BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PREPARED FOR DELOITTE AND TOUCHE INC.
ON BEHALF OF
THE FARO MINE CLOSURE PLANNING OFFICE

TASK 20B
PLUG DAM
CONCEPTUAL DESIGN

FINAL

PROJECT NO.: 0257-038-01
DATE: NOVEMBER 9, 2006

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Project No. 0257-038-01
November 9, 2006

Mr. Douglas Sedgwick
Deloitte & Touche Inc. the Interim Receiver for Anvil Range Mining Corporation
Suite 1900, TD Centre
79 Wellington Street West
Toronto, Ontario
M5K 1B9

RE: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Dear Mr. Sedgwick:

The Plug Dam Conceptual Design project has developed in four distinct phases, as follows:

1. The first phase, SRK 1993, was initiated due to concerns about seepage from Faro Pit through the alluvial deposits located adjacent to North Fork Rose Creek (NFRC) via the Zone II Pit. In this report, a “plug dam” was shown to retain the Faro Pit water at elevation 1140 m. The Plug Dam shown in this report was never constructed.
2. The second phase, BGC 2004a, consisted of the development of a conceptual design for the Plug Dam located in the east access road to the Faro Pit. This conceptual design was based on information collected in a desk study and supplementary information collected in a one day site reconnaissance. The conceptual design consisted of an earth-core rockfill dam between the two rock walls. The maximum height of the dam was based on the appearance of “intact” rock in the right abutment.
3. The third phase, BGC 2004b, consisted of the completion of a drilling and water pressure testing program at the Plug Dam site identified in the second phase. The information obtained in this site investigation was used to update the conceptual design.
4. The fourth phase, this report, consisted of continuing the site investigation program at the location of the Plug Dam. The 2005 program consisted of drilling four boreholes in the area of the dam foundation and performing both water pressure and pressure grout testing.

The report provided herein summarizes the work undertaken to-date for the Plug Dam project. It provides a summary of all the site investigation information collected in the above noted phases. The site investigations have brought the level of understanding of the foundation conditions to a "pre-feasibility" level. The dam design however, has not been advanced to a similar level of study but has been left at a "conceptual" level. This was done deliberately given the status of the on-going closure planning for the Faro Mine. A decision on the need for the Plug Dam construction has not yet been made. It is thought, that along with the decision to proceed with the construction, other design criteria for water elevations within the pit, seepage requirements and other performance requirements would have been defined. Until such design criteria are provided, as part of the overall closure planning effort, advancing the dam design is premature. For the purpose of this conceptual design report, it was assumed that the maximum practical water elevation (without the need to construct saddle dams) should be established and that seepage should be minimized to the extent practical.

Following a decision to proceed with the construction of the Plug Dam, including the required design water elevation for the Faro Pit, a pre-feasibility design can be prepared without the need for additional site investigations. Further site investigations will be required prior to proceeding to final design.

This report was previously issued for review by Deloitte & Touche Inc., the Faro Mine Closure Planning Office (FMCPO) and members of the Plug Dam working group. Following receipt of review comments, the report has been modified as required and issued in its final form.

We trust that this information meets with your requirements at this time. Should you have any questions or comments, please do not hesitate to contact BGC at your convenience.

Yours truly,
BGC Engineering Inc.
per:

Gerry Ferris, M.Sc., P.Eng.
Geotechnical Engineer

GWF/sf

Attached: Final Report

EXECUTIVE SUMMARY

This report summarizes the work undertaken to-date for the Plug Dam project. It provides a summary of all the site investigation information collected in the 2005 field season and also any work from previous investigations. The site investigations have brought the level of understanding of the foundation conditions to a "pre-feasibility" level. The dam design however, has not been advanced to a similar level of study but has been left at a "conceptual" level. This was done deliberately given the status of the on-going closure planning for the Faro Mine.

A decision on the need for the Plug Dam construction has not yet been made. It is thought, that along with the decision to proceed with the construction, other design criteria for water elevations within the pit, seepage requirements and other performance requirements would have been defined. Until such design criteria are provided, as part of the overall closure planning effort, advancing the dam design is premature. Once these decisions are made, a pre-feasibility dam design should be prepared, as needed.

The estimated capital cost to construct the Plug Dam to retain a full supply water elevation of 1168 m amsl within the Faro Pit with a high quality (cement) grout curtain is between $2.5 and 4.1 million dollars.

Report Title:	Task 20B – Plug Dam – Conceptual Design
Prepared by:	BGC Engineering Inc.
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LIMITATIONS OF REPORT

This report was prepared by BGC Engineering Inc. (BGC) for the account of Deloitte and Touche Inc., Interim Receiver for Anvil Range Mining Corporation and the Faro Mine Closure Planning Office. The material in it reflects the judgement of BGC staff in light of the information available to BGC at the time of report preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be based on it are the responsibility of such Third Parties. BGC Engineering Inc. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

As a mutual protection to our client, the public, and ourselves, all reports and drawings are submitted for the confidential information of our client for a specific project and authorization for use and/or publication of data, statements, conclusions or abstracts from or regarding our reports and drawings is reserved pending our written approval.

1.0 INTRODUCTION

1.1 General

This report presents the consolidated results of geotechnical site investigations undertaken related to the Plug Dam at Faro Mine, Yukon. These investigation results have been used in the preparation of a conceptual level design for the Plug Dam. This project was undertaken by BGC Engineering Inc. (BGC) for Deloitte & Touche Inc. (D&T) on behalf of the Faro Mine Closure Planning Office (FMCPO).

The purpose of the Plug Dam is to increase the water elevation within the Faro Pit which increases the storage capacity of the pit. The need for a raised water elevation in the pit is related to the concept of a flow-through pit. The need for additional storage is related to the possible deposition of either tailings or waste rock within the pit. Definition of the need for either more storage capacity or higher water elevations is outside the scope of the current study. It is understood that the Plug Dam is required in some of the closure scenarios but the definitive need and performance requirements have not yet been established.

Past studies have indicated that the water elevation of the Faro Pit could be raised as high as about 1168 m (BGC 2004a) from the current 1140 m amsl, a water level raise of 28 m. This increase in pit water elevation would result in the creation an additional 16.3 million m^3 of storage.

1.2 Background

The Faro Mine is location in the central Yukon, approximately 200 km northeast of Whitehorse. The mine is accessible by an all weather road from Whitehorse and is about 22 km north of the Town of Faro (Figure 1). The general arrangement of the Faro Mine is shown on Figure 2. As indicated, the Plug Dam is to be located on an access road into the Faro Pit. The Plug Dam will be used to “plug” a gap (Photo 1) in the exposed bedrock wall forming the current bedrock low around the rim of the Faro Pit. The Plug Dam would then form part of barrier between the Faro Pit and the buried Zone II Pit.

Studies related to the Plug Dam project have developed in four distinct phases; as follows:

1. The first phase, SRK 1993, was initiated due to concerns about seepage from Faro Pit through the alluvial deposits located adjacent to North Fork Rose Creek (NFRC). Following the completion of mining activities in the Faro Pit, the pit was allowed to flood with water. The water elevation within the flooded pit was allowed to rise to 3850 feet (or 1140 m amsl). Concerns were expressed by regulators concerning the possibility of increased seepage water arriving at the NFRC due to this water level rise. This report provided information on both the hydraulic conductivity of the bedrock between the Main Pit and the Zone II Pit (two boreholes with water pressure testing) as well as the hydraulic conductivity of the bedrock between the Zone II Pit and the alluvial deposit. A load balance was prepared to indicate the relative importance of the seepage (and the contaminant loading) through bedrock to the total loading to the NFRC from all sources. In this report a “plug dam” was shown to retain the Faro Pit water at elevation 1140 m. The Plug Dam shown in this report was never constructed.
2. The second phase, BGC 2004a, consisted of the development of a conceptual design for the Plug Dam. The conceptual design concept developed consisted of an earth core rockfill dam with grouting to ‘seal’ the foundation rock. The need for the Plug Dam was related to the need for additional storage (for water or tailings solids) in the Faro Pit. The dam was located between two exposed rock walls in the eastern access to the Faro Pit (between the Faro Pit and the Zone II pit). The conceptual design was based on information collected as part of a desk study which was supplemented by a one day site reconnaissance.
3. The third phase, BGC 2004b, consisted of the completion of a preliminary drilling and water pressure testing program at the Plug Dam site. The program consisted of drilling three boreholes (with water pressure testing) in the area of the dam, test pitting in potential borrow sources, determination of the elevation of exposed bedrock on the edge of the Faro Pit, performing geophysics in the pillar between the Main Pit and the Zone II pit and drilling one borehole at the west access to the Faro Pit (former Faro Creek location). The information obtained from this investigation was used to update elements of the conceptual design. The general concept, an earth-core rockfill dam with a grout curtain, remained the same. Updates included recognizing that a 3 to 5 m thick deposit of waste rock was present in the road location, the upper portion of the bedrock beneath the road was highly permeable and that the general permeability of the rock below this upper part was generally ‘tight’.
4. The fourth phase, this report, consisted of continuing the site investigation program at the location of the Plug Dam. The 2005 program consisted of drilling four boreholes in the area of the dam foundation and performing both water pressure and pressure grout testing in these holes. A topographical survey of a small drainage course which exited within the left abutment area of the plug dam was undertaken. An examination of the salts encountered on the right abutment area of the pit wall was undertaken. The updates to the conceptual design are contained in this report.

1.3 Current Study Objectives

The objective of the 2005 site investigation was to bring the state of knowledge concerning the foundation of the Plug Dam to a "pre-feasibility" level. In order to accomplish this objective, the data obtained from previous investigations was supplemented by the 2005 program. The 2005 program consisted of drilling four boreholes in the area of the dam, water pressure and pressure grout testing, collecting detailed survey information concerning the small surface drainage area which discharges into the left abutment area and collecting samples of the salts encountered on the right abutment.

As noted in Section 1.1 some of the key design criteria for the Plug Dam are currently undefined. Therefore, the design provided herein is to a conceptual level, until further definition of the need for, and design criteria requirements of the dam are developed. The conceptual design concept remains an earth-core rockfill dam. In this report, the concept has been to maximize the water level in the Faro Pit without the need for associated saddle dams. Once storage requirements for the pit are defined, the Plug Dam concept should be reassessed.

If the water elevation in the Faro Pit is allowed to be greater than the elevation of the intact rock in the east access road to the Faro Pit (about 1159 m), water would flow easily through waste rock (or highly fractured bedrock) into the Zone II Pit (Figure 3). If the water elevation within the Zone II pit is allowed to be greater than about 1123.8 m (Figure 3), water would flow easily through waste rock into the alluvial soils adjacent to North Fork of Rose Creek (NFRC). At lower water elevations (either in the Faro Pit or the Zone II Pit), the flow of water occurs as seepage through intact rock. Currently the water elevation in the Faro Pit is maintained by pumps between elevation 1140 and 1142 m (GLL 2005). The water elevation within the Zone II Pit is controlled by a pump and is maintained between 1106 and 1117 m (GLL 2005).

The scope of work for the 2005 program was developed in conjunction with D&T, FMCPO and the Plug Dam working group. The agreed program was presented by BGC in a proposal dated July 26, 2005 to D&T. Formal approval of the program was provided by the FMCPO via letter and authorization to proceed was provided by D&T via a letter dated August 3, 2005.

1.4 Site Survey Datum

Within the mine site area, topographic elevations may be referenced to various datum levels. Unless noted otherwise, all drawings in this report are based on the 1927 North American Grid system (NAD27) and geodetic datum, with elevations given in metres above mean sea level (m amsl). Older mine drawings may be based on "Mine Datum" or "Down Valley Project Datum" and may be in feet. The approximate conversion factors for these data are as follows (Robertson 1997):

- To convert Mine Datum to m amsl, subtract 33.3 m or 109.2 feet.
- To convert Down Valley Project Datum to m amsl, subtract 32.3 m or 106 feet.

2.0 SCOPE OF WORK AND WORK PROGRAM

The 2005 program of work undertaken by BGC included the following major tasks:

- Compile and review existing information, including work undertaken by BGC in 2004 (BGC 2004a)
- Perform bedrock core drilling to assess the rock type, number and characteristics of the joints and rock mass quality.
- Perform water pressure and pressure grout testing within the drilled holes to assess the hydraulic conductivity and potential grout takes.
- Collect topographical information at the small watercourse that flows from the waste rock dump to the left abutment area of the Plug Dam.
- Collect samples of the salts encountered on the exposed bedrock in the right abutment area to assess the potential effects of these salts on the construction of the Plug Dam.
- Compile the information from the current and previous investigations to develop an understanding of the site.
- Update, if necessary, the conceptual design of the Plug Dam.

2.1 Compile and Review Existing Information

As indicated in the list of references, a considerable amount of information was available with respect to the geology of the East Wall of the Faro Pit and the hydraulic properties of the rocks in this area. Selected reports have been reviewed and relevant information has been incorporated into this report, as appropriate.

Prior to the 2005 investigation, the only site investigation performed in the foundation of the Plug Dam was that performed in 2004 (BGC 2004b). There were two previous investigations in the general East Wall and Zone II Pit Areas. In 1986, Piteau performed an investigation into the groundwater conditions of the East Wall of the Faro Pit (Piteau 1986). A copy of the borehole logs and water pressure testing from this 1986 program is included in Appendix A. This investigation was performed in support of dewatering efforts being considered at the time. In 1993, SRK performed an investigation to determine the amount of seepage water that could be expected from the Faro Pit into the Zone II pit and ultimately to the NFRC (SRK 1993). A copy of the borehole logs and water pressure testing from that program is also included in Appendix A. The locations of these drill hole locations (from both 1986 and 1993) are shown on the figure included in Appendix A.

In the summer of 2004, shallow geophysical surveys were undertaken to determine the depth to intact bedrock in the right abutment area. The survey consisted of performing seismic refraction on three different lines. The results of this geophysical survey are presented in a report dated December 21, 2004 prepared by Aurora Geosciences Ltd. This report is provided under separate cover.

Relevant information from the geophysical survey has been used to supplement observations made at the borehole locations. The seismic refraction information represents the only information available in the portions of the right abutment 'pillar' of rock between the Faro and Zone II Pit.

2.2 Bedrock Drilling

A brief site reconnaissance was undertaken on August 21, 2005 by Mr. G. Ferris, P.Eng. of BGC, to check site access for the drill rig, arrange for logistical support from site staff and finalize borehole locations.

Diamond drilling was carried out during the period August 22 to September 18, 2005, during which time, a total of four boreholes were drilled at the locations shown on Figure 4 (BGC05 series of boreholes). The drilling was performed under the full-time supervision of Mr. G. Ferris, P.Eng. for the period August 22 to September 10, 2005. From September 10 to 18, the drilling was supervised by Ms. C. Banton, E.I.T. of BGC. The drilling was performed using a track-mounted CME 75 diamond drill rig, supplied and operated by Midnight Sun from Whitehorse, Yukon.

At each borehole, HW casing was set through the overburden material prior to initiation of core drilling. The boreholes were cored in 1.5 m core runs to the desired depth with a thick walled NQ3 diamond rotary bit, resulting in 45 mm diameter core. The drilling was performed using a triple-tube wire-line arrangement. Water was used as the drilling fluid for all the holes.

Initial geotechnical logging was performed at the drill site as the core was brought out of the ground. Given the rapid nature of drilling, core logging was completed either later at the drill site during equipment set-up for other activities or later after being moved to storage. The core logging information collected included the following parameters:

- Total core recovery (TCR),
- Solid core recovery (SCR),
- Rock Quality Designation (RQD),
- Strength index,
- Weathering and alteration,
- Bedrock lithology,
- Joint shape and roughness, joint alteration and/or infill, joint aperture,
- Discontinuity inclination with respect to the core axis, and
- Occurrence of broken core and lost core.

The borehole logs from this on program drilling are attached in Appendix B. Each joint, fracture and drill break was inspected with respect to type, roughness, infilling and aperture. A summary of the core fractures, including those due to drill breaks, is included immediately following the appropriate borehole log.

An attempt was made to estimate the degree of joint aperture in-situ, based on an examination of the joint surface characteristics in the core samples. Joint aperture was logged as “tight” (T), “Partially open” (P) and “Open” (O) and is included on the summary of the core fractures. The tight aperture condition was usually associated with fractures along foliation, and had no staining. These fractures were difficult to distinguish from drill-induced fractures. Partially open and open fractures frequently displayed surface staining, weathering or some degree of wall rock mismatch.

Photographs of the core collected are included immediately following the summary of joint characteristics. As can be seen in these photos, the core was often highly broken up and fractured by drilling; logging of distinct fractures was difficult. Quartz zones were encountered during drilling (as indicated on the logs) and it was thought that occasionally fragments of quartz become stuck in the core catcher, resulting in the softer schistose rock being ground out of the way by the quartz. This may be reason for very low core recoveries in certain sections.

On completion of drilling, the boreholes were backfilled with grout and the locations were staked. The locations and elevations of the ground surface at each drill hole were determined in the field by a survey crew from Yukon Engineering Services of Whitehorse.

Details of the bedrock drilling conducted in 2004 was previously reported (BGC 2004b). The location of these boreholes is also shown on Figures 4 (BGC04 series) and a copy of the borehole logs is included in Appendix B.

2.3 Water Pressure Testing

Water pressure testing was performed within each of the four boreholes drilled as part of the 2005 program. Data collected during the water pressure testing is contained in Appendix C.

The water pressure testing was undertaken following the down-stage method as the drilling was completed. This was accomplished using a single packer (double wire-line packer) arrangement where the upper packer seals the inside of the drill rods allowing water to flow through the packers to the area below the lower packer, which has sealed the upper portion of the rock. The water pressure testing was completed following the advancement of the drilling by 3.05 m (10 feet). Prior to testing, the borehole section was flushed with clean water.

The inflatable N-size packers for this program supplied by Midnight Sun were manufactured by RST Instruments of Vancouver, B.C. The packers were inflated using nitrogen gas to at least three times the maximum test pressure to seal the test zone.

During the water pressure test, water was pumped into the test section under constant pressure using the main water pump on the drill rig. The total flow for each test interval was measured at the surface using 'Neptune' flow meter, reading in litres. The gauge pressure was measured (and controlled using ball valves) at the surface using a dial gauge.

The testing was conducted using at least five injection pressures for each test increment; the pressure was increased in three increments and then decreased for two decrements while the flow was measured continuously. The sequential pressures utilized were approximately equivalent to 1/3P, 2/3P, P, 2/3P and 1/3P where P was equal to between 1 and 2 psi per foot of depth. Each increment and decrement of pressure was maintained until stabilized pressure/flow conditions were achieved within the test section. The test was conducted until a minimum of 10 minutes of constant flow rates were achieved in each test increment.

Details of the water pressure testing conducted in 2004 was previously reported in BGC (2004b). A copy of the 2004 water pressure testing results is Appendix C. The testing conducted in 2004 used the same equipment as the 2005 program, however, the packers were arranged in a double packer set-up and the testing was completed following the completion of the drilling. During the 2004 program not all of the test sections were completed using five test pressures. In some cases, only a single pressure was used.

2.4 Pressure Grout Testing

Pressure grouting was performed within each of the four boreholes drilled as part of the 2005 program. Data collected in the pressure grout testing is contained in Appendix D.

Pressure grout testing was performed either immediately after the water pressure testing or upon completion of the drilling, depending on the results of the water pressure testing. The purpose of this testing was twofold; to seal any upper permeable zone (so that it would not affect the lower water pressure test sections) and to obtain an estimate of grout takes. The maximum pressure used for the testing was calculated on the same basis as the water pressure tests, no pressure cycling was performed as part of the grout tests. The tests were run until zero grout take was achieved for a 10 minute interval at a constant pressure. The grout tests were conducted following the 'Australian Method' (Houlsby 1990) where an initial grout mix was selected based on the water pressure testing results. This mix was thickened as needed during the test to achieve closure of the hole.

Grout was mixed using a paddle mixer and maintained in solution using an agitator. Measurements of the grout take were made on the basis of the amount of grout in the tanks on an approximate 10 minute basis. Grout injection was achieved through the use of a Moyno pump and a series of ball valves at the grout header. Gauge pressure was measured at the header. The grout was delivered through 20 mm (¾ inch) diameter coated metal pipe and used a single packer (pneumatic) to seal the test zone.

2.5 Investigation at the Former Faro Creek Area

As part of the 2004 investigation program, a single borehole was drilled into the area of the former Faro Creek, on the main access road into the Faro Pit. Additional boreholes and geophysics were performed in this area during the 2005 investigation season. The results obtained from that program were previously presented in BGC (2006). As needed for the purpose of this conceptual design report, the investigation results from the former Faro Creek area are used in this report.

2.6 Survey at Watercourse

A small watercourse exits from the waste rock dump to the northeast of the dam site. This watercourse crosses under the Faro Creek Diversion access road and discharges down the side of the rock cut near the left abutment of the dam. A survey of the creek and the surrounding area was conducted by Yukon Engineering Services Limited in August 2005. The results of this survey are discussed in Section 3.1.

