American Creek Resources Ltd.

2008 SUMMARY REPORT
ON THE
TREATY CREEK PROPERTY

Located in the Stewart Area
Skeena Mining Division
NTS 104B/9E
56° 35' North Latitude
130° 07' West Longitude
Claims: Treaty Creek Claim Group

-Owned by-
Teuton Resources Corp.
-Optioned to-
American Creek Resources Ltd.

- Prepared for-

American Creek Resources Ltd.
Box 798
53A Broadway North
Raymond, Alberta, Canada
T0K 2S0

-Prepared by-

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May 2009

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1.0 SUMMARY

The Treaty Creek property is located in the Coast Mountains in the Skeena Mining Division in northwestern British Columbia, approximately 80km north-northwest of Stewart, British Columbia (Figure 1). The claims lie on NTS Map Sheet 104B/9 and are centered at 56° 35' north latitude and 130° 07' west longitude. Access to the property is by helicopter from Stewart, or the base at Bob Quinn Lake approximately 45 km to the north, or from the Bell II staging area on the Stewart-Cassiar Highway (Highway 37) about 15 km to the northeast. The Treaty Creek property consists of 44 contiguous claims covering approximately 179 square kilometres, owned by Teuton Resources Corp. and operated by American Creek Resources Ltd. ("American Creek"). Under the terms of an option Agreement, American Creek may earn a 51% interest in the Treaty Creek property by issuing 100,000 shares and spending $5.0 million in exploration over three years. American Creek may earn a further 9% interest (such that its aggregate interest would be 60%) by completing a positive feasibility study on the property.

The property is geologically set along the east limb of the McTagg anticline and is underlain by volcanic, sedimentary rocks of the Upper Triassic Stuhini Group and the Jurassic Hazelton Group, which are intruded by orthoclase porphyry, monzonite, diorite and felsic intrusions. To the north and east of the property are sedimentary rocks of the middle Jurassic Bowser Lake Group. To the south, Hazelton Group strata is in fault contact with the Bowser Lake Group along the southeast vergent Sulphurets Thrust Fault.

The Treaty Creek property contains numerous zones of hydrothermal alteration and gold mineralization interpreted to have formed within geological environments ranging from a porphyry setting to an epithermal setting. These zones occur within volcanic and sedimentary strata of the upper Triassic Stuhini Group and the lower to middle Jurassic Hazelton Group. The areas of alteration and mineralization addressed in this study include the Main Gossan, the West Nunatak and the GR2 Zone, even though there are other mineralized areas in the property studied in previous reports, such as the Orpiment zone. These several different targets range from conceptual to early stage prospecting, drill ready and advance exploration targets for resource definition. The 2007 exploration season drilled the main mineralized targets, with special emphasis in the Copper Belle and GR2 zones.

The Copper Belle zone is a newly exposed mineralization after the continuous retreat of the Atkins Glacier in the last 20 years. Within the Copper Belle zone, grades are consistent in the upper zone, characterized for a strong potassic alteration of the host rock, starting from the drillpad to an approximate depth of 70m @ 0.70 g/t Au. There is evidence of several other mineralized intervals (Hole TC07-21 and TC07-30). Anomalous molybdenum is found in an altered mineralized quartz-monzodiorite (up to 0.01% molybdenum in the lowest part of drillholes TC07-19 and TC07-21). Gold mineralization is interpreted to occur in a porphyry style of mineralization, with locally anomalous molybdenum rich zones capping the intrusive rock.

The GR2 zone can be described as the feeder zone of a Volcanogenic Massive Sulphide (VMS) deposit. Bedded sulphides preserved in a mudstone-sandstone turbiditic sequence between hydrothermally altered epiclastic rocks have been intersected in core, above a lens of massive sulphides (Galena-Sphalerite-Chalcopyrite-Tetrahedrite? with elevated grades of gold and silver, as well as elevated values in pathfinder elements such as Antimonium and Arsenic). Grades in the massive sulphide lens in hole TC07-24 are 6.8m @ 1.39g/t Au, 93.95g/t Ag, 0.27% Cu, 2.59% Zn and 4.41% Pb including 1.8m @ 4.04 g/t Au, 204 g/t Ag, 0.57% Cu, 5.08% Zn and 9.66% Pb.

The Eureka zone was drilled in 2007 for continuity of the previously high-grade gold known mineralization found in 1993 in trenches and later drilled in 1994. Drilling in the 2007 season reached greater depths than in the previous drill programs and shows enrichment in base metals, in particular copper and zinc below approximately 100m from surface, and very high silver associated with a fault zone (Hole TC07-04 with last 8.51m @ 2,094 g/t Ag). A large AeroTEM airborne anomaly shows evidence of a porphyry style mineralization with epithermal overprinting. The AeroTEM airborne survey indicates that the anomaly is located just beneath the main gossan in the Treaty Nunatak. Sulphide enrichment at depth and towards the center of the anomaly found in drill core and the lack of base metals in soils may indicate surface leaching and presence of the sulphide mineralization at depth (porphyry style with high grade Au-Ag epithermal overprinting). The main gossan shows no evidence of base metals in soil geochemistry (Chapman, *et.al.*, 1991) but stream sediments from 2002 (Discovery Consultants working for Eskay Creek) reported values of around 100ppm Cu in streams located within both the gossan and the airborne anomaly. There are evidences in drill core that mineralization has been leached to a depth of about 100m from surface, but beyond that depth, sulphide mineralization reappears in a similar fashion to what happens in other deposits in the study area (e.g. Kerr deposit, *B. Ballantyne personal communication*).

After assessing results from the 2008 field season, it is strongly recommended to follow up with drilling in the GR2 and Copper Belle targets. Grades found in core match with those from surface exposures and there is correlation between surface geology and core geology. Correlations between holes can be done with a certain degree of confidence and the next stage of drilling may be undertaken with the primary focus of resource definition, stepping back from known mineralized areas and testing extension at depth in both GR2 and Copper Belle targets. Drilling a deep vertical hole in the center of the AeroTEM anomaly will test the presence of the presumed sulphide mineralization from the Eureka drillholes towards the central part of the anomaly. This anomaly was identified from the results of the airborne survey for the Eskay Creek area conducted by Aeroquest Limited in October 2004.

2.0 INTRODUCTION AND TERMS OF REFERENCE

American Creek Resources Ltd. acquired the Treaty Creek mineral claims by option with Teuton Resources Corp. and carried out initial fieldwork from July through October of 2007. The area has a history of previous exploration with information and results available. These include several Minfile locations in the property and ARIS reports.

The author is under contract to American Creek Resources Ltd. and is the Vice President, Exploration and Senior Project Geologist for the company. The scope of this report is to summarize a ground VLF-EM survey over the Treaty Gossan area, and to compile and re-interpret the 2007 drill and sample results, together with previous information contained in historical assessment and technical reports. Numerous previous exploration programs have evaluated different parts of the Treaty Glacier area. The most extensive work has been completed in the last thirty years, following the discovery of the Eskay Creek deposit. The following table summarizes the more significant previous exploration programs for the areas covered in the present study. There are large alteration zones at Treaty Glacier that occur in three main areas, historically referred to as the Orpiment zone, the West Nunatak, and the Main Gossan (Fig. 3). These areas are exposed along the margins of the North Treaty Glacier, which obscures the geological relationships between them. The zones contain alteration mineral assemblages compatible with epithermal to porphyry geological environments (Kaip et al., 1994; Thompson and Lewis, 1992).

3.0 RELIANCE ON OTHER EXPERTS

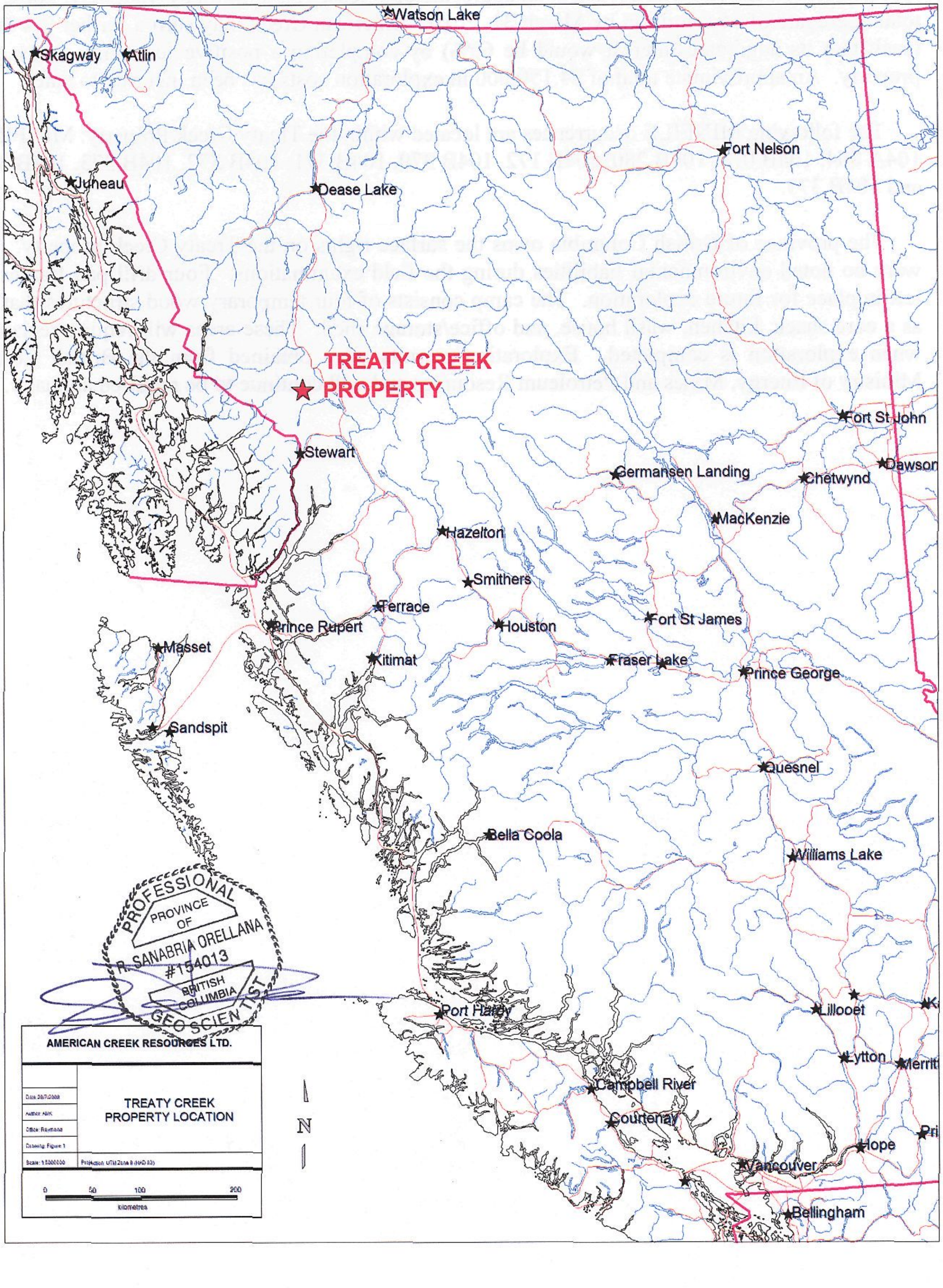
Information pertaining to ownership of claims on the property has been provided by American Creek Resources Ltd., which to the best of my knowledge and experience is correct. However, I disclaim responsibility for such information.

This report relies on information provided by the BC Ministry of Energy and Mines, which includes previous assessment reports and recorded Minfile occurrences in the property area, and information provided in the website "MapPlace". The regional geological context is derived from published reports by government geologists. The author does not claim responsibility for accuracy of information provided within these sources. There is no reason to believe that any of this information is incorrect.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Treaty Creek Property is located in northwestern British Columbia, approximately 80km north-northwest of Stewart, British Columbia (Figure 1). The claims lie on NTS Map Sheet 104B/9 and are centered at latitude 56° 35' N, longitude 130° 07' W.

The Treaty Creek Property consists of 44 claims totaling 179.13 square kilometers in the Skeena Mining Division (Table 1, Figure 2). The property is owned by Teuton Resources Corp. and operated by American Creek Resources Ltd. Under the terms of an option agreement, American Creek may earn a 51% interest in the Treaty Creek Property by issuing 100,000 shares and spending


Watson Lake
Skagway
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Fort Nelson
Dease Lake
TREATY CREEK
PROPERTY
Fort St John
Stewart
Dawson
Germansen Landing
Chetwynd
MacKenzie
Hazelton
Smithers
Terrace
Prince Rupert
Houston
Fort St James
Masset
Kitimat
Fraser Lake
Prince George
Sandspit
Quesnel
Bella Coola
Williams Lake
PROFESSIONAL
PROVINCE
OF
R. SANABRIA ORELLANA
#154013
BRITISH
COLUMBIA
GEOSCIENTIST
Port Hardy
Lillooet
Lytton
Merritt
Campbell River
Courtenay
Hope
Vancouver
Bellingham
AMERICAN CREEK RESOURCES LTD.
TREATY CREEK
PROPERTY LOCATION
Drawing: Figure 1
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50
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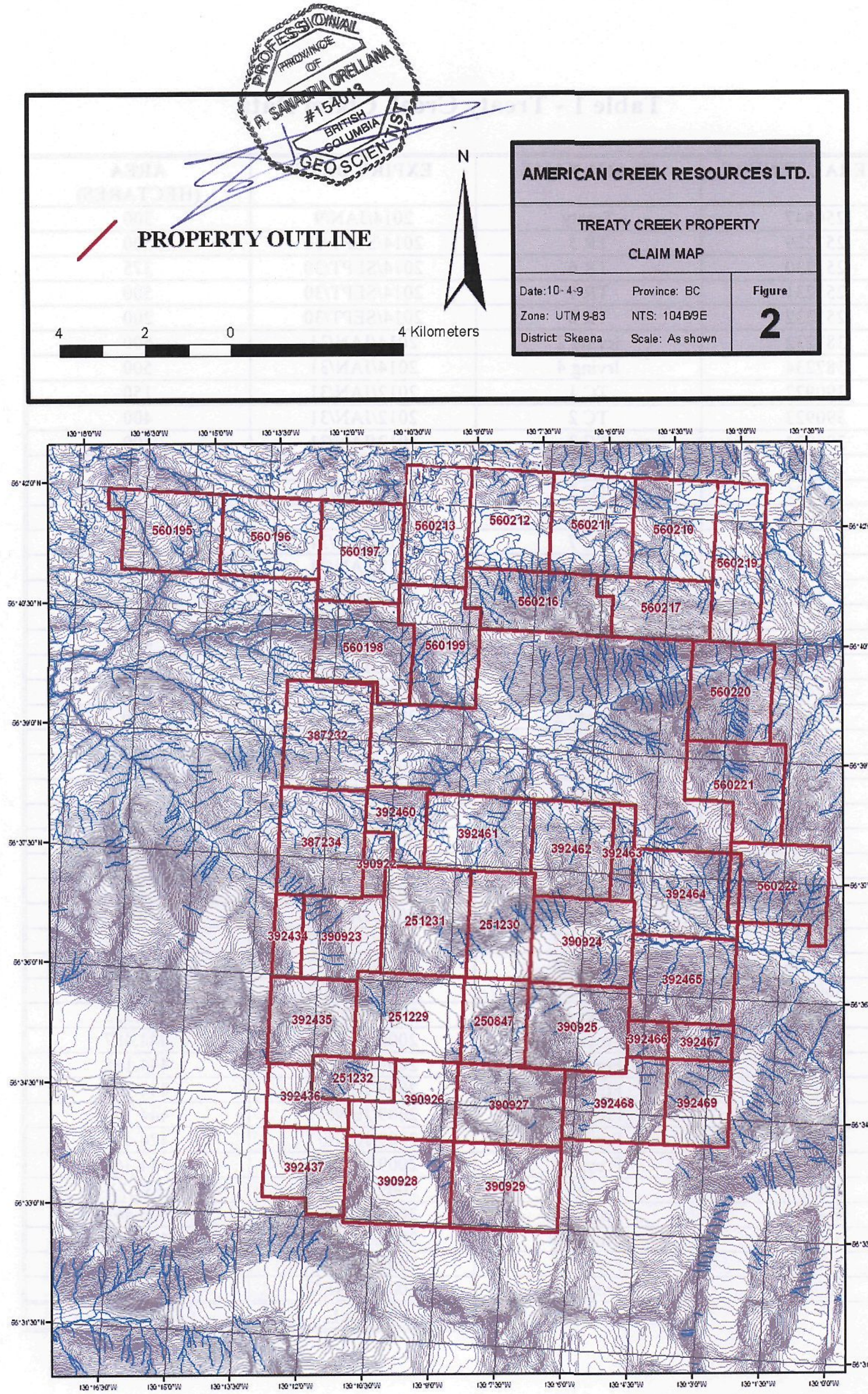
$5.0 million in exploration over three years. At least $1.0 million in exploration costs must be incurred on or before March 31, 2008; an aggregate of at least $2.5 million by March 31, 2009; and a total aggregate of $5.0 million by March 31, 2010. American Creek may earn a further 9% interest (such that its aggregate interest would be 60%) by completing a positive feasibility study on the property. An approximate total of $4,150,000 in exploration costs has been incurred to date.

The following MINFILE occurrences are located within the Treaty Creek Property: MINFILE 104A 004, 104B 078, 104B 280, 104B 172, 104B 370, 104B 371, 104B 372, 104B 373, 104B 374 and 104B 375.

The province of British Columbia owns the surface rights on the Treaty Creek property. There were no noted environmental liabilities during the field examinations. Four drill pad frames were left in place for future exploration. The camp consists of four temporary wood structures that serve as a core shack, kitchen, wash house, and office/storage shed. These areas will require reclamation when exploration is completed. Exploration permits were obtained from the British Columbia Ministry of Energy, Mines and Petroleum Resources and will continue to be required annually.

Table 1 - Treaty Creek Claim Data

MINERAL TENURE	CLAIM NAME	EXPIRY DATE	AREA (HECTARES)
250847	Treaty	2014/JAN/9	300
251229	TR 5	2014/SEPT/30	500
251230	TR 6	2014/SEPT/30	375
251231	TR 7	2014/SEPT/30	500
251232	TR 8	2014/SEPT/30	200
387232	Irving 2	2014/JAN/31	500
387234	Irving 4	2014/JAN/31	500
390922	TC 1	2012/JAN/31	150
390923	TC 2	2012/JAN/31	400
390924	TC 3	2012/JAN/31	500
390925	TC 4	2012/JAN/31	500
390926	TC 5	2012/JAN/31	500
390927	TC 6	2012/JAN/31	500
390928	TC 7	2012/JAN/31	500
390929	TC 8	2012/JAN/31	500
392434	TC 9	2012/JAN/31	200
392435	TC 10	2012/JAN/31	500
392436	TC 11	2012/JAN/31	400
392437	TC 12	2012/JAN/31	400
392460	Treaty 1	2012/JAN/31	300
392461	Treaty 2	2012/JAN/31	500
392462	Treaty 3	2012/JAN/31	500
392463	Treaty 4	2012/JAN/31	150
392464	Treaty 5	2012/JAN/31	500
392465	Treaty 6	2012/JAN/31	500
392466	Treaty 7	2012/JAN/31	100
392467	Treaty 8	2011/JAN/31	150
392468	Treaty 9	2011/JAN/31	500
392469	Treaty 10	2011/JAN/31	300
560195	Freya 57	2009/JUNE/7	444.267
560196	Freya 58	2009/JUNE/7	426.512
560197	Freya 59	2009/JUNE/7	444.3
560198	Freya 60	2009/JUNE/7	444.533
560199	Freya 61	2009/JUNE/7	444.487
560210	Freya 67	2009/JUNE/7	444.165
560211	Freya 68	2009/JUNE/7	444.178
560212	Freya 69	2009/JUNE/7	444.177
560213	Freya 70	2009/JUNE/7	426.439
560216	Freya 71	2009/JUNE/7	444.366
560217	Freya 72	2009/JUNE/7	337.71
560219	Freya 73	2009/JUNE/7	426.467
560220	Freya 74	2009/JUNE/7	444.541
560221	Freya 75	2009/JUNE/7	426.972
560222	Freya 76	2009/JUNE/7	445.006
		TOTAL	17,913


PROPERTY OUTLINE
N
4 2 0 4 Kilometers
AMERICAN CREEK RESOURCES LTD.
TREATY CREEK PROPERTY
CLAIM MAP
Date: 10-4-9
Province: BC
Zone: UTM 9-83
NTS: 104B/9E
District: Skeena
Scale: As shown
Figure
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5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES AND PHYSIOGRAPHY

The Treaty Creek property is accessible by helicopter from the town of Stewart, located 80km to the south-southwest of the property.

Additional access to the property is by helicopter from the base at Bob Quinn Lake approximately 45 km to the north or from a staging area near the Bell II Lodge on the Stewart-Cassiar Highway (Highway 37), about 25 km to the northeast. Exploration work was conducted from a base camp on the Treaty Gossan Nunatak.

The Treaty Creek property lies within the Boundary Ranges of the Coast Mountains in northwestern British Columbia. The property occupies the area surrounding the Atkins, Treaty and South Treaty glaciers and southward to the Mitchell glacier.

Local topographic relief is moderate to very steep with elevations ranging from 1,500 metres in the valleys on the east margin of the property up to 2,175 meters on the peaks to the west. The area is characteristic of alpine glaciated physiography with large valley glaciers flanked by steep rugged mountains capped by glaciers, cirques and deeply incised upland drainages. Rock exposure is best along ridge tops and in areas with little moraine cover.

The property is subject to a northern coastal climate, with cool summers and cold winters. Several metres of snow can fall and accumulate during the winter months. Due to location conditions and elevation, the working season is feasible from mid-June to mid October, conditioned mainly by snow coverage.

Vegetation consists mainly of isolated patches of scrub alpine, spruce, juniper, and a variety of alpine grasses overlying extensive felsenmeyer. The low lying areas are vegetated by mountain hemlock and balsam.

6.0 EXPLORATION HISTORY

The Treaty Gossan was initially discovered and staked by Knipple and Williams in 1928. Consolidated Mining and Smelting Co. optioned the property the same year and after initial prospecting let the option lapse.

In 1953, Williams and Knipple returned to the Treaty area and discovered a narrow silver-rich vein at the southwest corner of the nunatak and tetrahedrite-rich boulders on the Treaty glacier; no source for the float was identified. Prospecting by several companies between 1953 and 1980 on the property failed to identify significant mineralization.

In 1981, E&B Explorations optioned the property from E. Kurchkowski and carried out a program of regional prospecting and geological mapping. No significant mineralization was discovered.

In 1984, Teuton Resources Corp. acquired the claims and carried out prospecting in the area. During 1985 and 1986, Teuton Resources Corp. continued exploring the Treaty area with programs consisting of mapping, prospecting and silt sampling. In 1987 persistence was rewarded with the discovery of the Konkin zone on the West Nunatak which returned 28 oz/t Au over 1.2 metres in a chip sample. This discovery enabled Teuton to carry out blast trenching, rock sampling, grid controlled soil sampling and diamond drilling on the West Nunatak during 1987 and 1988.

In 1989, the property was optioned by Tantalus Resources. From 1989 to 1992 Tantalus carried out mapping, trenching, diamond drilling, sampling and geophysics on the West Nunatak, Treaty Nunatak and Orpiment zones. These efforts culminated in the discovery of the AW-Ridge and Goat Trail zones on the West Nunatak and the Mama Susu zone on the GR2 claims. Between 1987 and 1992 a total of 1437 m were drilled in 18 diamond drill holes on the Konkin, AW, Goat Trail and GR2 zones.

In 1993, the Eureka zone was discovered on the Treaty Nunatak. The zone comprises a core of silicification within advanced argillic alteration which returned 0.135 oz/t Au over 9.1 metres including 0.272 oz/t Au over 1.6 metres. Prime Resources Group Inc. optioned the Treaty Creek property in June, 1994 and completed a two-stage program of 1:5,000 and 1:2,500 scale geological mapping, 90 metres of blast trenching in 11 trenches and 8 diamond drill holes totaling 866.42 metres. During the program 206 rock samples and 9 whole rock geochemistry samples were collected on surface and a total of 596 core samples were collected for analysis. The first stage comprised 1:5,000 scale mapping of the Treaty Nunatak and 1:2,500 scale mapping, trenching and rock sampling of the Main Gossan and the Orpiment zone. A total of 60 chip samples were taken from 11 trenches which traced the Eureka zone over 370 metres of strike length. A total of 9.7 km of grid was re-established on the Main Gossan and 1.2 km of new grid developed on the Eureka zone to assist in geological mapping and rock sampling. Work concentrated on testing the mineral potential of the Eureka zone identified during 1993. Stage 2 of the program involved drilling seven holes totaling 634.9 metres on the Eureka zone and one hole totaling 231.5 metres on the Orpiment zone. Continued geological mapping concentrated on the Goat Trail zone and evaluation of the AW and GR2 zones.

In 2003, Lewis Geoscience conducted field mapping at the request of Geoinformatics Exploration. Geoinformatics was coordinating and conducting much of the 2003 exploration programs for Heritage Exploration Ltd. who held an option on several claims in the Treaty Glacier area.

In 2004, Heritage Exploration acquired mineral rights over an extensive area in the Eskay Creek region of north-western British Columbia. Fieldwork at Treaty Creek in 2003 by Peter Lewis greatly improved the knowledge and understanding of the various zones in the area. The geological mapping and evaluation highlighted a number of areas for follow up work. Re-evaluation of airborne EM data indicated a porphyry target 1.5 kms southeast of the East Treaty (Eureka) prospect. The porphyry target was drill tested in 2004 with a 496 meter hole. Results were disappointing. Unaltered intermediate to mafic volcaniclastics with minor argillites were intersected. An airborne EM-magnetic survey was flown late in the 2004 field season. Both the Eskay-SIB trend and the Treaty Glacier areas were covered. The survey was undertaken by Aeroquest Limited using their AeroTEM time domain system.

Year	*Work Reported*	*Reference*	*Comment*
Main Gossan			
1990	Mapping, sampling, geophysical surveys (mag, EM).	Chapman et al., 1991	Detailed map studies; proposed three stages of porphyry to epithermal mineralization.
1992	Geochemical sampling.	Walus et al., 1992	
1993	Eureka Zone Trenching.	Cremonese, 1993	
1994	1:5,000 scale mapping; seven diamond drillholes At Eureka Zone.	Kaip et al., 1994 (Prime) AR 23686	Good quality lithologic and alteration mapping for the Main Gossan Area.
1997	Two(?) diamond drillholes at Eureka Zone	Teuton news release	Long but low-grade gold Intersections encountered.
2003	Geological mapping.	Lewis, 2003	
2007	Drilling in the Eureka zone.	Sanabria, 2008	Long low-grade gold intervals High grade silver in fault zone.
West Nunatak			
1988	Sampling, trenching, mapping.	Cremonese, 1988	
1989	Sampling, trenching, eleven diamond drillholes at AW-Ridge; Goat Trail, and Konkin Zones.	Dewonek, 1990	Referred to as "stage 2" drilling; "stage 1" from earlier in year not reported but described as positive.
1990	Three diamond drillholes at Konkin and Goat Trail Zones, three at SW zone.	Chapman et al., 1990	Positive results in Goat Trail Zone
1994	Geological mapping of Goat Trail area.	Kaip et al., 1994	
1996	Trenching, sampling	Kruchkowski, 1996	
2003	Geological mapping	Lewis, 2003	
2007	Drilling in the Copper Belle new discovered showing	Sanabria, 2008	Gold-(Molybdenum) porphyry style of mineralization. Long low-grade gold intersections. String potassic alteration.
Orpiment Zone			
1992	Trench sampling	Walus et al., 1992	
1993	Trench sampling	Cremonese, 1993	
1994	Geological mapping, one diamond drillhole.	Kaip et al., 1994	Drillhole tested lower (southern) part of zone.
2003	Geological mapping	Lewis, 2003	
GR2 Zone			
1990	Reconnaissance geological mapping; trenching and sampling; geophysical (UTEM) surveys.	Chapman et al., 1991	Identified 'shear zones" hosting Au-Ag mineralization.
1991	Two diamond drillholes.		Tested northern portion of mineralized fault, but not area of highest grade trench samples.
2003	Geological mapping	Lewis, 2003	
2007	Drilling the histrorical Mama Sushu-A showing	Sanabria, 2008	VMS style os mineralizarion found high values of Ag, Zn, Pb associated with Au and Cu. Anomalous high As and Sb values. Bedded sulphides in turbidites in hole TC07-24.

In 2007, American Creek Resources Ltd. optioned the property from Teuton Resources Corp. and conducted a diamond drill program totaling 5,467.66 meters in the Eureka, ND, Copper Belle and GR2 zones.

7.0 GEOLOGICAL SETTING

7.1 Regional Geology

The Treaty Creek property lies within the Stikine terrane, along the western margin of the Intermontane Belt of the Canadian Cordillera. Stikinia is characterized by Paleozoic sedimentary and volcanic rocks of the Devonian to Permian Stikine Assemblage, Upper Triassic Stuhini Group volcanic and sedimentary rocks and Jurassic sedimentary and volcanic rocks of the Hazelton Group. Overlying Middle to Upper Jurassic sedimentary rocks of the Bowser Lake Group and Cretaceous Sustut Group are overlap assemblages that link Stikinia to adjacent terranes. The western margin of Stikinia is intruded by Cretaceous to Tertiary intrusive rocks of the Coast Plutonic Complex and record the accretion of the Insular Terrane to North America during the Late Jurassic and Early Cretaceous. Regional mapping has been completed by the Geological Survey of Canada (Anderson, 1989), the British Columbia Geological Survey (Grove, 1986 and Alldrick and Britton, 1988) and the Mineral Deposit Research Unit, UBC (Lewis, 1993).

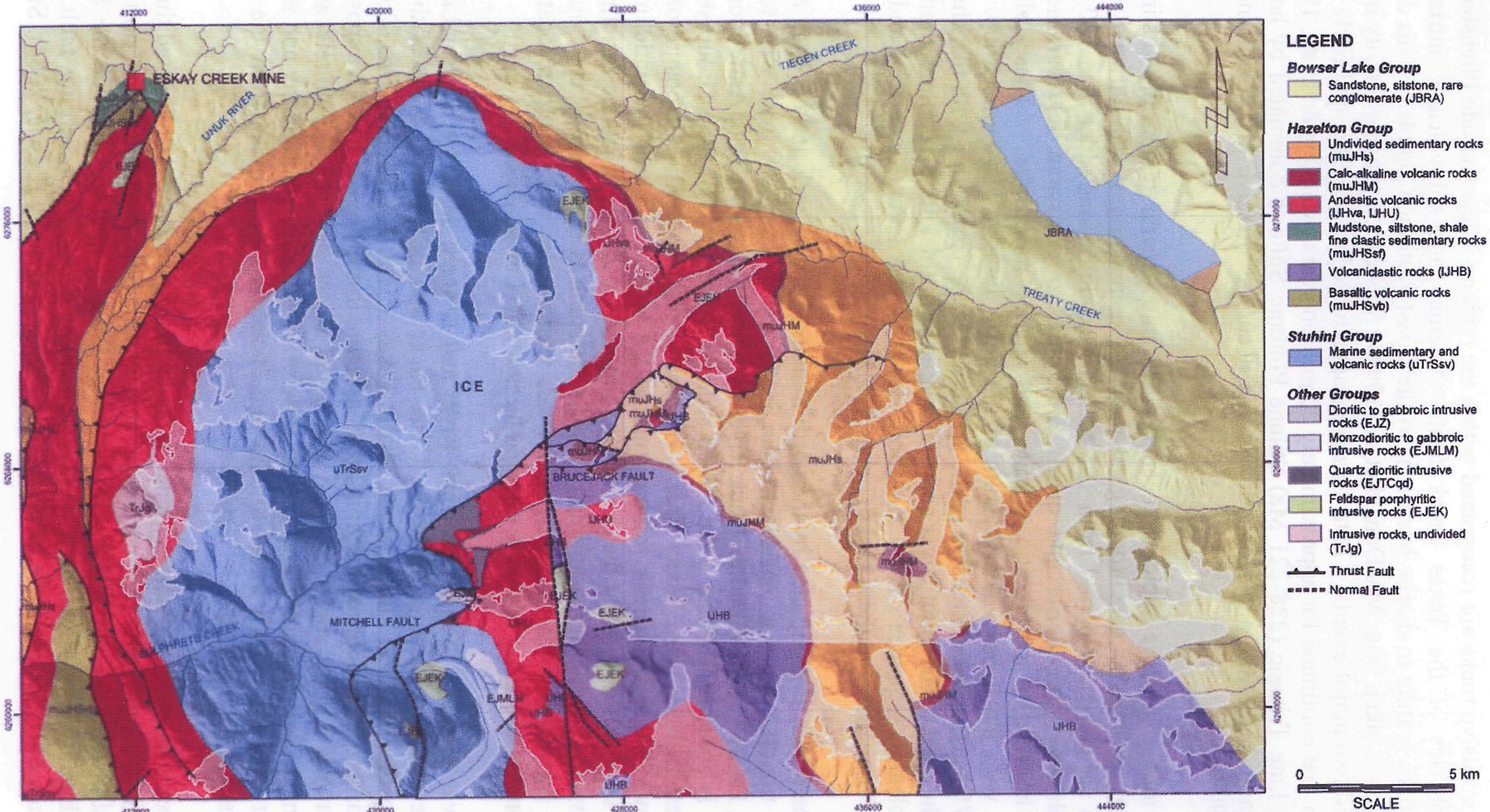
The oldest rocks in the region are sedimentary and volcanic rocks of the Upper Triassic Stuhini Group which core the McTagg anticlinorium. The Stuhini Group consists of mafic flows, sills and volcaniclastic rocks which are intercalated with, and intrude well-bedded sandstones and siltstones.

Overlying the Stuhini Group are sedimentary and mafic to felsic volcanic rocks of the Lower Jurassic Hazelton Group. The base of the Hazelton Group comprises Hettangian to Sinemurian age (Unuk River Formation) well-bedded arenitic sandstones interbedded with siltstones and minor volcanic derived conglomerates. Henderson et al. (1992) noted the presence of a distinctive conglomerate marker unit with granitoid and volcanic cobbles (Jack formation) that marks an erosional unconformity at the base of the Hazelton Group strata.

Overlying the Unuk River Formation are Pliensbachian hornblende-plagioclase, orthoclase-phyric and vesicular andesitic flows, breccias, tuffs and minor felsic ash tuffs of the Betty Creek Formation.

Stratigraphically above these volcanic rocks are Toarcian fossiliferous, calcareous sandstones, siltstones and minor limestone which are correlated with the upper part of the Betty Creek Formation in the Eskay area. Conformably overlying the Betty Creek Formation are heterolithic dacite tuffs, breccias, massive to vesicular dacites and flow-banded rhyo-dacite flows of the Aalenian age Mount Dilworth Formation. The top of the Hazelton Group comprises mafic flows, pillow lava and volcanic rocks, rhyolite flows, breccias and felsic, pyritic fragmental rocks overlain by well-bedded siltstones with interbedded ash tuff of the Aalenian age Salmon River Formation.

Conformably overlying the Hazelton Group are sandstones, siltstones and chert pebble conglomerates of the Middle Jurassic Bowser Lake Group.



Source: Klohn Crippen Berger

Figure 3. Regional Geology of the Treaty Creek Area. Source: Rescan Environmental Services Ltd., 2008

PROFESSIONAL
PROVINCE OF BRITISH COLUMBIA
R. SANABRIA ORELLANA
#174013
GEOSCIENTIST

Three ages of intrusive rocks are recognized within the region. These include Pliensbachian age two-feldspar porphyries of the Texas Creek Suite, Aalenian age sub-volcanic intrusions and Cretaceous to Tertiary granite to diorite intrusions of the Coast Plutonic Complex. This description of the intrusive rocks is taken from MacDonald et al, (1996). Mesozoic intrusive activity in the Iskut River area involved two major events: a Late Triassic magmatic pulse, and extended Early to Middle Jurassic plutonism that continued for approximately 20 million years (MacDonald et al., 1996). The earliest pulse, the Late Triassic (228-221 Ma) Stilune Plutonic Suite is dominated by hornblende-biotite diorite, quartz monzonite and monzodiorite and occurs as massive to foliated and lineated plutons (Lewis, 2003).

The Jurassic intrusions have typically been divided into several temporally distinct suites. However, an enlarged Jurassic geochronological database demonstrates that intrusive activity is nearly continuous for the entire period from 195 to 175 Ma. Intrusions older than 180 Ma range from biotite-hornblende granodiorite and quartz monzonite to potassium feldspar megacrystic, plagioclase and hornblende porphyritic syenite and quartz monzonite. These plutons are contemporaneous with the lower volcanic units of the Early Jurassic Hazelton Group. Younger intrusions (180-175 Ma) are less extensive in the area and may be correlative with the Three Sisters plutonic suite to the west of the Iskut River area. The younger intrusions are contemporaneous with the uppermost volcanic sequence of the Hazelton Group in the Iskut River area and probably represent intrusive equivalents to these rocks (Lewis, 2003).

Structure in the region is dominated by the north trending Eskay Creek and McTagg Anticlines. Four major folds trending north to northeast occur in the area. They are from west to east, the Mackay Syncline, Eskay Creek Anticline, Unuk River Syncline and the McTagg Anticlinorium. The Mackay Syncline is cored by Bowser Lake Group sediments and has Hazelton Group stratigraphy exposed on its western limb. The Eskay Creek Anticline contains extensive exposure of Hazelton Group stratigraphy. The Eskay Creek Mine occurs on the western limb of the anticline and this location has been the focus of most of the exploration in the area. To the north the anticline plunges north beneath Bowser Lake Group stratigraphy and to the south is truncated by the Coulter Creek thrust fault. The Eastern limb and hinge zone are less well studied and the exact location of the hinge is poorly constrained and is probably effected by faulting (Lewis, 2003).

The Unuk River Syncline follows the Unuk River and is again cored by Bowser Lake Group sediments. These sediments extend down the Unuk River and merge with those of the Mackay Syncline, isolating the Hazelton Group strata in the Eskay Creek Anticline (Lewis, 2001). The McTagg Anticlinorium is the dominant regional fold structure in the project area. It exposes a broad belt of folded Stuhini Group rocks between the Unuk River and the Sulphurets area. The anticlinorium plunges north beneath Hazelton and Bowser Lake Group stratigraphy and is bound to the west and east by faults which thrust Stuhini and Hazelton Group rocks from the core over younger adjacent strata (Lewis, 2001).

The project area contains significant regional faults including west and east directed thrust faults, steeply dipping north, northeast and northwest striking dip-slip faults and the north striking Harrymel strike-slip Fault (Lewis, 2001). Major thrust faults in the area include the Sulphurets Fault. The Sulphurets Thrust Fault is a gently west dipping, southeast verging fault, thrusting Stuhini Group strata over Bowser Lake or Hazelton Group stratigraphy (Lewis, 2001). Steep faults of variable orientation including north, northwest and northeast striking, are common throughout the project area and frequently cross cut folds and thrust faults. Slip directions cannot usually be determined, but Lewis (2001) suggests dip slip. It would seem questionable that all of these faults are of the same age and type. Mapping by Geoinformatics personnel at the SIB Prospect indicate that some of the faults are long lived structures that were re-activated post mineralization to cause the cross-cutting relationships and late emplacement of mineralizing fluids along them. These structures must be considered important when planning future exploration in the project area.

7.2 Regional Mineralization

The Stewart-Unuk-Iskut area hosts a wide variety of precious and base metal deposits, almost all of which have close spatial, and probably genetic links with early Jurassic subvolcanic magmatism. Deposit styles reflect a variety of depositional environments (MacDonald et al., 1996), including:

7.2.1 Porphyry

Kerr-Sulphurets-Mitchell (KSM – Measured: 579.3 M tonnes @ 0.66 g/t Au, 0.18% Cu; Indicated: 1.243 B tonnes @ 0.56 g/t Au, 0.23% Cu; Inferred: 745.7 M tones @ 0.50% Au, 0.17% Cu) is a Seabridge Gold Inc. project and is hosted in Upper Triassic tuffaceous and sedimentary rocks intruded by 195-200 Ma syenodiorite, augite porphyry hornblende porphyry and potassium feldspar megacrystic, hornblende-plagioclase porphyry dykes and stocks. The strongest copper mineralization is associated with a core of chlorite-magnetite and chlorite-pyrite alteration with quartz stockwork, flanked by chlorite-sericite-pyrite and sericite-quartz-pyrite zones (Ditson et al., 1995)

Snowfield (Measured: 31.9 M tonnes @1.5 g/t Au, 1.4 g/t Ag, 0.03% Cu; Indicated: 102.8 M tonnes @ 0.90 g/t Au, 1.6 g/t Ag, 0.07% Cu; Inferred: 661.8 M tonnes @ 0.70 g/t Au, 1.8 g/t Ag, 0.14% Cu) is a Silver Standard Resources Inc. project located adjacent to the Mitchell Deposit and is geologically similar to the Mitchell Deposit.

