SURFICIAL GEOLOGY REPORT
ON THE
ADANAC (RUBY CREEK) PROPERTY

104N/11W

Latitude: 59° 42.5' North
Longitude: 133° 24' West

ATLIN MINING DIVISION

for

ADANAC MOLY CORP.
2A 15782 Marine Drive,
White Rock, British Columbia,
V4B 1E6

RECEIVED
MAR 02 2006
Gold Commissioner's Office
VANCOUVER, B.C.

By: Robert H. Pinsent, P.Geo.
2335 West 13th Avenue,
Vancouver, British Columbia,
V6K 2S5

February 28th, 2006

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

28,306

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1.0 Summary

In 2005, Adanac Moly Corp. conducted a major exploration program on the Adanac/Ruby Creek "porphyry molybdenum" property, near Atlin. It diamond-drilled 19 holes, for an aggregate depth of 4,984.1 metres in-and-around the main deposit, and percussion-drilled 17 holes for a total depth of 249 metres lower-down the valley. It also dug and sampled 81 back-hoe pits as part of a study of surficial cover in the vicinity of its proposed mill-site and tailings impoundment.

Adanac Moly Corp. has completed a pre-feasibility study and it is currently working on a full feasibility study. In the summer, it commissioned Klohn, Crippen Berger Consultants Limited to examine the surficial geology of the upper part of the Ruby Creek valley. The programme provides insight into the nature of the rocks and soil-cover underlying the company's placer claims down-stream from the proposed molybdenum deposit. Although there are active placer operations in the lower part of the Ruby Creek drainage, they are in Tertiary gravels; none of which were found during the current programme. Adanac Moly Corp's claims appear to have low potential for placer gold.

2.0 Introduction

2.1 General Statement

In 2002, Adanac Gold Corp. (Adanac Moly Corp.'s predecessor) acquired 100% ownership of the Adanac/Ruby Creek deposit, through staking. In 2004, the company drilled 9,087 metres of core in 38 holes to delineate the deposit, fill data gaps within it and substantiate previous work. Amec Americas Limited (AMEC) calculated a NI 43-101 compliant mineral resource and, in May, 2005, Adanac Moly Corp. announced that the deposit has a measured and indicated geological resource of 205,100,000 tonnes grading 0.062% Mo at a cut off grade of 0.04% Mo. The 2005 exploration programme is designed to enable the company to complete a full feasibility study.

The deposit has been to "feasibility" twice before. It was drilled and bulk sampled by Adanac Mining and Exploration Limited (no relation to Adanac Moly Corp) and Kerr Addison Mines Limited between 1969 and 1972. At that time it was deemed uneconomic. It was later evaluated by Placer Development Limited, in 1979 and 1980, but the company shelved its production plans when the price of molybdenum collapsed, around 1982/3. Placer Development reported an "undiluted mineable mineral reserve" of 151 971 000 tonnes grading 0.063% Mo at a cutoff grade of 0.04% Mo and a strip ratio of 1.5:1 (Pinsent and Christopher, 1995).

Kerr Addison and Placer Development both undertook geotechnical studies in the upper part of the Ruby Creek valley. Placer Development's work was conducted by Klohn Leonoff Consultants Limited, a precursor of Klohn Crippen Berger. Much of the old information is available to Adanac Moly Corp and has been included by Klohn, Crippen and Berger in their analysis of the area. The latter have just completed a full environmental base-line study of the Ruby Creek valley. Several segments from that study, documenting the over-burden characteristics of the upper part of the Ruby Creek valley are attached to this report in an appendix.

2.2 Location and Access

The Adanac/Ruby Creek deposit (Lat. 59° 42.5' N, Long. 133° 24' W; NTS 104N/11) is at the head of Ruby Creek, 24 km northeast of Atlin in northern British Columbia (Figure 1). It underlies the floor of the valley at approximately 1500 metres elevation. The deposit is readily accessible by road from Atlin. The first 19 km of road, to the Pine Creek Bridge at Surprise Lake are fully maintained. Thereafter, the road is maintained by the company and by local placer miners.

2.3 Topography and Climate

The Adanac/Ruby Creek deposit is in "alpine" terrain at the head of a creek that flows into Surprise Lake. It underlies a flat, relatively un-vegetated cirque near the head of the valley. The walls of the cirque are steep but the floor is glacially scoured and flat. The climate is temperate. Summers are mild and may be either wet or dry. Winters tend to be cold and windy and the area receives a considerable amount of snowfall between October and May. Klohn Leonoff Consultants Limited studied the climate for Placer Development Limited in the early 1980s, and its successor, Klohn Crippen Berger Consultants Limited established a weather station on site for Adanac Moly Corp. early in 2005.

2.4 Claim Disposition

Adanac Moly Corp has an undivided 100% interest in 13 contiguous placer claims, (Ruby Tin to Ruby Tin 14, totaling 1,632.6 hectares), near the head of Ruby Creek. It also owns two contiguous tenures (Rufner 1 and Rufner 4, totaling 632.87 hectares) covering the upper part of Rufner Creek and one (Boulder Tin, 294.3 hectares) over the upper part of the adjacent Boulder Creek drainage. The tenures are listed in Table 1 and are shown in Figure 2. They were staked on-line, according to Mineral Titles on Line procedures and, following acceptance of this report will be "in good standing" until April, 2016.

Figure 2 shows that the Ruby Creek tenures are upstream from the active placer operations on the creek. However, they cover a significant portion of the upper part of the valley, including all of the company's proposed open-pit mine and mill-site, and much of its proposed tailing impoundment and dam-site. The tenures extend out of the Ruby Creek valley into the adjacent Rufner and Boulder Creek drainages.

3.0 Exploration History

The Adanac/Ruby Creek molybdenum deposit was discovered in 1905 but saw limited exploration prior to 1966, when it was staked by Adanac Mining and Exploration Limited

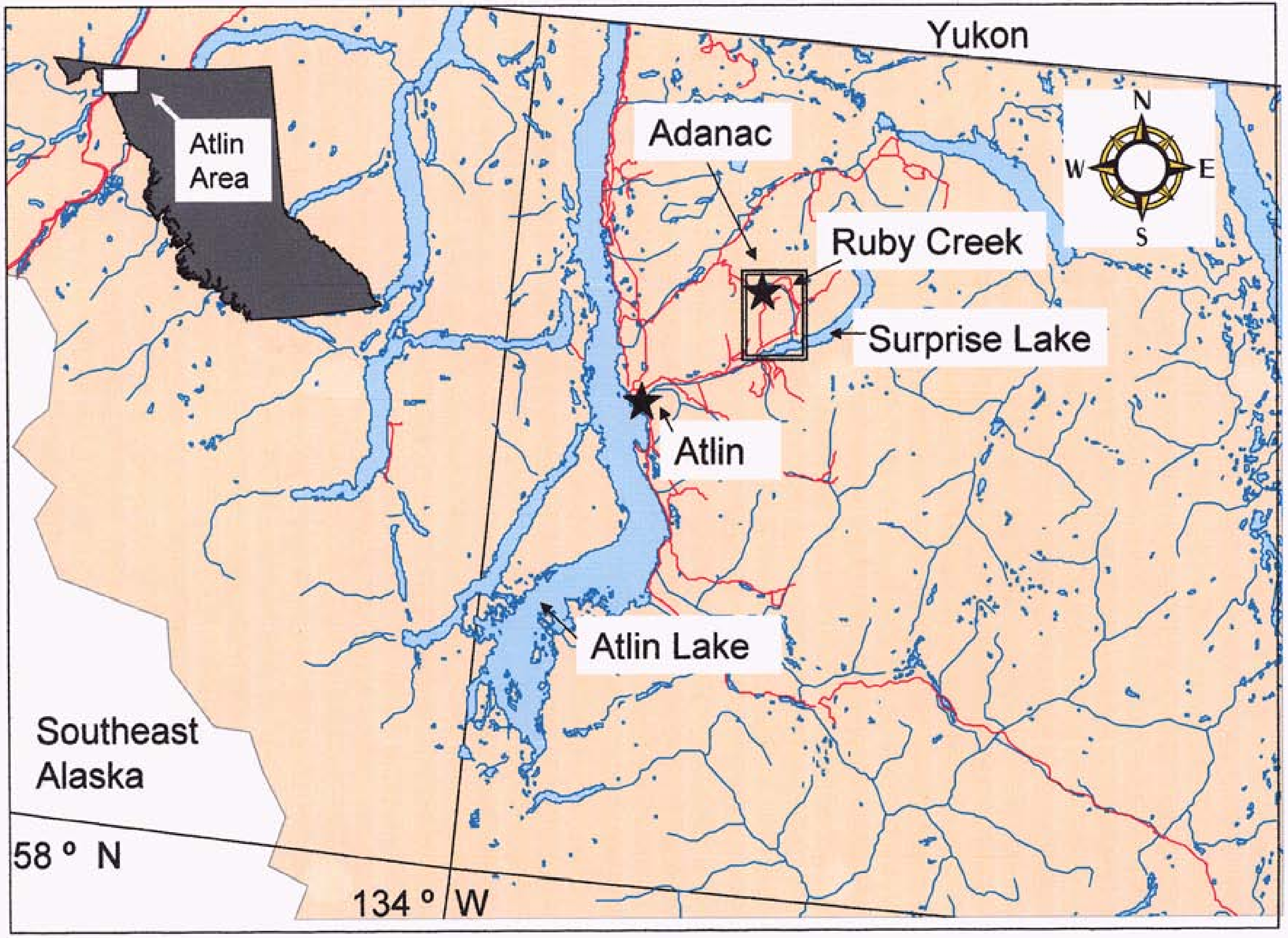


Figure 1: Regional Location Map: Adanac Property, Northwest British Columbia

TABLE 1
PLACER TENURES, RUBY CREEK

TENURE NUMBER	TENURE NAME	HECTARES	GOOD TO DATE*
510492	Ruby Tin	97.96	8th April 2016
510498	Ruby Tin 2	81.62	10th April 2016
510501	Ruby Tin 3	32.66	10th April 2016
510528	Ruby Tin 4	65.29	10th April 2016
510529	Ruby Tin 5	48.99	10th April 2016
510710	Ruby Tin 6	49.00	10th April 2016
510711	Ruby Tin 7	16.33	10th April 2016
510718	Ruby Tin 8	16.33	10th April 2016
510727	Ruby Tin 9	408.27	10th April 2016
510728	Ruby Tin 10	408.04	10th April 2016
510729	Ruby Tin 11	16.33	10th April 2016
511140	Ruby Tin 12	147.01	10th April 2016
510838	Ruby Tin 14	244.77	10th April 2016
511142	Boulder Tin	294.30	10th April 2016
510834	Rufner 1	408.10	10th April 2016
510944	Rufner 4	244.77	10th April 2016

*Date on acceptance of this report

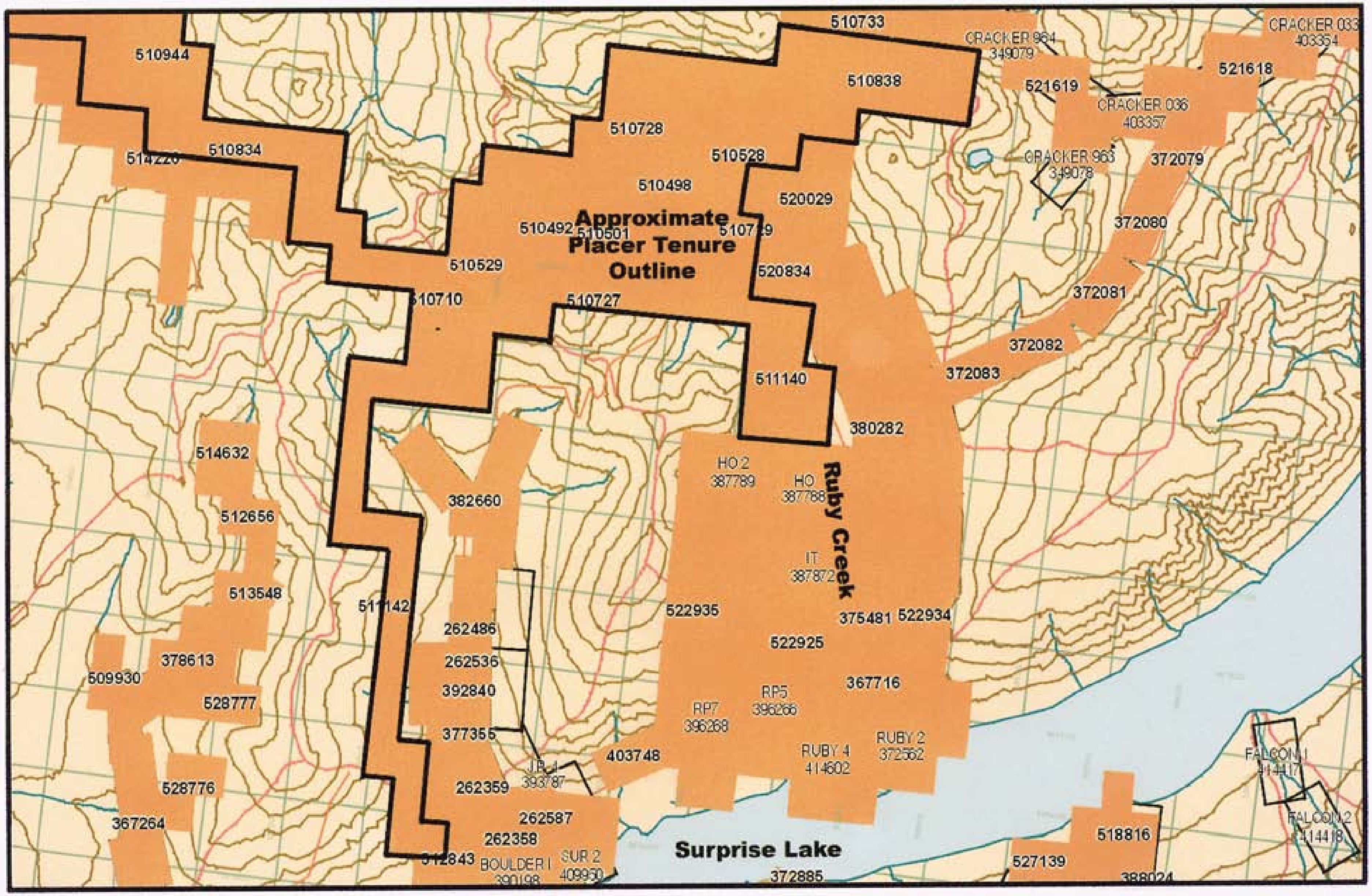


Figure 2: Placer Claim Location Map

and Canadian John's Manville Limited. Adanac Mining acquired the controlling interest the following year and drilled 80 holes for an aggregate length of 12,775 metres. In 1970, it optioned the property to Kerr Addison Mines Limited.

Kerr Addison diamond drilled a further 47 holes for a total depth of 5,626 metres and drove 589 metres of drift, 246 metres of cross-cut and 281 metres of raise in the "higher-grade" core of the deposit. It extracted 9,545 tonnes of ore, from the cross-cut and six raises and processed them on site to evaluate the "nugget effect" caused by coarse-grained molybdenite. Chapman, Wood and Griswold Limited completed a full feasibility study in 1972 and found the deposit to be uneconomic.

The following year, 1973, Climax Molybdenum Corporation of British Columbia Limited diamond-drilled and/or deepened a further 9 holes for an aggregate depth of 2,672 metres. The Company later dropped its option but its staff went on to publish a comprehensive geological description of the deposit (White et al., 1976). The property was then dormant until metal prices improved in the late 1970s.

In 1978 Placer Development Limited re-evaluated Kerr Addison's feasibility study, optioned the property and started a full-scale technical and socio-economic review. In 1979, it diamond-drilled a further 6,028 metres in 49 holes in-and-around Kerr Addison's proposed "initial pit", and the following year it drilled a further 27 holes with an aggregated depth of 4,858 metres, in and around the margins of its "ultimate pit". At the same time, it contracted Klohn Leonoff Consultants limited to complete a geotechnical survey of its proposed plant and tailings areas lower in the valley. Although Placer Development completed nearly all the work required for a formal feasibility study, it was never finished. The price of molybdenum dropped sharply in 1982/3. The company held on to the option for a few years but eventually returned the property to Adanac Mining and Exploration Limited. The claims lapsed in the late 1990s.

Andris Kikauka staked the deposit for Adanac Gold Corporation (Adanac Moly Corp) in 2002. The following year, the company compiled the existing data and worked on a "scoping study" that led to a drill programme in 2004. It was designed with input from AMEC, who later calculated the NI 43-101 compliant resource based on a combination of new and the historic data.

In 2005, Adanac Moly Corp returned to the property and drilled a further 19 holes for an aggregate depth of 4,984.1 metres. It also contracted with Klohn Crippen Berger Consultants to undertake the socio-economic, environmental and geotechnical studies required for a full feasibility study.

4.0 Regional Geology

The Adanac/Ruby Creek molybdenum deposit formed late in the development of a small igneous complex (Mount Leonard Stock) west of the Surprise Lake Batholith. It is entirely within the stock, which is a chemically highly evolved granite or quartz monzonite of the Surprise Lake plutonic suite.

The geology of the Atlin area is mapped by Aitken (1959), and the regional setting of the deposit is discussed by Christopher and Pinsent (1982). Simply put, the Atlin area (Figure 3) is underlain by highly deformed and weakly to moderately metamorphosed ophiolitic rocks of the Pennsylvanian and/or Permian-aged Cache Creek Group (Monger, 1975). The latter consists of serpentinites and basalts, as well as limestones, cherts and shales. The Cache Creek Group strata are cut by two large plutons. North of Pine Creek, they are cut by a Jurassic-age granodiorite to diorite intrusion known as the Fourth of July Batholith, and north and south of Surprise Lake they are cut by a large Cretaceous-age granitic to quartz monzonitic intrusion known as the Surprise Lake Batholith. The Mount Leonard stock is separated from the Surprise Lake batholith by a north-south oriented panel of Cache Creek Group strata (mainly deformed meta-sediment and ultramafic rock) that underlies much of the lower part of Ruby Creek.

All the (above) rocks are faulted and the Adanac deposit is located near the intersection of three major, syn to post-mineral faults. It is partially controlled by, and is partially off-set by, the Adera fault which trends from northeast to southwest down Ruby Creek and defines much of the southern boundary of the Fourth of July Batholith. It is also controlled by the Boulder Creek fault system. This runs north up Boulder Creek and cuts across the head of the Ruby Creek drainage. This also appears to have helped localize emplacement of the deposit.

The Ruby Mountain fault system runs from northwest to southeast and defines the northeast contact of the deposit. This fault system controls on the location of the Ruby Mountain volcano, which is immediately to the south of the deposit (Figure 3). The volcano is Late Tertiary to Quaternary in age. It erupted after the deposition of placer-gold bearing gravels in the lower part of the Ruby Creek drainage, and they are covered by columnar basalt and volcanoclastic debris. There has been intermittent exploration for placer-bearing gravels in the upper part of the valley, upstream from the volcanic cover. The Eastman shaft was sunk in the 1950s (?) without success. Results to date suggest that gold-bearing gravels are limited to the lower part of the drainage below the volcanic rocks. The origin of the placer gold is uncertain; however, most of it probably comes from quartz-carbonate veins in shears in Cache Creek Group strata. However, work by Sack and Mihalynuk (2000) suggests that some may locally be derived from Surprise Lake batholith-related intrusions.

5.0 Property Geology

The Adanac deposit underlies the valley floor near the head of Ruby Creek. It is largely buried and has very little surface expression. There is little outcrop in the valley floor and molybdenite is only rarely found in float and/or in veins in outcrop in the bed of the creek. Most of the geology is derived from drill data and underground development. Figure 4 shows the geology, along with Placer Development Limited's 1448 metres elevation assay contours and ultimate pit outline. It also shows the surface projection of Kerr Addison Mines Limited's drift and cross-cut.

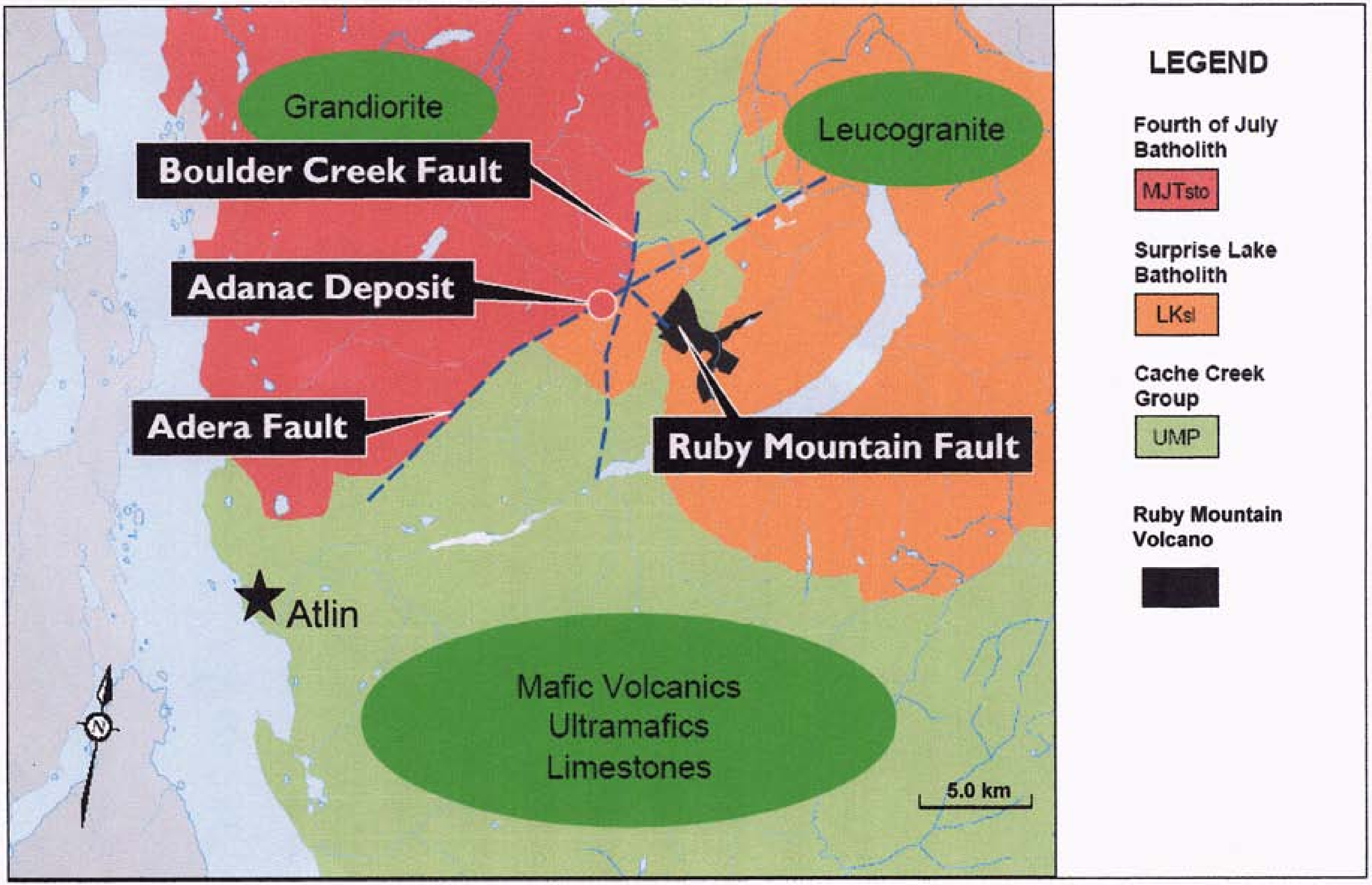
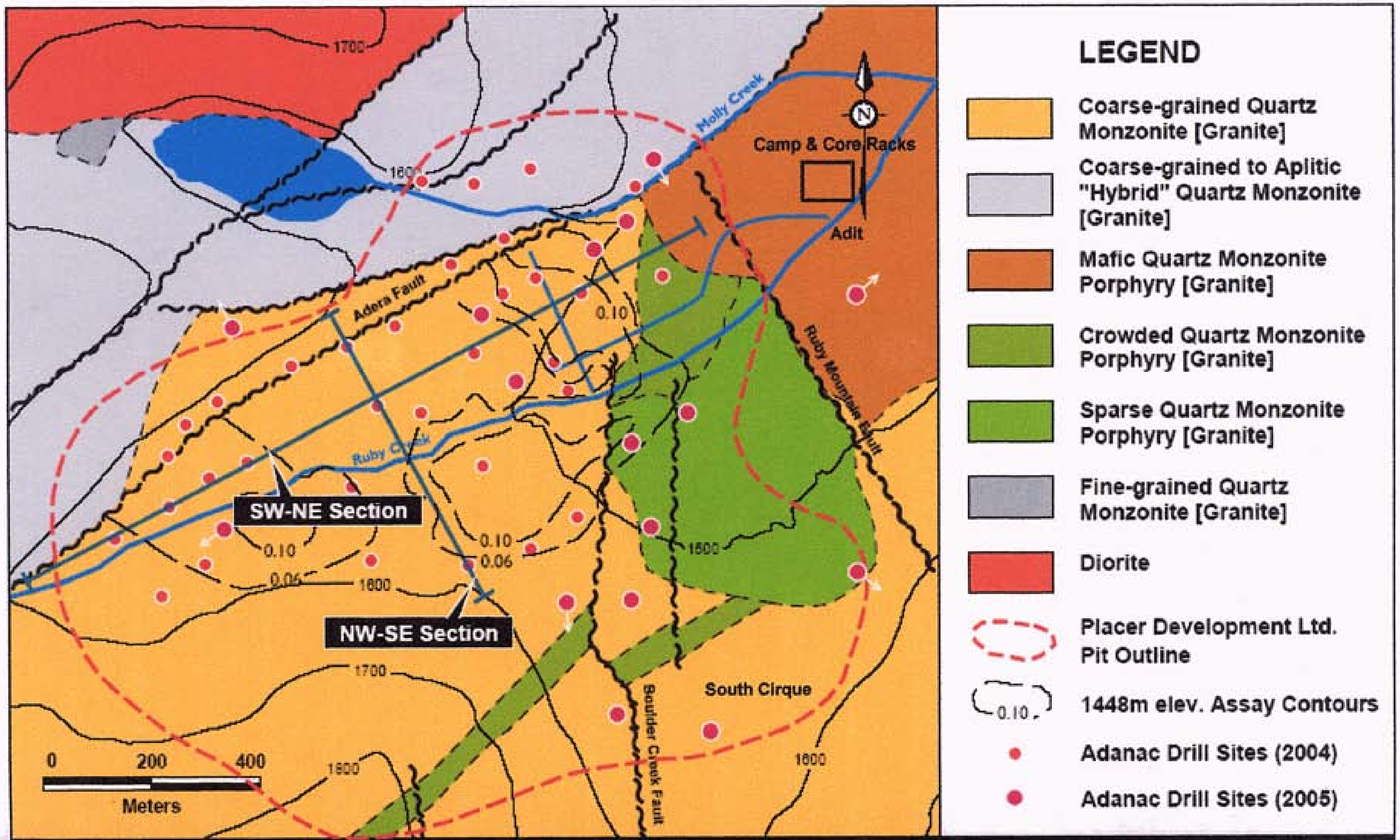


Figure 3: Simplified Regional Geology: Atlin Area, Northwest British Columbia



After Pinsent and Christopher; CIM Special Volume 46 (1995)

Figure 4: Simplified Property Geology Map: Adanac, Northwest British Columbia

The geology of the deposit is described by Sutherland Brown (1970), Janes (1971), White et al (1976), Tennant (1979), Pinsent (1980), Christopher and Pinsent (1982) and Pinsent and Christopher (1995), among others. For consistency, Adanac Moly Corp uses the terminology employed by Placer Development Limited in 1979/80 (Tennant, 1979; Pinsent, 1980 and Pinsent and Christopher, 1995). However, the quartz monzonites are chemically highly evolved and they may be granites.

The deposit area is underlain by at least three separate pulses of plutonic rock, each of which underwent deformation prior to injection of the next pulse. The first, which includes the contact phase between the two (Fourth of July and Surprise Lake/Mount Leonard Stock) batholiths consists of a highly variably textured unit that grades from "coarse-grained quartz monzonite" (CGQM) south of the Adera fault through a number of texturally transitional phases including "transitional and/or hybrid coarse-grained quartz monzonite" (CGQM-T or CGQM-t; CGQM-H) and "crowded quartz feldspar porphyry" (CQFP) to "sparse quartz feldspar porphyry" (SQFP) upward and outward from the deposit. The latter is best exposed north of the Adera fault, near the diorite contact.

Coarse-grained quartz monzonite (CGQM) is weakly-to-moderately deformed. It is a pink to grey equigranular, coarse-grained (0.5 to 3.0 cm) quartz monzonite consisting of approximately equal amounts of orthoclase, plagioclase and grey quartz (Christopher and Pinsent, 1982). The feldspar is commonly seriate and, locally, includes a small amount of fine-grained (2 to 4 mm) matrix. Coarse-grained quartz monzonite (CGQM) grades to sparse quartz feldspar porphyry (SQFP) with increase in matrix content and decrease in "phenocrysts".

The first stage of intrusion also includes a distinctive "mafic quartz monzonite porphyry" (MQMP) that is intruded into and intercalated with the coarse-grained unit. It is found within and on the northeast side of the deposit and outcrops down-stream from it (Figure 4). It underlies the mill site and part of the proposed tailings pond. This distinctive grey rock type has a seriate (1 to 4 mm) locally porphyritic texture. It is composed largely of chalky white plagioclase, disseminated biotite and phenocrysts of ragged plagioclase and lesser quartz. These two early phases were fractured and deformed prior to emplacement of a second pulse of magma.

The second pulse has two main mapped phases (Figure 4). They are "crowded quartz monzonite porphyry" (CQMP) and "sparse quartz monzonite porphyry" (SQMP). The two rock-types are very similar; however the former has an average of 45% to 50% (2 to 6 mm) subhedral to euhedral plagioclase, orthoclase quartz and biotite phenocrysts in an aphanitic matrix, and the latter has fewer, 10% to 30%. The porphyries are fresher and generally less deformed than the surrounding rocks and they have a much finer, more chilled matrix than the sparse quartz feldspar porphyry (SQFP) described above. The porphyries are exposed, locally, in the floor of the valley in the South Cirque area and diamond drilling shows that they are present at depth, cutting coarse-grained quartz monzonite under the floor of the valley upstream from the South Cirque.

The third intrusion phase, "fine-grained quartz monzonite" (FGQM) is a variably textured "aplite" that intrudes coarse-grained quartz monzonite and its variants (CGQM, CGQM-T, CGQM-H) and mafic quartz monzonite porphyry (MQMP) above and around the sparse and crowded porphyry intrusions. It is also found in the porphyries (CQMP, SQMP) but is less easily recognized. Fine-grained quartz monzonite (FGQM) is not exposed on surface but is well documented in the sub-surface, forming a series of 0.05 to 10 metres thick, approximately flat lying, structurally-controlled, sills and dykelets that can be traced from hole to hole over considerable distances.

In addition to these reasonably well defined rock types, drilling of the southwest part of the deposit has located two additional units in the sub-surface. They are a Megacrystic Feldspar Porphyry (MFP) and a Medium-grained Equigranular Quartz Monzonite (MEQM). They are not well constrained spatially; however, they appear to be relatively young phases of the composite intrusion. The former consists of rare to abundant large (>10 mm) euhedral orthoclase phenocrysts in a finely chilled matrix. The latter consists of an equigranular mosaic of (3-5 mm) quartz and feldspar crystals.

All three ages of quartz monzonite predate mineralization and still later post-mineral faulting. The Adera fault is a composite structure that dips steeply to the northwest. It is "normal" and has down-dropped the northern part of the deposit in a series of slices. Because of the depth of drilling, the off-set portion is currently very poorly defined. The Boulder Creek and Ruby Mountain fault systems are poorly defined by vertical drilling; however, they both appear to focus and off-set mineralization in the South Cirque area, on the northeast side of the deposit. The intrusive rocks underlying the propose plant site and tailings impoundment belong to the first phase of intrusion. They appear to be textural variants of coarse-grained quartz monzonite (CGQM) and mafic quartz monzonite porphyry (MQMP).

6.0 Surficial Geology

The Ruby Creek valley is Tertiary in age but is heavily modified by Late Tertiary to Quarternary volcanism, and by more recent glacial and post-glacial activity. The latter include the affects of at least two major land-slides. The overburden in the valley consists of a small amount of Tertiary-age gravel, glacial and post-glacial fluvial deposits, younger colluvial and alluvial deposits, and recent organic soils.

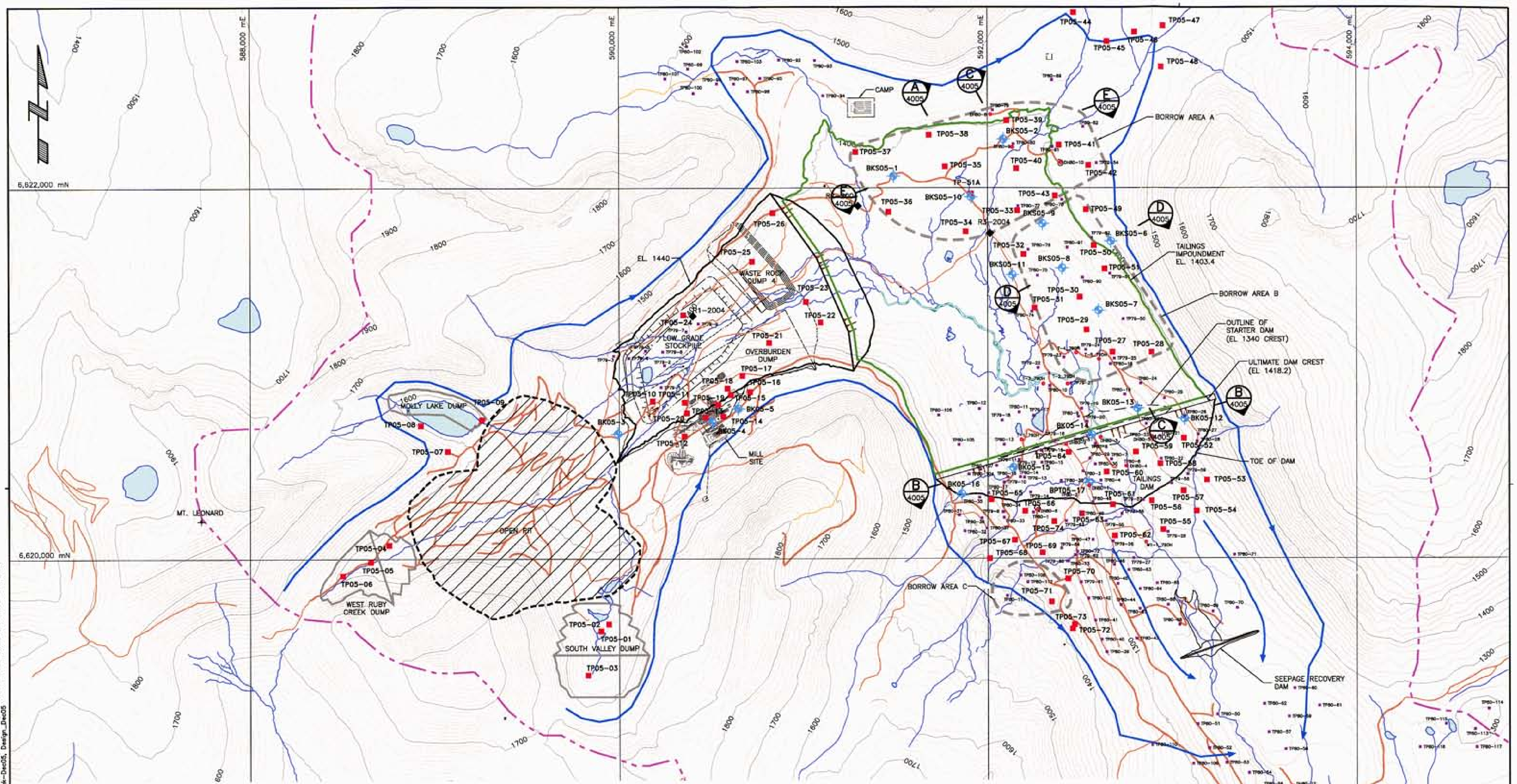
The Tertiary alluvial sediments are exposed beneath a capping of basalt in the lower part of the drainage. They are mainly cobble and boulder gravels with some pebbly beds that exhibit horizontal stratification. Some of the upper beds contain scoria marks the onset of volcanism. The age of volcanism is uncertain. However, it is clear that lavas erupted into the drainage and filled much of the lower valley with basalt. The volcanic edifice that built up on Ruby Mountain later became unstable and two major landslides appear to have occurred on its eastern flank in the relatively recent past. The slides transported volcanic rock across the drainage, on to the eastern side of Ruby Creek.

The lower slopes of the Ruby Creek valley are predominantly overlain by lateral and terminal glacial moraine deposits and ablation tills. However, in the upper part of the valley, above the influence of the basalt flows, the valley widens out and is underlain by a complex, inter-fingering of till, alluvium and lacustrine sediment. These younger deposits extend throughout much of the proposed tailings pond area and into the vicinity of the proposed plant site. They show abundant evidence for multiple episodes of glacial advance and retreat. There are alluvial fan deposits close to the right and left abutments of the proposed tailings dam site and underlying part of the central upper valley floor. Colluvial deposits are locally abundant near the head of the valley. They are formed as a result of gravitational action, as landslides or avalanche debris, or through slower moving solifluction around the valley walls. The lower slopes of many of the bed-rock cliffs are draped with talus. The glacial and post-glacial deposits in the main floor of the valley have a small amount of organic cover.

7.0 Technical Programme

In September, 2005, Klohn Crippen Berger Consultants conducted a major review of the surficial geology and overburden deposits of the upper part of the Ruby Creek valley (Figure 5). The project was designed to obtain base-line environmental data and assist in establishing the lay-out of a proposed mill site, tailings facilities and impoundment dam. Most of the geotechnical data are discussed in *"2005 Site Investigation Program"* in Appendix III of Klohn Crippen's *"Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management"* report to Adanac Moly Corp. However, some of the surficial geology and is described in *Chapter 4 "Physical Environmental Baseline"*. Work on the mill-site is in Appendix IX. Appendices III and IX are attached to the current report in their entirety as Appendix C. Two of the principal maps and tables are reproduced in the main body of the report for convenience. However, the pit and drill-hole logs are in the appendix. The results provide considerable insight into the nature of the surficial deposits in the upper part of the valley.

Klohn Crippen drilled 25 Becker-drill holes at 17 different sites (BKS05-01 to BKS05-17), in two of the borrow pit areas, at the mill site, the tailings pond and the tailings dam. The locations and depths are summarized in Table 2 (Table III-2 in Klohn Crippen's report) and locations are shown in Figure 6. The holes were vertical, drilled using a truck mounted model HAV-180 Becker hammer drill rig. It drove double-walled 168 mm diametre casing into the ground in 3 metres lengths using an ICE 180 double-acting diesel pile hammer. Nine of the holes were closed and used for hydrological experimentation. The rest were open. The drill logs are given in Klohn Crippen's appendix. The open-end holes were drilled to establish soil stratigraphy and retrieve samples. The sample material was lifted to surface by compressed air circulating through the casings and discharged through a cyclone. Samples were collected every 3.0 metres, or where a change in soil was encountered. Because of the destructive nature of the drilling process, the materials returned were largely classified on the basis of grain-size rather than "lithology".



LEGEND

▨	ULTIMATE PIT BOUNDARY
— - —	CATCHMENT BOUNDARY
→	CLEAN WATER DIVERSIONS
—	EXISTING ACCESS ROADS
BK05-10 BKS05-2 BPT05-17	2005 BECKER HOLE FOR FEASIBILITY DESIGN
■ TP05-15	2005 TEST PIT FOR FEASIBILITY DESIGN
▪ TP80-42	TEST PIT (1979, 1980)
▪ DH80-6	DRILL HOLE (1979, 1980)
◆ R3-2004	STREAM GAUGING LOCATIONS

NOTES

1. BASEMAP COMPOSED OF THREE SETS OF CONTOURS: TWO METRE CONTOURS DONE BY MISSION MAPPING & FORESTRY LTD. IN NOVEMBER 2005, FIVE METER CONTOURS DIGITIZED BY UNDERHILL GEOMATICS LTD. FROM A PLACER DEVELOPMENT LTD. PLAN No. 80-07-V-164, AND TWENTY METER CONTOURS TAKEN FROM 1:20,000 TRIM DATA.
2. DATUM NAD 83 UTM ZONE 8.

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NO.	DATE	ISSUE / REVISION	DRAWN	CHK'D	DESIGN	APP'D
0	FEB 2006	FINAL REPORT	PL/AW		FL	

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CLIENT

ADANAC MOLY CORP

KLOHN CRIPPEN

PROJECT

RUBY CREEK FEASIBILITY DESIGN OF
TAILINGS FACILITY AND WASTE DUMPS

TITLE

SITE INVESTIGATION PLAN

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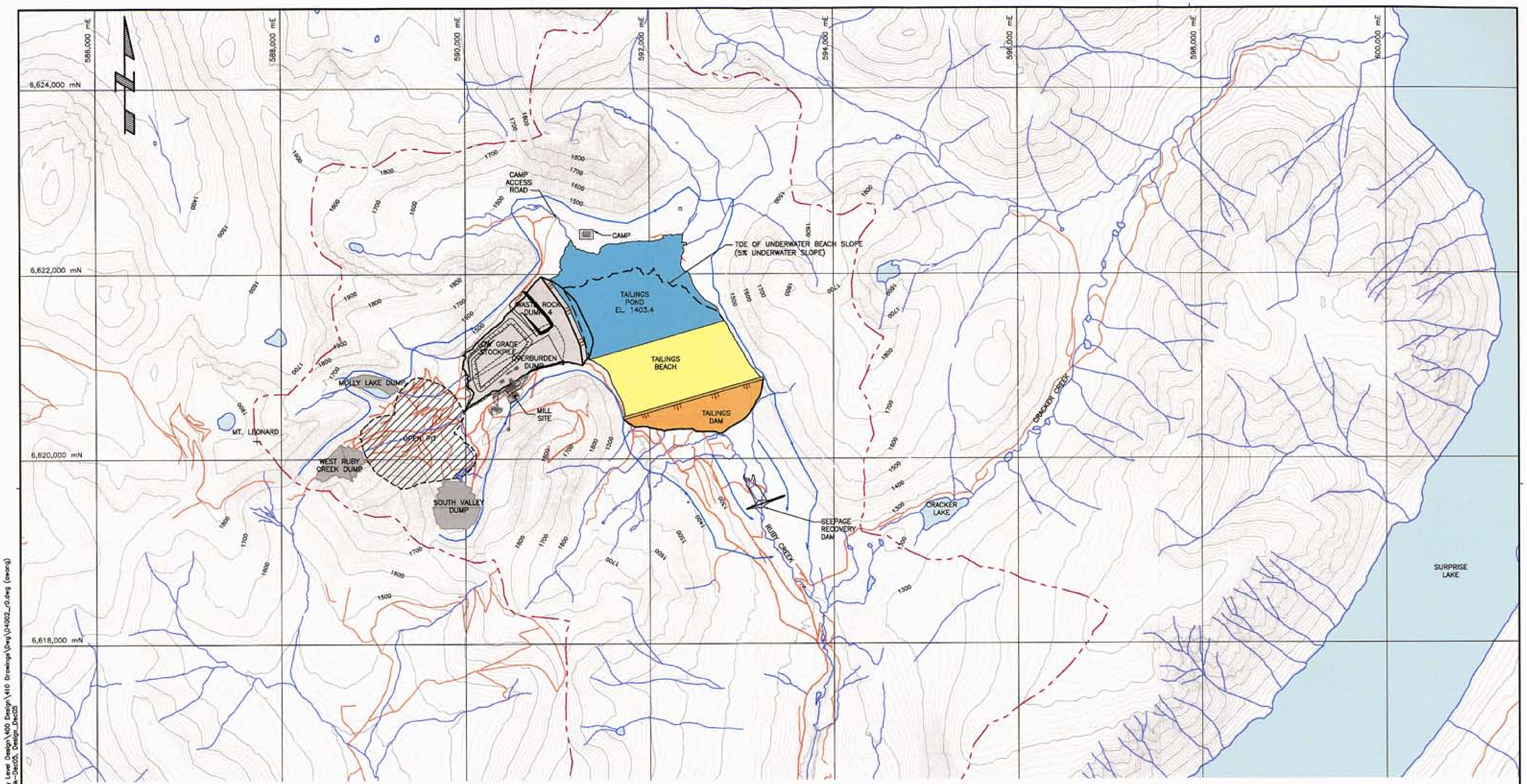

LEGEND

▨	ULTIMATE PIT BOUNDARY	▆	WASTE ROCK DUMPS
— - —	CATCHMENT BOUNDARY	🟧	ULTIMATE TAILINGS DAM FOOT PRINT
→	CLEAN WATER DIVERSIONS	🟨	TAILINGS BEACH
—	EXISTING ACCESS ROADS	🟦	TAILINGS POND (BASE CASE WATER BALANCE)

NOTES

1. BASEMAP COMPOSED OF THREE SETS OF CONTOURS: TWO METRE CONTOURS DONE BY MISSION MAPPING & FORESTRY LTD. IN NOVEMBER 2005, FIVE METER CONTOURS DIGITIZED BY UNDERHILL GEOMATICS LTD. FROM A PLACER DEVELOPMENT LTD. PLAN No. 80-07-V-164, AND TWENTY METER CONTOURS TAKEN FROM 1:20,000 TRIM DATA.
2. DATUM NAD 83 UTM ZONE 8.

NOT FOR CONSTRUCTION

SCALE: 0 800 m

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MOLY CORP

KLOHN CRIPPEN

PROJECT
RUBY CREEK FEASIBILITY DESIGN OF
TAILINGS FACILITY AND WASTE DUMPS

TITLE
GENERAL SITE ARRANGEMENT

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TABLE 2*
SUMMARY OF 2005 BECKER DRILL PROGRAM

Hole #	Dates	Location	Northing (m)	Easting (m)	Ground Elevation (m)	Open/ Closed End Becker	Max. Test Depth (m)
BKS05-01	Sep. 6-7	North Borrow	6,622,037	591,464	1376	Open	9.2
BKS05-02	Sep. 7-8	North Borrow	6,622,262	592,085	1379	Open	7.9
BK05-03	Sep. 9	Mill	6,620,673	589,992	1459	Open	8.5
						Closed	5.2
BK05-04	Sep. 9, 16	Mill	6,620,735	590,500	1450	Open	3.4
						Closed	2.8
BK05-05	Sep. 16-17	Mill	6,620,821	590,650	1458	Open	4.2
						Closed	3
BKS05-06	Sep. 19	East Borrow	6,621,741	592,639	1408	Open	2.5
BKS05-07	Sep. 19	East Borrow	6,621,337	592,601	1340	Open	2.6
BKS05-08	Sep. 20	East Borrow	6,621,591	592,380	1347	Open	12.4
BKS05-09	Sep. 21-22	East Borrow	6,621,807	592,303	1378	Open	14.8
BKS05-10	Sep. 22-23, 27-30	Tailings Pond	6,621,951	591,910	1356	Open	35.3
BKS05-11	Oct. 2-8	Tailings Pond	6,621,531	592,134	1337	Open	35.2
BK05-12	Oct. 9-10	Tailings Dam	6,620,755	593,068	1348	Open	15.7
						Closed	6.8
BK05-13	Oct. 12-13	Tailings Dam	6,620,810	592,811	1302	Open	10.7
						Closed	4.3
BK05-14	Oct. 14-15	Tailings Dam	6,620,667	592,563	1297	Open	7
						Closed	3.7
BK05-15	Oct. 16-17	Tailings Dam	6,620,490	592,138	1340	Open	17.4
						Closed	4
BK05-16	Oct. 17-18	Tailings Dam	6,620,350	591,859	1384	Open	8.8
						Closed	7.8
BPT05-17	Oct. 19	Tailings Dam	6,620,406	592,549	1304	Closed	15.8

* See Table III -2 in Appendix C

Most of the surficial materials underlying the proposed mill-site, primary borrow-areas and tailings dam consist of sandy till. However, they are described as consisting of coarse-grained sand and gravel deposits containing small cobbles. Two Becker holes (BKS05-10, BKS05-11) in the tailings pond area intersected particularly dense till between the sandy till the bedrock. In these two holes, the bedrock was cored and NQ3 wire-line was used to retrieve a short sample. In each case the bottom of the hole consisted of "alaskite" (quartz monzonite); however, in BKS05-10 it was intermixed with "greenstone", possibly hornfelsed volcanic rock.

The three Becker holes drilled in the proposed mill-site area also penetrated a short distance into "alaskite" (quartz monzonite) bedrock. In each case, the principal lithology immediately above bed-rock was dense fine-to-coarse-grained, well-graded sand and gravel till. The depth to bedrock varied from 2.4 metres at BK05-04 to 8.4 metres at BK05-03. The Becker holes in the tailings dam area (BK05-12 to BK05-16) penetrated between 8.5 and 14.6 metres of medium to coarse material before intersecting fresh basalt.

Klohn Crippen also dug 81 test pits (TP05-01 to TP05-74 and TP05-100 to TP05-105) using a Hitachi 120 Excavator. Pit locations, coordinates and depths are listed in Table 3 (Table III-I in Klohn Crippen's report) and the sites are shown in a Figure 6. The test pit logs are also in the appendix. The pits were sited to give overall coverage of the valley, and to provide information on specific areas of potential disturbance. They cover the possible mill site, waste dumps, diversion ditch and tailings dam, and areas of potential for borrow material, such as Borrow areas A-C, and the Cinder Borrow site (Figure 5). The pits extend to depths of up to 4.8 metres, in the "North Diversion area". However, they average around 3.0 metres in depth. The material encountered and described in the logs, is largely classified by grain-size distribution. However, some indication of the nature of the source material (e.g. alluvium, till) is usually given. The dominant material is sandy till.

Klohn Crippen Consultants dug eleven test pits (TP05-10 to TP05-20) in the vicinity of the currently proposed mill site, near the head of the Ruby Creek valley. The site is on a shallow dipping bench that straddles the main access road on the south side of Ruby Creek, down-stream from the deposit. The test pits ranged in depth from 1.1 to 2.7 metres and encountered similar assemblages of cobble, sand and gravel-bearing till overlying either bedrock or large boulders. Of the ten pits, seven (TP05-11 to TP05-15, TP05-17 and TP05-19) appear to have reached bedrock or close to it. The other three (TP05-16, TP05-18 and TP05-20) were stopped short. One of the test pits. (TP05-10) was dug in the vicinity of the proposed low-grade stockpile on the north side of Ruby Creek. It also failed to reach bedrock, encountering sand and gravelly material down to a depth of 4.2 metres. Pit and Becker-hole depths both show that the sediment package thickens along the central axis of the valley.

None of the pits across the proposed tailings dam (TP05-52 to TP05-66) reached bed-rock; however, that there is dense, well-graded, cobble-bearing sand and gravel till unit at depth, and that there are well defined seams of silt and sand in places, near the top of the

TABLE 3*
SUMMARY OF 2005 TEST PIT PROGRAM

Test Pit ID	Location	Northing (m)	Easting (m)	Elevation (m)	Pit Depth (m)
TP05-01	South Valley	6 619 611	589 901	1540	3.6
TP05-02	South Valley	6 619 648	589 943	1536	2.4
TP05-03	South Valley	6 619 372	589 830	1554	1.2
TP05-04	West Ruby	6 620 076	588 752	1576	2.4
TP05-05	West Ruby	6 619 984	588 653	1574	1.5
TP05-06	West Ruby	6 619 911	588 501	1595	2.7
TP05-07	Molly Lake	6 620 580	589 069	1621	3.1
TP05-08	Molly Lake	6 620 720	588 924	1598	2.7
TP05-09	Molly Lake	6 620 751	589 254	1595	2
TP05-10	Millsite	6 620 851	590 182	1423	4.2
TP05-11	Millsite	6 620 839	590 350	1424	1.7
TP05-12	Millsite	6 620 659	590 350	1454	1.7
TP05-13	Millsite	6 620 761	590 462	1446	1.7
TP05-14	Millsite	6 620 766	590 561	1452	2.2
TP05-15	Millsite	6 620 887	590 604	1441	1.8
TP05-16	Millsite	6 620 923	590 714	1450	2.4
TP05-17	Millsite	6 620 988	590 668	1430	2.6
TP05-18	Millsite	6 620 918	590 587	1433	2
TP05-19	Millsite	6 620 831	590 537	1441	1.1
TP05-20	Millsite	6 620 793	590 368	1435	1.3
TP05-21	Waste Dump #4	6 621 165	590 814	1387	2.4
TP05-22	Waste Dump #4	6 621 275	591 094	1354	1.4
TP05-23	Waste Dump #4	6 621 386	591 015	1351	3.2
TP05-24	Waste Dump	6 621 315	590 348	1404	3
TP05-25	Waste Dump	6 621 604	590 722	1381	1.7
TP05-26	Waste Dump	6 621 866	590 834	1398	1.7
TP05-27	Borrow A	6 621 114	592 676	1328	3.4
TP05-28	Borrow A	6 662 113	592 888	1362	2.8
TP05-29	Borrow A	6 621 234	592 536	1325	2.9
TP05-30	Borrow A	6 621 412	592 499	1338	2.6
TP05-31	Borrow A	6 621 353	592 254	1330	4.2
TP05-32	Borrow A	6 621 642	592 194	1358	3.7
TP05-33	Borrow B	6 621 879	592 160	1371	2.3
TP05-34	Borrow B	6 621 765	591 881	1338	3.2
TP05-35	Borrow B	6 622 115	591 770	1370	3.3
TP05-36	Borrow B	6 621 871	591 464	1352	3.8
TP05-37	Borrow B	6 622 193	591 285	1393	3.8

Test Pit ID	Location	Northing (m)	Easting (m)	Elevation (m)	Pit Depth (m)
TP05-38	Borrow B	6 622 285	591 684	1392	3.5
TP05-39	Borrow B	6 662 363	592 103	1402	3.5
TP05-40	Borrow B	6 622 105	592 155	1384	3.2
TP05-41	Borrow B	6 622 232	592 387	1404	3.3
TP05-42	Borrow B	6 622 123	592 547	1418	3.5
TP05-43	Borrow B	6 621 958	592 366	1394	3.5
TP05-44	North Diversion	6 622 948	592 468	1468	3.8
TP05-45	North Diversion	6 622 789	592 648	1455	4.8
TP05-46	North Diversion	6 622 841	592 798	1450	3.3
TP05-47	North Diversion	6 622 875	592 954	1458	4.5
TP05-48	North Diversion	6 622 653	592 943	1448	4.2
TP05-49	Borrow A	6 621 885	592 533	1410	4.3
TP05-50	Borrow A	6 621 691	592 576	1396	5
TP05-51	Borrow A	6 621 564	592 634	1385	3
TP05-51A	Borrow B	6 621 968	591 912	1360	3.4
TP05-52	Tailings Dam	6 620 649	593 064	1329	3.9
TP05-53	Tailings Dam	6 620 422	593 189	1320	3
TP05-54	Tailings Dam	6 620 257	593 133	1288	3.9
TP05-55	Tailings Dam	6 620 156	592 952	1278	2.9
TP05-56	Tailings Dam	6 620 312	592 888	1286	3.5
TP05-57	Tailings Dam	6 620 365	593 062	1296	4.5
TP05-58	Tailings Dam	6 620 510	592 936	1300	4.1
TP05-59	Tailings Dam	6 620 573	592 801	1294	3.1
TP05-60	Tailings Dam	6 620 466	592 643	1294	3.3
TP05-61	Tailings Dam	6 620 291	592 676	1290	3.2
TP05-62	Tailings Dam	6 620 122	592 688	1290	3.2
TP05-63	Tailings Dam	6 620 242	592 509	1306	3.4
TP05-64	Tailings Dam	6 620 572	592 437	1306	3.3
TP05-65	Tailings Dam	6 620 319	592 018	1364	3.6
TP05-66	Tailings Dam	6 620 257	592 201	1344	4.7
TP05-67	Cinder Area	6 620 100	592 145	1361	3.5
TP05-68	Cinder Borrow	6 620 000	592 009	1385	2.7
TP05-69	Cinder Borrow	6 620 031	592 295	1343	3.8
TP05-70	Cinder Area	6 619 890	592 435	1346	2.9
TP05-71	Cinder Borrow	6 619 765	592 345	1379	3.8
TP05-72	Cinder Borrow	6 619 619	592 459	1378	1.9
TP05-73	Cinder Borrow	6 619 642	592 470	1374	4.5
TP05-74	Cinder Area	6 620 201	592 359	1335	4.5
TP05-100	Boulder Creek	6 612 966	589 666	948	n/a
TP05-101	Boulder Creek	6 613 076	590 074	934	n/a
TP05-102	Pink Cinder Area	6 167 480	593 740	1155	n/a
TP05-103	Pink Cinder Area	6 167 370	593 690	1155	n/a
TP05-104	Grey Cinder Borrow	6 618 157	593 594	1197	n/a
TP05-105	Grey Cinder Borrow	6 618 255	593 413	1254	n/a

* See Table III - 1 in Appendix C

section (TP05-60). These are thought to be recent stream sediments. They are overlain by organic material. Elsewhere, most of the pits in the main possible borrow areas (TP05-27 to TP05-43 and TP05-49 to TP05-51A) were found to be underlain by similar cobble-bearing sand and gravel till deposits. However, there are exceptions. In "Borrow area A", TP05-31 had a sandy section near its top and TP05-51 had a thick sand unit above a boulder-rich base. Similarly, TP05-33 in "Borrow area B" is largely composed of sand. Elsewhere, in "Borrow area C", in the recent cinder/scoria pile, the pits contained variable thicknesses of volcanic cobbles and boulders (TP05-71 to TP05-73).

Klohn Crippen sampled 28 test pits (TP05-27 to TP05-43, TP05-49 to TP05-51A, TP05-68, 69, TP0571-TP05-73, and TP05-104-105) in two potential sources areas for borrow material near the head of the valley and one potential source area (over scoria) lower down the creek. The programme is described in Klohn Crippen's up-coming submission. Most of the material collected from the lower parts of these pits was used for geotechnical studies; however, samples obtained near the top of eleven of the pits were set aside for acid-base-accounting studies and for solid-phase elemental analysis by ICP-MS.