2.7 Soluble Salts

White efflorescent salts were observed, coating an exposure of the sulphide-rich rock in the right abutment area of the Plug Dam. Surface samples were collected from near the road surface and also from the first bench level on the right abutment near borehole BGC04-03 (Figure 4). The samples were returned to BGC's office for a visual review. The results are presented in Section 3.9.

2.8 Borrow Source Investigation

2.8.1 Test Pitting

Six test pits were excavated in the overburden soils on the left abutment area to investigate the potential use of this material as Zone 1 (core) fill for the Plug Dam. The test pits were excavated on September 14, 2004 using the Anvil Range Caterpillar 235 tracked excavator. The test pits were excavated and sampled under the supervision of Mr. Gerry Ferris, P.Eng. of BGC. The location of these six test pits are shown on Figures 4 and 5. Three test pits were excavated at the crest of Northeast waste dump. Anecdotal information suggested that this area had been used as a waste dump for till that was removed during overburden stripping. The position of these test pits is shown on Figure 5.

A copy of the test pit logs and photographs from this investigation are included in Appendix E.

2.8.2 Surface Sampling

Surface samples were collected at a number of locations on the Northeast waste dump. This surface sampling program was intended to supplement the test pitting. The location of the surface samples are shown on Figure 5. The surface samples were collected by Mr. Gerry Ferris, P.Eng. either on September 13 or 15, 2004. Photographs taken during the collection of these surface samples are included in Appendix E.

3.0 SITE CONDITIONS

3.1 Topography

An overview of the current site conditions and the areas of interest for the Plug Dam project are shown on Figures 3 and 4 and Photo 1. The Faro Pit straddles the Faro Creek Valley. Faro Creek was diverted around the northeast side of the pit to allow mining during the original development of the mine. The pit was mined in three zones. Zones I and III are located within the main pit boundary. The Zone II Pit was located south of the Main Pit, as shown in Figure 3 and was subsequently backfilled with waste rock.

Waste rock piles from the open pit mine are draped over the valley slopes of Rose Creek, along the southeast sides of the pit. The original Faro Creek drainage course forms a notch into the pit wall crests on the west and north sides. The pit is currently filled with water which varies between elevations of 1140 to 1142 m. The notch along the former Faro Creek channel has been partially filled in with waste rock (Photo 1b), with the lowest topographical point now being at elevation 1181.59 m (on waste rock) at the top of the access road to the pump barge, as shown in Figure 3. A bedrock low, at elevation 1158.2 m, occurs in this area (SRK 1991). The location of this topographic and bedrock low is indicated on Figure 3. Drilling performed in this area and geophysics (BGC 2006) indicates that the bedrock elevation encountered beneath the road near the pit wall rim was between 1150 and 1155 m.

On the southeast corner of the pit, a haul road ramp forms a narrow slot through the Faro Pit crest (Photo 1). This road was previously used to connect the Main Pit to the Zone II Pit and was abandoned during mining of the Zone III ore body. The maximum bedrock elevation in the base of the haul road is about elevation 1158.9 m amsl (SRK 1991). This elevation represents another bedrock low on the rim of the Faro Pit. At the location of the Plug Dam foundation investigation, bedrock was encountered between elevations 1147.2 and 1148.4 m (Appendix B). The bedrock around the Zone II Pit has been covered by waste rock dumps, which have a maximum elevation of about 1254 m amsl on the southeast side, between Faro Pit and Rose Creek. The minimum saddle elevation on the haul road out of the main pit, located on rockfill cover over the former Zone II pit area, is 1174.6 m, as shown in Figure 3.

The survey conducted along the small watercourse indicated that the elevation of the water at the point where it begins to cascade down the rock wall was 1171 m amsl. as shown on Figure 6 and 7. Also shown in Figures 6 and 7 are “proposed ditch options” for increasing the elevation of the water discharge into the Faro Pit from 1171 m amsl. Discussion of these options and the need to complete this work is provided in Section 4.1.

3.2 Surface Features

An overview of the two areas of concern, the Plug Dam area and the former Faro Creek, are shown on Photo 1. The Plug Dam location consists of a relatively narrow trench between two rock outcrops, as shown on Photo 2.

The bedrock exposure on the right hand side of these photos will form the right abutment of the Plug Dam. This bedrock exposure forms a pillar of rock between the Faro Pit and the buried Zone II Pit. Views of the right abutment are shown in Photo 3. A sulphide exposure is located on the right abutment, immediately downhill from Borehole BGC05-25; the significance of this deposit and the associated soluble salts is discussed in Section 3.9.

The left abutment is shown in more detail in Photo 4. In this photo, the benches from mining activity are still evident along with a marker showing the approximate location of the drill holes from the previous programs. The approximate location of the 1986 investigation of the east wall of the pit is also shown in this photo. Included on Photo 5 is an overview of the left and right abutments along the proposed alignment of the Plug Dam.

A walking inspection of the small drainage ditch which discharges on the left abutment area was undertaken in 2005. Views of this ditch are shown on Photos 6 and 7.

3.3 Geology

3.3.1 Regional Setting

The area has been extensively glaciated during the Quaternary period. Tills and outwash deposits fill the lower parts of most valleys. Overburden, consisting of till-like colluvial deposits, sands, silts and gravels were found to exist up to depths of 60 m in the Faro Creek valley, in the vicinity of the open pit (Piteau, Gadsby, Macleod Ltd., 1975 and Pigage 2001).

The Faro Pit is the most westerly of a series of several concordant, stratiform, massive sulphide lead-zinc ore bodies, which occur within the Anvil Arch, on the north side of the Tintina Trench. The main ore bodies of the Anvil Range, from west to east are the Faro, Grum and Vangorda deposits. The main bedrock units hosting the Faro deposit are part of a deformed sequence of late Precambrian to Upper Paleozoic metasedimentary and metavolcanics, intruded by a Cretaceous granitic plutonic suite (SRK 1988).

The geology of the Plug Dam site and proximal area is relatively complex, as shown on Figure 8. The following sections summarize geological details compiled from various references to augment the field data and provide a description of the geology of the Faro orebody. Many of these details will become important during final design, when further site-specific drilling and better mapping data are obtained after the foundation has been exposed and the abutments cleaned of accumulated colluvial debris.

3.3.2 Bedrock Geology

The Anvil Range ore bodies occur at the contact between the Mt. Mye Formation and the Vangorda Formation. Both of these formations have been encountered in the vicinity of the Plug Dam site area, with the Vangorda Formation on the right abutment and the Mt. Mye Formation on the left abutment. Figure 8 (taken from Pigage 2001) presents an updated geological plan of the Faro Pit area including the Plug Dam. Figure 9 presents a more detailed geological plan of the Plug Dam site area, based on the mapping and augmented by airphoto interpretation and site reconnaissance mapping by BGC.

The Mt. Mye Formation is the oldest map unit in the area, ranging in age from Late Proterozoic to Lower Cambrian (Jennings and Jilson 1986) and forms the basal stratigraphic unit of the region. Mt. Mye strata comprise non-calcareous phyllite and schist, marble and calc-silicate lenses, carbonaceous schist, minor psammitic schist and metabasite. The typical non-calcareous phyllite of the Mt. Mye Formation is a medium to dark medium grey, weathering rusty brown, with a rust flecked foliation surface (Jennings and Jilson 1986). The rocks are commonly banded with dark grey micaceous folia, 1 mm to 10 mm thick, separating lighter grey, finely crystalline quartz-rich layers 2 to 50 mm thick. Metabasites are either flows or sills, occurring mainly near the top of the formation. They comprise mainly dark green amphibole, plagioclase, quartz schists that are strongly foliated, lacking relict igneous structure. These units are relatively thin (a few metres to several tens of metres thick), and discontinuous, with lateral dimensions up to a few hundred metres.

The Vangorda Formation, of middle to late Cambrian age (Pigage 1990), consists of calcareous phyllite and calc-silicate, metabasites, carbonaceous phyllite, chloritic phyllite and minor marble (Jennings and Jilson 1986). The unit has been strongly deformed, making it difficult to estimate its overall thickness. Estimates of 1000 m were indicated from cross-sections based on exposures in the Anvil Range (Jennings and Jilson 1986). The best exposures of the calc-silicate units are in the northwest side of the Faro Pit. A carbonaceous unit exists near the base of the formation and can also be seen within the Faro Pit. The Vangorda Formation is characterized by medium grey phyllite, very thinly interlayered with light grey quartz and calcite rich bands. The phyllitic bands are 0.5 to 1 cm thick and the quartz and calcite bands are 1 cm to several cm thick. The thin bands are typically intricately folded at the hand-specimen scale, with an axial plane crenulation cleavage forming the dominant plane of fissility of the phyllites.

In addition to the above major phyllite units, there are four subordinate phyllite units that may represent up to 15% (by volume) of the formation: (Jennings and Jilson 1986):

a) Black, variably calcareous and commonly dolomitic, thinly layered, quartzose phyllite;
b) Soft, medium grey to black, homogeneous, non-calcareous phyllite lacking in quartz siltstone layers.
c) Medium grey, non-calcareous phyllite, thinly interlayered with quartz siltstone.
d) Medium grey phyllite with thin quartz dolomite layers

A variety of the black phyllite is found in association with the sulphide ore bodies, and near the base of the Vangorda Formation. This unit is pervasively foliated, homogeneous, variably siliceous, hard, fine-grained, with minor (1%) disseminated pyrite and pyrrhotite.

Metabasites or “greenstones” are the most abundant subordinate rock unit within the Vangorda Formation. Compositionally, these rocks are of basaltic composition. This meta-igneous rock accounts for about 15%-20% of the Vangorda Formation, but is conspicuous because of its greater resistance to weathering. Local crosscutting contact relationships and fine-grained texture support an intrusive origin. This unit is associated with a green phyllite that may represent tuffs or mafic flows.

The ore deposits are confined to an approximately 150 m thick interval straddling the Mount Mye-Vangorda formation contact zone. This stratigraphic position indicates that the mineralization is Cambrian in age (Pigage 1990). The deposits consist of one to five sheets of sulphide mineralization, with inter-banded metasedimentary rocks. All ore types in the Anvil districts are described as completely recrystallized metamorphic tectonites containing well developed foliations. The main ore types consist of massive and quartzose ores (Pigage 1990).

The entire right abutment of the dam and a portion of the downstream left abutment is composed of massive sulphide ore. The following descriptions provide details on the nature of these rock units (from Pigage 1990):

<u>Massive Sulphide Ores:</u>

- Massive pyritic sulphides consisting of banded to homogeneous, usually weakly foliated and or lineated massive pyrite with lesser sphalerite and galena. Total sulphide content is at least 60% and may be up to 100%. Accessory minerals include pyrrhotite, chalcopyrite, magnetite, arsenopyrite and marcasite. Gangue minerals include quartz, barite and carbonates.
- Baritic, massive pyritic sulphides is a strongly to thinly banded massive sulphide/sulphate rock consisting of pyrite, galena, sphalerite and commonly magnetite in a gangue of barite and lesser carbonates. Barite content ranges up to 50%. Pyrrhotite is not commonly associated with this facies except at the Faro deposit where pyrrhotite is more abundant overall.

- Carbonate bearing, massive pyritic sulphide is similar to the massive pyritic sulphides but contains 10% carbonate and is a relatively minor facies.
- Pyrrhotitic massive sulphides consisting of massive, finely crystalline, usually well foliated pyrrhotite with less than 50% pyrite and highly variable amounts of sphalerite and galena. Minor chalcopyrite is characteristic of this copper rich facies. This is a minor facies except at the Faro deposit.

Quartzose Disseminated Sulphide Ores:

- Ribbon banded, “graphitic”, pyritic quartzite is a dark grey, well banded sulphide-bearing quartzite. The dark grey bands consist of very fine grained, carbonaceous phyllitic quartzite to siliceous phyllite. The light grey bands consist of more coarsely crystalline, quartz-sulphide (pyrite-sphalerite-galena) inter-bands. Total sulphide content is between 2%-60%, with pyrite being the dominant sulphide.
- Pyritic quartzite is a light grey, generally poorly banded, moderately to weakly foliated micaceous quartzite with a highly variable base metals and pyrite content. Pyrite content ranges from 2% to 60%, with a complete gradation from massive sulphide to quartzose ores. Barite, chalcopyrite, pyrrhotite and magnetite bearing varieties are common. Sphalerite may be present in high-grade varieties. A thick interval of this unit is found at the northeast edge of the Faro deposit, containing elevated copper and magnetite.

Post-metamorphic breccias are common within the massive sulphides (Pigage 1990), especially in the massive pyritic and pyrrhotitic facies. The origin of the breccias may be related to ductility contrasts between the sulphides and adjacent lithologies during sulphide flow induced by deformation and metamorphism (Pigage 1990). Friable and porous massive sulphides are relatively common and when strongly developed, degenerate to a pyrite sand. These units are commonly carbonate or barite bearing and originated by post-metamorphic groundwater leaching and oxidation, especially near faults (Pigage 1990).

The Anvil batholith was intruded during the Cretaceous into the metamorphic sequence. The dominant rock type ranges from a biotite-muscovite granite to a hornblende-biotite granodiorite.

The Anvil batholith and surrounding metasedimentary rocks were intruded by late and post-metamorphic intrusive rocks of Cretaceous age as large plutonic bodies, dikes, sills and plugs. Three major intrusions are recognized and are collectively termed the Anvil Plutonic Suite, ranging in composition from granite to granodiorite (Jennings and Jilson 1986). Within the Faro Pit, a prominent set of northeast trending, porphyritic, medium to dark green hornblende diorite dikes are commonly associated with faults and fractures. A large diorite body was found within the north end of the Faro Pit and northeast of the Zone II Pit (Jennings and Jilson 1986). This unit has produced an extensive zone of brecciation locally involving the sulphide deposit.

Intrusive rocks in the mine area consist of the following (Piteau Gadsby Macleod 1975):

- Hornblende- biotite quartz diorite dikes (also forms large plug in north end of Faro Pit).
- Fine grained, grey, biotite diorite dikes.
- Quartz feldspar porphyry dikes (late stage-undated)
- Fine grained, dark green chloritic metamorphosed and site dikes.

3.3.3 Structural Geology

The Anvil deposits occur on the south limb of the Faro Anticline. Five phases of deformation are recognized within the meta sedimentary and metavolcanic rocks hosting the ore bodies (Pigage 1990). The first two phases occurred in mid-Mesozoic time and involved intense deformation and metamorphism that resulted in establishing the gross overall structure of the mineral deposits. The remaining deformational phases were only locally developed and did not tend to form large or significant structures.

The original bedding (S_0) appeared to control the deposition of the sulphide ore bodies. The first deformation (D_1) produced a regional metamorphic foliation (S_1) axial planar to tight to isoclinal mesoscopic folds (F_1) within the bedding (S_0). The larger scale folds associated with D_1 have fold axes that plunge to the northwest or southeast and are either vertical or inclined to the northeast.

The second deformation event (D_2) strongly crenulated the S_1 foliation and produced tight folds in S_1. The S_0 primary bedding was aligned nearly parallel with the S_1 foliation. Parallel to the axial planes of the D_2 folds is a crenulation cleavage (S_2). The F_2 axial planes and the S_2 axial plane foliations dip shallowly to the southwest in the pit area.

The subsequent deformation events (D_3 to D_5) generally produced open folds and weak crenulations in S_2 related to broad regional structures. In the vicinity of the Faro Pit, D_4 produced tight folds within the S_2 and associated axial plane crenulation cleavages.

The Anvil Batholith was intruded in the later stages of this deformation sequence, further deforming the metamorphic sequence into a northwest-southeast elongated dome, cored by the batholith. The later stages of emplacement were accompanied by large scale extensional faulting along the margins of the batholith. The faults developed in association with late D_2 deformation and delimited several of the deposits (Pigage 1990). The quartz diorite dikes appear to be associated with these faults.

Metamorphic grade ranges from upper amphibolite facies (sillimanite-muscovite) to lower greenschist facies (muscovite-chlorite). Metamorphic isograds are roughly concentric around the Anvil batholith and are truncated by the late D_2 extensional faults (Pigage 1990). The Faro deposit is the closest deposit to the batholith and is metamorphosed to amphibolite facies.

3.3.3.1 Faults

The Tintina and Vangorda Fault Zones form the southwest boundary of the Anvil District. Within the mine area, numerous smaller faults are locally important. These faults tend to be grouped into two major trends; 060^{o} and 340^{o} (Jennings and Jilson 1986). Most of these faults are moderately to steeply dipping normal faults that appear to be related to the post-metamorphic extensional fault system, possibly related to the emplacement of the Anvil batholith. Some faults show strike-slip displacement, possibly related to offset on the Tintina Fault. Some older faults, possibly related to the D_1 deformation phase, are present locally (Jennings and Jilson 1986).

In the Faro deposit, the central Zone 3 is bounded by several faults forming a graben structure. These normal faults are inferred to be post-D_2 (and D_3?) (Jennings and Jilson 1986). Numerous other sets, mapped at the pit scale are known, with relatively small displacements.

Locally, in the vicinity of the Plug Dam, several faults have been mapped that pass through the right abutment pillar between the Faro Pit and the Zone II Pit (Figures 4 and 9). Limited information is available on these features.

3.4 Faro Pit Design Information

Previous engineering geological studies for design of the Faro Pit wall provide some details regarding discontinuities that may be applied to assessing the abutments and foundation of the proposed dam. A major source of information was a report prepared by Piteau Gadsby Macleod Limited (1975) on the analysis and design of the open pit slopes. Subsequently, SRK (1988) assessed the feasibility of underground mining in the southwest corner of the pit. Prior to mining, there was limited exposure of the rocks hosting the Faro Pit. Therefore, detailed information had to be obtained from exposures within the pit itself as it was mined.

3.4.1 Jointing and Structural History

During the reconnaissance mapping carried out by BGC (2004a), gathering of joint set data was difficult due to colluvial cover and inability to access some of the slopes. As a result, the structural measurement data set is rather sparse. Previous investigations and mapping in the pit during active mining revealed the complex deformational history and structure of the rock units. The following details were compiled from available references and are pertinent to gaining an understanding of the overall rockmass characteristics at the plug dam site.

The main metamorphic event (D_2) produced a well-defined foliation, which generally strikes 110^o to 120^o and dips 20^o to 60^o SW (Piteau Gadsby Macleod Limited 1975), but has a wide range of orientations depending on location within the pit. Major faults were used to subdivide the pit into structural domains. Each fault-bounded structural domain had approximately similar structural geology characteristics, except for the orientation of the foliation with respect to the pit wall. With respect to pit wall stability, the orientation of the foliation was the prime factor used to delineate the final structural domain boundaries. The variation in joint orientations from one domain to another was not considered to be as significant in this regard (Piteau, Gadsby Macleod Limited 1975). Foliation dipping into the pit constituted a major discontinuity set along which instability could develop. Due to the regional dip of the foliation, stability of the east wall of the pit is adversely affected. The orientation of the foliation rotated such that it dips to the south in the vicinity of the Faro Creek valley, southwest between Faro Creek and the Faro Fault and west in the calc-silicate gneisses and associated rocks south of the Faro Fault, in the south end of the pit. Hence, the foliation dips towards the pit over the entire east wall of the pit, resulting in several large-scale pit wall instabilities.

Piteau Gadsby Macleod Limited (1975) processed and summarized joint data from geological mapping as stereographic plots for each domain. Core orientation data was also analyzed (Piteau Gadsby Macleod Limited 1975), but proved to be inconclusive regarding subsurface joint orientations. Five pronounced joint sets plus a few inconsistent or randomly distributed groups were found within the pit limits. The faults within the pit area were found to be generally similar in attitude as the main joint sets. The following is a summary of the joint set data compiled by Piteau Gadsby Macleod Limited (1975):

- Joint Set A: Joints formed parallel to sub-parallel to the foliation and compositional layering. The average dip of these joints may be slightly steeper than foliation. These joints are very prominent and control the stability of the slopes on the east side of the pit.
- Joint Set B: Joints that strike approximately east-northeast to east and dip steeply to the south. These joints are particularly well developed in the intrusive rocks and are probably related to the emplacement of the intrusion.
- Joint Set C: Joints that strike approximately southeast to south and dip vertical to sub vertical. These joints are also well developed in the intrusive rocks and are probably related to intrusion.
- Joint Set D: Joints that strike approximately east-west and dip steeply north. These joints may be related to joints of Joint Set B.
- Joint Set E: Joints that strike approximately east-southeast and dip about 60^o to 70^o south. These joints are not present in all structural domains.
- Miscellaneous Sets: These sets occur throughout the pit and may be significant on a local basis only.

Joint frequency and persistence varies considerably depending on lithology and, possibly on proximity to major faults. Joints and faults of Joint Set A are well developed in the schistose rocks. Cross joints of Joint Sets B, C, and D are well developed in the brittle intrusive dikes, calc-silicate gneiss and massive sulphide rocks, but not as prevalent in the more ductile and deformable schists (Piteau Gadsby Macleod Limited 1975).