Red Bluff (102 M t @ 0.15% Cu, 0.72 g/tonne Au) is hosted by quartz stockwork in sericite-quartz-Kspar-biotite altered, 195 Ma potassium feldspar megacrystic plagioclase porphyry (Rhys, 1995).

7.2.2 Veins

Silbak Premier (past producer) (5.3 M t @10.9g/tonne Au, 233 g/tonne Ag) comprises high and low-sulphide breccias and veins, locally with low sulphidation epithermal textures, in the Upper Andesite member of the Unuk River Formation. Premier porphyry potassium feldspar megacrystic plagioclase-hornblende dykes (195 Ma) are spatially associated most ore zones (Alldrick, 1993).

Snip (past producer) (1.3 M tonnes @ 24.5g/tonne Au) is a shear vein system within Triassic clastics, 300m above and genetically related to the 195 Ma Red Bluff potassium feldspar megacrystic plagioclase porphyry (Rhys, 1995).

Red Mountain (1.3 M tonnes @7.90 g/tonne Au, 24.7g/tonne Ag) consists of three semi-tabular 5-29m thick zones of pyrite-pyrrhotite stockworking in intensely sericitized sedimentary rocks. They lie within 100 meters of the 197 Ma Goldslide feldspar-hornblende-biotite-quartz porphyry, which is thought to be the mineralizing intrusion (Rhys *et. al.*, 1995).

Brucejack/Sulphurets (Sulphurets Zone 108.3 M tonnes @ 0.22% Cu, 0.71 g/tonne Au, 535 M lb Cu, 2.47 M Oz Au) comprises low-sulphidation epithermal veins in Hazelton Group andesitic volcaniclastics and clastics cut by 193 Ma hornblende-plagioclase porphyry and potassium feldspar megacrystic plagioclase stocks (Margolis and Britten, 1995).

Scottie Gold (past producer) (196,000 tonnes @16.5 g/tonne Au), comprises massive pyrrhotite veins within shear or fracture zones trending 310/75 NE in andesitic volcaniclastics and epiclastics of the Middle Andesite Member of the Unuk River Formation, intruded by the 193 Ma Summit Lake Stock (Alldrick, 1993).

East Gold (past producer) (46 tonnes @ 1,126 g/tonne Au and 3,106 g/tonne Ag) is a 3-60cm quartz-calcite-sulphide-sulphosalt vein, trending 165/70 W with rich pockets of Electrum (Minfile, 2001).

7.2.3 Volcanogenic Massive Sulphides (VMS)

Eskay Creek (past producer) (2.7 M tonnes @ 47 g/tonne Au, 2,135 g/tonne Ag), comprises lenses of clastic massive sulphide sulphosalt in mudstone of the flank of a submarine rhyolitic flow-dome emplaced near the base of the Salmon River Formation at about 180 Ma. Eskay Creek is considered to be the product of a low-sulphidation epithermal system venting to the seafloor in a shallow marine setting.

* Note that resource and production figures quoted above are not all 43-101 compliant and are of unknown reliability; they are included only as a rough indication of deposit sizes and grades.

7.3 Property Lithology

Rocks exposed in the Treaty Creek property include the upper part of the Stuhini Group, the complete Hazelton Group, and the lower part of the Bowser Lake Group (Figures 3 and 4).

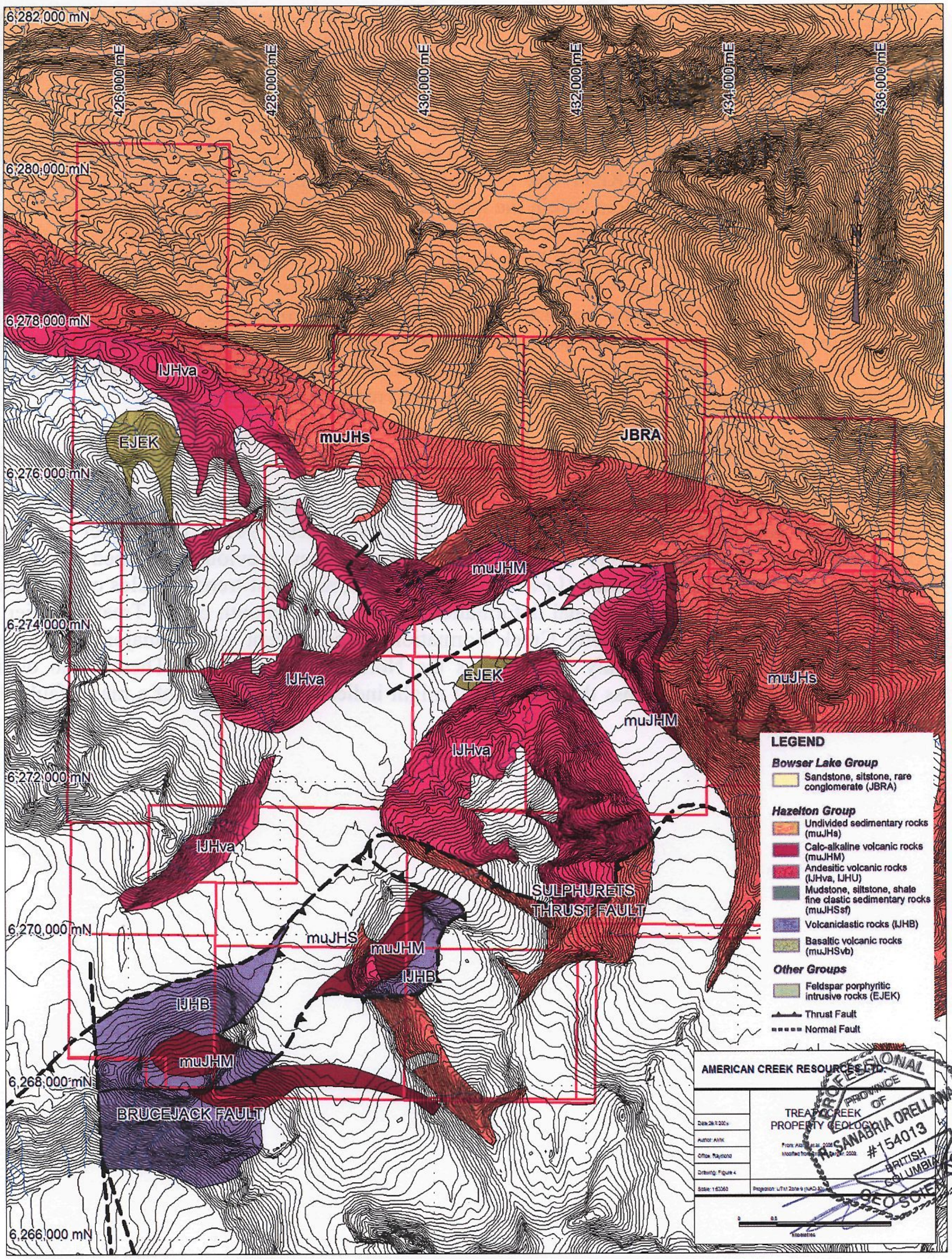
Intrusive rocks form small stocks and dykes mainly within the Hazelton Group succession, and likely formed as hypabyssal bodies genetically associated with the volcanic portions of that unit (Lewis, 2003). The entire stratigraphic succession youngs eastward, reflecting its position on the east limb of the McTagg anticlinorium.

Upper Triassic Stuhini Group rocks comprise interstratified sedimentary and intermediate composition volcanic strata, exposed on the western parts of the West Nunatak and the GR2 zone. It is possible that rocks in the GR2 zone may be the lower part of the Hazelton Group (Dani Alldrick personal communication).

At the West Nunatak, the contact between the two groups likely passes between the Southwest and Konkin zones, in a part of the Nunatak not examined in this work. Stratigraphic nomenclature used in this report for Lower and Middle Jurassic Hazelton Group follows that defined on regional maps by the Mineral Deposit Research Unit (Lewis, 2001), and adopted by McGuigan (2002) for the Eskay Creek Project area. This nomenclature establishes a three-part division of the Hazelton Group comprising the Jack, Betty Creek, and Salmon River formations. It avoids the ambiguity surrounding historical usage of the Unuk River and Mt. Dilworth formations by assigning rocks previously mapped as these units to members within the three principal formations (Table 2). At Treaty Glacier, sedimentary strata within the base of the Hazelton Group succession are assigned to the Jack Formation. These rocks are overlain by a thick succession of Betty Creek Formation andesitic volcanic and epiclastic strata, which are the most common host rock within the altered zones. Salmon River Formation strata consist of bimodal volcanic rocks and intercalated mudstones exposed on the Treaty Nunatak and to a lesser extent, near the Orpiment Zone. Clastic strata of the Upper Jurassic and Cretaceous Bowser Lake Group conformably overlie or are faulted against the Hazelton Group succession to the east and north of the Treaty Glacier area.

7.4 Property Structure

Major structural features in the Treaty Glacier area are dominated by folds and contractional faults formed within the Cretaceous Skeena Fold Belt (Evenchick, 1991). The project area lies on the upper plate of the Sulphurets Thrust Fault, which has been previously mapped crossing the southern part of the Treaty Nunatak (Lewis, 2001). Upright, northeast-trending folds on the nunatak formed during this same contractional deformation event. At the mouth of the Treaty Glacier, the lower Hazelton Group strata (Betty Creek Formation) is coincident with a major east-northeast trending linear magnetic anomaly that follows the North Treaty Glacier. There is no obvious stratigraphic discontinuity across the glacier that might indicate the presence of a major fault along this anomaly.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lJHva
SULPHURETS THRUST FAULT
muJHS
muJHM
lJHB
lJHB
muJHM
BRUCEJACK FAULT
LEGEND
Bowser Lake Group
Sandstone, siltstone, rare conglomerate (JBRA)
Hazelton Group
Undivided sedimentary rocks (muJHs)
Calc-alkaline volcanic rocks (muJHM)
Andesitic volcanic rocks (lJHva, lJHU)
Mudstone, siltstone, shale fine clastic sedimentary rocks (muJHSsf)
Volcaniclastic rocks (lJHB)
Basaltic volcanic rocks (muJHSvb)
Other Groups
Feldspar porphyritic intrusive rocks (EJEK)
Thrust Fault
Normal Fault
AMERICAN CREEK RESOURCES LTD.
TREATY CREEK
PROPERTY GEOLOGY
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Unit 5 *Salmon River Formation* *(includes Troy Ridge, Eskay Rhyolite, John Peaks, and Bruce Glacier members)*		**Brucejack Lake Member:** Densely welded felsic ash tuff, succeeded by massive lapilli to block tuff, and uppermost welded spherulitic lapilli tuff **John Peaks Member:** Pillowed basaltic volcanic flows intercalated with broken pillow breccia, mudstone, hydroclastite breccia, and mafic sills *(Unit 3a,b of Lewis et al.)* Grades upward into volcaniclastic breccia and conglomerate with abundant andesite and basalt clasts. *(Unit 3c of Lewis et al.)*
Betty Creek	*Unit 4* *Treaty Ridge Member*	Medium-bedded volcaniclastic conglomerate, overlain by channelized, highly fossiliferous (pelecypods, belemnites, corals, bryozoans) calcareous sandstone and sandy limestone; passes upward into black argillite, conglomerate, turbiditic mudstone to sandstone, and siliceous tuffaceous sandstone *(Unit 2 of Lewis et al).*
	Unit 3 *Brucejack Lake member*	Densely-welded felsic lapilli to ash tuff layers intercalated with polylithic volcanic conglomerate *(Unit 1c? of Lewis et al)*
	Unit 2 *Unuk River member*	Thick feldspar+hb-phyric volcanic breccia, block tuff, and volcanic conglomerate; intercalated lapilli tuff, massive andesite flows, rare mudstone-argillite; grades northward into condensed volcaniclastic sandstone/mudstone section *(Unit 1a,b of Lewis et al.)*
Unit 1 *Jack Formation*		(Near Atkins Glacier) Thickly bedded siliceous siltstone, greywacke; discontinuous lenses of volcanic conglomerate w/ hb-pl phyric andesite-dacite clasts; mollusc coquinoid calcareous sandstones; channel scours, mudstone rip-up clasts common; rare limestone layers up to 1 m thick *(Transitional unit of Anderson and Thorkelson, 1991)*

Table 2: Summary of lithologic characteristics of Hazelton Group map units in the project area (from Lewis, 2003)

8.0 MINERALIZATION

The Treaty Creek area shows several mineralized areas that can be separated into different zones depending on the host rock and the style of mineralization. The main zones on which extensive exploration has been conducted are the Main Gossan in the Treaty Nunatak, the Copper Belle zone (historically the Goat Trail and Konkin zones described in Minfile reports) and the GR2 (described as Mama Susu in Minfile reports).

8.0.1 MAIN GOSSAN ZONE

The Main Gossan, located on the northwest side of the Treaty Nunatak, is the largest exposed alteration anomaly in the Treaty Creek area, measuring over a square kilometer in surface area.

Alteration in the Main Gossan overprints several different rock units, including intermediate composition volcanic flows and breccias, plagioclase-porphyry intrusions, and minor sedimentary rocks. In much of the gossan, strong to intense alteration and deformation overprints primary textures, making determination of protolith lithology uncertain. Much of the strongest alteration, typified by the Sulphur Knob area, is within rocks containing relic feldspar phenocrysts that now appear as flattened and elongate white clay patches. Uniform textures over large areas, and lack of evidence for an extrusive origin, suggests that these rocks represent a porphyritic intrusion. These porphyritic rocks are exposed in areas previously mapped as both monzonite and fine-grained plagioclase+hornblende porphyry (Kaip et al., 1994). Textural differences between the rocks in these areas are interpreted to result from different styles of alteration, rather than changes in primary rock type (Lewis, 2003).

Alteration along the northern margin of the Main Gossan overprints interfingering mudstones, basaltic andesite flows and breccias, and epiclastic siltstone, wacke, and conglomerate. These units are tentatively assigned to the Betty Creek Formation, although inclusion within the Salmon River Formation is also possible. Volumetrically minor, fine grained dioritic intrusions cut these rocks in the area adjacent to the Eureka Zone (Lewis, 2003).

Most rocks within the Main Gossan contain a penetrative foliation (S1) that varies in intensity from weak to intense. This foliation clearly post-dates alteration, is parallel to axial surfaces of folds outside the area of alteration, and is interpreted to have formed during regional contractional deformation associated with the Skeena Fold and Thrust Belt. Cleavage intensity correlates with alteration style and intensity: most strongly altered rocks, characterized by an alteration assemblage of quartz+sericite+ pyrite±pyrophyllite contain an intense foliation while less-altered rocks contain a weaker foliation or spaced cleavage. In areas where foliation is strongest, a steeply-raking elongation lineation is visible on foliation surfaces. Foliation has a moderate to steep dip, and strikes range from ENE to NS. A linear belt with anomalous EW cleavage orientations trends westward from the Sulphur Knob area. The variable cleavage orientations within the Main Gossan reflect the strong strain heterogeneity of the area, resulting from deformation of a rock package containing considerable differences in rock competency (Lewis, 2003).

8.0.2 WEST NUNATAK: KONKIN/GOAT TRAIL AND SOUTHWEST ZONES

The West Nunatak contains several areas of alteration and gold mineralization, the most important of which are at the Goat Trail, Konkin, AW, and Southwest Zones.

The West Nunatak is underlain by rocks of both the Stuhini and Hazelton Groups, and several volumetrically minor intrusive bodies. In the area of the Southwest zone, massive, andesite-dominated polylithic breccias and conglomerates are interstratified with thinly to thickly-bedded mudstones, wackes, and feldspathic sandstones. Stratification within these units strikes northeasterly, with moderate northwest (overturned) to subvertical dips. The dominant host rocks at the Ridge and AW zones are andesitic(?) volcanic breccias. Conspicuous augite phenocrysts in these rocks are diagnostic of a stratigraphic position within the Stuhini Group. Bedding orientations in these areas suggests that the strata at the Southwest zone most likely are stratigraphically higher than those exposed at the Ridge/AW zones (Lewis, 2003).

The Konkin and Goat Trail zones are underlain by andesitic, plagioclase-phyric tuffs, breccias, and epiclastic rocks with lesser feldspathic sandstones and siltstones. Stratification within these rocks strikes northerly to northwesterly, and dips steeply to the east to vertically. These strata are intruded by fine-grained, equigranular diorite bodies at the north end of the nunatak and adjacent to the Konkin gold pit. However, large outcrop areas on the northeast margin of the nunatak that were previously mapped as diorite are in fact thickly-bedded to massive sandstone, within which weak silicification has produced a granular texture with an intrusive appearance. The andesitic succession exposed at the Konkin and Goat Trail zones is likely part of the Betty Creek Formation. Therefore, the contact between the Stuhini and Hazelton groups must pass between the Ridge/AW and Konkin/Goat Trail zones. Rocks throughout the West Nunatak contain a northeast-striking, moderately to steeply northwest-dipping penetrative foliation. Foliation varies in intensity from weak or nonexistent to intense, depending on location and rock type. Although foliation is typically at low angles to bedding, local areas with bedding and foliation at high angles attest to the presence of folds. No major faults have been identified on the West Nunatak (Lewis, 2003).

8.0.3 GR2 ZONE

The GR2 zone consists of several narrow linear zones of alteration and small gossans, located near the head of the Atkins Glacier.

The GR2 zone contains a lithologically varied sequence of sedimentary and volcanic rocks that encompasses the lower part of the Hazelton Group (Dani Alldrick, personal communication). These strata strike northerly to northwesterly, and dip moderately to steeply eastward (Lewis, 2003).

Stratigraphically lowest rocks at the GR2 zone consist of Triassic turbiditic mudstones, siltstones, and interstratified sandstone layers exposed in the western part of the area. Minor conglomerate layers within the sequence commonly consist of angular, dark grey to black mudstone clasts supported by a fine to medium-grained sandstone matrix. The upper part of the turbiditic sequence contains several stratified intermediate (andesitic?) composition, plagioclase-phyric aphanitic units that range texturally from breccias to massive layers. Vesicles and silica-filled amygdules are common in these rocks. Matrix in the breccia layers usually consists of black mudstone. The upper part of the sequence in the GR2 zone is dominated by andesitic composition volcanic fragmental rocks. Most common are thick successions of massive, coarse, clast-supported conglomerate to breccia. Clasts consist of both plagioclase-phyric volcanic rocks and lesser mudstone, in a feldspathic, sandy matrix. These coarse clastic rocks are interlayered with several intervals of thinly to medium-bedded feldspathic sandstone to wacke, with lesser tuffaceous siltstone. Stratigraphically above, the following unit is represented by several metres of thickly-bedded, calcareous sandstone and limestone. This unit contains an abundant and diverse fossil assemblage, which includes coarse-ribbed bivalves, ammonites, and belemnites. Fossil collections here indicate a Hettangian to Sinemurian age, consistent with inclusion in the Jack Formation (Lewis, 2001). The calcareous strata grade upward into thinly to medium bedded turbiditic siltstones, representing the stratigraphically highest levels mapped at the GR2 zone. These strata contain minor bioclastic sandstone and limestone lithologically similar to the basal sequence, but not usually exceeding a metre in thickness. The stratified sequence is cut and displaced by several subvertical faults striking 030°-040°. Where exposed, these faults are associated with anomalously altered zones up to ten metres wide. Of the five faults identified by Lewis (2003), four displace stratigraphic contacts with an apparent dextral sense, and one with an apparent sinistral sense. The greatest apparent displacement is on the easternmost fault, and measures at least a hundred metres. The most continuous fault can be mapped for over a kilometer, and is covered by glacier to both the NE and SW (Lewis, 2003).

8.1. ALTERATION AND MINERALIZATION

Mapping of alteration mineral assemblages within the Main Gossan by Kaip et al. (1994) defined a broad zonation characterized by a central core of kaolinite + quartz + pyrite alteration, grading outwards to sericite + quartz + pyrite, and peripheral chlorite + pyrite + carbonate alteration zones. Areas of massive silica occur on the east side of Sulphur Knob, and pyrophyllite occurs locally within some of the more intensely altered rocks in the core of the gossan. Much of the previous exploration work, including all fifteen of the diamond drillholes completed in the Main Gossan, are from an area along the western margin of the gossan referred to as the Eureka zone.

The Eureka zone is exposed in several northeasterly elongated outcrops, surrounded by morainal debris and ice. These outcrops contain irregular alteration zones dominated by either chlorite + pyrite, or kaolinite (sericite?) + limonite assemblages, with weak to moderate patchy silicification. Because of the extensive cover surrounding the outcrops, it is uncertain whether the northeasterly outcrop elongation is representative of the overall geometry of the zone.

Veins infilled with variable proportions of fine to coarse-grained quartz, calcite, and pyrite form up to several volume percent of outcrops in the Eureka zone. Veins have steep dips, strikes varying from EW to N, and form weakly sheeted to stockwork zones. Previous exploration programs have collected hundreds of surface samples from trenches and outcrops in the Main Gossan. Nearly all of the rock samples that contain significantly elevated gold values are from the Eureka zone area. Despite the intensity of alteration in the Sulphur Knob area and the large number of samples collected there, very few samples have produced elevated gold values.

The Eureka zone was tested by seven diamond drillholes in 1994 and two additional drillholes in 1997. The drillholes tested a northeasterly strike length of approximately 400 metres. Several intersected long intervals containing weakly elevated gold grades (e.g.: DH 97-1, 169.2m @0.46 g/t), but none encountered significant high-grade intersections.

During the 2007 season, drilling was attempted in the Eureka zone and in a newly discovered area named ND zone, but quality of the rock made drilling a challenge and holes in the ND zone had to be abandoned above target depths. Best intersection for the Eureka zone shows 75.45m @ 0.69 g/t Au and 2.89 g/t Ag in hole TC07-02. Hole TC07-04 shows 23.51m @ 0.50g/t Au and 760.01 g/t Ag.

Previous exploration on the West Nunatak has focused on three areas of precious metal mineralization: 1) the Goat Trail and Konkin zones, 2) the Southwest zone, and 3) the AW and Ridge zones. All of these zones contain strongly anomalous to high-grade gold values on surface, and all have been tested by previous diamond drilling programs. The following descriptions are drawn from both work completed in this study and published assessment reports.

Two distinct styles of alteration and mineralization occur in the Goat Trail and Konkin zones. In the Goat Trail zone and at higher elevations in the Konkin zone, elevated gold values occur within irregular to tabular zones with sericite+quartz+pyrite assemblages, grading outward into peripheral chlorite+pyrite+calcite. These zones are from a few decimeters to several tens of metres thick, and dip gently to the northwest. They contain an anomalously high density of fractures parallel to zone boundaries, and fractures within them are often weakly silicified. They do not however appear to be fault zones with mappable displacement, and their strike lengths are at most a few hundred metres. Two diamond drillholes completed in the Goat Trail zone intersected broad zones of alteration and mineralization that can be correlated with similar zones cropping out on surface, using a gently west-dipping grade/alteration envelope (Dewonek, 1990). Highest gold grades are typically within the 1.0 – 5.0 g/t range. Drilling during the 2007 season extended the known mineralized zone to the Copper Belle, a newly exposed area in which a strong potassic alteration that overprints an andesitic volcanic breccia in a Au-(Mo) porphyry style of mineralization. Hole TC07-19 intersected 76.07m @ 0.93g/t Au and 8.78g/t Ag. Hole TC07-21 intersected several mineralized zones including 41.07m @ 1.11g/t Au and 5.88 g/t Ag in an altered feldspathic sandstone. Hole TC07-23 intersected 72.75m @ 0.72 g/t Au and 20.83g/t Ag.

A second style of gold mineralization occurs in the lower part of the Konkin zone, at the Konkin gold pit. Here, high-grade gold values (up to several oz/t) have been obtained in surface samples from an irregular zone described in previous reports as a skarn (Cremonese, 1988). This zone contains semi-massive chalcopyrite and pyrite within a vuggy-textured rock rich in epidote, vein quartz, calcite, and chlorite. It occurs along an irregular contact between fragmental volcanic textures, and a lower unit with a fine grained, homogeneous, granular texture. This latter unit is tentatively interpreted as the marginal phase of a diorite intrusion exposed to the northeast of the gold pit occurrence, suggesting that the high-grade gold values are localized along the intrusive contact. At least ten diamond drillholes have been completed in the vicinity of the Konkin gold pit, in an attempt to trace the high-grade zone in the subsurface. Of these, only one has intersected grades anywhere near those on surface. Drillhole T-87-2 contains a single assay interval grading 26.06 g/t over 3.3 metres, albeit at a level over 50 metres below the high grade surface samples.

Elevated gold values (1.0 to 5.0 g/t range) in the Southwest zone occur within narrow tabular zones containing quartz+sericite+pyrite±carbonate alteration. These zones are mainly confined to andesitic volcanic fragmental rocks, and are up to 5 metres in thickness. They typically contain a higher density of sub-parallel fractures than the enclosing strata, and are mineralogically and structurally similar to those found in the Goat Trail zone and upper part of the Konkin zone. However, strike continuity is somewhat greater in the Southwest zone than in these other areas. Three diamond drillholes are reported to have tested the Southwest zone in 1997.

Alteration in the southern part of the GR2 zone is focused along the NE trending mineralized zones below the contact with the calcareous sandstone and limestones tentatively forming part of the Jack Formation. These zones are dominated by quartz, sericite, and pyrite, with lesser carbonate. Semi-massive to massive pods of galena and minor sphalerite occur in trenches and blocks in the southernmost area. Although the faults are not directly exposed in these trenches, their position coincides with the southern projection of the easternmost fault. In the northern GR2 zone, patches of gossanous rocks with prominent manganese staining occur in rocks adjacent to the faults. These gossanous zones measure up to a few tens of meters long, and contain moderate silicification, disseminated pyrite, and minor sericite. They have irregular shapes, and do not appear to be spatially associated with faults. Surface sampling in previous exploration programs has focused on trenches excavated across the principal altered faults, and a few samples from the surrounding less altered rocks. Gold grades are strongly elevated in the trenches, with values in the 1.0 – 5.0 g/t range common. In contrast to most of the other Treaty Glacier area zones, the GR2 zone also contains strongly elevated values of Pb, Zn, Ag, Sb and As. Two drillholes were completed in the GR2 zone in 1991 - one targeting a NE-striking altered fault in the southern part of the zone, and the other testing one of the irregular gossanous zones in the northern part of the zone. The target zone was missed as drilling was parallel to the mineralized zone. The southern hole tested one of the less continuous NE-striking faults, in an area containing weak silicification, sericite alteration, and quartz veining on surface. The sulphide-rich trenches, which coincide with the highest surface gold grades, were not tested. The northern drillhole was collared next to an outcrop of moderate to strong silicification and semi-massive pyrite.

Drilling during the 2007 season in the GR2 zone defined two separate zones of mineralization. The first zone is described as stockwork veins within sericite-carbonate altered epiclastic rocks and the second zone comprised of bedded sulphides (pyrite) within dark-grey to black mudstones-siltstones (See figure 9 and Picture 2). Below the bedded sulphide zone, a lens of coarse grained massive sulphides (galena-sphalerite-chalcopyrite) was intersected, in contact with fossiliferous dark mudstones-siltstones of presumed younger age. Best intersection is found in hole TC07-24 with 6.8m @ 1.39g/t Au, 93.95g/t Ag, 0.27% Cu, 2.59% Zn and 4.42% Pb. Hole TC07-26 intersected 0.5m @ 2.03g/t Au, 170g/t Ag, 4.2% Zn and 5.9% Pb. Hole TC07-14 intersected 0.6m @ 0.17g/t Au, 94.5g/t Ag, 1.01% Cu, 2.9% Zn and 2.92% Zn. Hole TC07-12 intersected 1.27m @ 0.63g/t Au, 340g/t Ag, 0.10%Cu, 4.26% Zn and 4.61% Pb and 4.55m @ 3.89g/t Au including 1.55m @ 9.6g/t Au.

9.0 EXPLORATION

The 2008 exploration season was to consist of an approximate 5,000 metre drill program, as well as a ground VLF-EM survey over the 2004 AeroTEM anomaly detected on top of the Treaty Gossan (See Figures 6 and 7), along with exploration and mapping. Camp was mobilized and in early stages of preparation to support the above work, but due to declining market conditions, the program was down-scaled early in the season. The field program consisted of a review of the Copper Belle and GR2 zones and examination of drillcore for better interpretation of the mineralized zones, including textures and different styles of mineralization.

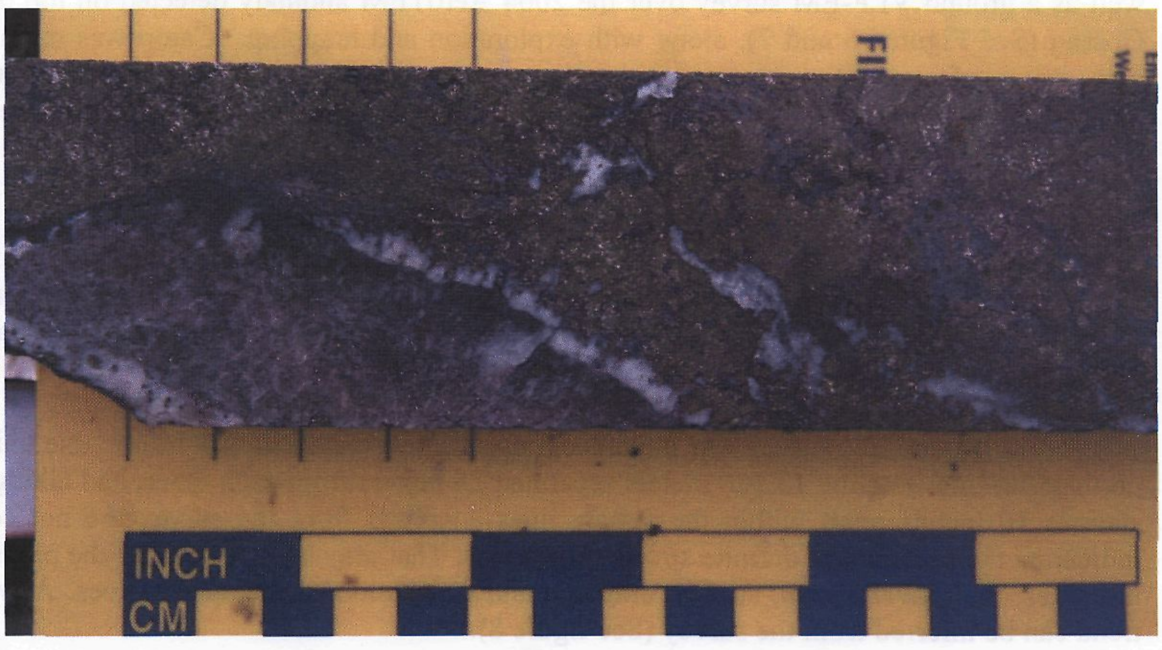
A ground VLF-EM survey was carried out over the gossan immediately east of the Eureka zone, covering an airborne AeroTEM anomaly. This information was obtained from Aeroquest when the Treaty property in the Eskay Creek area was surveyed during September and October, 2004.

The ground EM survey was undertaken using 2 Overhauser GSM-19 portable units following north-south lines totaling 13,170 meters separated 25 meters from each other, and taking readings in stations 10 meters apart within the survey lines. Results from the survey are not conclusive in indicating the presence of definite strong conductors. That may be produced by the presence of thick moraines, thick overburden, surface drainage and orientation of the survey lines. A weak NW-SE trend can be inferred from the survey (See figure 8).

Several key drill-core samples from 2007 drill-core stored in the property from Copper Belle and GR2 drillcore were sent to Vancouver Petrographics Ltd., for a polished section petrographic study and clarification of rock types and alteration patterns for better understanding of styles of mineralization. In July 2008, Aerogeometrics flew the property for the purposes of obtaining an orthophoto and a detailed topographic map in the areas where the known mineralizations occur.

The Copper Belle zone was a recently discovered showing immediately northeast of the historic Goat Trail showings. Retreat and thining of the glacier in recent years revealed an exposed outcrop of intense potassic altered and mineralized andesitic volcaniclastic rocks and breccias interbedded with andesitic tuffs and flows and minor welded feldspathic sandstones. The rock was later intruded by quartz-monzodiorite? and a gold-porphyry mineralization was developed in the contact of the intrusion. Several mineralized zones are interpreted from the drilled section. The first zone starts from surface to a depth of approximately 70 to 80 metres, showing moderate to steeply west dipping, and striking north-northwesterly. This zone averages 0.70 g/t Au over an interpreted thickness of 70-80m. It is characterized by strong potassic alteration (Picture 1), showing disseminated pyrite and massive pyrite-quartz veining, grades to pervasive chlorite and pyrite-sericite-carbonate altered andesitic volcanic breccias and is the common feature in this mineralized interval. Hole TC07-19 intersected 76.07m @ 0.93g/t Au and 8.78g/t Ag. Hole TC07-23 intersected 72.75m @ 0.72 g/t Au and 20.83g/t AgA

A second interpreted mineralized zone occurs apparently sub-parallel to the previous described one, and is intersected in drillhole TC07-21, where several mineralized zones include 41.07m @ 1.11g/t Au and 5.88 g/t Ag and 102.00m @ 0.56g/t Au occurring in welded feldspathic sandstones, similar to hole TC07-23 (72.75 @ 0.72 g/t Au). The grades and alteration zones indicate that a Au-porphyry style of mineralization was developed in this part of the property.



Picture 1. TC07-30 (35.5 to 35.7m). Coarse grained pyrite stockwork in intense potasic altered volcanic breccia from the Copper Belle zone. Gold grades average >1 g/t.

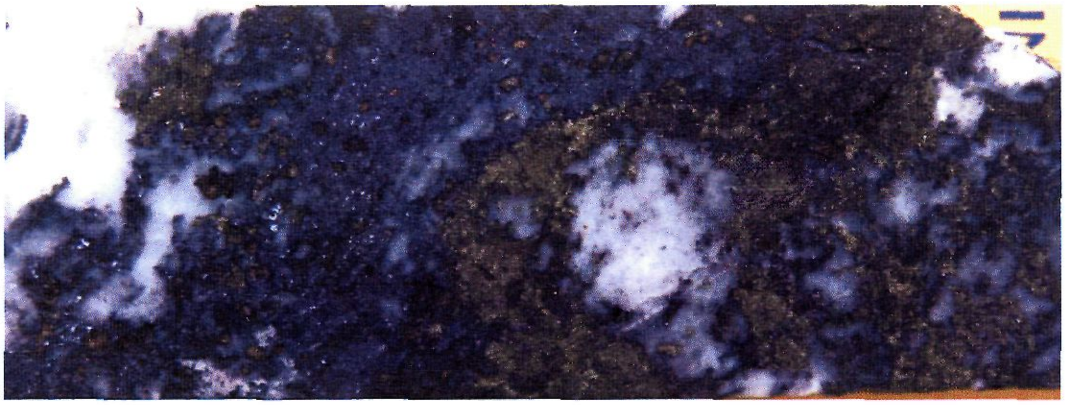
Table 3: Copper Belle Zone Drill Highlights

COPPER BELLE DRILL HIGHLIGHTS					
HOLE	From (m)	To (m)	Interval (m)	Au (g/t)	Ag (g/t)
TC07-07	2.44	48.76	**46.23**	**0.83**	6.39
TC07-07	65	81	16	0.66	0.23
TC07-09	2.44	80	**77.56**	**0.79**	2.8
including	2.44	41	**38.56**	**1.17**	4.4
TC07-11	2.43	73	**70.57**	**0.76**	4.91
including	2.43	18.5	**16.07**	**1.61**	13.34
TC07-11	113	130	**17**	**4.33**	2
including	113	115	**2**	**22.6**	5.8
TC07-11	213	220.5	7.5	1.12	36.35
TC07-13	4	43	**39**	**0.72**	3.26
TC07-15	2.43	72.5	**70.07**	**0.66**	6.31
including	9.5	18	**8.5**	**1.58**	27.43
and	60	64.2	4.2	1.61	25.58
TC07-17	1.82	32	**30.18**	**1.32**	5.93
including	8	14	**6**	**2.91**	19.7
TC07-17	52	71	**19**	**1.24**	15.14
including	64.5	71	**6.5**	**2.93**	42.52
TC07-19	2.43	78.5	**76.07**	**0.93**	8.78
including	10	14	**4**	**1.49**	49.35
and	60	68	**8**	**3.23**	45.48
TC07-21	2.43	43.5	**41.07**	**1.11**	5.88
including	2.43	24	**21.57**	**1.67**	9.8
TC07-21	127	171	**44**	**0.82**	1.5
including	147	151	4	1.5	3.1
TC07-21	191	233	**42**	**0.49**	1.3
TC07-21	295	309	14	0.5	0.8
TC07-21	363	379	16	0.51	1.8
TC07-21	467	469	2	4.65	6
TC07-23	5	70	**65**	**0.81**	3.8
including	25	46	**21**	**1.21**	8.39
and	30	34	4	1.64	27.89
TC07-23	140	212.75	**72.75**	**0.72**	20.83
including	140	153	**13**	**1.73**	**103.51**
TC07-23	233	267	34	0.49	7.88
including	233	235	2	3.8	123
TC07-30	3.04	48.5	**45.46**	**0.81**	18.7
including	23	24.75	1.75	1.29	70.17
including	46.5	48.5	2	2.75	104.3

Anomalous values of molybdenum are detected at the bottom of holes TC07-17 and TC07-21, this last within the altered quartz-monzodiorite? intrusive, showing values up to 0.01% molybdenum over 25m with a highest of 0.017% molybdenum. This suggests high temperature of the intrusion at relatively shallow depths. Drill highlights of the Copper Belle zone are shown in Table 4. Gold values decrease drastically in pink and green massive ash-tuffs, locally showing patches of K-feldspar, chlorite and epidote alteration, indicating that permeability of the rock is lower compared with the andesitic volcanic breccias, and mineralizing hydrothermal fluids are resistant to penetrate in this unit. These rocks in the drill-logs are described in error in the 2007 drill logs as "skarn" and such interpretation may be misleading as it indicates a completely different style of mineralization. A drill-hole section with the updated lithologies based in 2008 field and after petrographic study descriptions (Leicht, 2008, in this report) is presented in Figure 10.

The GR2 target is located in the vicinity of the Copper Belle, at higher topographic and stratigraphic level (Lewis, 2003). Marked structural and lithological control, textures in sulphide mineralization as well as very elevated concentration of pathfinder elements such as arsenic, antimonium and manganese values indicates a Volcanogenic Massive Sulphides (VMS) style of mineralization. Three styles of mineralization have been interpreted in core. Stringers and veins composed chiefly of quartz and pink rhodohrosite? and minor galena, sphalerite, chalcopyrite showing breccia and crustiform textures typical of epithermal environments, as well as intense alteration of the host rock to sericite-pyrite and carbonate suggest a feeder zone for a VMS deposit. Well bedded sulphides (pyrite) in black mudstone (Picture 2) indicate the presence of exhalative sulphides and a reduced basin where deposition and preservation of sulphides exist. A zone of coarse grained sulphide, locally up to 20m thick showing silicification, indicates a possible lens of massive sulphide proximal to the venting zone (Picture 3). Elevated grades of gold and silver correlate with zinc and lead (sphalerite, galena and lead sulphosalts) in these zones, whereas gold is also concentrated in the lower contact (not clear if a fault zone) with fossiliferous black mudstones-siltstones of turbiditc origin (Figure 9). Sulphide rich zones are characterized by presence of massive galena and sphalerite, with small amounts of chalcopyrite, where pyrite is conspicuous in the host. The mineralized lenses and stringer-vein zones strike roughly northeast and dip steeply to the northwest. Drill highlights of the GR2 area are shown in Table 4.