The samples largely consist of sandy till and sand. They were sent to ALS Environmental Limited for preparation and analysis. Preliminary work by Klohn Crippen Berger show that the samples display near neutral paste pH (ranging from pH6.8 to 8.0). They were sieved and the whole and <2mm grain-size fractions were analyzed for a variety of different elements by ICP-MS. The results have been compared with typical crustal abundance values and the data show that most are high for Ag, As, Bi, Cd, Cr, Mo, Pb, V and W, relative to crustal abundance. Of these, a subset is also elevated in Co, Cu, Mg, Ni and U. However, if one examines the population as a whole (and assumes that "anomalies" are in excess of five times crustal average), then Bi is the only element that is anomalous in every sample. However, Ag, Cd, As, Mo, Pb and W were anomalous in some. The samples were not analyzed for gold. Klohn Crippen Berger also made a total of 106 soil and/or site inspections over the Ruby Creek catchment and submitted 14 soil samples to ALS Environmental Limited, in Vancouver, for analysis for, among other things, pH, Electrical Conductivity, total N, S and C and As, B, Cd, Cu, Fe, Pb, Mn, Hg, Mo and Zn contents. The grain-size distribution was also determined.

8.0 Discussion

The placer gold-bearing gravels in the lower reaches of the Ruby Creek valley are well-defined and visually distinct. They have been traced up the valley from its mouth to the level of Cracker Creek, where they wedge out below a cap of Late Tertiary to Quaternary volcanic rock. This cap-rock has clearly protected the gold-bearing sediments from erosion. To date, nobody has found gold-bearing Tertiary gravel above the volcanic cap.

Work by Klohn Crippen Berger Consultants shows that the volcanic rocks extend up to the level of the proposed tailings dam, but not much further. There is no evidence of either Tertiary alluvial sediment or recent volcanic rock upstream of the proposed dam-site. If either had existed, they most have been eroded out by glacial and post-glacial activity. The principal surficial materials found above bed-rock in the upper part of the valley are colluvium and talus on the valley walls, and sandy glacial till and recent alluvial sediments in the valley floor. There is no sign of concentration of gold in the recent sediment.

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APPENDIX A

CERTIFICATE OF QUALIFICATIONS

I, Robert Hugh Pinsent, of 2335 West 13th Avenue, Vancouver, British Columbia, hereby certify:

1. I am a Consulting Geologist, practicing from #2335 West 13th Avenue, Vancouver, British Columbia.

2. I graduated, in 1968, from Aberdeen University, Scotland, with a B.Sc. Honours (B.Sc. Hons.) Degree in Geology.

3. I graduated from the University of Alberta, Edmonton, Alberta, with a Master of Science (M.Sc.) Degree in Geology in 1972, and from Durham University, England, with a Doctorate in Geology (Ph.D.) in 1975.

4. I am a Practicing Member of the Association of Professional Engineers and Geoscientists of British Columbia, and have been since August, 1992 (Registration No. 19499).

5. I have practiced my profession over 35 years as an exploration geologist, a civil servant and a geological consultant.

6. I managed the work programme on the Adanac/Ruby Creek deposit, near Atlin, British Columbia, for Adanac Moly Corp. between June and October, 2005. This report, dated 28th February, 2006, is based on the results of that programme.

7. I have a direct equity interest in the Adanac/Ruby Creek property through ownership of shares of Adanac Moly Corp.

Dated at Vancouver, British Columbia this 28th February, 2006

R. H. PINSENT

APPENDIX B

STATEMENT OF COSTS
ADANAC/RUBY CREEK PROPERTY

2A 15782 Marine Drive,
White Rock, British Columbia,
V4B 1E6

Field Programme Costs

	$CDN
Field Staff :	
Project Engineer, Geotechnical Engineer and Environmental Technologist	60,000
Accommodation & Food:	
Hotel and meals	20,000
Transportation:	
Airfares, Car Rental and Fuel	10,000
Drill Contractor:	
Foundex Exploration Limited	103,000
Test Pit Contractor:	
Ruby Gold Limited	15,000
Assays and Analysis:	
ALS-Chemex	20,000
Data Analysis and Reporting	
Klohn Crippen Berger Consultants	60,000
Total	**288,000**

APPENDIX C

RUBY CREEK PROJECT

Excerpts from

Feasibility Design of Tailings Facility,
Waste Dumps and Site Water Management

By

Klohn Crippen Berger Consultants Ltd.

February, 2006

ADANAC
MOLY CORP

RUBY CREEK PROJECT

Excerpts from:Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

M09222A04 **FEBRUARY 2006**

KLOHN CRIPPEN

fine gravel composed almost entirely of scoria. Large clasts of basalt are also present in the upper part of the gravel deposit (Levson, 1992).

Permafrost

The Adanac site is in a region of discontinuous permafrost. Periglacial features such as solifluction lobes, stone stripes, nivation hollows, and cryoturbated soils are common at higher elevations (Levson, 1992). A rock glacier is present on the northwest flank of the Ruby Mountain (Edwards and Bye, 2003).

2.3 Climate

The Ruby Creek area lies east of the Coast Range Mountains and within a zone generally described as having an interior-type climate. In general, the winters are severe and the summer months are cool. Summer is enhanced by the long hours of daylight; during June and July, daylight lasts for upwards of 18 hours.

2.3.1 Temperature

Temperature data were measured concurrently at Atlin and Ruby Creek in 1979 and 1980. A weather station was more recently installed at the project site in June 2004 as part of the environmental baseline studies.

Atlin long-term temperature records indicate:

- Mean annual temperature is about 1 °C;
- Mean daily temperatures are above freezing from April to October;
- Temperature extremes range from -50 °C to 31 °C; and
- Freezing temperatures could be encountered at any time during the year.

Based on limited comparisons of weather at Atlin, and the project site, the following comments can be drawn about temperatures for the Ruby Project site:

- Mean annual temperature is approximately – 2 °C, which is about 3°C lower than Atlin;
- Mean temperatures at Ruby Creek are about 5 °C lower than Atlin in summer, and close to Atlin temperatures in winter;
- Mean daily temperatures should be above freezing from June to September;
- Temperature extremes could range from -53 °C to 28 °C; and
- Freezing temperatures could be encountered at any time during the year.

2.3.2 Precipitation

Rainfall data at the project site are available for summer months in 1979 and 1980, and from the weather station installed in July 2004. Comparison between concurrent summer rainfall at Atlin and Ruby Creek during the 1979 and 1980 summer period showed that Ruby Creek had 1.6 to 2.2 times the rainfall measured at Atlin, with an average of 1.9.

Based on site correlations to date, the estimated mean annual precipitation is 702.9 mm. The monthly precipitation distribution is shown in Table 2.1.

Table 2.1 Average Monthly Precipitation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Precipitation (mm)	80.8	54.8	39.2	30.4	63.2	89.9	89.9	23.8	86.3	91.3	53.2	66.2	702.9

Table 2.2 shows the annual precipitation for dry and wet years with various return periods.

Table 2.2 Dry and Wet Analysis

	RETURN PERIOD (year)				
Case	**10**	**20**	**50**	**100**	**200**
Wet Year (mm)	826	909	1016	1097	1177
Dry Year (mm)	441	358	250	170	90

2.3.3 Evaporation and Evapotranspiration

Annual actual and potential evapotranspiration were previously estimated at Atlin in 1980. Potential evapotranspiration was estimated at 495 mm, while estimated actual evapotranspiration ranged between 236 mm and 283 mm, with an average of 260 mm. The ratio of the actual to potential evapotranspiration was 0.52.

In 2004, a weather station was installed at Ruby Creek and the collected data was used to estimate the potential evapotranspiration at the site. The estimated potential evapotranspiration at Ruby Creek was 450 mm. Assuming a ratio of 0.52, the estimated actual evapotranspiration is 234 mm.

Lake evaporation was estimated using the following assumptions:

- The evaporation at Atlin Lake is equivalent to the lake evaporation estimated from Whitehorse Airport station;
- The ratio of lake evaporation to potential evapotranspiration at Atlin is the same as the ratio at Ruby Creek; and
- Evaporation distribution throughout the year is similar to evapotranspiration distribution.

The estimated lake evaporation is 307.1 mm. The monthly distribution is given in Table 2.3.

Table 2.3 Average Monthly Evaporation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Evaporation (mm)	5.1	5.6	14.0	31.0	56.8	49.3	37.5	52.0	30.1	11.6	8.6	5.5	307.1

2.4 Surface Hydrology

The Ruby Creek sub-basin forms a portion of the Pine Creek basin, which discharges into Atlin Lake about 3 km south of the Town of Atlin. Atlin Lake, in turn, drains northward, as part of the Yukon River system. The total drainage area of Pine Creek at its mouth at Atlin Lake is 697 km^2.

At its mouth on Surprise Lake, Ruby Creek has a drainage area of 46 km^2, which is 7% of the total Pine Creek drainage area. The total Ruby Creek drainage area that will be affected by the project development (upstream of the point where the diversion channels re-enter Ruby Creek) is 27.5 km^2 or about 4% of the total Pine Creek drainage area.

Stream flows in the area are principally derived from snowmelt that is supplemented by summer rain. Typically, 65% to 70% of the annual runoff occurs during the four month period from May to August, while the remainder of the runoff is distributed fairly uniformly as base flow during the other eight months of the year. Water Survey of Canada (WSC) data from Pine Creek show an average annual discharge of 5.2 m^3/s, which corresponds to an annual runoff of 236 mm from the entire 697 km^2 Pine Creek drainage area.

Annual runoff from Ruby Creek follows a trend similar to Pine Creek, however, significant differences occur. Firstly, the Ruby Creek basin is located in a relatively high elevation alpine region where the mean basin precipitation (and hence unit runoff) is greater than for the larger Pine Creek basin. Secondly, the Ruby Creek basin that drains through the mine site is much smaller than the Pine Creek basin, therefore, its response to an isolated rainstorm would be substantially quicker than would be recorded at the Pine Creek gauge, especially given the attenuation capacity of Surprise Lake.

Correspondingly, a short, intense rainstorm in the Ruby Creek basin would quickly generate a runoff peak, which would recede shortly after the rainfall diminishes. Pine Creek flows are naturally regulated by Surprise Lake where some basin runoff is temporarily stored during peak runoff periods and released more gradually. Hydrological studies are continuing as part of the 2005 environmental baseline study program.

2.4.1 Runoff Coefficient

The mean annual runoff coefficient was calculated based on the difference between the estimated total precipitation and evapotranspiration at the project site. The total annual precipitation and evapotranspiration are 703 mm and 234 mm, respectively. The estimated annual runoff coefficient is therefore 0.67. This assumes that groundwater losses are small and/or groundwater infiltrating the ground at higher elevations discharges to surface water at lower elevations.

2.4.2 Estimation of a Ruby Creek Runoff

The average monthly Ruby Creek flows were estimated based on precipitation, the annual runoff coefficient and snow melt distribution. The snowmelt distribution was assumed so that the estimated runoff would closely match the observed stream flows at gauging Stations R1, R2 and R3 located on Drawing D-4004. R1, R2 and R3 represent the three main drainages in the Upper Ruby Creek basin, and the tailings disposal facility encompasses all three catchments.

Table 2.4 summarizes the mean monthly flows for R1, R2, R3 and the combined catchments.

Table 2.4 Estimated Average Monthly Flows in Ruby Creek Valley

MONTH	AVERAGE MONTHLY FLOW (m^3/s)				% MONTHLY FLOWS
	R1	R2	R3	R1 + R2 + R3	
January	<0.01	<0.01	<0.01	0.02	0.5
February	0.01	0.01	0.01	0.03	0.8
March	<0.01	<0.01	<0.01	0.02	0.5
April	0.01	0.01	0.01	0.03	0.6
May	0.22	0.14	0.17	0.54	12.9
June	0.47	0.31	0.36	1.16	27.9
July	0.37	0.24	0.29	0.91	22.0
August	0.09	0.06	0.07	0.23	5.5
September	0.21	0.14	0.16	0.52	12.6
October	0.23	0.15	0.18	0.57	13.7
November	0.02	0.01	0.01	0.04	1.0
December	0.03	0.02	0.02	0.07	1.8
Average Annual	**0.14**	**0.09**	**0.11**	**0.35**	**100**

The measured average monthly flows at the R1, R2 and R3 gauging stations are plotted versus the estimated flows in Figure 2.3. The estimated Ruby Creek flows are in a good agreement with the measured flows. The average annual flow from R1, R2 and R3 combined is 0.35 m^3/s.

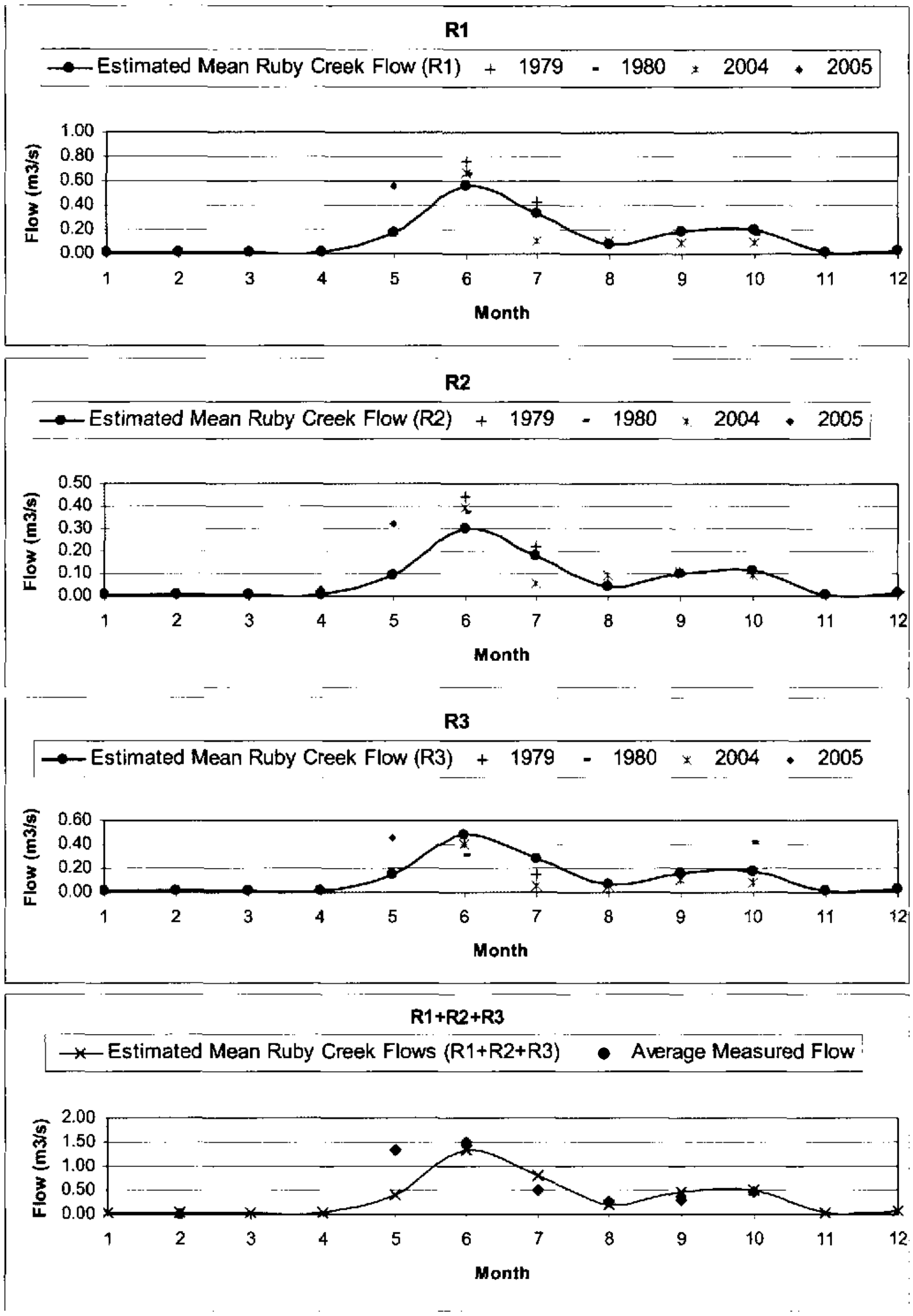

Figure 2.3 Ruby Creek Flow Distribution

2.5 Seismicity

The Ruby Creek Project Site is located in the Northern British Columbia (NBC) zone identified in the National Building Code of Canada. The NBC zone is a zone of low seismicity that includes the northern British Columbia Cordillera and extends into the Yukon. The maximum magnitude earthquake recorded in the NBC zone is the M5.4 earthquake which occurred in March 1986 northeast of Prince George and about 900 km from the site. Detection levels of low magnitude earthquakes were poor until three new regional recording stations were installed in 1981. However, there are no known events larger than M5.4 which would have been detected since at least the early 1960's (Basham et al, 1982).

The Geologic Survey of Canada was contacted to provide site specific estimates of the peak ground accelerations (PGA) at Ruby Creek for various return periods. Table 2.5 compares the PGA values predicted by the seismic hazard model for the current 1990 Building Code and unofficial values for the proposed 2005 code. A 2475-year PGA of 0.08 g is predicted by the seismic hazard model for the 2005 code. This level of earthquake shaking will have minimal effect on the stability of the proposed tailings dam and waste dumps.

Table 2.5 Median PGA Values for Various Return Periods

RETURN PERIOD	1990 NATIONAL BUILDING CODE	UNOFFICIAL 2005 NATIONAL BUILDING CODE
200-year	0.067 g	-
475-year	0.089 g	0.051 g
1,000-year	0.111 g	0.065 g
2,475-year		0.083 g

The peak horizontal ground acceleration for the Maximum Credible Earthquake (MCE), which is the largest magnitude of earthquake shaking which could be expected at this site, is estimated to be in the range of 0.10 g and 0.20 g.

3. 2005 SITE INVESTIGATIONS

3.1 General

Extensive site investigations were carried out by Klohn Leonoff (predecessor of Klohn Crippen) in 1979 and 1980 for preliminary design of the tailings dam, seepage recovery dam potable water dam, freshwater dams and construction borrow areas. The field work comprised 12 drill holes, 117 test pits, ground mapping, in situ permeability tests, a pumping test, and laboratory testing. This information is contained in two reports by Klohn Leonoff (1980, 1981). Drawings presenting the site stratigraphy are provided in Appendix I for reference.

The site investigations carried out in 1979/1980 were extensive and provide most of the required information for design purposes. The following additional site investigation work was carried out in August to October of 2005 to augment this information for the feasibility design study:

- **Tailings Facility:** A limited site investigation program was carried out to confirm the following unknowns:

  a) The surface foundation soils (overlying the basalt flows and/or bedrock) are variable in composition and their density may also vary widely. A program of 6 drill holes and 15 test pits was carried out to confirm that the gradation of the soils is sufficient to prevent piping of the tailings into the underlying pervious basalt flows and the soil densities are sufficient to prevent liquefaction during an earthquake.

  b) The northward extent of the basalt flows under the tailings facility was investigated to confirm the limit of the flows by undertaking two confirmatory drill holes into the bedrock. These holes were positioned 1000 m and 1500 m upstream of the tailings dam. Permeability testing in the overburden soils and bedrock was carried out to provide supporting data for design seepage analyses.

- **Fill Borrow Sources:** Delineation of sufficient general fill borrow close to the dam sites is key to confirm the constructability and cost of the dam designs, and to obtain optimum (lower) quotes by bidding contractors. Six drill holes and 21 test pits were undertaken to confirm the required material quantities. Investigations for fill resources focussed on borrow areas within the tailings basin to minimize land disturbance and enlarge the tailings storage basin.

- **Dam Filter Sources:** Sources of filter materials were investigated and included the volcanic cinder deposits, local talus deposits and aggregates from the alluvial mining in the lower reaches of Ruby Creek.
- **Waste Dumps:** The foundations beneath the waste rock dumps were visually assessed to be competent in the preliminary feasibility study. Sixteen test pits and mapping were conducted at the waste dump sites to confirm this assessment.
- **Mill Foundations:** No site investigation data was available in the vicinity of the re-located mill site. Three drill holes and ten test pits were carried out to assess soil conditions and depths to bedrock. This information is used to identify the preferred site layout (in particular, the positioning of the most heavily loaded mill structures). The results of this work are reported in Appendix IX and are not discussed in this report.
- **Septic Field Percolation Tests:** Percolation tests were performed at a tentative site of a septic field for the proposed construction camp. These test results are reported in Appendix X and are not discussed in this report.

Drawing D-4004 shows the location of all geotechnical site investigations conducted in 1979, 1980 and 2005.

A laboratory program was carried out to confirm the geotechnical characteristics of the overburden and bedrock at the tailings dam, and the borrow sources for construction of the various structures. The laboratory program included:

- 76 moisture content determinations;
- 53 grain size analyses;
- 2 specific gravity tests;

- 3 standard proctor density tests to evaluate moisture-density relationships;
- 2 permeability tests; and
- 2 Los Angeles Abrasion tests on granular filter materials to assess competency.

Details of site investigation program and laboratory testing are presented in Appendices III and IV. Site conditions at the major structures are discussed in the following sections.

3.2 Tailings Basin

3.2.1 Stratigraphy

In ascending order, the sub-surface profile within the tailings basin consists essentially of bedrock, lower valley sediments, volcanics, with overlying glacial, alluvial and colluvial deposits. Drawings D-4005 (4 sheets) show the distribution of these deposits in section views. The nature and extent of surficial deposits is also shown in the surficial geology maps on Figure 2.2 and Drawing E-2685-4, Appendix I.

Bedrock

All holes drilled to bedrock in the 1980 tailings dam drilling program terminated in alaskite. The top of bedrock is typically highly weathered and fractured, with silt coatings and intense limonite staining on the fractures. Significant alteration of feldspar was observed in most drill cores. The holes drilled in the 1980 investigation program did not extend completely through the weathering profile. However, an improvement in bedrock quality was observed at 10 m to 15 m below the bedrock surface.

Lower Valley Sediments

Valley sediments overlie the bedrock and include discontinuous layers of silt-rich tills, colluvium, clean sand and alluvium.

Basalt and Basalt Rubble Deposits

Volcanic basalt flows overlie bedrock and the lower valley sediments on the western side of the valley. At least one flow originated at Ruby Mountain and advanced down Ruby Creek Valley toward Surprise Lake. This flow was intercepted by many of the drill holes in the 1979 and 1980 investigations and outcrops near the right[4] abutment of the tailings dam site. Drawing D-4005 (Sheet 1) indicates the north advance of the flows up the Ruby Valley terminates 400 m to 600 m upstream of the tailings dam centerline.

The competent portions of the Ruby Creek flows generally exhibit columnar jointing, though zones of massive basalt were also encountered during the investigations.

Basalt rubbles are commonly associated with interflow deposits in volcanic terrains. These deposits generally consist of large broken boulders with sand and gravel infillings, and are commonly highly vesicular and oxidized. They may also be found in the interior of a flow, for example as a result of the flow moving over a large step in the terrain just prior to solidification. Rubble deposits at the site are both irregular and discontinuous as evidenced in exposures along Ruby Creek.

Glacial Deposits

Glacial deposits blanket the majority of the tailings basin. There is ample evidence at the tailings dam site to suggest several advances and retreats of alpine glaciation. This includes the occurrence of multiple lateral and terminal moraines in the vicinity of the proposed tailings dam site. Glacier advance may have slowed in this vicinity due to

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[4] Right and left dam abutments are referenced looking downstream from the dam crest.

reduction in the valley gradient caused by the basalt deposits. A sand deposit believed to be of outwash or glaciofluvial origin was observed in Test Pits 80-4, 80-29 and 80-30. No other sand and gravel deposits of glacial origin were identified in the vicinity of the tailings dam site.

Surface till deposits are generally ablation tills, deficient in clay and silt sizes and with a proportionally higher pebble, cobble and boulder content. The thickness of the till deposit varies up to 25 m. Tills were found to be very dense with localized zones that are loose to moderately dense.

Since deposition, the tills have weathered in situ, possibly accelerated by the surface organics. Many of the test pits exhibited a near surface zone of till up to 1.5 m thickness, brown in colour, which often had a seepage line at its lower boundary. Although the brown till could be a separate deposit, the apparent uniformity of soil properties across this colour change suggests a weathering front.

Lacustrine Deposits

Glacial lacustrine deposits were encountered at two separate locations upstream of the tailings dam site. The first was at Test Pit 80-36 where a small pond existed behind a glacial moraine at the toe of an alluvial fan. The pond was subsequently filled with alluvial fan material.

The second was upstream of the terminal moraines which cross Ruby Creek Valley. Two silt and clay deposits were intersected by DDH T-3 in the 1979 investigations. These lacustrine deposits were formed behind the terminal moraines and in front of the receding glaciers. Similar deposits could have been left after each glacial advance and also following the basalt flow.

The lacustrine deposits are of limited areal extent and will not affect the stability of the tailings dam.

Alluvial Fan Deposits

Alluvial fans have developed near the left and right abutments of the tailings dam. The fan on the left abutment begins in a bedrock gorge and continues most of the way to Ruby Creek. Several small springs exist on and around this fan. The material is poorly sorted with only vague stratification.

The alluvial fans on the right abutment have three source streams:

- The most southerly of these streams flows off the north-eastern flank of Ruby Mountain. This stream has no surface flow for most of the year due to high infiltration into the large slide deposit on the north-eastern flank of Ruby Mountain. The fan consists of stratified black and red volcanic sands and gravels washed from the large landslide.
- The middle stream carries most of the surface water from the valley north of Ruby Mountain and has formed the largest alluvial fan. Flow is intermittent on the fan as all water percolates into the debris except during snowmelt or heavy rainfall. Test pits excavated into this fan indicate a poorly sorted material with vague stratification near its apex (TP 80-1) grading to a well sorted stratified material at the toe (TP 80-36) where, as mentioned earlier, it overlies lacustrine silts. At this toe location, a large part of the flow re-surfaces as springs (approximately 10-20 l/sec).
- The most northerly stream, which has a small catchment, flows only during snowmelt. However, small springs exist at the toe of this fan for most of the year. Material encountered in test pits were generally poorly sorted with the exception of a few well sorted laminations.

For the feasibility design, the tailings dam centreline was moved northward to avoid contact with these fans. Cutoff trenches will also be constructed beneath the tailings dam to minimize the potential for preferential seepage paths or piping of tailings through alluvial deposits.

Colluvial Deposits

Colluvial materials are loose deposits which have been transported downstream chiefly by gravity. Talus or scree slopes form aprons around many of the slopes surrounding the tailings basin.

On the left dam abutment, a small slip was mapped in 1980 (see Drawing E-2685-4, Appendix I). The total movement was of the order of 50 m to 100 m. As a result of the slip, the glacial material has been loosened and weathering has progressed deeper than in surrounding undisturbed materials. Small springs exist at the toe of this deposit. This local slide feature will not affect the operation of the tailings facility, but should be further assessed as the dam footprint is stripped and prepared for fill placement.

Organic Surface Deposits

An organic cover is found over large areas of the tailings basin. These deposits are relatively thin (< 0.3 m) on the valley slopes and up to one metre thick on the valley bottom. Perched water tables are often found in the organic materials, causing considerable difficulty in moving equipment over these deposits.

All organics will be stripped from areas beneath the tailings dam and seepage recovery dam.

3.2.2 Hydrogeology

The 2005 site investigation program included hydraulic conductivity (K) testing, water level measurements, and delineation of the hydrogeologic/geologic units below the tailings impoundment and tailings dam. Details of the hydrogeological investigation are provided in Appendix III. A summary of the K values obtained from the 1979, 1980, and 2005 site investigations are presented in Table 3.1. Geologic sections and water levels are shown on Drawing D-4005.

Table 3.1 Hydraulic Conductivity of Foundation Materials

	RANGE OF K VALUES (m/s)		
	1979/80 Testing	**2005 Testing**	**K Values Adopted for Seepage Analysis (Note 1)**
Weathered till	$7x10^{-7} – 4x10^{-6}$	No testing	$4x10^{-6}$
Till	$7x10^{-9} – 5x10^{-6}$	$5x10^{-8} – 5x10^{-6}$	
Basalt	$1x10^{-7} – 5x10^{-4}$	$2x10^{-3}$	$1x10^{-5}$
Lower Valley Sediments	$1x10^{-6} – 1x10^{-5}$	No testing	$1x10^{-6}$
Alluvium Colluvium	No testing	$8x10^{-6}$	$1x10^{-5}$
Fractured Bedrock	$7x10^{-8} – 7x10^{-5}$	$4x10^{-7} – 6x10^{-7}$	$5x10^{-6}$
Competent Bedrock	$7x10^{-8} – 7x10^{-5}$	$5x10^{-10}$	Impermeable

1. Kh/Kv assumed to be 1 for all units.

The groundwater regime in the upper Ruby Creek Valley is typical of bedrock dominated valleys. Infiltration from the upper slopes recharges the shallow overburden and bedrock aquifers, which flow towards the valley bottom and then longitudinally down the creek valley. Generally, water levels are high due to the low permeability of the overburden and underlying bedrock, and follow the topography of the valley slopes.

Four main aquifers are present within the valley:

- **Overburden Aquifer:** The water table in the overburden soils was typically encountered within 3 m of the ground surface. Visible seepage was often noted near the contact between the weathered surface tills and underlying, denser un-oxidized tills. Silt contents typically range from 7% to 30%. An average permeability of 4×10^{-6} m/s is representative.

- **Basalt Flow Aquifer:** The major valley aquifer is the basalt unit, which begins approximately 400 m upstream of the proposed tailings dam and blankets the right abutment of the tailings dam. The columnar jointing of the basalt[5] and basalt rubble zones contribute to a high permeability and the unit is confined hydraulically by the lower permeability surficial soils. Artesian flow in DH80-W-4 is evidence of the aquifer confinement.

In the 1979 exploration program, permeabilities in basalt materials ranged from 10^{-7} to 8×10^{-7} m/s. During the 1980 program, downstream of the 1979 drill locations, basalt permeabilities were measured at 4×10^{-6} to greater than 5×10^{-5} m/s in borehole tests.

The aquifer test in basalts and basalt rubble indicated that the rubble behaves as a discontinuous aquifer with a permeability of 10^{-3} to 10^{-2} m/s. As the geometry of the rubble layers cannot be accurately defined, the boundary permeabilities cannot be established. The results from Drill Hole 80-7 indicate that the composite aquifer near the seepage recovery dam, behaves as an homogenous unit with permeability of $k = 4 \times 10^{-5}$ m/s and a coefficient of storage $s = 0.02$. Borehole logging and small scale testing indicates that an appropriate permeability for analytical purposes at the tailings dam is 10^{-5} m/s.

- **Lower Valley Sediments:** Few permeability values are available for the lower valley sediments. In the 1979 program, a value of 10^{-5} m/s was measured in gravels in DDH T-1. As silt rich sands and gravels are found in this unit, an average permeability of 10^{-6} m/s has been assigned for design purposes.

- **Upper Bedrock Aquifer:** The top of the bedrock is frequently weathered and fractured, creating a zone of preferential flow. The depth of the weathered zone is in the order of 10 m to 15 m. The permeability depends to a large extent on the degree of fracturing and weathering of the material. In general, the near surface bedrock has local permeabilities of 5×10^{-5} to 10^{-6} m/s.

3.3 Properties of Overburden Soils at Tailings Dam

The overburden soils beneath the tailings dam consist primarily of glacial, colluvial, and alluvial deposits. The thickness of the deposits recorded in drill holes ranges from 5 m to

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[5] Evidence of the columnar jointing is well exhibited in the exposure of the basalt at the alluvial gold mine workings approximately 1 km downstream of the tailings dam.

25 m. Topsoil cover is typically less than 0.3 m on the valley slopes and up to 1 m in the base of the valley. An average 0.5 m depth of stripping to remove surface organics is assumed.

Figure 3.1 summarizes the gradation and water content analyses (Appendix IV) conducted on representative soil samples. Collectively, the overburden soils are a silty sand and gravel mixture comprised of 50% to 70% gravel or coarser, and 7% to 33% fines. This grain size distribution is filter compatible[6] with the cycloned sand, indicating that potential for piping of tailings through the overburden soils into the underlying fractured basalts is remote. However, the tailings dam footprint will be carefully examined after stripping of organics to confirm that no exposures of basalt or other pervious zones in the dam foundation are present.

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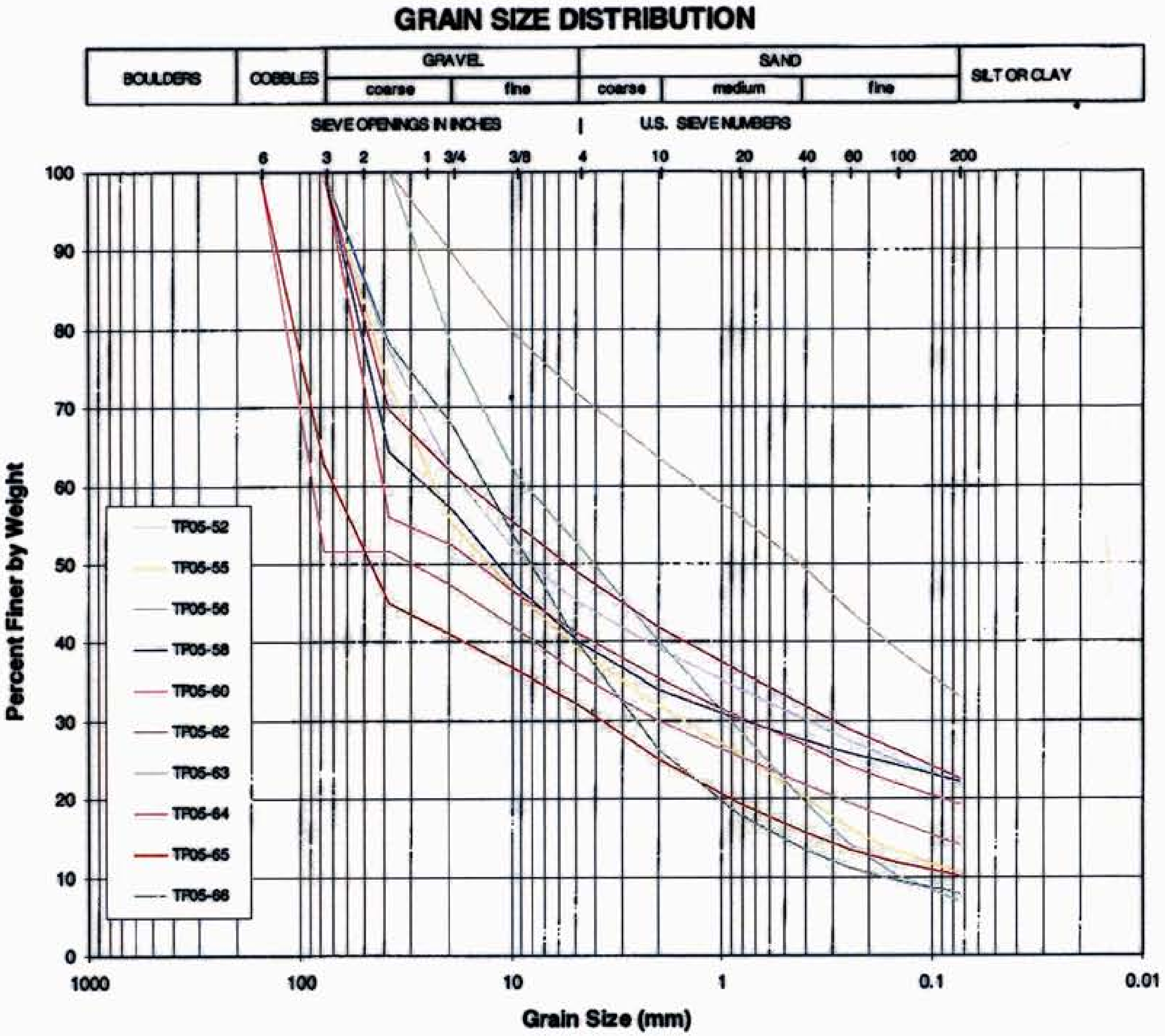
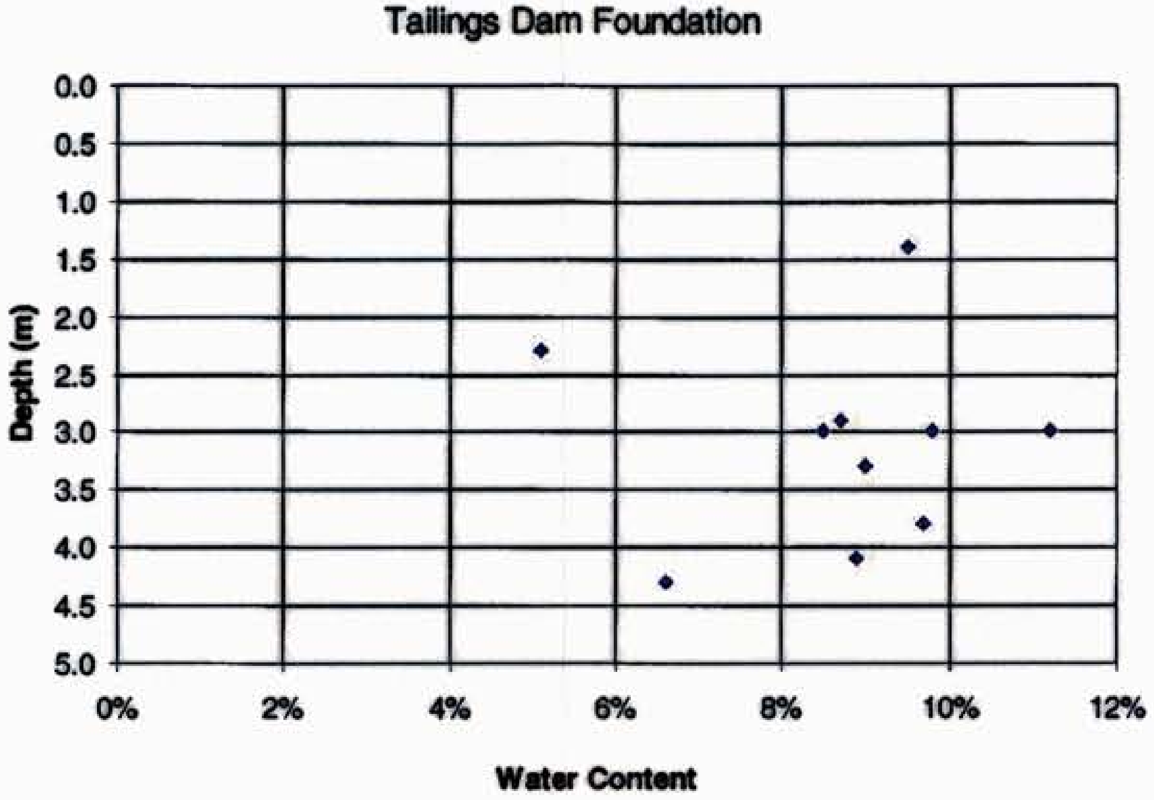
[6] Based on $D_{85} = 0.25$ mm for cyclone sand and $D_{15} < 0.5$ mm for overburden soils. Resulting D_{15} to D_{85} of 2 is less than maximum allowable of 5.





TO BE READ WITH KLOHN-CRIPPEN REPORT DATED February 8, 2006

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ADANAC
MOLY CORP

KLOHN CRIPPEN

PROJECT
RUBY CREEK FEASIBILITY DESIGN OF
TAILINGS FACILITY AND WASTE DUMPS

TITLE
GEOTECHNICAL PROPERTIES OF
TAILINGS DAM FOUNDATION SOILS

PROJECT NO. M09222 A04

FIGURE NO. 3.1

Becker Penetration Tests (BPTs) were conducted for the tailings dam foundation to assess the density of the overburden soils. Details and results of the BPT program are presented in Appendix III. Equivalent Standard Penetration Test $(N_1)_{60}$ blowcount values derived from the BPT's using the Sy (1993) method are shown on Section B in Drawing D-4005. The overburden soils are generally "dense", with $(N_1)_{60}$ values greater than 20. Several localized pockets of loose soils were encountered and the depths and locations are summarized in Table 3.2.

Table 3.2 Summary of Zones with $(N_1)_{60}$ Values Less Than 20

	ZONES WITH $(N_1)_{60}$ VALUES LESS THAN 20
Drill Hole	Depth Range (m)
BK05-12	0 to 2.7
BK05-13	0 to 1.0
BK05-15	0 to 0.3
BK05-16	2.4 to 4.6
BK05-17	0 to 3.3

Prior to dam construction, additional drilling investigations will be carried out to assess the aerial extent of these loose zones. If required, loose zones within 5 m of the surface can be easily excavated. The final ground surface beneath the dam will be compacted by six passes of a 10 tonne vibratory roller (Section 8.6).

3.4 General Fill Borrow Areas

Surficial overburden soils within the tailings basin will be used as general fill borrow for construction of the tailings starter embankment. Two main borrow areas shown on Drawing D-4004 have been investigated in detail. Borrow Area "A" is located 500 m to 1000 m upstream of the left abutment of the tailings dam and was previously denoted Borrow Area 1 in the 1979/80 investigations. Borrow Area "B" is located at the north end of the tailings basin, approximately 1500 m from the tailings dam. Table 3.3 summarizes the investigations completed within each borrow area.

Table 3.3 Summary of General Fill Borrow Investigations

BORROW AREA	1979/80 INVESTIGATIONS		2005 INVESTIGATIONS	
	Test Pits	Drill Holes	Test Pits	Drill Holes
A	TP79-24		TP05-27	BKS05-6
	TP79-50		TP05-28	BKS05-7
	TP79-51		TP05-29	BKS05-8
	TP79-52		TP05-30	BKS05-9
	TP80-74		TP05-31	
	TP80-75		TP05-32	
	TP80-76		TP05-49	
	TP79-80		TP05-50	
	TP80-90		TP05-51	
	TP80-91			
B	TP79-54	DH80-8	TP05-33	BKS05-1
	TP80-77	DH80-9	TP05-34	BKS05-2
	TP80-79		TP05-35	BKS05-10
	TP80-80		TP05-36	
	TP80-81		TP05-37	
	TP80-82		TP05-38	
	TP80-89		TP05-39	
			TP05-40	
			TP05-41	
			TP05-42	
			TP05-43	
			TP05-51A	

The depth of overburden soils (to bedrock or limit of backhoe penetration) generally varies between 2 m on valley slopes to 25 m near the middle of the tailings basin. Two main soil units were encountered:

- **Organic Deposits:** The ground on the slopes of the tailings basin is covered by a thin veneer of brown, organic silt (topsoil) intermixed with roots and wood debris. The thickness of the organic deposits is typically 0.15 m thick. Greater thicknesses of organic deposits (up to 1 m) are possible based on visual observations in the tailings basin.

- **Till:** Deposits interpreted to be primarily ablation tills were encountered in all test pits up to a depth of 5 m. The tills comprise non-plastic sand and gravel with angular cobbles and trace to little silt. Boulders up to 600 mm were occasionally encountered. The till was oxidized to a brown color to a depth of 1.5 m in most test pits. Dense, unoxidized brownish grey till was found at greater depth.

Observations of seepage and the water levels in the test pits and drill holes indicates that the static water table is more than 4 m below the ground surface, but perched groundwater also flows within the brown, weathered till.

Table 3.4 summarizes the total borrow resources from each area assuming 75% of the till is useable for dam construction.

Table 3.4 Estimated Volume of General Fill in Borrow Areas

BORROW AREA	SURFACE AREA	ESTIMATED TILL DEPTH (m)	ESTIMATED USEABLE TILL VOLUME (m^3)
A	500 m x 1000 m	5	1,900,000
B	500 m x 1000 m	5	1,900,000

Gradation testing, proctor compaction and permeability test data for the till is summarized in Figures 3.2 and 3.3. Salient results are as follows:

- The till soils in Borrow Area A comprise a well-graded sand and gravel, with variable fines content between 1% and 40% (median = 13%). Borrow Area B is consistently finer and more uniform than Borrow Area A, with fines content between 12% and 30% (median = 18%).
- The water contents in both borrow areas range between 4% and 10% to depths up to 5 m.
- Standard Proctor Compaction tests were conducted on representative composite samples (19 mm minus) from Borrow Areas A and B. The optimum compaction water content ranged from 6% to 7% with maximum compaction dry densities (SPDD) of 2265 to 2270 kg/m^3. Most of the in situ water contents are within $\pm$ 2% of the optimum water contents. No problems with compacting over wet or over dry soils are anticipated.
- Constant head permeability tests were conducted on the representative composite samples compacted in a fixed-wall permeameter to a minimum of 95% of the SPDD. The permeability of the Borrow Area A sample (17.5% fines) was 2×10^{-6} m/s. The finer soils of the Borrow Area B sample (26.0% fines) gave a lower permeability of 5×10^{-7} m/s.

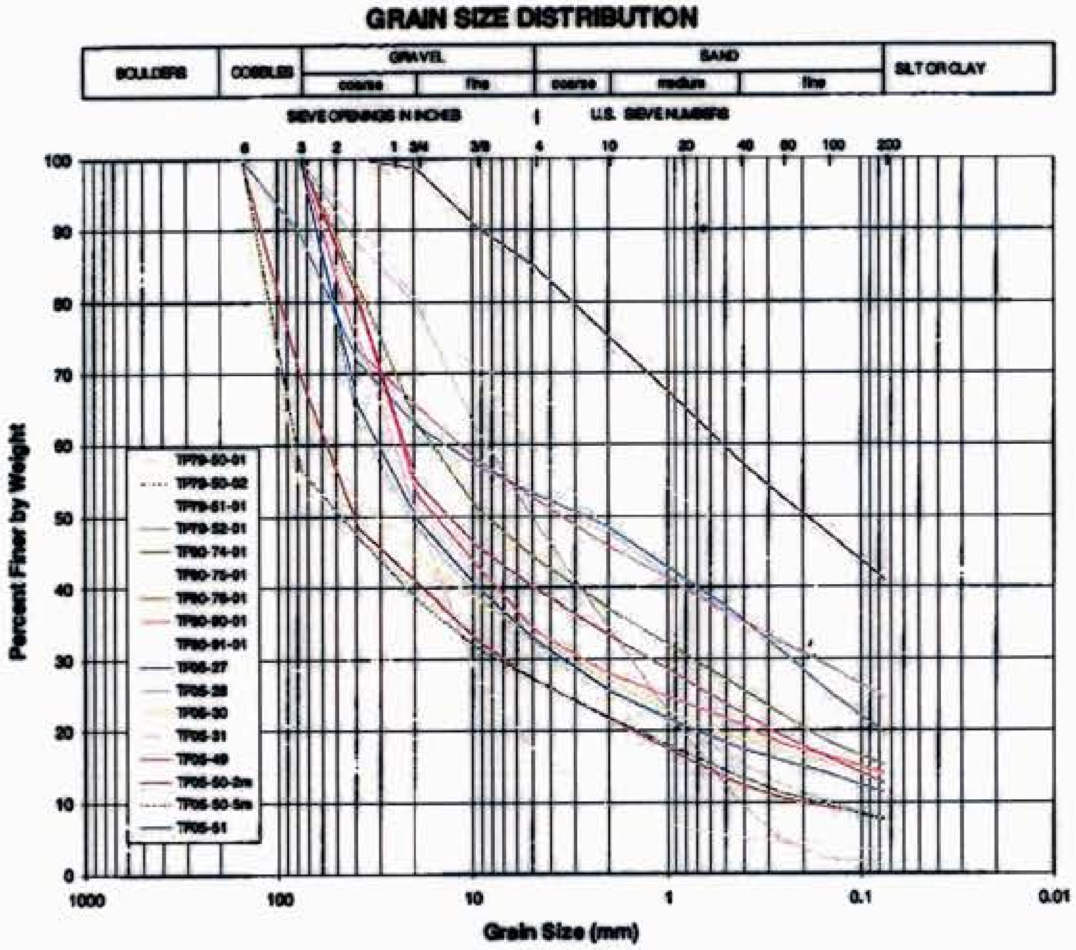
The in situ soils from both Borrow Areas A and B are considered suitable for random fill for dam construction. The permeability of the compacted soil will be in the order of 5×10^{-6} m/s.

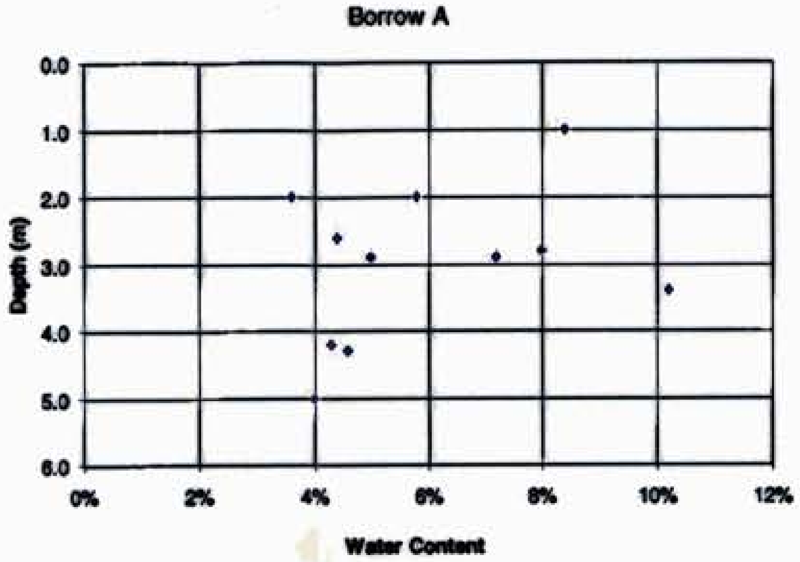
Screening the till soils from Borrow Area B to 38 mm minus will provide a lower permeability material for "core" construction. The 38 mm maximum particle size is selected to minimize segregation of the processed material in stockpiles, and during handling and compaction. The permeability of the compacted soil will be in the order of 5×10^{-7} m/s.

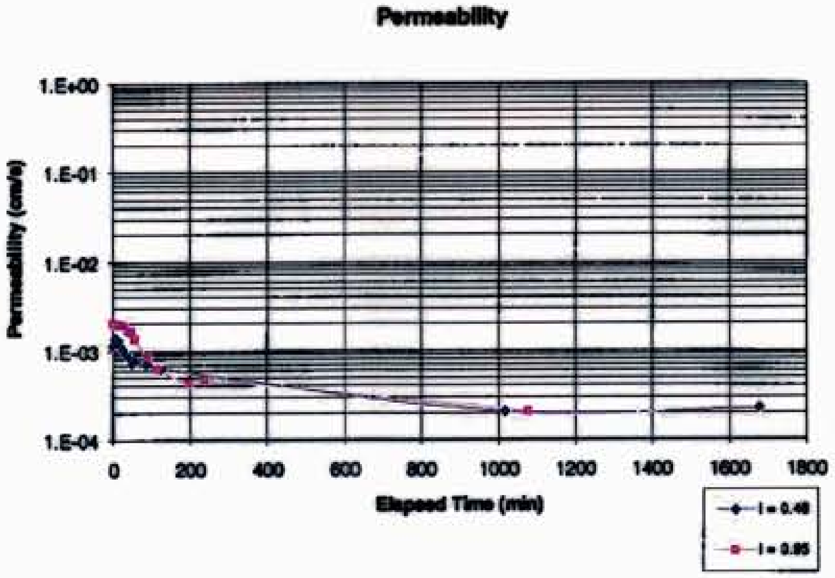
3.5 Filter and Drain Materials

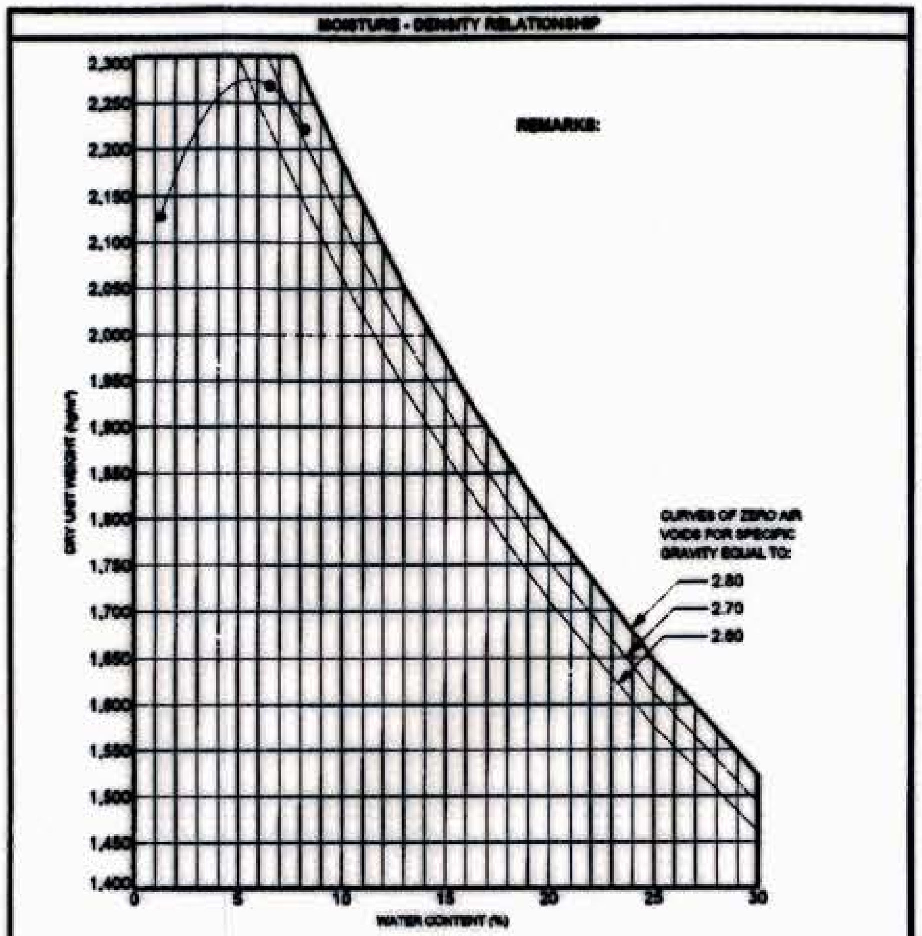
3.5.1 Cinder Rock

The scoria (cinder) rock associated with historic volcanic events are found on the west slope of the Ruby Creek valley downstream of the proposed tailings dam. The gradation and porous nature of these rocks suggest that they may be suitable as filter and drain material. The location of three potential sources is shown on Drawing D-4004 and Figure 3.4. Borrow Area C is located just downstream of the right abutment of the tailings dam. The "Grey" Cinder Borrow is located approximately 1.5 km downstream of the tailings dam. The Pink Cinder Pile is located further downstream about 2.5 km from the tailings dam. The Pink Cinder Pile is actually a waste pile developed during recent placer mining activity. The test pit program shows that at Borrow C, the cinder material is only within 2 m of the surface. Frozen ground was encountered at TP05-71. Material from Borrow C may need to be laid out and thawed prior to use. The cinder material extends to a depth of 3 m at the Grey Cinder Borrow and Pink Cinder Pile. No water was encountered in test pits at these locations.