In 1988, SRK undertook structural mapping in the southwest corner of the pit to assess the rock mass for underground mining. The site is characterized by a dominant foliation (S_2) dipping to the southwest at 14^o to 22^o. Two prominent joint sets were identified. The first had a vertical dip and a strike of 168^o, which corresponds to Joint Set C mapped by Piteau Gadsby Macleod Limited (1975). The other set had a strike of 78^o and a dip of 50^o to the south, comparable to Joint Set B. A third set had a strike of 95^o with vertical dip, possibly corresponding to Joint Set D. Fault sets comparable to these joint sets were also mapped.

3.4.2 Faults

Numerous small-scale fault sets were mapped in previous studies that were approximately parallel to the above noted joint sets. Most of the mapped sets were moderately to steeply dipping and parallel to Joint Set A.

Fault Set A is common in the schists or in the schist bands within the more competent gneissic or ore rocks. The fault zones contain very soft, fine-grained micaceous clay gouge, up to 30 cm wide. In some faults, the micas are closely aligned and it is often not clear whether the gouge zones are due to movement or to intense alteration of the softer schist bands in the sequence. For engineering purposes, the implications of the gouge zones are similar, regardless of origin. Some of these faults extend over the entire slope and are significant to the overall stability of the slope. There is little evidence for fault breakage or brecciation along the margins of the faults and the sense of movement is difficult to determine. Undulations on the fault planes are generally conformable with the undulations of the foliation (Piteau Gadsby Macleod Limited 1975).

Faults Sets B to D are steeply dipping and related to the intrusive events or to cross jointing in the pit. These faults are present in all rock units, but are especially prevalent in the harder gneisses, massive sulphides and dike rocks and may extend over two or more benches. Fault zones contain both gouge and breccia and often have a zone of intensified fracturing in the adjacent rocks. Movement and offset across the faults is usually obvious. In schists, the gouge zones contain micaceous clay filling. In stronger rocks, the fault gouge is usually a stiff clay matrix with fine to coarse-grained fragments.

The most significant fault in the pit is the Faro Fault. The fault has an average strike of 106^{o} and a dip of 40^{o} south and appears to offset the south part of the orebody by about 46 m (Piteau Gadsby Macleod Limited 1975). Drag folding and offset of the orebody indicates a normal displacement with the south block being displaced downwards relative to the north block. The fault zone consists of a conspicuous 1 m to 3 m wide zone of extremely soft and sheared graphitic schist material. The fault is well defined on the east wall of the pit but was difficult to locate in the ore zone or on the west wall (Piteau Gadsby Macleod Limited 1975). Its attitude within the pit was highly variable due to the effects of dikes and rock strength variations.

Additional data on the description of faults within the Faro pit were obtained from a series of reports prepared by Piteau Associates Engineering Ltd. between 1991 and 1992 (Piteau 1991a, b, c, d, 1992). These reports reviewed geological mapping as the pit was developed, with respect to slope stability, particularly the east pit wall. Ten major faults were identified within the pit:

- North Bound (NB)
- North Bound Splay (NBS)
- Lower Bound (LB)
- AY
- Big Indian Splay (BIS)
- JB
- Faro (FRO)
- Graben A (GFA)
- Graben B (GFB)
- South (SOU)

As mining progressed, mapping of these structures revealed the following details:

- The overall dip of the structures was steeper than the pit slope, but could flatten with depth resulting in planar or wedge failures that could daylight on the slope at lower elevations. Several large potential wedge failures were identified in the northern portion of the east wall.
- The NB fault is a wide fault zone that strikes obliquely to the east wall with a dip ranging from 60^{o} to 87^{o} to the west (275^{o} to 300^{o}).
- The Big Indian fault dips about 55^{o} southeast. This structure is responsible for the “south slump area” in the southern portion of the east wall.
- The Faro Fault strikes almost perpendicular to the east wall and dips moderately steeply to the south, having an average dip direction/dip of 195^{o}/57^{o} (Piteau 1992).
- The Faro Fault and NB Fault intersect and were considered to have a potentially significant affect on slope stability.

The traces of mapped faults in the vicinity of the Plug Dam are shown Figure 9. The locations of these structures were obtained from SRK (1991 and 1996), based on fault locations mapped by Curragh Resources Inc. in 1988. Based on the fault traces shown, with respect to the topography, the dip of most of these structures appears to be sub-vertical as they cross through the pillar of rock between the Faro and Zone II pits.

3.5 Rock Mass Properties

During investigations conducted in (SRK 1988), point load strength tests were conducted on samples of drill core. A “Mining Rock Mass Rating” (MRMR) system was used to classify each of the rock units on the basis of intact rock strength, fracture frequency and fracture condition. In general, phyllites received MRMR ratings between 30 and 40 (“Poor”), graphitic quartzites rated values between 40 and 50 (“Fair”) and massive sulphides were rated at 50-65 (“Fair-Good”). The massive sulphides lacked foliation, but the high rating did not account for the hidden, healed fractures revealed by point load testing. Broken or fractured sulphide zones rated at 30 to 50 (“Poor-Fair”). Unconfined compressive strengths of massive sulphide rock units ranged from 56 MPa to 175 MPa, compared to footwall and hanging wall rocks, which ranged from 8 MPa to 193 MPa.

During the 1994 investigation of the Zone II pit seepage (SRK 1994 and Appendix A), Borehole BH94-16 was drilled about 500 m downstream of the Plug Dam site (Figure 4). At this location, an upper sequence of carbonaceous Phyllite, quartz sericite schist, biotite schist about 20 m thick was encountered. Within this upper sequence, drill core recoveries ranged between 50% and 95%, with RQD less than 20%. Below about 20 m depth, the rock consisted of chloritic biotite schist which had core recoveries and RQD values that improved with depth. Core recoveries ranged from 60% to 100% between 20 and 40 m depth, 80% to 100% from 40 to 60 m and 90% to 100% at depths greater than 60. RQD values ranged from 10% to 80% between 20 and 40 m depth, 30% to 80% from a depth of 40 to 60 m depth and around 80% below 60 m depth (with two instance of RQD of around 50% being encountered at depths of 82 and 106 m). The values recorded for RQD can be compared to a general classification of rock quality as per Table 1 (Deere and Deere 1988).

Table 1 Rock Mass Classification based on RQD (after Deere & Deere 1988)

RQD	Rock Quality Classification
<25%	Very Poor
25-50%	Poor
50-75%	Fair
75-90%	Good
90-100%	Excellent

During the 2005 investigations (Figure 4 and Appendix B), borehole BGC05-24 was drilled in the left abutment. RQD values ranged from 0% to 30% from the surface until a depth of 14.5 m, 60% to 100% between 14.5 and 37 m depth (with three zones of lower RQD centred on 20 m, 26 m and 31 m depth) and 20% to 60% below a depth of 37 m.

During the 2005 investigations (Appendix B), borehole BGC05-26 was drilling beneath the road access. RQD value was 0% until a depth of 5.5 m, then it increased to about 15% to 25% until a depth of 8.5 m; below this depth, the RQD was between 20% and 75%.

During the 2005 investigations (Appendix B), borehole BGC05-025 was drilling in the right abutment. RQD value was 0% until a depth of 13 m, then it ranged from 10% to 60% until a depth of 35 m (the low RQD measured between 24 and 32 m depth was due to problems with the diamond bit), below 35 m the range of RQD was between 10% to 40%.

Data related to RQD and TCR are included on all the borehole logs included in Appendix B, for both the 2004 and 2005 programs.

3.6 Hydrogeology

Piteau (1986) provides an assessment of the east pit wall stability of the Faro Pit included a drilling and piezometer installation program to determine groundwater conditions in the pit. The purpose of this program was to estimate the contribution of this water to pit accumulations and to determine if wells or drains could relieve the water pressures. Although these investigations were carried out in a different section of the pit than the exact Plug Dam foundation the following important observations were made regarding the hydrogeological characteristics of the rock mass (Piteau 1986):

- The soft intrusive rocks near the bedrock-overburden contact appeared to be relatively impervious.
- Falling head tests in a zone of altered schist below a dike contact yielded a hydraulic conductivity of 6.4×10^{-7} m/s. Higher hydraulic conductivities were found in an adjacent hole (> 1×10^{-6} m/s). The contact zones of the dike may serve as a significant conduit for groundwater.
- The Big Indian Fault system was found to act as a drain to the less permeable rocks in the immediate vicinity of the fault zone.
- A second hole designed to intersect the Big Indian Fault zone intersected impervious phyllites and only a small seep of water at the phyllite-massive sulphide contact.
- Water levels in all piezometers in the east wall were relatively high, indicating that the east wall does not drain freely towards the pit. Some of the structural features that maintain high groundwater levels in the east wall are the porphyry intrusive dikes, which have gouge-filled planar contacts striking parallel to the pit wall. Seepage flow is directed laterally and upward along these contacts.

- Gouge filled structures in phyllite associated with the Big Indian Fault impede groundwater flow towards the pit in the same manner as intrusive contacts.
- An average hydraulic conductivity of 3 $x10^{-8}$ m/s was determined from the piezometer nests in the east wall. The piezometers were selectively set in permeable structures within the boreholes, resulting in a high average value for the bulk material. The direction of greatest permeability is sub-parallel to the east wall.
- Only a few small isolated seeps are contributing groundwater accumulations of water in the pit.

In 1991, SRK studied the amount leakage that could be expected from the Faro Pit, to the Zone II Pit and ultimately to the North Fork Rose Creek. In this study, the Plug Dam was first envisioned (in approximately the same location as present) to restrict water flow along this pathway. As part of this study, the hydrogeology of the Faro and adjacent Zone II Pit were assessed. The following summary information was taken from SRK (1991) regarding the hydrogeology of the Faro Pit-Zone II Pit area:

- The Plug Dam area is characterized by a high degree of fracturing and jointing in the floor and wall rocks, and several individual and mapable fractures of the Big Indian fault system are in close proximity. The potential for seepage from the Main pit via fracture flow in this area is therefore considered to be high and warrants consideration of control measures.
- Below Elevation 1143 m amsl, the wall rocks are predominantly schists and phyllites, which do not maintain open fractures to any great depth. Based on this assessment, it is assumed that there would be minimal seepage out of the main pit below 1143 m amsl.
- Flooding of the pit above Elevation 1143 m amsl would expose the southern and south-eastern corners of the pit to seepage loss through the rock mass. SRK assumed hydraulic conductivities ranging from $1x10^{-5}$ to $1x10^{-6}$ m/s.
- Three packer tests were performed during drilling of borehole BH94-16 (Figure 4), using a single packer arrangement during drilling (SRK 1994). The hydraulic conductivities measured for the following zones; 4.6 to 15.2 m, 15.5 to 24.4 m and 58.6 to 68.3 m were respectively $2.1x10^{-8}$ m/s, $8.9x10^{-9}$ m/s and $6.1x10^{-8}$ m/s. The ground surface at this borehole was 1160 m amsl making the upper hydraulic conductivity test between elevation 1155.4 m and 1144.8 m.
- Three piezometers were installed in borehole (BH94-16) using very long screen zones. The upper piezometer installation was not completed (no sand pack was installed, and the piezometer pipe was attached to the middle piezometer) due to frozen conditions. In 1994 following drilling, the measured groundwater level was at 6.1 m below grade, at elevation 1153.9 m. In September 2004, the measured water level (all three piezometers) was between 4.8 m and 5.2 m below grade at elevations 1155.2 to 1154.2 m.

The 2004/2005 investigation programs for the Plug Dam included water pressure testing of the foundation, left abutment and right abutment areas. The purpose of this program was to estimate the hydraulic conductivity of the foundation and abutments of the Plug Dam to allow estimates of seepage to be made and to assess the need for grouting of the foundation. The results of these programs were in general agreement with the results of the previous investigations described above. The following summary of the testing results is presented:

- The water pressure test data (Appendix C) was interpreted in two ways; equivalent Lugeons (to be used as part of the grouting assessment, following the Houlsby 1990 method) and in terms of hydraulic conductivity (to be used for seepage analysis, following the Hvorslev 1951 method). The calculated hydraulic conductivity results are also plotted on the borehole logs in Appendix B.
- As can be seen on the borehole logs, there does not appear to be a strong correlation between the relatively low RQD values and permeability. This is speculated to be due to the nature of the weak foliated schistose rock. Once the overburden pressure rises, the rock is no longer strong enough to maintain open fractures, but any normal variations in the drilling method results in core loss and the creation of fractures. Further examination of this aspect will be required as part of the preparation of the next level of design for the Plug Dam.
- In the abutments, the upper more weathered portion of the bedrock was more permeable (Lugeon values between 3 and 21) than the lower un-weathered rock (Lugeon of 1, hydraulic conductivity below 1 $x10^{-7}$ m/s). This effect is shown clearly on Figure 10, which plots the water pressure test results in terms of their equivalent Lugeon value. A general understanding of the meaning of these Lugeon values can be gained by comparing the test results to the guidance provided in Table 2.
- In the centre of the dam foundation on the road this variation was much more pronounced. The upper 10 m of the bedrock being too permeable to measure using the equipment available (Lugeon value of 45 to 100). Below an elevation of about 1139 m amsl, the permeability of the rock was similar to that experience in the un-weathered parts of the abutments (Figure 10). This zone of highly permeable rock is interpreted to have been affected by blast damage from the development of the open pits.
- An interpretation of the type of flow field that occurred during the water pressure test is part of the determination of the Lugeon value to be reported as representative (Houlsby 1990 and Appendix C). The results of these flow field type determinations can be further used to gain an understanding of the expected behaviour of the foundation. The results of this are summarised in Table 3.
- In the majority (66% of all tests) of the water pressure tests, the flow could be considered laminar, which is consistent with the low Lugeon values obtained and tight joints. In only one test was the flow field considered to be turbulent. Turbulent flow field are normally associated with open joints.
- The interpreted flow results indicated that about 6% of the tests experienced washing out of the joints during the water pressure tests.

Table 2 General Guidance on the Interpretation of Lugeon Values (after Fell et al. 1992)

Lugeon	Condition
<1	Joints tight
1 – 5	Small joint openings
5 - 50	Some open joints
> 50	Many open joints

Table 3 Interpreted Flow Types (after Houlsby 1990)

Flow Type	BGC04-02*	BGC 04-03	BGC04-04*	BGC 05-24	BGC 05-25	BGC 05-26	BGC 05-27	Total	% Total
Laminar	-	6	-	8	8	6	7	35	66%
Turbulent	-	-	-	-	1	-	-	1	2%
Dilation	-	2	-	1	1	1	3	8	15%
Wash-out	-	-	-	1	1	1	-	3	6%
Void Filling	-	-	-	2	1	1	1	5	9%
*****	-	-	-	-	-	-	1	1	2%
Total Tests	-	8	-	12	12	8	11	51	100%
* Cycling of tests not completed									

Discussion of the expected amount of seepage and the need for grouting based on seepage analysis is reviewed in Section 4. 2. The results of this testing however can be used directly to determine the need for grouting. Rock with a Lugeon value of 1 cannot be grouted with conventional cement grout (the joint spacing is generally not large enough to allow penetration by the cement particles). Grouting of rock is almost always undertaken when the Lugeon results indicate a value greater than about 100 (Houlsby 1990 and Fell et al. 1992). Between these two extremes, grouting is undertaken when required to produce a safe dam (to protect against piping or other potential seepage failure modes) or to limit seepage to the maximum extent possible. At this stage with the performance requirements of the dam not yet defined, the following general guidance (Houlsby 1990) is provided as follows:

- To protect against the possibility of piping in the foundation;
    - grouting would be undertaken if the Lugeon value was 7 or higher for a dam with a wide core and 3 rows of grout holes,
    - grouting would be undertaken if the Lugeon value was 5 or higher for a dam with a narrow core or a single line grout curtain,

- Using conventional cement grouts, the foundation rock cannot be improved to have a Lugeon value less than 1. If the water take is the result of flow into multiple fine fractures grouting using conventional cement grouts may not result in any improvement (even for initial Lugeon Values as high as 10).

Thus, until further definition of the performance is defined, it is assumed that the foundation should be improved as much as possible. This assumption must be examined for future design exercises. In order to accomplish improvement of the foundation, the following improvements are thought necessary:

- Blast affected rock with wide open joints below the road should be removed and replaced with low permeability cut-off material,
- A blanket grouting program should be undertaken below the core trench,
- A curtain grouting program needs to be undertaken through the road and abutments to treat the upper weathered portion and be used as part of an investigation of the foundation to treat yet undiscovered specific features in the foundation.

3.7 Pressure Grout Testing

The 2005 investigation program for the Plug Dam included pressure grout testing of the foundation, left abutment and right abutment areas. The purpose of this program was to both supplement the results of water pressure testing and to allow an estimate of the grout takes in the rock. These results are also used to supplement the assessment of the need for grouting. The results of the testing are presented in Appendix D and are summarized on Figure 11, where the grout-take is plotted in terms of the kilograms of cement injected per metre length of borehole. Most research shows that there is not a strong relationship between Lugeon value and grout-takes due to the differences in the two fluids (Fell et al. 1992). However, there is a general agreement between the results shown on Figures 10 and 11.

The grout-take in the blast damaged zone in the centre part of the dam foundation had grout-takes of between 120 to 200 kg/m. The grout-take measured outside of this blast affected zone was generally less than 40 kg/m and often less than 5 Kg/m. Context of the relative significance (as compared to grout takes on a wide variety of dam locations) of these grout takes can be gained by examination of Table 4.

Table 4 Simple Classification of Grout Takes (after Houlsby 1990)

Range of Grout-take (kg/m)	Relative Description of Grout-take
0 - 25	Low
26 - 50	Moderately low
51 -100	Moderate
101 - 200	Moderately high
201 - 400	High
> 400	Very high

3.8 Borrow Investigation

3.8.1 Core Material

The area on the left abutment of the Plug Dam was investigated, as shown on Figure 5, as a possible borrow source for core material. In general, the soil encountered consists of silty sand with some gravel to silty, gravely sand. The Liquid Limit of the portion of the samples finer than the No. 40 sieve varied from 17 to 25. The Plastic Limit varied from 8 to 15. The natural water content of the samples was less than the Plastic Limit. A copy of the laboratory testing completed on samples from the test pits is included in Appendix E and is also included on the test pit logs included therein. The broadly graded nature of this material resembles a till, which has sufficient fines content to be suitable as a core material for the dam. Permeability testing program on this material should be undertaken as part of the final dam design. The sand and gravel content will provide a high degree of shearing resistance when placed in compacted lifts in the dam.

Three test pits were excavated at the crest of Northeast waste dumps. Anecdotal information suggested that this area had been used as a waste dump for till that was removed during overburden stripping. The position of these test pits is shown on Figure 5. A copy of the test pit logs based on this investigation is included in Appendix E. These three test pits were excavated to determine the amount of natural soils present in the area for use as Zone I fill. The test pitting program found no undisturbed natural materials, nor was any material encountered to indicate that this was a “till dump” from overburden stripping. At both BGCTP04-07 and -09, only waste rock was encountered to the maximum reach of the excavator. At BGCTP04-08, a 0.5 m thick disturbed mix of natural material was encountered at the base of the excavation. This led to the conclusion that the material exposed on the face of the dump is likely disturbed and dumped material, mixed with waste rock, rather than part of a natural deposit or indicative of a “till dump” that could be exploited as a borrow area for dam core material.

3.8.2 Sand and Gravel Borrow

Surface samples were collected at a number of locations on the Northeast waste dump looking for a potential source for sand and gravel borrow material. This surface sampling program was intended to supplement the test pit program. The location of the surface samples are shown on Figure 5. The locations are denoted by the name of the sample collected at each location.

Surface samples GWF22 through GWF27 were collected at the base of “till dumps” as shown in Figure 5. The soil encountered at these locations varied from sandy gravel with some cobbles to gravely sand with some cobbles. Moisture contents of these samples were measured and the results are included in Appendix E. Given the test pit program performed and visual inspection of the crest of the dumps, it was concluded that none to little Zone I core material would be available from these locations. Based on this review, the material exposed in this area may be more suitable, after processing, as Zone 2 filter material. It is considered unlikely however, that this area represents a significant resource in terms of volume of material available.

Surface samples GWF28 and GWF29 were collected from a sand and gravel dump located on the crest of the Northeast waste dump, as shown in Figure 5. The soil encountered at these two surface sampling locations consisted of sandy gravel with some cobble to gravely sand with some cobble. A summary of the laboratory testing results for these samples are attached in Appendix E. This material potentially could be used, following processing, as Zone 2 filter material.

3.9 Soluble Minerals

3.9.1 Sample Descriptions

A total of seven samples of the surface salts or joint infill material were examined under 10x magnification using a binocular microscope. Table 5 presents a summary of the sample descriptions.