Picture 2. Bedded sulphides (pyrite) in black mudstone from hole TC07-24 in the GR2 zone.



Picture 3. Coarse grained massive sulphides (chalcopyrite, galena, sphalerite) in lower part of hole TC07-24 from the GR2 zone (interpreted as proximal zone in the sulphide venting area)

Table 4: GR2 Zone Drill Highlights

GR2 DRILL HIGHLIGHTS

HOLE	From (m)	To (m)	Interval (m)	Au (g/t)	Ag (g/t)	Cu %	Zn %	Pb %	As ppm	Sb ppm
TC0724	208.7	215.5	6.8	1.394	93.957	0.271	**2.593**	**4.417**		
including	211.7	213.5	1.8	**4.04**	**204**	0.5715	**5.08**	**9.66**	1140	285
TC0726	51.5	56	4.5	0.873	**201.8**					
TC0726	178	178.5	0.5	**2.03**	**170**	0.04	**4.2**	**5.9**	1545	330
TC0726	184	200	16	0.955						
TC0714	32	34	2	1.61	5.3	0.0144	0.0112	0.0028	4870	120
TC0714	34	34.5	0.5	**3.08**	**122**	0.3809	**1.41**	0.5758	9740	1605
TC0714	47.5	48.5	1	0.22	**664**	0.2963	0.5463	**4.13**	920	1695
TC0714	107.5	108	0.5	0.29	**180**	0.0598	**1.66**	**6.82**	1135	490
TC0714	158	158.6	0.6	0.17	94.5	**1.006**	**2.9**	**2.92**	265	1650
TC0712	33	33.5	0.5	**2.54**	87.2	0.2709	0.8445	0.5626	4520	620
TC0712	172.38	173.65	1.27	0.63	**340**	0.1002	**4.26**	4.61	825	665
TC0712	174.45	179	4.55	**3.899**						
including	174.45	176	1.55	**9.6**	2.4	0.0111	0.0051	0.0048	6805	110
and	176	178	2	0.97	0.3	0.0103	0.008	0.0026	645	30
TC0718	34.58	35.08	0.5	0.17	44.1	0.0269	**3.63**	1.61	670	145
TC0718	56.15	56.65	0.5	1.59	60	0.0118	0.0599	**4.43**	2880	175
TC0718	84	85	1	**3.01**	16.5	0.1918	0.1002	0.119	2545	110
TC0718	105.3	106	0.7	**4.55**	34.2	0.0967	0.3544	0.1218	4385	380
TC0720	117	118	1	**3.41**	3.8	0.0247	0.0225	0.0296	7290	260
TC0716	177	189	12	1.37						
TC0727	172	177	5	1.68	30.98					
TC0727	*179*	*183*	*4*	*1.95*	4.2					

10.0 INTERPRETATION AND CONCLUSIONS

During the 2008 season, the ground VLF-EM survey covering the airborne anomaly didn't reveal any definite conductor that may indicate the presence of structures controlling the epithermal mineralization. This may be explained by the presence of thick moraines, overburden and ice patches in the area surveyed, along with the orientation of the survey lines.

The GR2 target was drilled in 2007 to confirm extension at depth of surface mineralization found in NE trending fault zones with relatively long extension along strike and potential to be mineralized. Drilling proved that mineralization does not occur in shear-fault zones dipping steeply to the east as Lewis (2003) suggested in his report. Mineralization occurs in sets of veinlets/stockworks parallel to a northeast strike, steeply dipping to the northwest as feeders of a stratabound mineralization that matches with a VMS style mineralization. Drilling has proven the important lithological control of the Au-base metal mineralization. Correlation can be done with a certain degree of confidence along a NE-SW strike. Alteration of the host rock and pathfinder element distribution indicate that the zones targeted with drillcore match with the feeder zone of a massive sulphide lens proximal to the venting zone. This apparently extends to the southwest, and dips northwest, where bedded sulphides (pyrite) within sedimentary mudstones-siltstones have been found. A lens of coarse grained massive sulphides (sphalerite, galena, chalcopyrite and Pb-sulphosalts?) has been found at the lowest part in most of the holes targeting the inferred faulted contact between fossiliferous black carbonatic mudstones and the volcaniclastic sequence, along with elevated gold and silver values, below the bedded sulphide zone. This massive sulphide lens shows a particular enrichment in gold in the lower contact (not clear if faulted) with turbiditic fossiliferous carbonaceous mudstones-siltstones. Textures and alteration in this coarse grained sulphide zone, along with breccia textures and geometry may indicate proximal zones to the sulphide vent zone.

The Copper Belle target drilled in 2007 is located immediately adjacent to the Goat Trail zone. Surface mineralization found in the Konkin and Goat Trail zones can be correlated with a certain degree of confidence towards the Copper Belle zone and may extend as far as the Konkin zone. Drilling tested the extension at depth of the newly exposed potassic altered knob. The sulphide and gold rich areas are found on surface and at depth in two main zones enveloped by lower grade zones. These main zones trend roughly NE and dip steeply to the NW. At this stage, the mineralized trend found in drillholes can be followed for at least 400 metres along strike over a 100 metre wide area and is still open at depth below 200 metres from surface. The quartz-monzodiorite? found in core revealed anomalous high amounts of molybdenum, (0.010%) over 10 metres in hole TC07-21 and also visible molybdenite in the lower part of hole TC07-17.

11.0 RECOMMENDATIONS

The GR2 zone hosts the potential of a volcanogenic massive sulphide (VMS) deposit. The identified feeder (sulphide-rich stringer zone) in a strongly phyllic altered rock and the bedded sulphides in turbiditic carbonaceous mudstone, along with coarse grained sulphides in a massive sulphide lens that texturally appears to be the proximal zone of the sulphide vent, indicates the great potential of this newly geologically interpreted area. The sulphide lens interpreted from two subparallel drill sections subperpendicular to the strike of the mineralized zone appears to thicken towards the southwest, same as the turbiditic sequence hosting bedded sulphides. Drilling the GR2 target along strike, stepping back from the known mineralization towards the southwest, will test the potential of the mineralization found at depth and along strike. A 4,000-5,000 metre drill program with less than 50 metre spacing between holes stepping back from the initial 2007 drillholes is recommended to follow up with the known mineralization, as well as drilling to test the potential of the other historical mineralized zones (B, B1 and F).

Drilling the Copper Belle target is recommended. Copper Belle hosts the potential of a low-grade, high-tonnage gold-(molybdenum) porphyry style of mineralization. Gold mineralized zones are striking in a northwestern direction and steeply dipping to the northwest. Correlation between drillholes and surface is possible with a high grade of confidence and gold and base metal grades combined are in the range for a bulk tonnage deposit according to the current market conditions. A drill program of 5,000-6,000 metres, stepping back towards the southwest (Goat Trail zone) from the initial 2007 drillpad and with 100 metre spacing between holes is also recommended. Infill drilling with 50 metre spacing can be done in the higher grade zones for the purpose of better confidence in correlation between holes.

Drilling the main AeroTEM anomaly in the Eureka zone will test the possibility of porphyry Cu-Au and epithermal Au-Ag-(Zn) styles of mineralization. A deep hole (400m) in the centre of the anomaly is recommended to test possible Cu-Au mineralization at depth.

Respectfully submitted,

PROFESSIONAL
PROVINCE OF
R. SANABRIA ORELLANA
#154013
BRITISH COLUMBIA
GEOSCIENTIST

Raul Sanabria Orellana, *M.Sc., EurGeol., P.Geo.*
Vancouver, British Columbia
May 30th, 2009

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<u>Appendix A: Statement of Qualifications</u>

STATEMENT OF QUALIFICATIONS

I, **Raul Sanabria**, *European Geologist* with license #*766* and *Professional Geoscientist* with license #154013 and business address in #1909-939 Beatty Street, Vancouver, British Columbia, V6Z 3C1, do hereby certify the following:

I am a consulting geologist retained by American Creek Resources Ltd., and *Qualified Person* as defined by National Instrument 43-101.

I hold a *Licenciado* in Geology Degree, specialist in Mineral Resources by the *Universidad Complutense de Madrid* (Spain) in 2001.

I have been practicing my profession continuously since graduation in 2001 as a mine and exploration geologist, with projects in Spain and Western Africa (Senegal). Since January 2007, I have been engaged in mineral exploration projects in Canada (Yukon Territory and British Columbia) as Senior Project Geologist, Senior Project Manager, Exploration Manager and Vice-President, Exploration.

I am a member in good standing with the *European Federation of Geologists* and the *Association of Professional Engineers and Geoscientists of British Columbia*. I am a full member of the *ICOG* (*Official Spanish Association of Geologists*).

I personally prepared this report and it is based upon a personal examination of all available company and government reports pertinent to the subject property.

I was personally on site from August 25th to September 8th, 2008, visiting drill-sites, interpreting geology and style of mineralization in key showings within the property and re-interpreting drill core. I did not supervise the work during the 2007 season as I was not employed by the Company at that time.

In the disclosure of information relating to the title of the optioned claims I have relied on the information provided to me by American Creek Resources Ltd. and the property vendors. I disclaim responsibility for such information.

I have interest in the property in the form of stock options and common shares of the corporation.

As of the date of the certificate, to the best of my knowledge, information and belief, I am not aware of any material fact or material change with respect to the subject matter of this technical report that is not reflected in this report, the omission to disclose which would make this report misleading.

I consent to and authorize the use of the attached report and my name in the Company's prospectus, Statement of Material Facts or other public document.

Raul Sanabria Orellana, M.Sc., EurGeol.

PROFESSIONAL PROVINCE OF R. SANABRIA ORELLANA #154013 BRITISH COLUMBIA GEOSCIENTIST

Dated in Vancouver, B.C. this ... day of MAY ...., 2009

Appendix B: Statement of Expenditures

STATEMENT OF EXPENDITURES

Treaty Creek Property 2008

Dates on Property - June 2 - September 8

Professional Fees and Wages - Field

Personnel	Days	Position Rate	Subtotal
Raul Sanabria	15 @	Geologist $625/Day	$9,375.00
Desmond O'Brien	15 @	Geologist $500/Day	$7,500.00
Lindsay Hills	6 @	Geology Student $235/Day	$1,410.00
Cameron Tymstra	9 @	Geology Student $225/Day	$2,025.00
Raquel Fernandez	15 @	Field Assistant $250/Day	$3,750.00
Mike Price Contract	3 Months	Camp manager	$23,750.01
Willie Edwards	3 months	Camp Assistant	$17,200.00
Rob Pavan	8 @	Labourer $250/Day	$2,000.00
Vincent Cauldwell	8 @	Labourer $250/Day	$2,000.00
Debbie Thomson		Cook	$1,275.00
Jennifer Jmaeff	standby	Cook/First Aid	$9,999.99

Sub-total $47,810.01

Office Studies

Raul Sanabria	20 @	Literature Search $625/Day	$12,500.00
	20 @	Database Compilation $625/Day	$12,500.00
	20 @	Computer Modeling $625/Day	$12,500.00
	15 @	Reprocessing of Data $625/Day	$9,375.00
	7 @	General Research $625/Day	$4,375.00
	10 @	Report Preparation $625/Day	$6,250.00
Marianne Hirsche	22 @	General Research $260/Day	~~$5,720.00~~
	10 @	Report Preparation $260/Day	$2,600.00

PROFESSIONAL PROVINCE OF R. SANABRIA ORELLANA #154013 BRITISH COLUMBIA GEOSCIENTIST

Sub-total $65,820.00

Equipment Rental

Trucks	2x 17 @	$150/day		$5,100.00
	1x 90 @	$150/day		$13,500.00
	1x 45 @	$150/day		$6,750.00
Mileage @ $.40/km	in British Columbia		15,032km	$6,012.80
Field Equipment	1x 15 @	$200/day		$3,000.00
	2 Quads, 2 Magnometers and Field Gear			
	1x 90 @	$50/day		$4,500.00
	1 Quad			
Reflex Instruments	2 EZ-shot	3 months		$12,727.44
			Sub-total	$51,590.24

Expenses

Food	$4,729.25
Materials and Supplies	$67,077.21
Avalanche Report	$3,147.30
AeroGeometrics	$19,248.00
Flights and Transportation in BC	$3,009.10
Courier/Baggage	$2,373.93
Hotel	$3,046.17
Phone/Communication	$2,545.51
Forklift Rental	$876.30
Small Tools	$6,756.52
Taxi/Parking	$585.18
Park Passes	$67.89
Fuel for Quads	$930.57
Vancouver Petrographics	$2,536.43
Helicopter	$131,977.48
Morecore Contract	$37,000.00
Sub-total	$285,906.84
Total	**$451,127.09**

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA R. SANABRIA ORELLANA #154013 GEOSCIENTIST

Appendix C: VLF-EM Raw Data

Treaty Creek VLF-EM survey (August 25th – September 3rd, 2008)

Seattle Station (NLK) 24.8 KHz

UTME	UTM N	sttn kHz	ip	op	h1	h2	pT	2nd sttn kHz	ip 2	op 2	h1 2	h2 2	pT 2	time
430175	6272000	24.8	-12.7	-6	63	79	12.56	25.2	-30	-2.8	34	50	1.86	145931.8
430175	6272010	24.8	-10.6	-3.6	-70	77	12.94	25.2	-27	-1.9	-39	45	1.82	150059.5
430175	6272019	24.8	-9.7	-4.9	-60	79	12.31	25.2	-25	-2.8	-62	99	1.77	150132.2
430175	6272030	24.8	-12.6	-5.7	-57	85	12.71	25.2	-34	-2.1	-52	107	1.81	150402
430175	6272040	24.8	-11.8	-5.7	-59	84	12.68	25.2	-30	-3.3	-64	103	1.84	150441.5
430174	6272050	24.8	-13	-7	-62	82	12.79	25.2	-35	-2.8	-61	105	1.84	150502.4
430175	6272060	24.8	-15.6	-8.6	-53	90	13	25.2	-34	-4.8	-60	112	1.92	150529.4
430175	6272070	24.8	-16	-8.1	-71	82	13.4	25.2	-32	-6.2	-71	102	1.89	150606.4
430174	6272080	24.8	-14.3	-8.2	-76	79	13.58	25.2	-32	-2.8	-79	99	1.92	150642.8
430175	6272090	24.8	-11.9	-6.6	-87	71	13.93	25.2	-37	-3.1	-88	95	1.97	150710.2
430175	6272100	24.8	-11.9	-7.1	-85	79	14.35	25.2	-28	-3.7	-94	101	2.1	150749
430175	6272110	24.8	-16	-10	-77	78	13.59	25.2	-32	-7.3	-78	95	1.87	150901.9
430175	6272120	24.8	-8.4	-4	-102	58	14.55	25.2	-26	-1.9	-101	81	1.96	151037.7
430175	6272130	24.8	-5.4	-1.1	-95	67	14.4	25.2	-31	2.9	-94	92	2	151114.6
430175	6272140	24.8	-6	-2.4	-73	80	13.39	25.2	-26	1	-71	105	1.93	151137.7
430175	6272150	24.8	-7	-2	-83	70	13.36	25.2	-27	1.6	-86	95	1.94	151205.1
430175	6272160	24.8	-9.8	-2.8	-60	82	12.56	25.2	-33	-0.1	-66	106	1.9	151235.9
430175	6272170	24.8	-12.7	-3.6	-52	82	12.02	25.2	-30	-0.4	-53	110	1.85	151316.2
430175	6272180	24.8	-12.7	-3.3	-80	63	12.61	25.2	-36	2.2	-89	75	1.77	151349.3
430174	6272190	24.8	-14.2	-2.5	-81	68	13.11	25.2	-37	0.4	-74	91	1.78	151428.6
430175	6272200	24.8	-21.8	-8.5	-36	84	11.35	25.2	-25	-3.1	-63	95	1.73	151659.9
430175	6272210	24.8	-22.8	-9.1	-72	74	12.75	25.2	-36	-7.5	-63	100	1.79	151755.1
430175	6272220	24.8	-25.2	-10.1	-71	74	12.67	25.2	-41	-6.3	-76	93	1.82	151858.4
430175	6272230	24.8	-22.4	-8.5	-37	85	11.53	25.2	-36	-2.6	-35	107	1.71	152011.4
430175	6272240	24.8	-15.5	-3.1	-57	91	13.26	25.2	-31	-1.9	-65	111	1.94	152158.9
430175	6272250	24.8	-7.2	1.6	-79	77	13.62	25.2	-21	3.7	-81	101	1.96	152307.9
430175	6272260	24.8	-5.7	1.5	-80	77	13.73	25.2	-18	2	-74	98	1.87	152353.9
430175	6272270	24.8	-11.7	-0.9	-34	91	12.06	25.2	-30	3	-31	116	1.83	152449.7
430175	6272280	24.8	-12.6	-0.6	-50	84	12.11	25.2	-23	2.1	-56	111	1.88	152707.2
430175	6272290	24.8	-15.5	-1	-42	87	12.03	25.2	-28	-0.7	-48	111	1.83	152745.7
430175	6272300	24.8	-16.7	-1.5	-59	88	13.05	25.2	-30	0.9	-58	106	1.84	152807.9
430175	6272310	24.8	-20.1	-0.5	-25	96	12.21	25.2	-32	1.9	-32	115	1.8	152840.6
430175	6272320	24.8	-21.8	0	5	94	11.64	25.2	-35	1.5	-2	118	1.79	152904.8
430175	6272330	24.8	-24.4	-1.7	-28	97	12.43	25.2	-39	1.3	-41	117	1.88	153004.4
430175	6272340	24.8	-21.7	1.2	-86	74	13.97	25.2	-34	1.4	-86	93	1.92	153039.7
430175	6272351	24.8	-24.9	0.8	-58	87	13	25.2	-34	3.4	-65	108	1.92	153123
430175	6272360	24.8	-22.7	1.9	-62	86	13.08	25.2	-39	4.3	-65	113	1.98	153149.9
430175	6272370	24.8	-25.1	1.6	-40	97	12.95	25.2	-36	3.7	-47	118	1.93	153221.5
430175	6272380	24.8	-25.4	1.9	-61	85	12.91	25.2	-41	3.4	-65	115	2.01	153247.5
430175	6272390	24.8	-24.3	2.5	-64	84	13.04	25.2	-38	3.9	-75	108	1.99	153345.9
430175	6272400	24.8	-24	2.6	-85	79	14.38	25.2	-44	7.4	-82	102	1.99	153411.1
430175	6272410	24.8	-30	-1	-51	94	13.28	25.2	-40	2.4	-55	113	1.91	153449.9
430175	6272420	24.8	-33.6	-2.5	-56	94	13.6	25.2	-47	2.4	-62	117	2	153518.4
430175	6272430	24.8	-31.6	-2.5	-83	82	14.51	25.2	-49	-0.2	-87	107	2.09	153604.8

430175	6272440	24.8	-31.8	-3.4	-96	70	14.75	25.2	-48	-1.4	-103	98	2.15	153709.4
430175	6272449	24.8	-34.2	-4.9	-90	80	14.91	25.2	-43	-0.5	-94	103	2.12	153837.8
430125	6272430	24.8	-25.1	2	-57	89	13.1	25.2	-15	5.7	-62	110	1.91	154832.4
430125	6272420	24.8	-26.5	1.9	-45	92	12.68	25.2	-12	3.5	-55	112	1.9	154927.7
430125	6272410	24.8	-24.7	2.1	-41	94	12.74	25.2	-13	4.6	-40	109	1.76	155033.8
430125	6272400	24.8	-23.5	3.2	-53	90	12.93	25.2	-8.3	6.6	-40	112	1.81	155137.9
430125	6272390	24.8	-21.3	5.2	-47	87	12.28	25.2	-7.1	6.8	-39	111	1.78	155214.9
430125	6272380	24.8	-19.8	4.8	-61	85	12.98	25.2	-8.7	7.2	-61	103	1.81	155453.9
430125	6272370	24.8	-20.6	3.1	-65	82	12.95	25.2	-9.1	5	-66	104	1.88	155602.7
430125	6272360	24.8	-17.9	1.9	-56	80	12.15	25.2	-7.4	1.2	-70	103	1.89	155639.1
430125	6272350	24.8	-16.9	3.2	-75	69	12.6	25.2	-1.8	4	-78	90	1.8	155717.4
430125	6272340	24.8	-16.1	3	-57	84	12.53	25.2	-3.3	4.7	-55	102	1.76	155748.8
430125	6272330	24.8	-13.4	3.6	-73	75	12.91	25.2	0.4	3.2	-76	94	1.83	155819.1
430125	6272320	24.8	-9.8	3.7	-81	71	13.34	25.2	3.6	4.7	-82	86	1.81	155856.1
430125	6272310	24.8	-7.8	3.5	-70	73	12.56	25.2	2.8	3.5	-87	93	1.93	155934.8
430126	6272300	24.8	-4.9	3.3	-88	68	13.77	25.2	7.2	2.5	-95	84	1.92	160006.9
430125	6272290	24.8	-5.9	1.4	-66	83	13.05	25.2	6.2	2.5	-63	103	1.83	160052
430125	6272280	24.8	-4.2	1.2	-78	78	13.65	25.2	6.8	1.9	-79	97	1.9	160118.6
430125	6272270	24.8	-4.9	-1.7	-79	75	13.5	25.2	6.2	-1.6	-86	96	1.96	160144.4
430125	6272260	24.8	-5.5	-1.5	-72	76	13	25.2	4.4	-1.8	-93	102	2.09	160214.3
430125	6272250	24.8	-6.9	-1.8	-61	87	13.14	25.2	1.5	-1.5	-72	115	2.05	160246.4
430125	6272240	24.8	-9.4	-2	3	103	12.68	25.2	1.7	-0.5	16	114	1.74	160344.3
430125	6272230	24.8	-14.8	-6.5	-51	88	12.62	25.2	0	-7.4	-57	108	1.86	160448.1
430125	6272220	24.8	-20.6	-10.7	-32	92	12.02	25.2	-12	-11	-32	106	1.68	160553.7
430125	6272210	24.8	-16	-7.7	-62	74	11.95	25.2	-0.2	-8.7	-71	92	1.77	160639.6
430125	6272200	24.8	-11.6	-1.5	-15	87	10.87	25.2	-1	-1.6	-13	108	1.66	160857.7
430125	6272190	24.8	-11.2	-4.2	-44	85	11.91	25.2	1.1	-3.2	-43	105	1.72	160958.6
430125	6272180	24.8	-6.7	-2.6	-50	84	12.15	25.2	4.5	-2.7	-48	102	1.71	161045.6
430125	6272170	24.8	-5	-2.5	-70	74	12.6	25.2	5.6	-2.2	-73	97	1.84	161117.9
430125	6272160	24.8	-5.1	-2.1	-21	90	11.42	25.2	1.3	-2.5	-21	110	1.7	161207.2
430126	6272150	24.8	-8.4	-6	-77	73	13.15	25.2	3.4	-5.4	-85	90	1.88	161254.6
430125	6272140	24.8	-7.2	-4.7	-23	93	11.9	25.2	0.8	-3.3	-23	113	1.74	161352.1
430125	6272130	24.8	-7.9	-4	-57	82	12.38	25.2	3	-4.3	-58	103	1.79	161448.8
430125	6272120	24.8	-8.2	-4.1	-44	87	12.06	25.2	2.2	-3	-49	110	1.83	161533.7
430125	6272110	24.8	-9.6	-6.2	-76	78	13.43	25.2	11	-8	-71	92	1.77	161557.9
430124	6272100	24.8	-9.4	-4.4	-63	81	12.72	25.2	2.1	-3.1	-68	100	1.84	161639.3
430125	6272090	24.8	-8.8	-4.2	-61	79	12.39	25.2	4.9	-5	-63	100	1.79	161723.9
430125	6272080	24.8	-10.4	-3.8	-64	78	12.56	25.2	2.2	-3	-68	102	1.86	161755.9
430125	6272070	24.8	-8.4	-1.9	-8	90	11.12	25.2	-0.7	-1.9	-5	113	1.71	161826.7
430124	6272060	24.8	-5.2	-1.6	-43	88	12.13	25.2	3.6	-1	-43	104	1.71	161906.3
430125	6272050	24.8	-3.2	-0.2	-57	81	12.26	25.2	5.7	-0.6	-61	97	1.74	161942.3
430125	6272040	24.8	6.4	4.1	-82	70	13.35	25.2	19	3.7	-91	91	1.95	162042.9
430125	6272030	24.8	3	3.8	-37	90	12.03	25.2	12	2.3	-42	112	1.82	162140
430125	6272020	24.8	-3.7	-1.3	-53	90	12.89	25.2	5.9	-0.6	-58	114	1.94	162215.8
430125	6272010	24.8	-9.6	-6.2	-72	82	13.54	25.2	-1.5	-5.2	-79	99	1.92	162253.6
430124	6272000	24.8	-9.4	-4.1	-55	87	12.71	25.2	1.9	-3	-53	106	1.81	162327.1
430075	6272000	24.8	-3	7.9	10	95	11.85	25.2	-13	7.3	5	61	1.85	172934.9
430075	6272010	24.8	-4	7.4	-35	89	11.82	25.2	-13	8.8	-17	57	1.81	173037.9
430075	6272020	24.8	-2.8	8.8	-48	94	13.05	25.2	-9.9	9.6	-21	60	1.96	173116.4
430075	6272030	24.8	-2.6	6.9	-57	85	12.7	25.2	3.7	8.8	-7	97	2.96	173144.9
430075	6272040	24.8	-3.8	6.1	-36	94	12.48	25.2	2.7	6.6	12	94	2.88	173214.4

430075	6272050	24.8	-5.7	3.5	-32	99	12.87	25.2	8.3	3.6	59	125	4.2	173300.9
430075	6272060	24.8	-7.9	2.3	-44	100	13.49	25.2	2.7	0.3	22	90	5.62	173409.6
430075	6272070	24.8	-6.2	2.4	-42	99	13.25	25.2	5.1	0.3	16	93	5.74	173444.2
430075	6272080	24.8	-3.3	4	-73	89	14.25	25.2	8.3	2.2	-3	101	6.16	173513.9
430075	6272090	24.8	-1	2.3	-60	97	14.08	25.2	8.8	0	2	95	5.75	173550.7
430075	6272100	24.8	-0.8	-1.4	-44	103	13.9	25.2	10	-1.9	22	90	5.64	173629.3
430075	6272110	24.8	2.1	-2.2	-68	92	14.21	25.2	13	-4.1	-4	95	5.77	173657.7
430075	6272120	24.8	1	-4.1	-44	98	13.28	25.2	13	-6.9	18	91	5.67	173725.5
430074	6272130	24.8	2.6	-4.8	-77	91	14.81	25.2	14	-6	-12	94	5.77	173758.2
430075	6272140	24.8	2.4	-4.9	-55	93	13.33	25.2	12	-9.4	10	95	5.8	173832.1
430075	6272150	24.8	3.4	-6.4	-52	95	13.39	25.2	14	-9.6	10	91	5.6	173924.3
430075	6272160	24.8	2.8	-4	-56	87	12.82	25.2	14	-7.8	0	92	5.57	174015.2
430075	6272170	24.8	0.4	-8.4	6	104	12.81	25.2	13	-8.9	61	81	6.2	174103.7
430074	6272181	24.8	1.9	-6.2	-33	104	13.52	25.2	14	-7.4	37	93	6.06	174251.2
430075	6272190	24.8	1.3	-2.8	-48	88	12.43	25.2	16	-5.7	16	93	5.74	174333.1
430075	6272200	24.8	0.1	-4.2	-67	85	13.41	25.2	15	-6.5	-10	95	5.81	174358.7
430075	6272210	24.8	0.1	-3.1	-58	86	12.88	25.2	15	-7.2	1	94	5.74	174431.2
430076	6272220	24.8	-0.3	-2.2	-54	89	12.91	25.2	16	-5.3	14	92	5.65	174523.8
430074	6272230	24.8	-1.4	-0.9	-15	97	12.13	25.2	13	-5.2	47	88	6.07	174703.9
430075	6272240	24.8	-3.8	-5	-32	94	12.31	25.2	13	-6.2	34	91	5.92	174730.1
430075	6272250	24.8	-5.2	-4.4	-62	80	12.52	25.2	13	-10	4	98	5.94	174800.6
430075	6272260	24.8	-3.2	-3.2	-68	89	13.86	25.2	15	-6	-2	99	6	174825.7
430075	6272270	24.8	-0.4	-0.3	-72	89	14.15	25.2	20	-3.5	-4	98	5.96	174857.3
430075	6272280	24.8	-0.3	-1.5	-66	86	13.47	25.2	23	-2.7	2	96	5.82	174924.5
430075	6272290	24.8	0	1.2	-74	80	13.48	25.2	24	0.3	-12	93	5.69	174945.3
430075	6272300	24.8	-1.7	-0.2	-58	87	12.91	25.2	24	1.4	7	90	5.48	175013.5
430075	6272310	24.8	-6.1	-2.6	-18	100	12.61	25.2	21	1.8	47	85	5.91	175056.7
430075	6272320	24.8	-6.3	-0.9	-65	84	13.11	25.2	18	0.9	-4	90	5.46	175123.9
430075	6272330	24.8	-7.6	-0.9	-63	84	12.97	25.2	16	1.9	-8	89	5.44	175151.6
430075	6272340	24.8	-9.6	-0.8	-13	104	12.91	25.2	13	2.4	44	79	5.53	175227.3
430075	6272350	24.8	-10.9	1.4	-67	82	13.06	25.2	15	5.3	-6	89	5.4	175316.2
430075	6272360	24.8	-11.9	2	-52	90	12.85	25.2	12	6.8	9	84	5.17	175343.3
430075	6272370	24.8	-12.8	2.3	-61	86	13.05	25.2	10	8	0	89	5.39	175413.9
430076	6272380	24.8	-14.8	1.3	-50	90	12.72	25.2	8.8	6.8	12	90	5.51	175441.3
430075	6272390	24.8	-19.4	1.5	-45	95	13.07	25.2	6	7	20	90	5.58	175531.9
430075	6272400	24.8	-18	0	-70	83	13.44	25.2	2.6	5.4	-11	85	5.22	175606.3
430075	6272410	24.8	-19.8	1.1	-52	97	13.57	25.2	2.3	4.5	8	94	5.75	175627.6
430075	6272420	24.8	-24.9	-1.2	-62	89	13.36	25.2	-4.2	3.2	0	96	5.83	175720.4
430075	6272431	24.8	-26.7	-0.9	-59	89	13.25	25.2	-4.3	2.5	4	96	5.81	175746.1
430075	6272440	24.8	-29.1	-3.4	-42	98	13.21	25.2	-4.6	1.2	26	94	5.96	175817.9
430075	6272452	24.8	-27.4	0.4	43	100	13.49	25.2	-3	3.3	98	67	7.2	180150.1
430075	6272460	24.8	-26.7	-1.6	50	107	14.58	25.2	-3.7	0.9	87	74	6.97	180317.7
430075	6272470	24.8	-20.7	0.8	-5	119	14.69	25.2	1.6	2.7	49	101	6.82	180405.1
430075	6272480	24.8	-11	4.4	-40	107	14.13	25.2	13	6.4	24	110	6.85	180451.5
430075	6272490	24.8	-8.2	3.2	-36	111	14.47	25.2	18	6.1	19	104	6.42	180520.7
430075	6272500	24.8	-6.9	-1.4	-5	112	13.9	25.2	18	2.8	53	90	6.34	180605
430026	6272500	24.8	-18.7	-2.3	57	110	15.27	25.2	4.4	-0.9	100	84	7.96	181016.6
430026	6272490	24.8	-39.2	-7.9	-1	117	14.41	25.2	-15	-8.4	53	102	7.01	181108
430025	6272480	24.8	-47.6	-12.8	-14	104	13.01	25.2	-20	-9	48	104	6.97	181148.5
430025	6272470	24.8	-41.8	-4.7	3	93	11.51	25.2	-11	-4.3	59	85	6.33	181322.2
430024	6272460	24.8	-34.3	-2.4	-14	89	11.11	25.2	-6.3	0.3	43	86	5.83	181408.6
430025	6272449	24.8	-26.8	1.8	-33	85	11.3	25.2	0	3.5	25	90	5.68	181504.4

430025	6272440	24.8	-25.4	-0.7	-27	91	11.72	25.2	2.7	2.2	37	86	5.67	181621.3
430025	6272430	24.8	-21.6	2	-19	90	11.43	25.2	4.7	4	41	83	5.64	181812.7
430024	6272420	24.8	-18.2	1.9	-35	87	11.55	25.2	6.9	7.3	20	80	5.03	181915.1
430024	6272410	24.8	-13.3	2.9	-43	90	12.3	25.2	10	6.5	16	85	5.28	182101.2
430025	6272400	24.8	-12.5	2.5	-47	91	12.71	25.2	13	7.6	11	89	5.47	182315.9
430025	6272390	24.8	-8.1	6.6	-15	94	11.83	25.2	13	8.1	36	86	5.66	182545.3
430026	6272380	24.8	-8.5	3.9	-38	95	12.62	25.2	16	6.8	21	90	5.63	182901.5
430025	6272370	24.8	-10.1	2.6	-65	79	12.61	25.2	16	6.8	-4	85	5.18	183005.4
430025	6272360	24.8	-7.4	4.1	-68	79	12.88	25.2	19	8.8	-4	88	5.33	183115.3
430025	6272340	24.8	-3.1	4.2	-16	101	12.65	25.2	21	6.4	44	72	5.13	184947.7
430025	6272330	24.8	-2.9	4.6	-34	91	12.08	25.2	24	6.7	25	81	5.13	185045.2
430025	6272320	24.8	-3.3	1	-50	86	12.35	25.2	25	0.3	-4	85	5.16	185113.5
430025	6272310	24.8	-1.3	-0.3	-71	78	13	25.2	27	0.9	-11	94	5.74	185147.3
430025	6272300	24.8	-1.5	-2.8	-69	88	13.86	25.2	29	-0.3	-5	95	5.81	185220.5
430025	6272290	24.8	0.4	-2.9	-70	88	13.88	25.2	29	-0.8	-8	94	5.72	185245.7
430025	6272280	24.8	-0.4	-5.3	-53	91	12.99	25.2	29	-2.1	11	92	5.64	185315.4
430025	6272270	24.8	-2.8	-7.1	-69	83	13.29	25.2	26	-7.3	-2	96	5.86	185355.4
430024	6272253	24.8	-2.1	-10.4	-51	90	12.77	25.2	28	-8.5	10	95	5.8	185511.5
430025	6272240	24.8	0	-5.7	-24	98	12.51	25.2	30	-3.1	35	91	5.94	190423.4
430025	6272220	24.8	-0.7	-6.9	-46	96	13.2	25.2	23	-7.5	26	94	5.92	190527.2
430025	6272210	24.8	1.2	-8.3	-95	71	14.71	25.2	21	-9.9	-31	94	6.01	190612.8
430025	6272200	24.8	1.6	-5.5	-68	88	13.71	25.2	24	-6.3	4	88	5.38	190650.5
430026	6272190	24.8	1.9	-5.9	-62	86	13.15	25.2	23	-6	0	92	5.62	190827.4
430025	6272180	24.8	3	-5.5	-49	98	13.52	25.2	23	-5.3	17	97	6	190858.9
430025	6272170	24.8	6	-3.4	-46	108	14.48	25.2	22	-4.8	20	98	6.08	190929.4
430025	6272160	24.8	3.9	-2.8	-57	95	13.74	25.2	22	-6.4	16	98	6.01	191019.9
430025	6272150	24.8	4.5	-3.2	-42	101	13.6	25.2	21	-5.3	25	96	6.07	191101.4
430024	6272140	24.8	5	-1.5	-45	99	13.52	25.2	19	-5.7	19	102	6.31	191137.4
430025	6272130	24.8	4.3	-0.9	-48	100	13.71	25.2	16	-4.3	13	99	6.06	191206.4
430025	6272120	24.8	2.4	2	-51	109	14.87	25.2	15	-2.3	20	103	6.35	191231.9
430025	6272110	24.8	-2.7	5.4	-50	108	14.71	25.2	8.9	2.3	21	96	5.97	191258.8
430025	6272100	24.8	-3	3.4	-51	100	13.9	25.2	8.9	0.1	7	99	6.06	191333.1
430024	6272091	24.8	-14.6	5.2	-79	85	14.34	25.2	-3.3	0	-18	94	5.82	191412.4
430025	6272080	24.8	-14.9	6.6	-67	91	14.01	25.2	-2.4	1.8	-1	92	5.57	191507.7
430025	6272070	24.8	-14.5	6.4	-70	84	13.51	25.2	-1.1	2.8	-11	83	5.1	191552.5
430025	6272060	24.8	-10.3	9	-70	83	13.45	25.2	7.3	6.4	-8	80	4.88	191612.7
430024	6272050	24.8	-6.3	9.7	-76	72	13.01	25.2	12	9.4	-20	85	5.32	191737.9
430025	6272040	24.8	0.6	11.1	-86	62	13.11	25.2	20	11.7	-29	80	5.18	191811.6
430026	6272030	24.8	3.8	12	-90	62	13.48	25.2	22	13.7	-29	81	5.23	191855.1
430025	6272020	24.8	7.1	13.9	-69	77	12.75	25.2	25	13.1	-9	86	5.28	191957.3
430025	6272010	24.8	7.7	13.2	-78	76	13.49	25.2	24	12.7	-13	87	5.36	192039.6
430024	6272000	24.8	12.1	15.9	-72	82	13.52	25.2	27	14.1	-9	90	5.53	192125.7
429975	6272000	24.8	-4.8	0.5	-57	98	13.97	25.2	10	4.6	4	92	5.59	192424
429976	6272010	24.8	-1.4	3.2	-42	103	13.72	25.2	14	6.5	10	95	5.81	192457.6
429975	6272020	24.8	6.5	8.8	-90	84	15.27	25.2	21	11.6	-29	92	5.88	192536.8
429975	6272030	24.8	8.9	11.3	-41	102	13.63	25.2	25	14.8	15	88	5.46	192629.9
429975	6272040	24.8	6	9.9	-48	94	13.08	25.2	20	12.8	13	84	5.16	192713.3
429975	6272050	24.8	2.3	10.4	-33	97	12.65	25.2	16	11.6	33	79	5.21	192802.9