	TEST	DEPTH(m)	METHOD	OWC	MDW	MATERIAL DESCRIPTION
●	COMP 2	0.0	698C	8	2270	

OWC = Optimum Water Content (%) MDW = Maximum dry Unit Weight (kg/m³)

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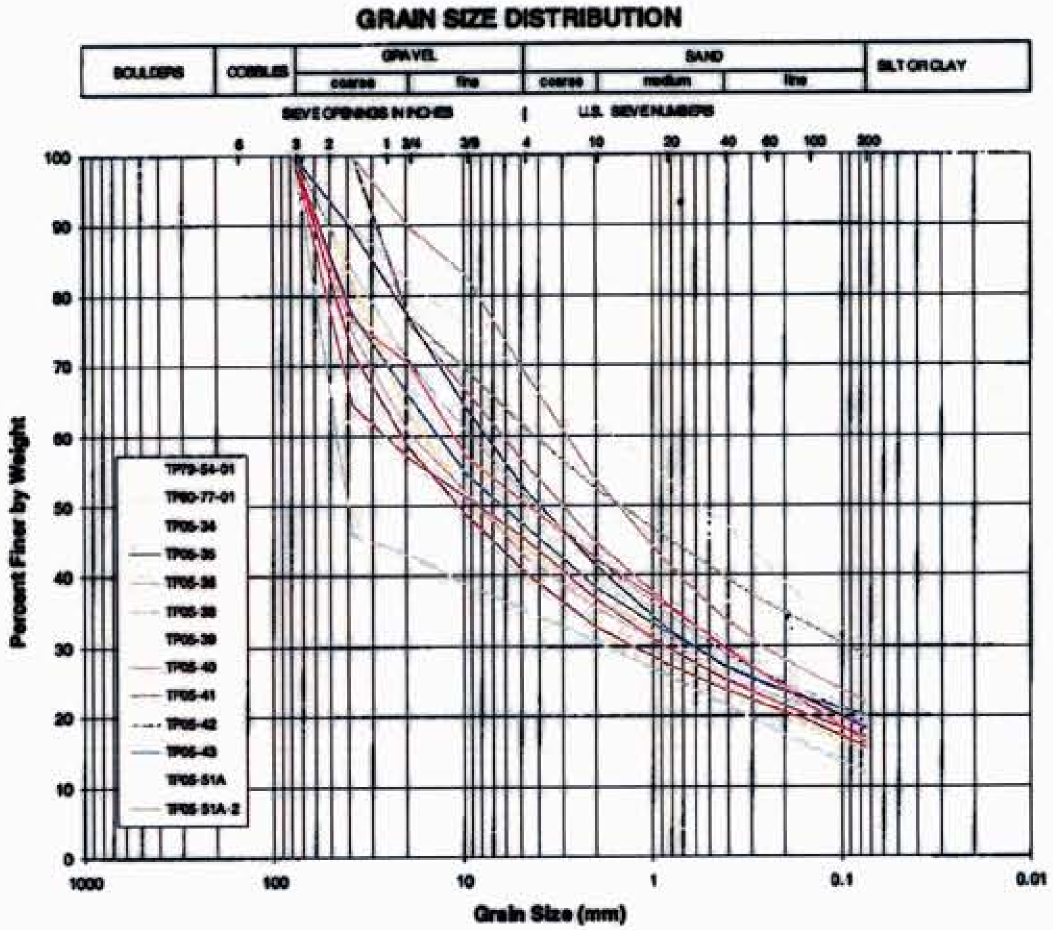
TAILINGS FACILITY AND WASTE DUMPS

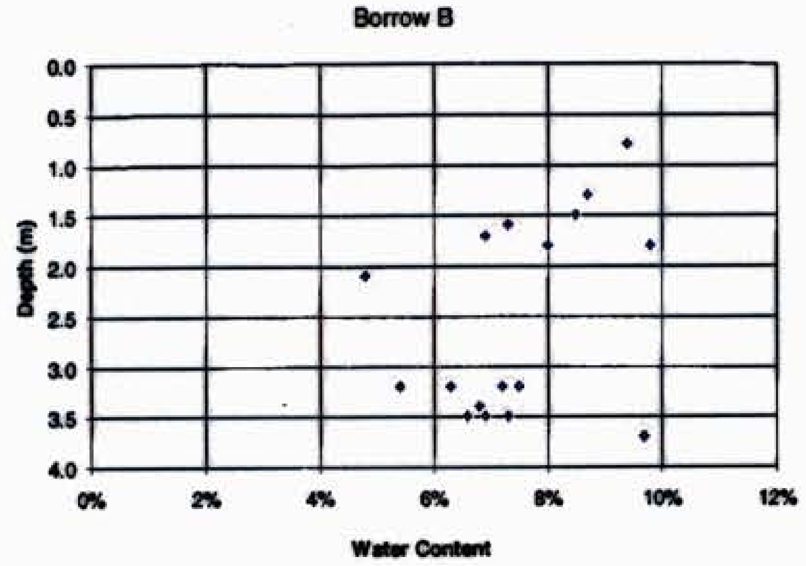
TITLE

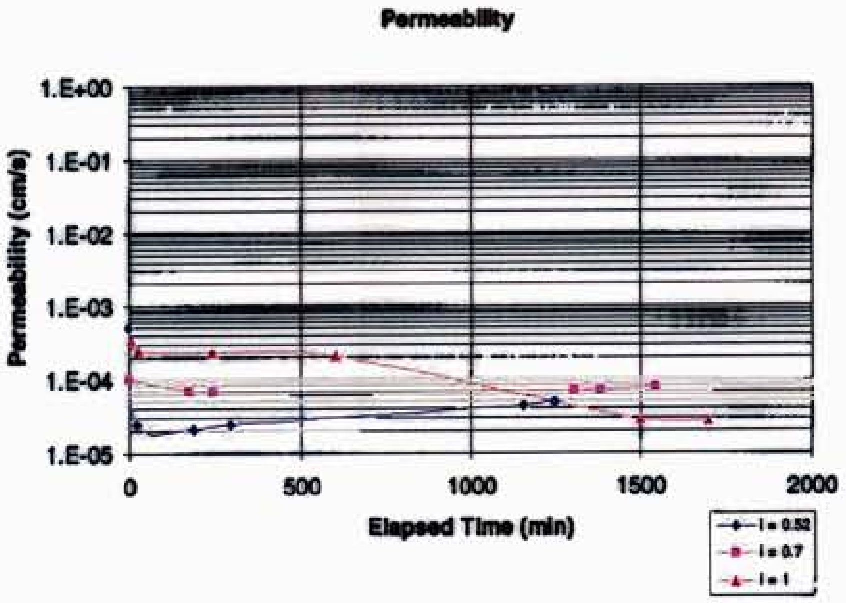
GEOTECHNICAL PROPERTIES
OF BORROW AREA A

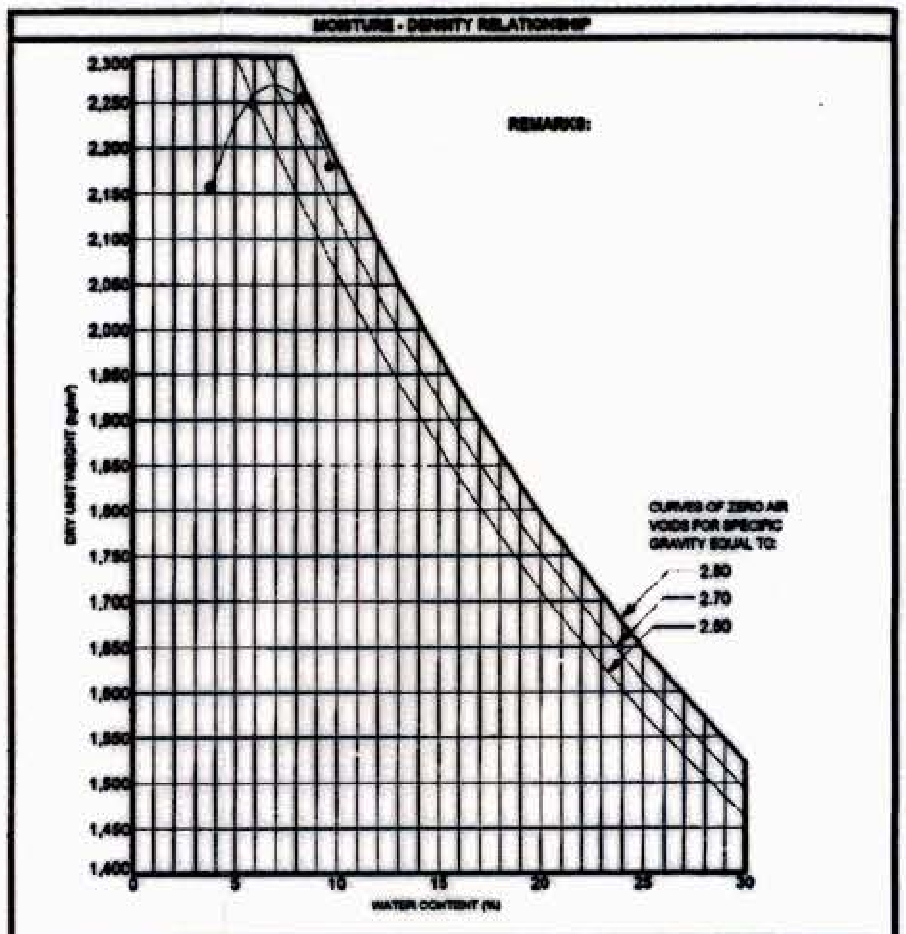
PROJECT NO. M09222 A04

FIGURE NO. 3.2









	TEST	DEPTH(m)	METHOD	OWC	MDW	MATERIAL DESCRIPTION
●	COMP 1	0.0	698C	7	2265	

OWC = Optimum Water Content (%) MDW = Maximum dry Unit Weight (kg/m³)

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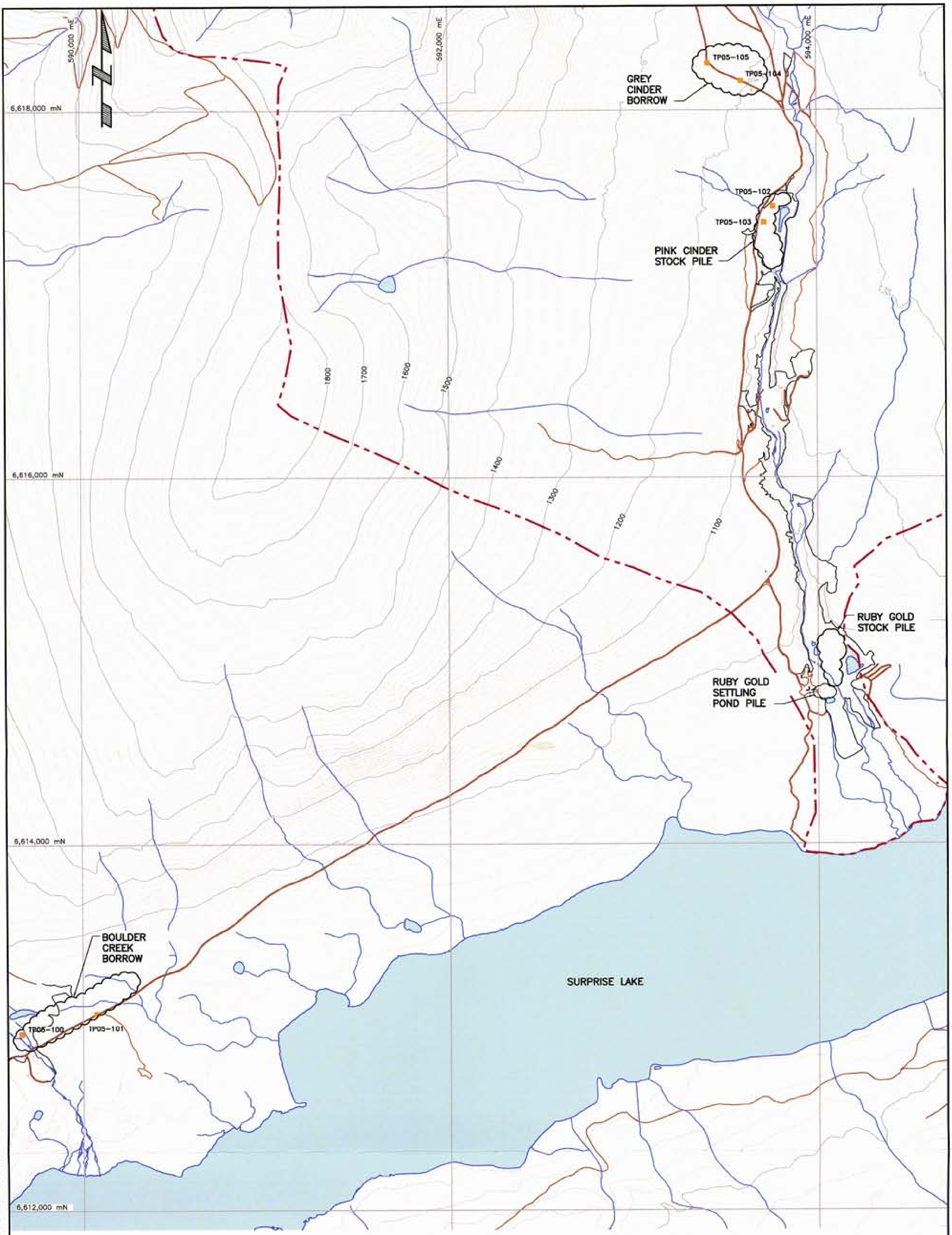
GEOTECHNICAL PROPERTIES
OF BORROW AREA B

PROJECT NO. M09222 A04
FIGURE NO. 3.3



LEGEND

— · — ·	CATCHMENT BOUNDARY
——	EXISTING ACCESS ROADS
■ TP05-105	TEST PIT SAMPLING SITES

NOTES

1. BASEMAP COMPOSED OF THREE SETS OF CONTOURS: TWO METRE CONTOURS DONE BY MISSION MAPPING & FORESTRY LTD. IN NOVEMBER 2005, FIVE METER CONTOURS DIGITIZED BY UNDERHILL GEOMATICS LTD. FROM A PLACER DEVELOPMENT LTD. PLAN No. 80-07-V-164, AND TWENTY METER CONTOURS TAKEN FROM 1:20,000 TRIM DATA.
2. DATUM NAD 83 UTM ZONE 8.

TO BE READ WITH KLOHN CRIPPEN REPORT DATED FEB 8, 2006

SCALE 0 400 m

CLIENT
ADANAC MOLY CORP

KLOHN CRIPPEN

PROJECT
RUBY CREEK FEASIBILITY DESIGN OF
TAILINGS FACILITY AND WASTE DUMPS

TITLE
LOCATION PLAN OF TEST PITS
FOR AGGREGATE ASSESSMENT

PROJECT No. M09222A04

FIG. No. 3.4

KCB-DM

Time: 9:1:52
Date: 1/6/2006
Scale: 1=12(PS)
Drawing File: M:\M09222A04 - Ruby Creek Feasibility Level Design\400 Design\410 Drawings\Fig\Fig3.4r0.dwg
Xrefs: BM-RubyCreek-Dec05, Design_Dec05

Table 3.5 summarizes the total borrow resources of each area assuming 75% of the material is usable for filters and drains.

Table 3.5 Estimated Volume of Cinder Material in Borrow Areas

BORROW AREA	SURFACE AREA	ESTIMATED DEPTH (m)	ESTIMATED USEABLE VOLUME (m^3)
C	300 m x 300 m	1	68,000
Grey Cinder	300 m x 300 m	3	203,000
Pink Cinder	100 m x 400 m	3	135,000

Gradation testing, specific gravity, and Los Angeles (LA) Abrasion data for the cinder material is summarized in Table 3.6. The cinder comprises a well-graded sand and gravel with a fines content typically less than 7%. The specific gravity of the cinders is in the order of 1.9 reflecting the porous fabric of the particles. The LA Abrasion loss was less then 30% indicating the cinders are durable[7]. Processed cinders are considered acceptable for incorporation in the sand and gravel drainage blanket for the tailings starter dam, which is only required to function for a limited time period of less than 5 years. They are also acceptable for the drainage blanket in the seepage recovery dam.

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[7] The durability of the cinders is also evidenced by the resistance to weathering and breakdown during the > 1000 ± years after deposition.

Table 3.6 Summary of Laboratory Tests on the Cinder Rock

BORROW AREA	TEST PIT #	Sieve Analysis			SPECIFIC GRAVITY	LOS ANGELES (L.A.) ABRASION (% Loss)
		%Gravel	%Sand	%Fines		
Borrow C	TP79-61, TP79-62, TP79-65, TP80-73, TP80-108, TP80-111, TP05-68, TP05-69, TP05-71, TP05-72, TP05-73	41 to 72	26 to 38	2 to 21	No testing	No testing
Grey Cinder Borrow	TP05-102	46.6	42.5	5.9	1.89	24.7
	TP05-103	47.1	46.0	7.0	-	25.6
Pink Cinder Pile	TP05-104	56.1	41.7	2.2	1.87	29.4
	TP05-105	60.1	30.0	3.5	-	25.1

3.5.2 Aggregate Sources

Aggregates for the permanent underdrainage system for the tailings cyclone sand dam can be obtained by processing sound talus materials within the Ruby Creek basin or rejects from alluvial mining operations at the mouth of the Ruby Creek Valley. Three such aggregate sources were tested by Klohn Crippen and the locations (Boulder Creek Borrow, Ruby Gold Settling Pond Pile and Ruby Gold Stockpile) are shown on Figure 3.4. The test results are presented in Appendix XI. All three sources are considered acceptable for production of drain materials.

3.6 Waste Dumps

The site conditions at each of the four waste dump sites are discussed below.

Waste Dump No. 1 – South Valley Dump

This site is in a small alpine valley above the open pit on the south side. The base of the valley is composed of coarse colluvium, talus and glacial deposits with little or no vegetation. Test pits TP05-01 to TP05-03 encountered coarse, angular sand and gravel

APPENDIX III

2005 Site Investigation Program

APPENDIX III

2005 SITE INVESTIGATION PROGRAM

III-1. Introduction

This appendix presents the results of the 2005 Site Investigations conducted in the Ruby Creek watershed for the feasibility design of the tailings facility, waste dumps, and mill foundations. The objective of the investigations is to obtain a greater understanding of the following key issues:

- Gradation and density of Tailings Dam foundation soils;
- Extent of the basalt flows beneath the tailings pond, and the permeability of the foundation soils and bedrock lining the tailings basin;
- Characterization of the locally borrowed soils and rock that will be used to construct the Tailings Dam;
- Complete the characterization of the geotechnical conditions within the waste rock dump sites;
- Mill site foundation conditions; and
- Hydrogeological conditions.

The various components of the investigation are described in Sections III.A-2 to III.A-4. Test pit logs are presented in Appendix III-A. Drill hole logs are presented in Appendix III-B. The conversion of Becker Penetration Test (BPT) values to equivalent $(N_1)_{60}$ values are presented in Appendix III-C. The hydraulic conductivity results interpreted from monitoring well response tests are presented in Appendix III-D. The results of the laboratory testing conducted by Klohn Crippen are presented in Appendix IV.

Geotechnical recommendations for the New Millsite foundations were presented in a KC letter[1] dated November 15, 2005. Laboratory testing results for potential aggregate materials were presented in a KC letter[2] dated January 6, 2006.

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[1] "New Millsite Location, Preliminary Geotechnical Recommendations". Klohn Crippen Report submitted to Adanac Moly Corp. on November 15, 2005.

[2] "Aggregate Assessment Testing". Klohn Crippen Report submitted to Adanac Moly Corp. on January 6, 2006.

III-2. Test Pit Program

The test pit program consisted of 81 test pits and was conducted from September 1 to October 20, 2005. A Hitachi 120 Excavator supplied by Ruby Gold Ltd. was used to dig the test pits. The test pit program is summarized in Table III-1. The test pit logs are presented in Appendix III-A.

Table III-1 Summary of 2005 Test Pit Program

Test Pit ID	Location	Northing (m)	Easting (m)	Elevation (m)	Pit Depth (m)
TP05-01	South Valley	6 619 611	589 901	1540	3.6
TP05-02	South Valley	6 619 648	589 943	1536	2.4
TP05-03	South Valley	6 619 372	589 830	1554	1.2
TP05-04	West Ruby	6 620 076	588 752	1576	2.4
TP05-05	West Ruby	6 619 984	588 653	1574	1.5
TP05-06	West Ruby	6 619 911	588 501	1595	2.7
TP05-07	Molly Lake	6 620 580	589 069	1621	3.1
TP05-08	Molly Lake	6 620 720	588 924	1598	2.7
TP05-09	Molly Lake	6 620 751	589 254	1595	2.0
TP05-10	Millsite	6 620 851	590 182	1423	4.2
TP05-11	Millsite	6 620 839	590 350	1424	1.7
TP05-12	Millsite	6 620 659	590 350	1454	1.7
TP05-13	Millsite	6 620 761	590 462	1446	1.7
TP05-14	Millsite	6 620 766	590 561	1452	2.2
TP05-15	Millsite	6 620 887	590 604	1441	1.8
TP05-16	Millsite	6 620 923	590 714	1450	2.4
TP05-17	Millsite	6 620 988	590 668	1430	2.6
TP05-18	Millsite	6 620 918	590 587	1433	2.0
TP05-19	Millsite	6 620 831	590 537	1441	1.1
TP05-20	Millsite	6 620 793	590 368	1435	1.3
TP05-21	Waste Dump #4	6 621 165	590 814	1387	2.4
TP05-22	Waste Dump #4	6 621 275	591 094	1354	1.4
TP05-23	Waste Dump #4	6 621 386	591 015	1351	3.2
TP05-24	Waste Dump	6 621 315	590 348	1404	3.0
TP05-25	Waste Dump	6 621 604	590 722	1381	1.7
TP05-26	Waste Dump	6 621 866	590 834	1398	1.7
TP05-27	Borrow A	6 621 114	592 676	1328	3.4
TP05-28	Borrow A	6 662 113	592 888	1362	2.8
TP05-29	Borrow A	6 621 234	592 536	1325	2.9
TP05-30	Borrow A	6 621 412	592 499	1338	2.6
TP05-31	Borrow A	6 621 353	592 254	1330	4.2
TP05-32	Borrow A	6 621 642	592 194	1358	3.7
TP05-33	Borrow B	6 621 879	592 160	1371	2.3
TP05-34	Borrow B	6 621 765	591 881	1338	3.2
TP05-35	Borrow B	6 622 115	591 770	1370	3.3
TP05-36	Borrow B	6 621 871	591 464	1352	3.8
TP05-37	Borrow B	6 622 193	591 285	1393	3.8

Table III-1 Summary of 2005 Test Pit Program (cont'd)

Test Pit ID	Location	Northing (m)	Easting (m)	Elevation (m)	Pit Depth (m)
TP05-38	Borrow B	6 622 285	591 684	1392	3.5
TP05-39	Borrow B	6 662 363	592 103	1402	3.5
TP05-40	Borrow B	6 622 105	592 155	1384	3.2
TP05-41	Borrow B	6 622 232	592 387	1404	3.3
TP05-42	Borrow B	6 622 123	592 547	1418	3.5
TP05-43	Borrow B	6 621 958	592 366	1394	3.5
TP05-44	North Diversion	6 622 948	592 468	1468	3.8
TP05-45	North Diversion	6 622 789	592 648	1455	4.8
TP05-46	North Diversion	6 622 841	592 798	1450	3.3
TP05-47	North Diversion	6 622 875	592 954	1458	4.5
TP05-48	North Diversion	6 622 653	592 943	1448	4.2
TP05-49	Borrow A	6 621 885	592 533	1410	4.3
TP05-50	Borrow A	6 621 691	592 576	1396	5.0
TP05-51	Borrow A	6 621 564	592 634	1385	3.0
TP05-51A	Borrow B	6 621 968	591 912	1360	3.4
TP05-52	Tailings Dam	6 620 649	593 064	1329	3.9
TP05-53	Tailings Dam	6 620 422	593 189	1320	3.0
TP05-54	Tailings Dam	6 620 257	593 133	1288	3.9
TP05-55	Tailings Dam	6 620 156	592 952	1278	2.9
TP05-56	Tailings Dam	6 620 312	592 888	1286	3.5
TP05-57	Tailings Dam	6 620 365	593 062	1296	4.5
TP05-58	Tailings Dam	6 620 510	592 936	1300	4.1
TP05-59	Tailings Dam	6 620 573	592 801	1294	3.1
TP05-60	Tailings Dam	6 620 466	592 643	1294	3.3
TP05-61	Tailings Dam	6 620 291	592 676	1290	3.2
TP05-62	Tailings Dam	6 620 122	592 688	1290	3.2
TP05-63	Tailings Dam	6 620 242	592 509	1306	3.4
TP05-64	Tailings Dam	6 620 572	592 437	1306	3.3
TP05-65	Tailings Dam	6 620 319	592 018	1364	3.6
TP05-66	Tailings Dam	6 620 257	592 201	1344	4.7
TP05-67	Cinder Area	6 620 100	592 145	1361	3.5
TP05-68	Cinder Borrow	6 620 000	592 009	1385	2.7
TP05-69	Cinder Borrow	6 620 031	592 295	1343	3.8
TP05-70	Cinder Area	6 619 890	592 435	1346	2.9
TP05-71	Cinder Borrow	6 619 765	592 345	1379	3.8
TP05-72	Cinder Borrow	6 619 619	592 459	1378	1.9
TP05-73	Cinder Borrow	6 619 642	592 470	1374	4.5
TP05-74	Cinder Area	6 620 201	592 359	1335	4.5
TP05-100	Boulder Creek	6 612 966	589 666	948	n/a
TP05-101	Boulder Creek	6 613 076	590 074	934	n/a
TP05-102	Pink Cinder Area	6 167 480	593 740	1155	n/a
TP05-103	Pink Cinder Area	6 167 370	593 690	1155	n/a
TP05-104	Grey Cinder Borrow	6 618 157	593 594	1197	n/a
TP05-105	Grey Cinder Borrow	6 618 255	593 413	1254	n/a

III-3. Becker Testing Program

The drilling program consisted of open-end Becker drill holes and closed-end Becker Penetration Test (BPT) holes, and was conducted from September 6 to October 20, 2005. The drilling contractor was Foundex Explorations Ltd. of Surrey, BC. Twenty-five holes at seventeen locations were drilled using a truck-mounted model HAV-180 Becker hammer drill rig. Double-walled 168 mm diameter casings were driven into the ground in 3 m lengths with an ICE 180 double-acting diesel pile hammer having a manufacturer's rated hammer energy of 11 kJ per blow. The drilling program is summarized in Table III-2. Complete drill logs are presented in Appendix III-B.

Table III-2 Summary of 2005 Becker Testing Program

Hole #	Dates	Location	Northing (m)	Easting (m)	Ground Elevation (m)	Open/ Closed End Becker	Max. Test Depth (m)
BKS05-01	Sep. 6-7	North Borrow	6,622,037	591,464	1376	Open	9.2
BKS05-02	Sep. 7-8	North Borrow	6,622,262	592,085	1379	Open	7.9
BK05-03	Sep. 9	Mill	6,620,673	589,992	1459	Open	8.5
						Closed	5.2
BK05-04	Sep. 9, 16	Mill	6,620,735	590,500	1450	Open	3.4
						Closed	2.8
BK05-05	Sep. 16-17	Mill	6,620,821	590,650	1458	Open	4.2
						Closed	3.0
BKS05-06	Sep. 19	East Borrow	6,621,741	592,639	1408	Open	2.5
BKS05-07	Sep. 19	East Borrow	6,621,337	592,601	1340	Open	2.6
BKS05-08	Sep. 20	East Borrow	6,621,591	592,380	1347	Open	12.4
BKS05-09	Sep. 21-22	East Borrow	6,621,807	592,303	1378	Open	14.8
BKS05-10	Sep. 22-23, 27-30	Tailings Pond	6,621,951	591,910	1356	Open	35.3
BKS05-11	Oct. 2-8	Tailings Pond	6,621,531	592,134	1337	Open	35.2
BK05-12	Oct. 9-10	Tailings Dam	6,620,755	593,068	1348	Open	15.7
						Closed	6.8
BK05-13	Oct. 12-13	Tailings Dam	6,620,810	592,811	1302	Open	10.7
						Closed	4.3
BK05-14	Oct. 14-15	Tailings Dam	6,620,667	592,563	1297	Open	7.0
						Closed	3.7
BK05-15	Oct. 16-17	Tailings Dam	6,620,490	592,138	1340	Open	17.4
						Closed	4.0
BK05-16	Oct. 17-18	Tailings Dam	6,620,350	591,859	1384	Open	8.8
						Closed	7.8
BPT05-17	Oct. 19	Tailings Dam	6,620,406	592,549	1304	Closed	15.8

The open-end Becker drill holes were conducted to determine soil stratigraphy and to retrieve samples. The drill cuttings were lifted to the surface by compressed air circulating through the casings and were discharged through a cyclone. Stratigraphy was determined from these cuttings, and samples were taken every 3 m or whenever a change in soil type was encountered.

The foundation soils beneath the millsite and tailings dam are waste rock and/or coarse sands and gravels with cobbles. Accurate quantification of the Standard Penetration Test (SPT) blowcounts in these cohesionless materials is needed to estimate their static strength and deformation properties, and to predict seismic behaviour during earthquake shaking. Whereas the 50 mm diameter SPT sampler works well in sands and silts, the accuracy of the test method in coarse sands and gravels is substantially reduced. The larger 165 mm diameter Becker Penetration Test (BPT) is accepted as the preferred method for determining equivalent SPT values in sands and gravels.

Becker Penetration Tests (BPTs) were conducted for the tailings dam and mill site holes to determine the penetration resistance or density of the soil. During ground penetration, the following data were recorded:

- The number of blows for every 0.3 m of casing penetration;
- Hammer bounce chamber pressures using a computerized data acquisition system;
- Casing friction measurements from pull-up tests. During each casing add-on, the casing was pulled up and the pull-up tension force was measured with a load cell connected to the top of the casing. The pull-up force is a measure of the skin friction developed on the outside of the Becker casing during the penetration test.

Equivalent $(N_1)_{60}$ values were derived from the BPT's using two methods proposed by Harder (1994) and Sy (1993). The Harder method uses the measured bounce chamber pressure of the Becker hammer and does not explicitly consider the effect of casing friction. This could result in unrealistically low $(N_1)_{60}$ values for shallow looser soils. The Sy method uses energy transmitted to the casing by the Becker hammer, measured by the Pile Driving Analyzer (PDA). The PDA was used for the HAV-180 rig at Faro, Yukon, immediately prior to starting the investigation at Ruby Creek. An energy value of 25% at the lower range of tested values at Faro was applied to the Ruby Creek data. Using a lower energy value was deemed conservative, because it results in lower equivalent $(N_1)_{60}$ values. The Sy method $(N_1)_{60}$ values were adopted for design. The interpreted equivalent $(N_1)_{60}$ values are presented in Appendix III-C. The Sy method $(N_1)_{60}$ values are shown on the Geologic Sections in Drawing D-4005.

Standard Penetration Tests (SPTs) were conducted in some holes (BKS05-01, BKS05-02, BKS05-08, BKS05-09, BKS05-10, and BKS05-11) to collect split spoon samples. These samples were not as disturbed as the cuttings samples and were used to get a better idea of the in situ composition of the soil. However, this method generally resulted in poor sample recovery due to the presence of gravelly soils.

III-4. Hydraulic Conductivity Testing and Water Level Measurements

Piezometer Installations and Water Levels

Ten piezometers were installed, as summarized in Table III-3. Schedule 40 PVC pipe was used for all installations. The screens were installed in a variety of soil units, but primarily targeting highly permeable zones. Silica sand was placed in the annular space between the borehole wall and piezometer screen to a distance of 0.3 m to 0.6 m above the screen, slowly withdrawing the Becker casing as more sand was added. Approximately 0.9 m of bentonite was then placed above the filter sand. Time-release bentonite tablets were used to avoid bridging inside the Becker casing when installing in wet conditions. If a second piezometer was specified within the same hole, the casing was pulled back to the second target installation depth, and the interval between the first and second piezometer screen was filled with bentonite (and filter sand in between if the interval was large). The hole was then filled with drill cuttings or sloughed material from the walls, with about 0.9 m of bentonite chips near the top. A monument was installed to protect the riser pipe, and concrete was poured around the base to hold it in place.

Water level measurements taken for the 2005, 1980, and 1979 piezometers are summarized in Table III-4. Water levels are shown on the Geologic Sections presented in Drawing D-4005.

Table III-3 Summary of Piezometer Installations

DRILLHOLE	DRILLING AND INSTALLATION DATE (2005)	LOCATION	PIEZOMETER[1]	PIPE DIAMETER	NORTHING (m)	EASTING (m)	GROUND ELEVATION (mamsl)	STICK UP (mag)	TOTAL DEPTH (mbg)	AQUIFER MATERIAL AT FILTER PACK DEPTH	FILTER PACK DEPTH (mbg)	SCREEN DEPTH (mbg)	STATIC GROUNDWATER LEVEL [2] (mbg)
BKS05-10	Sep. 22-23, 27-30	Tailings Pond	BKS05-10 (PZ-A)	1”	6,621,951	591,910	1360	0.68	35.3	Bedrock	28.2-32.0	29.0-32.0	7.51
			BKS05-10 (PZ-B)	1”	6,621,951	591,910	1360	0.69	35.3	Gravel and Sand (Till)	12.5-16.6	13.1-16.2	7.18
BKS05-11	Oct. 2-8	Tailings Pond	BKS05-11 (PZ-A)	1”	6,621,531	592,134	1330	0.82	35.2	Gravel and Cobbles (Till)	18.9-22.4	19.4-22.4	4.60
			BKS05-11 (PZ-B)	1”	6,621,531	592,134	1330	0.66	35.2	Sand and Gravel (Fluvial)	14.6-16.8	15.2-16.8	1.46
BK05-12	Oct. 9-10	Tailings Dam	BK05-12 (PZ-A)	2”	6,620,755	593,068	1346	0.74	15.7	Sand and Gravel (Till)	6.9-10.2	7.2-10.2	10.18
BK05-13	Oct. 12-13	Tailings Dam	BK05-13 (PZ-A)	2”	6,620,810	592,811	1314	0.73	10.7	Gravel and Sand (Till)	8.1-9.9	8.4-9.9	-0.08
BK05-14	Oct. 14-15	Tailings Dam	BK05-14 (PZ-A)	2”	6,620,667	592,563	1298	0.68	7.0	Sand and Gravel (Till)	4.4-6.4	4.9-6.4	2.27
BK05-15	Oct. 16-17	Tailings Dam	BK05-15 (PZ-A)	2”	6,620,490	592,138	1340	0.80	17.4	Basalt Flow	15.5-17.4	15.8-17.4	11.80
BK05-16	Oct. 17-18	Tailings Dam	BK05-16 (PZ-A)	2”	6,620,350	591,859	1381	0.83	8.8	Sand and Gravel (Till)	5.6-8.5	6.1-8.5	3.92
BPT05-17	Oct. 19	Tailings Dam	BPT05-17 (PZ-A)	2”	6,620,406	592,549	1297	0.95	15.8	Sand and Gravel (Till/Colluvium)	11.0-14.8	11.7-14.8	1.15

[1] The "A" piezometer is the deepest at each location.

[2] Water level measured within a day of piezometer installation.

mamsl – metres above mean sea level
mbg – metres below ground
mag – metres above ground

Table III-4 Water Level Measurements

Piezometer	Date	Depth of Piezometer [1] (m)	Stick Up [2] (m)	Water Level [1] (m)	Comments
Installed in 1979 and 1980					
DH80-2A	3-Oct-05	16.46	0.66	1.7	30 m deep according to drill log. Blockage?
DH80-2B	3-Oct-05	12.19	0.72	10.6	
DH80-3	3-Oct-05	2.83	0.66	1.14	
DH80-4	3-Oct-05	??	0.43	artesian	
DH80-6	3-Oct-05	18	??	dry	
DH80-9A	3-Oct-05	13.04	0.49	10.03	
DH80-9B	3-Oct-05	7.04	0.22	dry	
DH80-10	3-Oct-05	2.35	0.39	dry	
T-1-79DH	3-Oct-05	3.75	0.3	dry	
T-2-79DH	3-Oct-05	9.35	0.95	dry	
T-3-79DH	3-Oct-05	11.48	0.91	10.335	
T-4-79DHA	3-Oct-05	17.9	5.54	1.13	
T-4-79DHB	3-Oct-05	11.25	5.52	1.33	
T-5-79DH	3-Oct-05	5.6	1.53	2.99	
Installed in 2005					
BKS05-10 (PZ-A)	1-Oct-05	See Table III-3.		8.18	
BKS05-10 (PZ-A)	2-Oct-05			8.205	
BKS05-10 (PZ-A)	3-Oct-05			8.19	
BKS05-10 (PZ-B)	1-Oct-05			7.865	
BKS05-10 (PZ-B)	2-Oct-05			7.875	
BKS05-10 (PZ-B)	3-Oct-05			7.865	
BKS05-11 (PZ-A)	12-Oct-05			5.4	
BKS05-11 (PZ-B)	15-Oct-05			2.12	
BK05-12 (PZ-A)	14-Oct-05			10.92	
BK05-13 (PZ-A)	14-Oct-05			0.67	
BK05-14 (PZ-A)	17-Oct-05			2.95	
BK05-15 (PZ-A)	17-Oct-05			12.54	
BK05-16 (PZ-A)	19-Oct-05			4.75	
BPT05-17 (PZ-A)	20-Oct-05			2.1	

1. Measured from top of riser pipe.
2. Measured from ground level.

Falling Head Test

Falling head tests were performed in all piezometers to determine hydraulic conductivity. Water level readings during the test were taken using a water level datalogger. The tests were conducted by taking an initial water level reading, submerging the datalogger below the static water level, and pouring about 10 litres of water into the standpipe. The datalogger recorded pressure and temperature readings at regular time intervals as the water level dropped, until the water level dropped by at least 75% of its initial rise. The data was then downloaded and hydraulic conductivity was calculated using the Hvorslev (1951) and McElwee et al. (1992) solutions. The falling head test data is presented in Appendix III-D, and summarized in Table III-5.

Packer Testing

Diamond coring into bedrock was conducted in two of the drill holes (BKS05-10 and BKS05-11). NQ3 wire-line coring was used to maximize recovery and minimize core disturbance.

Packer testing was performed in the coring holes to determine the hydraulic conductivity of the bedrock. A single packer was used to test the interval between the bottom of the packer and the bottom of the drill hole. The packer was inflated with compressed nitrogen to a pressure of 300 psi. Constant head testing was performed at three stages of increasing water injection pressure (10, 20, and 40 psi), followed by replication of the first two pressure stages in reverse order. During each stage, pressures were maintained until injection rates (water consumption) had stabilized. The packer test data is presented in Appendix III-D, and summarized in Table III-5.

Table III-5 Summary of Hydraulic Conductivity (K) Testing Results

Falling Head Test Results

Piezometer	K Value (m/s)			Soil Unit	Comments
	Test 1	Test 2	Average		
BKS05-10 (PZ-A)	6.6E-07	6.3E-07	6.5E-07	Fractured Bedrock	
BKS05-10 (PZ-B)	2.9E-06	2.5E-06	2.7E-06	Till	
BKS05-11 (PZ-A)	4.6E-08	4.5E-08	4.6E-08	Till	
BKS05-11 (PZ-B)	1.5E-06	1.3E-06	1.4E-06	Fluvial	
BKS05-12 (PZ-A)	1.4E-06		1.4E-06	Till	
BKS05-13 (PZ-A)	2.7E-06	2.6E-06	2.7E-06	Till	
BKS05-14 (PZ-A)	4.9E-05	4.9E-05	4.9E-05	Till	
BKS05-15 (PZ-A)	2.5E-03	1.0E-03	1.8E-03	Basalt	
BKS05-16 (PZ-A)	5.2E-06	5.2E-06	5.2E-06	Till	
BKS05-17 (PZ-A)	8.0E-06	8.0E-06	8.0E-06	Till/Colluvium	Based on DH80-01

Packer Test Results

Drill hole	Test Interval (meters below ground)	K Value (m/s)	Geologic Unit
BKS05-10	26.8 to 35.2	3.6E-07	Fractured Bedrock
BKS05-11	28.3 to 35.2	5.2E-10	Bedrock

Range of K Values for Geologic Units

Geologic Unit	# of Test Locations	Range of K Values (m/s)	Geometric Mean (m/s)
Till/Colluvium	1	8 E-6	-
Till	6	5E-8 to 5E-6	2E-06
Fluvial	1	1E-06	-
Basalt	1	2E-03	-
Fractured Bedrock	1	4E-7 to 6E-7	-
Bedrock	1	5E-10	-

References

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APPENDIX III-A

Test Pit Logs

KLOHN-CRIPPEN

SYMBOLS AND TERMS
FOR SOIL DESCRIPTION AND TEST HOLE LOGS

BASIC SYMBOLS

SYMBOL VARIATIONS - EXAMPLES(1)

CLASSIFICATION BY PARTICLE SIZE				
		Size Range		
			U.S. Standard Sieve Size	
Name		(mm) (3)	Retained	Passing
Boulders		> 200	8 inch	-
Cobbles		75 - 200	3 inch	8 inch
Gravel:	coarse	19 - 75	0.75 inch	3 inch
	fine	5 - 19	No. 4	0.75 inch
Sand:	coarse	2 - 5	No. 10	No. 4
	medium	0.4 - 2	No. 40	No. 10
	fine	0.075 - 0.4	No. 200	No. 40
Fines (Silt or Clay) (4)		< 0.075	-	No. 200

PROPORTION OF MINOR COMPONENTS BY WEIGHT(2)	
and	35 - 50%
y/ey	20 - 35%
some	10 - 20%
trace	0 - 10%

PARTICLE SHAPE	
Flat	width/thickness > 3
Elongated	length/width > 3

DENSITY OF GRANULAR SOILS		
Description	SPT N (5)	SPT $(N_1)_{60}$ (6)
Very Loose	0 - 4	0 - 3
Loose	4 - 10	3 - 8
Compact	10 - 30	8 - 25
Dense	30 - 50	25 - 42
Very Dense	> 50	> 42

CONSISTENCY OF COHESIVE SOILS			
Description	S_u (7)		SPT N(9)
	(kPa)(3)	(ksf)(8)	
Very Soft	< 12	< 0.25	< 2
Soft	12 - 25	0.25 - 0.5	2 - 4
Firm	25 - 50	0.5 - 1	4 - 8
Stiff	50 - 100	1 - 2	8 - 15
Very Stiff	100 - 200	2 - 4	15 - 30
Hard	> 200	> 4	> 30

---

(1) Only selected examples of the possible variations or combinations of the basic symbols are illustrated.
(2) Example: SAND, silty, trace of gravel = sand with 20% to 35% silt and up to 10% gravel, by weight.
(3) Approximate metric conversion.
(4) Fines are classified as silt or clay on the basis of Atterberg limits (refer to Plasticity Chart).
(5) Standard Penetration Test (SPT) blow count (uncorrected), after Terzaghi and Peck, 1948.
(6) Standard Penetration Test blow count, based on above N value corrected to 60% hammer efficiency and 96 kPa (1.0 ton/ft²) effective overburden pressure, after Skempton, 1986.
(7) Undrained shear strength can be estimated by vane (gives S_u), pocket penetrometer (gives unconfined compressive strength, i.e., 2 S_u), or unconfined compression test (gives 2 S_u).
(8) ksf = 1000 pounds per square foot = 0.5 tsf (ton/ft²) = approximately 0.5 kg/cm².
(9) Very approximate correlation with Standard Penetration Test blow counts, after Terzaghi and Peck, 1948.

KLOHN-CRIPPEN

SYMBOLS AND TERMS
FOR SOIL DESCRIPTION AND TEST HOLE LOGS

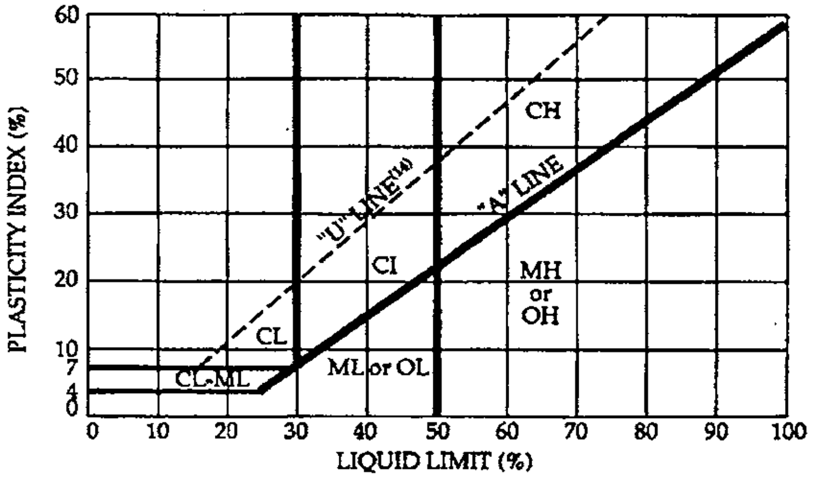
PLASTICITY OF COHESIVE SOILS(10)

Description	Silt	Clay
High	W_L(11) > 50	$W_L > 50$
Medium	–	$30 < W_L < 50$
Low	$W_L < 50$	$W_L < 30$
Non-Plastic	NP(12)	–

SENSITIVITY OF COHESIVE SOILS

Description	Undisturbed Strength(13) / Remoulded Strength
High	>8
Medium	4 to 8
Low	<4

PLASTICITY CHART FOR SOILS PASSING NO. 40 SIEVE(10)



CLASSIFICATION OF GROUND ICE(15)

GROUP		SUBGROUP	
Symbol	Description	Symbol	Description
N	Ice not visible by unaided eye	Nf	Poorly bonded or friable
		Nbn	Well bonded, no excess ice
		Nbe	Well bonded, excess ice
V	Visible ice less than 25 mm thick	Vx	Individual ice crystals or inclusions
		Vc	Ice coatings on soil particles
		Vr	Random or irregularly oriented ice
		Vs	Stratified or distinctly oriented ice
ICE	Visible ice greater than 25 mm thick	ICE + (soil type)	Ice with soil inclusions
		ICE	Ice without soil inclusions

---

(10) This plasticity classification conforms to the Unified Soil Classification System (USCS) and the ASTM D-2487 plasticity chart, except for the addition of an intermediate category for clay, where the liquid limit is between 30% and 50% (CI). Under ASTM and USCS, all clays with a liquid limit less than 50% are classified as low plasticity (CL).

(11) W_L = Liquid Limit (%).

(12) NP = Non Plastic (silts only).

(13) Dimensionless ratio.

(14) "U" Line marks typical upper limit. "A" Line divides clays from silts and organic soils.

(15) For soil descriptions, estimate percentage of ground ice based on volume, after National Research Council of Canada, 1963.

KLOHN-CRIPPEN

SYMBOLS AND TERMS
FOR SOIL TEST HOLE LOGS

TEST TYPES[1]

DH	Drill Hole - *typical drilling methods include tricone, percussion, wash boring, machine auger with SPT or thin-walled tube samples and coring.*
BK	Becker hammer drill hole - *both open and closed test at the same location.*
BKS	Becker hammer drill hole - *open casing, sampled.*
BPT	Becker penetration test - *closed casing.*
TP	Test pit - *machine or hand dug.*
CPT	Electric cone penetration test with pore pressure measurements.
DCT	Dynamic cone penetration test.
VST	Vane shear test.
AH	Auger hole - *machine or hand auger, no SPT or thin-walled tube samples taken.*

IN SITU TESTS OR DOWNHOLE INSTRUMENTATION[2]

BM	Benchmark
DMT	Dilatometer test
IN	Inclinometer
PMT	Pressuremeter test
PT	Permeability test
PZ	Piezometer
SW	Shear wave velocity test

LABORATORY AND/OR FIELD TESTS[3]

S_u Undrained shear strength, measured by:[4]

◆	Field Vane (peak)
◇	Field Vane (remoulded)
■	Lab Vane (peak)
□	Lab Vane (remoulded)
▲	Unconfined Compression
△	Pocket penetrometer

●	Standard Penetration Test (SPT) blow count, uncorrected (N)	
○	W%	In situ moisture content
✕	W_P%	Plastic limit
✕	W_L%	Liquid limit
┐	Becker penetration test blow counts, closed casing	
≶	Becker penetration test blow counts, open casing	
▼ or ▽	Water level, measured on date and from piezometer indicated on log	

OTHER LABORATORY TESTS[5]

CD	Consolidated, drained triaxial test
CUP	Consolidated, undrained triaxial test with pore pressure measurements
CUCY	Consolidated, undrained triaxial test with cyclic loading
UU	Unconsolidated, undrained triaxial test
UC	Unconfined (uniaxial) compression test
DS	Direct shear test
DSS	Direct simple shear test
GSD	Grain size distribution *(by sieve or hydrometer)*
MDR	Moisture-density relationship *(i.e. standard or modified Proctor test)*
ORG	Organic content
OED	Oedometer consolidation test
RD	Relative density *(also known as density index)*
GS	Specific gravity
K	Permeability
UW	Unit Weight

---

(1) Test type abbreviation is typically followed by a two-part number indicating year and chronological sequence of test. Example: CPT93-1 indicates the first electric cone penetration test at a particular site in 1993.
(2) In situ test or downhole instrumentation abbreviations are typically shown in brackets following the appropriate test type designation. Example: DH93-1(PZ) indicates a piezometer was installed in drill hole 93-1.
(3) These symbols are for laboratory and/or field test results shown on the test hole log.
(4) Vane gives S_u. Pocket penetrometer and unconfined compression tests give 2 S_u, so results are divided by 2 for plotting on log.
(5) Where other laboratory test results are available but not shown on the test hole log, the applicable abbreviation appears under the heading *"Other Tests"* on the log.

TEST PIT LOG

Su - kPa

20 60 100 140 180

STARTED: 9/1/2005 **FINISHED:** 9/1/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1546.0

COORDINATES (m): N 6619611 E 589901

VANE PEAK FIELD ◆ LAB ■ ▲UC/2

REMOLD ◇ □ △P.PEN/2

★ % FINES

W_P% W% W_L%

× – – – – o – – – – ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				SAND and GRAVEL (SG), some cobbles, occasional boulder, trace silt, brown, damp.	
1.0 – 1.3	Grab	1			
3.5				- seeps observed at bottom of pit	
3.60 1542.4				End of Hole at 3.60 m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-01

TEST PIT LOG

STARTED: 9/1/2005 **FINISHED:** 9/1/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1536.0

COORDINATES (m): N 6619648 E 589943

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2

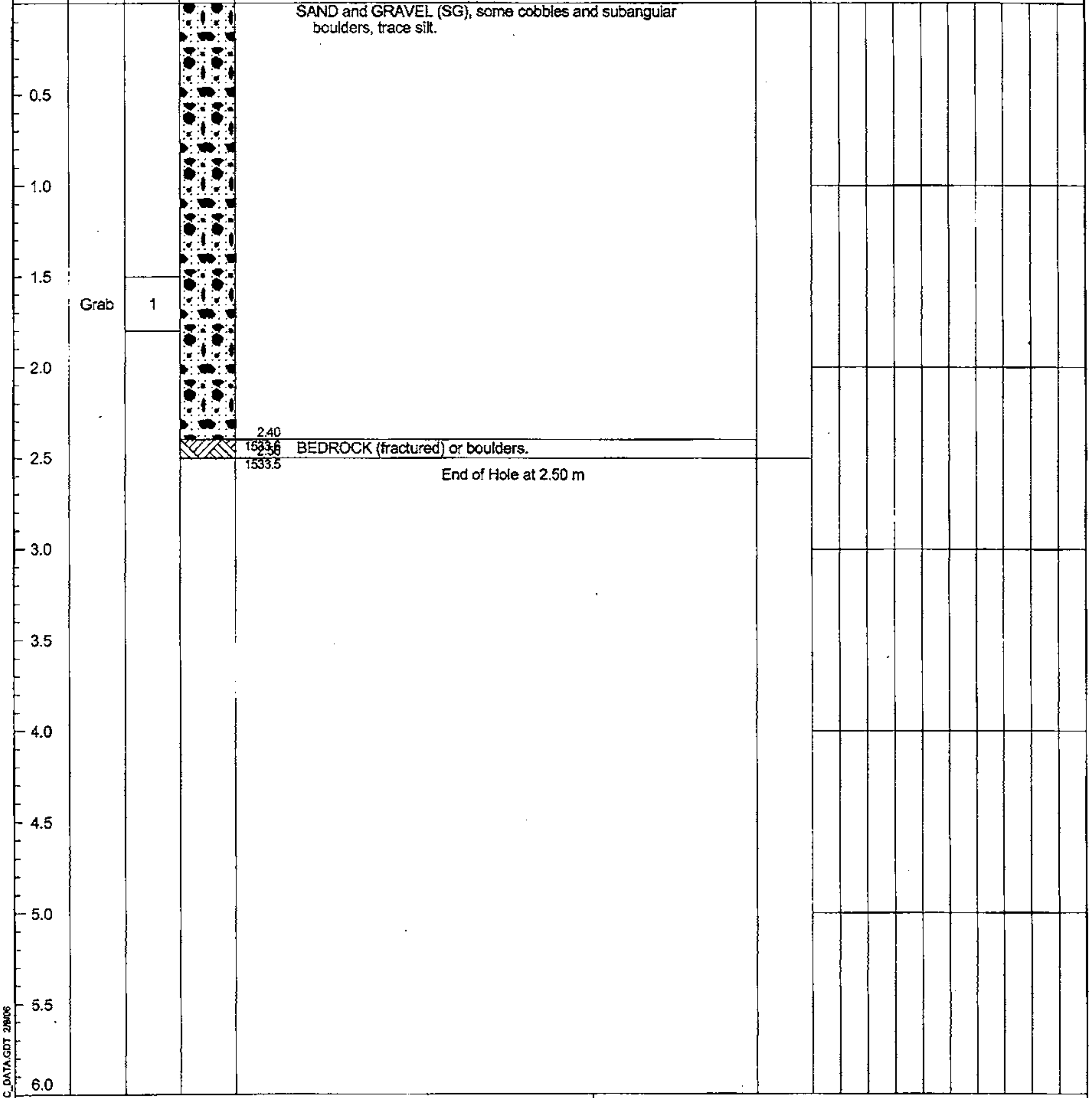
REMOLD ◇ ☐ △P.PEN/2

★ % FINES

$W_p\%$ × – – – – – ○ W% – – – – – × $W_L\%$

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0 – 2.40	Grab	1	SAND and GRAVEL (SG), some cobbles and subangular boulders, trace silt.	
2.40 (1533.6) – 2.50 (1533.5)			BEDROCK (fractured) or boulders.	
			End of Hole at 2.50 m	



KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-02

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/5/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1555.0

COORDINATES (m): N 6619372 E 589830

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■
REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES

$W_P\%$ × – – – – ○ W% – – – – × $W_L\%$
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0 – 1.20				Coarse SAND and GRAVEL (SG), some angular cobbles and boulders, occasional large boulders, light brown, saturated.	
1.0	Grab	1			
1.20 1553.8				End of Hole at 1.20 m Note: Water at surface (moss).	
1.5					
2.0					
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-03

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/2/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1581.0
COORDINATES (m): N 6620076 E 588752

Su - kPa
20 60 100 140 180
VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.5 1.0 1.5 2.0				SAND and subangular GRAVEL (SG), occasional subangular and subrounded boulders, trace silt, unsorted, damp.	
	Grab	1		2.40 1578.6	
2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0				End of Hole at 2.40 m	

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-04

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/2/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1576.0

COORDINATES (m): N 6619984 E 288653

Su - kPa: 20 60 100 140 180

VANE	FIELD	LAB	
PEAK	●	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

W_P% × – – – – ○ – – – – × W_L%; W% ○

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				SAND (med-coarse) and GRAVEL (med-large) (SG), subangular and subrounded, occasional large boulder, trace silt	
1.5	Grab	1		Water flowing in rapidly.	
2.40 1573.6				End of Hole at 2.40 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-05

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/2/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1597.0

COORDINATES (m): N 6619911 E 588501

Su - kPa

20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

$W_P\%$ $W\%$ $W_L\%$

× - - - - - o - - - - - ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				SAND (coarse) and GRAVEL (fine-coarse) (SG), subangular, some cobbles, occasional boulders, trace silt.	
0.5					
1.0					
1.5	Grab	1		Very large boulder. In front of boulder exc to 2.7 m.	
2.0				Water present.	
2.5					
3.0				3.00 1594.0 End of Hole at 3.00 m	
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-06

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/2/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1620.0

COORDINATES (m): N 6620580 E 589069

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			GRAVEL and cobbles, some (20%) boulders (angular and sub-angular), some sand, trace of yellow silt, damp, not cohesive.	
0.5				
1.0				
1.5				
2.0				
2.5				
3.0	Grab	1	- Slow inflow of water	
3.10 1616.9			- Large Boulder (or bedrock).	
			End of Hole at 3.10 m	
			Note: On road over scree slope.	
3.5				
4.0				
4.5				
5.0				
5.5				
6.0				

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 OF 1 **HOLE NO.:** TP05-07

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ ◻ △P.PEN/2
★ % FINES
W_P% W% W_L%
× - - - - o - - - - ×
20 40 60 80

STARTED: 9/2/2005 **FINISHED:** 9/2/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1601.0

COORDINATES (m): N 6620720 E 588924

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				SAND (med) and COBBLES (subangular) (SG), some boulders (angular), trace silt, damp.	
1.8				Water flowing in.	
2.0	Grab	1			
2.70 1598.3				Big boulder? End of Hole at 2.70 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-08

KLOHN CRIPPEN

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/2/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1595.0

COORDINATES (m): N 6620751 E 589254

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB	
PEAK	●	■	▲UC/2
REMOLD	◇	□	△P.PEN/2

★ % FINES

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0–2.00				SAND (fine-coarse) and GRAVEL (fine-coarse) (SG), some cobbles (angular and sub-angular), some boulders, trace silt, brown, unsorted. Ground is saturated.	
1.7–2.0	Grab	1			
2.00 1593.0				End of Hole at 2.00 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-09

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_P% W% W_L%
× - - - - ○ - - - - ×
20 40 60 80

STARTED: 9/2/2005 **FINISHED:** 9/2/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1426.0
COORDINATES (m): N 6620851 E 590182

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL		DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
					Pea GRAVEL (campsite).	
				0.20 1425.8	SAND AND GRAVEL (SG), medium to coarse sand, fine to coarse gravel, some cobbles, trace silt, light brown.	
0.5						
1.0						
1.5						
2.0	Grab	1				
2.5	Grab	2		2.50 1423.5	SAND AND GRAVEL (SG), fine to coarse gravel, dark brown. Particle size (45.3% gravel, 42.6% sand, 12.0% fines)	
3.0						
3.5						
4.0	Grab	3				
				4.20 1421.8	End of Hole at 4.20 m Notes: No hard surface encountered. Walls holding near vertical. Some subangled boulders in walls.	
4.5						
5.0						
5.5						
6.0						

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-10

TEST PIT LOG

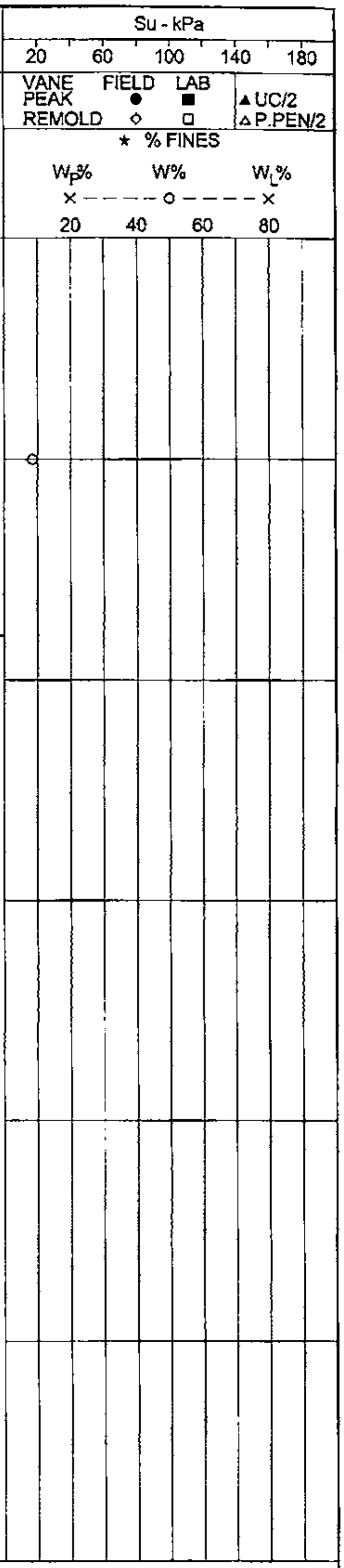
STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1424.2

COORDINATES (m): N 6620842.809 E 590354.422

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL		DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
					HUMUS (ORGANICS), dark brown.	
0.5				0.40 1423.8	GRAVEL AND SAND (SG), some cobbles, trace organics, trace silt, brown, damp.	
	Grab	1				
					- yellow and saturated at 1 m.	
1.0					SAND AND GRAVEL (SG), medium to coarse silty sand, fine to coarse gravel, angular, yellow, damp.	
	Grab	2				
1.5	Grab	3		1.70 1422.5 1.80	BEDROCK or boulders, fractured.	
				1422.4	End of Hole at 1.80 m	
2.0						
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						



KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-11

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1452.4

COORDINATES (m): N 6620663.168 E 590353.918

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲UC/2
REMOLD	◇	□	△P.PEN/2

★ % FINES

W_P% W% W_L%
×- - - - -○- - - - -×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			ORGANICS	
0.60 1451.8			GRAVEL AND SAND (SG), fine to coarse gravel, medium to coarse sand, some cobbles, occasional boulder, trace silt, sub-angular to angular, light brown, wet.	
1.3	Grab	1		
1.70 1450.7			BEDROCK or boulders, fractured.	
1.80 1450.6			End of Hole at 1.80 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-12

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1445.2

COORDINATES (m): N 6620764.019 E 590468.257

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2

REMOLD ◇ ◻ △P.PEN/2

★ % FINES

W_P% W% W_L%

× — — — ○ — — — ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.00				ORGANICS	
0.60 1444.6	Grab	1		SAND AND GRAVEL, fine to coarse, trace silt, trace cobbles, occasional angular and sub-angular boulders, wet.	
1.70 1443.5				BEDROCK or boulder, fractured.	
1.80 1443.4				End of Hole at 1.80 m	

DEPTH (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-13

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1451.9

COORDINATES (m): N 6620767.869 E 590563.718

Su - kPa
20 60 100 140 180
VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_p% W% W_L%
× ---- ○ ---- ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			ORGANICS	
0.5			0.50 1451.4 SAND AND GRAVEL (SG), fine to coarse, some cobbles, some boulders, trace silt, sub-angular, light brown, loose, moist	
1.0	Grab	1	Particle size (68.3% gravel, 25.5% sand, 6.2% fines) -water seep at 1.2 m	
1.5				
2.0			2.20 1449.7 2.30 BEDROCK or boulders, fractured. 1449.6	
2.5			End of Hole at 2.30 m	
3.0				
3.5				
4.0				
4.5				
5.0				
5.5				
6.0				

