141	143.1	FZ	3	Moderate small fault. Bottom contact sharp at 40dtca. Annealed section at top, followed by sandy gouge plus rubble.
143.1	153.4	BRKZ	3	Moderately broken, possibly minor jointing at 20dtca.
153.4	154.2	FL	4	Sandy clay fault gouge with some small milled fragments, annealed. B ottom contact sharp at 60dtca.
154.2	162	JZ	1	Competent core with minor jointing at 30dtca.
162	167	BRKZ	4	Strong broken zone with rubble and clay gge
167	176	BRKZ	3	Moderate broken zone, with longer intervals of competent rock, but still local rubble and clay gge
176	185.8	JZ	2	Weak joint zone, mostly high angle fractures - 65-80 degrees TCA
185.8	197	BRKZ	3	Moderate broken zone, with shards and rubble, and rough fracture planes
197	219	FZ	4	Broken to faulted zone with increasingly broken rock and rubble and localized clay gge
219	224	JZ	2	Jointed core, fractures are 45-60dtca
224	267	BRKZ	3	Moderate broken zone, with intervals of rubble and minor clay gge
267	363	BRKZ	1	Weakly broken zone, regular intervals of rubble and rough fractures throughout

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Blackwater Project
Drill Logs

Hole ID:	BW0451	Tenure #:	515810	Hole Diameter:	HQ	Easting:	376001.5
Depth (m):	373	Date Started:	08/05/2012	Casing Size:	HWT	Northing:	5892849.94
Azimuth:	0	Date Completed:	17/05/2012	Casing (m):	75	Elevation (m):	1571
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
100	321.4	-89.7
150	153.6	-89.5
200	111.9	-89.4
256	171	-89.5
301	93.1	-89.6
352	144.1	-89.3
373	114.4	-89.1

Blackwater Project
Drill Summary - Lithology

BW0451

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	67	OB							Sandy matrix first 42m. Muddy matrix, minimal clasts from 42-67m
67	71.5	OB							As above
71.5	107.5	FT	frctz		L	GRY	FLT	GR30	Bleached light grey with medium grey silica bands. Dark red-brown along fx planes = str lim + hem + goeth +/- jarosite?
107.5	119.5	FT	lam		M	GRY	UNKN		Str sil +/- ser alt. Laminated bands of silica with flaky text of ser. Local brecciation of sulphide clasts
119.5	158.6	FT	lam		M	GRY	ALTFR	GR5	Medium-light greenish grey. Silica alteration has given unit laminated appearance. Sulphide breccia clasts (possibly relict) have laminae wrapping around clasts. Within zone of strong silica-clay alteration
158.6	168	FT	bx		M	GRY	FLT	GR10	Dark greenish grey to light grey (alteration differences) of brecciated FT, weakly laminated. Dark grey breccia clasts are sphal-py rich.
168	175.6	FT	fltbx		M	GRY	FLT	GR10	Strongly faulted, gouge rich with silica-sericite altered fault breccia clasts. Faulted gouge zone from 175.6-176
175.6	185.3	VC	ms	LAP	M	GRY	FLT	GR30	Matrix-supported mafic-dom polymictic VC unit. Bleached clasts have serraded edges. Clasts up to 5 cm in size. Alignment of clasts from 180.70-181m
185.3	187	AND	por		D	GRY	UNKN		Plag-phyric hornfelsed andesite unit. Plag phenos have been altered to clay and appear dark. Not much lighter in colour then groundmass of volcanic
187	188.1	AND	por		D	GRY	FLT	SH	As above
188.1	209.4	AND	frctz		D	GRY	FLT	GR10	Strongly fractured, gouge-rich. Wk porphyritic texture of cruddy plag phenos. Hornfelsed and faulted
209.4	248.6	AND	volc	LAP	M	GRY	ALTFR	SH	Interval of medium-dark grey primarily volcaniclastic texture. Clasts up to block-size of amyg-rich andesite (po replacing calcite in amyg?).
248.6	262.5	VC	ms	LAP	M	GRY	ALTFR	GR30+	Gradation into green-grey more clastic unit with occasional foreign quartz fragments (252-253m). Weak layering/stratification from 252-254.5 m at approximately 50 dTCA
262.5	373	AND	por	BLOCK	M	GRY			Andesitic flows with patchy hydrobreccia.

Blackwater Project
Drill Summary - Alteration

BW0451		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
71.5	103.8	T		0	PERV	5	PERV	4	PATC	2	LIM	FC	4	HM	FC	2	Strong clay + lim + hem on fx and following laminae. Silica is pervasive and dominates banding between light grey silica and medium grey silica
103.8	119.5	T		0	PERV	3	PERV	4	PATC	3	LIM	FC	2	CLY	SPHL	1	Str sil +/- ser (patchy) has pervasively altered originally clay altered FT unit (appears clast-like and brecciated from silica event). Yellow clay/sulphate at 119.4m may be jarosite surrounding pyrite crystals. 116m - alteration product 10cm oxidation related cuts laminated bands of silica. Ragged contact.
119.5	151.6	T		0	PERV	5	PERV	4	PATC	3	LIM	FC	1	CLY	SPHL	2	Haloes around sulphides are bleached white (mix of clay and silica). Patchy sericite alteration in breccia clasts. Silica alteration is pervasive over clay
151.6	158.8	S		0	PERV	4	PERV	4	PATC	3							Out of oxidation along fx zone. Clay still prominent and enriched within unit
158.8	168.8	S	FR	1	FC	3	PERV	4	PATC	4							Perv sil-sericite alteration giving the unit a greenish tinge to overall grey colour
168.8	176.5	S	FR	3	FC	4	PERV	4	PATC	3							Strongly silicified blocks of FT & VC within clay-chl gouge-rich fault bx
176.5	185.5	S	FR	4	REP	2	MTRX	3	CLST	3	SER	CLST	2	SIL	CLST	3	Silica clasts/crystals? within medium grey silica-sericite altered matrix. Clasts are beige and up to 10 cm in size and have been sericite altered
185.5	209	S	FR	4	FC	4	MTRX	3	CLST	2							Strong clay-chlorite alteration prevalent in faulted interval
209	222.4	S	FR	2	FC	2	AMYG	2	CLST	2	SIL	VN	1				Weakly altered. Silica veinlets within interval (hard, no rxn to HCl). Amygdules are composed of silica
222.4	232.1	S	FR	2	FC	3	MTRX	2	CLST	3	SIL	MTRX	2	CAL	VN	2	Silica amygdules. Appearance of calcite veinlets within interval. Clasts are soft = sericite, matrix is hard = silica
232.1	233.7	S	FR	5	FC	2	MTRX	1	CLST	3	CAL	FC	4				Euhedral calcite crystals within sheared interval of chlorite-clay-pyrite alteration
233.7	240.8	S	FR	2	FC	3	MTRX	2	CLST	3	CAL	VN	2				Weakly altered with minor calcite veinlets
240.8	241.5	S	FR	2	FC	4	MTRX	2	CLST	3	CAL	FC	4				Calcite-chlorite rich interval affected by fault structure
241.5	245.5	S	FR	3	FC	2	MTRX	2	CLST	3	CAL	FC	3	CAL	VN	2	Calcite, strong rxn to HCl on fx planes, possibly running through rock between sericite altered andesitic clasts

Blackwater Project
Drill Summary - Alteration

BW0451		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
245.5	245.8	S	FR	5	FC	2	MTRX	2	CLST	3	CAL	FC	2				Calcite veinlets and along fx planes. Sericite altered clasts with wk silica matrix
245.8	248.7	S	FR	1	FC	2	MTRX	2	CLST	3	CAL	VN	2				Weakly altered zone with calcite veinlets and calcite-clay on fracture planes. Minor chlorite
248.7	265	S	FR	3	FC	2	MTRX	3	CLST	3	CAL	VN	2	CAL	FC	3	Greenish bleached zones affected by calcite veinlets bleeding into surrounding VC unit. More intensely calcite altered in these zones
265	276	S		0	FC	3	MTRX	2	CLST	3	CAL	VN	4				Strong clay halos around calcite veins.
276	303	S	FR	1	PERV	1	MTRX	2	PERV	3	CAL	VN	2				Moderate pervasisve sericite alteration.
303	332	S	PATC	3	FC	2	MTRX	2	PERV	3	CAL	VN	2				Increaseing Chlorite and clay alteration.
332	373	S		0	VNHL	1	MTRX	2	PERV	3	CAL	VN	1				decresing hydrobreccia intensity.

Blackwater Project
Drill Summary - Mineralization

BW0451		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
71.5	107.5	FG	0.5		0		0	Goe	FC	2	Hm	FC	1	Jaro	FC	0.1	Black-orange goet-hem fx controlled. Black specks of goethite visible on core at 81.80m. Fine grained pyrite darkens brecciated silica clasts.
107.5	119.5	FG	1.5	DI	1	BB	0.1	Dbs	VN	1	Goe	FC	0.5	Sp	CR	0.5	Strong black sphalerite mineralization as disseminated blebs scattered through core and as clast haloes surrounding silica-pyrite rich clasts. Blackjack sphal
119.5	140.5	FG	0.5	BB	0.5	BB	0.1	Dbs	DEN	3	Goe	FP	0.5				DBS throughout interval. Lumped together as brecciated segments within silica-laminae altered zone. Silica-clay haloes surround fine grained pyrite within silica cores possibly infilling vugs of some sort. Blackjack sphal.
140.5	158.8	FG	1	BB	0.5	BB	0.1	Dbs	DEN	1	Goe	FP	0.1				Decrease in DBS within interval. Still well mineralized. Clay still prevalent, but oxide has disappeared
158.8	168.8	FG	1	BB	0.5	BB	0.1	Py	GOU	1	Dbs	DEN	0.5				Red sphal within interval
168.8	176.5	GOU	1.5	BB	0.5	BB	0.1	Ga	GOU	0.1							Reddish sphal within clasts of flt bx. Strong py within gouge. Galena seam at 173.8m
176.5	185.8	FG	1	BB	0.1	BB	0.5	Py	FP	0.5	Py	GOU	1				Pyrite fine-grained. Mostrly clast-replacement style mineralization
185.8	192.4	FP	0.5	BB	0.1	BB	0.5	Py	GOU	0.1							Trace pyrite within gouge. Weakly mineralized
192.4	209	GOU	0.5	BB	0.1	CR	1	Py	VN	0.1							Trace pyrite veinlets and increased pyrite within gouge.
209	222.4	FP	0.1	BB	0.1	CR	1	Apy	SP	0.1							Trace speck of arsenopyrite seen at 221m. Pyrite restricted to fracture planes.
222.4	232.1	FP	0.1	BB	0.1	CR	1	Po	AMYG	0.1							Trace po amygdules
232.1	233.8	EU	0.5	BB	0.1	CR	1	Po	FP	0.1							Euhedral pyrite on fx planes with po
233.8	248.6	FP	0.5	CR	0.1	CR	1	Po	AMYG	0.5	Py	VN	0.1	Apy	SP	0.1	Po amyg replacement. Po clast replacement and trace pyrite veins within interval
248.6	263	FP	0.1	CR	0.5	CR	1	Apy	SP	0.1							Po = complete clast replacement. Minor py on fx planes
263	285		0		0	BB	0.5										Po in blebs and filling amgdules

Blackwater Project
Drill Summary - Mineralization

BW0451		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
285	301	VN	0.5		0	VN	0.5	Po	BB	1							Po in blebs and filling amgdules, mix of Po and Py in veins up to 2cm along joints.
301	322		0		0	BB	0.5										Po in blebs and filling amgdules
322	345		0		0	BB	0.5										Po in blebs and filling amgdules
345	373		0		0	BB	0.5	Mag		0.1							Po in blebs and filling amgdules, magnitite?

Blackwater Project
Drill Summary - Structure

BW0451

From (m)	To (m)	Structure	Strength	Comments
71.5	79.5	FZ	4	Coating of goet-hem along fx planes ranges from 40-60 dTCA. Influenced by meteoric water
79.5	84	JZ	3	Strongly jointed. Dom angle of 15 dTCA. Gougy sections at about 60 dTCA
84	84.6	FZ	4	Strongly fractured. Clay altered. Gougy
84.6	89.65	JZ	3	Joints from 50-60 dTCA as well as 20 dTCA. Coated with goeth-hem
89.65	91.7	BZ	3	Lower contact at 50 DTCA. Gougy, strongly fractured. Fault bx
91.7	94	JZ	4	Joints follow laminae @ 50 dTCA, secondary joints at 30 dTCA
94	98.5	FZ	4	Lower contact @ 30 dTCA. Fault bx through most of interval. Lim-goet alt with possible jarosite
98.5	104	JZ	4	Joints between 20 & 30 dTCA. Goet-hem along fx plane
104	110.5	JZ	3	Joints from 40-50 dTCA, coated with clay-hem-goet
110.5	111	FZ	5	Sharp upper contact @ 30 dTCA, brecciated lower contact. Fault bx from 110.8-111m
111	119.5	JZ	2	Weakly jointed (strongly silicified). Joints follow laminae. Dominant joint set at 40 dTCA
119.5	148.6	JZ	2	Joints dominantly 30-30 dTCA. Second set also at 50 dTCA. FeOx visible along fx planes
148.6	165.9	JZ	4	Strong joint set from 30-40 dTCA. Clay along fx planes. Minor gouge from ~154-155m & from 162.5-162.7m
165.9	168.8	BRKZ	4	Strongly fractured. Minimal gouge within interval. Chlorite +/- pyrite vis on fx planes
168.8	176.5	FZ	4	Possible lower contact? @ 176.2m. Fault bx within interval with pyrite gouge
176.5	181.5	JZ	3	Joints 20-30 dTCA consisting of chlorite and minor clay on fx planes. Additional set at about 50 dTCA
181.5	182.2	FL	4	Chlorite slicks on fx plane with py.
182.2	185.2	JZ	4	Chlorite-pyrite on fx planes
185.2	185.3	FL	4	Gougy. Sharp lower contact @ 70 dTCA
185.3	188.2	JZ	3	Clay coated fracs with minor chlorite
188.2	190.8	FL	4	Sharp upper contact @ 40 dTCA
190.8	196.1	JZ	3	Joint set approximately parallel TCA, Clay with chlorite along fx. Wk second set of fx @ 40 dTCA
196.1	197.6	JZ	3	Upper contact @ 50 dTCA, minor gouge. Joints prominently @ 50 dTCA
197.6	200.7	FZ	4	Gouge-rich interval. Upper contact sharp @ 20 dTCA
200.7	203.6	JZ	4	Joints @ 10, 30 and 50 dTCA, chlorite-clay coated fx planes
203.6	208.7	FZ	5	Sharp upper contact @ 30 dTCA. Lower contact has slickensides on 40 dTCA fx plane (contact?)
208.7	232.1	JZ	2	Primary joint set from 40-60 dTCA. Secondary joint set at approx 20 dTCA
232.1	233.8	SZ	4	Joints 20-30 & 80 dTCA. Increased calcite within interval, pyrite and chlorite-rich

Blackwater Project
Drill Summary - Structure

BW0451

From (m)	To (m)	Structure	Strength	Comments
233.8	239.8	JZ	1	Very weakly jointed. Blocky. 30-40 dTCA joints.
239.8	240.5	JZ	3	Calcite-pyrite-chlorite increased along fx planes within interval
240.5	240.8	JZ	3	Joints from 20-30 dTCA
240.8	241.5	SZ	3	Shear zone with calcite-chlorite and pyrite more intense then above and below
241.5	266	JZ	3	joints @ 55, 70, 80
266	268	FL	3	30% fault gouge, clasts are angular to milled.
268	305	JZ	1	joints @ 30, 60, 75
305	373	JZ	1	Joints @ 30 and 75.

Blackwater Project
Drill Logs

Hole ID:	BW0452	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375801.98
Depth (m):	382	Date Started:	09/05/2012	Casing Size:	HWT	Northing:	5893050.52
Azimuth:	0	Date Completed:	16/05/2012	Casing (m):	10	Elevation (m):	1558
Dip:	-90	Logged By:	BBo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
30	289.2	-88.5
106	267	-88.1
154	270.3	-88
200	263	-88
300	275.7	-88.4
350	277.4	-88.1

Blackwater Project
Drill Summary - Lithology

BW0452

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	16.9	OB							Overburden contact is rubbled somewhat and looks to be starting at approx. 16.9 metres.
16.9	141.1	FT	flwbnd	FA	P	OR	OXFR	GR30	Pale yellow brown, oxidized, limonite rich altered felsic laminated to banded felsic tuff.
141.1	193	FT	flwbnd	FA	P	GRY	OXFR	GR30	Light pale grey to pale green coloured, silica sericite+/- clay altered banded to laminated felsic tuff.
193	211	FLPT	lpt	LAP	L	GRY	ALTFR	GR30	Light yellow-green to pale greenish grey coloured, silica-sericite+/-clay altered felsic lapilli tuff...silica alteration is textute destructive often mottled in textute.
211	242.5	FLPT	lpt	LAP	P	GRY	ALTFR	GR30	Pale greenish -grey coloured, silica-sericite-chlorite altered felsic lapilli tuff...silicification is texture destructive and results in a mottled textural appearance.
242.5	243	FLPT	fltbx	LAP	P	GRN	ALTFR	GR30	Greenish-grey coloured, silica-sericite-chlorite altered felsic lapilli tuff...silicification is texture destructive to strongly mottled throughout the interval...very broken section.
243	288.7	FT	aph	FA		GRY	FLT	GR30	Pale green to grey-green, silica-sericite+/-chlorite altered felsic tuff...complete texture destructive...local flow banding silica with mottled textures.
288.7	293.7	FT	fltbx	LAP	P	GRN	FLT	GR10	Fault breccia with milled and tectonized matrix...both angular and rounded fragments...matrix is fine to gritty in texture.
293.7	341.4	FT	aph	FA		GRY	FLT	GR30	Pale green to grey-green coloured, silica-sericite-chlorite altered felsic tuff...texture destructive alteration throughout...a number of shaer structures also cut the interval in random areas.
341.4	343	FT	fltbx	LAP	P	GRN	FLT	GR10	Shallow angle to core fault breccia interval...milled and tectonized matrix consisting of clay-silica-sericite matrix material, generally supporting the broken breccia fragments.r
343	347.6	FT	aph	FA	P	GRY	FLT	GR30	Pale greenish-grey coloured, silica-sericite+/-chlorite altered felsic tuff...texture destructive alteration...interval is broken and rubbled.
347.6	356.5	FT	fltbx	LAP	L	BEI	FLT	GR10	Strong fault breccia interval cutting the core at approx. 40 degrees TCA...abundant clay-sericite-silica sandy matrix supporting a subangular to subrounded silica-sericite fragments.
356.5	371.5	FT	aph	FA	P	GRY	FLT	GR10	Strong silica altered felsic tuff interval...very texture destructive alteration.
371.5	376	FT	fltbx	FA		GRY	FLT	GR10	Strong fault breccia zone interval...clay-sericite-chlorite matrix with chloritized/sericite/silica altered milled and tectonized fragments...subangular to subrounded...dominant shear orientation is 30 degrees TCA.

Blackwater Project
Drill Summary - Lithology

BW0452

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
376	382	FT	aph	FA	P	GRY			Pale greyish-green coloured, silica-sericite+/-chlorite altered felsic tuff..complete texture destructive alteration.

Blackwater Project
Drill Summary - Alteration

BW0452		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
16.9	97.25	O		0	REP	3	PERV	3	PERV	1	LIM	REP	3				Alteration consists of strong oxidation throughout, original pervasive silica, clay replacement due to oxidation weathering.
97.25	119.5	T		0	REP	1	PERV	3	PERV	2	LIM	REP	2				Alteration is similar to previos, howevr, oxidation is now in transition and patchy areas of non-limonite exist with pyrite and dbs...patchy areas of sericite alteration is now present.
119.5	131.2	T		0	REP	2	PERV	3	PERV	1	LIM	PERV	3				Alteration through this interval is modweate oxitaion throughout with clay and limonite replacement, however, sulphides still occur in areas of this interval.
131.2	141.1	T		0	PERV	2	PERV	2	PERV	2							Alteration through this interval is weak to moderate pervasive silica-sericite-clay alteration throughout.
141.1	193	S		0	PERV	1	PERV	3	PERV	2							Alteration consists of weak to moderate pervasive silica-sericite+/-clay alteration overprint.
193	211	S		0	PERV	3	PERV	2	PERV	2							Dominant alteration overprint is weak to moderate pervasive siilica-sericite-clay alteration.
211	239.5	S	FC	1	DEF	1	PERV	3	PERV	2							Dominant alteration overprint is pervasive silica-seticite overprint with weak fracture controlled chlorite and associated clay alteration in shear related structures and deformation.
239.5	244	S	FC	2	DEF	2	PERV	3	PERV	2							Dominant alteration in this interval is pervasive silica-sericite and chlorite-clay alteration related to structure/deformation and shearing.
244	288.7	S	FC	1		0	PERV	4	PERV	3							This interval has a moderate to strong pervasive silica alteration with accessory sericite and chlorite alteration.
288.7	293.7	S	FC	1	DEF	1	PERV	3	PERV	3							This interval has a similar alteration style as the previous, however, this interval contains a fault breccia section and has more sericite and associated clay material from the structural deformation.
293.7	341.5	S	FC	2	DEF	1	PERV	3	PERV	3							Alteration through this interval consists of pervasive silica-sericite and fracture controlled chlorite.

Blackwater Project
Drill Summary - Alteration

BW0452		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
341.5	343	S	DEF	1	DEF	3	PERV	2	DEF	3							Alteration through this fault breccia zone consists of sericite-clay+/-chlorite alteration due to deformation and hydrothermal alteration...silica is present as the primary alteration.
343	347.6	S	FC	2		0	PERV	3	PERV	2							Alteration consists of moderate to strong pervasive silica-sericite-chlorite alteration overprint...texture destructive alteration.
347.6	356.5	S		0	DEF	3	PERV	3	DEF	3							This interval has deformation related clay-sericite alteration overprint and previous silica altered material...strong fault breccia.
356.5	371.5	S		0		0	PERV	4	PERV	1							Alteration is a strong pervasive silica and lesser sericite alteration overprint.
371.5	376	S	DEF	2	DEF	3	PERV	2	DEF	3							Alteration consists of deformation relatered clay-sericite-chlorite alteration overprint.
376	382	S	FC	1		0	PERV	3	PERV	2							This interval consists of moderate pervasive sericite-silica-chlorite alteration.

Blackwater Project
Drill Summary - Mineralization

BW0452		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16.9	97.25		0		0		0	Goe	GmR	5	Jaro	FC	15				Goethite and limonite are the dominant oxide minerals present through this oxide zone interval.
97.25	119.3	BB	2		0		0	Dbs	DEN	1	Mrc	FG	0.3				Sulphides occur as blebs, disseminations, dendritic mico-fracture fills or dendritic veinlets...sulphides types include pyrite, marcasite and dbs...total sulphides are 3 to 4%.
119.3	131.2	DI	0.2	DI	0.1		0	Goe	FC	5	Jaro	FC	15				This interval has a weak to moderate oxidation throughout with limonite and jarocite forming in the fractures/micro-fractures.
131.2	141.1	DI	2	DI	1		0	Dbs	DEN	0.5							This interval contained moderate sulphides as coarse blebs, disseminations, fine dendritic mocro-veinlets and fine fracture fills...total sulphides approx. 3 - 4% py/sph/dbs.
141.1	163	BB	2	BB	1.5	DI	0.3	Dbs	FG	0.8	Ga	DI	0.3				This interval is similar to the previous, however, this interval has more large blebby sections present.
163	193	BB	2	DI	2.5	DI	0.3	Dbs	FG	0.8							This interval has more abundant sulphides that previous with a few areas of coarse massive sulphides infills...these infills are yypically dark black sphalerite with lesser pyrite and dbs.
193	211	BB	2	DI	2.5	DI	0.2	Dbs	DEN	0.7	Ga	SP	0.2				This interval has moderate to strong sulphides as disseminations, blebs and dendritic micro-veinlet infills...sulphide types include py/sph/dbs and lesser pyrrhotite & galena.
211	242.5	DI	2	DI	2.5	DI	0.6	Dbs	DEN	0.4	Ga	SP	0.2				This interval has similar sulphide textures and mineralization types as previous comments, however, sulphides are slightly more abundant and finer grained.
242.5	288.7	BB	1.5	DI	2.5	DI	1.5	Dbs	DEN	0.4	Ga	SP	0.2				This interval contains abundant sulphides as blebs, disseminations, fine fracture fillings and specks...total sulphides 4 - 6% (sph/py/po/dbs and lesser galena).

Blackwater Project
Drill Summary - Mineralization

BW0452		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
288.7	293.7	BB	2	DI	2	DI	1	Dbs	INFILL	1							Fault breccia with abundant milled and disseminated sulphides with occasional sulphide veinlets cutting the interval.
293.7	341.5	DI	2	DI	2.5	DI	0.8	Dbs	INFILL	0.5	Ga	SP	0.2				This interval has moderate to strong sulphides occuring as blebs, veinlets, disseminations and fine fracture fills...total sulphides 3 to 5 % (py/sph/dbs with lesser po/galena/asp.
341.5	343	DI	0.3	DI	0.2		0	Dbs	INFILL	0.1							This fault breccia is weakly mineralized...total sulphides approx. 0.5 - 0.6%
343	347.6	DI	0.5	DI	0.4		0										This interval has weak pyrite-sphalerite mineralization...total sulphides approx. 0.5 to 1.0%.
347.6	356.5	DI	1	DI	0.8		0										This fault breccia interval has weak disseminated sulphides...total sulphides approx. 1 - 2%.
356.5	371.5	DI	1	DI	1		0	Dbs	DEN	0.3							This interval has weak disseminated sulphides...total sulphides 1 - 3% py/sph and trace dbs.
371.5	376	DI	0.5	DI	0.5		0										This fault breccia interval has weak disseminated pyrite & sphalerite...total nsulphides approx. 0.5 - 1.0%.
376	382	DI	0.8	DI	0.8		0										This interval has weak disseminated pyrite and sphalerite...total sulphides approx. 1 - 2%.

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Blackwater Project
Drill Summary - Structure

BW0452

From (m)	To (m)	Structure	Strength	Comments
16.9	22.3	BRKZ	2	Dominant joint set 35 degrees TCA.
22.3	43.6	JZ	2	Dominant joint set is 40 degrees TCA.
43.6	44.6	FL	2	Clay/limonite altered fault at 25 degrees TCA.
44.6	50	JZ	3	Dominant joint set is 45 degrees TCA.
50	51.5	SZ	4	Dominant shear zone orientation is 20 degrees TCA
51.5	70.7	JZ	2	Dominant joint set is 30 degrees TCA.
70.7	72.8	BRKZ	3	Dominant joint set is 25 degrees TCA.
72.8	73.1	FL	2	Small fault breccia cutting the interval at 40 degrees TCA.
73.1	80.5	JZ	4	Dominant joint set is 30 degrees TCA.
80.5	89.3	JZ	3	Dominant joint orientation is 60 degrees TCA.
89.3	92.6	JZ	4	Dominant joint sets are 25 & 50 degrees TCA.
92.6	119.9	JZ	2	Dominant joint sets are 30 & 45 degrees TCA.
119.9	120.3	BRKZ	2	Dominant joint set is 30 degrees TCA.
120.3	128.7	JZ	2	Dominant joint sets are 20 & 40 degrees TCA.
128.7	149.9	JZ	1	Dominant joint set is 45 degrees TCA.
149.9	157	JZ	3	Dominant joint sets are 30 & 45 degrees TCA.
157	162.5	JZ	4	Dominant joint set is 35 degrees TCA.
162.5	169.3	BRKZ	3	Dominant joint set is 10 degrees TCA.
169.3	181	JZ	3	Dominant joint sets are 25 & 40 degrees TCA.
181	187	JZ	2	Dominant joint sets are 35 & 55 degrees TCA.
187	188.6	JZ	4	Dominant joint sets are 10 & 50 degrees TCA.
188.6	199.2	JZ	3	Dominant joint sets are 15 & 40 degrees TCA.
199.2	203.6	JZ	4	Dominant joint sets are 10 & 40 degrees TCA.
203.6	206.5	JZ	2	Dominant joint set is 20 degrees TCA.
206.5	215.5	JZ	3	Dominant joint sets are 20 & 40 degrees TCA.
215.5	217.1	JZ	4	Dominant joint sets are 20 & 60 degrees TCA.
217.1	239.4	JZ	3	Dominant joint sets are 30 & 40 degrees TCA.
239.4	243	BRKZ	3	Dominant joint set is 20 degrees TCA.

Blackwater Project
Drill Summary - Structure

BW0452

From (m)	To (m)	Structure	Strength	Comments
243	250	JZ	3	Dominant joint sets are 20 & 30 degrees TCA.
250	251	BRKZ	4	Dominant joint set is 20 degrees TCA.
251	262	JZ	3	Dominant joint set is 20 degrees TCA.
262	268.3	JZ	4	Dominant joint set is 25 degrees TCA.
268.3	279.5	JZ	3	Dominant joint set is 35 degrees TCA.
279.5	288.4	JZ	2	Dominant joint sets are 20 & 30 degrees TCA.
288.4	293.7	FZ	4	Dominant shear orientation is 45 degrees TCA.
293.7	299.5	BZ	3	Dominant joints are 10 degrees TCA.
299.5	309	JZ	3	Dominant joint sets are 10 & 40 degrees TCA.
309	325	JZ	2	Dominant joint sets are 20 & 40 degrees TCA.
325	328	BD	2	Dominant joint set is 20 degrees TCA.
328	340.7	JZ	4	Dominant joint sets are 30 & 50 degrees TCA.
340.7	347.5	JZ	4	Dominant joint sets are 25 & 50 degrees TCA.
347.5	356.5	FZ	4	Dominant fault shear orientation is 40 degrees TCA.
356.5	364.2	JZ	3	Dominant joint set is 50 degrees TCA.
364.2	378.5	BRKZ	3	Dominant fracture set and shear orientation is 25 degrees TCA.
378.5	382	JZ	4	Dominant joint sets are 15 & 55 degrees TCA.

Blackwater Project
Drill Logs

Hole ID:	BW0453	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375401.77
Depth (m):	398.91	Date Started:	09/05/2012	Casing Size:	HWT	Northing:	5893049.42
Azimuth:	0	Date Completed:	15/05/2012	Casing (m):	3.05	Elevation (m):	1590
Dip:	-90	Logged By:	CCu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.02	289.6	-89.4
91.74	11.7	-89.9
137.5	300.8	-89.9
183.2	118.8	-89.7
228.9	248.6	-89.5
274.3	250.4	-89.5
320.3	90.8	-89.2
366.1	241.2	-89.1
398.1	222.2	-89

Blackwater Project
Drill Summary - Lithology

BW0453

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3.5	OB							
3.5	13.5	FLPT	mon	LAP	L	BEI	DEP	GR10	some local laminated matrix, clast rich. Close to clast supported in places.
13.5	24.6	VC	plm	LAP	MO	GRY	DEP	GR10	lots of mafics in VC. Clasts more rounded than litho above. Medium grey mottled with dark grey
24.6	29.2	VC	lpt	LAP	L	GRY	DEP	GR10	FLPT end of VC spectrum, similar looking as above FLPT, with rare large mafic clast. Clasts=mtx, light grey
29.2	33.1	FLPT	mon	LAP	L	GRY	DEP	GR10	Some laminated clasts, poorly sorted, similar as above with no mafics
33.1	36.5	VC	plm	LAP	MO	GRY	DEP	GR10	mottled light/dark grey unit, clast supported
36.5	43.5	VC	ms	LAP	D	GRY	DEP	GR10	mostly mafic clasts with rare felsic clast. Clasts are sub-rounded. Very dark rock.
43.5	53.7	VC	plm	LAP	MO	GRY	FLT	SH	top contact an alt'n front, then a moderate to well sorted VC, very polymictic. Mottled. Clast rich, increasing mafic clast towards bottom
53.7	56.4	VC	fltgge				FLT	SH	a length of gouge obscurring litho
56.4	124.4	VC	ms	BLOCK	M	GRN	DEP	GR10	mafic rich, quite poorly sorted. Upper contact a significant fault. Increasing frequency of block-sized plagopheric andesite clasts
124.4	134.6	VC	plm	BLOCK	M	GRY	DEP	GR30+	more clast-rich than above, with large clasts being polymictic- some mafic clasts as well as some large laminated felsics. Sub-angular to angular clasts, although mafic clasts seem a bit more rounded. Clast rich-becoming clast supported toawrds botto
134.6	139	VC	plm	BLOCK	M	GRY	DEP	SH	much smaller clasts overall, sharp contact, more matrix rich, occaisional clast up to block size
139	153.4	VC	plm	BLOCK	D	GRY	DEP	GR5	clast sizes have become larger agian, smiliar as VC from 124-134. Maybe a bit more mafic dominant than above units.
153.4	174	FLPT	mon	LAP	L	GRN	FLT	GR30	quick contact into FLPT with a laminated matrix, local zones may be more FT(?). Small clast sizes, locally brecciated. Pale blue-green colour. Moving to more of a light grey later.
174	398.9	VC	lam		L	GRY			perhaps some local zones of FLPT, but mostly laminated, with alteration obscurring textures. Light grey with a slight green tinge; increasing small-scale brecciation towards end

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Blackwater Project
Drill Summary - Alteration

BW0453		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.5	13.5	T	PATC	1	MTRX	3	MTRX	4	PERV	1	HM	FR	4	CLY	FC	2	quite hard and glossy with a silica overprint. Clay rich in matrix and a bit on fractures
13.5	21.1	T	CLST	2	FC	2	MTRX	3	PERV	3	HM	FR	3	CHL	PATC	1	sil with ser in matrix, yellow clay seen rimming some clasts. Increasing perv silica towards bottom of unit
21.1	33.3	T	CLST	2	FC	2	MTRX	4	PERV	2	HM	FR	3	CLY	CLST	1	increased silica, with patches of intense pervasive sil
33.3	43	T	PATC	2	INFILL	1	MTRX	4	PERV	2	HM	FR	2	SIL	OP	3	Some clay infilling small gaps between clasts, weakening hemitite
43	51.6	T	CLST	1	CLST	2	MTRX	4	PATC	3	HM	FR	2	CLY	CLST	1	similar as above, a bit more clay
51.6	59.9	S	FC	4	FC	2	MTRX	2	FC	3	SER	PERV	2	CHL	CLST	2	out of trans zone, gouge with quite a bit of chl-ser, some yellowish clay
59.9	70	S	PATC	2	CLST	3	PERV	3	PATC	3	CHL	CLST	3	CHL	FR	2	quite patchy, modest alt'n of all kinds
70	110	S	PERV	4	FC	2	PATC	2	PATC	3	CHL	CLST	4	CHL	FR	3	medium-dark chl pervasive in most places, as well as on fracture planes and gouge. Patchy ser-sil, with sil not as much as before. Many block-sized andesite clasts are pervasively chl altered
110	125	S	PATC	3	FC	1	PERV	2	PERV	3	SER	FR	2	CHL	FR	3	moderate all around alt'n, sometimes heavy chl on fracture planes, and occaisionally a yellowish clay on fracture planes
125	153.5	S	CLST	2	FC	1	MTRX	2	PERV	4	CHL	FR	5	SIL	OP	2	chl becoming very intense on fractures towards end of interval
153.5	167	S	PERV	3	CLST	1	PATC	3	PERV	3	CHL	FR	3	SIL	OP	4	into more felsic unit with patchy silica flooding, moderate pale-blue green ser-chl throughout too
167	188	S	FC	2	FC	1	PERV	5	PERV	1	SER	FC	2	CHL	PATC	1	becoming very sil flooded, brittle fracturing and glossy core
188	210.5	S	FR	1	FC	1	PERV	5	PATC	1	SIL	OP	5				almost exclusively silica alt'n.
210.5	262	S	FC	3	FC	3	PERV	4	FC	3	CHL	FR	2				fault breccia where gouge is quite a bit of ser-chl-cly
262	354	S	PATC	2	MTRX	2	PERV	5	MTRX	3	CHL	MTRX	1	CHL	FR	3	very hard, sil altered rock with intense sil OP. Patchy moderate to dark green chl, with some sil-ser-cly in matrix, giving a "washed" pale green colour
354	398.9	S	MTRX	2	FC	2	PERV	4	PERV	2	CHL	CLST	3	CHL	FR	1	Pale light green rock with moderate chl-ser alt'n with silica

Blackwater Project
Drill Summary - Mineralization

BW0453		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3.5	15		0		0		0										no sulphides
15	25		0	CR	0.1	SP	0.1										Po mostly with mafic clasts
25	33		0		0		0	Dbs	DEN	0.1							no sulphides. Appears that most DBS has been oxidized out
33	40		0	CR	0.1	BB	0.1										Po in mafics, little blebs
40	44.7		0	CR	1		0.1										sph replacing edges of mafic clasts
44.7	53.7		0	CR	1	CR	1										Frequent Sph-Po replacing clasts in this VC unit
53.7	68	FP	0.5	CR	0.5	CR	0.5										Bright Py on some FP's, SPh replacing some clasts quite well.
68	77		0	CR	0.1		0										only a trace of sph seen partially replacing a clast.
77	82.5	FP	0.1	CR	0.1	BB	0.1										trace of sulphides
82.5	90	VN	0.1	CR	0.5	CR	0.5										spotty sulphides. Sph-Po clast replacement in some places, Py seen in one vnlt with sph
90	100	FP	0.1	CR	0.5	CR	0.5										similar as above, Py on fracture planes
100	108	FP	0.1	CR	0.5	CR	0.5										As above, perhaps higher grade sph locally
108	117.8	DI	0.5	CR	1	SP	0.1										minerals picking up
117.8	126	FP	0.5	DI	1	BB	0.1	Py	DI	0.5	Sp	CR	0.5				Average about 2 % overall sulphides
126	135	FP	0.5	CR	2		0	Py	DI	0.5	Sp	DI	0.5				some py disseminated with sph.
135	144	FP	0.5	CR	2	BB	0.1	Py	DI	0.5	Sp	DI	0.5	Mrc	FP	0.1	trace Po with Sph. Possible mrc? on fracture planes
144	154	FP	0.5	CR	3	CR	0.5	Py	DI	0.5							quite good grade sph. Po sometiemes with sph+/-py, sometimes by itself
154	161	DI	1	DI	2	SP	0.5	Dbs	VN	0.5	Py	VN	0.5	Sp	VN	0.5	Po specks near end. Patches of higher grade fine grained disseminated sulphides. Some cross-cutting vnlts bearing sph-py. DBS whispy
161	166	DI	1	DI	3	CG	2	Dbs	VN	0.5	Py	VN	0.5				local sph quite high grade, frequent coarse grained Po, Whispy DBS here and there. Sulphide mineralization in high grade patches
166	168.4	DI	0.1	DI	0.5	SP	0.1	Apy	VN	0.1	Py	VN	0.1				zone of relatively weak mineralization. One small aspy bearing vnlt.
168.4	171	FC	2	DI	1	SP	0.1	Py	DI	0.5							some high grade py in a fault breccia zone

Blackwater Project
Drill Summary - Mineralization

BW0453		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
171	179	FC	1	DI	0.5	BB	0.5	Dbs	VN	0.5	Sp	FC	0.5				Py infilling some opened fractures. Some sph with py. Some whispy vnlts towards end of interval
179	190	DI	0.5	DI	0.5	DI	3	Dbs	VN	0.5	Py	VN	0.5	Po	VN	0.5	Po with galena in a fracture coating/vein. Higher grade diss Py towards end of interval.
190	201	DI	0.5	DI	0.5	BB	5	Dbs		1							Mainly Po blebs and well defined DBS in short vnlts
201	210.5	DI	0.5	DI	0.5	BB	5	Dbs		1							As above
210.5	222	FC	0.5	DI	0.5	BB	0.5	Py	FP	0.5	Dbs		1				a bit of py and dark sulphides within gouge material, but not all that significant. 1-2% overall sulphides
222	235	VN	3	DI	1	BB	0.5	Cp	VN	1	Dbs	BB	2	Apy	FP	1	some py vnlts with high grade cpy with it. Blebby and small scale dendritic DBS. Aspy on one fracture coating. Several (10-15) vnlts parallel in a row with high grade Py+/-Cpy @ 55 deg TCA. Fairly equally spaced at 5-10 cm apart
235	245	VN	3	DI	1	BB	0.5	Dbs	DEN	3	Cp	VN	1	Apy	VN	0.5	Py as above, with one thick high grade vein approx 1cm @ 15 deg TCA. DBS in small scale dendritics, Cpy in vnlts, sometimes high grade, sometimes minor component with Py. Aspy seen in one vnlt with cpy
245	264	DI	1	DI	0.5	BB	2	Dbs	DEN	2	Cp	SP	0.1				spotty sulphides, 4-5% overall, Po a significant portion. Speck of CPY seen near end
264	272.5	DI	2	DI	0.5	BB	2	Dbs	DEN	7	Apy	FC	1	Cp	SP	0.1	places with frequent blebs of Po. Patches of very high grade DBS, mostly following laminations. Aspy in fault breccia gouge material with Py. Cpy trace with some DBS
272.5	280	BB	2	DI	1	BB	2	Dbs	BB	7							High grade DBS patches, zones of small blebs, and zones of small scale dendritic vnlts following laminations. Some brassy blebby py, and brighter py on FP's
280	290	BB	2	DI	0.5	BB	1	Cp	BB	1	Dbs	DEN	3	Grnt	BB	1	some brassy, vuggy blebs of Py in places. Po not as common as Py. Blebs of cpy becoming common and a high grade vnlt seen with brassy py and bright yellow cpy. DBS in spotty disseminations and small scale dendritics. Couple of large clusters of tan-b

Blackwater Project
Drill Summary - Mineralization

BW0453		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
290	300	BB	1	DI	0.5	BB	2	Dbs		2	Cp	BB	0.5				Py in some blebs and on fracture planes. More dominant Po than Py now. A couple brief patches of high grade DBS, but mostly spotty. Some cpy blebs with Po seen
300	312	DI	1	DI	0.5	BB	1	Dbs	BB	2	Cp	VN	1	Grnt	VN	0.5	spotty patches of DBS, CPy mostly in one very high grade pair of lensical vnlts, very bright, with caramel brown garnets
312	328	BB	1	BB	0.5	BB	1	Dbs	VN	0.5	Cp	BB	1				sph blebs with some DBS. DBS in well defined short vnlts. CPY coarse grained with Py occaisionally
328	337	BB	0.5	BB	0.5	BB	0.1	Dbs	VN	0.5	Cp	BB	1				significant portion of sulphides here is CPY, in some coarse grained blebby patches
337	346	BB	0.5	BB	0.5	BB	0.5	Dbs	VN	1	Cp	BB	1				as above, with increased DBS and Po. CPY again common in blebs with fine grained PY. Sulphide blebs patchy.
346	352	BB	1	DI	0.5	BB	1	Dbs	VN	1	Cp	BB	0.5				patches of well defined vnlts of DBS. CPY blebs not as frequent as above.
352	361	DI	1	DI	1	BB	0.1										Py+/- sph disseminated locally, and in some shoddy vnlts. Rare bleb of PO
361	372	VN	1	DI	0.5	BB	0.1										sulphide styles as above
372	376	FC	3	DI	0.5		0										high percentage dark sulphide (mosly PY likely) in gouge "goo" in local clay annealed fracturing
376	391	DI	2	DI	0.5	BB	0.1	Dbs	BB	1							Speckled small scale dendritic DBS, spotty, appears to be mostly fine grained py
391	398.9	DI	3	DI	0.5	BB	0.1	Dbs	BB	1	Cp	VN	0.1	Grnt	BB	0.5	Some blebby PY with the DBS. DBS in spotty black speckles, and a few more distinct vnlts. Trace bright CPY seen in a shoddy vnlt. One patch of big tan-brown garnet clusters

Blackwater Project
Drill Summary - Structure

BW0453

From (m)	To (m)	Structure	Strength	Comments
3.5	6	BRKZ	3	rough fractures and broken, likely from meteoric effects
6	37	JZ	5	runs of competant core frequently interupted by heavy jointing, and fairly broken rock. Major joint sets measured at 15-20 deg TCA and around 70-80 deg TCA. Minor set around 40
37	50.6	JZ	2	joint sets at 20-30 deg TCA, and around 60. Fewer jointing than above
50.6	53.7	BRKZ	3	well broken rock, various fracture orientaitons
53.7	56.4	FZ	4	lots of greenish gritty soft gouge. upper contact measured at 40, lower contact less clear but roughly the same
56.4	61	BRKZ	4	short competant run at start, then broken and rubbly, with some minor gouge
61	68.5	JZ	5	may be more of a broken zone, rough jointing, planar set measured at 30 deg TCA
68.5	126.4	BRKZ	3	large interval where rock is quite broken with chl grit frequently on fractures, sometimes some minor chl gouge material. mostly broken/busted core with rough fracturing. various fracture orientations; no dominant set
126.4	157	BRKZ	2	slightly more competant rock, but still frequent fracturing, mostly non-planar rough fracturing with frequent chl-cly grit. Fracture orientations measured at 60 and 25 deg TCA
157	165.2	JZ	4	competant runs of core with planar fracturing, interspaces with small more broken zones
165.2	168.4	BRKZ	4	broken, busted rock, with orientations as above
168.4	175	FZ	2	low intensity fault zone, first a breccia zone with annealed gouge, then broken, then an intensly fractured zone with annealed gouge, quite solid in places.Then rubble
175	179.5	JZ	4	fair sized runs of core, with interspaces very broken stuff. planar fracture measured around 40 deg
179.5	184.7	BRKZ	4	well broken and fairly rubbly
184.7	210.5	JZ	2	quite competant rock with dominant jointing at 40 deg TCA. planar joints. Another set perhaps at around 60
210.5	220.4	BZ	3	fault breccia with a bit of chl-clay gouge, and lots of rubbly, broken rock
220.4	225.9	BRKZ	3	chunky highly fracture rock with various fracture orientations
225.9	234.9	JZ	3	pretty competant jointed core with two dominant planar joint sets at 30 and 60 degTCA
234.9	243.5	BRKZ	2	some rough fractures, but some parallel fracture sets measured at 30-40 deg TCA, another minor set around 55 deg.
243.5	244.2	BZ	2	low intensity fault breccia zone, with sub-rounded rock fragments suspended. unclear contacts
244.2	249.3	BRKZ	2	rough fracturing. fracture set at 45-55 deg TCA
249.3	254.3	JZ	2	competant unit, with very planar jointing, measured at 45 deg TCA
254.3	270.5	JZ	5	will be good runs for some length, then small choppy zones where a fracture sub-parallel TCA comes in and busts core up a little more. planar jointing measured from 25 to 45 deg TCA

Blackwater Project
Drill Summary - Structure

BW0453

From (m)	To (m)	Structure	Strength	Comments
270.5	278.7	BRKZ	2	lots of "sheeted" fracturing at 35 deg TCA, some zones where many fractures in a row spaced at approx 5cm apart, similar orienatation. Also minor jointing at 15 deg tCA.
278.7	290	JZ	3	competant rock, with jointing at 45 and 10 deg TCA
290	307.2	BRKZ	2	moderate broken zone, with zones of more rubble
307.2	316.5	BRKZ	4	rubbly broken rock
316.5	322.5	JZ	5	highly jointed, some rough fracturing, especially at low angles TCA
322.5	325.1	FZ	4	breccia zone with well healed sand gouge, then into straight gouge, with a few small suspended fragments, lower contact at 30 deg tCA
325.1	339.5	BRKZ	4	well broken core, somewhat rubbly in places, but shard-like fracturing with very frequent planar fractures. various orienations
339.5	350.8	JZ	3	other jointing at orienations 15, 50 and 60 deg tCA. Planar jointing
350.8	360	JZ	5	some good runs, interspaced with broken busted rock. joint sets 15-25 deg TCA, and aorund 45 deg TCA
360	366	BRKZ	3	mostly chunky/very broken rock, with a few interspaced competant runs. Increasing rubble towards end
366	376.5	FZ	2	very broken/rubbly rock, with a bit of annealed gouge in places. rough measurement on one of these gouge seams at 50 degTCA. some fault breccia, with fairly angular clasts suspended within sandy/gritty gouge
376.5	384.3	JZ	5	some rough joint planes. with orientations at 15, 40 and 55 deg TCA
384.3	387.4	BRKZ	5	mixed bag of rubble, with some breccia-gouge, and a few short competant runs.
387.4	398.9	JZ	4	joint zone with short sections of interspaced broken rock. Seems to be not strong planar orientation, large variation in joint angles

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Blackwater Project
Drill Logs

Hole ID:	BW0454	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375052.19
Depth (m):	397.35	Date Started:	10/05/2012	Casing Size:	HWT	Northing:	5892950.42
Azimuth:	0	Date Completed:	16/05/2012	Casing (m):	3.05	Elevation (m):	1585
Dip:	-90	Logged By:	CCu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
92.05	154	-89.1
137.8	126.4	-89.1
183.5	112.6	-88.4
229.2	127.4	-88.2
274.9	118.1	-88.4
320.7	119.6	-88.3
366.4	122.6	-88.1

Blackwater Project
Drill Summary - Lithology

BW0454

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	27.8	OB							
27.8	87	FLPT	mon	LAP	MO	GRY	DEP	GR30+	"salt and pepper" looking FLPT, with grey and white mottle texture, and black specks from sulphides. small clasts. Ashy, very porous looking, locally laminated, and lots of laminated clasts
87	92.5	VC	obsalt	LAP	M	GRY	DEP	GR10	very alteration obscurred, some wavy laminations in matrix, as well as some laminated clasts. Felsic dominated, matrix supported, seems to be very messed up by high silica movement
92.5	165	FLPT	obsalt	LAP	L	GRY			poorly sorted, clasts appear rounded, but likely a result of alteration. Extremely silica flooded obscurring textures. Places look like FT but are alt'n obscurred. Moderate to light grey-green becoming a darker green towards bottom
165	194.2	FLPT	bx	LAP	L	GRY	FLT	GR10	brecciated, laminated matrix and clasts. matrix dominant. Many rounded clasts
194.2	225	VC	lpt	LAP	M	GRN	DEP	GR30+	felsic dominant, moderate to poorly sorted. more matrix composition than above. Pale green-grey
225	247	FLPT	bx	LAP	L	GRY	DEP	GR10	back to a monomictic litho, similar as above FLPT
247	249.3	VC	obsalt	LAP	M	GRY	FLT	GR10	moderate grey-blueish-green tone. Mostly sub-rounded clasts. Alteration obscurred, may be same litho as above, just altered to appear like a different protolith.
249.3	288	FLPT	lam	LAP	L	GRY			places with laminated matrix, could be more of a FT in some spots. Quite a consistant moderate blue-green colour. Sub-angular clasts, places where matrix rich, places clast-rich. Overall 50-50
288	319	FT	lam		M	GRN			laminated, sometimes wavy, locally brecicated, and some spots appears to be FLPT, but mostly laminated FT. Moderate to light grey with patches of green and brown (high grade sph)
319	325	VC	ms	LAP	M	GRY	DEP	GR30	gradually grading into FLPT(?), then mafic clasts coming in gradually, becomin increasingly mafic towards end of unit. Fairly rounded mafic clasts. Banding of light/dark colours,
325	341	VC	ms	BLOCK	MO	GRY			mafic rich, with some blowck sized clasts, very poorly sorted, interspaced with short zones of a more felsic fragmental rock. Fairly rounded mafic clasts mostly. Mottled dark brown-grey to light grey in colour.
341	354.6	VC	plm	LAP	MO	GRY	FLT	GR5	mafic dominant, some zoning of clast sized, mainly clast rich, some very rounded clasts, especially felsics, of which appear to be just quartz(?). A mottled light grey to dark grey colour

Blackwater Project
Drill Summary - Lithology

BW0454

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
354.6	360.9	VC	fltbx		D	GRN	FLT	GR5	fault gouge, dark green (chl rich) with host rock fragments that are sub-angular to sub-rounded
360.9	397.4	VC	plm	LAP	MO	GRN	UNKN		VC as above.