429975	6272060	24.8	-2.8	8.9	-25	89	11.41	25.2	10	11	29	76	4.98	192853.4
429975	6272070	24.8	-12.6	8	-39	89	12.03	25.2	-3	3.1	20	81	5.06	192946.9
429975	6272080	24.8	-13.5	8.9	-24	98	12.48	25.2	-5.5	6	19	85	5.33	193020.1
429975	6272090	24.8	-14.6	7.9	-29	99	12.71	25.2	-10	4.4	-2	82	4.96	193047.4
429975	6272100	24.8	-14.6	6.9	-58	96	13.87	25.2	-7.5	3	10	91	5.55	193137.2
429975	6272110	24.8	-8.8	5.5	-70	98	14.85	25.2	-0.9	3.3	5	102	6.24	194739.4
429975	6272120	24.8	-7.8	6.7	-57	101	14.35	25.2	4.5	2.4	12	108	6.59	194816.4
429975	6272130	24.8	-3.6	3.6	-71	100	15.22	25.2	7.2	3.2	-5	101	6.15	194913
429975	6272140	24.8	-1.5	0.8	-78	92	14.91	25.2	13	1.3	-13	101	6.19	194934.2
429975	6272150	24.8	1.8	1.7	-90	95	16.11	25.2	17	1.2	-9	106	6.48	195132.6
429975	6272160	24.8	3.3	-2.4	-71	98	14.99	25.2	20	-1.5	-11	103	6.28	195212
429976	6272170	24.8	3.1	-2	-57	99	14.15	25.2	23	-0.4	11	98	6	195253.4
429975	6272180	24.8	6.9	-1.3	-62	99	14.47	25.2	26	0.1	0	103	6.26	195340.3
429975	6272190	24.8	7.4	-1.1	-65	100	14.8	25.2	28	0	-3	103	6.26	195414.5
429976	6272200	24.8	5.8	-4.2	-68	91	14.09	25.2	26	-1.9	-14	96	5.91	195458.3
429975	6272210	24.8	8.9	-4.2	-69	96	14.62	25.2	27	-4.2	-10	95	5.83	200315.6
429975	6272220	24.8	10	-3.4	-79	94	15.21	25.2	28	-5.3	-16	101	6.21	200335.8
429975	6272230	24.8	12.2	-4.6	-54	102	14.27	25.2	29	-6.4	9	98	5.96	200446.6
429975	6272240	24.8	13	-3.2	-72	91	14.32	25.2	31	-6.1	-10	96	5.86	200517.1
429975	6272250	24.8	15.6	-4.6	-29	105	13.51	25.2	32	-6.5	28	95	6.01	200547.4
429975	6272260	24.8	18.6	-6.3	-27	100	12.79	25.2	35	-5.7	38	89	5.88	200635.7
429975	6272270	24.8	16.3	-4.4	-47	92	12.71	25.2	37	-4	21	94	5.86	200828.7
429975	6272280	24.8	15.3	-2	-26	94	12.04	25.2	37	-3.3	36	94	6.14	201120.3
429975	6272290	24.8	14.2	-1.2	-55	87	12.75	25.2	35	-2.9	1	90	5.5	201204.2
429975	6272300	24.8	14.8	-1.2	-56	89	13.03	25.2	34	-3.7	-3	94	5.75	201246.5
429975	6272310	24.8	15.3	2	-57	91	13.27	25.2	33	0.3	0	95	5.78	201325.6
429975	6272320	24.8	13.1	3.7	-64	80	12.73	25.2	32	-0.2	-4	90	5.47	201349.4
429975	6272330	24.8	13.5	6.9	-42	91	12.45	25.2	31	6.5	17	86	5.35	201436.9
429975	6272340	24.8	14.5	9.6	-56	83	12.43	25.2	32	10.8	-1	89	5.41	201852.4
429975	6272348	24.8	12.1	10.1	-66	75	12.39	25.2	27	10.9	-8	84	5.13	202128
429975	6272400	24.8	6.2	15.8	-45	86	11.98	25.2	17	12.4	10	91	5.56	203844.7
429975	6272410	24.8	6.1	14.1	-71	72	12.56	25.2	19	12.4	-18	89	5.54	203930.5
429974	6272420	24.8	3.7	13.9	-76	71	12.88	25.2	18	11.6	-22	93	5.81	204006.6
429975	6272430	24.8	4	11.6	-63	78	12.43	25.2	16	12.3	0	93	5.66	204050.9
429975	6272440	24.8	0.2	11.6	-29	92	11.95	25.2	13	10.9	30	86	5.55	204145.2
429975	6272450	24.8	-0.1	12.5	-41	90	12.26	25.2	13	11.1	26	92	5.82	204224.5
429975	6272460	24.8	-2.2	10.9	-26	94	12.11	25.2	12	10.5	28	92	5.82	204304.9
429975	6272470	24.8	-3.5	9.9	-38	86	11.64	25.2	8.8	8.1	20	93	5.8	204336.5
429975	6272480	24.8	-9.7	7	-23	94	11.96	25.2	5.7	4.4	45	90	6.15	204401.3
429975	6272490	24.8	-17.3	1	6	89	10.98	25.2	4.6	1.6	79	83	7.01	204452.9
429975	6272500	24.8	-28	-10.7	63	82	12.87	25.2	-3.4	-5.6	105	53	7.19	204735.4
429925	6272500	24.8	6.8	7	13	103	12.78	25.2	30	9.3	71	89	6.9	205413.9
429926	6272490	24.8	6.2	7.7	-47	99	13.55	25.2	31	13	23	102	6.38	205546.2
429925	6272480	24.8	5.1	6.1	-65	95	14.24	25.2	28	12.1	3	104	6.34	205653.9
429925	6272470	24.8	7.5	8	-50	99	13.7	25.2	24	12	17	98	6.06	205746.6
429925	6272460	24.8	2.8	8.5	-67	94	14.27	25.2	20	9.5	-2	99	6	205825.7
429925	6272450	24.8	2.8	9.1	-59	92	13.54	25.2	19	9.3	0	98	5.98	205902.1

429925	6272410	24.8	9.7	13.3	-10	104	12.9	25.2	26	14.9	57	86	6.29	210748.9
429925	6272400	24.8	9.1	10	-79	78	13.78	25.2	27	13	-5	94	5.7	210920.6
429926	6272390	24.8	6.7	10.4	-67	83	13.22	25.2	28	11.9	-3	94	5.7	211010.6
429926	6272380	24.8	11.4	11.2	-52	96	13.45	25.2	30	11.7	20	94	5.87	211130.6
429925	6272370	24.8	13.1	8.8	-21	104	13.11	25.2	28	7.7	45	90	6.12	211208.3
429925	6272360	24.8	11.9	6	-55	93	13.4	25.2	27	3.5	12	94	5.77	211234.1
429927	6272350	24.8	10.8	3.5	-42	98	13.24	25.2	26	-0.2	33	97	6.23	211317.6
429925	6272340	24.8	17.2	6.2	-56	92	13.29	25.2	31	2.4	10	94	5.76	211405
429926	6272329	24.8	19.3	4.9	-79	82	14.07	25.2	33	2.7	-15	89	5.49	211439.7
429925	6272320	24.8	19.5	3.7	-109	49	14.81	25.2	32	0.8	-64	82	6.36	211552.5
429925	6272310	24.8	24.6	4.7	-67	95	14.37	25.2	37	1.4	-3	98	5.96	211642.3
429924	6272300	24.8	23.4	2.9	-62	93	13.79	25.2	38	-1.3	0	99	6	211714.9
429925	6272290	24.8	22.8	0.9	-83	84	14.55	25.2	38	-2.8	-22	95	5.96	211812.5
429925	6272280	24.8	24.6	0.6	-70	97	14.8	25.2	39	-4.1	2	102	6.19	211850
429925	6272270	24.8	25	0.8	-60	102	14.6	25.2	40	-3	1	100	6.07	211928.2
429925	6272260	24.8	23.3	0.8	-66	98	14.69	25.2	39	-4.6	-6	101	6.13	211952.3
429925	6272250	24.8	22.1	-0.6	-65	102	15	25.2	36	-4.3	-5	103	6.24	212026.7
429925	6272240	24.8	19.9	-0.2	-49	111	14.97	25.2	33	-3.5	14	104	6.39	212130.4
429926	6272230	24.8	13.3	-0.6	-106	89	17.13	25.2	26	-4.3	-46	107	7.09	212208.9
429925	6272220	24.8	7.1	-1.1	-98	84	16.01	25.2	22	-4.3	-41	111	7.18	212233.7
429925	6272210	24.8	6	-0.1	-93	96	16.58	25.2	19	-3.2	-28	99	6.27	212316.9
429925	6272200	24.8	3.3	0.7	-88	91	15.66	25.2	18	-2.1	-28	105	6.6	212342.3
429925	6272190	24.8	2.6	0.9	-96	91	16.32	25.2	17	-1.5	-35	99	6.41	212417.2
429925	6272180	24.8	2.1	1.8	-90	86	15.42	25.2	17	0.5	-36	102	6.55	212442.3
429925	6272170	24.8	-1.6	2.2	-109	79	16.66	25.2	15	1.2	-46	98	6.57	212517.8
429925	6272160	24.8	-5.8	4.5	-75	93	14.81	25.2	12	3.8	-14	99	6.09	212556.4
429925	6272150	24.8	-11.1	1.9	-94	86	15.8	25.2	7.7	3.4	-33	101	6.48	212623.2
429924	6272140	24.8	-12.6	5.4	-62	99	14.42	25.2	6.7	3.7	5	110	6.72	212654.1
429926	6272129	24.8	-13.6	4	-86	77	14.31	25.2	5.9	5.1	-25	101	6.34	212729.7
429925	6272120	24.8	-13.7	4.7	-78	82	14.03	25.2	8	6.4	-11	97	5.95	212827.9
429925	6272110	24.8	-10.7	5.2	-59	96	13.9	25.2	9.6	8.4	4	91	5.55	212906.8
429925	6272100	24.8	-7.5	5.3	-87	84	14.97	25.2	14	11.5	-15	92	5.67	212953.1
429924	6272090	24.8	-5.8	5.5	-88	81	14.83	25.2	15	10.6	-10	96	5.86	213111.6
429925	6272080	24.8	1.6	11.1	-49	96	13.32	25.2	16	11.7	28	87	5.57	213209.4
429925	6272069	24.8	3.7	9.1	-98	70	14.85	25.2	17	9.6	-40	92	6.11	213336.3
429925	6272060	24.8	5.1	8.3	-88	77	14.42	25.2	20	8.6	-25	99	6.2	213412.7
429925	6272050	24.8	7.3	7.6	-102	63	14.85	25.2	21	7.8	-46	94	6.38	213450.9
429924	6272040	24.8	8.4	6	-108	76	16.26	25.2	19	4.2	-47	97	6.55	213547.6
429925	6272030	24.8	3.3	4.4	-70	98	14.94	25.2	15	0.6	0	99	6.02	213633.3
429926	6272020	24.8	-2.7	0.1	-83	81	14.35	25.2	8.6	-3	-23	93	5.81	213659.5
429925	6272010	24.8	1.3	2.9	-55	99	14.08	25.2	11	-1.9	16	102	6.28	213725.5
429925	6272000	24.8	2.5	3.5	-73	84	13.8	25.2	10	-1.6	-11	89	5.48	213756.3
429899	6272000	24.8	-5.1	0.9	-69	95	14.51	25.2	6.4	-1.4	0	93	5.68	213903.9
429900	6272010	24.8	-5.5	-0.4	-72	98	15.08	25.2	6.3	-1.7	-5	93	5.66	213942.6
429900	6272020	24.8	-6.3	-1	-89	87	15.41	25.2	6.5	-2.2	-22	91	5.72	214011.6
429900	6272030	24.8	-7.7	-0.3	-77	89	14.58	25.2	4.1	-3.6	-8	94	5.75	214054.4
429900	6272040	24.8	-7	0.2	-74	103	15.71	25.2	6.5	-0.4	-6	101	6.12	214132.8
430201	6271999	24.8	-13.4	10	76	-69	12.71	25.2	30	3.7	2	75	2.28	141734.4
430200	6272010	24.8	-7.3	11.5	72	-76	12.95	25.2	-50	-12	-14	59	1.86	145602.8

430200	6272020	24.8	-10	12.1	63	-86	13.18	25.2	-42	-13	-17	62	1.97	145707.2
430200	6272030	24.8	-6.1	12.1	86	-76	14.17	25.2	-45	-13	-30	53	1.85	145746.7
430200	6272040	24.8	-14.3	12.6	56	-96	13.77	25.2	-26	-14	-25	60	1.98	145837.9
430200	6272049	24.8	5.2	13.5	68	-88	13.77	25.2	-43	-16	-13	65	2.03	145931.9
430201	6272060	24.8	5.5	9.9	93	-76	14.88	25.2	-28	-12	-39	53	2.01	150008
430200	6272070	24.8	-11.3	8.2	97	-72	14.94	25.2	-1.7	-7.6	-57	43	2.17	150046.4
430200	6272080	24.8	-8.1	8	96	-69	14.58	25.2	-28	-12	-45	46	1.96	150248.7
430200	6272089	24.8	-5.6	10.6	109	-47	14.72	25.2	-36	-10	-73	75	1.59	150323.6
430200	6272100	24.8	-8	10.4	52	-88	12.64	25.2	-22	-14	-49	114	1.89	150459.5
430198	6272110	24.8	14.1	13.5	81	-80	14.11	25.2	-15	-8.6	-86	100	2	150556.9
430200	6272120	24.8	-7.4	6.6	67	-87	13.55	25.2	-6.2	-5.8	-65	99	1.8	150703.1
430199	6272131	24.8	5.8	4	121	-30	15.37	25.2	-74	-16	-57	55	1.2	150751.2
430200	6272140	24.8	-8.3	3.7	94	-67	14.26	25.2	-12	-5.2	-102	84	2	150837.7
430200	6272150	24.8	-6.4	6.1	91	-66	13.92	25.2	-39	-11	-77	93	1.82	150921.1
430200	6272160	24.8	-10.6	7.5	92	-64	13.89	25.2	-38	-9.9	-86	87	1.86	150953.9
430199	6272170	24.8	-5.7	8.8	70	-79	13.1	25.2	-28	-10	-71	93	1.78	151025
430200	6272180	24.8	-0.3	11.2	80	-69	13.13	25.2	-36	-11	-82	84	1.78	151117
430199	6272190	24.8	3.1	13.1	98	-49	13.55	25.2	-44	-14	-91	69	1.74	151151.1
430200	6272200	24.8	5.9	15.6	86	-61	13.08	25.2	-37	-13	-83	75	1.7	151248.6
430201	6272210	24.8	7.4	17.7	84	-69	13.45	25.2	-44	-13	-78	93	1.85	151504.5
430199	6272221	24.8	13.5	17.2	106	-46	14.32	25.2	-46	-15	-103	60	1.82	151540.6
430199	6272231	24.8	18.9	21	93	-57	13.51	25.2	-45	-12	-57	80	1.49	151635.7
430198	6272239	24.8	15.1	17.9	116	-6	14.37	25.2	-80	-13	-55	49	1.12	151847.2
430202	6272249	24.8	24.1	12.5	92	-69	14.18	25.2	-28	-4.2	-95	97	2.07	152257.5
430200	6272259	24.8	-5.4	4.4	107	-59	15.1	25.2	-53	-7.1	-67	92	1.73	152344.9
430201	6272270	24.8	-8.7	4.4	77	-82	13.95	25.2	-20	-3.8	-83	100	1.97	152423.4
430201	6272282	24.8	-3.5	5.4	72	-85	13.86	25.2	-29	-4.9	-61	110	1.91	152456.2
430200	6272291	24.8	-3.2	6.8	33	-96	12.6	25.2	-27	-6.3	-29	117	1.82	152526.2
430201	6272301	24.8	5	9	73	-86	13.91	25.2	-28	-7.5	-74	102	1.91	152602.8
430201	6272311	24.8	12.2	10.7	75	-76	13.2	25.2	-40	-7.8	-57	108	1.86	152657.6
430201	6272321	24.8	10	13.3	51	-89	12.71	25.2	-39	-6.3	-45	114	1.86	152751.6
430199	6272330	24.8	-1.5	10.3	67	-88	13.75	25.2	-35	-5.8	-71	109	1.98	152819.5
430200	6272340	24.8	6.9	9	58	-90	13.25	25.2	-37	-3.6	-60	113	1.95	152852.9
430200	6272350	24.8	12.7	7.6	99	-69	14.94	25.2	-32	-3.4	-107	88	2.1	152921.3
430200	6272360	24.8	5.4	7.3	33	-101	13.15	25.2	-35	-3	-29	120	1.88	152947.8
430201	6272370	24.8	9.3	4.8	79	-86	14.48	25.2	-37	-1.6	-73	107	1.97	153025.9
430200	6272380	24.8	22.2	5.8	71	-90	14.22	25.2	-31	0.2	-79	113	2.09	153054.3
430200	6272391	24.8	-1.8	5.2	56	-97	13.8	25.2	-39	-2.4	-59	118	2.01	153127.3
430200	6272401	24.8	11.1	7.2	69	-96	14.59	25.2	-37	-3.1	-66	114	1.99	153157.4
430200	6272410	24.8	3.7	7	36	-110	14.3	25.2	-36	-4.3	-29	122	1.91	153240.2
430200	6272421	24.8	4.6	8.8	101	-73	15.38	25.2	-42	-6.2	-52	47	2.13	153324.4
430202	6272430	24.8	0.4	9.4	87	-92	15.62	25.2	-43	-7.4	-45	57	2.21	153408.3
430201	6272439	24.8	22.7	11.7	109	-70	16.04	25.2	-32	-4.5	-62	44	2.31	153451.5
430200	6272450	24.8	16.2	11.3	53	-113	15.43	25.2	-34	-6.3	-30	70	2.32	153531.7
430201	6272461	24.8	-4.9	7.9	82	-98	15.78	25.2	-30	-6.3	-38	66	2.32	153610.4
430201	6272472	24.8	24.3	10	112	-81	17.13	25.2	-25	-8.2	-58	51	2.36	153707.4
430199	6272481	24.8	8.3	13.3	118	-55	16.11	25.2	-26	-8.7	-64	35	2.21	153851.2
430199	6272490	24.8	10.1	14.7	124	-42	16.14	25.2	-44	-13	-30	32	1.34	153927.9
430198	6272502	24.8	6.4	15.6	42	-44	15.11	25.2	-28	-13	-96	111	2.23	154032.8
430150	6272438	24.8	52.2	6.1	58	-93	13.5	25.2	-25	2	-36	117	1.85	154921.5
430151	6272430	24.8	41.2	5.6	88	-74	14.24	25.2	-19	2.7	-97	95	2.05	155452.4

430150	6272420	24.8	33.2	4.3	89	-75	14.37	25.2	-15	3.5	-94	93	2.01	155547.4
430149	6272409	24.8	26	2	94	-70	14.47	25.2	-10	6	-94	93	2	155624.7
430149	6272400	24.8	33.1	3.2	69	-85	13.59	25.2	-14	5.6	-75	104	1.94	155659.5
430149	6272389	24.8	27.2	2.1	81	-81	14.15	25.2	-11	5.5	-82	98	1.95	155805.7
430150	6272380	24.8	24.9	1.5	78	-80	13.85	25.2	-10	4.5	-82	101	1.98	155844.9
430150	6272370	24.8	20.8	1.3	103	-60	14.68	25.2	-6	4.4	-98	78	1.9	155914.5
430149	6272360	24.8	39.7	3.5	79	-70	13.1	25.2	-11	4.3	-82	99	1.95	155934.7
430149	6272350	24.8	16.6	2.1	102	-56	14.45	25.2	-6	3	-105	75	1.96	155952.9
430151	6272340	24.8	22.8	1.8	112	-43	14.81	25.2	-11	1.9	-114	62	1.96	160012.6
430150	6272330	24.8	26.8	3	91	-71	14.26	25.2	-12	0.6	-88	91	1.91	160039.7
430150	6272320	24.8	21	1.6	108	-52	14.81	25.2	-16	-0.2	-120	65	2.08	160109.3
430150	6272310	24.8	7	0.1	106	-50	14.47	25.2	-8.5	1.2	-103	68	1.87	160139.6
430149	6272301	24.8	10.8	-0.6	94	-60	13.8	25.2	-0.7	1.4	-96	80	1.9	160211.8
430149	6272290	24.8	12.1	-0.2	96	-65	14.33	25.2	2.4	3.1	-91	83	1.87	160242.4
430150	6272281	24.8	12.6	-0.4	94	-66	14.25	25.2	-5.7	-0.5	-105	74	1.95	160320.1
430150	6272270	24.8	14.9	-1.8	76	-78	13.41	25.2	5.9	4.2	-74	100	1.89	160354.4
430150	6272259	24.8	11.1	-1.4	92	-66	13.99	25.2	5.3	2.6	-100	86	2	160435.6
430148	6272250	24.8	15.2	-1	96	-68	14.59	25.2	11	2.4	-88	87	1.89	160505.4
430149	6272241	24.8	-4.9	-1.6	89	-78	14.6	25.2	-3.3	-0.3	-92	99	2.04	160543.3
430151	6272231	24.8	15.4	6.2	118	-45	15.64	25.2	5.3	-2.8	-102	68	1.86	160702.3
430150	6272220	24.8	13.3	10.6	106	-57	14.88	25.2	-8.2	-8.7	-98	73	1.85	160820.7
430150	6272209	24.8	14.4	9.1	105	-51	14.47	25.2	-6.8	-5.7	-103	67	1.86	160907.6
430150	6272199	24.8	15	4.4	118	-27	14.91	25.2	21	1.3	-92	47	1.57	161029.2
430151	6272191	24.8	16.8	4.4	105	-61	15.01	25.2	1.3	-0.7	-97	82	1.93	161216.8
430150	6272180	24.8	10.6	4.4	113	-33	14.58	25.2	17	1.1	-91	56	1.62	161244.7
430150	6272170	24.8	4	2.3	108	-41	14.31	25.2	15	0.8	-94	66	1.74	161316.3
430150	6272161	24.8	8.5	3.7	78	-77	13.57	25.2	0.6	-1.5	-73	95	1.82	161356.1
430150	6272148	24.8	5.2	5	117	-40	15.29	25.2	2.5	-0.3	-112	67	1.98	161427.9
430150	6272141	24.8	1.8	4.4	96	-68	14.57	25.2	-4.1	-3.8	-102	85	2.01	161532.5
430150	6272129	24.8	11.3	5.9	106	-62	15.21	25.2	3.7	-5.1	-99	81	1.94	161612.2
430150	6272121	24.8	-3.1	7.2	80	-75	13.56	25.2	-5.4	-6	-91	99	2.04	161641.9
430151	6272110	24.8	12.5	6.2	106	-52	14.57	25.2	-3.8	-5.2	-110	71	1.99	161715.3
430149	6272100	24.8	16.1	7.7	97	-65	14.42	25.2	-7.5	-5	-104	80	1.99	161755.9
430149	6272090	24.8	29.4	8.2	79	-73	13.31	25.2	-4	-1.1	-91	94	1.98	161829.5
430150	6272080	24.8	21.4	6.4	80	-74	13.53	25.2	-7.3	-4	-90	93	1.97	161900.4
430151	6272070	24.8	4.6	5.9	77	-77	13.47	25.2	-6.5	-3.9	-78	97	1.89	161944.8
430150	6272060	24.8	23.4	6.2	64	-83	13.01	25.2	-4.5	-2.8	-70	103	1.88	162014.5
430151	6272049	24.8	20	5.7	76	-75	13.21	25.2	-3.6	-1.1	-80	90	1.83	162039.2
430149	6272039	24.8	23.9	4.7	52	-84	12.25	25.2	1.7	0.5	-53	98	1.7	162116.2
430148	6272031	24.8	18.5	1.8	44	-84	11.71	25.2	1.9	0.9	-45	107	1.77	162202.1
430150	6272020	24.8	9.7	-1.5	37	-93	12.33	25.2	5.4	3.4	-30	107	1.68	162303.7
430149	6272011	24.8	3.6	-3.8	56	-94	13.55	25.2	4.5	3.1	-59	112	1.92	162406.4
430149	6271999	24.8	30.4	5.4	32	-98	12.81	25.2	-0.6	2.1	-30	118	1.84	162447.7
430099	6272000	24.8	-14.6	6.9	-17	48	12.56	25.2	-1.2	5.6	0	64	1.94	173050.8
430100	6272010	24.8	-7.7	1.5	-52	94	13.31	25.2	12	8.5	23	127	3.91	173325.4
430100	6272021	24.8	-11.9	0.7	-68	86	13.61	25.2	4.6	6.4	-14	94	5.76	173354.8

430101	6272031	24.8	-2.4	0	-101	65	14.88	25.2	6.8	1.9	-50	89	6.2	173453
430100	6272040	24.8	-9.5	-1.6	-63	92	13.75	25.2	6.2	5.2	-7	93	5.71	173516
430100	6272051	24.8	0.2	1.8	-94	72	14.61	25.2	7.3	5.5	-39	88	5.88	173543.9
430100	6272060	24.8	-13.2	1.6	-91	74	14.49	25.2	-0.1	4	-38	97	6.33	173602.3
430100	6272069	24.8	-16.6	1.3	-87	81	14.74	25.2	-1.9	3.4	-30	91	5.84	173633.8
430100	6272080	24.8	-15.5	0	-98	60	14.21	25.2	-3.9	2.9	-54	86	6.2	173705.5
430100	6272090	24.8	-13.8	-1	-82	81	14.23	25.2	1.2	2.1	-23	92	5.79	173736
430100	6272100	24.8	-7	-2.3	-89	81	14.85	25.2	7	1.5	-25	104	6.49	173758.9
430101	6272110	24.8	-9.6	-1.6	-81	81	14.17	25.2	5.1	1.6	-22	94	5.86	173825.4
430101	6272120	24.8	0.8	-3.6	-89	59	13.23	25.2	11	-1	-40	89	5.91	174011.4
430100	6272129	24.8	-16.7	-4.2	-83	84	14.61	25.2	4.5	-3.1	-22	101	6.3	174037.7
430099	6272140	24.8	6.8	-3.9	-60	90	13.38	25.2	5.6	-3.3	21	98	6.07	174104.9
430100	6272150	24.8	-10.5	-2.4	-73	84	13.8	25.2	13	2.3	-5	101	6.13	174133.8
430101	6272161	24.8	-6.4	-5.3	-73	84	13.77	25.2	11	-5.6	-11	102	6.22	174235.1
430100	6272170	24.8	-8.8	-3.4	-89	74	14.28	25.2	6.3	-2.8	-34	94	6.1	174308.1
430100	6272180	24.8	-4.3	0.9	-84	82	14.46	25.2	12	1.2	-28	100	6.33	174331.6
430100	6272190	24.8	-7.9	0.4	-71	82	13.42	25.2	12	1.2	-12	99	6.06	174358.8
430101	6272200	24.8	-5.6	0.5	-53	96	13.53	25.2	14	1.5	17	93	5.77	174427.2
430100	6272210	24.8	-15.4	-1.1	-72	76	12.94	25.2	9.8	0.5	-9	91	5.55	174459.1
430099	6272220	24.8	-9.8	-3.9	-40	90	12.24	25.2	7.5	-3.7	23	91	5.69	174605.7
430101	6272230	24.8	-14.3	-6.2	-72	82	13.55	25.2	6.1	-5.7	-9	100	6.1	174644.5
430099	6272240	24.8	-14.5	-9.4	-47	94	13.08	25.2	5	-7.1	18	102	6.28	174721.4
430100	6272250	24.8	-18.6	-5.4	-81	77	13.76	25.2	5.2	-1.6	-28	102	6.45	174810.6
430101	6272259	24.8	-11.3	-2	-79	86	14.47	25.2	11	2.1	-19	102	6.28	174834.6
430101	6272270	24.8	-6.8	0.9	-81	82	14.25	25.2	16	5.6	-21	105	6.52	174903.7
430100	6272280	24.8	-11.4	-0.9	-66	92	14.03	25.2	15	6.1	-2	96	5.85	174927.8
430101	6272290	24.8	-15.4	-2.8	-57	90	13.11	25.2	15	3	6	99	6.04	174954.8
430100	6272300	24.8	-13.9	-2.9	-65	89	13.65	25.2	13	0.6	-1	97	5.92	175019.4
430100	6272310	24.8	-15.6	-2.6	-69	86	13.69	25.2	11	5	-9	97	5.93	175046.2
430100	6272320	24.8	-25.4	0.9	-102	56	14.36	25.2	1.7	8.2	-59	81	6.13	175110.3
430100	6272330	24.8	-20.2	0.8	-95	70	14.63	25.2	2.3	9.2	-38	90	5.96	175136.6
430100	6272340	24.8	-24.6	0.9	-74	83	13.72	25.2	6.6	7.2	-14	93	5.74	175215.1
430101	6272351	24.8	-10.9	0.6	-79	78	13.77	25.2	8.1	5.5	-22	91	5.67	175249.9
430100	6272359	24.8	-20.5	2.1	-73	86	13.95	25.2	5.8	10	-15	94	5.78	175329.2
430100	6272370	24.8	-17	1.3	-78	83	14.05	25.2	5.1	10.6	-18	94	5.8	175401.8
430100	6272381	24.8	-27.8	-2.8	-82	73	13.59	25.2	-3.1	6.9	-29	89	5.69	175449.7
430100	6272390	24.8	-29.4	-2.7	-80	83	14.21	25.2	-2.5	7.7	-17	92	5.71	175507.5
430101	6272399	24.8	-22	-2.3	-71	88	14.01	25.2	-1.2	6.1	-10	95	5.83	175531.2
430101	6272411	24.8	-33.6	-3.8	-97	68	14.66	25.2	-9.1	7.5	-35	92	5.98	175559.5
430100	6272420	24.8	-24.1	-3.7	-79	88	14.66	25.2	-6.4	4.9	-20	97	6.04	175636.6
430100	6272428	24.8	-27.3	-9.3	-29	100	12.86	25.2	-2.1	0.3	35	90	5.88	175836.2
430100	6272441	24.8	-28.7	-7.7	-73	96	14.93	25.2	-8.2	1.3	-18	105	6.47	180051.4
430100	6272450	24.8	-25.1	-3.7	-76	102	15.74	25.2	-3.4	5.8	-5	110	6.72	180120.3
430050	6272501	24.8	-4.7	-3.4	-35	123	15.74	25.2	12	0.8	32	113	7.14	180838.5
430049	6272490	24.8	2	-8.1	-33	59	16.76	25.2	7.9	-2.1	1	118	7.15	181050.5
430050	6272480	24.8	-3	-11.1	-52	46	17.13	25.2	8.5	-5.6	-47	113	7.44	181118.9
430051	6272470	24.8	-5.8	-10.7	-46	48	16.64	25.2	1.1	-7.2	-35	108	6.94	181156.5
430050	6272460	24.8	-3.6	-13.2	-98	81	15.73	25.2	0.8	-6.9	-42	103	6.75	181239.3
430050	6272449	24.8	-13	-10.2	-63	92	13.84	25.2	-6.1	-2.9	-3	101	6.13	181329.6
430049	6272440	24.8	-13.7	-10.5	-85	71	13.75	25.2	1.1	-1.6	-30	93	5.95	181406.9
430051	6272433	24.8	-11.3	-7.1	-60	95	13.86	25.2	-4	1.8	4	97	5.9	182028.2

430054	6272419	24.8	-3.1	-5.2	-67	84	13.33	25.2	1.7	1.6	-8	94	5.71	182457.3
430054	6272411	24.8	-10.1	-4.1	-40	97	13.01	25.2	-4.4	3.7	19	87	5.43	182923.9
430053	6272401	24.8	2.4	-1.3	-45	87	12.11	25.2	5.9	4.6	14	94	5.79	183145.1
430050	6272390	24.8	0.4	-1.4	-62	90	13.51	25.2	14	5.7	0	95	5.78	183235.6
430049	6272380	24.8	5.8	-0.5	-69	82	13.25	25.2	13	7.8	-4	98	5.97	183320.4
430049	6272371	24.8	6.7	-2.6	-65	86	13.39	25.2	16	4.7	1	93	5.65	183418.6
430053	6272358	24.8	-18.4	-1.8	-101	57	14.35	25.2	3.3	4.9	-50	87	6.12	183806.8
430053	6272349	24.8	15.9	0	-84	72	13.68	25.2	17	8.3	-23	93	5.85	184543.2
430052	6272328	24.8	-0.8	0.9	-57	92	13.39	25.2	23	10	11	92	5.65	184730.8
430051	6272319	24.8	13.4	1.5	-58	94	13.68	25.2	20	7.8	13	94	5.75	184757.5
430050	6272309	24.8	4.7	-0.6	-55	89	12.97	25.2	23	7.1	9	98	5.99	184830.9
430048	6272299	24.8	6.2	-1.3	-44	96	13.07	25.2	24	5.2	29	98	6.23	184905.7
430049	6272290	24.8	23.6	1.2	-99	53	13.91	25.2	35	6.4	-54	90	6.37	184936.5
430050	6272281	24.8	14.3	0.6	-82	83	14.37	25.2	28	4	-15	103	6.35	185019.9
430050	6272271	24.8	20	-3.6	-98	68	14.78	25.2	32	1	-37	93	6.06	185055.6
430050	6272260	24.8	9.5	-6.2	-65	91	13.84	25.2	21	-5.3	3	93	5.68	185135.9
430050	6272249	24.8	15.6	-5.2	-77	91	14.78	25.2	22	-2.7	-3	99	6.03	185347.9
430049	6272240	24.8	-3	-3.3	-77	81	13.81	25.2	21	-1.5	-10	98	5.98	185457.4
430050	6272231	24.8	10.3	-2.1	-47	92	12.83	25.2	19	-2.1	14	98	6.02	185540.7
430051	6272220	24.8	16.6	-2	-91	76	14.65	25.2	27	-1.2	-25	100	6.26	185625.6
430050	6272210	24.8	16.8	-2.9	-87	88	15.33	25.2	23	-5	-16	104	6.43	185651.9
430050	6272200	24.8	16.4	-2.2	-85	80	14.38	25.2	26	-3.6	-17	96	5.95	185815.3
430049	6272190	24.8	21.1	-2.8	-77	87	14.37	25.2	22	-5	-9	97	5.92	185837.9
430050	6272180	24.8	13.8	-2.7	-73	91	14.45	25.2	23	-6	-4	100	6.11	185902.5
430050	6272170	24.8	13.1	-2.7	-61	95	13.98	25.2	22	-3.6	10	105	6.44	185927.2
430050	6272160	24.8	19.1	-2.5	-65	90	13.77	25.2	19	-3.8	-1	100	6.08	185956.9
430049	6272151	24.8	22.7	-1.6	-82	86	14.65	25.2	24	-3.2	-19	99	6.11	190024.9
430050	6272140	24.8	26	-3.4	-98	73	15.07	25.2	26	-6.9	-40	98	6.42	190157
430050	6272130	24.8	33.7	0.9	-102	54	14.34	25.2	34	-2.6	-54	92	6.49	190425.2
430049	6272119	24.8	21.7	0.2	-90	91	15.82	25.2	17	-3.5	-26	102	6.38	190529.9
430050	6272110	24.8	10.4	0.2	-90	92	15.95	25.2	14	-2.9	-24	108	6.71	190617.3
430050	6272100	24.8	8.5	-0.7	-80	95	15.41	25.2	13	-1.7	-17	102	6.27	190701.5
430050	6272089	24.8	22	2.4	-114	72	16.61	25.2	20	0.7	-51	88	6.22	190736.9
430050	6272080	24.8	16.2	1.7	-106	74	15.98	25.2	15	-0.9	-44	100	6.65	190845.5
430049	6272069	24.8	8.3	1.1	-103	64	14.92	25.2	12	0.6	-52	92	6.41	190922.4
430049	6272060	24.8	8.7	1.3	-99	64	14.65	25.2	6.6	0.6	-40	86	5.77	191013.3
430050	6272050	24.8	9.1	2.4	-101	62	14.61	25.2	14	3	-39	81	5.47	191114.8
430049	6272041	24.8	-10.7	6.1	-59	87	13.01	25.2	5.1	8.8	6	94	5.75	191146.4
430049	6272030	24.8	-2.9	6.9	-49	91	12.74	25.2	1.7	6.9	18	92	5.68	191214.9
430049	6272020	24.8	0.1	9.6	-58	88	13.04	25.2	7	10.2	5	95	5.8	191303.1
430052	6272010	24.8	-1.3	9.5	-82	73	13.58	25.2	8.3	11	-27	88	5.62	191350.9
430049	6272000	24.8	18.3	12.2	-92	65	13.91	25.2	20	13.6	-39	87	5.83	191459.6
430001	6272001	24.8	-5.1	12.3	-89	85	15.23	25.2	11	15.3	-23	94	5.89	194104.5
430001	6272010	24.8	-5.7	11.3	-92	85	15.54	25.2	9.4	15.5	-26	95	6.02	194307.6
430000	6272019	24.8	-22	9.6	-104	69	15.49	25.2	1.5	15	-54	92	6.48	194347.2
430000	6272030	24.8	-18.7	9.1	-106	57	14.94	25.2	-0.6	13.3	-59	84	6.24	194441.3
430000	6272040	24.8	-19.9	8.7	-97	70	14.81	25.2	1.3	14.5	-34	85	5.6	194540.4
430000	6272050	24.8	6	8.9	-71	89	14.04	25.2	9.8	11.3	-6	86	5.27	194620.4
429999	6272060	24.8	-21.2	5.1	-91	67	14.02	25.2	-1.8	8.3	-34	86	5.63	194742.3

430000	6272070	24.8	-23.4	5.4	-89	72	14.13	25.2	-8.7	6.8	-31	85	5.51	194809.6
430001	6272080	24.8	-21.1	3.3	-64	91	13.73	25.2	-8.5	4.4	0	93	5.66	194832.6
430000	6272090	24.8	-27.1	2.3	-55	100	14.15	25.2	-9.5	2	9	98	5.96	194859.7
430000	6272100	24.8	-31.8	-0.5	-94	83	15.48	25.2	-21	0.3	-29	97	6.18	195025.5
430001	6272110	24.8	-14.6	4.2	-66	105	15.32	25.2	-6.7	3.2	5	108	6.55	195049
430000	6272120	24.8	-11	2.6	-79	99	15.67	25.2	-0.5	4.1	-16	109	6.69	195127.2
430001	6272130	24.8	-9.7	0.9	-86	100	16.24	25.2	1.8	3.9	-18	108	6.68	195146.3
430001	6272140	24.8	-11.9	1	-94	90	16.11	25.2	3.5	3.2	-29	109	6.87	195224.5
430001	6272151	24.8	-5.5	-1.1	-77	95	15.15	25.2	8.5	3.2	-13	107	6.53	195250.1
430001	6272160	24.8	-12.9	-0.2	-101	89	16.61	25.2	3.9	1.6	-37	106	6.83	195320.8
430000	6272170	24.8	-7.7	-0.3	-95	82	15.51	25.2	8.2	4.2	-35	104	6.7	195354.4
430001	6272180	24.8	-8.8	-1.9	-112	61	15.72	25.2	6.2	2.6	-65	92	6.88	195444.4
430000	6272189	24.8	-12.1	-2.2	-107	42	14.18	25.2	2.8	3.9	-74	82	6.73	195537.2
429999	6272200	24.8	4.7	-2.8	-82	87	14.81	25.2	18	6.8	-14	100	6.16	195625.9
430000	6272210	24.8	-8.2	-4.3	-103	73	15.63	25.2	11	2.6	-47	94	6.43	195830.8
430000	6272220	24.8	-19.5	-6.6	-99	72	15.09	25.2	8.7	1.6	-39	93	6.11	195900.5
430000	6272232	24.8	-11.2	-2.9	-99	66	14.68	25.2	10	1.4	-54	94	6.59	195937.8
430000	6272240	24.8	-11.3	-1.7	-110	51	15.01	25.2	3.5	2.6	-80	81	6.94	200006.4
430000	6272251	24.8	-9.1	-1.4	-100	57	14.27	25.2	8.1	2.6	-64	91	6.77	200146.5
429999	6272261	24.8	-6.4	1.1	-64	91	13.79	25.2	23	3.7	-2	102	6.21	200312.7
430000	6272270	24.8	-10.3	-0.1	-103	59	14.61	25.2	12	1.4	-61	94	6.85	200342.1
430000	6272280	24.8	0	0	-84	74	13.85	25.2	18	4	-32	93	6	200412.2
430000	6272290	24.8	-11.5	1.3	-80	80	14.01	25.2	17	3.9	-26	93	5.85	200444.7
430000	6272300	24.8	-14.2	1.6	-81	78	13.95	25.2	12	3.7	-30	91	5.85	200510.1
430000	6272311	24.8	2.5	2.5	-77	80	13.67	25.2	18	6.1	-18	96	5.94	200544.9
430000	6272320	24.8	-16.5	3.2	-86	74	14.05	25.2	9.2	5.8	-36	91	5.94	200613
430000	6272330	24.8	-8.6	4.5	-51	89	12.69	25.2	15	9.9	9	96	5.85	200653.4
430000	6272340	24.8	-1.5	6.2	-51	89	12.73	25.2	13	15.4	8	93	5.66	200841.4
430001	6272349	24.8	-8.3	6.5	-55	89	12.97	25.2	13	14.1	0	91	5.51	200921.2
430000	6272360	24.8	-2.7	6.1	-37	94	12.54	25.2	5.8	9.1	26	93	5.86	201025.9
429998	6272369	24.8	-13.7	4.9	-70	78	13.01	25.2	3.6	9.7	-4	97	5.88	201132.2
429998	6272382	24.8	-18.5	6.7	-69	76	12.77	25.2	9.3	7.4	-7	96	5.88	201806.8
430000	6272388	24.8	-16.7	8.5	-69	76	12.69	25.2	6.7	11.9	-21	111	6.86	202234.9
430001	6272401	24.8	-6.3	7.7	-79	70	13.06	25.2	-1.4	9	-20	97	6.01	202541.1
429998	6272410	24.8	-7.9	7.7	-62	83	12.77	25.2	9.6	12.2	-3	105	6.39	202702.9
429999	6272420	24.8	-11.2	9.3	-75	71	12.75	25.2	-5.4	10.6	-27	93	5.89	202909.4
429999	6272429	24.8	-14.3	8.2	-69	73	12.45	25.2	5	13.4	-17	93	5.76	203012.3
429999	6272442	24.8	-13.4	5.9	-84	58	12.64	25.2	-0.2	10.8	-45	89	6.11	203315.5
429997	6272449	24.8	-19.9	5.4	-69	77	12.72	25.2	9	11.9	-2	97	5.89	203604.6
430000	6272460	24.8	-32.7	-1.2	-57	71	11.36	25.2	-20	3.5	-6	97	5.89	203900.9
430003	6272471	24.8	-25.9	-6.9	-39	82	11.27	25.2	-18	-2	22	94	5.89	204244.3
430001	6272481	24.8	-31.7	-11.3	-61	85	12.97	25.2	-19	-7.8	-5	100	6.07	204304.9
430000	6272490	24.8	-32.2	-10	-67	93	14.19	25.2	-18	-7	-11	113	6.87	204339.4
430001	6272500	24.8	-35.8	-8.2	-70	97	14.77	25.2	-15	-4.3	-20	116	7.13	204404.6
430000	6272510	24.8	-20.5	-2.4	-105	88	16.88	25.2	-2	1.3	-64	116	8.06	204434.2
429950	6272500	24.8	7.8	1.5	-34	105	13.65	25.2	13	4.5	27	108	6.79	205414.1
429951	6272488	24.8	8.2	3.9	-55	92	13.3	25.2	19	7.3	11	104	6.37	205543.9
429950	6272479	24.8	13.7	8.1	-50	98	13.65	25.2	14	10.1	22	103	6.41	205632.9