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-14

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1440.9

COORDINATES (m): N 6620884.738 E 590605.317

Su - kPa

20 60 100 140 180

VANE	FIELD	LAB
PEAK	◆	■
REMOLD	◇	□

▲ UC/2
△ P.PEN/2

★ % FINES

W_P% W% W_L%

× - - - - - ○ - - - - - ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, topsoil.	
0.5					
1.0				1.00 1439.9 SAND AND GRAVEL (SG), fine to coarse, some cobbles, some boulders, sub-angular, wet.	
	Grab	1			
1.5					
				1.80 1439.1 1.90 BOULDERS, hard bottom.	
2.0				1439.0 End of Hole at 1.90 m	
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-15

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1450.6

COORDINATES (m): N 6620900.003 E 590710.027

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2

REMOLD ◇ □ △ P.PEN/2

★ % FINES

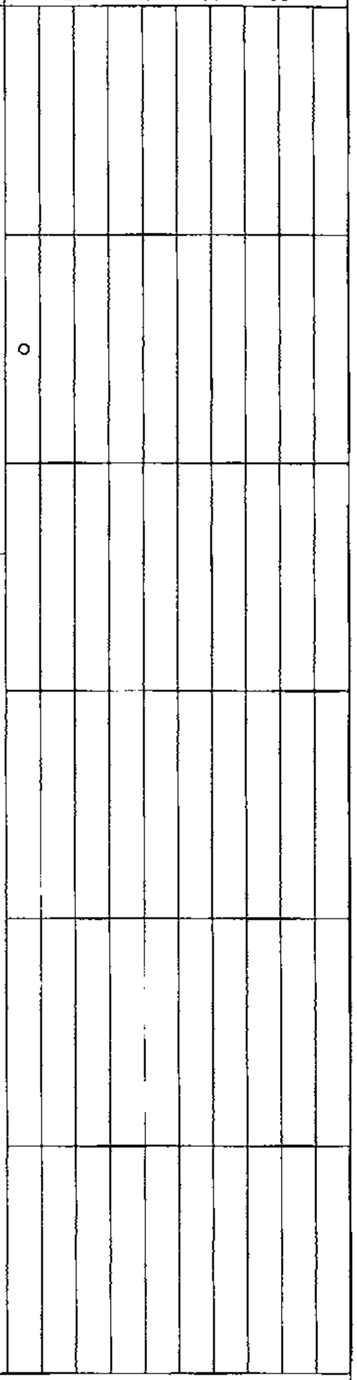
W_P% W% W_L%

× - - - ○ - - - ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0 – 0.50			BOULDERS (angular) and organics. -cobbley.	
0.50 1450.1			SAND AND GRAVEL (SG), medium to coarse, some cobbles, trace silt, moist.	
1.6	Grab	1	- becomes wet at 1.6 m	
2.40 1448.2			End of Hole at 2.40 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 OF 1 **HOLE NO.:** TP05-16

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): N/A

COORDINATES (m): N 6620988 E 590668

Su - kPa
20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■
REMOLD: FIELD ◇ LAB ☐
▲ UC/2
△ P.PEN/2
★ % FINES

W_P% W% W_L%
× - - - - ○ - - - - ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.40			ORGANICS, dark brown. -boulders and cobbles, sub-angular. beside TP location.	
2.60	Grab (1.6–1.9)	1	SAND AND GRAVEL (SG), fine to coarse, 10% boulders, angular, trace silt. - becomes wet at 2.0 m	
2.70			BEDROCK	
			End of Hole at 2.70 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-17

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1433.8
COORDINATES (m): N 6620918.851 E 590587.223

Su - kPa
20 60 100 140 180

VANE FIELD LAB
PEAK ◆ ■ ▲ UC/2
REMOLD ◇ ◻ △ P.PEN/2
★ % FINES
W_P% W% W_L%
× - - - - ○ - - - - ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			ORGANICS with coarse gravel, cobbles, sub-angular to angular.	
0.30 1433.5			GRAVEL AND COBBLES, some sand, trace silt, loose. - becomes wet at 0.9 m	
1.00 1432.8			COBBLES AND BOULDERS, sub-angular.	
	Grab	1		
2.00 1431.8			End of Hole at 2.00 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-18

TEST PIT LOG

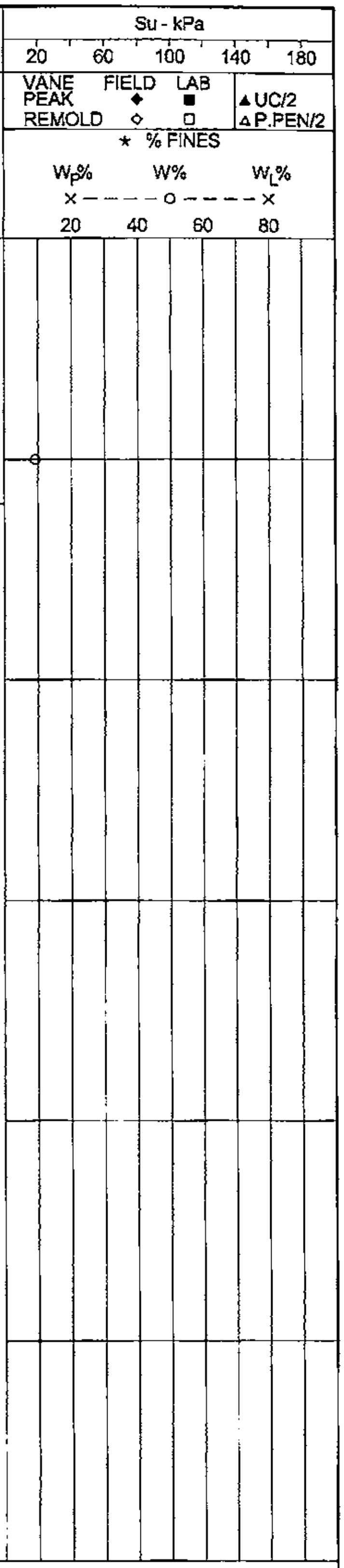
STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1441.2

COORDINATES (m): N 6620831.732 E 590537.043

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS 0.20	
0.5				1441.0 GRAVEL AND COBBLES, sandy to some sand, medium to coarse sand, moist. - becomes wet at 0.65 m 0.90	
1.0	Grab	1		1440.3 Till, grey. 1.10	
				1440.1 1.20 Fractured Bedrock.	
				1440.0 End of Hole at 1.20 m	
1.5					
2.0					
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					



KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-19

TEST PIT LOG

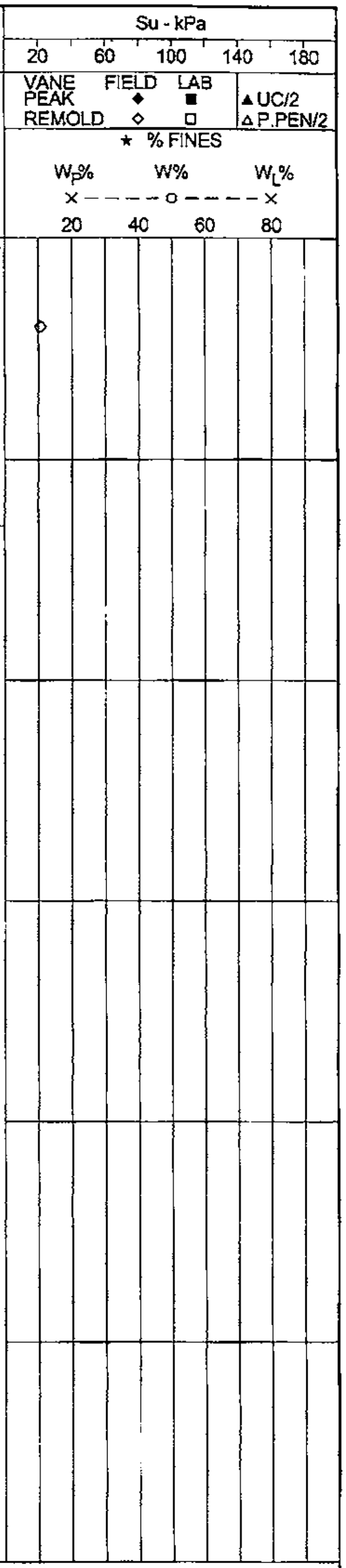
STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1433.8

COORDINATES (m): N 6620787.526 E 590366.938

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				Organics, some cobbles and gravel, some sand and silt, dark brown. 0.30	
0.5 1.0	Grab	1		1433.5 COBBLES AND GRAVEL, some sand, trace silt, some boulders, sub-angular, light brown, wet. - becomes wet at 0.5 m 1.30	
1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0				1432.5 End of Hole at 1.30 m	



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-20

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1392.0
COORDINATES (m): N 6621165 E 590814

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

W_P% W% W_L%
× - - - - o - - - - ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS AND COBBLES/GRAVEL, trace silt, brown, damp.	
0.5	Grab	1		0.80	
1.0				1391.2 GRAVEL, some sand, traces silt, angular, light brown [TILL].	
1.5	Grab	2			
2.0				- refusal at 2.4 m	
2.5				2.40 1389.6 End of Hole at 2.50 m	
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-21

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1348.0
COORDINATES (m): N 6621275 E 591094

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■
REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES
W_P% × – – – – W% o – – – – × W_L%
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			0.10	ORGANICS	
			1347.9	SAND AND GRAVEL (SW-GW), sand (fine to coarse), gravel (fine to coarse), some cobbles, greyish brown, damp. [TILL]	
0.5					
1.0	Grab	1			
			1.20 1346.8	COBBLES AND BOULDERS	
			1.40 1346.6	- refusal at 1.4 m	
1.5				End of Hole at 1.50 m	
2.0					
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-22

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES

W_P% W% W_L%
× — — — — ○ — — — — ×
20 40 60 80

STARTED: 9/3/2005 **FINISHED:** 9/3/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1333.0
COORDINATES (m): N 6621386 E 591015

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS	
0.30 1332.7				GRAVEL AND SAND (GW-SW), some cobbles (subrounded to subangular), trace silt, trace organics, well-graded, greyish brown. [TILL]	
0.5					
1.0	Grab	1			
1.30				- seep observed at 1.3 m	
1331.7				SAND AND GRAVEL (SW-GW) (subangular), trace silt, well-graded, greyish brown, moist. [TILL] - refusal at 3.2 m	
1.5					
2.0					
2.5					
3.0	Grab	2			
3.20 1329.8					
				End of Hole at 3.30 m	
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-23

TEST PIT LOG

STARTED: 9/4/2005 **FINISHED:** 9/4/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1405.0
COORDINATES (m): N 6621315 E 590348

Su - kPa
20 60 100 140 180
VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – – o – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0–0.40			ORGANICS AND SAND/GRAVEL, well-graded, dark brown, damp.	
0.40 1404.6			SAND AND GRAVEL (SW-GW), well-graded, subrounded, moist. [TILL]	
			- brown from 0.4 to 0.9 m	
	Grab	1		
			- greyish brown from 0.4 to 2.4 m	
	Grab	2		
			- brownish grey, more fine sand below 2.4 m	
	Grab	3	- refusal at 3 m	
3.00 1402.0			End of Hole at 3.00 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-24

TEST PIT LOG

STARTED: 9/4/2005 **FINISHED:** 9/4/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1381.0

COORDINATES (m): N 6621604 E 590722

Su - kPa: 20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

$W_P\%$ W% $W_L\%$

× – – – – ○ – – – – ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			ORGANICS AND SAND, some silt, occasional cobbles and boulders, dark brown.	
0.5				
	Grab	1		
1.0				
			- small seep at 1.1 m	
	Grab	2	1.30	
			1379.7 SAND, bouldery, some cobbles (subrounded), some silt, brownish grey. [TILL] - reddish brown from 1.1 to 1.7 m	
1.5				
	Grab	3		
2.0				
2.5	Grab	4		
3.0			3.10	
			1377.9 End of Hole at 3.10 m	
3.5				
4.0				
4.5				
5.0				
5.5				
6.0				

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-25

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

STARTED: 9/4/2005 **FINISHED:** 9/4/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1398.0
COORDINATES (m): N 6621866 E 590834

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0 – 1.70	Grab	1	▨	COBBLES AND BOULDERS, some gravel (med to coarse), trace silt, angular, trace organics. - test pit was dug into the slope beside a road	
1.70 1396.3				End of Hole at 1.70 m	

DEPTH (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/6/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 OF 1 **HOLE NO.:** TP05-26

TEST PIT LOG

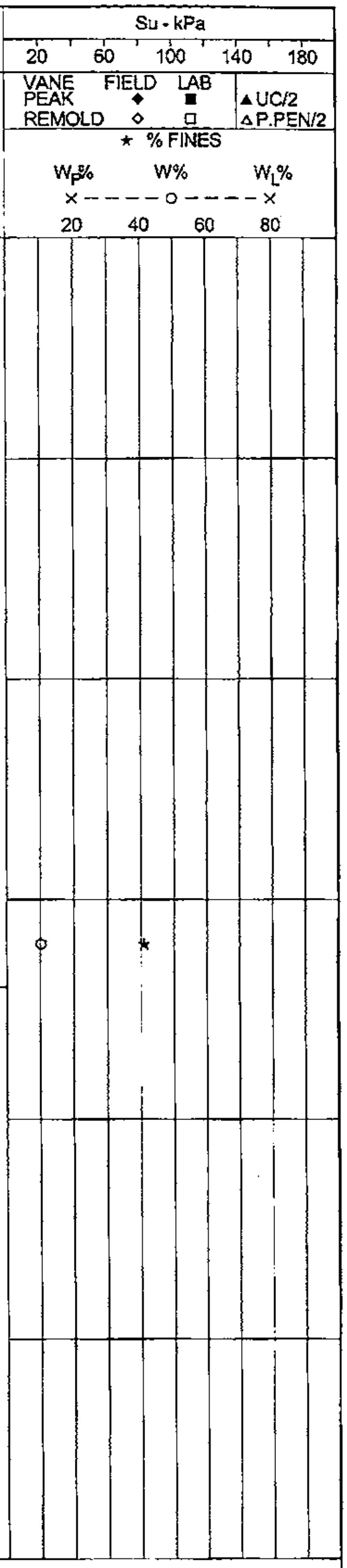
STARTED: 9/4/2005 **FINISHED:** 9/4/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1328.0

COORDINATES (m): N 6621114 E 592676

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, sandy, trace silt, black, moist.	
0.30 1327.7				SAND AND GRAVEL (SW-GW), well-graded, subangular, occasional boulder, moist. [TILL]	
0.5	Grab	1		- brown from 0.3 to 0.7 m	
				- greyish brown, moist to wet.	
1.0					
1.5					
2.0				- seep at 2.1 m	
2.5				- damp below 2.5 m	
3.0					
	Grab	2		- 15% gravel, 44% sand, 41% fines	
3.40 1324.6				- refusal at 3.4 m	
3.5				End of Hole at 3.40 m	
4.0					
4.5					
5.0					
5.5					
6.0					



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-27

KLOHN CRIPPEN

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/5/06

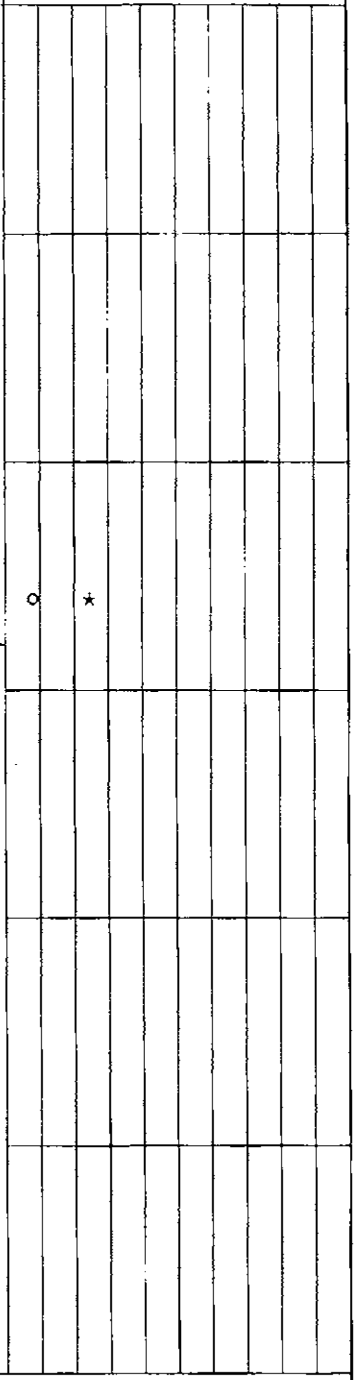
TEST PIT LOG

STARTED: 9/4/2005 **FINISHED:** 9/4/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1362.0
COORDINATES (m): N 6662113 E 592888

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■
REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES
W_P% ×, W% o, W_L% ×: 20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.20 1361.8			ORGANICS AND COBBLES/BOULDERS, some sand, trace silt, light brown.	
			SAND (SP), med to coarse, trace silt, occasional boulders (interlocked, subangular to subrounded), light brown. [TILL]	
1.0	Grab	1		
			- light greyish brown, fewer boulders below 1.3 m	
2.5	Grab	2	- 48% gravel, 28% sand, 25% fines	
2.80 1359.2			- refusal at 2.8 m	
			End of Hole at 2.80 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0



PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-28

KLOHN CRIPPEN

TEST PIT LOG

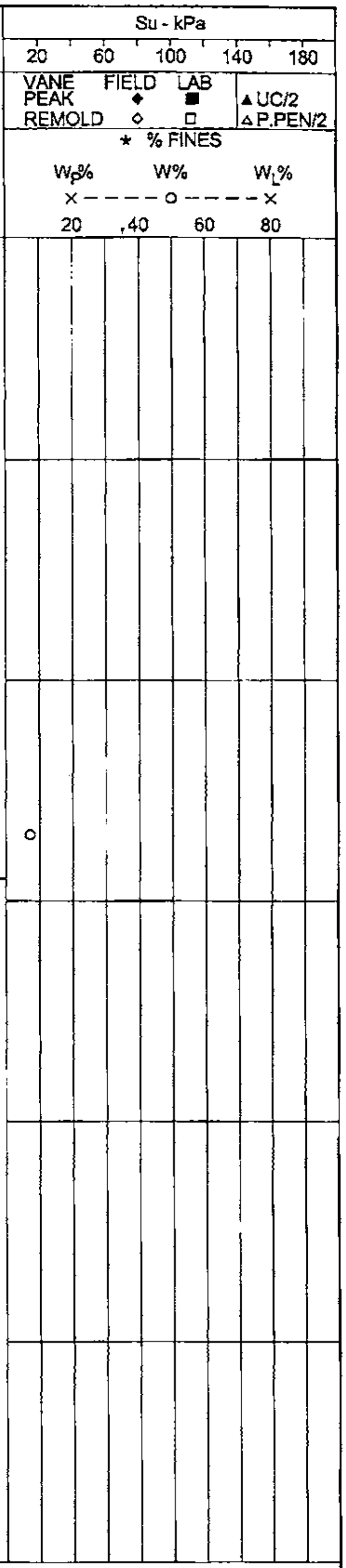
STARTED: 9/7/2005 **FINISHED:** 9/7/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1325.0

COORDINATES (m): N 6621234 E 592536

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	Depth/Elev.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS AND SAND/GRAVEL, some cobbles (subangular), trace silt, light reddish brown, damp.	
0.5	Grab	1			
1.0			0.90 1324.1	SAND and GRAVEL (SW-GW), some cobbles/boulders (subrounded), well-graded, greyish brown, damp [TILL].	
2.5	Grab	2		- boulders at bottom of pit - refusal at 2.9 m	
3.0			2.90 1322.1	End of Hole at 2.90 m	



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-29

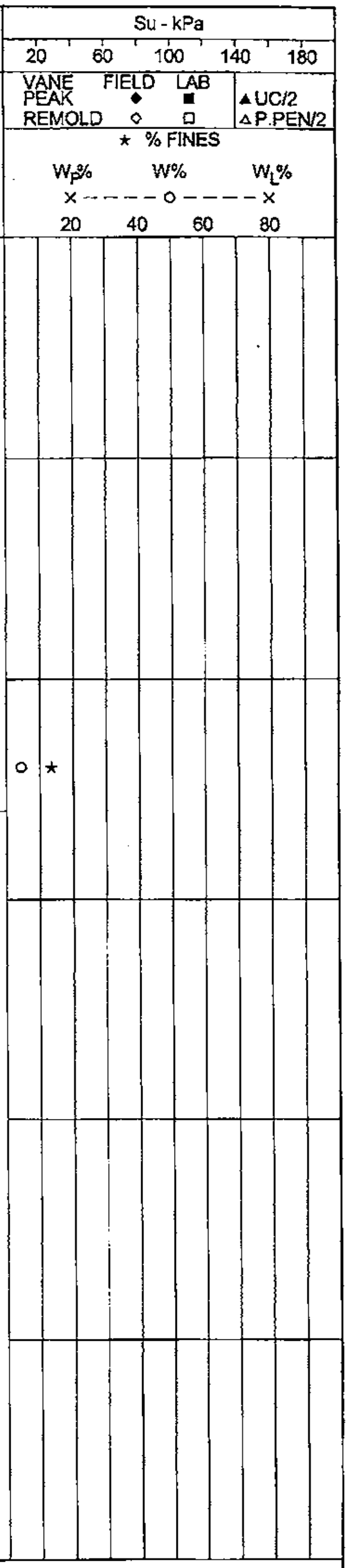
KLOHN CRIPPEN

TEST PIT LOG

STARTED: 9/7/2005 **FINISHED:** 9/7/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1338.0
COORDINATES (m): N 6621412 E 592499

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0 – 0.80	Grab	1		SAND (fine to coarse) and GRAVEL (fine) (SW-GW), some cobbles (subangular), trace silt, occasional boulder, damp. - Medium to dark brown, organics, from 0 to 0.3 m - Light brown, loose to compact from 0.3 to 0.8 m	
0.80 – 2.60	Grab	2	0.80 1337.2	GRAVEL and SAND (GW-SW), some boulders (subrounded to subangular), trace to some silt, occasional cobbles (fine to coarse), dense, greyish brown, damp. [TILL] - 47% cobble, 20% gravel, 20% sand, 13% fines at 2.3 m	
2.60			2.60 1335.4	End of Hole at 2.60 m	

DEPTH (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0



KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-30

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

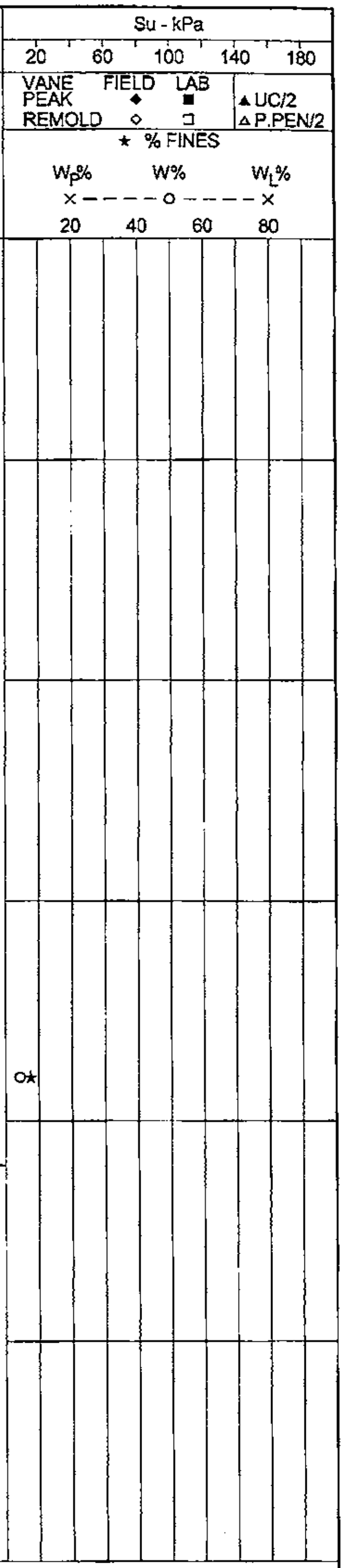
STARTED: 9/7/2005 **FINISHED:** 9/7/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1330.0

COORDINATES (m): N 6621353 E 592254

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			SAND (fine to medium) (SW), some gravel (fine, subangular), some cobbles (subangular), trace boulders (subangular), brown, moist. - Organics from 0 to 0.4 m - Reddish staining	
0.5	Grab	1		
0.90 1329.1			GRAVEL (fine) (GW), sandy (fine to coarse), some cobbles (fine to coarse, subangular), trace boulders (subrounded to subangular), trace silt, dense, greyish brown, moist. [TILL] - Wet at 4.2 m	
3.9	Grab	2	- 68% gravel, 24% sand, 8% fines at 3.9 m	
4.20 1325.8			End of Hole at 4.20 m	



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 OF 1 **HOLE NO.:** TP05-31

KLOHN CRIPPEN

TEST PIT LOG

STARTED: 9/7/2005 **FINISHED:** 9/7/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1358.0

COORDINATES (m): N 6621642 E 592194

Su - kPa
20 60 100 140 180

VANE FIELD LAB
PEAK ◆ ■
REMOLD ◇ □
▲UC/2
△P.PEN/2

* % FINES

W_p% W% W_L%
× ---- o ---- ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0–0.40			BOULDERS and COBBLES, trace sand, trace gravel, trace silt, organics, brown, damp.	
0.40 1357.6			SAND (fine to medium) and COBBLES (subangular), some gravel (fine to coarse, angular), well-graded, dense, greyish light brown, moist. [TILL]	
1.5	Grab	1		
3.70 1354.3			End of Hole at 3.70 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-32

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/7/2005 **FINISHED:** 9/7/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1371.0

COORDINATES (m): N 6621879 E 592160

Su - kPa: 20 60 100 140 180

	FIELD	LAB	
VANE PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

W_P% W% W_L%

× — — — ○ — — — ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				TOPSOIL, some boulders (angular), organics, brown.	
				0.30 1370.7 SAND (fine to coarse) (SW), some gravel, trace cobbles, compact, light brown, damp. [TILL]	
0.5					
				- Greyish brown, occasional boulders below 0.6 m	
1.0					
	Grab	1			
1.5	Grab	2		- Reddish staining, trace silt, damp from 1.5 to 2.1 m	
2.0					
				- Dense below 2.1 m	
				2.30 1368.7 End of Hole at 2.30 m	
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

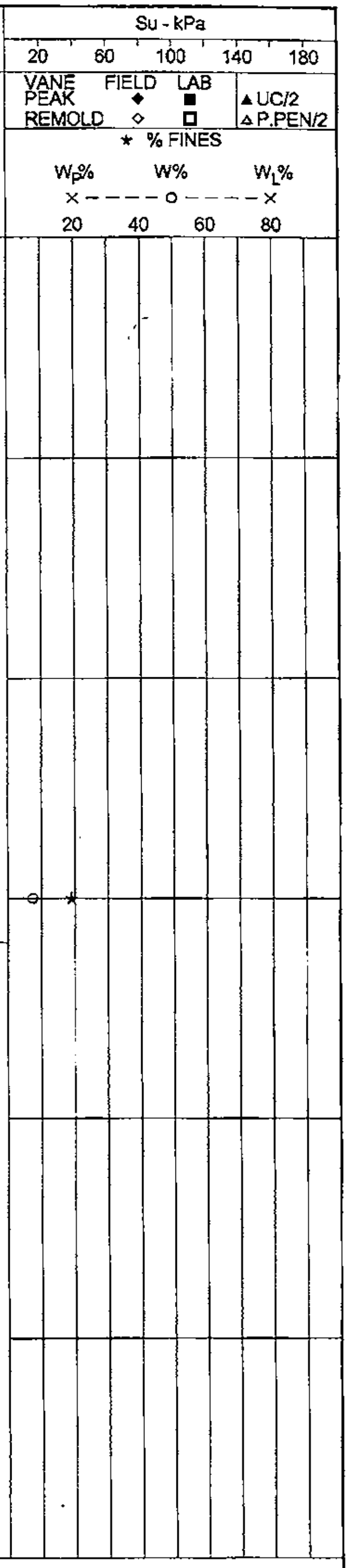
SHEET 1 **OF** 1 **HOLE NO.:** TP05-33

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/7/2005 **FINISHED:** 9/7/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1338.0
COORDINATES (m): N 6621765 E 591881

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	Depth / Elev.	DESCRIPTION OF MATERIALS
0.0				ORGANICS, some angular boulders, dark brown.
0.40			0.40 1337.6	GRAVEL (fine to coarse) (GW), sandy (fine to coarse), some cobbles (fine, subangular), some silt, trace boulders (subangular), compact, moist to wet. [TILL]
1.0				- 3 seeps between 1 m and 1.4 m
1.5	Grab	1		
2.8				- Large seep at 2.8 m
3.0	Grab	2		- 57% gravel, 24% sand, 19% fines at 3.2 m - refusal at 3.2 m
3.20			3.20 1334.8	End of Hole at 3.20 m



PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-34

KLOHN CRIPPEN

TEST PIT LOG

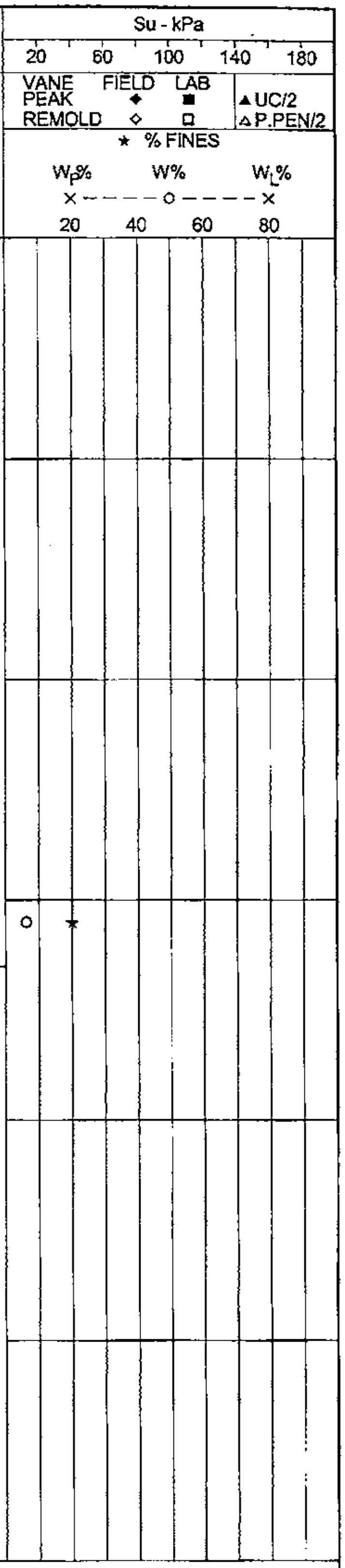
STARTED: 9/7/2005 **FINISHED:** 9/7/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1370.0

COORDINATES (m): N 6622115 E 591770

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.00–0.20			ORGANICS, light reddish brown.	
0.20 1369.8			SAND (SW), well-graded, gravelly (angular), some cobbles (subangular), some silt, trace boulders (subrounded), compact, greyish brown, moist, statified (20 cm thick).	
1.0	Grab	1		
3.2	Grab	2	- 48% gravel, 32% sand, 20% fines at 3.2 m	
3.30 1366.7			- Cobbles and boulders at 3.3 m. End of Hole at 3.30 m	



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-35

TEST PIT LOG

STARTED: 9/8/2005 **FINISHED:** 9/8/2005

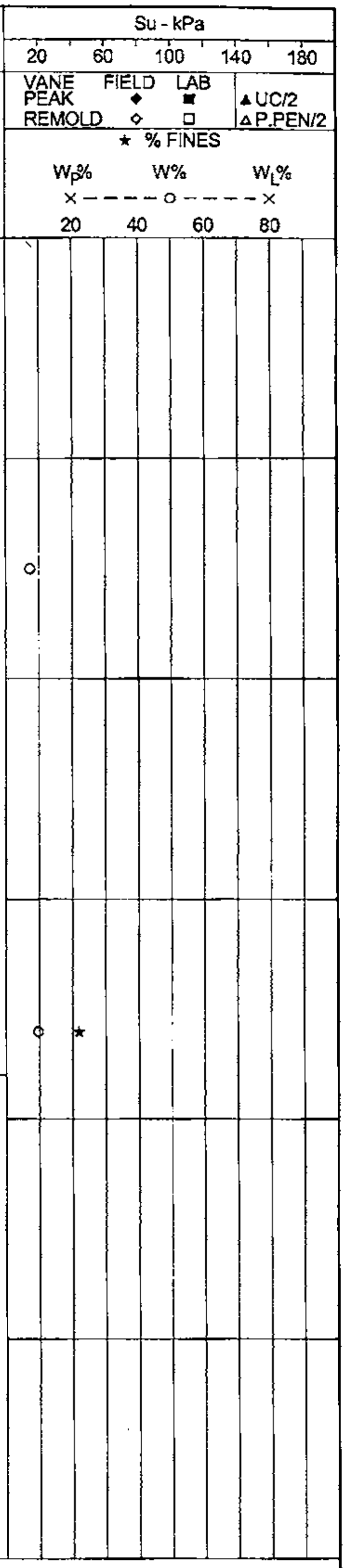
EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1352.0

COORDINATES (m): N 6621871 E 591464

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			ORGANICS, silty, black.	
0.50 1351.5			SAND (fine to coarse), gravelly (fine to coarse, subangular) (SW-GW), some cobbles (subangular), trace silt, occasional boulder, greyish brown, wet. [TILL]	
1.5	Grab	1		
2.5			- Reddish brown from 2.5 to 3.7 m	
3.7	Grab	2	- 31% gravel, 47% sand, 22% fines at 3.7 m	
3.80 1348.2			- refusal at 3.8 m End of Hole at 3.80 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-36

KLOHN CRIPPEN

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/8/2005 **FINISHED:** 9/8/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1393.0

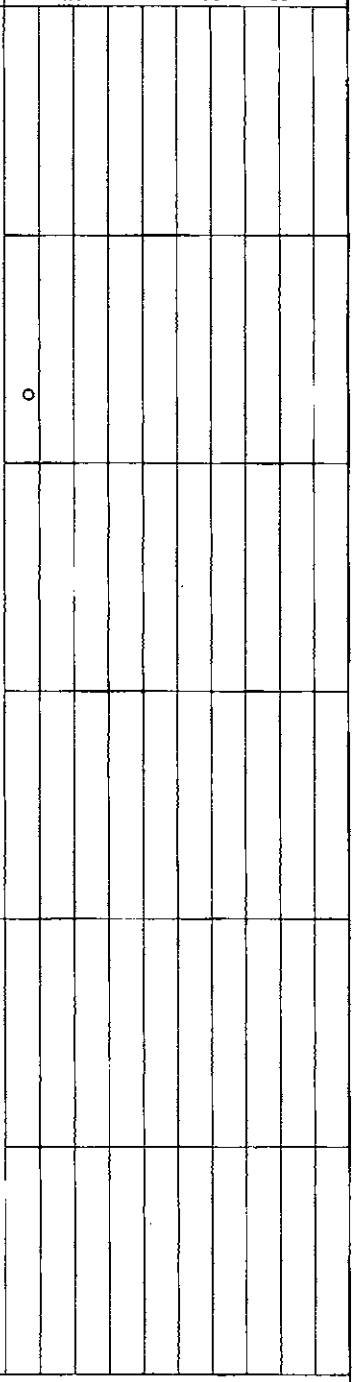
COORDINATES (m): N 6622193 E 591285

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2
★ % FINES

$W_P\%$ × W% ○ $W_L\%$ ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			BOULDERS AND ORGANICS, some sand, some gravel.	
0.40 1392.6			SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace to some silt, dense, occasional boulder. [TILL]	
0.5			- light brown, some silt from 0.4 to 0.9 m	
	Grab	1	- brownish grey, wet below 0.9 m	
1.0			- seeps at 1.0 and 1.7 m	
1.5				
	Grab	2		
2.0				
2.5				
3.0				
3.5			- very dense below 3.8 m	
4.00 1389.0			End of Hole at 4.00 m	
4.5				
5.0				
5.5				
6.0				



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

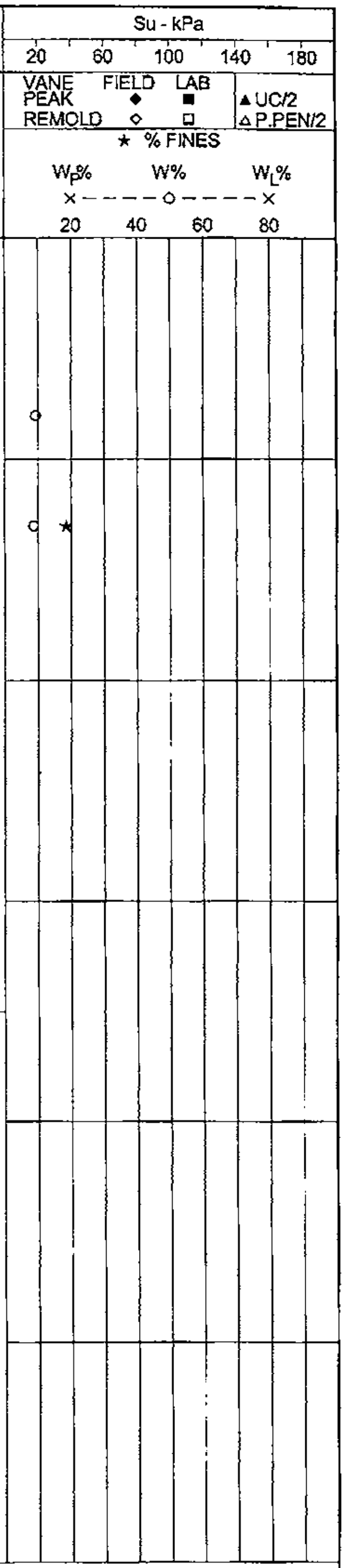
LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-37

TEST PIT LOG

STARTED: 9/8/2005 **FINISHED:** 9/8/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1392.0
COORDINATES (m): N 6622285 E 591684

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			ORGANICS AND BOULDERS	
0.40 1391.6			SAND AND GRAVEL (SW-GW), trace silt, well-graded, light brown, occasional boulder. [TILL]	
			- loose to compact, light brown from 0.4 to 1.2 m	
0.9	Grab	1		
			- several seeps from 1 to 1.2 m	
			- greyish brown, occasional reddish, dense below 1.2 m	
1.4	Grab	2	- 44% gravel, 37% sand, 19% fines at 1.3 m	
			- bouldery, refusal at 3.5 m	
3.50 1388.5			End of Hole at 3.50 m	



KLOHN CRIPPEN

PROJECT NO.: M09222A04	
PROJECT: Ruby Creek Feasibility Study	
LOCATION: Atlin, BC	
LOGGED BY: DB	**CHECKED BY:** FL
SHEET 1 **OF** 1	**HOLE NO.:** TP05-38

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

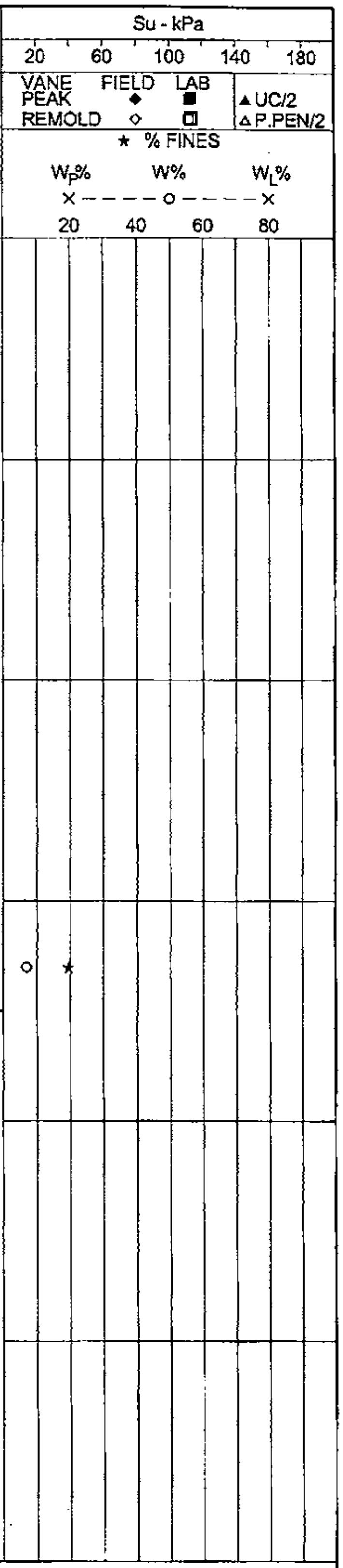
STARTED: 9/8/2005 **FINISHED:** 9/8/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1402.0

COORDINATES (m): N 6662363 E 592103

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			COBBLES AND ORGANICS, brown.	
0.50 1401.5			SAND AND GRAVEL (SW-GW), well-graded, trace silt. [TILL] - cobbly (angular to subangular), light brown, damp from 0.5 to 3.5 m - bouldery (subrounded to subangular), dense, brownish grey, wet from 0.9 to 1.3 m - several small seeps at 1 m - bouldery, dense, brownish grey, damp below 1.3 m	
1.75	Grab	1		
3.4	Grab	2	- 49% gravel, 32% sand, 19% fines at 3.5 m	
3.50 1398.5			End of Hole at 3.50 m	



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-39

KLOHN CRIPPEN

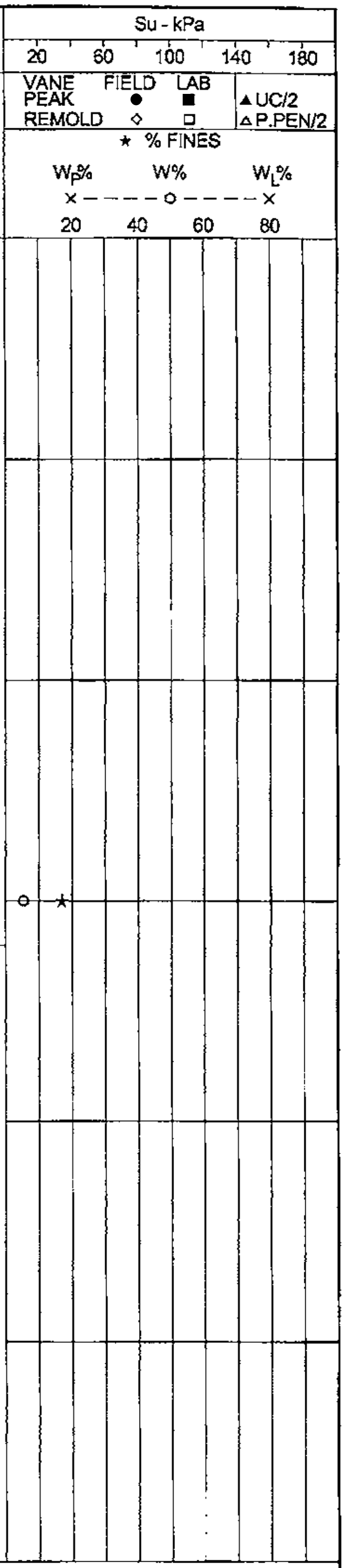
KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

STARTED: 9/8/2005 **FINISHED:** 9/8/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1384.0
COORDINATES (m): N 6622105 E 592155

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS AND BOULDERS, loose, brown.	
0.40			0.40 1383.6	SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt. [TILL] - loose, light brown (some red) from 0.4 to 0.6 m - bouldery, dense, greyish brown below 0.6 m	
1.3	Grab	1			
3.1	Grab	2		- 55% gravel, 28% sand, 17% fines at 3.2 m - refusal at 3.2 m	
3.20			3.20 1380.8	End of Hole at 3.20 m	

DEPTH (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0



PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-40

KLOHN CRIPPEN

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_P% W% W_L%
× - - - - o - - - - ×
20 40 60 80

STARTED: 9/8/2005 **FINISHED:** 9/8/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1404.0
COORDINATES (m): N 6622232 E 592387

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS	Su - kPa / % FINES / W%
			ORGANICS, reddish brown.		
0.50 1403.5			SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, loose to compact. [TILL] - light brown from 0.5 to 0.8 m - dense, greyish brown below 0.8 m - seep at 1.2 m		
	Grab	1			
			- strong seep at 2.9 m - 59% gravel, 25% sand,16% fines at 3.2 m - coarser from 3.2 m, refusal at 3.3 m		o ★
	Grab	2			
3.30 1400.7			End of Hole at 3.30 m		

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-41

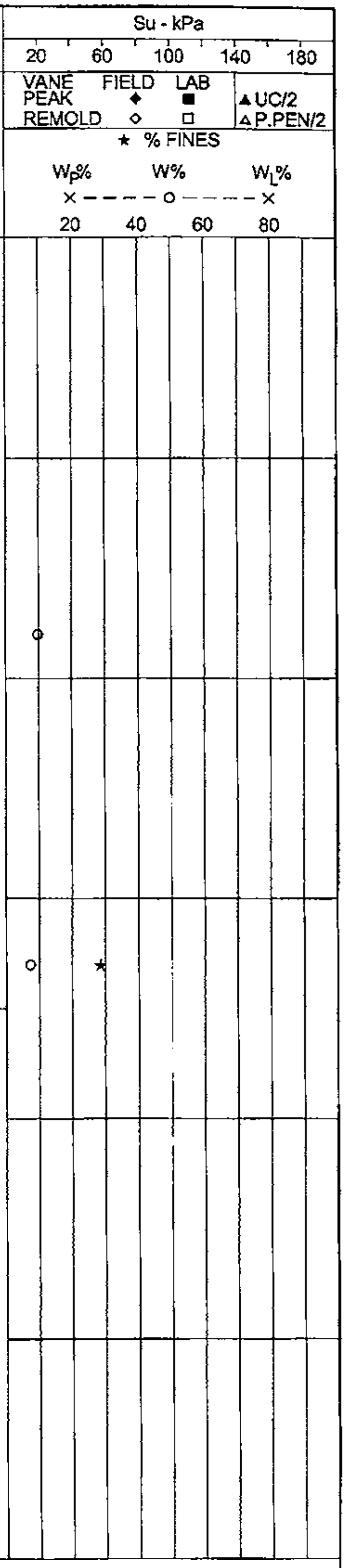
KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/8/2005 **FINISHED:** 9/8/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1418.0
COORDINATES (m): N 6622123 E 592547

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS AND COBBLES	
0.30 1417.7				SAND AND GRAVEL, well-graded, some cobbles, trace silt, occasional boulder. [TILL]	
				- reddish brown from 0.3 to 1 m	
1.0				- compact, greyish brown, damp below 1 m - several seeps at 1 m	
1.9	Grab	1			
3.2				- 39% gravel, 33% sand, 28% fines at 3.2 m	
3.4	Grab	2			
3.50 1414.5				End of Hole at 3.50 m	

DEPTH (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0



KLOHN CRIPPEN

PROJECT NO.: M09222A04	
PROJECT: Ruby Creek Feasibility Study	
LOCATION: Atlin, BC	
LOGGED BY: DB	**CHECKED BY:** FL
SHEET 1 **OF** 1	**HOLE NO.:** TP05-42

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

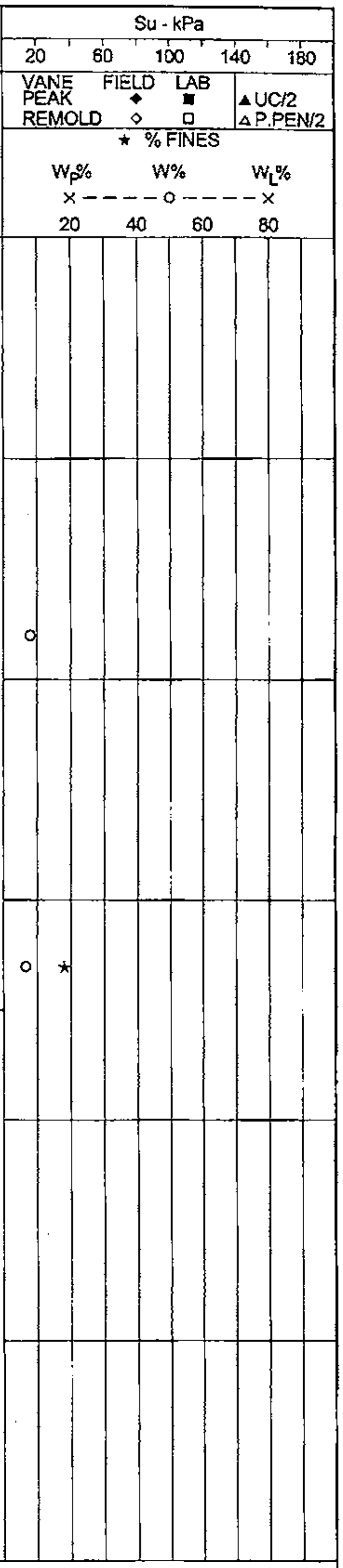
STARTED: 9/8/2005 **FINISHED:** 9/8/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1394.0

COORDINATES (m): N 6621958 E 592366

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
0.00			ORGANICS AND BOULDERS
0.30 1393.7			SAND AND GRAVEL (SW-GW), well-graded, trace cobbles, trace silt, loose, damp. - light brown from 0.3 to 0.6 m - compact, greyish brown below 0.6 m - bouldery below 1.5 m
	Grab	1	
	Grab	2	- 53% gravel, 29% sand, 18% fines at 3.5 m
3.50 1390.5			End of Hole at 3.50 m



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-43

KLOHN CRIPPEN

TEST PIT LOG

STARTED: 9/9/2005 **FINISHED:** 9/9/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1468.0

COORDINATES (m): N 6622948 E 592468

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS AND BOULDERS	
				0.20 1467.8 SAND AND GRAVEL (SW-GW), well-graded, trace cobbles, trace silt. [TILL]	
0.5				- loose to compact, brown from 0.2 to 1.1 m	
	Grab	1			
1.0					
				- gravel (subrounded to subangular) seam from 1.1 to 1.2 m - water seeping from seam - greyish brown, some boulders below 1.2 m	
1.5					
				- gravel seam	
2.0					
2.5					
	Grab	2			
3.0					
3.5					
				- refusal at 3.8 m	
				3.80 1464.2 End of Hole at 3.80 m	
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-44

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

STARTED: 9/9/2005 **FINISHED:** 9/9/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1455.0

COORDINATES (m): N 6622789 E 592648

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES

W_P% W% W_L%
× – – – – o – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS AND SAND/GRAVEL, light brown to reddish brown.	
				0.30 1454.7 SAND AND GRAVEL (SW-GW), well-graded, some cobbles, some boulders, trace silt, compact, moist. [TILL]	
0.5					
1.0				- compact to loose, bouldery below 0.9 m - dry with wetness in cobble seams from 0 to 2 m	
1.5					
2.0				- wet below 2 m	
2.5					
3.0					
3.5					
4.0					
	Grab	1			
4.5					
				- more boulders but easier digging at 4.8 m - reached extent of excavator 4.8 m 4.80	
				1450.2 End of Hole at 4.80 m	
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-45

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/9/2005 **FINISHED:** 9/9/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1450.0

COORDINATES (m): N 6622841 E 592798

Su - kPa: 20 60 100 140 180

VANE	FIELD	LAB	
PEAK	●	■	▲UC/2
REMOLD	◇	◻	△P.PEN/2

★ % FINES

W_p% W% W_L%

× - - - - ○ - - - - ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, dark brown. - standing water on surface	
0.30 1449.7				SAND AND GRAVEL (SW-GW), well-graded, trace cobbles, trace silt. [TILL] - compact, light brown from 0.3 to 0.7 m - brownish grey, wet below 0.7 m - seeps at 0.7 m	
2.0	Grab	1			
				- denser, refusal at 3.3 m	
3.30 1446.7				End of Hole at 3.30 m	

DEPTH (m): 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-46

TEST PIT LOG

STARTED: 9/9/2005 **FINISHED:** 9/9/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1458.0

COORDINATES (m): N 6622875 E 592954

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES

W_P% W% W_L%
× - - - - ○ - - - - ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS, dark brown, saturated.	
0.30 1457.7				SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt. [TILL]	
				- light brown, wet from 0.3 to 0.8 m	
0.5 – 1.0	Grab	1		- dense, brownish grey, moist.	
4.5	Grab	2		- refusal at 4.5 m	
4.50 1453.5				End of Hole at 4.50 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-47

TEST PIT LOG

STARTED: 9/9/2005 **FINISHED:** 9/9/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1448.0

COORDINATES (m): N 6622653 E 592943

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2

REMOLD: FIELD ◇ LAB □ △P.PEN/2

★ % FINES

W_P% × – – – – W% ○ – – – – W_L% ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
0.00			ORGANICS AND GRAVELS, some cobbles, dark brown. - no surface water
0.60 1447.4			SAND AND GRAVEL (SP-GP), poorly graded, some cobbles, trace silt. - compact, damp, light brown from 0.6 to 0.9 m - trace to some silt, compact to dense, damp, occasional boulders below 0.9 m
1.5	Grab	1	
4.20 1443.8			End of Hole at 4.20 m

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-48

TEST PIT LOG

STARTED: 9/9/2005 **FINISHED:** 9/9/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1410.0

COORDINATES (m): N 6621885 E 592533

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2

★ % FINES

W_P% W% W_L%
× – – – – o – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.00			BOULDERS, angular, covered with humus.	
0.50 1409.5			COBBLES AND SAND, subangular, some gravel, compact, light brown.	
1.30 1408.7			SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, dense, brownish grey, moist, occasional boulders. [TILL]	
2.0 – 2.3	Grab	1		
4.2 – 4.3	Grab	2	- 60% gravel, 27% sand, 13% fines at 4.3m - no boulders	
4.30 1405.7			End of Hole at 4.30 m	

DEPTH (m): 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

DEPTH (m)	W%	% FINES
2.0	o	
4.2	o	★

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-49

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

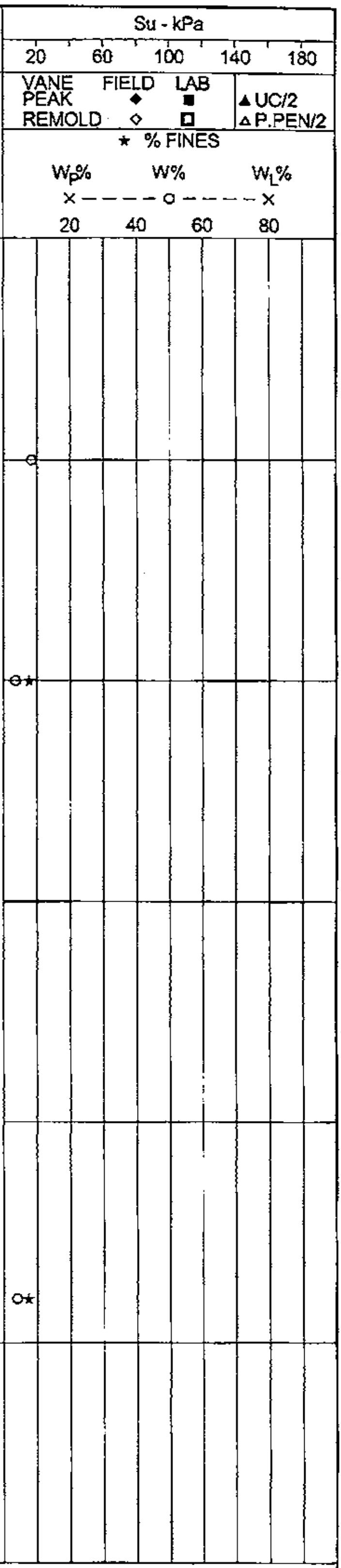
STARTED: 9/10/2005 **FINISHED:** 9/10/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1396.0

COORDINATES (m): N 6621691 E 592576

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0–0.40			ORGANICS AND BOULDERS, some sand, some gravel, trace silt, brown.	
0.40 1395.6			SAND AND GRAVEL (SW-GW), well-graded, some cobbles (subangular to angular), trace silt. [TILL] - reddish brown, damp from 0.4 to 1.2 m - some yellowish brown material at 1.2 m	
1.0	Grab	1	- brownish grey, moist, occasional boulders from 1.2 to 2.1 m	
2.0	Grab	2	- 43% gravel, 19% sand, 8% fines at 2 m - some boulders, brownish grey, moist from 2.1 to 4.0 m	
4.0			- brownish grey, moist, fewer boulders, easy digging below 4 m	
5.00 1391.0	Grab	3	- 29% gravel, 19% sand, 8% fines at 5 m	
			End of Hole at 5.00 m	



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

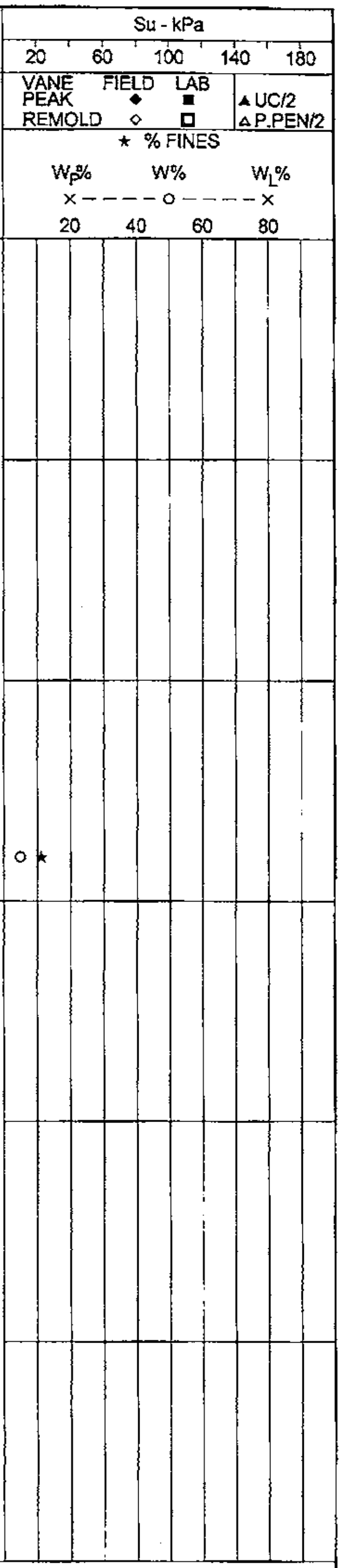
LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-50

TEST PIT LOG

STARTED: 9/10/2005 **FINISHED:** 9/10/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1385.0
COORDINATES (m): N 6621564 E 592634

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				SAND AND ORGANICS, sand (fine to medium), silty, light to medium brown.	
0.5				0.40 1384.6 SAND AND GRAVEL (SW-GW), well-graded, some cobbles (fine to coarse, subangular), compact, brown. [TILL] - several small seeps at 1.0 m	
1.0				1.00 1384.0 SAND (SW) (fine to medium), some gravel, come cobbles/boulders (subrounded), trace silt, brownish grey, damp. [TILL]	
1.5	Grab	1			
2.0				2.00 1383.0 COBBLES AND BOULDERS, possibly fractured bedrock. - refusal at 3.0 m	
2.5					
	Grab	2		3.00 - 67% gravel, 22% sand, 11% fines at 2.9 m	
3.0				1382.0 End of Hole at 3.00 m	
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					