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Blackwater Project
Drill Summary - Alteration

BW0454		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
27.85	48	T	CLST	3	FC	3	MTRX	3	PATC	3	HM	PATC	2	HM	FR	3	moderate overall alt'n, with orange hemitite patchy and darker on fractures
48	72.5	S	CLST	2	CLST	4	MTRX	4	PATC	4	SER	CLST	2	CLY	FC	1	patches of sil-ser in matrix, and pervasive flooding of silica. Chl-ser clasts. Clasts in mtx commonly clay altered
72.5	95	S	MTRX	2	CLST	4	MTRX	3	PERV	2	SER	CLST	3	SIL	OP	4	sil with ser in matrix is quite destuctive to primary texture. Clay strongly replacing several clasts and rimming some others
95	105	S	MTRX	2	CLST	2	MTRX	4	PATC	2	SER	CLST	3	CLY	FC	1	strong sil in matrix and many clasts strongly sil altered. Discrete chl streaks in matrix
105	116	S	PERV	1	FC	2	PERV	5	PERV	3	SER	FR	1	CHL	PERV	2	very intensely fine grained silica-flooded, destroying primary textures, with a significant clay+/-ser influence
116	158	S	MTRX	3	FC	3	MTRX	4	PERV	2	SER	CLST	4	CHL	CLST	3	still strong sil in matrix, and obscurring some primary textures, with significant chl-ser influences as well. Tiny fractures with white clay infill
158	170	S	PERV	3	FC	1	PERV	3	PERV	3	SER	CLST	2	CHL	CLST	4	more chl alt'n, rock becoming a darker green. Still strong silica, less clay overall
170	184	S	PATC	3	MTRX	2	PERV	4	PATC	3	CHL	FR	2	CHL	CLST	3	patchy green chl alt'n, and frequent chl altered clasts. Silica flooding throughout. Some places stronger than others.
184	188.5	S	PATC	1	MTRX	2	PERV	4	PATC	1	SIL	OP	2				short section with dominantly silica. grey
188.5	211.5	S	PATC	3	MTRX	2	PATC	3	PATC	3	CHL	CLST	3	CHL	FR	3	chl increasing to moderate, a consistant green colour to core
211.5	226	S	PATC	4	MTRX	2	PERV	3	PATC	3	CHL	FR	4	CHL	CLST	3	Increased intensity of chl alt'n. Patchy, with sericite. Some very dark green chl, especially around some fractures
226	247	S	PATC	2	FC	1	PERV	4	PERV	3	CHL	FR	2	CHL	CLST	2	weakening chl influence, stronger silica. Rock becoming very hard with strong silica overprint
247	249.5	S	PATC	2	FC	2	PATC	2	PERV	4	SER	CLST	3	CHL	CLST	3	weak sil, more patchy on edges of unit. Lots of ser-chl=cly, fairly texture destructive. Kind of a "speckled" appearance with the pervasive ser-chlcly alt'n
249.5	288	S	PERV	2	FC	2	PATC	3	PERV	3	CHL	PATC	4	CHL	FC	4	higher sil, and some patchy sil overprint with distinct patches of chl (infilling?), and strong on Fracture planes

Blackwater Project
Drill Summary - Alteration

BW0454		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
288	323	S	PATC	3	CLST	1	PERV	4	PERV	3	CHL	FR	2	SIL	OP	4	Strong silica pervasive in laminated rock. Moderate ser-chl
323	340	S	CLST	2	FC	2	PATC	2	PATC	3	SER	FC	3	CHL	FC	5	less silica except in interspaced felsic lithos. Strong chl particularly where gouged/ highly fractured, with a dark green chl fracture planes
340	354.5	S	PERV	3	CLST	2	MTRX	3	PERV	2	CHL	CLST	3	CHL	FC	4	moderate overall alt'n, with some dark chl on fracture planes
354.5	361.3	S	FC	5	FC	3	MTRX	1	FC	3	SER	PERV	2	CHL	PERV	3	gouge with intense dark green chl, with increasing ser-clay towards end, and patchy within the gouge
361.3	397.4	S	PERV	3	PATC	2	MTRX	3	MTRX	3	SER	FC	2	CHL	FR	3	matrix is sil-ser dominant with greenish colour from chl alteration

Blackwater Project
Drill Summary - Mineralization

BW0454		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
28	35	CG	0.5		0		0	Grnt	BB	0.1							subtle garnet clusters
35	38	CG	3	DI	0.1		0	Grnt	BB	0.1							some coarse grained, sometime very bright yellow py, with pitted core.
38	55	CG	5	DI	1	SP	0.5	Dbs	BB	10	Grnt		0.5				salt and pepper looking core, with the dark flaky blebs being dark sulphides, small blebs which appear to be mostly fine grained Py(?). Coarser grained py with the DBS, also a bit of sph with DBS
55	72	DI	3	CR	1		1	Dbs	BB	10	Py	VN	1	Grnt		0.5	occaisional bleb of Po. DBS blebby as above 10-15 %, locally maybe even higher. some planar vnlts with Py.
72	82	SP	2	CR	2	BB	1	Dbs	DEN	7	Py	VN	2	Grnt		0.5	py specks and in blebby veins/fractures, with pitted core. Some patches of sph, fairly coarse. DBS not as frequent as above, but some thicker blebs and vnlts of it, quite dark
82	88	VN	5	VN	5	BB	0.5	Dbs	BB	3	Sp	DI	1	Py	DI	1	veined or infilling fractures Py with sph with some grnts. Vein is sub-parallel and appear to be somewhat opened by fracturing, not planar. Appears to be a good site for high grade Au(?). DBS dropped in grade to sooty blebs, locally good
88	100	BB	1	DI	1	BB	3	Dbs	DEN	1	Grnt	BB	3	Py	DI	0.1	garnets becoming quite significant, and high grade with some large clusters (up to 5-7cm), with some fine grained py+/-sph in with these clusters. Common large Po high grade bleb
100	110	BB	2	DI	1	BB	2	Dbs	DEN	5	Grnt	BB	1	Mrc	FP	0.5	fine grained blebs of py, some nice flowery dendritic DBS, appearing to be mainly py?. Less garnets. Overall core nicely mineralized
110	120	BB	1	DI	1	BB	3	Dbs	DEN	3	Grnt		1				patches of high grade DBS in more felsic clasts especially. Overall less sulphides but still good grade. Po high grade especially in texture destructive silica
120	132	SP	1	DI	1	BB	1	Dbs	DEN	2	Grnt	BB	0.5	Cp	SP	0.1	Local higher grade DBS. Garnets in rare clusters. Lower grade sulphides overall, DBS good in spots. Flakey specks of cpy

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Blackwater Project
Drill Summary - Mineralization

BW0454		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
132	145	BB	3	DI	2	BB	1	Dbs	DEN	3							sph and py commonly occuring together. Mins picking up again, with small blebby DBS commonly with coarse blebs of py and diss sph
145	160	DI	2	DI	2	BB	3	Dbs	DEN	7	Cp	SP	0.5	Ga	FP	1	finely dendritic DBS and some little blebs. GAlena on a fracture coating and some disseminated nearby with cpy. Fien grained disseminated sulphides and good small scale dendritic DBS. Frequent high grade patches of up to 10% DBS or so
160	170	VN	2	VN	2	BB	1	Dbs	VN	2	Cp	SP	0.5				py in vnlts and blebby with quartz infill. sph in vnlts and disseminated, cpy specks with sph and py. Quite a few vnlts with py+/- sph and specks of cpy. Also py+/-sph in some blotchy qtz infill, with cpy. Also much disseminated fine grained sulphide
170	180	BB	3	DI	2	BB	1	Dbs	DEN	10	Cp	SP	0.5	Apy	SP	0.5	some blebby sph with DBS. Plenty of small scale dendritic DBS patchy but frequent. Cpy specks with other sulphides. High grade hairline vnlts of py-sph continue
180	190	BB	2	VN	2	BB	1	Dbs	DEN	7	Cp	SP	0.5	Apy	VN	0.5	py blebby and blebby veins. Some high grade hairlines of sph and disseminated. Occaisional high grade bleb cluster of Po. DBS as above, but patches a bit more sparse. One high grade sph-aspy vnlt seen
190	200	BB	2	DI	2	BB	0.5	Dbs	FC	3							less total sulphides here, but fault gouge material has a bit of dark fine grained sulphide goo, still vnlts of good sph +/- py and blebby py
200	210	BB	2	DI	2	BB	2	Dbs	DEN	3							good grade Py at star in blebby vnlts, then mocint to more blebs of Po. Coarse grained Py with DBS in places, especially around infilled fracture
210	220	BB	3	DI	2	BB	1	Dbs	BB	2	Cp	BB	0.5	Ga	CG	0.5	some nice looking blebby Py, with sometimes galena and specks of Cpy with these blebs. Py rich planar vnlts still pretty common, sometimes cross-cutting
220	230	BB	2	DI	1	DI	1	Dbs	VN	3	Cp	CG	0.5	Ga	FP	0.5	some vnlts and fractures with py, total sulphides around 7%, high grade brassy py vnlts common

Blackwater Project
Drill Summary - Mineralization

BW0454		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
230	237	VN	0.5	DI	0.5	BB	0.1	Dbs	VN	0.5							whispy vnlts of DBS. Mineral grade dropping quite a bit in rock that appears more "tight" with a glossy silica wash
237	247	SP	2	CR	1	BB	0.5	Dbs	DEN	1	Cp	VN	0.5	Apy	SP	0.1	specks to coarse grained, hairline vnlts of py. Sph clast replacement here and there. Sparse DBS. CPY blebs and in some vnlts with py.
247	249.5	DI	1	BB	2	BB	3	Dbs	DEN	1	Cp	BB	1				Blebs of Po becoming large with SPH+/-Py. Fairly large blebs of CPY someitmes with Po+/-Py
249.5	260	DI	2	BB	5	BB	1	Dbs	DEN	1	Cp	SP	0.1	Ga	FP	0.1	SPH blebs frequent and becoming fairly large. Also metallic sph in vnlts and FP's with Py. Occaisional bleb, sometiems large Po. Gal on rare vnlt and FP
260	270	BB	1	DI	3	BB	1	Dbs	VN	1	Cp	SP	0.1				Py Blebs with DBS sometimes. SPH patch or two of high grade disseminated blebs. DBS isolated vnlts here and there
270	280	BB	1	BB	1	BB	1	Dbs	DEN	0.5							rock appears to be becoming "tighter", with not so much mineralization. Picking up a bit towards end with some local patches of DBS
280	295	BB	1	DI	5	BB	2	Dbs	VN	1							sph high grade patchy disseminations, somtimes roughly banded with alteration. Po occurring in SPH patches, with a few rare blebs on their own. Occaisional patch of stringy DBS vnlts
295	306	BB	1	BN	5	BB	2	Dbs	VN	0.5							Py as above, but finer grained. Sph as above, high grade at start, decreasing downhole, but banded patches remaining frequent
306	315	VN	1	DI	3	BB	1	Dbs	VN	0.5	Apy	VN	0.1				Py in some vnlts, and some fracture planes. High grade disseminated patches continuing but not quite so frequent. Po as above with sph mostly. Minor aspy seen in one qtz vein
315	324	BB	1	BN	2	BB	1	Dbs	VN	0.5							Py increasing at end, in blebby vnlts, usually dark and brassy. Banded patches of SPH as above, lower grade. Some straggler DBS vnlts

Blackwater Project
Drill Summary - Mineralization

BW0454		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
324	332	BB	3	DI	2	BB	1										high grade blebby patches, with SPh and quite a few high grade vnlts and py FP's usually a dull yellow. SPH patches with py.
332	341	FC	5	DI	2	BB	0.5	Apy	VN	0.5							py mainly in annealed fracture gouge, with some moderate grade blebby patches, and low grade disseminated in matrix.
341	350	VN	2	CR	2	CR	1										several small fracture infill py, and in annealed fracture gouge. Also a bit blebby replacing clasts with sph/Po. PY-SPH in matrix as well very fine grained
350	361	FC	2	CR	2	BB	1										fracture gouge may carry significant fine grained sulphides... For SPH certain clasts nearly entirely replaced by SPH-PO
361	372	DI	1	CR	2	BB	2										PY in matrix very fine grained, and minor on fracture planes. SPH in some smudgy disseminations. Some PO in clast replacement with SPH
372	384	FP	0.5	CR	1	CR	2										some SPH with PO in clast replacement.
384	397.4	DI	0.1	CR	1	DI	3										quite a bit of disseminated PO in clasts, especially in mafic clasts and some in blebs within matrix

Blackwater Project
Drill Summary - Structure

BW0454

From (m)	To (m)	Structure	Strength	Comments
27.8	48	JZ	4	more broken at top of hole, likely from meteoric effects exploiting weaknesses in rock. dominant joint set at 40 deg TCA, with minor set around 55 deg TCA
48	91	JZ	2	quite competant joint zone, with nice planar jointing. Minor set around 55 deg TCA
91	102	JZ	3	fairly comptant rock, long runs, with short local busted zones. Minor joint set at 60 degTCA
102	188.2	JZ	2	consistant rock integrety. Minor joint set at 55-60 deg TCA
188.2	194.2	FZ	3	low-moderate intensity fault zone. Some gritty gouge, some rubble, some broken rock
194.2	235.8	JZ	3	consistant quite competant joint zone, minor joint set at approx 55 deg TCA
235.8	264	BRKZ	2	well fractured, with many rough broken sections. joint sets at 30 and 55 deg TCA.
264	266	JZ		minor set at approx 50 deg
266	266.5	BZ	5	very well healed small breccia channel, quite solid gouge, running sub-parallel TCA approx 5 cm in thickness
266.5	290	JZ		very sharp/planar joint sets at 50-55 deg TCA, minor set at 10-15 deg TCA
290	301.3	JZ	2	good stick rock, joints planar
301.3	304	BRKZ	3	brief zone of broken rock from 20-40 deg TCA
304	317.8	JZ	3	competant jointed rock. Minor set at approx 60 deg TCA
317.8	335	BRKZ	3	quite consistantly broken rock for a while, gruadually increasing in intensity
335	339	BZ	3	very well healed with high grade Py within the structure.
339	348.1	JZ	5	joint zone, with brief interspaced zones of broken rock. Solid consistancy on jointing at 50-55 deg TCA
348.1	354.3	BRKZ	4	increasing intensity of broken rock above the fault zone. some rubble, and some clay-annealed fracturing
354.3	361.6	FZ	4	lots of clay-gouge, some brecciated sub-angular to sub-rounded host rock in gouge material. Soft gouge, becoming more clay-rich towards end. Core then goges to rubble, very rough orientation measured at 50 deg TCA, not clear at all
361.6	368.6	JZ	4	other planar joint measured at 35 deg TCA,
368.6	368.8	FL	4	short soft gouge with upper and lower contact at 25 deg TCA
368.8	392.3	JZ	5	minor sets at 60 and around 10 deg TCA. Very blocky jointing, very frequent planar joints, with some zones looking more broken.
392.3	397.4	JZ	3	bit more competant core than above, but some fractures are rough, especially at the 10 to 20 deg orientations

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Blackwater Project
Drill Logs

Hole ID:	BW0455	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375002
Depth (m):	377.95	Date Started:	12/05/2012	Casing Size:	HWT	Northing:	5893150.43
Azimuth:	0	Date Completed:	18/05/2012	Casing (m):	5	Elevation (m):	1563
Dip:	-90	Logged By:	KOI	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	128.4	-89.6
91.44	156.3	-89.6
137.2	115.3	-89.8
182.9	114.3	-89.6
228.6	124.4	-89.6
274.3	158.6	-89.2
320.0	151.2	-88.2
374.9	152.9	-87.6

Blackwater Project
Drill Summary - Alteration

BW0455		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0.8	4	O	CLST	1	CLST	2	CLST	4		0	LIM	FC	3	LIM	PATC	2	no sulphide observed. Silica alteration of clasts and matrix with chlorite and clay alteration of clasts. Limonite-oxide is fracture controlled and as patches
4	22.5	T	CLST	1	CLST	3	CLST	3		0	SIL	MTRX	3	LIM	FC	3	transition zone - weak chlorite alteration of mafic clasts. clay alteration of clasts: a) a pale green soapy clay, b) a dull, powdery white clay. silica alteration of clasts (forming hazy white-grey, reaction rims on clasts) and matrix (silcia flooding: obscuring the texture of the finer fragments of the matrix). Patchy limonite alteration throughout and fracture controlled oxide (incl. limonite and geothite). Garnet replacing clasts (intergrown with sulphide: sphalerite and pyrrhotite).
22.5	27	T	CLST	2	CLST	4	MTRX	4		0	LIM	FC	3	GRNT	CLST	2	Significant increase in matrix dominant silca alteration and clast dominant clay alteration (almost all clasts are clay altered). Some clasts are replaced by garnet and others have variable amounts of chlorite alteration.
27	42.6	T	CLST	2	CLST	4	MTRX	3	CLST	1	CHL	MTRX	2	SIL	CLST	3	Weak sericite alteration of clasts, chlorite alteration of clasts and begining to see matrix dominant chlorite alteration (increasing with depth). Garnet alteration of clasts is weaker than above and limonite is still fracture controlled. A silica flooded matrix and moderate silica alteration of felsic looking clasts.
42.6	57	T	MTRX	4	CLST	3	CLST	2	CLST	1	LIM	FR	3	GRNT	CLST	1	Greater matrix dominant chlorite than above - giving the rock a green-grey colour. Garnet replacing clasts. Clay and silica alteration of clasts. Silica flooding of the matrix.
57	65	T	PERV	4	CLST	3	PERV	4	CLST	1	CHL	FR	3	LIM	FR	2	Sericite and clay alteration of clasts is overprinted by intense, pervasive chlorite-silica alteration. Chlorite as a deep, dark green on fracture surfaces. Limonite on fracture planes and garnet as clast replacement. Alteration obscures the fragmental texture of the rock. The fault in this interval is extremely chlorite rich.

Blackwater Project
Drill Summary - Alteration

BW0455		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
65	82	T	CLST	2	CLST	3	CLST	3	CLST	1	SIL	MTRX	4	CHL	MTRX	1	Lesser chlorite than above. Sililca alteration of felsic looking clasts and matrix. Clay alteration of clasts and mechanical clay on fractures. Limonite on fractures.
82	88	S	CLST	2	CLST	3	CLST	3	CLST	1	SIL	MTRX	4	CHL	MTRX	1	As above with no oxide. Sulphide zone.
88	103	T	CLST	2	CLST	3	MTRX	3	CLST	1	SER	MTRX	2	SIL	CLST	3	Very weak oxide on fracture planes, biotite alteration (hornfels) of andesitic clasts. Silica alteration of (felsic) clasts and matrix. Weak sericite alteration of clasts and matrix. Clay alteration of clasts.
103	108	S	CLST	2	CLST	3	MTRX	3	CLST	1	SER	MTRX	2	SIL	CLST	3	As above with no oxide - sulphide zone.
108	127	S	FR	3	FC	2	CLST	2		0	BIOT	CLST	2	SIL	MTRX	3	Moderate to strong chlorite on fracture planes. Sil lesser than above in clasts because less felsic clasts. Clay, chlorite and biotite alteration of clasts.
127	195	S	CLST	2	CLST	3	CLST	4	CLST	1	CHL	MTRX	2	CHL	FR	1	Clasts are altered to sericite, clay, silica, biotite and chlorite. Matrix is predominantly silica altered (obscuring the primary texture of the finest of the matrix fragments) with a bit if chlorite alteration. Chlorite and a dusty, off-white clay coating on fracture planes.
195	260	S	FC	4	FC	2	CLST	4		0	CHL	CLST	2	CLY	CLST	1	less clay altered clasts than above - could have a silica overprint. Biotite alteration of mafic clasts, silica alteration of felsic clasts and matrix. Chlorite alteration of fracture planes and mafic clasts. Garnet mineralization on clasts.
260	293	S	PATC	4	FR	1	PERV	4	PATC	2	CHL	FR	2	GRNT	ANH	3	Strong, pervasive silica alteration and patchy chlorite sericite alteration with patches typically following laminations. Chlorite and clay also on fracture planes. White-green clay on fracture planes.
293	344	S	PATC	4	FR	1	PERV	4	PATC	2	CHL	FR	2	GRNT	ANH	3	Strong, pervasive silica alteration and patchy chlorite sericite alteration with patches typically following laminations. Chlorite and clay also on fracture planes. White-green clay on fracture planes.

Blackwater Project
Drill Summary - Alteration

BW0455		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
344	359	S	PATC	2	FR	2	PERV	4	PATC	3	GRNT	ANH	2				Patchy sericite and chlorite in a strong silica altered, texture destroyed rock. Some convoluted laminations and coarse grained aggregates of reddish brown garnets. White-green clay coating on fractures. Locally microbrecciated with a silica matrix.
359	378	S	PATC	2	FR	3	MTRX	2	PATC	1	SIL	PERV	2	CHL	FR	3	Hornfelsed andesite with moderate biotite and clay alteration - some silicification throughout. And weak patchy sericite alteration. Strong chlorite on fracture planes.

Blackwater Project
Drill Summary - Mineralization

BW0455

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
0.8	4		0		0		0	Jaro	FC	1.5	Jaro	PATC	1.5	Goe	FP	0.5	jar = fracture controlled and patchy orange. geo = black on fracture planes.
4	14		0	CR	1	CR	0.1	Grnt	CR	2	Jaro	PATC	2	Jaro	FC	1	Sphalerite and pyrrhotite intergrown with garnets in clasts. Garnet also occuring without intergrown sulphides.
14	22.5		0	CR	1	CR	1	Grnt	CR	2	Jaro	PATC	2	Jaro	FC	1	as above with greater pyrrhotite and lesser goe on fractures. Sphalerite also occuring without garnet in mafic clasts.
22.5	27		0	CR	0.1	CR	0.1	Grnt	CR	1	Dbs	VN	0.5	Jaro	FC	1	less sphal and pyrrhotite than above. DBS occuring as hairline veinlets that are multi-directional and cut through both clasts and matrix.
27	55.25	CR	0.5	CR	1	CR	1.5	Grnt	CR	1.5	Dbs	DEN	0.1	Jaro		1	pyrite occuring in clasts with sphalerite and pyrrhotite. Garnet as above - still intergrown with sulphides. Lesser DBS than above but occuring as dendric wisps a couple of inches long, multi-directional and cutting accross clasts and matrix.
55.25	70	FG	0.5	CR	0.1	CR	1	Grnt	CR	3	Jaro	FP	1	Dbs	DEN	0.5	Fine grained black pyrite cutting across faulted interval (at 50 DTCA). Lesser sphalerite than above. Pyrrhotite as clast replacement. Increase in garnet abundance, still mineralizing clasts. DBS as fine dendric wisps, as above, cutting through clast
70	90	FP	0.5	CR	2	CR	2	Grnt	CR	0.1	Dbs	DEN	0.5				Pyrite on fractures associated with a dull, white clay and pyrrhotite and sphalerite. Sphalerite as red disseminations in clasts - appears to be nucleating on clasts, predominantly within clasts but not restricted to clasts. Pyrrhotite as clast repla
90	108	VN	0.5	CR	2	CR	2	Grnt	CR	0.5	Dbs	DEN	0.5	Mrc	FP	0.5	Pyrite in veinlets with sphalerite and pyrrhotite. Sphalerite and pyrrhotite as clast replacement, typically occuring together in predominantly mafic clasts (with chlorite). Garnet intergrown with pyrite in clasts. DBS as fine, dendric veinlets and i

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Blackwater Project
Drill Summary - Mineralization

BW0455		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
108	127	VN	0.1	CR	0.5	MA	1.5	Grnt	CR	0.1	Mrc	FP	0.1				Pyrrhotite and sphalerite as clast replacement. Red sphalerite occuring with a dull, white clay in felsic clasts. Pyrrhotite is predominantly occuring in the matrix, in the intersitical places between clasts. Weak cruddy, brown garnets as clast repla
127	155	CR	0.5	CR	1	CR	2	Grnt	CR	0.1	Mrc	FP	0.1				Pyrite, spahlerite and pyrrhotite mineralizing in clasts. Some DBS in felsic clasts. Marcasite on fracture planes as radiating crystals with chlorite. Weak garnet mineralization within clasts - occuring with sulphide, predominantly pyrrhotite.
155	171	CR	0.5	CR	1	CR	2	Grnt	CR	0.1	Mrc	FP	0.5				As above.
171	190	CR	0.1	CR	1.5	CR	2	Grnt	CR	0.5	Mrc	FP	0.5				Similar to above with coarser grained garnet mineralizing in clasts (with pyrrhotite) where you can see individual red-brown crystals.
190	215		0	CR	1	CR	2	Grnt	CR	0.5	Mrc	FP	0.1				Spal and po mineralization in clasts. garnet mineralization in clasts. Marcasite on fracture planes.
215	235		0	CR	0.5	CR	1.5	Grnt	CR	0.5	Mrc	FP	0.1				same mineralization style as above
235	258		0	CR	0.5	CR	1	Grnt	CR	0.1	Mrc	FP	0.1				same mineralization style as above
258	293	BB	1.5	DI	0.5	BB	1.5	Grnt	CG	2.5							better mineralization than above, more sulphides. Pyrite and pyrrhotite blebbs to disseminations. Sphalerite disseminations to specks with other sulphide. Garnet as brown and black coarse grained disseminations (black is intergrown with pyrrhotite).
293	311	BB	1	BB	1	DI	2	Grnt	CG	1.5	Dbs	DEN	1.5				Blebby pyrite and sphalerite (red) with disseminated blebbs of pyrrhotite. Garnet as coarse grained red-brown anhedral masses. DBS as black, dendric to radiating clusters typically parallel to laminations (also present perpindicular to laminations).
311	335	BB	1	BB	0.1	DI	1	Grnt	CG	1	Dbs	DEN	1				Mineralization as above - difficult to determine with intense faulting (may be underestimating sulphide content).

Blackwater Project
Drill Summary - Mineralization

BW0455		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
335	359	BB	0.5		0	DI	1	Grnt	CG	1	Dbs	DEN	0.5				similar to alteration style as above with lesser sulphide and garnet.
359	371		0		0	DI	3										Significant decrease in sulphide variety - but a significant increase in pyrrhotite mineralization - up to 5% disseminated po in andesite - can be blebby locally.
371	378	BB	0		0	DI	1	Grnt	CG	1	Dbs	DEN	0.5				Bleached rock - similar to interval two above.

Blackwater Project
Drill Summary - Structure

BW0455

From (m)	To (m)	Structure	Strength	Comments
0.8	60.5	JZ	3	Joint zone with oxide on fracture planes. Dominant fracture set at 20 DTCA with 10 degree variation.
60.5	61.5	FL	3	Healed fault with strong chlorite throughout. Mineralized with finegrained sulphide (incl. pyrite) that cuts the fault at 50 DTCA).
61.5	71.5	BZ	2	broken zone with intervals of competant core. Clay and oxide on fracture planes.
71.5	77	JZ	3	Joint zone with clay and oxide on fracture.
77	77.5	CLYSEAM	4	Clay seam with oxide - colour is a medium grey-tan.
77.5	112	JZ	2	15 and 30 DTCA. Joint zone with weak oxide and clay on fracture. Local, small, broken zones.
112	117	BZ	4	Broken zone with competant core and moderate to strong chlorite on fractures. 30-45 DTCA.
117	127	JZ	2	Joint zone with chlorite and clay and fractures. 25-30 DTCA
127	204.2	JZ	3	Joint zone with fractures at 15 and 40 DTCA - chlorite and clay on fracture planes. Some radiating crystals of marcasite on fractures with chlorite.
204.2	205.8	FL	4	Fault - clay gouge with yellow clay and deep green chlorite - 30 DTCA (low confidence - taken at lower contact, 205.75 meters)
205.8	256	JZ	4	Joint zone with weak to moderate slickensides on fracture planes, chlorite and marcasite on fracture planes. Small local broken zones.
256	256.5	FL	3	Fault with broken core and clay gouge - no mineralization observed.
256.5	277.5	JZ	3	30 DTCA - joint zone with small broken intervals. Some chlorite and clay on fractures.
277.5	292	JZ	5	Joint zone with more frequent jointing and small broken intervals. Chlorite and clay on fractures.
292	295.2	BZ	3	As above with more broken zones than intervals of competant core.
295.2	309.1	JZ	4	Joint zone with jointing ~40 DTCA
309.1	336	FZ	4	fault zone with clay gouge (subangular pieces of lamimnated fragments in a yellow-green clay matrix, locally pinkish) with intermittent broken zones.
336	354.8	JZ	4	Joint zone with some broken zones.
354.8	355.1	FL	4	Fault - clay gouge. No mineralization observed. Unknown orientation
355.1	367.5	BRKZ	3	Broken zone with clay and chlorite on fracture planes.
367.5	378	JZ	3	JZ with fractures at 45 DTCA with smooth fracture surfaces (some with slickensides).

Blackwater Project
Drill Logs

Hole ID:	BW0456	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375751.49
Depth (m):	327	Date Started:	12/05/2012	Casing Size:	HWT	Northing:	5893400.17
Azimuth:	0	Date Completed:	19/05/2012	Casing (m):	9	Elevation (m):	1525
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
51	143.7	-89.5
100	194.5	-89.4
153	169.9	-89.1
201	185.5	-89.1
250.5	200.7	-88.9
303.5	187.3	-89.1

Blackwater Project
Drill Summary - Lithology

BW0456

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	1	OB							
1	9	AND	ms	LAP	D	GRY	ALTFR	GR30+	D.Gray matrix supporting D.Gray-black SR porphyritic Feldspar>Amphibole clasts and aphanitic clasts. Fracture planes oxidized, and red Jasper and white calcite in small fractures locally. Gradational sericite alt into matrix dominant VC, obscured by
9	22.3	VC	t	LAP	M	GRN	ALTFR	GR10	M.Green-Gray ser-silica matrix supporting SR gray silica clasts and M-D.Green ser replaced clasts. clay rep off-white feldspars throughout matrix. Clasts gradationally larger with depth past 19m (depositional contact?), bottom contact is a weak grada
22.3	27.2	AND	ms	LAP	D	GRN	ALTFR	GR30+	D.Green ser-chl matrix with off-white feldspars supporting mottled M.Gray and D.Green feldspar-phyric mafi/int clasts. Clasts dominatley lapilli size, but the odd block size clasts appear. Gradational alteration contact.
27.2	45	VC	ms	LAP	L	GRY	FLT	GR30	L.Gray-Green Silica-ser matrix supporting poorly sorted from 2-30mm clasts ranging from rounded to sub-A, clasts may be L-M.Gray silica rep or ser-chl rep and faintly ghost like margins (alt obscuring clast boundaries?), locally heavily jigsaw fit to
45	48.8	VC	ms	LAP	L	GRY	FLT	GR30	Less altered version of above;ash to coarse sand-sized silica-ser rep matrix supporting SA/SR poorly sorted calsts of MGray-L.Green colour (clay-ser replaced) ranging in size from 1-30mm. Bottom contact; middle of fault switches to AND.
48.8	55	AND	bx	LAP	D	GRY	FLT	GR30	M-D.Gray with a hint of purple matrix supporting SR dominatley aphanitic clasts, some feldspar-phyric. Bottom contact; Fault/Alteration contact.
55	80.1	VC	ms	BLOCK	D	GRY	ALTFR	GR10	L.Gray siliceous feldspar abundant matrix supporting SA/SR Lapilli to Block size M-D.Gray feldspar-phyric clasts.
80.1	87.5	VC	ms	LAP	L	GRY	ALTFR	GR30	Perv silica-ser alt, in amongst structure zone. Ser strongly replaces Lapilli size clasts. Bottom contact gradational alteraton boundary with decrease in sericite.
87.5	89.5	VC	ms	LAP	D	GRY	FLT	GR30	L.Gray siliceous feldspar abundant matrix supporting SA/SR Lapilli size M-D.Gray feldspar-phyric clasts.
89.5	102	VC	ms	LAP	M	GRN	FLT	GR30+	Flattened angular ser-clay-chl rep clasts supported by a M.Gray-Green silica-ser matrix. Clasts have a weak-moderate alignment perpendicular to core axis.
102	138.5	AND	bx	LAP	D	GRY	DEP	GR30	M-D.Gray off purple locally weakly siliceous matrix supporting SR-SA poorly sorted AND clasts; amygdaloidal or aphanitic. Decrease in matrix content with depth and increase in amygdules. Large alteration/fault zone from 130.45-133.7m L.Greay-Green.

Blackwater Project
Drill Summary - Lithology

BW0456

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
138.5	163.9	AND	mas		D	GRY	DEP	SH	Silica calcite filled amygdules > feldspar-porphyry, feldspars partially obscured. Weakly Bx'd by fluids locally irregular.
163.9	223.5	AND	mas		D	GRY			Massive abundantly plag-phyric (5-30%) and locally weakly calcite filled amygdaloidal.
223.5	275	AND	por	LAP	D	GRY			Massive to porphytic andesite, pervasive silica and biotite alteration. Locally bleached. Frequent calcite/talc infilling fractures.
275	288.5	AND	amg	LAP	D	GRY	ALTFR	GR30+	Amygdaloidal to porphyritic AND, perv silica-calcite-biotite alteration, causing bleaching. Moderate Calcite/talc infilling fractures. Bottom contact is a siliceous alteration front, beginning @ 288.5m where silica injection Brecciates the rock in a
288.5	308.6	AND	obsalt		L	GRY	FLT	GR10	Perv silica-ser alteration obscuring texture, and locally imparting sericitic laminations. Bottom coantact is a moderate fault-Bx with an almost sharp gradation into AND.
308.6	327	AND	flw	BLOCK	D	GRY			Block size amygdaloidal flows on the order of meters, seperated by small 1-30cm clastic sections; with D.Gray-Black ghost like elongate clasts that seem partially abosrbed in the matrix and aligned @ 55 dtca with the Block of amygdaloidal AND the mat

Blackwater Project
Drill Summary - Alteration

BW0456		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
1	8	T	PERV	1	FR	2	PERV	3	REP	2	SIL	FC	3	LIM	FR	4	Transition zone; Oxide fracture controlled, and eweakly pervasive around FP's. Red Jasper and white Silica fracture controlled.
8	11	T		0	FR	3	PERV	3	MTRX	2	SER	CLST	2	LIM	FR	3	Perv silica-ser, altering clast and matrix, some clasts solely ser rep. Orange Lim on FP's
11	21.3	S		0	REP	4	PERV	3	MTRX	5	SER	CLST	4				Perv ser-silica, ser also rep select clasts. Off-white clay rep feldspars and op small grains in matrix.
21.3	27.3	S	REP	2	REP	4	PERV	3	PERV	4							Patchy Perv sericite, in matrix and clasts. Silica perv. Chlorite replaces small grains with ser, and ser-clay rep plag.
27.3	44.96	S		0	FC	4	MTRX	4	MTRX	4	SIL	CLST	3	SER	CLST	4	L.Gray siliceous clasts and L-D.Green sericitic clasts, in a ser-silica matrix. with fracture controlled clay.
44.96	48.8	S		0	FC	3	MTRX	4	MTRX	3	SER	FC	4				Less altered then above, lighter gray (less green). Silica-ser matrix with small clay overprints. Fault structure is white-gray clay and L.Green ser altered.
48.8	58	S	CLST	3	FC	4	MTRX	4	MTRX	1	CHL	FC	2	CLY	CLST	2	Strong silica matrix dom, sith small ser BB's. Chl on FP's and in gouge, as well as rep clasts locally. Clay rep larger clasts encapsulated by siliceous amtrix.
58	60.6	S	FC	2	FC	4	PERV	4	PERV	3	SER	FC	4				Fault Gouge, with rounded perv silica-ser obsalt lithics. weak chl strong ser-clay in gouge.
60.6	68	S	FR	3	CLST	3	MTRX	4	CLST	3	CAL	VN	1	SER	FR	2	Matrix dom silica; ser rep smaller clasts and on FP's with clay and chl, clay rep larger porphyritic clasts.
68	73.3	S	FR	2	CLST	3	MTRX	4	CLST	2		MTRX		CAL	CLST	2	White and red silica (regular and jasper) matrix rep. FC ser-chl. Clay rep larger blocks.
73.3	87.5	S		0	CLST	3	MTRX	4	MTRX	4	SER	CLST	3				Bleached rock, clasts clay-ser replaced and matrix silica-ser.
87.5	97	S	FR	2	CLST	2	MTRX	3	MTRX	3							M.Green-Gray silica-ser rep matrix and green rep small grains. clay weakly rep clasts.
97	104	S		0	FC	4	PERV	5	PATC	5	SER	PERV	3				Bleached rock, structurally controlled. Perv silica with L.D.Green soft irregular patches.

Blackwater Project
Drill Summary - Alteration

BW0456		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
104	130.4	S		0	CLST	2	MTRX	2	CLST	2	CAL	AMYG	2	CAL	VN	2	Matrix weakly silicified with a purple hue, and locally stronger. Calcite fills amygs in clasts and is weakly veined. Clay ser alt of clasts/Blocks.
130.4	133.9	S		0	CLST	4	PERV	5	PERV	3	SER	CLST	3				Bleached rock. Perv silica-ser and clasts are clay and/or ser rep.
133.9	163.9	S	PATC	1	PERV	2	PERV	1	PERV	1	CAL	AMYG	4	SIL	AMYG	2	
163.9	199.8	S		0	PERV	1	PERV	2		0	CAL	AMYG	2	CAL	VN	3	Hornfelsed; Perv silica wake clay and minor biotite. Small sections of amygs are filled with calcite.
199.8	216.2	S	PATC	1	PERV	2	PERV	2		0	CAL	PERV	1	CAL	VN	3	increasingly clay altered near strucutre.
216.2	275	S	PATC	1	REP	2	PERV	2		0	BIOT	PERV	3	CAL	INFILL	2	Pervasive silica and biotite, with chlorite in veins and fractures, talc/calcite infilling fractures, clay replacing phenocrysts
275	284	S	PATC	1	REP	2	PERV	2		0	BIOT	PERV	2	CAL	VN	3	Pervasive silica and weakly Biotite, with small chl patches in veins/fractures. Talc/calcite Veinlets. Calcite infilling amygs, clay replacing phenos, and clay calcite centric alteration haloes.
284	288.5	S	FR	2	CLST	2	MTRX	5		0	SIL	PERV	2	BIOT	CLST	2	weak perv silica, silica injection into AND ahs fractured it in a jisaw pattern leaving a 95% silica matrix. Weak Biot-Clay alt of clasts. Silcia increases with depth.
288.5	308.6	S	FR	2	FC	1	PERV	5	PERV	3	SER	BN	2				Perv silica-ser alt obscuring texture. Ser bands locally.
308.6	327	S	PATC	1	PATC	1	PERV	1	PERV	1	SIL	PATC	3	CAL	VN	3	Weak perv silica, in the block sie AND flows, but flowtops are highly siliceous (glass) with a purpleish hue (Hematite). Amygdules filled with Calcite.

Blackwater Project
Drill Summary - Mineralization

BW0456		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
1	9	BB	0.1		0		0										Trace bleby/specked pyrite in clusters
9	22	BB	0.5	BB	1	DEN	1										Py blebs in sections, Sph blebs disseminated throughout interval, some in clasts, dendritic/wispy Dbs
22	28.5	BB	0.1		0	BB	0.1										Trace bleby Py in smakk gougy/brecciated section, trace Po in clasts
28.5	45	FP	0.5	BB	1		0	Dbs	WIS	0.5							Tarnished Py on frcature planes in clusters, Bleby/disseminated Sph, Wispy/blebyor speckled black sulphides
45	49		0	BB	0.5		0	Dbs	WIS	0.1							Bleby/speckled Sph and trace wispy black sulphides
49	55	BB	0.1		0	FG	1										Fine grained Po, trace bleby Py
55	69	BB	0.5	BB	0.5	FG	0.1	Dbs	WIS	0.1							Dull/tarnished Py blebs, bleby Sph, trace fine grained Po in some andesite clasts, trace wispy Dbs
69	80	BB	0.1	BB	0.1	FG	0.1										Trace sulphides; weak Po in some andesite clasts, bleby py and sph
80	88	VN	0.1	DI	0.5		0	Dbs	WIS	0.5							Weak mineralization through interval, disseminated Sph <0.5 but more than trace, trace Py in veinlet, some wispy/dendritic black sulphide
88	103.9	FP	0.5	BB	0.5	BB	0.1										Py in bleby clusters on a few fracture planes, bleby Sph in small sections and some in clasts, trace Po
103.9	130.4		0	BB	0.1	FG	1										Dominantly fine grained Po in andesite/andesite clasts, trace bleby Sph
130.4	133.8		0	SP	0.1		0	Dbs	SP	0.1							Trace specks of Dbs and Sph seen???
133.8	159		0	SP	0.1	FG	1										Trace Sph, Fine grained Po
159	162	VN	0.5	BB	0.1	FG	1										Py in vein/veinlet, trace bleby Sph, fine grained Po , more visible on fracture planes
162	181.5		0	VN	0.1	BB	1										Po is seen in blebs and also fine grained, trace Sph seen in calcite veinlet
181.5	199.5		0		0	FG	0.5										Fine grained Po
199.5	216		0		0	BB	1										Po becomes mor bleby and visible in this interval although still fine grained in sections

Blackwater Project
Drill Summary - Mineralization

BW0456		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
216	225	FP	0.5		0	BB	0.5										Speckled Py on fracture planes and some times seen as fine grained euhedral smal crystal clusters, bleby Po
225	275	VN	0.5		0	DI	0.5										Minor di po, minor py with veinlets
275	284		0		0	DI	1	Py	FP	0.1							Di'd Po, througout, locally DI'd BB's intergrown with Ca. elongate bronzy Py on FP's locally.
284	288.5	INFILL	1	INFILL	0.1	BB	2	Py	VN	1	Po	VN	0.5	Sp	VN	0.1	Py with weak Sp infill fractures left by fluids. Py>Po>Sp Veined. Po throughout GM as BB's and filling amygs.
288.5	292	BN	5	BB	1	DI	1	Cp	BB	0.1	Ga	BB	0.1				Py BB's and banded masses in fault gouge. Sp BB's in Fault gouge and altered rock. Po DI's throughout intact rock.
292	296.1	BB	0.5	BB	1	BB	1	Ga	BB	0.5							Po-Sp-Py-Ga BB's intergrown.
296.1	308.6	BB	1	BB	1.5	BB	0.5	Ga	BB	0.5	Ga	VN	0.5	Po	VN	0.1	Sp-Py-Ga intergrown BB's. Ga-Po veinlets, locally Py-Sp veinelts or Ga-Po-Sp veinelts.
308.6	327	BB	0.5		0	BB	2										DI'd Po BB's and amyg fill. Py DI'd BB's.

Blackwater Project
Drill Summary - Structure

BW0456

From (m)	To (m)	Structure	Strength	Comments
1	2.8	JZ	2	Jointed @ 30>50 dtca.
2.8	4.95	BRKZ	5	Mud, and broken bed-rock.
4.95	6.6	JZ	4	Jointed @ 25=50 dtca.
6.6	6.8	FL	3	Gouged fault-Bx, with rounded lithics.
6.8	7.8	JZ	5	Jointed and broken at low angles to core axis, 10>25 dtca.
7.8	9.3	JZ	3	Jointed @ 30>50 dtca.
9.3	9.45	FL	3	Gouged fault-Bx, with rounded lithics.
9.45	12.6	JZ	3	Jointed @ 0, 10 >60 dtca.
12.6	12.8	FL	2	Small fault-Bx, 15mm wide, @ 25 dtca.
12.8	16.39	JZ	3	Jointed @ 10, 25>60 dtca.
16.39	16.51	BZ	2	Small fault-Bx , 11mm wide @ 30 dtca.
16.51	20.3	JZ	4	Jointed @ 25>60 dtca.
20.3	21.8	BZ	3	fault Bx, broken rock with minor-moderate gouge, and moderate jointing @ 25 and 40 dtca.
21.8	23.9	FZ	4	ser-chl gouge supporting rounded lithics, jointing @ 30 dtca.
23.9	34.7	BRKZ	3	Broken throughout, locally jointed @ 35, 50 > 0 dtca.
34.7	39.8	FZ	4	broken fault bx, small <0.5m competent sections jointed @ 20 dtca
39.8	42	JZ	4	weakly cracked across whole rock, but joints apparent @ 35>50 dtca.
42	42.2	BZ	3	silica healed fault-Bx.
42.2	43	JZ	4	Jointed @ 35>60 dtca.
43	43.15	FL	4	sharply jointed @ 35 dtca, ser-clay fault.
43.15	44.2	JZ	4	Jointd @ 35 and 50 dtca, and broken = to.
44.2	44.99	BZ	4	reounded lithics supported by partly silicified gouge, bottom contact @ 35 dtca.
44.99	46	BRKZ	3	oddly broken
46	47.5	JZ	3	Jointed @ 50>30 dtca.
47.5	62.1	FZ	5	STrong Fault-Bx, with small semi-intact sections with jointing @ 15-20 and 50 dtca.
62.1	66	JZ	4	Moderatley broken and jointed, Jointing @ 30 adn 50 dtca.
66	66.3	FL	3	unknownstrong clay gouge.
66.3	70.6	FZ	4	abundant Bx, and abroken rock with minor gouge. Jointing @ 10 and 50 dtca.

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a clear direction

Blackwater Project
Drill Summary - Structure

BW0456

From (m)	To (m)	Structure	Strength	Comments
70.6	72.68	JZ	5	Strongly well developed Jointing @ 40>20 dtca.
72.68	72.76	BZ	4	ser-chl gouge supporting rounded lithics.
72.76	73.68	JZ	4	Jointed @ 50 and 25 dtfca.
73.68	73.9	BZ	3	fault bx, ser-chl gouge.
73.9	74.5	JZ	2	Jointed @ 50 dtca.
74.5	75	BZ	1	weak Fault-Bx.
75	80.8	JZ	4	Jointed @ 15 and 30 > 50 dtca.
80.8	92.6	FZ	4	abundantly broken and moderatley gouged locally fault zone. Locally jointed @ 30>50 dtca.
92.6	95.3	JZ	5	Strongly Strongly jointed @ 20 and 30-35 dtca, and broken weakly.
95.3	95.85	BZ	4	Fault Bx, gouge supporting SA lithics.
95.85	98	BRKZ	3	broken.
98	98.3	JZ	1	
98.3	102	BZ	5	Rounded Lithics supported by gouge
102	103.8	BRKZ	2	Broken zone, dropped core, and cave.
103.8	107.3	JZ	4	Moderatley Jointed @ 45 dtca.
107.3	108.6	JZ	4	Jointed = Broken @ 20 dtca.
108.6	116.8	FL	4	Broken rock irregularly, washed away gouge (short runs), locally gogue supporting rounded lithics.
116.8	121.5	JZ	5	Strongly Strongly Jointed @ 40 > 50 dtca.
121.5	136.5	FZ	5	Strongly Gouged and Fragmental Fault.
136.5	215.3	JZ	2	Jointed weakly @ 30 > 50 dtca.
215.3	216.2	BZ	3	Fault Bx, mechanically fround clay supporting SA/SR clasts.
216.2	219.3	JZ	2	Weakly Jointed @ 45>10 dtca.
219.3	275	JZ	2	Joint zone with fractures predominantly 45 to 55 degrees TCA
275	289.9	JZ	3	Jointed @ 35>50 dtca. Small vein-Bx section and increasingly broken towards fault.
289.9	291.9	BZ	4	Strong Fault-Bx starting with a Ca-Vein-Bx above, bottom contact @ 45 dtca.
291.9	293.2	BZ	2	Low angle to core axis extension of fault-Bx.
293.2	296.1	JZ	3	Jointed @ 25>35>50 dtca.

Blackwater Project
Drill Summary - Structure

BW0456

From (m)	To (m)	Structure	Strength	Comments
296.1	296.9	BZ	3	Fault-Bx, Angular fragments dominant over matrix, intact. Top contact @ 50 dtca, bottom contact is a Ga-Po vein @ 50 dtca.
296.9	302.1	JZ	4	Strong Jointing becoming locally broken with depth near fault.
302.1	304.8	BZ	4	Angular Bx, and strogn Jointing @ 50 dtca.
304.8	307.5	JZ	5	Strongly Fractured and moderatley jointed @ 50 dtca.
307.5	308.7	BZ	4	Moderate to strong angular fault-bx, bottom contact @ 65 dtca.
308.7	327	JZ	3	Jointed @ 25 and 50 dtca.

Blackwater Project
Drill Logs

Hole ID:	BW0457	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375701.54
Depth (m):	332.5	Date Started:	15/05/2012	Casing Size:	HWT	Northing:	5893349.87
Azimuth:	0	Date Completed:	19/05/2012	Casing (m):	6	Elevation (m):	1532
Dip:	-90	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	280.1	-89.4
100	249.3	-87.8
150	263.8	-88.1
200	258.2	-87.9
250	260.9	-88.1
300	270	-87.9
332.5	263.6	-88.6

Blackwater Project
Drill Summary - Lithology

BW0457

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3.2	OB							
3.2	150.1	AND	volc	LAP	D	GRY			Pervasively fragmental 100% andesitic volcanoclastic unit. ~70-85% clasts, angular - subrounded, clasts typically 0.5-5cm wide, can be up to 15cm blocks. Compositionally lagrely massive amydaloidal - porphyritic. Interval is intermittently faulted, f
150.1	154.7	VC	plm	CA	MO	GRY	DEP	SH	Clasts are consistently 1-3mm wide, and all are altered to either kaolinite or sercite/chlorite giving speckled appearance - ?polymicitc. Largely matrix supported, matrix of secondary silica. Clasts are typically subangular, occasionally angular, occ
154.7	166	AND	volc	LAP	D	GRY			Intermittently brecciated, locally gougy fragmental andesite. Majority is ~85% clasts, clasts largely angular and poorly sorted, occasional short matrix dominatant intervals with lower average clasts size. Matrix pervasively pinikish ?biotite
166	211	AND	por		D	GRY			Massive poryhritic to amydaloidal andesite, frequently with fine jigsaw fit brecciation. Phenocrysts are 1-2mm long laths, amydules occure in 5-20cm long clusters and are typically 1-2mm wide.
211	332.5	AND	por	CA	MO	GRY			Lrgely feldspar phyric andesite, phenos are 1-2mm long and account for variably ~5-20% of total volume. Locally amygdaloidal and occasional weakly mosaic fragmental.

Blackwater Project
Drill Summary - Alteration

BW0457		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3.2	20.6	O		0	PERV	2	PERV	2	PERV	2	CLY	PATC	4	HM	FC	2	Oxide zone - zero sulphides, haematite on fractures and occasionally permeating matrix. Pervasive mild silca-sericite alt with ?overprint of white ?kaolininte alt, particulalry evident in phenos. Strong carbonate alteration throughout.
20.6	34	T	PATC	3	CLST	1	PERV	2	PERV	3	HM	FR	1	CARB	PERV	3	Very weak oxidation on small proportion of fractures. Pervasive mild obleaching caused by fine sericite +/- chlorite, occasional clasts being extensively replaced by soft white ?kaolinite/illite. Strong carbonate alt throughout, particulalry in amydules, but througout matrix.
34	40	S	CLST	3	CLST	3	PERV	3	PERV	4	TOUR	VN	1				Extensively bleached interval, sericite-chlorite-silica alt throughout, clasts frequently either pistachio/medium chlorite green, or soft white kaolinite/illite. ~10cm of hydrobreccia in ?tourmailne matrix at 35.5m.
40	68.8	S	PATC	1	PATC	1	PERV	3	PERV	1	CARB	PERV	4				Pervasive strong calcite-silca alteration, with isolated 0.5-2m long intervals of heavily bleached sericite - chlorite - silca shouldering brecciated intervals.
68.8	88	S	PATC	2	CLST	1	PERV	4	PERV	3							Fault zoen, fragments in breccias are pervasively silica-sericite altered, frequently with patchy chlorite. Very occasional kaolinite/illite altered lcasts.
88	100.7	S	CLST	3		0	PERV	3	PATC	2	BIOT	CLST	1				Fragmental interval, moderately silciifed throughout, clasts and phenos in clasts are frequently chloritic, matrix of some larger clasts is biotitic. Carbonate conspicuously absent.
100.7	120	S	PATC	1		0	PERV	3	PATC	1	CARB	PERV	4				Pervasive moderate silicicfication, occasional small patches of chlorite-sericite bleaching associated with deformation. Carbonate is prevalent throughout, filling amygdules, fractures, and appearing to fill very fine pore space throughout, locally highly calcareous.
120	122.5	S	CLST	3		0	PERV	4	PERV	4							Heavily bleached interval, qtz-sericite throughout, frequent highly chloritc clasts.

Blackwater Project
Drill Summary - Alteration

BW0457		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
122.5	139	S	DEF	3		0	CLST	2	PATC	2	CHL	FR	3	BIOT	MTRX	2	Frequently brecciated and gougy with gouge pervasively chloritic, chlorite also on fractures in competent intervals. Off green-white sericite on fine fractures and disseminated troughout, locally weak silica alteration, but relatively little. Matrix to fragmental andesite in competent intervals biotitc.
139	149.5	S	DEF	2	PERV	3		0		0	CARB	PATC	2				Pervasively soft (hardness 3-4) interval, gougy intervals are moderately chloritic, fine carbonate filling amygdules, fractures and fine pore space throughout.
149.5	154.8	S	FR	3	CLST	3	PERV	2	CLST	3							Quite VC with clasts pervasivley altered to either soft white kaolinite/dickite, or pistachio green white streaking sericite. Matrix is silica. Fractures and gouge are pervasivley chloritic. No carbonate at all.
154.8	165	S	FR	3		0	PERV	2	PATC	2	BIOT	MTRX	2	CARB	PATC	1	Intermittently gougy interval with gouge pervasively chloritic, fractures also chloritic. Core shouldering structures is moderately sericite bleached, remainder is silica - pinkish biotite altered. Weakly calcareous with calcite focused in amygdules and fine pore space.
165	211	S	PATC	2	VNHL	1	PERV	3	PATC	2	BIOT	MTRX	2	CARB	PERV	2	Moderate, locally quite intnese sericite-chlorite clay alteration in 5-15cm wide haloes around carbonate veins, and very scarce bands of deformation. Otherwise silica altered with biotitic matrix, amygdule, fractures and fine pore space strongly calcareous throughout
211	244	S	PATC	3	VNHL	1	PERV	3	PATC	3	BIOT	MTRX	2	CARB	PATC	1	Similar to overlying interval but patches of ser-chl alt are more common, still typically associated with intervals rich in carbonate veinlets, but also in sporadic centimetric patches. Chl - ser also associated with elevated silica intensity. Carbonate is largely restricted to veinlets, fractures and occasional amygdules. Dull reddish brown biotite in matrix of fresher intervals.

Blackwater Project
Drill Summary - Alteration

BW0457		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
244	315	S	PATC	2	VNHL	3	PERV	3	PATC	2	BIOT	MTRX	2	CARB	PATC	2	Pervasive weak-moderaste silcicification, occasional 5-40cm wide patches of locally quite intense ser-chl alt, background biotite alt in groundmass. Carbonate is very patchy, come and goes, locally quite intense with calcite filling amygdules, fractures and fine invisible pore space.
315	332.5	S	VN	1	VNHL	3	PATC	1	PATC	1	CARB	PERV	3	BIOT	MTRX	3	Fine calcite throughout, filling veinlets and fine pore space throughout. Matrix is pervasively brownish biotite. Frequent carbonate veinlets define mosaic breccias around which core is soft clay altered. Occasional trace chlorite in veinlets, and weak ser in small patches proximal with high veilet densitiess.

Blackwater Project
Drill Summary - Mineralization

BW0457		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3.2	20.6		0		0		0	Hm	FC	1							Oxide zone, hameatite and trace ghoethite on fractures and in goiuge
20.6	39.5	GOU	0.1	DI	0.1		0	Dbs	DEN	0.5							Quite frequent moderately well developed 2-8cm long strands of DBS, trace sphal disseminated, noted on basis of sulphurous smell under acid
39.5	54.5	BB	0.1	VN	0.5		0	Sp	DI	0.1							Quite frequent sphal veinlets, <1-2mm wide. Very occasional 1-5mm wide blebs of py sporadicly throughout
54.5	73	GOU	0.1	SP	0.1		0	Dbs	DI	0.1							Weakly mineralized. Occasional very fine (up to 1mm) specks of sphal, typically in bleached clasts, very scarce fine py in gouge, very scarce DBS in bleached intervals.
73	90	GOU	0.1	CR	1		0	Sp	VN	0.1	SoSu	DI	0.1				Frequent 1-2mm wide blebs of sphal typically occurring within bleached clasts. Very occasional well developed sphal + py veinlets. Sooty sulphide sporadically throughout in variety of forms, veined in gouge, fine specks in bleached breccias, very occ
90	104	BB	0.1	BB	0.5	SP	0.1	Py	FP	0.1							Quite sparse mineralization, millimetric blebs of spahl frequently associated with qtz/carbonate fracture fills, occasional 1-3mm wide elongate py bleb/veinlets associated with gouge, very fine po disseminated throughout..
104	124	VN	0.1	SP	0.1		0	Py	FP	0.1							Occasional very fine specks of sphal associated with carbonate in veinlets, trace py on some fractures and in discontinuous stringers in gouge. ?jasper veinlets at 108.5
124	140	STR	0.5	VN	0.5	DI	0.1	SoSu	GOU	0.1							Very gougy interval with frquent very fine stringers of py, also py with sphal in 1-2mm wide veinlets, isolated 1cm wide sphal bleb/veinlet at 126.85m. Trace po disseminated throughout, also occasional fine poorly defined 'veinlets' of sooty sulphide
140	150	FP	0.1		0	SP	0.1	Py	STR	0.1							Trace po disseminated throughout, occasional very py stringers and on fractures.

Blackwater Project
Drill Summary - Mineralization

BW0457		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
150	160.5	VN	0.5	BB	0.5	DI	0.1	Sp	CR	0.1							Frequent1-2mm wide veinlets of pyrite, most frequent around gouged zones, also millimetric blebs of sphal speckled throguhout, occasional replacing clasts.Trace very fine po disseminated throughout.
160.5	172.5	DI	0.5	DI	0.1	DI	0.5	Ga	DI	0.1	Py	FP	0.1				Quite patchy but locally up to 2% disseminated py>po>sphal + galena - all very fine (1mm max) disseminated throughout groundmass
172.5	184.3	VN	0.1	DI	0.5	DI	1										Fine specks of po > sphal disseminated throughout, occasional trace py associated with calcite veinlets.
184.3	197	VN	0.1	DI	0.1	DI	1	Po	VN	0.5							Frequent qtz-carbonate veinlets with po+/-py partially replacing them. Fine po and trcae sphal disseminated throughout.
197	210		0	DI	0.1	DI	0.5										Trace sphal and very fine po disseminated throughout.
210	224		0	DI	0.1	DI	0.1										Very fine trace po and sphal disseminated sporadically throughout
224	238	FP	0.1	DI	0.1	SP	1	Po	VN	0.5							Frequent millimetric specks of po and trace fine sphal disseminated throughout, also ~1p/m 1-3mm wide po +/- py veinlets.
238	272.5	FP	0.1	DI	0.1	DI	0.5	Po	STR	0.1							Very scarce py on fractures and fine disseminated sphal. More common but still scarce fine stringers of calcite + po, and fine po disseminated.
272.5	275	FP	0.1	VN	0.5	VN	0.5	Po	DI	0.5	Sp	DI	0.1				Typical background of fine disseminated po>sphal with addition of quite frequent 1-2mm wide po + sphal veinlets including a larger 1-3cm wide band of clay alteration with ~50% sphal + po.
275	295	FP	0.1		0	DI	0.5	Po	VN	0.1							Sparse fine po disseminated throughout, occasional flecks of po in carbonate veinlets, patchy py?marcasite on fractures.
295	332.5	VN	0.1	VN	0.1	DI	0.5	Cp	DI	0.01							Trace very fine specks of po disseminated throughout, an isolated sub-millimetric speck of chalco in similar form. 5mm wide sphal + py veinlets at 323.7m.