Table 5 Summary of Sample Descriptions

Borehole Number	Location	Description
BGC05-26	Shear zone 47'7''.	A mixture of silt, sand and gravel sized fragments of muscovite-sericite schist. Non plastic.
BGC05-26	Shear zone 57 feet.	A mixture of silt, sand, gravel sized fragments of decomposed sericitic schist. Non plastic.
	Salts from near road site.	Broken fragments of white, buff to yellowish coloured crusts composed of fine, acicular micro-crystals of iron sulphates. Dissolves rapidly in water at room temperature.
	Iron stained salts near bench site.	A mixture of silt, sand, gravel sized fragments of decomposed sericitic schist, containing sulphides that are breaking down to iron sulphates. Feels clayey and greasy when wet.
	Soluble salts near bench site.	Broken fragments of white to buff coloured crusts with fine, acicular micro-crystals of iron sulphates. Dissolves rapidly in water at room temperature. Evaporated residues are rusty stained.
BGC05-27	Box 2, 63-68', joint infill material.	Broken core pieces of sericite schist along a joint/fracture surface parallel to the core axis. Discontinuity surface covered by scattered patches of a red coloured crust that dissolves easily in water at room temperature. Soluble material is iron sulphate with iron oxide staining.
BGC05-27	Box 2, 73-78', fault gouge?	Broken lumps of decomposed graphitic sericite schist. Very weak and friable.

3.9.2 Geological Setting

The Faro Mine orebody is classed as a sediment-hosted sulphide deposit. The principal commodities produced were zinc, lead, silver, with associated copper, cadmium and tin. The principal ore minerals were sphalerite and galena, associated with barite, quartz, pyrrhotite, pyrite, chalcopyrite, marcasite, arsenopyrite, various sulphosalts and cassiterite (Eckstrand 1984).

A large lens of massive sulphide is located within the right abutment, within the proposed footprint of the Plug Dam. Sulphide alteration products are associated with this lens and the sulphides within the host rocks.

3.9.3 Sulphide Alteration

Weathering of sulphide ore bodies results in the oxidation of the sulphide minerals. The rate of oxidation depends on many factors, including:

- Mineral composition of the ores, i.e. marcasite oxidizes easier than pyrite and polymineral aggregates easier than monomineral compositions.
- Grain size; fine-grained aggregates oxidize easier than coarse-grained.
- Composition and structure of the host rocks.
- Climatic and hydrogeological conditions.

The primary sulphide minerals involved in the oxidation process are pyrite (FeS_2), marcasite (FeS_2) and pyrrhotite ($Fe_{1-x}S$). The interaction of groundwater and surface water with these minerals generates highly acidic waters, with very high sulphate (SO_4^{2-}) and metals content. Bacterial action may control FeS_2 oxidation organically. Under favourable conditions, the bacteria *Thiobacillus ferrooxidans* can accelerate the oxidation rate several orders of magnitude relative to the abiotic rate.

The crystallization of sulphates results from the evaporation of the solutions, concentrating the products of FeS_2 oxidation. The kinds of sulphate minerals precipitated from these solutions is a function of the solution composition and local conditions (humidity, acidity and redox potential).

Melanterite ($FeSO_4$- $7H_2O$) is one of several water soluble sulphate minerals formed as a result of oxidation of iron sulphides such as pyrite, marcasite and pyrrhotite. Melanterite is also the name of a group of sulphate minerals having the same basic structure, but have in place of iron, ions of manganese, zinc, cobalt and copper. The members of the Melanterite Group are:

- Bieberite, $CoSO_4$- $7H_2O$ (hydrated cobalt sulphate).
- Boothite, $CuSo_4$- $7H_2O$ (hydrated copper sulphate).
- Mallardite, $Mn^{2+}SO_4$- $7H_2O$ (hydrated manganese sulphate).
- Melanterite, $FeSo_4$- $7H_2O$ (hydrated iron sulphate).
- Zinc-melanterite, (Zn, Cu^{2+}, Fe^{2+})SO_4- $7H_2O$ (hydrated zinc copper iron sulphate).

All of the sulphate minerals release metals and form acidic solutions when they dissolve, furthering the cycle of sulphide oxidation and sulphate mineral formation. In addition, alteration of the iron sulphate minerals results in creation of other, more stable phases, such as rozenite ($FeSo_4$- $4H_2O$), formed by the dehydration of melanterite. The presence of clay minerals (i.e. kaolinite) in the host rocks, derived from the alteration of minerals containing aluminosilicates, results in the formation of numerous aluminium sulphate minerals such as halotrichite, $Fe^{2+}Al_2(SO_4)$ and alunogen, $Al_2(SO_4)_3$- $17H_2O$.

The sulphate minerals present in the samples obtained in 2005 from the Plug Dam area were tentatively identified as melanterite group minerals, based on the presence of pyrite and pyrhotite in the host rocks. Further laboratory analysis will be required to confirm the specific minerals present.

4.0 GEOTECHNICAL EVALUATION

4.1 Maximum Reservoir Elevation

The original conceptual design report (BGC 2004a) proposed that the maximum water elevation for the raised Faro Pit could be 1173 m amsl. The design water elevation was selected based on assumptions regarding the quality of rock in the pillar between the Main Pit and Zone II Pit.

The survey results from the small watercourse, indicates that it currently outlets at elevation 1171 m amsl. The options for re-alignment of this watercourse indicate that the outlet elevation could be raised to discharge water at elevation 1174 m amsl. Assuming that this small watercourse must discharge into the Faro Pit as part of closure, this small watercourse then sets an upper limit on the water elevation of about 1174 m amsl.

At the Plug Dam site, the seismic refraction geophysicial investigation (Aurora 2005) performed in the pillar area between the Main Pit and the Zone II Pit indicated intact bedrock is at an elevation of about 1167 to 1171 m amsl (based on a mapped transition in seismic velocity from about 1000 m/s to 4500 m/s). Borehole BGC05-25 encountered intact bedrock at elevation 1175 m amsl. Additional investigation will be required in this area to confirm the intact, tight bedrock elevation for tie in of the cut-off, prior to final design. This pillar area then sets an upper limit of about elevation 1168 m amsl on the upper limit of water within the Faro Pit. This assumes that no saddle dam is constructed on top of this pillar area (which could be performed if needed).

At the former Faro Creek valley location, the measured bedrock elevation at the edge of the Faro Pit is about 1160 m, based on exposures at the pit edge (BGC 2004b). The geophysics and borehole drilling results indicate that the top of bedrock is between 1150 and 1155 m amsl (BGC 2006) within the former creek. This creek bed is currently full of mostly fine-grained sediments. Raising the water level above elevation (1150 m amsl) will induce seepage through the soil encountered in the former Faro Creek Valley and through the bedrock. Hydraulic conductivity testing in the area indicates a conductivity of about $5x10^{-6}$ m/s in the bedrock and slightly lower values in the soil above the bedrock (BGC 2004b).

The recommended maximum reservoir elevation is 1168 m, based on the expected elevation of intact bedrock in the right abutment pillar. Under this scenario, seepage would still be possible through the materials filling the Faro Creek valley area on the west side of Faro pit. Constructing the Plug Dam so that a water level of 1168 is retained in the Faro Pit will create about 16,300,000 m^3 of additional storage in the pit (BGC 2004b).

If seepage at the former Faro Creek area is not acceptable, then a seepage cut-off will be required in this area or a maximum water level of 1150 m amsl could be selected. Additional investigation in this area will be required to determine the requirements for seepage cut-off or the elevation of low permeability rock.

4.2 Schistose Bedrock

Most schistose rocks have strengths in the very weak to medium strong range, and the rocks forming the foundation and abutments fit this category (Section 3.5). The most significant engineering consideration with most schistose rock types is the pronounced anisotropy and weakness along the foliation (Fell et al. 1992). Both of these properties are expected to be encountered at the Plug Dam foundation, as evident from the laboratory testing from the East Wall area (Section 3.5) and the multiple breaks along foliation in the core drilling (Appendix B). In addition to these features, many schistose rocks exhibit two additional types of minor faults developed parallel and at acute angles to the foliation:

1. Foliation shears – minor faults parallel to the foliation that are narrow, sheared zones or crushed seams. These are typically formed by inter-layer slip. Associated with this type of shearing are shear planes cutting across the foliation at acute angles. These acute angle shears are typically thrust faults. In laboratory settings, these features have measured shear strengths of between 7° and 15° (Fell et al. 1992). These features can be potential sliding surfaces in the foundation area.
2. Kink bands – within these kink bands the foliation features have been displaced to form features similar to monclinal folds but with sharp, angular hinges. In some cases, continuous near-planar joints have developed along the hinges and the foliation layers within the band have parted to form open or in-filled joints.

Further consideration of these aspects needs to be made in the next design phase. However for this conceptual design, no consideration of the foundation strength has been made. The design sideslope have been conservatively selected on the basis of precedent. It is considered unlikely that the foundation shear strength will be a key design factor. This is mostly based on the performance of the near vertical pit walls in the area. It is also assumed that the foundation preparation will remove any surficial unsuitably soft or weak material from the foundation.

4.3 Soluble Salt Implications

The samples obtained from the dam site provide evidence that soluble sulphates exist within the joints and fractures of the right abutment, at least in the sulphides exposed in the area. In addition, the host rocks have undergone a considerable amount of shearing and alteration. As a result, the discontinuities within the rock mass are expected to contain a mixture of soluble sulphate mineral precipitates, altered or decomposed rock, and fault gouge. Based on the water pressure testing results, the fault gouge would be tentatively considered to be of low permeability and not prone to washing-out. It should be noted that there were three tests (9% of the total tests) where it appeared that washing out of the joints was occurring.

The primary concern is the potential for this material (mostly the salts) to be washed away when the rock mass becomes saturated as the water level in the Faro Pit rises behind the plug dam. Grouting will be required to reduce the quantity of water seeping through the foundation. The presence of sulphate precipitates within the bedrock fractures may limit or prevent grout penetration in to the rock mass. As a result, potential seepage paths may not be adequately treated by grouting. These aspects will require further examination during later design stages.

4.3.1 Acidic Drainage and Metal Leaching

Seepage through the sulphide zones in the right abutment when the Faro Pit water level is raised, will create an ongoing cycle of acidic drainage and metal leaching. Oxidation of the sulphides will result in the seepage water becoming acidic and high in sulphates and metals. Any iron sulphates present within the rock mass will also contribute to increasing the acidity of the seepage water and the metals content as they go into solution.

The potentially acidic conditions will develop only where oxygen is present, such as along the capillary fringe, above the phreatic surface within the abutment. Once the upstream side of the abutment becomes inundated, the exposed sulphides should no longer be subjected to oxidation.

4.3.2 Treatment Options

The objectives of the dam foundation treatment should be to reduce seepage quantities and prevent or mitigate acid mine drainage and metal leaching. Potential treatment options that may be considered include:

- Designing the dam alignment so that the grout curtain avoids the sulphide zone. Ideally, the sulphide zone should be located upstream of the grout curtain so that it will become completely saturated upon impounding.
- Removal of the sulphide zone during construction, including any host rock mass that may have sulphate precipitates within the discontinuities.
- Consider constructing an impervious upstream blanket using compacted till or synthetic liner to eliminate the need for a grout curtain entirely.

Assessment of the feasibility of these options will require additional site investigations to delineate the extent of the sulphides and associated oxidation zone. In addition, seepage analysis will be required to demonstrate that the sulphides will be completely saturated and not subjected to oxidation.

Design of the grouting program will also have to consider the ability of the grout itself to resist acidic conditions. Conventional cement - bentonite grouts may not be suitable if the potential for acidic seepage exists.

4.4 Foundation Conditions

The hydraulic conductivity in the right and left abutments exhibited two different zones of permeability, Figure 9, an upper weathered zone and a lower un-weathered zone. The upper zone has a permeability ranging from 5 to 20 Lugeons while the lower zone has a permeability less than a 1 Lugeon equivalent to (a hydraulic conductivity of $1x10^{-7}$ m/s). This transition occurs at elevation 1165 m amsl in the left abutment and at about 1155 m amsl in the left abutment (Figure 9)..

In the road area, the permeability transitions to have the same properties (Lugeon value of 1) as the lower un-weathered zone at elevation 1139 m amsl. Above this elevation the permeability is almost too high to be measured with the equipment used in the testing program (Figure 9). This upper zone consists of fairly wide and open joints, based both on the water pressure testing and the pressure grout testing.

The unconsolidated overburden sediments within the bedrock low defining the Faro Creek had a hydraulic conductivity in the range of $1x10^{-6}$ m/s. The bedrock immediately beneath these sediments however was found to be more permeable, with a hydraulic conductivity of about $5x10^{-6}$ m/s. The drilling performed did not extend to depth to find the elevation where the rock permeability reduced, as this was not the purpose of the investigation. The results indicate that the underlying rock will extend the seepage area, depth potentially acting as a conduit for water flow from the Faro Pit. Indeed, given this result, it is possible that a seepage zone could extend along the entire pit perimeter. Inflow to the pit would come mainly from the north and east sides of the pit and outflow through the south and west sides.

An assessment of the overall seepage from the pit would be a requirement of the next stage of investigation in the Plug Dam. The starting point for this assessment would be a water balance of the existing Faro Pit, which BGC understands is in preparation.

4.5 Seepage Assessment

Upon installation of the Plug Dam and raising the water elevation to 1168 m amsl, two main zones of seepage loss in bedrock low areas would occur:

- The south corner of the pit, adjacent to the Zone II Pit and including the Plug Dam foundation;
- The southwest wall, related to the sediments in the former Faro Creek valley sediments and bedrock.

In addition to the seepage from these two bedrock low areas general seepage from the Faro Pit is to be expected. BGC understands that a water balance for the Faro Pit has been prepared in 2005, this study would provide a summary of the current seepage from the pit. Based on the drilling/testing programs, the hydraulic conductivity decreases with lower elevation. Therefore, it is likely that general seepage losses from the pit will increase as the water level in the pit is increased.

South Corner and Plug Dam Foundation

The Zone II Pit will act as a local groundwater sink along the south perimeter of the Faro Pit (or below the right abutment and central portion of the proposed Plug Dam). The water elevation in the Zone II Pit pumping well has fluctuated between approximately 1106 m and 1116 m amsl, between March 14, 1997 and September 30, 2003 (BGC 2004b)

Estimates of seepage losses from the Faro Pit to the Zone II Pit have been carried out based on information obtained from the 1993, 2004 and 2005 site investigation programs for the foundation soils and estimates for the dam materials and zones outside of the area actually investigated. The expected seepage flux on the section shown on Figure 12, through the centre of the dam was calculated using the commercial program Seep/W. Two scenarios were modeled: the first calculated the flux for the condition of no grouting of the foundation beneath the dam and leaving in place some of the permeable material (Figure 13) and the second considered that the upper blast affected zone would be grouted or replace to achieve a hydraulic conductivity of 1 x 10^{-7} m/s (Fell et al. 2005) (Figure 14). The results of the analysis for the no grouting condition was that the total seepage volume is 142 m^3 per year per metre width of the seepage area. The results of the modelling when grouting is performed beneath the core indicates that the total seepage would be reduced to 84 m^3 per year per metre width. It was assumed in the past that the seepage zone width was about 250 m, which would result in a yearly flow beneath the dam of between 21,000 m^3 (grouting and replacement of the permeable zone) to 35,500 m^3 (no grouting).

Southwest Wall (former Faro Creek Valley)

As discussed previously, the overburden soils have a hydraulic conductivity of about 1x10^{-6} m/s and the underlying bedrock has a hydraulic conductivity of 5x10^{-6} m/s. The upper portion of the bedrock has a hydraulic conductivity about half an order of magnitude higher than the valley fill sediments. For this preliminary assessment, it has been assumed that the seepage will occurred through a 25 m thick zone have a width of 150 m. Applying Darcy's Law and with assumed representative values for hydraulic conductivity and gradient of 5x10^{-6} m/s and 0.1 respectively, the estimated seepage through this zone was calculated to be about 162 m^3/day or about 59,000 m^3 for the entire year. This seepage volume should be considered preliminary since the hydraulic gradient was only an assumed value.

These sediments are overlain by at least another 8 m of waste rock (to el. 1181±). The hydraulic conductivity of the waste rock is expected to be at least two orders of magnitude higher than the in situ sediments. Seepage through the rockfill is not an issue if the pit pond water level is maintained below 1168 m amsl. Additional investigation will need to be performed in the former Faro Creek area to determine the need for a seepage cut off.

4.6 Discussion of Findings

Seepage out of the pit through the sediments along the former Faro Creek will occur with any impoundment of water above Elevation 1158 m amsl. BGC has not assessed the requirements for seepage control in this area under the current terms of reference. Further work (geophysical surveys and drilling) will be required to confirm bedrock elevations and the hydraulic conductivities of overburden and bedrock units in this area at a subsequent phase of study.

Potential treatment measures for controlling seepage through this area include grouting of the alluvium, constructing a slurry wall cut off trench down to bedrock or constructing an impervious blanket over the area to prevent infiltration. The selection of an appropriate seepage control option will require a program of geotechnical investigations to determine bedrock topography and the hydraulic properties and distribution of the overburden units. Any discharge of water from the pit would need to be compliant with discharge criteria or else treatment would be required.

5.0 CONCEPTUAL DESIGN

5.1 General

The conceptual design of the Plug Dam shown on Figure 15 has not been substantially altered from that prevented previously (BGC 2004a and BGC 2004b). The dam section chosen is a zoned rockfill dam with a central core of relatively impervious material, upstream and downstream filter and transition zones. The key difference in the revised conceptual design is the recognition that the seepage cut-off below the dam foundation should be deepened (to remove the permeable blast affected rock) and an extensive consolidation grouting program (to elevation 1139 m amsl in the road location) beneath this core trench should be undertaken.

Further definition of the core trench and consolidation grouting transition will be required in future design stages. Future investigations will need to determine the depth at which suitable conditions for core placement on rock are found. It is important to note that the central impervious core dam section shown for the Plug Dam assumes that suitable foundation conditions for the placement of core materials can be found within a reasonable depth. If this is not the case, alternative dam sections may have to be considered due to the need to integrate the impervious element of the embankment with the seepage cut-off in the foundation. Alternative seepage cut-off methods may include a slurry trench cut-off utilizing soil-bentonite mixtures or plastic concrete that extends through the embankment and into the bedrock. In the extreme case, alternative dam alignments may have to be identified to avoid unfavourable foundation conditions.

In view of the need to treat a potentially extensive zone of fractured bedrock below the core trench, the grout curtain in the foundation has been expanded from a single line previously shown in the to a three-line grout curtain extending to elevation 1130 m. The grout curtain for the abutment area is planned to consist of a two-line curtain, leaving a possibility for a middle line, to be grouted as necessary. A schematic showing this concept is shown on Figure 15. This conceptual design was chosen based on the following considerations:

- Simple design that can be constructed using readily available construction equipment, with a minimal amount of technical supervision in a short construction season.
- Construction materials include waste rock, till and sand and gravel, which are readily available at the site.

- The rockfill side slopes can readily be flattened or steepened to accommodate any type of material.
- Minimal abutment foundation preparation required, which can be done over the late winter- early spring before the summer construction season. The sulphide material encountered in the right abutment will be removed as part of the core trench excavation.
- The high permeability measured in the upper portions of the foundation area, treatment by excavation of a core trench and consolidation grouting.
- Grout curtain to seal potential water transmitting fractures in the bedrock above elevation 1130 m.

Prior to fill placement, the entire footprint of the dam will be stripped of colluvial debris and scaled of loose rock. The road base covering the foundation will be removed under the entire dam footprint. To minimize disturbance to the rock in the dam foundation, the core trench will not be blasted. Minor rock excavation will, however be required in the right abutment to shape the core contact area and remove the sulphide rock. Ideally, the impervious fill should be placed on a slope no steeper than 45^{o} from the horizontal to ensure that during compaction, the lowermost lifts in contact with rock are adequately compacted. Steeper rock slopes will be trimmed or concrete fillets placed in order to create smooth transitions on the core contact surface. The core contact area will be hand scaled and blown clean with compressed air prior to fill placement. Dental concrete and slush grouting of open surface cracks may be required, especially in the right abutment area.

During construction of the Plug Dam, the following additional items of work will be required:

- Removal of a portion of the waste rock dump located on the right abutment to allow access for the grouting equipment.
- Relocation of the water discharge pipeline from the Zone II pump well, which passes through the dam footprint along the toe of the left abutment.
- Removal and reconfiguration of the small watercourse located on the left abutment.
- System to collect seepage water from the downstream toe of the dam. The seepage collection system along the downstream toe will be installed during dam construction and may involve a collection pond with a pumping system to return the seepage water over the Plug Dam into the Faro Pit.

5.2 Embankment Section and Construction

5.2.1 Zone 1 Impervious Earth Fill

The investigation of the glacial/colluvial material on the left abutment revealed that the material consisted of a low plasticity broadly graded silty to gravely sand. This material is suitable for use as Zone 1 material. Final recommendation to use this material, as opposed to a more uniformed fine grained material from the Vangorda Plateau, will be made during a later design phase. An economic evaluation of the requirements for Zone 2 filter material will dictate the final selection.

It was assumed that prior to construction, further investigations will be carried out to identify potential borrow areas for dam construction materials, both in terms of the quality and quantities of materials available. Later detailed designs of the dam will need to consider minimization of processing to keep the cost of the construction down.

The core material will need to be protected from the effects of frost. Frost affects and cracking are evident on most of the dams at the Faro Mine. Consideration of this must be made during the later design stages.