KLOHN CRIPPEN

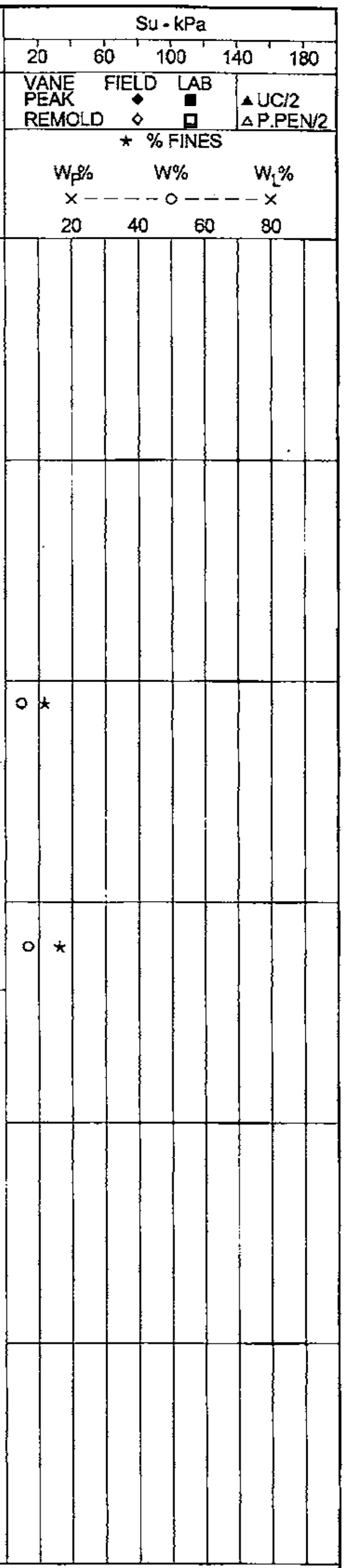
PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-51

TEST PIT LOG

STARTED: 9/10/2005 **FINISHED:** 9/10/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1360.0
COORDINATES (m): N 6621968 E 591912

SAMPLE TYPE	SAMPLE No.	DEPTH (m) / ELEV.	DESCRIPTION OF MATERIALS
			ORGANICS, reddish brown
		0.30 1359.7	SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, dense, light brown. [TILL]
		0.70 1359.3	GRAVEL AND COBBLES, sandy, trace silt, light brown, damp. [TILL]
Grab	1		- 65% gravel, 23% sand, 12% fines at 2.1 m
Grab	2		- 50% gravel, 34% sand, 16% fines at 3.4 m - refusal at 3.4 m
		3.40 1356.6	End of Hole at 3.40 m

INSTRUMENT DETAILS



KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-51A

TEST PIT LOG

STARTED: 9/11/2005 **FINISHED:** 9/11/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1329.0

COORDINATES (m): N 6620649 E 593064

Su - kPa: 20 60 100 140 180

VANE: PEAK FIELD ◆ LAB ■; REMOLD ◇ □; ▲ UC/2; △ P.PEN/2

★ % FINES

W_P% × - - - - ○ W% - - - - × W_L%: 20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	Depth / Elev.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS AND SAND, sand (fine to coarse), brown.	
0.40			0.40 1328.6	SAND AND GRAVEL (SW-GW), well-graded, trace silt, damp. [TILL] - trace cobbles, compact, light brown from 0.4 to 0.7 m - some cobbles (subangular), dense, greyish brown from 0.7 to 2.3 m - several seeps at 2.3 m	
2.30			2.30 1326.7	SAND AND BOULDERS, sand (medium to coarse), gravelly, trace silt, brownish grey, wet. [TILL] - refusal at 3.9 m	
3.7	Grab	2			
3.90			3.90 1325.1	End of Hole at 3.90 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-52

TEST PIT LOG

STARTED: 9/11/2005 **FINISHED:** 9/11/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1320.0

COORDINATES (m): N 6620422 E 593189

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ● LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2

★ % FINES

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0 – 0.40				ORGANICS AND BOULDERS	
0.40 1319.6				SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, subangular. [TILL] - compact, trace organics, greyish brown, damp, occasional boulder from 0.4 to 1.2 m - some boulders, dense, brownish grey from 1.2 to 2.6 m - small seep at 1.4 m	
2.60 1317.4	Grab	2		BOULDERS AND GRAVEL/SAND, trace silt, brownish grey, damp. [TILL] - refusal at 3.0 m	
3.00 1317.0				End of Hole at 3.00 m	

Depth scale: 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 OF 1 **HOLE NO.:** TP05-53

TEST PIT LOG

STARTED: 9/11/2005 **FINISHED:** 9/11/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1288.0

COORDINATES (m): N 6620257 E 593133

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■

REMOLD: FIELD ◇ LAB □

▲ UC/2

△ P.PEN/2

★ % FINES

W_P% ×, W% ○, W_L% ×: 20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS, dark brown, occasional boulder, boggy.	
			0.40 1287.6	SAND AND GRAVEL (SW-GW), well-graded, trace silt. [TILL] - loose to compact, brownish grey, moist from 0.4 to 0.8 m - small seeps at 0.7 m - some cobbles, compact, light brown, damp, occasional boulders from 0.8 to 3.0 m	
0.8	Grab	1			
2.9	Grab	2		- small seep at 3.0 m	
			3.00 1285.0	SILT AND GRAVEL (ML-GP), gravel (fine), trace sand (fine), grey, damp. [TILL]	
3.8	Grab	3			
			3.90 1284.1	End of Hole at 3.90 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 25/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-54

TEST PIT LOG

STARTED: 9/11/2005 **FINISHED:** 9/11/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1278.0
COORDINATES (m): N 6620156 E 592952

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■
REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – ○ – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			ORGANICS, dark brown, occasional boulder.	
0.30 1277.7			SILT (ML), some sand (fine to coarse), some gravel (subangular), some cobbles (subangular), grey, damp.	
0.60 1277.4	Grab	1	SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt. [TILL] - compact, greyish brown, damp, occasional boulder from 0.6 to 1.9 m - seep at 1.1 m	
1.5	Grab	2		
2.0			- some boulders, compact, greyish brown, damp below 1.9 m - red staining on some boulders	
2.8	Grab	3	- refusal at 2.9 m	
2.90 1275.1			End of Hole at 2.90 m	

DEPTH (m): 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-55

TEST PIT LOG

STARTED: 9/11/2005 **FINISHED:** 9/11/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1286.0

COORDINATES (m): N 6620312 E 592888

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

W_P% W% W_L%
× — — — ○ — — — ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, saturated, boggy, sulphur smell.	
0.5				0.50 1285.5 SILT AND SAND (ML), some gravel, some boulders/cobbles. - compact, grey, wet from 0.5 to 1.7 m	
1.0					
	Grab	1			
1.5					
				- light grey, damp from 1.7 to 3.3 m	
2.0					
2.5					
3.0					
	Grab	2			
	Grab	3		3.30 1282.7 SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, very dense, light brown, damp, occasional boulder. [TILL]	
3.5				3.50 1282.5 End of Hole at 3.50 m	
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-56

TEST PIT LOG

STARTED: 9/11/2005 **FINISHED:** 9/11/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1296.0
COORDINATES (m): N 6620365 E 593062

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■
REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES
W_p% ×– – – – W% ○ – – – – W_L% ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			ORGANICS AND SILT, sandy, light brown.	
			0.30 1295.7 SAND AND GRAVEL (SW-GW), well-graded, some cobbles/boulders (subangular), dense, brown, damp. [TILL]	
0.5				
	Grab	1		
1.0				
1.5				
2.0				
	Grab	2	- dark brown material from 2.2 to 2.3 m	
2.5	Grab	3	- more boulders below 2.5 m	
3.0				
3.5				
			- 3 small seeps at 3.6 m	
4.0				
			- refusal at 4.5 m	
4.5			4.50 1291.5 End of Hole at 4.50 m	
5.0				
5.5				
6.0				

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-57

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 29/06

TEST PIT LOG

STARTED: 9/12/2005 **FINISHED:** 9/12/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1300.0
COORDINATES (m): N 6620510 E 592936

Su - kPa
20 60 100 140 180
VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

INSTRUMENT DETAILS

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
			ORGANICS, silty, sandy, brown.
			0.30 1299.7 SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, loose to compact, brown, damp, occasional boulder, stratified (20 cm thick layering). [COLLUVIUM]
0.5			
	Grab	1	
1.0			
			1.20 1298.8 SAND AND GRAVEL (SW-GW), well-graded, some cobbles/boulders, trace silt, compact, brownish grey. [TILL]
1.5			
	Grab	2	- silty zone from 1.6 to 1.8 m
			- seeps at 1.8 m
2.0			
2.5			
3.0			
			- strong seeps at 3.6 m
3.5			
			3.60 1296.4 COBBLES AND GRAVEL, subangular to angular, some boulders, trace sand, trace silt, wet. [TILL]
4.0	Grab	3	
			4.10 1295.9 End of Hole at 4.10 m
4.5			
5.0			
5.5			
6.0			

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-58

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/12/2005 **FINISHED:** 9/12/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1294.0

COORDINATES (m): N 6620573 E 592801

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2

★ % FINES

W_P% × – – – – ○ W% – – – – × W_L%

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			ORGANICS, dark brown, wet, occasional boulder - several seeps at 0.3 m	
0.30 1293.7			SAND AND GRAVEL (SM-GM), silty, dense, grey, wet, reddish stains. [TILL]	
0.5	Grab	1		
0.70 1293.3			SAND AND GRAVEL (SW-GW), trace silt, compact, brownish grey, moist. [TILL]	
1.0				
1.5				
	Grab	2	- some boulders below 1.9 m - seep at 2 m	
2.0				
2.5				
3.0			- refusal at 3.1 m	
3.10 1290.9			End of Hole at 3.10 m	
3.5				
4.0				
4.5				
5.0				
5.5				
6.0				

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-59

TEST PIT LOG

STARTED: 9/12/2005 **FINISHED:** 9/12/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1294.0

COORDINATES (m): N 6620466 E 592643

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2

★ % FINES

W_P% W% W_L%

× – – – – ○ – – – – ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	Elev./Depth	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0 – 0.30				ORGANICS, wet. - water at surface	
0.30 – 1.20			0.30 1293.7	SILT AND SAND (ML), trace gravel, trace cobbles, dense, grey, occasional boulder.	
0.5	Grab	1			
1.20 – 3.30			1.20 1292.8	SAND AND GRAVEL (SW-GW), well-graded, some cobbles/boulders, trace silt, brownish grey, damp. [TILL] - small seep at 1.3 m	
2.0	Grab	2		- large seep at 2 m	
3.3	Grab	3		- refusal at 3.3 m	
3.30			3.30 1290.7	End of Hole at 3.30 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-60

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 29/06

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_P% W% W_L%
× — — — ○ — — — ×
20 40 60 80

STARTED: 9/12/2005 **FINISHED:** 9/12/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1290.0
COORDINATES (m): N 6620291 E 592676

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, dark brown, wet.	
				0.30 - several seeps at 0.3 m	
				1289.7 SAND AND SILT (SM-ML), trace gravel, loose, brown.	
0.5				0.50 1289.5 SAND AND GRAVEL (SW-GW), some cobbles, trace silt, compact to dense, brownish grey, moist, occasional boulder. [TILL]	
1.0					
	Grab	1			
1.5					
	Grab	2		- more boulders below 1.8 m	
2.0					
2.5					
3.0				- refusal at 3.2 m	
				3.20 1286.8 End of Hole at 3.20 m	
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/6/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-61

TEST PIT LOG

STARTED: 9/12/2005 **FINISHED:** 9/12/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1290.0

COORDINATES (m): N 6620122 E 592688

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ | ▲UC/2
REMOLD: FIELD ◇ LAB □ | △P.PEN/2

★ % FINES

$W_P\%$ × – – – – ○ – – – – × $W_L\%$ (W%)

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL		DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				0.30 1289.7	ORGANICS, dark brown, wet.	
				0.50 1289.5	SAND (SP), fine to medium, some gravel, trace silt, brown, 2cm of black silty sand.	
0.5				0.70 1289.3	SAND AND GRAVEL (SP-GP), trace cobbles, loose, wet. - visible flow within this unit	
1.0					SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, dense, brownish grey, occasional boulder. [TILL] - increasing amount of boulders at depth	
1.5	Grab	1				
2.0						
2.5						
3.0	Grab	2		3.20 1286.8	- refusal at 3.2 m	
					End of Hole at 3.20 m	
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-62

TEST PIT LOG

STARTED: 9/12/2005 **FINISHED:** 9/12/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1306.0

COORDINATES (m): N 6620242 E 592509

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES

$W_P\%$ $W\%$ $W_L\%$
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL		DESCRIPTION OF MATERIALS	INSTRUMENT	DETAILS
					ORGANICS AND SAND, dark brown to black.		
				0.20 1305.8	SAND AND GRAVEL (SW-GW), well-graded, very loose, damp, black and red volcanic. [COLLUVIUM]		
0.5	Grab	1					
				0.60 1305.4	SAND AND GRAVEL (SW-GW), well-graded, trace silt, loose, damp. [COLLUVIUM] - brown from 0.6 to 0.9 m - grey silty zone from 0.85 to 0.9 m - some cobbles, light brown from 0.9 to 2.3 m		
	Grab	2					
	Grab	4					
1.0							
1.5	Grab	3					
2.0							
				2.30 1303.7	- sandy silt zone from 2.3 to 2.5 m		
	Grab	5		2.50	- small seeps at 2.5 m		
2.5				1303.5	SAND AND GRAVEL (SW-GW), well-graded, some cobbles/boulders, trace silt, greyish brown. [TILL]		
3.0							
	Grab	6					
				3.40 1302.6	End of Hole at 3.40 m		
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-63

TEST PIT LOG

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■
REMOLD ◇ □
▲UC/2
△P.PEN/2
★ % FINES

W_P% W% W_L%
×-----○-----×
20 40 60 80

STARTED: 9/12/2005 **FINISHED:** 9/12/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1306.0
COORDINATES (m): N 6620572 E 592437

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, dark brown.	
				- seeps at 0.3 m	
0.30 1305.7				SAND AND GRAVEL (SW-GW), trace silt, light greyish brown, occasional cobbles, roots.	
0.5					
0.70 1305.3				SAND AND GRAVEL (SW-GW). well-graded, some cobbles, trace silt, compact, brownish grey, damp, occasional 1 m boulders.	
1.0	Grab	1			
1.5					
2.0					
2.5					
3.0					
				- refusal at 3.3 m	
3.30 1302.7				End of Hole at 3.30 m	
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-64

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

STARTED: 9/14/2005 **FINISHED:** 9/14/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1364.0

COORDINATES (m): N 6620319 E 592018

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.		DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, some boulders (angular), brown.	
			0.40 1363.6	SAND AND GRAVEL (SW-GW), some cobbles, compact, damp.	
0.5					
			0.60 1363.4	SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, compact, light brown, moist, occasional boulders. [TILL]	
1.0	Grab	1			
1.5				- increasing amount of boulders below 1.5 m	
2.0					
2.5	Grab	2			
3.0					
3.5				- refusal at 3.6 m	
			3.60 1360.4	End of Hole at 3.60 m	
4.0					
4.5					
5.0					
5.5					
6.0					

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-65

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/8/06

TEST PIT LOG

STARTED: 9/14/2005 **FINISHED:** 9/14/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1344.0

COORDINATES (m): N 6620257 E 592201

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ●
REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES

$W_P\%$ × - - - - W% ○ - - - - $W_L\%$ ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	Depth / Elev.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			0.10 1343.9	ORGANICS.	
0.10				SAND AND GRAVEL (SW-GW), some cobbles (subangular), trace silt, loose, light brown, moist. [COLLUVIUM]	
1.2–1.5	Grab	1			
2.30			2.30 1341.7	GRAVEL AND COBBLES, no silt.	
2.60			2.60 1341.4	SAND AND GRAVEL (SW-GW), some cobbles, light brown. [COLLUVIUM]	
3.20			3.20 1340.8	SAND AND GRAVEL (SW-GW), some cobbles, trace silt, loose, dark brown, damp. [COLLUVIUM]	
4.3–4.5	Grab	2			
				- limit of excavator at 4.7 m	
4.70			4.70 1339.3	End of Hole at 4.70 m	

Depth scale: 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-66

TEST PIT LOG

STARTED: 9/14/2005 **FINISHED:** 9/14/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1361.0

COORDINATES (m): N 6620100 E 592145

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2

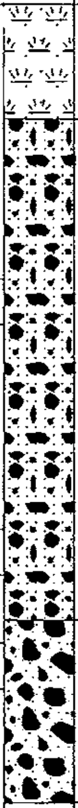
REMOLD: FIELD ◇ LAB □ △P.PEN/2

* % FINES

W_P% W% W_L%

× - - - - ○ - - - - ×

20 40 60 80



DEPTH (m)	SAMPLE TYPE	SAMPLE No.	Depth / Elev.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS AND SAND, dark brown.	
0.5			0.50 1360.5	SAND AND GRAVEL, some cobbles/boulders, loose, light brown. [COLLUVIUM]	
1.2				- roots penetrate to 1.2 m	
1.3	Grab	1			
2.4	Grab	2			
2.7			2.70 1358.3	SAND AND GRAVEL (SW-GW), trace silt, reddish brown. [COLLUVIUM]	
2.9	Grab	3			
3.5				- black basalt at 3.5 m	
3.5			3.50 1357.5	End of Hole at 3.50 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-67

TEST PIT LOG

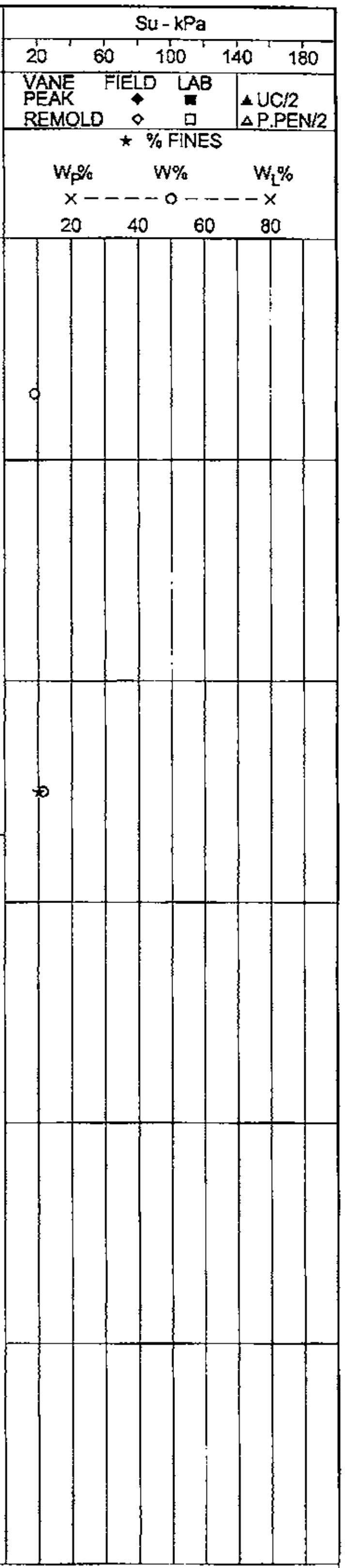
STARTED: 9/14/2005 **FINISHED:** 9/14/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1385.0

COORDINATES (m): N 6620000 E 592009

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS, some boulders (angular), brown. 0.30 / 1384.7 SAND AND GRAVEL (SW-GW), trace cobbles, loose, brown, moist. [COLLUVIUM]	
0.5	Grab	1		- volcanic sand and gravel, black from 0.6 to 0.7 m 0.90 / 1384.1 SAND AND GRAVEL (SW-GW), well-graded, some cobbles/boulders, trace silt, compact. [COLLUVIUM]	
1.0				- greyish brown from 0.9 to 2.5 m	
1.5					
2.0					
2.5	Grab	2		- coarser, light brownish grey below 2.5 m - refusal at 2.7 m, no seeps into pit 2.70 / 1382.3 - 58% gravel, 32% sand, 10% fines at 2.6 m End of Hole at 2.70 m	
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 OF 1 **HOLE NO.:** TP05-68

TEST PIT LOG

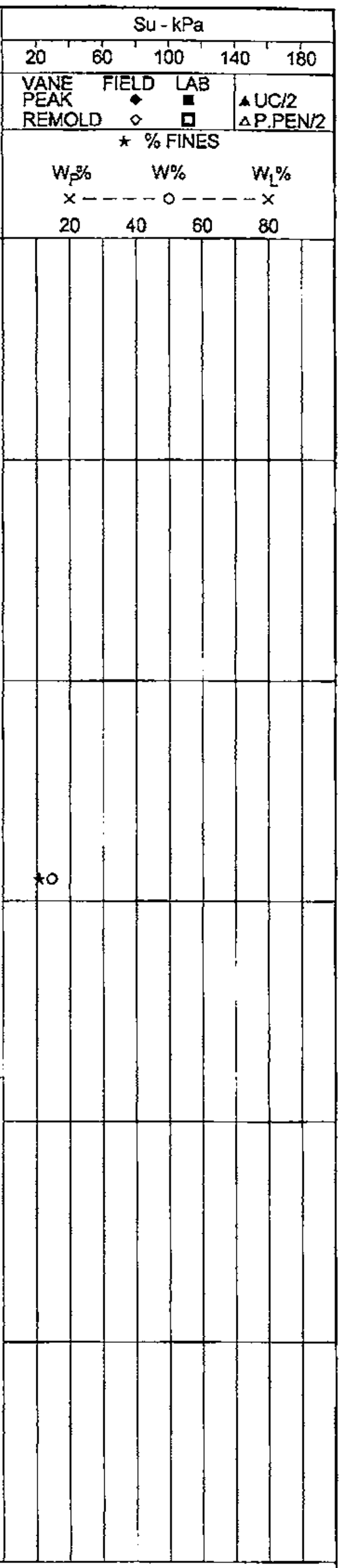
STARTED: 9/15/2005 **FINISHED:** 9/15/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1343.0

COORDINATES (m): N 6620031 E 592295

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS, brown.	
			0.30 1342.7	GRAVEL (GP), coarse, trace sand, black volcanic.	
0.5			0.50 1342.5	SAND AND GRAVEL (SW-GW), trace silt, loose to compact, light brown, damp, occasional cobbles/boulders. [COLLUVIUM]	
1.0	Grab	1			
			2.70 1340.3	GRAVEL (GP), coarse. - strong flow within this unit - 63% gravel, 26% sand, 11% fines at 2.9 m	
3.0	Grab	2	3.00 1340.0	SILT (ML), trace sand, loose, brown. - refusal at 3.8 m	
	Grab	3			
			3.80 1339.2	End of Hole at 3.80 m	



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-69

KLOHN CRIPPEN

TEST PIT LOG

STARTED: 9/15/2005 **FINISHED:** 9/15/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1346.0

COORDINATES (m): N 6619890 E 592435

Su - kPa
20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES

W_P% W% W_L%
×-----○-----×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			ORGANICS, brown.	
0.5			0.30 1345.7 COBBLES (angular), some gravel, air spaces between cobbles, organics.	
1.0	Grab	1	0.60 1345.4 SAND AND GRAVEL (SW-GW), well-graded, some cobbles, trace silt, loose, reddish brown, damp, organics. [COLLUVIUM]	
1.5 2.0 2.5	Grab	2	1.20 1344.8 SAND AND GRAVEL (SW-GW), some cobbles, trace silt, loose to compact, grey, damp. [COLLUVIUM] - organics down to 2 m - refusal at 2.9 m	
3.0 3.5 4.0 4.5 5.0 5.5 6.0			2.90 1343.1 End of Hole at 2.90 m	

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-70

TEST PIT LOG

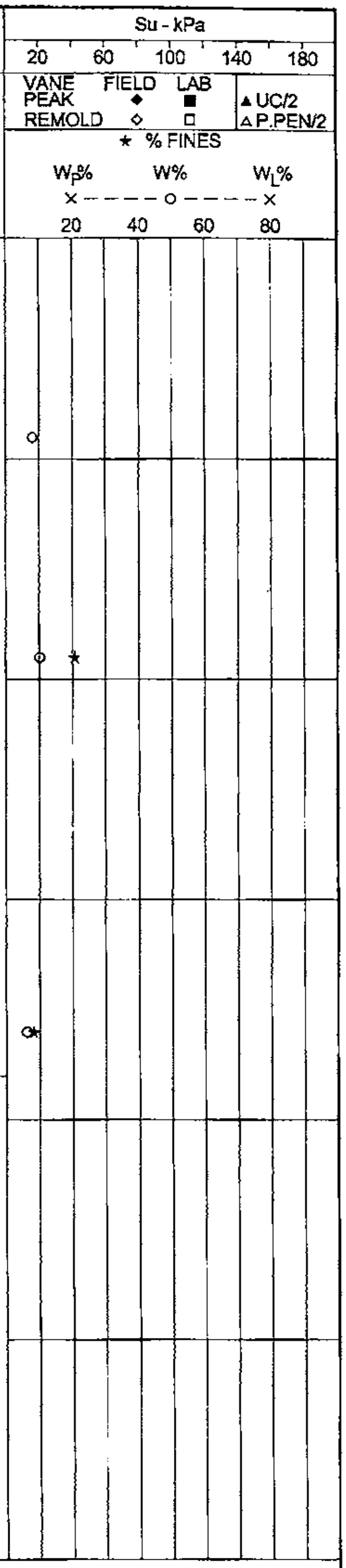
STARTED: 9/15/2005 **FINISHED:** 9/15/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1379.0

COORDINATES (m): N 6619765 E 592345

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS AND SILT, brown.	
0.5				0.30 1378.7 SAND AND GRAVEL (SW-GW), well-graded, trace silt, loose, light brown, seams of gravel. [COLLUVIUM]	
1.0	Grab	1		0.70 1378.3 SAND AND GRAVEL (SW-GW) , well-graded, loose, grey and red, damp.	
1.5				1.00 1376.0 COBBLES AND BOULDERS, air spaces between cobbles.	
2.0	Grab	2		1.60 1377.4 SAND AND GRAVEL (SP-GP), some boulders, compact, damp. - 42% gravel, 37% sand, 21% fines at 1.9 m	
2.5					
3.0					
3.5	Grab	3		- refusal at 3.8 m 3.80 - 70% gravel, 22% sand, 8% fines at 3.7 m	
4.0				1375.2 End of Hole at 3.80 m	
4.5					
5.0					
5.5					
6.0					



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-71

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/15/2005 **FINISHED:** 9/15/2005

EXCAVATOR TYPE: 120 Hitachi

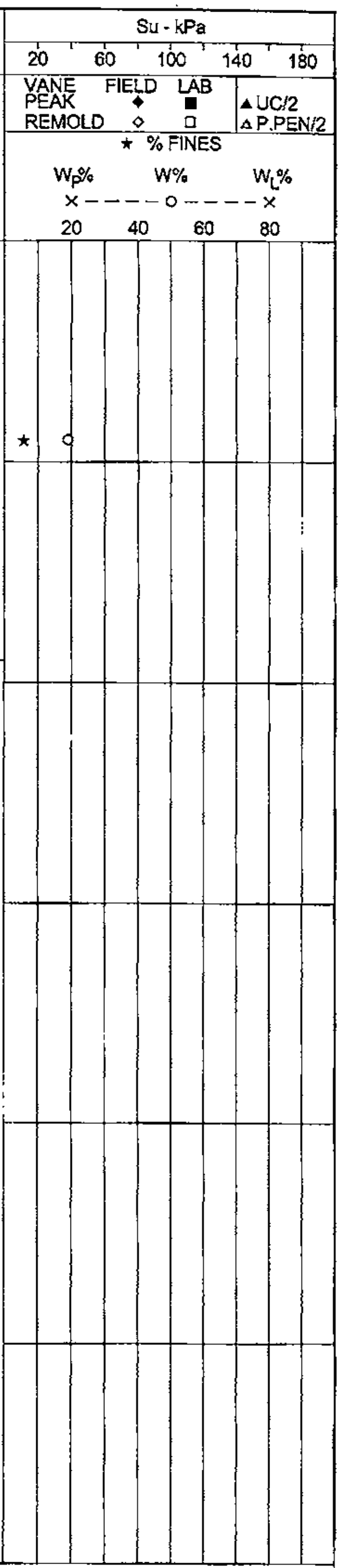
GROUND ELEV. (m): 1378.0

COORDINATES (m): N 6619619 E 592459

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.10 1377.9				ORGANICS	
1.50 1376.5	Grab	1		SAND AND COBBLES, subangular, some boulders, loose, damp, red volcanics. - 49% gravel, 45% sand, 6% fines at 0.9 m - mud from 1.0 to 1.5 m - frozen below 1.5 m	
1.90 1376.1	Grab	2		SAND AND GRAVEL, grey.	

End of Hole at 1.90 m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0



KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-72

TEST PIT LOG

STARTED: 9/15/2005 **FINISHED:** 9/15/2005

EXCAVATOR TYPE: 120 Hitachi

GROUND ELEV. (m): 1374.0

COORDINATES (m): N 6619642 E 592470

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
			ORGANICS.	
0.40 1373.6			COBBLES AND BOULDERS, red volcanics, large air spaces between rocks.	
1.30 1372.7			SAND AND GRAVEL (SW-GW) some silt, trace cobbles, loose to compact, brown, damp to wet. [COLLUVIUM] - 43% gravel, 38% sand, 19% fines at 1.5 m	
1.5	Grab	1		
2.90 1371.1			GRAVEL AND COBBLES, loose, reddish brown, air spaces.	
3.40 1370.6			SAND AND GRAVEL (SW-GW), trace cobbles, trace silt, loose to compact, grey, damp to moist, occasional boulders. [TILL]	
4.0	Grab	2		
4.50 1369.5			End of Hole at 4.50 m	

Su - kPa: 20 60 100 140 180

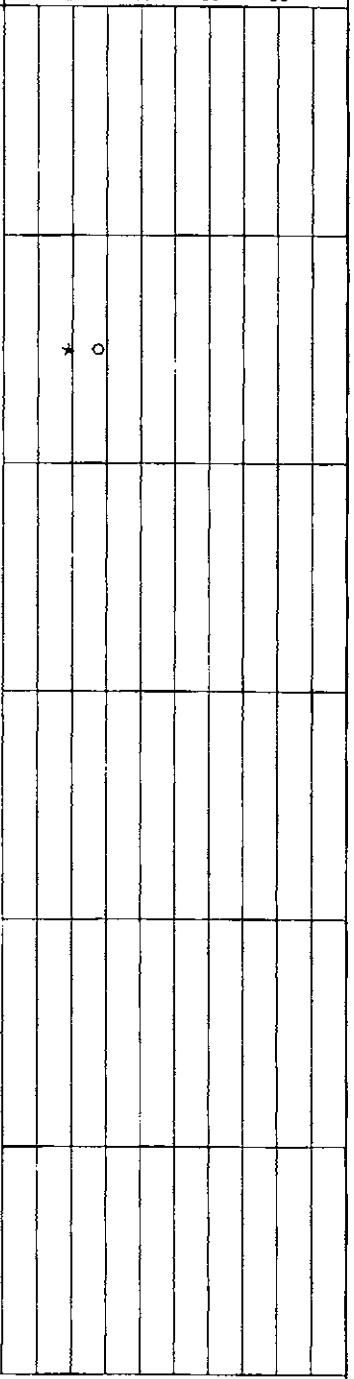
VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2

REMOLD: FIELD ◇ LAB □ △ P.PEN/2

★ % FINES

W_P% × — — — — ○ W% — — — — × W_L%

20 40 60 80



PROJECT NO.: M09222A04

PROJECT: Ruby Creek Feasibility Study

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** TP05-73

KLOHN CRIPPEN

KC_TEST_PIT-SI RUBY-TP.GPJ KC_DATA.GDT 2/9/06

TEST PIT LOG

STARTED: 9/15/2005 **FINISHED:** 9/15/2005
EXCAVATOR TYPE: 120 Hitachi
GROUND ELEV. (m): 1335.0
COORDINATES (m): N 6620201 E 592359

Su - kPa
20 60 100 140 180
VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0			ORGANICS AND BOULDERS, angular to subangular.	
0.30 1334.7			SAND AND GRAVEL (SW-GW), well-graded, some cobbles/boulders, trace silt, loose. [COLLUVIUM] - light brown from 0.3 to 0.9 m - light greyish brown from 0.9 to 2.3 m	
1.1–1.3	Grab	1		
2.30 1332.7			SAND AND GRAVEL (SW-GW), well-graded, some silt, dark greyish brown.	
2.60 1332.4			GRAVEL AND SAND (GW-SW), some cobbles, trace silt, greyish brown, damp, occasional boulders.	
4.3–4.5	Grab	2		
4.50 1330.5			End of Hole at 4.50 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek Feasibility Study
LOCATION: Atlin, BC
LOGGED BY: DB **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** TP05-74

APPENDIX III-B

Drill Hole Logs

TEST HOLE LOG

STARTED: Sep. 6, 2005 **FINISHED:** Sep. 7, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1376.00
COORDINATES (m): N 6622037 E 591464

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB ☐ △ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× — — — ○ — — — ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0 – 2.00		Grab	1	GRAVEL AND COBBLES (GW), fine to coarse, some sand, trace to some silt, well graded, sub-angular, greyish brown, moist [TILL]	
2.00 1374.00		Grab Grab	2 3	GRAVEL (GW), fine to coarse, cobbly, sandy, trace silt, well graded, very dense, sub-angular to angular, light brown, dry [TILL] - Boulders at 2.0, 3.0, and 4.6 m - Less dense 3.7 to 5.8 m	
		Grab	4		
5.80 1370.20		LPT Grab	5 6	SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles to cobbly, trace to some silt, well graded, very dense, sub-angular to angular, greyish brown, damp [TILL] - Boulder (granite) at 6.7 m - Light reddish brown, moist from 7.5 to 7.9 m - Boulder at 8.1 m - Less silt at 8.8 m	
9.00 1367.00	>50	SPT Grab	none 7	Granitic Rock [ALASKITE] - 1000 blows could not penetrate 0.3 m	
1366.80				End of Hole at 9.20 m	

KC_TEST_HOLE . DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: FL/DK **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** BKS05-01

TEST HOLE LOG

STARTED: Sep. 7, 2005 **FINISHED:** Sep. 8, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1379.00

COORDINATES (m): N 6622262 E 592085

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ● LAB ■ ▲ UC/2

REMOLD ◇ □ △ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%

× – – – – ○ – – – – ×

20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL		DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0 – 1.80		Grab	1		1.80	SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles to cobbly, some silt, well graded, loose, sub-angular to sub-rounded, greyish brown, wet, organics [TILL] - Cobble/boulder at 0.9 and 1.2 m - Very wet 1.2 to 1.8 m	
1.80 – 4.10		Grab	2		1377.20 4.10	GRAVEL AND SAND (GW-SW), fine to coarse, trace to some silt, well graded, very dense, sub-angular to sub-rounded, greyish brown, wet, occasional boulders [TILL] - Cobbly, sub-angular to angular from 2.7 to 4.1 m	
4.10 – 4.90		Grab	3		1374.90 4.90	SAND (SM), fine, silty, gravelly (sub-rounded to sub-angular), some cobbles, poorly graded, very dense, light greyish brown, moist - Clumps of silty sand - Silt-coated rocks	
4.90 – 7.60	78	SPT	4		1374.10	SAND AND GRAVEL (SW-GW), fine to coarse, trace silt, some cobbles, well graded, very dense, sub-rounded to sub-angular, greyish brown, moist [TILL] - Some silt, gravel sub-rounded, wet from 5.5 to 6.4 m - Some silt, light greyish brown, moist from 6.4 to 7.6 m	
		Grab	5		7.60		
7.60 – 7.90					1371.40 7.90 1371.10	Granitic Rock [ALASKITE] - Could be sloping bedrock (still getting some till with cuttings) - 500 blows from 7.6 to 7.9	
						End of Hole at 7.90 m	

DEPTH (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** BKS05-02

TEST HOLE LOG

STARTED: Sep. 9, 2005 **FINISHED:** Sep. 9, 2005

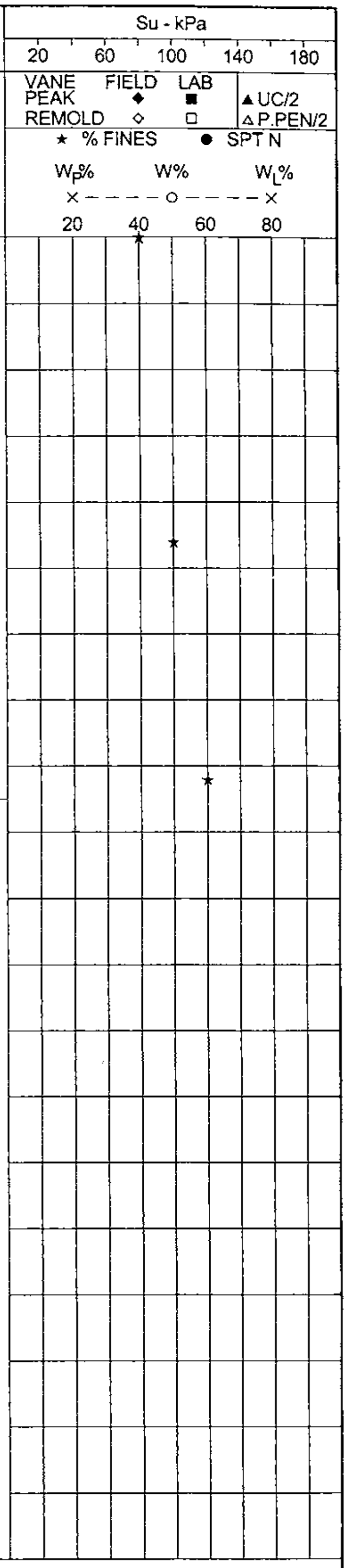
DRILL METHOD: Becker

GROUND ELEV. (m): 1451.79

COORDINATES (m): N 6620674.168 E 589992.552

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
		Grab	1	0.90	SAND AND GRAVEL (SW-GW), fine to coarse, some silt, some cobbles, well graded, loose, sub-rounded to sub-angular, greyish brown, moist [COLLUVIUM]	
1				1450.89 1.80	GRAVEL AND SAND (GW-SW), fine to coarse, some cobbles, trace silt, well graded, loose, greyish brown, moist [COLLUVIUM]	
2				1449.99 3.50	SAND AND GRAVEL (SW-GW), fine to coarse, some silt, well graded, loose, sub-angular, greyish brown, moist [COLLUVIUM] - Trace silt from 2.7 to 3.5	
4		Grab	2	1448.29 8.40	SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles, trace silt, well graded, dense, sub-rounded to sub-angular, light brown, dry, occasional boulder [TILL] - Clumps of silt, very dense below 5.2 m	
8		Grab	3	1448.50 1443.29	Granitic Rock [ALASKITE] - more than 300 blows/ft	

End of Hole at 8.50 m



PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** BK05-03

KLOHN CRIPPEN

TEST HOLE LOG

STARTED: Sep. 9, 2005 **FINISHED:** Sep. 16, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1452.05

COORDINATES (m): N 6620736.833 E 590503.725

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2

REMOLD: FIELD ◇ LAB □ △ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%

× – – – – ○ – – – – ×

20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.90 1451.15					SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles, trace silt, well graded, loose, sub-rounded to sub-angular, brown, moist [COLLUVIUM]	
2.40 1449.65		Grab	1		GRAVEL AND SAND (GW-SW), fine to coarse, some cobbles, trace silt, well graded, compact to dense, sub-rounded to sub-angular, orangish brown, moist [TILL]	∇
3.40 1448.65					Granitic Rock [ALASKITE], signs of fracturing and weathering. - Refusal at 3.4	

End of Hole at 3.40 m

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

KC_TEST_HOL . DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** BK05-04

TEST HOLE LOG

STARTED: Sep. 16, 2005 **FINISHED:** Sep. 17, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1454.04
COORDINATES (m): N 6620809.469 E 590649.328

Su - kPa
20 60 100 140 180
VANE FIELD LAB
PEAK ◆ ■
REMOLD ◇ □
▲ UC/2
△ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0–1.80		Grab	1		SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles, trace silt, well graded, loose, sub-rounded to sub-angular, orangish brown, moist [COLLUVIUM] - Compact below 0.9 1.80 ∇	
1.80–3.80		Grab	2		1452.24 - Light brown, dense from 1.8 to 2.6 m [TILL] - Boulder at 2.6 m - Very dense past 2.9 3.80	
3.80–4.20					1450.24 Granitic Rock [ALASKITE], signs of weathering, rusty staining. 4.20 1449.84 - 300 blows from 4.0 to 4.2 m	

End of Hole at 4.20 m

DEPTH (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

KC_TEST_HO . DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** BK05-05

TEST HOLE LOG

STARTED: Sep. 19, 2005 **FINISHED:** Sep. 19, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1408.00

COORDINATES (m): N 6621741 E 592639

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2

REMOLD: FIELD ◇ LAB □ △ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%

× – – – – ○ – – – – ×

20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DEPTH / ELEV.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0 – 0.90				0.90 1407.10	SAND AND GRAVEL (SW-GW), fine to coarse, some silt, some cobbles, well graded, compact to dense, sub-rounded to sub-angular, light brown, moist, organics [TOPSOIL]	
0.90 – 2.30		Grab	1	2.30 1405.70	SAND AND GRAVEL (SW-GW), fine to coarse, some silt, some cobbles, well graded, compact to dense, sub-rounded to sub-angular, light brown, moist [TILL] - Very dense past 1.8 m	
2.30 – 2.50				2.50 1405.50	Biotite-Rich Rock, blueish-grey, fine-grained -Breaks along planes at ~50° & 100° to each other -Rock is fractured on top, more competent past 2.4 m	

End of Hole at 2.50 m

DEPTH (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

KC_TEST_HOLL_.. DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** BKS05-06

TEST HOLE LOG

STARTED: Sep. 19, 2005 **FINISHED:** Sep. 19, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1340.00
COORDINATES (m): N 6621337 E 592601

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
					SILT AND SAND (ML-SM), fine sand, gravelly, low plasticity, soft, light to medium brown, wet, organics [TOPSOIL] 1.10	
1		Grab	1		1338.90 SAND AND GRAVEL (SW-GW), fine to coarse, some silt, some cobbles, well graded, compact to very dense, sub-rounded to angular, dark brown, moist [TILL] 2.10	
2				▨	1337.90 - Very dense, sub-rounded to sub-angular, light brown, damp below 2.1 m 2.60	
3					1337.40 Granitic Rock [ALASKITE], fractures with rusty stains - More than 300 blows/ft	
					End of Hole at 2.60 m	

DEPTH (m): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

KC_TEST_HO... DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04	
PROJECT: Ruby Creek	
LOCATION: Atlin, BC	
LOGGED BY: DK	**CHECKED BY:** FL
SHEET 1 **OF** 1	**HOLE NO.:** BKS05-07

TEST HOLE LOG

STARTED: Sep. 20, 2005 **FINISHED:** Sep. 20, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1347.00
COORDINATES (m): N 6621591 E 592380

Su - kPa
20 60 100 140 180
VANE FIELD LAB
PEAK ◆ ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
					SAND (SW), fine to coarse, gravelly (sub-rounded to sub-angular), some cobbles, trace silt, compact to dense, brown, moist, occasional boulders [TILL]	
1.20 1345.80		Grab	1		SAND (SP), fine, gravelly (sub-rounded to sub-angular), some cobbles, some silt, poorly graded, compact to dense, light brown/tan, moist [TILL] - Cobbles or small boulders at 2.0, 2.4 and 3.4 m - Dense past 2.7 m	
3.70 1343.30		Grab	2		GRAVEL AND SAND (GW-SW), fine to coarse, cobbly, trace silt, well graded, dense, sub-rounded to angular, greyish light brown, damp, occasional boulders [TILL] - Easier drilling below 4.1 m - More sand below 4.6 m - Boulder from 5.2 to 5.5 m	
5.80 1341.20		Grab	3		SAND AND GRAVEL (SW-GW), sand (fine to coarse), gravel (fine to coarse, sub-rounded to angular), well graded, dense, light brown, moist [TILL] - Damp below 6.4 m - Trace to some silt from 6.4 to 7.3 m - Trace silt below 7.3 m - Cobble/boulder at 8.4 and 9.1 m - More gravel from 8.5 to 8.8 m - More sub-rounded particles below 9.8 m	
10.10 1336.90	 47 48	Grab SPT Grab	4 5 6		GRAVEL AND SAND (GW-SW), fine to coarse, some cobbles, trace silt, well graded, dense, sub-angular to angular, light brown, damp to moist - Wet below 10.8 m - Sandier and more sub-rounded particles below 11.6 m	
12.40 1334.60					- Less sand, very dense below 12.2 m - 900 blows drove casing 0.2 m - Blueish-grey rock chips came up with the cuttings	

End of Hole at 12.40 m

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** BKS05-08

TEST HOLE LOG

STARTED: Sep. 21, 2005 **FINISHED:** Sep. 22, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1378.00
COORDINATES (m): N 6621807 E 592303

Su - kPa
20 60 100 140 180
VANE PEAK: FIELD ● LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.		DESCRIPTION OF MATERIALS
					SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace silt, well graded, dense, sub-rounded to sub-angular, greyish light brown, moist - Boulders at 2.3, 3.0-3.5, 4.1, 4.4-4.9 m - Orangish light brown from 0 to 0.6 m
1		Grab	1		
2					
3					
4		Grab	2		
5					
6	>50	SPT Grab	3 4		- Mostly fine sand 5.5 to 6.4 m, more well graded sand past 6.4 m - Cobbles/boulders at 6.7-7.0, 7.8, 8.2-8.5, 8.8 m
7					
8		Grab	5		
9	>50	SPT	none	9.10 1368.90	- No sample recovery in split spoon at 8.9 m GRAVEL (GW), sandy, cobbly, some boulders, trace silt, well graded, dense, sub-rounded to angular, tan, dry
10					- Mostly chips of cobbles, coarse gravel and boulders in the cuttings than actual soil
11		Grab	6		
12					-More sand from 12.2 to 13.4 m but still primarily gravel and chips of broken rock in cuttings
13				13.40 1364.60	BOULDERS -Alaskite at 13.4-14.0, 14.2-14.5, 14.8 m -Blueish-grey fine-grained rock at 14.5-14.8 m -Some sandy gravel between boulders (sub-rounded to sub-angular gravel)
14					
15				14.80 1363.20	-536 blows from 14.6 to 14.8 m
16					End of Hole at 14.80 m
17					
18					
19					
20					

INSTRUMENT DETAILS

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** BKS05-09

KC_TEST_HO... DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

TEST HOLE LOG

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES ● SPT N
$W_P\%$ W% $W_L\%$
× – – – – ○ – – – – ×
20 40 60 80

STARTED: Sep. 22, 2005 **FINISHED:** Sep. 29, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1356.00
COORDINATES (m): N 6621951 E 591910

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.
1.3		Grab	1
3	31 49 48	SPT	2
4.1		Grab	3
6	25 38 34	SPT	4
7.7		Grab	5
9	63 64 69	SPT	6
12	34 70 23	SPT	7
14		Grab	8
15	32 26 30	SPT	9
17		Grab	10
18	32 >75	SPT	11

DESCRIPTION OF MATERIALS

SAND AND GRAVEL (SW-GW), sand (fine to medium), gravel (fine to coarse), some cobbles, trace silt, well graded, dense, sub-rounded to sub-angular, greyish light brown (rusty brown in places), moist
- Cobbles at 0.6, 0.9, 1.5, 3.7 m
- Angular particles from 3.8 to 5.5 m
- Some pockets with finer sand
- Silt content varying between ~0-10% (trace)
- Water at ~7.6 m
- Some silt below 8.8 m
- Less coarse gravel past 10.0 m

11.00
1345.00

SILT (ML), sandy (fine), low plasticity, firm, light brown, wet
- Moderate effort to penetrate with thumb (on split spoon sample)

12.00
1344.00

GRAVEL AND SAND (SW-GW), fine to coarse, some cobbles, trace to some silt (varying with depth), well graded, dense, sub-angular to angular, greyish light brown, wet
- Some chunks of silt and fine sand from 12.0 to 12.8 m
- Some sub-rounded rocks below 12.8 m

16.20
1339.80

SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles, trace to some silt, well graded, very dense, sub-rounded to sub-angular, greyish light brown, moist
- Cobbles at 16.2, 16.5, 16.9, 19.5, 20.0, 20.1, and 20.7 m
- Water likely perched on top of this very dense material (layers above are wet)

Continued Next Page

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 3 **HOLE NO.:** BKS05-10

TEST HOLE LOG

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2
REMOLD ◇ □ △ P.PEN/2
★ % FINES ● SPT N

$W_P\%$ W% $W_L\%$
× – – – – ○ – – – – ×
20 40 60 80

STARTED: Sep. 22, 2005 **FINISHED:** Sep. 29, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1356.00
COORDINATES (m): N 6621951 E 591910

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
		Grab	12	
21.00 1335.00				BOULDERS, very dense till in between
25.80 1330.20				Rock, blueish-grey, fine-grained, fractured, some pockets of till, seams of quartz, clay gouge 32.9 to 33.4: Light grey, silty, chalky sand 33.4 to 33.6: Fine gravel size pieces of blueish-grey rock in soft matrix with blue-green coating (serpentine?)
33.70 1322.30				Granitic Rock [ALASKITE], interspersed with blueish-grey fine-grained rock
35.30 1320.70				

End of Hole at 35.30 m

Installation Details for BKS05-10

Bentonite	0 - 0.9 m
Cuttings	0.9 - 11 m
Bentonite	11 - 12.5 m
Sand	12.5 - 16.6 m
Screen (PZ-B)	13.1 - 16.2 m
Bentonite	16.6 - 17.5 m
Sand	17.5 - 25.1 m
Bentonite	25.1 - 28.2 m

Continued Next Page

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 2 **OF** 3 **HOLE NO.:** BKS05-10

TEST HOLE LOG

STARTED: Sep. 22, 2005 **FINISHED:** Sep. 29, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1356.00
COORDINATES (m): N 6621951 E 591910

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB	
PEAK	●	■	▲ UC/2
REMOLD	◇	☐	△ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS

41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Sand	28.2 - 32 m
Screen (PZ-A)	29 - 32 m
Bentonite	32 - 35.3 m

Stickup Above Ground Surface

BKS05-10 (PZ-A)	0.68 m
BKS05-10 (PZ-B)	0.69 m

Water Level Depth Below Ground Surface (October 2005)

BKS05-10 (PZ-A)	7.51 m
BKS05-10 (PZ-B)	7.18 m

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 3 **OF** 3 **HOLE NO.:** BKS05-10

TEST HOLE LOG

STARTED: Oct. 2, 2005 **FINISHED:** Oct. 8, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1337.00

COORDINATES (m): N 6621531 E 592134

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× – – – – o – – – – ×
20 40 60 80

DEPTH (m) | SPT BLOWS PER 0.15m | SAMPLE TYPE | SAMPLE No. | SYMBOL | INSTRUMENT DETAILS

DESCRIPTION OF MATERIALS

Depth (m)	Elev. (m)	
		SAND AND GRAVEL (SW-GW), sand (fine to coarse), gravel (fine, sub-rounded to sub-angular), some cobbles, trace silt, loose, brown, damp - Disturbed from site prep
0.90	1336.10	GRAVEL AND SAND (GW-SW), gravel (fine to coarse), sand (fine to coarse), some boulders, trace silt, dense to very dense, sub-rounded to angular, greyish light brown, dry to damp - Boulders at 1.2, 3.7, and 4.9 m - Damp past 2.7 m - Light brown from 5.5 to 6.4 m
6.40	1330.60	SAND AND GRAVEL (SW-GW), sand (fine to coarse), gravel (fine to coarse), cobbly, trace silt, very dense, sub-rounded to angular, grey, damp - Brown from 8.8 to 9.1 m
9.10	1327.90	SAND AND GRAVEL (SW-GW), sand (medium to coarse), gravel (fine to coarse), sub-angular to angular, greyish brown - Water yield at 9.1 m - Sub-rounded to subangular 10.1 to 11.0 m
11.00	1326.00	GRAVEL AND SAND (GW-SW), gravel (fine to coarse), sand (fine to coarse), some cobbles, trace silt, very dense, sub-rounded to sub-angular, greyish brown, no water yield [TILL] - Some rounded rocks past 11.9 m, and only medium to coarse sand - Boulder at 12.8 m - Less dense past 13.3
14.00	1323.00	SAND AND GRAVEL (SW-GW), sand (medium to coarse), gravel (fine to coarse), no silt, rounded to sub-angular [FLUVIAL] - Denser and trace cobbles coated with silt past 14.6 m - Silty water yield at 14.9 m
17.70	1319.30	GRAVEL AND COBBLES (GW), gravel (fine to coarse), cobbles (fine to coarse), trace silt, very dense, rounded to sub-angular, greyish light brown to brownish light grey [TILL] - Angular particles 19.2 to 21.9 m

Continued Next Page

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: FL/DK **CHECKED BY:** FL

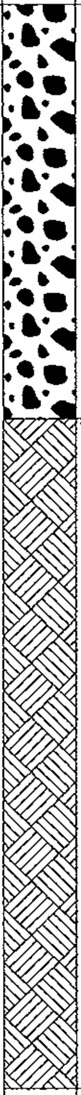
SHEET 1 **OF** 3 **HOLE NO.:** BKS05-11

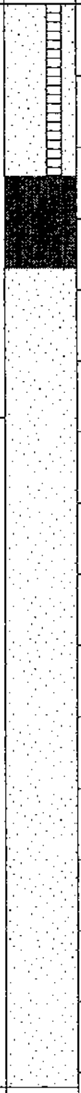
TEST HOLE LOG

STARTED: Oct. 2, 2005 **FINISHED:** Oct. 8, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1337.00
COORDINATES (m): N 6621531 E 592134

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■; REMOLD: FIELD ◇ LAB □
▲ UC/2
△ P.PEN/2
★ % FINES ● SPT N
$W_P\%$ × – – – – ○ W% – – – – × $W_L\%$
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
21				
22				- Sub-rounded to angular particles 21.9 to 25.8 m
23				
24				- Light brown 23.8 to 25.8 m
25				
25.80 1311.20				Granitic Rock [ALASKITE] - Large irregular spots in white matrix - Fractures infilled with sand and silt - Sand grains appear to be weathered bedrock - Slight rusty stain in places
26				
27				
28				
29				- Clay gouge at 28.7 m
30				
31				
32				
33				
34				
35				
35.20 1301.80				End of Hole at 35.20 m
36				
37				
38				
39				
40				





End of Hole at 35.20 m

Installation Details for BKS05-11

Concrete	0 - 0.6 m
Cuttings	0.6 - 0.8 m
Bentonite	0.8 - 1.7 m
Cuttings	1.7 - 13.7 m
Bentonite	13.7 - 14.6 m
Sand	14.6 - 16.8 m
Screen (PZ-B)	15.2 - 16.8 m
Bentonite	16.8 - 18.9 m
Sand	18.9 - 22.4 m

Continued Next Page

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: FL/DK **CHECKED BY:** FL
SHEET 2 **OF** 3 **HOLE NO.:** BKS05-11

TEST HOLE LOG

Su - kPa
20 60 100 140 180

STARTED: Oct. 2, 2005 **FINISHED:** Oct. 8, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1337.00

COORDINATES (m): N 6621531 E 592134

VANE PEAK FIELD ◆ LAB ■ ▲UC/2
REMOLD ◇ □ △P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

DEPTH (m) | SPT BLOWS PER 0.15m | SAMPLE TYPE | SAMPLE No. | SYMBOL | **DESCRIPTION OF MATERIALS** | INSTRUMENT DETAILS

41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Screen (PZ-A)	19.4 - 22.4 m
Bentonite	22.4 - 23.7 m
Sand	23.7 - 35.2 m

Stickup Above Ground Surface

BKS05-11 (PZ-A)	0.82 m
BKS05-11 (PZ-B)	0.66 m

Water Level Depth Below Ground Surface (October 2005)

BKS05-11 (PZ-A)	4.60 m
BKS05-11 (PZ-B)	1.46 m

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: FL/DK **CHECKED BY:** FL

SHEET 3 **OF** 3 **HOLE NO.:** BKS05-11

TEST HOLE LOG

Su - kPa: 20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: ◇ □ △ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× – – – – o – – – – ×
20 40 60 80

STARTED: Oct. 9, 2005 **FINISHED:** Oct. 10, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1348.00
COORDINATES (m): N 6620755 E 593068

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
0				SAND AND GRAVEL (SW-GW), fine to coarse, silty, some cobbles, well graded, loose to compact, sub-rounded to angular, brown, moist - Wet below 1.7 m - Few cuttings recovered in first 2.7 m (pushing rocks through the ground)
1		Grab	1	
4.30				4.30 / 1343.70 SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace to some silt, well graded, dense to very dense, sub-rounded to angular, brown, moist
5		Grab	2	
6.4				- Trace silt and sandier 6.4 to 8.2 m
7		Grab	3	
8				- Boulders at 7.9-8.5 and 10.8-11.4 m
9.5		Grab	4	
10				▽
11.40				11.40 / 1336.60 SAND AND GRAVEL (SW-GW), sand (mostly fine), gravel (fine to coarse), some cobbles, trace to some silt, dense to very dense, sub-angular to angular, tan, moist
11.6		Grab	5	
14.60				14.60 / 1333.40 ROCK, blueish-grey fine-grained, some sandy gravel interspersed - Easier drilling 14.6 to 15.2 m - 450 blows from 15.5 to 15.7 m
15.70				15.70 / 1332.30

End of Hole at 15.70 m

Installation Details for BK05-12

Concrete	0 - 0.6 m
Cuttings	0.6 - 1.2 m
Bentonite	1.2 - 2.1 m
Cuttings	2.1 - 5.5 m
Bentonite	5.5 - 6.1 m
Sand	6.1 - 10.2 m
Screen (PZ-A)	7.2 - 10.2 m

Continued Next Page

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 2 **HOLE NO.:** BK05-12

TEST HOLE LOG

STARTED: Oct. 9, 2005 **FINISHED:** Oct. 10, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1348.00

COORDINATES (m): N 6620755 E 593068

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
21						
22					Bentonite 10.2 - 11.3 m Slough 11.3 - 15.7 m Stickup Above Ground Surface BK05-12 (PZ-A) 0.74 m Water Level Depth Below Ground Surface (October 2005) BK05-12 (PZ-A) 10.18 m	
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Su - kPa

20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■

REMOLD ◇ □

▲ UC/2

△ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%

× — — — — ○ — — — — ×

20 40 60 80

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 2 **OF** 2 **HOLE NO.:** BK05-12

TEST HOLE LOG

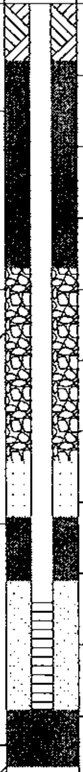
Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲ UC/2
REMOLD: FIELD ◇ LAB □ △ P.PEN/2
★ % FINES ● SPT N