Blackwater Project
Drill Summary - Structure

BW0457

From (m)	To (m)	Structure	Strength	Comments
3.2	25	FZ	3	Frequent short (0.2-1m) brecciated +/- gouge intervals, otherwis competent weakly jointed core.
25	36.3	FZ	1	Essentially a joint zone with an isolated short faulted interval.
36.3	40	FL	3	Fault breccia with moderate amounts of sandy gouge.
40	54.5	JZ	3	Joint zone with increasing fracture density doenhole. Variety of angles 30-60degTCA
54.5	89.5	FZ	5	Rubbly fault breccia throughout,intermittent but frequnet intervals of moderate sandy-clay rich gouge development.
89.5	104	FZ	3	Interval is ~40% fault breccia, locally with moderate gouge development. Otherwise jointed - rubbly, joints at variety of angles from 20-60degTCA.
104	111	JZ	2	Moderately jointed
111	120.5	BRKZ	4	Rubblt throughout, locally brecciated.
120.5	127	FL	3	Largely fault breccia, high fracture density, locally gougy.
127	131.2	JZ	2	Moderately jointed
131.2	136	FZ	4	Rubbly, ~60% gougy and brecciated.
136	139	FL	5	Fault breccia in gouge matrix.
139	160.4	FZ	4	Rubbly throughout, frequent fault brecciation accompanied with moderate gouge and high fracture densitites.
160.4	166	FZ	2	Largely competent core with occasional short intervals of breccia and gouge.
166	332.5	JZ	2	Occasional clean planar fractures at 60>25degTCA

Blackwater Project
Drill Logs

Hole ID:	BW0458	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375404.17
Depth (m):	334	Date Started:	15/05/2012	Casing Size:	HWT	Northing:	5893495.96
Azimuth:	0	Date Completed:	21/05/2012	Casing (m):	10	Elevation (m):	1515
Dip:	-90	Logged By:	TOl	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
53.5	72.3	-89.9
100	221.3	-89.5
154	261	-89.7
202	254.5	-89.6
253	235.1	-89.1
301	225.1	-89.4
334	219.3	-89.1

Blackwater Project
Drill Summary - Lithology

BW0458

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	3	OB							Overburden
3	16	VC	plm	LAP	M	GRN	FLT	GR30	Medium green-grey volcaniclastics with SA/SR clasts dominantly felsic clasts; bottom contact faults into next interval
16	40	FLPT	lam	LAP	L	GRN	UNKN		Light green-grey felsic lapilli tuff with laminations/banding in sections and laminated clasts, some convoluted bands seen in sections
40	83	VC	plm	LAP	M	GRN			Altered volcaniclastics with texture washed out by silica-sericite alteration in sections, weak chlorite in clasts, matrix-clasts and mafic-felsic ratios hard to say exactly due to washed out texture
83	88	VC	plm	LAP	M	GRN	DEP	GR30	Altered volcaniclastics similar to previous interval
88	117.6	FT	lam	LAP	L	GRN	DEP	GR10	Light to medium green-grey felsic tuff/felsic lapilli tuff??? Banded/ laminated in sections, banding oriented at 60 degrees in sections and 40degrees in others, some hematite in matrix in sections
117.6	126.9	VC	plm	LAP	M	GRN	UNKN		Medium grey with greenish hue in sections, roughly 50-50 clast to matrix ratio and 75-25 mafic to felsic clasts
126.9	137.2	AND	amg	LAP	D	GRY			Dark grey amygoloidal andesite with calcite filled amygdules increasing in size down hole, some elongated ones showing a 60degree orientation in sections and a 40/50 degree orientation in other sections
137.2	140.5	AND	bx	LAP	D	GRY	UNKN		Dark grey brecciated andesite, porphyritic in sections with calcite veinlets/fracture fillings, calcite veinlet cutting and offsetting silica hematite intrusion/jasper??? (hard red alteration between 139.7m-140m)
140.5	178	AND	bx	LAP	D	GRY			Dark grey brecciated andesite with amygdules in sections, calcite veinlets/stringers/stockwork
178	205	AND	bx	LAP	D	GRY			Dark grey brecciated/amygoloidal andesite, more amygoloidal towards bottom of interval, increased calcite veining/stockwork, silicified calcite filled amygdules
205	211	AND	bx	LAP	D	GRY			Dark grey brecciated andesite with a 0.5m section bleached/altered
211	213.5	VC	plm	LAP	M	GRY			Medium to dark grey polymictic volcaniclastics with dominantly mafic clasts and roughly 50-50 clast to matix ratio
213.5	222.5	VC	plm	LAP	M	GRN			Silica-sericite altered volcaniclastics, texture obscured by alteration but looks dominantly mafic and clast supported
222.5	237.3	VC	plm	BLOCK	D	GRY			Medium to dark grey volcaniclastics with block/boulder sized andesite clasts; dominantly mafic clasts roughly 75-25 mafic to felsic clasts

Blackwater Project
Drill Summary - Lithology

BW0458

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
237.3	244.4	VC	plm	LAP	M	GRY			Medium grey polymictic volcaniclastics with 75-25 mafic to felsic ratio and 75-25 clasts to matrix ratio
244.4	254	VC	plm	LAP	MO	GRN			Mottled light grey volcaniclastics with mottled alteration, some of the texture has been obscured by alteration particulary the boundaries of clasts making some of the clasts look like ghost clasts with no well defined edges; roughly 50-50 clast to m
254	261	VC	plm	BLOCK	M	GRY			Medium to dark grey volcaniclastics, blocky/boulder sized andesite clasts, dominantly mafic clasts and clast supported in sections
261	267.8	VC	plm	LAP	M	GRY			Polymictic volcaniclastics; medium grey, clast supported with roughly 75-25 mafic to flsic clasts
267.8	273	VC	plm	LAP	D	GRY	ALTFR	GR5	Dark grey volcaniclastics with 0.5m bleached out section at top of interval
273	285.5	VC	plm	LAP	M	GRN			Medium green grey volcaniclastics with 75-25 mafic to felsic clasts and dominantlt clast supported
285.5	309.6	VC	plm	LAP	M	GRN			Medium green grey volcaniclastics with roughly 50-50 clast to matrix ratio and dominantly felsic clasts
309.6	316	VC	plm	LAP	M	GRN			Medium green-grey volcaniclastics
316	323.3	VC	plm	BLOCK	MO	GRN	UNKN		Mottled green-grey polymictic volcaniclastics with mottled/patchy alteration in ~0.5m sections, blocky andesite clasts
323.3	326.9	AND	bx	LAP	D	GRY			Dark grey-black brecciated andesite with calcite veinlets/stringers/fracture filling
326.9	334	VC	mon	LAP	D	GRY			Dark grey volcaniclastics with some brecciated andesite clasts, dominantly mafic clasts with ~10% felsic clasts

Blackwater Project
Drill Summary - Alteration

BW0458		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
3	5.5	T	OP	1	FR	3	PATC	3	MTRX	2	HM	FR	1	LIM	FR	2	Oxides -lim + Hm present on fracture planes, sericite in matrix, chlorite as overprint, patchy silica and clay on fractur planes
5.5	31	T		0	CLST	2	PATC	3	CLST	3	HM	PATC	1	LIM	PATC	1	Very faint oxide stainings in in sections, dominantly sericite-clay alteration, patchy silica
31	47.5	S	CLST	1	CLST	3	PATC	3	CLST	3							Patchy silica, weak chlorite in a few clasts, sericite-clay in clasts, sericite in matrix and some clay on fracture planes
47.5	67	S	FC	1	CLST	3	PATC	3	CLST	4	HM	PATC	1				Hematite faint in gougy sections, strong sericite-clay in clasts, some patchy clay, weak chlorite in fractures of fault breccia sections, patchy silica
67	82	S	FC	1	CLST	3	MTRX	3	CLST	4	HM	PATC	1				Sericite-clay in clasts, sericite-silica in matrix, weak fracture controlled chlorite, some hematite (banded looking/vein looking???) in gougy sections
82	88	S	FC	1	FC	2	PERV	4	CLST	3	HM	PATC	1				Alteration similar to pervious interval only stronger pervasive silica, less sericite and fracture controlled clay
88	115	S	PATC	1	FR	2	PERV	4	MTRX	3	HM	PATC	1				Dominantly sericite-silica altered, some clay on fractures, weak patchy chlorite in sections, some small patchy hematite in matrix
115	117.9	S	FR	2	FC	1	PERV	4	MTRX	3	HM	MTRX	2				Silica-sericite alteration, with increased hematite in matrix, weak clay on fracture planes, some chlorite on fracture plane
117.9	127	S	FR	2	FC	2	PATC	3	MTRX	2							Patchy silica, some clay on fracture planes, weak chlorite on fracture planes and in a few clasts, sericite in matrix
127	140.5	S	MTRX	2	FC	1	PATC	5	MTRX	1	CAL	AMYG	3	HM	PATC	5	Weak sericite in matrix, chlorite in matrix and in some calcite filled amygdules, weak clay on fractureplanes and replacing plag crystals in sections, strong patchy silica, strong silica-hematite/jasper in patches, calcite in amygdules/veinlets and on som
140.5	159	S	MTRX	2	FC	2	PERV	4	MTRX	1	CAL	VN	2				Some chlorite in matrix, calcite in veinlets and on fracture planes, weak sericite, strong silica
159	164	S	MTRX	1	FC	1	PERV	5	CLST	1	CAL	VN	2				Weak sericite, chlorite and clay, strong pervasive silica and calcite in veinlets

Blackwater Project
Drill Summary - Alteration

BW0458		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
164	190	S	FR	3	PATC	2	PATC	3	CLST	2	CAL	VN	2				Sericite in clasts, chlorite on fracture planes, patchy clay and silica, calcite in vein/veinlets/hairlines
190	205	S	MTRX	2	PATC	2	PATC	4	MTRX	2	CAL	AMYG	2				Patchy clay and silica, weak sericite and chlorite in matrix and calcite in amygdules/veinlets and hairlines
205	208.8	S	MTRX	2	REP	1	PATC	3	MTRX	1	CAL	VN	1				Weak sericite in matrix, some chlorite in matrix and on fracture planes, weak clay as replacement and on fracture planes, moderate patchy silica
208.8	213.5	S	FR	3	FR	2	PATC	3	MTRX	2							Patchy silica, clay and chlorite on fracture planes, sericite in matrix
213.5	222.5	S	FR	2	FR	1	PATC	4	MTRX	3	GRNT	CLST	1				Patchy silica almost as overprint but slightly less in some patchy areas than others, clay and chlorite on fracture planes, with some chlorite weak in clasts, sericte in both matrix and some clasts
222.5	237.4	S	CLST	1	REP	1	PATC	4	CLST	1	CAL	INFILL	2	GRNT	CLST	1	Garnets in clasts/as clast replacement, calcite as infill in fractures, veinlets, stringers and on fracture planes, strong patchy silica
237.4	254	S	FR	1	FR	1	PERV	4	MTRX	1	CAL	FC	2	GRNT	REP	2	Garnets bigger in size than previous interval and replacing clasts, fracture controlled calcite, strong pervasive silica, weak chlorite and clay on fracture plane and weak sericite in matrix and some clasts
254	268	S	CLST	2	FR	2	PATC	4	MTRX	1	CAL	FR	2	GRNT	CLST	1	Chlorite in clasts and matrix, clay on fracture planes, strong patchy silica, calcite on fracture planes and in veinlets, weak sericite in matrix
268	273	S	CLST	1	FR	1	PERV	4	MTRX	2							Sericite in matrix and some in clasts, weak chlorite in clasts, very weak clay on fracture planes, strong pervasive silica
273	295	S	FR	2	FR	3	PATC	3	CLST	3							Clay-chlorite on fracture planes, sericite mainly in clasts and patchy silica
295	317	S	FR	3	FR	2	PATC	3	CLST	4							Chlorite-clay on fracture planes, patchy silica and strong sericite in clasts
317	334	S	FR	1	PATC	1	PATC	3	MTRX	1	CAL	VN	2				Weak sericite in matrix and clasts, weak chlorite on some fracture planes, very weak patchy clay, patchy silica and clacite in veinlets and on some fracture planes

Blackwater Project
Drill Summary - Mineralization

BW0458		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
3	16		0	DI	0.5		0	Dbs	BB	0.5							Disseminated Sph, some bleby black sulphides/some wispy
16	37		0	DI	0.5		0	Dbs	STR	0.5							Black sulphide stringers/bands in gougy sections and bleby in areas; disseminated Sph
37	52		0	DI	1.5		0	Dbs	DI	1							Red and black shiny Sph in blebs and disseminated in sections; disseminated black sulphides, some wispy ones as well
52	67		0	DI	1		0	Dbs	DI	1							Disseminated Sph and black sulphides, a few wispy black sulphides
67	82		0	BB	0.5		0	Dbs	BB	0.5							Bleby Sph, Bleby/wispy black sulphides
83	88	BB	0.1	BB	0.5		0	Dbs	BB	0.5							Trace tarnished Py, Sph and black sulphides in blebs
88	117.6	BB	0.1	BB	1		0	Dbs	WIS	0.5							Trace Py in blebs, disseminated/bleby Sph, some wispy/bleby black sulphides
117.6	126.9	GOU	0.5	BB	0.1	DI	0.5										Py in small fault breccia secton, in veinlet and on a few fracture planes, trace bleby Sph and disseminated Po
126.9	137.2		0		0	AMYG	0.5										Po with calcite in some amygdules
137.2	140.5	VN	0.1	GmR	0.1	PATC	0.5										Py in veinlet >0.1; trace sph in matrix as GmR, patchy Po particularly in area/patch wth jasper???/hematite silica???
140.5	156		0		0	DI	0.5										Disseminated Po
156	172	VN	0.5	VN	0.1	BB	1	Ga	VN	0.1	Mrc	FP	0.1				Bleby Po, Py in vein with Sph and galena, Py also associated with some of the calcite veinlets and small cluster of euhedral crystals on fracture plane, some marcasite seen on a few fracture planes
172	190	VN	0.5	VN	0.1	BB	1	Mrc	FP	0.1							Trace marcasite on fracture planes, Py in veinlets/bleby, trace Sph in veinlet, bleby Py
190	205	FP	1		0	AMYG	1.5	Mrc	FP	0.1							Py on fracture planes and in veinlets, Po in amygdules/bleby, trace marcasite on fracture planes
205	208.8		0		0	DI	0.5										Disseminated/bleby Po

Blackwater Project
Drill Summary - Mineralization

BW0458		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
208.8	211	BB	0.1	PATC	0.5	DI	0.5	Apy	PATC	1							Patchy/disseminated Apy, disseminated Po, patchy sph associated with the Apy and tarnished trace Py in blebs
211	222.5	BB	0.1	CR	0.1	DI	0.1	Grnt	CR	0.1							Trace sulpides overall in this interval, some trace garnets as clast replacement
222.5	235		0		0	DI	0.1	Mrc	FP	0.1	Grnt	CR	0.1				Disseminated Po, marcasite on fracture plane, and garnets as clast replacement
235	246	SP	0.1	BB	0.1	BB	0.5	Cp	DI	0.1	Grnt	CR	0.1				Bleby Po in andesite clasts and as clast replacements in some of the smaller clasts, trace Py specks, trace bleby Sph and trace disseminated Cp; Garnets as clast replacement >0.1% but <0.5%
246	255		0		0	BB	0.5	Grnt	CR	0.5							Bleby Po with some in clasts associated with the garnets; garnets as clast replacement and they increase in siz in this interval
255	268		0	BB	0.1	BB	0.5	Grnt	CR	0.1							Po in blebs and some in andesite clasts, trace shiny black sph in blebs associated with Po, Garnets as clast replacement
268	272.5		0	BB	0.1	BB	0.1	Dbs	WIS	0.1	Grnt	CR	0.1				Trace Sph, Po, Dbs and garnets
272.5	284.5	BB	0.1	CR	2		0	Grnt	CR	0.1							Py blebs in clasts and some on fracture planes, Sp as clast replacement, bleby in clasts and sometimes around the edges of clasts, trace garnets as clast replacement
284.5	294.7	VN	0.1	CR	1		0	Ga	VN	0.5							Trace Py in veinlet and some as blebs in clasts, Sph as clast replacement, galena in veinlets and as specks
294.7	301	BB	0.5	CR	0.5	CR	0.5	Ga	DI	0.5							Bleby Py, Sph and Po in clasts/as clast replacement, disseminated specks of galena
301	309.3	BB	0.5	CR	1	BB	0.1	Ga	CR	0.5							Sph in clasts/ as clast replacement sometimes with galena and some patchy Sph, trace bleby Po in clasts, patchy/bleby Py
309.3	319	BB	0.5	BB	1.5	BB	0.5	Grnt	CR	0.5	Cp	CR	0.1				Bleby Py and Sph, some Sph and Po in clasts, garnets as clast replacement, trace cp in a garnet cluster

Blackwater Project
Drill Summary - Mineralization

BW0458		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
319	334	BB	0.1	BB	0.1	BB	1	Cp	BB	0.1	Grnt	CR	0.1				Po in disseminated blebs, trace py (associated with the calcite veinlets) and cp in blebs (with py in a calcite veinlet),Trace bleby Sph and trace garnets as clast replacement

Blackwater Project
Drill Summary - Structure

BW0458

From (m)	To (m)	Structure	Strength	Comments
0	28.4	FZ	2	Strong brokenzone (5)/weak fault (2) overall - broken bits of core with fault/clay gge in sections; stronger faults in smaller sections
28.4	34	BRKZ	3	Broken zone; was able to get 3 angle readings 50, 20 and 30dtca
34	38.7	FL	3	Fault zone with fault/clay gge+ broken bits of core
38.7	50.5	BRKZ	3	Broken zone with locally faulted sections
50.5	62.5	JZ	2	Weak jointzone with local fault breccia sections/ small fault gge attached to end of competent core, joints mostly at 40dtca others at 60dtca
62.5	67.23	FL	2	Fault with small sections with competent core
67.23	76	JZ	3	Joint zone with local broken sections < 0.5m, joints dominantly at 60dtca others at 40/50dtca
76	82	JZ	2	Joint zone with locally faulted sections~0.5m, joints mostly at 50dtca others at 40dtca
82	86.5	FL	2	Weak to moderate fault with broken bits of core + fault/clay gge in sections sometimes attached to the ends of competent core
86.5	97	BRKZ	3	Broken zone with local sections of stonger broken zones /fault breccia
97	103	JZ	1	Weak joint zone/broken zone, was able to get angle measurements off rough/jagged joints mostly 40/30dtca
103	107.7	BRKZ	3	Broken zone with broken up bits of core
107.7	127	JZ	2	Joint zone with local strong broken zones, joints at 50>60>30dtca
127	140.5	JZ	3	Joint zone with small 0.1m broken zone in sections, joints mostly 50/60dtca others at 15, 20, 30 and 40 dtca
140.5	163	JZ	3	joint zone with local weak broken zones in sections <0.5m, joints dominantly at 40 dtca others at 70>30>60 dtca
163	190	JZ	2	Joint zone with local broken zones >0.5m, joints dominantly at 50/40dtca, others at 60>30dtca
190	205	JZ	3	Joints dominantly at 40dtca, others at 60>50>20>30 dtca
205	229	JZ	2	Joint zone with small sections of local broken zones, joints mostly at 40dtca others at 60>30>50>20dtca
229	256	JZ	3	Joints mostly at 70dtca, others at 50>60dtca, some steep ones at 30>20>10dtca
256	268	JZ	2	Joints at 70/50/60dtca, steep ones at 20/30/10dtca
268	289	JZ	2	Joint zone with local broken zones ~0.5m; joints dominantly at 50dtca, others at 40>30dtca
289	323	JZ	3	Joint zone with a few local broken zones <0.5m, joints dominantly at 30dtca, with others at 40>70>50dtca, some steep ones at 10/20dtca
323	334	JZ	2	Joint zone with locally faulted zones ~0.2m sections, wispy/jagged joints, joints at 50/30dtca

Blackwater Project
Drill Logs

Hole ID:	BW0459	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375551.71
Depth (m):	374.5	Date Started:	15/05/2012	Casing Size:	HWT	Northing:	5893099.48
Azimuth:	0	Date Completed:	24/05/2012	Casing (m):	7.5	Elevation (m):	1572
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
52	93.9	-89
100	59	-89.4
151	85.2	-89.1
200	92.8	-89.3
253	105.7	-89.2
307	114.1	-89.6
352	129.5	-89.5
374.5	103.3	-89.8

newgold
a clear direction

Blackwater Project
Drill Summary - Lithology

BW0459

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.6	OB							Block size Lithics supported by Dirt.
5.6	45	AND	bx	LAP	M	GRY	FLT	GR30	Bx'd AND. SR-SA Clasts rich (15-50%) in feldspar-pheno's, as well as Groundmass. Variable alterations some replacing matrix/Bx'ing rock further.
45	50	FLPT	bx	LAP	L	GRN	FLT	SH	M.Gray Siliceous matrix partially supporting, partial clast support, L.Greenish-Gray to white Angular silica laminated clasts. Clasts appear to be crackled, and are on some ends dissolved into the gray silica matrix. Bottom contact is a sharp alt con
50	51.98	VC	bx	LAP	M	GRY	ALTFR	GR10	Perv silica-ser, with large patches of Ser. Small 2mm angular clasts and larger ghost like clasts rep by sericite. Bottom contact is a gradational contact over 5mm of finer grained increasingly fine-grained silica (fluid edge?, chill-zone?)
51.98	63.3	AND	bx	BLOCK	D	GRY	FLT	SH	Bx'd AND, large Lapilli to Blocks almost indescirnable, abundantey feldspar-phyric (20-40%), locally bleached. Bottom contact is a 1m fault of which the bottom of fault is a sharp contact with a silica altered VC.
63.3	66.5	VC	ms	LAP	L	GRY	ALTFR	GR10	L.Gray matrix supporting L-M.Gray siliceous, L.Green-Gray-White ser-clay rep clasts, and D.Green silica-chl rep clasts. Select laminated clasts.
66.5	70.5	VC	ms	LAP	M	GRY	DEP	SH	Less-altered version of above? ; M.Gray ash to Coarse sand-sized matrix supporting angular D.Gray-Black and L.Gray to white siliceous clasts (some laminated).
70.5	74.5	VC	ms	BLOCK	D	GRY	FLT	GR30	Top of unit 20cm of fine-grained laminated tuff @ 50 dtca. M.Gray ash to coarse-sand sized matrix supporting Lapilli and Block sized clasts, Dominatley silica filled amygdaloidal D.Gray-Black blocks, but smaller lapilli size clasts may be aphanitic a
74.5	90	FLPT	bx	LAP	L	GRY	ALTFR	GR30+	M.Gray Siliceous matrix partially supporting, partial clast support, L.Greenish-Gray to white Angular silica laminated clasts. Clasts appear to be crackled, and are on some ends dissolved into the gray silica matrix. Bottom contact is a sharp alt con
90	99.3	VC	fltbx	LAP	L	GRY	ALTFR	GR30+	Strongly Faulted, Fault-Bx/Gouge. Similar to above, but largely completely silicified (obsalt). Small section from 95-96.7m of faulted fresher rock; AND with D.Gray-Black clasts supported by a partly silicified D.Gray matrix , dominatly fault-Bx.
99.3	107.6	AND	fltbx	BLOCK	D	GRY	ALTFR	GR30	L-M.Gray siliceous matrix supporting D.Gray-Black amygdaloidal or aphanitic clasts Lapilli to Block size. Strongly Faulted/Broken throguhout.
107.6	139.5	AND	fltbx		M	GRY	ALTFR	GR30+	Strongly M.Green gouged Fault-Bx, with rounded clasts < Gouge. All texture obscureed by silica-ser, locally ghost like clasts trace, but margins indiscernable.
139.5	144.7	AND	fltbx	LAP	M	GRY	ALTFR	GR30	M.Gray weakly siliceous matrix supporting D.Gray-Black clasts that have been dominatley sulphide replaced (Sp>Py). Strongly faulted. Bottom and top contacts are gradational fault/alteration contacts.

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Blackwater Project
Drill Summary - Lithology

BW0459

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
144.7	163	AND	fltbx		M	GRN	FLT	GR10	Fault Bx, with rounded clasts supported by M.Gray-Green gouge. intact rock is perv silica-ser altered obscuring all texture. Bottom contact is a sharp to weakly gradational fault/alteration contact.
163	167.5	AND	ms	LAP	D	GRY	FLT	GR10	M-D.Gray siliceous matrix, and bands/patches of M-D.Gray silica supporting very poorly sorted rounded to sub-angular mafic fragments/clasts, clasts are partially sulphide replaced (Sp>Py). (Silica Bx'd rock)
167.5	183	AND	obsalt		M	GRY			Perv silica-ser obscuring all texture.
183	195.8	AND	obsalt		M	GRY	ALTFR	GR30	Perv silica-ser obscuring primary texture and imparting a moderate lamination @ 20, 50 dtca or undulating.
195.8	199.5	AND	mas		D	GRY	FLT	SH	weakly perv silicified, weakly amygdaloidal locally dominantly massive.
199.5	206.8	AND	obsalt		M	GRY	ALTFR	GR30+	Perv silica-ser obscuring primary texture and imparting moderate to strong laminations locally @ 25 dtca.
206.8	211.1	AND	mas		D	GRY	FLT	GR10	Massive AND with a M.Gray Groundmass (feldspar rich) hosting small Black grains (Pyroxenes? Amphiboles?). Texture partly obscured by alteration.
211.1	223	AND	fltbx		M	GRN	ALTFR	GR10	Strong Fault-Bx. M-D.Green gouge supporting Sub-rounded lithics. Perv silica-ser alteration obscuring all texture.
223	242.4	AND	mas		D	GRY	UNKN	GR30+	Massive mottled M-D.Gray groundmass irregularly mottled with D.Gray-Black BB's/grains, (Anhedral to subhedral Amphiboles in a feldspar Groundmass? maybe silica injection?)
242.4	299	AND			D	GRY			finely granular 0.1-1mm black anhedral to euhedral black amphiboles in a D.Gray matrix, patchy abundance of feldspar phenos 1-2mm in size. and local SA/SR Bx'ns (eg:274.6-275m).
299	337	AND			D	GRY			Finely granular 0.1-1mm black anhedral to euhedral black amphiboles and finely granular feldspars.
337	374.5	AND	mas		D	GRY			Finely granular 0.1-1mm black anhedral (amphiboles?) and locally dirty white grains (feldspar?). MAssive Fine-grained AND.

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Blackwater Project
Drill Summary - Alteration

BW0459		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.6	14.5	T		0	PERV	4	PATC	1	PERV	3	CLY	REP	5	CLY	FR	4	Clay patchy perv and clay rep feldpsars, unknown amount of sericite. limonite on FP's. Yellow-white clay on FP's.
14.5	18.2	T		0	CLST	4	MTRX	4	MTRX	2	CLY	FR	2	LIM	FR	4	silica matrix dom, with green ser rep small grains in matrix.
18.2	46	T	FR	2	REP	4	MTRX	3	CLST	3	CLY	FR	5	LIM	FR	1	weak micro-rystalline silica in matrix, clasts clay-ser altered. Abundant yellow clay on Fp's with minor Orange Limonite.
46	50	T		0	FR	2	PERV	5	CLST	1	LIM	FC	4				Perv silica altered rock, with weak ser alt of clasts. Orange Lim alt of gouge and FP's.
50	51.98	S		0	FR	3	PERV	5	PATC	4	SIL	OP	3				Silica perv obscuring texture, and white overprint over sulphide haloes. Patches of lime-green Ser.
51.98	56.3	T	PATC	3	REP	4	PERV	3	PATC	3	CLY	FC	2	LIM	FR	1	Patchy/Block ser-chl-clay rep. Silica in matrix and patchy-perv. clay rep feldspars.
56.3	58.8	S	PATC	2	FR	2	PERV	5	PATC	4	CLY	REP	4				Bleached zone. Perv silica patchy ser-chl. Clay rep feldspars.
58.8	63.3	S	PATC	1	FR	5	PERV	3	PATC	2	CLY	REP	4				Yellow clay on FP's, of-white lcay rep feldspars.
63.3	67.5	S		0	CLST	3	MTRX	5	CLST	3							Strongly silicified matrix. Clasts white-L.Green ser-clay rep.
67.5	70.5	T		0	CLST	3	MTRX	3	CLST	2	LIM	FR	2				weaker alteration then above
70.5	74.7	T	CLST	1	CLST	3	MTRX	4	CLST	3	LIM	FR	2				similar toa bove, stronger matrix silicification and clay is dominant in larger clasts while ser is dominant in smaller clasts.
74.7	91	T		0	CLST	2	PERV	5	CLST	2	LIM	FC	4				Strong M.Gray silica in matrix and mod-strong silica in clasts with ser and clay. mod-strong Limonite oxidation of sulphides and coating fractures/FP's.
91	95	S		0	FC	3	PERV	4	PERV	4							Similar to above; but ser and silica more evenly distributed between amtrix and clasts, and loclaly silica-ser completely obscures texture.
95	96.7	S	FC	3	CLST	4		0	FC	3	CLY	FC	4				More Mafic/Int Fault-Bx, M.Green Clay-Chl-Ser Gouge supporting Clay altered Lithics. Lithics with matrix and clasts apparent have a slightly more siliceous matrix.

Blackwater Project
Drill Summary - Alteration

BW0459		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
96.7	99.3	S		0	FC	4	MTRX	5	FC	2	CLY	CLST	4				White-yellow clay in Gouge, and White-yellow clay rep clasts locally.
99.3	107.7	S	FR	5	CLST	3	MTRX	3	FC	2	CLY	FC	3	SIL	AMYG	2	Lapilli to Block sized clasts in a Fault Bx, intact sections are matrix dom silica supporting clay rep clasts, some with silica filled amygs.
107.7	139.5	S	FC	4	FC	3	PERV	5	PERV	4	SER	FC	4				Perv silica Ser in rock fragments, locally increasingly sericitic (darker green). Fault Gouge is dominatly M.Green ser-clay but locally D.Green chl.
139.5	144.5	S	FC	5	FC	2	MTRX	2	MTRX	1	CHL	REP	4				Weak silica-ser rep of matrix. FP's and gouge strongly chloritic, as well clasts are chlorite>Sulphide replaced.
144.5	163	S	FR	4	FC	3	PERV	5	PERV	4							dingy yellow clay fracture controlled and within the gouge. Perv silica-ser alteration increasing in strength with depth away from last interval, obscuring all texture.
163	167.5	S	FR	5	CLST	3	MTRX	2	MTRX	2	CHL	CLST	2				Altered AND, M-D.Gray fluids weakly siliceous/sericitic creating the matrix. Clasts are clay-chl-sulphide replaced (Sp>Py). Strong D.Green Chl on FP's.
167.5	183.3	S	FR	4	FR	1	PERV	5	PERV	4	SER	BN	2	HM	FR	1	Strong silica-ser perv, with local bands of L-M.Green ser. Weak off red to weak orange Hm on FP's.
183.3	195.8	S	FR	5	FR	1	PERV	5	PERV	4	SER	BN	2				similar to above, increasesd chl. Ser and silica may be partially seperate in laminations.
195.8	199.5	S	FR	5	FR	1	PERV	3	PERV	1							D.Gray-Black rock, Perv siliceous, with strong M-D.Green chl coating FP's.
199.5	206.8	S	FR	5	FC	1	PERV	5	PERV	4	SER	BN	2				perv silica-ser, local strogner ser in laminations. D.Green>M.Green chl coating FP's.
206.8	211.1	S	FR	5	PERV	3	PERV	2	PERV	1	BIOT	PERV	3				Decreasingly siliceous/sericitic from top alt contact to bottom fault contact. With depth clay and Biot content increase. D.Green chl coating FP's.
211.1	216.1	S	FR	2	FC	1	PERV	5	PERV	2							Perv silica-ser. weak chl coating FP's. clay-ser gouge.
216.1	221.5	S	PERV	2	FC	4	PERV	5	PERV	3	CHL	FC	3				Fault-Bx; Chl on FP's and in gouge with clay and sericite. Lithics are M.Gray silica perv with moderate ser and weak chl.

Blackwater Project
Drill Summary - Alteration

BW0459		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
221.5	223	S	FR	3		0	PERV	5	PERV	3							Broken; Fragments perv silica-ser and moderate chl on FP's locally.
223	224.5	S	FR	5	FC	1	PERV	3	PERV	2	CHL	PERV	2				Perv silica-ser-chl, with D.Green chl coating all FP's.
224.5	227	S	PERV	1	FR	3	PERV	3	PERV	1	CHL	FR	5				Fault zone; Yellow clay coating FP's on top of D.Green chl. Lithics and blocks are perv silica-ser-chl altered.
227	239.5	S	PERV	1	FC	3	PERV	2	PERV	1	CHL	FR	5				Fault zone; D.Green chl coating FP's. lithics and blocks are perv silica-ser-chl rep.
239.5	274.3	S	FR	5	FC	5	PERV	2	PERV	1	CLY	REP	2	SIL	PATC	2	Pervasive silica, throughout replacing matrix/Groundmass. Small grains wether they be fragments or anhedral to euhedral amphiboles are chl-clay replaced. Fracture planes are very strongly chlorite coated, and proximal to faults/fault zones pale to moderat
274.3	279	S	FR	4	FR	1	PERV	3	FR	4	CAL	FR	4				L.Green to white mixture of sericite and calcite coating FP's locally on top of chlorite. Perv silica alterting GM and feldspar phenos.
279	284.5	S	FR	3	FC	5	PERV	2	FR	2							WEak chl stain on FP's, with strong moderate yellow clay filling fractures and rep gouge.
284.5	299	S	FR	5	FC	2	PERV	3	PERV	1	CLY	REP	2	CHL	REP	2	sligghtly lighter AND, bleached. Chl coats FP's and occurs with Py in veins. Minor-moderate yellow clay on local FP's. Pervasive BIot alt, giving an off brown look.
299	318	S	FR	5	FR	3	PERV	3	PERV	1	CLY	REP	2	CHL	REP	2	simialr to above.
318	333	S		0	VNHL	3	PERV	3	VN	3	BIOT	PERV	2	CAL	VN	3	weak-moderate silica, locally stronger perv alt. L.Green-Blue sericite with white calcite fracture controlled veinlets. Perv Brown BIOT alt, locally stronger. Clay alteration surrounding calcite-sericite veinlets.
333	356	S	VN	1	PERV	4	PERV	2	VN	1	BIOT	PERV	4	CAL	VN	3	M.Brown Clay-BIot altered siliceous rock, with m oderate to strong calcite veining incorportating masses of sericite and Chl. Calcite vein centric clay alteration halos.
356	366.5	S		0	PERV	3	PERV	3	REP	3	BIOT	PERV	3	CAL	VN	4	bleached zone, increased calcite veining. L.Green ser rep grains in GM.
366.5	374.5	S		0	PERV	3	PERV	2	PERV	1	BIOT	PERV	4	CAL	VN	4	less silicified then above.

Blackwater Project
Drill Summary - Mineralization

BW0459		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.6	17.5		0	BB	0.5	CR	0.1										Sph in blebs, Po fine grained in clasts
17.5	32	FP	1	BB	0.1	CR	0.1	Dbs	WIS	0.5	Cp	SP	0.1	Ga	SP	0.1	Py on fracture planes, some dull/tarnished Py in fractures of core, trace Sph in blebs, weak Po in clasts, some Dbs present, trace tarnished Cp (bluish-purple) and Ga on fracture plane
32	46		0		0	FG	0.5										Fine grained Po
46	52	BB	0.5	DI	1		0	Cp	BB	0.1	Ga	SP	0.1	Dbs	WIS	0.5	Trace galena specks and trace cp bleb, some wispy dbs and some Py blebs, disseminated Sph but bleby in sections
52	63.4	FP	0.5	BB	1	BB	0.1										Trace Po in blebs, Py/marcasite?? on fracture planes, Bleby Sph in some cases patchy/clusters of blebs
63.4	74.9	FP	0.5	CR	1.5	CR	0.1	Ga	SP	0.5	Dbs	DEN	0.5				Galena in specks (in a 0.3m) section and trace specks throughout interval; Sph as clast replacement in smaller clasts, as blebs in and rimming the edges of larger clasts
74.9	77.6	BB	0.1	DI	0.1		0	Dbs	WIS	0.5	Ga	SP	0.1				Trace galena specks and trace disseminated sph and Py, some Dbs present; some leached sulphide sites
77.6	91	SP	0.1	DI	0.1		0	Dbs	WIS	0.1							Trace sulphides; Py specks, disseminated Sph and wispy Dbs
91	95	BB	1	BB	3	BB	0.1	Dbs	DEN	0.5							Black Sp and Py BB's weak Po locally intergrown. Dendritic/wispy BS's.
95	107.6	BB	0.5	BB	1		0	Py	VN	0.5	Cp	VN	0.5	Mrc	FP	0.1	Py veinlets and a CP>>Py veinlet, Bx'd in teh fault-Bx. Black metallic Sp BB's in gouge and in clasts.
107.6	139.5	DI	1.5	DI	3.5	DI	0.5	Sp	VN	0.1	Py	FP	0.1	Dbs	DEN	0.1	small to large DI'd BB's of Sp, locally rep clasts. DI'd BB's of Py locally intergrown with minor Po. Qtz-Sp veinlet. In Gouge is Bb's/crystals of Sp Py throughout, locally milled. Some post structure Py mineralization acting as matrix to the Fault-B
139.5	145	VN	0.5	CR	2	CR	0.1	Py	CR	1	Mrc	FP	0.1				Red-Sp>Py>Po replacing clasts with chlorite. Py VN'd/FC'd within rock and within gouge. (post structure mineralization?).

Blackwater Project
Drill Summary - Mineralization

BW0459		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
145	152	DI	0.5	DI	3	DI	0.1	Py	FP	1.5	Cp	FP	0.1	Py	STR	0.1	Di'd BB's of Sp>Py>Po. dendritic/wispy BS's as well as small discont stringers of Py and Sp.
152	163	DI	2	DI	2.5	DI	0.1	Py	FP	0.1	Dbs	DEN	0.5				Di's BB's of Sp<>=Py locally. Dendritic wispy BS's. Large Vein-like BB of Py @ 156.4 m.
163	167.5	CR	1.5	CR	3	CR	0.1	Py	FP	1.5	Py	VN	2	Sp	VN	0.5	D.Gray-Black clast replacement BB's /GMR by Py-Sp and trace Po in Py BB's. Py occurs in 2 types of veinlets, larger Sp-Py-Cp-Chl-Ser-Qtz veinlets and smaller Py fracture controlled veinlets throughout.
167.5	183.3	DI	4	DI	6	DI	1	Py	VN	0.1	Sp	VN	0.1	Cp	VN	0.1	Abundant DI's and DI'd BB's of Py and Sp locally one more abundant then the other.
183.3	187.5	BB	1	BB	9	BB	1	Mrc	FP	0.1	Py	FP	0.5				Abundant BB's of red Sp, locally up to 25%, with BB's of Py and Po.
187.5	195.8	BB	1		5	BB	1	Mrc	FP	0.5	Py	FP	0.1				Abundant BB's of Sp, throughout, locally banded. fine-grained Po replacing cubes of Py. Py BB's and discontinuous BB'y bands.
195.8	199.4	FC	1	GmR	4	GmR	3	Po	BB	1	Mrc	FC	1	Py	GmR	1	Sp-Po-Py replacing grains within Groundmass, both smaller <0.1mm and lareger ~0.5mm. Py and Mrc Fracture controlled, threoughout. Po infill maygs lcoally. Py Veined, cubes and tetrahedral on one face.
199.4	206.8	BB	1	BB	3	BB	1	Cp	BB	0.5	Mrc	FP	0.5				BB's of Sp>Py-Po intergrown together locally, and locally intergrown with Cp.
206.8	211.1	BB	4	BB	1	BB	0.5	Cp	BB	0.1	Mrc	FP	0.1	Py	FP	1	Fracture bontrolled BB's of Py, with trace Po and Cp, intergrown. Sp DI'd BB's. Very fine-grained Py on FP's, with trace Mrc.
211.1	216	BB	0.5	BB	2	BB	0.1										DI'd BB's of Sp, Py, Po.
216	221.4	BB	2	BB	7	BB	0.5	Py	VN	0.5							BB's of Py in gouge, and within lithics. Lithics are up to 30% Sp replaced as BB's style.
221.4	223	BB	1	BB	2.5		0										DI'd BB's of Sp, Py.
223	241.5	VN	0.5	BB	3.5	BB	1.5	Py	FC	2							Di'd BB's of Py, Po and Sp. Po rep cube like Py. red Sp BB's in GM rep small grains. Strong Fracturing coated by Py.

Blackwater Project
Drill Summary - Mineralization

BW0459		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
241.5	256.2	VN	1	BB	2.5	BB	1	Py	BB	4	Sp	VN	0.5				Patchy abundances of Sp and Py one or the otehr locally more abundant, BB's replacing groundmass. Py veining at regular angles with Sp and fracture controlled without.
256.2	271.7	BB	2	BB	2	BB	1	Mrc	FP	1	Py	VN	0.1	Py	FP	0.1	Mrc coating FP's. BB's of Py and Sp and locally intergrown together replacing grains and encircling grains.
271.7	281	FC	0.1	BB	0.1	BB	1	Mrc	FP	0.5	Apy	VN	0.1				Mrc on FP's. Py FC'd with sericite and carbonate. Po irregular BB's and specks in GM. Trace APy in a Qtz-Apy veinlet.
281	289	BB	0.5	GmR	10	SP	0.1	Py	VN	0.5							Abundant BB's of Red-Sp rep GM. trace Po and Py throughout, Py dominatley VN'd.
289	303.5	BB	2	BB	0.5	BB	1	Py	VN	1	Po	VN	0.1	Sp	VN	0.1	Py with minor Sp and Po veinlets. Large fragments (`20-40mm) of laminated Chl-Py-Po. Round BB's of Py > Po in small patches throguhout (amygdules?),Py and Po locally rimmed by red Sp.
303.5	310	SP	1	SP	1	SP	1	Py	VN	0.5	Sp	VN	0.1				Fracture controlled and vein controlled Py. Sp Po Py all specks in GM possibly replacing grains.
310	313.8	VN	2	VN	0.5	BB	0.1	Sp	SP	1							abundant fracture controlled Py veinlets, locally with Sp. Red Sp Specks and BB's throughout GM.
313.8	321	VN	0.1	SP	2	SP	1	Po	BB	0.1							red Sp specks and BB's in GM, throguhout. Py Veining decreases with depth. Po BB's with intergrown Sp, and Po specks, throughout.
321	337		0	SP	1	SP	2										Specks/BB's of red Sp and Po throughout GM,
337	356		0	BB	0.1	SP	2	Apy	BB	0.1							specks and cube-like Po DI's throughout.Trace BB's of Spy and Sp BB's assoc with Qtz @ 349.25m
356	366.5		0		0	BB	0.5										Small Specks and BB's of Po locally.
366.5	374.5	EU	0.1		0	SP	1	Apy	FC	0.1	Po	FC	0.1				Euhedral Py cubes in Vuggy Calcite Veinlet.

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Blackwater Project
Drill Summary - Structure

BW0459

From (m)	To (m)	Structure	Strength	Comments
5.6	12	JZ	3	Jointed @ 50>15>35 dtca
12	17.2	FZ	3	intermittent fault gouge and jointing. Jointing @ 35 dtca. fault @ 15 dtca, fault gouge on Fracture plances.
17.2	22.5	FL	4	intact gouge supporting lithics.
22.5	23.2	FL	4	Mineralized 15mm wide fault @ 10 dtca.
23.2	25.1	JZ	4	Strongly Jointed @ 10>25 > 50 dtca.
25.1	25.7	FL	4	strong fault gouge.
25.7	28.1	JZ	4	Strongly Jointed @ 20>30>50 dtca.
28.1	29.3	BRKZ	3	irregularly broken.
29.3	35.6	JZ	3	Jointed @ 30-40 > 45-50 dtca.
35.6	35.8	FL	5	Gouge.
35.8	37.36	JZ	4	Jointed @ 30>50 dtca.
37.36	37.6	FL	5	gouge.
37.6	40.45	FL	4	fault gouge supporting Bx. Bottom contact @ 25 dtca.
40.45	43	JZ	4	Jointed @ 10>30 dtca.
43	47	FL	4	Lost recovery amongst irregular fractured/broken rock, and small section of faiult gouge.
47	48.2	BRKZ	3	Broken, but local jointing @ 10>30 dtca.
48.2	51	FZ	4	Locally crushed, gouged and/or broken/jointed.
51	52.5	FZ	2	Weakly gouged and broken amongst jointed rock @ 30> 50 dtca.
52.5	61.3	JZ	3	Jointed at 50 and 0 dTCA, 3rd set at 30 dTCA
61.3	62.5	FZ	2	Local brecciated rock, fault large amounts of clay/gougy
62.5	63.3	FL	4	Lower contact @ 35 dTCA.Fault breccia, clay gouge supporting subangular to subrounded lithic fragments
63.3	65.4	FL	3	Broken, low angle TCA joints. May appear to be strongly faulted then the interval actually is
65.4	69.2	JZ	3	Joints at 30 and 45 dTCA.
69.2	69.7	BRKZ	4	Strongly fractured/jointed with gouge
69.7	71.4	JZ	4	Joints at 5 and 30 dTCA
71.4	71.5	FL	5	Joint at 40 dTCA
71.5	73.7	JZ	4	Joints at 20 and 40 dTCA
73.7	74.5	FL	3	Irregular broken core supported by gouge.

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Blackwater Project
Drill Summary - Structure

BW0459

From (m)	To (m)	Structure	Strength	Comments
74.5	74.7	FL	5	Fault breccia, abunding gouge supporting lithics
74.7	77.5	JZ	3	Joints at 20 and 50 dTCA
77.5	77.9	BZ	4	Fault Bx, beginning with dominant gouge and weakening with depth supporting larger rounded fragments.
77.9	79.3	BRKZ	2	weakly broken, but highly fractured rock, still intact.
79.3	79.55	FL	4	Crush zone, limonitic gouge.
79.55	82.3	JZ	3	moderatley jointed = broken @ 20 dtca.
82.3	84.1	BZ	3	Fault Bx, intact, and at low angle to core axis starting @ 82.3 and increasing in size with depth. Rounded lithics dominant supported by limonitic gouge.
84.1	88	BRKZ	2	weakly broken and weakly jointed section. Fractured trhoughout but still intact.
88	88.8	BZ	4	Rounded clast dominant supported by limonitic gouge.
88.8	90.9	JZ	3	Jointed @ 20=35 dtca. weakly fractured locally.
90.9	131.2	FZ	5	Strong Fault Zone, Strong Gouge sections and Strong Fault-Bx sections, crossing multiple litho's and alteration types (D.Green/Black, M.Gray, M-Gray/Green). Jointing in fault gouge and small intact rock blocks is @ 50 dtca.
131.2	146.8	FZ	5	Fault-Bx, with M.Green ser-clay-chl gouge, small intact sections that have been strongly fractured.
146.8	163.3	FZ	4	Moderate gouge, and strong broken zones. jointing locally @ 30 dtca
163.3	167.4	JZ	4	Strongly Jointed @ 30=50-60 dtca, and moderatley fractured/broken, weakly parallel to core axis.
167.4	168.1	FL	5	Fault gouge and fault Bx, chl banding @ 60 dtca.
168.1	169.5	BRKZ	4	Strongly broken, but with moderate jointing @ 30 dtca.
169.5	175.5	JZ	5	Jointed strongly @ 5-15 > 30 > 50 dtca.
175.5	188.5	JZ	4	Jointed @ 35-45 dtca.
188.5	196	BRKZ	2	BRoken rock, at irreegular angles >50%, Jointed @ 15 and 40 dtca.
196	198.1	JZ	3	Jointed @ 25>50 dtca.
198.1	199.3	FL	3	Fault with jointing @ 50 dtca.
199.3	199.5	BZ	4	Fault Bx, SA-SR lithics supported by L.Green gouge bottom contact @ 45 dtca.
199.5	204.5	JZ	5	Strongly Jointed @ 5>25 dtca. locally broken. Parallel to core axis jointing makes jointing look stronger then is.
204.5	208.1	JZ	3	Jointed @ 5>25>50 dtca.
208.1	208.7	BRKZ	3	Moderatley broken with some crushed rock, and jointing @ 25 dtca.
208.7	210.7	JZ	4	Jointed @ 50>5 dtca.
210.7	221.2	BZ	5	sub-angualr to sub-rounded lithics supported by M.Green gouge.

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Blackwater Project
Drill Summary - Structure

BW0459

From (m)	To (m)	Structure	Strength	Comments
221.2	222.6	BRKZ	4	large chunks of broken rock.
222.6	225	JZ	5	jointed strongly @ 35 and 50 dtca, as well as fractured (part of fault zone)
225	229.3	FZ	4	Moderate-strongly gouged, supporting Bx, and blocks.
229.3	230.3	JZ	3	jointed @ 25 and 50 dtca.
230.3	230.7	FL	4	fault goue and broken rock.
230.7	232.2	JZ	4	Jointed @ 35 and 20 dtca.
232.2	239	FZ	5	Strong fault-Bx with smaller rounded clasts and larger blockas.
239	245.7	FZ	3	moderate faults between intact joint zones @ 40 dtca.
245.7	247.9	JZ	5	Jointed very strongly @ 0 > 20-30 dtca.
247.9	248.1	FL	3	yellow clay gouge dominant.
248.1	254	JZ	4	Jointed @ 0 and 20-40 dtca.
254	254.8	FL	3	Broken rock with abundant gouge.
254.8	258.3	JZ	4	Jointed @ 5 and 50 dtca.
258.3	259	FL	5	Gouge fault @ 30 dtca.
259	261	BRKZ	4	Broken irregularly, Fault with gouge washed away?
261	262.3	BRKZ	3	less broken.
262.3	271.6	JZ	4	Jointed @ 30>50 dtca.
271.6	274.3	FZ	4	Fault zone, with moderate gouged faults and intermittent jointed sections @ 40 dtca.
274.3	280.1	JZ	5	Jointed @ 30>50 dtca.
280.1	284.6	FZ	4	Intermittently faulted with abundant gouge and jointed @ 40 dtca.
284.6	302.5	JZ	4	Jointed @ 50>>30 dtca.
302.5	305	JZ	5	Jointed @ 25 > 40-55 dtca.
305	310.8	JZ	3	Jointed @ 15>35>60 dtca.
310.8	317.2	FZ	1	Broken fragmental partly healed fault zone.
317.2	337	JZ	2	Jointed @ 60>15 dtca.
337	366.5	JZ	3	Jointed @ 55>15 dtca.
366.5	367.7	FL	1	weak fault, partly broken rock, with slickens on FP's .
367.7	374.5	JZ	3	Jointing @ 50 dtca.

Blackwater Project
Drill Logs

Hole ID:	BW0460	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375701.15
Depth (m):	502.5	Date Started:	16/05/2012	Casing Size:	HWT	Northing:	5893148.96
Azimuth:	0	Date Completed:	26/05/2012	Casing (m):	7.5	Elevation (m):	1552
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	83.9	-89.6
105	148.1	-89.5
201	229	-89.8
250.5	135.6	-89.3
300	161.3	-89.2
350	56.4	-89.3
400	170.4	-89.1
450	300.4	-88.2
500	259.7	-89.7

Blackwater Project
Drill Summary - Lithology

BW0460

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9	OB							Broken rounded cobbles. Andesite fragments with felsic tuff/lapilli tuff below
9	33.15	FT	lam		L	GRY			Light grey to light yellow grey (caused by oxidation). Lamianted throughout interval. Difficult to distinguish true variation from clast to matrix. Unit has been blasted with alteration and now has laminated appearance, locally brecciated. May have o
33.15	45	VC	ms		M	GRY	FLT	GR30+	Medium grey, matrix support, rounded clasts. Appears to have slightly more mafic clasts then felsic clast
45	55.5	VC	ms	LAP	M	GRY	FLT	GR30+	Medium to light grey to greenish grey within strongly faulted interval. Texturally obscured to 50.5m -> appears to be more felsic?
55.5	71	FLPT	obsalt	LAP	M	GRY	FLT	GR30+	Greenish-grey well mineralized. White-light grey clast of felsic rocks with pervasive silica overprint.
71	84	FLPT	lam	LAP	M	GRY	FLT	SH	Lam, occasional bx clast. Mineralization follows laminae
84	98	FLPT	obsalt	LAP	M	GRY	FLT	GR10	Texturally obscured. Medium greyish green to dark greyish green. Laminated texture. Possibly originally a VC. Clasts range from mm-size to cm-size. Clay altered clasts. Believed to be all felsic? but questionable
98	111.4	FLPT	obsalt	LAP	L	GRY	FLT	GR30	Texturally obscured. Appears to be light coloured clay altered felsic clasts? obscured by laminations created by pervasive silica alteration
111.4	119.3	FLPT	obsalt	LAP	L	GRY	FLT	GR30+	Same unit as above but within a strong fault zone (fault breccia). Into broken/faulted (- clay) downhole
119.3	125.3	VC	obsalt	LAP	L	GRY	FLT	GR30+	Brecciated white clay-altered clasts (felsic?) mm-sized
125.3	136.5	VC	obsalt	LAP	M	GRY	FLT	GR30	Dark green and dark grey cm-scale laminated bands.
136.5	145.5	VC	ms	LAP	M	GRY	ALTFR	GR10	Dark grey, matrix-supported, mafic-dominant VC unit. Increase in po. Minor white rounded qtz clasts within interval.
145.5	154.5	VC	obsalt	LAP	L	GRY	UNKN		Medium-dark greenish-grey. Felsic dominant? White-clay replacement of felsic clasts? Texturally destroyed. Laminated. Best guess at a mafic clast at 149.50m
154.5	163.7	VC	obsalt	LAP	M	GRN	ALTFR	GR10	Medium-dark green-grey. Strongy laminated. Dark grey rounded clasts (occasional clast <10% of unit).
163.7	166.9	VC	ms	LAP	D	GRY	FLT	SH	Dark grey monomictic matrix-supported unit. Might just be fragmental andesite. Ghost like subrounded clasts within unit
166.9	179.2	VC	fltbx	LAP	M	GRN	FLT	SH	Fault breccia unit with dominantly dark green-grey faulted andesite? mixed with lighter greenish-grey faulted felsic-mafic mixed VC unit

Blackwater Project
Drill Summary - Lithology

BW0460

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
179.2	220.5	AND	por		D	GRY	UNKN		Dark grey dominantly porphyritic andesite with occasional silica-amygdules. Occsaional hornbelnde phenocrysts. Weak fault unti; 185.1m. Occasionally brecciated
220.5	230	AND	por		D	GRY	FLT		As above, yellow clay on fx planes. phenocrysts comprise up to 30% of rock. Locally hornblende phyric
230	235.5	AND	bx	LAP	D	GRY	FLT	GR10	Black-dark grey subrounded brecciated clasts/aggregates of hornblende with medium grey silica matrix
235.5	261.9	AND	por	LAP	D	GRY	FLT	GR10	Occasional brecciated clast. Hornblende phyric. Brecciation may be the result of weak hydrofracturing. Locally strongly fractured
261.9	265.5	AND	fltbx	LAP	D	GRY	UNKN		Strongly faulted with plag-phyric andesite clasts supported by grey-white clay rich gouge
265.5	283.8	AND	por	LAP	D	GRY	ALTFR	GR30+	Grey-black, hornblende-phyric. Biotite-sericite altered brecciated clasts? Silica altered matrix
283.8	286.1	AND	obsalt	LAP	M	GRY	UNKN	GR10	Medium grey silica matrix with sphalerite replaced clasts, possibly sphal replacing hbl phenos?
286.1	292.5	AND	obsalt	LAP	M	GRY	FLT	SH	As above, lower contact sharp @ 25 dTCA. Greenish colour from 289.8-290.2m.
292.5	301.5	AND	por	LAP	D	GRY	FLT	GR10	Dark grey-greyish black hornblende-phyric andesite. Hornfelsed. Silica matrix with bt?
301.5	305	AND	obsalt	LAP	M	GRY	FLT	GR30	Medium greenish grey groundmass with light-medium grey clasts (visible at 303.6m)
305	310.6	AND	frctz	LAP	M	GRY	FLT	SH	Dark green, strongly fractured,
310.6	333.9	AND	obsalt	LAP	M	GRY	FLT	SH	Strongly altered, texturally obscured. Faint evidence of clastic texture. Sulphides aggregated together in what appears to be clasts.
333.9	334.4	AND	obsalt	LAP	M	GRY	ALTFR	GR5	Greyish-green vein-like bleeding into lower interval. Interfingering alteration contact
334.4	342.8	AND	por	LAP	D	GRY	ALTFR	GR10	Medium grey hornblende-phyric, locally brecciated/volcaniclastic texture.
342.8	360.3	AND	por			GRY	ALTFR	GR10	Dark grey-greyish black, hornblende phyric with pyrrhotite infilling amygdules. 1% sulphide veinlets/veins through interval.
360.3	369	AND	obsalt	LAP	M	GRY	UNKN		Texturally obscured medium-light grey with a weak green tinge. Pervasively silicified, with patchy sericite alteration. Locally laminated.
369	379.5	AND	obsalt	LAP	M	GRY	FLT	GR30+	As above

Blackwater Project
Drill Summary - Lithology

BW0460

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
379.5	393.7	AND	obsalt	LAP	M	GRY	FLT	GR30+	Medium-light grey, weak green tinge. Occasional brecciated clast of sulphides?, faint laminated texture
393.7	395.7	AND	frctz	LAP	M	GRY	FLT	GR30+	Strongly faulted consists dominantly of clasts of unit uphole
395.7	412.8	AND	por	LAP	D	GRY	FLT	GR10	Brown-dark grey, hornblende-phyric, weakly brecciated. Alignment of phenos from 406.5-407.5. Light green sericite appears to have replaced hornblende. Trachytic texture
412.8	425	AND	obsalt	LAP	M	GRY	UNKN		Medium-light grey to greyish green. Laminations locally intense. Texture destroyed, difficult to deteremine host rock
425	443.8	AND	obsalt	LAP	M	GRN	ALTFR	GR30+	Green-grey, weakly brecciated, strongly mineralized. distinctive colour from interval above and below
443.8	464.1	AND	obsalt	LAP	VL	GRY	FLT	GR5	Very light grey altered andesite? massive. Sphalerite mineralization decreases
464.1	468	AND	obsalt		VL	GRY	FLT	GR5	Sphalerite-rich fault breccia, equivalent of unit above and below
468	485.5	AND	obsalt		VL	GRY	ALTFR	GR30	Massive fine somewhat flaky crystalline silica-sericite-schlorite mix with sphal evenly disseminated throughout. Texture completely obscured by alteration. Lower contact is gradational reduction in ser-chl over ~1m.
485.5	502.5	AND	por		D	GRY	UNKN		Dark grey-black andesite with weak brownish purple groundmass, locally feldspar and horneblende phyric, weak fragmental texture throughout.

Blackwater Project
Drill Summary - Alteration

BW0460		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9	33.1	T		0	PERV	5	PERV	5	PERV	2	LIM	FC	4	HM	FR	3	Light grey pervasively silica-clay altered. Limonite-hematite-goethite strongly influenced by fractures
33.1	45	S	FC	2	FC	2	MTRX	3	MTRX	4	SER	CLST	1	SIL	CLST	3	Medium grey matrix composed of sericite-silica. Mafic clasts are weakly sericite altered, smaller lighter clasts are replaced by silica. No core recovered from 43.5-45m
45	50.6	S		0	CLST	3	PERV	4	MTRX	3							Pervasively silicified. White clasts are composed of clay which have been affected by a silica glass and are somewhat scratchable on a broken surface.
50.6	85	S	FC	3	FC	3	PERV	4	PERV	4	CLY	CLST	3	SIL	BN	3	Pervasive silicification has washed clay altered lapilli to block sized clasts. Sericite is from light green to medium green colour
85	119.5	S	FC	3	CLST	4	PERV	4	PERV	4	CLY	FC	3	SIL	BN	4	Laminae silica bands through interval that appear to brecciate through block sized clasts of clay altered felsics?
119.5	121.5	S	FC	3	CLST	5	MTRX	4	CLST	3	SER	MTRX	2				Clasts are scratchable (sericite-altered). VC texture visible. Laminae have disappeared within this interval
121.5	132.5	S	FC	3	CLST	2	PERV	4	PERV	4	CLY	FC	2	SIL	BN	3	Pervasive sil-ser alt (not scratchable with knife). Laminated interval with medium grey cloudy zones of silica mixed with med-dark green laminated bands
132.5	141.4	S	FC	4	REP	1	PATC	4	CLST	4	CLY	FC	2	SER	MTRX	3	Medium green-grey silica-sericite matrix with clasts of lighter green sericite and white-light grey silica. Minor white clay found along small fractures within VC unit and as replacement of phenos?
141.4	145.6	S	FC	5	FR	2	MTRX	3	CLST	3	CLY						Darker grey then previous interval. Clasts are larger (block-size) and composed of sericite. Matrix consists primarily of grey silica with minor amounts of white qtz
145.6	154.5	S	FC	3	CLST	3	PERV	4	PATC	4	SIL	BN	3				Laminated bands of dark grey silica within pervasively altered (occasionally patchy) silica>sericite altered rock with strong dark green chlorite on fracture planes and possibly between laminae
154.5	162.8	S	FC	4	FC	2	PERV	5	PERV	4	SIL	BN	3				Strongly sil-ser altered. Laminated texture secondary? from silica. Clast replacement? or phenos replaced by white clay (overprinted by silica). Gradational lower contact over 10 cm, approx perpendicular tCA

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Blackwater Project
Drill Summary - Alteration

BW0460		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
162.8	166.6	S	FC	4	FC	2	PATC	3	CLST	2	CLY	REP	2				Medium grey (matrix) to dark grey (clasts). Patchy silicification (dominantly matrix)
166.6	179.1	S	FC	5	FC	5	CLST	2	FC	3	SER	CLST	3				Sericite-silica light grey-green clasts within clay +/- chlorite matrix. Alternating subintervals of dark green chlorite rich gouge and lighter grey-green sericite-clay rich intervals
179.1	220.5	S	FC	4	REP	2	PATC	3	PERV	3	SIL	AMYG	3	CLY	FC	3	Silica amygdules + minor clay replacement of plag phenos. Hornfelsed volcanics
220.5	265.5	S	FC	4	FC	3	PATC	3	MTRX	2	BIOT	MTRX	2	CARB	FR	2	Hornfelsed. Biotite in the matrix? (or dusty sericite). Chlorite-yellow clay/carbonate? visible on fx planes
265.5	283.8	S	FC	3	FC	4	PATC	3	MTRX	2	BIOT	MTRX	2	SIL	AMYG	1	Yellowish clay +/- carb +/- sphal on fx planes with chlorite. Locally intense from 271.3-272.2m. Locally clay replaces plag phenos. Local silica amygdules
283.8	288	S	FC	2	FC	4	PERV	4	CLST	3	SIL	PATC	2				Patchy white silica. Green sericite altered clasts within pervasively silicified unit
288	303	S	FC	2	FR	4	PATC	3	CLST	2	BIOT	CLST	3				Hornfelsed. Biotite-altered clasts. Silica altered matrix. Yellowish clay on fx planes from 298.5-301.5
303	306	S	FC	4	FC	3	PATC	4	PERV	3							Dark green chlorite on fx planes. Stronger silica-sericite alteration from 303-305m
306	310.8	S	FC	5	FC	2	CLST	1	FC	1							Gougy fault zone with abundant chlorite
310.8	320.2	S	FC	2	FC	3	PERV	4	PERV	4	HM	FC	2				Reddish hematite on fx planes stron from 317-320m
320.2	334.5	S	FC	3	FC	4	PERV	4	PERV	4							As above, but lacking hematite
334.5	360.3	S	FC	3	FC	2	PATC	3	CLST	2	CHL	CLST	2	BIOT	CLST	2	Dark grey bt-sericite-chlorite altered clasts within grey silica altered matrix
360.3	376	S	FC	4	FC	3	PERV	4	PATC	4	CLY	SPHL	2	SER	CLST	2	Medium-light grey to green. Subintervals with more laminated texture (sil band?) from 361-361.5m, 363.5-364m, volcaniclastic texture from 367-369 meters.
376	395.8	S	FC	4	FC	2	PERV	4	PATC	4	SIL	BN	1	SER	BN	1	Faint laminae of sil-ser. Patchy pale green zones of sericite-alt.
395.8	413	S	FC	5	FC	1	PATC	3	MTRX	2	BIOT	MTRX	3	SER	REP	2	Sericite has replaced hbl? @ 407m. Bt-alteration has given rock slight brownish tinge. Strong calcite veined interval from approx 400- 405m

Blackwater Project
Drill Summary - Alteration

BW0460		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
413	423	S	FC	5	FC	3	PERV	4	PERV	4	CHL	CLST	2	SIL	CLST	2	Weakly brecciated dark green (chl-ser?) clasts + sil clasts within pervasively sil-ser altered unit
423	425	S	FC	5	FC	2	PERV	3	PERV	3							As above
425	443.8	S	FC	5	FC	2	PERV	5	PERV	4	HM	FC	3				Red hematite on fracture planes with goethite within interval. Bleached green obliterates texture and the unit cannot be scratched with a knife. Sil-5
443.8	485.5	S	FC	5	FC	3	PERV	4	PERV	5	CLY	REP	2	HM	FR	1	Slightly less silicified then previous interval. Clay alteration intense within faulted areas. Dark green black chlorite on fx planes...possibly goethite, mixed with fine pyrite
485.5	502.5	S	PATC	2	VNHL	1	PERV	4	PATC	1	BIOT	MTRX	2	CHL	FR	3	Still pervasive strong silicification, but chlor-ser is restricted to occasional 5-15cm wide patches. Carbonate veinlets frequently have 5-20mm wide haloe of soft clay alteration. Biotitc matrix.