5.2.2 Zone 2 Filter

The gradation and number of filters will depend on the distribution of grain size curves obtained for the Zone 1 impervious core material and the gradation of the Zone 3 rockfill. Processed sand and gravel will be used to provide a material that meets the filter gradations. Granular borrow sources are located within 6 km of the dam site, on the crest of the Northeast dump and the Faro Creek borrow area. It has been assumed that appropriate quality and quantities of material will be available from these two sources. Processing is expected prior to the use of materials from these borrow areas prior to placement within the dam.

The filter zones were generously sized in order to facilitate placement and compaction. Filter materials will be placed in lifts as the impervious core and rockfill shells are raised. The material details depth of thermal cover protection must be assessed in future design studies by conducting thermal modelling using site-specific climatic factors and soil properties.

5.2.3 Zone 3 Rockfill

It was assumed that sufficient rockfill would be obtained from the adjacent Faro waste rock dumps. Some of this material contains potentially acid generating (PAG) rock units, such as pyrite bearing quartzites, massive sulphide ores or disseminated sulphides. The SRK Plug Dam options considered using PAG material in the upstream shell, below the water line. This is still a valid option, as long as the future water levels in the pit do not change. Further consideration of the location of PAG materials within the dam section will be dependent on the final operational conditions for the Faro Pit water level. For the purposes of this study, it was assumed that the rockfill used in the dam will be clean, non-PAG rock.

Rockfill will consist of metamorphic rock units such as phyllite, schist, gneiss and minor volcanics or calc-silicate. Since the waste rocks have been exposed to weathering for a period of time, it should be possible to selectively excavate materials that are strong, durable and not subject to chemical or physical breakdown due to weathering.

No rip rap has been included in the dam section. It was assumed that the rockfill used in the upstream shell would satisfy erosion protection requirements for the dam. This assumption will be checked in future detailed design for the Plug Dam.

5.2.4 Seepage Cut-off Elements

Two different grout curtains are proposed; a triple-line beneath the dam and a double-line in the abutment areas extending for 120 m along the right abutment. Beneath the Zone 1 core material, consolidation grouting is proposed to an elevation of 1139 m. The rock mass is characterized by at least five joint sets, generally inclined from the vertical to varying degrees. Therefore, the proposed orientation of the grout holes is vertical, which will result in the grout holes intersecting the majority of the fracture systems.

The rockmass below the foundation area, under the current road, is highly permeable with Lugeon values ranging from 40 to 100. Consolidation grouting, with an estimated spacing of 0.5 m is proposed to seal the highly fractured rock. It has been assumed that at least 3 m of stripping will be required in the core trench to reach bedrock in the foundation that is intact enough to benefit from consolidation grouting. The purpose of the consolidation grouting is to strengthen the rock mass under the core contact area and to fill the voids with grout, thereby creating a grout sealed cap through which the grout curtain can be constructed.

The triple-line grout curtain for the road area based on the high permeability encountered in this location. This was reduced to a double-line grouting in the abutment, which would mean not grouting the centre line in this locations when possible.

The grout curtain will tie in to the zone of relatively impermeable rock expected to be located below elevation 1136 m. The bottom of the grout curtain has been set at elevation 1130 m in the foundation area beneath the road. This will provide at least 6 m of overlap into the lower impervious rock mass. In the left abutment area, the base of the grout curtain can be tentatively set at elevation 1159 m. In the right abutment, the grout curtain should extend to elevation 1143 m). The final grout curtain arrangement will be part of the next design stage and should be expected to vary once the actual grout program begins. Based on the modelling results presented in this report, the grout program is expected to reduce the yearly inflow to the Zone II by 14,500 m^3 per year (from 35,500 to 21,000 m^3 per year) as compared to building the dam without grouting.

6.0 COST ESTIMATE

Two different cost estimate have been prepared for the Plug Dam construction (BGC 2004 and BGC 2004b). The range of construction costs were calculated to be between $2.5 to 4.1 million dollars. The costs to complete the construction were not re-estimated for this report, since many of the key design parameters have not been established (height of dam being the main one) nor the required performance (which affects grouting costs). The cost estimates prepared previously assumed that the dam would be completed to maximize the height of the dam (to have a full supply level of 1168 or 1173 m amsl) and a high quality grout curtain. Therefore the past estimates are considered to be representative of the range for this type of dam. Obviously, the cost estimate will need to be updated, but until the key parameters for the performance of the dam are established, further detailing of the construction costs is thought to be premature.

7.0 CONCLUSIONS AND RECOMMENDATIONS

A conceptual design for the Plug Dam was developed on the basis of a series of geotechnical investigations. The proposed concept is an earth and rockfill dam with a central impervious core, founded on bedrock, supplemented by grouting in the foundation and abutments.

The right abutment is a critical element of the design due to the proximity of the Zone II Pit. The pillar of rock between the Faro Pit and the Zone II Pit is traversed by several fault zones, which were mapped in the open pit. Although drilling of this area has been completed, further definition of the rock mass and its permeability is required.

The proposed design of the dam utilizes locally obtainable materials, and is typical to construct within one construction season. The estimated capital cost of this construction is between $2.5 and $4.1 million, excluding mobilization, demobilization, escalation and extra work allowances. But, numerous design criteria have not been finalized for this cost and the costs could increase as definitive design criteria are selected.

Definition of the required height of the dam and its seepage performance requirements is needed to advance this design beyond the conceptual level. Following this definition of the need for the dam, further seepage analysis would be proposed for the two key seepage areas (Plug Dam area and former Faro Creek area) to explore what can be achieved by treatment in these areas. Then other design items can follow, such as dimensioning the dam, selecting filter material and designing the grout curtain details.

The 2005 geotechnical investigations identified a potential issue with soluble sulphates within portions of the plug dam foundation. The sulphates are associated with a zone of sulphides and oxidation within the host rocks making up the right abutment. The sulphates have precipitated within the bedrock fractures and may prevent grout from penetrating the foundation. Subsequently, after the plug dam is commissioned, water seeping through the abutment may dissolve the precipitated sulphates, leading to increased seepage through the foundation, as well as potential for acidic mine drainage and metal leaching. This issue will require further assessment in the future.

Based on the assessment carried out in this review, the following activities are recommended to follow-up on this issue:

- Conduct further site investigations, including detailed geological mapping and drilling to delineate the extent of the sulphide and oxidation zone.
- Conduct laboratory analyses to identify specific sulphate mineralogy and assess geochemical processes under present conditions.
- Review the options for foundation treatment based on the results of the investigation.
- Re-assess the geochemical environment under predicted conditions after plug dam is commissioned, including seepage analyses.
- Develop feasible options to meet objectives of seepage control and prevention of acidic drainage and metal leaching.

8.0 CLOSURE

We trust that this information will meet with your requirements at this time. Should you have any questions or require any additional information, please do not hesitate to contact the undersigned.

The report provided herein, Plug Dam Conceptual Design, provides a conceptual level design for the proposed structure. Numerous criteria design criteria have not been finalized for this structure and this significant limitation should be noted. The design elements and the related cost of construction my significantly change when the design criteria are finally provided.

Yours truly,

BGC Engineering Inc.
Per:

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Geotechnical Engineer

James W. Cassie, P.Eng.
Specialist Geotechnical Engineer

Holger Hartmaier, M.Eng., P.Eng.
Senior Geotechnical Engineer

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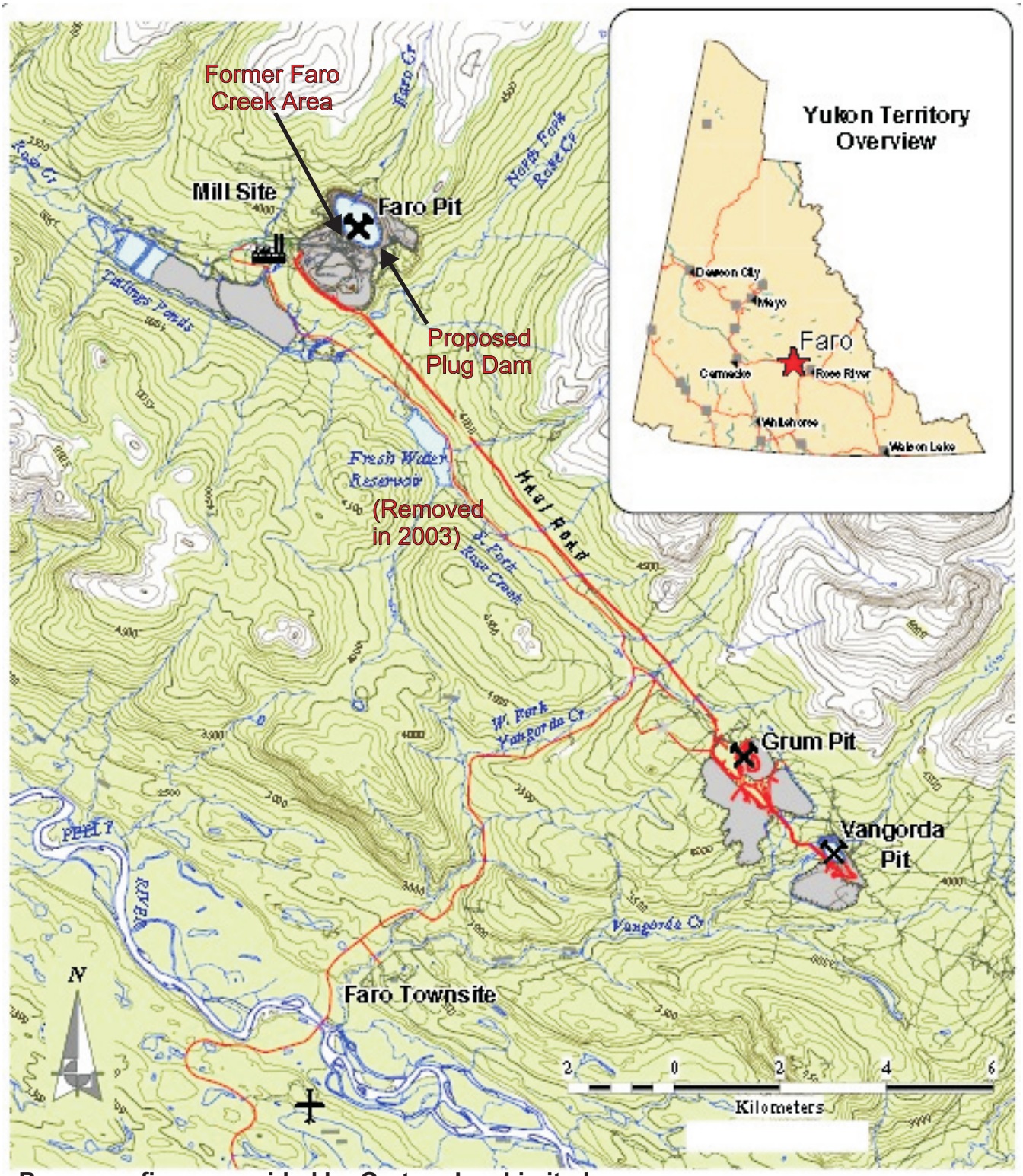
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FIGURES



Note: Base map figure provided by Gartner Lee Limited.

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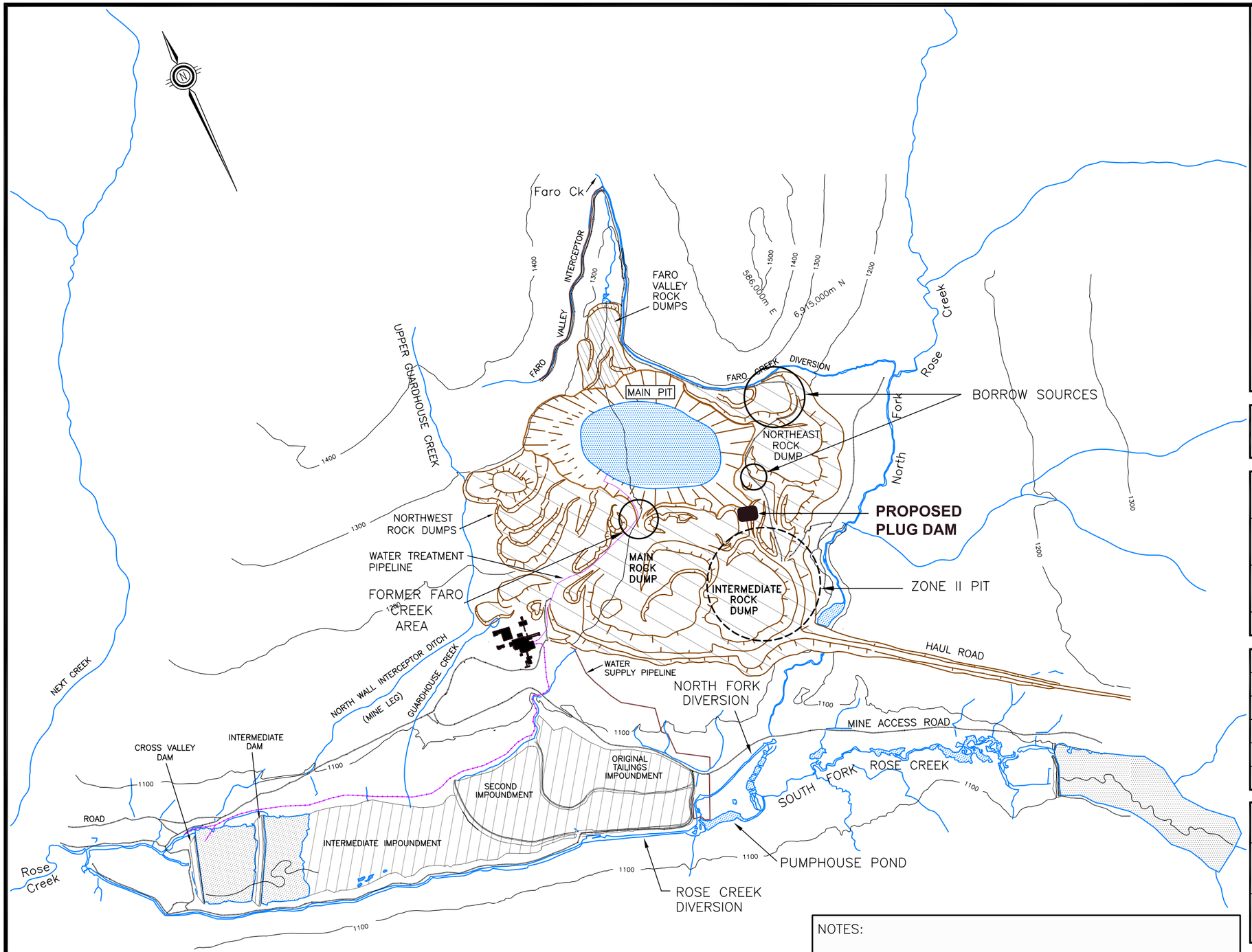
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PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: LOCATION PLAN

PROJECT No.	FIGURE No.	REV.
0257-038-01	1	0



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LEGEND:

- ROADS
- EXISTING DRAINAGE
- ORIGINAL DRAINAGE
- EFFLUENT PIPELINE
- PIPELINE

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APPROVED:	JWC

NOTES:

1. BASE MAP SUPPLIED BY THE ORTHOSHOP, JANUARY 1991
2. NORTH AMERICAN DATUM 1927
3. CONTOUR INTERVAL 100m
4. UNIVERSAL TRANSVERSE MERCATOR PROJECTION
5. MAP IS A COMPOSITE OF 9 BASEMAPS

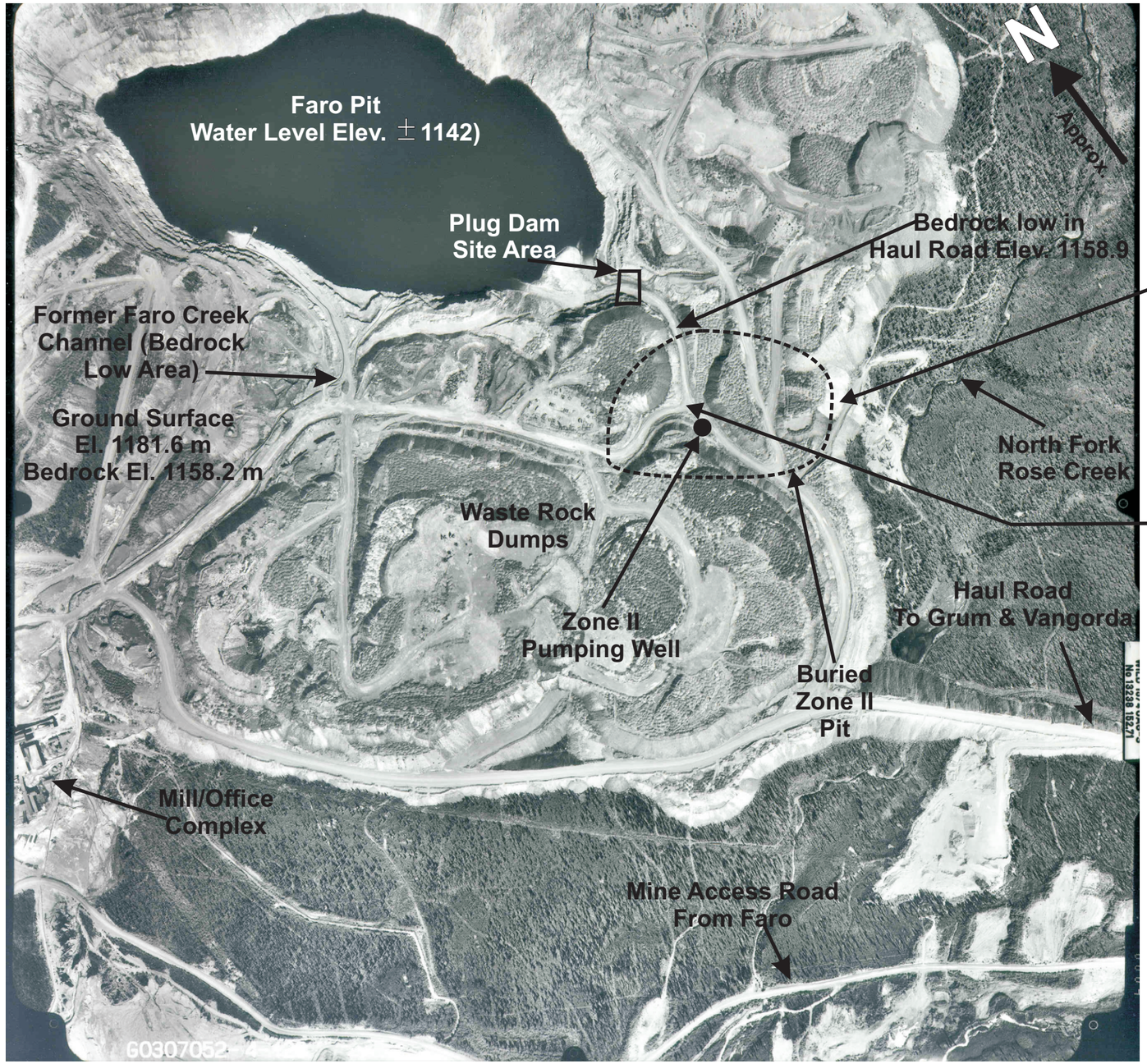
PROJECT: TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE: MINE PLAN GENERAL ARRANGEMENT

PROJECT No.	FIGURE No.	REV.
0257–038–01	2	0

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K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings\0257-038-01 001 Fig 2.dwg



Bedrock Low
in Rim of Zone II
Pit Elevation 1123.8 m

Ground Surface
El. 1174.57 m

Photo Data:
Date: July 25, 2003
Scale: 1:11,800 Approx.