W_P% W% W_L%
× – – – – ○ – – – – ×
20 40 60 80

STARTED: Oct. 12, 2005 **FINISHED:** Oct. 13, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1302.00
COORDINATES (m): N 6620810 E 592811

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	Depth / Elev.	DESCRIPTION OF MATERIALS
0 – 1.50				1.50	SAND AND GRAVEL (SW-GW), fine to coarse, silty, some cobbles, well graded, loose, sub-rounded to sub-angular, brown, moist, trace organics
1.50 – 4.00		Grab	1	1300.50 4.00	SAND AND GRAVEL (SW-GW), fine to coarse, some silt, some cobbles, well graded, compact to dense, sub-rounded to angular, brownish-grey, moist - Transitional layer from 1.5 to 1.8 m with intermediate colour and silt content - Contains clumps of low plasticity silt with fine sand - Silty coating on rocks
4.00 – 4.60				1298.00 4.60	SAND (SW), fine to coarse, gravelly, some cobbles, trace silt, well graded, dense, sub-rounded to angular, light grey, damp
4.60 – 7.30		Grab	2	1297.40 7.30	SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace silt, well graded, dense to very dense, sub-rounded to angular, greyish-brown, damp - Boulder at 7.0 m
7.30 – 10.40		Grab	3	1294.70 10.40	GRAVEL AND SAND (GW-SW), fine to coarse, many cobbles and boulders, well graded, very dense, sub-angular to angular, light grey-brown, dry - Moist layer 9.0 to 9.4 m
10.40 – 10.70				1291.60 10.70 1291.30	Granitic Rock [ALASKITE], fractured, rusty staining - 280 blows for last 0.13 m



End of Hole at 10.70 m

Installation Details for BK05-13

Concrete	0 - 0.8 m
Bentonite	0.8 - 3.7 m
Cuttings	3.7 - 6.4 m
Slough	6.4 - 7.2 m
Bentonite	7.2 - 8.1 m
Sand	8.1 - 9.9 m
Screen (PZ-A)	8.4 - 9.9 m
Bentonite	9.9 - 10.7 m

Stickup Above Ground Surface

BK05-13 (PZ-A) 0.73 m

Water Level Depth Below Ground Surface (October 2005)

BK05-13 (PZ-A) -0.08 m (negative = artesian)

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 1 **HOLE NO.:** BK05-13

TEST HOLE LOG

STARTED: Oct. 14, 2005 **FINISHED:** Oct. 15, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1297.00

COORDINATES (m): N 6620667 E 592563

Su - kPa: 20, 60, 100, 140, 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2

REMOLD: FIELD ◇ LAB □ △P.PEN/2

★ % FINES ● SPT N

Wp% × – – – W% ○ – – – WL% ×

20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
0 – 2.10		Grab	1	SAND AND GRAVEL (SW-GW), fine to coarse, silty, some cobbles, well graded, compact, sub-rounded to sub-angular, brown, moist - Clumps of low plasticity silt and fine sand - Some flat chips of basalt - Silt coated rocks
2.10 1294.90		Grab Grab	2 3	SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace silt, well graded, compact to dense, sub-angular to angular, colour alternating between light brown and tan, damp - Clumps of silty sand - More cobbles and boulders past 3.7 m - Water level in casing at 3.6 m the next morning - Wet cuttings past 4.6 m
6.70 1290.30				Basalt Rock - More than 300 blows for 0.3 m penetration
1290.00				

End of Hole at 7.00 m

Installation Details for BK05-14

Concrete	0 - 0.6 m
Bentonite	0.6 - 1.5 m
Cuttings	1.5 - 3.9 m
Bentonite	3.9 - 4.4 m
Sand	4.4 - 6.4 m
Screen (PZ-A)	4.9 - 6.4 m
Bentonite	6.4 - 7.0 m

Stickup Above Ground Surface

BK05-14 (PZ-A) 0.68 m

Water Level Depth Below Ground Surface (October 2005)

BK05-14 (PZ-A) 2.27 m

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** BK05-14

KC_TEST_HOL... DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

TEST HOLE LOG

Su - kPa
20 60 100 140 180

VANE FIELD LAB
PEAK ◆ ■
REMOLD ◇ □
▲ UC/2
△ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× — — — — ○ — — — — ×
20 40 60 80

STARTED: Oct. 16, 2005 **FINISHED:** Oct. 17, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1340.00
COORDINATES (m): N 6620490 E 592138

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS
				SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace silt, well graded, compact to dense, sub-angular to angular, light rusty brown, damp
2		Grab	1	
3				- Some sub-rounded particles below 2.7 m
4				- 0.6 m boulder at 4.0 m
5		Grab	2	
6				- Mostly light brown past 5.8 m - A few small pockets of dark grey colour between 6.0 and 9.0 m
8		Grab	3	
10				-Moist past 10.0 m
11		Grab	4	
12				⊻
14		Grab	5	- Some vesicular basalt rocks 14.0 to 14.9 m
14.90 1325.10				- Grey-brown colour, 14.6 to 14.9 m
15				Basalt Rock, vesicular -Some light brown sandy clay infilling -Grains (coarse sand size) of weathered granite embedded in the basalt
16		Grab	6	
17.40 1322.60				

End of Hole at 17.40 m

Installation Details for BK05-15

Concrete 0 - 0.6 m

Continued Next Page

KC_TEST_HOL_ _3I DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 2 **HOLE NO.:** BK05-15

TEST HOLE LOG

STARTED: Oct. 16, 2005 **FINISHED:** Oct. 17, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1340.00

COORDINATES (m): N 6620490 E 592138

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
21						
22					Cuttings 0.6 - 1.2 m Bentonite 1.2 - 2.4 m Slough 2.4 - 15.1 m Bentonite 15.1 - 15.5 m Sand 15.5 - 17.4 Screen (PZ-A) 15.8 - 17.4 m	
24					Stickup Above Ground Surface BK05-15 (PZ-A) 0.80 m	
25					Water Level Depth Below Ground Surface (October 2005) BK05-15 (PZ-A) 11.80 m	
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Su - kPa

20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲ UC/2

REMOLD ◇ □ △ P.PEN/2

★ % FINES ● SPT N

W$_P$% W% W$_L$%

× - - - - ○ - - - - ×

20 40 60 80

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 2 **OF** 2 **HOLE NO.:** BK05-15

TEST HOLE LOG

Su - kPa
20 60 100 140 180
VANE PEAK: FIELD ◆ LAB ■ — ▲ UC/2
REMOLD: FIELD ◇ LAB □ — △ P.PEN/2
★ % FINES ● SPT N
W_P% — W% — W_L%
× — — — — ○ — — — — ×
20 40 60 80

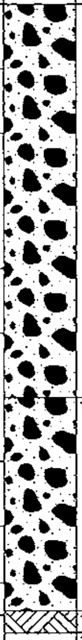
STARTED: Oct. 17, 2005 **FINISHED:** Oct. 18, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1384.00

COORDINATES (m): N 6620350 E 591859

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.
1.5		Grab	1
4.2		Grab	2
6.9		Grab	3
8.3		Grab	4



DESCRIPTION OF MATERIALS

SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace to some silt, well graded, loose to compact, sub-rounded to sub-angular, rusty brown, damp

- Some volcanics (vesicular basalt)
- Brown and moist, with clumps of silty sand below 3.7 m ▽
- Water yield at 4.9 m

5.50
1378.50

SAND AND GRAVEL (SW-GW), sand (medium to coarse), gravel (fine to coarse), some cobbles, trace to some silt, well graded, dense, sub-angular to angular, brown, wet

- Moist below 6.4 m
- More gravel 7.6 to 8.1 m
- Mostly vesicular basalt rocks below 7.6 m (some granite)
- More silt and fine sand 8.1 to 8.5 m

8.50
1375.50 8.80

Basalt Rock, moderately vesicular

-600 blows for 0.3 m penetration

1375.20

End of Hole at 8.80 m

Installation Details for BK05-16

Concrete	0 - 0.6 m
Bentonite	0.6 - 1.5 m
Cuttings	1.5 - 4.9 m
Bentonite	4.9 - 5.6 m
Sand	5.6 - 8.5 m
Screen (PZ-A)	6.1 - 8.5 m
Bentonite	8.5 - 8.8 m

Stickup Above Ground Surface

BK05-16 (PZ-A) 0.83 m

Water Level Depth Below Ground Surface (October 2005)

BK05-16 (PZ-A) 3.92 m

INSTRUMENT DETAILS

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 1 **OF** 1 **HOLE NO.:** BK05-16

KC_TEST_H[illegible] DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

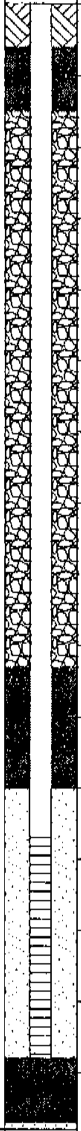
TEST HOLE LOG

STARTED: Oct. 19, 2005 **FINISHED:** Oct. 19, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1304.00
COORDINATES (m): N 6620406 E 592549

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ · ▲ UC/2
REMOLD: FIELD ◇ LAB □ · △ P.PEN/2
★ % FINES ● SPT N
W_P% W% W_L%
× - - - - ○ - - - - ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
1					No open Becker conducted ∇	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15					15.80 1288.20	
16						
17					End of Hole at 15.80 m	
18					Installation Details for BPT05-17	
19						
20					Continued Next Page	



Installation Details for BPT05-17

Concrete	0 - 0.6 m
Bentonite	0.6 - 1.5 m
Cuttings	1.5 - 9.3 m
Bentonite	9.3 - 11.0 m
Sand	11.0 - 14.8 m
Screen (PZ-A)	11.7 - 14.8 m
Bentonite	14.8 - 15.7 m

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:** FL
SHEET 1 **OF** 2 **HOLE NO.:** BPT05-17

KC_TEST_HL DRILLHOLES.GPJ KC_DATA.GDT 2/9/06

TEST HOLE LOG

STARTED: Oct. 19, 2005 **FINISHED:** Oct. 19, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1304.00

COORDINATES (m): N 6620406 E 592549

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
21						
					Slough 15.7 - 15.8 m	
22					Stickup Above Ground Surface	
23					BPT05-17 (PZ-A) 0.95 m	
					Water Level Depth Below Ground Surface (October 2005)	
24					BPT05-17 (PZ-A) 1.15 m	
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Su - kPa

20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES ● SPT N

$W_P\%$ W% $W_L\%$

× – – – – ○ – – – – ×

20 40 60 80

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:** FL

SHEET 2 **OF** 2 **HOLE NO.:** BPT05-17

APPENDIX III-C

$(N_1)_{60}$ Calculations

List of Abbreviations and Symbols

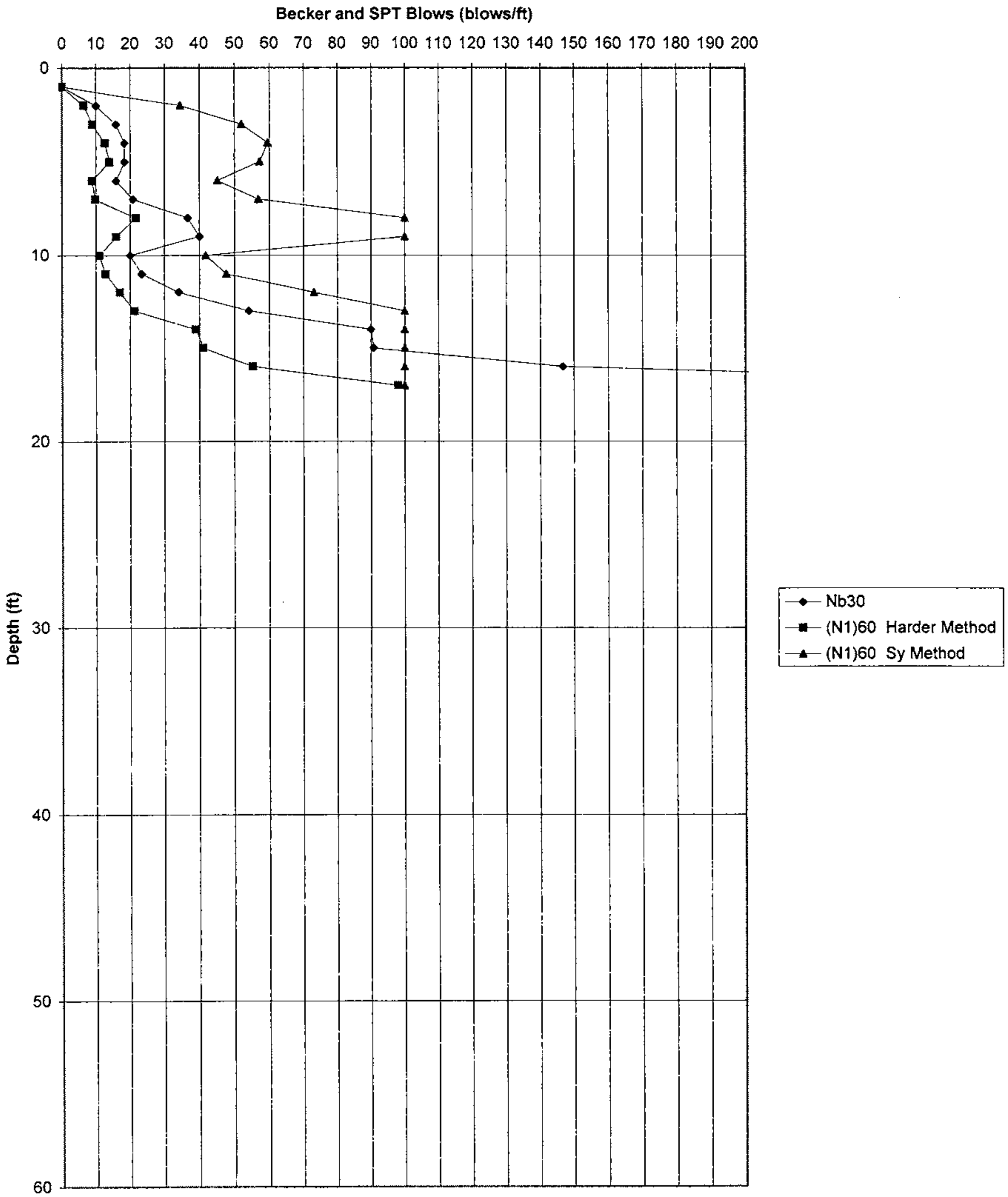
SPT	Standard Penetration Test
γ_{sat}	Unit weight of saturated soil (pcf)
NB	Number of Becker blow counts per foot
BP	Bounce Chamber pressure (psi)
NBC	Energy corrected Becker blow counts
Harder N60	Equivalent Standard Penetration Test values using the Harder method
PDA	Pile driver analyzer energy measurement
Nb30	Becker blow counts assuming standard energy transfer of 30%
Sy N60	Equivalent Standard Penetration Test values using the Sy method
(N1)60	Normalized Standard Penetration Test value assuming energy transfer of 60%
Rs	Casing Friction (kips)
σ_{vo}'	Effective overburden stress (psf)
Cn	(N1)60 Correction factor for overburden stress

Note:

(N1)60 values calculated using the Sy Method had an upper limit of 100 blows per foot. Values greater than 42 blows per foot indicate very dense material.

ADANAC MOLY CORP.
Ruby Creek Project
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BK05-03



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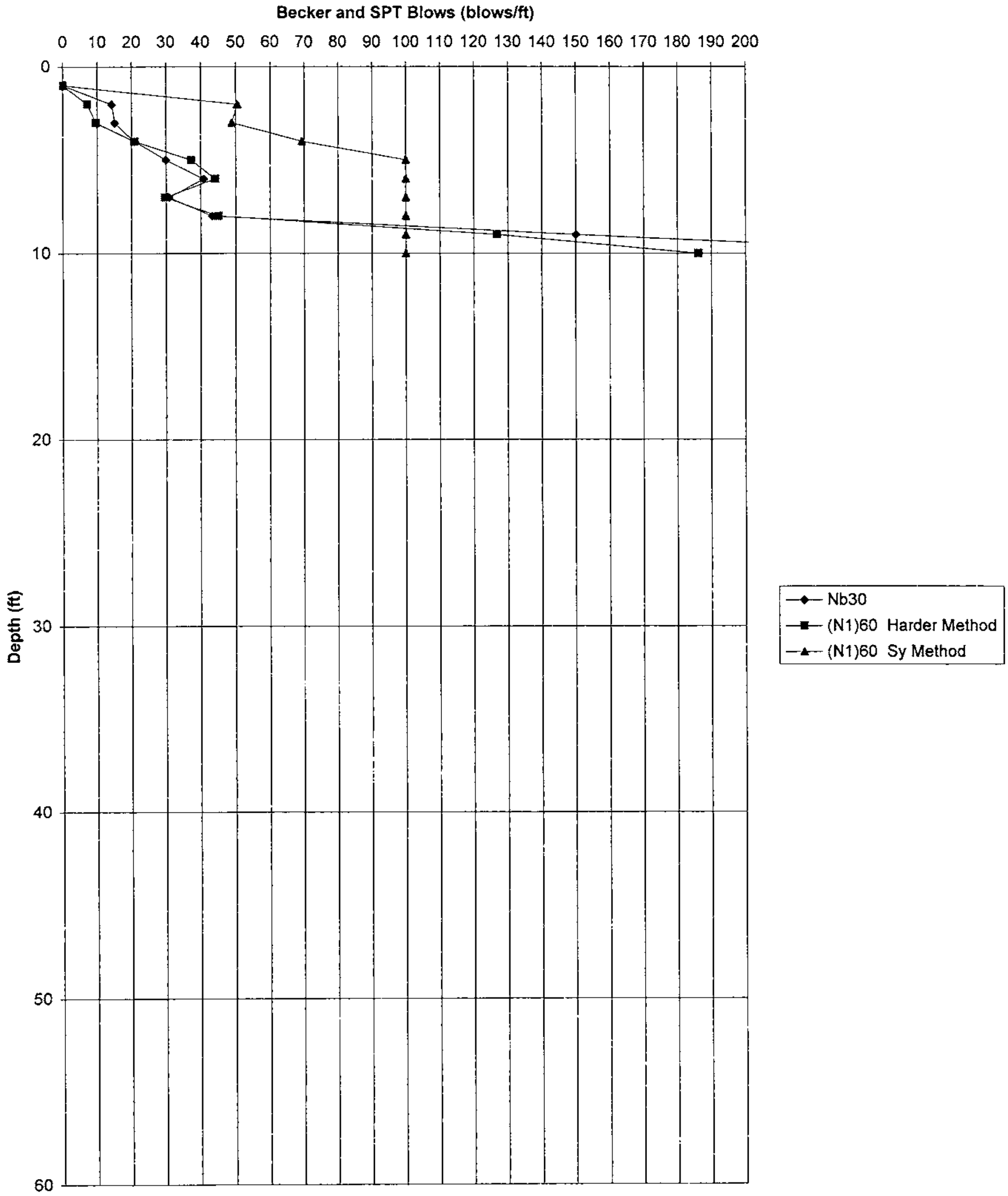
Project	Ruby Creek
Project No	M09222A04
Calcls	BPT Data reduction
Hole	**BK05-03**

GEL (m)
GWT (ft) **18**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	0	0		0.0	0.0		0.0	0	0.0	1.86	125.0	125.0	1.7
2	12	5.3	4.0	3.8	6.4	25	10.0	20.3	34.5	3.72	125.0	250.0	1.7
3	19	6.6	5.5	5.3	9.0	25	15.8	30.6	52.0	5.58	125.0	375.0	1.7
4	22	8	7.8	7.4	12.6	25	18.3	35	59.5	6.36	125.0	500.0	1.7
5	22	8.1	8.6	8.2	14.0	25	18.3	33.7	57.3	7.13	125.0	625.0	1.7
6	19	7.4	5.5	5.3	8.9	25	15.8	26.9	45.2	7.91	125.0	750.0	1.7
7	25	7.8	6.6	6.3	9.8	25	20.8	36.6	56.9	8.69	125.0	875.0	1.6
8	44	10.5	15.7	14.9	21.7	25	36.7	71.3	100.0	9.23	125.0	1000.0	1.5
9	48	8.1	12.2	11.6	15.9	25	40.0	77.3	100.0	9.78	125.0	1125.0	1.4
10	24	8.5	8.9	8.5	11.0	25	20.0	32.1	41.8	10.32	125.0	1250.0	1.3
11	28	9.1	10.8	10.3	12.7	25	23.3	38.5	47.8	10.87	125.0	1375.0	1.2
12	41	10.1	15.0	14.3	17.0	25	34.2	61.6	73.2	11.41	125.0	1500.0	1.2
13	65	10.3	19.7	18.7	21.3	25	54.2	100	100.0	11.96	125.0	1625.0	1.1
14	108	12.8	44.7	35.5	39.0	25	90.0	100	100.0	12.50	125.0	1750.0	1.1
15	109	13.9	49.8	38.7	41.1	25	90.8	100	100.0	13.05	125.0	1875.0	1.1
16	176	14.5	73.7	53.8	55.3	25	146.7	100	100.0	13.47	125.0	2000.0	1.0
17	406	15.3	144.3	98.3	98.1	25	338.3	100	100.0	13.90	125.0	2125.0	1.0

ADANAC MOLY CORP.
Ruby Creek Project
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BK05-04



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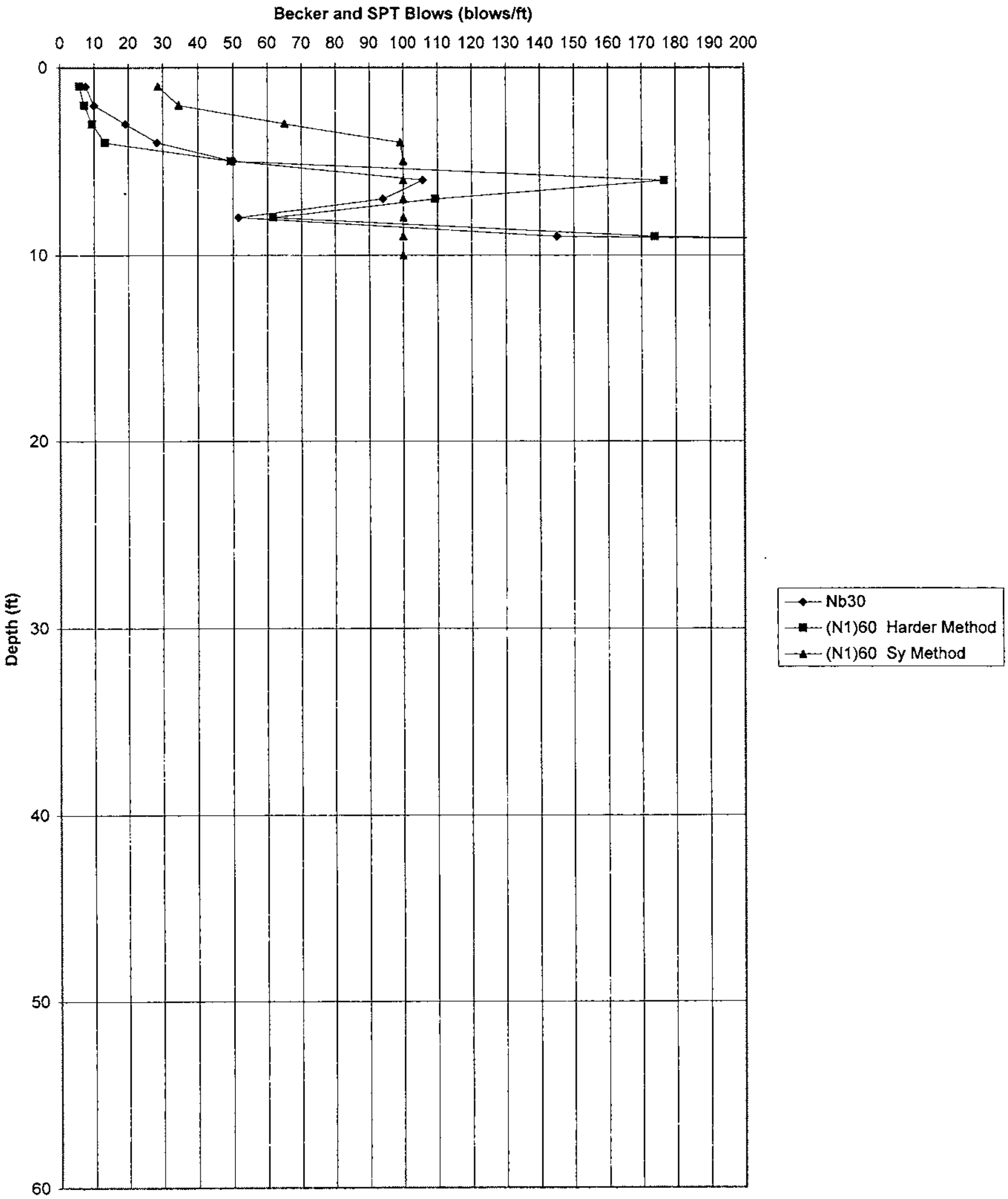
Project Ruby Creek
Project No M09222A04
Calcls BPT Data reduction
Hole **BK05-04**

GEL (m)
GWT (ft) **4.9**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	0	0		0.0	0.0		0.0	0	0.0	1.86	125.0	125.0	1.7
2	17	3.4	4.4	4.2	7.1	25	14.2	29.7	50.5	3.72	125.0	250.0	1.7
3	18	6.9	6.0	5.7	9.6	25	15.0	28.8	49.0	5.58	125.0	375.0	1.7
4	25	10.8	12.9	12.3	20.9	25	20.8	40.8	69.4	6.36	125.0	500.0	1.7
5	36	13.7	23.1	21.9	37.3	25	30.0	60.6	100.0	7.13	125.0	562.6	1.7
6	49	13.3	29.5	25.9	44.1	25	40.8	83.5	100.0	7.91	125.0	625.2	1.7
7	37	11.8	18.4	17.5	29.8	25	30.8	59.3	100.0	8.69	125.0	687.8	1.7
8	52	13.4	30.9	26.8	45.1	25	43.3	85.9	100.0	9.23	125.0	750.4	1.7
9	180	18.2	113.1	78.6	126.9	25	150.0	100	100.0	9.78	125.0	813.0	1.6
10	326	17.8	178.5	119.8	186.2	25	271.7	100	100.0	10.32	125.0	875.6	1.6

ADANAC MOLY CORP.
Ruby Creek Project
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BK05-05



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Project Ruby Creek
Project No M09222A04
Calcls BPT Data reduction
Hole **BK05-05**

GEL (m)
GWT (ft) **5.6**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	9	3.6	3.5	3.4	5.7	25	7.5	16.8	28.6	1.86	125.0	125.0	1.7
2	12	4.1	4.4	4.2	7.1	25	10.0	20.3	34.5	3.72	125.0	250.0	1.7
3	23	5.4	5.8	5.5	9.4	25	19.2	38.3	65.1	5.58	125.0	375.0	1.7
4	34	7.9	8.2	7.8	13.2	25	28.3	58.3	99.1	6.36	125.0	500.0	1.7
5	60	9.6	34.6	29.2	49.6	25	50.0	100	100.0	7.13	125.0	625.0	1.7
6	127	113	153.3	103.9	176.6	25	105.8	100	100.0	7.91	125.0	687.6	1.7
7	113	12.2	91.8	65.2	109.4	25	94.2	100	100.0	8.69	125.0	750.2	1.7
8	62	11.2	49.1	38.3	61.7	25	51.7	100	100.0	9.23	125.0	812.8	1.6
9	174	12.8	165.9	111.8	173.9	25	145.0	100	100.0	9.78	125.0	875.4	1.6
10	839	16.6	593.1	381.0	572.3	25	699.2	100	100.0	10.32	125.0	938.0	1.5

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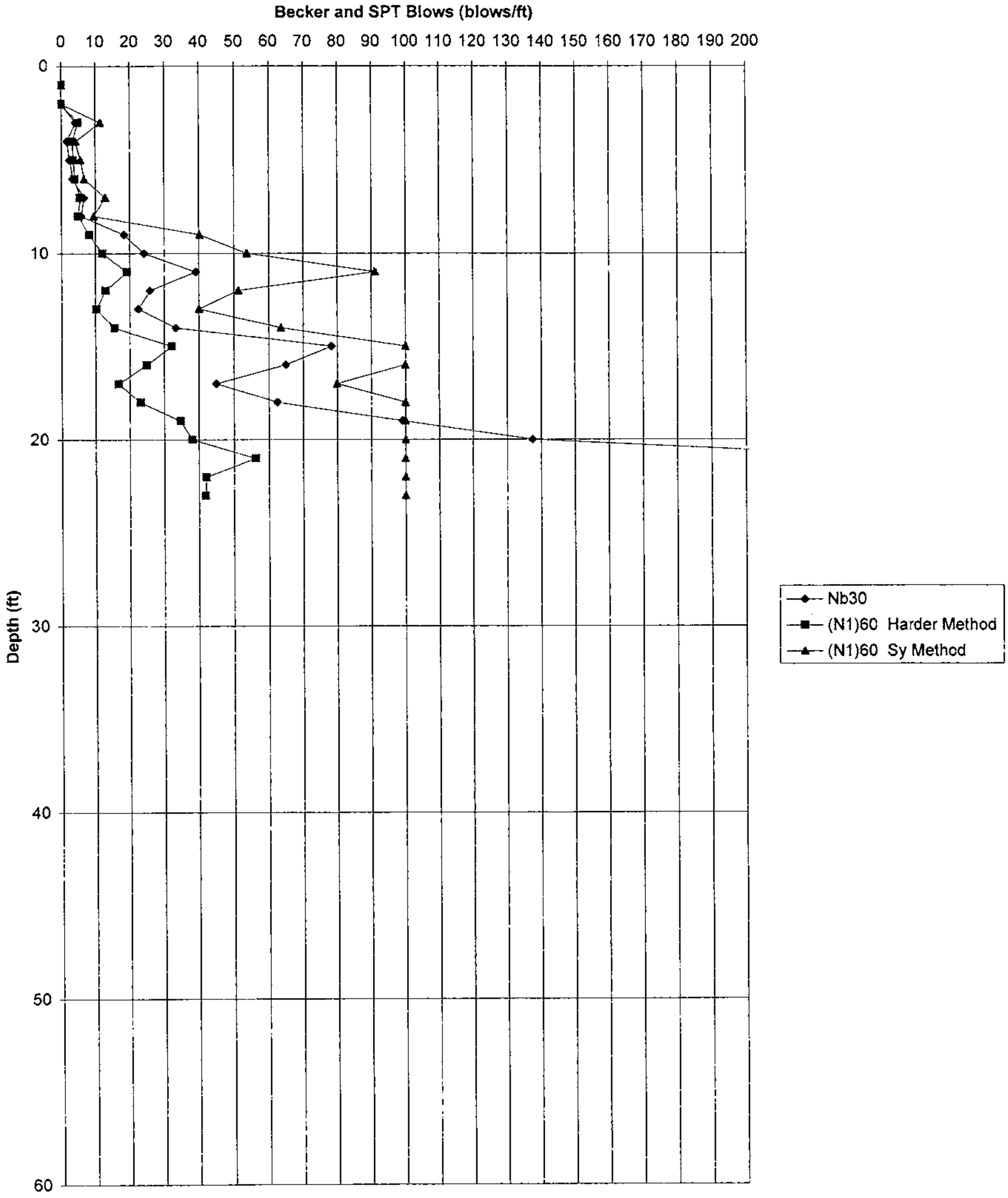
BK05-12


Becker and SPT Blows (blows/ft)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
Depth (ft)
0
10
20
30
40
50
60
Nb30
(N1)60 Harder Method
(N1)60 Sy Method

Project Ruby Creek
Project No M09222A04
Calcls BPT Data reduction
Hole **BK05-12**

GEL (m)
GWT (ft) **33.5**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	0	0	0.0	0.0	0.0	25	0.0	0	0.0	1.86	125.0	125.0	1.7
2	0	0	0.0	0.0	0.0	25	0.0	0	0.0	3.72	125.0	250.0	1.7
3	5	4.8	3.1	2.9	5.0	25	4.2	6.7	11.4	5.58	125.0	375.0	1.7
4	2	4	2.0	1.9	3.2	25	1.7	2.5	4.3	6.36	125.0	500.0	1.7
5	3	3.3	2.2	2.1	3.6	25	2.5	3.3	5.6	7.13	125.0	625.0	1.7
6	4	3	2.5	2.4	4.0	25	3.3	4	6.7	7.91	125.0	750.0	1.7
7	8	4.5	3.8	3.6	5.6	25	6.7	8.2	12.8	8.69	125.0	875.0	1.6
8	7	4.3	3.6	3.4	4.9	25	5.8	6.5	9.5	9.23	125.0	1000.0	1.5
9	22	6.2	6.3	6.0	8.3	25	18.3	29.3	40.2	9.78	125.0	1125.0	1.4
10	29	8	9.7	9.2	11.9	25	24.2	41.3	53.7	10.32	125.0	1250.0	1.3
11	47	10.1	16.3	15.5	19.2	25	39.2	73.4	91.1	10.87	125.0	1375.0	1.2
12	31	9.2	11.4	10.8	12.8	25	25.8	43.2	51.3	11.41	125.0	1500.0	1.2
13	27	8.2	9.4	8.9	10.2	25	22.5	35.1	40.1	11.96	125.0	1625.0	1.1
14	40	9.8	14.8	14.1	15.5	25	33.3	57.8	63.6	12.50	125.0	1750.0	1.1
15	94	11.7	36.4	30.3	32.2	25	78.3	100	100.0	13.05	125.0	1875.0	1.1
16	78	10.9	26.7	24.2	24.9	25	65.0	100	100.0	13.47	125.0	2000.0	1.0
17	54	10	17.6	16.8	16.7	25	45.0	80.1	79.9	13.90	125.0	2125.0	1.0
18	75	10.4	26.0	23.7	23.0	25	62.5	100	100.0	14.32	125.0	2250.0	1.0
19	119	12.5	46.7	36.7	34.7	25	99.2	100	100.0	14.75	125.0	2375.0	0.9
20	165	12.8	54.1	41.4	38.1	25	137.5	100	100.0	15.18	125.0	2500.0	0.9
21	301	13.3	87.8	62.6	56.2	25	250.8	100	100.0	15.60	125.0	2625.0	0.9
22	375	11.7	64.6	48.1	42.1	25	312.5	100	100.0	16.03	125.0	2750.0	0.9
23	396	11.4	66.0	48.9	41.9	25	330.0	100	100.0	16.46	125.0	2875.0	0.9

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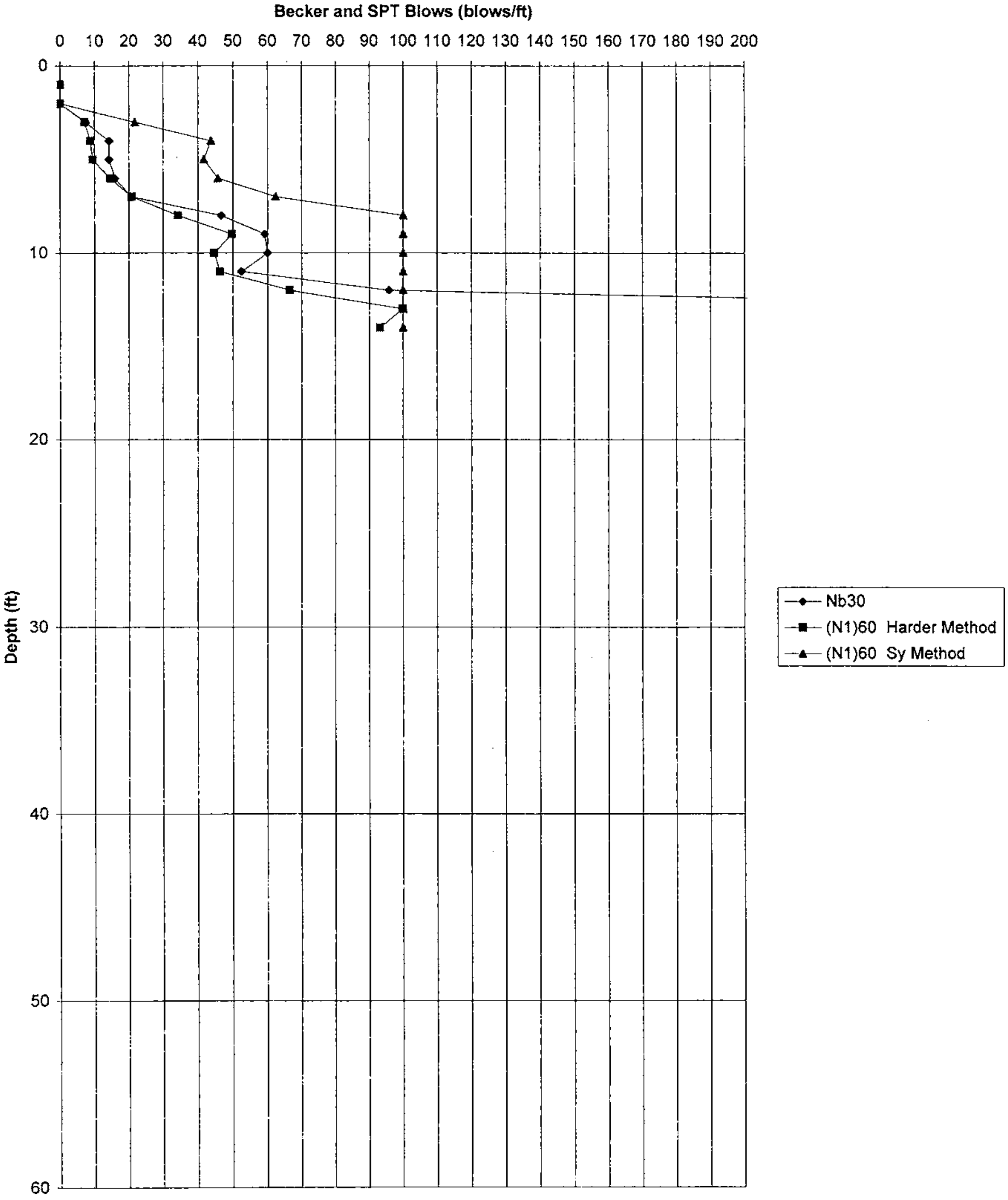
BK05-13


Becker and SPT Blows (blows/ft)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
Depth (ft)
0
10
20
30
40
50
60
Nb30
(N1)60 Harder Method
(N1)60 Sy Method

Project Ruby Creek
Project No M09222A04
Calcls BPT Data reduction
Hole **BK05-13**

GEL (*m*)
GWT (ft) **0**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	0	0			0.0	25	0.0	0	0.0	1.86	125.0	62.6	1.7
2	0	0			0.0	25	0.0	0	0.0	3.72	125.0	125.2	1.7
3	9	5.6	4.4	4.2	7.1	25	7.5	12.8	21.8	5.58	125.0	187.8	1.7
4	17	5.8	5.4	5.1	8.7	25	14.2	25.7	43.7	6.36	125.0	250.4	1.7
5	17	6	5.9	5.6	9.5	25	14.2	24.5	41.7	7.13	125.0	313.0	1.7
6	19	9.5	9.0	8.6	14.5	25	15.8	26.9	45.7	7.91	125.0	375.6	1.7
7	25	10.8	12.9	12.3	20.9	25	20.8	36.7	62.4	8.69	125.0	438.2	1.7
8	56	11.4	21.2	20.1	34.2	25	46.7	93.3	100.0	9.23	125.0	500.8	1.7
9	71	12.5	34.8	29.3	49.8	25	59.2	100	100.0	9.78	125.0	563.4	1.7
10	72	11.8	30.0	26.3	44.6	25	60.0	100	100.0	10.32	125.0	626.0	1.7
11	63	12.7	31.6	27.3	46.4	25	52.5	100	100.0	10.87	125.0	688.6	1.7
12	115	13.7	51.2	39.6	66.5	25	95.8	100	100.0	11.41	125.0	751.2	1.7
13	433	12.6	86.6	61.9	99.8	25	360.8	100	100.0	11.96	125.0	813.8	1.6
14	401	12.6	83.6	60.0	93.2	25	334.2	100	100.0	12.50	125.0	876.4	1.6

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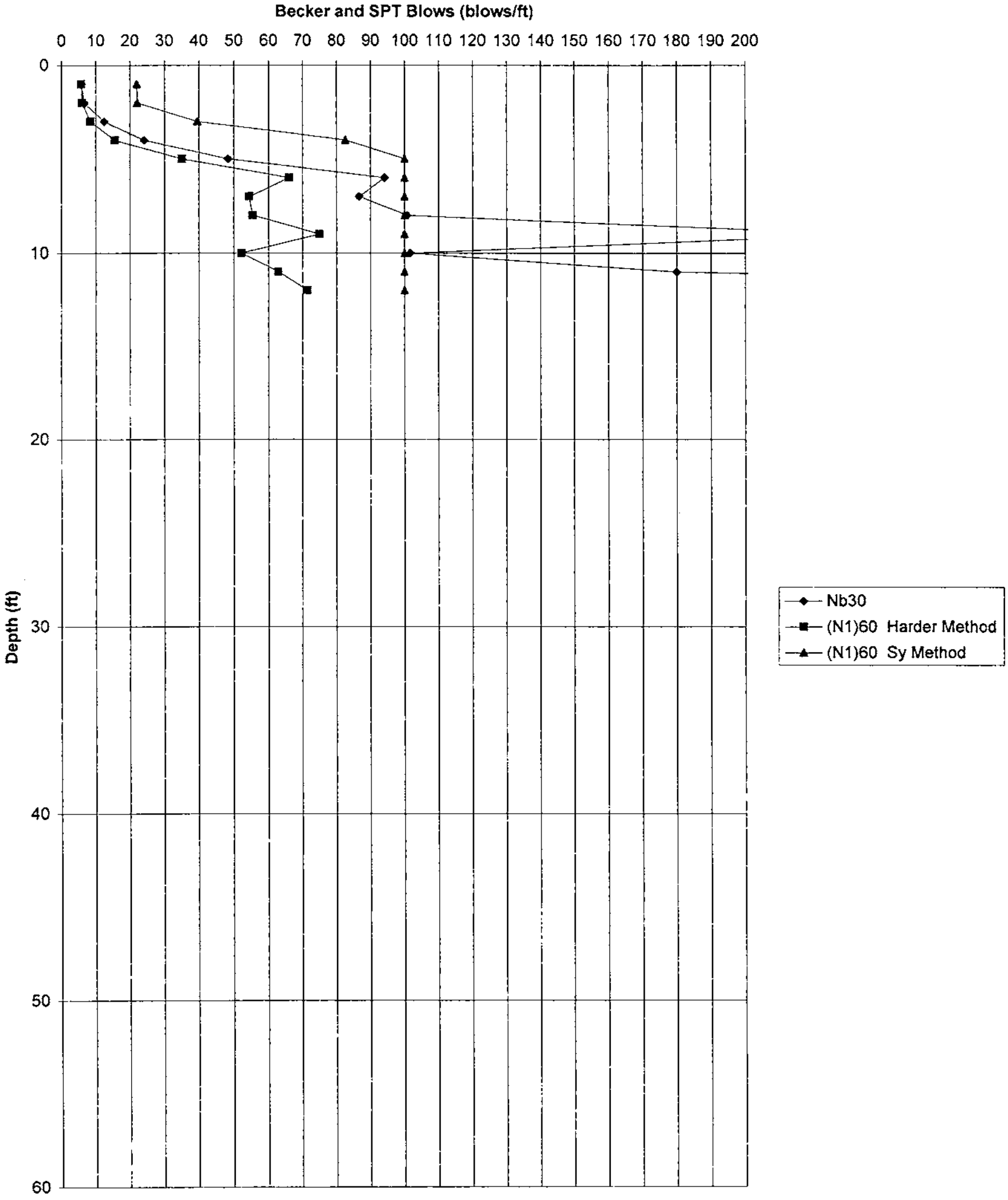
Ruby Creek Project
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BK05-14



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Project	Ruby Creek
Project No	M09222A04
Calcls	BPT Data reduction
Hole	**BK05-14**

GEL (m)	
GWT (ft)	**7.5**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	7	4	3.6	3.4	5.7	25	5.8	12.9	21.9	1.86	125.0	125.0	1.7
2	8	4.4	3.8	3.6	6.1	25	6.7	13	22.1	3.72	125.0	250.0	1.7
3	15	5.7	5.2	5.0	8.4	25	12.5	23.2	39.4	5.58	125.0	375.0	1.7
4	29	8.3	9.7	9.2	15.6	25	24.2	48.6	82.6	6.36	125.0	500.0	1.7
5	58	11.1	21.7	20.6	35.1	25	48.3	100	100.0	7.13	125.0	625.0	1.7
6	113	14.1	50.8	39.3	66.1	25	94.2	100	100.0	7.91	125.0	750.0	1.7
7	104	13.3	43.9	35.0	54.5	25	86.7	100	100.0	8.69	125.0	875.0	1.6
8	121	12.5	47.0	37.0	55.5	25	100.8	100	100.0	9.23	125.0	937.6	1.5
9	283	12.9	70.2	51.6	75.1	25	235.8	100	100.0	9.78	125.0	1000.2	1.5
10	122	13.2	47.2	37.1	52.3	25	101.7	100	100.0	10.32	125.0	1062.8	1.4
11	216	12.5	61.2	45.9	62.9	25	180.0	100	100.0	10.87	125.0	1125.4	1.4
12	520	12.2	73.4	53.6	71.5	25	433.3	100	100.0	11.41	125.0	1188.0	1.3

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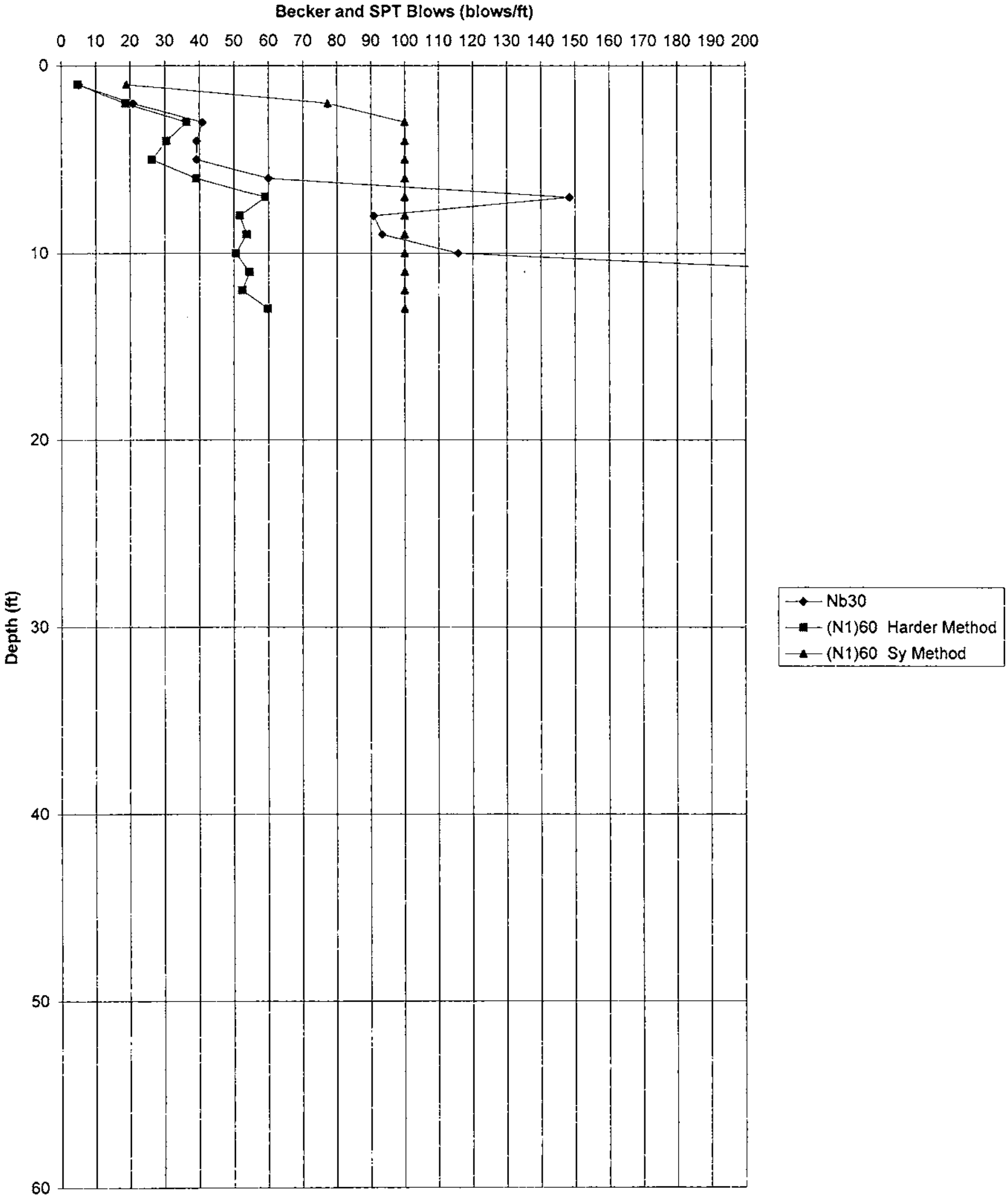
Ruby Creek Project
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BK05-15



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Project Ruby Creek
Project No M09222A04
Calcls BPT Data reduction
Hole **BK05-15**

GEL (m)
GWT (ft) **36.7**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	6	2.6	3.0	2.9	4.8	25	5.0	11.1	18.9	1.86	125.0	125.0	1.7
2	25	10	11.6	11.0	18.7	25	20.8	45.5	77.4	3.72	125.0	250.0	1.7
3	49	11.9	22.5	21.3	36.3	25	40.8	89	100.0	5.58	125.0	375.0	1.7
4	47	11.2	18.9	17.9	30.5	25	39.2	83.3	100.0	6.36	125.0	500.0	1.7
5	47	10.1	16.3	15.5	26.3	25	39.2	81.5	100.0	7.13	125.0	625.0	1.7
6	72	10.9	25.3	23.3	39.1	25	60.0	100	100.0	7.91	125.0	750.0	1.7
7	178	11.4	48.6	37.9	59.0	25	148.3	100	100.0	8.69	125.0	875.0	1.6
8	109	12.9	44.9	35.6	51.8	25	90.8	100	100.0	9.23	125.0	1000.0	1.5
9	112	13.8	50.5	39.2	53.7	25	93.3	100	100.0	9.78	125.0	1125.0	1.4
10	139	12.6	50.0	38.9	50.6	25	115.8	100	100.0	10.32	125.0	1250.0	1.3
11	285	12.1	58.1	44.0	54.5	25	237.5	100	100.0	10.87	125.0	1375.0	1.2
12	290	12.1	58.5	44.2	52.5	25	241.7	100	100.0	11.41	125.0	1500.0	1.2
13	487	12.1	71.5	52.4	59.8	25	405.8	100	100.0	11.96	125.0	1625.0	1.1

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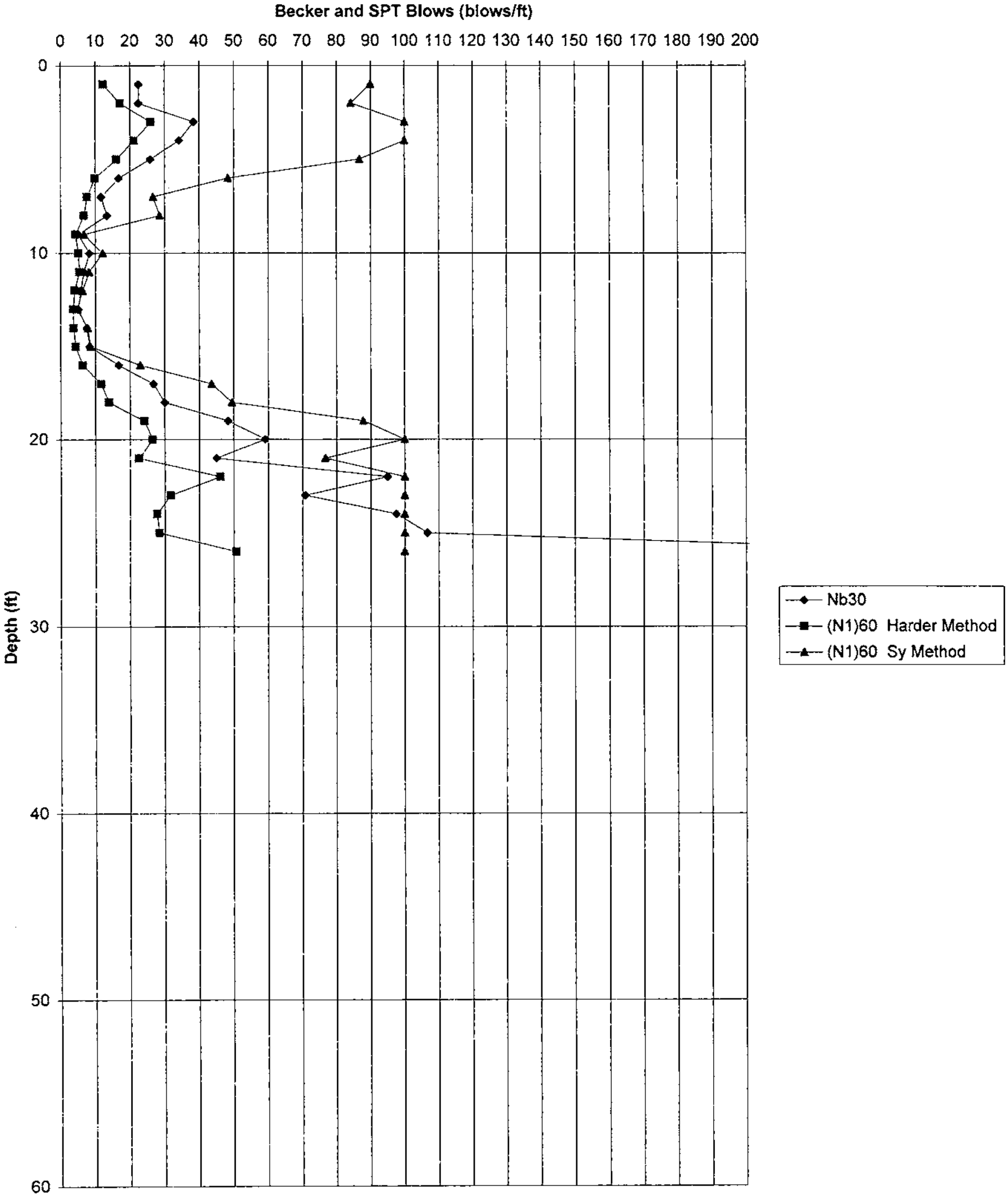
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BK05-16



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Project Ruby Creek
Project No M09222A04
Calcls BPT Data reduction
Hole **BK05-16**

GEL (m)
GWT (ft) **13.1**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	27	7.4	7.6	7.2	12.3	25	22.5	52.9	89.9	1.86	125.0	125.0	1.7
2	27	9	10.6	10.1	17.1	25	22.5	49.5	84.2	3.72	125.0	250.0	1.7
3	46	9.8	16.1	15.3	26.0	25	38.3	83.2	100.0	5.58	125.0	375.0	1.7
4	41	9.1	13.1	12.5	21.2	25	34.2	71.8	100.0	6.36	125.0	500.0	1.7
5	31	8.3	9.9	9.4	16.0	25	25.8	51	86.7	7.13	125.0	625.0	1.7
6	20	6.9	6.2	5.8	9.8	25	16.7	28.8	48.4	7.91	125.0	750.0	1.7
7	14	5.6	5.1	4.9	7.6	25	11.7	17.1	26.6	8.69	125.0	875.0	1.6
8	16	4.4	4.8	4.6	6.7	25	13.3	19.6	28.5	9.23	125.0	1000.0	1.5
9	6	4.3	3.3	3.2	4.3	25	5.0	4.9	6.7	9.78	125.0	1125.0	1.4
10	10	4.7	4.1	3.9	5.1	25	8.3	9.3	12.1	10.32	125.0	1250.0	1.3
11	8	6	4.6	4.3	5.4	25	6.7	6.6	8.2	10.87	125.0	1375.0	1.2
12	7	4.3	3.6	3.4	4.0	25	5.8	5.3	6.3	11.41	125.0	1500.0	1.2
13	6	4	3.3	3.2	3.6	25	5.0	4.2	4.8	11.96	125.0	1625.0	1.1
14	9	3.7	3.5	3.4	3.8	25	7.5	7	7.8	12.50	125.0	1687.6	1.1
15	10	4	4.1	3.9	4.3	25	8.3	7.8	8.6	13.05	125.0	1750.2	1.1
16	20	6.5	6.2	5.8	6.3	25	16.7	21.2	22.9	13.47	125.0	1812.8	1.1
17	32	8.9	11.6	11.0	11.7	25	26.7	41	43.6	13.90	125.0	1875.4	1.1
18	36	9.8	14.0	13.3	13.9	25	30.0	47.4	49.5	14.32	125.0	1938.0	1.0
19	58	11.6	25.5	23.4	24.1	25	48.3	85.4	87.8	14.75	125.0	2000.6	1.0
20	71	12	29.7	26.1	26.4	25	59.2	100	100.0	15.18	125.0	2063.2	1.0
21	54	11.7	24.2	22.6	22.5	25	45.0	76.8	76.6	15.60	125.0	2125.8	1.0
22	114	15	62.8	46.9	46.1	25	95.0	100	100.0	16.03	125.0	2188.4	1.0
23	85	12.5	40.1	32.6	31.6	25	70.8	100	100.0	16.46	125.0	2251.0	1.0
24	117	10.7	34.3	29.0	27.7	25	97.5	100	100.0	16.82	125.0	2313.6	1.0
25	128	10.7	36.1	30.1	28.4	25	106.7	100	100.0	17.19	125.0	2376.2	0.9
26	316	13	74.3	54.2	50.7	25	263.3	100	100.0	17.41	125.0	2412.7	0.9