Blackwater Project
Drill Summary - Mineralization

BW0460		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9	33.1	FG	0.1		0		0	Goe	FC	1.5	Hm	FC	0.5				Mostly oxide within interval. Dark brown-red goet>hem derived from sulphides downhole
33.1	41.9	FG	0.5	CR	1	CR	0.1	Py	GOU	1	Dbs	VN	0.1	Py	FP	0.5	Pyrite-rich, found along fractures and fine-grained through the matrix giving the rock a distinct grey colour
41.9	45	GOU	1.5	BB	0.1	CR	0.1										Interval dominated by pyrite gouge
45	55.7	GOU	0.5	CR	0.5	CR	0.1	Dbs	VNHL	0.5	Dbs	VN	0.5	Py	VN	0.1	DBS visible as vein centric haloes from 49-50m
55.7	70	BB	0.1	BB	1.5	BB	0.1	Dbs	VN	1	Py	FC	0.1	Apy	SP	0.1	DBS as veinlets through interval running from 40-50 dTCA as well as approx 10 dTCA
70	76	BB	0.5	BB	2	BB	0.1	Dbs	VN	1							Increased mineralization through interval particularly of sphalerite blebs
76	78	GOU	1	BB	1	BB	0.1	Py	BB	0.5							Gougy interval with abundant py
78	89	BB	1	BB	1.5	BB	0.1	Dbs	VN	0.5	Py	FP	0.5	Py	GOU	0.1	Mineralization consists of dominantly blebby pyrite with sphalerite. DBS veinlets cut laminae
89	102.9	FG	1	BB	2	BB	0.1	Py	BB	1	Dbs	VN	1				Sulphide-rich, very sphalerite rich with pyrite as blebs
102.9	111.5	BB	1	BB	2	BB	0.1	Sp	MA	0.1	Dbs	VN	1.5	Py	FP	0.5	Well mineralized interval. Red sphalerite follows banding
111.5	117	GOU	1	BB	1	BB	0.1	Py	BB	0.5	Py	GOU	0.5	Py	VN	0.1	Blebs of pyrite-sphalerite visible within clasts of flt bx. Disappearance of DBS
117	135.6	BB	1.5	BB	1.5	BB	0.1										Red sphalerite blebs locally high and follow laminae. Pyrite locally high (towards start of interval)
135.6	145.6	CR	1	CR	0.5	CR	0.5	Py	VN	0.5	Apy	SP	0.1	Sp	BB	0.5	Dom Clast replace in VC unit. Increase in Py & Po
145.6	154.5	BB	1	BB	0.5	BB	0.1	Dbs	VN	0.5	Py	FG	0.5				DBS follows laminae. Pyrrhotite drops off
154.5	162.8	FP	1	BB	2	BB	0.1	Py	EU	0.1	Py	BB	0.5	Py	VN	0.1	Red sphal. Py vlts.
162.8	166.6	AMYG	1	BB	0.1	AMYG	0.5	Py	FP	0.5	Apy	SP	0.1				Amygdules are mostly open rimmed with Py and minor Po (weakly magnetic)
166.6	179.1	GOU	1	GOU	0.5	BB	0.1	Sp	BB	0.5	Py	EU	0.5				Pyrite & sphalerite rich within interval
179.1	220.5	AMYG	0.1	BB	0.1	AMYG	0.5	Py	VN	0.1	Py	FP	0.1				Weakly mineralized. Mienralization restricted to amygdules
220.5	229.5	FP	0.1	BB	0.1	AMYG	0.5	Py	SP	0.1	Goe	FP	0.1				Occasional pyrite on fx planes. Black goethite? seen at 225.25m on fx planes with iron carbonate

Blackwater Project
Drill Summary - Mineralization

BW0460		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
229.5	230	GOU	5	GOU	0.5	GOU	0.1	Ga	GOU	10	SoSu	GOU	10	Cp	GOU	0.5	Sulphide rich vein consisting of sooty black sulphide > galena > pyrite > chalcopyrite. Excepting high grade from interval
230	245.5	FC	0.5	BB	0.1	AMYG	0.5	Py	GOU	0.1	Py	VN	0.1	Mrc	FP	0.1	Weakly mineralized. Occasional py veinlets.
245.5	261.8	FC	0.5	BB	0.5	AMYG	0.5	Mrc	FP	0.1	Sp	VN	0.1				Sphalerite-pyrite 3mm veinlet at 247.45m
261.8	265.5	GOU	1	BB	0.5	AMYG	0.5										Gougy pyrite-clay matrix. Po & sph within clasts of plag-phyric andesite
265.5	273	FP	0.1	BB	0.5	AMYG	0.5	Po	VN	0.1							Pyrite locally high on fx planes. Pyrrhotite has replaced sporadic amygdules
273	279.2	FP	0.1	BB	0.5	AMYG	1	Mrc	FP	0.5	Po	VN	0.1				Marcasite found as rosettes along fx planes. Increased pyrrhotite within interval
279.2	282.5	SP	0.1	FP	0.1	AMYG	0.5	Sp	BB	0.5							Yellowish-orange to green colour on fx planes gives off smell indicating sphal
282.5	284.7	GOU	0.5	BB	1	AMYG	1	Mrc	FP	0.5							Weakly mineralized
284.7	291	GOU	0.5	BB	3	BB	0.1	Dbs	VN	0.5	Py	VN	0.1	Sp	CR	2	Abundant red sphalerite visible replacing clasts and as blebs
291	302	FC	1	BB	0.1	BB	0.5	Py	VN	0.5							Stockwork like pyrite veining from 294-296m
302	310.8	VN	0.1	BB	1.5	BB	0.5	Py	FG	0.5							Well-mineralized broken pieces within fault
310.8	335	FG	0.5	BB	1	BB	0.1	Py	GOU	0.5	Py	FP	0.5	Sp	VN	0.5	Euhedral pyrite on fracture planes. Strongly faulted, sphalerite locally very strong. Pyrite along fracture planes. Less mineralized from 322-326m
335	361	VN	0.5	VN	0.1	AMYG	0.1	Sp	CR	1	Apy	VN	0.1	Cp	VN	0.1	Copper rich interval from 345-346 m should be multi-gram gold...Pd read with XRF meter
361	376	BB	1	CR	1	BB	0.5	Py	VN	0.5	Cp	BB	0.1	Sp	BB	0.5	Blebby evenly spaced interval with pyrite, sphalerite and occasional pyrrhotite. Veins of pyrite sparse through interval occasionally following laminae
376	395.7	BB	1	BB	1.5	BB	0.5	Sp	VN	0.1	Py	FC	0.5	Apy	SP	0.1	Sulphides dominantly blebby within interval, fairly evenly distributed.
395.7	413	VN	0.5	BB	0.5	BB	0.5	Py	EU	0.1	Sp	VN	0.1	Py	GOU	0.5	Euhedral pyrite on fx plane at 405.8m. At same location marcasite also visible on fx plane.

Blackwater Project
Drill Summary - Mineralization

BW0460		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
413	425	VN	0.5	BB	2	BB	0.5	Mrc	FC	0.5	Py	FC	0.1	Py	EU	0.1	High concentration of blebby sph, occasionally as euhedral-subhedral crystals
425	444	VN	0.5	BB	3	SP	0.1	Py	BB	0.1	Goe	FP	1	Hm	FP	0.5	Black jack pyrite fairly evenly distributed, decrease in magnetism through interval (less pyrrhotite). Fracture planes consist of black goethite with red hematite.
444	463.5	VN	0.1	BB	1.5	SUBH	0.5	Mrc	FP	0.1	Apy	SP	0.1	Hm	FP	0.1	Mineralization is locally high and locally sparse. Sphalerite flooding controlled by fault visible at 458.9m
463.5	468	VN	1	DI	10	DI	2	SoSu	GOU	1	Py	FP	0.5				Sphalerite-rich interval with pyrite & sooty sulphide gouge/veins @ approximately 30 dtCA
468	472.5	FP	0.5	BB	1	BB	2	Py	VN	1							Pyrrhotite rimmed by sphalerite dominant min-style within interval. Pyrite gouge veinlets are largely fracture controlled
472.5	485.5	VN	1	BB	2.5	BB	1.5	Dbs	DEN	0.1	Py	GOU	0.5				Interval is dense with millmetric specks of sphal, less frequent 1-2mm wide blebs of po. Frequent fine py veinlets in spidery networks associated with fractures, with lesser po. Occasional fine strnads of DBS. What little gouge there is is rich in so
485.5	502.5		0	SP	0.1	DI	0.5										Quite frequent very fine specks of po and ?sphal disseminated throughout

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Blackwater Project
Drill Summary - Structure

BW0460

From (m)	To (m)	Structure	Strength	Comments
9	12.5	JZ	4	Prominent angle @ 60 dTCA. Strong FeOx along fx planes
12.5	13.65	FZ	2	Weak gouge within strongly oxidized, fractured interval
13.65	15.1	JZ	3	Goet-coated fracs @ 40 dTCA
15.1	15.15	FL	3	Hardened clay gouge on fx plane
15.15	15.6	JZ	1	Weakly jointed, short interval
15.6	15.8	FL	2	Sharp lower contact with gouge @ 40 dTCA, mostly broken
15.8	17	JZ	3	Primary joint set @ 40 dTCA, secondary @ 5 dTCA, FeOx coated
17	27	FZ	3	Fault breccia rich interval that has been strongly jointed and influenced by supergene processes.
27	32	JZ	4	Prominent set @ ~5 dTCA coated with FeOx. Microcfractured throughout interval.
32	34.5	FZ	3	Strongly broken, crushed clay
34.5	36.7	JZ	3	Joints @ 20 & 70 dTCA
36.7	39.4	FZ	3	Lower contact sharp @ 55 dTCA, strongly broken through interval
39.4	41.8	JZ	3	Joints @ 10 & 30-40 dTCA
41.8	43.5	BZ	4	Upper contact @ 25 dTCA. Gouge-rich with rounded clasts primarily of unit downhole (mm-sized)
43.5	45	FL	5	NO CORE RECOVERED
45	49	FL	4	Strongly broken, minor gouge. Questionable measurable angle @ 46m
49	52.35	JZ	3	Joints from 30-40 dTCA and 10 dTCA
52.35	54	BZ	4	Lower contact @ 30 dTCA, chl-clay rich matrix of flt bx
54	54.5	JZ	3	Chl-coated joints
54.5	56.4	FZ	4	Lower contact approx 10 dTCA
56.4	64.4	JZ	3	Chl-coated joints from 20-30 dTCA. Minor fracturing parallel TCA clay-rich
64.4	65.5	FZ	3	Upper contact with pyrite-chlorite @ 60 dTCA
65.5	66.35	JZ	3	Clay along fx planes
66.35	71.3	FZ	2	Average angle approx 10. Gouge along fx planes. Weak fault
71.3	76.5	JZ	3	Joints from 40-50 dTCA, chlorite coated
76.5	77.8	FZ	5	Sharp lower contact @ 10 dTCA, gouge rich
77.8	78.5	BRKZ	4	Difficult to measure angle, sphal- DBS veinlest within broken pieces of core
78.5	79.3	JZ	3	Chl-coated joints

Blackwater Project
Drill Summary - Structure

BW0460

From (m)	To (m)	Structure	Strength	Comments
79.3	82.1	BRKZ	4	Lower contact @ 10 dTCA, minor gouge
82.1	82.15	FL	5	Chl-clay gouge
82.15	84.8	JZ	4	Prom joint set @ 30 dTCA with chl-coating
84.8	98.1	FZ	4	Minor chlorite gouge. Str ser-silica-clay. Strongly faulted. Sandy at bottom of fault
98.1	101	BRKZ	3	Minor joints from 50-70 dTCA from 98-99m. Dominant joint set approximately subparallel TCA
101	101.6	FL	4	Questionable fault breccia angle measured @ 60 dTCA. Clay-rich
101.6	102.9	BRKZ	4	Chlorite picks up @ 102m. Clay-sericite on fx planes.
102.9	105	JZ	3	Joint set at 50 dTCA, second @ 10 dTCA
105	107.1	FZ	3	Upper contact @ 50 dTCA. Lower contact @ 50 dTCA
107.1	108.1	JZ	4	Major joints @ 70 dTCA, weak joints @ 10 dTCA
108.1	108.4	BZ	3	Lower contact questionable @ 70 dTCA. Clay-rich interval
108.4	111.5	JZ	3	Joints from 10-20 dTCA & 70 dTCA
111.5	119.3	BZ	5	Clay-sericite > chlorite rich fault breccia
119.3	122	JZ	3	Joints from 20-30 dTCA & 40-50 dTCA
122	122.5	FL	3	Questionable lower contact @ 30 dTCA
122.5	124.5	JZ	3	Joints from 30-40 dTCA
124.5	125.4	BRKZ	3	Strongly broken due to low angle TCA joint
125.4	129	FZ	3	Lower contact @ 45 dTCA, gougy with clasts of FLPT
129	132.5	JZ	2	Strongly sil-sericite altered, very hard, weak jointing between 40-60 dTCA
132.5	136.5	FZ	4	Chl-rich interval from 133.3-133.5m. Measurable angle @ 45 dTCA @ 133.55m
136.5	139.5	JZ	3	Weakly jointed interval
139.5	140.3	SZ	3	Sheared/faulted (closely spaced fracs) from 25-35 dTCA through interval
140.3	154.5	JZ	3	Joints from 20-30 & 40-50 dTCA, Chlorite-clay coated
154.5	166.8	JZ	3	Joint set @ 15 and 55 dTCA
166.8	179.2	FZ	5	Sharp lower contact @ 10 dTCA, Sharp upper contact @ 30 dTCA
179.2	185.2	FZ	3	Intermittently brecciated, high fracture density, occasional short gougy intervals. Angles vary from 20-50 dTCA through interval
185.2	212.2	JZ	4	Strongly jointed, low angle approx 10-20, high angle about 40-60 dTCA

Blackwater Project
Drill Summary - Structure

BW0460

From (m)	To (m)	Structure	Strength	Comments
212.2	217.5	FZ	3	Chl-rich faulted interval. 2nd angle @ 30 dTCA
217.5	222	JZ	3	Joints @ 10, 35, and 75 dTCA. Yellow clay on fx planes
222	224	JZ	3	Joint from 5-15 dTCA. Weak second joint at 75 dTCA
224	228.4	JZ	3	Joints at 50, 25 dTCA, weak joint sub// TCA
228.4	229.6	BRKZ	4	Angle roughly from 5-15 dTCA as well as weak second angle @ 75 dTCA
229.6	230.1	FL	5	Lower contact @ 45 dTCA. Sulphide-rich from 229.7-230m
230.1	232.3	JZ	3	Joints @ 45 and 70 dTCa
232.3	237	FZ	4	Sharp upper contact @ 25 dTCA. Questionable lower contact. Yellow clay on fx from 236-237m
237	240	JZ	4	Dominant angle @ 5 dTCA. Joints also from 25-40 dTCA
240	240.3	FL	5	Sharp lower contact @ 20 dTCA. Clay gouge rich
240.3	244.9	JZ	4	Str jointed. Joints from 5-35 dTCA. Chlorite-rich
244.9	246.5	FZ	3	Contact @ 246m @ 25 dTCA
246.5	249.5	JZ	3	Joints @ 25, 40 & 55 dTCA. Str green chl coating on fx planes. Minor white clay
249.5	261.6	FZ	3	Lower contact gougy @ 20 dTCA. Jointing @ 45 and 10 dTCA through interval. More competent joint set from 253.6-254.5m
261.6	265.5	BZ	4	Breaks in fault breccia @ 55 dTCA and 20 dTCA
265.5	267.3	JZ	3	Chl-clay coated fx
267.3	268.5	FZ	3	Minor gouge, strongly broken
268.5	271.2	JZ	3	Chl-clay coated fx
271.2	272.2	FL	5	Pervasive yellowish grey coloured clay +/-chlorite +/- sericite altered zone.
272.2	274.9	FZ	3	Chlorite-coated fx plane, strongly broken. Lower contact @ 25 dTCA
274.9	279.3	JZ	3	Chlorite coated fx 50-60 and 20-30 dTCA
279.3	282	JZ	4	Clay +/- sphalerite +/- carbonate coated fx planes with minor chlorite at 15 and 40 dTCA
282	282.4	FL	5	Chlorite gouge-rich fault. Lower contact @ 35 dTCa
282.4	285.7	JZ	3	Joints @ 35 & 50 dTCA. Chl-clay coated fx planes
285.7	288	FZ	3	Joints from 15-30 and 60 dTCA, chlorite-clay on fx
288	289.7	JZ	3	Chlorite coated fx planes
289.7	290.2	FL	4	Lower contact has slickensides and reddish iron stain on fxz plane

Blackwater Project
Drill Summary - Structure

BW0460

From (m)	To (m)	Structure	Strength	Comments
290.2	292.6	FZ	3	Lower contact gougy fault breccia uphole with more competent andesite (downhole)
292.6	298.5	JZ	3	Joints from 35-45, chlorite coated
298.5	301.3	JZ	4	Joints from 35-50 dTCA, yellowish clay on fx coating with chlorite
301.3	305	FZ	4	Upper contact at 30 dTCA, strongly broken throughout interval. Gougy at start of fault/broken zone
305	306	JZ	3	Joints at 30 & 50 dTCA, chl-coating on joints
306	310.8	BZ	3	Sheared zone with veins. Could also interpret as a fault breccia
310.8	333	FZ	4	Angles between 10-30 dTCA. Clay & chlorite rich intervals
333	334	FZ	4	Sharp lower contect @ 25 dTCA
334	369.5	JZ	3	Joints from 25-60 dTCA
369.5	376	FZ	3	Joints at approximately 5 dTCA, strongly fractured/faulted as a result of low angle tCA
376	379.1	BZ	3	Joint with chl slicks @ 55 dTCA
379.1	382.4	JZ	3	Joints from 20-30 dTCA, chl-coated
382.4	383.8	BZ	4	Rouded sil-sericite clasts with pyrite-replaced clasts within chloritic matrix
383.8	388.2	JZ	3	Joints from 20-40, chl-coated
388.2	391.4	JZ	1	Weakly jointed, massive. Strongly silicified
391.4	393.7	JZ	3	Joints from 15-40 dTCA, chl-coated
393.7	396.4	FZ	4	Fault breccia with clay-chl gouge. sulphide rich from 395.8-396.35m
396.4	399	JZ	3	Joints from 25-50 dTCA
399	405.8	JZ	4	Dominant joint set @ 5 dtCA. Calcite coated with euhedral py from 405.7-405.8m
405.8	407.8	JZ	2	Joints from 20-30 dTCA
407.8	410.8	JZ	4	Joint sets at 20 and 40 dTCA
410.8	412.8	BZ	2	Rehealed fault breccia with joints approx 30 dTCA
412.8	417.9	JZ	4	Joints at 30 dTCA. Veins on joints at approx 15 dTCA
417.9	420.1	FZ	3	Gougy within interval, lower contact @ 30 dTCA
420.1	423	JZ	3	Joints from 20-35 dTCA
423	426.4	JZ	3	Low angle joints. Chl-clay on fx planes
426.4	428.7	JZ	4	Hematite-coated fx planes
428.7	432	FZ	4	Rough estimate of flt plane @ 429.5m = 20 dTCA. Hematite coated planes approx subparallel tCA, gougy.

Blackwater Project
Drill Summary - Structure

BW0460

From (m)	To (m)	Structure	Strength	Comments
432	433.4	FZ	3	Veinlet follows flt plane? @ 433.2m. gougy & broken
433.4	436	JZ	3	25-40 dTCA joints, decrease in hematite-goethite. Only visible at 434.95m
436	439	FZ	3	Chlorite-goethite slickensides on fx planes. Second set of fx @ 30 dTCA
439	445	JZ	3	Joints at 40 dTCA & 20 dTCA. Minor hematite on fx planes
445	449.8	JZ	4	Joints at 5, 30 and 50 dTCA, mostly chl-coated
449.8	452	FZ	3	Gougy upper and lower contacts. Blocky through interval
452	454.1	JZ	2	Dominant joint set at 50 dTCA
454.1	455.3	FZ	3	Lower contact at 55 dTCA. Healed fault breccia from 454.9-455.2m
455.3	457	JZ	3	Joints at 35 and 60 dTCA
457	458.3	FZ	4	Lower contact sharp at 25dTCA. Sphalerite "stream" at low angle tCA downhole may be controlled by fault?
458.3	462.5	JZ	4	Joints @ 5 and from 20-30 dTCA
462.5	463.5	FZ	4	Lower fault contact approximately 5 dTCA. Gougy
463.5	468	BZ	5	Gouge-rich interval with clasts of sericite-silica altered andesite. Clay-chlorite matrix
468	477.4	JZ	4	Strongly jointed with pyrite-chlorite along fracutre surfaces
477.4	477.9	FL	4	Fault breccia in gouge matrix, highly chloritic
477.9	502.5	JZ	2	Angle varies, tends to increase from 30-65 downhole

Blackwater Project
Drill Logs

Hole ID:	BW0461	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375901.4
Depth (m):	341.5	Date Started:	16/05/2012	Casing Size:	HWT	Northing:	5893050.92
Azimuth:	0	Date Completed:	22/05/2012	Casing (m):	19.5	Elevation (m):	1549
Dip:	-90	Logged By:	NDh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	173.4	-89.5
112	182.4	-89.6
151	327.5	-89.6
200	281	-89.4
250	289.9	-89.6

Blackwater Project
Drill Summary - Lithology

BW0461

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	11	OB					OXFR	GR10	bouldery overburden
11	79	FT	flwbnd		L	GRY	OXFR		light orange grey laminated felsic tuff. clay gge throughout, moderate oxidation dominantly fracture controlled
79	167.5	FT	flwbnd	FA	L	GRY	DEP	GR30	light grey laminated to banded felsic tuff, sulphide blebs with albite? dark blackish haloes, moderate oxidation present to 121.5m depth
167.5	220.8	FLPT	lpt		M	GRY			medium grey-green lapilli tuff with local microbrecciatio; an apparent clastic texture as well as some local laminated/banded sections
220.8	331.3	FLPT	obsalt	FA	M	GRN	FLT	GR10	fragmental unit stongly obscured by alteration, apparent clastic texture
331.3	341.5	AND	bx	LAP	D	GRY			brecciated andesite, local amygdules, broken zone EOH at 341.5

Blackwater Project
Drill Summary - Alteration

BW0461		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
11	65.2	O		0	PATC	1	PERV	3	PERV	3	LIM	FC	3	HM	FC	2	lots of clay gge throughout, patchy sericite and pervasive silica, some fe mg oxide
65.2	78	T		0	PATC	1	PERV	3	PERV	3	LIM	FC	3	HM	FC	2	same as above, into to transition zone
78	121.6	S		0	FC	1	PERV	3	PERV	3	ALB	SPHL	2				
121.6	151	S		0	PATC	1	PERV	3	PERV	3							pervasive sericite + silica, weak chlorite + clay along fractures
151	227.8	S	PERV	2	FC	1	PERV	4	PERV	3							pervasive sericite +chlorite overprinted? by silica/pervasive silica
227.8	251	S	PERV	1	FC	1	PERV	5	PERV	3	CHL	FR	2				same as above, slightly more obscured by alteration as less textures defined, stronger silica?
253	331.3	S	PATC	1		0	PERV	4	PERV	3	CHL	FR	2				pathcy chlorite along laminations. and within fault zones (fracture related?)
331.3	341.5	S	FR	1	FR	1	PATC	3	PATC	2							chlorite and weak clay along fractures, patchy silica and sericite

Blackwater Project
Drill Summary - Mineralization

BW0461

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
11	65.2		0		0		0	Goe	GmR	2	Jaro	FC	2				strong oxidation throughout interval dominantly fracture controlled but some as groundmass replacement
65.2	66.3	SP	0.1		0		0	Goe	FC	2	Jaro	FC	2				same as above, trace py
66.3	69	BB	0.5		0		0	Jaro	FC	1							sooty black sulphide (py?) blebs, fracture controlled oxidation still present
69	77.68	DI	0.1		0		0	Jaro	FC	2	Goe	FC	2				trace py, strong oxidation
77.68	112	BB	1.5	BB	0.5	DI	0.1										blebs/clusters of py>sph most of which are surrounded by a sooty sulphide halo/rim
112	132.6	BB	1.5	DI	1		0	Dbs	DEN	1.5							sphalerite and pyrite disseminations throughout wiht a peppery look, dbs and dendritic stringers
132.6	157	DI	1.3	DI	1.5		0	Dbs	DEN	1.5							same as above but slightly more sph
157	189.8	DI	0.5	DI	1.5		0	Dbs		1							slight decrease in py and dbs
189.8	209.5	DI	1	DI	1.5	BB	0.5	Dbs	DEN	1							a few blebs of po throughout, disseminated py also found in blebs, sphalerite as disseminations throughout, some in little blebs with po
209.5	229.5	DI	1	DI	1.5	BB	0.5	Dbs	DEN	0.5							slight decrease in dbs, also not as many cluster of po but more disseminations with sph
229.5	243.2	DI	0.8	BB	2	BB	1	Dbs	DEN	1							increase in sph as little disseminated blebs, some with po, py also disseminated throughout, decresae from previous interval, dbs as dendritic stringers
243.2	256	BB	1	BB	2		0	Dbs	DEN	0.5	Sp	DI	0.5				large blebs to discontinous veins of Sp and Py.
256	271	BB	1	BB	2		0	Dbs	DEN	0.5	Sp	DI	0.5	Py	VN	0.5	discontinous veins of Sp and Py. locally diseminated Sp and Py. Trace Ga in Veins
271	275	BB	1	BB	1		0	SoSu	GOU	0.5	Py	VN	0.5	Sp	VN	0.5	Minerization is very similar to above, style changes are attibuted to fault.
275	287	BB	1	BB	2		0	Dbs	DEN	0.5	Sp	DI	0.5	Py	VN	0.5	discontinous veins of Sp and Py. locally diseminated Sp and Py. Trace Ga in Veins
287	297	BB	1	BB	1		0	SoSu	GOU	0.5	Py	VN	0.5	Sp	VN	0.5	Minerization is very similar to above, style changes are attibuted to fault.

Blackwater Project
Drill Summary - Mineralization

BW0461		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
297	312.1	BB	1	BB	2		0	Dbs	DEN	0.5	Sp	DI	0.5	Py	VN	0.5	discontinous veins of Sp and Py. locally diseminated Sp and Py. Trace Ga in Veins
312.1	331.3	BB	1	BB	1		0	Dbs		0.1	Py	VN	0.5	Sp	VN	0.5	same as above but slightly less sulphides
331.3	341.5	DI	1	DI	0.5		0										finely disseminated py and sph throughout

Blackwater Project
Drill Summary - Structure

BW0461

From (m)	To (m)	Structure	Strength	Comments
11	22.25	BRKZ	3	moderate rubbly broken zone
22.25	27.8	JZ	2	joint set with some rough jagged joints, but joints dominantly at 45ish dtca; laminations range from 30-55 dtca
27.8	32.5	FZ	3	moderate fault zone with strong mechanical clay gge throughout but mostly on fractures
32.5	54.3	JZ	2	joint set with joints at 65>30 dtca; clay gge along fracture; laminations range from 30-55dtca
54.3	61	FZ	4	fualt zone with strong clay throughout, some clay annealed brecciated sections throughout as well
61	112	JZ	3	joints 55>30>80 dtca; clay along fractures but weaker than previous intervals
112	121.6	FZ	2	weak to moderate fault zone, clay gge along fractures,
121.6	151	JZ	2	joint zone, joints are at 30-50 dtca, some are more at 45sih and a few that are 80ish dtca
151	157	FZ	3	moderate fault zone with gge throughout
157	179.2	JZ	3	joint set, some rough and jagged, fractures are mostly at 55 dtca, a few at 30 and a few at 80sih dtca
179.2	191.5	BRKZ	2	weak to moderate broken zone,
191.5	211	JZ	3	joint set with joints ranging from 30 to 55 dtca
211	227.8	FZ	3	moderate fault zone, gge throughout, some more broken interval with chlorite+ clay along fractures
227.8	268.4	JZ	2	competent core, joints dominantly at 55 dtca, some more at 30
268.4	272.4	BRKZ	3	broken above fault
272.4	274	FL	3	50% fault gouge, clasts are 1<3cm, SA to milled.
274	275.5	BRKZ	2	
275.5	286.7	JZ	4	joints at 20,30,50,70, joints at 20 and 70 are orthoganal.
286.7	296.8	FZ	4	50% fault gouge, clasts are 1<3cm, SA to milled.
296.8	324.1	JZ	2	joints @ 40, 70.
324.1	325	FL	4	fault gouge
325	329.6	BRKZ	1	weakly broken zone
329.6	334	FZ	3	fault zone, 70% gouge with some competent sections, lithology changes into andesite at ~331.3m
334	341.5	BRKZ	3	weak to moderate broken zone with rough jagged edges

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Blackwater Project
Drill Logs

Hole ID:	BW0462	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375601.55
Depth (m):	376.73	Date Started:	16/05/2012	Casing Size:	HWT	Northing:	5893050.64
Azimuth:	0	Date Completed:	20/05/2012	Casing (m):	3.05	Elevation (m):	1575
Dip:	-90	Logged By:	CCu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.02	51.7	-89.9
91.74	232.5	-89.6
137.5	177.1	-89.6
183.2	270.6	-89.7
228.9	211.3	-89.6
274.6	147.8	-89
320.3	195.8	-89
366.1	187.9	-88.1

Blackwater Project
Drill Summary - Lithology

BW0462

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5.3	OB							
5.3	16.5	FLPT	lam	LAP	L	GRY	FLT	GR10	light grey, laminated, matrix rich, may be more FT(?) in places.
16.5	22.2	VC	fltgge		M	GRY	FLT	GR5	fault gouge, soft clay material, some SA fragments of host rock suspended within gouge
22.2	35.05	VC	ms	LAP	M	GRY	DEP	GR30	blurred edges on clasts from alteration. Some block sized andesite clasts, very poorly sorted, pale blueish grey.
35.05	44.4	AND	volc		D	GRY	FLT	GR10	volcanoclastic texture with all mafic andesite clasts, some more massive sections (or Blocks?) and some zones with small subtle hornfels
44.4	47.2	FLPT	fltgge		M	GRN	FLT	GR5	fault gouge, obscurred by alteration, banded chl gouge material with yellow soft clay
47.2	59.9	FLPT	ms	LAP	L	GRY	FLT	GR10	fault-bound, matrix supported, matrix dominant at start, becoming clast dominant towards bottom
59.9	63.3	FLPT	fltgge		L	GRY	FLT	GR10	soft fault gouge with some brecciated host rock suspended within some parts of the gouge (mostly the edges). Somewhat banded with a dark grey/yellowish grey bitonal
63.3	84.5	FT	lam		L	GRY	DEP	GR30	laminated, light grey-blue greenish, locally brecciated. very contrasting laminations with sulphides following some
84.5	91.4	FT	mcbx		L	GRY	DEP	GR30	FT as above, with intense microbrecciation (small-scale brecciation), almost scale-y looking rock with tight brecciation networking
91.4	97	VC	obsalt	LAP	D	GRY	ALTFR	GR30	sudden change into a relatively dark VC, gradually becoming mafic(?) rich, texture quite obscurred by pervasive sericite. Sub-rounded clasts likely from alteration around edges. Poorly sorted, gradually changes from dark green-grey to a pale light gr
97	110.2	FLPT	obsalt	LAP	L	OR	FLT	GR10	Very texture obscurred by clay-ser alt'n, and patches of silica wash. Laminated clasts. More clast rich at start, becoming matrix rich gradually. Very yellow-orange colour from jarosite/hemitite fracture controlled. Also significant fault breccia
110.2	166	FLPT	fltgge	LAP	M	GRY			as above, with silica washed zones, and over 75% of recovered core is gouged fault breccia and/or rubble
166	209.9	FLPT	obsalt	LAP	M	GRY	DEP	GR30+	similar as above FLPT, without so much rubble and gouge.
209.9	376.7	VC	obsalt	LAP	M	GRY			very texture obscurred by alt'n. Grey-green colour, becoming more grey on bottom half of interval. Faint clasts visible sometimes, very adamently resorbed by alteration influenced laminations. Not confident on composition of clasts

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Blackwater Project
Drill Summary - Alteration

BW0462		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5.3	16	T	CLST	1	PERV	4	PERV	4	PATC	3	CLY	FC	3	SIL	OP	3	strong clay alt'n
16	22.2	S	FC	2	FC	5	CLST	2	FC	4							gouge with fracture controlled clay-ser-chl
22.2	44.3	S	MTRX	3	CLST	3	CLST	3	PATC	4	SER	CLST	3	CHL	CLST	3	quite strong pervasive sericite alt'n, somewhat texture destructive
44.3	63.7	S	CLST	2	FC	5	PERV	4	PERV	3	SER	FC	3	CHL	PATC	1	clay gouge on many fractures, and in more major faulting pervasive. Some chl in these faults, banded with yellow clay. Un-gouged core is hard with pervasive and overprinted Silca
63.7	73.5	S	CLST	1	MTRX	4	MTRX	4	MTRX	2	SIL	OP	3				strongly interlaminated clay and silica
73.5	92	T		0	MTRX	3	PERV	4	MTRX	2	CHL	CLST	4	CHL	FC	3	Places where pervasively silica washed, these are also where most oxide comes in, infilling tiny fractures
92	96.7	T	CLST	1	FC	3	MTRX	2	PERV	4	SER	FC	2	HM	FR	1	section of dark rock, seems quite texture obscurred by ser alt'n. Clay -ser in some minor gouge material
96.7	113.6	T	CLST	1	FC	4	PERV	2	PERV	3	CLY	CLST	3	CLY	PATC	3	silica washed patches, then clay rich patches, with strong cherty clay on fractures. Lots of orange iron oxide, perhaps using a fault here as a zone of weakness and pathway for meteoric effects
113.6	166	S	FC	2	FC	5	PERV	4	FC	4	SER	PATC	2				very high amount of clay gouge for a long interval here, with clay-ser-chl. Patchy chl, moreso in bottom half of interval. Pervasive sil in competant runs of core
166	218	S	PERV	2	FC	3	MTRX	4	PERV	2	CHL	FR	2	CLY	CLST	2	strong sil with moderate chl-ser giving a consistant pale green colour. Some gouge and annealed fracturing with white-yellowish clay. Gradual incrase in chl on fracture planes
218	246	S	PERV	2	FC	3	MTRX	3	PERV	3	SER	FC	2	CHL	FR	2	increased ser, decreased sil
246	280	S	PATC	1	FC	2	PERV	4	PERV	2	CHL	CLST	2	CHL	FR	1	more silica, fine grained crystalline silica, with low intensity chl
280	376.7	S	MTRX	1	FC	3	PERV	5	MTRX	3	SER	FC	3	CHL	FR	2	Laminated sil-ser pervasive, destroying primary texture. Yellow-white clay in annealed fractures, and in gouged sections. Chl on fracture planes in some cases strong

Blackwater Project
Drill Summary - Mineralization

BW0462		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5.3	16	SP	0.1		0		0	Dbs	VN	0.1							and isolated DBS vnlt
16	22.2	FC	2		0		0	Dbs	FC	3							some dark sulphide goo perhaps(?) in gouge material. Some small vnlts in suspended clasts
22.2	30	DI	0.5	CR	0.5	CR	0.5	Dbs	VN	0.5							DBS picking up near end, ossaisional clast well replaced with sph +/- Po.
30	39	DI	1	DI	1	SP	0.1	Dbs	VN	0.5							fine grained py with DBS. Smudgy brown disseminated sph. Local vnlt "web" of DBS
39	44	INFILL	0.5	DI	0.5	SP	0.1	Dbs	VN	0.1							py infilling some opened fractures
44	54	FC	2	DI	2	SP	0.1	Dbs	FC	5							gouge material seems to be carrying significant fine grained sulphides in dark goo (?)
54	64	DI	3	CR	5		0	Dbs	DEN	3							fine grained py with DBS. Sph clast replacement getting stronger. Strong DBS within clasts, especially larger felsic clasts. Also could be fine grained sulphides in clay-annealed fractures
64	74	DI	5	DI	7	SP	0.1	Dbs	VN	5							very high grade sulphides, mainly in laminations, disseminated, most laminations appear to be running sub-parallel to core axis
74	84.5	DI	3	DI	5	SP	0.1	Dbs		7							very small scale dendritic DBS "blebs", nearly salt and pepper looking core. Total sulphides around 15%
84.5	91.4	DI	2	DI	2	SP	0.1	Dbs	DEN	3							Fine grained diss py with DBS, occaisionally subhedral bright Py seen. Patchy small scale dendritic DBS. Core has a nice microbrecciated texture to it, could potentially be a good host rock for some grade of gold(?)
91.4	97	DI	3	DI	2	SP	0.1	Dbs	VN	1							high grade very fine grained PY-SPH in matrix. (Maybe even higher than estimate). Also some greenish-yellow py on the odd fracture plane
97	107.5	DI	1	DI	1		0	Dbs	VN	1							vnlt patch of DBS here and there. Some small zones of good grade sulphides, but mostly sulphides appear to have been oxidized out
107.5	113.8	DI	1	DI	2		0	Dbs	DI	3							Py disseminated with DBS. Patchy blebby DBS, potentially sooty dark sulphide goo in gouge material

Blackwater Project
Drill Summary - Mineralization

BW0462		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
113.8	120	DI	0.5	DI	0.5		0	Dbs	LAM	7							laminated DBS (sulphide goo in gouge) potentially high grade dark sulphides in gouge material. Doesn't smell strongly with HCl, so perhaps mostly fine grained PY(?). May not even be sulphides...
120	130	DI	1	DI	1		0	Dbs	LAM	5							definitely some sparkling DBS within gouge material seen, appears to be largely fine grained Py, fairly significant amount of this (7% total sulphides)
130	142	FP	1	DI	2		0	Dbs	LAM	5							py on fracture planes and occasional blebs. Sph diss, spotty. DBS as above
142	155	FP	1	DI	1		0	Dbs	LAM	2							as above, lower grade sulphide overall
155	166	FC	1	DI	1		0	Dbs	LAM	2							as above
166	175	SUBH	3	DI	3	SP	0.1	Dbs	VN	1	Apy	SUBH	0.5	Cp	SP	0.1	sph in disseminated "spots", perhaps clast replacement, although clasts are nearly totally obscurred by alt'n. CPY specks with PY.
175	185	SUBH	2	DI	3	SP	0.1	Dbs	VN	1	Apy	VN	0.1	Cp	SP	0.1	subhedral bright py, becoming more blebby near end. Patches of good grade subhedral py and diss sph with some straggler DBS; Py with metallic sph sometimes
185	195	BB	2	DI	2	SP	0.1	Dbs	VN	1	Apy		0.1				as above with a bit less sulphides overall
195	205	BB	2	DI	2	SP	0.1	Dbs	VN	2	Apy		0.1				As above except DBS in a few high grade patches, and overall higher grade than above
205	215	BB	3	DI	3	BB	0.5	Dbs	VN	1							overall increase in sulphides
215	225	BB	3	DI	5	BB	0.5	Dbs	VN	1							as above with higher sph in high grade disseminated "patches" (or faint Clast replacement?). Short whisps of DBS
225	235	BB	3	DI	3	BB	0.5	Dbs	VN	1	Cp	SP	0.1				as above with a few large py-sph blebs. Decreased mineralization a bit towards bottom. SPH @ 3%, CPY @ 0.1%
235	245	BB	2	DI	2	BB	0.1	Dbs	VN	0.5	Cp	SP	0.1				bit of decrease of sulphides, similar styles as above except fewer vnlts
245	255	BB	2	DI	2	BB	0.1	Dbs	VN	2	Cp	SP	0.1				As above, with increased DBS in a zone of frequent vnlt "networks"

Blackwater Project
Drill Summary - Mineralization

BW0462		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
255	265	SUBH	3	DI	1	SP	0.1	Dbs	VN	2	Cp	SP	0.5				several vnlt splays of DBS; some specks of CPY and sometimes fairly coarse with PY; Quite a bit of shoddy vnlts with bright blebby PY
265	275	SUBH	3	DI	1	SP	0.1	Dbs	VN	2	Cp	SP	0.5				As above, PY blebs quite bright, and in some cases fairly large
275	285	SUBH	3	DI	3	SP	0.1	Dbs	VN	0.5	Cp	SP	0.1				subhedral py, and blebs with sph. SPH with py and small "dots" diss. DBS in whispy vnlts.
285	295	SUBH	3	DI	3	BB	1	Dbs	VN	1	Cp	SP	0.1				As above, with sudden appearance of PO with PY-SPH blebs. Short whisps of DBS continues, vnlt or two with good grade py & black metallic sph
295	305	SUBH	5	DI	2	SP	0.1	Dbs	VN	0.5	Cp	SP	0.1				High grade zones of mostly sub-hedral py with lesser SPH. particularly one spot with a 90% pure chl "glob" where py-sph is very high grade
305	316	BB	3	DI	3	SP	0.1	Dbs		0.1							Py strong at start in blebs and in one high grade tapered vein. Diss sph strong at end
316	320	FC	5	DI	2		0	Cp	BB	0.5							some high grade bright and dull py in annealed heavy fracturing/gouge material. Some cpy with it
320	330	BB	2	DI	3	BB	0.5	Cp	SP	0.5	Dbs	VN	0.5				pretty barren mineralization at start of interval, then sph picking up strong and common py blebs. PO a bit with sph. The odd DBS vnlt
330	340	BB	2	DI	3	BB	0.5	Cp	SP	0.5	Dbs	VN	0.5				as above, with some subh py. Sph picking up strong at end
340	355	BB	2	DI	3	BB	1	Cp	SP	0.5	Dbs	VN	0.5				As above, with py blebs getting larger. PO up to 1% in fairly large blebs, and a vnlt
355	367	BB	2	DI	3	BB	1	Cp	SP	0.5	Dbs	VN	0.5				As above
367	376.7	BB	3	BB	2	BB	0.5	Cp	SP	0.1							common isolated large blebs of py>sph. Otherwise rock appears quite "tight", not as much fine grained sulphides

Blackwater Project
Drill Summary - Structure

BW0462

From (m)	To (m)	Structure	Strength	Comments
5.3	9	BRKZ	3	broken rock with clay, likely from meteoric processes
9	14	JZ	4	minor set at 25 deg TCA
14	16.5	BRKZ	2	increasingly broken rock
16.5	22.3	FZ	5	unconfident with contact angles, bottom angle is at very low angle TCA. soft clay material in gouge, some SA fragments of host rock suspended
22.3	41.45	JZ	4	frequent jointing, some short zones of more busted up rock, minor joint set at around 30 deg tCA
41.45	44.3	BRKZ	3	broken rock, with a couple small clay-annealed fractured zones.
44.3	47.2	FZ	5	soft green and yellow gouge material, with small rock fragments suspended within. Upper contact measured at 60, becomes broken rock at bottom
47.2	60	BRKZ	4	very broken to nearly rubble, for a signifcant length
60	63.3	FZ	4	clay gouge, with some banding of different clay material. Lower contact measured at 60 deg TCa
63.3	95.4	JZ	3	competant core. Dominant joint set varies from 15-30 deg TCA, with minor set at around 60
95.4	101	JZ	5	increased jointing, and also a bit of clay-annealed fracturing, minor
101	102.4	FZ	3	orange soft gouge material. Could be a pathway for meteric fluids(?) as rock has iron oxide staining in vicinity.
102.4	110.1	JZ	4	joint zone with interspaced minor broken rock
110.1	110.9	SZ	4	short section, with sheared gouge, with very broken/rubble underneath
110.9	113.4	JZ	3	short section of more competant core
113.4	118.9	FZ	5	top contact measured at 25 deg TCA. Very intense gouge, soft but gritty in spots. also some rubble
118.9	123	FZ	2	lower intensity fault zone than above. Lots of rubble, with some white gouge interspaced
123	129.5	FZ	4	rubble then healed gouge, then more rubble with gouge. Lower contact at roughly 50 deg tCA
129.5	131	BRKZ	2	short zone of somewhat competant rock. No measureable fracture planes, all rough
131	166.4	FZ	4	broken/rubble, with plenty of clay gouge. Typically sub-angular to sub-rounded fragments suspended within gouge material. Over 75% of recovered core is gouge and/or rubble, with the rest broken
166.4	176.3	JZ	5	jointed with some rough fractures too. Blocky jointing with short 10-30cm runs
176.3	179.7	BRKZ	3	broken to nearly rubble, chunky
179.7	185.3	JZ	4	jointed core with some rough fracturing, and brief zones of busted up core
185.3	193.9	BRKZ	3	very broken up in most places with brief competant runs
193.9	208.5	BRKZ	3	minor fracture set orientation at 30 deg. Rough fracturing
208.5	209.9	FZ	3	gouge, then fault breccia well healed, with slickensides on bottom contact, dip-slip

Blackwater Project
Drill Summary - Structure

BW0462

From (m)	To (m)	Structure	Strength	Comments
209.9	218.8	JZ	4	some rough fractures, competant core
218.8	219	FL		small bit of annealed fault breccia
219	227.1	JZ	4	other joint sets at 15 and 50 deg TCA
227.1	227.9	BZ	3	annealed fault breccia zone, rich in fragments, alignment of clasts same as contact angle @ 25 deg TCA
227.9	233.1	BRKZ	2	joint set following laminations in the core, at 20 deg TCA, with minor set at aroudn 40 deg TCA. Quite a bit of rough fracturing too
233.1	239.2	BRKZ	4	very broken core, going to rubble in places
239.2	251	FZ	3	gouge then broken/rubbly core, with short competant runs of core near end interspaced with rubble/gouge
251	267.4	JZ	3	some long runs of competant core, with short zones of more broken/rough core
267.4	280	BRKZ	3	rubbly/rough broken with interspaced competant runs of core
280	282.5	JZ	3	short section of competant core
282.5	286.3	BRKZ	3	rough fracturing
286.3	287.7	FZ	4	gritty gouge, with some a few sub-rounded fragments suspended within. Lower contact sharp at 25 deg TCA.
287.7	308.7	JZ	5	fairly competant core with many zones of brken/rough fractures. Minor joint set at 60 deg TCA
308.7	325.9	BRKZ	5	mostly very broken to rubbly with a bit of gritty gouge. Brief interspaced runs of competant core
325.9	329.5	JZ	5	rough joint planes for the most part
329.5	338.8	BRKZ	3	main planar joint set at roughly 55 deg, but mostly rough broken fractures
338.8	341.7	JZ	3	planar joint measured at 25.
341.7	342.2	CLYSEAM	2	brief clay seam with rubble within mainly competant rock,
342.2	376.7	JZ	3	dominant jointing at 30-40 deg TCA. good runs of core for the most part, with a section or two a bit more broken up

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Blackwater Project
Drill Logs

Hole ID:	BW0463	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376101.3
Depth (m):	343.5	Date Started:	17/05/2012	Casing Size:	HWT	Northing:	5892949.91
Azimuth:	0	Date Completed:	26/05/2012	Casing (m):	88	Elevation (m):	1553
Dip:	-90	Logged By:	LMo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
58.5	198.5	-88.8
106	241.5	-89
150	230.7	-88.6
200	229.8	-88.9
250	200.2	-88.8
300	222.5	-88
343.5	229.8	-88.6

Blackwater Project
Drill Summary - Lithology

BW0463

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	89	OB							Gravel to boulder sized clasts, muddy silt to sand sized matrix.
89	343.5	AND	por		M	GRY			Mostly porphyritic andesite, with local amydules and massive intervals. Some volcanoclastic textures are also visible. Possible younger/subarial andesite at the top of the interval, due to purple colouration.

Blackwater Project
Drill Summary - Alteration

BW0463		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
89	100	O		0	CLST	2		0		0	LIM	FC	3				Oxide zone, clay replacing phenocrysts and amygdules, fractures controlled limonite
100	104	T	FC	2	CLST	2		0		0	LIM	FR	1				Transition zone, fracture controlled limonite, chlorite in fault gge, clay replacing phenocrysts
104	134	S	FC	2	CLST	2	PATC	2		0							Sulpide zone, chlorite on fractrures, clay replacing phenocrysts
134	170	S	FC	4	PATC	2	PATC	2		0	CAL	FR	2				Patchy silica and clay, strong chlorite in clay gge zones, calcite on fractures
170	343.5	S	FR	1	INFILL	1	PATC	3		0	CAL	INFILL	2				Weak chlorite on occasional fractures, patchy moderate silica, sometimes causing bleaching and highlighting VC texture, calcite>clay infilling fractures

Blackwater Project
Drill Summary - Mineralization

BW0463		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
100	104	DI	0.1		0	DI	0.1	Goe	FC	1							Trace py and po, with goethite/limonite on fractures
104	130	DI	0.1		0	DI	0.1	Mrc	FC	0.1							Trace di py and po, some marcasite on fractures
130	164	VN	0.5	VN	0.1	DI	0.5	Mrc	FP	0.1							Increased py, di an in veins up to 5mm wide, sometimes with sphal. Di and blebby po.
164	232	VN	0.5		0	DI	0.5	Mag	FP	0.1							Py in veins, di po, sometimes in veins and blebs
232	249.4	VN	0.5		0	DI	0.5										weak sulphides,diss py with rare veins of pyrite associated with calcite.
249.4	330	VN	0.5		0	DI	0.5										similarto above
330	343.5	DI	0.1		0	DI	0.1										Major drop off of sulphdes. Trace po and py.

Blackwater Project
Drill Summary - Structure

BW0463

From (m)	To (m)	Structure	Strength	Comments
89	128	FZ	2	Weak fault zone, with broken rock and local fault gauge
128	135	FZ	4	Strong fault zone, with clay gge and rubble
135	170	BRKZ	3	Moderate broken zone, intervals of rubble, rough fractures, and clay gge on fractures
170	196	BRKZ	1	Weakly broken zone, with rough fractures
196	333	JZ	2	Joint zone, fractures 75>45 degrees TCA
333	343.5	BRKZ	2	Weakly broken zone, rough fractures and some short rubbly intervals.

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Blackwater Project
Drill Logs

Hole ID:	BW0464	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375201.31
Depth (m):	432.1	Date Started:	17/05/2012	Casing Size:	HWT	Northing:	5892949.87
Azimuth:	0	Date Completed:	24/05/2012	Casing (m):	4.5	Elevation (m):	1600
Dip:	-90	Logged By:	NDh	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.33	7.8	-89.5
92.05	343.7	-89.7
140.8	57.3	-89.7
186.5	309.5	-89.8
229.2	39.3	-89.7
274.9	53.2	-89.8
320.7	355.4	-89.8
366.4	172.6	-89.5
412.1	184.8	-88.5
431.9	58.6	-88.9

Blackwater Project
Drill Summary - Lithology

BW0464

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2	OB							bouldery overburden
2	41.3	FLPT	lpt		L	GRY	DEP	GR30+	felsic lapilli tuffwith laminations in clasts, some silicified clasts <5%; moderate to strong oxidation
41.3	79.2	VC	plm		M	GRY	DEP		medium to dark grey volcanoclastic unit,clasts are subrounded to subangular, some are laminated, mixed mafic and felsic (50:50) overall, but sections within interval up to 20cm some which are more mafic than felsic and vice versa
79.2	113.4	FLPT	lpt		M	GRY	DEP	GR30+	felsic lapilli tuff, clasts>matrix, laminated clasts
113.4	162	FLPT	lpt		M	GRN			felsic lapilli tuff with laminted clasts, local microbrecciation nd local bleached sections
162	325	FLPT	lpt		M	GRN			felsic lapilli tuff with laminated clasts, some local laminated sections as well, strong alteration obscuring some textures. Strong bx textures
325	350	FLPT	lam		M	GRN			local microbrecciation, laminated in sections likely due to alteration and not deposition, textures also obscured by alteration
350	432.1	FLPT	lam		M	GRN			same as above, but more textures visible, clastic/fragmental with local banded sections; EOH

Blackwater Project
Drill Summary - Alteration

BW0464		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	41.2	O		0	REP	2	PERV	3	PERV	2	LIM	FC	3	HM	FC	3	strong oxidation, clay as replacement in some clasts, some mechanical clay along fractures as gge, pervasive silica+sericite
41.2	55.8	T		0	REP	1	PERV	3	PERV	2	LIM	FR	2	HM	FR	3	similar to above but in transition, less oxidation as well
55.8	79.2	S	FR	1	REP	2	PATC	2	PATC	2							sulphide zone, some clay replacement in mafic clasts, some felsic clasts are silicified, patchy sericite dominantly in matrix
79.2	113.5	S		0	FR	1	PERV	4	PERV	3	ALB	SPHL	1				felsic unit with strong pervasive silica + sericite alteration, weak clay along fractures
113.5	162	S	FR	1	FR	1	OP	5	PERV	3	SIL	PERV	4	CHL	PATC	1	sericite and weak chlorite, pervasive silica and strong silica overprint
162	294	S	FR	2	FR	1	PERV	4	PERV	3	SER	FC	1	CHL	REP	1	pervasive silica alteration, weak chlorite altertion in some clasts, sericite pervasive throughout but also along fractures
294	325	S	FR	2	PERV	2	PERV	5	PERV	3							Very strong pervasive silica, moderate to strong pervasive sericite, clay and possibly chlorite,
325	350	S	FR	1	PATC	1	PERV	5	PERV	3							pervasive strong silicificaton, pervasive sericite and likely some clay, weak chlorite along fractures
350	405.2	S	REP	1	REP	1	PERV	4	PERV	3	CHL	FR	1				some weak chlorite and clay replacing clasts, pervasive sericite and silica
405.2	432.1	S	FR	1		0	PERV	5	PERV	3							pervasive silica, glassy looking rock, pervasive sericite and weak chlorite along fractures

Blackwater Project
Drill Summary - Mineralization

BW0464		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
41.3	47.9	DI	0.1	DI	0.5		0										trace pyrite disseminated as brassy specs, dissemianted sph throughout as well
47.9	62.6	DI	0.5	DI	1		0	Dbs	DEN	0.1							slight increase in sulphies, disseminated sph>py>>dbs
62.6	79.2	DI	0.1	DI	0.1		0										decrease in sulphides in vc unit, trace py and sph
79.2	95.5	DI	1	DI	0.5		0.1	Dbs	DEN	0.5							increase in py, some sooty blebs and some brassy specs throughout, decrease in sphlarite, trace po in some clasts
95.5	108.6	DI	1	DI	0.5		0	Dbs	DEN	1							same as above, increase in dbs
108.6	113.5	DI	0.5	DI	1	BB	0.5	Dbs	DEN	0.5							disseminated sph>py=dbs=po
113.5	126	DI	1	DI	1	DI	0.5	Dbs	DEN	1							pyrite as fine brassy disseminations, po also as fine disseminations, sphalerite as little blebs disseminated throughout and sooty dbs stingers
126	148.2	DI	0.5	DI	1	DI	1	Dbs	DEN	1							similar style of sulphide as above but different amounts
148.2	161.0	DI	0.5	DI	0.5	DI	1.5	Dbs	DEN	0.5							
161.0	183.6	DI	1	DI	1	DI	0.5	Dbs	DEN	0.5							disseminated sph some little blebs with po, dbs as little stringers,
183.6	190.8	DI	1	DI	1	DI	0.5	Dbs	DEN	1							slight increase in dbs
190.8	197.3	DI	0.5	DI	0.5	DI	0.5	Dbs	DEN	0.5							decrease in TS
197.3	204.9	DI	1	DI	1	DI	0.5	Dbs	DEN	1							increase in overall sulphides
204.9	225.2	EU	1	DI	1	BB	0.5	Dbs	DEN	0.3							decrease in sooty dbs stringers, py as euhedral/ cubic; po in little belbs throughout, sph disseminated throughout but overall decrease in sulphides
225.2	294	DI	1	BB	1	BB	0.5	Dbs	DEN	0.3							Local zones of eu py, di po, sphal and DBS
294	328.3	DI	0.5	BB	0.5	BB	1	Cp	SP	0.1	Dbs	DEN	0.5				trace cpy in blebs of Po. Sphalerite mineralization typically follow laminations.
328.3	345	DI	0.5	DI	0.1	DI	0.5	Dbs	DEN	0.1							
345	365	DI	0.1	DI	0.5	DI	1	Dbs	DEN	0.1							trace py as brassy specs, trace dbs, blebs of po some with sph

Blackwater Project
Drill Summary - Mineralization

BW0464		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
365	386.2	DI	0.5	DI	0.5	CR	1	Dbs	DEN	0.1	Grnt	BB	0.1				blebs of po, some with sph and py, po also seems to be replacing somethien possiby garnet? ratty garnet blebs
386.2	415.3	DI	0.1	DI	0.3	DI	1	Dbs	DEN	0.1	Grnt	BB	0.3				decrease insulphides, smaller blebs of po, disseminated sph and py
415.3	432.1	DI	0.3	DI	0.5	DI	1	Dbs		0.1	Grnt	BB	0.1				trace py, sph and dbs, some ratty garnet blebs up to 5mm diameter; po disseminated throughout (fine disseminations and some blebs)

Blackwater Project
Drill Summary - Structure

BW0464

From (m)	To (m)	Structure	Strength	Comments
2	23	BRKZ	1	weak broken zone, clay gge throughout some competent sections up to 40cm
23	93.57	JZ	2	joint zone with joints 50>30 dtca, two fractures at ~10dtca; two strongly jointed or weakly broken sections up to 30cm
93.57	123.4	JZ	1	competent core, joints at ~55 dtca
123.4	124.1	BRKZ	4	moderate to strong broken zone with chlorite +clay gge throughout
124.1	177.9	JZ	2	competent core with fractures dominantly at 50 dtca, some at 30 dtca
177.9	205.2	JZ	3	competent core, weak joint zone with some local weakly broken sections up to 30cm, fractures dominantly at 30 but some are at 55ish dtca
205.2	228	JZ	2	fractures range from 45-55 dtca, competent core
228	235.5	BRKZ	3	Broken to rubbly rock, preceding fault zone
235.5	257	FZ	4	Strong fault zone with frequent zones of rehealed fault gge and rubble
257	267.1	BRKZ	2	weak broken zone with some fractures parallel TCA and some rubble
267.1	318.5	JZ	2	Joint zone, fractures 45>30>80 degrees TCA
318.5	339.5	BRKZ	3	broken zone
339.5	354.9	BRKZ	2	less broken rock then previous interval
354.9	357.3	FZ	3	clay+chlorite annealed fault zon
357.3	390.7	JZ	2	joint zone with fracture dominantly at 45 and 55 dtca
390.7	398	BRKZ	2	moderate broken zone; some chlorite+clay gge throughout
398	405.2	FZ	4	moderate to strong fault zone, clay+chlorite gge throughout, some annealed sections
405.2	411.2	JZ	2	competent core, few fractures mostly at 30 dtca, some at 45
411.2	415.3	FZ	3	moderate to strong fault zone, chlorite+clay annealed sections
415.3	432.1	JZ	2	competent core, fractures are in to main sets, one at 30ish dtca and one at 50ish dtca

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Blackwater Project
Drill Logs

Hole ID:	BW0465	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376051.83
Depth (m):	364	Date Started:	18/05/2012	Casing Size:	HWT	Northing:	5892899.79
Azimuth:	0	Date Completed:	25/05/2012	Casing (m):	91.5	Elevation (m):	1562
Dip:	-90	Logged By:	BRe	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	78.4	-89.7
59.6	78.4	-89.7
108	182.9	-89.9
150	296.9	-89.7
250	358.1	-89.7
300	193.6	-89.3
364	166.4	-89.8

Blackwater Project
Drill Summary - Lithology

BW0465

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	86.23	OB							
86.23	106	FLPT	lam	LAP	L				Dominately laminated crystal tuff, with beds/short intervals, of lapilli tuff.
106	199.9	FLPT	obsalt	LAP	L	CRM	DEP	SH	lapilli tuff with textures obscured by alteration, still an apparent fragmental texture. Locally banded.
199.9	208.7	AND	volc	LAP	M	GRY	FLT	SH	Medium grey-brown volcaniclastic Andesite. Silica rich matrix. Majority of clasts are subrounded to angular. Sharp faulted lower contact, 80 TCA. Slicks
208.7	225.2	FLPT	obsalt			CRM	DEP	GR10	fault breccia and texturally obscured FLPT. No clasts present. Locally laminated.
225.2	256	AND	volc	BLOCK	M	GRY	DEP	GR30+	dark grey andesite. Porphyritic to amygdule rich in places. Rare garnets. Calcite veining begins at 247m. Sulphide veining strong.
256	364	AND	volc	BLOCK	M	GRY			dark grey andesite. Porphyritic to amygdule rich in places.

Blackwater Project
Drill Summary - Alteration

BW0465		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
86.23	91.1	O		0		0	PERV	2	PERV	3	LIM	FC	4	LIM	PERV	2	oxide zone with limonite over printing serite and silica alteration.
91.1	108	T		0		0	PERV	3	PERV	3	LIM	FC	4				Decreasing limonite intensity
108	140	S		0	FR	1	PERV	4	PERV	3	ALB	SPHL	1				pervasive silica and sercite, weak chlorite along fractures, albite? whitish halos around sulphide blebs
140	199.7	S		0	FR	1	PERV	4	PERV	3							same as above but no more albite or white mineral haloes
199.7	208.7	S	PERV	3	FC	1	PERV	3	PERV	3							silica rich matrix within volcaniclastic andesite.
208.7	225.3	S	FC	3	FC	2	PERV	4	PERV	3							fault breccia, increase chlorite in fractures. Intense silica alteration.
225.3	364	S	PERV	3	FC	2	PERV	3	PERV	2	GRNT	PATC	2	CAL	VN	4	silica rich matrix, calcite veining and rare garents present

Blackwater Project
Drill Summary - Mineralization

BW0465		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
86.23	91		0		0		0										oxide zone
91	106	EU	0.1	BB	0.1		0										trace Py and Sp, is remains of what appears to have been 1-2% sulphide prior to oxidation.
106	124.5	BB	2	BB	3		0	Dbs		1.5							blebs of sphalerite and py, most surrounded by an albite? (whitish mineral) rim/halo; dbs as little dendritic bits throughout
124.5	155	DI	1	DI	1.5		0	Dbs	DEN	1	Ga	SP	0.1				same as above but less sulphides, also a few specks of galena throughout
155	173.9	DI	2	DI	3		0	Dbs	DEN	0.5							disseminated blebs of py and sph throughout, some dbs, also some mixed sulphide blebs with sph and py
173.9	199.8	DI	3	DI	6		0	Dbs	DEN	2							intense sulphides, red and black spalerite, diss. Black sooty pyrite and dbs present
199.8	207.8	DI	2	DI	2	DI	1										decrease in sulphides, increase in sulphides within veins.
207.8	225.2	DI	2	DI	4	DI	0.5	Dbs	DEN	2							slilcified unit, diss sulphides, dbs. Strong.
225.2	256	VN	2	VN	1	DI	1	Grnt	PATC	1							increase in veined sulphides, rare garnets present. Amgydules replaces by pyrite and po.
256	264	VN	0.5	VN	0.5	BB	1										blebs of Po filling amgdules and replaceing grains.
264	280	DI	0.5		0	BB	1	Cp									grains of cp in cores of Po.
280	300		0		0	BB	0.5										Po replaceing grains and clasts.
300	330		0		0	BB	0.1										Rare blebs of Po.
330	356		0		0	BB	0.1										Rare blebs of Po.
356	357	VN	1		0		0										Py in vein with drusy Qtz after calcite.
357	364		0		0	BB	0.1										Rare blebs of Po.