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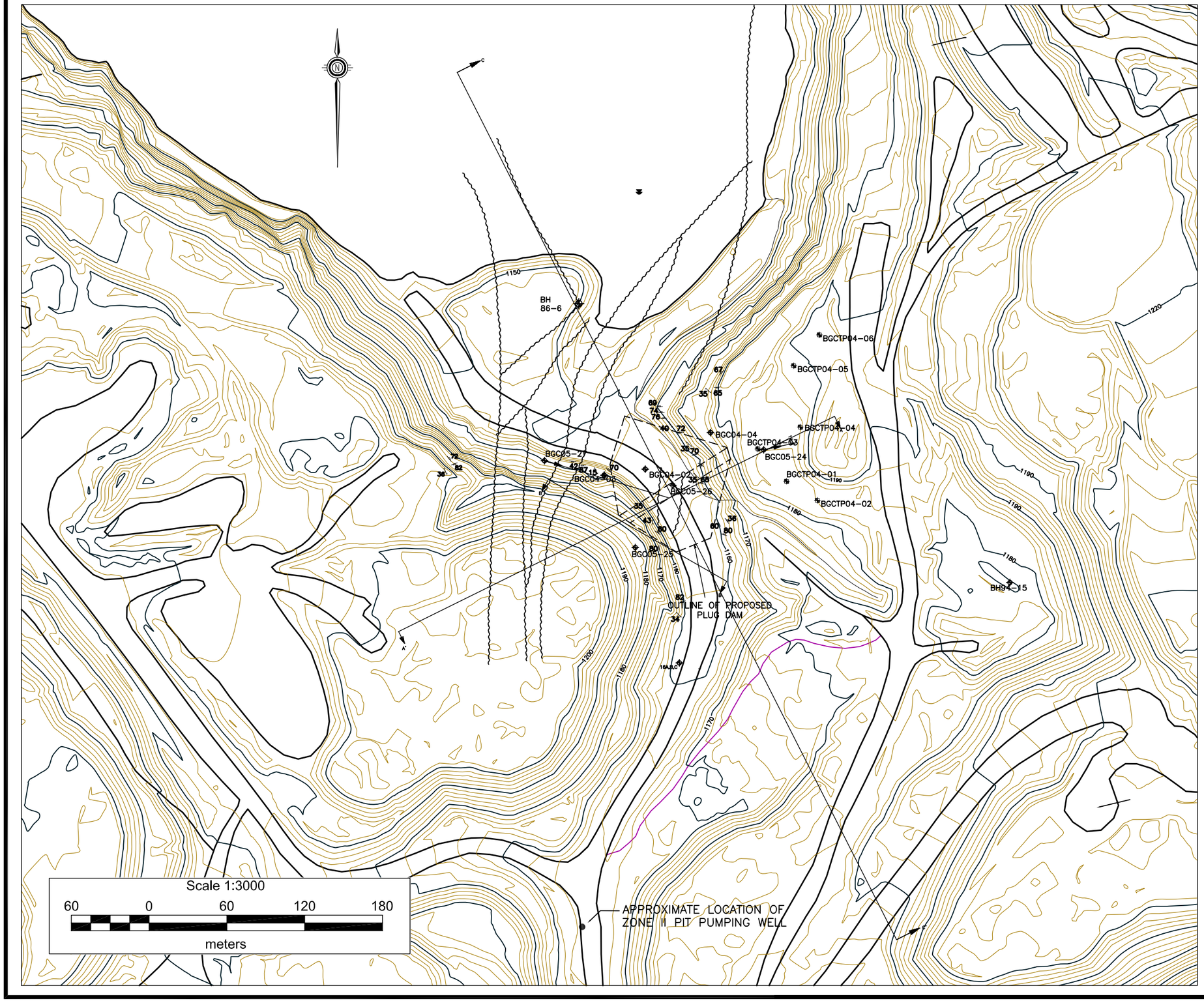
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PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: CURRENT SITE CONDITIONS

PROJECT No.	FIGURE No.	REV.
0257-038-01	3	0

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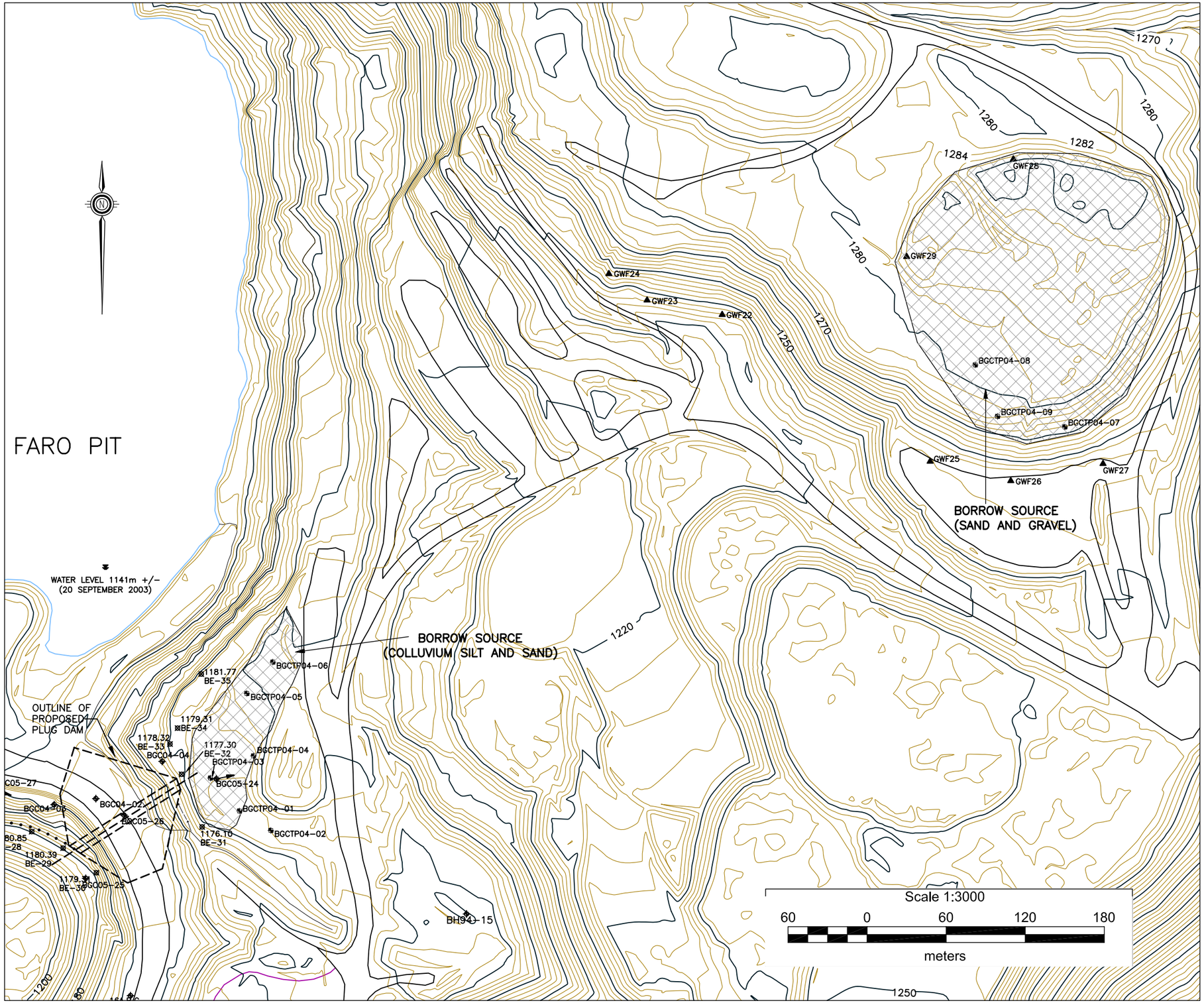
PROJECT
TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE
PLUG DAM FOOTPRINT AND BOREHOLE LOCATIONS

PROJECT No.	FIGURE No.	REV.
0257-038-01	4	0

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0257-038-01 FIG 7(2).dwg



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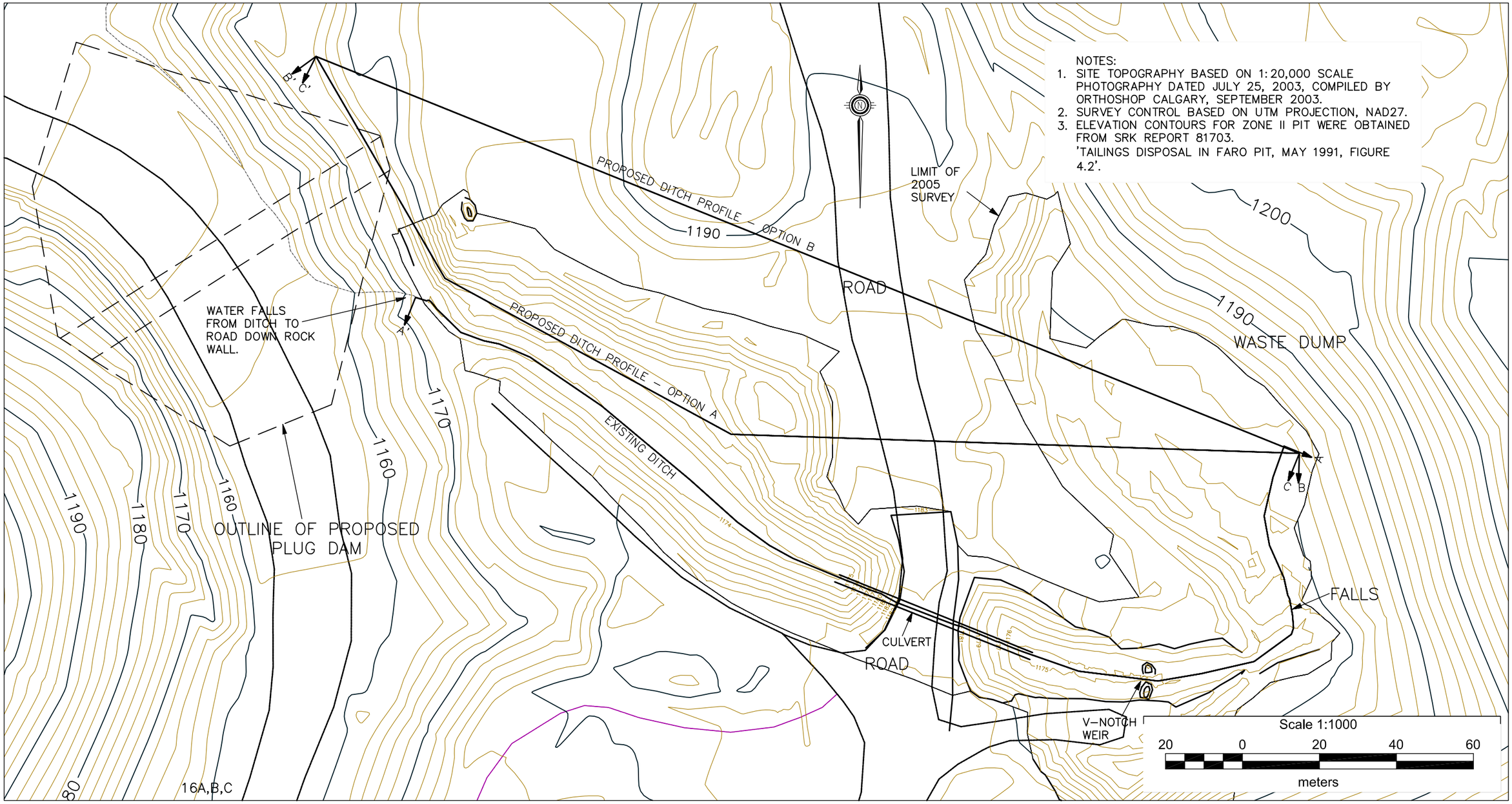
PROJECT
TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE
BORROW PIT AREA
BOREHOLE LOCATIONS

PROJECT No.	FIGURE No.	REV.
0257-038-01	5	0

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K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings\0257-038-01 FIG E-1.dwg



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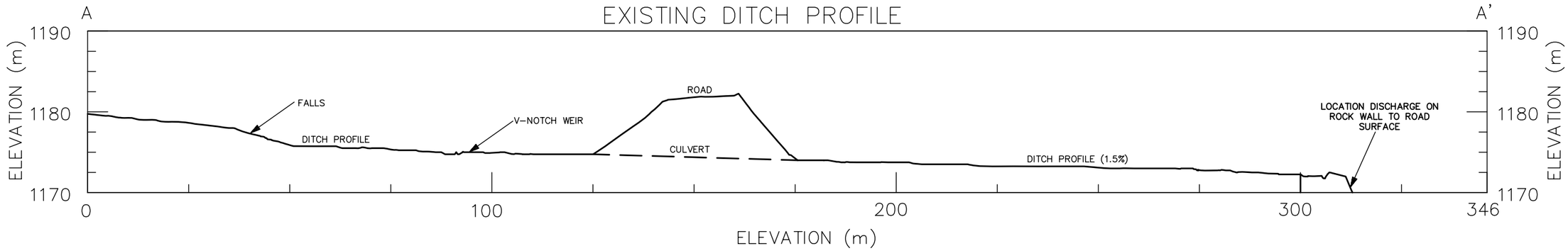
CLIENT Deloitte & Touche

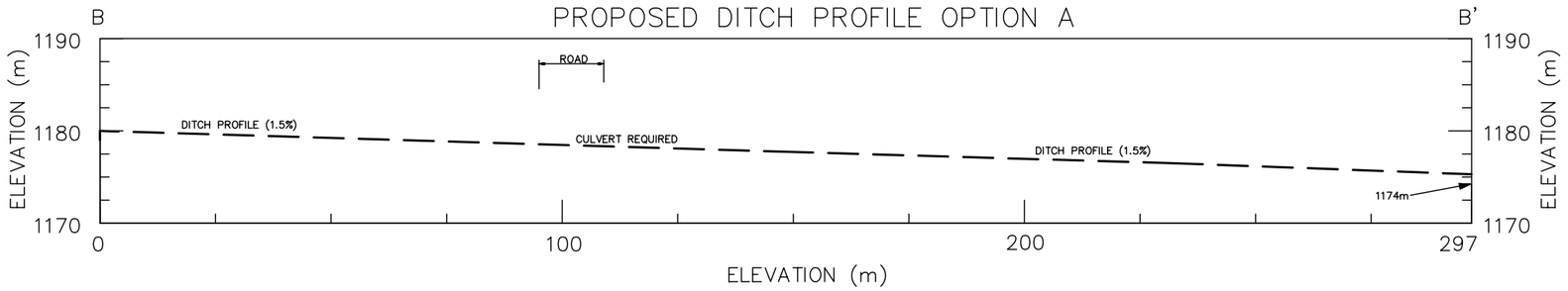
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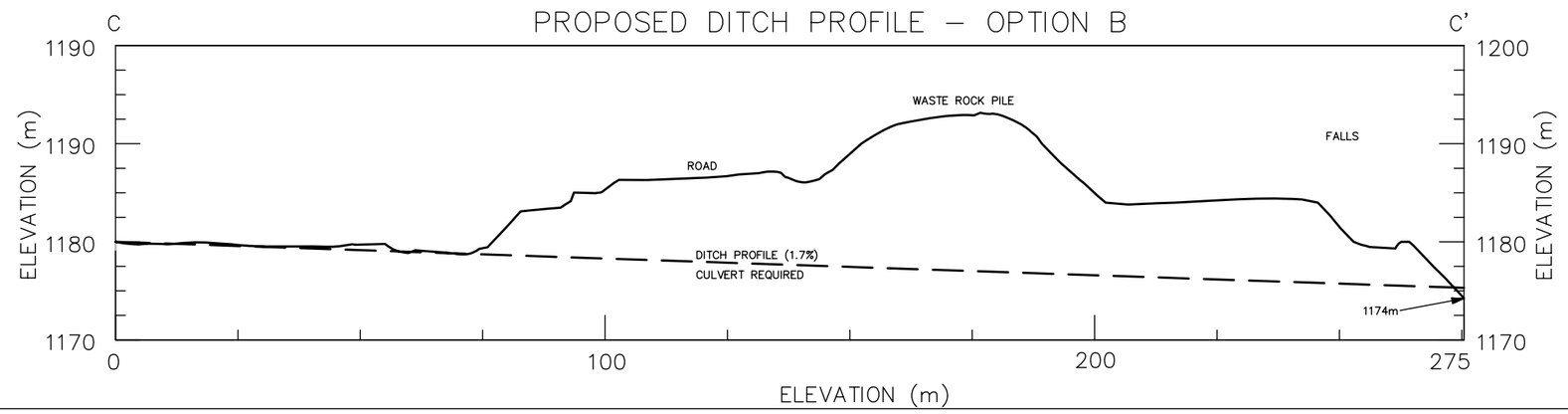
TITLE
PLAN OF SMALL WATERCOURSE

PROJECT No.	FIGURE	REV.
0257–038–01	6	0

0257-038-01 Fig 13 – 14.dwg







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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE	AS SHOWN
DATE	SEPT. 2006
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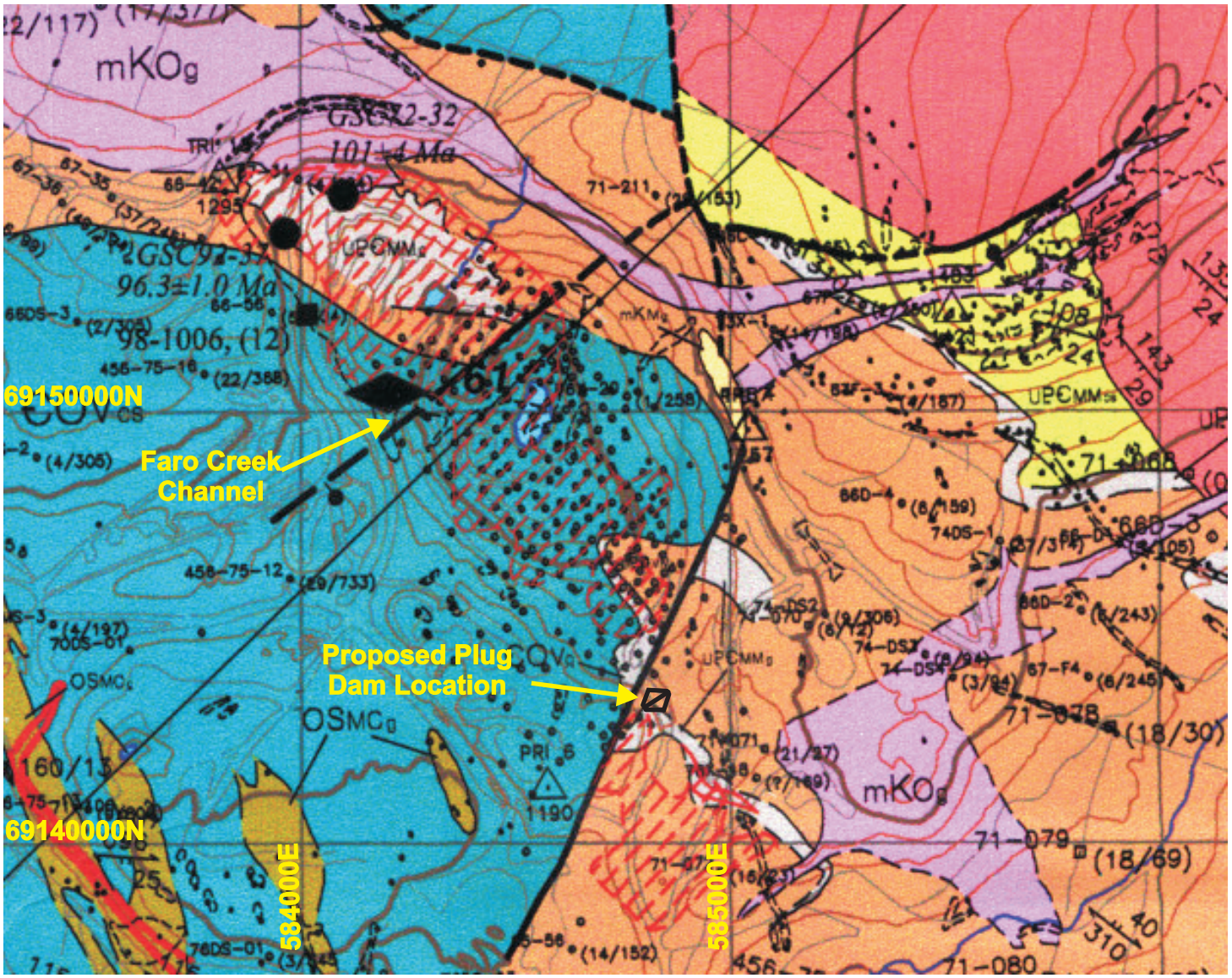
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PROJECT
TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE
PROFILES OF SMALL WATERCOURSE

PROJECT No.	FIGURE	REV.
0257-038-01	7	0

0257-038-01 Fig 13 – 14.dwg



Source: PIGAGE, L.C. (2001)

LEGEND

CAMBRIAN-ORDOVICIAN

- **COVp** Calcareous Phyllite
- **COVcs** Calc-silicate
- **COVg** Carbonaceous Phyllite or Schist