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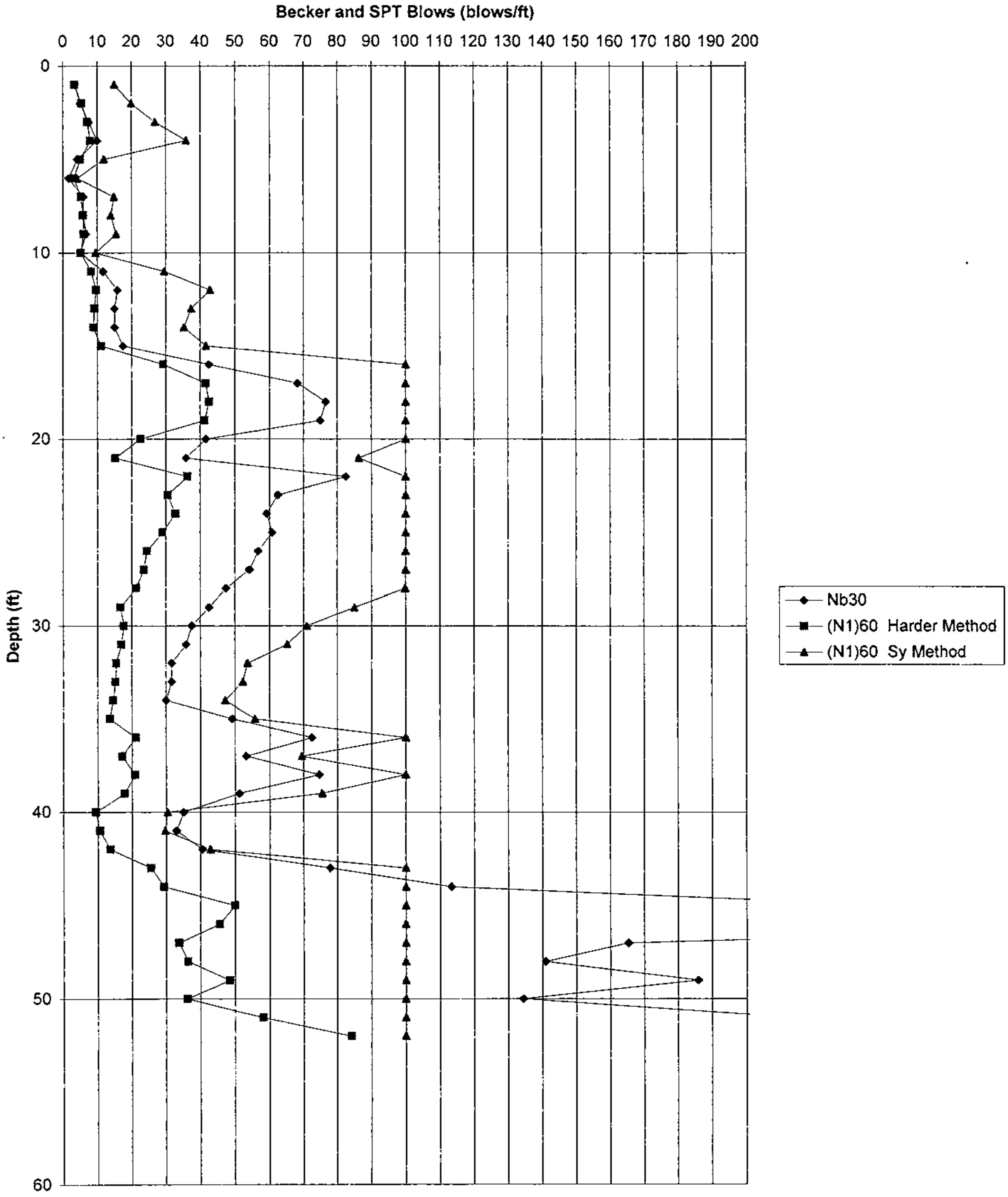
ADANAC MOLY CORP.
Ruby Creek Project
Feasibility Design of Tailings Facility, Waste Dumps and Site Water Management

BPT05-17



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Project	Ruby Creek
Project No	M09222A04
Calcs	BPT Data reduction
Hole	**BPT05-17**

GEL (m)	
GWT (ft)	**3.9**

		γ_{sat} (pcf)	**125**	**HARDER**		**PDA**		**SY**			γ_{sat}	σ_{vo}'	
Depth (ft)	**NB**	**BP**	**NBC**	**N60**	**(N1)60**	**EN(%)**	**Nb30**	**N60**	**(N1)60**	**Rs - (kips)**	**(pcf)**	**(psf)**	**Cn-factor**
1	4	1.9	2.1	2.0	3.4	25	3.3	8.8	15.0	1.86	125.0	125.0	1.7
2	6	4	3.3	3.2	5.4	25	5.0	11.7	19.9	3.72	125.0	250.0	1.7
3	9	5.4	4.4	4.2	7.1	25	7.5	15.8	26.9	5.58	125.0	375.0	1.7
4	12	5.9	4.9	4.7	7.9	25	10.0	21.1	35.9	6.36	125.0	437.6	1.7
5	5	4.6	3.1	2.9	5.0	25	4.2	7	11.9	7.13	125.0	500.2	1.7
6	2	4.5	2.0	1.9	3.2	25	1.7	2.4	4.1	7.91	125.0	562.8	1.7
7	7	3	3.2	3.0	5.2	25	5.8	8.7	14.8	8.69	125.0	625.4	1.7
8	7	4.6	3.6	3.4	5.7	25	5.8	8.2	13.9	9.23	125.0	688.0	1.7
9	8	4	3.8	3.6	6.0	25	6.7	9.2	15.4	9.78	125.0	750.6	1.7
10	6	4.6	3.3	3.2	5.1	25	5.0	5.9	9.5	10.32	125.0	813.2	1.6
11	14	6	5.5	5.3	8.2	25	11.7	19	29.5	10.87	125.0	875.8	1.6
12	19	7.5	6.7	6.4	9.6	25	15.8	28.5	42.8	11.41	125.0	938.4	1.5
13	18	7.3	6.6	6.3	9.1	25	15.0	25.7	37.4	11.96	125.0	1001.0	1.5
14	18	7.1	6.6	6.3	8.8	25	15.0	25	35.3	12.50	125.0	1063.6	1.4
15	21	8.2	8.5	8.1	11.1	25	17.5	30.4	41.7	13.05	125.0	1126.2	1.4
16	51	11.4	23.1	21.9	29.3	25	42.5	93.6	100.0	13.47	125.0	1188.8	1.3
17	82	12.7	39.0	32.0	41.5	25	68.3	100	100.0	13.90	125.0	1251.4	1.3
18	92	13	41.6	33.5	42.6	25	76.7	100	100.0	14.32	125.0	1314.0	1.3
19	90	12.3	41.2	33.3	41.3	25	75.0	100	100.0	14.75	125.0	1376.6	1.2
20	50	10.5	19.6	18.6	22.6	25	41.7	88	100.0	15.18	125.0	1439.2	1.2
21	43	9.3	13.4	12.8	15.1	25	35.8	72.7	86.3	15.60	125.0	1501.8	1.2
22	99	11.7	37.8	31.2	36.2	25	82.5	100	100.0	16.03	125.0	1564.4	1.2
23	75	12	30.9	26.8	30.6	25	62.5	100	100.0	16.46	125.0	1627.0	1.1
24	71	12.8	34.8	29.3	32.8	25	59.2	100	100.0	16.82	125.0	1689.6	1.1
25	73	11.5	30.3	26.4	29.1	25	60.8	100	100.0	17.19	125.0	1752.2	1.1
26	68	11.1	24.3	22.7	24.5	25	56.7	100	100.0	17.56	125.0	1814.8	1.1
27	65	10.6	23.5	22.2	23.5	25	54.2	100	100.0	17.93	125.0	1877.4	1.1
28	57	10.8	21.5	20.4	21.3	25	47.5	95.6	99.8	18.30	125.0	1940.0	1.0
29	51	10.3	17.1	16.2	16.7	25	42.5	82.7	85.0	18.66	125.0	2002.6	1.0
30	45	10.7	18.4	17.4	17.7	25	37.5	70.1	71.0	19.03	125.0	2065.2	1.0
31	43	10.8	17.8	16.9	16.9	25	35.8	65.4	65.2	19.40	125.0	2127.8	1.0
32	38	10.5	16.5	15.7	15.4	25	31.7	54.6	53.7	19.73	125.0	2190.4	1.0
33	38	10.7	16.5	15.7	15.2	25	31.7	54	52.3	20.06	125.0	2253.0	1.0
34	36	10.6	15.9	15.1	14.5	25	30.0	49.4	47.2	20.39	125.0	2315.6	1.0
35	41	10.1	15.0	14.3	13.5	36	49.2	59.1	55.7	20.73	125.0	2378.2	0.9
36	68	10.5	24.3	22.7	21.1	32	72.5	100	100.0	21.06	125.0	2440.8	0.9
37	50	10.5	19.6	18.6	17.1	32	53.3	75.6	69.5	21.39	125.0	2503.4	0.9
38	70	11.2	24.8	23.0	20.9	32	74.7	100	100.0	21.72	125.0	2566.0	0.9
39	55	11	20.9	19.9	17.8	28	51.3	84.1	75.5	22.05	125.0	2628.6	0.9
40	30	8.8	11.2	10.6	9.4	35	35.0	34.3	30.4	22.36	125.0	2691.2	0.9
41	30	9.8	12.7	12.1	10.6	33	33.0	33.9	29.7	22.66	125.0	2753.8	0.9
42	38	10.9	16.5	15.7	13.6	32	40.5	49.4	42.8	22.97	125.0	2816.4	0.9
43	73	12.7	35.6	29.8	25.5	32	77.9	100	100.0	23.27	125.0	2879.0	0.9
44	100	12.9	43.2	34.5	29.3	34	113.3	100	100.0	23.58	125.0	2941.6	0.8
45	214	14	82.9	59.6	50.0	34	242.5	100	100.0	23.88	125.0	3004.2	0.8
46	325	12.9	75.4	54.8	45.6	34	368.3	100	100.0	24.19	125.0	3066.8	0.8
47	160	12.9	53.3	40.9	33.7	31	165.3	100	100.0	24.49	125.0	3129.4	0.8
48	151	13.3	59.2	44.6	36.3	28	140.9	100	100.0	24.78	125.0	3192.0	0.8
49	180	15.1	83.8	60.1	48.5	31	186.0	100	100.0	25.06	125.0	3254.6	0.8
50	126	14.5	60.3	45.3	36.2	32	134.4	100	100.0	25.35	125.0	3317.2	0.8
51	214	16.1	105.0	73.5	58.1	30	214.0	100	100.0	25.64	125.0	3379.8	0.8
52	384	16.1	158.6	107.2	84.1	28	358.4	100	100.0	25.92	125.0	3442.4	0.8

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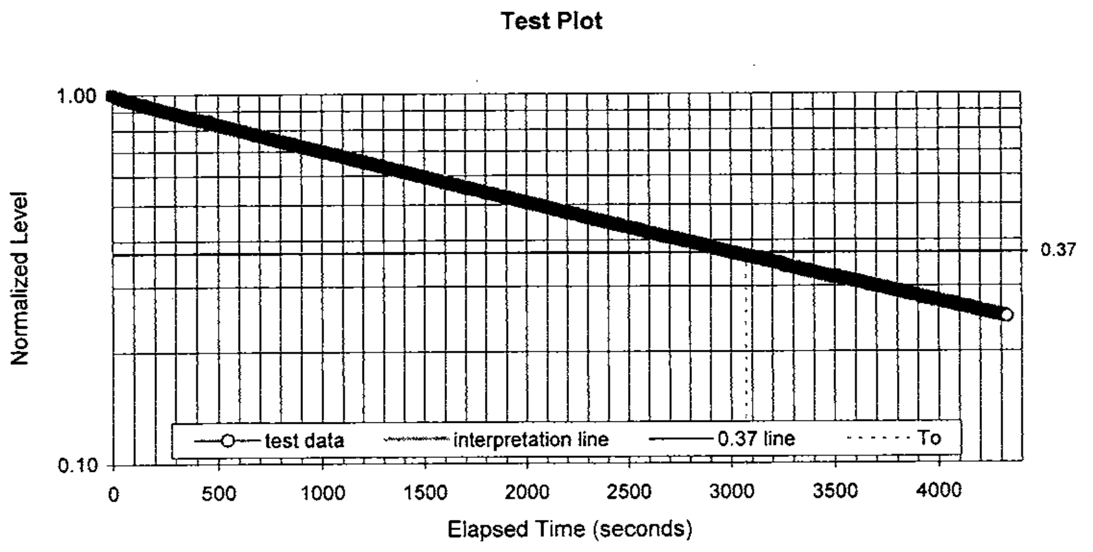
APPENDIX III-D

Monitoring Well Response Test Analyses

Falling Head Test - Hvorslev Solution

Date:	October 12, 2005	Time Initiated:	10:10	**Well:**	**BKS05-11 (PZ-A) - T1**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	3.00
Estimated Static Level H (mbrp	5.400	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**3070**
				K (m/s) =	**4.6E-08**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		0	5.40	1.00	
	3		0.013	5.39	1.00	
	6		0.024	5.38	1.00	
	9		0.032	5.37	0.99	
	12		0.04	5.36	0.99	
	15		0.053	5.35	0.99	
	18		0.061	5.34	0.99	
	21		0.072	5.33	0.99	
	24		0.08	5.32	0.99	
	27		0.088	5.31	0.98	
	30		0.096	5.30	0.98	
	33		0.104	5.30	0.98	
	36		0.112	5.29	0.98	
	39		0.123	5.28	0.98	
	42		0.125	5.28	0.98	
	45		0.131	5.27	0.98	
	48		0.141	5.26	0.97	
	51		0.149	5.25	0.97	
	54		0.152	5.25	0.97	
	57		0.16	5.24	0.97	
	60		0.168	5.23	0.97	
	63		0.179	5.22	0.97	



KLOHN-CRIPPEN	Project No.:	M09222A04		
	Project:	Ruby Creek		
	Details:	BKS05-11 (PZ-A) - Test 1		
	Eng.:	DK	Checked:	FL
	Date:	19-Oct-05		

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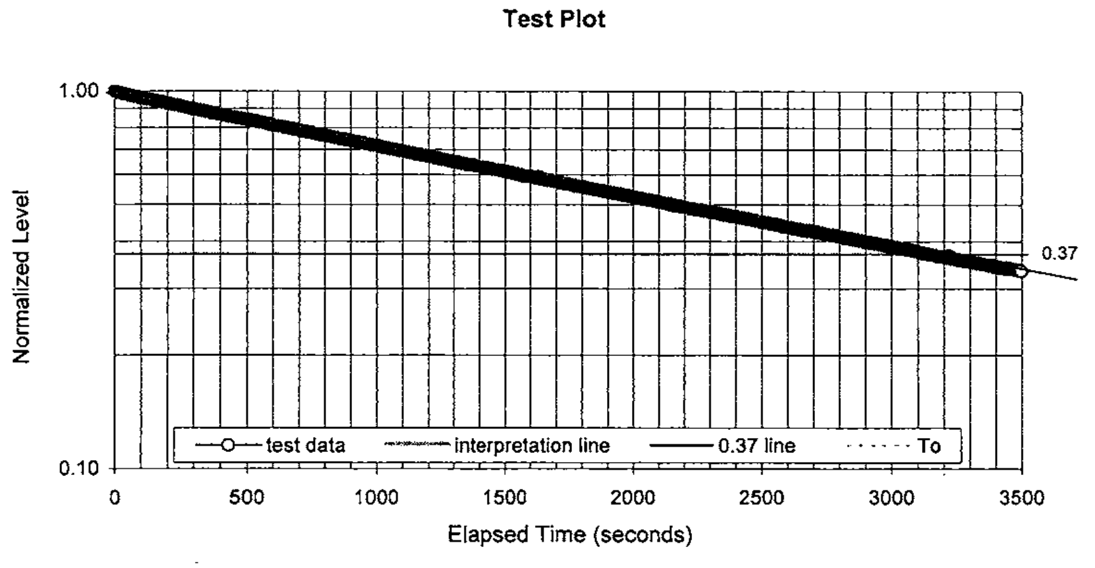
Falling Head Test - Hvorslev Solution

Date:	October 12, 2005	Time Initiated:	10:10	**Well:**	**BKS05-11 (PZ-A) - T2**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	3.00
Estimated Static Level H (mbrp	5.400	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**3200**
				K (m/s) =	**4.5E-08**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		0	5.40	1.00	
	3		0.008	5.39	1.00	
	6		0.016	5.38	1.00	
	9		0.021	5.38	1.00	
	12		0.024	5.38	1.00	
	15		0.04	5.36	0.99	
	18		0.051	5.35	0.99	
	21		0.056	5.34	0.99	
	24		0.061	5.34	0.99	
	27		0.072	5.33	0.99	
	30		0.077	5.32	0.99	
	33		0.085	5.32	0.98	
	36		0.088	5.31	0.98	
	39		0.096	5.30	0.98	
	42		0.101	5.30	0.98	
	45		0.112	5.29	0.98	
	48		0.115	5.29	0.98	
	51		0.12	5.28	0.98	
	54		0.125	5.28	0.98	
	57		0.131	5.27	0.98	
	60		0.136	5.26	0.97	
	63		0.144	5.26	0.97	



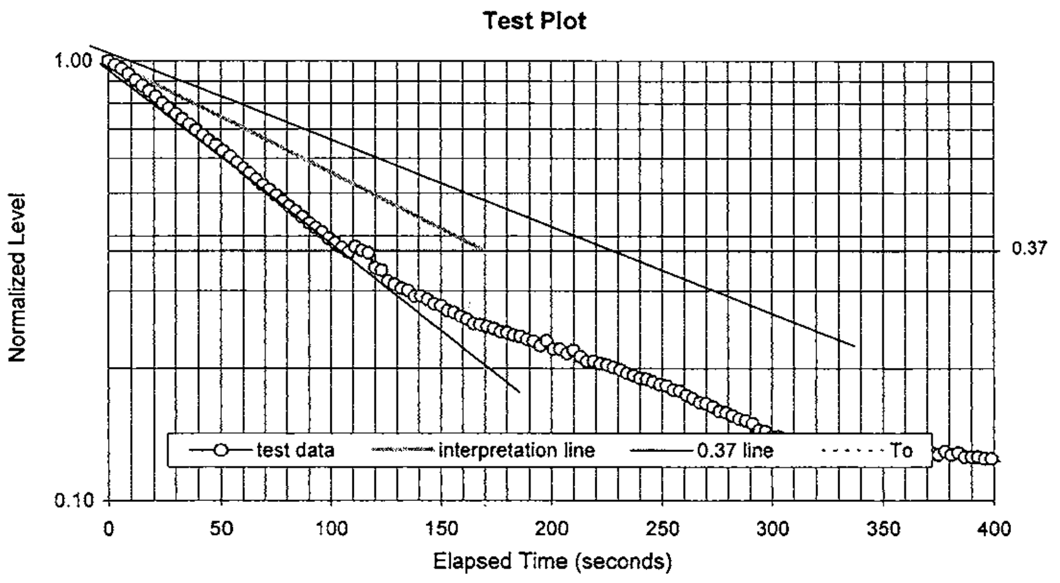
KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	**Ruby Creek**		
Details:	**BKS05-11 (PZ-A) - Test 2**		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

Falling Head Test - Hvorslev Solution

Date:	October 15, 2005	Time Initiated:	15:41	**Well:**	**BKS05-11 (PZ-B) - T1**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	1.52
Estimated Static Level H (mbrp	2.120	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**170**
				K (m/s) =	**1.5E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		0	2.12	1.00	
	3		0.043	2.08	0.98	
	6		0.088	2.03	0.96	
	9		0.142	1.98	0.93	
	12		0.203	1.92	0.90	
	15		0.259	1.86	0.88	
	18		0.307	1.81	0.86	
	21		0.363	1.76	0.83	
	24		0.416	1.70	0.80	
	27		0.464	1.66	0.78	
	30		0.515	1.61	0.76	
	33		0.558	1.56	0.74	
	36		0.6	1.52	0.72	
	39		0.643	1.48	0.70	
	42		0.683	1.44	0.68	
	45		0.723	1.40	0.66	
	48		0.758	1.36	0.64	
	51		0.798	1.32	0.62	
	54		0.835	1.29	0.61	
	57		0.875	1.25	0.59	
	60		0.912	1.21	0.57	
	63		0.942	1.18	0.56	



KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	**Ruby Creek**		
Details:	**BKS05-11 (PZ-B) - Test 1**		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

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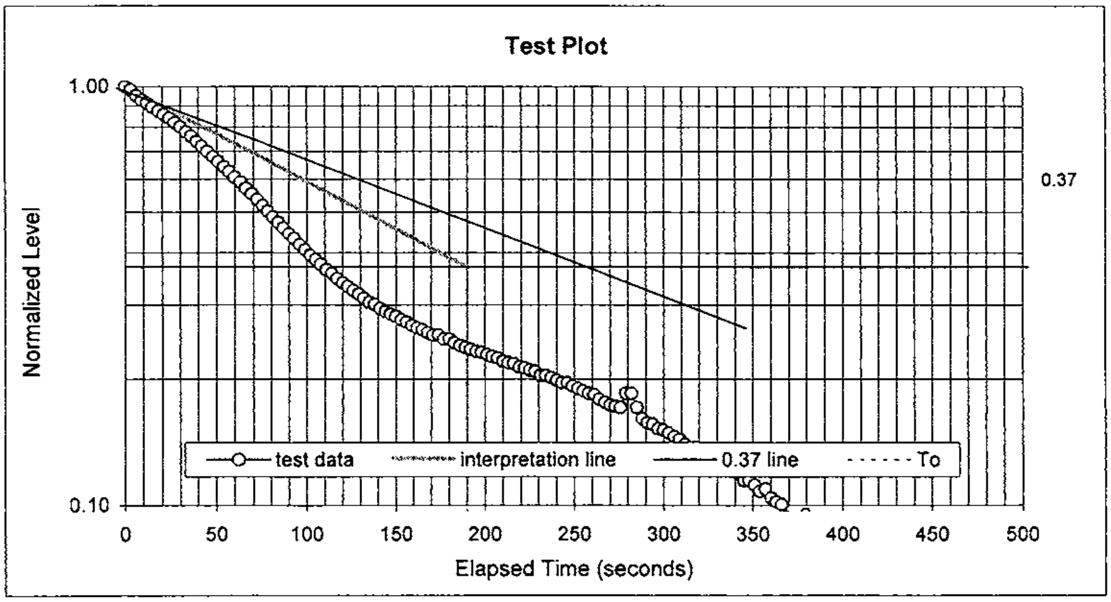
Falling Head Test - Hvorslev Solution

Date:	October 15, 2005	Time Initiated:	15:41	**Well:**	**BKS05-11 (PZ-B) - T2**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	1.52
Estimated Static Level H (mbr	2.120	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**190**
				K (m/s) =	**1.3E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		0	2.12	1.00	
	3		0.037	2.08	0.98	
	6		0.101	2.02	0.95	
	9		0.152	1.97	0.93	
	12		0.184	1.94	0.91	
	15		0.227	1.89	0.89	
	18		0.267	1.85	0.87	
	21		0.301	1.82	0.86	
	24		0.336	1.78	0.84	
	27		0.384	1.74	0.82	
	30		0.421	1.70	0.80	
	33		0.467	1.65	0.78	
	36		0.509	1.61	0.76	
	39		0.552	1.57	0.74	
	42		0.595	1.53	0.72	
	45		0.637	1.48	0.70	
	48		0.680	1.44	0.68	
	51		0.717	1.40	0.66	
	54		0.757	1.36	0.64	
	57		0.792	1.33	0.63	
	60		0.835	1.29	0.61	
	63		0.869	1.25	0.59	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BKS05-11 (PZ-B) - Test 1**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**19-Oct-05**		

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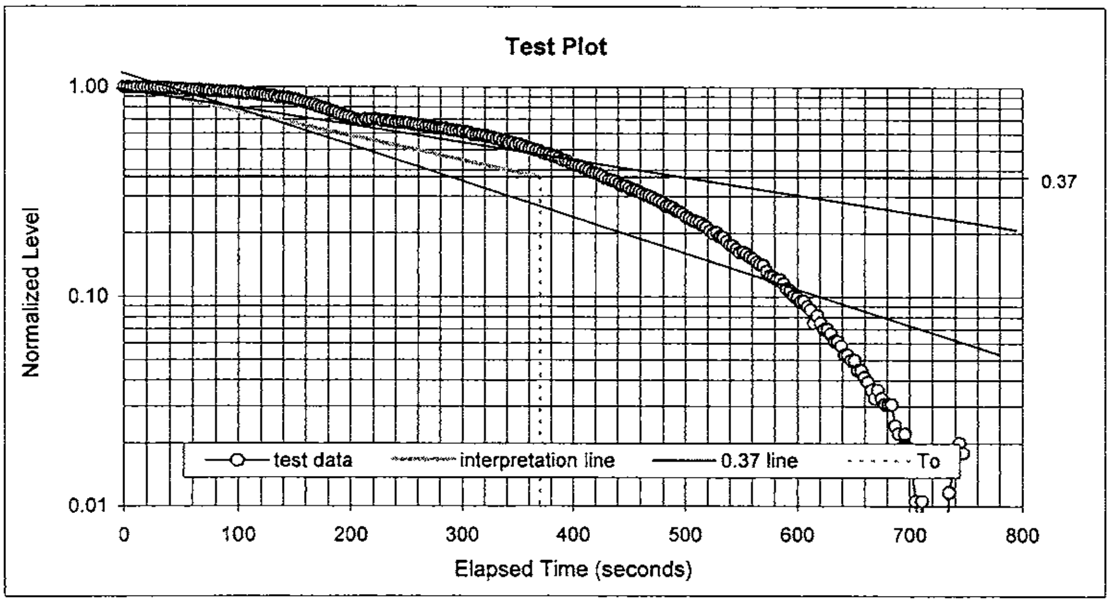
Falling Head Test - Hvorslev Solution

Date:	October 14, 2005	Time Initiated:	9:37	**Well:**	**BK05-12 (PZ-A) - T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	3.00
Estimated Static Level H (mbr	10.920	Initial Level H_0 (mbrp):	9.97	**T_o (sec) =**	**370**
transducer may have shifted during test				**K (m/s) =**	**1.4E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		9.974	0.95	1.00	
	3		9.977	0.94	1.00	
	6		9.979	0.94	0.99	
	9		9.979	0.94	0.99	
	12		9.977	0.94	1.00	
	15		9.979	0.94	0.99	
	18		9.979	0.94	0.99	
	21		9.979	0.94	0.99	
	24		9.982	0.94	0.99	
	27		9.979	0.94	0.99	
	30		9.982	0.94	0.99	
	33		9.985	0.94	0.99	
	36		9.985	0.94	0.99	
	39		9.987	0.93	0.99	
	42		9.990	0.93	0.98	
	45		9.993	0.93	0.98	
	48		9.995	0.93	0.98	
	51		9.995	0.93	0.98	
	54		9.998	0.92	0.97	
	57		10.001	0.92	0.97	
	60		10.001	0.92	0.97	
	63		10.003	0.92	0.97	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BK05-12 (PZ-A)-Test 1**		
	Eng.:	**DK**	**Checked:**	FV
	Date:	**19-Oct-05**		

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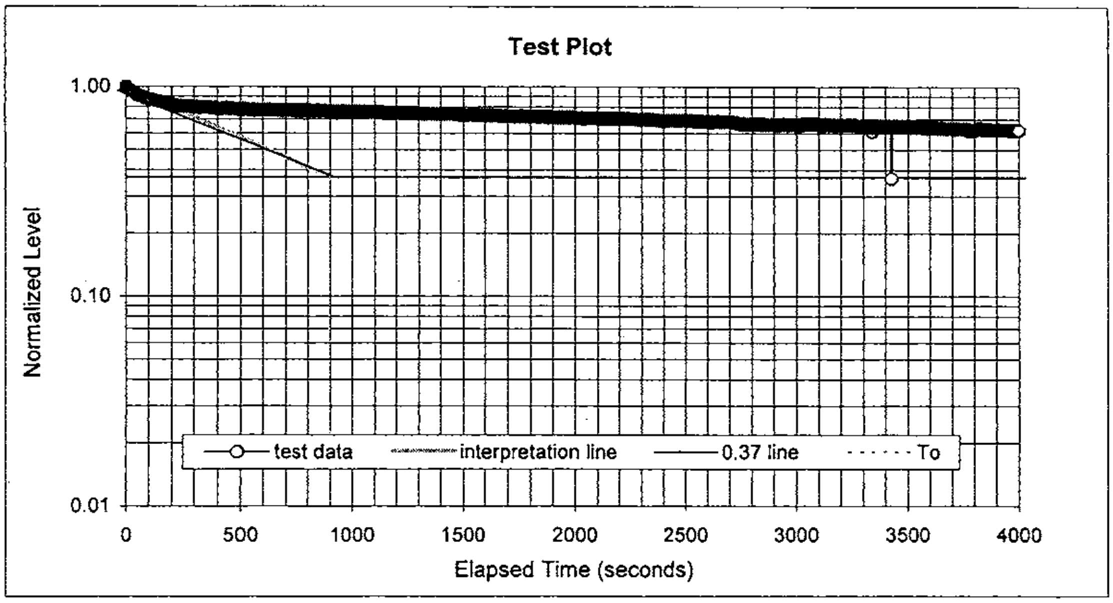
Falling Head Test - Hvorslev Solution

Date:	October 14, 2005	Time Initiated:	9:37	**Well:**	**BKS05-12 (PZ-A) - T2**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	3.00
Estimated Static Level H (mbrp	10.920	Initial Level H_0 (mbrp):	10.03	**T_o (sec) =**	**900**
transducer may have shifted during test				**K (m/s) =**	**5.7E-07**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		10.027	0.89	1.00	
	3		10.046	0.87	0.98	
	6		10.051	0.87	0.97	
	9		10.056	0.86	0.97	
	12		10.059	0.86	0.96	
	15		10.059	0.86	0.96	
	18		10.067	0.85	0.96	
	21		10.067	0.85	0.96	
	24		10.07	0.85	0.95	
	27		10.072	0.85	0.95	
	30		10.083	0.84	0.94	
	33		10.086	0.83	0.93	
	36		10.086	0.83	0.93	
	39		10.088	0.83	0.93	
	42		10.094	0.83	0.92	
	45		10.096	0.82	0.92	
	48		10.099	0.82	0.92	
	51		10.102	0.82	0.92	
	54		10.102	0.82	0.92	
	57		10.110	0.81	0.91	
	60		10.110	0.81	0.91	
	63		10.112	0.81	0.90	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	Ruby Creek		
	Details:	DH05-12		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**19-Oct-05**		

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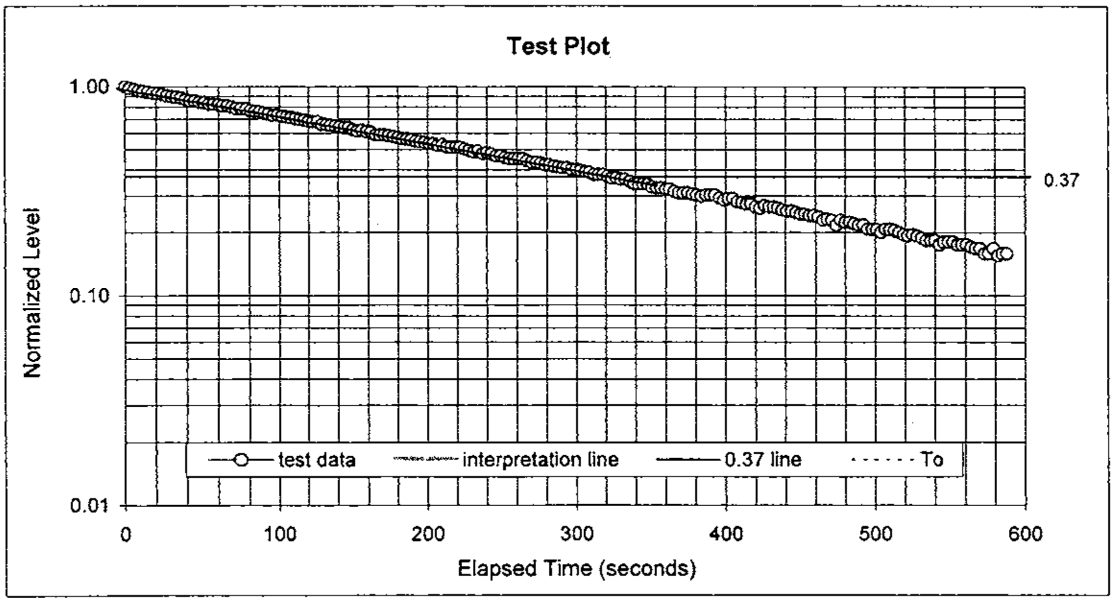
Falling Head Test - Hvorslev Solution

Date:	October 14, 2005	Time Initiated:	12:50	**Well:**	**BKS05-13 (PZ-A)-T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	1.52
Estimated Static Level H (mbr	0.670	Initial Level H_0 (mbrp):	0.02	**T_o (sec) =**	**320**
				K (m/s) =	**2.7E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level $(H-h)/(H-H_0)$	Comments
	0		0.02	0.65	1.00	
	3		0.031	0.64	0.98	
	6		0.039	0.63	0.97	
	9		0.047	0.62	0.96	
	12		0.052	0.62	0.95	
	15		0.057	0.61	0.94	
	18		0.063	0.61	0.93	
	21		0.068	0.60	0.93	
	24		0.076	0.59	0.91	
	27		0.081	0.59	0.91	
	30		0.087	0.58	0.90	
	33		0.092	0.58	0.89	
	36		0.095	0.58	0.88	
	39		0.105	0.57	0.87	
	42		0.111	0.56	0.86	
	45		0.113	0.56	0.86	
	48		0.121	0.55	0.84	
	51		0.124	0.55	0.84	
	54		0.132	0.54	0.83	
	57		0.132	0.54	0.83	
	60		0.137	0.53	0.82	
	63		0.143	0.53	0.81	



KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	**Ruby Creek**		
Details:	**BK05-13 (PZ-A)-Test 1**		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

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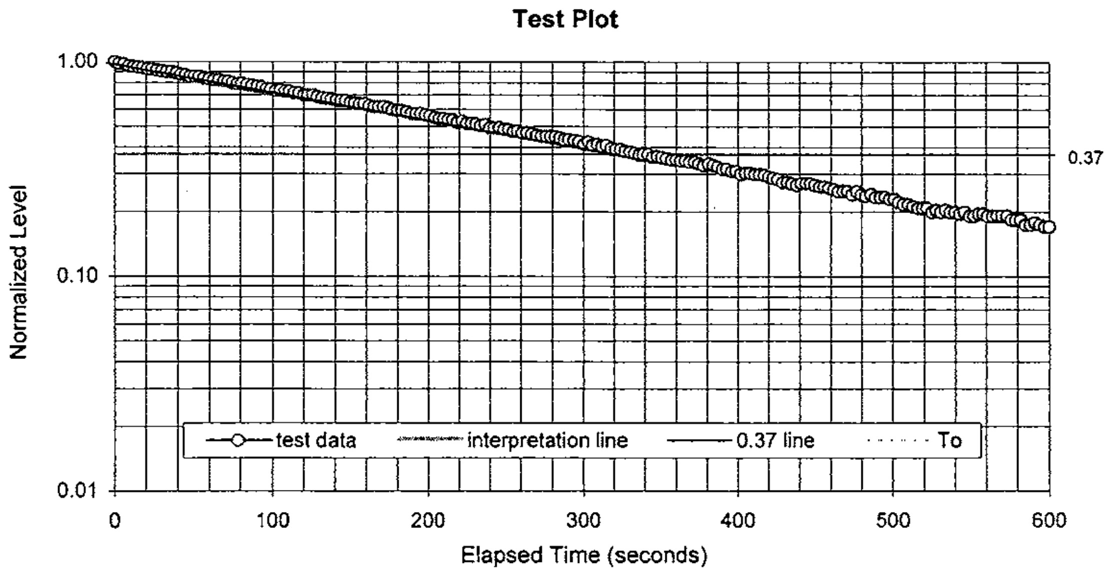
Falling Head Test - Hvorslev Solution

Date:	October 14, 2005	Time Initiated:	12:50	**Well:**	**BKS05-13 (PZ-A)-T2**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	1.52
Estimated Static Level H (mbrp	0.670	Initial Level H_0 (mbrp):	0.03	**T_o (sec) =**	**340**
				K (m/s) =	**2.6E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		0.031	0.64	1.00	
	3		0.044	0.63	0.98	
	6		0.047	0.62	0.97	
	9		0.06	0.61	0.95	
	12		0.063	0.61	0.95	
	15		0.065	0.61	0.95	
	18		0.071	0.60	0.94	
	21		0.079	0.59	0.92	
	24		0.081	0.59	0.92	
	27		0.087	0.58	0.91	
	30		0.092	0.58	0.90	
	33		0.095	0.58	0.90	
	36		0.097	0.57	0.90	
	39		0.103	0.57	0.89	
	42		0.111	0.56	0.87	
	45		0.116	0.55	0.87	
	48		0.124	0.55	0.85	
	51		0.124	0.55	0.85	
	54		0.127	0.54	0.85	
	57		0.135	0.54	0.84	
	60		0.140	0.53	0.83	
	63		0.143	0.53	0.82	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BKS05-13 (PZ-A)-Test 2**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**19-Oct-05**		

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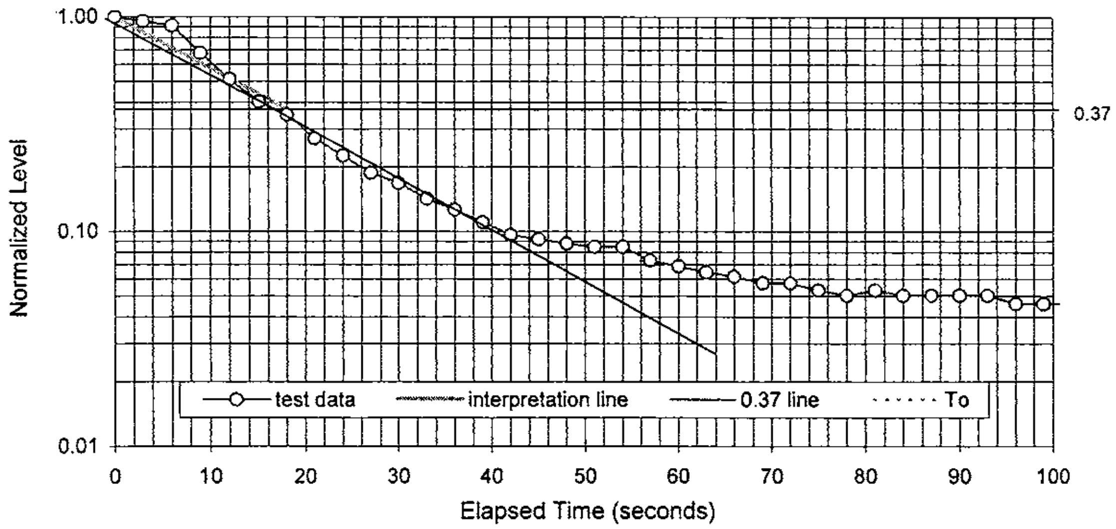
Falling Head Test - Hvorslev Solution

Date:	October 17, 2005	Time Initiated:	12:50	**Well:**	**BK05-14 (PZ-A) - T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	1.52
Estimated Static Level H (mbrp	2.950	Initial Level H_0 (mbrp):	2.25	**T_o (sec) =**	**18**
				K (m/s) =	**4.9E-05**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		2.254	0.70	1.00	
	3		2.286	0.66	0.95	
	6		2.315	0.64	0.91	
	9		2.478	0.47	0.68	
	12		2.593	0.36	0.51	
	15		2.67	0.28	0.40	
	18		2.707	0.24	0.35	
	21		2.761	0.19	0.27	
	24		2.793	0.16	0.23	
	27		2.819	0.13	0.19	
	30		2.833	0.12	0.17	
	33		2.851	0.10	0.14	
	36		2.862	0.09	0.13	
	39		2.873	0.08	0.11	
	42		2.883	0.07	0.10	
	45		2.886	0.06	0.09	
	48		2.889	0.06	0.09	
	51		2.891	0.06	0.08	
	54		2.891	0.06	0.08	
	57		2.899	0.05	0.07	
	60		2.902	0.05	0.07	
	63		2.905	0.05	0.06	

Test Plot

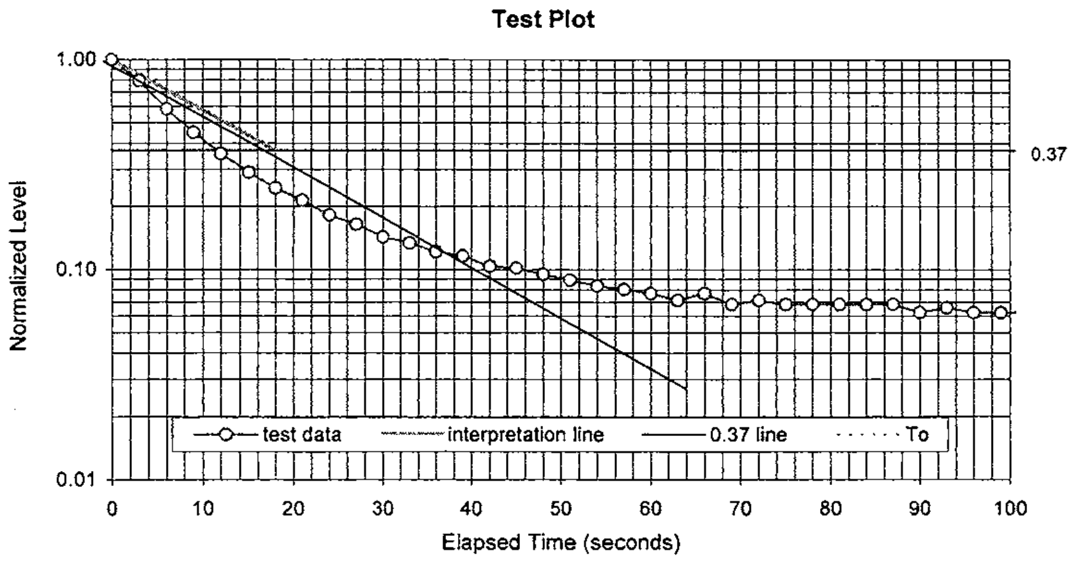


KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BK05-14 (PZ-A) - Test 1**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**19-Oct-05**		

Falling Head Test - Hvorslev Solution

Date:	October 17, 2005	Time Initiated:	12:50	**Well:**	**BK05-14 (PZ-A) - T2**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	1.52
Estimated Static Level H (mbr|	2.950	Initial Level H_0 (mbrp):	2.05	**T_o (sec) =**	**18**
				K (m/s) =	**4.9E-05**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		2.054	0.90	1.00	
	3		2.238	0.71	0.79	
	6		2.427	0.52	0.58	
	9		2.547	0.40	0.45	
	12		2.63	0.32	0.36	
	15		2.689	0.26	0.29	
	18		2.731	0.22	0.24	
	21		2.758	0.19	0.21	
	24		2.787	0.16	0.18	
	27		2.803	0.15	0.16	
	30		2.822	0.13	0.14	
	33		2.83	0.12	0.13	
	36		2.841	0.11	0.12	
	39		2.846	0.10	0.12	
	42		2.857	0.09	0.10	
	45		2.859	0.09	0.10	
	48		2.865	0.09	0.09	
	51		2.870	0.08	0.09	
	54		2.875	0.08	0.08	
	57		2.878	0.07	0.08	
	60		2.881	0.07	0.08	
	63		2.886	0.06	0.07	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BK05-14 (PZ-A) - Test 2**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**19-Oct-05**		

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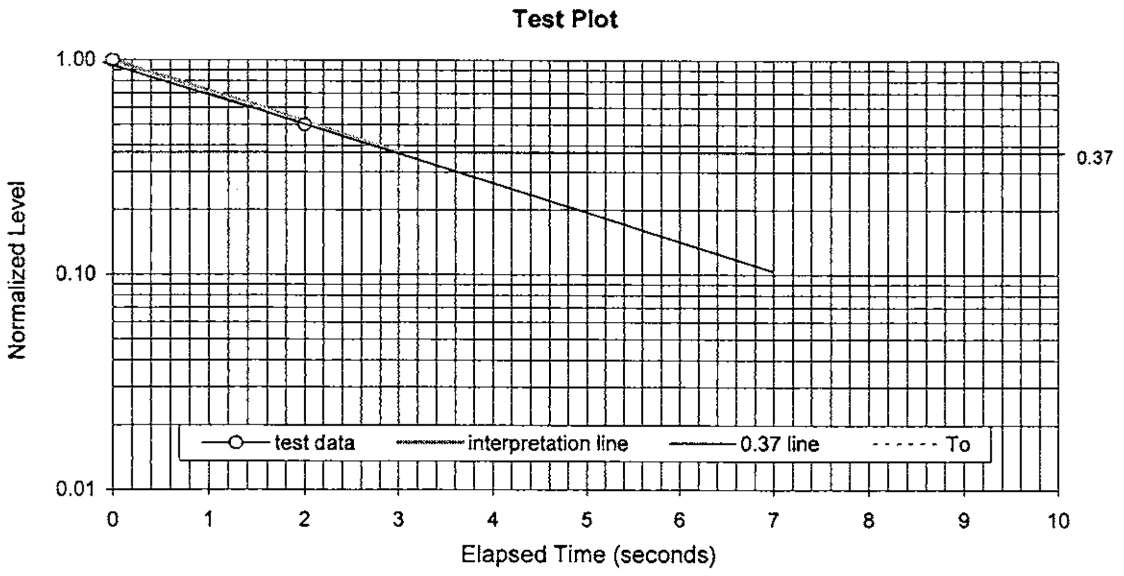
Falling Head Test - Hvorslev Solution

Date:	October 17, 2005	Time Initiated:	14:42	**Well:**	**BK05-15 (PZ-A) -T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	1.52
Estimated Static Level H (mbrp	12.540	Initial Level H_0 (mbrp):	12.50	**T_o (sec) =**	**3**
				K (m/s) =	**2.9E-04**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		12.5	0.04	1.00	
	2		12.52	0.02	0.50	



KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	Ruby Creek		
Details:	DH05-14		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

Slug Test - Oscillating Response
For partially penetrating wells in high permeability formations

Date: ######## Well: **BK05-15(PZ-A** **Test 1**
Time Initiated:

Static level - H (m)	12.540
Initial level - Ho (m)	12.574
Screen length - b (m)	1.52
Intake diam - $2r_w$ (m)	0.051
Riser diam - $2r_c$ (m)	0.051
Anisotropy (Kz/Kr)	1
Aspect ratio - A	0.017
g (m/s^2)	9.8

Key Equations - McElwee et al., 1992

$$K = \sqrt{\frac{g}{Le}}\,\frac{r_c^2 \ln[1/(2A) + (1 + (1/(2A))^2)^{0.5}]}{2bC_d}$$

$$Le = \frac{g}{T^2}$$

Kest

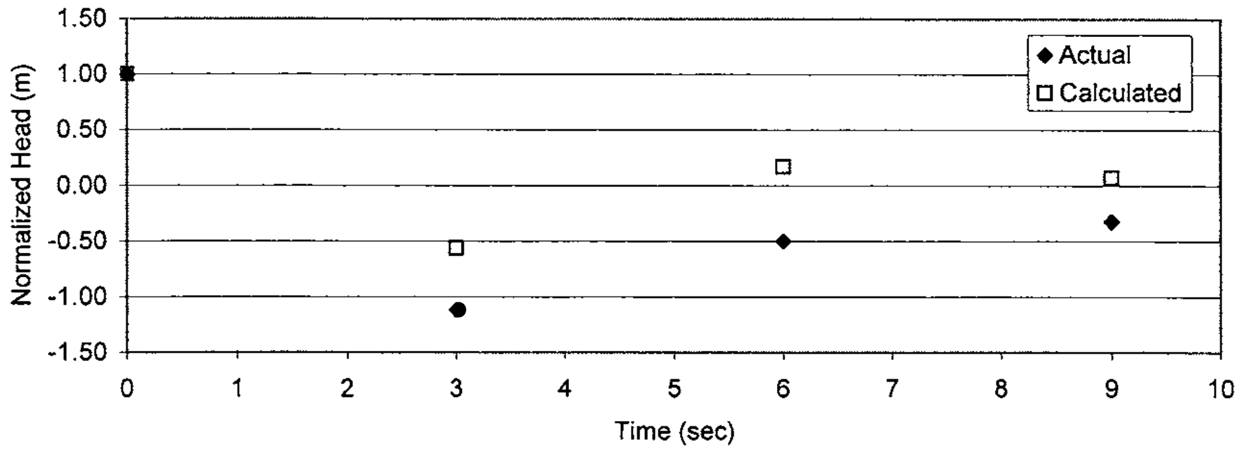
	Peak/trough $_n$		Peak/trough $_{n+1}$		C_{guess}	$Freq_{est}$	Le_{est}	$Damping_{est}$
	time - t1	head - w1	time - t2	head - w2				
1								
2								
3								
					Freq $_{Average}$			

Curve Fitting Coefficients	
Tfactor - T	0.857
Damping - Cd	0.297

Calculated Parameters	
Frequency	0.989
Effective length - Le (m)	13.35

Curve Fittiing Optimization	
Total Misfit	36449
sigma	0.005

K = 2.5E-03 m/s



KLOHN CRIPPEN

Project no.:	**M09222A04**		
Project:	Ruby Creek Feasibility Study		
Details:	BK05-15(PZ-A) Test 1		
Eng.:	DK	**Checked:** Fl	
Date:	17-Oct-05		

Slug Test - Oscillating Response
For partially penetrating wells in high permeability formations

Date: ######## Well: **BK05-15(PZ-** **Test 2**
Time Initiated:

Static level - H (m)	12.540
Initial level - Ho (m)	12.460
Screen length - b (m)	1.52
Intake diam - $2r_w$ (m)	0.051
Riser diam - $2r_c$ (m)	0.051
Anisotropy (Kz/Kr)	1
Aspect ratio - A	0.017
g (m/s^2)	9.8

Key Equations - McElwee et al., 1992

$$K = \sqrt{\frac{g}{Le}}\,\frac{r_c^2 \ln[1/(2A) + (1+(1/(2A))^2)^{0.5}]}{2bC_d}$$

$$Le = \frac{g}{T^2}$$

Kest

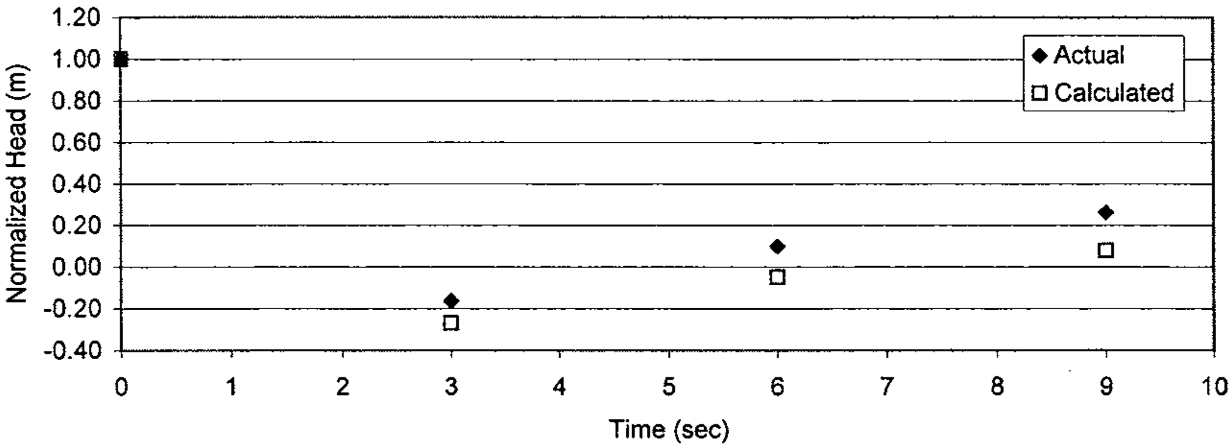
	Peak/trough $_n$		Peak/trough $_{n+1}$		C_{guess}	$Freq_{est}$	Le_{est}	$Damping_{est}$
	time - t1	head - w1	time - t2	head - w2				
1								
2								
3								
					Freq $_{Average}$			

Curve Fitting Coefficients	
Tfactor - T	0.792
Damping - Cd	0.690

Calculated Parameters	
Frequency	0.939
Effective length - Le (m)	15.63

Curve Fittiing Optimization	
Total Misfit	2696
sigma	0.005

K = 1.0E-03 m/s



KLOHN CRIPPEN

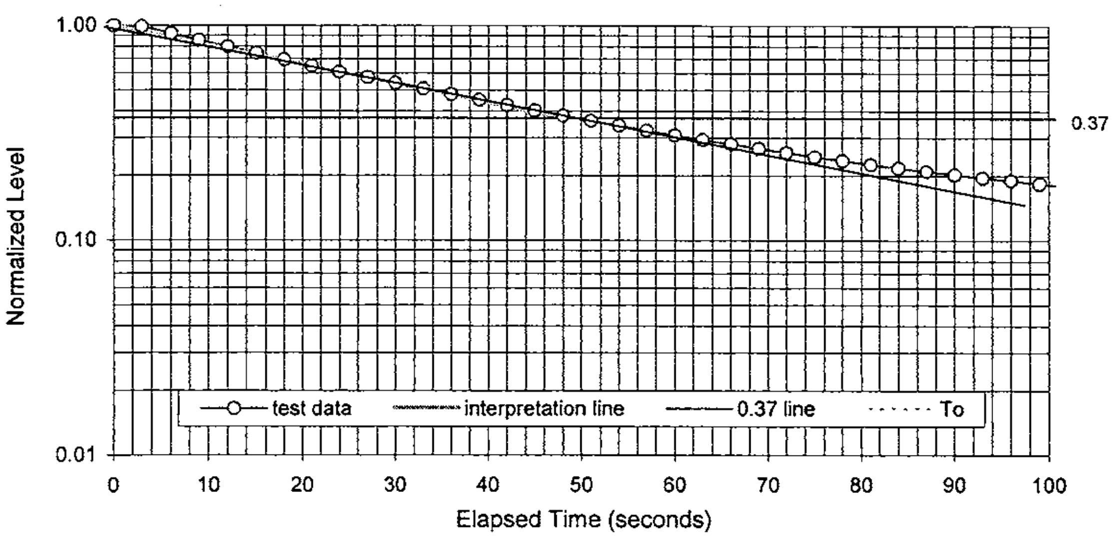
Project no.:	**M09222A04**		
Project:	Ruby Creek Feasibility Study		
Details:	BK05-15(PZ-A) Test 2		
Eng.:	DK	**Checked:**	FL
Date:	17-Oct-05		

Falling Head Test - Hvorslev Solution

Date:	October 2, 2005	Time Initiated:		**Well:**	**BKS05-10 (PZ-B) - T1**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	3.05
Estimated Static Level H (mbrp	7.875	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**48**
				K (m/s) =	**2.9E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H$_0$)	Comments
	0		0	7.88	1.00	
	3		0.088	7.79	0.99	
	6		0.662	7.21	0.92	
	9		1.16	6.72	0.85	
	12		1.606	6.27	0.80	
	15		2.03	5.85	0.74	
	18		2.414	5.46	0.69	
	21		2.763	5.11	0.65	
	24		3.08	4.80	0.61	
	27		3.36	4.52	0.57	
	30		3.624	4.25	0.54	
	33		3.872	4.00	0.51	
	36		4.104	3.77	0.48	
	39		4.32	3.56	0.45	
	42		4.526	3.35	0.43	
	45		4.704	3.17	0.40	
	48		4.878	3.00	0.38	
	51		5.040	2.84	0.36	
	54		5.182	2.69	0.34	
	57		5.315	2.56	0.33	
	60		5.443	2.43	0.31	
	63		5.555	2.32	0.29	

Test Plot



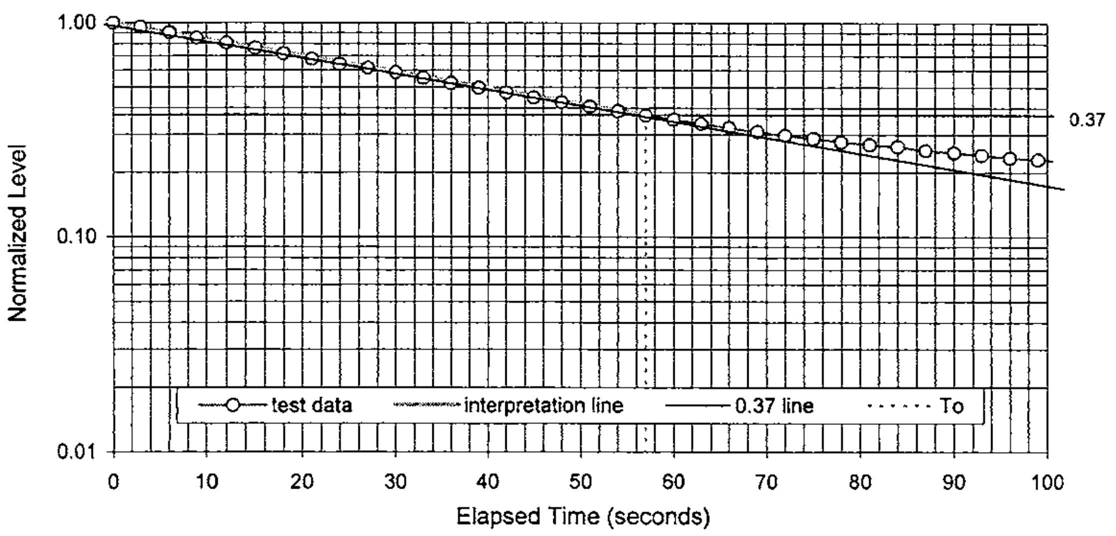
KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BKS05-10 (PZ-B) - Test 1**		
	Eng.:	FL	**Checked:**	FL
	Date:	**19-Oct-05**		

Falling Head Test - Hvorslev Solution

Date:	October 2, 2005	Time Initiated:		**Well:**	**BKS05-10 (PZ-B) - T2**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	3.05
Estimated Static Level H (mbrp	7.875	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**57**
				K (m/s) =	**2.5E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level $(H\text{-}h)/(H\text{-}H_0)$	Comments
	0		0	7.88	1.00	
	3		0.357	7.52	0.95	
	6		0.771	7.10	0.90	
	9		1.181	6.69	0.85	
	12		1.539	6.34	0.80	
	15		1.885	5.99	0.76	
	18		2.221	5.65	0.72	
	21		2.536	5.34	0.68	
	24		2.835	5.04	0.64	
	27		3.027	4.85	0.62	
	30		3.267	4.61	0.59	
	33		3.52	4.36	0.55	
	36		3.757	4.12	0.52	
	39		3.963	3.91	0.50	
	42		4.157	3.72	0.47	
	45		4.347	3.53	0.45	
	48		4.525	3.35	0.43	
	51		4.680	3.20	0.41	
	54		4.832	3.04	0.39	
	57		4.968	2.91	0.37	
	60		5.099	2.78	0.35	
	63		5.219	2.66	0.34	

Test Plot



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BKS05-10 (PZ-B) - Test 2**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**19-Oct-05**		