Blackwater Project
Drill Summary - Structure

BW0465

From (m)	To (m)	Structure	Strength	Comments
86.23	97	JZ	3	Joints along laminations variable from 30-60 deg to CA.
97	110.9	FZ	2	fault zone with a few comptent sections; clay gge throughout
110.9	130.9	BRKZ	1	weakly broken zone some gge along fractures
130.9	164.5	FZ	3	moderate to strong fault zone with some competent sections up to 30cm throughout
164.5	208.7	BRKZ	3	moderate to strong broken zone, some gge along fractures
208.7	217.3	FL	4	sharp fault contact, fault breccia with intact zones. Slicks on fault surfaces
217.3	230	JZ	3	majority of joints shallow
230	273.3	JZ	3	increase in steepness in the jointing
273.3	274.5	FL	1	vein breccia and localized fault Gouge.
274.5	364	JZ	2	joints @ 30, 80. Broken along calcite veins.

Blackwater Project
Drill Logs

Hole ID:	BW0466	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375101.34
Depth (m):	390.54	Date Started:	18/05/2012	Casing Size:	HWT	Northing:	5893149.62
Azimuth:	0	Date Completed:	24/05/2012	Casing (m):	5	Elevation (m):	1574
Dip:	-90	Logged By:	KOI	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	160.5	-88.5
91.44	166.2	-88.8
115.8	156.1	-87.3
137.2	160.8	-88.5
228.6	169.3	-88.4
320.0	170.9	-88
365.8	165.1	-86.9
390.1	165.6	-86.8

Blackwater Project
Drill Summary - Lithology

BW0466

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	32.5	FLPT	volc	LAP	L	GRY	ALTFR	GR30+	Light to medium grey FLPT (likely an altered VC, as below) with 100% banded, felsic looking clasts that are heavily clay altered. Predominantly lapilli sized and smaller, moderately sorted, clast supported with a strongly silicified matrix that is di
32.5	52	VC	obsalt	LAP	M	GRN	ALTFR	GR30+	Medium grey VC (likely as that is the unit below), some volcanoclastic texture can be observed locally but predominantly texture destroyed by intense silca with clay and sericite alteration patches. Heavy oxide throughout.
52	63.4	VC	volc	LAP	M	GRY	ALTFR	GR30	Medium grey, relatively unaltered VC unit (likely a good indicator of the protolith of surrounding, heavily altered units). Clast supported, polymictic included clasts that appear felsic, banded with both silica and clay alteration, and dark, aphanit
63.4	90	VC	obsalt	LAP	M	GRY	ALTFR	GR30+	More altered than the unit above, obscured by alteration - likely a VC as local zones have ghost clasts (sericite and clay altered).
90	145	VC	obsalt	LAP	M	GRY	ALTFR	GR30+	Medium grey-green (FLPT?) VC with intense alteration, obscuring primary texture. Local zones where volcanoclastic texture can be observed with apparent 100% felsic looking clasts. Strong silica sericite atleration. Laminated texture in clasts. A few
145	190	VC	obsalt		D	GRY	ALTFR	GR30+	Strongly altered VC? with laminations throughout, no clasts observed. Medium to dark grey in colour with strong silica-sericite-chlorite alteration. Sulphide mineralization following laminations.
190	220	VC	obsalt	LAP	M	GRY	ALTFR	GR30+	Medium to dark grey green VC, similar to above but with lesser laminations and a more prominant volcaniclastic texture. Texture obscuring alteration alteration - strong silica chlorite sericite.
220	270	VC	obsalt	LAP	MO	GRY	ALTFR	GR30+	Very similar to above, texture destroyed VC with similar style in alteration as above. This interval is less laminated and has local zones of microbrecciation (appears to be secondary as clast alteration in this zone is a dull white clay while in the
270	390.5	VC	obsalt	LAP	MO	GRY	UNKN		Similar to above in alteration style and colours. VC with local zones of volcaniclastic texture and laminated texture. Much of the texture of the rock is obscured by alteration - making determining the texture of the VC difficult or undeterminable.

Blackwater Project
Drill Summary - Alteration

BW0466		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	32.5	O		0	CLST	4	MTRX	4	CLST	2	SIL	CLST	2	CLY	MTRX	2	Clast are mostly clay altered with a sericite component and silica banding within clasts. The matrix is strongly silica altered (with a little bit of clay in the smaller clasts that make up the matrix). Hematite is strong and fracture controlled.
32.5	52	T	CLST	2	FC	3	PERV	5	CLST	3	SER	PATC	2	CLY	CLST	2	Clasts are sericite-clay altered, sericite also occuring as patches. Silica alteration is pervasive throughout this interval and intense - obscuring the primary texture almost completely (some weak clasts can be observed). Clay on fracture planes as thin (5 mm), oxidized seams. Oxide on fractures, penetrating into the rock and thin, dendric, oxidized veinlets.
52	63.4	T	CLST	2	CLST	3	MTRX	4	CLST	2	SIL	CLST	1	CLY	FR	2	Clasts are clay with sericite and chlorite altered, with lesser clasts with silica alteration. The matrix is strongly silica altered, obscuring the fine texture of the matrix. Clay on fracture planes. Oxide is fracture controlled and patchy throughout on the core.
63.4	73	T	PATC	1	PERV	3	PERV	3	PATC	2	CLY	FR	2	HM	FR	1	Significantly less oxide in this interval than above and below. Moderate, pervasive silica and clay alteration throughout. Patchy sericiate and chlorite alteration.
73	89.5	T	PATC	2	SPHL	3	PERV	4	PERV	3	HM	FC	3	HM	PATC	3	Strong oxide relative to above. Pervasive to banded silica-sericite-clay alteration. Clay also as white reaction rims on sulphide+silica blebs which have been overprinted by silica wash.
89.5	119	T	PATC	3	SPHL	1	PERV	4	PERV	3	CLY	PATC	3	HM	FC	3	Similar to above - intense alteration obscuring the primary texture of the rock. Clay as patches.
119	121	T	PERV	3	FR	2	PERV	4	PERV	2	CHL	FR	2	CLY	PATC	3	Pervasive silica-chlorite-sericite alteration, patchy clay alteration. Chlorite and clay also on fracture planes. Weak hematite on fracture planes.
121	145	S	PERV	3	FR	2	PERV	4	PERV	2	CHL	FR	2	CLY	PATC	3	As above with no oxide. SULPHIDE ZONE>
145	195	S	PATC	4	FR	4	PERV	4	PERV	3							STRONG ALTERATION - laminated texture. Pervasive silica-sericite with patchy chlorite. Cloudy, convoluted laminations.

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Blackwater Project
Drill Summary - Alteration

BW0466		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
195	225	S	FR	4	FR	2	PERV	4	PATC	2	CHL	PERV	4	CLY	CLST	3	Similar in colour as above with a less laminated texture. The texture is moderately fragmental with weak laminations throughout (laminations primary or secondary - unknown!?). Strong, pervasive silica alteration with chlorite, chlorite also as intense patches and as a thick deep green coating on fracture surfaces. Sericite and clay alteration of fragments.
225	256	T	PATC	2	CLST	3	PERV	4	PATC	3	CHL	FR	3	CLY	FR	2	Similar to above with a micro brecciated texture with smaller clasts altered to a dull white clay. The larger laminated clasts are sericite-chlorite altered (+/- silica). Silica is strongest in the matrix where brecciated but occurs as a pervasive wash with sericite and chlorite patches that destroy the primary texture of the rock.
256	270	T	PATC	3	CLST	3	PERV	4	PATC	3	CHL	FR	4	CLY	FR	2	similar to above with greater chlorite on fractures and throughout. Alteration still strongly obscuring the texture of the rock. Strong sulphide mineralization.
270	290	T	PERV	3	CLST	2	PERV	4	PATC	2	CHL	FR	4	CLY	FR	1	Similar to above with a more laminated texture and chlorite, clay, sericite alteration roughly following these laminations. Clay alteration of clasts, some micro breccia.
290	305	T	CLST	3	CLST	3	MTRX	4	CLST	2	CHL	FR	4				Matrix is silica altered with clay. Clasts are sericite, chlorite clay altered. Fractures are coated with chlorite with radiating crystals of marcasite. An unknown, cloudy pink in the matrix with laminations - really faint and only present in a several meter interval.
305	324	S	PATC	3	PATC	3	PERV	4	PATC	2	CHL	FR	3	CLY	FR	3	Convoluted and irregular laminations with pervasive silica and patchy sericite, chlorite and clay alteration that tend to follow the laminations. Chlorite and clay on fractures.
324	334	S	CLST	4	CLST	3	PERV	4	CLST	2	CHL	FR	3	CLY	MTRX	2	A decrease in pervasive chlorite. Silica alteration is pervasive. Clasts are altered to sericite, chlorite and clay. The matrix is somewhat clay altered and there is a dull, white clay around sulphide mineralization.

Blackwater Project
Drill Summary - Alteration

BW0466		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
334	390.5	S	FR	2	FR	3	PERV	4	PERV	4	SIL	MTRX	5	CLY	PATC	1	Alteration obscures texture, strong, pervasive silica-sericite alteration with some microbrecciated zones with a very strong, intense silica matrix.Weak chlorite alteration throughout, following laminations.

Blackwater Project
Drill Summary - Mineralization

BW0466		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
0	32.5		0		0		0	Grnt	CG	0.5	Hm	FC	4				No sulphide observed. Garnet as reddish-brown coarse grained aggregates, cruddy and poorly formed. Oxide is fracture controlled.
32.5	52	DI	1		0	DI	1	Grnt	CG	0.5	Dbs	DEN	2	Hm	FC	2	Pyrite as disseminated, euhedral clasts some partially filled casts. Po disseminations similar to pyrite (could be replacing py?). DBS as small, dendric disseminations. Garnet as reddish-brown coarse grained aggregates, as above.
52	63.4	CR	0.5	CR	0.5	CR	0.5	Grnt	CR	0.5	Hm	FC	3				Sulphides mineralizing in clasts. Garnets also mineralizing in clasts, also occuring intergrown with sulphide mineralization.
63.4	73		0		0	DI	2	Hm	FP	0.1							Heavily altered rock, only pyrrhotite mineralization observed as disseminated blebs throughout. Very weak oxide on fractures.
73	89.5		0	BB	0.1	BB	0.1	Hm	PATC	3							Strongly oxidized rock, little suphide observed. Could be underestimated because of intense oxide.
89.5	119	DI	1	DI	1	DI	2	Dbs	DEN	1	Hm	FC	4				Significant increase in sulphide than above. Disseminations of pyrite, spalerite and pyrrhotite with dendric disseminations of DBS.
119	145	BB	2	DI	1	DI	2	Dbs	DEN	2	Grnt	CG	1				As above, no oxide. Garnet as coarse brown aggregates, intergrown and proximal to sulphide.
145	162	DI	1.5	DI	1	DI	1.5	Dbs	DEN	1.5	Grnt	CG	1.5				As above, greater garnet and less pyrite than above.
162	182	DI	1.5	DI	1	DI	2	Dbs	DEN	1	Grnt	CG	1				Similar to above with finer grained sulphide disseminations and sulphide disseminations following laminated texture.
182	195	DI	1	DI	1	DI	1.5										Disseminated to blebby sulphide mineralization. Pyrrhotite and sphalerite as larger clusters. Pyrite as very fine grained black disseminations that follow the laminated texture of the rock.
195	220	DI	1	DI	0.5	BB	1.5	Mrc	FC	1							Similar to above with blebby po and sparse sphal. Pyrite as fine stringers that are surrounded by chlorite.

Blackwater Project
Drill Summary - Mineralization

BW0466		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
220	240	DI	1	DI	1	DI	1.5	Mrc	FC	0.5	Dbs	DEN	2				increase in sulphide mineralization than above. DBS as black dendric disseminations and (red) sp, py and po disseminations.
240	255	DI	1.5	DI	1	DI	1.5	Mrc	FC	0.5	Dbs	DEN	3				Increase in DBS disseminations and pyrite!!
255	270	DI	3	DI	2	DI	1.5	Mrc	FC	0.5	Dbs	DEN	1	Py	VN	1.5	significant increase in pyrite mineralizations clusters of 1-5 mm subhedral to euhedral disseminations. increase in sphalerite disseminations, red.
270	290	BB	2	DI	1.5	BB	1.5	Dbs	DEN	4	Mrc	FP	0.5				Pyrite and pyrrhotite as blebby disseminations, sphalerite as red disseminations - all tend to be following the laminated texture of the rock. Abundant DBS as dendric disseminations, also following laminations. Marcasite on fractures with chlorite.
290	305	DI	1	DI	1	BB	2	Dbs	DEN	1	Mrc	FP	0.5				less pyrite, sphalerite and dbs than above. slight increase in blebby po
305	324	DI	1	VN	0.5	BB	1.5	Sp	DI	1	Mrc	FP	0.5	Grnt	ANH	2	Appearance of garnet as red-brown aggregates of anhedral, cruddy crystals - some with adjacent sulphide mineralization. Sphalerite-pyrite-silica veinlet at 318.9 m (<1cm thick). Some gougey zones in this interval with late, fine grained sulphide mine
324	338	BB	1.5	DI	2	DI	3	Cp	SP	0.1	Mrc	FP	0.5	Dbs	DEN	0.5	Similar to above with blebby pyrite - typically strung out in irregular shaped, discontinuous and multidirectional stringy vein-like blebbs. Sphalerite as fine, red disseminated clusters following laminations. Disseminations of pyrrhotite with accicu
338	365	VN	0.5		0	DI	1.5	Dbs	DEN	0.5	Grnt	ANH	2				Less sulphide mineralization than above with pyrite as chlorite-associated stringers. Pyrrhotite replaceing euhedral disseminations of pyrite. Garnet as red-brown, cruddy anderal aggregates.
365	390.5		0		0	DI	0.5	Dbs	DEN	0.1	Grnt	ANH	2				As above with lesser sulphide.

Blackwater Project
Drill Summary - Structure

BW0466

From (m)	To (m)	Structure	Strength	Comments
0	6.9	JZ	4	40 and 20 DTCA. Oxide on fracture planes.
6.9	7.2	CLYSEAM	3	clay seam with a mushy white (weakly oxidized) clay that could be an surface water weathering product?
7.2	32.5	JZ	3	45 and 15 DTCA. Oxide on fractures with a clayish oxide seam on some fractures, ~1 cm thick.
32.5	34.2	BZ	3	Fault breccia with a clay matrix and sub-rounded fragments and moderate oxide throughout.
34.2	62.3	JZ	4	45 and ~20 DTCA with a clay coating on fracture planes and strong oxide on fractures.
62.3	65.8	FZ	3	Orienation measurement with a moderate uncertainty. Fault zone with oxidized clay gouge and broken core.
65.8	82.4	JZ	2	Joint zone, weak to moderate fractures
82.4	83.5	BRKZ	4	Broken zone with clay to gravel sized fragments, oxidized.
83.5	103.9	JZ	2	Joint zone with moderate fractures and oxide on fracture surfaces.
103.9	117	BRKZ	3	Broken zone with a small (~10 cm) clay gouge at 104.1 m. Competant core and broken zones within this interval.
117	118	JZ	3	30 and 15 DTCA - joint zone.
118	118.7	FL	4	Fault of unknown orientation. Clay gouge with up to golf ball sized fragments in a green-blue clay. Chlorite rich clay but no late mineralization oberved in gouge. Fragments are sulphide mineralized suggesting this is a post mineralization structure.
118.7	146.3	JZ	3	Joint zone with intermittent, local broken zones.
146.3	147	FL	4	Fault, unknown orientation. Clay gouge with broken upper and lower boundaries. A weak red-orange oxide staining - hematite?- in clay. No late sulphide mineralization observed.
147	162	FZ	4	Fault zone, similar to above but with intermittent jointed intervals and broken zones. Between 155.5-156.1 meters the clay gouge is a pale green with a very fine grained sulphide mineralization.
162	181	JZ	4	Joint zone witn intermittend broken zones with a clay to gravel sized coating on fracture surfaces.
181	240.7	BRKZ	3	40 and 20 DTCA. Broken zone with intermittent joint zones throughout.
240.7	257	JZ	3	Joint zone with fractures at 40 and 20 DTCA.
257	267	BRKZ	3	Broken zone with jointed core. Chlorite on fracture planes.
267	272.5	FZ	4	Fault zone with dark green clay gouge and broken core.
272.5	288	JZ	3	joint zone with chlorite on fracture planes and weak broken zones.
288	309	JZ	4	Joint zone with more frequent jointing than above and an increase in the broken zones.
309	317	FZ	3	Fault zone with broken and jointed core with healed fault breccia with late fine grained sulphide mineralization.
317	330.4	JZ	2	Joint zone with jointing at 20 DTCA
330.4	330.8	FL	3	dark green clay gouge

Blackwater Project
Drill Summary - Structure

BW0466

From (m)	To (m)	Structure	Strength	Comments
330.8	389.5	JZ	3	Joint zone with main fracture set at 20 DTCA with intermittent broken zones.
389.5	390.5	FL	4	unknown orientation. Fault - clay gouge

Blackwater Project
Drill Logs

Hole ID:	BW0467	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375152.43
Depth (m):	453	Date Started:	19/05/2012	Casing Size:	HWT	Northing:	5893399.35
Azimuth:	0	Date Completed:	29/05/2012	Casing (m):	4.5	Elevation (m):	1530
Dip:	-90	Logged By:	SCa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	298.3	-89.1
150	311.2	-88.6
200	287.7	-88.8
250	311.3	-88.1
300	308.5	-87.8
350	302.4	-87.8
400	272.1	-88.1

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Drill Summary - Lithology

BW0467

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	2.88	OB							Clasts/Blocks of Silica-ser altered rock and silica-altered AND, finer-grained mud/soil washed away.
2.88	13.7	FLPT	hydbx	LAP	L	GRY	ALTFR	GR30+	L-M.Gray siliceous matrix supporting White-L.Gray partially clay rep fragments averaging 1-3mm size and larger Lapilli sized laminated white-L.Gray clay-silica laminated clasts, weakly rotated (not aligned). Poorly sorted matrix dominant (90:10 --> 7
13.7	31	FLPT	hydbx	LAP	L	GRN	FLT	SH	L.Green-Gray silica-ser matrix supporting M.Gray siliceous rounded clasts averaging 4mm and larger Lapilli > Block sized laminated ser-clay-silica laminated clasts, having been strongly rotated. Poorly sorted matrix dominant (90:10 --> 75:25). (Rotat
31	57.5	FLPT	fltbx	LAP	L	GRY	FLT	GR30+	Strongly Fault-Bx; L.Gray-Green and/or pale tomoderate yellow Fault Gouge supporting Lapilli > Block size lithics. Lithics are Perv silica-ser altered dominatly obscuring texture; L.Green-Gray matrix supporting Siliceous clasts; Clast margins are obs
57.5	80.05	VC	fltbx	LAP	M	GRY	FLT	SH	Strong Fault-Bx, gouge supporting lithics; lithics have a siliceous matrix with patchy sericite giving a pseudoclastic texture, matrix supports1-20mm D.Gray-Green silica-ser-chl-sulphide rep clasts. Locally (eg:73.5-75m),evidence for silica BXing roc
80.05	110	VC	ms	LAP	M	GRY	ALTFR	GR30+	Siliceous VL.Green-M.Gray silica flooded matrix with patchy L.Green Sericite supporting Lapilli to Block size varve-like (D.Gray and L.Gray siliceous laminae) laminated clasts. Bottom contact is an increasing silicified zone.
110	122.2	VC	ms	LAP	D	GRN	ALTFR	GR30	Perv silica-chl-ser, alteration obscuring clasts and clast margins when clast visible. Visibly ghost like clasts appear laminated similar to above.
122.2	138.5	VC	ms	LAP	M	GRY	FLT	GR30	Siliceous VL.Green-M.Gray silica flooded matrix with patchy L.Green Sericite supporting Lapilli size ser-chl rep fragments > varve-like (D.Gray and L.Gray siliceous laminae) laminated clasts.
138.5	162.7	VC	ms	LAP	L	GRN	FLT	GR30	silica-ser obscuring dominant texture, ser rep clasts, locally relict laminated siliceous clasts. Alteration of above. Bottom contact is a fault marcating an alteration change
162.7	192.8	VC	obsalt	LAP	M	GRN	ALTFR	GR30+	Silica-ser perv alteration, top of unit clasts L.Olive-Green ser replaced. small patches of L.GrayBeige siliceous matrix supporting either small <2mm SR white clasts or SR/SA crackled L.Green-White clasts (HydroBx). Weakly laminated locally. Bottom c

Blackwater Project
Drill Summary - Lithology

BW0467

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
192.8	232.5	VC	obsalt	LAP	L	GRY	UNKN	GR30+	Silica-ser perv, moderate laminations @ 50 dtca, abundant patches of SA/SR clasts and crackled clasts supported by L-M.Gray Siliceous matrix (Hydrothermal-Bx?).
232.5	260	VC	ms	LAP	MO	GRY			Silica-Ser-Chl patchy pervasive and localized alternating banding.Pervasivley altered rock. Relictly clastic sections with ghost like matrix supported clasts in a fine-coars-grained matrix > laminations of very fine-grained (silt size) siliceous lami
260	299	VC	obsalt	LAP	M	GRY	UNKN		Texture mostly obscure by alteration. Areas of less teure destruction show mostly mafic clasts with minor felsic clasts. Mafics are ser/chl altered, most felsics seem silicified. Texture destroyed areas display alteration fluid flow patterns at mu
299	369	VC	obsalt		MO	GRY	ALTFR	GR30+	No primary texture remaining, massive secondary silica with frquent laminations and mottled patches defined by medium-dark green chlor-ser alteration.
369	453	VC	obsalt	LAP	MO	GRN			Texture is still largely obscured by alteration, but relict clastic texture is clearly visible in a number of place showing ??polyimictic matrix support, locally clast supported VC, clasts 0.5-1.5cm wide.

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Drill Summary - Alteration

BW0467		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
2.88	8.5	T		0	CLST	2	MTRX	5	CLST	1	LIM	FC	5	HM	FR	3	M.Gray siliceous matrix supporting Off-white to L.Gray clay-ser replaced siliceous clasts. Strong Black Goe on FP's and moderate Goe-Jaro FC'd. Hm coating FP's atop Goe.
8.5	13.7	T		0	FC	2	PERV	5	PERV	4	LIM	FC	5	HM	FR	1	Perv texture obscuring L-M.Green silica-ser alteration.
13.7	31	T		0	CLST	2	MTRX	4	CLST	4	SER	MTRX	3	SIL	CLST	5	L.Grey-Green silica-ser matrix dom. Smaller clasts incredibly siliceous with no texture, larger laminated calsts dominatley L.Green ser rep, but also beige clay rep larger clasts partially, locally following laminations.
31	36	S		0	FC	2	PERV	5	PERV	3	SER	FC	3				silica-ser obscuring most textures, faint clasts locally increasingly sericitic within lithics. Gouge is dominatly a Very L.Gray-Green Ser-clay mix, with minor-moderate pale-moderate yellow clay.
36	43.8	S		0	FC	5	PERV	4	PERV	3	SER	FC	2				similar to above; pale-moderatley yellow clay Strong in Fault Gouge.
43.8	57.5	S	FR	1	CLST	3	PERV	4	PERV	3	SER	CLST	4	SER	FC	4	similar to above; visible clasts are dominatley M.Green ser rep, but beige clay also rep select clasts, increasing clay-rep of clasts with depth. Strong ser rep of gouge.
57.5	63.1	S	CLST	4	FC	3	MTRX	4	PATC	4							Fault Gouge is yellow clay - L.Green ser replaced. Lithics; matrix silica replaced with patches of L.Green-Yellow sericite giving a pseudoclastic texture. Clasts are chlorite-sulphide-clay replaced.
63.1	73	S	CLST	3	FC	1	MTRX	4	PATC	4	CHL	FR	2				similar to above, but chl on FP's and no yellow clay.
73	74.5	S	CLST	1		0	PERV	4	PATC	2	CHL	FR	2				Silica perv through clasts and matrix, with minor Ser matches locally.
74.5	80.05	S	FR	3	FC	3	MTRX	4	PATC	4	CHL	CLST	1				yellow clay in fault gouge.
80.05	97.6	S	FR	2	FC	3	MTRX	4	PATC	5	SIL	CLST	5	SER	FC	5	LM.Gray siliceous matrix supporting siliceous clasts. L-M.Green patches within matrix and L.Green-Yellow fractures are strongly sericitized
97.6	110.7	S	FR	1	FR	3	MTRX	4	PATC	5	SIL	CLST	4	SER	FC	2	Matrix and larger laminated clasts are siliceous (completely), while smaller fragments are clay-ser rep. Patches of L.Green-M.Green Ser throughout.

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Blackwater Project
Drill Summary - Alteration

BW0467		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
110.7	118.3	S	FR	1	FR	2	PERV	5	PERV	5	SER	PATC	4				MD.Green Perv silica-ser alteration, obscuring clasts. Patches of L-M.Green Ser rep clasts and random throughout.
118.3	124.4	S	FR	4	FR	1	PERV	4	PERV	4	SER	PATC	5				similar to above, but ser dominatley large pathces throughout and rep clasts.
124.4	129.5	S	FR	4	CLST	1	MTRX	4	PATC	3	CHL	CLST	1	SER	MTRX	3	Siliceous-Sericitic M.Green-Gray matrix with small and larger patches of ser-chl, locally rep clasts.
129.5	132.6	S	FR	3	FR	2	PERV	5	PATC	4	SER	PERV	2				Perv L.Green Silica-Ser, with M.Green Ser patches and clast rep. Qtz Vein-Bx at the center of the alteration.
132.6	138.5	S	PATC	3	FR	2	MTRX	4	PATC	4	SER	MTRX	2	CHL	FR	4	Siliceous-Sericitic M.Green-Gray matrix with small and larger patches of ser-chl, locally rep clasts.
138.5	152	S	FR	3	FC	3	PERV	5	PATC	5	SER	PERV	3				Perv L.Gray-Green Silica-Ser, with large Patches of L.Green Ser troguhout. Pale-Yellow Clay fracture controlled, chlorite coating FP's locally.
152	162.5	S	PATC	2	FR	2	PATC	4	PATC	5	CHL	FR	5				Patches of either Silica-Ser or Ser-Chl, Ser-Chl also rep clasts locally. D.Green>M.Reggn Chl coating Fp's locally with a dusting of pale yellow clay.
162.5	196.8	S	FR	2	FC	2	PERV	5	PERV	4	SER	CLST	4				Pervasive silica with patchy abundant perv sericite. Ser also traces fractures and replaces clasts and parts of laminated clasts.
196.8	222.8	S	FR	2	CLST	1	PERV	5	PERV	4	SER	PATC	2	CLY	REP	2	Pev silica-ser alteration dominatley obscuring texture, locally faint Bx'd texture showing through. With small patches of L-M.Gray siliceous matrix supporting siliceous partly clay rep white clasts. Patches of Sericite throughout. Pale yellow clay replaci
222.8	232.5	S	FR	2	FC	3	PERV	5	PERV	4	SER	FC	4				L.Green-D.Green Ser filling fractures/FP's/lining fractures. D.Green Chl on localized FP's with Ser. pale-moderate yellow clay in fault gouge,, and weakly on localized FP's.
232.5	264	S	PERV	1	FR	3	PERV	4	PERV	4	SIL	BN	4	CHL	PATC	3	Outside of laminations Perv M-D.Green-Gry silica-ser. Localized Laminations are silica or silica-ser or silica-ser-chl rep, silica also locally occurs as irregular BB'y discontinuous laminations. Patches of D.Green chl increasing with depth. Localized cla

Blackwater Project
Drill Summary - Alteration

BW0467		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
264	299	S	PERV	1	FC	3	PERV	4	PERV	4	SER	CLST	3	SIL	BN	4	Alteration fluid pattern is banding of silica-sericite-clay. Weak-moderate chlorite on fracture planes. Yellow-green sandy fracture control clay. Carbonate veining begins at 290.2m.
299	351	S	PATC	3		0	PERV	5	PERV	2	CHL	PERV	2	CHL	FR	3	Pervasive intense utterly texture destructive silica alteration, near pervasive weak-moderate chlorite, locally intense and combining with sericite to form broad swales and laminae of various shades of green
351	359.5	S	PATC	4		0	PERV	5	PATC	3	CHL	FR	3	CHL	PERV	2	Similar to above with increased intensity of patchy chlorite resulting in overall greener hue and better defined laminations.
359.5	372	S	PATC	4		0	PERV	5	PATC	3	CHL	FR	4	CHL	PERV	2	As above, pervasive intense texture destructive silica alt with swaley laminae defined by chlorite/sericite intensity. Interval is heavily fractured, with very strong velvety green/black chlorite on fractures.
372	412	S	PATC	4		0	PERV	4	PATC	3	CHL	PERV	2	SER	PERV	2	Although not wholly texture destructive, silica-chl-ser alteration is still very strong, blurring/completely obscuring clast boundaries and locally producing very weak, poorly defined laminations.
412	453	S	PATC	4	PATC	2	PERV	4	PATC	3	CHL	PERV	3	SER	PERV	2	Very similar to above - strong to intense largely texture destructive silica-chl-ser alteration givingnmottled greenish hue throughout. Also occasional vein-centric haloes and sporadic centimetric patches of overprinting ?clay/sericite alt producing 'hole

Blackwater Project
Drill Summary - Mineralization

BW0467		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
2.88	5.26	DI	0.5	DI	0.5		0	Dbs	WIS	0.5	Goe	FP	2	Jaro	FC	0.5	DI'd BB's of Sp> Py, and wispy Dracture controlled BS's (Black sulhpdies). Black Goe on FP's and orange Goe-Jaro mixture controlled by fractures.
5.26	13		0		0		0	Goe	FP	3	Jaro	FC	0.8	Hm	FP	0.5	red Hm atop Black Goe on FP's, while orange Goe-JKaro mixture is gouge/fracture controlled.
13	31	DI	0.1	DI	1.5		0	Dbs	WIS	0.1	Goe	FP	1	Jaro	FC	0.5	DI'd BB's of red and black-metallic Sp rimming/replacing clasts, locally with trace Py.
31	57	FG	0.1	BB	2.5		0	Py	BB	0.1							fine-grained Py crystals in fault gouge. Di'd BB's of red and black metallic Sp, throughout lithics and milled BB's in fault gouge, locally intergrown with specks of Py.
57	80.05	BB	0.1	CR	3	VN	0.1	Ga	CR	0.5							Masses of red-Sp replacing Darek.Gray clasts, locally with intergrown BB's of Ga.
80.05	110	VN	0.1	BB	4	BB	0.1	Ga	BB	1	Sp	VN	0.1	Ga	VN	0.1	Irregular red-SP and Ga specks within the siliceous matrix, and larger irregular BB's within sericitic masses such as clast rep and fracture fill. Red Sp may follow laminations in clasts. SpGaPo intergrown BB's.
110	121.5		0	BB	3	BB	1	Sp	FP	0.1	Ga	DI	0.5	Sp	VN	0.1	Character of mineralization highyl variable. DI'd BB's of Sp throughout, locally Po BB's, locally Ga BB's, and in middle of interval Mrc coating FP's.
121.5	129.4	CR	0.1	CR	4	CR	0.1	Ga	CR	1	Py	VN	0.1	Sp	VN	0.1	Sp-Ga-PyPo intergrown BB's replacing clasts, locally replacement follows laminations. trace Py-Sp Veining.
129.4	132.5	BB	1	BB	1.5	BB	0.5	Apy	VN	1	Py	VN	0.1	Sp	VN	0.1	Alteration interval; Above Qtz-Apy Vein Bx; Sp dominant BB's intergrown tih Py and Po. Below qTz-Apy Vein Bx; rectangular Py grains.
132.5	138.5	BB	0.1	BB	0.1	BB	0.5	Py	FP	0.1	Grnt	BB	0.1				BB's of Po with intergrowths of Sp and Py, within Sericite patches/clast-rep. Fine-grained Py amalgamations on FP's. Singular large 2cm L.Brown-Beige material supporting small D.Brown Resinous Garnets

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Blackwater Project
Drill Summary - Mineralization

BW0467		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
138.5	151	BB	0.1	BB	1	BB	1	Ga	BB	0.1	Ga	VN	0.1	Py	VN	0.1	silvery to black metallic Sp BB's, red Sp BB's assoc with Ga and Po intergrowths. Po BB's throguhout, as discreet ghost like black BB's. Py on FP's as well as in Veins with Ga.
151	162.5	FP	0.1	CR	0.1	CR	2	Ga	CR	0.1							Fine-grained mottled clast replacement, locally with intergrowths of Ga and red Sp.
162.5	178.5	FP	0.1	CR	0.5	CR	0.1	Ga	CR	0.1							sparsely clastic, with red and silvery Sp and Ga partially replacing clasts.
178.5	198	FP	0.1	DI	1	DI	0.1	Ga	DI	0.1	Grnt	BB	0.1	Sp	FP	0.1	Red Sp DI's and locally BB's following banding, intergrown with Po-Py. Py on FP's with Sp locally.
198	206.5	FP	0.1	DI	1	DI	0.5	Ga	DI	0.1	Py	VN	0.1	Sp	VN	0.1	Red and metallic silvery Sp DI'd BB's intergrown locally with Po, Ga or Py. Irregular wispy BS's
206.5	222.5	FP	0.1	BB	0.1	BB	0.1	Grnt	BB	1	Grnt	CR	0.5				L.Brown-red garnet matrix supporting D.Brown resinous Garnets.
222.5	237.8	BB	0.1	BB	0.5	BB	0.1	Grnt	BB	0.5	Py	FP	0.1				similar garnets to above. Sulphides intergrown BB's, red Sp following Laminations in regular banding.
237.8	256.5	FP	0.1	BB	1.5	BB	0.1	Grnt	BB	1	Cp	BB	0.1	Py	BB	0.1	Garnets being replaced by sulphides increasingly with depth, intergrowths of Sp>Po>Py>Cp. Black metallic Sp with trace Po locally in rectangulr discontinuous BB's.
256.5	274	SP	0.5	BB	1.5	SP	0.1	Grnt	BB	0.3	Cp	BB	0.1	Py	FP	0.3	Dominated by Sp. TS~=2.5% Sp>Py>Po>Cp
274	283	SP	0.5	BB	1	SP	0.1	Grnt	BB	0.3	Ga	SP	0.1				TS~2%. SP>Py>Po
283	299	SP	0.8	BB	0.5	SP	0.1	Grnt	BB	0.8	Ga	BB	0.3				TS=2.5%. Streak of fine flecks of Galena and fine Py at 294-296.2m
299	327	SP	0.1	PATC	2.5	DI	1	SoSu	DI	0.5	Grnt	BB	0.5				Sphal is present in fine specks throughout, but is locally very dense and appears to follow laminations, densely packing certain layers. Fine specks of po frequrently coincident and intergrown with sphal. Occasional 2-7mm wide ratty garnets
327	336	SP	0.5	SP	0.1	DI	1	Po	DEN	0.1	Dbs	DEN	0.1	Grnt	BB	0.5	Sharp drop off in sphal, frequent very fine specks of po > py, and occasional small patches of DBS +/- fine po. Less garnet than above

Blackwater Project
Drill Summary - Mineralization

BW0467		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
336	360	SP	0.5	SP	0.5	SP	1.5	Grnt	BB	0.5	SoSu	DI	0.5	SoSu	DEN	0.5	Fine specks of po>sphal + sooty sulphide>py disseminated throughout, often concentrated in laminae defined by alteration. 356.7m studied under microscope and revelaed tiny arseno disseminated throughout, and trace py associated with large po blebs.
360	390	SP	0.5	SP	0.5	DI	1	Grnt	BB	0.1	Apy	DI	0.1	Py	FP	0.1	Quite even but very fine mineralization throughout, sphal is somewhat pathcy and intergrown with po, po typically very fine but occasionally up to 1cm wide in blebs. Py is diddicult to distinguish from po,, as it is often closely associated. ?Arseno
390	400	SP	0.5	SP	1	SP	0.5	SoSu	SP	1	Dbs	DEN	0.1				Patchyy, locally quite dense millimetric specks of sphal>sooty sulphide>po>py throughout, occasional very fine stringers of DBS/?py
400	417	SP	0.5	SP	1.5	SP	1	Dbs	DEN	0.5	Py	STR	0.1	Mrc	FP	0.1	Similar style of mineralization to above interval but increased density of DBS/py stringers, increased density of sphal specks.
417	426	SP	0.5	BB	1.5	SP	0.5	Dbs	DI	0.1	Py	FP	0.1	Grnt	BB	0.1	Frequent 1-3mm wide, irregulalry shaped blebs of sphal, typically associated with fine specks of po and py. Occasional weak DBS, garnet is back as 1-4mm wide blebs of degraded garnet covered in white specks
426	453	SP	1	BB	2	BB	2	Dbs	PATC	0.5	Apy	VN	0.1	Sp	VN	0.1	Heavily and consistently mineralized, sphalerite is inclined to form the largest blebs, up to 2.5cm wide. Po, py and sphal disseminated in irregualr and often intergrown specks and blebs throughout. Frequent patches of DBS, commonly associated with c

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Drill Summary - Structure

BW0467

From (m)	To (m)	Structure	Strength	Comments
2.88	3.5	BRKZ	2	Top of hole broken and weakly jointed @ 30 dtca.
3.5	3.55	CLYSEAM	4	Clay seam 15mm wide @ 45 dtca.
3.55	5.26	JZ	3	Jointed @ 40-50 dtca.
5.26	5.46	CLYSEAM	5	Swelling clay seam @ 65 dtca.
5.46	9.5	JZ	4	Jointed @ 20, 30, 50 dtca. Moderatley fractured/Bx'd.
9.5	10.65	BZ	4	fault -Bx, lithics supported by moderate yellwo fault gouge.
10.65	11.7	JZ	3	Jointed @ 15>500 dtca.
11.7	13.2	BZ	1	BRoken @ 20 dtca, and weak Bx supported by fault gouge locally.
13.2	26.5	JZ	2	Jointed @ 20 and 50-60 dtca.
26.5	27.5	BZ	1	weak fault-Bx
27.5	31	JZ	2	Jointed @ 30 and 70 dtca.
31	57	BZ	5	Strong Fault Bx, 50:50 gouge:Bx, gouge supporting SR-R lithics.
57	80.3	BZ	5	same as above; larger blocks of intact rock locally.
80.3	88.5	FZ	2	Intermittent small faultBx, ~ 10-50mm wide. amongst intact jointed rock. joints and faults @ 25 and 45 dtca.
88.5	91.35	FZ	3	Faulted/fractured rock, locall FaultBx. Jointing and fault planes @ 40>25 dtca.
91.35	95.1	JZ	2	irregularly/pporly jointed @ 20 dtca.
95.1	95.32	FL	1	weak falt, intact rock, with minor gouge on edges.
95.32	96.5	JZ	3	jointed @ 40 and 50 dtca.
96.5	96.85	FL	4	strongly gouged FaultBx.
96.85	102.1	JZ	2	Jointed @ 25 dtca, and equally irregularly fractured joints.
102.1	102.1	BZ	1	Weak Fault Bx perpendicular to core axis.
102.1	103.8	JZ	1	irregular joints.
103.8	104	FL	3	moderatley gouged fault.
104	109.5	JZ	2	Jointed @ 40 and 50 dtca.
109.5	112.4	JZ	5	Jointed @ 5-30 dtca. variably irregularly broken as well.
112.4	114.8	FL	4	Fault-Bx, locallygouge supporting lithics, strongly broken locally.
114.8	116.2	JZ	3	Jointed @ 20 dtca.
116.2	116.3	FL	3	brokena nd gouged rock.

Blackwater Project
Drill Summary - Structure

BW0467

From (m)	To (m)	Structure	Strength	Comments
116.3	119.5	JZ	3	Jointed @ 35 and 50 dtca
119.5	120.4	BZ	1	WEak fault Bx lithic dominant.
120.4	121.2	JZ	2	Jointed @ 65 dtca.
121.2	122.1	FZ	3	weak fault zone/fault-Bx.
122.1	126	JZ	4	Jointed @ 45 dtca, and broken irregularly.
126	126.9	BRKZ	4	irregularly broken
126.9	131	JZ	4	Jointed @ 35, 50 and 5 dtca. equally as irregularly broken.
131	132.8	VZ	4	Qtz Vein Bx @ 20 dtca, Bx'ing the rock making SA/SR fragments between Qtz-Ga veinlets. Large vein center is Qtz and prismatic Qtz growing in a Geode that was cut through.
132.8	135	FZ	3	Jointed and fault-Bx at 45-55 dtca.
135	137.2	JZ	3	Jointed @ 45 dtca.
137.2	138.5	FL	4	Strongly gouged fault @ 45 dtca.
138.5	141.3	JZ	4	Jointed @ 55 and broken @ 10 dtca.
141.3	143	BZ	4	Fault Bx.
143	146.2	FZ	3	Local FaultBx, dominatley broken, weakly jointed @ 35 dtca. Faulted @ 45
146.2	152.5	JZ	4	Jointed/Broken parallel to core axis, and jointed @ 25 dtca.
152.5	152.6	BZ	1	semi-healed fault-Bx.
152.6	161.8	JZ	3	Jointed >>BRoken @ 30>.45 dtca.
161.8	163.7	BZ	4	fault Bx with bottom contact @ 20 dtca.
163.7	166.3	JZ	3	Jointed @ 10 dtca, locally gouged joints.
166.3	166.4	FL	3	Gouged fault 3cm wide @ 35 dtca.
166.4	179.1	JZ	4	Jointed @ 45>15--25 dtca.
179.1	181.1	BRKZ	4	redrilled irregularly broken rock.
181.1	183	BRKZ	3	similar to above, small intact sections, with minor gouge locally.
183	196.8	JZ	3	Jointed @ 45>20>5 dtca.
196.8	198.8	FZ	3	Starting as low angle to core axis strong jointing and becoming gouge supporting rounded lithics.
198.8	225.5	JZ	5	Jointed @ 40-70 < 15-30 dtca.
225.5	231.6	FZ	2	Broken rock, strongly jointed @ 30 dtca, and localized fault-Bx with moderate yellow gouge.

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Drill Summary - Structure

BW0467

From (m)	To (m)	Structure	Strength	Comments
231.6	247	FZ	4	abundantly broken, with minor sections of intact stick rock.
247	257.9	JZ	4	Jointed @ 5, 20, 30, 50 dtca.
257.9	268.1	BRKZ	3	moderately broken zone, small sections of competent core, no regular angles, small seams of yellow-green clay gouge.
268.1	277.5	JZ	4	strongly jointed at 40dtca plus some subverticle fractures - jagged
277.5	283.5	FZ	4	Only minor seams of yellow-green clay gouge with milled fragments. Severly broken throiughout. Few joints at 4dtca.
283.5	299	JZ	4	Dominantly jointed at 30dtca, plus minor jointing at 50 and 10dtca.
299	359	JZ	2	quite frequent fractures at 25-35 and antithetic.
359	363	BRKZ	3	Heavily fractured - moderately rubbly
363	393	JZ	3	Frequent joints at either 0-10degTCA or 50-65degTCA
393	402	JZ	2	Quite frequent fractures and joints most commonly at ~50degTCA, also often at 5-10degTCA
402	418.5	JZ	3	Intermittently rubbly, otherwise jointed, 50-55>5-10degTCA
418.5	422.6	BRKZ	3	Moderately rubbly - heavily fractured throuhgout
422.6	425	FL	4	Fault breccia in well devloped gouge matrix, upper and lower contacts sharp at 25degTCA
425	448	JZ	3	Frequent fractures at 25-45DegTCA
448	453	FZ	3	High fracture density in semi-competent core forming weak fault breccia texture, very minor gouge on some fractures

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Drill Logs

Hole ID:	BW0468	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375602.09
Depth (m):	344.5	Date Started:	19/05/2012	Casing Size:	HWT	Northing:	5893349.5
Azimuth:	0	Date Completed:	25/05/2012	Casing (m):	6	Elevation (m):	1533
Dip:	-90	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	326.8	-89.6
100	6.6	-89.4
149.5	58.4	-89.4
200	39.6	-89.5
250	139.2	-89.7
300	78.2	-89.7

Blackwater Project
Drill Summary - Lithology

BW0468

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6	OB							
6	17.5	VC	fltbx	LAP	M	GRY	FLT	GR30	Intermittently brecciated, heavily fractured and altered interval. Freshest intervals appearto be clastic, largely clast supported, with polymicticity noted on account of variable alteration of smaller clasts - kaolinite - sericite - chlorite - silic
17.5	35	AND	por	CA	D	GRY	FLT	GR30+	Intermittently brecciated and gougy andesite. Feldpsar phyric throughout, with patches of sub-anhedral ?horneblend pheno's. Pheno's 1-3mm long. Occasional narrow bands of amygdules.
35	49	VC	fltbx	LAP	MO	GRY	FLT	GR10	Interval is 90% composed of chlor-ser altered fault gouge and breccia/rubble. Occasional un-brecciated pieces are heavily altered clastic material, variety of alteration in clasts suggest polymicitic - VC. Clasts where visible are rounded-subangular,
49	64	FLPT	ms	LAP	L	GRY	FLT	GR30	Interval is bounded above and below by faults, and intermittently brecciated & gougy throughout. Lith2 represent ~5m of andesite in middle of interval, again bounded by faults. FLPT consist of poorly sorted angular fragments of laminated silica-clay
64	77.5	VC	cs	BLOCK	D	GRY	FLT	SH	Upper 4m is un-interupted porphyritic andesite, remainder is sub-well rounded mafic porphyritic, occasionally amygdaloidal andesitic clasts typically 4-15cm wide. Texturally clasts are quite varied, from ~10% feldpspar phyric, ~20% horneblende phyric
77.5	98.5	VC	obsalt	LAP	MO	GRN	ALTFR	GR30+	Pervasive silica-sericite-chlorite alt obscure primary composition of clasts, ~20% are heavily chloritized and po rich with ?feint relict phenocrysts. majority are 5-10mm wide and clay altered, larger ones frequently laminated. ~85% clasts but large
98.5	119.5	VC	ms	BLOCK	D	GRY	ALTFR	GR30+	60-80% clasts, matrix supporetd throughout. Matrix is fine crystalline silica. Clasts are 5- 150mm wide, porrly sorted and subrounded-subangular throughout. Majority of clasts are feldspar phyric andesite, occasional amygdaloidal, felsics are massive
119.5	194.5	VC	ms	LAP	MO	GRN			Pervasive strong silca-sericte-chlorite alt frequently obscures clast boundaries and compositions. Heavily mottled colourations and occasional relict clast boundaries associated with variations in mineralization are evidence of clastic and polymictic
194.5	268	AND	amg		D	GRY			Frequent 5-15cm wide patches dense with 1-2mm wide amygdules, occasional felpspar phenocrysts, and occasionally weakly fragmental.

Blackwater Project
Drill Summary - Lithology

BW0468

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
268	344.5	AND	por		D	GRY			Dark grey/brown fine-medium feldpar phyric andesite. Phenos typically subhedral and <1mm wide, locally euhderal and 1-3mm long. Brownish hue throughout from fine ?biotite in matrix. Weak calcite veining and calcite patches of amygdules throughout.

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Blackwater Project
Drill Summary - Alteration

BW0468		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
6	16.6	S	PATC	3	CLST	2	PERV	3	DEF	2	SER	CLST	2				Near pervasive silca alt in matrix and overprinting in some clasts. Gouge is consistently ser-chl altered, and clasts in breccias/VC are variously sericte, soft white kaolinite/dickit, or chlorite altered.
16.6	35	S	PATC	2		0	PERV	3		0	SIL	REP	1	CHL	REP	1	Matrix is pervasively pinkish biotite altered, phenos replaced by qtz +/- chlorite. Moderate silica alt throughout. Gouge is weakly chloritic. Fine calcite is common throughout interval?filling fine pore space and amygdules.
35	49.3	S	DEF	4	CLST	1	PATC	2	PATC	3	CHL	CLST	2				frequently gougy interval with gouge pervasively chloritic. Less brecciated intervals are moderately silicified with clasts being replaced by chlorite and occasionally soft white ?kaolinite.
49.3	55.9	S	CLST	2	CLST	2	PERV	4	PERV	4							Pervasive strong silica-sericite alteration giving bleached appearance, clasts are patchily chloritized and occasionally kaolinit/dickkite altered.
55.9	59.5	S	DEF	3		0	PERV	3	CLST	1	BIOT	MTRX	1				Upper half of interval is moderately chloritic gouge, lower part is silca altered andesitic with weak pinkish biotite in matrix
59.5	64	S	CLST	2	CLST	2	PERV	4	PERV	4	CHL	DEF	1				Weakly chloritic gouge, pervasive strong silica-sericite bleaching, patchy chlorite-clay alt in clasts
64	77.5	S	PATC	2	FR	2	PERV	3		0	BIOT	MTRX	2				Relatively fresh, largely andesitic interval of dark moderately silca altered core, weak-moderately biotitc matrix, occasional 2-10cm wide patches with vague dark greenish ?chlorite alt
77.5	98.5	S	PATC	3	CLST	2	PERV	4	PERV	4	CHL	FR	3	CHL	CLST	2	Pervasive strong silca-sericite giving blurry bleached appearance. Pathcy chlorite and intermittent chlorite replacment of clasts giving heavily mottled green hue, quite frequent smaller clasts altered to soft white clay.
98.5	119.5	S	MTRX	2	CLST	1	MTRX	4	MTRX	2	BIOT	CLST	2	CHL	FR	2	Matrix and smaller felsic clasts are pervasively silica-sericite-chlorite altered, moderate -weak in intensity. Sil-ser-chl is absent from frequent larger andesitic clasts, which have biotic matrices

Blackwater Project
Drill Summary - Alteration

BW0468		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
119.5	139	S	PERV	4	CLST	1	PERV	4	PATC	1	CHL	FR	3	CHL	CLST	3	Pervasive strong silic-chlorite alt, with sericite restricted to occasional patches and specks in relic clasts. Chloritic fractures and frequent patches of dark chlorite - presumably relict clasts
139	145	S	PERV	4		0	CLST	3	MTRX	2	CHL	DEF	4				Faulted interval of highly chloritic gouge, competent clasts in breccia are strongly sil-chlor-ser altered. Also a 30cm interval of ?hydrobreccia with intensely chloritic matrix.
145	175.8	S	PERV	2		0	PERV	4	PERV	3	CHL	CLST	4	SER	CLST	3	Pervasive strong silica -chlorite-sericite altertaion, locally blurring texture and discouloring to medium-dark green throughout. Clasts are more intesnely chlorite-sericite altered than matrix throughout. Fracture stronmgly chloritic.
175.8	183	S	PERV	3		0	PATC	3	PERV	3	CHL	CLST	4	SER	CLST	3	Pervasive, locally intense chlorite-sericite alt, silica is somewhat patchy based on hardness, but ?pervasive and overprinted by chl-ser. Fractures and clasts pervasively chloritic, with clasts also sericite irch.
183	194.5	S	DEF	3		0	CLST	3	PERV	3	CHL	CLST	2				Intermittently gougy, gouge is moderately chloritic. Competent clasts are silica - sericite altered, with clast medium dark green chlorite-sericite altered.
194.5	203.5	S	PATC	1		0	PERV	4	PERV	1							Strong silica alteration throughout, filling amygdules and giving glassy hard aspect to core, texture is not affected however. ?sericite as fine whitishe specks, and occasional short intervals with feint greenish hue.
203.5	210	S	PATC	1		0	PERV	3		0	CARB	PERV	3	BIOT	MTRX	1	Pervasive moderate but not texture destructive silica alt, carbonate filling amygdules and fine pore space throughout. Occasional feint greenish chlorite disseminated in narrow patches.
210	214	S	PATC	3		0	PERV	5	PATC	2							Somewhat patchy intesne silica-chl-sericte. ~75% of interval is texture destroyed green-white silica.

Blackwater Project
Drill Summary - Alteration

BW0468		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
214	239	S	PATC	2		0	PERV	3	PATC	1	CARB	PATC	3				Pervasive moderate but not texture destructive silica alt, carbonate filling amygdules and fine pore space throughout. Occasional feint greenish chlorite disseminated in narrow patches.
239	273	S	PATC	2	VNHL	2	PERV	3	PATC	1	BIOT	MTRX	2	CARB	PATC	2	Pervasive moderate silica alt with brownish hue ?due to biotite in matrix. Occasional 5-15cm patches of more intense silica-chlorite-sericit altertaion. Quite frequent 1-3cm wide haloes of soft clay alt around carbonate veinlets. Intermittent calcite fill
273	344.5	S	PATC	1	VNHL	2	PERV	2	PATC	1	BIOT	MTRX	3	CARB	PERV	2	Pervasive weak silica alteration, pervasively biotite rich matrix, occasional 1-3cm wide haloes of soft moderatey bleached clay alt around carbonate veinlets. Very much occasional 10-100cm wide intervals of moderate ser-chl alt associated with sharp incre

Blackwater Project
Drill Summary - Mineralization

BW0468		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
6	16.5	STR	0.1	BB	0.1		0	Dbs	DEN	0.1	Py	FP	0.1				Very patchy mineralization, py stringers are very fine and sporadic, sphal blebs restricted to 5-10cm wide patches, and DBS present in twow seperate 10cm intervals. Trace py on some fractures throughout
16.5	34	FP	0.1		0	DI	0.1										Trace py on fractures, very scarce fine specks of po disseminated patchily.
34	49.6		0	SP	0.1		0	Dbs	DEN	0.1							Quite frequent but short and slender strands of DBS, occasional millimetric specks of sooty black ?sphal
49.6	54		0	CR	0.5		0	Dbs	DEN	0.1	SoSu	CR	0.1				Quite frequent slender bands of sphal following laminae in clasts, also occaisonal millimetric specks of sooty sulphide and sparse DBS
54	59.7	FP	0.1	SP	0.1	SP	0.1										Occasional fine specks of po, ?sphal and trace py on fractures.
59.7	64		0	SP	0.5	SP	0.1	Dbs	DEN	0.5	SoSu	SP	0.1				Patchy specks of sphal and sooty sulphide, intermittent, locally moderately well developed DBS
64	77.5	FP	0.1	VN	0.5	SP	0.1										Quite frequent short discontinuous veinlets of sphal, occasionally with qtz. Trace fine specks of po, occasional py on fractures. 0.1% ?jasper, hard blood red filling fractures.
77.5	89.5	VN	0.1	CR	2	CR	0.5	Dbs	DEN	0.5							Relict clasts are frequently extensively replaced by red sphalerite, intermittently associated with fine specks of po. Also quite frequent fine stringers of py, and patchy DBS throughout.
89.5	98.5	FP	0.1	CR	0.5	CR	0.1	Dbs	DI	0.1	Py	VN	0.1				Very sparse py in veinlets and on gfractures
98.5	115	FP	0.1	SP	0.5	SP	0.5										Sporadic millimetric specks of sphal disseminated throughout, and occasional blebs of po filling amygdules in clasts
115	124.4		0	CR	2	CR	0.5	Dbs	DI	0.1							Clasts frequently largely replaced by sphal and po, trcae DBS

Blackwater Project
Drill Summary - Mineralization

BW0468		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
124.4	139	FG	0.5	CR	3	SP	0.1	Dbs	DEN	1	Sp	BB	2	Sp	VN	0.1	Interval is dense with sphalerite, ?replacing relict clasts, as very frequent 1-2mm wide blebs, in occasional veinlets, essentially speckling the entire interval. Py also present as fine blebs throughout, and partially forming matrix along with chlor
139	144.5	DI	0.5	BB	0.5	SP	0.1	Dbs		0.1							Frequently gougy, gouge has only trace py disseminated. Competent pieces have 2-3% blebs of sphal + po, with short strands of DBS
144.5	169	FC	1	BB	4	SP	0.1	Py	BB	0.5	Sp	CR	1	Py	VN	0.1	Consistent heavy mineralization. Sphal is disseminated throughout as 1-3mm wide blebs ?completetly replacing small clasts, and also partially replacing larger relict clasts. Py is often associated with shpal in blebs, but dominantly present filling f
169	188.2	FC	1.5	BB	2	BB	2	Py	BB	0.5	Sp	CR	0.5	Po	CR	0.5	Very similar in sulphide style and density to above interval, but with po much more common. Sphal and po often intergrown in 1-3mm wide blebs and replacing larger clasts. Py in fine veinlets, occasional blebs, and disseminated in matrix to breccias.
188.2	194.5	DI	0.5	CR	1	SP	0.1										Infrequent fine py disseminated in gouge, and occasionally as fine veinlets along fractures. Competent pieces in fault breccia have blebs of sphal and trace po replacing clasts.
194.5	207	FP	0.1	BB	0.5	AMYG	0.5	Po	SP	0.5							Frequent fine specks of po throughout, po also filling smygdules. Intermittent patches with numerous millimetric blebs of sphal.
207	224.3		0	DI	0.1	DI	0.5										Occasional very fine specks of po and trcae sphal disseminated throughout
224.3	276		0	SP	0.1	BB	1.5	Po	VN	0.1							Significant increase in po density from above interval, frequent 1-4mm wide blebs of po, often filling amygdules, and focused in patches of blebs.
276	297		0	SP	0.1	SP	0.5	Po	VN	0.1							Reduced frequency of fine po specks, same style as above, <1-1mm wide specks disseminated throughout. isolated 1mm wide planar po veinlet.