CRETACEOUS

- **mKOg** Granite to Granodiorite

UPPER PROTEROZOIC-CAMBRIAN

- **uPCMMs** Muscovite - Biotite Schist
- **uPCMMg** Black Phyllite to Schist

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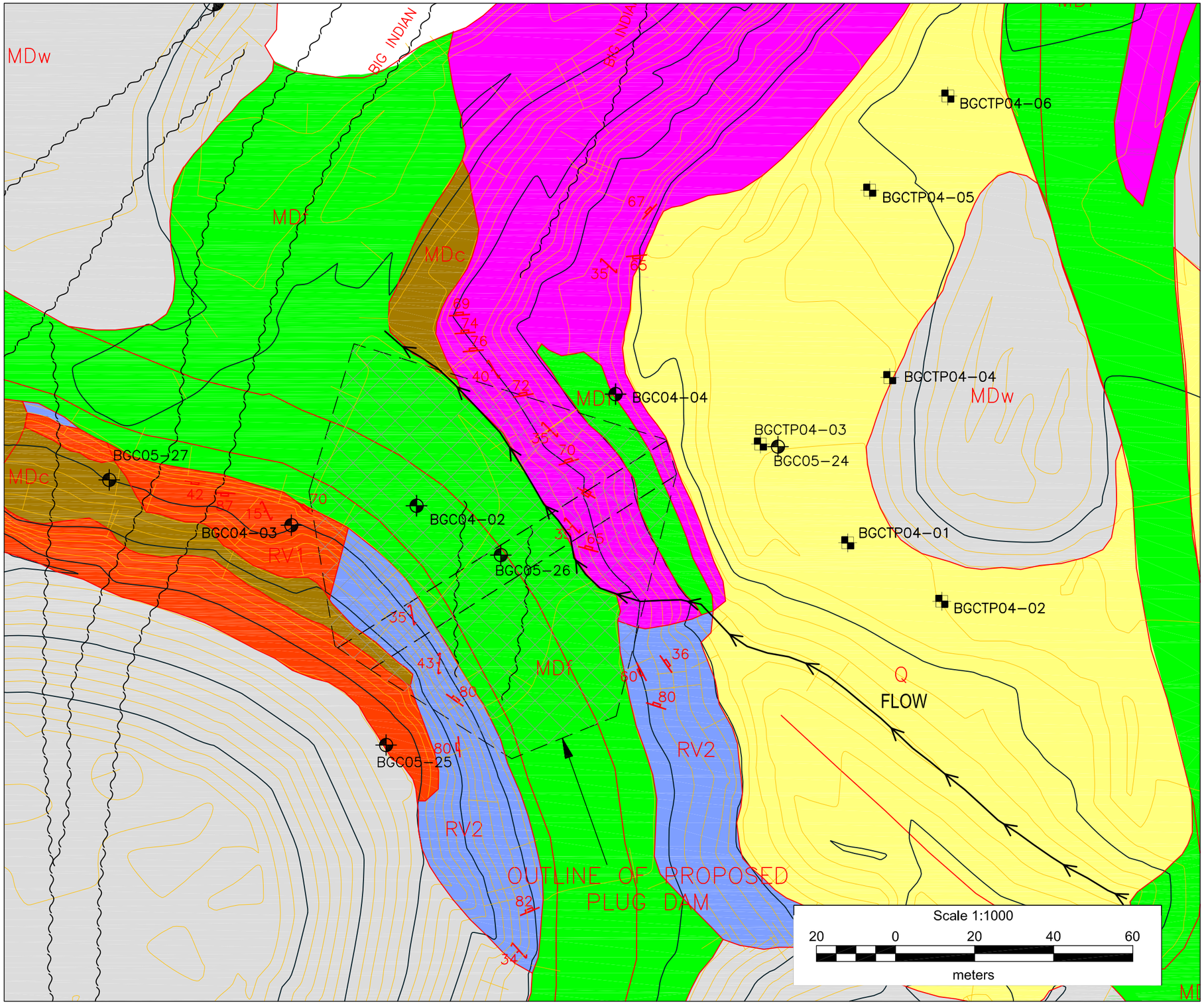
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PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: FARO PIT AREA BEDROCK GEOLOGY

PROJECT No.	FIGURE No.	REV.
0257-038-01	8	0



K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings0257-038-01 FIG 9.dwg

CLIENT:

LEGEND

- MINE DISTURBED (MD)
- UNDIFFERENTIATED COLLUVIAL DEBRIS
- UNDIFFERENTIATED WASTE ROCK
- UNDIFFERENTIATED FILL
- QUATERNARY (Q)
- UNDIFFERENTIATED NATIVE OVERBURDEN MATERIALS
- BEDROCK (R)
- VANGORDA FORMATION (RV) (CAMBRIAN TO LOWER ORDOVICIAN)
- RV1: CALC–SILICATE GNEISS, CARBONACEOUS SCHIST, SCHIST, CHLORITE SCHIST AND CALC–SILICATE
- FARO DEPOSIT, INCLUDES:
  – RIBBON BANDED GRAPHITIC PYRITE QUARTZITE AND UNDIFFERENTIATED NON–GRAPHITIC SULPHIDE BEARING QUARTZITE.
  – BARREN MASSIVE PYRITE AND MASSIVE PYRITIC SULPHIDES.
- MT. MYE FORMATION (RM) (LOWER CAMBRIAN)
- FINE BIOTITE– MUSCOVITE – ANDALUSITE SCHIST, DARK GREY CARBONACEOUS SCHIST, INCLUDES CHLORITE SCHIST, ALTERED META–BASIC INTRUSIVE, GRADES DOWNWARD INTO BIOTITE–MUSCOVITE–GARNET, STAUROLITE–ANDALUSITE SCHIST.
- RM2: ALTERED QUARTZ MUSCOVITE SCHIST (WHITE MICA ENVELOPE). (MAY BE MAPPED IN THE FIELD WITH UNIT RV2)
- FAULT (LOCATIONS BASED ON SRK (1991), DERIVED FROM CURRAGH RESOURCES, 1988 "FARO MINE ABANDOMENT PLAN" FIGURE 10 ("FARO MINE – PLAN VIEW, ULTIMATE PIT GEOLOGY" MARCH 8, 1988).
- GEOLOGICAL CONTACT
- FOLIATION – (INCLINED)
- JOINTING – INCLINED
- JOINTING – VERTICAL
- BOREHOLE LOCATION
- TESTPIT LOCATION
- ZONE II PIT PUMPING WELL

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

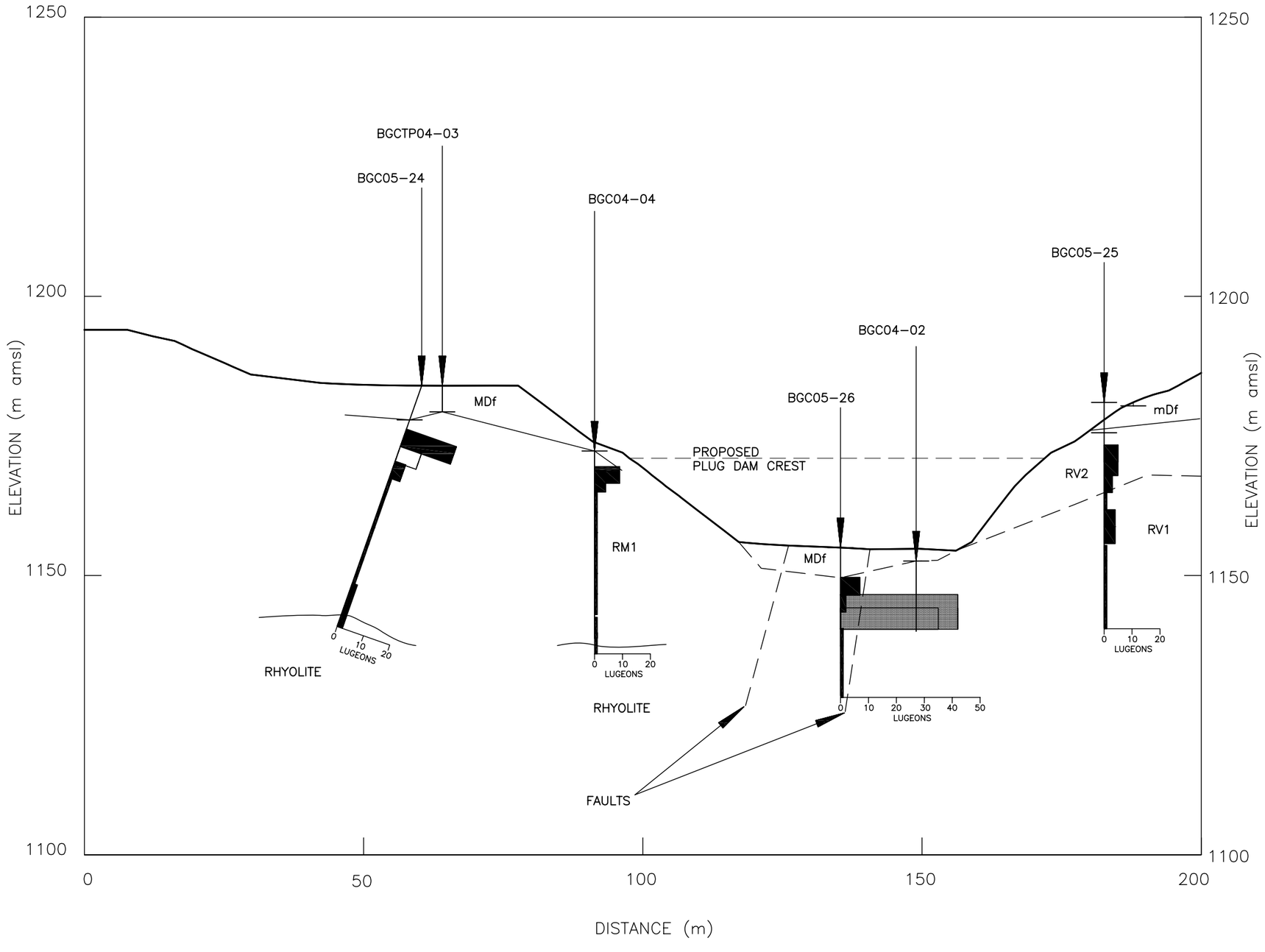
SCALE:	AS SHOWN
DATE:	SEPT. 2006
DRAWN:	EBN
DESIGNED:	EBN
CHECKED:	GWF
APPROVED:	JWC

PROJECT: TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE: GEOLOGY–PLUG DAM AREA

PROJECT No.	FIGURE No.	REV.
0257–038–01	9	0

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Calgary, AB Phone: (403) 250 5185



CLIENT:

Deloitte & Touche

LEGEND

RV1 – CALC-SILICATE GNEISS, CARBONACEOUS SCHIST

RV2 – GRAPHITIC PYRITE QUARTZITE, NON-GRAPHITIC SULPHIDE BEARING QUARTZITE, MASSIVE PYRITE AND PYRITIC SULPHIDES

MDf – UNDIFFERENTIATED FILL

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	AS SHOWN
DATE:	SEPT. 2006
DRAWN:	EBN
DESIGNED:	EBN
CHECKED:	GWF
APPROVED:	JWC

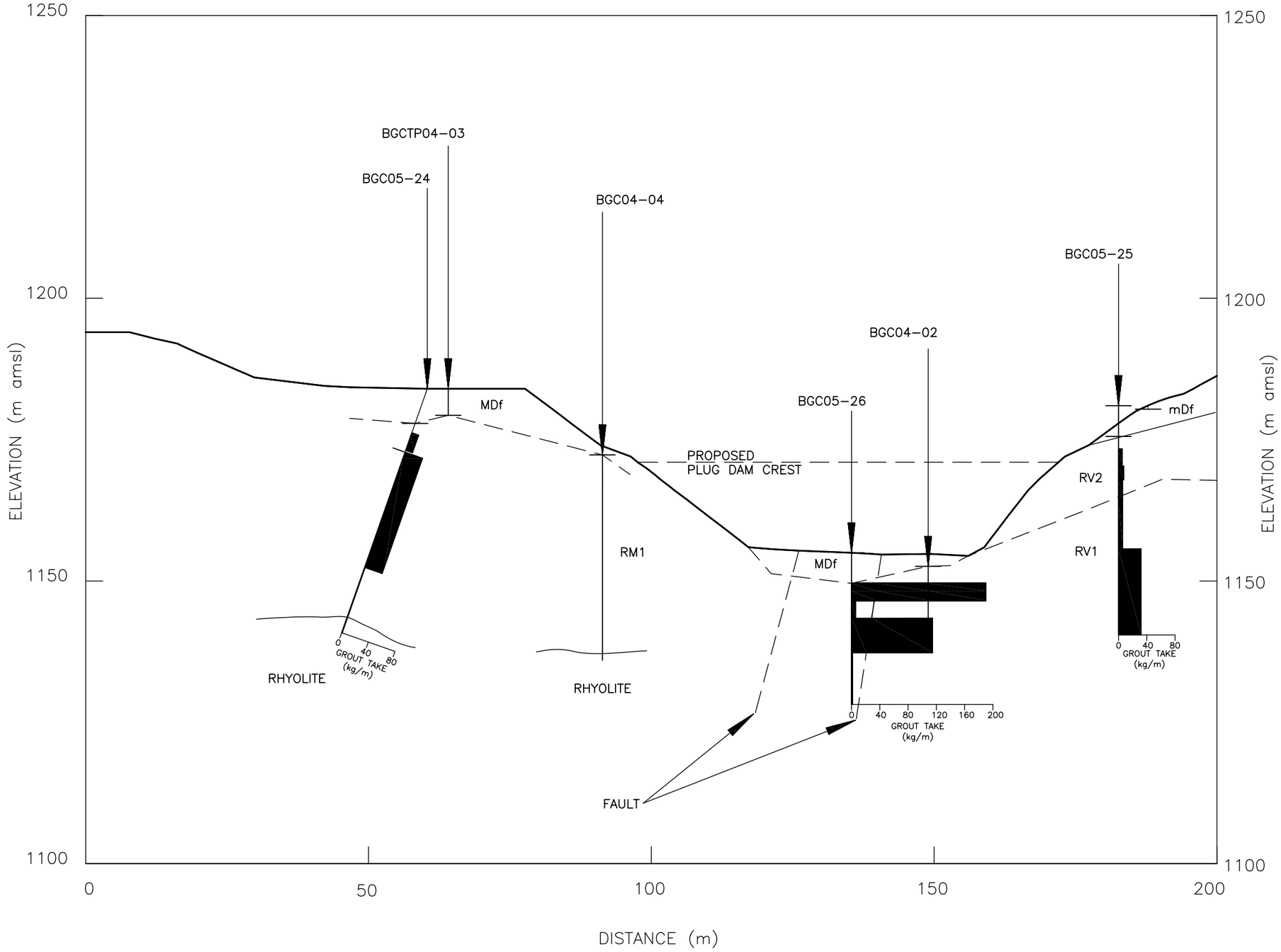
PROJECT: TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE: WATER PRESSURE TESTING RESULTS

PROJECT No.	FIGURE No.	REV.
0257-038-01	10	0

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K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings\0257-038-01 FIG 10-11.dwg



CLIENT:

Deloitte & Touche

LEGEND

RV1 – CALC–SILICATE GNEISS, CARBONACEOUS SCHIST

RV2 – GRAPHITIC PYRITE QUARTZITE, NON–GRAPHITIC SULPHIDE BEARING QUARTZITE, MASSIVE PYRITE AND PYRITIC SULPHIDES

MDf – UNDIFFERENTIATED FILL

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	AS SHOWN
DATE:	SEPT 2006
DRAWN:	EBN
DESIGNED:	EBN
CHECKED:	GWF
APPROVED:	JWC

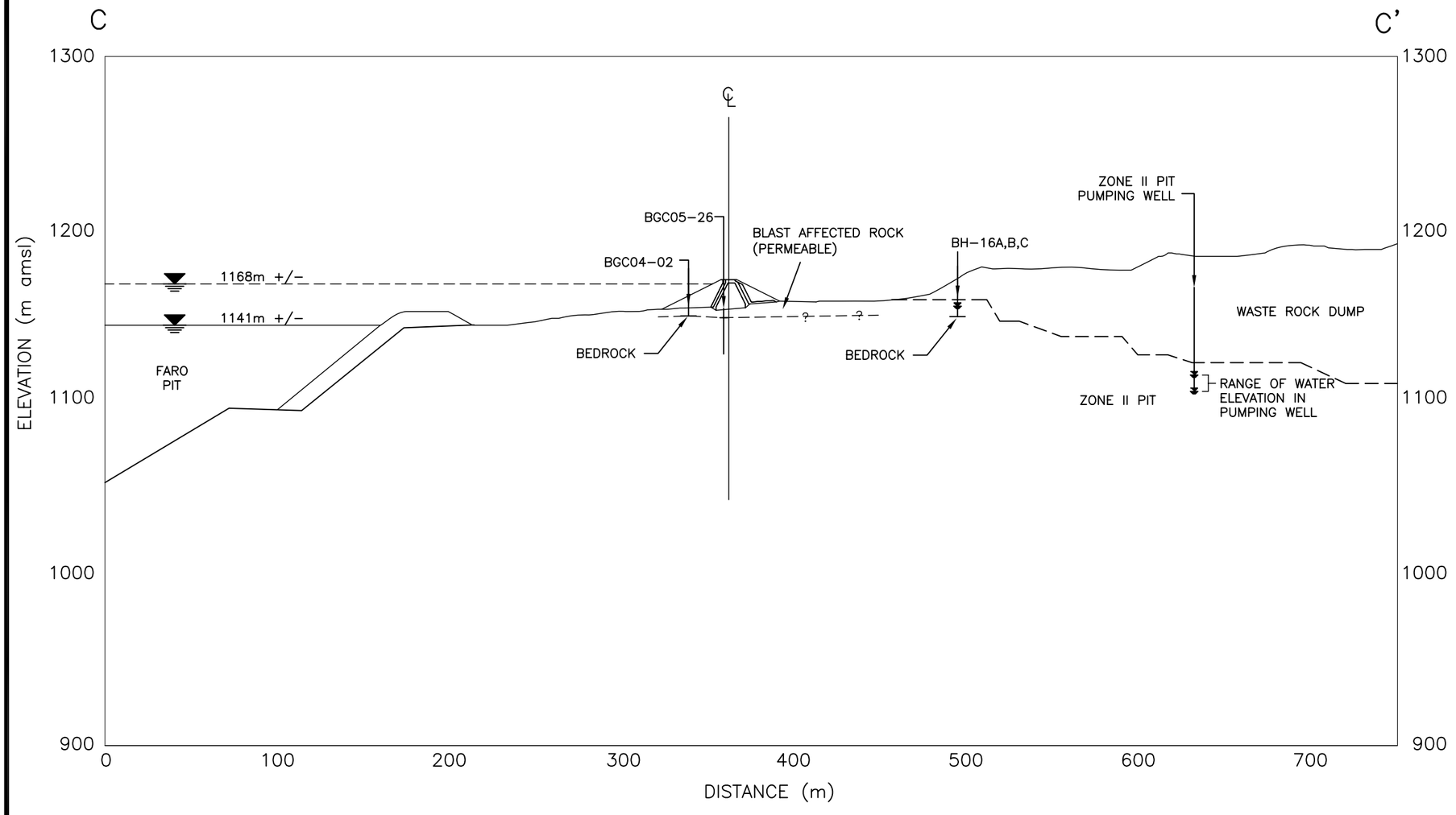
PROJECT: TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE: PRESSURE GROUT TESTING

PROJECT No.	FIGURE No.	REV.
0257–038–01	11	0

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K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings\0257-038-01 FIG 10-11.dwg



CLIENT:

Deloitte & Touche

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	AS SHOWN
DATE:	SEPT. 2006
DRAWN:	EBN
DESIGNED:	EBN
CHECKED:	GWF
APPROVED:	JWC