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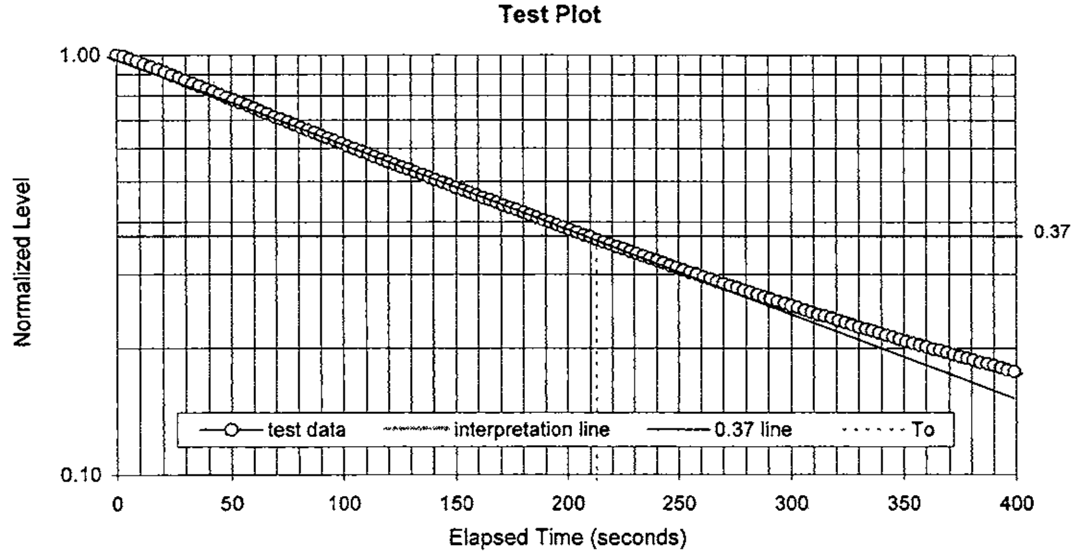
Falling Head Test - Hvorslev Solution

Date:	October 2, 2005	Time Initiated:		**Well:**	**BKS05-10 (PZ-A) - T1**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	3.05
Estimated Static Level H (mbr	8.180	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**213**
				K (m/s) =	**6.6E-07**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level $(H-h)/(H-H_0)$	Comments
	0		0.000	8.18	1.00	
	3		0.064	8.12	0.99	
	6		0.162	8.02	0.98	
	9		0.272	7.91	0.97	
	12		0.389	7.79	0.95	
	15		0.501	7.68	0.94	
	18		0.613	7.57	0.93	
	21		0.725	7.46	0.91	
	24		0.842	7.34	0.90	
	27		0.952	7.23	0.88	
	30		1.061	7.12	0.87	
	33		1.178	7.00	0.86	
	36		1.277	6.90	0.84	
	39		1.381	6.80	0.83	
	42		1.482	6.70	0.82	
	45		1.586	6.59	0.81	
	48		1.685	6.50	0.79	
	51		1.786	6.39	0.78	
	54		1.877	6.30	0.77	
	57		1.973	6.21	0.76	
	60		2.066	6.11	0.75	
	63		2.160	6.02	0.74	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BKS05-10 (PZ-A) - Test 1**		
	Eng.:	**DK**	**Checked:**	EL
	Date:	**19-Oct-05**		

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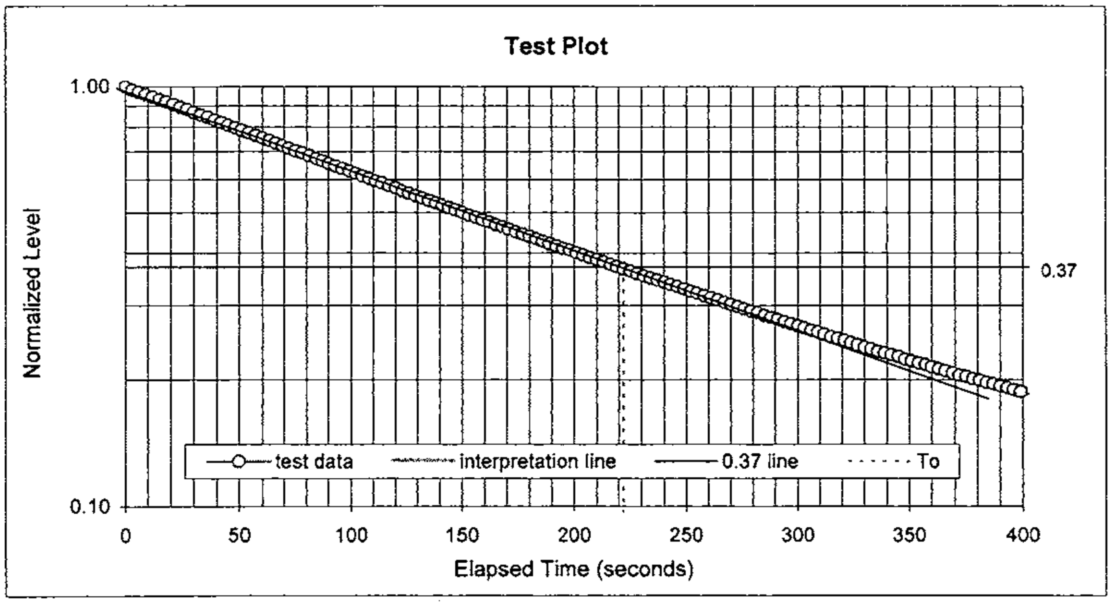
Falling Head Test - Hvorslev Solution

Date:	October 2, 2005	Time Initiated:		**Well:**	**BKS05-10 (PZ-A) - T2**
Effective Intake OD (mm):	25	Riser Diameter (mm):	25	Intake Length (m):	3.05
Estimated Static Level H (mbrı	8.180	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**222**
				K (m/s) =	**6.3E-07**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		0.000	8.18	1.00	
	3		0.142	8.04	0.98	
	6		0.243	7.94	0.97	
	9		0.35	7.83	0.96	
	12		0.451	7.73	0.94	
	15		0.555	7.63	0.93	
	18		0.654	7.53	0.92	
	21		0.763	7.42	0.91	
	24		0.864	7.32	0.89	
	27		0.966	7.21	0.88	
	30		1.072	7.11	0.87	
	33		1.174	7.01	0.86	
	36		1.267	6.91	0.85	
	39		1.366	6.81	0.83	
	42		1.467	6.71	0.82	
	45		1.563	6.62	0.81	
	48		1.654	6.53	0.80	
	51		1.747	6.43	0.79	
	54		1.838	6.34	0.78	
	57		1.923	6.26	0.76	
	60		2.014	6.17	0.75	
	63		2.099	6.08	0.74	



KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	**Ruby Creek**		
Details:	**BKS05-10 (PZ-A) - Test 2**		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

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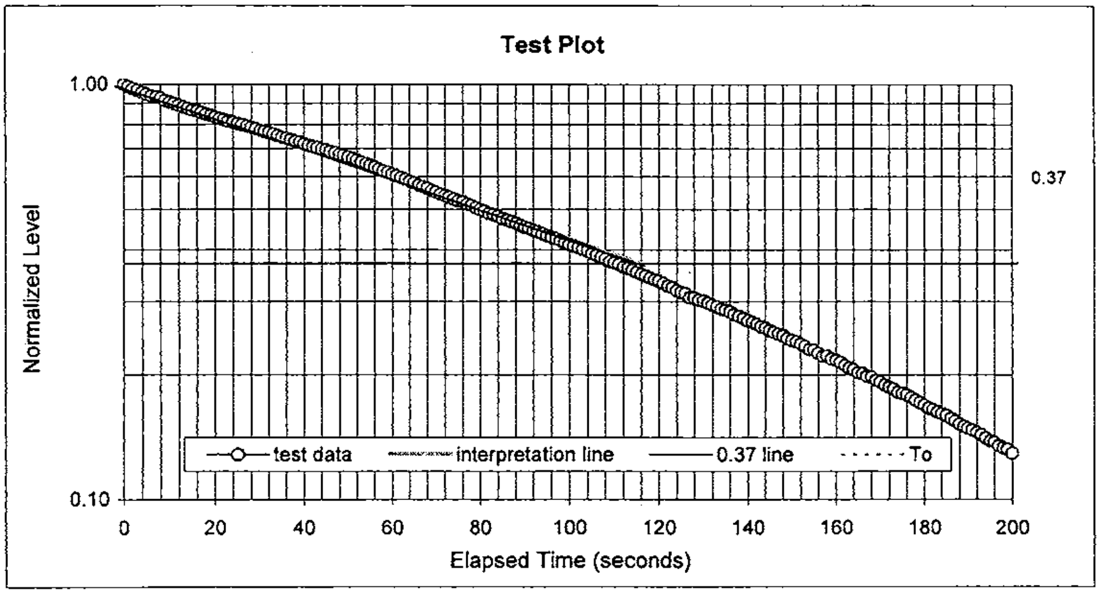
Falling Head Test - Hvorslev Solution

Date:	October 19, 2005	Time Initiated:		**Well:**	**BK05-16 (PZ-A) - T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	2.44
Estimated Static Level H (mbrp	4.750	Initial Level H_0 (mbrp):	1.58	**T_o (sec) =**	**116**
				K (m/s) =	**5.2E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level (H-h)/(H-H_0)	Comments
	0		1.584	3.17	1.00	
	1		1.621	3.13	0.99	
	2		1.656	3.09	0.98	
	3		1.691	3.06	0.97	
	4		1.72	3.03	0.96	
	5		1.752	3.00	0.95	
	6		1.779	2.97	0.94	
	7		1.797	2.95	0.93	
	8		1.819	2.93	0.93	
	9		1.861	2.89	0.91	
	10		1.885	2.87	0.90	
	11		1.907	2.84	0.90	
	12		1.931	2.82	0.89	
	13		1.955	2.80	0.88	
	14		1.979	2.77	0.88	
	15		2.003	2.75	0.87	
	16		2.021	2.73	0.86	
	17		2.043	2.71	0.86	
	18		2.067	2.68	0.85	
	19		2.088	2.66	0.84	
	20		2.109	2.64	0.83	
	21		2.128	2.62	0.83	



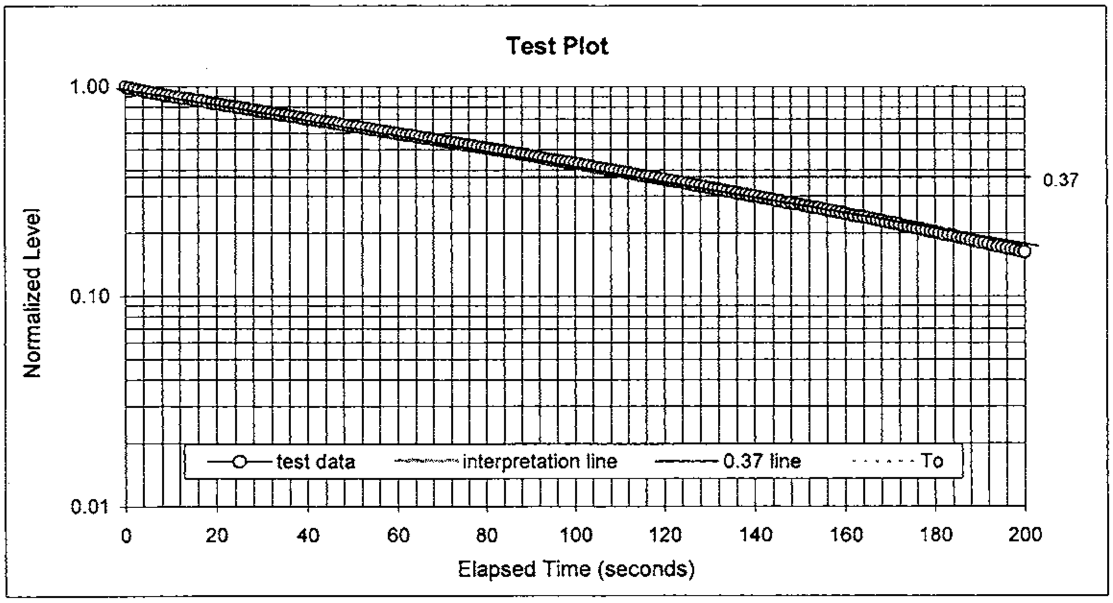
KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	**Ruby Creek**		
Details:	**BK05-16 (PZ-A) - Test 1**		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

Falling Head Test - Hvorslev Solution

Date:	October 19, 2005	Time Initiated:		**Well:**	**BK05-16 (PZ-A) - T2**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	2.44
Estimated Static Level H (mbr	4.750	Initial Level H_0 (mbrp):	1.26	**T_o (sec) =**	**116**
				K (m/s) =	**5.2E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level $(H-h)/(H-H_0)$	Comments
	0		1.261	3.49	1.00	
	1		1.309	3.44	0.99	
	2		1.349	3.40	0.97	
	3		1.387	3.36	0.96	
	4		1.419	3.33	0.95	
	5		1.459	3.29	0.94	
	6		1.491	3.26	0.93	
	7		1.52	3.23	0.93	
	8		1.547	3.20	0.92	
	9		1.573	3.18	0.91	
	10		1.6	3.15	0.90	
	11		1.629	3.12	0.89	
	12		1.651	3.10	0.89	
	13		1.677	3.07	0.88	
	14		1.704	3.05	0.87	
	15		1.731	3.02	0.87	
	16		1.755	3.00	0.86	
	17		1.776	2.97	0.85	
	18		1.805	2.95	0.84	
	19		1.832	2.92	0.84	
	20		1.853	2.90	0.83	
	21		1.880	2.87	0.82	



KLOHN-CRIPPEN

Project No.:	**M09222A04**		
Project:	**Ruby Creek**		
Details:	**BK05-16 (PZ-A) - Test 2**		
Eng.:	**DK**	**Checked:**	FL
Date:	**19-Oct-05**		

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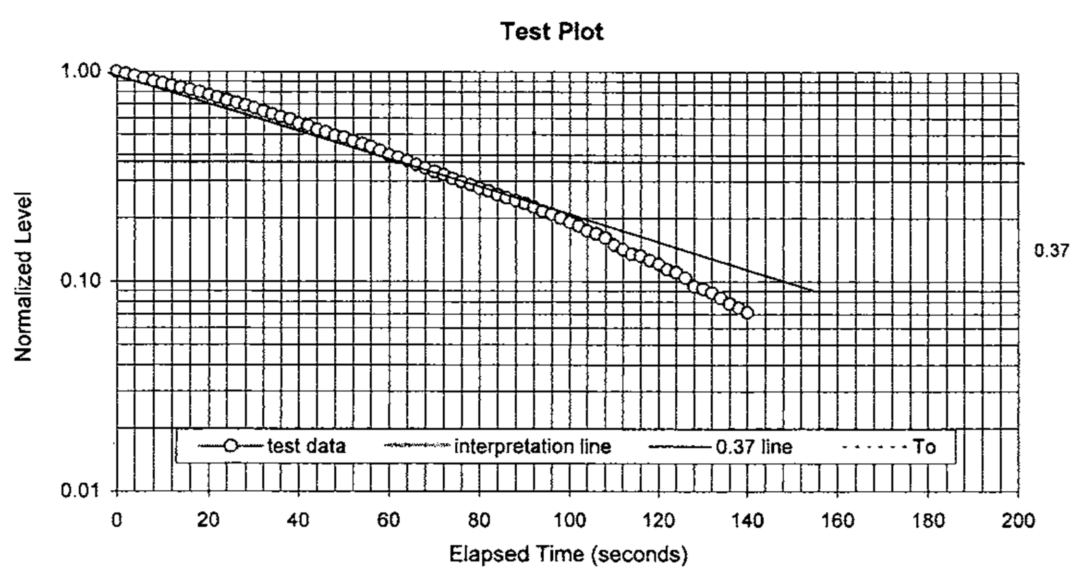
Falling Head Test - Hvorslev Solution

Date:	October 20, 2005	Time Initiated:		**Well:**	**BPT05-17 (PZ-A) - T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	3.05
Estimated Static Level H (mbr	2.200	Initial Level H_0 (mbrp):	0.00	**T_o (sec) =**	**64**
				K (m/s) =	**8.0E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level $(H-h)/(H-H_0)$	Comments
	0		0.000	2.20	1.00	
	2		0.045	2.16	0.98	
	4		0.101	2.10	0.95	
	6		0.157	2.04	0.93	
	8		0.211	1.99	0.90	
	10		0.259	1.94	0.88	
	12		0.307	1.89	0.86	
	14		0.352	1.85	0.84	
	16		0.392	1.81	0.82	
	18		0.44	1.76	0.80	
	20		0.496	1.70	0.77	
	22		0.541	1.66	0.75	
	24		0.592	1.61	0.73	
	26		0.64	1.56	0.71	
	28		0.68	1.52	0.69	
	30		0.723	1.48	0.67	
	32		0.773	1.43	0.65	
	34		0.821	1.38	0.63	
	36		0.864	1.34	0.61	
	38		0.896	1.30	0.59	
	40		0.957	1.24	0.57	
	42		0.984	1.22	0.55	

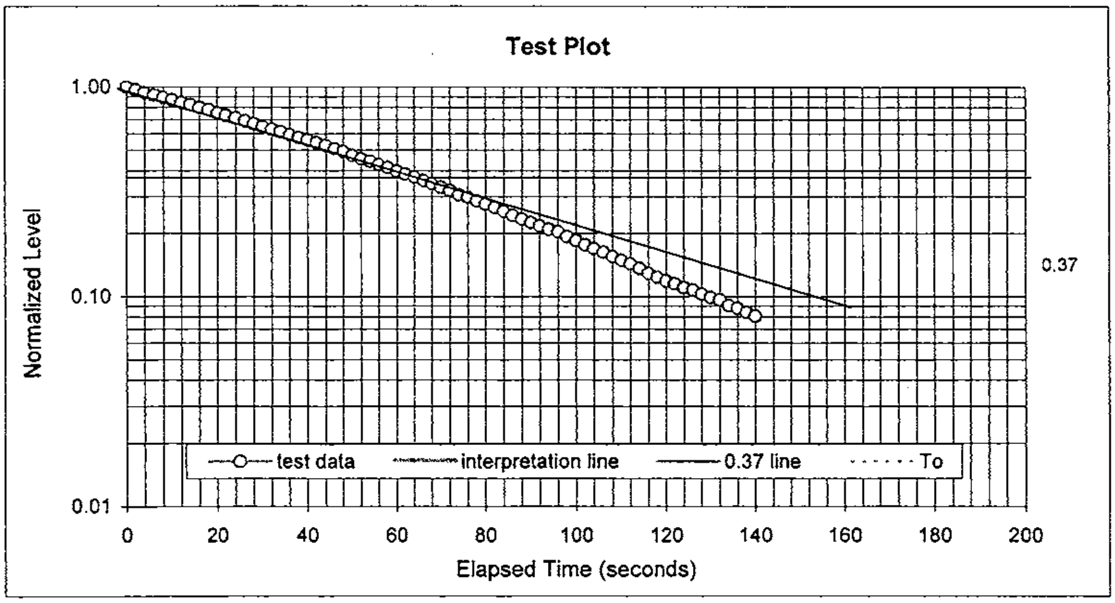


KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BPT05-17 (PZ-A) - Test 1**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**27-Dec-05**		

Falling Head Test - Hvorslev Solution

Date:	October 20, 2005	Time Initiated:		**Well:**	**BPT05-17 (PZ-A) - T1**
Effective Intake OD (mm):	51	Riser Diameter (mm):	51	Intake Length (m):	3.05
Estimated Static Level H (mbrp	2.200	Initial Level H_0 (mbrp):	0.03	**T_o (sec) =**	**64**
				K (m/s) =	**8.0E-06**

Clock Time	Elapsed Time (sec)	Elapsed Time (min)	Depth to Water (h) (mbrp)	Drawdown H - h (m)	Normalized Level $(H-h)/(H-H_0)$	Comments
	0		0.031	2.17	1.00	
	2		0.097	2.10	0.97	
	4		0.164	2.04	0.94	
	6		0.217	1.98	0.91	
	8		0.271	1.93	0.89	
	10		0.319	1.88	0.87	
	12		0.367	1.83	0.85	
	14		0.415	1.79	0.82	
	16		0.465	1.74	0.80	
	18		0.508	1.69	0.78	
	20		0.564	1.64	0.75	
	22		0.609	1.59	0.73	
	24		0.652	1.55	0.71	
	26		0.703	1.50	0.69	
	28		0.748	1.45	0.67	
	30		0.793	1.41	0.65	
	32		0.833	1.37	0.63	
	34		0.873	1.33	0.61	
	36		0.913	1.29	0.59	
	38		0.953	1.25	0.57	
	40		0.985	1.22	0.56	
	42		1.023	1.18	0.54	



KLOHN-CRIPPEN	**Project No.:**	**M09222A04**		
	Project:	**Ruby Creek**		
	Details:	**BPT05-17 (PZ-A) - Test 1**		
	Eng.:	**DK**	**Checked:**	FL
	Date:	**27-Dec-05**		

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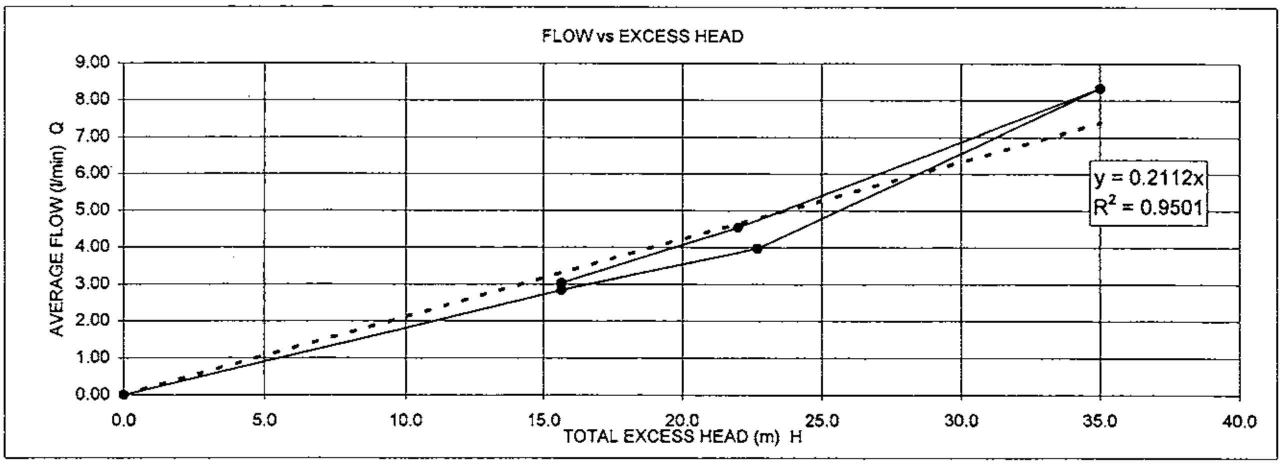
PRESSURE PACKER TEST - CONSTANT HEAD TEST

DATE OF TEST	Sep 30/05	DEPTH OF HOLE AT TIME OF TEST (m) along dip	35.20
DRILL HOLE NO.	BKS05-10	TEST SECTION from - to (m) 26.82	35.20
TEST NO	#1	LENGTH OF TEST SECTION (m) along dip (L)	8.38
PACKER TYPE	Single	STATIC GROUNDWATER LEVEL (m) vertical below gr. level (1)*	7.62
INFLATION PRESSURE (psi)	300	HEIGHT OF GAUGE ABOVE GROUND LEVEL (m) (2)	1
CASING DETAILS	5" casing to 4.5 m	INCLINATION OF HOLE FROM HORIZONTAL (deg)	90
DIAMETER OF HOLE (mm) (D)	74	TRUE DEPTH OF DRILL HOLE (m)	35.20
I.D. of DRILLING RODS (mm)	60		

*IF GROUNDWATER LEVEL UNKNOWN OR BELOW TEST SECTION, USE DEPTH TO CENTRE OF TEST SECTION

INJECTED FLOW RATE (l/min)	INJECTION PRESSURE (m)	FRICTION HEAD LOSS (m)		TOTAL EXCESS HEAD (m) (H)	COMMENTS
	(3)	BASIC PACKER (4)	RODS (5)	(1+2+3-4-5)	
0.00	0.0			0.0	
2.8	7.0			15.7	first stage
4.0	14.1			22.7	second stage
8.3	26.4			35.0	third stage
4.5	13.4			22.0	second stage
3.0	7.0			15.7	first stage



CALCULATIONS

BULK HYDRAULIC CONDUCTIVITY (K) (m/s) K = Q*ln(2L/D) / (2pi*L*H)	3.1E-07	**LUGEON UNIT (LU) (m^{-1})** LU = (100/L)*(Q/H)	2.2E+00	DATA POINT 1
	3.0E-07		2.1E+00	DATA POINT 2
	4.1E-07		2.8E+00	DATA POINT 3
	3.5E-07		2.5E+00	DATA POINT 4
	3.3E-07		2.3E+00	DATA POINT 4
	3.4E-07		2.4E+00	AVERAGE
	3.6E-07			BEST FIT
Klohn Crippen			M09222A04	

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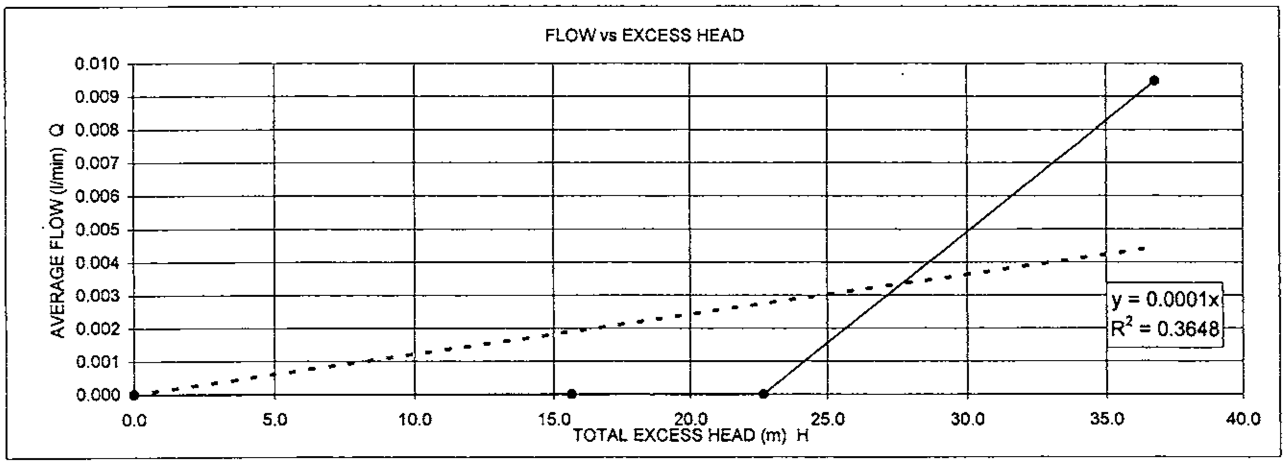
PRESSURE PACKER TEST - CONSTANT HEAD TEST

DATE OF TEST	**Sep 30/05**	DEPTH OF HOLE AT TIME OF TEST (m) along dip	**35.20**
DRILL HOLE NO.	**BKS05-11**	TEST SECTION from - to (m) **28.35**	**35.20**
TEST NO	**#1**	LENGTH OF TEST SECTION (m) along dip (L)	**6.86**
PACKER TYPE	**Single**	STATIC GROUNDWATER LEVEL (m) vertical below gr. level (1)*	**7.62**
INFLATION PRESSURE (psi)	**300**	HEIGHT OF GAUGE ABOVE GROUND LEVEL (m) (2)	**1**
CASING DETAILS	**5" casing to 4.5 m**	INCLINATION OF HOLE FROM HORIZONTAL (deg)	**90**
DIAMETER OF HOLE (mm) (D)	**74**	TRUE DEPTH OF DRILL HOLE (m)	**35.20**
I.D. of DRILLING RODS (mm)	**60**		

*IF GROUNDWATER LEVEL UNKNOWN OR BELOW TEST SECTION, USE DEPTH TO CENTRE OF TEST SECTION

INJECTED FLOW RATE (l/min)	INJECTION PRESSURE (m)	FRICTION HEAD LOSS (m)		TOTAL EXCESS HEAD (m) (H)	COMMENTS
	(3)	BASIC PACKER (4)	RODS (5)	(1+2+3-4-5)	
0.00	0.0			0.0	
0.0	7.0			15.7	first stage
0.0	14.1			22.7	second stage
0.01	28.1			36.8	third stage
0.0	14.1			22.7	second stage
0.0	7.0			15.7	first stage



CALCULATIONS

BULK HYDRAULIC CONDUCTIVITY (K) (m/s) K = Q*ln(2L/D) / (2pi*L*H)		**LUGEON UNIT (LU) (m⁻¹)** LU = (100/L)*(Q/H)		DATA POINT 1
				DATA POINT 2
	5.2E-10		**3.8E-03**	DATA POINT 3
				DATA POINT 4
				DATA POINT 4
				AVERAGE
				BEST FIT

Klohn Crippen		M09222A04	

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APPENDIX IX

Mill Site Foundation Report

KLOHN CRIPPEN

November 15, 2005

Adanac Moly Corp.
2A – 15782 Marine Drive
White Rock, British Columbia
V4B 1E6

Mr. Michael E. MacLeod, P.Eng.
Vice President, Project Management

Dear Mr. MacLeod:

Ruby Creek Feasibility Study
New Millsite Location, Preliminary Geotechnical Recommendations

This letter is an addendum to our previous Preliminary Millsite Geotechnical Recommendations letters, dated May 11 and July 4, 2005, and should be read in conjunction with the above letters.

The mill site has been moved approximately 500 m south-east from the location indicated in our previous letter report of May 11, 2005. The proposed millsite will now be located on a bench, above the south-east side of Ruby Creek.

1. SOIL AND GROUNDWATER CONDITIONS

A site investigation, consisting of eleven test pits (TP05-10 to 20) and three Becker holes (DH05-03 to 05) was conducted during September 2005. The ten test pits (TP05-11 to 20) located within the main millsite area ranged from 1.1 m to 2.7 m in depth, and generally encountered sand, gravel and cobbles overlying bedrock or large boulders. All test pits encountered water at depths of 0.6 m to 2.0 m. In many test pits, the water inflow during excavation was significant, and the sand and gravel above the bedrock surface was saturated. The two Becker holes (DH05-04 and 05) located within the main millsite area encountered 2.4 m to 4.8 m of sand, gravel and cobbles overlying bedrock or boulders. Bedrock was not confirmed by coring any of the drill holes.

TP05-10 is located closer towards the valley floor than the other test pits, and encountered dry sand, gravel and cobbles to the maximum excavation depth of 4.2 m. DH05-03 is also located closer towards the valley floor and encountered about 4 m of compact to dense sand and gravel, overlying about 4 m of dense gravel and cobbles, overlying bedrock or boulders.

The geotechnical field program was supervised by a Klohn Crippen engineer. The test pit and Becker hole locations are shown on Figure 1. The drill hole and test pit logs are attached.

2. RECOMMENDATIONS

2.1 General Site Development

The site gradient averages about 20% over most of the site, and may approach 25% towards the east side. As such, significant cutting into the soil and bedrock along the uphill (south) side and filling along the downhill (north) side will be required to obtain a level, or benched site.

We recommend that any organic soil be stripped from the millsite and be stockpiled for future site reclamation. After stripping, the exposed surface should be proof rolled with a 10 tonne vibratory roller. Loose soils or soft fine-grained soils should be removed and replaced with compacted granular fill. The final exposed surface should be compacted by six passes of a 10 tonne vibratory roller.

Fill placed to grade and level the site should consist of well-graded granular fill, compacted to at least 98% standard Proctor maximum dry density (ASTM D698).

Due to the anticipated groundwater flow above the bedrock surface, we anticipate that a perimeter groundwater collection drain will be required along the uphill side of the site. The drain should be designed and constructed in such a way as to limit surficial water flow across the site, and the resulting potential for icing during the winter time. Surface water should also be diverted along the uphill side of the site.

2.2 Foundations

We confirm that the general foundation recommendations given in our letter of May 11, 2005 are still applicable.

Development of this site will involve cutting into the south side and filling the north side. As such, we recommend that heavily loaded or settlement sensitive structures, such as the ball or SAG mills, be founded on bedrock on the south side of the site if practicable.

Lightly loaded or insensitive structures can be founded on compacted granular fill along the north side of the mill site.

We recommend that to reduce differential settlements, structures should be founded on compacted granular fill, or on bedrock, but should not be founded on both material types. Structures may have to be orientated with their longitudinal axis perpendicular to the slope to satisfy the above requirement.

2.3 Additional Work

The ridge behind the mill site rises more than 400 m to an elevation of about 1875 m. Photographs taken during our June 2005 site visit show several snow filled gullies and colluvial fan deposits. We therefore recommend that this slope be studied to assess the risk to the mill site due to possible snow slides or rock fall.

We trust this letter meets your current requirements. We are available to meet with your plant designers to discuss specific aspects of foundation design in more detail as the project proceeds.

Yours truly,

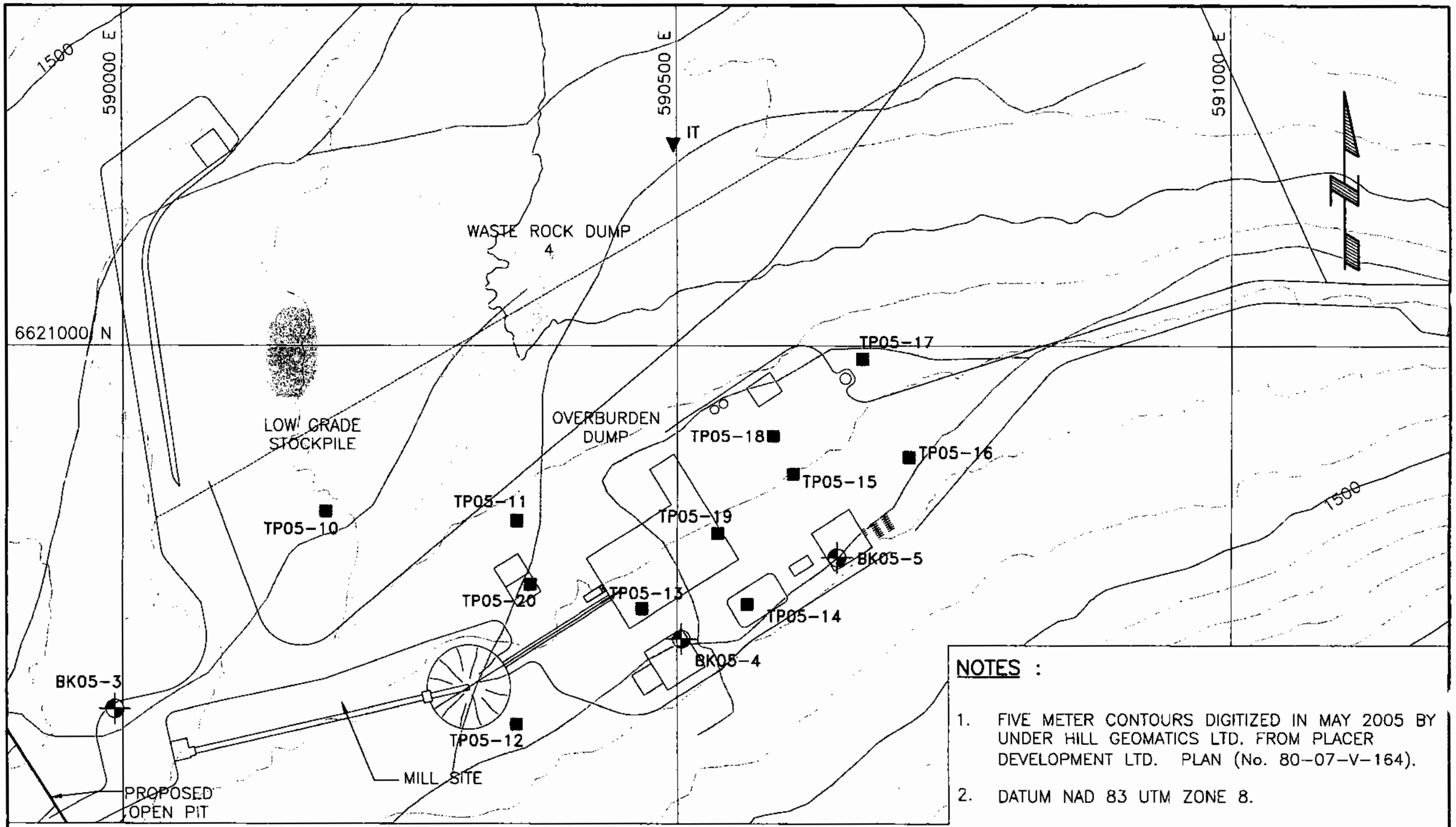
KLOHN CRIPPEN CONSULTANTS LTD.

Andrew Port

Andrew Port, P.Eng.
Project Engineer

Howard D. Plewes, P.Eng.
Project Manager

Attach: Figure 1 – Test Pit and Drill Holes Location Plan
Test Pit Logs
Drill Hole Logs



NOTES :

1. FIVE METER CONTOURS DIGITIZED IN MAY 2005 BY UNDER HILL GEOMATICS LTD. FROM PLACER DEVELOPMENT LTD. PLAN (No. 80-07-V-164).
2. DATUM NAD 83 UTM ZONE 8.

LEGEND :

⌖ BK05-10	2005 BECKER HOLE FOR FEASIBILITY DESIGN
■ TP05-15	2005 TEST PIT FOR FEASIBILITY DESIGN
▼ IT	INFILTRATION – TEST

NOT FOR CONSTRUCTION

DRAFT

SCALE 0 200 m

CLIENT
ADANAC

KLOHN CRIPPEN

PROJECT
RUBY CREEK FEASIBILITY DESIGN OF
TAILINGS FACILITY AND WASTE DUMPS

TITLE
TEST PIT AND DRILL HOLE
LOCATION PLAN
IN MILL SITE

PROJECT No. M09222A04

FIG. No. 1

Scale: 1=1(PS)
Drawing File: M\M09222A04 – Ruby Creek Feasibility Level Design\400 Design\410 Drawings\Fig\Fig1rA.dwg
Xrefs: BM-RubyCreek-13July05

KCRA-H-M

TEST PIT LOG

STARTED: 9/2/2005 **FINISHED:** 9/2/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1426.0

COORDINATES (m): N 6620851 E 590182

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2
REMOLD: FIELD ◇ LAB □ △P.PEN/2
★ % FINES

W_P% ×— — — — W% o — — — — × W_L%

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0–0.20			Pea GRAVEL (campsite).	
0.20 1425.8			SAND AND GRAVEL (SG), medium to coarse sand, fine to coarse gravel, some cobbles, trace silt, light brown.	
2.0–2.3		1		
2.50 1423.5			SAND AND GRAVEL (SG), fine to coarse gravel, dark brown.	
2.5–2.8		2		
3.9–4.2		3		
4.20 1421.8			End of Hole at 4.20 m No hard surface encountered. Walls holding near vertical. Some subangled boulders in walls.	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-10

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1424.2

COORDINATES (m): N 6620842.809 E 590354.422

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2

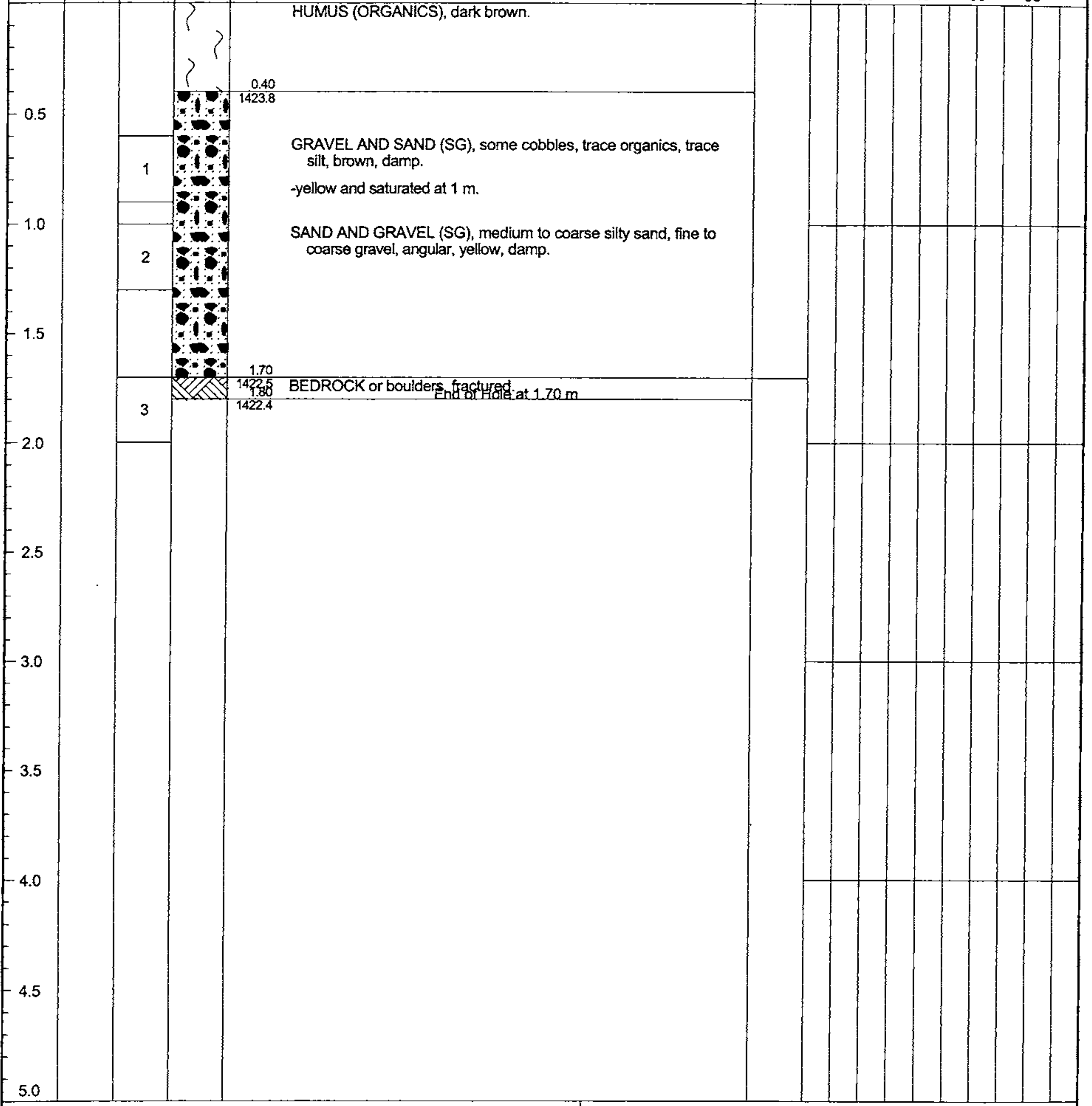
REMOLD: FIELD ◇ LAB □ △P.PEN/2

★ % FINES

W_P% W% W_L%

× – – – – ○ – – – – ×

20 40 60 80



DESCRIPTION OF MATERIALS

Depth / Elev.	Sample No.	Description
		HUMUS (ORGANICS), dark brown.
0.40 1423.8	1 2	GRAVEL AND SAND (SG), some cobbles, trace organics, trace silt, brown, damp. -yellow and saturated at 1 m. SAND AND GRAVEL (SG), medium to coarse silty sand, fine to coarse gravel, angular, yellow, damp.
1.70 1422.5	3	BEDROCK or boulders, fractured.
1.80 1422.4		End of Hole at 1.70 m

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-11

TEST PIT LOG

STARTED: 9/3/2005 FINISHED: 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1452.4

COORDINATES (m): N 6620663.168 E 590353.918

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■

REMOLD: FIELD ◇ LAB □

▲ UC/2

△ P.PEN/2

★ % FINES

W_P% × ---- W% o ---- W_L% ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS	
0.60 1451.8				GRAVEL AND SAND (SG), fine to coarse gravel, medium to coarse sand, some cobbles, occasional boulder, trace silt, sub-angular to angular, light brown, wet.	
1.2–1.5		1			
1.70 1450.7				BEDROCK or boulders, fractured.	
1.80 1450.6				End of Hole at 1.80 m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

KC_TEST_P[illegible] TESTPIT05.GPJ KC_DATA.GDT 11/15/05

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB CHECKED BY:

SHEET 1 OF 1 HOLE NO.: TP05-12

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1445.2

COORDINATES (m): N 6620764.019 E 590468.257

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■

REMOLD: FIELD ◇ LAB □

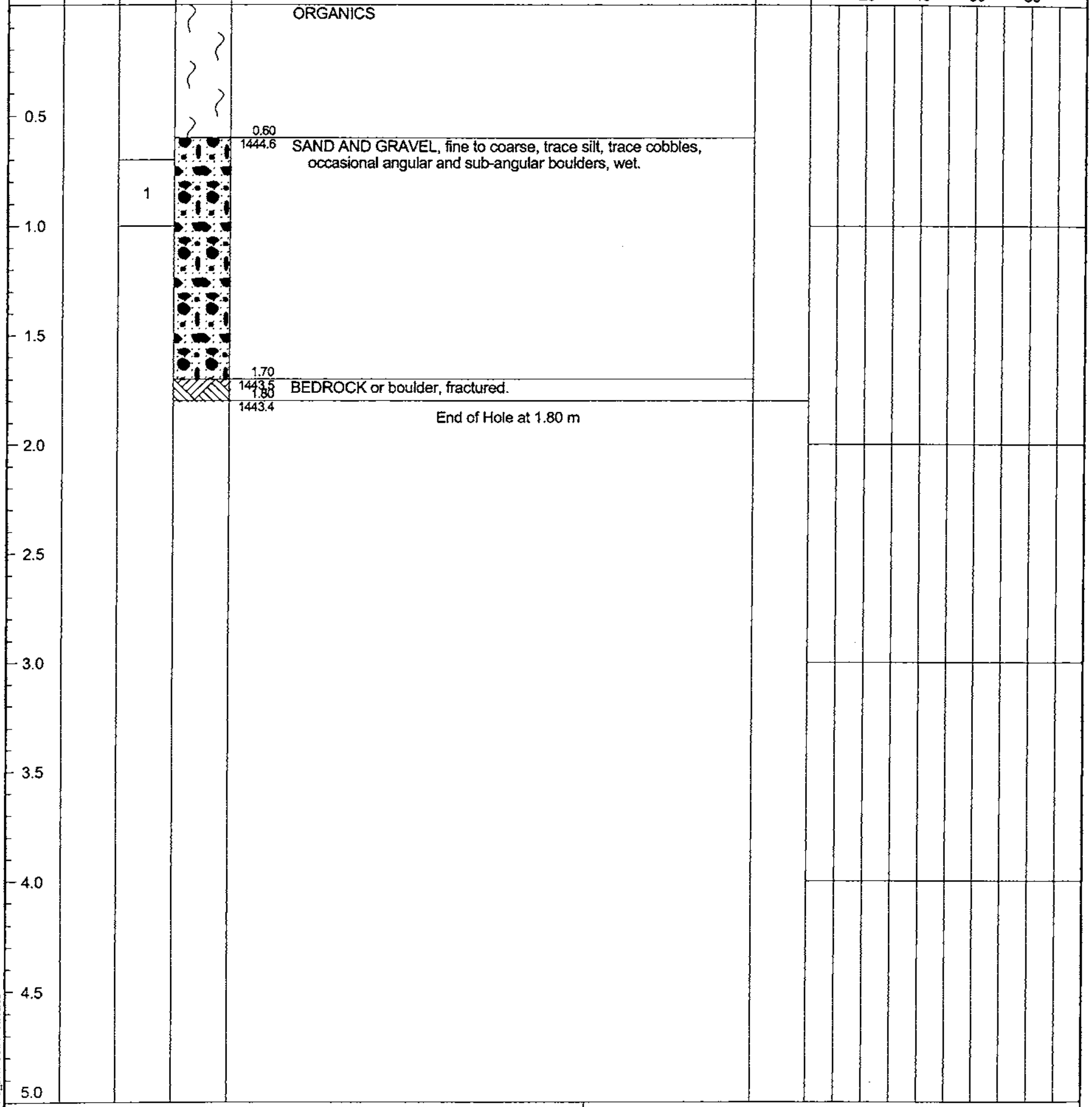
▲ UC/2

△ P.PEN/2

★ % FINES

W_P% × – – – – W% ○ – – – – W_L% ×

20 40 60 80



ORGANICS

0.60
1444.6 SAND AND GRAVEL, fine to coarse, trace silt, trace cobbles, occasional angular and sub-angular boulders, wet.

1.70
1443.5 BEDROCK or boulder, fractured.
1.80
1443.4

End of Hole at 1.80 m

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-13

XC_TEST_I-.. .i TESTPIT05.GPJ KC_DATA.GDT 11/15/05

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1451.9

COORDINATES (m): N 6620767.869 E 590563.718

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■

REMOLD: FIELD ◇ LAB □

▲ UC/2

△ P.PEN/2

★ % FINES

W_P% × – – – – ○ W% – – – – × W_L%

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS	
0.50 1451.4				SAND AND GRAVEL (SG), fine to coarse, some cobbles, some boulders, trace silt, sub-angular, light brown, loose, moist.	
1.0		1			
				-water seep at 1.2 m	
2.20 1449.7				BEDROCK or boulders, fractured.	
2.30 1449.6				End of Hole at 2.30 m	

DEPTH (m): 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-14

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1440.9

COORDINATES (m): N 6620884.738 E 590605.317

Su - kPa: 20 60 100 140 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2

REMOLD: FIELD ◇ LAB □ △P.PEN/2

★ % FINES

W_P% × W% o W_L% ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS, topsoil.	
0.5					
1.00 1439.9				SAND AND GRAVEL (SG), fine to coarse, some cobbles, some boulders, sub-angular, wet.	
1.5		1			
1.80 1439.1				BOULDERS, hard bottom.	
1.90 1439.0				End of Hole at 1.90 m	
2.0					
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-15

KC_TEST_P... TESTPIT05.GPJ KC_DATA.GDT 11/15/05

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1450.6

COORDINATES (m): N 6620900.003 E 590710.027

Su - kPa: 20, 60, 100, 140, 180

VANE PEAK: FIELD ◆ LAB ■ ▲UC/2
REMOLD: FIELD ◇ LAB □ △P.PEN/2
★ % FINES

$W_P\%$ × ---- W% o ---- $W_L\%$ ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				BOULDERS (angular) and organics. -cobbley.	
0.50 (1450.1)				SAND AND GRAVEL (SG), medium to coarse, some cobbles, trace silt, moist.	
1.6		1		- becomes wet at 1.6 m	
2.40 (1448.2)				End of Hole at 2.40 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-16

KC_TEST_ TESTPIT05.GPJ KC_DATA.GDT 11/15/05

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): N/A

COORDINATES (m): N 6620988 E 590668

Su - kPa: 20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES

W_P% × – – – – ○ W% – – – – × W_L%

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0.0				ORGANICS, dark brown. -boulders and cobbles, sub-angular. beside TP location.	
0.40				SAND AND GRAVEL (SG), fine to coarse, 10% boulders, angular, trace silt.	
1.6–1.9		1			
2.0				- becomes wet at 2.0 m	
2.60				BEDROCK	
2.70				End of Hole at 2.70 m	

DEPTH (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-17

KC_TEST_PI~SI TESTPIT05.GPJ KC_DATA.GDT 11/15/05

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1433.8

COORDINATES (m): N 6620918.851 E 590587.223

Su - kPa: 20 60 100 140 180

VANE	FIELD	LAB	
PEAK	◆	■	▲UC/2
REMOLD	◇	□	△P.PEN/2

★ % FINES

W_P% ×- - - - - W% ○ - - - - - W_L% ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				ORGANICS with coarse gravel, cobbles, sub-angular to angular.	
0.30 1433.5				GRAVEL AND COBBLES, some sand, trace silt, loose. - becomes wet at 0.9 m	
1.00 1432.8				COBBLES AND BOULDERS, sub-angular.	
2.00 1431.8				End of Hole at 2.00 m	

Depth scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-18

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1441.2

COORDINATES (m): N 6620831.732 E 590537.043

Su - kPa
20 60 100 140 180

VANE	FIELD	LAB
PEAK	◆	■
REMOLD	◇	□

▲ UC/2
△ P.PEN/2
★ % FINES

$W_P\%$ W% $W_L\%$
× – – – – o – – – – ×
20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				Organics. 0.20	
				1441.0 GRAVEL AND COBBLES, sandy to some sand, medium to coarse sand, moist.	
0.5				- becomes wet at 0.65 m 0.90	
1.0				1440.3 Till, grey. 1.10	
				1440.1 Fractured Bedrock. 1.20	
				1440.0 End of Hole at 1.20 m	
1.5					
2.0					
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-19

TEST PIT LOG

STARTED: 9/3/2005 **FINISHED:** 9/3/2005

EXCAVATOR TYPE:

GROUND ELEV. (m): 1433.8

COORDINATES (m): N 6620787.526 E 590366.938

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2

REMOLD ◇ □ △P.PEN/2

★ % FINES

W_P% W% W_L%

× ——— o ——— ×

20 40 60 80

DEPTH (m)	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
				Organics, some cobbles and gravel, some sand and silt, dark brown.	
0.30 1433.5				COBBLES AND GRAVEL, some sand, trace silt, some boulders, sub-angular, light brown, wet. - becomes wet at 0.5 m	
1.30 1432.5				End of Hole at 1.30 m	

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

KLOHN CRIPPEN

PROJECT NO.: M09222 A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DB **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** TP05-20

KC_TEST_ J TESTPIT05.GPJ KC_DATA.GDT 11/15/05

TEST HOLE LOG

STARTED: Sep. 9, 2005 **FINISHED:** Sep. 9, 2005

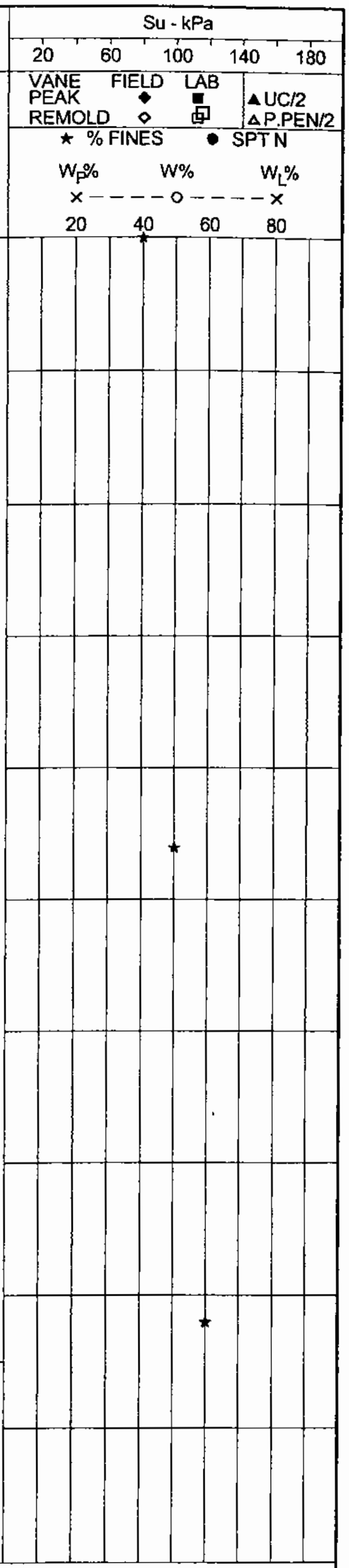
DRILL METHOD: Becker

GROUND ELEV. (m): 1451.79

COORDINATES (m): N 6620674.168 E 589992.552

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
		Grab	1		SAND AND GRAVEL (SW-GW), fine to coarse, some silt, some cobbles, well graded, loose, sub-rounded to sub-angular, brown, moist.	
0.90 1450.89					GRAVEL AND SAND (GW-SW), fine to coarse, some cobbles, trace silt, well graded, loose, brown, moist.	
1.80 1449.99					SAND AND GRAVEL (SW-GW), fine to coarse, silty, well graded, loose, sub-angular, greyish brown, moist. -Less silty 2.7 to 3.5 (trace silt)	
3.50 1448.29		Grab	2		SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles, trace silt and boulders, well graded, dense, sub-rounded to sub-angular, light brown, dry. Below 5.2: -Clumps of plastic silt -Very dense	
		Grab	3			
8.40 1448.59 1443.29					ROCK (ALASKITE) -more than 300 blows/ft	

End of Hole at 8.50 m



KC_TEST_... -SI DRILLHOLES.GPJ KC_DATA.GDT 11/15/05

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** BK05-03

TEST HOLE LOG

STARTED: Sep. 9, 2005 **FINISHED:** Sep. 16, 2005
DRILL METHOD: Becker
GROUND ELEV. (m): 1452.05
COORDINATES (m): N 6620736.833 E 590503.725

Su - kPa
20 60 100 140 180

	FIELD	LAB	
VANE PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%
× — — — o — — — ×
20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
					SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles, trace silt, well graded, loose, sub-rounded to sub-angular, brown, moist.	
1		Grab	1	0.90 1451.15	GRAVEL AND SAND (GW-SW), fine to coarse, some cobbles, trace silt, well graded, compact to dense, sub-rounded to sub-angular, rusty brown, moist. ▽	
2				2.40 1449.65	ROCK (ALASKITE), signs of fracture and weathering. -Refusal at 3.4	
3				3.40 1448.65	End of Hole at 3.40 m	
4						
5						
6						
7						
8						
9						
10						

KLOHN CRIPPEN

PROJECT NO.: M09222A04
PROJECT: Ruby Creek
LOCATION: Atlin, BC
LOGGED BY: DK **CHECKED BY:**
SHEET 1 **OF** 1 **HOLE NO.:** BK05-04

TEST HOLE LOG

STARTED: Sep. 16, 2005 **FINISHED:** Sep. 17, 2005

DRILL METHOD: Becker

GROUND ELEV. (m): 1454.04

COORDINATES (m): N 6620809.469 E 590649.328

Su - kPa: 20 60 100 140 180

VANE PEAK FIELD ◆ LAB ■ ▲UC/2

REMOLD ◇ □ △P.PEN/2

★ % FINES ● SPT N

W_P% W% W_L%

× — — — ○ — — — ×

20 40 60 80

DEPTH (m)	SPT BLOWS PER 0.15m	SAMPLE TYPE	SAMPLE No.	SYMBOL	DESCRIPTION OF MATERIALS	INSTRUMENT DETAILS
0 – 1.80		Grab	1		SAND AND GRAVEL (SW-GW), fine to coarse, some cobbles and boulders, trace silt, well graded, loose, sub-rounded to sub-angular, orangey brown, moist. -Compact below 0.9	
1.80 1452.24		Grab	2		Same as above but light brown and dense. -Boulder at 2.6 -Very dense past 2.9 ∇	
3.80 1450.24					ROCK (ALASKITE), signs of weathering, rusty staining. -300 blows from 4.0 to 4.2	
4.20 1449.84					End of Hole at 4.20 m	

DEPTH (m): 1 2 3 4 5 6 7 8 9 10

KLOHN CRIPPEN

PROJECT NO.: M09222A04

PROJECT: Ruby Creek

LOCATION: Atlin, BC

LOGGED BY: DK **CHECKED BY:**

SHEET 1 **OF** 1 **HOLE NO.:** BK05-05