Blackwater Project
Drill Summary - Mineralization

BW0468

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
297	305	SP	0.1	SP	0.1	SP	1										Same style as above, slightly increased density of po and ?trace py
305	344.5	BB	0.1	VN	0.1	DI	1										FIne specks of po disseminated throughout. 6mm wide sphal veinlet at 324.5, calcite + 1-2mm wide blebs of py in veinlet at 325.5

Blackwater Project
Drill Summary - Structure

BW0468

From (m)	To (m)	Structure	Strength	Comments
6	16	FZ	4	Interval is heavily fractured-brecciated throughout, with frequent 5-20cm intervals og chloritic gouge.
16	26	FZ	1	Moderately broken up throughout with occasional gouge on fractures and in narrow bands.
26	34.6	FZ	2	Jointed to broken/rubbly with quite frequent 5-10cm intervals of poorly consolidated gouge.
34.6	47	FZ	4	Very rubbly and brecciated throughout, local weak gouge devleopment.
47	50.7	FL	5	Fault breccia with sandy consolidated gouge matrix
50.7	65.1	FZ	4	Frequent intervals of heavy brecciation and moderate gouge devlopment. Also frequent short discreet intervals of competent gouge.
65.1	91.3	JZ	3	Quite frequent fracturing and joints at variety of angles, most commonly low angle, but also common sets at 65degTCA
91.3	121.4	JZ	2	Occasional, locally quite dense sets of fractures and joints at 20-30degTCA, also occasionally at 60-70degTCA
121.4	123.5	FL	4	Moderately brecciated, heavily fractured, locally gougy
123.5	145	FZ	1	Essentially a weak joint zone but with short intervals of high fine fracture density, and occasional weak gouge on fractures.
145	182	JZ	2	Quite frequent joints and sets of fractures at either 10-15 or 50-60degTCA
182	194.5	FL	3	Intermittently brecciated with pathces of poorly devloped fault gouge, moderately rubbly. Lower 2m is more pervasively gougy
194.5	344.5	JZ	1	Occasional fractures at 15-20degTCA

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Blackwater Project
Drill Logs

Hole ID:	BW0469	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375451.99
Depth (m):	433.12	Date Started:	20/05/2012	Casing Size:	HWT	Northing:	5892750.52
Azimuth:	0	Date Completed:	25/05/2012	Casing (m):	3.05	Elevation (m):	1624
Dip:	-90	Logged By:	CCu	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-89
46.02	186.7	-88.5
91.74	179.6	-88.3
137.5	186.5	-88.3
182.9	178.1	-88.3
228.9	170.1	-88.2
274.3	290.8	-87.7
320.3	177.3	-87.8
365.8	178.4	-88.1
411.5	176.6	-87.6
433.1	187.7	-87.4

Blackwater Project
Drill Summary - Lithology

BW0469

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	1.9	OB							
1.9	32	VC	plm	LAP	M	GRY	DEP	GR30	clast rich VC. Some obscurring of primary textures by sericite in matrix, and many clasts altered to clay
32	40.7	FLPT	obsalt	LAP	L	GRY	DEP	GR10	fragmental rock, very altered by pervasive silica with alt'n laminations. Short sections of lesser alt'n at end suggests it is a Felsic dominant
40.7	51.7	VC	plm	LAP	M	GRY	DEP	GR30	varying clast composition with zones of dominantly mafic, then zones about 50/50 mafic to felsics. Some alt'n halos (with white clay)
51.7	58.5	FLPT	lam	LAP	L	GRY	FLT	GR10	some laminations in clasts as well as in the matrix, poorly sorted and brecciated
58.5	85	VC	obsalt	LAP	D	GRN			obscurred by alt'n, matrix-rich becoming less altered and darker grey towards bottom
85	147.2	VC	ms	LAP	D	GRY	DEP	GR30+	increasing mafic content as we go down. Brief brecciated zones where more clast rich and patchily altered to green. Rare near-block sized clast
147.2	168.1	VC	ms	LAP	D	GRY	DEP	GR30+	similar as above, but more andesitic in content, with some brecciated andesite zones (or large clasts?), then a matrix-rich VC with a few felsics. Dark rock
168.1	192	AND	mas		D	GRY	INTR	GR30	andesite, dark with spotty amygdules here and there. Some narrow calcite vnlts in a largely massive andesite. Some faint volcanoclastic textures seen
192	286	INTR	mas		D	GRY			rock is frequently very coarse grained, although there are many patches that are aphanitic, perhaps due to alteration (sericite alt'n appears to be bringing out phaneritic texture(?)). Coarse-grained rock especially appearing haloing some calcite ve
286	346.5	AND	mas		D	GRY	DEP	GR10	Dark andesite, coarse grained zones with significant aphanitic sections. Massive for the most part.
346.5	375.9	VC	plm	LAP	D	GRY	ALTFR	GR10	clast rich, but not quite matrix supported. Mostly dark clasts, with approximately 10 % small quartz clasts with fuzzy edge boundaries. Quite rounded with the odd sub-angular clast. Rare laminated dark clast
375.9	433.1	VC	obsalt	LAP	M	GRY	UNKN		very texture-obscurred by strong pervasive silica. Brecciated and volc texture, medium grey, SIL 5 basically. Some alteration-laminations, as well as local microbrecciation

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Blackwater Project
Drill Summary - Alteration

BW0469		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
1.9	11.2	O	CLST	3	FC	4	MTRX	2	MTRX	4	SER	CLST	3	SER	FC	3	strongly sericitized, obscurring patches of the primary texture. Consistant orange to dark red-brown colour to the rock, especially due to high structure intensity
11.2	19	T	CLST	2	CLST	1	OP	3	PERV	4	SER	CLST	3	HM	FR	3	strong sericite under a moderate silica overprint. Hemitite sometimes dark on fracture planes. Limonite sometimes a very bright orange
19	34.8	T	CLST	2	CLST	2	MTRX	3	CLST	5	SER	MTRX	2	CLY	FC	2	As above, with sil in matrix significant. Clasts very strongly ser-clay altered. Some soft white clay gouge. Some very dark red rusty hemitite on fracture planes
34.8	39.1	T		0	CLST	1	PERV	5	CLST	2	SER	MTRX	1	CLY	FC	1	strong silica (SIL 5), with some alteration laminations. Plenty of orange limonite throughout small fracturing in rock
39.1	51.5	T	CLST	3	FC	2	MTRX	3	MTRX	4	SER	CLST	4	SIL	OP	3	decreasing hemitite on fracture planes as rock becomes more competant. strong ser-sil alt'n in matrix
51.5	54	T	PATC	1	FC	3	MTRX	3	PATC	2	CLY	CLST	1	SIL	OP	3	moderate patchy overall alt'n.
54	60	S	PATC	1	FC	3	MTRX	3	PATC	2	CLY	CLST	1	SIL	OP	3	As above, into sulphide facies, no hemitite seen
60	64.5	S	FC	3	PATC	2	PERV	2	PERV	3	CHL	CLST	2	SIL	OP	3	short patch of strong clay alt'n at start
64.5	83	S	PERV	3	CLST	1	PERV	2	PERV	2	CHL	FR	5	CHL	CLST	2	quite a bit more chl, especially on fracture planes, dark green, becoming more patchy towards end
83	157.4	S	PATC	3	FC	1	PATC	3	PATC	2	CHL	FR	5	CHL	CLST	3	patchy pale green chl with very dark green chl on fracture planes
157.4	168	S	FR	4	FC	1	MTRX	2	PERV	3	CHL	CLST	2	SIL	OP	3	Some very dark chl on many fracture planes
168	205	S	FR	3		0	OP	3	PERV	2	BIOT	PATC	2				very dark andesite, no overwhelming alt'n present
205	286	S	PATC	1	FC	1	OP	2	PATC	3	CHL	VN	1				stick-rock andesite, fairly hard with some silica overprint. Patchy ser causing local lightenting/darkening of primary texture
286	375.9	S	PATC	1		0	OP	3	PERV	2	BIOT	PATC	1				similar as above
375.9	404.1	S	FC	2	FC	1	PERV	5	PERV	3	CHL	FR	3	SIL	OP	3	very bleached rock, a typical sil-5. Very dark chl on FP's
404.1	408.7	S	FR	3	FC	4	PERV	5	PERV	3	SIL	OP	3				lots of white clay gouge in this interval
408.7	433.1	S	PATC	2	FC	1	PERV	5	PERV	3	CHL	FR	3	SIL	OP	3	increased chl in streaky patches. Decreasing sericite content as sil becomes dominant towards EOH

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Blackwater Project
Drill Summary - Mineralization

BW0469		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
1.9	11.2		0		0		0										sulphides have been oxidized out
11.2	18.7	SP	0.1	CR	2		0										frequent sph partially replacing clasts, fine grained dark py
18.7	34	DI	1	CR	1	SP	0.1	Dbs	DEN	5							fine grained diss py, dark with some brighter specks. high grade DBS in small-scale flowery dendritics, sooty
34	40	DI	0.5	CR	0.5		0	Dbs	DEN	1							fine grained dark py. Small scale dendritic DBS, most sulphides appear to have been oxidized out in section of abundant limonite
40	50	SP	0.1	CR	0.5	BB	0.5										fine grained specks of py within matrix
50	60	SP	0.1	CR	1	BB	0.5										clast replacement SPH and disseminated patches. Rare bleb with sph
60	70	CR	1	CR	2	CR	1	Mrc	FP	0.5							partial clast replacement sulphides. Radial mrc on some chl-rich fracture planes
70	83	CR	1	CR	2	CR	1	Mrc	FP	0.5							As above, with some PY more in blebs. Dull fairly dark blebs
83	93	SP	0.1	DI	1	BB	0.5										SPH diss and CR. Infrequent bleb of PO
93	103	SP	0.1	DI	1	BB	0.5										As above
103	112	BB	0.5	CR	1	BB	0.5										CR and disseminated SPH; one good vnlt with metallic black sph along with brown sph
112	120	BB	0.5	DI	1	DI	1										generally as above
120	130	BB	0.5	DI	1	DI	2										disseminated frequent PY vnlts increasing near end of interval
130	140	VN	1	DI	1	SP	1										vnlts of py and some disseminated with sph. Specks of Po in clasts
140	150	VN	1	DI	1	SP	2										speck clusters of Po. Fairly frequent meandering hairline vnlts of py
150	160	CR	1	DI	2	DI	2										Py haloing red sph. Diss sph in more mafic clasts especially. Small specks of Po disseminated in darker rock
160	168	DI	1	CR	2	DI	1										very fine grained disseminated py

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Blackwater Project
Drill Summary - Mineralization

BW0469		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
168	180	DI	1	DI	0.5	DI	1										very fine grained specks of Po. Fine grained diss py as well as in hairline vnlts.
180	190	DI	1	DI	0.5	DI	1										as above generally
190	205	DI	0.5	DI	0.5	DI	0.5										a bit less sulphides overall from above
205	220	VN	1	DI	0.1	SP	0.5										Py fairly common in vnlts with calcite.
220	235	VN	0.5	DI	0.1	SP	0.5										as above, less sph and py
235	250	VN	0.5	DI	0.1	BB	0.5										generally as above
250	275	VN	0.5	DI	0.1	BB	0.5										as above, with some dark sph in vnlts
275	286	SP	0.5	DI	0.5	VN	2	Cp	VN	0.5							specks and vnlts with py. metallic black sph in some vnlts. Some vnlts with Po. Some planar vnlts with high percentage of sulphides.
286	300	VN	0.5	DI	0.1	DI	1										bright py in some calcite/carb veining
300	315	VN	2	VN	1	VN	2										several vnlts and veins bearing high amounts of py>sph>po, and Po in fine grained diss throughout
315	330	VN	2	DI	0.5	DI	1										Py in some calcite/carb vein, sometimes high amounts
330	345	VN	0.5	DI	0.1	DI	1										tiny hairline py vnlt "networks"
345	360	CR	1	CR	1	DI	1										frequent clasts partially replaced with py and sph, sometimes py in vnlts and fp's
360	375	CR	1	CR	1	DI	1	Mrc	FP	0.1							as above with some marcasite
375	385	SP	1	CG	0.5	SP	0.1	Dbs	VN	1	Apy	VN	0.1				py in specks and blobs in a couple annealed fractures. Some fairly large clusters of sph. fuzzy, non-distinct vnlts.
385	400	SP	1	CG	1	SP	0.1	Dbs	VN	1	Apy	VN	0.1				as above with increased sph in diss specks
400	415	VN	0.5	DI	0.1	SP	0.1	Dbs	VN	0.5	Apy	SP	0.1	Cp		0.1	some shoddy vnlts are good Py, but overall fairly low. Diss specks of sph at start, dying off. Rare speck of Po. Non distinct DBS vnlts, fuzzy. SP apy in qtz vnlts. Possible CPY?
415	425	VN	1	VN	0.5	SP	0.1	Cp	VN	0.5	Apy	SP	0.1				vnlts of py, including some good vnlts of py with cpy at around 418m. Apy speck seen in rare vnlt

Blackwater Project
Drill Summary - Mineralization

BW0469		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
425	433.1	VN	0.5	VN	0.5	VN	0.5	Cp	SP	0.1	Dbs	VN	0.5				low frequency shoddy vnlts with bleb or two of py=sph>po>cpy

Blackwater Project
Drill Summary - Structure

BW0469

From (m)	To (m)	Structure	Strength	Comments
1.8	11.2	FZ	3	broken up rock, may have been influenced by meteoric process. Quite a bit of clay gouge right at top of hole
11.2	33.9	JZ	3	competant rock, dominant joint set measured at 50-55 deg TCA. Typically iron oxide on jointing
33.9	34.1	FL	4	very soft white clay gouge, with some sub-rounded host-rock fragments suspended within
34.1	57.5	JZ	4	other joint set at 25 deg TCA. becoming gradually broken and increasing jointing as we go down
57.5	60.3	FZ	3	rubble, with fairly poor recovery, likely some clay has been washed away. Still a run or two of soft gouge. Rock more broken/busted on edges of fault zone
60.3	87	JZ	5	minor set at 40 deg TCA. mostly solid runs of core with planar jointing, with brief interspaced more broken intervals
87	93	BRKZ	3	very broken up
93	123.8	JZ	4	dominant joint set at 50 deg TCA
123.8	139.1	BRKZ	3	broken rock, in places is brief annealed fault breccia
139.1	144.4	JZ	2	competant rock with planar jointing
144.4	206	JZ	3	runs of competant rock increasing in length. Some very short zones of a bit mashed up rock, but overall quite competant
206	360	JZ	1	stick-rock, few joints. Some variation in jointing angles, not a distinct dominant set, but mostly quite planar. Set
360	391	JZ	3	minor set at 10-15 deg TCA. Moderate jointing intensity
391	404.2	JZ	5	jointing orientations as above, with increased intensity
404.2	407.2	BZ	3	white clay with suspended fragments that are mostly quite angular
407.2	412.1	BRKZ	4	another joint set at 15 deg TCA. Busted up core
412.1	419.5	JZ	2	other joint set at 15. mainly good competant runs
419.5	420	BZ		short annealed fracture brecciation
420	433.1	BRKZ	2	jointed to broken, increasing brokenness towards end of hole

Blackwater Project
Drill Logs

Hole ID:	BW0470	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375202.01
Depth (m):	439	Date Started:	22/05/2012	Casing Size:	HWT	Northing:	5893498.49
Azimuth:	0	Date Completed:	30/05/2012	Casing (m):	16	Elevation (m):	1514
Dip:	-90	Logged By:	BMa	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
55	337.3	-89.2
100	10.7	-89.1
151	12.5	-89.6
203.5	340.9	-89.4
250	21.5	-89.1
300	354	-89.5
349	340.4	-89.5
400	322.2	-89.1
439	1.3	-89.6

Blackwater Project
Drill Summary - Lithology

BW0470

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	16	OB							Sandy overburden. Volcaniclastic boulders. Broken pieces of outcrop? from 14.5-16m
16	88	VC	ms	LAP	M	GRN	UNKN		Matrix support, polymictic, dominantly sericite-chlorite altered clasts with occasional laminated clasts.
88	174.2	VC	ms	LAP	M	GRN	DEP	SH	Heavily altered matrix and clasts. Alteration is somewhat texture destructive. Mostly subangular mafic clasts altered by sericite. One large block of andesite at 126.8-127.4m. At149.9-150.2m is interval of heavily bleached, white, VC? with lapill
174.2	263.7	AND	amg		D	GRY	FLT	GR30	Andesite, predominantly massive with local amygdules and phenocrysts.
263.7	374.5	VC	plm	LAP	M	GRN			Matrix supported, felsic dominant volcanoclastic. Pervasive qtz-ser-cly alteration
374.5	434	VC	plm	LAP	D	GRN	FLT	GR10	VC, as above, with increasinly more mafic clasts present. Stronger chlorite, still moderately obscured by alteration
434	439	AND	mas		D	GRY	UNKN		Massive aphanitic, locally weakly feldspar phyric, pervasively carbonate veined.

Blackwater Project
Drill Summary - Alteration

BW0470		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
16	22	T	CLST	1	REP	5	MTRX	3	CLST	3	CLY	FC	4	LIM	FC	2	Strongly clay altered, white clay with orange limonite alteration along fx planes. Matrix is silicified with light green ser+chl clasts
22	74	S	CLST	1	FC	3	MTRX	4	PATC	3	SER	CLST	3	CLY	REP	2	Light grey silica matrix with green sericite-silica clasts. Replacement of clasts phenos with white clay. Clay strongly fracture controlled to 74m
74	85	S	CLST	1	FC	2	MTRX	3	PATC	3	SER	CLST	4				White clay replacing clasts/phenos. Green sericite-chlorite replaced clasts. Grey silica matrix. Dominantly clast supported in this interval
85	89	S	CLST	1	FC	2	MTRX	3	PATC	3	SER	CLST	4	CARB	VN	3	Pinkish rhodochrosite along veins within interval, otherwise interval similar to above
89	104.5	S	CLST	1	FC	1	MTRX	3	PATC	3	SER	CLST	4				As above, but lacking rhodochrosite in interval
104.5	126.9	S	CLST	1	FC	2	MTRX	3	PATC	3	SER	CLST	4				As above, slightly stronger clay (FC).
126.9	135	S	CLST	2		0	MTRX	4	PATC	3	SER	CLST	4	CLY	CLST	1	Similar to above. Stronger sericite/chlorite alteration of mafic clasts. Clay alteration of some felsic clasts. Fracture coontrolled clay is absent.
135	149.9	S	CLST	2	FC	2	MTRX	3	PATC	4	SER	CLST	4	CLY	CLST	2	Beginning 2m of interval is strongly altered and silicified with green, cream and purple flow patterns. Abundant fracture controlled clay. Clay alteration of felsic clasts. Sericite/chlorite alteration of mafic clasts.
149.9	154.5	S	CLST	1	FC	1	PATC	4	PATC	4	SER	CLST	4	CLY	CLST	3	Increase of felsic clay altered clasts.
154.5	174.2	S	CLST	1	FC	2	PATC	3	PATC	4	CHL	FC	3	CLY	CLST	1	Appearance of dark green fracture controlled chlorite. Yellowish green fracture controlled clay between 161.5-164m
174.2	263.7	S	PATC	1	PATC	2	PATC	2		0	BIOT	PATC	1	TALC	INFILL	2	Minor patchy chlorite, clay, biotite and silica. Talc and calcite infilling fractures and on fracture planes.
263.7	374.5	S	FR	2	PERV	2	PERV	4	PERV	3	CHL	CLST	2				Pervasive moderate to strong qtz-ser+/-clay. Chlorite on fractures and replacing clasts
374.5	424	S	PERV	2	PERV	2	PERV	3	PERV	3							Increased pervasive chlorite, pervasive qtz-ser-cly.
424	433	S	PATC	2		0	PERV	3	PERV	3	CHL	DEF	3	CHL	FR	3	Moderate pervasive sil-ser-weak chl alteration, clasts are variously silica-sericite altered. Frequent intervals of highly chloritic gouge, and all fractures are chloritic.

Blackwater Project
Drill Summary - Alteration

BW0470		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
433	439	S	FR	1	PERV	3		0	PERV	1	CARB	PERV	2				Interval is andesite and hardness 3-4 throughout - pervasive clay/?sericite alteration. Carbonate veined throughout, also locally in fine pore space.

Blackwater Project
Drill Summary - Mineralization

BW0470		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	35	BB	0.5	BB	0.5	BB	0.1	Dbs	VN	0.1	Dbs	BB	1				Blebby dark black sulphides, sphal & py fairly evenly distributed in unit. 1 DBS veinlet from 21-21.2m
35	54	BB	0.5	BB	1	BB	0.1	Dbs	BB	1.5	Ga	SP	0.1	Apy	SP	0.1	Blebby dark black sulphides with aggregates of blebby sphalerite. Trace Apy & Galena specks
54	74.5	CR	0.5	CR	0.5	BB	0.1	Dbs	BB	1							Sulphides appear to be blebby replacing clasts within unit, different then uphole. Decrease in density of mineralization
74.5	83.2	BB	0.5	BB	0.5	BB	0.1	Dbs	BB	1	Sp	VN	0.1	Ga	VN	0.1	Occasional veinlets with sph + py +/- gal
83.2	92	BB	0.1	SUBH	1	BB	0.1	Dbs	BB	0.1	Ga	VN	0.1	Sp	VN	0.1	Gal-sphal-rhodchrosite veinlets from 86-86.5m & at 88.5m
92	113.5	BB	0.1	BB	1.5	BB	0.5	Ga	SP	0.1							Specks of Sp+Po+Ga Creating specks and blebs which appear black.
113.5	126.8	SP	0.1	BB	1	BB	0.5	Ga	SP	0.1	Dbs	DEN	0.5				Appearance of DBS in dendrites at ~65dtca and 10dtca.
126.8	136	SP	0.3	BB	0.8	BB	0.3	Dbs	DEN	0.5	Ga	SP	0.1				Py in veinlet and also fine specks in matrix.
136	149.9	SP	0.2	BB	1.8		0	Dbs	SP	0.1							Majority of TS = red Sp.
149.9	154.5	SP	0.1	BB	0.5		0	Dbs	DEN	0.1	Ga	SP	0.1				Red sphalerite blebs, slight DBS grains
154.5	174.2	FC	0.8	BB	0.1		0	Dbs	VN	0.5	Ga	SP	0.1				Py on fractures, blebby po, DBS veinlets
174.2	200	VN	1		0	BB	1	Apy	VN	0.5	Po	AMYG	0.5				Py>po/arspy in veins, with blebby po. Also po and silica infilling amygdules from 191.5-200m.
200	250	DI	0.1		0	DI	0.5	Apy	SP	0.1							Decrease in sulphides with minor blebby po, trace py and trace arspy as specks.
250	263.7	VN	0.5		0	BB	1	Apy	VN	0.5							Increased po and arspy, minor py, esp veined with arspy
263.7	351	VN	1	DI	5	BB	1	Apy	VN	0.1							Strong di sphal, up to 10% locally, blebby po and py in veinlets. Occasional arspy veins.
351	400	VN	0.5	CR	1	CR	1	Apy	VN	0.1							Sharp decrease in sphal and po, still replacing clasts. Minor arspy and py veinlets, up to 3mm wide. Interval of clay gge with di py and arspy, 391-397m.
400	419	VN	1	CR	1	BB	0.5										Increased py, mostly veined, decreased po, sphal replacing clasts

Blackwater Project
Drill Summary - Mineralization

BW0470		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
419	430	VN	0.5	CR	1	BB	0.5	Grnt	BB	0.5	Py	FP	0.5				Similar to above, also frequent 1-3mm wide blebs of degraded ?garnet, light pinkish with fine creamy specks. Also frequent vague millimetric sooty specks.
430	434	VN	1	SP	0.1		0	Py	BB	0.5	SoSu	BB	0.5				fault gouge with occasional 2-10mm wide bloby veinlets, clasts have 1-2mm wide sooty sulphide /py blebs throughout
434	439	VN	0.1	DI	0.5	BB	0.1										Isolated py in carbonate veinlet, fine red sphal dissmeminated throughout

Blackwater Project
Drill Summary - Structure

BW0470

From (m)	To (m)	Structure	Strength	Comments
16	19	FZ	4	Gouge-rich fault zone with 10cm max blocks
19	20.6	JZ	3	Joint set @ 20m = 45 dTCA
20.6	20.8	FL	5	GOUGE-rich. No measurable angle
20.8	23.1	JZ	3	Dom frac set at 30 dTCA
23.1	26.4	FL	4	Strongly broken, lower contact @ 25 dTCA
26.4	28	JZ	3	Low angle joints from 5-15 dTCA
28	36	FZ	3	Measurable contact @ 33m = 25 dTCA
36	37.9	BRKZ	4	Lower contact @ 30 dTCA
37.9	38.3	FL	5	Upper contact @ 30 dTCA. Gougy
38.3	41.2	JZ	3	Joints from 10-20 dTCa
41.2	42.1	FL	5	Gouge rich fault-fault breccia with shear angle measured @ 41.45m = 25 dTCA
42.1	44.4	FZ	3	Angles from 40-50 dTCA within interval. Fault breccia
44.4	49	JZ	3	Joints from 25-40 dTCA
49	54	FZ	3	Low angle questionable at 25 dTCA
54	56	JZ	3	Jointed interval with clay along joints
56	59.7	BZ	4	Weak joint? @ 30 dTCA. cm+ sized blocks within gougy matrix = fault bx
59.7	67	FZ	3	15-50d TCA joints within interval, strongly broken, gougy throughout most of interval. Possibly several small subintervals could be broken out as joint zones
67	82	JZ	4	Strong jointing subparallel tCA. Weak joints at 30 and 50 dTCA. Clay along joints
82	110.2	FZ	4	Severly broken core, few sections over 30cm long. Moderate jointing at 40-50dtca. Abundant sandy gouge. Fault brecciatd with milled grains.
110.2	123.3	JZ	4	Moderate to moderately strong jointing at 30dtca in competent core.
123.3	123.7	FL	4	Gouge-rich, sand gouge (small milled fragments).
123.7	129	JZ	3	Moderate jointing, somewhat irregular between 30 and 50dtca.
129	131.1	FL	3	Some small competent core pieces. Sandy gouge. No measureable angle.
131.1	136.3	JZ	3	steeply dipping, rough joints
136.3	149.7	FZ	4	Top contact at 20dtca. Some chunks of competent core. Sandy gouge with milled grains. Severly broken.
149.7	159	JZ	2	weakly jointed + some subvertical fractures
159	176	FZ	3	Gouge seams + rubble sections + joints at 40dtca

Blackwater Project
Drill Summary - Structure

BW0470

From (m)	To (m)	Structure	Strength	Comments
176	248	JZ	2	Joint zone, fractures predominantly 45 degrees TCA
248	252.3	FZ	3	Short fault zone with bx clasts in rehealed fault gge, rubbly broken surfaces
252.3	263.4	JZ	2	Joint zone with predominantly low angle TCA fractures 45/35>65
263.4	275.5	FZ	4	Moderate to strong fault zone, with rehealed gge and bx
275.5	391	BRKZ	2	Weakly broken zone with rough, irregular fractures and short intervals of rubble
391	397	FZ	5	Strong fault zon, completely clay gge and rounded fragments. Di sulphides in matrix.
397	424	BRKZ	3	Moderate broken zone, intervals of rubble and rehealed gge.
424	425.5	FL	3	Fault breccia with ++ clay/chlorite gouge.
425.5	428.3	JZ	1	
428.3	436	FL	5	Well devloped fault breccia with gouge matrix, lithology change.
436	439	JZ	4	Also at 10-15degTCA

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Blackwater Project
Drill Logs

Hole ID:	BW0471	Tenure #:	509273	Hole Diameter:	HQ	Easting:	376001.89
Depth (m):	338.5	Date Started:	22/05/2012	Casing Size:	HWT	Northing:	5893049.8
Azimuth:	0	Date Completed:	28/05/2012	Casing (m):	1	Elevation (m):	1544
Dip:	-90	Logged By:	NDh	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
58	243	-89.3
100	213.4	-89.5
150	237.5	-89.8
200	157.7	-89.9
253	196.4	-89.6
307	203.3	-89.6
338.5	205.8	-89.6

Blackwater Project
Drill Summary - Lithology

BW0471

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	44.5	OB							bouldery, sandy overburden
44.5	80	FT	lam		L	GRY	DEP	GR30+	felsic tuff, moderate to strong oxidation throughout; laminated to banded transition starts at 59.8m
80	86.1	FT	lam		L	GRY	DEP	GR30+	laminated to banded felsic tuff
86.1	136.5	FLPT	obsalt	LAP	M	GRY			felsic lapilli tuff, obscured by alteration, local laminated sections, local microbrecciated pockets
136.5	196	FLPT	lpt	LAP	M	GRN	FLT		felsic lapilli tuff with some clasts that have been chloritized up to 5% sulphides
196	206.8	VC	plm	LAP	M	GRY	DEP	GR30+	polymictic vc with 50:50 mafic to felsic clasts, matrix supported, matric is felsic to intermediate
206.8	267	AND	bx	LAP	D	GRY			brecciated andesite, matrix supported, local massive sections,
267	274	AND	amg		D	GRY			amygdaloidal andesite, some po/sulphides in amygdules
274	318	AND	amg		D	GRY			mostly porphyritic andesite, some amygdaloidal sections, locally bleached
318	338.5	AND	por	LAP	D	GRY			porphyritic andesite, local volcanoclastic sections with calcite? white mineral surrounding some clasts

Blackwater Project
Drill Summary - Alteration

BW0471		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
44.5	59.8	O		0	FR	2	PATC	2	PATC	2	LIM	FC	3	HM	FC	3	strong oxidation
59.8	80	T		0	FR	1	PERV	3	PERV	2	LIM	FC	2	HM	FC	2	transition zone
80	196	S	FR	1	FR	1	PERV	4	PERV	3							pervasive silica +sericite alteration, weak chlorite and clay long fractures
196	203	S	CLST	1	CLST	1	PERV	4	MTRX	3	CHL	FR	1				
203	245.5	S	FR	1	FR	1	PATC	3	MTRX	3	CLY	CLST	1				silica +sericite throughout matrix, weak clay alteration in clasts
245.5	274	S	FR	1	FR	1	PATC	3	MTRX	3	CLY	CLST	1	CARB	VN	1	same as above but with calcite/carb veinlets
274	338.5	S	FR	1	FR	1	PATC	3	PATC	3	CARB	VN	2				calcite/carbonate veinlets throughout, patchy silica+sericite alteration, weak clay +chlorite along fractures

Blackwater Project
Drill Summary - Mineralization

BW0471		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
59.8	76.4	DI	1.5	DI	1.5		0	Dbs	DEN	1							py disseminated both as brassy specs and sooty disseminations, sph also disseminated sometime with py, dbs
76.4	99.7	DI	1.5	DI	2		0	Dbs	DEN	0.5	Ga	VN	0.1	Cp	VN	0.1	sph>py>dbs, trace cpy and gn in veins, fine disseminations of sulphides
99.7	119.9	DI	1.5	DI	1.5		0	Dbs	DEN	1	Sp	VN	1	Py	VN	0.5	veins with sph>py>>cpy=gn up to 5 cm wide; fine disseminations of brassy py and red and blackish sph, some dbs
119.9	142.1	DI	1	DI	2		0.1	Dbs	DEN	0.5							
142.1	154	DI	1	DI	2		0	Dbs	DEN	1							
154	161.4	DI	0.5	DI	1		0	Dbs	DEN	0.5							sphalerite in this interval and two above almost have a softer reddish clay like material surrounding them/mixed in with them might be disseminated sph with clay
161.4	189.8	DI	1	DI	2	VN	0.1	Dbs	DEN	1	Py	VN	0.5	Apy	VN	0.3	disseminated py, sph and dbs throughout veins of silica+py+sph+apy+trace cpy
189.8	206.8	DI	0.5	DI	0.1		0										decrease in sulphides after fault zone in VC unit
206.8	222.3	DI	0.5	DI	0.1	DI	0.1										decrease in sulphides, brassy py disseminated trace sph and po
222.3	267	DI	0.5	DI	0.5	DI	1										disseminated po>sph>py
267	270	DI	0.1	DI	0.1	DI	1	Po	AMYG	0.5							po disseminated in blebs and in amygdules
270	305.1	DI	0.1	DI	0.1	DI	1										finely disseminations of po, mostly visible on fresh surface, trace py and sph
305.1	318	DI	0.1	DI	0.5	DI	1										fine disseminations of po, some specs of sph, trace py
318	338.5	SP	0.1	SP	0.1	DI	0.5										decrease in sulphides, po as fine disseminations, trace sph, py

Blackwater Project
Drill Summary - Structure

BW0471

From (m)	To (m)	Structure	Strength	Comments
44.5	59.8	BRKZ	3	strong broken zone in oxidation zone, some more faulty sections but mostly broken
59.8	101.3	JZ	4	joint set with local broken sections up to 40cm; 2 joint sets, one at ~45-55 dtca and one at 30ish dtca
101.3	133.8	FZ	3	weak to moderate fault zone, gge along fracture
133.8	144.7	BRKZ	2	weakly broken zone,
144.7	156.5	JZ	2	
156.5	189.8	JZ	3	some joints at 50ish dtca, some at 30ish dtca, local broken intervals up to 40cm
189.8	203.5	BRKZ	3	moderate broken zone with local fault -annealed fault intervals
203.5	218.9	JZ	3	moderate joint set, could be weakly broken, fractures are dominantly at 50sih dtca, some at 30, some rough jagged joints
218.9	234.3	FZ	3	moderate fault one, mostly healed/annealed, some cometent core up to 40cm, strong chlorite gge along fractues
234.3	252.5	JZ	3	joint set, joints at 50>30 dtca
252.5	257.5	FZ	3	chlorite+clay gge throughout
257.5	274	JZ	2	competent core
274	278	FZ	2	moderate fault zone, gge throughout
278	300.6	JZ	2	competent core, fractures at 70-80 dtca
300.6	307.2	FZ	3	moderate fault zone, gge throughout, calcite veining throughout also
307.2	338.5	JZ	2	competent core, fractures dominantly at 70-80 dtca, some at 50

Blackwater Project
Drill Logs

Hole ID:	BW0472	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375651.9
Depth (m):	433	Date Started:	26/05/2012	Casing Size:	HWT	Northing:	5893100.34
Azimuth:	0	Date Completed:	10/06/2012	Casing (m):	6	Elevation (m):	1563
Dip:	-90	Logged By:	KOr	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
49	23.5	-89.2
101.5	31.1	-89.6
200	320.1	-89.8
350	78.6	-89.7
400	130.7	-89

Blackwater Project
Drill Summary - Lithology

BW0472

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6	OB							
6	22.1	FT	obsalt	LAP	L	OR	ALTFR	GR10	Only faint veiws of clasts. Mafic to felsic ratio of clasts is unknown. Oxide zone.
22.1	44.5	FT	obsalt	LAP	L	GRY	ALTFR	GR30+	Same as above with sections lacking oxide alteration. Transition zone.
44.5	78	FT	obsalt	LAP	L	GRY	UNKN		Some planes of lamination visible near 48-52m. Oxidation gone. Sulphide zone.
78	105	FT	obsalt	LAP	L	GRN	UNKN		Continued from above. Increased texture destruction.
105	116.4	VC	plm	LAP	L	GRN	DEP	GR10	Moderate to strong texture destruction but many clasts still deiscernable. Roughly equal parts mafic and felsic clasts.
116.4	121.9	AND	volc	LAP	D	GRY	ALTFR	GR10	Mostly fine grained andesite + andesite clasts. No evidence of felsic clasts. Fairly freash.
121.9	337	FT	obsalt	FA	L	GRN	UNKN		Top ~1m of interval contains clasts and may be another polymict VC unit. Below that the core is completely texturally obscured by alteration. Alteration has created local laminations. Minor bleached sections. Silica-sericite-clay-chlorite alterati
337	433	FLPT	lam	LAP	L	GRN			Felsic lapilli tuff with banding texture running sub parallel to core axis, ghost clasts often replaced by sulphides ~ 10% of core. Appearance of ratty garnets (trace)

Blackwater Project
Drill Summary - Alteration

BW0472		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	22.1	O		0	PERV	4	PATC	3	PERV	3	HM	FC	3	LIM	FC	3	Entirely oxide zone. From 6-12m is a bright yellow powdery material - fracture control - Jarosite?
22.1	44.5	T		0	PERV	4	PATC	3	PERV	3	HM	FC	2	LIM	FC	2	Oxide is in and out for short sections. Tansition begins and ends in this interval.
44.5	78	S		0	PERV	4	PATC	4	PERV	3	CLY	FC	2				Bleached. Strongly altered / texture destroyed. Local heavy silicification. Local fracture control/deform clay.
78	105.1	S	FC	1	PERV	4	PATC	2	PERV	4	CLY	DEF	3				Local strong silicification in competent core from 92.3m onward. Deformation + alteration clay in strong gouge from 79.1-92.3m
105.1	116.4	S	FC	1	PERV	4	PATC	3	PERV	4	SIL	CLST	4	CLY	DEF	3	Partially texture destructive alteration by silica-sericite-clay. No chlorite on fractures. Silicifed clasts and sericitized clasts.
116.4	121.7	S	FC	3	MTRX	1	PATC	3	MTRX	1	CLY	FC	2				Fairly fresh. Some sericite and clay alt in both clasts and matrix. Mostly matrix altered. Moderate chlorite in fracs and gouge. Deform clay gouge - minor.
121.7	160.2	S	BN	3	PERV	4	PATC	4	PERV	4	CHL	FC	3	CLY	DEF	1	Alteration is texture destructive. Alteration banding/laminations strongest from 141-149m. Chlorite on frcatures is moderate overall but locally up to 5, ex: 139.5-141m, in other sections chl is absent in fractures. Moderate-strong silicification overa
160.2	173	S	PATC	2	PERV	5	PATC	1	PERV	5	CLY	DEF	5				Intense alteration in fault with minor sections of silica annealed gouge.
173	191	S	FC	3	PERV	4	PATC	4	PERV	5	CLY	DEF	4				Same as above with more chloritization on fracs, slightly less deformational clay. Still fault zone with rubble and gouge. Alteration completely obscures primary texture.
191	236	S	FC	3	PERV	4	PATC	3	PERV	5	CLY	DEF	2				Same as above, less deformational clay. Slightly less silicious.
236	262	S	FC	3	PATC	2	BN	3	PERV	5							Strong pervasive sericite alteration, silica often weakly banded, chlorite along fracture planes, patchy spotted clay (albite?)
262	337	S	FC	3	PATC	2	BN	3	PERV	4							Same as above with slight decrease in sericite

Blackwater Project
Drill Summary - Alteration

BW0472		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
337	353	S	FC	3	PATC	2	BN	3	PERV	3							Silica alteration pervasive but locally banded, spotted white clay alteration, chlorite increasing where rock is more fractured, trace hematite on fractures.
353	381	S	FC	3	PATC	1	BN	4	PERV	3							Banded silica alteration overprinting sericite/chlorite
381	433	S	FC	3	PATC	2	PERV	4	PERV	3	HM	FC	1				Similar to above with increased patchy clay. FC chlorite is often very dark/almost black colour.

Blackwater Project
Drill Summary - Mineralization

BW0472		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
6	22.1		0		0		0	Goe	FC	2							Possible Py/Sulphide casts but no remnants or halos.
22.1	37	BB	0.5		0		0	Dbs	STR	0.5	Py	DI	0.5	Goe	FC	1	Py is blebby in solid core and dissem in gouge.
37	44.5	SP	0.1		0		0	Dbs	STR	0.5	Goe	FC	1				Less Py and DBS than above.
44.5	78	BB	0.5	BB	0.5		0	Dbs	STR	1.5	Sp	VN	0.1				DBS locally up to 10% (ex: at 61m). Tarnished Py and fresh Py in blebs and specks. Sp occurs in vein at 78m. Vein is 5mm wide at 30dtca. Vein is Sp>Py.
78	98.5	BB	1	BB	0.1		0	Dbs	STR	4							DBS locally up to 8%. Sp and Py inside DBS stringers.
98.5	116.4	DI	0.5	BB	3	SP	0.1	Dbs	STR	1							Sp present in both red and black/grey forms. Locally Sp up to 5%. Py found as fine dissem specks. Po magnetism felt - weak. DBS has Py inside.
116.4	121.7	DI	1	DI	2	DI	2										Up to 5% TS. Mostly very fine specks all throughout andesite VC matrix. Trace Py on fracs Plus Py and Sp veinlets near beginning and end of interval.
121.7	160.7	FC	0.5	BB	3.5	BB	0.5	Dbs	STR	3	Py	DI	1	Cp	FC	0.1	Sp dominates - both red and black sp in blebs. DBS stringers have fine Py inside. py on frac fills and disseminated. CHalco found in 3 small Py fracture fills. Po dominant from154-155, up to 3% - as large crystals in vugs.
160.7	173	SP	0.1	GOU	0.5		0	Dbs	GOU	0.5							Fine Py + Soft DBS + soft Sp in gouge.
173	191	SP	0.5	BB	3	SP	0.1	Dbs	STR	1.5							Sp as red blebs. Fine specks of Py found. DBS stringers are very fine and oriented from 5 to 0 dtca.
191	208.8	EU	2	BB	3		0	Dbs	STR	0.5							Py increaseed form above - Py is euhdral 0.5-1mm crystals disseminated throughout core. Sp occurs in blebs and is equally well disseminated. DBS concentration less than above.
208.8	229	EU	1.5	BB	1.5	DI	1	Dbs	DEN	1.5							Abundant disseminated sulphides often clustered together
229	245	EU	2	BB	1.5	DI	1	Dbs	DEN	1	Cp	DI	0.1				As above with trace chalcopyrite and abundant gouge with some finer grained mineralization
245	269	EU	2	BB	2	DI	0.5	Dbs	DEN	0.5							Slight decrease in Dbs and pyrrhotite

Blackwater Project
Drill Summary - Mineralization

BW0472		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
269	286	EU	2	BB	2	DI	0.5	Dbs	DEN	0.5							Well mineralized with sphalerite often haloing pyrite, small wisps of dbs, some finer grained sulphides in crushed fault gouge
286	301	EU	2	BB	1.5	DI	0.5	Dbs	DEN	0.1							Continued strong mineralization lesser DBS, sphalerite occurs as blackjack and red sphalerite
301	310	FG	1	FG	0.5	FG	0.1										Fine grained sulphides in fault gouge breccia
310	325	FG	1.5	DI	0.5	DI	0.5										Fine grained sooty black sulphides, dominantly pyrite sometimes in veins
325	339	EU	1.5	BB	2	DI	0.5	Dbs	DEN	0.1	Mrc	FC	0.1				Euhedral pyrite surrounded by sphalerite, marcasite along fractures, minor disseminated pyrrhotite
339	357	DI	2	BB	2	DI	0.5	Hm	FC	0.1							Fine grained and euhedral pyrite with abundant sphalerite often following banded texture of rock
357	374	DI	2	BB	1.5	DI	0.5	Sp	VN	0.5	Dbs	DEN	0.5				Sulphides disseminated and spotted throughout core locally sulphides follow banding
374	433	FC	1	BB	2.5	PATC	0.5	Dbs	STR	1	Py	SP	0.5	Cp	FC	0.1	Core is peppered with small blebs of mostly Sp with some Py and Po. Many veinlets containing abundant Sp with lesser Py,Cp,Po. 1cm vein of Sp+Py at 388.7m

Blackwater Project
Drill Summary - Structure

BW0472

From (m)	To (m)	Structure	Strength	Comments
6	23.5	JZ	3	Rubble down to 10.8m.
23.5	36	FZ	4	Begins and ends in partially healed gouge. Some sections of competent core. Weak/rough jointin/fractures at 30dtca.
36	49.9	JZ	3	Secondary jointing at 80dtca. Separation of lamination planes from 44.6-45m
49.9	53	FL	4	Partially healed. Full of jagged and milled clasts.
53	60.5	JZ	4	
60.5	62	JZ	4	
62	78	JZ	3	secondary jointing at 40 and 60dtca.
78	79.1	BRKZ	3	Rubble above fault.
79.1	92.3	FL	5	Intense gouge with subrounded breccia clasts near bottom. Small rubble sections.
92.3	98.3	JZ	1	Steep rough fractures.
98.3	214.5	FZ	4	Very large fault zone. Alternating sections of broken zone/rubble with both loose and annealed gouge. Some trace jointing at 50, 60 and 20dtca. Competent sections of core do not exceed ~2m. Gouge is predominant from 160.5-173m. Many subvertical fract
214.5	223	BRKZ	2	Weakly competant core with no measurable angles
223	226	FL	2	small fault with minor fault gouge
226	234	BRKZ	3	Moderate broken zone
234	236.5	FL	2	Rubble and weakly milled grains
236.5	241	BRKZ	3	broken core with some competant pieces
241	242.5	FL	2	Minor fault gouge
242.5	245	JZ	2	weak wavy joint set
245	260.7	FZ	4	Fault gouge and rubble zone with >50% fault gouge
260.7	271	BRKZ	2	Broken zone with small compentant pieces of core
271	281.1	FL	2	Fault gouge with some fault breccia and broken core
281.1	304	JZ	2	secondary jointing at 50
304	311	BZ	4	Fault gouge breccia
311	334	BRKZ	3	broken core with some milled grains
334	334.6	FL	2	fault gouge
334.6	340	BRKZ	3	broken and fractured core

Blackwater Project
Drill Summary - Structure

BW0472

From (m)	To (m)	Structure	Strength	Comments
340	342.2	BZ	3	fault/hydrothermal breccia
342.2	366	JZ	3	secondary joint set at 30 degrees
366	368	FL	1	minor fault with gouge and annealed clay
368	373.5	JZ	2	secondary jointing at 25
373.5	433	JZ	3	Seconday jointing at 60, 20 and 30dtca. Plus fairly abundant steep / subvertical rough fractures. Small fault with gouge and milled clasts at 413.4-414m

Blackwater Project
Drill Logs

Hole ID:	BW0473	Tenure #:	509273	Hole Diameter:	HQ	Easting:	374901.26
Depth (m):	362.69	Date Started:	24/05/2012	Casing Size:	HWT	Northing:	5892899.76
Azimuth:	0	Date Completed:	29/05/2012	Casing (m):	18	Elevation (m):	1575
Dip:	-90	Logged By:	KOr	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
45.72	74.6	-89.4
91.43	80	-89.3
137.2	73	-89.4
182.9	84.2	-88.2
228.6	117.1	-88.9
274.3	87.2	-88
320.0	161	-88.5
362.7	149.2	-88.1

Blackwater Project
Drill Summary - Lithology

BW0473

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	17.5	OB							Overburden, poor recovery by drillers
17.5	63	VC	volc	LAP	M	GRY			Dark grey 50-50 volcaniclastic. Majority of clasts are rounded. Typical B&W lapilli tuff that is found on the western edge. Limonite on fractures. Weak sulphides.
63	99.4	VC	plm	LAP	M	GRY	FLT	SH	Still transition zone with limonite fracture coating.
99.4	116.8	VC	obsalt	LAP	L	GRY	FLT	SH	Very texturally destroyed. Relict laminated clasts visible.
116.8	155.5	VC	plm	LAP	M	GRY			Back into more fresh VC.
155.5	170.1	VC	plm	LAP	M	GRN	DEP	SH	Medium green-grey altered VC, Bottom contact with andesite VC is depositional at 40dtca.
170.1	220	AND	volc	LAP	D	GRY	UNKN		Volcaniclastic andesite with amygduloidal patches down to ~181m. Sections of high alteration (186-187m, 195-201m) which are light green/grey and have more silicious (felsic?) clasts. At 217m core looks like crackle brecciated andesite.
220	299	AND	volc	LAP	D	GRY			Predominantly volcaniclastic/brecciated andesite. Interspresed with layers of polymicitic volcaniclastic.
299	343.9	VC	plm	LAP	M	GRY	DEP	GR5	Same VC unit as listed (lith 2) above. Less felsic clasts. Felsic clasts concentrated into sections.
343.9	362.7	AND	amg	CA	D	BLK	UNKN		Dark black/purple andesite with chloritic area. Locally amyduloidal - silica-sericite-chlorite filled. Local plagioclase phenocrysts. Moderate carbonate veinlets throughout. Intensely silicified. Occasional felsic clasts. Occasional areas of br

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Blackwater Project
Drill Summary - Alteration

BW0473		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
17.5	63	T	MTRX	3	FC	2	PERV	3	CLST	2	SIL	CLST	4				Fairly unaltered VC. Fresh looking. Limonite on fractures. Pervasive silica.
63	99.4	T	MTRX	2	FC	2	PERV	3	CLST	2	SIL	CLST	4				Same as above.
99.4	116.8	S	MTRX	3	PERV	4	PERV	5	PERV	4	CLY	FC	1				Texture destructive alteration. Intensly silicified. Clay sericite silica alteration.
116.8	131.5	S	FC	3	PERV	3	PERV	4	PERV	3	CHL	MTRX	4				Same as above. More chloritic matrix.
131.5	152	S	FC	2	FC	2	PERV	4	CLST	3	SIL	CLST	5				Same as vc from 63-99m but more silicious.
152	153.5	S	FC	2	FC	2	PERV	4	CLST	3	SIL	CLST	5				Same as above.
153.5	170.1	S	FC	1	PERV	3	PERV	5	PERV	4							Very altered but some texture still discernable.
170.1	194.9	S		0	CLST	1	PERV	5	CLST	1							Fairly fresh. Minor alteration of clasts by sericite and clay. Intensely silicified throughout. Some felsic? or toatlly silicified clasts.
194.9	201.2	S	FC	1	PERV	3	PERV	5	PERV	4							Same alteration as 153.1-170.1m.
201.2	220	S		0	CLST	1	PERV	5	CLST	2							Weak alteration of clasts by sericite and possibly clay. Intense silicification.
220	299	S	CLST	1	CLST	1	PERV	4	CLST	2	CLY	MTRX	1	SER	MTRX	1	Sections of polymicitic volcaniclastic in this unit are preferentially altered. Locally (in VC unit) alteration of clasts and martix is moderate to strong. Mafic clasts altered by ser/chl/clay, felsic clasts altered by silica/clay. Core is strongly sil
299	306	S	MTRX	5	DEF	4	PATC	3	PERV	3							Heavily chloritized fault gouge with lots of deformational clay. Rubble zone below gouge is silicified.
306	343.9	S	FC	1	PATC	2	PERV	4	CLST	2	CHL	CLST	1	CLY	CLST	1	Sericite/Chlorite/Clay alteration of mafic? clasts. Silica/Sericite alteration of felsic? clasts. Pervasive silicification. Minor carbonate veining.
343.9	362.7	S	AMYG	2	FC	1	PERV	4	AMYG	2	SIL	AMYG	2	CARB	VN	3	

Blackwater Project
Drill Summary - Mineralization

BW0473		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
17.5	63	DEN	0.1		0		0	Goe	FC	3							weak sulphides, trace pyrite. FeOx on fractures.
63	80	FC	0.1		0	BB	0.1	Goe	FC	3							same as above plus Po
80	99.5	BB	0.1		0	BB	0.5	Goe	FC	3							same as above with increase in Po
99.5	106	BB	0.1		0		0.5										Trace Py in gouge. Po in competent andesite.
106	116.8	FC	0.5		0	BB	0.5	Dbs	STR	1							Very fine DBS stringers + Po blebs + Py on fracs.
116.8	131		0		0	BB	0.5										Weak Po mineralization.
131	153.5	FC	1		0	BB	1										TS~2% Po in blebs in matrix and as fine grained clast fill. Py on fracture planes.
153.5	170.1	FC	0.5		0	DI	3										Finely disseminated Po with occasional blebs. Few Py coated fracs.
170.1	194.9	FC	1	BB	0.1	DI	4	Ga	FG	0.1							Abundant fine Po. Py on fractures. At 174.3m in mechanical fracture is a fine grained metallic mineral amongst Po - called it galena.
194.9	201.2		0		0	SP	0.1										Only very weak Po found.
201.2	220	SP	0.1		0	DI	2.5	Po	AMYG	1							Po occasionally occurs in amyduals down to 181m. Fine disseminations throughout.
220	270	SP	0.1		0	BB	1.5	Cp	SP	0.1							Dominated by blebs of Po occuring in matrix and occasionally in clasts. Chalco? found in polymict VC unit as specks around Po blebs. Py also seen only in polymict VC sections.
270	275	SP	0.1		0	VN	4										Chunky crystals of Po in vuggy veining + trave Py.
275	299	FC	1		0	CR	1.5	Hm	FC	0.1	Py	VN	0.1				Po as fine specks throughout and dominantly in clasts. Py on fracture surfaces. Py vein at 280.2m with trace hematite staining.
299	343.9	FC	0.5	SP	0.1	BB	1	Apy	FC	0.1	Cp	FC	0.1				Overall sulphides up to 2%. Arseno occurs in 3 fracture fills between 314.7-315.5m at 50dtca (jointing) - A few large (0.5-1cm wide) crystals. Chalco found only in one fracture at 320.5m. Locally sulphides up to ~3.5%.
343.9	362.7	FC	0.5	FC	0.1	FC	1	Po	AMYG	0.1							Sulphides leass than 2%. Dominantly Po.

Blackwater Project
Drill Summary - Structure

BW0473

From (m)	To (m)	Structure	Strength	Comments
17.5	64	JZ	3	joints at 45 and 70.
64	97.5	JZ	3	SAME AS ABOVE
97.5	131.5	FZ	3	Moderate to strong fault zone. Moderate clay gouge. Strongly faulted. Few section of competent strongly silicified core. Jointing at 50dtca.
131.5	152	JZ	2	lesser joints at 20dtca.
152	220	JZ	4	Well jointed at 35 with less common joints at 50 and 60dtca. Very competent core.
220	298	JZ	5	Strongly jointed at 50dtca. Lesser jointing at 40, 60 and 70dtca.
298	306.3	FZ	4	Heavily chloritized gouge from 298.7-302m. With subrounded clasts. Rubble zone below gouge.
306.3	340	JZ	4	Dominant joints at 50dtca. Lesser jointing at 20dtca.
340	362.7	JZ	4	Dominately jointed at 30dtca. Seconday jointing at 50dtca.

Blackwater Project
Drill Logs

Hole ID:	BW0474	Tenure #:	509273	Hole Diameter:	HQ	Easting:	375402.1
Depth (m):	482.49	Date Started:	24/05/2012	Casing Size:	HWT	Northing:	5892799.86
Azimuth:	0	Date Completed:	01/06/2012	Casing (m):	5	Elevation (m):	1613
Dip:	-90	Logged By:	NDh	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46.33	206.2	-89.7
92.05	188.2	-89.4
137.8	184.4	-89.1
183.5	186.6	-88.6
229.2	197	-88.9
274.9	193.9	-89
320.7	187.8	-88.7
366.4	203.6	-88.6
412.1	186.8	-88.2
457.8	203.3	-87.8

Blackwater Project
Drill Summary - Lithology

BW0474

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	6.5	OB							
6.5	17.4	FLPT	lpt	LAP	L	GRY	DEP	GR30	oxide zone, felsic lapilli tuff with moderate to strong oxidation along fractures
17.4	149.1	AND	por		D	GRY	DEP	SH	porphyritic and amygdaloidal andesite, weak mineralization in some amygdules
149.1	174	AND	obsalt	LAP	M	GRY	ALTFR	GR30+	bleached andesite? clay (albite) alteration haloes around sulphide blebs, some around clay+sulphide, some clastic/fragmental texture but mostly obscured; gradational contact (back and forth between andesite and bleached andesite) brecciated
174	221.4	AND	por		D	GRY			porphyritic breccia with local pseudo-brecciated intervals, brecciation appearane may be due to fluid movement channels?
221.4	250.6	VC	plm	LAP	D	GRY			polymictic vc clast supported,
250.6	342	AND	por		D	GRY	FLT	GR30	porphyritic andesite with plag and hrbl? throughout, local massive sections; also local volcanoclastic intervals; brecciated slightly on either side of the fault
342	411	AND	obsalt		M	GRY			bleached andesite (could be felsic lapilli tuff?) textures obscure by alteration
411	482.5	AND	obsalt		M	GRY			bleached andesite, laminated likely due to alteration, some fragmental intervals but mostly obscured by alteration

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Blackwater Project
Drill Summary - Alteration

BW0474		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
6.5	17.4	O		0	PATC	2	PERV	3	PERV	3	LIM	FC	3	HM	FC	3	pervasive sericite, oxidation zone, patchy silica
17.4	31.3	T		0	FR	1	PATC	2	MTRX	3	LIM	FR	2	HM	FR	2	transition zone, pervasive sericite, weak silica , silica amygdules
31.3	90	S	FR	1	FR	1	PATC	2	MTRX	3	CLY	PATC	2				patchy clay througout, pervasive sericite and patchy silica
90	149.1	S	FR	2	FR	1	PATC	2	PATC	3	CLY	PATC	2				same as above more chlorite along fractures
149.1	187.9	S	FR	1	SPHL	1	PERV	4	PERV	3	ALB	SPHL	2	SER	FC	1	felsic unit? with albite/clay/white mineral sulphide halo's around sulphides, most textures obscure by alteration
187.9	221.4	S	FR	3	FR	1	PATC	2	PERV	2							
221.4	250.6	S	FR	2	FR	1	PATC	3	PATC	3	CHL	REP	1	CLY	REP	1	weak clay and chlorite replacing some clasts, pervasive/patchy silica + sericite
250.6	342	S	FR	2	FR	1	PATC	3	PATC	2	CLY	REP	1				
342	355	S	FR	2	FR	1	PERV	3	PERV	3	SER	VNHL	1				bleached andesite? pervasive silica +sericite, moderate chlorite along fractures planes
355	411	S	PATC	2	FR	1	PERV	4	PERV	3	SER	FC	1	CHL	FR	2	pervasive silica and sericite alteration, chlorite and weak clay along fractures, some sericite fracture controlled
411	482.5	S	PERV	1	FR	1	PERV	4	PERV	3	SER	FC	1	CHL	FR	3	

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Blackwater Project
Drill Summary - Mineralization

BW0474		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
16	63	DI	0.5	DI	0.5	DI	0.5	Po	AMYG	0.5							fine disseminated brassy py, some disseminated sph,
63	90	DI	0.5	DI	0.5	DI	0.5	Po	AMYG	0.5	Py	VN	0.1				same as above, some py in silica + py stringers
90	148	DI	0.5	DI	1	DI	0.5	Po	AMYG	0.5							not very much sulphide, little blebs of po and po in amygdules, some sph disseminated with py
148	174	BB	2.5	BB	2	BB	0.1	Dbs	DEN	0.5							blebs of py throughout, some surrounded but albite? sulphide halo, sphalerite disseminations some with trace po also surrounded by halo
174	202	VN	1	DI	0.5	DI	1.5										fine disseminations of po throughout, py dominantly as stringers, specs of sph
202	221.4	VN	0.5	DI	1	DI	1.5	Cp	SP	0.1							slightly more sphalerite
221.4	245	SP	1	DI	0.5	DI	1.5	Py	VN	0.5							
245	272.8	SP	0.1	DI	0.5	DI	2										mostly disseminated po, possibly trace py specs, some sph
272.8	317.4	VN	0.5	DI	0.1	DI	2	Py	DI	0.1							the disseminated py is mostly near the veins
317.4	342.6	VN	1		0	DI	1	Py	DI	0.5							veined py, some disseminated, disseminated po
342.6	366.3	VN	0.5	DI	0.1	DI	1	Py	DI	0.5							less veined py than previous interval
366.3	389.5	DI	1	DI	1	DI	1	Py	VN	0.5							slight increase in sulphides, some disseminated specs of brassy py throughout as well
389.5	404	VN	1	DI	0.1	DI	1										dissemianted po, py in veinlets, variably oriented
404	418.3	VN	1	DI	1	DI	1	Ga	SP	0.1							disseminated sph, some py, and po, sometime all in mixed sulphide blebs with trace gn, py also veined
418.3	425	BB	1	BB	1	DI	1	Ga	SP	0.1	Py	VN	0.5				blebs/clusters of sph+py and some po, disseminated po, trace gn
425	447.2	DI	0.5	DI	0.5	DI	0.5										decrease in sulphide througou fault/broken sectios
447.2	464.0	BB	1	DI	0.5	DI	1	Sp	BB	0.5	Dbs		0.5	Grnt	BB	0.5	small garnet blebs up to 5mm wide; disseinated po and py, some with sooty black sulphide (dbs) rims/halos; blebs of mixed sph and py
464.0	482.5	BB	0.5	BB	0.5	DI	1	Grnt	BB	0.1							trace garnets, disseminated po throughout, little blebs of py and sph, some py in little stringers

Blackwater Project
Drill Summary - Structure

BW0474

From (m)	To (m)	Structure	Strength	Comments
6.5	55.2	JZ	3	moderate joint set with local broken/fault zones up to 30cm
55.2	65.7	FZ	2	weak fault zone with clay and chlorite gge
65.7	117	JZ	3	local joint zone, joints at 50>30 dtca
117	137.8	FZ	3	moderate to strong fault zone with clay+chlorite annealed intervals
137.8	190	JZ	2	mostly competent core, a couple weak broken stections up to 20cm, joints dominantly at 50ish dtca
190	204.5	BRKZ	3	moderate broken zone, some chlorite gge throughout mostly along fracture planes
204.5	331	JZ	2	mostly competent core with fracture at 50 and 30ish dtca
331	341.2	FZ	3	moderate fault zone with annealed/healed sections througout
341.2	353.7	JZ	2	competent core,weak joint set
353.7	363.5	BRKZ	3	weak to moderate broken zone
363.5	364.5	FZ	3	healed/annealed fault zone
364.5	382.3	BRKZ	2	moderate broken zone, some gge along fractures, also some competent sections
382.3	389	JZ	2	competent core
389	395.4	FZ	3	fault, gge throughout, sort of a crushed zone
395.4	425.9	BRKZ	1	weakly broken zone, overall competent core but fractures are more broken rough and jagged than oriented
425.9	428.8	JZ	2	competent core, few fractures mostly at 45-55 dtca
428.8	449.9	FZ	3	moderate fault zones, three fualt zones with about 1-2 meters of broken/competent core btween them
449.9	482.5	JZ	3	fractures between 45-55 dtca; some local weak broken zones

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Blackwater Project
Drill Logs

Hole ID:	BW0475	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375401.98
Depth (m):	436.62	Date Started:	25/05/2012	Casing Size:	HWT	Northing:	5892749.68
Azimuth:	0	Date Completed:	31/05/2012	Casing (m):	4.88	Elevation (m):	1624
Dip:	-90	Logged By:	BRe	Drill Contractor:	Paycore	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
46	206.7	-89.1
91	214.3	-87.6
137	215.9	-87.5
183	215.5	-87.4
228	209.6	-87.8
274	209.3	-87.8
320	212.2	-87.9
365	215.4	-87.1
411	209.9	-87
436	109.1	-86.4

Blackwater Project
Drill Summary - Lithology

BW0475

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	1.88	OB							Overburden
1.88	10.3	FLPT	bx	BLOCK	L	WH	ALTFR	GR5	90% of clasts are banded. no obvious tertural differences with colour change.
10.3	37	AND	amg	BLOCK	D	GRY	ALTFR	GR10	Bracciated andesite, decreasing breccia intensity down hole.
37	46	VC	volc	LAP	M	GRY			
46	178.3	AND	por	LAP	D	GRY	ALTFR	GR30	Texture distructive silica alteration.
178.3	191.8	AND	bx	LAP	D	GRY	ALTFR	GR30+	brecciated andesite with silica matrix.
191.8	207	AND	bx	LAP	M	GRY	ALTFR	GR30+	texture distructive silica altered, similar to above.
207	330.4	AND	bx	LAP	D	GRY	ALTFR	GR30+	
330.4	353.5	VC	bx	BLOCK	MO	GRY			
353.5	436.6	FLPT	bx	LAP	L	GRY			

Blackwater Project
Drill Summary - Alteration

BW0475		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
1.88	10.3	O		0	CLST	4	MTRX	1	PATC	3	LIM	FC	3				Oxide zone, oxidation following fracture
10.3	26.5	T		0	FR	5		0	PERV	3	LIM	FR	1				
26.5	34.8	S	FR	2	FR	5		0	PERV	3							Chlorite gaining intensity on fracture.
34.8	38	T	FR	1	FR	3		0	PERV	3	LIM	FR	2				
38	45.8	S		0	CLST	3	MTRX	3	MTRX	2							
45.8	178.3	S	FR	2		0		0	PERV	3	TALC	FC	3				
178.3	191.8	S	PERV	1		0	MTRX	5	PERV	3							Silica alteration and bleaching.
191.8	207	S	PERV	1		0	REP	5	PERV	3							Sil 5 texture destructive silica replacement and banding.
207	256	S	PERV	1		0	MTRX	5	PERV	3							
256	331	S	PATC	1		0	PATC	2	PERV	3	CHL	FR	3				
331	332.2	S	PERV	3		0		0	PERV	1	CHL	FR	4				
332.2	341.3	S	PATC	1	FR	4		4	PERV	2	GRNT	CLST	1				garnet replacement of clasts.
341.3	357.5	S	FR	1		0	PERV	4	PERV	2							
357.5	436.6	S	FR	3		0	PERV	5	PERV	1							

newgold
a clear direction

Blackwater Project
Drill Summary - Mineralization

BW0475		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10.3	26.5	DI	0.1		0	DI	0.1										Trace un oxidized sulphide
26.5	37	DI	0.1		0	DI	0.1										Trace Py and Po
37	45.6		0		0		0										Barren VC
45.6	88		0	MA	0.1		1										Po and trace Sp in brecciated andesite.
88	106	FP	0.1	DI	0.1	DI	2										
106	120	DI	0.1	GmR	1	DI	2										
120	137	GmR	1	GmR	1	DI	1	Ga	GmR	0.1							
137	153	GmR	1	GmR	1	DI	1										
153	157.3		0		0		3										Py at lower contact.
157.3	173	DI	0.5	DI	5	DI	2										
173	178.3	DI	0.5	DI	2	DI	0.5										
178.3	181.5	DI	1	DI	2	DI	5										
181.5	186.2		0		0	DI	3										
186.2	191.8	DI	1	DI	5	DI	5										
191.8	207	DI	1	DI	3	DI	1										
207	222		0		0	DI	3										
222	256		0		0	DI	1										
256	280		0		0	DI	1										
280	310		0		0	DI	1										
310	332.2		0		0	DI	1										
332.2	341	BB	1	BB	2	BB	2										metallic and red Sp.
341	344	BB	1	VN	0.5	BB	1	Grnt	CR	0.5							
344	399	DI	1	DI	2	DI	0.1										
399	436.6	DI	0.5	DI	2	DI	2										Sulphides where moving to Po.