429950	6272470	24.8	6.1	8.4	-64	92	13.81	25.2	19	8.8	-1	104	6.34	205657.9
429949	6272461	24.8	9	8.9	-70	93	14.43	25.2	15	10	3	105	6.4	205738.3
429950	6272450	24.8	3.8	7.8	-76	85	14.12	25.2	15	10.1	-9	104	6.34	205853.5
429950	6272440	24.8	10.3	10.4	-91	78	14.84	25.2	17	11.7	-33	96	6.17	205935.5
429949	6272431	24.8	16.3	10	-72	86	13.87	25.2	16	10.4	2	102	6.22	210025.1
429951	6272411	24.8	5	11.3	-76	82	13.84	25.2	22	14.5	-12	103	6.3	210621.7
429949	6272399	24.8	8.7	13.1	-46	97	13.25	25.2	20	12.9	20	100	6.2	210823.3
429949	6272389	24.8	16	13.6	-47	92	12.78	25.2	11	13.1	21	97	6.06	210900.4
429949	6272378	24.8	9.8	12.1	-80	74	13.51	25.2	27	10.7	-21	100	6.2	211057.3
429950	6272369	24.8	15.5	13.8	-87	69	13.73	25.2	28	12.5	-32	95	6.09	211128.2
429951	6272360	24.8	19	13.7	-66	86	13.42	25.2	27	10.7	0	99	6.01	211148.1
429954	6272349	24.8	15.8	10.8	-43	98	13.25	25.2	23	8.2	24	98	6.12	211522.6
429951	6272338	24.8	20.7	9.9	-53	90	13.01	25.2	30	9.4	7	99	6.03	211634
429950	6272328	24.8	24.9	9	-98	71	14.98	25.2	35	8.8	-47	91	6.25	211755.9
429950	6272320	24.8	26.2	5.6	-85	75	14.03	25.2	38	7.2	-25	95	5.95	211843.5
429951	6272310	24.8	32.3	5.2	-89	72	14.17	25.2	40	6.9	-37	96	6.24	211920.2
429950	6272300	24.8	32.8	5.8	-106	55	14.71	25.2	43	5.1	-61	83	6.27	211953.7
429951	6272290	24.8	39.5	3.8	-97	63	14.29	25.2	46	4.8	-49	89	6.18	212023.9
429951	6272279	24.8	34.3	2.3	-89	78	14.65	25.2	41	3.1	-31	98	6.26	212117.2
429951	6272269	24.8	34.6	3.2	-76	87	14.25	25.2	40	2	-18	103	6.37	212157.1
429951	6272260	24.8	33.9	3.4	-92	78	14.94	25.2	44	6	-35	99	6.38	212224.8
429950	6272250	24.8	30	1.5	-107	67	15.58	25.2	45	3	-56	101	7.03	212256.4
429951	6272240	24.8	23.9	-0.5	-57	103	14.61	25.2	14	-0.9	25	114	7.1	212350.5
429950	6272230	24.8	25	-1.2	-83	96	15.66	25.2	34	-0.3	-20	110	6.82	212518.6
429950	6272219	24.8	18.7	-0.9	-100	83	16.01	25.2	30	0.4	-43	110	7.18	212545.8
429950	6272210	24.8	30	1.3	-108	71	15.98	25.2	37	2	-52	96	6.64	212647.7
429951	6272200	24.8	9.3	-0.7	-92	88	15.76	25.2	28	1.2	-26	110	6.84	212722.3
429950	6272190	24.8	21.2	0.8	-108	80	16.65	25.2	34	1.4	-43	101	6.67	212748.3
429950	6272180	24.8	23.8	2	-116	65	16.43	25.2	34	5.4	-69	97	7.22	212830.4
429950	6272170	24.8	9	2.3	-111	66	15.99	25.2	25	5.4	-61	99	7.08	213026.7
429951	6272160	24.8	23.4	5.2	-106	37	13.9	25.2	32	8.6	-92	77	7.28	213106.1
429950	6272149	24.8	8.3	1.6	-117	70	16.81	25.2	21	4.4	-62	102	7.23	213140.7
429950	6272139	24.8	8.8	1	-109	79	16.63	25.2	18	2.6	-48	106	7.11	213245.6
429951	6272130	24.8	14.3	2.6	-107	63	15.38	25.2	23	4.1	-63	96	6.98	213328.9
429950	6272120	24.8	2.3	0.7	-107	61	15.22	25.2	17	4.2	-60	102	7.23	213352.5
429950	6272111	24.8	13.4	4.3	-106	49	14.41	25.2	23	4.4	-67	82	6.46	213422.3
429950	6272100	24.8	18.6	5.7	-103	62	14.92	25.2	22	7	-50	102	6.9	213456.1
429951	6272090	24.8	5.7	6.2	-88	37	11.75	25.2	18	6.9	-73	72	6.25	213556.4
429951	6272079	24.8	23.9	11.3	-84	34	11.22	25.2	28	8.2	-74	74	6.38	213644.5
429950	6272069	24.8	8.2	10.1	-93	63	13.91	25.2	18	7.5	-34	85	5.59	213722.9
429950	6272051	24.8	22.6	17.1	-85	73	13.81	25.2	25	14	-26	92	5.83	213821.9
429949	6272038	24.8	25.2	17.2	-76	82	13.82	25.2	30	14.9	-16	93	5.74	213912.5
429950	6272031	24.8	18.3	15.3	-89	83	14.97	25.2	26	14.8	-29	99	6.29	213947.6
429950	6272020	24.8	19.8	7.8	-83	88	15.04	25.2	26	7.5	-27	107	6.69	214022.9
429950	6272010	24.8	16	4.4	-85	87	15.1	25.2	20	5.5	-26	102	6.38	214054.1
429950	6272000	24.8	16.7	-0.7	-81	93	15.24	25.2	15	0.8	-20	108	6.68	214124.6
430199	6271901	24.8	-16.6	7.9	95	-58	13.81	25.2	12	5.1	-28	86	5.5	150215.5

430201	6271911	24.8	-7.1	9.4	92	-64	13.91	25.2	9.9	0.1	-23	84	5.32	150312.9
430200	6271920	24.8	4.9	10	89	-73	14.2	25.2	15	-2.1	-14	85	5.26	150348.6
430200	6271931	24.8	-1.8	8.1	100	-64	14.65	25.2	8.2	0.3	-34	85	5.6	150416.7
430200	6271940	24.8	-7.6	3.8	109	-58	15.24	25.2	2.3	6.1	-46	83	5.78	150456.1
430200	6271950	24.8	-16	0.4	102	-62	14.74	25.2	5.6	8.6	-35	82	5.44	150523.9
430199	6271961	24.8	-15.2	-1.9	100	-56	14.21	25.2	7.2	12.7	-41	84	5.67	150601.5
430200	6271970	24.8	-12.9	-0.6	68	-74	12.41	25.2	12	13.9	1	81	4.91	150637.9
430200	6271980	24.8	-12.7	4.9	82	-64	12.88	25.2	1.2	5.5	-18	82	5.12	150719.2
430200	6271990	24.8	1.1	7.9	76	-71	12.91	25.2	3.1	-1.5	-11	85	5.19	150900.9
430176	6271990	24.8	21.8	-0.4	96	-57	13.87	25.2	32	3.8	-33	90	5.81	151229.4
430174	6271979	24.8	17.8	-2.1	103	-58	14.64	25.2	31	6.3	-41	87	5.85	151303.8
430175	6271970	24.8	18.9	-0.3	119	-49	15.94	25.2	36	4.2	-53	81	5.91	151347.6
430175	6271960	24.8	27	4.5	88	-71	13.97	25.2	22	-1.4	-24	90	5.69	151425.2
430175	6271950	24.8	23.1	10.1	99	-58	14.21	25.2	22	-1.7	-39	86	5.71	151452.3
430175	6271940	24.8	22.8	9.7	87	-70	13.83	25.2	19	-1.7	-18	85	5.29	151517.4
430175	6271930	24.8	29.6	8.3	80	-70	13.16	25.2	22	0.4	-10	87	5.31	151549
430175	6271919	24.8	29	7	73	-69	12.4	25.2	25	2.8	-3	87	5.3	151630.1
430175	6271910	24.8	25.5	4.5	83	-69	13.33	25.2	27	2.2	-11	87	5.35	151703.8
430175	6271900	24.8	25.7	3.1	92	-68	14.16	25.2	26	6.1	-16	90	5.55	151735.8
430150	6271900	24.8	11.9	2.2	87	-63	13.28	25.2	11	8.5	-18	87	5.42	152107.5
430151	6271910	24.8	7.6	4.9	72	-74	12.73	25.2	3.5	8.8	-13	84	5.18	152137.3
430150	6271920	24.8	-13	-1.1	71	-77	12.97	25.2	4.4	10.9	-6	87	5.28	152303
430150	6271930	24.8	6.9	3.1	75	-72	12.91	25.2	6.5	7.9	-9	90	5.49	152344.3
430150	6271940	24.8	-1.2	3.3	98	-55	13.92	25.2	-2.2	5.1	-47	81	5.7	152453.2
430150	6271950	24.8	0.8	2.5	95	-66	14.31	25.2	-2.3	6.2	-31	87	5.6	152515.5
430149	6271961	24.8	-8.4	1.9	99	-63	14.55	25.2	-0.7	4.7	-37	86	5.71	152535.8
430150	6271970	24.8	3.4	5.3	89	-69	13.97	25.2	-1.2	1.4	-26	87	5.52	152604.6
430150	6271980	24.8	-9.7	6.2	106	-54	14.71	25.2	-7.5	-0.3	-58	84	6.23	152627.2
430150	6271990	24.8	-4.7	5	115	-51	15.5	25.2	-4.9	0.4	-68	80	6.37	152655
430126	6271990	24.8	20.3	0.7	102	-62	14.68	25.2	26	4.3	-38	91	5.99	152938.3
430126	6271980	24.8	14.3	0.3	112	-46	14.98	25.2	25	4.9	-65	77	6.11	153013.9
430125	6271970	24.8	-3.6	-1.5	90	-67	13.9	25.2	13	9.7	-25	91	5.75	153053.3
430125	6271960	24.8	23.3	1.7	77	-71	12.91	25.2	16	1	-13	94	5.76	153123.3
430125	6271950	24.8	16.7	-4.1	80	-68	12.94	25.2	18	6.3	-16	86	5.34	153202.3
430124	6271940	24.8	15.6	-6	76	-69	12.78	25.2	24	9	-13	86	5.28	153344.7
430126	6271930	24.8	16.6	-5.2	82	-65	12.89	25.2	22	11.2	-18	82	5.13	153416.1
430124	6271919	24.8	20.9	-3.9	86	-65	13.35	25.2	23	12.2	-21	90	5.63	153451.4
430125	6271910	24.8	17.2	-5.9	96	-53	13.62	25.2	30	10.5	-36	87	5.72	153557
430124	6271899	24.8	16.8	-8.9	69	-74	12.54	25.2	23	13.6	-2	87	5.29	153642.7
430100	6271900	24.8	-19.8	-13.1	70	-81	13.21	25.2	16	22.3	-6	85	5.2	154028.9
430100	6271910	24.8	-21.5	-10.2	90	-66	13.8	25.2	9.6	20.7	-30	82	5.33	154110.6
430102	6271920	24.8	9.2	-8.8	72	-78	13.08	25.2	20	15.1	-4	93	5.64	154149.1
430100	6271930	24.8	-16.7	-9.7	41	-78	10.85	25.2	14	18.9	23	81	5.13	154235.6
430100	6271940	24.8	-23.5	-6.1	73	-75	13.01	25.2	12	18.1	-11	85	5.19	154313.8
430101	6271950	24.8	-15.4	-1.6	71	-76	12.9	25.2	8.8	18.4	-4	83	5.08	154353
430101	6271960	24.8	-6	1.1	80	-66	12.82	25.2	-2	13.	-24	77	4.89	154431.6

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430100	6271970	24.8	-8.9	1.9	89	-71	14.14	25.2	-3.9	6	-27	81	5.22	154502.1
430100	6271980	24.8	-22.4	-7.5	87	-79	14.59	25.2	0.7	14.8	-23	92	5.75	154530.5
430100	6271990	24.8	-18.3	-12.1	63	-85	13.15	25.2	9.3	18.4	0	89	5.38	154631.3
430075	6271990	24.8	20.4	-5.8	91	-62	13.67	25.2	23	7.7	-28	86	5.52	155028.1
430074	6271980	24.8	18.4	-6.8	91	-65	13.85	25.2	22	9.7	-30	92	5.88	155055.8
430075	6271971	24.8	12.1	-7.9	95	-63	14.11	25.2	25	10.2	-35	84	5.52	155141
430075	6271960	24.8	-3.5	-8.4	64	-80	12.71	25.2	19	11.6	4	90	5.48	155239.9
430075	6271950	24.8	17.3	-6.8	93	-62	13.86	25.2	27	11.7	-30	84	5.46	155327.9
430075	6271940	24.8	5.7	-9.3	84	-73	13.74	25.2	20	15.4	-21	88	5.5	155414.7
430075	6271931	24.8	3.6	-10.2	86	-69	13.62	25.2	24	16.3	-26	89	5.65	155455.2
430075	6271921	24.8	9.2	-13	91	-70	14.18	25.2	30	17.2	-29	88	5.65	155538.1
430075	6271909	24.8	-7	-15.9	52	-89	12.73	25.2	18	21.6	17	89	5.49	155629.6
430075	6271900	24.8	1.8	-14.6	110	-52	15.07	25.2	35	20.3	-52	82	5.89	155712.9
430050	6271901	24.8	-6.3	1.9	67	-89	13.79	25.2	9.9	2.2	-4	92	5.61	160222.9
430050	6271911	24.8	-10.4	-1	85	-85	14.84	25.2	9.8	5.6	-20	95	5.91	160316.4
430050	6271919	24.8	-16.8	-6.4	121	-51	16.23	25.2	-2.5	14.6	-66	79	6.25	160405.3
430051	6271930	24.8	-28.7	-6.3	71	-87	13.91	25.2	12	15.3	-7	91	5.53	160441.9
430050	6271940	24.8	-28.6	-7.8	83	-83	14.52	25.2	11	15.5	-12	90	5.55	160510.3
430050	6271950	24.8	-27.5	-7.4	80	-80	14.05	25.2	8.8	15.5	-18	91	5.62	160542.9
430050	6271959	24.8	-6.2	-11.2	87	-74	14.21	25.2	9.7	14.7	-29	85	5.46	160625.8
430051	6271972	24.8	41	17	24	22	4.07	25.2	13	15.2	56	77	5.79	160732.4
430051	6271980	24.8	-7.4	-12.6	125	-127	11.04	25.2	11	12.6	-14	96	5.88	160817.9
430050	6271989	24.8	-16.6	-10.8	97	-63	14.33	25.2	4.9	13.6	-36	86	5.68	160925.9
430025	6271989	24.8	19.1	-13.8	62	-81	12.62	25.2	24	14	-2	96	5.83	161252.7
430025	6271979	24.8	18.6	-10.9	74	-89	14.3	25.2	22	11	1	96	5.81	161324.6
430025	6271970	24.8	10.7	-8.4	94	-79	15.18	25.2	23	6.4	-24	92	5.77	161408.1
430025	6271960	24.8	0	-6	100	-76	15.55	25.2	19	5.1	-34	93	6.03	161434.2
430025	6271950	24.8	11.3	-4.7	114	-63	16.14	25.2	20	5.5	-47	85	5.91	161501.1
430025	6271940	24.8	7.8	-6.3	90	-84	15.21	25.2	23	7.2	-23	90	5.64	161531.9
430025	6271930	24.8	14.3	-6.5	87	-83	14.87	25.2	26	9.1	-18	91	5.64	161614.5
430024	6271920	24.8	1.3	-5.8	63	-96	14.24	25.2	15	8.1	8	101	6.16	161649.3
430026	6271911	24.8	7.1	-0.1	84	-90	15.26	25.2	18	2.6	-14	98	6.02	161720.5
430026	6271901	24.8	3.3	3.1	55	-89	12.9	25.2	12	-0.5	18	94	5.84	162055
430000	6271899	24.8	-4.9	1.7	27	-55	7.62	25.2	-5.3	2.4	41	85	5.77	162417.7
429999	6271910	24.8	-19.6	-0.1	45	-95	12.99	25.2	5.1	3.7	18	91	5.63	162718.9
430001	6271921	24.8	7	0.1	76	-84	14.06	25.2	7.5	3.4	-16	94	5.77	162813.5
429999	6271931	24.8	-25	-0.7	44	-93	12.73	25.2	3.5	4.8	21	91	5.7	162929.6
430000	6271941	24.8	-4.2	-0.5	86	-84	14.82	25.2	5.2	2.9	-20	92	5.72	163006.7
430001	6271950	24.8	-21.1	-4.6	88	-83	14.96	25.2	5.8	5.4	-20	91	5.7	163037.9
430000	6271960	24.8	-19.5	-3	80	-90	14.86	25.2	5	5.9	-6	92	5.61	163120.1
429999	6271970	24.8	-23.3	-4.3	101	-77	15.73	25.2	1.4	7.9	-31	94	6.03	163146.5
429999	6271979	24.8	-18.2	-5.2	113	-76	16.9	25.2	1.7	8.6	-41	89	5.99	163215.1

429999	6271990	24.8	-10.8	-6.7	114	-71	16.58	25.2	5.2	11.4	-43	92	6.19	163244.4
429975	6271990	24.8	12	1.6	93	-87	15.83	25.2	10	0.6	-9	48	5.99	175340.4
429975	6271980	24.8	21.3	3.2	63	-93	13.88	25.2	7.5	-0.3	9	97	5.91	175557.2
429975	6271968	24.8	24.7	3.8	79	-88	14.68	25.2	11	-1.9	-5	94	5.7	175627.2
429974	6271960	24.8	12.3	2.9	81	-89	14.89	25.2	9.3	-1.9	-3	97	5.88	175650.9
429975	6271951	24.8	14.4	2.3	114	-60	15.88	25.2	22	-2	-50	85	5.99	175727.6
429975	6271940	24.8	13.9	0.7	93	-80	15.13	25.2	15	-2.4	-13	91	5.58	175814.1
429975	6271930	24.8	31.5	-2.2	50	-92	13.01	25.2	7.3	1.5	21	93	5.8	175911.5
429974	6271921	24.8	20.6	-1.5	47	-89	12.46	25.2	-0.3	-1.9	25	90	5.71	180001.3
429974	6271909	24.8	26.9	-7.3	23	-8	3.05	25.2	2.2	5.5	45	76	5.41	180053.8
429974	6271900	24.8	15.1	-11.5	127	-127	11.12	25.2	17	9.8	-1	88	5.38	180134.5
429950	6271900	24.8	-26.5	-9.9	88	-70	13.97	25.2	5.1	18.7	-21	82	5.18	180312.2
429950	6271910	24.8	-24	-9.5	73	-80	13.42	25.2	8.3	18.2	-3	84	5.08	180525.8
429950	6271920	24.8	-20.3	-7.3	74	-81	13.53	25.2	4.4	14.5	0	86	5.25	180618.3
429950	6271930	24.8	-22.7	-5.5	90	-75	14.43	25.2	0.1	11.3	-22	85	5.31	180654.3
429950	6271940	24.8	-15.3	-2.9	103	-73	15.59	25.2	-4.9	8	-31	88	5.69	180728.2
429950	6271950	24.8	-24.8	0.2	86	-79	14.41	25.2	-0.3	7	-13	90	5.53	180802.9
429950	6271961	24.8	7.6	1	81	-83	14.34	25.2	8.3	3	-9	86	5.27	180847.3
429951	6271970	24.8	7.5	2	73	-86	13.99	25.2	6.7	3.9	-5	97	5.89	180916.3
429951	6271980	24.8	-7.7	0.9	38	-90	12.1	25.2	1.6	2.6	33	92	5.95	180947.2
429951	6271989	24.8	-15	1.9	58	-92	13.51	25.2	4.4	4.5	7	94	5.74	181017.7
429924	6271989	24.8	8.3	-5.3	97	-82	15.71	25.2	20	4.4	-22	97	6.06	181329.8
429925	6271980	24.8	12.1	-6.9	101	-83	16.18	25.2	25	4.6	-32	96	6.16	181351.3
429925	6271970	24.8	11.5	-4.9	98	-85	16.03	25.2	21	3.9	-19	99	6.12	181416.6
429925	6271960	24.8	7.3	-5.1	108	-65	15.62	25.2	21	5.7	-43	89	6.02	181442.9
429925	6271950	24.8	6.2	-6.7	118	-64	16.64	25.2	17	8.5	-45	89	6.06	181513.6
429925	6271940	24.8	1.5	-8.2	118	-48	15.71	25.2	26	10.1	-60	80	6.12	181543.2
429925	6271930	24.8	17.2	-9.2	105	-67	15.37	25.2	25	9.1	-33	84	5.48	181615.6
429925	6271920	24.8	12.6	-11.1	116	-57	16.01	25.2	28	13.4	-47	80	5.67	181642.3
429925	6271910	24.8	8.1	-11.5	89	-79	14.75	25.2	23	16.3	-16	90	5.53	181726.5
429925	6271900	24.8	-6.3	-13.9	87	-79	14.51	25.2	26	21.1	-17	89	5.49	181803.5
429899	6271921	24.8	-35.4	-13.5	80	-85	14.51	25.2	14	24.4	-7	84	5.12	182218.3
429900	6271930	24.8	-19.6	-11.4	97	-82	15.64	25.2	7	19.4	-23	89	5.6	182417.9
429901	6271940	24.8	-18.9	-11.1	96	-81	15.54	25.2	8.5	16.9	-24	90	5.7	182446.5
429901	6271950	24.8	-21.7	-8.2	86	-87	15.09	25.2	4.4	13.2	-14	92	5.66	182514.7
429900	6271959	24.8	-22.4	-4.4	104	-77	15.97	25.2	0.2	12.1	-30	90	5.78	182546.4
429899	6271970	24.8	-4.8	-3.2	103	-76	15.9	25.2	-3	5.1	-34	94	6.11	182619.4
429900	6271980	24.8	-13.2	-2.1	94	-83	15.48	25.2	-0.5	5.2	-23	96	5.99	182656.3
429900	6271991	24.8	-18.5	-1.8	91	-86	15.5	25.2	-0.1	4.8	-13	99	6.08	182723.8
429825	6272080	24.8	-13.7	6.8	79	-98	15.58	25.2	-4.8	-1.5	-7	113	6.9	184024.9
429827	6272090	24.8	-15.1	4.1	72	-104	15.64	25.2	-0.2	-0.3	2	111	6.76	184113.3
429826	6272100	24.8	-6.9	3.2	73	-111	16.43	25.2	2	-0.4	-1	106	6.46	184146
429825	6272110	24.8	-7.2	1.4	87	-95	15.94	25.2	3.3	-0.8	-14	103	6.31	184216.2
429826	6272120	24.8	-17.4	0.9	96	-90	16.22	25.2	1.7	1.3	-24	104	6.48	184246.9
429825	6272130	24.8	-3.9	1.4	122	-65	17.14	25.2	-7.5	0.4	-61	99	7.09	184312.9

429824	6272140	24.8	-7.5	0.4	63	-32	17.51	25.2	-0.4	3.1	-55	95	6.66	184338.1
429824	6272150	24.8	-7.9	1.1	61	-33	17.24	25.2	-2.8	5.6	-53	95	6.61	184425.9
429825	6272160	24.8	-3.3	3.8	63	-28	17.11	25.2	-5.5	5.6	-56	81	6.01	184454.5
429823	6272170	24.8	-3.4	6.3	47	-41	15.51	25.2	-5.2	5.8	-22	96	6.02	184523.6
429825	6272180	24.8	12	5.2	123	-56	16.72	25.2	-8.6	0	-65	88	6.65	184600.8
429824	6272190	24.8	1.7	4.7	64	-28	17.34	25.2	-10	1.7	-69	85	6.69	184630.6
429824	6272201	24.8	3.6	4.7	68	-20	17.64	25.2	-22	1.1	-84	79	7.01	184659.6
429825	6272210	24.8	4.8	5.3	71	-29	19.05	25.2	-21	-0.3	-70	90	6.93	184728.2
429825	6272220	24.8	6.6	6.6	72	-31	19.41	25.2	-25	-2.2	-80	88	7.22	184754.2
429824	6272230	24.8	-2.4	4.9	66	-36	18.73	25.2	-22	-0.5	-68	92	6.95	184825
429825	6272239	24.8	4.5	3.9	66	-34	18.37	25.2	-16	-1.2	-69	102	7.49	184856.2
429825	6272250	24.8	2.7	3.5	80	-15	20.04	25.2	-22	0.5	-103	75	7.73	184931.9
429826	6272260	24.8	-0.7	4.8	80	-14	20.24	25.2	-25	-0.9	-100	66	7.28	185122.3
429825	6272270	24.8	0.3	4.6	75	-27	19.74	25.2	-14	-1.7	-89	86	7.53	185157.3
429824	6272280	24.8	-1.6	5.6	78	-25	20.27	25.2	-18	-3.8	-102	84	8.02	185235.3
429825	6272290	24.8	-2.4	4.4	75	-28	19.99	25.2	-9.5	-1.5	-91	93	7.92	185327.6
429825	6272300	24.8	-12.6	4.6	83	-17	21.07	25.2	-15	-1.6	-106	81	8.12	185356
429824	6272309	24.8	-19.9	3.3	69	-41	19.93	25.2	6.1	3.2	-66	104	7.48	185433.9
429825	6272320	24.8	-16.9	2.5	69	-40	19.71	25.2	10	6.3	-63	103	7.34	185506.1
429825	6272330	24.8	-19.6	0.3	73	-31	19.65	25.2	3.2	6.3	-77	87	7.07	185641.3
429825	6272340	24.8	-14.6	2.2	69	-30	18.57	25.2	3.3	5.2	-67	85	6.62	185722.4
429825	6272350	24.8	-18.2	1.1	74	-23	19.1	25.2	1.7	6.7	-80	81	6.94	185823.2
429825	6272360	24.8	-24.6	-1.4	57	-43	17.74	25.2	17	12.9	-38	94	6.16	185904.1
429825	6272370	24.8	-14.8	0.5	68	-26	18.19	25.2	2.5	9.4	-76	84	6.88	185945.1
429824	6272380	24.8	-9.8	-0.6	62	-38	17.97	25.2	7.8	7	-49	95	6.53	190017.8
429825	6272390	24.8	-19.8	-1.2	64	-36	18.21	25.2	0.4	8.4	-61	89	6.58	190131.6
429824	6272399	24.8	-25.7	-5.1	55	-45	17.68	25.2	4.7	10.7	-34	97	6.27	190237.4
429825	6272410	24.8	-4.4	-6.7	46	-48	16.47	25.2	13	12.6	-16	101	6.2	190327.9
429826	6272420	24.8	-1.5	-5.4	83	-98	15.87	25.2	11	15.9	-17	94	5.82	190503.6
429824	6272430	24.8	-1	-3.7	74	-95	14.9	25.2	9.4	13.9	-8	97	5.91	190549.4
429825	6272439	24.8	3	-1.7	41	-100	13.35	25.2	14	10.5	36	95	6.2	190631.5
429825	6272450	24.8	-1.2	-1.8	117	-76	17.25	25.2	-4.6	8.5	-56	101	7.02	190803.8
429825	6272460	24.8	-5.1	-8.6	100	-95	17.03	25.2	11	18.8	-36	105	6.77	190859.4
429825	6272471	24.8	-3.3	-9.5	73	-104	15.74	25.2	15	18.1	-10	105	6.42	190954.3
429825	6272479	24.8	-11.2	-8.6	92	-100	16.77	25.2	13	19	-15	100	6.16	191107.7
429825	6272491	24.8	-9.3	-5.9	85	-103	16.46	25.2	9.2	16.2	-21	101	6.26	191329.8
429825	6272500	24.8	-1.5	-7.8	123	-80	18.13	25.2	7.5	16.2	-58	103	7.21	191422.5
429825	6272509	24.8	-21.2	-4	58	-44	17.96	25.2	-0.7	14.1	-47	99	6.68	191500.4
429825	6272519	24.8	-21.3	-2.2	47	-53	17.5	25.2	5.7	10.3	-17	108	6.66	191546.2
429825	6272530	24.8	-13	-0.3	65	-42	19.08	25.2	-3.7	7.5	-60	105	7.35	191641.3
429824	6272540	24.8	-21	-1.5	70	-40	19.88	25.2	0.9	9	-72	102	7.62	191722.1
429825	6272549	24.8	-28.4	-2.1	60	-47	18.82	25.2	8.5	10.2	-50	104	7.01	191800.8
429825	6272559	24.8	-18.2	-2.3	65	-39	18.73	25.2	22	10.9	-59	100	7.05	192026.7

429825	6272569	24.8	-2	1.2	55	-46	17.76	25.2	27	7.1	-44	107	7.01	192208.2
429824	6272581	24.8	-25.9	-1.1	54	-45	17.3	25.2	38	10.2	-39	102	6.65	192301.9
429825	6272590	24.8	-21.4	1.7	36	-54	16.08	25.2	43	8.5	-2	106	6.46	192429.4
429824	6272600	24.8	-21.7	2.7	63	-38	18.25	25.2	32	9.9	-59	97	6.91	192511.4
429824	6272610	24.8	-21.8	4.5	64	-34	17.99	25.2	33	12	-59	81	6.1	192633.6
429825	6272619	24.8	-14.4	7.5	66	-31	18.02	25.2	41	7.3	-60	81	6.13	192753.9
429825	6272630	24.8	-31.4	7.9	59	-39	17.51	25.2	29	4.2	-49	78	5.6	192921.2
429900	6272051	24.8	-0.5	7.1	26	52	14.44	25.2	14	7.1	60	19	7.75	145621.6
429900	6272061	24.8	-2.5	5	-56	34	16.3	25.2	-19	-7.1	42	-28	6.18	145935.9
429900	6272071	24.8	-5.8	3.5	-20	52	13.96	25.2	24	12.9	34	65	4.45	150055.2
429900	6272080	24.8	-7.2	3.6	-40	44	14.87	25.2	0.9	-3.8	25	-36	2.69	150208.8
429901	6272090	24.8	-3.6	6	-72	93	14.53	25.2	6	1.8	46	-36	1.79	150310.6
429900	6272100	24.8	-3.6	6.4	-48	106	14.36	25.2	51	24.3	111	105	2.32	150405.9
429900	6272109	24.8	-3.6	4.8	-5	105	13.02	25.2	41	23.6	127	127	2.72	150452.3
429900	6272120	24.8	-4.7	7.2	-60	93	13.67	25.2	23	3	43	11	1.35	150528.9
429900	6272130	24.8	-3.2	7.7	-68	87	13.72	25.2	0.9	-3.9	84	-36	1.39	150608.5
429900	6272140	24.8	-7.5	6.5	-64	89	13.51	25.2	8.9	-5.8	83	-27	1.33	150820.6
429900	6272151	24.8	-8.5	7.6	-36	109	14.15	25.2	30	8.5	125	120	2.63	151639.1
429900	6272161	24.8	-7.8	6.7	-31	104	13.43	25.2	16	2.5	80	110	4.13	151711.9
429900	6272170	24.8	-4.8	6	-66	94	14.18	25.2	6.6	-14	45	-26	1.59	151748.6
429899	6272180	24.8	-2.7	4.9	-58	103	14.61	25.2	32	-8.9	92	64	1.7	151818.6
429900	6272190	24.8	-0.9	6.1	-83	98	15.82	25.2	-23	-16	114	-113	2.43	151854.9
429901	6272200	24.8	-2.5	4.4	-56	105	14.73	25.2	40	-11	99	81	1.94	151920.9
429900	6272210	24.8	-1	4.2	-76	107	16.26	25.2	-12	-16	96	-56	1.69	151957.6
429900	6272220	24.8	-3	0.4	-43	116	15.32	25.2	44	-10	123	112	2.52	152038.3
429901	6272230	24.8	-2	1.4	-10	114	14.16	25.2	22	-5.1	114	124	5.11	152112.5
429900	6272241	24.8	3	0	-55	117	15.93	25.2	17	-14	26	47	3.26	152154.8
429900	6272250	24.8	5.7	-0.7	-52	113	15.41	25.2	28	-13	59	104	3.63	152243.7
429900	6272260	24.8	8.7	-2.4	-68	109	15.91	25.2	26	-13	73	38	2.51	152318.6
429900	6272269	24.8	16.3	-2.8	-47	116	15.49	25.2	38	-15	57	92	3.29	152430.2
429900	6272281	24.8	20.3	-2.8	-55	108	15.03	25.2	40	-15	55	87	3.13	152511.9
429900	6272290	24.8	20.6	-0.7	-49	111	14.98	25.2	42	-11	63	98	3.55	152552.9
429900	6272299	24.8	18.4	-1	-57	102	14.45	25.2	38	-18	54	81	2.97	152644.2
429900	6272310	24.8	16.3	0.4	-16	111	13.86	25.2	39	-1.1	104	116	4.73	152921.8
429900	6272319	24.8	16.3	-0.6	-30	107	13.73	25.2	40	-2.6	97	117	4.61	153006.6
429900	6272331	24.8	13.9	1.8	-64	99	14.55	25.2	27	-22	50	46	2.09	153042.7
429900	6272340	24.8	12.5	3.7	-61	91	13.5	25.2	36	-14	54	66	2.6	153131.4
429900	6272349	24.8	10.6	3.8	-45	95	13	25.2	46	1	77	110	4.09	153205.2
429900	6272360	24.8	11.6	4.2	-22	106	13.42	25.2	40	9.3	95	109	4.39	153242.2
429900	6272370	24.8	6.4	2.6	-30	105	13.51	25.2	33	3.5	81	107	4.08	153337.4
429900	6272380	24.8	11.9	8.3	-2	110	13.58	25.2	34	16	116	118	5.02	153426.4
429901	6272390	24.8	11.3	11.4	-38	105	13.84	25.2	37	15	77	107	4.01	153547.8
429901	6272400	24.8	9.7	13.1	-23	106	13.45	25.2	36	21	96	110	4.45	153713.7
429900	6272410	24.8	7.2	11.9	2	108	13.4	25.2	31	20	120	119	5.12	153807.5
429899	6272419	24.8	3.4	9.5	3	103	12.71	25.2	27	19.5	124	121	5.27	153948.2
429900	6272430	24.8	0.8	7.2	-18	109	13.67	25.2	22	14.3	60	71	5.64	154149.6
429900	6272480	24.8	7.5	7	9	115	14.24	25.2	30	13.2	76	81	6.76	155242.2
429900	6272500	24.8	4.8	9.1	35	81	10.95	25.2	13	0.7	72	31	4.78	155426.3
429900	6272510	24.8	6.6	1.5	-36	113	14.65	25.2	34	-0.8	37	71	4.9	155642.2

429900	6272520	24.8	9.6	0.3	-12	112	13.93	25.2	33	0.8	55	87	6.3	155749.1
429901	6272530	24.8	13.8	-4	-33	116	14.94	25.2	40	-0.6	41	80	5.48	155838.1
429900	6272540	24.8	16.1	0	-64	111	15.84	25.2	43	-42	22	24	2.02	155926.2
429874	6272570	24.8	20.3	-0.6	9	125	15.48	25.2	49	-3.1	122	126	5.32	160328.3
429875	6272560	24.8	17.3	-0.7	3	67	16.51	25.2	37	-2.1	64	92	6.81	160456.5
429875	6272549	24.8	14.9	0	-29	55	15.42	25.2	47	-14	23	15	1.69	160557.1
429875	6272540	24.8	-10.3	0.7	-13	60	15.33	25.2	-49	-3.2	91	118	4.52	160701.4
429875	6272530	24.8	-5	-1.7	-32	55	15.74	25.2	-21	30.7	45	-3	1.36	160758.4
429875	6272520	24.8	-4.2	-3.2	12	61	15.53	25.2	-58	-12	127	127	2.72	160908.5
429875	6272510	24.8	-4.2	-6	4	60	14.98	25.2	-38	-13	120	124	5.23	160955.6
429875	6272500	24.8	-5.9	-5.2	-21	57	15.1	25.2	-36	-16	34	66	4.54	161033.9
429875	6272491	24.8	-5.6	-7.5	-3	59	14.71	25.2	-33	-17	58	79	5.95	161220.6
429875	6272480	24.8	-8.5	-12.6	27	57	15.68	25.2	-26	-16	99	62	7.13	161455.3
429875	6272470	24.8	-3	-9.3	23	55	14.67	25.2	-23	-12	102	66	7.42	161719
429874	6272460	24.8	2.2	-7.6	16	56	14.48	25.2	-17	-8.5	90	69	6.87	161806.9
429875	6272450	24.8	2.7	-8.4	-22	54	14.45	25.2	-22	-7.8	36	68	4.69	161913.9
429875	6272440	24.8	2.4	-9.1	9	58	14.53	25.2	-20	-13	84	72	6.76	162031.5
429875	6272431	24.8	-3.5	-11.4	22	54	14.38	25.2	-22	-14	92	52	6.41	162213.4
429875	6272421	24.8	-8	-13.5	29	50	14.44	25.2	-25	-14	105	47	7	162324.7
429875	6272410	24.8	-6.2	-8.9	-5	57	14.18	25.2	-29	-18	61	73	5.78	162434
429875	6272400	24.8	-4.2	-6.5	0	57	14.02	25.2	-27	-11	75	73	6.37	162535.5
429875	6272390	24.8	-5.8	-5.9	0	57	14.18	25.2	-25	-5.4	75	70	6.27	162633.4
429876	6272379	24.8	-6.1	-2.1	-37	49	15.21	25.2	-32	5.7	26	10	1.69	162722.9
429874	6272369	24.8	6.1	9.9	66	23	8.66	25.2	-35	-8.4	127	-89	4.7	162935.3
429874	6272360	24.8	-15.3	-2.7	26	112	14.19	25.2	-28	-7.2	86	63	6.49	163144
429875	6272350	24.8	-13.1	-0.1	81	96	15.56	25.2	-28	-6.5	111	35	7.05	163303.5
429875	6272340	24.8	-10.2	2	77	95	15.18	25.2	-26	-2.8	110	38	7.08	163359.8
429875	6272330	24.8	-11.8	1.4	66	105	15.32	25.2	-26	-0.9	107	50	7.15	163441.9
429875	6272319	24.8	-13.6	-0.2	-118	75	17.27	25.2	27	4.9	54	-75	5.63	163525.3
429875	6272309	24.8	-13.9	1.6	-41	115	15.05	25.2	-32	5.1	40	70	4.93	163632.6
429875	6272299	24.8	-14.4	-0.4	-111	90	17.68	25.2	30	5.7	43	-72	5.13	163827.9
429875	6272290	24.8	-9	2.8	-86	111	17.32	25.2	-21	19.3	25	5	1.58	163923.9
429875	6272280	24.8	-8.8	2.2	-96	102	17.3	25.2	26	4.6	69	-115	4.08	164004.6
429875	6272270	24.8	-3.2	3.8	-48	119	15.84	25.2	-30	12.6	68	106	3.83	164046.9
429875	6272259	24.8	0.3	2.3	-66	115	16.44	25.2	-17	24.8	47	21	1.57	164112.7
429875	6272249	24.8	0.5	1.9	-48	119	15.88	25.2	-44	20.3	115	107	2.38	164139.4
429875	6272240	24.8	2	-0.2	-12	123	15.23	25.2	-43	7.8	127	123	2.68	164220.3
429875	6272231	24.8	4.3	-1	-18	59	15.31	25.2	-18	9.3	70	108	3.92	164308.6
429875	6272220	24.8	5.8	-2.2	-24	60	16.14	25.2	-17	8.2	66	111	3.91	164335.2
429875	6272210	24.8	6	-4.4	-30	59	16.42	25.2	-17	10.4	51	70	2.64	164403.7
429875	6272200	24.8	5.7	-5.4	-24	58	15.53	25.2	-18	3.9	58	94	3.38	164435.4
429875	6272190	24.8	6.9	-6.7	-15	59	15.22	25.2	-17	-2.2	84	111	4.24	164509.7
429875	6272180	24.8	6.5	-8.2	-2	61	15.04	25.2	-15	-5.8	112	119	4.96	164547.4
429874	6272170	24.8	6.3	-8.6	27	54	15.08	25.2	-10	-4	125	114	5.13	164630.9
429875	6272158	24.8	9.1	-5.5	41	48	15.76	25.2	-3.8	-3.3	113	40	7.28	164752.7
429875	6272149	24.8	5.7	-7.5	49	103	14.15	25.2	-7.9	-3.4	103	59	7.2	165010.5
429875	6272141	24.8	5.4	-6.5	70	107	15.74	25.2	-5.4	-4.8	92	47	6.27	165114.9
429876	6272130	24.8	4.4	-7.2	35	103	13.5	25.2	-10	-4.5	93	62	6.84	165206.2
429875	6272120	24.8	3.9	-6.5	27	110	14	25.2	-8.4	-7.1	85	67	6.61	165312.8