Blackwater Project
Drill Summary - Structure

BW0475

From (m)	To (m)	Structure	Strength	Comments
1.88	128	JZ	4	joints 10,60,80
128	192	JZ	2	jints 10, 60, 80
192	204.5	JZ	4	joints 10, 30, 70, 80.
204.5	256	JZ	2	joints 10, 30, 70 , 80.
256	331	JZ	1	joints 30, 50, 60
331	353	JZ	3	joints 30, 60.
353	436.6	JZ	2	joints 0, 30, 60.

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Blackwater Project
Drill Logs

Hole ID:	BW0476	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375501.06
Depth (m):	341.5	Date Started:	25/05/2012	Casing Size:	HWT	Northing:	5893349.83
Azimuth:	0	Date Completed:	29/05/2012	Casing (m):	9	Elevation (m):	1537
Dip:	-90	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	0	-90
50	322.6	-89.6
100	310.1	-89.4
150	337.6	-89.6
250	354.7	-89.1
300	356.3	-89.2

Blackwater Project
Drill Summary - Lithology

BW0476

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9	OB							
9	27.7	VC	plm	LAP	MO	GRN	FLT	GR10	Polymicitc, clasts are typically 2-30mm wide, patchy chl-sil alt obscures primary compostion to some extent, but some clasts have visible phenos. Lower 3m of interval is ~95% felsic/clay altered, and significantly more angular than upper portion.
27.7	86	AND	fltbx		D	GRY	DEP	GR30+	Interval is intermittently faulted throughout, rubbly with frequent low recovery. Competent pieces and clasts are dark weakly feldspar phyric andesite. 63-67m is heavily clay altered ?felsic breccia of highyl angular typically weakly laminated clasts
86	103	VC	plm	BLOCK	D	GRY	DEP	GR30+	Upper 5m is very much mafic dominant, with lapilli-block sized porphyritic and amygdaloidal andesite clasts, downhole is more felsic, with frequent 5-30mm wide massive-laminated felsic clasts. Clast -matrix ration varies from 50-50 to 80-20, and majo
103	123	VC	plm	LAP	MO	GRN	FLT	GR30	Primary compostion somewhat obscured by alteration. ~30-40% clasts in matrix of sand sized grains and secondary silica. Clasts are 5-30mm wide, very rarely larger, subangular-subrounded, very much matrix supported, and larger clasts are typically an
123	138.8	VC	plm	BLOCK		GRY	DEP	GR10	As for 86-103m - appears to be same unit.
138.8	151	VC	plm	LAP	MO	GRY	DEP	GR30	Coarsening downwards sequence, upper ~4m is clast support and well sorted, clasts 2-10mm wide. Below this larger lapilli 1-6cm wide andesitic clasts become increasingly common, ending in gradational contact into simialr unit to overlying, lower conta
151	277.4	VC	plm	LAP	MO	GRN			Texture in interval is increasingly obscured by pervasive sil-ser-chl alt, making clast composition difficult to determine. Unit appears to be largely matrix supported, and ~60-80% clast. Clasts are typically 5-20mm wide, locally up to 5cm wide. Occa
277.4	292.3	VC	plm	LAP	D	GRY	FLT	SH	Interval is ~65% fault breccia ain well developed gouge matrix. Unbrecciated intervals are polymicitc VC which shows distinct 'bedding' in that the degree of clast - matrix support and sorting varies quite markedly. Locally tightly packed clast suppo
292.3	307.8	VC	plm	LAP	M	GRY	DEP	GR10	~50-50 clast - matrix, matrix support throughout, clasts typically angular - subrounded, more often subangular, .5-8cm wide, in matrix of ?sand/secondary silica.

Blackwater Project
Drill Summary - Lithology

BW0476

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
307.8	320.5	VC	ms	CA	M	GRY	DEP	SH	Essentially a coarse sandstone of occasional 0.2-0.8cm wide clasts floating in sand/secondary silica matrix, with occasional 10-80cm wide 'interbeds' of much coarser and less well rounded lapilli sized VC. Lower contact is gradational and clearly de
320.5	325	VC	plm	BLOCK	D	GRY	DEP	GR10	Polymictic VC composed of largely angular andesitic clasts, gradational depositional contacts above and below.
325	341.5	AND	amg		D	GRY	UNKN		Upper 4m is massive and largely aphanitic with only occasional millimetric anhedral ?phenoscrysts, porhyritic texture becomes dominant gradually, and lower 10m is strongly amygdaloidal - porphyritic - ?autobrecciated.

Blackwater Project
Drill Summary - Alteration

BW0476		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9	17.8	S	PERV	2	CLST	1	PERV	3	PERV	3	CLY	SPHL	1				Pervasive modewrate silica-chl-ser alt, with chl more dominant in clasts. Occasional clasts are altered to soft whit kalinite/dickite, as are 1-2mm haloes on some sulphide blebs
17.8	27.5	S	MTRX	1	CLST	4	MTRX	2	MTRX	3							Sil-chl-sericite relegated to matrix as kaolinite/dickite pervasively completelty replace clasts
27.5	52	S	FR	2	FR	1	PERV	3		0	BIOT	MTRX	1				Pervasive moderate silica alt in competent intervals, weakly chloritic fractures occasionally with weakl mushy clay development. Brownish purple ue in matrix - ?biotite
52	56	S	MTRX	2	CLST	4	MTRX	2	MTRX	3							Sil-chl-sericite relegated to matrix as kaolinite/dickite pervasively completelty replace clasts
56	63	S	FR	2		0	PERV	3		0	BIOT	MTRX	1				Pervasive moderate silica alt in competent intervals, weakly chloritic fractures occasionally with weakl mushy clay development. Brownish purple ue in matrix - ?biotite
63	67.5	S	CLST	3	CLST	2	PERV	4	PERV	4							Strong silica with moderate sericite wash throughout, clasts are either chlorite or kaolinite altered.
67.5	82	S	DEF	4		0		0	DEF	3							Interval is pervasively highly chloritic sericitic gouge
82	103	S	CLST	2		0	MTRX	3	PERV	1	CHL	PERV	1	CHL	FR	3	Pervasive but somewhat variably intense silica alt, tending to increase with depth. SOme clasts are partially chloritic, and entire interval has vague greenish ser-chlor wash.
103	122	S	CLST	3	CLST	2	MTRX	3	PERV	3				CHL		2	Pervasive moderate silica-sericite alteration of matrix, felsic clasts are either ser-chlor or kaol/dickite altered. Entire interval is bleached greenish grey
122	151	S	MTRX	2	CLST	1	PERV	3	MTRX	2	BIOT	CLST	1	CHL	FR	3	Pervasive moderate-strong silica alteration in matrix and clasts, chlo-ser throughout matrix. Majority of clasts are andesitic and jthese are sil altered with brownish biotite in groundmass. occasional clasts are partially eaten by very soft (~2) chalky ?
151	183	S	CLST	3		0	PERV	4	PERV	3	CHL	FR	3				Pervasive strong silica-sericite alteration giving glassy sheen and greenish hue, clasts are frequently darker chloritic green. Fractures chloritic throughout

Blackwater Project
Drill Summary - Alteration

BW0476		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
183	228.8	S	PERV	4		0	PERV	4	PERV	3	CHL	FR	3				Pervasive strong silica-chlorite-sericite alt, clasts and matrix affected similarly giving core medium mottled green and glassy hue throughout
228.8	236	S	FR	5		0	PERV	4	PERV	2	CHL	PERV	4				More heavily jointed, locally brecciated interval with intesne velvety black/green chloritie on fractures and around breccia, otherwise similar to above
236	263.5	S	PERV	4		0	PERV	4	PERV	2	CHL	FR	3				Pervasive strong silica-chlorite alt, also near pervasive sericite, more pronounced in some ?felsic clasts. Interval is medium-dark green.
263.5	270	S	FR	3		0	PERV	3	PATC	2	CHL	PATC	2				Moderate sil and chl on fractures throughout, ser-chlo green bleaching is restricted to 267.3-268m
270	273	S	DEF	4		0	CLST	3	PATC	1	CHL	FR	3				Faulted interval, gouge is highly chloritic, competent clasts are similar to above interval.
273	277.4	S	FR	2		0	PERV	3	PATC	3	CHL	CLST	1				Pervasive moderate - strong silica alt, sericite is quite strong in upper 4m, dropping off sharply over lower 3m. Chl on fractures
277.4	292.3	S	DEF	5		0	CLST	1	CLST	1							Interval is largely composed of extremely chloritic gouge, isolated competent clasta are moderately sil-ser-chlor altered.
292.3	320	S	CLST	3		0	PERV	3	CLST	3	CHL	FR	2				A matrix dominated interval in which matrix is pervasively moderately silicified, clasts are ~5070% ser-chl altered, fractures are all weakly chloritic.
320	325	S	FR	2		0	PERV	3		0	CHL	MTRX	1				Interval is moderate-strongly silicified, decreasing in intensity with depth. Weak chl on fractures and occasional short intervals with weak green hue in matrix - chl
325	341.5	S	FR	1	PATC	3		0		0	BIOT	MTRX	2				occasional weakly chloritic fractures, patchy ?biotite in matrix (mixed with sphal - tough to be sure) - interval is relatively soft - <4.5 - combo of ++ sphal and ?clay alt

Blackwater Project
Drill Summary - Mineralization

BW0476		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9	25.5	VN	0.1	CR	0.5		0	Cp	SP	0.1	Apy	VN	0.1	Py	VN	0.1	Quite sporadic mineralization, locally quite well formed fronds of DBS throughout, occasional fine py veinlets +/-trace arseno, isolated instance of fine chalco sitting in matrix. Sphal most common as <1-3mm wide blebs.
25.5	51.5		0	SP	0.1	SP	0.1										Very very scarce fine po and ??sphal in fine specks.
51.5	56	SP	0.1	SP	0.1		0	Dbs	DEN	0.1							Very scarce, fine specks of py + sphal occurring together, alos occasional short but quite weel developed fronds of DBS
56	63.5		0		0	DI	0.5										Quite even spread of fine po throughout
63.5	75		0	CR	0.1	SP	0.1										Occasional 1-2mm wide specks of sphal replacing clasts, very scarce fine specks of po
75	77.5	GOU	0.1		0		0										Trace fine py in gouge
77.5	83.5	SP	0.1	CR	0.1		0	Dbs	DEN	0.5							Quite frequent short but well developed strands of DBS, occasional fine specks of py and sphal.
83.5	100	SP	0.1	CR	0.5	SP	0.1										Very occasional specks of po ans brassy-sooty py in matrix, more frequent but still scarce 1-2mm wide blebs of sphal replacing clasts
100	107.5		0	CR	1	SP	0.5	Po	VN	0.1	Dbs	DEN	0.1				Quite frequent sphal as specks in clasts and occasionally forming disitinct rims to clasts. Also patches of fine po <0.5%. Occasional well developed sooty DBS with po in fine veinlets.
107.5	113.5	VN	0.1	CR	0.5	CR	1										Frequent specks of po intergrown with sphal replacing clasts, occasional hairline py +/- po veinlets
113.5	122.5	DEN	0.1	CR	2.5	CR	0.5	SoSu	DEN	0.1							Frequent blebny sphal replacing clasts with lesser po in similar form. Patchy well developed fronds of dendritic py + sooty sulphide. Mineralization decrease over lower 3m.
122.5	140	VN	0.1	CR	0.5	CR	0.5										Quite frequent fine specks of sphal in clasts, most prominent in larger andesitic clasts, typically accompanied by even finer specks of po. Very scarce fine discontinuous py veinlets.

Blackwater Project
Drill Summary - Mineralization

BW0476		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
140	151	SP	0.1	SP	1	SP	0.5										Fine (<1mm) specks of sphal> po and occasionally ?brassy py disseminated throughout
151	155.5	VN	1	SP	0.5	BB	0.5	Py	SP	0.1							Greater number of large laminated felsic clasts with moderate density of fine brassy py/DBS following laminae. Otherwise similar to above.
155.5	158.5	GOU	0.5	CR	0.5	SP	0.1	Py	FP	0.1							Locally quite dense py in gouge, also py on fractures in fault breccia. Otherwise typical specks of sphal>po in clasts
158.5	164.5	FP	0.1	CR	1	CR	1.5	Py	SP	0.1							Frequent 2-15mm wide intergrown masses of po>sphal replacing clasts, trace py in similar style and frequently coating fractures planes.
164.5	187.7	FP	0.1	BB	1.5	BB	2.5	Py	SP	0.1							Similar style of mineralization to above interval, but greater density and on average larger blebs of intergrown po and sphal. Py on fractures. Really quite consistent mineralization.
187.7	189.6	VN	1	BB	2	BB	2	Py	FP	0.1	Apy	VN	2				SImilar background disseminated blebs of sphal and po as present above, frequent 1-10mm wide irregularly shaped belbby veinlets of massive py. ~7cm thick massive arsenopyrite + qtz vein at 189.4m
189.6	197	SP	0.1	BB	1.5	BB	3	Mrc	FP	0.1	Sp	VN	0.1				Interval is quite dense with 1-5mm wide blebs of po>sphal, often intergrown. Trace specks of ?brassy py, and weak marc/py on fractures. Occaisonal 1-2mm wide planar sphal veinlets.
197	208.5	SP	0.1	BB	2	BB	4.5	Mrc	FP	0.1							Interval is heavily mineralized with 1-6mm wide blebs of po, often intergrown with sphal and ??fine py. Marcasite and py on occasional fractures.
208.5	223.7	VN	0.5	VN	0.5	BB	4.5	Sp	BB	2	Mrc	FP	0.1	Py	BB	0.1	As above with the addition of occasional 2-5mm wide py + sphal veinlets.
223.7	235.5	FC	1.5	CR	2	BB	3	Mrc	FP	0.5	Py	SP	0.5				Intermittently brecciated interval, matrix to breccias is mixed chlorite and sooty py (fracture controlled). Unbrecciated intervals are heavily mineralized with 2-15mm wide blebs/clast replacment sphal and po, typically intergrown.

Blackwater Project
Drill Summary - Mineralization

BW0476

From (m)	To (m)	Pyrite Style	Pyrite Pct	Sphalerite Style	Sphalerite Pct	Pyrrhotite Style	Pyrrhotite Pct	Mineral 1 Code	Mineral 1 Style	Mineral 1 Pct	Mineral 2 Code	Mineral 2 Style	Mineral 2 Pct	Mineral 3 Code	Mineral 3 Style	Mineral 3 Pct	Comments
235.5	245.5	VN	0.1	CR	2	BB	5.5	Py	SP	0.5	Mrc	FP	0.1				Frequent 0.5-6cm wide blebs of po, smaller blebs are frequently intergrown with sphal - appears to be clast replacement as well as just sporadic blebs. Marc +/- py on fractures and occasional fine py stringers.
245.5	256	BB	1	CR	2	BB	4	Mrc	FP	0.1	Py	VN	0.1				Similar clast replacemtn/blebs of sphal, often intergrown with po, significant increase in frequency and size of py blebs, reduction in density and size of po blebs.
256	269	VN	1	CR	2	BB	3	Mrc	FP	0.1	Py	SP	0.1				Similar background mineralization of po>sphal>>py replacing clasts in 1-5mm wide blebs, also frequent 1-4mm wide late stage py veinlets, locally visible to be filling ?C-S fractures (257.8m)
269	272.9	GOU	1.5		0		0										Gougy interval with fine and blebby (up to 2mm) py disseminated throuhgout.
272.9	277.4	VN	1.5	VN	0.5	CR	1.5	Sp	CR	1	Apy	VN	0.5				Frequent very fine anastamosing veinlets of py, also frequent 1-3mm wide planar veinlets of py>sphal + arseno. Clasts are frequently partially replaced by po and sphal.
277.4	292.3	GOU	2	CR	0.5		0										Frequent specks and blebs of py disseminated in gouge, small blebs of sphal replacing clasts in breccia, lower 1.5m particularly rich.
292.3	307.9	VN	0.5	CR	2.5	CR	3	Py	BB	1	SoSu	STR	0.1				Frequent complete replacement of smaller clasts by po +/- sphal, larger clasts and felsics are frequently partially replaced by intergrown po + sphal, occasionally py. Py also occurs in frequent fine stringers, and occasional 1-10mm wide blebs. Very
307.9	317	SP	0.5	CR	1.5	CR	1	Sp	VN	0.1							Small clasts are frequently replaced by sphal and po, still in quite high densityies but significantly reduced from above. One 2mm wide sphal veinlets perpendicular TCA at 313.3m. Po occasionally has trace py intergrown with it.

Blackwater Project
Drill Summary - Mineralization

BW0476		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
317	327	VN	0.5	CR	2	BB	1.5	Sp	VN	0.1	Po	VN	0.1				Quite frequent 1-2mm wide planar py +/- po + sphal veinlets. Frequent 1-3mm wide blebs of sphal and po either replacing clasts or as disseminated blebs
327	336	VN	0.1	DI	3.5	BB	1.5										Locally very dense cluster of fine sphal blebs and larger po blebs, occasional py partially replacing carbonate in veinlets
336	341.5		0	DI	1	DI	1										Similar style of sphal + po to above siginifcantly reduced density to above

Blackwater Project
Drill Summary - Structure

BW0476

From (m)	To (m)	Structure	Strength	Comments
9	30	FZ	3	Intermittently brecciated and locally gougy throughout. Most intense gouyge zone 26-27.5m
30	38	BRKZ	2	Moderately rubly, very weak gouge at top of interval.
38	41	FL	3	Modertae, locally quite heavy brecciation ascociated with weak patchy gouyge devlopment along denser fracture networks.
41	74	FZ	4	Rubbly and poor recovery throughout, frequent brecciation, often associated with weak gouge devlopement.
74	83	FL	4	Hevavily brecciated with pervasive moderate gouyge devlopment, locally very poor recovery.
83	104	JZ	3	Locally broken, otherwise moderately jointed. 25 or 50 degTCA
104	122	JZ	1	Very weakly jointed
122	123.5	FL	3	Rubbly with small amounts of gouge, short discreet faulty breccia at top of interval @80degTCA. Lithology break.
123.5	137.3	FL	2	Rubbly with weak clay gouge devlopment.
137.3	153	JZ	2	Weakly jointed, wide variety of angles from 15-60degTCA
153	157	FL	3	High fracture density throughout, frequent dusty gouge on fracture planes, and ~1.5m of fault breccia in gouge matrix 154-155.5m
157	177	JZ	2	Joints are largely between 35-45degTCA
177	180	BRKZ	3	Heavily jointed/rubbly
180	215	JZ	2	weakly jointed, angle increases from 15-40 downhole
215	216.5	BRKZ	3	Moderately rubbly/heavily jointed throughout
216.5	223	JZ	2	Joints at 40-50degTCA
223	236	FZ	3	~50% of interval is competent tight packed breccia with vague mosaic fit - could be hydrobreccia. Remiander is heavily jointed to rubbly, with small amiounts of heavily chloritic gouge on fracture planes.
236	260.5	JZ	3	Weak to moderate jointing, variety of angles, most commonly ~40, but sometimes ~15 and ~65degTCA
260.5	263	FZ	3	High fracrure density and local fault breccia with weak gouge development
263	270	JZ	3	Frequent joints, typically at 35degTCA, often antithetic.
270	273	FZ	4	Localaly poor recovery, upper 1.5m is fault breccia in gouge mnatrix, remainder is rubbly.
273	277.4	JZ	2	Frequent joints and veins at 40degTCA
277.4	292.3	FL	5	Interval well developed fault breccia in gouge matrix, upper contact is sharp at 40degTCA, and aligned elongate clasts in breccia at 280.65m are also at 35degTCA
292.3	327	JZ	2	Occasional clean joints at 35-40degTCA, occasional conjugates at simlar angle but opposite dip direction.
327	327.8	FL	2	Majority of interval is heavily jointed/rubbly, lower 20cm is fault breccia in poorly devloped gouge matrix

Blackwater Project
Drill Logs

Hole ID:	GM12-01	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375101.32
Depth (m):	400	Date Started:	17/02/2012	Casing Size:	HWT	Northing:	5892739.25
Azimuth:	180	Date Completed:	02/03/2012	Casing (m):	18	Elevation (m):	1613
Dip:	-65	Logged By:		Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	180	-65
49	182.9	-64.7
100	186.9	-64.7
151	188.2	-64.2
199	189.9	-64.4
250	192.3	-63.7
301	191.9	-62.7
352	190.7	-62.6
400	190.9	-62.2

Blackwater Project
Drill Summary - Lithology

GM12-01

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	10.3	OB							
10.3	40	VC	a	FA	M	GRY			Intermediate medium grey pyroclastic surge with entrained felsic clasts. Matrix is a fine ash, felsic clasts occur sporadically throughout the unit. A number of different alteration sequences occur within.
40	68.9	VC	volc	BLOCK	D	GRY	DEP	GR30	Polymictic volcaniclastic. Large blocks of porphyritic andesite. 20cm clasts of FT. Limonite on fractures.
68.9	79	VC	volc	LAP	M	GRY	DEP	GR10	polymictic "black and white" volcaniclastic. 50-50 mafic to felsic. Mafic groundmass.
79	92.5	VC	mon	BLOCK	D	GRY	FLT	GR10	Majority of clasts are andesite. Faulted lower contact with andesite.
92.5	125.5	AND	volc	BLOCK	D	GRY			Dark grey andesite with local intervals of polymictic volcanics. Clasts of VC? Clasts are very angular to rounded. Moderate sulphides
125.5	172.7	VC	bx	BLOCK	M	GRY			Interesting interval. Section goes from andesite to FT for 3m to brecciated 50-50 mafic to felsic volcaniclastic lens at 136.5 to 140m. Alteration masking VC towards 155m.
172.7	261.8	AND	autbx	LAP	D	GRY	FLT		Clastic andesite, often silica overprinted, short zone of clay altered and silica overprinted prophyritic texture.
261.8	274	FT	mas		MO	GRN		SH	Felsic tuff (?), alteration obscured (chlorite/sericite/clay?), also some oxidation
274	314	AND	volc	LAP	MO	GRY			Andesite with volcanoclastic texture. Areas of bleaching with strong chlorite and sericite
314	390.4	VC	plm	LAP	MO	GRY	DEP	GR30+	Primary texture in upper 50m is largely destroyed by extensive silicification. Where visible clealry clastic, and appears polymicitc, although degree of felsic material which is primary is questionable. Clasts are rounded to subangular, though clast
390.4	400	VC	ms	LAP	D	GRY	UNKN		~95% mafic clasts, largely ang-subang, occasionally subrounded clasts.

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Blackwater Project
Drill Summary - Alteration

GM12-01		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
10.3	15	O		0	CLST	1		0	CLST	1	LIM	FR	1				Weak sericite/clay alteration of clasts
15	30.7	O		0	OP	1	PERV	5	OP	2	LIM	FR	3	HM	FR	2	Oxide zone pitted vuggy strongly silica altered pyroclastic ash surge. Primary textures are completely obscured locally ghost clasts are observed.
30.7	40	T	FC	1	SPHL	2	PERV	5	OP	2	LIM	FR	1				Strong silica alteration local elongated silica altered welding texture, clay alteration halos around sulphides (replacing felsic clasts?), trace chlorite on fractures
40	66	T	PERV	2	FR	2	PERV	3	CLST	1	LIM	FR	2				increase in chlorite. More mafic.
66	92.5	S	PERV	3	FR	1	PERV	3	CLST	1	BIOT	PERV	1				mafic volcaniclastic. Strong chlorite.
92.5	128.5	S	PERV	4	FR	1	PERV	3	CLST	1	BIOT	PERV	2				Typical andesite with strong chlorite. Local intervals of more felsic VC. Clasts of it.
128.5	131	S	PERV	3	FR	1	PERV	3	PERV	3							increase in serecite and chlorite in small FT package.
131	153.5	S	PATC	4		0	PATC	4	PATC	1	SIL	CLST	3				patchy alteration, increase silica groundmass in VC sections. Patchy silia flooding.
153.5	172.5	S	PERV	3		0	PERV	5	PATC	1	BIOT	PATC	2				strong silica.
172.5	238.5	S	PATC	2	PATC	2	PERV	4	PATC	1	BIOT	PATC	1	CAL	INFILL	1	Strong pervasive silica, sometimes overprinting clay alteration; patchy biotite, patchy sericite esp. around veins; weak chlorite; weak calcite, moderate talc infilling fractures
238.5	244	S	PERV	4	PERV	1	PATC	1	PERV	2							Short zone of fractured rock, strong chlorite, weak clay/sericite, weak silica, if any.
244	261.8	S	PATC	2		0	PATC	3		0	BIOT	PATC	1				Weak chlorite, moderate silica
261.8	268.5	T	PATC	2	PATC	2	PATC	2	PERV	2	LIM	FC	2				Transition zone around faulted material, patchy sericite, chlorite and probably clay, with patchy silicification
268.5	274	S	PERV	2	PERV	1	PATC	2	PERV	3							Moderate to strong pervasive chlorite, also sericite, patchy silica and clay
274	284.5	S	PATC	3	PATC	2	PATC	2	PATC	3							Patchy sericite/clay/silica, patchy chlorite especially strong around fractures and in fault gge
284.5	288	T	PATC	3	PATC	1	PATC	3	PATC	1	LIM	FC	2				Fracture controlled limonite, patchy, weak sericite/clay, stronger chlorite in gge, patchy silica

Blackwater Project
Drill Summary - Alteration

GM12-01		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
288	305.8	S	FC	3	PATC	1	PERV	1	PATC	2							Weak pervasive silica, chlorite around fractures, patchy sericite/clay
305.8	313.1	T	FR	3		0	PERV	2		0	HM	FC	1				Moderately chloritc fractures, frequently in concert with rusty orange Fe oxide.
313.1	334.7	T		0		0	PERV	5		0	HM	FC	2	HM	PATC	1	Intense, texture destructive sil throughout. Haem on majority of fractures and in occasional centimetric patches
334.7	336.2	O	DEF	2		0	PERV	4		0	HM	FC	4				Heavily fractured - brecciated interval, fractures focusing Fe oxide mineralization and locally chlorite. Sil is still pervasive.
336.2	341.6	T	FR	1		0	PERV	5		0	HM	FC	3	HM	PATC	3	Intense sil throughout, trace chl on occasional fractures, Fe oxide ficused around fractures throughout, and locally staining groundmass in centimetric patches.
341.6	345.9	S	FR	4	PATC	1	PERV	3		0							Fault zone, majority of fractures and sandy gouge intervals are highly chloritic. Majority of interval is still composed of silica, with occasional soft ?clay rich patches.
345.9	375.3	T		0	PATC	1	PATC	5		0	HM	FC	2				Majority of interval is heavily silicified, but occasioanl large clasts and short intervals are ?unaltered, ?weakly clay altered (softer - ~4-5). Rusty red-orange Fe oxide staining on some fracture, occasional black ?goethite.
375.3	400	S	FR	1		0	PERV	4		0	CHL	VNHL	1				Occasional weak vein centric chloritic haloes. Pervasive silicifcation, thoiugh texture is relatyively untouched.

Blackwater Project
Drill Summary - Mineralization

GM12-01		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
10.3	30.7		0		0		0	Goe	FP	3	Jaro	FP	2	Hm	FP	0.5	Oxide minerals on fractures and locally more pervasive, abundant pitted, dippled leached sulphide sites suggesting prior pyrite and sphalerite mineralization
30.7	40	DI	2.5	DI	1.5	DI	0.1	Dbs	DEN	0.5	Goe	FP	0.5	Jaro	FP	0.1	Strong smeared pyrite/sphalerite dissemination with trace pyrrhotite and minor DBS, locally pyrite in small wavy staggered veinlets becoming oxidized
40	60	DI	0.5	DI	0.5	DI	0.5	Dbs	DEN	0.1	Goe	FP	1				moderate sulphides
60	78	DEN	0.5	DI	0.1	DI	1	Po	CR	0.5							increase in po.
78	92.5	VN	0.5	DI	0.1	DI	0.5	Py	DI	0.5							increase in pyrite veinlets in mafic volcaniclastics
92.5	105.9	BB	0.5	BB	0.5	BB	0.5										moderate py>sp>po
105.9	124.5	BB	0.5	BB	0.1	BB	0.5										decrease in sphalerite. Moderate po.
124.5	155	BB	0.5	BB	0.1	BB	0.5	Cp	SP	0.1							weak sulphides with trace cpy at 138.5m
155	173	BB	0.1		0	BB	0.1										weak sulphides
173	192		0		0	CR	1.5										Po infilling amygdules with chlorite
192	210	FP	0.1		0	CR	1.5										Py (marcasite) on occasional fractures, po replacing clasts/infilling amygdules
210	235	FP	0.1	CR	0.5	CR	1.5	Py	VN	0.1							Po replacing clasts, some py veinlets and some py on fractures, minor sph replacing clasts
235	238	VN	0.5	CR	1	DI	1										Sph replacing phenocrysts, py in veinlets, minor di po
238	244.8	VN	0.5	VN	0.1		0	Py	DI	0.5							Py and sph veinlets, with minor di py
244.8	262	DI	1		0	DI	2										Di po>di py
262	268.5	DI	0.5		0		0	Goe	FP	5	Hm	FP	1				Transition zone, with fracture controlled goethite and some hematite, and minor di py
268.5	286	DI	1		0	DI	0.5										Weak di py and po
286	304	DI	1		0	DI	1										Weak di po and py, some py in veins w/ qtz
304	338.5		0		0	SP	0.1										Essentially dead, very scarce specks of Po in clasts.
338.5	339.5		0		0		0	Dbs	DEN	0.5							Small amount of quite well developed black dendritic material, overprinted by sil so ?DBS, could be ?goethoite

Blackwater Project
Drill Summary - Mineralization

GM12-01		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
339.5	345.9	VN	0.5		0		0	Py	DI	0.5							Quite frequent py + sooty sulphide stringers, and ~50cm at heart of fault with fine oy disseminated throughout
345.9	369.5		0		0	SP	0.1										Essentially dead, very very scarce fine specks of po.
369.5	378.5		0	SP	0.1	SP	0.5										Quite frequent very fine specks of Po, occasional sphal
378.5	398		0		0		0										Dead
398	400		0		0	SP	0.5										frequent very fine specks of Po.

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Blackwater Project
Drill Summary - Structure

GM12-01

From (m)	To (m)	Structure	Strength	Comments
10.3	13.1	BRKZ	3	Moderately broken and rubble zone
13.1	26.7	JZ	2	joint sets at 30 and 60 degrees
26.7	27.05	FL	3	main body of fault
27.05	62.4	JZ	3	jointing at 20 and 50 degrees
62.4	62.7	FL	3	small fault, 40 TCA, minor slicks
62.7	78.8	JZ	3	jointing from 25 to 55
78.8	91	BRKZ	4	broken core
91	92.5	FL	4	Fault, clay gouge.
92.5	116.9	JZ	3	jointing at 45 t.c.a Oriented core starts at 112m.
116.9	125.5	BRKZ	3	broken core, some intact
125.5	142.5	JZ	3	moderate jointing
142.5	142.6	VZ	3	alpha 30, beta 145
145	145.1	VZ	3	small vein
146.7	146.8	VZ	3	vein 25 tca/50 beta
148.8	148.9	VZ	3	vein
149.2	149.2	LY	3	contact, sharp, 70, 165
149.2	208	JZ	3	stick rock, joints from 20 to 50 to core axis
208	238.8	BRKZ	3	Broken zone, uphole of short fault
238.8	245	FL	4	Fault with patchy clay gge and rubble
245	258	BRKZ	3	Broken zone, between two faults
258	304	FZ	4	Fault zone, with clay gge and bx
304	316	BRKZ	3	Moderately rubbly throughout
316	320.2	FZ	2	Rubbly with two isolated 30cm intervals of sandy gouge and brecciation.
320.2	341.5	BRKZ	3	Heavily fractured, locally quite intensely rubbly
341.5	345.9	FZ	4	Heavily fractured, locally brecciated 30cm of fault gouge at 342.6-343m
345.9	370	BRKZ	2	Heavily fractured, locally rubbly
370	400	JZ	2	Also joints at 55-60degTCA

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Drill Logs

Hole ID:	GM12-02	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375501.87
Depth (m):	400	Date Started:	03/03/2012	Casing Size:	HWT	Northing:	5892759.6
Azimuth:	180	Date Completed:	14/03/2012	Casing (m):	21	Elevation (m):	1621
Dip:	-65	Logged By:	KOI	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	180	-65
49	179.6	-64.8
100	180.3	-65.2
151	181	-65.5
202	181.2	-65.3
250	184	-65.2
300	185	-64.8
352	185.9	-62.9
400	188.2	-61.3

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Drill Summary - Lithology

GM12-02

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	5	OB							overburden
5	80	FLPT	volc	LAP	VL	GRY	DEP	GR30	Very light grey felsic lapilli tuff with poorly sorted, laminated, intensely clay altered clasts. Silicified matrix with extensive disseminated sulphides and oxidation on fracture planes. Some intervals are massive (? felsic tuff or bleached zone)
80	112.9	VC	volc	LAP	M	GRY	DEP	GR30+	VC with a strong majority of felsic clasts - ~1% mafic. Many clasts are chloritized and distinction of mafic to felsic clasts is unknown. Moderate to well sorted, subrounded to variably subangular, polymictic. Grades into coarser, poorly sorted, matr
112.9	137.5	VC	volc	BLOCK	M	GRY	UNKN	GR30+	Similar to unit above but with larger clasts - up to small block, matrix supported and relatively poorly sorted compared to the overlying VC unit. Unknown bottom contact with FLPT unit.
137.5	153	FLPT	bx	LAP	M	GRY			Green to grey FLPT: poorly sorted, matrix supported, banded. SHORT BANDED INTERVALS (<50 cm) = ? tuff or tuff clast ?
153	194.5	VC	lptbx	BLOCK	M	GRY	DEP	GR10	Lapilli tuff breccia: poorly sorted, with ash to block sized angular clasts, polymictic, dominated by banded felsic clasts and massive felsic clasts with lesser mafic clasts (both massive and plag-phyric andesite). Matrix supported with local zones
194.5	204	VC	lptbx	BLOCK	M	GRY	DEP	GR30+	Same as above with more mafic clasts - short (<1m) intervals with 100% felsic clasts and others with 100% mafic clasts. Andesite with sulphide mineralized clasts.
204	215	VC	volc	LAP	M	GRY	DEP	GR30+	input from geo quick log!
215	227.2	VC	volc	LAP	M	GRY	DEP	SH	as above with 25% mafic clasts.
227.2	229	FT	lam	FA	M	GRY	DEP	GR5	Medium green-grey laminated felsic tuff with alternating light and dark bands. Volcaniclastic texture is due to some fiamme at the base of this interval. Laminations are oriented 60 degrees (alpha) towards O degrees (beta) relative to reference line.
229	240	VC	volc	LAP	M	GRY			as unit two above with 50% mafic clasts.
240	258.5	VC	volc	BLOCK	M	GRY	DEP	SH	Polymictic, volcaniclastic that gets increasingly mafic with depth to (75% mafic clasts at base of interval). Poorly sorted, fine lapilli to block sized, matrix supported, subangular to subrounded clasts with edges that have been blurred by alteratio
258.5	262	VC	volc	LAP	D	GRY	DEP	GR10	Volcaniclastic with 100% mafic clasts, subangular to subrounded, variably clast supported. Clasts are a massive to plag-phyric andesite. The matrix is a hazy-blue sericite-sililca. Lower contact is gradational over 10 cm.

Blackwater Project
Drill Summary - Lithology

GM12-02

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
262	269	VC	plm	BLOCK	M	GRY	DEP	GR30+	Polymictic, block sized, mafic dominant, poorly sorted, subangular to subrounded clasts. Banded clasts, plag-phyric andesite, massive mafic, massive felsic. Matrix supported.
269	280	VC	plm	BLOCK	M	GRY	DEP	GR30+	as above without banded felsic clasts.
280	290	VC	plm	LAP	M	GRN	DEP		NICE VOLCANIC SEQUENCE! Upper part of interval is a fine to medium lapilli, clast supported, well sorted that grades into a poorly sorted, block sized clasts, matrix supported. Clasts are polymictic: plagioclase porphyritic andesite, massive andesite
290	345	VC	plm	BLOCK	M	GRY	DEP	GR30+	Polymictic, block-sized volcaniclastic, clast to matrix supported, subrounded volcaniclastic. Clasts are plagioclase porphyritic andesite, massive andesite, and massive felsic.
345	354	VC	plm	BLOCK	D	GRY	UNKN		Volcaniclastic, as above, with subrounded to subangular clasts that at up tp 90% mafic (plagioclase porphyritic andesite and massive andesite). Common elongation of c-axis in clasts creating a foliation.
354	360	AND	bx	LAP	D	BLK	UNKN	GR30+	Grey to black andesite with plagioclase phenocrysts and minor brecciation (lapilli sized fragments). Lower contact is difficult to put your finger on. Late calcite veining.
360	400	SED	mud		D	BLK			Very dark grey to black mudstone (sedimentary) with weak bedding showing normal, graded bedding. Late calcite veining.

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Drill Summary - Alteration

GM12-02		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
5	68.8	T		0	CLST	5	MTRX	3	CLST	2	SER	PATC	4	CLY	FR	2	Strong clay alteration of clasts, sericite alteration is patchy in both the matrix and clasts. Oxide on fracture planes and patchy throughout the rock. Oxide is also strong in gouge zones.
68.8	80	S		0	CLST	3	MTRX	4	CLST	3	SER	MTRX	2	CLY	FR	2	Sulphide zone - no oxide.
80	112.9	S	CLST	1	CLST	4	CLST	2	PERV	2	SER	CLST	3	SER	MTRX	1	Strong silicification of the matrix. Chlorite mineralization of clasts makes determining felsic to mafic abundance difficult. Sericite alteration is dominant in the clasts but also present in the matrix.
112.9	124	S	CLST	3	CLST	3	MTRX	4	CLST	3	SER	MTRX	1	CHL	FR	3	Stronger chlorite alteration than above.
124	137.5	S	CLST	3	CLST	3	MTRX	4	CLST	3	SER	MTRX	1	CHL	PATC	4	Stronger chlorite throughout - as patches proximal to sulphide mineralization (Py, Sp, Po). Clay on fracture planes and on vein walls (pale green) of hairline pyrite veins.
137.5	153	S	CLST	2	CLST	2	MTRX	4	CLST	4	SER	PATC	3	CHL	PATC	3	Slightly less chlorite than above, although still strong. Strong sericite.
153	194.5	S	CLST	2	FR	1	MTRX	4	MTRX	2	SER	CLST	2	CHL	FR	3	Alteration is variable over 1 meter intervals within this unit: i.e. stronger chlorite zones, weak sericite. Biotite alteration in mafics.
194.5	206	S	CLST	4	CLST	3	MTRX	4	MTRX	3	SER	CLST	2	CHL	MTRX	1	A patchy, hazy bluish grey sericite alteration proximal to the mafic rich zones, with patchy, weak chlorite alteration throughout. Strong chlorite on fractures with marcasite. Sulphide mineralization concentrated in clasts.
206	227.2	S	CLST	3	CLST	3	MTRX	4	CLST	3	SER	MTRX	2	CHL	FR	4	Strong CHL on fractures, moderate SER, CHL, CLY of clasts, strong, matrix dominant silica with weak matrix sericite.
227.2	229	S	PATC	3	FR	1	PERV	4	PERV	3	CHL	FR	4				Moderate, pervasive sericite alteration, patchy chlorite, pervasive silica. Strong chlorite, weak clay on fractures.
229	240	S	FR	4	CLST	2	MTRX	4	MTRX	2	SER	CLST	1	CHL	CLST	3	Matrix: strong SIL, weak SER. Clasts: Weak SIL, SER, moderate CHL and CLY. Mechanical clay gouge with sulphide mineralization. Most clasts are chlorite altered (mafic) or sericite/clay altered (felsic).

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Blackwater Project
Drill Summary - Alteration

GM12-02		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
240	258.5	S	CLST	3	CLST	3	MTRX	4	MTRX	1	SER	CLST	3	CHL	FR	3	Sericite, chlorite, clay, and weak biotite, silica alteration of clasts. Strong silicification of the matrix. Clay on fractures.
258.5	262	S	CLST	1	FR	2	MTRX	2	MTRX	4	BIOT	CLST	3	CHL	FR	3	Strong sericite silical alteration of the matrix. Strong biotite of clasts.
262	271	S	FR	3	FR	1	MTRX	5	CLST	2	SER	MTRX	1	CHL	CLST	3	STRONG silica in matrix, blurring the clast boundaries. Weak sericite in the matrix. Chlorite-sericite alteration of clasts. Clay on fracture planes.
271	280	S	FR	4	FR	5	MTRX	4	MTRX	2	CHL	CLST	2	CLY	CLST	3	Strong mechanical clay on fractures - in gouge zones - sulphide mineralized. Sericite-silica matrix, strong chlorite on fracture planes.
280	290	S	CLST	1	CLST	2	CLST	3	CLST	1	SIL	MTRX	4				Less sericite, clay and chlorite than above. Moderate to strong silica in the matrix and clasts.
290	314.5	S	CLST	2	FR	3	MTRX	4	PERV	2	CLY	CLST	1	SIL	CLST	2	Strong silica alteration of the matrix, pervasive sericite alteration, chlorite and clay on fracture planes, weak silica and clay alteration of clasts.
314.5	353	S	FR	4	FR	2	MTRX	3	MTRX	2	CHL	CLST	3	BIOT	CLST	3	Biotite is clast dominant to pervasive, sericite/silica matrix/groundmass. Chlorite alteration of clasts and on fractures (with slicks). Clay on fractures (some clast replacment)
353	360	S	FR	3	FR	4	MTRX	1	MTRX	2	BIOT	CLST	3				Variable alteration style in this interval. Sericite and silica typically restricted to the matrix. Biotite alt of clasts/andesite. Chlorite and mechanical clay on fracture planes.
360	400	S	FR	2	FR	2	PERV	1		0	BIOT	PERV	1				Late calcite veining with brittle brecciation.

Blackwater Project
Drill Summary - Mineralization

GM12-02		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
5	25.91		0		0		0	Dbs	DI	0.1	Hm	FP	2	Goe	FP	3	Stong oxide, predominantly geothite and hemiatite with lesser jarosite. Minor unidentified black sulphide disseminations. 2-3% empty disseminated sulphide (typically cubic) casts.
25.91	46		0.1		0		0	Hm	FP	3	Goe	FP	2				Trace pyrite disseminations (with pervasive casts of cubic disseminated sulphide). Moderate to strong oxide.
46	51	DI	0.1		0		0	Dbs	VN	3	Hm	PERV	4				Sudden increase in sulphide content - predominantly disseminated to veined DBS with trace disseminations of brassy pyrite.
51	68.8	DI	0.1		0		0	Dbs	DI	0.5	Hm	PERV	3	Goe	FP	1	Sudden decrease in sulphide content, minor DBS and trace pyrite.
68.8	80	DI	1	CR	1		0	Dbs	DI	0.5							Sulphide Zone: increase in sulphides, pyrite as very fine pervasive disseminations, sphalerite as red clusters in clasts. DBS as fine disseminations. 1% sulphide goo in fault zone.
80	96	DI	1	CR	1		0	Dbs	VN	1							Faulted and clay gouge zone so mineralization is hard to determine. Sooty disseminated Py, clast replacement Sp, veined DBS.
96	99	MA	8		0		0										Disseminated to massive, metallic to sooty pyrite with vuggy silica (3%).
99	108	DI	1.5	CR	1	DI	0.5	Dbs	VN	0.5	Py	VN	0.5				Py = diss. and veined; DBS as hairline veins; Sp as clast replacement; Po = diss.
108	112	DI	2	CR	2	DI	0.5	Dbs	VN	0.5							greater Py and Sp than above.
112	123	DI	1	BB	1.5	BB	1	Dbs	VN	1							lesser pyrite and sphalerite than above. Slightly more pyrrhotite.
123	134	DI	2	BB	1	BB	1	Dbs	VN	1	Py	VN	1	Sp	VN	0.5	CPY = specks in Po blebbs. Sphalerite and pyrite veined together.
134	137.5	VN	1	BB	3	DI	1	Dbs	VN	0.5							Less pyrite than above. Greater sphalerite.

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Blackwater Project
Drill Summary - Mineralization

GM12-02		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
137.5	153	DI	1	MA	2	BB	1	Dbs	VN	1							Sphalerite as red and black, disseminated to massive (lesser veined with py). Py as disseminations and lesser veined with sphalerite. Pyrrhotite as blebbs to finer disseminations.
153	175	VN	1	VN	1	CR	2	Dbs	DEN	0.5	Mrc	FP	0.5	Cp	VN	0.1	Pyrite in veins with sphalerite, quartz and trace chalcopyrite. Marcacite on fracture planes. Pyrrhotite and sphalerite as clast replacement. Sulphide mineralization is concentrated in clasts. Plus multidirectional pyrite stringers
175	194	VN	1	CR	2	CR	2	Dbs	DI	0.5	Mrc	FP	0.5	Cp	VN	0.1	Fine, hairline pyrite veinlets, sp and po disseminated in clasts. Fine dendric, disseminations of DBS, trace chalcopyrite in veins with pyrite and sphalerite.
194	204	CR	1	CR	1.5	CR	1	Dbs	DEN	0.1	Mrc	FP	0.1	Py	VN	1	Sulphid mineralization concentrated in mafic clasts, but not restricted to.
204	222.1	VN	0.5	CR	1.5	CR	1.5	Mrc	FP	0.1	Cp	VN	0.1				Similar mineralization style as above. Sphalerite+pyrite+chalcopyrite veins, hairline pyrite veins.
222.1	240	VN	0.5	CR	1	CR	1.5	Mrc	FP	0.1							Fine, hairline pyrite veinlets, wispy sphalerite, pyrite, pyrrhotite veins.
240	258.5	CR	0.5	CR	1	CR	2	Mrc	FP	0.5	Cp	SP	0.1				Sulphide mineralized clasts. Pyrite, sphalerite, pyrrhotite as clast replacement. Chalcopyrite specks in blebbs of pyrrhotite and sphalerite. Fine, discontinuous veins of pyrite - multi directional.
258.5	262	GmR	1	GmR	1	GmR	1.5	Mrc	FP	0.1							Sulphide mineralization is within the ground mass. Marcasite on fracture planes.
262	271	CR	1	CR	1.5	CR	1.5	Mrc	FP	0.1							Sulphide mineralization as clast replacement. Pyrite stringers.
271	280	VN	3	BB	1	BB	1.5	Py	DI	1	Mrc	FP	0.1	Cp	VN	0.1	Zone of concentrated pyrite veining. Blebbs of pyrite, sphalerite and pyrrhotite found proximal to veining. Trace arsenopyrite and chalcopyrite in pyrite veins. Marcasite on fracture planes.

Blackwater Project
Drill Summary - Mineralization

GM12-02		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
280	290	DI	0.1	CR	1	CR	1.5	Mrc	FP	0.1	Py	VN	0.1				Sphalerite and pyrrhotite as clast replacement. Pyrite as fine grained, pervasive disseminations and as hairline veins. Marcasite on fracture planes.
290	320	VN	1.5	CR	1	CR	2	Mrc	FP	0.5							Py as veins and blebbs around veins, sp and po replacing clasts. Marcasite on fracture planes with chlorite.
320	340	VN	1.5	VN	1.5	VN	1	Sp	CR	0.1	Po	CR	0.1	Mrc	FP	0.5	Blebby to massive py+sp+po+cpy veining. Minor sulphide as clast replacement.
340	367	VN	1	CR	1	CR	1	Mrc	FP	0.1							sulphides as clast replacement, some pyrite/chl veining. Late calcite veining with euhedral calcite veining.
367	385	VN	0.5		0	VN	2	Mrc	FP	0.1							Pyrrhotite blebby to massive veins, minimal pyrite. Marcasite on fracture planes.
385	400		0		0	BB	0.5										Pyrrhotite is the only observed sulphide mineralized in this interval - as blebbs within the mudstone

Blackwater Project
Drill Summary - Structure

GM12-02

From (m)	To (m)	Structure	Strength	Comments
5	25	JZ	4	Joint zone with strong oxidation on fractures - local broken zones with clay.
25	32.6	JZ	3	Joint zone with slightly less oxidation and less frequent fractures.
32.6	36.5	FL	5	Fault with extensive oxidation and rounded fragments in a clay matrix.
36.5	57.5	JZ	4	Joint zone with local minor broken zones. Oxide and clay on fracture planes.
57.5	58.5	FL	5	Clay healed gouge, unknown orientation.
58.5	63.3	JZ	4	Joint zone with oxide and clay on fracture planes.
63.3	113	FZ	4	Fault zone with consistent clay healed gouge with short intervals of jointed core. Structural measurement was difficult to determine (accuracy give or take 10 degrees on both dip and dip direction). 3 other clay gouge contacts where measured with a dip of 30 with the dip direction unknown.
113	172.6	JZ	3	Joint zone iwth clay, slickensides and chlorite on fracture planes.
172.6	172.7	CLYSEAM	4	Small clay seam at 50 degrees TCA - no reference line.
172.7	183.5	JZ	3	Joint zone iwth clay, slickensides and chlorite on fracture planes.
183.5	183.6	FL	5	Competant clay healed gouge zone with little to no mineralization.
183.6	229	JZ	4	Joint zone with more frequent jointing than above. Clay, chlorite and slickensides on fracture planes. Marcacite on fractures.
229	232.5	JZ	5	Joint zone with frequent fractures. Clay and chlorite on fractures with marcasite.
232.5	236	FZ	3	Fault zone with clay healed gouge with sulphide (pyrite) mineralization.
236	253.8	JZ	3	Joint zone with moderate chlorite on fracture planes.
253.8	254.1	BZ	3	Fault breccia with slickensides and pyrite mineralization.
254.1	271	JZ	3	Joint zone with moderate chlorite alteration and slickensides on fracture planes.
271	280	VZ	4	Vein zone with a high concentration of pyrite veining and blebby pyrite and sphalerite mineralization.
280	286.1	JZ	3	JZ chlorite and marcasite on FP
286.1	286.6	FL	4	Clay gouge with subrounded clasts. Sulphide mineralized.
286.6	289.1	JZ	3	JZ chlorite on FP
289.1	289.3	FL	5	Fault zone with clay gouge - subrounded clasts.
289.3	303.5	JZ	4	Joint zone with local, minor BZ. Clay, chlorite, and marcasite on fracture planes.
303.5	353	FZ	3	Fault zone areas of clay(dark grey-green) healed gouge with subrounded clasts and sulphide mineralization (euhedral pyrite mineralization). Minor pyrite veining sub-parallel to fault zone.
353	362.5	FL	5	Fault with dark grey to green clay healed gouge zone. No mineralization observed.

Blackwater Project
Drill Summary - Structure

GM12-02

From (m)	To (m)	Structure	Strength	Comments
362.5	369.5	BZ	3	Broken zone with clay on fractures. Local, minimal clay gouge.
369.5	371	FL	4	Fault - Gouge with subrounded clast with a medium to light grey-green clay. Sulphide mineralization - pyrite/pyrrhotite and fine grained black sulpide.
371	390.5	BRKZ	3	Broken zone with minimal areas of competant core. Lots of calcite veining on fractures. Some chlortite on fractures
390.5	399.9	JZ	4	Joint zone.
399.9	400	BD	3	Bedding measurement.

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Blackwater Project
Drill Logs

Hole ID:	GM12-03	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375852.08
Depth (m):	400	Date Started:	14/03/2012	Casing Size:	HWT	Northing:	5892749.96
Azimuth:	180	Date Completed:	24/03/2012	Casing (m):	45	Elevation (m):	1596
Dip:	-65	Logged By:	Other	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	180	-65
55	176.6	-63.6
106	179.1	-63.4
151	175.4	-65.4
222	175.9	-67
223	176.6	-66.6
301	178.4	-65.9
361	177.6	-65.2
400	180	-64.8

Blackwater Project
Drill Summary - Lithology

GM12-03

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	46	OB							
46	118	VC	ms	BLOCK	M	GRY			Medium to dark grey, polymictic, volcaniclastic with subangular to subrounded, matrix supported (variably clast supported). The average clast size is lapilli with up to block sized clasts. Clasts are predominantly mafic, with plagioclast porphyritic
118	135	AND	volc	BLOCK	M	GRY	DEP	GR30+	Andesite with a classic volcaniclastic texture: 100% mafic clasts, subangular, matrix supported, lapilli sized clasts with rare block sized clasts, poorly sorted. Clasts include: plagioclase porphyritic andesite (with pyrrhotite mineralized plagiocla
135	159.5	AND	volc	LAP	D	BLK			Different unit than above. Andesite with cryptic brecciation. Autobrecciated andesite/fragmental andesite with fragments that are 3-5 mm in diamter - much smaller than overlying unit. Light to medium grey matrix. Clasts are typically aphanitic.
159.5	185	AND	fltgge		L	GRN	ALTFR	GR10	Light grey, texture destroyed andesite/dacite ashfall tuff? - crushed, faulted, clay gouge. Fine laminations observed.
254	323	AND	por		D	GRY			Andesite that varies from fine lapilli sized breccia, to plag - hornblend porphyritic to quartz amygdoidal in texture. Alteration is variable.
323	356.2	VC	ms	LAP	D	GRY	FLT	SH	Interval is frequently fractured, brecciated, rubbly and variously altered, making texture often difficult to discern. Majority is largely mafic polymicitc VC, ~40% clasts, and 85-15 mafic-felsic. Occasional distinctive laminated felsic clasts are pr
356.2	400	SED	lam	FA	D	GRY			Very fine grained, weakly laminated siltstone. Upper 1m has fine crystalline salt and pepper ?hornfels texture of anhedral quartz and a black mineral. Remainder is consistently laminated, beds defined by subtle variations in shade, and slight variati

Blackwater Project
Drill Summary - Alteration

GM12-03		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
0	96	O	CLST	1	MTRX	2	MTRX	3	MTRX	1	LIM	FR	1	HM	FR	1	Oxide on fracture planes, limonite, hematite - also rimming some clasts and some clasts are completly weathered to oxide. Clasts are typically clay altered (light grey). The matrix is silica flooded. Sericite alteration in the matrix is patchy.
96	118	T	CLST	1	MTRX	2	MTRX	3	MTRX	1	HM	FR	1	CLY	FR	1	Transition facies: first appearance of sulphide - pyrrhotite mineralization as blebbs in some clasts - and mineralizing in the center of quartz amydgules. Similar style of alteration as above with less clay on fracture planes - likely a result of being at depth, away from mechanical surface weathering.
118	135	S	FR	3	CLST	2	MTRX	2	MTRX	2	CHL	CLST	2	BIOT	CLST	3	Sulphide facies: with chl/cly/bt alteration of clasts. Moderate chlorite alteration on fractures. Sil and ser in the matrix.
135	159.5	S	FR	1	FR	2	MTRX	2	MTRX	1	BIOT	CLST	3				Biotite alteration of andesite, weak chlorite in gouge zone, silica/sericite of the matrix.
159.5	185	S	PATC	2	DEF	4	PERV	5	INFILL	1	ANK	FR	1				Strong alteration zone through faulted interval. Likely altering an andesite/dacite ash-tuff that has been almost completely texture and colour destroyed. Strong mechanical clay/rock flour throughout, pervasive silicification and patchy chlorite alteration. Weak sericite throughout. Some anhdrite occuring late in gouge zone. Sulphide mineralization within the clasts as well as minor fine grained, sooty-black sulphide veins occuring late through the gouge zone.
185	205	S	FR	2	FR	3	MTRX	2	MTRX	2	BIOT	PERV	3	ANK	FC	2	Relatively unaltered compared to overlying interval. Sericte and silica alteration of the matrix where the andesite is brecciated. Mechanical clay on fractures and in gouge zone. Biotite-hornfelsing of the andesite. Quartz amygdules with pyrrhotite, pyrite, sphalerite mineralized centers.
205	223	S	PERV	2	FR	2	MTRX	1	PATC	2	CHL	FR	3	CHL	CLST	2	similar to above. Patchy sericite alteration.

Blackwater Project
Drill Summary - Alteration

GM12-03		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
223	248	S	PERV	2	FR	5	PATC	1	PATC	1	BIOT	PERV	3	CHL	FR	3	Very strong mechanical clay on fractures - intense clay healed gouge zone.
248	266.5	S	PATC	3	FR	2	PATC	2		0	BIOT	PERV	2				Patchy chlorite - silica alteration, no obserrved sericite. Pervasive biotite.
266.5	292.5	S	PERV	2	FR	2	REP	2		0	BIOT	PERV	3	CHL	FR	2	Pervasive biotite, hazy blue grey alteration patches throughout, especially effecting the groundmass of the andesite. Plagioclase phenocrysts are altered to a brown/grey (clay/silica?) - typically brown centers with white rims - sometimes looks reddish. Light/bleached alteration halos around veins. Alteration varies over small intervals depending on texture of andesite.
292.5	323	S	FR	2	REP	3	REP	2	PATC	1	BIOT	REP	3	CHL	FR	3	More chlorite than above, bleached alteration halos on veins, patches of chlorite. Silica replacement of plagioclase phenos and quartz amygdules. Specks of clay alteration. Pervasive biotite.
323	340	S	FR	4		0	PERV	2	PATC	1	CHL	PATC	3				Pervasive moderate silicification, most prominent in matrix to VC as fine crystralline qtz. Majority of matrix is also affected by patchy ser +/- chl alt, giving greenish hues. Fractures are pervasivley chloritic, very prominent in frequent rubbly intervals.
340	356.5	S	FR	2		0	PERV	3	FC	2	CHL	CLST	1				Pervasive moderate sil, weak to moderate chlorite on majority of fracture planes, occasional clasts completely chloritized. Patchy ser and chl is absent from matrix.
356.5	366	S	FR	3		0		0		0	CARB	VN	3				Fractures are near pervasively chloritic, very evident in rubble. High carbonate vein density.
366	400	S		0		0		0		0							Unaltered siltstone

Blackwater Project
Drill Summary - Mineralization

GM12-03		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
46	96		0		0		0	Hm	FP	0.5	Goe	FP	0.5				No sulphide mineralization observed
96	107		0		0	CR	5	Hm	FP	0.1							Pyrrhotite mineralization as blebbs in clasts, also as centers in quartz amygdules.
107	119		0		0	CR	0.5	Hm	FP	0.1							as above.
119	135	BB	0.5		0	CR	1										Blebby - veined - discontinuous pyrite, pyrrhotite as clast replacement (as above)
149	159.5	VN	0.5		0	CR	1										as above
159.5	185	VN	1	DI	0.5		0	Sp	VN	0.5							Pyrite veined and disseminated with sphalerite (red sphalerite as disseminations, black in veins). Veins are often fracture filling, multidirectional, some thicker than others.
185	204	VN	0.5	BB	0.5	BB	1										Fine, hairline veinlets of pyrite that are multidirectional. Sphalerite, pyrrhotite, and pyrite blebb mineralizing centers of quartz amygdules.
204	223	VN	0.5	DI	0.1	BB	1										same as above
223	248	DI	0.1		0		0										intense fault gouge, trace fine grained pyrite observed.
248	254	VN	0.5	DI	0.1	BB	0.5										fine, hairline pyrite veinlets, pyrrhotite blebbs +/- sphalerite.
254	266.5	VN	0.5	DI	0.1	BB	1.5										Pyrite as euhedral crystals in calcite veins, pyrrhotite blebbs as crystal replacement or amygdule replacement. Fine, rare sphalerite disseminations.
266.5	283	VN	0.5	DI	0.5	BB	1										as above
283	302.3	VN	1		0.5	BB	1.5										as above.
302.3	323	VN	0.5	DI	0.1	BB	1.5	Mrc	FP	0.1							as above with marcasite on fracture planes.
323	329	VN	0.5	CR	0.5	BB	2.5	Mrc	FP	0.1							Frequent centimetric irregulaly shaped blebs of po, also po and sphal replacing clasts. Quite frequent fine late stage py veilets.

Blackwater Project
Drill Summary - Mineralization

GM12-03		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
329	339	VN	0.5	BB	1.5	BB	0.5	Mrc	FP	0.1							Frequent fine py veinlets, millimetric blebs of sphal throughout. Po significantly reduced from above interval, still present as fine specks and blebs in clasts.
339	356.2	VN	0.5	BB	1	BB	0.5	Dbs	CR	0.1	Py	DI	0.5				Frequent gouge is locally quite highly pyritic, also felsic clasts frequerntly have weak DBS within them. Sphal and po in 1-3mm wide blebs.
356.2	359.5	VN	1	VN	0.1	VN	0.5	Po	BB	1							Fault zone with frequent veinlets of py + po and trace sphal. Also frequent blebs of po in groundmass.
359.5	365.2	VN	0.5		0		0	Py	DI	0.1							Quite frequent sub-euhedral py in calcite veinslts. Also trace py in occasional clay gouge.
365.2	400	VN	0.1		0		0										Very occasional trace py in calcite veinlets.

Blackwater Project
Drill Summary - Structure

GM12-03

From (m)	To (m)	Structure	Strength	Comments
46	55	JZ	4	JZ with clay zones from weathering
55	84.6	JZ	3	minor mechanical clay on fractures
84.6	84.9	CLYSEAM	4	White-orange clay seam. No reference line.
84.9	93	BRKZ	3	Broken zone with intervals of competant core and clay seams. Mechanical weathering product - fluid pathways?
93	109.9	JZ	3	JZ with minor oxide and clay on fractures.
109.9	110.2	FL	4	Fault - clay healed gouge (no mineralization) - alpha = 45, beta = 050.
110.2	113	JZ	3	JZ
113	174	FZ	2	Fault zone - areas of competant core with broken zones and clay gouge (at least every 3 meters). No reference line throughout this interval but gouge areas have an angle of 45-60 degrees TCA. Measurement at 158.4 meters: alpha = 15, beta = 234 degrees. Appears to be multiple orientations of faulting/broken/jointing.
174	194	FL	5	Consistent clay gouge over this interval, rounded to subrounded clasts in a clay to rock flour matrix. Extensive alteration/bleaching in this zone, with later, minor sulphide mineralization as very fine-grained hairline stringers. Major fault structure. Contact between light grey altered rock and andesite gouge measured at 181.0 meters as 50 degrees TCA (no reference line)
194	205	JZ	4	Moderate to strong JZ
205	210	BRKZ	3	Moderate broken zone
210	221	JZ	4	JZ with local BZ and clay and slicks on fractures
221	247.7	FL	4	Fault with clay/rock flour healed gouge with rounded to sub-rounded clasts. Broken fragments and lots of chlorite, clay on fracts.
247.7	278.3	JZ	2	JZ with calcite on fractures and some clay. Some chlorite.
278.3	280.4	BRKZ	1	Broken zone with clay on fractures. Some calcite and weak chlorite. Some euhedral pyrite crystals with calcite.
280.4	283.8	JZ	2	Joint zone with weak clay, chlorite and carbonate on fractures.
283.8	284.1	CRZ	3	Fair measurement on a clay gouge with slicks and clay
284.1	310.2	JZ	2	Joint zone with clay and weak chlorite on fractures
310.2	314.5	FZ	2	Fault zone with frequent, small (less than 30 cm) gouge zones. Measurement taken on a gouge at 310.2-310.4
314.5	317.2	JZ	3	JZ with weak clay on fractures.
317.2	322.1	BZ	3	Highly fractured zone with broken fragments.
322.1	328.2	JZ	4	Joint zone with frequent breaks and fractures.
328.2	334.8	BRKZ	4	Very rubbly throughout, rubble of centimetric angular fragments, no palpable gouge.
334.8	338	BRKZ	2	Moderately rubbly, competent core is quite heavily fractured.

Blackwater Project
Drill Summary - Structure

GM12-03

From (m)	To (m)	Structure	Strength	Comments
338	341.7	FZ	3	Hewavily fractured, borderline fault breccia. short interval of gouge.
341.7	344.3	FL	4	Heavily fractured with ~ 50% of intevral fault breccia, moderate amounts of gouge.
344.3	350.8	FZ	2	Majority of interval is competent jointed core, moderate fracture density, short intervals of breccia with small amount of gouge.
350.8	356.3	BRKZ	1	Locally rubbly, otherwise gougy.
356.3	358	FL	3	Upper 1m is very rubbly, lower 1m is more competent but still heavily brecciated, with ++ veining. Discreet 20cm of fault gouge at 357-357.2m
358	361.6	JZ	2	Occasional fractures.
361.6	363.6	FZ	4	Majority of interval is fine rubble, occasional sooty gouge.
363.6	400	BD	3	Majority of interval is moderately jointed, occasional clay seams. Bedding is consitent at alpha 30deg, Beta 80deg, recorded at 381.3, 388, and 395.7m.

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Blackwater Project
Drill Logs

Hole ID:	GM12-04	Tenure #:	515810	Hole Diameter:	HQ	Easting:	375648.45
Depth (m):	200	Date Started:	25/03/2012	Casing Size:	HWT	Northing:	5892719.6
Azimuth:	180	Date Completed:	31/03/2012	Casing (m):	13	Elevation (m):	1617
Dip:	-65	Logged By:	TJo	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	180	-65
51	177.6	-66.4
100	178.6	-68.6
150	175.2	-69.5
200	177.7	-69.9

Blackwater Project
Drill Summary - Lithology

GM12-04

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	9	OB							
9	44	AND	volc	LAP	D	GRY			Majority of interval is VC texture, clasts .5-8cm wide and largely angular. Larger clasts and up to 80cm long intervals are coarse plag phyric, with occasional large amydules (0.7cm wide). Upper 1m and isolated 80cm interval at ~32.5m have minor fels
44	56.9	AND	fltgge		MO	GRY	FLT	GR10	Fault rock, fault breccia with gouge matrix. Locally bleached, chloritic where not bleached.
56.9	111	AND	volc	LAP	D	GRY	FLT	GR10	VC texture throughout, matrix supported, clasts are angular-subrounded, typically 1-6cm wide, and all andesitic. Matrix of fine medium-dark grey ash.
111	121.5	VC	ms	LAP	M	GRY	DEP	GR30+	Upper 3m is fault breccia and gouge. Distinctly polymictic with massive - porph mafic clasts, and massive to finely laminated felsics. ~50% clasts-matrix. Clasts are typically 5-15mm, but quite frequently larger, up to 6cm wide.
121.5	174	VC	ms	LAP	D	GRY			~95-99% mafic clasts, but occasional 2-15mm quartz clasts, and occasional larger (3-15cm) laminated felswic clasts. Mafic clasts are typically lapilli size, but occasional well rounded bombs up to 20cm wide are also present. ~60-75% clasts - matrix
174	184	AND	fltbx		D	GRY	FLT	GR10	~60% of interval is rubbly with small amounts of snady gouge and high fracture density. Locally bona-fide fault breccia with gouge matrix. Competent pieces are pervasively andesitic.
184	200	AND	amg	CA	D	GRY			Locally dense patches of amygdules and up to 4mm long lath shaped phenocrysts.

Blackwater Project
Drill Summary - Alteration

GM12-04		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
9	12.2	T		0	PERV	2	CLST	2		0	HM	FR	3				Entire interval is relatively soft, with Fe oxide on fractures, and crystalline quartz in some clasts.
12.2	13.5	T		0	PATC	2	PATC	3		0	HM	FR	3				As above bu ~60% of interval is moderately bleached and silicified.
13.5	44	T		0	PATC	3		0		0	HM	FR	3				~50-60% of interval is softened and 'chossy' - clay alt. Red Fe oxide on fractures.
44	50	S	PERV	3		0		0	PERV	3							Gouge, pervasively bleached sericite - chlorite alt, greenish hue evident in gouge.
50	57	S	PERV	3		0		0	PATC	2							Gouge is less bleached than above interval, more dominant chlorite alt with only small patches of sericite
57	67	S	FR	3		0	PATC	1		0	BIOT	MTRX	2				Pervasive moderate chlorite on fracture planes, small amounts of silica visible under handlesn throughout, but core is still relatively soft. Weak pinkish hue occasionally evident in matrix - ?biotite.
67	70	S	FR	4		0	PATC	1		0	BIOT	MTRX	2	CHL	DEF	4	As above with frequent intervals of highly chloritic gouge.
70	83.3	S	FR	3		0		0	DEF	1	BIOT	MTRX	2	CHL	DEF	1	Chlorite coating fractures throughout, also in occasional short gougy intervals. Gouge also has trace creamy white flaky ?sericite disseminated. Clasts are near pervasively brownish due to combination of biotite alt and sphal.
83.3	96.2	S	FR	4		0		0	DEF	1	CHL	DEF	4	BIOT	CLST	2	Strong chloritic coating on fractures, and large amounts of moderate-highly chloritic gouge, gouge also occasionally has trace sericite. Clasts are variously biotised, and very occasionally highly chloritic.
96.2	97.4	S	CLST	2		0	PERV	4	PERV	2	CHL	FR	2				Intensely silicifed, border;ine texture destrucitve, clast are still visible but indistinct and highlighted by patchy chlorite alt. ?ser throughout as translucent pale greenish hue and white flakes amongst qtz.
97.4	110.5	S	FR	3		0		0		0	BIOT	CLST	2	CHL	CLST	1	?largely unaltered interval, clasts are frequently tinted dull brown, and very occasionaly intensely chloritic. Fracture planes pervasively chloritic.
110.5	114.1	S	DEF	4		0		0	DEF	2							Fault zone, gouge is pervasively chloritic, with patches of whitieish clay ?ser

Blackwater Project
Drill Summary - Alteration

GM12-04		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
114.1	121.4	S	CLST	3		0	PERV	3	MTRX	2	CHL	FR	2				Matrix is pervasively bleached, certainly some silica, ?sericite too. Clasts are frequently highly chloritic.
121.4	147	S	DEF	2		0		0		0	CHL	FR	3	BIOT	CLST	2	Intermittently gougy, with gouge quite heavily chloritic. Chlorite also on most fractures. Clasts are frequently biotitic.
147	152	S	DEF	4		0		0		0	BIOT	CLST	2				Chlorite on all fractures and throughout gouge, clasts in competent pieces are patchyily biotiic.
152	168	S	FR	3		0	PATC	2		0	BIOT	CLST	3				Silicificaation is patchy, but increasing with depth as increasing hardness, occasional qtz veinlets, and crystalline qtz in matrix.
168	173.6	S	FR	3		0	PERV	3		0	BIOT	CLST	2				Pervasive moderate sil and chloritic fratcures.
173.6	184	S	DEF	4		0		0		0	BIOT	CLST	3	CHL	PATC	1	Chloritee is pervasive on the frequent fracture surafaces and in gouge. Also bottom 10cm is pervasively chloritic. Biotitie evident replacing clasts in competent pieces.
184	200	S	FR	1		0		0		0	BIOT	MTRX	3				Relatively fresh. Matrix has pervasive pinkish hue - ?biotite, weak chlorite on some fractures.

Blackwater Project
Drill Summary - Mineralization

GM12-04		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
9	12.2	SP	0.1		0		0	Goe	GmR	0.1	Hm	FP	0.5				Haem on fractures, Ghoetite occasionally forminf large rings ?around old sulphide sites. Trace sooty py in millimetric blebs at bottom of interval.
12.2	13.7	SP	0.1	CR	0.1		0	Dbs	DEN	0.5							Patchy but locally quite dense DBS in 1-3mm long needles. Isolated clast ~5% replaced by sphal.
13.7	28		0	BB	0.1		0										Isolated occurrence of sphal filling large amygdules.
28	32.5		0	CR	0.5		0										Quite frequent very fine sphal replacing clasts.
32.5	38.5		0		0		0										Dead transition zone andesite.
38.5	44		0	DI	0.5		0	Hm	FP	0.1							Frequent fine specks of sphal replacing clasts and disseminated in matrix.
44	53.75	SP	0.1	VN	0.1		0	Sp	CR	0.1							Occasional wispy veinlets of blackjack sphal in gouge, also trace fine specks of py disseminated in gouge, and fine specks of reddish sphal replacinjg clasts.
53.75	57	VN	0.5	BB	1.5		0										Impressive centimetric blebs of dark red-black sphal in gouge, also locally dense networks of sooty black py veinlets.
57	74.8		0	CR	0.5	SP	0.1	Sp	DI	0.5							Sphalerite very common as millimetric specks replacing clasts and disseminated in matrix. Very scarce fine po in matrix.
74.8	88.7	VN	0.1	CR	1	SP	0.1	Sp	DI	0.1							Clasts are frequently quite extensively replaced by fine grained reddish sphalerite. Py is restricted to gougy intervals, where it is present as poorly defined 'veins' of sooty to brassy py.
88.7	96.2	VN	0.5	CR	0.5	SP	0.1	Py	DI	0.5	Sp	BB	0.5				Dominantly gougy interval with very fine py patchily disseminated in gouge, and frequent fine py stringers, occasional large blebby py in gouge. Sphal replacing clasts and in occasional centimetric blebs.
96.2	97.4	VN	0.1	SP	0.5	DI	1	Po	CR	0.5	Dbs	DI	0.5				Clasts are being replaced by millimnetric specks of po + sphal, commonly intergrown. DBS and po are disseminated throughout in fine blebs and specks.

Blackwater Project
Drill Summary - Mineralization

GM12-04		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
97.4	116	VN	0.1	CR	1	DI	1	Ga	VN	0.1	Sp	VN	0.5				Clasts are almost all being replaced to varying degrees by red sphal and lesser specks of po. Po is also disseminated throughout in mvery fine specks. Quite frequent planar veinlets of sphal + trace galena and py. Also very fine py veinlets displacin
116	129.3	VN	0.1	CR	1	CR	0.5	Po	DI	0.5							Clasts are frequently being replaced by red sphal and specks of po.
129.3	142	VN	0.5	CR	1	DI	0.5	Ga	VN	0.5	Sp	VN	0.1				Clasts are still being partially replaced by spahl, po still disseminated in fine specks throughout. ~1 chunky sulfide veinlet p/m, all are a mix of galena, py and sphal in varying proportions.
142	162	VN	0.1	CR	0.5	DI	1										Locally quite dense areas of fine po specks, mostly in matrix. Clasts are frequently partially replaced by sphal.
162	178	VN	0.1	CR	0.5	SP	0.5										occasional py stringers in gouge, sphal and po in competetn intervals.
178	200	VN	0.1	BB	0.5	SP	0.1	Ga	BB	0.5							Occasional centimetric patches of dull reddish sphal in matrix, trace po in very fine specks. Frequent galena filling amygdules and in occasional irregular centimetric blebs.

Blackwater Project
Drill Summary - Structure

GM12-04

From (m)	To (m)	Structure	Strength	Comments
9	12	BRKZ	3	Moderately rubbly.
12	14	JZ	2	Occasional fractures, irregualr surfaces, close to perpendicular TCA
14	34	FZ	1	Largely competent core, but with quite frequent short (5-10cm) intervals of hugh fracture density and weak gouge development. One such gouge zone measured - Alpha = 40, Beta =120
34	44	JZ	2	Quite frequent fractures .
44	57	FL	5	Fault breccia with gouge matrix - cataclasite. No orientation lines.
57	83.2	FZ	3	Majority of intervals is moderately jointed, but frequent rubbly intervals with narrow bands of gouge on fracture planes. No orientation lines
83.2	85.2	FL	4	Fault rock, fault breccia and ++gouge.
85.2	88	BRKZ	2	Locally rubbly, otherwise jointed.
88	90.2	FL	4	Majority of interval is fault rock, sporadic clasts in matrix of chlrotic gouge.
90.2	95	FZ	2	Moderately rubbly, competent core has high fracture density, locally weak gouge development. Alpha25 beta 110 takenm from gouge bounded fracture plane, fractures at similar orientation throughout.
95	96.2	FL	4	Fault breccia in gouge matrix.
96.2	108.3	JZ	2	occasional clean planar fractures
108.3	114.1	FL	5	Fault breccia a chloritic gouge, lith change. Alpha 30 beta 260 taken from fracture plane butting up against breccia.
114.1	119.3	JZ	2	Occasional clean planar fractures
119.3	129	FZ	3	~30% of interval is fault breccia, occurring in intermittent 25-50cm wide intervals. Competent inbetween breccia.
129	139.8	JZ	2	Occasional clean planar fractures.
139.8	149	FZ	2	Rublly, quite heavily fractured, a couple of short gougy intervals.
149	152	FZ	3	Quite heavily fractured and patchy goige sub-parallel TCA
152	176	FZ	1	Majority of interval is jointed, with occasional short intervals of fault breccia/
176	184	FZ	4	~60% of interval is highyl fractured breccia with patchy gouge.
184	200	JZ	3	Moderately fractured.

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Blackwater Project
Drill Logs

Hole ID:	GM12-05	Tenure #:	515809	Hole Diameter:	HQ	Easting:	375839.41
Depth (m):	400	Date Started:	04/01/2012	Casing Size:	HWT	Northing:	5892800.59
Azimuth:	90	Date Completed:	13/04/2012	Casing (m):	50	Elevation (m):	1592
Dip:	-65	Logged By:	Other	Drill Contractor:	Falcon	Survey Method:	RTK

Downhole Surveys

Depth	Azimuth	Dip
0	90	-65
100	90.6	-65.1
150	90	-65.3
200	92.2	-66.5
250	97.3	-67
300	89.3	-67.3
400	89.6	-68.4

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Blackwater Project
Drill Summary - Lithology

GM12-05

From (m)	To (m)	Lith Code	Texture	Grain Size	Colour		Bottom Contact Nature	Bottom Contact Type	Comments
0	50	OB							overburden
50	182.5	FT	lam		M	GRY	DEP		Light grey to white - quite orange from heavy oxidation - laminated felsic tuff with increasing silicification with depth. Strong and pervasive oxidation. For measurements on laminations please see excel sheet of measurements taken in hole folder.
182.5	226.5	FT	lam		M	GRY	DEP	SH	As above.
226.5	229	AND	bx		M	GRY	DEP	GR30	Medium to dary gray andesite that is equigranular - pretty texture destroyed and variably microbrecciated - hydrobrecciated? - matrix is a fine dark grey silica. Some ghost, tabular crystals can be observed (likely plagioclase could be hornblende). S
229	249	AND	amg		D	GRY			Dark brown to gray andesite with a variable textures over a few meters. Some quartz amygdoidal andesite, plag porphyritic textures and more massive andesite with depth. Silica is typically altering the phenos and amygdules, some patches in the ground
249	301	AND	por		D	GRY			As above. Andesite with variable texture: predominantly plagioclase porphyritic with plag. laths from 2 mm to 1 cm in length. Texture also varies from massive, aphanitic to equigranular phaneritic. At depth, a weak trachytic texture can be observed (
301	320	AND	por		D	GRY			As above. Andesite with laminated texture. Some cherty bands.
320	371	AND	volc	LAP	D	GRY	DEP	GR30	Andesite breccia/volcaniclastic with clasts of plg-phyric andesite, qtz-amygdoidal andesite and massive andesite. Some minor light to medium grey looking clasts - silicified? Probably not felsic clasts. There is still a laminated texture to the rock
371	400	AND	mcbx	LAP	D	BR			Dark grey-brown andesite that is variable in texture from clast supported microbrecciated to massive-aphanitic with local zones of plagioclase porphyritic andesite. Moderate biotite-silica-chlorite alteration and weak calcite veining.

Blackwater Project
Drill Summary - Alteration

GM12-05		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
50	61.5	O		0	PERV	4	PATC	3	PATC	2	HM	FR	3	HM	PATC	2	Sericite/silica alteration is patchy (observed where core is competant). No chlorite observed. Strong mechanical clay (faulted/near surface). Strong hematite/oxide within the gouge and moderate patches in competant pieces.
61.5	84.5	O		0	PERV	4	PERV	4	PATC	2	HM	PATC	3	HM	FR	3	Similar to above with less mechanical clay. Sericite alteration is minimal and is present as patches that follow laminations. Silica and clay alteration is dominant and pervasive, following the laminated texture. Silica alteration also present as lesser, medium grey, glassy patches that obliterate the laminated texture of the rock. Hematite alteration is patchy throughout and present on fracture planes. Yellow-orange limonite is weak to moderate on fracture planes. A weak cloudy-pink alteration
84.5	105	O		0	REP	2	PERV	2	PATC	1	CLY	PERV	3	CLY	FR	3	Similar to above with clay also altering specks (cyrstal replacement?) throughout. Stronger hematite and limonite on fractures and in gouge zone. Clay also present in fault gouge (?fault or weathering?)
105	129.5	O		0	PERV	4	PERV	3	PATC	2	HM	PATC	3	LIM	FR	4	Similar to above with the same cloudy-pink alteration that is proximal to limonite on fractures - ? hematite staining?
129.5	144.9	O		0	PERV	4	PATC	2	PATC	1	HM	PATC	3	LIM	FR	4	Less silica patches than above and more clay throughout. The interval is more bleached out than the intervals above and below. Oxide is heavily on fractures. Silica and clay alteration following laminations. Some deep pink hematite staining on fractures and fracture halos.
144.9	184	T		0	PERV	3	PERV	3	PATC	1	SIL	PATC	2	HM	FR	2	Similar to above with sulphide exposed in the unoxidized patches. Clay and silca alteration leading to a white-grey colour. Transition zone - first appearance of sulphide - fine grained DBS (slightly magnetic) up to 5% in unoxidized patches (patches of stronger silicification). Where oxidized - no DBS observed.

Blackwater Project
Drill Summary - Alteration

GM12-05		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
184	190.1	T		0	PERV	3	PERV	3	PATC	1	LIM	FR	2	LIM	PATC	2	Very similar to above with significantly less oxide and increase in sulphide. Sulphide minerals are haloed by a black, opaque, dull, aphanitic (?tourmaline - Mg-oxide?). A similar white cloud observed in more silicified zones.Some black haloes have quarts centers +/- sulphide. Clay-silica following laminations. Some zones of more pervasive silica. Sericite is patchy - following laminations and light, pale green.
190.1	206.5	S		0	FR	3	PERV	3	PATC	2	CLY	PATC	1				Sulphide zone - no oxides. More sericite than above, following laminations. Clay is still present throughout in lesser amounts, following laminations. Mechanical clay also on fractures and in gouge zones. Black sulphide halos still present but significantly less than above - type of oxide?
206.5	227.3	S	FR	2	PATC	2	PERV	4	PATC	3							Stronger silica-sericite than above. Introduction of chlorite on fracture planes. Silica is pervasive and following laminations - in some zones silica alteration obscures the laminated texture. Pale green, patchy to pervasive sericite alteration. Minor (less than 1%) white, relatively hard, dull reaction rims on the sulphide mineralization. Clay alteration is a patchy, soft soapy pale green.
227.3	232	S	FR	2	MTRX	2	PATC	3		0	BIOT	MTRX	3	SIL	AMYG	5	Silca altered amygdules and plagioclase phenocrysts and some patches of flooding - intersticially. The remainder of the rock, the groundmass, is an ashy brown and quite clay and biotite altered. Chlorite alteration appears to be restricted to fracture planes.
232	249	S	FR	2	MTRX	2	PATC	2		0	BIOT	MTRX	3				Chlorite still restricted to fractures, clay and biotite of the groundmass. Less silica than above, still minor alteration of crystals and amygdules but predominantly as hazy patches within the groundmass.
249	263	S	FR	3	FR	2	PERV	2		0	BIOT	PERV	3	CLY	PERV	2	Similar to above with more chlorite on fracture surfaces, silica weakly pervasive/patchy and replacing plagioclase phenocrysts. Some clay on fractures.

Blackwater Project
Drill Summary - Alteration

GM12-05		Oxide	Chlorite		Clay		Silica		Sericite		Alteration 1			Alteration 2			
From (m)	To (m)	Facies	Style	Int	Style	Int	Style	Int	Style	Int	Code	Style	Int	Code	Style	Int	Comments
263	301	S	FR	2	PERV	2	PERV	2		0	BIOT	REP	3	SIL	REP	3	As above with lesser chlorite and clay on fracture planes. Calcite veining within this interval.
301	320	S	PATC	2	PATC	2	REP	3	PATC	1	SIL	PATC	2	BIOT	PERV	3	Pervasive hydrothermal bioite alteration, silica as replacement of amygdules and plagioclase phenocrysts. Chlorite patches and weaker on fracture planes. Patchy clay alteration. Some late calcite veining (+/- pyrite).
320	350	S	FR	2	CLST	2	MTRX	2	MTRX	2	BIOT	CLST	3	CAL	VN	1	Sericite silica mostly in the matrix while clay and biotite is in the clasts. Weak calcite veining throughout.
350	362	S	FR	2	CLST	1	MTRX	2	MTRX	2	BIOT	CLST	4	CAL	VN	1	SIMILAR TO ABOVE.
362	375	S	FR	2	CLST	1	MTRX	3	MTRX	1	CAL	VN	2	BIOT	CLST	3	Similar to above with greater silica alteration of clasts, more chlorite than above in clasts, greater silica alteratioin of matrix and less sericite.
375	386.5	S	PATC	1	PATC	2	PERV	2		0	CHL	FR	1	SIL	REP	3	less chlorite than above, moderate biotite silica alteration. Silica is pervasive and as plagioclase crystal replacement in porphyritic andesite.
386.5	400	S	PATC	3	PATC	2	PERV	2		0	SIL	REP	3	BIOT	PERV	4	Less calcite veining than above. More chlorite alteration than above as medium green patches. Clay is patchy, especially around veins.

Blackwater Project
Drill Summary - Mineralization

GM12-05		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
50	84		0		0		0	Goe	FP	0.5	Hm	PERV	4				no sulphide observed. Strong oxide.
84	103		0		0		0	Goe	FP	1.5	Hm	PERV	2				greater geo than above lesser hm.
103	115.3		0		0		0	Goe	FP	1.5	Hm	FP	1	Hm	PERV	1	jar on fractures. Hm as a red/pink fracture coating and fracture halo also as rustpy patches throughout. Black geo on fractures.
115.3	144.9		0		0		0	Goe	FP	0.5	Hm	PERV	1	Jaro	FP	0.5	Similar to above.
144.9	145.4		0		0		0	Dbs	DEN	3	Hm	FP	0.1				FIRST APPEARANCE OF SULPHIDE = DBS. DBS is slightly magnetic - pyrrhotite component? Weak hematite on fracture surfaces.
145.4	162.5		0		0		0	Goe	FP	0.5	Hm	PERV	4	Jaro	FP	0.5	Hm pervasive, geo and jar on fractures.
162.5	184	BB	0.1		0		0	Dbs	DEN	0.1	Hm	PERV	0.5	Goe	FP	0.1	FIRST APPEARANCE OF PYRITE. As a bleb proximal to slightly magnetic DBS. Rare due to heavy oxidation.
184	190.1	DI	0.5		0		0	Dbs	DEN	1	Goe	FP	0.1	Jaro	FP	0.5	significant increase in sulphide content. DBS as black, dendric and smaller disseminated occurances. Some DBS is weakly magnetic suggesting a Po component. Sulphides in silca blebbs. In the longer branches of DBS brassy pyrite can be observed.
190.1	221	DI	0.1		2		0.1	Dbs	DEN	1							Similar to above - DBS is dendric to disseminated and is weakly magnetic. Some pyrite?/brassy sulphide in some larger clusters of DBS. DBS is weakly magnetic.
221	227.5	BB	3	MA	8	DI	1	Dbs	DEN	1.5							Similar to above with more pyrite and increasingly more sphalerite (mostly a dullish red with some minor black sphalerite in centers of red masses). Some sulphide mineralization in gouge zone between 223.3 and 224.3 - sulphide goo. Pyrite as subhedra
227.5	246	DI	1	DI	0.5	GmR	1.5										Less sphalerite than above, decreasing with depth. Mostly Po (some py) replacing crystals and fracture filling and some groundmass replacement.

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Blackwater Project
Drill Summary - Mineralization

GM12-05		Pyrite		Sphalerite		Pyrrhotite		Mineral 1			Mineral 2			Mineral 3			
From (m)	To (m)	Style	Pct	Style	Pct	Style	Pct	Code	Style	Pct	Code	Style	Pct	Code	Style	Pct	Comments
246	263	VN	0.1		0	DI	1	Mrc	FP	0.1							Decrease in mineralization from above interval. Pyrrhotite disseminations throughout - sometimes nucleating on plagioclase crystals or within vesicles. Weak marcasite on fractures with chlorite. Pyrite as an accesory in some calcite veins.
263	301	VN	0.1		0	DI	1	Mrc	FP	0.1							as above.
301	320	VN	0.1	BB	1	BB	1	Mrc	FP	0.1							As above with an increase in sphalerite - red but some black, metallic looking centers.
320	350	VN	0.5	DI	0.5	DI	1.5	Mrc	FP	0.5							Similar to above with a VC texture. Clasts are mineralized with po and sp - po mineralizing on plg-phenos and qtz-amyg. More marcasite on fractures. Pyrite in calcite veins and in veinlets with chlorite alteration halos.
350	370	VN	0.5		0	CR	1.5	Mrc	FP	0.1							Similar to above. Sulphide mineralization is predominantly po which is mineralizing plagioclase phenocrysts and disseminations within clasts. Marcasite on fractures,
370	400		0		0	DI	0.1										significantly less sulphide than above. Trace po disseminations throughout - disapearing at depth.

Blackwater Project
Drill Summary - Structure

GM12-05

From (m)	To (m)	Structure	Strength	Comments
50	61.5	FL	4	Fault zone at surface? Could be surface weathering. Oxidized clay gouge. Unknown orientation.
61.5	80.3	JZ	4	Joint zone with small broken interevals
80.3	92	JZ	3	Joint zone as above with oxidized clay alteration on fractures - perhaps a result of surficial weathering.
92	92.8	FL	3	Fault - oxidized clay gouge with subangular fragments 1-3 cm in diameter. Moderate to well healed. Structural measurement is good quality, measured at the lower fault contact at 92.8 meters.
92.8	190	JZ	2	Joint zone with very competant core. Strong oxidation on fractures.
190	203.5	FZ	3	Broken zones with local clay gouge. Measurement taken at 202.5 at clay gouge interface. Some slicks on subparallel fractures.
203.5	223.3	JZ	3	some minor broken zones but likely mechanical breaks from drilling
223.3	224.3	FL	3	Fault with clay gouge and moderate sulphide mineralization. 2 measurements taken - @ 224.3: alpha = 48, beta = 080; @ 223.4: alpha = 60, beta = 80. Not sure of the quality of the reference line in this run - can't find a match with the previous run and if off ~30 degrees from the following run. Should compare measurements with neighbouring laminations andthe K&P confidence data for the run.
224.3	247	JZ	4	Joint zone with moderate broken zones.
247	263.5	JZ	5	Joint zone with intermittent broken zones and 1-2 cm pale yellow-green clay seams. Chlorite on fractures.
263.5	301	JZ	3	Significantly more competant core than interval above. Lesser chlorite on fractures. Frequent calcite veining.
301	325.8	JZ	3	Joint zozne as above, less frequent calcite veining. Weak chlorite-clay on fractures. Some mechanical breakage zones.
325.8	328.2	FL	4	Fault zone in contact with joint zone. Measurement taken at 325.8 meters of 50 DTCA with no reference line. Clay gouge with subrounded fragments in a medium to dark grey clay. No mineralization observed. Some intermittent competant zones.
328.2	357	JZ	3	joint zone with some mechanical breaks
357	358.5	BRKZ	3	with clay and broken core.
358.5	360.5	FL	2	fault with healed clay gouge and competant core. no reference line - dip 40 DTCA
360.5	400	JZ	3	joint zone - minor calcite veining and chlorite on fracture surfaces.

APPENDIX IV: GEOCHEMICAL AND LITHOLOGICAL CROSS-SECTIONS

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893500 N
1755 Z

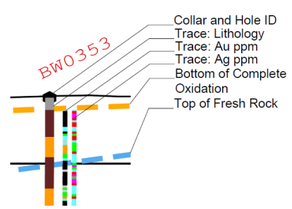
1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0470 | BW0427 | BW0449

(439) | (424) | (334) | (350)

374740 E
5893500 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,893,500 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

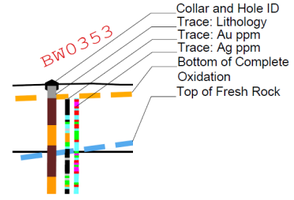
376260 E
5893400 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0467 BW0334 BW0397 BW0327 BW0404 BW0416 BW0310 BW0422 BW0306 BW0436 BW0456 BW0346 BW0338 BW0333

(440) (396) (300) (424) (350) (336) (336) (347) (327) (253) (373) (331)

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374740 E
5893400 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,893,400 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

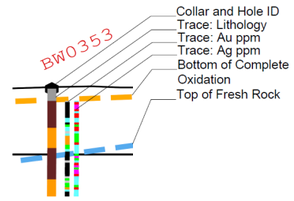
376260 E
5893350 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0377 BW0369 BW0385 BW0359 BW0348 BW0352 BW0337 BW0476 BW0343 BW0468 BW0351 BW0457 BW0356 BW0322 BW0311 BW0324

(322) (390) (351) (358) (346) (429) (356) (340) (343) (368) (350) (333) (330) (345) (325) (328)

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

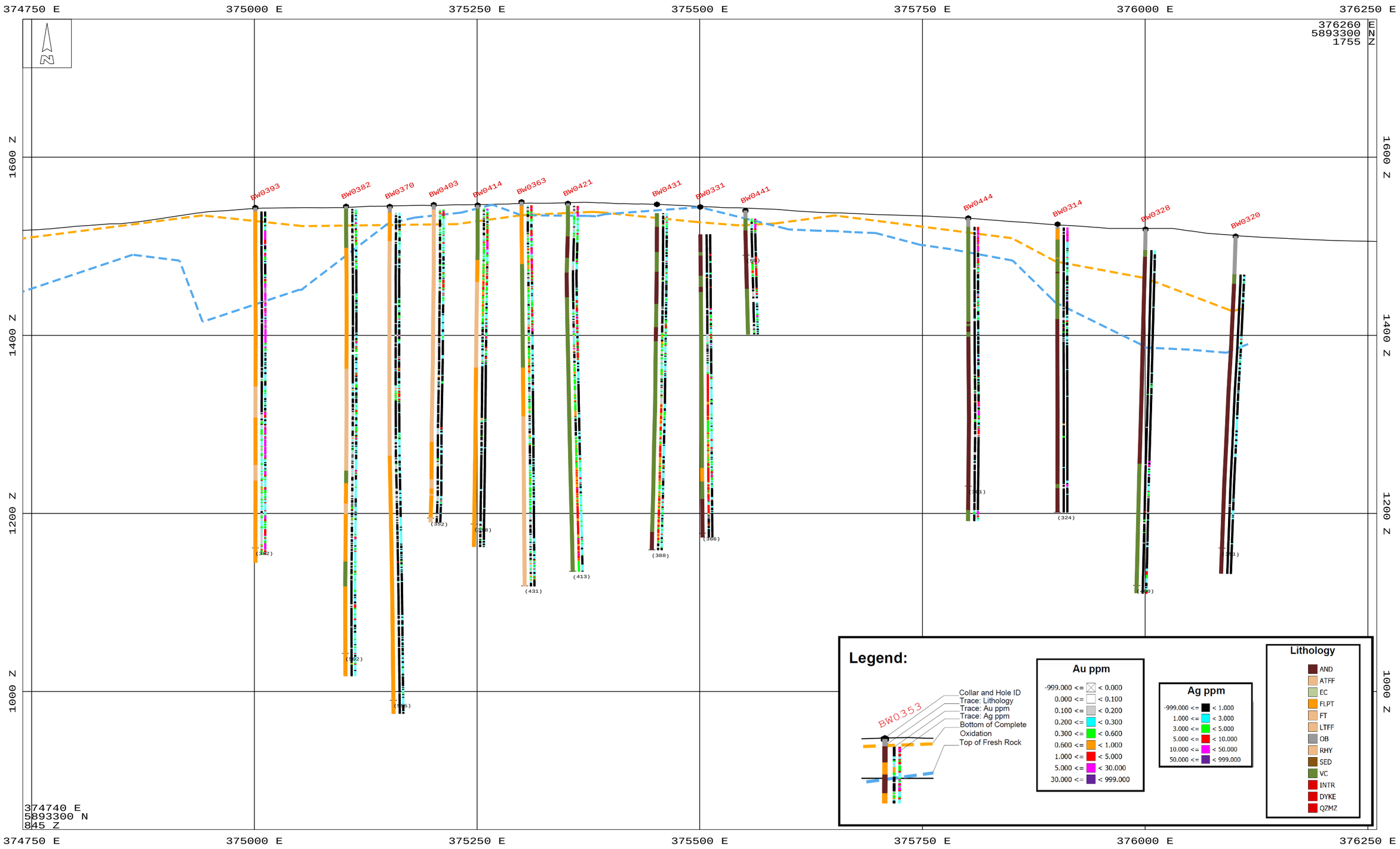
Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374740 E
5893350 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,893,350 N
Facing North



Section 5,893,300 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893250 N
1755 Z

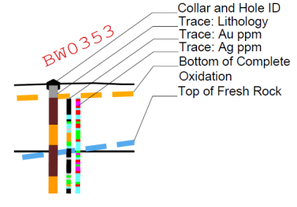
1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0381 BW0341 BW0388 BW0332 BW0396 BW0407 BW0305 BW0316 BW0415 BW0323 BW0428 BW0433 BW0302 BW0443 BW0336 BW0309

(409) (382) (364) (386) (374) (364) (500) (366) (360) (363) (352) (349) (354) (333) (327)

374740 E
5893250 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,893,250 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893200 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0350 (369)
BW0384 (381)
BW0358 (361)
BW0375 (433)
BW0367 (451)
BW0303 (492)
BW0390 (449)
BW0318 (535)
BW0399 (421)
BW0409 (384)
BW0417 (382)
BW0424 (352)
BW0342 (327)
BW0301 (362)
BW0361 (339)

Legend:

BW0353
Collar and Hole ID
Trace: Lithology
Trace: Au ppm
Trace: Ag ppm
Bottom of Complete Oxidation
Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374740 E
5893200 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,893,200 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893150 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0434 (354)
BW0445 (374)
BW0455 (375)
BW0466 (390)
BW0460 (500)
BW0435 (500)
BW0430 (373)

Legend:

BW0353

- Collar and Hole ID
- Trace: Lithology
- Trace: Au ppm
- Trace: Ag ppm
- Bottom of Complete Oxidation
- Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374740 E
5893150 N
845 Z

Section 5,893,150 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893100 N
1755 Z

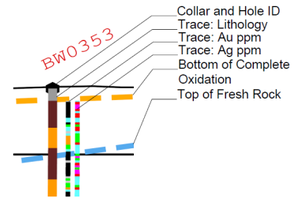
1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0364 | BW0395 | BW0405 | BW0419 | BW0437 | BW0447 | BW0459 | BW0472

(56) | (385) | (444) | (382) | (400) | (400) | (375) | (420)

374740 E
5893100 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,893,100 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893050 N
1755 Z

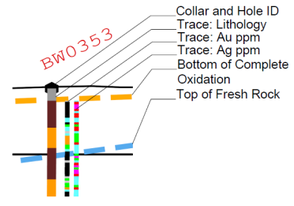
1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0432 BW0364 BW0442 BW0453 BW0462 BW0452 BW0461 BW0471

(201) (396) (395) (398) (399) (399) (399) (399)

374740 E
5893050 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,893,050 N
Facing North

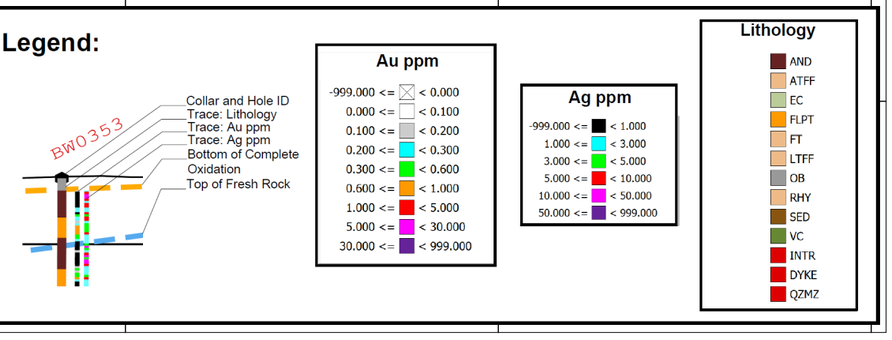
374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5893000 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0426 | BW0418 | BW0408 | BW0400 | BW0392 | BW0383 | BW0364

(366) | (369) | (450) | (412) | (332)



374740 E
5893000 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,893,000 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892950 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0438 BW0454 BW0464 BW0402 BW0412 BW0425 BW0439 BW0450 BW0463 BW0364

(344) (363) (384) (418) (434) (432) (461)

Legend:

BW0353

Collar and Hole ID
Trace: Lithology
Trace: Au ppm
Trace: Ag ppm
Bottom of Complete Oxidation
Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374740 E
5892950 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,892,950 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892925 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0362 (490)
BW0371 (502)
BW0438 (344)
BW0364 (526)
BW0412 (345)
BW0463 (344)

Legend:

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

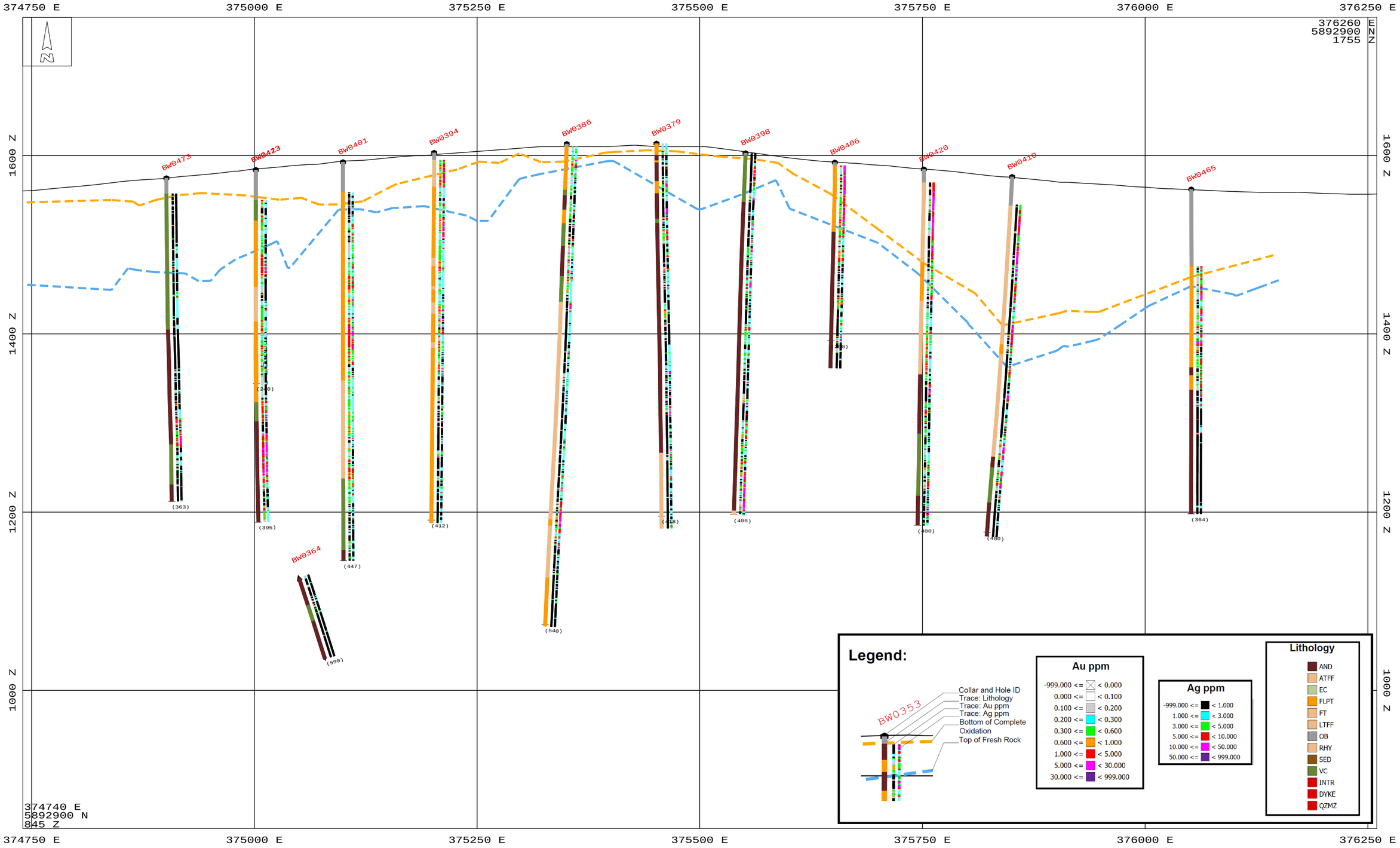
Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

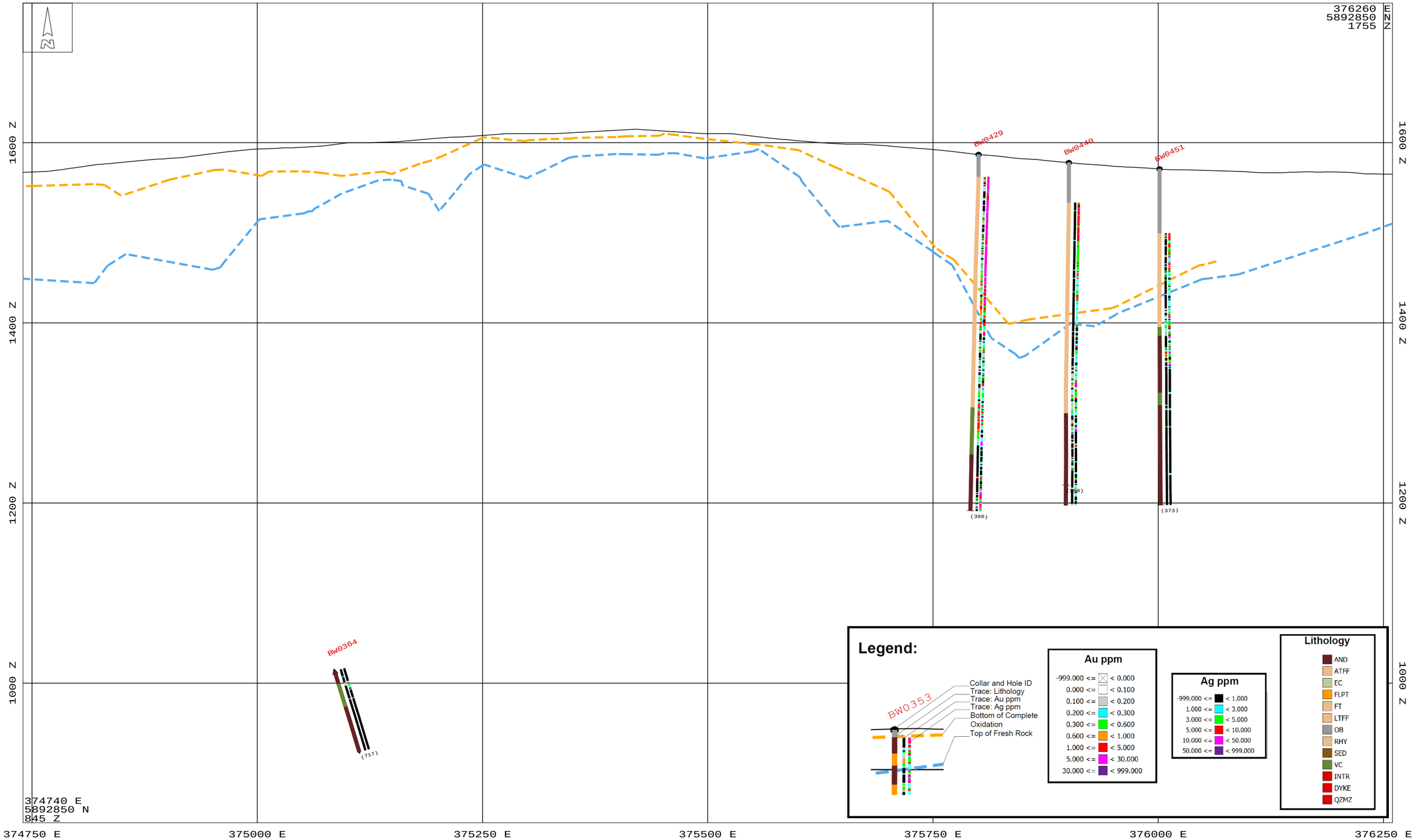
374740 E
5892925 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,892,925 N
Facing North



Section 5,892,900 N
Facing North



Section 5,892,850 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892825 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0304 | BW0315 | BW0308 | BW0321 | BW0330

(528) | (444) | (452) | (429)

BW0364 (779)

374740 E
5892825 N
845 Z

Legend:

BW0353

- Collar and Hole ID
- Trace: Lithology
- Trace: Au ppm
- Trace: Ag ppm
- Bottom of Complete Oxidation
- Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

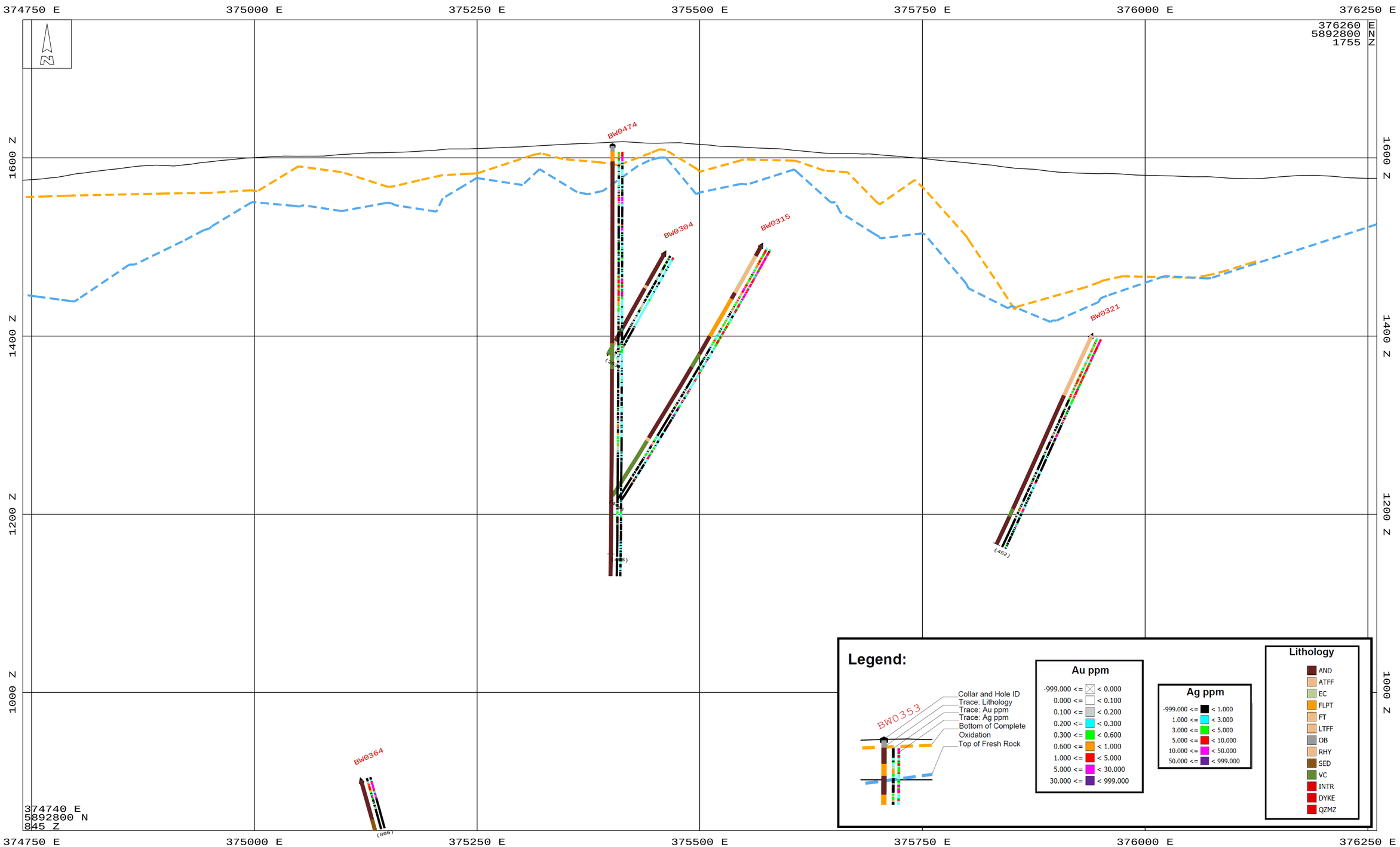
Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,892,825 N
Facing North



Section 5,892,800 N
Facing North

374750 E
375000 E
375250 E
375500 E
375750 E
376000 E
376250 E

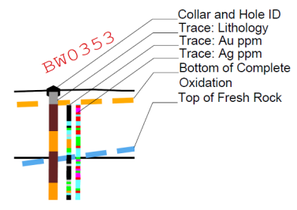
376260 E
5892775 N
1755 Z

1600 Z
1400 Z
1200 Z
1000 Z

BW0345
BW0357
BW0339
BW0474
BW0335
BW0364

374740 E
5892775 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,892,775 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892750 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0475 BW0469 BW0339 BW0335 BW0354 BW0326

(436) (433) (539)

Legend:

BW0353

- Collar and Hole ID
- Trace: Lithology
- Trace: Au ppm
- Trace: Ag ppm
- Bottom of Complete Oxidation
- Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

374740 E
5892750 N
845 Z

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

Section 5,892,750 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892725 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

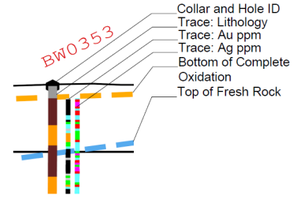
BW0319 | BW0329 | BW0339 | BW0326 | BW0336 | BW0344 | BW0354

BW0475 | BW0469

(497) (494) (515) (436) (433) (332) (318)

374740 E
5892725 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,892,725 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892675 N
1755 Z

1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0307 (40)
BW0349 (568)
BW0360 (599)
BW0368 (488)
BW0394 (402)
BW0372 (399)
BW0312 (408)
BW0353

374740 E
5892675 N
845 Z

Legend:

BW0353
- Collar and Hole ID
- Trace: Lithology
- Trace: Au ppm
- Trace: Ag ppm
- Bottom of Complete Oxidation
- Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,892,675 N
Facing North

374750 E | 375000 E | 375250 E | 375500 E | 375750 E | 376000 E | 376250 E

376260 E
5892650 N
1755 Z

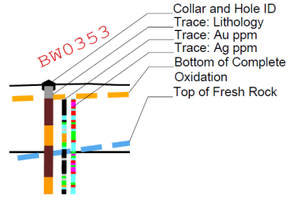
1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0325 BW0312 BW0300 BW0307 BW0340 BW0353 BW0366 BW0376 BW0378 BW0387 BW0356 BW0357 BW0365 BW0374 BW0380 BW0389 BW0360

(421) (449) (274) (91) (500) (425) (445) (433) (440) (418) (421) (431) (430) (399)

374740 E
5892650 N
845 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section 5,892,650 N
Facing North

5892500 N 375250 E 5892750 N 375500 E 5893250 N 374750 E 5893500 N

374594 E
5893566 N
1655 Z

1600 Z
1400 Z
1200 Z
1000 Z
800 Z

BW0807 (226)
BW0319 (336)
BW0349 (251)
BW0329 (480)
BW0432 (396)
BW0364 (354)
BW0434
(847)

375466 E
5892321 N
745 Z

Legend:

BW0353

- Collar and Hole ID
- Trace: Lithology
- Trace: Au ppm
- Trace: Ag ppm
- Bottom of Complete Oxidation
- Top of Fresh Rock

Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section BW0364
Facing Southwest

5892250 N | 5892500 N | 5892750 N | 5893000 N | 5893250 N | 5893500 N

375277 E
5893712 N
1855 Z

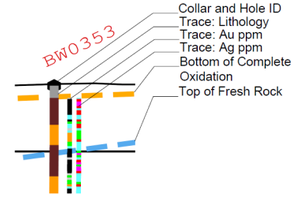
1800 Z | 1600 Z | 1400 Z | 1200 Z | 1000 Z

BW0307
BW0314
BW0362
BW0349
BW0329
BW0371
BW0303
BW0339
BW0360
BW0427

(143) (140) (343) (328) (346) (462) (500)

375277 E
5892192 N
945 Z

Legend:



Au ppm

-999.000 <=	< 0.000
0.000 <=	< 0.100
0.100 <=	< 0.200
0.200 <=	< 0.300
0.300 <=	< 0.600
0.600 <=	< 1.000
1.000 <=	< 5.000
5.000 <=	< 30.000
30.000 <=	< 999.000

Ag ppm

-999.000 <=	< 1.000
1.000 <=	< 3.000
3.000 <=	< 5.000
5.000 <=	< 10.000
10.000 <=	< 50.000
50.000 <=	< 999.000

Lithology

- AND
- ATFF
- EC
- FLPT
- FT
- LTFF
- OB
- RHY
- SED
- VC
- INTR
- DYKE
- QZMZ

Section BW0307
Facing West