429875	6272110	24.8	1.6	-5.2	4	109	13.42	25.2	-12	-11	62	72	5.76	165347.3
429876	6272100	24.8	-1.1	-5.7	8	109	13.55	25.2	-14	-10	67	74	6.11	165421.5
429875	6272091	24.8	1.3	-3.7	105	87	16.88	25.2	-13	-7.1	115	30	7.23	165638.5
429875	6272081	24.8	3	-2.9	-52	108	14.77	25.2	-22	-13	28	51	3.53	175945.5
429875	6272071	24.8	3.8	-3	3	116	14.29	25.2	-17	-9.6	68	81	6.44	180239.1
429875	6272060	24.8	6.7	-1.7	-76	103	15.81	25.2	-13	-8.1	23	-19	1.85	180313.3
429875	6272050	24.8	11.7	0.4	-48	109	14.75	25.2	-20	-5	75	108	3.99	180357.8
429875	6272040	24.8	11.1	2.1	-123	49	16.34	25.2	8.6	1	126	-120	5.29	180454.5
429875	6272029	24.8	9.6	1.3	-61	21	16.1	25.2	0.9	-0.1	85	-66	6.55	180737.6
429873	6272020	24.8	12.9	1.1	-40	48	15.51	25.2	-12	0.2	26	-25	2.2	180836.1
429875	6272010	24.8	11.7	1.9	-52	107	14.65	25.2	-14	0.8	62	92	3.37	180920.4
429875	6272001	24.8	11.1	-0.5	64	102	14.87	25.2	-6.4	-3.1	126	98	4.84	181119
429876	6271990	24.8	7.4	-2.7	17	111	13.86	25.2	-7.9	-4.1	73	66	5.99	181239.8
429850	6271990	24.8	-11	3.9	71	108	15.99	25.2	6.1	6.1	106	50	7.12	181642.6
429855	6272001	24.8	-4.5	3.4	6	91	11.32	25.2	-6.9	-4.5	50	56	4.59	182507
429850	6271990	24.8	-14	4.7	75	55	11.5	25.2	4.8	6.3	119	-37	7.56	182637.8
429850	6272041	24.8	-21.2	-5.7	0	121	14.91	25.2	0.5	-2	73	82	6.68	183825.2
429850	6272050	24.8	-20	-6	-85	101	16.32	25.2	15	7.3	26	-46	3.25	183954
429851	6272060	24.8	-14.1	-3.2	-77	103	15.88	25.2	1.4	4.6	70	-97	3.64	184106.5
429850	6272071	24.8	-10.7	-0.2	-72	111	16.35	25.2	19	11.2	45	-24	1.57	184138.3
429849	6272080	24.8	-8.6	1.2	-77	103	15.97	25.2	-0.4	4.9	96	-77	1.87	184214.7
429849	6272090	24.8	-4.9	1.1	-65	107	15.44	25.2	28	11.5	92	31	1.47	184244.9
429851	6272100	24.8	-5.3	3.3	-27	113	14.35	25.2	43	12.6	126	117	2.61	184328.9
429851	6272111	24.8	-3.6	4.1	-40	114	14.88	25.2	20	7.5	73	105	3.88	184410.6
429850	6272120	24.8	-3.4	4.4	-71	102	15.4	25.2	17	3	46	10	1.45	184444.9
429850	6272130	24.8	-6.3	5.3	-68	101	15.01	25.2	30	-0.5	99	54	1.71	184517.3
429850	6272140	24.8	-6	6.1	-90	88	15.56	25.2	-15	-6.8	118	-113	2.48	184549.2
429850	6272150	24.8	-6.2	5.9	-89	92	15.85	25.2	-12	-9	113	-99	2.27	184625.6
429850	6272159	24.8	-12.3	4.5	-46	105	14.16	25.2	40	1.1	124	108	2.5	184713
429850	6272170	24.8	-12	5	-101	98	17.44	25.2	-4.9	-6	64	-108	3.81	184747.9
429850	6272180	24.8	-12.8	5	-99	80	15.74	25.2	-2.9	-4.2	81	-118	4.36	184813.7
429850	6272190	24.8	-15.8	4.8	-96	87	15.98	25.2	-1.7	-3.8	73	-116	4.17	184842.4
429850	6272200	24.8	-15.2	3.9	-104	79	16.15	25.2	-1.4	-3.9	94	-121	4.65	184918.1
429850	6272211	24.8	-12.6	3	-123	60	16.97	25.2	-6.7	-2.4	126	-123	5.36	184953.9
429850	6272220	24.8	-10.3	2	-65	21	17.01	25.2	-1.9	-0.7	91	-60	6.64	185029.9
429850	6272230	24.8	-0.9	-4.5	-23	11	6.38	25.2	-4.8	-0.1	118	-48	7.77	185106.6
429850	6272240	24.8	-8.1	1.2	-121	85	18.31	25.2	-4.9	-0.7	57	-84	6.19	185147.8
429850	6272250	24.8	-4.3	1.1	-126	64	17.49	25.2	-9.3	-1.8	80	-79	6.82	185224.5
429851	6272260	24.8	-6	-1.7	-57	47	18.37	25.2	-7.6	0.4	55	-83	6.08	185259.9
429850	6272270	24.8	-2.8	-1.8	-61	40	18.16	25.2	-11	3.2	66	-88	6.69	185325.4
429850	6272281	24.8	0.7	-2.3	-56	48	18.33	25.2	-14	1.7	47	-84	5.86	185347.1
429850	6272290	24.8	1.3	-3.8	-48	52	17.53	25.2	-12	-0.3	32	-61	4.2	185412.2
429850	6272300	24.8	3.1	-5.6	-39	56	16.88	25.2	12	-24	25	-2	1.53	185436.9
429850	6272310	24.8	6.6	-3.7	-32	57	16.16	25.2	34	-15	55	68	2.68	185521.9
429850	6272320	24.8	8.6	-4.4	-43	48	15.98	25.2	-15	-14	54	-50	2.24	185549.4
429850	6272330	24.8	9.4	-1.4	-98	92	16.63	25.2	-27	-5.2	70	-108	3.91	185640.1
429850	6272340	24.8	10.6	-1.7	-90	94	16.07	25.2	-24	-9.9	59	-83	3.1	185718.3
429850	6272350	24.8	6.9	-4.2	-76	102	15.77	25.2	10	-16	49	-17	1.58	185753.3
429850	6272360	24.8	6.8	1.1	-108	81	16.64	25.2	-48	-12	127	-127	2.73	185824.7
429850	6272370	24.8	6.4	2.9	-110	76	16.48	25.2	-32	-13	91	-121	4.6	185904.4
429849	6272378	24.8	11.1	4.2	-118	39	15.34	25.2	-35	-9.9	127	-113	5.16	185938.9

429850	6272390	24.8	6	5.4	-118	46	15.64	25.2	-28	-10	74	-68	6.14	190035.3
429850	6272400	24.8	3	6.6	-122	53	16.45	25.2	-24	-11	73	-69	6.1	190119.7
429850	6272410	24.8	4.2	9	-60	20	15.74	25.2	-23	-11	90	-63	6.68	190159.4
429850	6272420	24.8	-0.5	9	-60	27	16.31	25.2	-18	-13	63	-71	5.8	190308.5
429850	6272429	24.8	-0.7	11.1	-61	33	17.14	25.2	-18	-11	64	-75	5.99	190411.5
429850	6272433	24.8	2.7	9.2	-60	25	16.13	25.2	-19	-10	75	-66	6.08	190514.3
429850	6272451	24.8	-1.2	8.8	-63	26	17.04	25.2	-15	-11	67	-79	6.31	190952.2
429850	6272461	24.8	-1	11.7	-56	38	16.94	25.2	-17	-17	48	-76	5.5	191225.7
429849	6272470	24.8	3.4	12	-47	45	16.24	25.2	-19	-21	32	-67	4.55	191302.5
429850	6272480	24.8	5	11.9	-25	116	14.62	25.2	32	18.5	46	77	5.47	191402.2
429850	6272500	24.8	6.5	9.3	-41	115	15.14	25.2	31	18.8	32	67	4.56	191950.5
429851	6272511	24.8	2.6	6	-44	116	15.38	25.2	26	13.5	34	71	4.82	192024.1
429850	6272520	24.8	1.8	2.2	16	121	15.06	25.2	17	6	74	83	6.78	192102.2
429850	6272530	24.8	7.1	4.5	-86	104	16.66	25.2	18	-12	23	-2	1.45	192142.9
429851	6272540	24.8	10	2.3	-74	112	16.52	25.2	-10	-17	48	-39	1.88	192230.7
429850	6272550	24.8	10.4	0	-59	113	15.78	25.2	65	-1.9	106	89	2.1	192334.1
429850	6272558	24.8	13.5	2.3	-124	63	17.2	25.2	-62	-3.1	127	-127	2.73	192447.5
429850	6272570	24.8	14.1	-1.6	-52	47	17.27	25.2	-40	-8.9	81	-121	4.41	192635.9
429849	6272580	24.8	19.1	-2.6	-30	55	15.58	25.2	63	1.1	61	79	3.04	192919.6
429850	6272590	24.8	20.1	-1.8	-23	56	15.11	25.2	61	-10	72	109	3.97	193052.3
429850	6272600	24.8	20.3	-5.2	-40	53	16.51	25.2	-18	-13	52	-41	2.02	193219.6
429850	6272610	24.8	19.3	-5.5	-46	49	16.85	25.2	-45	-5	66	-97	3.56	193307.4

Appendix D: Petrographic Report

PETROGRAPHIC REPORT ON 11 SAMPLES FROM TREATY CREEK PROPERTY, B.C.

Report for: Raul Sanabria, Exploration Manager
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Invoice 080914

Nov. 7, 2008.

SUMMARY:

The 8 samples from the Copper Belle showing appear to comprise mainly feldspathic sandstone (2 samples, CB-1 and 2) and ash tuff (1 sample, CB-3) plus andesitic flow or flow/breccia to crystal/lithic tuff (3 samples, CB-5, 6, and 8) and possible dacitic tuff (1 sample, CB-7). However, the level of alkali feldspar (mainly Kspar) alteration increases so strongly in the series CB-4, 5, 6, and 7 that these rock type identifications are speculative at best. In general, the alteration in all samples is phyllic, and comprises albite-quartz-carbonate-sericite-pyrite-rutile-apatite, in association with veinlets of carbonate-quartz (locally chalcedonic)-sulfides, which may be overprinted on, or contemporaneous with, the potassic alteration noted above. Carbonate appears to vary from calcite and/or dolomite to local ankerite (?), but this would require confirmation by SEM. Sulfides are mostly pyrite but rarely include minor galena or sulfosalt (?), associated with secondary quartz.

The 3 samples from the GR2 showing appear to be lapilli(/crystal) tuff (2 samples, GR-2 and 3), composed of variably sericite, carbonate-sericite or quartz or pyrite altered clasts and possible sericite altered plagioclase (?) and carbonate altered mafic (?) crystals/shards, in a fine-grained quartz-sericite ±carbonate-pyrite-rutile-apatite altered matrix, and breccia (one sample, GR-1) composed of cockade-textured, possibly manganiferous (?) carbonate surrounding relict clasts, cemented by quartz/chalcedonic quartz matrix with minor but significant pyrite-sphalerite-galena-chalcopyrite-minor sulfosalt (tetrahedrite?).

Speculation about presence or absence of bimodal volcanism, or classification of the deposit vis-à-vis VMS or epithermal deposits, would appear to be idle on the basis of so few samples, and the level of alteration. Capsule descriptions are as follows:

CB-1: porphyritic quartz monzodiorite or feldspathic sandstone (?) altered to albite-quartz-ankerite-sericite-pyrite-rutile in association with veinlets of ankerite-quartz-minor pyrite-possible galena or sulfosalt (?), which requires SEM identification.

CB-2: coarse feldspathic sandstone (?), composed of strained, composite detrital (?) quartz grains in a matrix of Kspar and sericite-calcite-pyrite-rutile altered plagioclase and possible lithic clasts (?), cut by local quartz-pyrite-minor calcite veinlets.

CB-3: ash tuff composed mainly of shards of quartz, Kspar, and plagioclase in a very fine-grained matrix of chlorite, sericite, and carbonate plus accessory rutile, with scattered euhedral pyrite crystals rimmed by fibrous chalcedonic quartz/sericite, not related to thin calcite-quartz veinlets. There is no evidence to suggest that chlorite is late.

CB-4: ash tuff composed mainly of shards of quartz, Kspar, and plagioclase in a very fine-grained matrix of (partly secondary?) Kspar-sericite-ankeritic carbonate-accessory rutile, with abundant euhedral pyrite crystals rimmed by sericite/fibrous chalcedonic quartz, partly related to thin sericite but not later ankerite-quartz veinlets.

CB-5: may have been andesite flow (originally composed of plagioclase and mafic phenocrysts in a fine-grained groundmass) strongly altered to Kspar-pyrite-carbonate (?dolomite/ankerite)-minor chlorite-sericite-quartz-rutile-apatite, in association with vein swarms of carbonate (calcite?) or pyrite-carbonate (dolomite?)-chlorite-sericite-rutile. Abundance of Kspar phenocrysts but lack of primary quartz suggests an intermediate-mafic precursor, possibly with most Kspar phenocrysts being secondary after former plagioclase (?), but this is speculative.

CB-6: possible andesite flow/breccia (originally composed of plagioclase ±mafic phenocrysts in fine-grained groundmass, locally fragmental) intensely altered to Kspar-pyrite-carbonate (calcite ±dolomite)-minor sericite-chlorite-quartz-rutile-apatite, in association with veins of calcite.

CB-7: strongly silicified, intensely Kspar-pyrite-sericite-minor carbonate-rutile-apatite altered rock, possibly originally felsic/intermediate tuff (dacitic?), shattered and cut by a stockwork of quartz-minor Kspar (part adularia?)-carbonate, or pyrite-quartz-sericite-minor carbonate veins which appear to be contemporaneous with the alteration.

CB-8: appears to represent mafic/intermediate (andesitic?) crystal/lithic tuff, strongly altered to albite-Kspar-carbonate-sericite-pyrite-minor quartz-accessory rutile-apatite, but not strongly silicified, in association with a microveinlet network of carbonate-sericite.

GR-1: breccia, composed of barely recognizable clasts (?) of either intensely carbonate altered, or lesser sericite-quartz-trace apatite altered, rock in a matrix of secondary quartz of several generations (fine-grained, chalcedonic, or coarse-grained), carbonate and sulfides including pyrite, sphalerite, galena and minor chalcopyrite, sulfosalt (possibly tetrahedrite?).

GR-2: it seems probable that this sample represents andesitic crystal/lapilli tuff, strongly altered to a phyllic assemblage (sericite-carbonate-quartz-pyrite-apatite-rutile ±chalcopyrite, rare galena, trace tetrahedrite?). Some clasts appear to be of strongly quartz veined, variably pyritized rock, suggesting several stages of mineralization/volcanism/erosion.

GR-3: appears to represent andesitic (?) crystal/lapilli tuff, strongly altered to a phyllic assemblage (sericite-carbonate-quartz-pyrite-apatite-rutile); minor Kspar could be relict from potassic alteration. Some clasts are of highly pyritized rock, almost massive sulfides, but they appear to be derived by replacement rather than by erosion of pre-existing massive sulfides.

Detailed petrographic descriptions and photomicrographs are appended (on CD). If you have any questions regarding the petrography, please do not hesitate to contact me.

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CB-1: QUARTZ MONZODIORITE OR FELDSPATHIC SANDSTONE? ALTERED TO ALBITE-QUARTZ-CARBONATE-SERICITE-PYRITE-RUTILE WITH CARBONATE-QUARTZ VEINS

Described as molybdenum porphyry style of mineralization, very silicified rock with yellowish color, containing molybdenite and pyrite in chalcedony veinlets; hand specimen shows pale grey-white, fine- to medium-grained, strongly altered felsic plutonic rock (?) cut by narrow stringers of buff-beige colored ankerite (?), locally mineralized with minor pyrite and a dark grey metallic phase (not molybdenite). The rock is not magnetic, and shows no reaction to cold dilute HCl, but there is minor stain for K-feldspar as small crystals in the etched offcut (which also reveals larger quartz phenocrysts). Modal mineralogy in polished thin section is approximately:

Plagioclase (albitized?)	50%
Quartz (partly secondary)	20%
K-feldspar (mainly primary)	15%
Carbonate (ankerite?)	10%
Sericite	3%
Pyrite	1-2%
Galena or sulfosalt (?)	<1%
Rutile, apatite	<1% each

This sample is composed of small crystals of quartz and smaller, lesser K-feldspar in a matrix of plagioclase that has been albitized and sericitized; the rock has been intimately fractured/brecciated, crackle veined by carbonate and quartz, with minor pyrite and traces of galena or sulfosalt (?). It originally appears to have been composed of about 15% quartz and 15% Kspar crystals in a plagioclase-rich, somewhat seriate-textured groundmass or matrix of mostly plagioclase; mafic minerals have been replaced by carbonate, quartz and sericite plus minor pyrite.

Quartz crystals are mostly subhedral and <1.5 mm in diameter, commonly aggregates of strongly strained quartz crystals <0.7 mm that display strong undulose extinction, planar features and sub-grain development, plus suturing of grain boundaries. They are also commonly brecciated or cut by microveinlets of quartz.

K-feldspar crystals have mostly broken, subhedral outlines <1 mm in size and are difficult to distinguish from untwinned albite crystals since there is little relief difference. Where crossed by microveinlets, Kspar crystals are commonly recrystallized to very fine-grained (<45 micron) ragged irregular interlocking secondary crystals.

Plagioclase occurs as sub- to locally euhedral crystals mostly <1 mm in size, but locally aggregating to 1.5 mm. Strong negative relief against adjacent quartz, and extinction Z^001 up to 21 degrees indicate a composition near pure albite, An0-5. Minor alteration to sericite (flakes <25 microns) and local carbonate (ragged sub/anhedra <0.1 mm) is common.

Veinlets are abundant, ranging from planar, mainly quartz (subhedra up to 1 mm) with minor carbonate (ragged subhedra <0.25 mm), up to 1.2 mm thick, to anastamosing, irregular, mainly carbonate (interlocking sub/anhedra mostly <0.0.5 mm) with minor quartz (euhedra <0.2 mm long), up to 0.6 mm thick. The carbonate is likely ankerite (Fe-Mg rich) judging by the lack of reaction to HCl in hand specimen, and brownish colour/high relief in thin section.

Pyrite is mostly disseminated, forming aggregates to 1 mm of <0.5 mm, fractured euhedral crystals commonly intergrown with minor carbonate and secondary quartz plus traces of rutile (aggregates to 0.3 mm of subhedra mostly <20 microns) and apatite as euhedra <0.1 mm in size (these may represent the sites of former mafic minerals), or is locally controlled along the irregular carbonate-rich veinlets. Traces of a soft (easily scratched), grey, apparently isotropic (or weakly anisotropic?) opaque phase with reflectivity about 30 (?), forming subhedra <0.1 mm intergrown with quartz, could be galena or a sulfosalt, possibly Ag-bearing if the geochemistry of the sample supports this, but it is not molybdenite.

In summary, this may represent porphyritic quartz monzodiorite or feldspathic sandstone (?) altered to albite-quartz-ankerite-sericite-pyrite-rutile in association with veinlets of ankerite-quartz-minor pyrite-possible galena or sulfosalt (?), which requires SEM identification.

CB-2: COARSE FELDSPATHIC SANDSTONE (DETRITAL QUARTZ IN MATRIX OF KSPAR AND SERICITE-CALCITE-PYRITE-RUTILE ALTERED PLAGIOCLASE/MAFIC MINERALS, LITHIC CLASTS (?)

Described as from the outer, mainly barren, alteration envelope, possibly microdiorite or coarse sandstone; hand specimen shows pale greenish-grey, fine- to medium-grained, felsic rock with somewhat detrital appearance (especially in etched offcut), with disseminated pyrite and cut by local white calcite veinlets. The rock is not magnetic, shows minor reaction to cold dilute HCl, and significant stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

Quartz	55%
K-feldspar	25%
Sericite (after plagioclase?)	10%
Carbonate (mainly calcite)	7%
Pyrite	2-3%
Rutile	<1%

This sample consists mainly of relatively coarse-grained, possibly detrital quartz in a matrix of K-feldspar, sericitized feldspar (possibly originally plagioclase?), carbonate (mainly calcite), pyrite and accessory rutile.

Quartz occurs mainly as aggregates or composite grains with subangular to irregular outlines up to about 2.5 mm in diameter. They typically display strong undulose extinction, local planar features and sub-grain development, or suturing of grain boundaries, indicative of strong strain. Their form and habit are indeed more suggestive of detrital quartz grains (from metamorphic/plutonic terrain) than igneous phenocrysts.

The feldspathic matrix consists of K-feldspar as subangular/subrounded to locally subhedral, broken crystals up to 2 mm long, and strongly sericite-minor carbonate altered relicts that may have been mostly plagioclase (?) or in some cases, lithic clasts, both up to about 1.5 mm in size. Although Kspar mostly shows relatively little alteration to sericite and carbonate (except where crossed by microveinlets of carbonate <0.1 mm thick), and is therefore readily identified, no relict plagioclase actually remains. However, by comparison to the previous sample, it seems a reasonable assumption. Sericite forms minute shreddy subhedral flakes mainly <20 microns in diameter; carbonate, likely mainly calcite, forms subhedra mostly <0.1 mm in diameter but in aggregates up to 0.6 mm long that could represent the sites of former mafic minerals since they are commonly associated with coarser-grained sericite (euhedral flakes to 50 microns), pyrite and accessory rutile (see below).

Pyrite occurs as mainly cubic crystals <0.5 mm in diameter, concentrated in the matrix between the larger quartz grains, and locally associated with minor accessory rutile forming sub- to euhedral, colourless to dark brown or locally opaque crystals mainly <0.1 mm in diameter.

Veinlets mostly <0.5 mm thick consist of quartz (elongate sub/euhedra up to almost 1 mm long), pyrite (strings up to 3 mm long of cubic crystals mostly <0.3 mm in size) and minor carbonate (raged subhedra to 0.35 mm, also likely calcite).

In summary, it seems likely that Lewis (2003) was correct in identifying this sample as coarse feldspathic sandstone, composed of strained, composite detrital (?) quartz in a matrix of Kspar and sericite-calcite-pyrite-rutile altered plagioclase and possible lithic clasts (?), cut by local quartz-pyrite-minor calcite veinlets.

CB-3:FELSIC ASH TUFF (QUARTZ-KSPAR-PLAGIOCLASE SHARDS IN KSPAR-CHLORITE-SERICITE-CARBONATE-MINOR RUTILE MATRIX); DISSEMINATED PYRITE WITH CHALCEDONIC QUARTZ RIMS, THIN CALCITE ±QUARTZ VEINLETS

Described as from the outer, mainly barren, alteration envelope, possibly ash (fine-grained, compact, sericite altered with chlorite + pyrite overprinting?); hand specimen shows greenish-grey, very fine-grained rock with disseminated pyrite and cut by local white calcite veinlets. The rock is locally slightly magnetic, shows minor reaction to cold dilute HCl, and intense stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

K-feldspar (mainly primary?)	45%
Plagioclase (albite or oligoclase?)	10%
Quartz (mainly primary, minor secondary)	10%
Chlorite	10%
Sericite	10%
Carbonate (mainly dolomite?; calcite in veins)	10%
Pyrite	3-5%
Rutile	1%
Apatite	<1%

This sample consists mainly of small shards of quartz, Kspar and plagioclase in a very fine-grained matrix of Kspar, intimately intergrown chlorite, sericite, carbonate and accessory rutile, with coarse disseminated pyrite throughout. Narrow calcite-minor quartz veins are mostly <0.5 mm thick.

Shards of quartz and feldspar have mainly angular to subangular, irregular outlines up to about 0.25 mm in diameter. K-feldspar shards are distinguished by relief similar to the matrix while plagioclase shows distinct polysynthetic twinning, with extinction on 010 up to about 13 degrees suggestive of either albite or oligoclase (not easy to determine relief against quartz, but albite seems more likely in this altered rock). Quartz shards are generally unstrained (lack undulose extinction) but show dissolution and corrosion at the margins. Some shards are composites, e.g. quartz and Kspar, suggesting derivation from a granitic source terrain.

In the matrix, the crystals are so fine-grained and intimately mixed as to be piled on top of each other in the 30 micron thickness of the thin section, making identification and quantitative estimation difficult. However, Kspar must be abundant judging by the yellow stain in the offcut, apparently forming subhedra mostly <15 microns long with random orientations. Chlorite and sericite are interleaved, both forming sub/euhedral flakes mostly <25 microns in size. Pale green but distinct pleochroism and near-zero birefringence in chlorite suggests Fe:Fe+Mg, or F:M, ratio around 0.5 (?). Both are commonly intergrown complexly around the margins of carbonate, which forms ragged subhedra mainly <0.1 mm in diameter that according to lack of reaction to HCl in hand specimen may be partly or mostly dolomite (?). Minor but significant accessory rutile occurs as minute subhedra mostly <10 microns in size but in irregular aggregates to 25 microns. Rare apatite occurs as scattered <0.1 mm euhedra. Lithic clasts with subangular outlines up to 0.7 mm are difficult to distinguish from the matrix except by their lack of shards.

Pyrite occurs as cubic crystals up to 1 mm with distinct zonal structure caused by inclusions particularly at the cores. The crystals are commonly surrounded by narrow rims <0.1 mm thick of fibrous, lamellar-textured secondary quartz (variably length-fast/slow, likely chalcedonic) and local sericite of similar size. They are associated with rutile as dark golden brown subhedra <50 microns.

In the veinlets, calcite forms interlocking subhedra up to about 0.4 mm in size, locally intergrown with quartz as sub/euhedral bladed crystals of similar size. Sulfides are not found in or associated with these veinlets.

In summary, this does in fact appear to be an ash tuff composed mainly of shards of quartz, Kspar, and plagioclase in a very fine-grained matrix of Kspar, chlorite, sericite, and carbonate plus accessory rutile, with scattered euhedral pyrite crystals rimmed by fibrous chalcedonic quartz/sericite, not related to thin calcite-quartz veinlets. There is no evidence to suggest that chlorite is late.

CB-4: FELSIC ASH TUFF (QUARTZ-KSPAR-PLAGIOCLASE SHARDS IN KSPAR-SERICITE-CARBONATE-MINOR RUTILE MATRIX); DISSEMINATED PYRITE WITH SERICITE-CHALCEDONIC QUARTZ RIMS, THIN SERICITE/LATER CALCITE ±QUARTZ VEINLETS

Described as from the outer, mainly barren, alteration envelope, possibly Kspar altered ash tuff (?); hand specimen shows buff-beige, very fine-grained, siliceous rock with heavily disseminated pyrite and shattered by common hairline white or grey veinlets. The rock is not magnetic, shows no reaction to cold dilute HCl even when powdered, and very strong stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

K-feldspar (possibly partly secondary)	55%
Carbonate (ankerite?)	15%
Quartz (mainly primary, shards; minor secondary)	10%
Sericite	10%
Pyrite	8-10%
Rutile	1%
Apatite	<1%

This sample is similar to CB-3, composed mainly of small angular shards of quartz and feldspar (Kspar and plagioclase) in a matrix that although strongly stained for Kspar, and mostly harder than steel, is strongly replaced by carbonate and sericite plus abundant pyrite (mostly with pressure shadow rims of sericite/minor quartz) and accessory rutile. Veinlets are mostly early sericite, cut by later carbonate, sericite and minor fibrous (chalcedonic?) quartz; only the early sericite ones are associated with more abundant pyrite. If there originally were lithic clasts, they are no longer distinguishable from the matrix due to the intense alteration.

Shards of quartz and feldspar have mainly angular, irregular outlines mostly <0.15 mm in diameter. K-feldspar is difficult to distinguish from the matrix because of similar relief, but plagioclase locally shows distinct polysynthetic twinning, with extinction on 010 up to about 10 degrees suggestive of either albite or oligoclase (not easy to determine relief against quartz, but albite seems more likely in this altered rock). Quartz shards are generally unstrained, i.e. lack undulose extinction, but locally show dissolution and corrosion at the margins where attacked by sericite of the matrix. Some shards are composites, e.g. quartz and plagioclase (?).

In the matrix, the crystals are so fine-grained and intimately mixed as to be piled on top of each other in the 30 micron thickness of the thin section, making identification and quantitative estimation difficult. However, Kspar is so abundant judging by the yellow stain in the offcut that it may in part be secondary, apparently forming subhedra mostly <15 microns long with random orientations. Sericite forms sub/euhedral flakes mostly <10 microns in size except in and along veinlets. Carbonate forms ragged brownish subhedra mainly <0.1 mm in diameter that according to lack of reaction to HCl in hand specimen, may be partly or mostly ankerite (?). Minor but significant accessory rutile occurs as minute subhedra mostly <10 microns in size but in irregular aggregates to 25 microns, commonly within the carbonate. Rare apatite occurs as scattered <65 micron euhedra.

Pyrite occurs as sub-cubic crystals <1 mm with distinct zonal structure caused by inclusions particularly at the cores. The crystals are commonly surrounded by narrow rims <0.1 mm thick of sericite as euhedral flakes to 0.12 mm, or fibrous, brush-textured secondary quartz up to 0.2 mm long (variably length-fast/slow, likely chalcedonic). They are locally associated with rutile as virtually opaque subhedra as described above for the matrix.

Sericite-filled fractures mostly <0.5 mm thick locally replace up to 10-15% of the rock. In the later veinlets (up to 1 mm thick), carbonate (relatively clear compared to carbonate in selvages and wallrock) forms interlocking subhedra up to about 0.5 mm, rarely intergrown with quartz as fibrous to bladed euhedra <0.15 mm long. Sulfides are locally associated with the early veinlets.

In summary, this also appears to be an ash tuff composed mainly of shards of quartz, Kspar, and plagioclase in a very fine-grained matrix of (partly secondary?) Kspar-sericite-ankeritic carbonate-accessory rutile, with abundant euhedral pyrite crystals rimmed by sericite/fibrous chalcedonic quartz, partly related to thin sericite but not later ankerite-quartz veinlets.

CB-5: ANDESITE FLOW (?) INTENSELY ALTERED TO KSPAR-PYRITE-CARBONATE-MINOR CHLORITE-SERICITE-QUARTZ-RUTILE-APATITE ASSOCIATED WITH VEINS OF CARBONATE-PYRITE-CHLORITE-SERICITE-RUTILE

Described as green chlorite-pyrite altered andesite lapilli tuff and stockwork mineralization that often carries gold mineralization and forms an envelope around the richest part of the deposit; hand specimen shows greenish grey, intensely fractured/shattered, strongly altered rock cut by abundant white carbonate, and in places dark green pyrite-chlorite, veinlets. The rock is not magnetic, but shows minor reaction to cold dilute HCl (mainly along the white veinlets), and intense stain for K-feldspar in the etched offcut (increase in intensity of stain from CB-3 to 4 to 5 indicates that part of the Kspar is probably secondary). Modal mineralogy in polished thin section is roughly:

K-feldspar (likely partly secondary)	60%
Pyrite	20%
Carbonate (calcite/dolomite?)	12%
Chlorite	3-5%
Sericite	2-3%
Quartz (mainly secondary)	1-2%
Rutile	<1%
Apatite	<1%

This sample consists of what appear to be phenocrysts (?) of Kspar (partly altered to sericite and carbonate) in a matrix of Kspar also partly altered to pyrite, carbonate, minor chlorite, sericite, apatite and rutile, in association with veinlets of carbonate, pyrite, minor chlorite and sericite.

Kspar phenocrysts show mainly euhedral outlines up to almost 3 mm long, with random orientations; they are not suggestive of shards and therefore may indicate a flow rather than a tuff. Given the apparent level of K-feldspar replacement of the rock, it is possible that they may represent former plagioclase phenocrysts that have been completely replaced by Kspar, rather than primary Kspar. This is in part supported by the common alteration to sericite (minute flakes mostly <25 microns) and carbonate (interlocking ragged anhedra mostly <0.2 mm) that locally replace up to 40% of the crystals, plus the locally microcrystalline sub-domains of Kspar within the crystals, similar in size and random orientation to Kspar in the adjacent matrix.

In the matrix, Kspar forms randomly oriented sub/euhedral laths mainly <50 microns long; if there is any quartz interstitial to the Kspar it is difficult to detect optically. The feldspathic matrix is strongly to locally intensely overprinted by pyrite (euhedral cubic crystals up to 0.5 mm in diameter, commonly aggregating to 2 mm, or longer where present along veinlets), carbonate (rounded sub- to anhedral crystals mostly <0.25 mm but in aggregates to 1 mm, or longer along veinlets), minor weakly pleochroic olive-green chlorite as minute flakes mostly <20 microns with length-slow, near-zero birefringence indicative of F:M around 0.5 (?), locally intimately interleaved/mixed with sericite as sub/euhedral flakes to 50 microns, apatite (likely secondary, forming sub/euhedral prisms mostly <50 microns long) and rutile (pale golden brown euhedra mostly <25 microns).

In the veinlets, which are up to about 1.5 mm thick and locally in swarms that may replace up to 50% of the sample, carbonate (possibly mainly calcite to judge by the reaction in hand specimen) forms interlocking sub/anhedra to about 1 mm long, pyrite is as described above, and chlorite and sericite are somewhat coarser than in the wallrock, forming sub/euhedral flakes up to 0.1 mm in diameter, commonly in pressure shadows around the pyrite. Minor quartz forms subhedral to locally fibrous crystals mostly <0.1 mm long. Rutile forms euhedral crystals up to 80 microns in size.

In summary, this could have been andesite flow (originally composed of plagioclase and mafic phenocrysts in a fine-grained groundmass) that has been strongly altered to Kspar-pyrite-carbonate (dolomite/ankerite/)-minor chlorite-sericite-quartz-rutile-apatite, in association with vein swarms of carbonate (calcite?) or pyrite-carbonate (dolomite?)-chlorite-sericite-rutile. Abundance of

Kspar phenocrysts but lack of primary quartz suggests an intermediate-mafic precursor, possibly with most Kspar phenocrysts being secondary after former plagioclase (?), but this is speculative.

CB-6: ANDESITE FLOW/BRECCIA (?) INTENSELY ALTERED TO KSPAR-PYRITE-CARBONATE-MINOR SERICITE-CHLORITE-QUARTZ-RUTILE-APATITE ASSOCIATED WITH CARBONATE VEINING

Described as intermediate between barren rock and chlorite-pyrite assemblage that often carries gold, with reddish hematitic alteration and silicification in sulfide-rich zone of core; hand specimen shows intensely fractured/shattered, strongly altered rock varying from reddish to greenish grey, cut by abundant white carbonate veinlets. The rock is not magnetic, but shows reaction to cold dilute HCl (mainly along the white veinlets), and intense stain for K-feldspar in the etched offcut (similar to intensity of stain CB-5, likely indicating that part of the Kspar is secondary). Modal mineralogy in polished thin section is roughly:

K-feldspar (likely partly secondary)	65%
Pyrite	15%
Carbonate (calcite/dolomite?)	10%
Sericite	3-5%
Chlorite	2-3%
Quartz (mainly secondary)	1-2%
Rutile	1%
Apatite	1%

This sample varies from what appears to be a green fragmental rock (subrounded intensely pyritized clasts) to a red porphyritic rock like CB-5, composed of phenocrysts (?) of Kspar (partly altered to carbonate, trace sericite) in a matrix of Kspar also partly altered to pyrite, carbonate, minor chlorite, sericite, apatite and rutile, in association with veinlets of carbonate, pyrite, minor chlorite and sericite.

In most of the slide, randomly oriented Kspar phenocrysts with mainly euhedral outlines up to just over 3 mm long are suggestive of a flow rather than a tuff. Given the apparent level of Kspar replacement of the rock, it is possible these represent former plagioclase phenocrysts completely replaced by Kspar, rather than primary Kspar. This is in part supported by the common alteration to carbonate (interlocking ragged anhedra mostly <0.4 mm), minor sericite (flakes mostly <25 microns) that locally replace up to 50% of the crystals, plus the recrystallized-looking sub-domains of Kspar within the crystals (red colour caused by microscopically divided hematite). Possible mafic relics with irregular outlines <0.5 mm are replaced by carbonate (as above) and chlorite-minor sericite as flakes <50 microns in size. In the matrix, Kspar forms randomly oriented sub/euhedral laths mainly <75 microns long; if there is any quartz interstitial to the Kspar it is difficult to detect optically. The feldspathic matrix is strongly to locally intensely overprinted by pyrite (euhedral cubic crystals up to 1 mm), carbonate (rounded sub- to anhedral crystals mostly <0.25 mm but in aggregates to 1 mm, especially along veinlets), minor weakly pleochroic olive-green chlorite as minute flakes mostly <30 microns with length-slow, near-zero birefringence indicative of F:M around 0.5 (?), locally intimately interleaved/mixed with sericite as sub/euhedral flakes to 50 microns, apatite (likely secondary, forming euhedral prisms <0.2 mm long) and rutile (pale golden brown euhedra mostly <45 microns).

In the fragmental (?) portion, clasts up to almost 1 cm across consist of pyrite (as described above), carbonate (brownish interlocking subhedra <0.35 mm that could be dolomite/ankerite?) and irregular to bladed laths of Kspar (secondary?) <2 mm long but composed of <0.2 mm sub-domains. Chlorite, apatite and rutile intergrown with carbonate imply more mafic composition.

In the veinlets, which are up to about 0.5 mm thick, carbonate (possibly mainly calcite to judge by the reaction in hand specimen) forms interlocking sub/anhedra to 1 mm long, pyrite (possibly accidentally trapped in the vein) forms cubes <0.5 mm, and quartz and sericite form mainly euhedral crystals/flakes <0.1 mm long.

In summary, this could have been andesite flow/breccia (?originally composed of plagioclase and mafic phenocrysts in a fine-grained groundmass, locally fragmental) that has been intensely altered to Kspar-pyrite-carbonate (calcite/?dolomite)-minor sericite-chlorite-quartz-rutile-apatite, in association with veins of carbonate (mainly calcite).

CB-7: INTENSE KSPAR-QUARTZ-PYRITE-SERICITE-CARBONATE ± RUTILE-APATITE ALTERED FELSIC TUFF (?) WITH STOCKWORK OF QUARTZ±CARBONATE, OR PYRITE-SERICITE±CARBONATE VEINS

Described as from the richest part of the orebody (grey silicified rock from the sulfide-rich zone with high geochem values of Au, Ag, As, Sb, Zn and Pb); hand specimen shows intensely fractured/shattered, strongly altered brownish-grey rock, cut by abundant white quartz ±carbonate veinlets. The rock is not magnetic, but shows minor reaction to cold dilute HCl (mainly along the white veinlets), and intense stain for K-feldspar in the etched offcut (similar to intensity of stain CB-5/6, likely indicating part of the Kspar is secondary). Modal mineralogy in polished thin section is roughly:

K-feldspar (largely secondary, could be minor adularia?)	55%
Quartz (mainly secondary)	25%
Pyrite	10%
Sericite	5-7%
Carbonate (calcite/dolomite?)	1-2%
Rutile	1%
Apatite	1%

This sample consists of shattered, broken Kspar and quartz crystals/shards in an extremely fine-grained matrix of Kspar and significant, interstitial quartz, cut by a network of quartz-minor carbonate or pyrite-quartz-sericite-minor carbonate veins. Silicification is much more important in this sample than in the previous samples.

Shards of quartz and feldspars have mainly broken, subhedral to euhedral outlines up to 0.6 mm and almost 1 mm respectively. The quartz shards are slightly strained (show minor undulose extinction) and are slightly corroded and overgrown at rims by the adjacent matrix, suggesting silicification. Kspar shards locally show relicts of former polysynthetic twinning, or zoning (mainly around the rims, suggesting they represent pseudomorphs of former plagioclase shards/crystals, in an originally more intermediate/mafic rock). There is minor to locally moderate replacement of the Kspar by sericite (subhedral flakes <25 microns in size with random to locally oriented habit) or minor carbonate (ragged subhedra mostly <0.1 mm in diameter). This carbonate is likely dolomite or even ankerite since it does not appear to react to HCl in hand specimen.

In the matrix, Kspar forming sub/anhedra rarely over 20 microns in size is intimately mixed with interstitial, even finer-grained quartz (mainly <5 microns in size), suggestive of intense Kspar-quartz alteration. This material is mixed with flakes of sericite (mainly subhedral, <20 microns), carbonate (subhedra <50 microns), pyrite (euhedra to 0.1 mm), apatite (ragged euhedra up to 0.3 mm long) and rutile (clusters to 0.1 mm of brown subhedra mostly <25 microns long).

Quartz-dominant veins are irregular, up to almost1 cm thick (2 cm in hand specimen), composed of either plumose, strongly strained quartz subhedra up to 1.5 mm long (with strong undulose extinction, sub-grain development, suturing of grain boundaries), minor Kspar (sub-to euhedral, locally triangular to diamond-shaped crystals <0.0.1 mm that are locally suggestive of adularia?), carbonate as ragged irregular subhedra to 0.6 mm (likely mostly calcite, especially along selvages, with deformed twin lamellae, undulose extinction), or fibrous lamellar quartz mostly <0.6 mm long intergrown with carbonate as ragged subhedra to 0.75 mm, also with twin lamellae parallel to elongation in quartz, oblique to the vein walls. Pyrite-dominant veins mainly <0.5 cm thick are less well-defined, more just concentrations of pyrite as cubic crystals up to 1 mm long, interspersed with interstitial quartz (ragged anhedra <0.1 mm long), sericite as subhedral flakes <65 microns long, and minor carbonate as subhedra to 0.5 mm. Selvages of these veins are composed of similar quartz, sericite and minor carbonate.

In summary, this is (as noted in the field) strongly silicified, intensely Kspar-pyrite-sericite-minor carbonate-rutile-apatite altered rock, possibly originally felsic/intermediate tuff (dacitic?), shattered and cut by a stockwork of quartz-minor Kspar (part adularia?)-carbonate, or pyrite-quartz-sericite-minor carbonate veins which appear to be contemporaneous with the alteration.

CB-8: ANDESITIC (?) CRYSTAL-LITHIC TUFF, STRONGLY ALTERED TO ALBITE-KSPAR-CARBONATE-SERICITE-PYRITE-MINOR QUARTZ-RUTILE-APATITE

Described as pink K-feldspar-rich alteration and chlorite alteration in pyrite-rich silicified rock; hand specimen shows strongly fractured/shattered and altered, pinkish to brownish-grey rock (local greenish clasts?), cut by a network of narrow carbonate ±quartz microveinlets. The rock is not magnetic, but shows minor reaction to cold dilute HCl (only where scratched), and modest stain for K-feldspar in the etched offcut (locally replacing cores of plagioclase, indicating part of the Kspar is secondary). Modal mineralogy in polished thin section is approximately:

Plagioclase (albitized, Kspar-carbonate-sericite altered)	40%
K-feldspar (largely secondary)	25%
Carbonate (dolomite/ankerite?)	15%
Sericite	10%
Pyrite	5%
Quartz (mainly secondary)	3-5%
Rutile	<1%
Apatite	<1%

This sample appears to be a crowded crystal-lithic tuff, composed of closely packed plagioclase and Kspar crystals (part or most Kspar could be secondary) and widely scattered, strongly carbonate- or sericite-altered lithic clasts, cut by a "crackle" network of very thin carbonate-sericite microveinlets.

Plagioclase crystals mainly have euhedral to locally broken outlines from <1 up to about 3 mm long, with polysynthetic twinning (extinction Y^010 up to 14 degrees, suggestive of albite, An5) but commonly partly to locally completely replaced at the cores by K-feldspar, plus 10-30% replaced by carbonate as subhedra <0.1 mm and sericite as subhedral flakes mostly <50 microns in size. The Kspar is in the form of vague, irregular pseudomorphic replacement, with very little discernible relief difference against the albite, but clearly detectable in the etched offcut with a hand lens. It is not clear whether there originally were primary Kspar crystals/shards or not; my guess would be the latter.

Probable former relict mafic sites are represented by concentrations of carbonate, sericite, pyrite and minor rutile and apatite with irregular to subhedral outlines up to about 1 mm long; locally elongate shapes are possibly suggestive of former hornblende or pyroxene (?). In these sites, carbonate forms interlocking brownish sub/anhedra mostly <0.1 mm that may be largely dolomite or ankerite to judge by the lack of reaction in hand specimen, sericite forms subhedral flakes <20 microns, pyrite forms cubic crystals up to 0.5 mm, and rutile occurs as aggregates to 50 μm of pale brown sub/euhedra mostly <20 microns in size. Apatite occurs as corroded prisms mostly <50 μm long (also found in feldspars). Local larger cubic crystals/aggregates of fractured pyrite up to 2 mm across, in places with adjacent pressure shadows of fibrous-lamellar quartz crystals up to 0.25 mm long (or locally flakes of sericite up to 0.1 mm), could represent larger mafic relics, or be glomeratic.

Lithic clasts vary from relatively small (subangular outlines <1 mm) and sericitized, to larger (up to 1 cm), subrounded and strongly carbonate (relatively clear, interlocking subhedra to 0.65 mm, possibly dolomite?) and sericite (randomly oriented subhedral flakes <65 microns), minor pyrite and rutile (as described above) altered, with discrete but ragged, fractured Kspar crystals up to 2 mm long (see etched offcut) that are likely secondary. The larger clasts could have been more mafic (basaltic?)

The matrix is very strongly altered to fine-grained sericite and carbonate, accessory rutile, but not obviously to Kspar (in contrast to previous samples); minute feldspar crystals in the matrix, mostly <20 microns in size, have similar relief to adjacent albite, and so are likely also albite.

Veinlets vary from <0.1 mm, mostly sericite (aligned subhedral flakes mostly <35 microns), up to 0.6 mm, mostly carbonate (interlocking, clear subhedra up to 0.35 mm, likely dolomite to judge by reaction in hand specimen).

In summary, this appears to represent mafic/intermediate (andesitic?) crystal/lithic tuff, strongly altered to albite-Kspar-carbonate-sericite-pyrite-minor quartz-accessory rutile-apatite, but not strongly silicified, in association with a microveinlet network of carbonate-sericite.

GR-1: BRECCIA: CARBONATE- OR SERICITE-ALTERED CLASTS IN MATRIX OF QUARTZ -CARBONATE-PYRITE-SPHALERITE-GALENA-CHALCOPYRITE-?TETRAHEDRITE

From GR2 showing, described as vein with cockade textures (rhodochrosite?) and sulfide banding around breccia clasts in undeformed, unaltered host lapilli tuff wallrock; hand specimen shows a breccia composed of large (up to 4 cm) angular, pinkish carbonate-altered clasts overgrown and cemented by a grey siliceous matrix with very fine-grained pyrite and base-metal sulfides. The rock is locally weakly magnetic, shows minor reaction to cold dilute HCl (where scratched) and no stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

Carbonate (possibly rhodochrosite?)	45%
Quartz (mainly secondary)	35%
Sericite	10%
Pyrite	3-5%
Sphalerite	2-3%
Galena	2-3%
Chalcopyrite	<1%
Apatite	<1%
Sulfosalt (tetrahedrite?)	<1%

This is actually a very strongly altered rock, in which primary volcanic minerals and textures are virtually destroyed, precluding identification of host rock. It appears to be breccia, composed essentially of barely recognizable clasts (?) of either intensely carbonate altered, or lesser sericite altered, rock in a matrix of secondary quartz of several generations (fine-grained, chalcedonic, or coarse-grained) and sulfides including pyrite, sphalerite, galena and minor chalcopyrite.

In the supposed clasts (which in hand specimen locally contain cores or nuclei of dark grey to black, silicified slate?), carbonate forms either 1) coarse, bladed, plumose-textured euhedral crystals up to 2 mm long in cockade texture around the margins of the clast, or 2) relatively fine-grained, granular to lamellar-textured, commonly bent or curving subhedra mostly <0.5 mm long. The exact identification of this carbonate would have to be by SEM to see if significant Mn is present, but the pink colour and slow reaction to cold dilute HCl unless scratched in hand specimen, and brownish colour in thin section are permissive of rhodochrosite (or possibly Mn-bearing dolomite?).

In sericitic clasts, patches or areas of sericite have mainly rectangular subhedral outlines up to about 1.5 mm across that are suggestive of former feldspar crystals (could have been plagioclase or Kspar, cannot be certain but plagioclase seems more likely). The sericite occurs as randomly oriented subhedral flakes mostly <20, but locally up to 35, microns in diameter, and is mixed with a little secondary quartz as subhedra mostly <0.1 mm long. The matrix between the relict feldspar (?) sites consists of similar sized quartz and lesser sericite, likely representing phyllic alteration of a quartzo-feldspathic groundmass. In places, particularly near the margins of the clast and near the breccia matrix, coarser-grained secondary quartz forms sub/euhedra to 0.35 mm, associated with pyrite as cubic euhedra and local apatite prisms both of similar size, and locally associated with carbonate similar to that described above but in ragged sub/anhedra mostly <0.2 mm in size.

In the siliceous breccia matrix, the very fine-grained quartz (ragged interlocking subhedra mostly <25 microns long, with random orientations) appears to show variable length-slow to length-fast character; this taken together with the fine grain size suggests it may be chalcedonic. It is mixed with a little carbonate (euhedra to 50 microns) and pyrite (euhedra mostly <25 microns). Coarse-grained, bladed euhedral quartz crystals are up to 1.5 mm long, with a similar plumose, radiating (cockade) texture like that of coarse carbonate. Pyrite forms sub/euhedral crystals up to 1.5 mm, locally with inclusions of sphalerite, galena, chalcopyrite and apparently isotropic sulfosalt that may be tetrahedrite (?) mostly <0.2 mm. Elsewhere, sphalerite (yellow, i.e. low-Fe, subhedra to 1.5 mm), galena (ragged subhedra to 2 mm intergrown at margins with tetrahedrite?) and minor chalcopyrite (subhedra <0.2 mm) are mostly intergrown with carbonate and quartz. Sphalerite contains minute inclusions of chalcopyrite mostly <20 µm, and chalcopyrite occurs along microveinlets <50 µm thick.

GR-2: POSSIBLY ANDESITIC (?) CRYSTAL-LAPILLI TUFF STRONGLY ALTERED TO SERICITE-CARBONATE-QUARTZ-PYRITE-MINOR APATITE-RUTILE-CHALCOPYRITE

Described as lapilli tuff with polymictic clasts, some with selective pyrite alteration; hand specimen shows somewhat elongate, aligned, dark grey to locally black clasts mostly <1.2 cm long in paler greenish-grey fine-grained matrix. The rock is not magnetic, shows minor, relatively slow reaction to cold dilute HCl, and only traces of stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

Sericite	40%
Carbonate (calcite, dolomite?)	25%
Quartz (largely secondary)	20%
Pyrite	13%
Apatite	1%
Rutile	<1%
Chalcopyrite (rare galena, trace tetrahedrite?)	<1%

Clasts consist of secondary minerals such as quartz, carbonate, sericite and pyrite (trace chalcopyrite, rare galena), locally associated with coarse (likely vein?) quartz, or mostly sericite, or mostly carbonate-minor quartz, in a matrix of fine-grained, also probably mostly secondary, quartz, sericite, carbonate and minor pyrite, rutile and apatite.

Clasts range from very well-defined, up to almost 1.5 cm long, to less well defined, mostly <3 mm long. The former are composed of coarse-grained (likely vein?) quartz as subhedra mostly <0.6 mm in diameter, associated with sulfides (see below) that are partly surrounded by fibrous-lamellar quartz in pressure shadows, cut by microveinlets mostly <0.15 mm thick of carbonate. The carbonate, which is mostly clear, could be calcite, and forms subhedral fibrous crystals mostly <0.1 mm long, aligned sub-parallel to the fibrous quartz crystals. The latter consist mainly of sericite, forming somewhat aligned subhedral flakes mostly <20 microns in diameter, with local pyrite as cubic crystals <0.1 mm, irregular carbonate crystals <50 microns, and traces of rutile as minute pale brown subhedra <15 microns in size. The carbonate, which is mostly distinctly brown, with higher relief than the clear calcite, could be dolomite; it is commonly closely associated with pyrite. The sericitic clasts grade to what are likely relict (plagioclase?) feldspar crystals pseudomorphed by sericite as mainly aligned sub/euhedral flakes up to 0.12 mm in diameter, clear carbonate (calcite?) as subhedra mostly <0.1 mm in size, and variable pyrite and rutile (see below).

The matrix to these clasts and possible crystal/shard relics consists of fine-grained (mostly <25 micron) quartz and sericite, variable carbonate (irregular, ragged sub/anhedra mostly <50 microns in size) and pyrite (see below), plus minor apatite (sub/euhedral prisms to 0.3 mm long) that could be either secondary, or represent relict original microphenocrysts in a mafic/intermediate rock. It seems likely, given the level of alteration in the sample, that most of the fine-grained quartz in the matrix is secondary, but this is not certain; if it is secondary, then the likelihood is that the precursor rock was mafic/intermediate rather than felsic.

Pyrite forms mainly euhedral, cubic crystals up to 0.5 mm in diameter (in aggregates up to 1 cm across where they replace most of a former clast). The pyrite is locally intergrown (especially at margins) with minor chalcopyrite as subhedra <50 microns in size, rutile (brown sub/euhedra mostly <30 microns long), or rare galena (<25 microns). In places pyrite contains minute, irregular-shaped bleb-like inclusions of chalcopyrite up to 30 microns long (that rarely contain inclusions <5 microns in size of tetrahedrite?).

In summary, it seems probable that this sample represents andesitic crystal/lapilli tuff, strongly altered to a phyllic assemblage (sericite-carbonate-quartz-pyrite-apatite-rutile ±chalcopyrite, rare galena, trace tetrahedrite?). Some clasts appear to be of strongly quartz veined, variably pyritized rock, suggesting several stages of mineralization/volcanism/erosion.

GR-3: POSSIBLY ANDESITIC (?) CRYSTAL-LAPILLI TUFF STRONGLY ALTERED TO SERICITE-CARBONATE-QUARTZ-PYRITE-MINOR KSPAR-APATITE-RUTILE

Described as lapilli tuff with polymictic clasts, some with selective pyrite alteration; hand specimen shows somewhat irregular to elongate, partly aligned, dark grey (pyritized) clasts mostly <1.2 cm long in paler greenish-grey fine-grained matrix. The rock is not magnetic, shows vigorous reaction to cold dilute HCl, and very minor stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

Sericite	35%
Carbonate (calcite, minor dolomite?)	25%
Quartz (largely secondary)	20%
Pyrite	15%
K-feldspar (likely secondary)	2-3%
Apatite	1%
Rutile	<1%

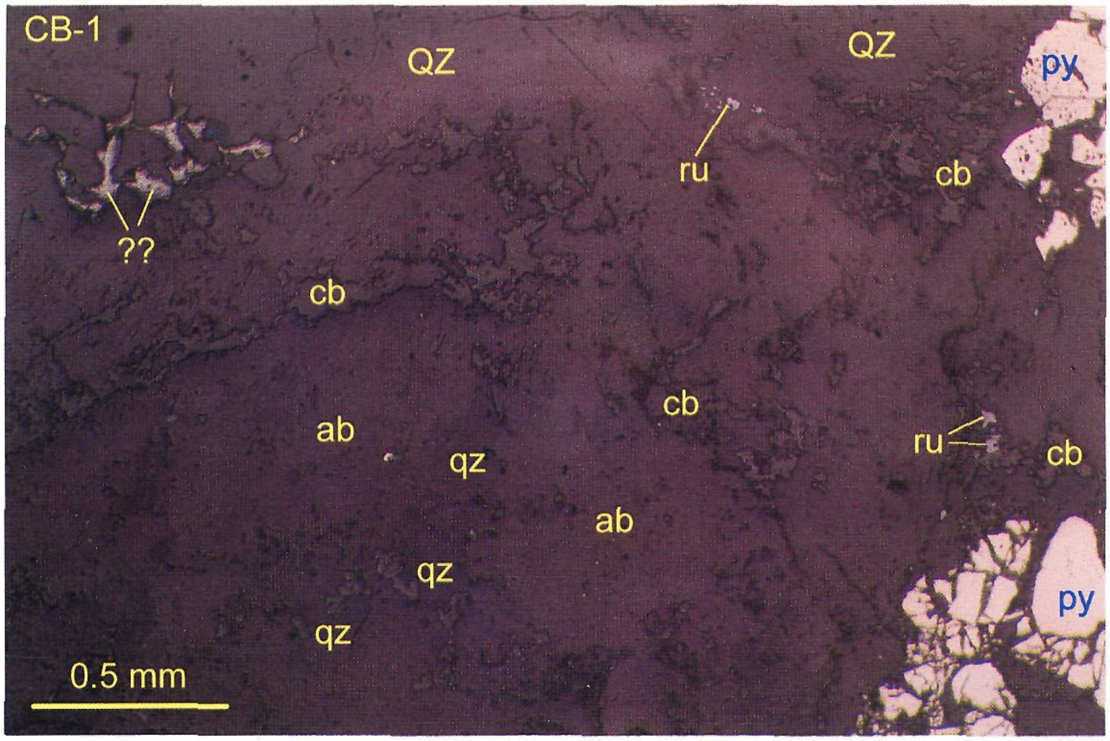
In this sample, clasts consist almost entirely of secondary minerals such as pyrite, sericite, carbonate, and quartz, or mostly sericite, or mostly carbonate-minor quartz-trace apatite, in a matrix of fine-grained, also probably mostly secondary, quartz, sericite, carbonate and minor K-feldspar, pyrite, rutile and apatite.

The most common clasts are somewhat elongated, up to about 1.5 cm long, with long axes somewhat aligned, and strongly pyritized. They consist mainly of pyrite forming 50-60% of the clast (as cubic crystals mostly <0.25 mm in diameter, but aggregating to 1 mm long, locally with fibrous-lamellar quartz and minor sericite in surrounding pressure shadows), interstitial sericite (as minute, randomly oriented subhedral flakes mostly <20 microns in size), and minor carbonate (as subhedra mostly <0.1 mm), rutile (aggregates to 50 microns of brownish subhedra <15 microns in size) and apatite (as euhedral prisms mostly <0.1 mm long). However, the chalcopyrite-trace galena seen in GR-2 seems to be absent in this sample.

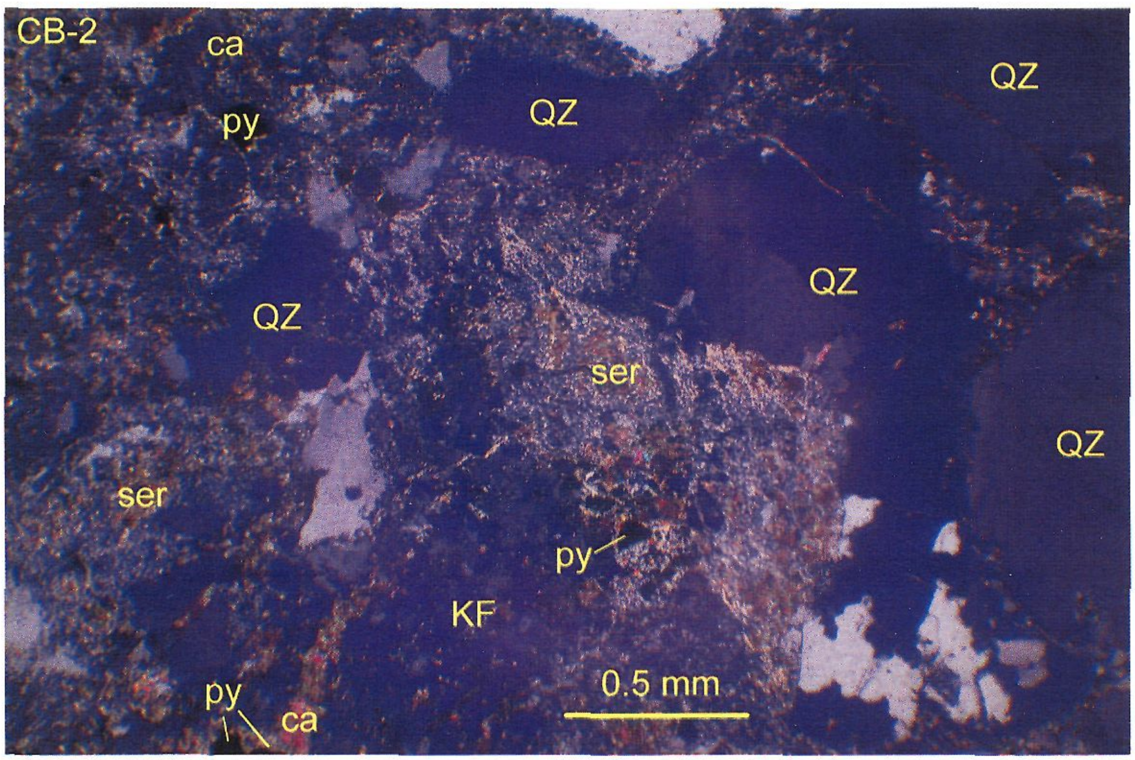
Other clasts are mainly sericitic, with variable carbonate, minor pyrite, rutile and apatite, composed mainly of what appear to be relict feldspar (plagioclase?) crystals or shards <1 mm long pseudomorphed by sericite as subhedral flakes <20 microns, relict mafic crystals <0.7 mm long replaced by carbonate (clear cores of calcite as subhedra to 0.3 mm, surrounded by brownish rims of finer-grained, <0.1 mm dolomite?), rutile, local apatite and pyrite (all as described above), in a quartz and sericite (both mostly <20 microns) altered groundmass. In places these sericitic "clasts" grade to what may be relict plagioclase crystals/shards mostly <1.2 mm, with similar alteration. Rarely, what appear to be quartz-filled amygdules (?) to 0.3 mm occur in some clasts, rimmed by rutile.

The matrix to these clasts and possible shards is similar to that described for GR-2, and consists of fine-grained (mostly <25 micron) quartz and sericite, variable carbonate (irregular, ragged sub/anhedra mostly <0.15 mm), K-feldspar (difficult to distinguish from quartz in thin section, but clearly visible in the etched offcut), pyrite (euhedral cubes <50 microns in size), plus local brownish (limonite-stained?) sericite or possible "hydrobiotite", and minor apatite (sub/euhedral prisms to 0.35 mm long) that could be either secondary, or represent relict original microphenocrysts in a mafic/intermediate rock. It seems likely given the level of alteration in the sample that most of the fine-grained quartz in the matrix is secondary, but this is not certain. If it is secondary, then it is likely the precursor rock was mafic to intermediate (andesitic?) rather than felsic, but this is somewhat speculative.

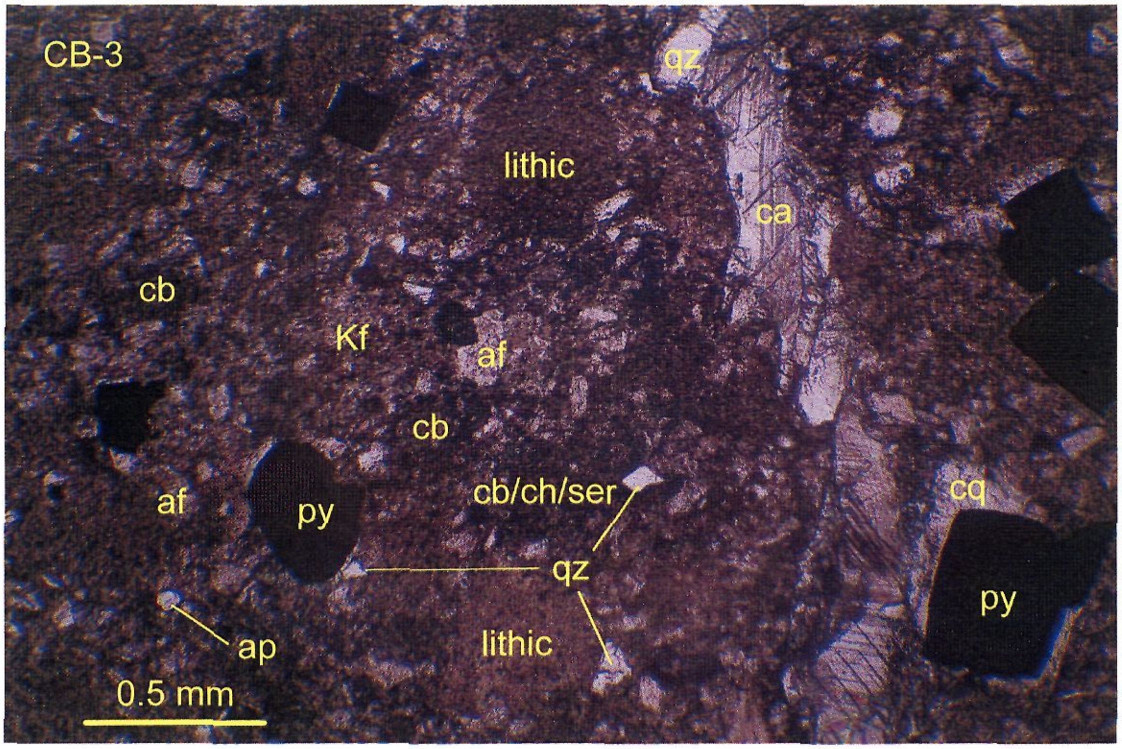
In summary, this sample appears to represent andesitic (?) crystal/lapilli tuff, strongly altered to a phyllic assemblage (sericite-carbonate-quartz-pyrite-apatite-rutile); minor Kspar could be relict from potassic alteration. Some clasts are of highly pyritized rock, almost massive sulfides, but they appear to be derived by replacement rather than by erosion of pre-existing massive sulfides.



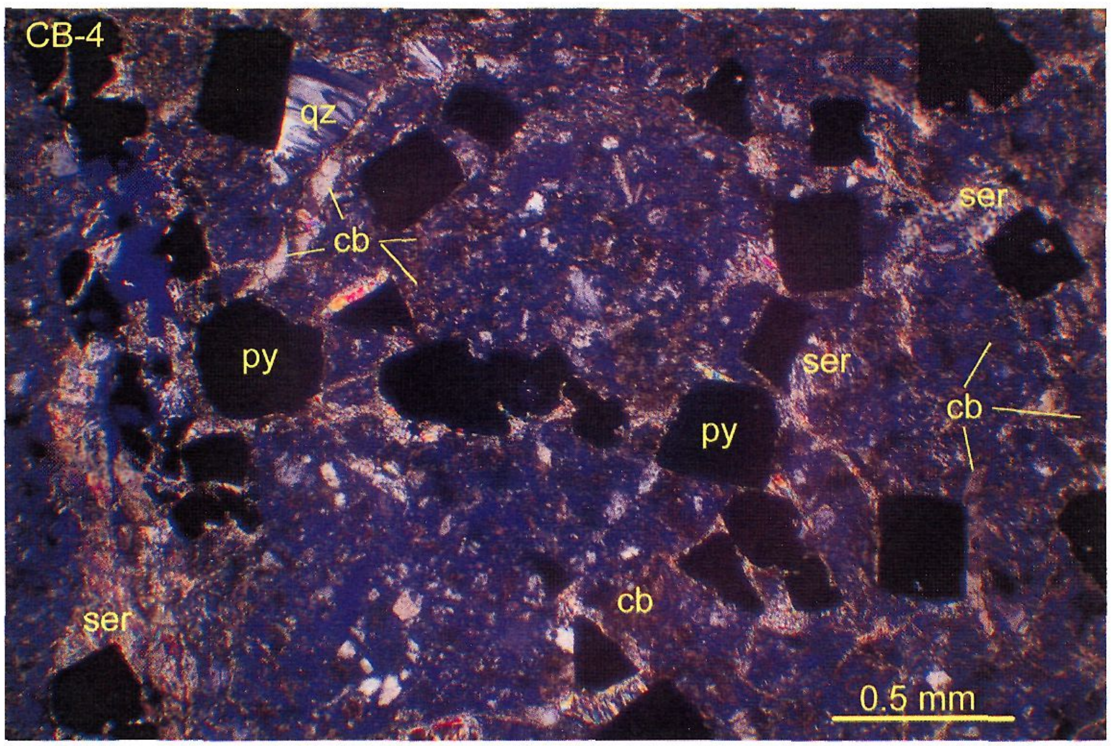
CB-1: Quartz veinlet (QZ) containing minor galena or sulfosalt (??), cutting strongly albite (ab) and fine-grained secondary quartz (qz), carbonate (cb) veined and altered wallrock with pyrite (py) aggregates and traces of rutile (ru) probably in former mafic mineral sites. Reflected light, uncrossed polars, field of view 2.75 mm wide.



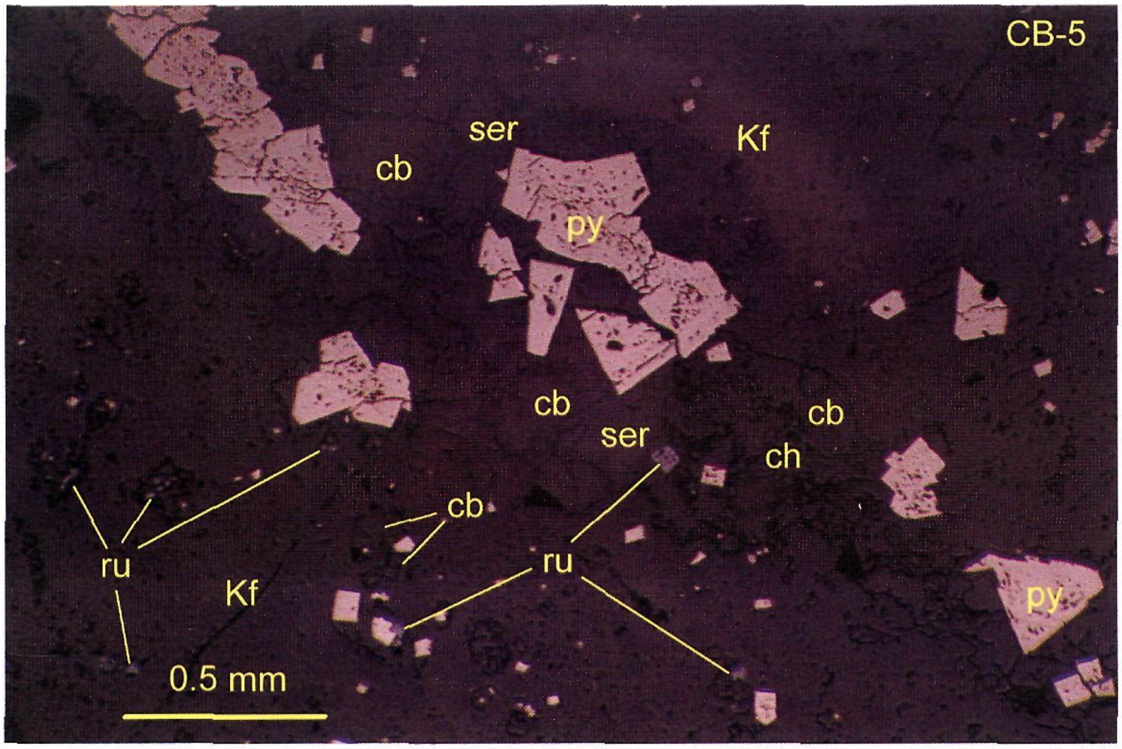
CB-2: Possible feldspathic sandstone composed of strained composite detrital (?) quartz (QZ) grains, K-feldspar (KF) cut by microveinlets of calcite (ca), plagioclase (?) altered to sericite (ser) and calcite, and possible mafic sites marked by calcite-sericite-minor pyrite (py). Transmitted light, crossed polars, field of view 3.0 mm wide.



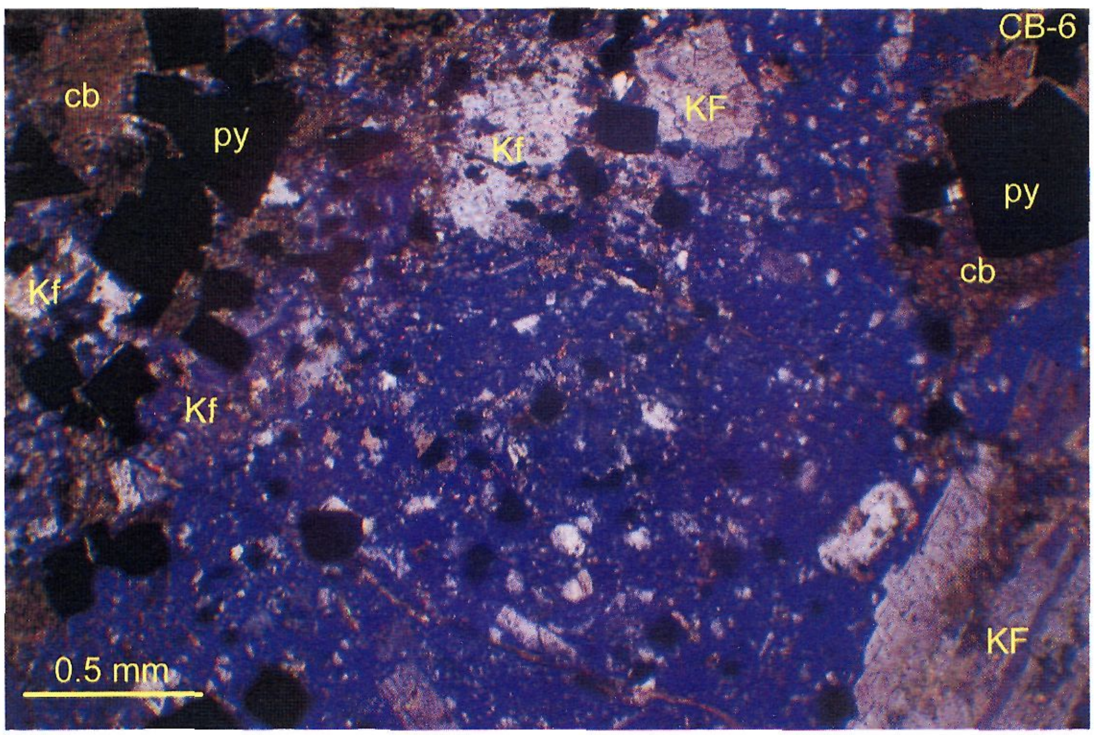
CB-3: Felsic ash tuff composed of shards of quartz (qz) and feldspar (af) plus poorly defined lithic clasts in a matrix of brownish Kspar (Kf)-chlorite (ch)-sericite (ser)-carbonate (cb), plus disseminated cubic pyrite (py) with rims of fibrous chalcedonic quartz (cq), rare apatite (ap), cut by veinlets of calcite (ca). Transmitted plane light, field of view 3.0 mm.



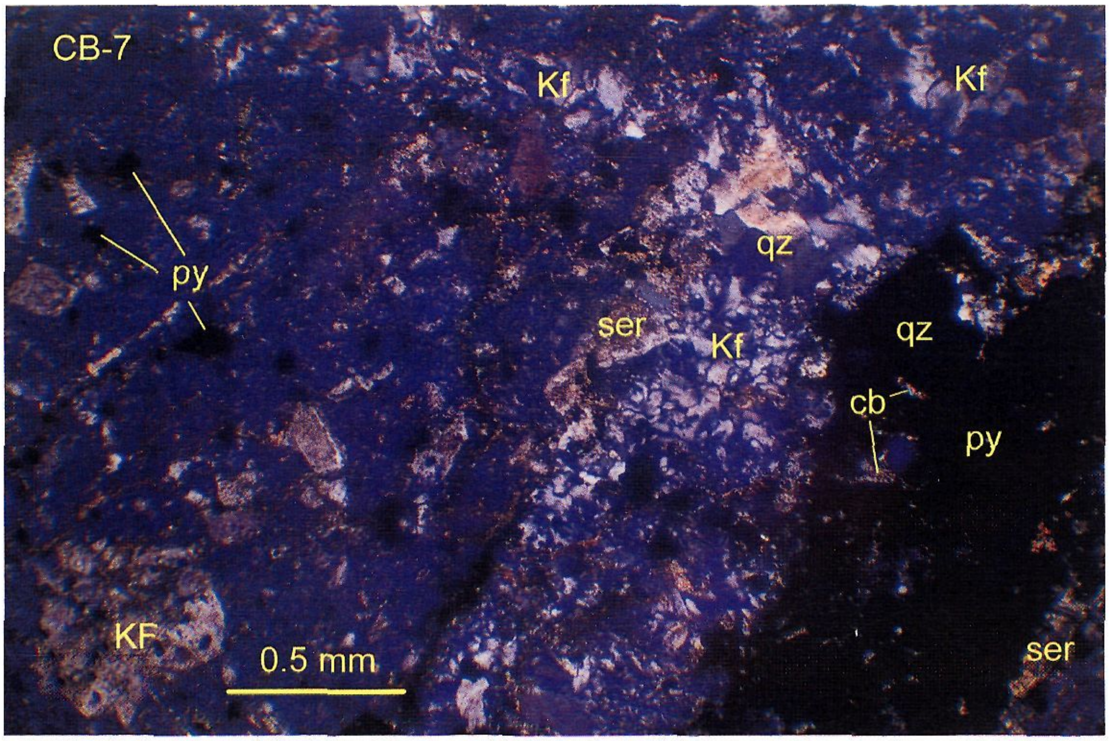
CB-4: Early sericite (ser) veinlets apparently associated with cubic pyrite (py; note local sericite or fibrous quartz, qz, rims) and local later carbonate (cb) veinlets cutting ash tuff composed of shards of quartz and feldspar in matrix of Kspar-sericite-carbonate-accessory rutile. Transmitted light, crossed polars, field of view 3.0 mm wide.



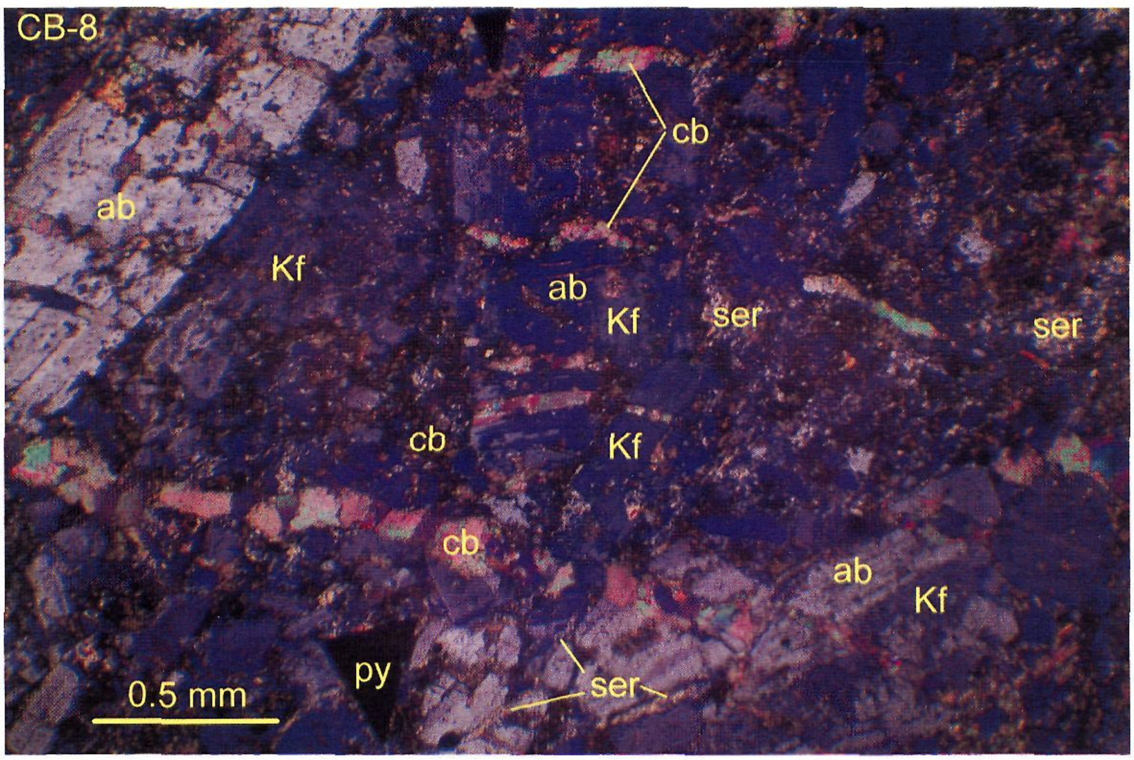
CB-5: Veinlet of pyrite (py), carbonate (cb) locally intergrown with sericite (ser) or chlorite (ch) and minor rutile (ru), cutting intensely Kspar (Kf), carbonate, pyrite ± rutile altered wallrock. Reflected light, uncrossed polars, field of view 2.75 mm wide.



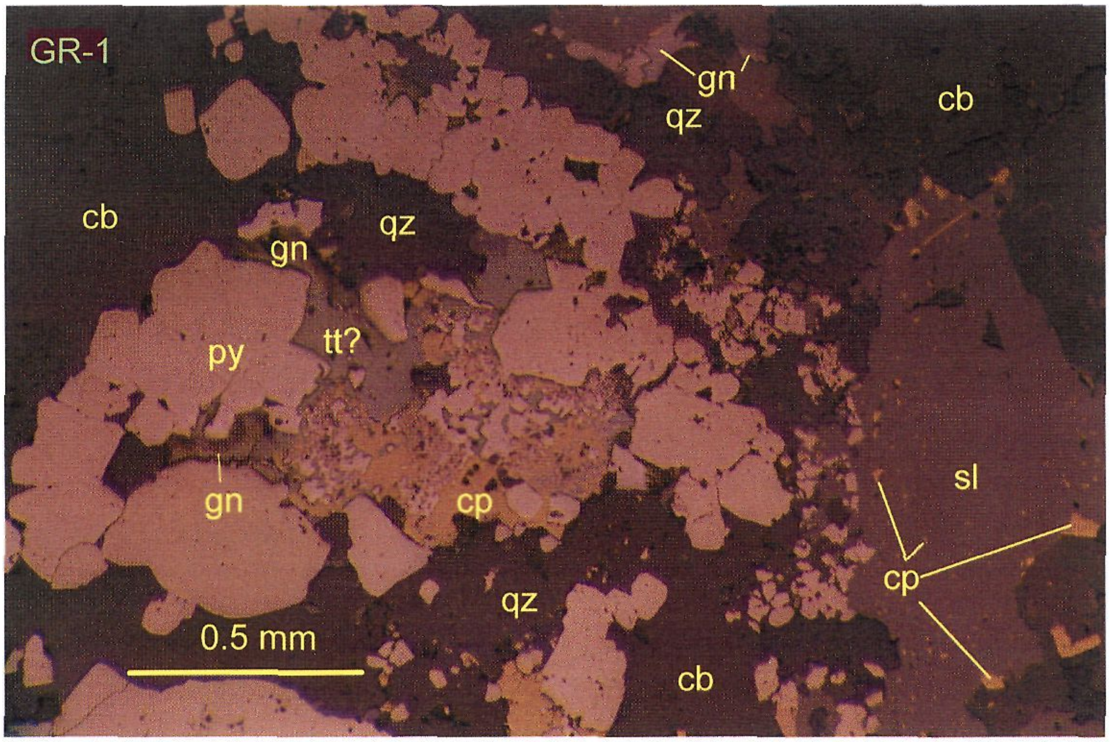
CB-6: Contact between clast (on left, composed of pyrite, py, carbonate, cb, and Kspar, Kf) and host flow (?) composed of phenocrysts of Kspar (KF, possibly after former plagioclase?) and mafics (replaced by pyrite, carbonate and intimately intermixed chlorite) in groundmass of Kspar-pyrite-carbonate. Transmitted light, crossed polars, field of view 3.0 mm.



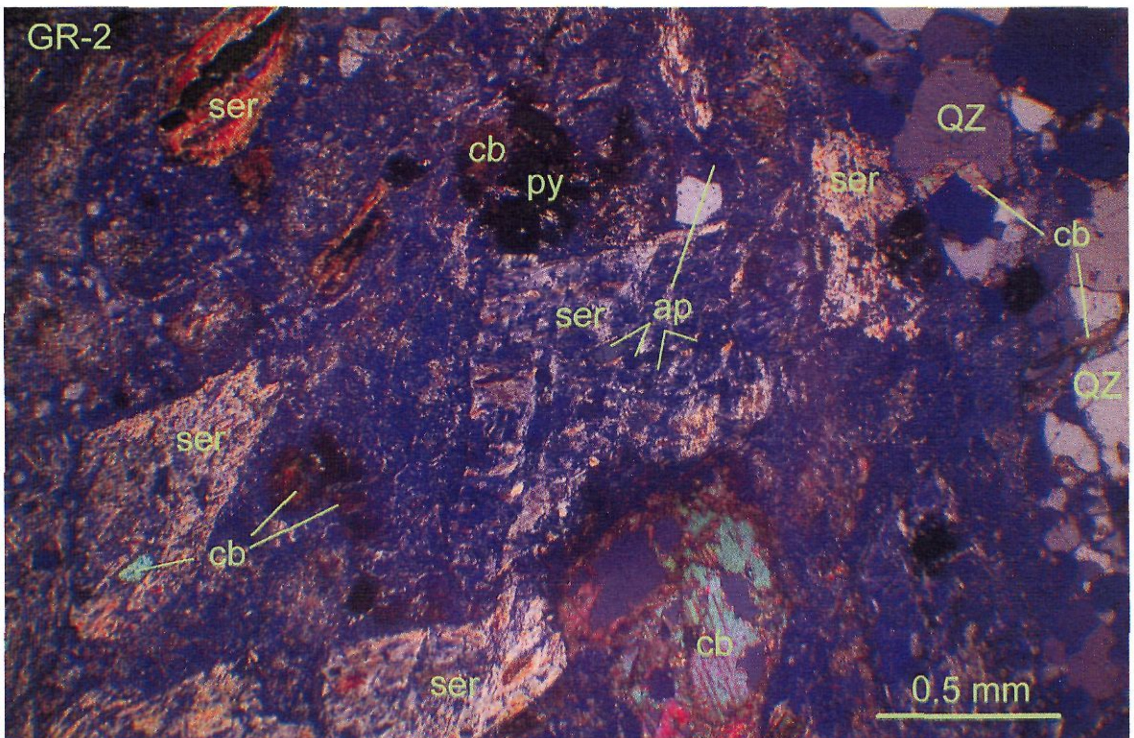
CB-7: Possible intermediate tuff (?) altered mainly to Kspar (KF), secondary quartz, sericite, pyrite and minor carbonate, shattered and brecciated by veins/fractures filled with quartz (qz) and Kspar (Kf) or pyrite (py, opaque)-minor quartz-sericite (ser)-carbonate (cb). Transmitted light, crossed polars, field of view 3.0 mm wide.



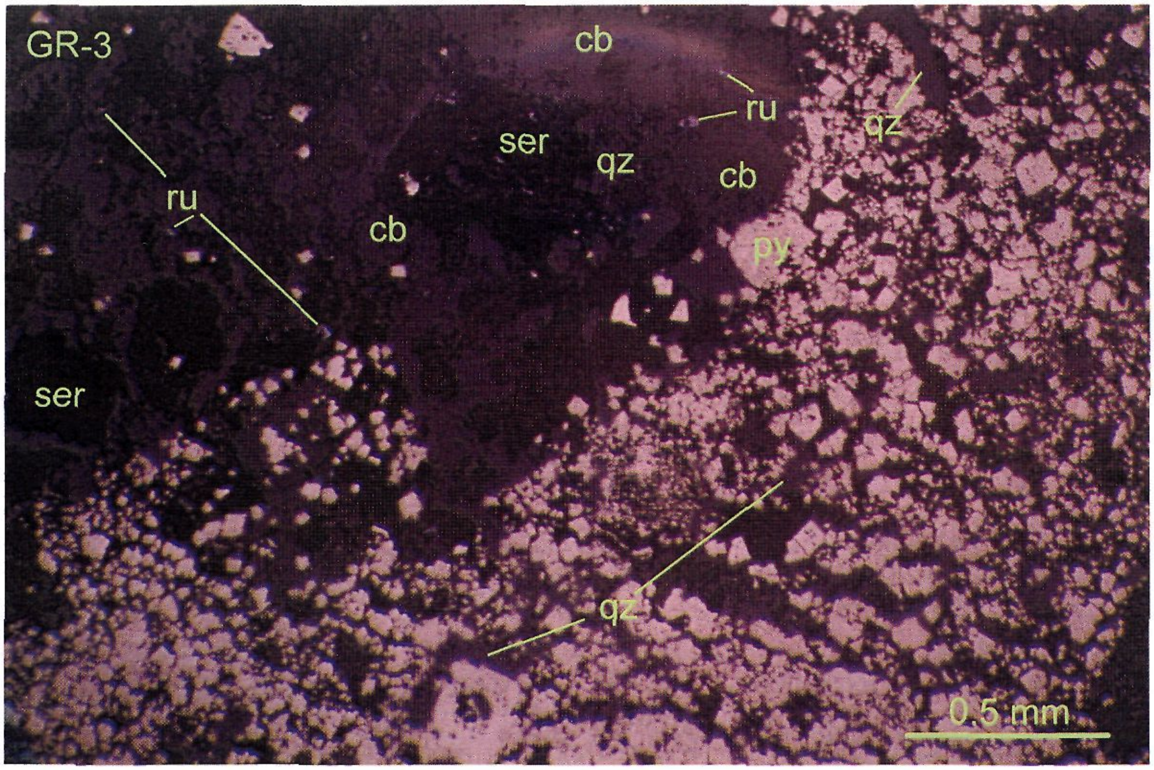
CB-8: Crowded crystal/lithic tuff composed of plagioclase replaced by twinned albite (ab) or local Kspar (Kf), in matrix of fine-grained, albite?-sericite-carbonate, and cut by microveinlets of carbonate (cb) or sericite (ser), with scattered cubic pyrite (py). Transmitted light, crossed polars, field of view 3.0 mm wide.



GR-1: Sulfides, including pyrite (py), sphalerite (sl), chalcopyrite (cp), minor galena (gn) and sulfosalt (possibly tetrahedrite, tt?) in matrix of secondary quartz (qz) and carbonate (cb). Reflected light, uncrossed polars, field of view 2.25 mm wide.

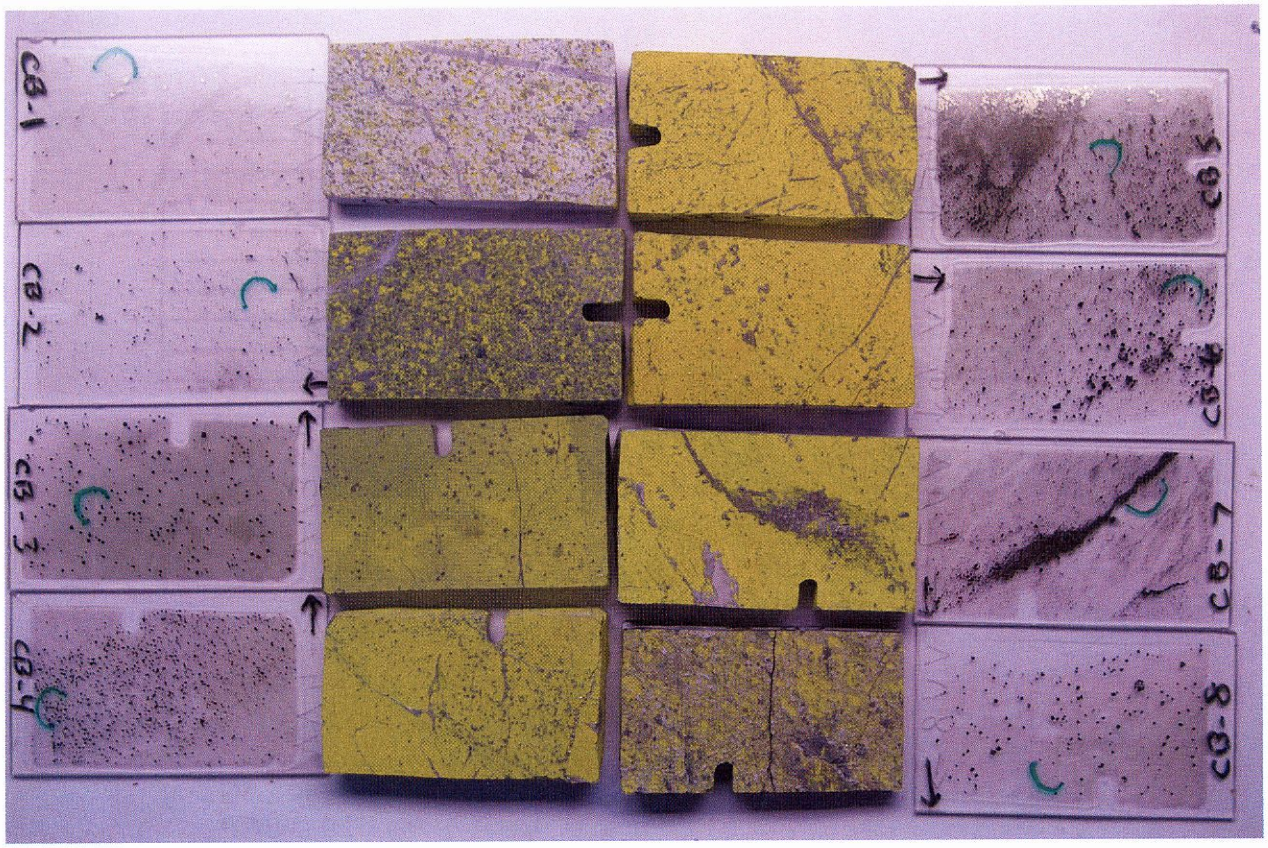


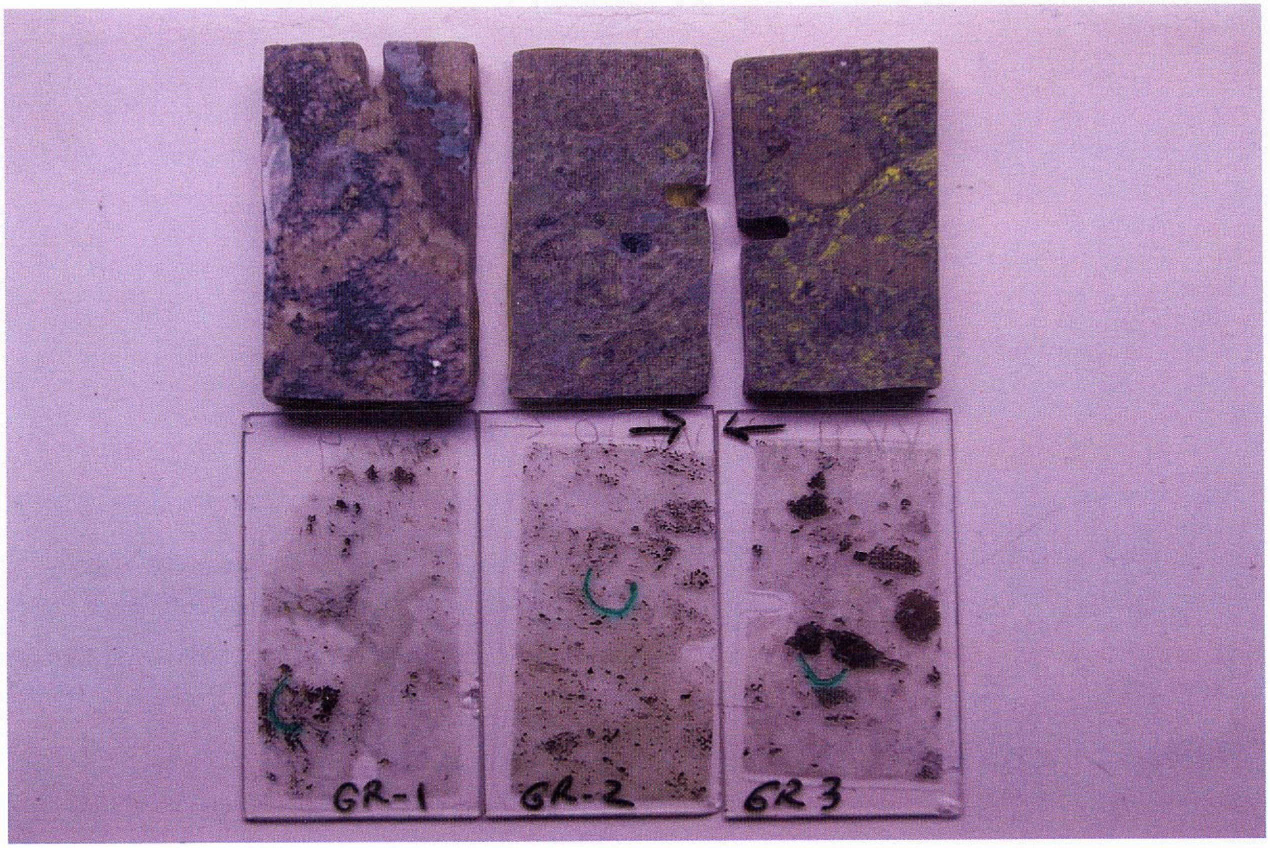
GR-2: Crystal?-lapilli tuff composed of clasts altered to sericite (ser), carbonate (cb), pyrite (py), possible plagioclase (?) crystals/shards altered to sericite, and possible vein fragments of quartz (QZ) and pyrite, in fine-grained matrix mostly altered to quartz, sericite and carbonate. Transmitted light, crossed polars, field of view 3.0 mm wide.



GR-3: Possible andesitic tuff composed of relict lapilli clasts mostly replaced by either pyrite (py), or mostly carbonate (cb), or mostly sericite (ser) and minor quartz (qz), accessory rutile (ru). Reflected light, uncrossed polars, field of view 2.75 mm wide.

Overviews of thin sections and offcuts (green semi-circles mark photomicrograph locations).


CB-1
CB-2
CB-3
CB-4
CB5
CB-7
CB-8


GR-1
GR-2
GR 3

Appendix E: Avalanche Report

Avalanche Assessment for the Camp and Drill Sites in the Treaty Glacier Area

Prepared for

American Creek Resources
Mr Mike Price
53 A Broadway North

Raymond, Alberta T0K 2S0
mprice@americancreek.com

2 June 2008

Prepared by

Bear Enterprises Ltd.

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Mountain Guide UIAGM
CAA Professional Member
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Avalanche Consulting

Table of Contents

1. Summary

American Creek Resources wishes to start occupying their camp on the South side of the Treaty Glacier and to start drilling at the Copper Belle and GR 2 sites. A site visit and assessment on 1 June 2008 found that at the time of writing there is a small risk of destructive avalanches to the camp site, a significant risk to the Copper Belle site, and a small risk to GR 2. The camp is in the runout zone of large avalanches and should be relocated if it is to be occupied beyond this summer. Conditions are changing rapidly at this time.

2. Location and climate

The Treaty Glacier is in the northern Coast Mountains of British Columbia. The relevant 1:50,000 NTS map sheet is 104 B/9 John Peaks. The centre of the area of interest is at 56° 35' N and 130° 08' W or MGR 285 715. The Treaty Glacier is a 10 km long valley glacier draining icefields on the divide of the Coast Mountains toward the East. The camp is on recently denuded morainal benches on its south side at an elevation of 1480m while the drill sites are beside a tributary glacier on the north side of the main glacier. The topography is very rugged with significant relief. The climate is maritime with very heavy snowpacks, moderate temperatures, and frequent high intensity wind and precipitation events. The snow avalanche regime is maritime, with a large and relatively stable snowpack. Large avalanche events are frequent due to the intensity of weather events and the amounts of snow available.

2. Methods

Christoph Dietzfelbinger and Johann Slam traversed the areas of interest, observing the depth and distribution of snow and terrain characteristics such as elevations, slope angles exposure to wind, and slope configuration. No large scale maps were available and the NTS sheet provides limited detail. Google Earth has poor resolution for the area.

3. Scope

This assessment addresses the current hazards with respect to the camp and the planned drill sites. That hazard will change as the season progresses and diminish with time. We also comment on the exposure of the camp for future consideration.

4. Camp

4.1. Terrain

The camp sits at an elevation of 1480m on a flat terrain feature on a NW aspect. Above it, the terrain rises to a 1900 m ridge. Three main start zones on that ridge can produce avalanches large enough to affect the camp. The are from 35 to 39° steep, contain rocky terrain, and are crossloaded by the prevailing winds as moderated by the topography. In the NW portion of the upper start zone, some remnants of ice or firn persist. The α and β angles[1] practically coincide because the camp is only 50 m from the point where the

1 Land Managers Guide to Snow Avalanche Hazards in Canada p. 10

general angle of the terrain drops below 10°. They read from 20 to 26° depending on which start zone is measured.

4.2. Snowpack

The past winter's snowpack was about average. However, cold weather in April delayed melt and conserved conditions quite late. We found an average of 250 cm of snow at the start zone elevations. The snowpack is isothermal (at 0° C throughout, with liquid water present) at this aspect and elevation. Only the snow on firn on the NW portion of the Upper Start Zone did not appear to be isothermal. The HS (height of snow) in camp was about 160 cm.

Photo 1: Camp location from the West. The elevation gain from camp to the upper start zone is about 500m. Safe locations are about 200 m from the present site.

5. Mitigation

5.1. Current Conditions

At the time of writing, the snow avalanche danger to the camp is low and will very likely decrease further. However, extreme weather events or unknown conditions deep in the snowpack do pose a residual risk. Large avalanche events on a buried early winter unstable layer are being observed throughout the region and in the vicinity of the site at the time of writing. If an early occupation of the camp is desired, avalanche control by explosives should be performed as a due diligence.

5.2. Future Considerations

If this camp is to be used in the future and particularly in winter conditions, its present location is not acceptable. Reports from heli-ski guides in the area indicate that it was hit by a small avalanche last winter. Fortunately, no damage seems to have occurred. However, infrequent large avalanches from the described start zones could entirely destroy the camp and kill or injure its inhabitants. Explosives control is not recommended and difficult above habitations. We strongly recommend to move the camp about 200 m from its present location as indicated on Photo 1. This is with respect to snow avalanche hazards only. Taking other logistical considerations into account, it may be useful to move the camp to a valley bottom location below the terminus of the glacier.

6. Copper Belle Sites

Last year's drill sites were not yet visible. In general, the terrain consists of a broad rocky ridge that separates the Treaty Glacier from a tributary to the North, with an elevation range from 1600 to 1400m. The ridge is still showing a cornice pointing toward wind loading of the terrain on the left or North side of the ridge. The slopes are from 39 to 35° steep and had a HS of 250 to 320 cm at the time of observation.

A significant avalanche danger still exists at this site and may remain for the month. It can be mitigated by explosives control, but the exact location of the drills and their infrastructure (water lines and materials stores) will determine what degree of mitigation is necessary. We recommend that an avalanche professional accompany the crew to reassess the situation and to make recommendations on site.

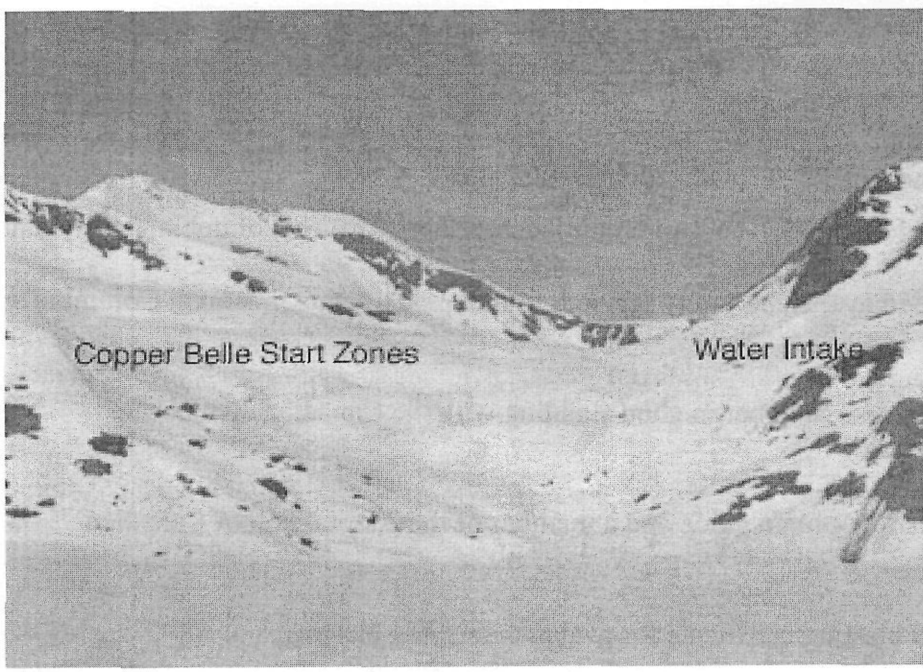

Photo 2: Drill sites. Note fresh deposit near last year's water intake.

7. GR 2 Sites

The GR 2 sites are on a steep southerly aspect. A drill pad near the pass at the head of the tributary glacier has melted out. The snowpack in the slopes above is already shallow and intermittent. We feel confident in assuming that it will recede quickly. Last season's water intake on an old lateral moraine further South is still exposed to snow avalanches. If infrastructure needs to be placed south of the existing drill pad in the pass, an onsite assessment should be considered to help with the safe location of water lines and materials depots.

8. References

Canadian Avalanche Association: Guidelines for Snow Avalanche Risk Determination and Mapping in Canada. Revelstoke n.d.

Canadian Avalanche Association: Land Managers Guide to Snow Avalanche Hazards in Canada. Revelstoke 2002

McClung, David and Peter Schaerer: The Avalanche Handbook. Seattle: The Mountaineers 2nd ed. 2006.

9. Certificate

I, Christoph Dietzfelbinger of Telkwa Highroad, Smithers, British Columbia, certify that

6.1. I have provided avalanche safety services to industrial clients in British Columbia since 1990.

6.2. I am a professional member in good standing with the Canadian Avalanche Association.

6.3. I am a certified mountain guide and a member of the Association of Canadian Mountain Guides.

6.4. I hold a valid blasting certificate for avalanche related blasting.

6.5. I have passed the CAA Level II course in 1989 and the Avalanche Hazard Mapping course in 2000.

2 June 2008


ORPIMENT ZONE
GR2 ZONE
EUREKA ZONE
COPPER BELLE
MAIN GOSSAN
GOAT TRAIL
KONKIN ZONE
SW ZONE
N
6,275,000 mN
6,274,000 mN
6,273,000 mN
6,272,000 mN
6,271,000 mN
6,270,000 mN
6,269,000 mN
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
30910
AMERICAN CREEK RESOURCES LTD.
TREATY CREEK PROPERTY
MAIN SHOWINGS
2008 ORTHOPHOTO AND CONTOURS
MINERAL TENURES
Date:28/5/2009
Author: AMK
Office: Raymond
Drawing: Figure 5
Scale: 1:12000
Projection: UTM Zone 9 (NAD 83)
0
200
400
800
metres

AMERICAN CREEK RESOURCES LTD.
TREATY CREEK PROPERTY
2008 VLF-EM (ip) SURVEY
24.8 KHz (Seattle NLK Station)
Date:28/5/2009
Author: AMK
Office:
Drawing: Figure 8
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99.918909% 50
99.786215% 40
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1416.1
1497.8
1565.6
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430,200 mE
430,300 mE
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
30,910
PROFESSIONAL GEOSCIENTIST
R. SANABRIA ORELLANA
#154013
BRITISH COLUMBIA

0 mE
50 mE
100 mE
150 mE
200 mE
NW
SE
1,650 mN
1,600 mN
1,550 mN
1,500 mN
1,450 mN
1,400 mN
1,350 mN
Ice
TC0718
188.06m
TC0726
224.09m
TC0727
245.06m
TC0724
270.05m
LEGEND
2007 Drilling GR2 zone
Ice
1.- Carbonaceous black fossiliferous mudstone
2.- Silicified volcanic breccia + massive sulphides
3.- Massive sulphides
4.- Volcanic breccia (sericite-quartz-carbonate-pyrite altered)
5.- Volcanic breccia (sericite-quartz-carbonate-pyrite altered)
6.- Sulphide stringer zones
7.- Black mudstone with bedded sulphides
AMERICAN CREEK RESOURCES LTD.
GR2 Zone NW-SE Section
2007 Drilling
Au-Ag-Cu-Zn-Pb (ppm)
Relative abundance:
Au
Zn
Pb
Date:19/5/2009
Author: AMK
Office: Raymond
Drawing: Figure 9
Scale: 1:400
Projection: Non-Earth (meters)
0
7.5
15
30
metres

NW
SE
150 mE
200 mE
250 mE
300 mE
350 mE
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1,350 mN
1,300 mN
1,250 mN
1,200 mN
1,150 mN
1,100 mN
TC0711
265.17m
TC0719
245.97m
TC0717
288.65m
LEGEND
DRILLHOLE AND SECTION GEOLOGY
Fault
Geological contact
Surface line
1 - Sst - Feldspathic Sandstone
2 - AnLAT (Chl-K-Spar) - Andesitic Ash Tuff (Chlorite and K-Feldspar alteration)
3 - AnLAT (Chl)- Andesitic Ash Tuff (Chlorite alteration)
4- AnVBx (Chl) - Andesitic Volcanic Breccia (Chlorite and pyrite alteration)
5 - FLT - Fault zone
6 - AnLAT - Andesitic Ash Tuff
7 - AnVBx - Andesitic Volcanic Breccia (hematite alteration)
8 - AnVBX (K-Spar) - Andesitic Volcanic Breccia (Intense K-Felspar alteration)
AMERICAN CREEK RESOURCES LTD.
Date:29/5/2009
Author: AMK
Office: Raymond
Drawing: Figure 10
Scale: 1:400
COPPER BELLE ZONE
2007 DRILLING
NW-SE SECTION
Drillholes TC07-11, 17 and 19
Gold values (ppm)
Projection: Non-Earth (meters)
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7.5
15
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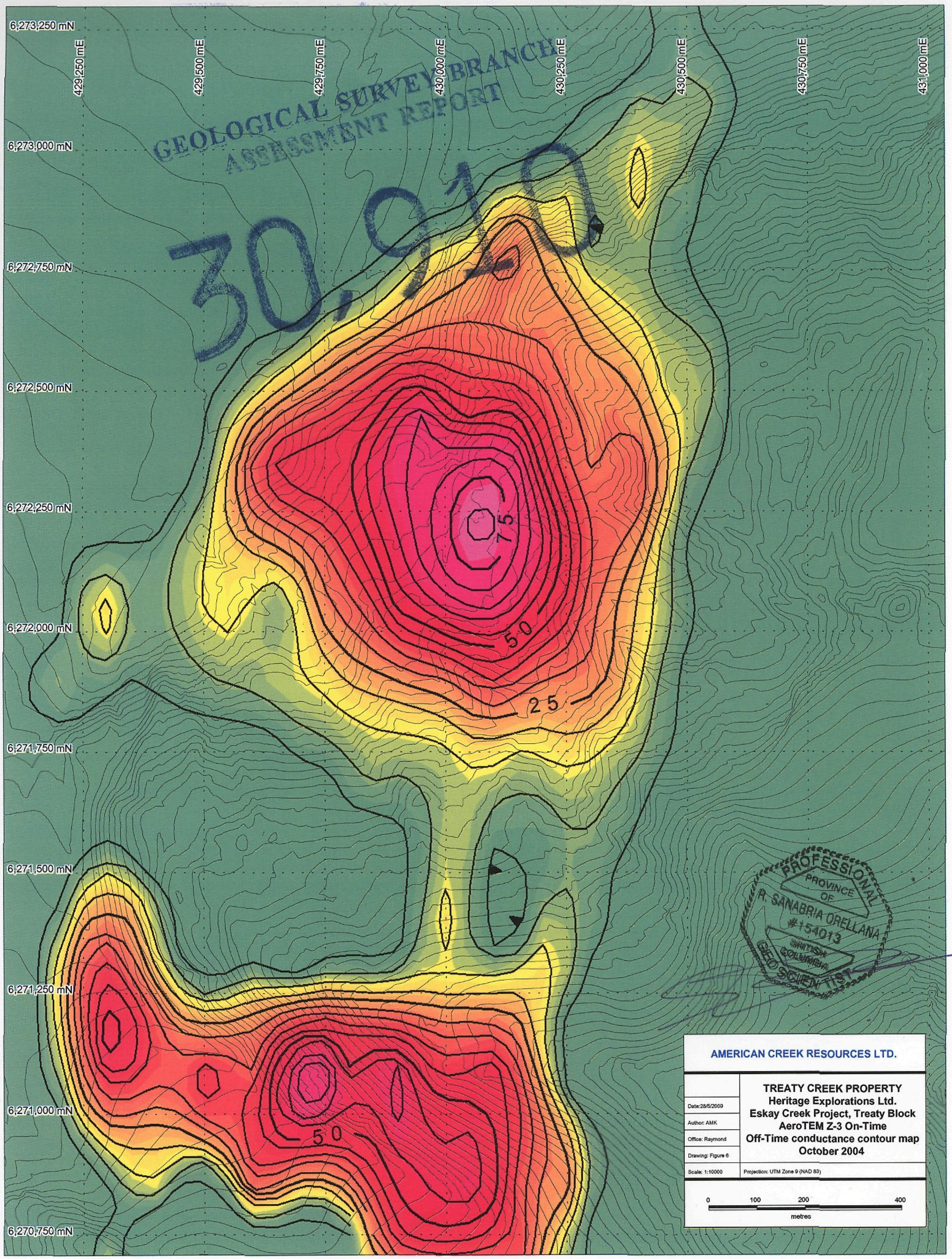
metres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431,000 mE
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50
25
50
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
30,910
PROFESSIONAL
PROVINCE OF
R. SANABRIA ORELLANA
#154013
BRITISH COLUMBIA
GEOSCIENTIST
AMERICAN CREEK RESOURCES LTD.
TREATY CREEK PROPERTY
Heritage Explorations Ltd.
Eskay Creek Project, Treaty Block
AeroTEM Z-3 On-Time
Off-Time conductance contour map
October 2004
Date:28/5/2009
Author: AMK
Office: Raymond
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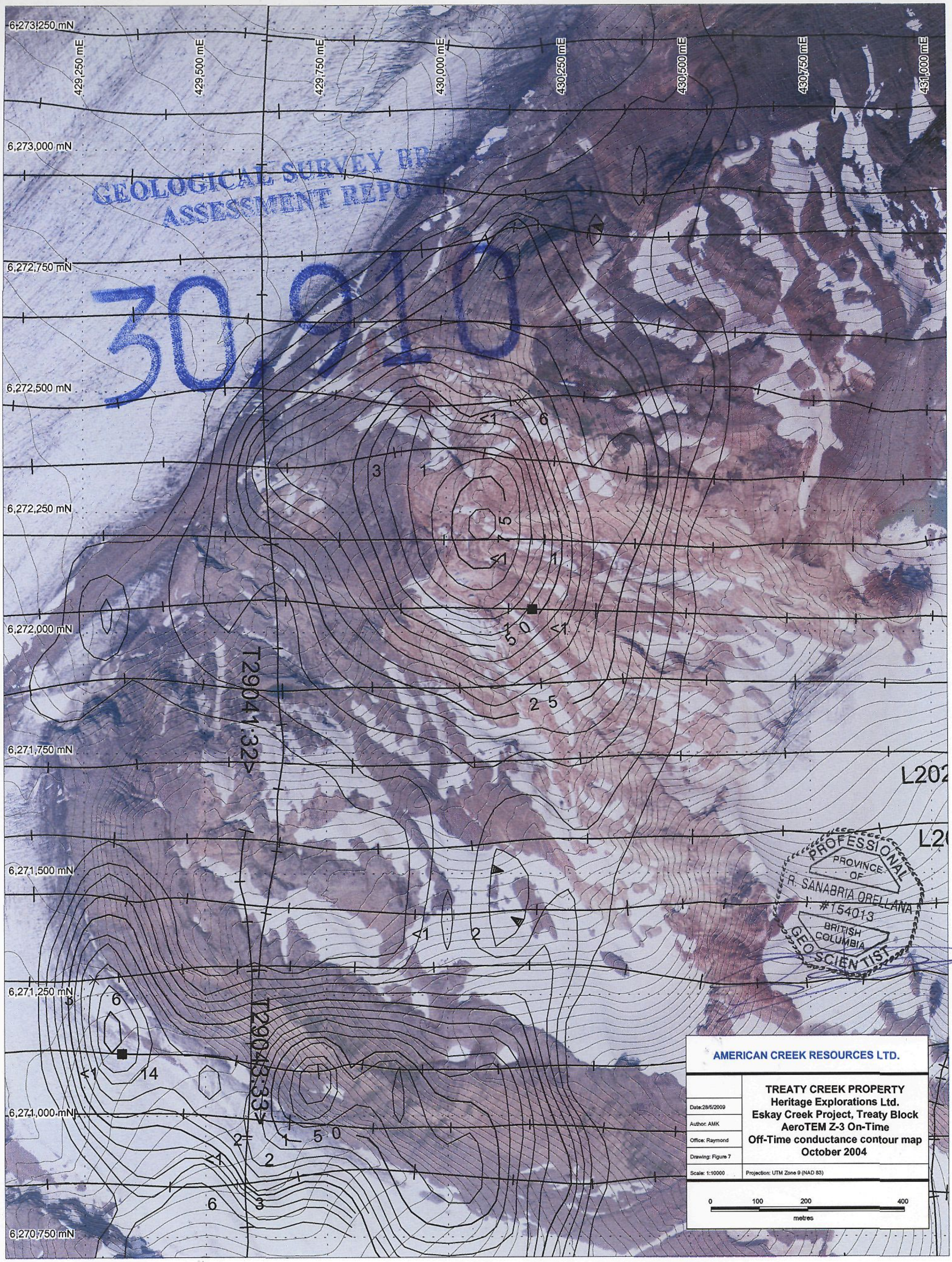
metres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GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
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T29043:33>
PROFESSIONAL
PROVINCE OF
R. SANABRIA ORELLANA
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BRITISH COLUMBIA
GEOSCIENTIST
AMERICAN CREEK RESOURCES LTD.
TREATY CREEK PROPERTY
Heritage Explorations Ltd.
Eskay Creek Project, Treaty Block
AeroTEM Z-3 On-Time
Off-Time conductance contour map
October 2004
Date:28/5/2009
Author: AMK
Office: Raymond
Drawing: Figure 7
Scale: 1:10000
Projection: UTM Zone 9 (NAD 83)
0
100
200
400
metres