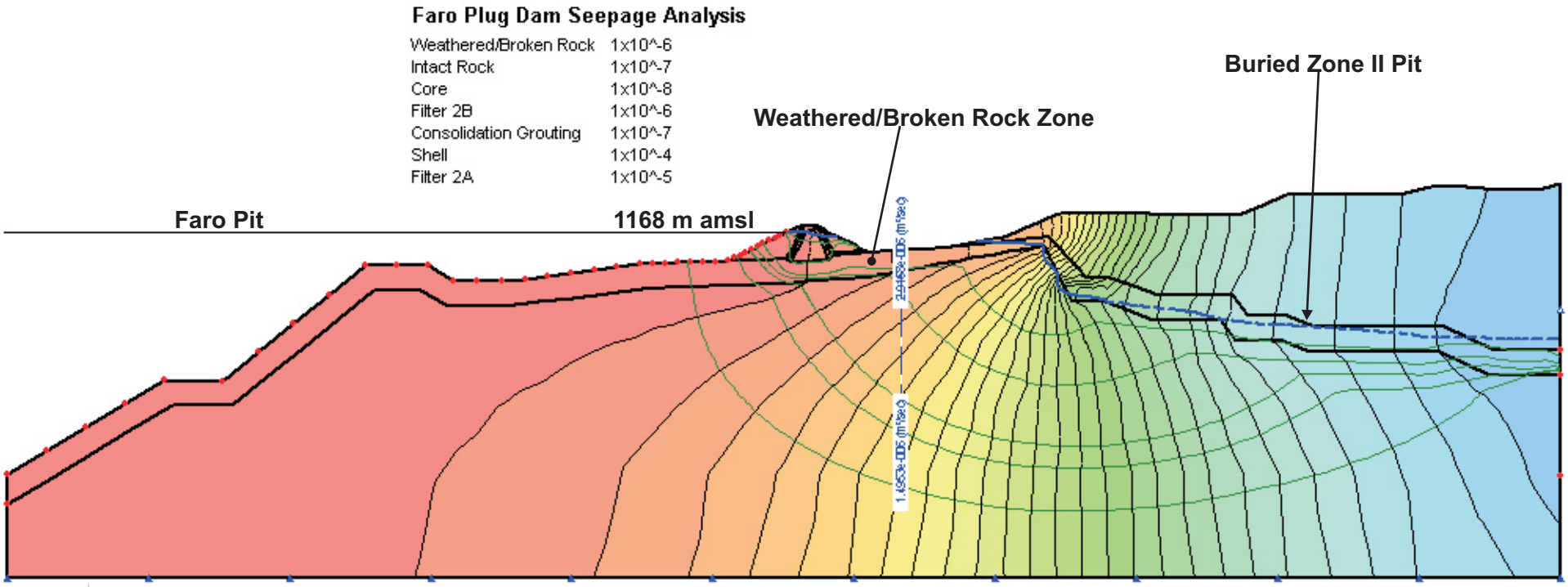
PROJECT
TASK 20B-PLUG DAM CONCEPTUAL DESIGN

TITLE
ZONE II PIT
WITH GEOLOGY AND BOREHOLES

PROJECT No.	FIGURE No.	REV.
0257-038-01	12	0

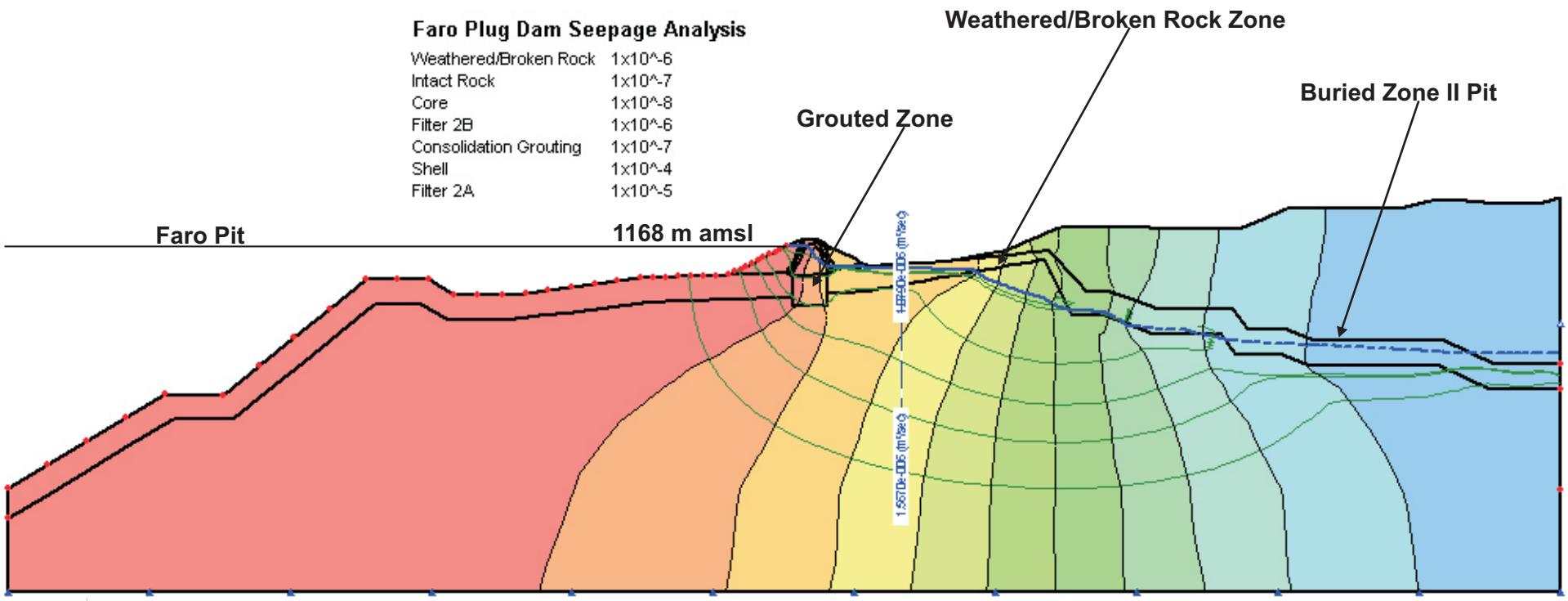
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K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings\0257-038-01 001 FIG 12.dwg

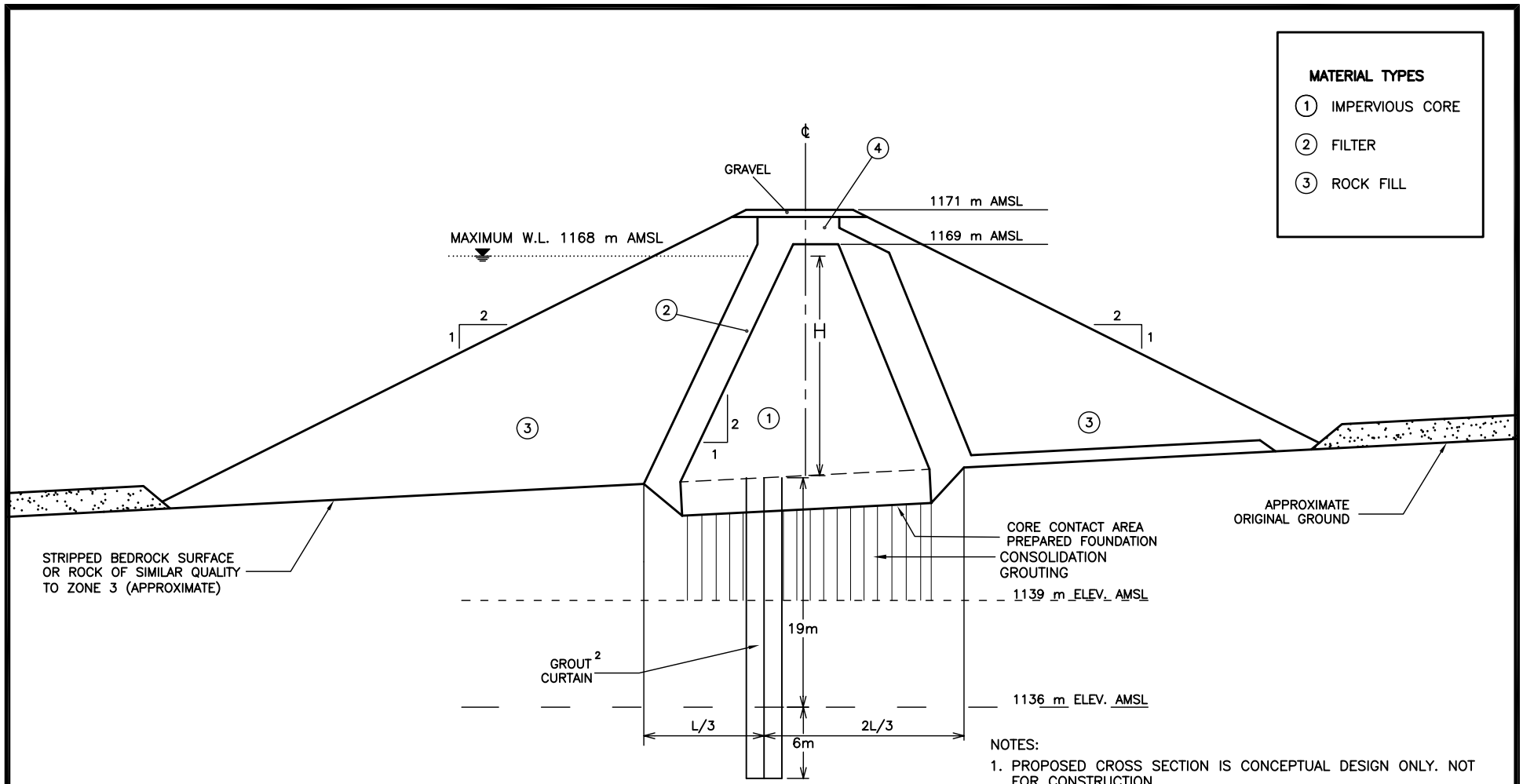


DATE: SEPT 2006	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT TASK 20B - PLUG DAM CONCEPTUAL DESIGN
REFERENCED DRAWING DESCRIPTION			TITLE SEEPAGE ANALYSIS RESULTS PLUG DAM WITH NO GROUTING
CLIENT Deloitte & Touche		PROJECT No. 0257-038-01	FIGURE 13 / REV. 0

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.



DATE: SEPT 2006	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT TASK 20B - PLUG DAM CONCEPTUAL DESIGN
REFERENCED DRAWING DESCRIPTION			TITLE SEEPAGE ANALYSIS RESULTS PLUG DAM WITH GROUTING
AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.		CLIENT Deloitte & Touche	PROJECT No. 0257-038-01 / FIGURE 14 / REV. 0



NOTES:

1. PROPOSED CROSS SECTION IS CONCEPTUAL DESIGN ONLY. NOT FOR CONSTRUCTION.
2. ACTUAL DESIGN DEPTH TO BE CONFIRMED BY FOUNDATION INVESTIGATION INCLUDING: DIAMOND DRILL CORING AND HYDRAULIC CONDUCTIVITY TESTING. TRIPLE LINE SHOWN.
3. L=H, WHERE L= CORE CONTACT WIDTH AT ANY POINT. MINIMUM WIDTH=3m.
4. H= HEAD OF WATER AT DAM CENTERLINE IN m.

SCALE: AS SHOWN	DATE: SEPTEMBER 2006	DRAWN: REM	DESIGNED: GWF	CHECKED: HHH	APPROVED: JWC

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CLIENT: Deloitte & Touche

PROJECT: TASK 20B – PLUG DAM CONCEPTUAL DESIGN

TITLE: CONCEPTUAL DAM SECTION

PROJECT No.	FIG No.	REV.
0257-038-01	15	0

0257-038-01 001CONCEPT XSEC.dwg

PHOTOGRAPHS

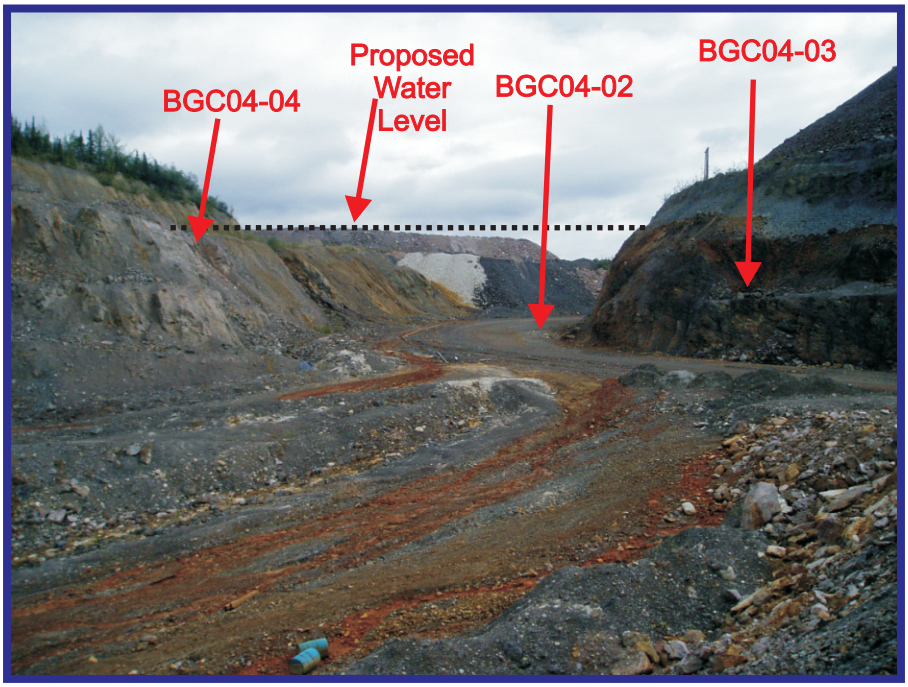


Photo 1a looking downstream at Plug Dam location.

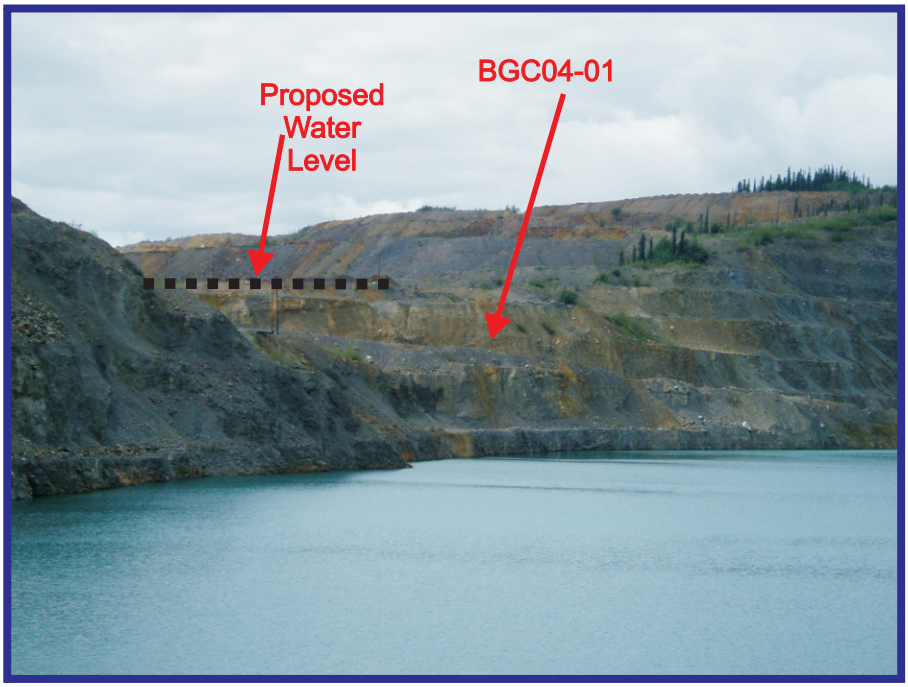


Photo 1b looking towards Faro Creek location.

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SCALE:	N/A	DESIGNED:	EBN
DATE:	SEPTEMBER 2006	CHECKED:	GWF
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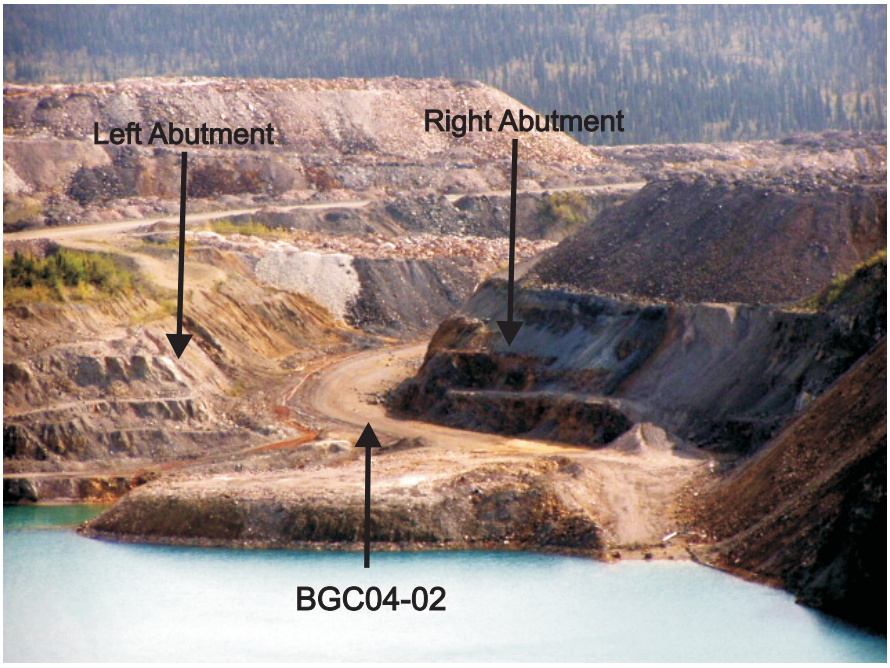
CLIENT: Deloitte & Touche

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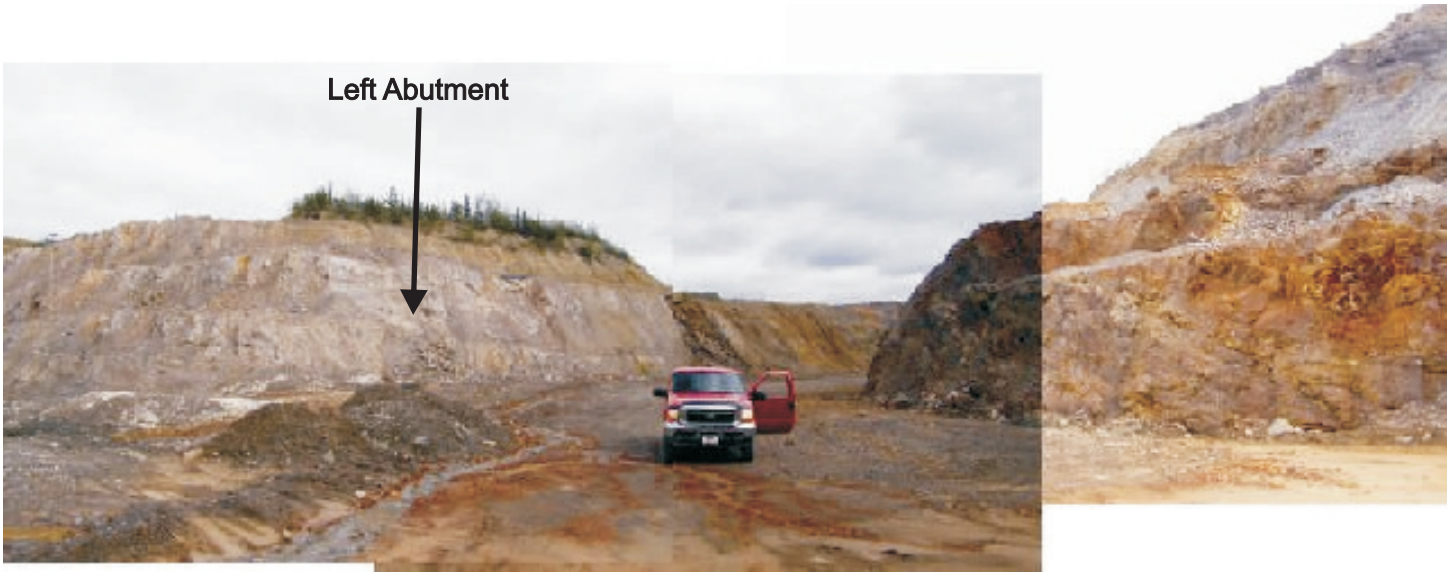
PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: PLUG DAM & FARO CREEK

PROJECT No.	FIGURE No.	REV.
0257-038-01	PHOTO 1	0



Over view of the Plug Dam area, looking to the east.



Looking downstream from the proposed Plug Dam footprint area.

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SCALE:	As Shown	DESIGNED:	EBN
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

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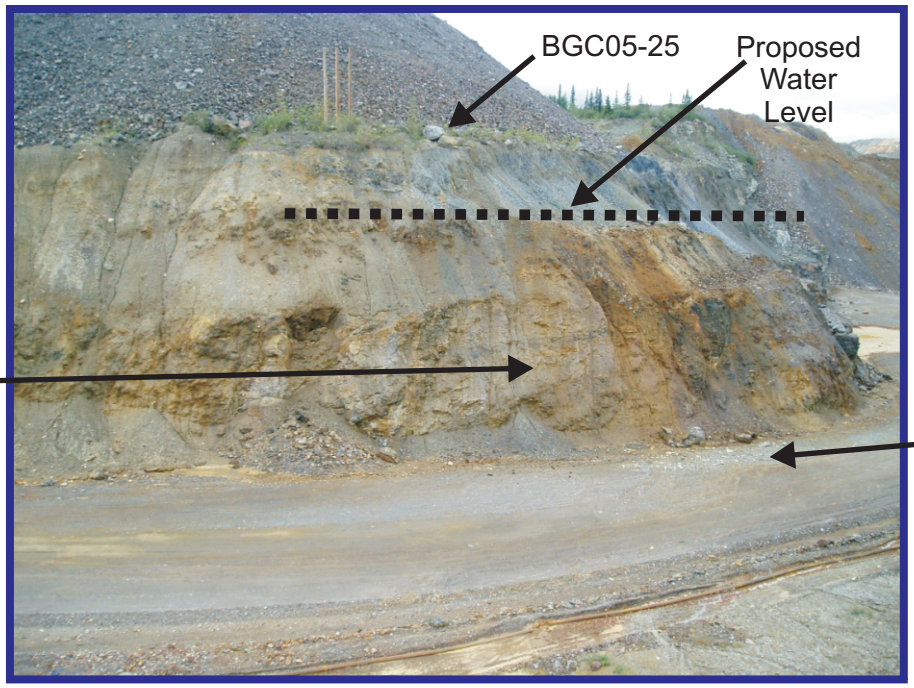
PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: LEFT AND RIGHT ABUTMENTS

PROJECT No.	FIGURE No.	REV.
0257-038-01	PHOTO 2	0



Overview of the right abutment and “pillar” area between Faro Main Pit and Zone II Pit (left background).



Looking in upstream direction at right abutment from crest of left abutment.

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SCALE:	N/A	DESIGNED:	EBN
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

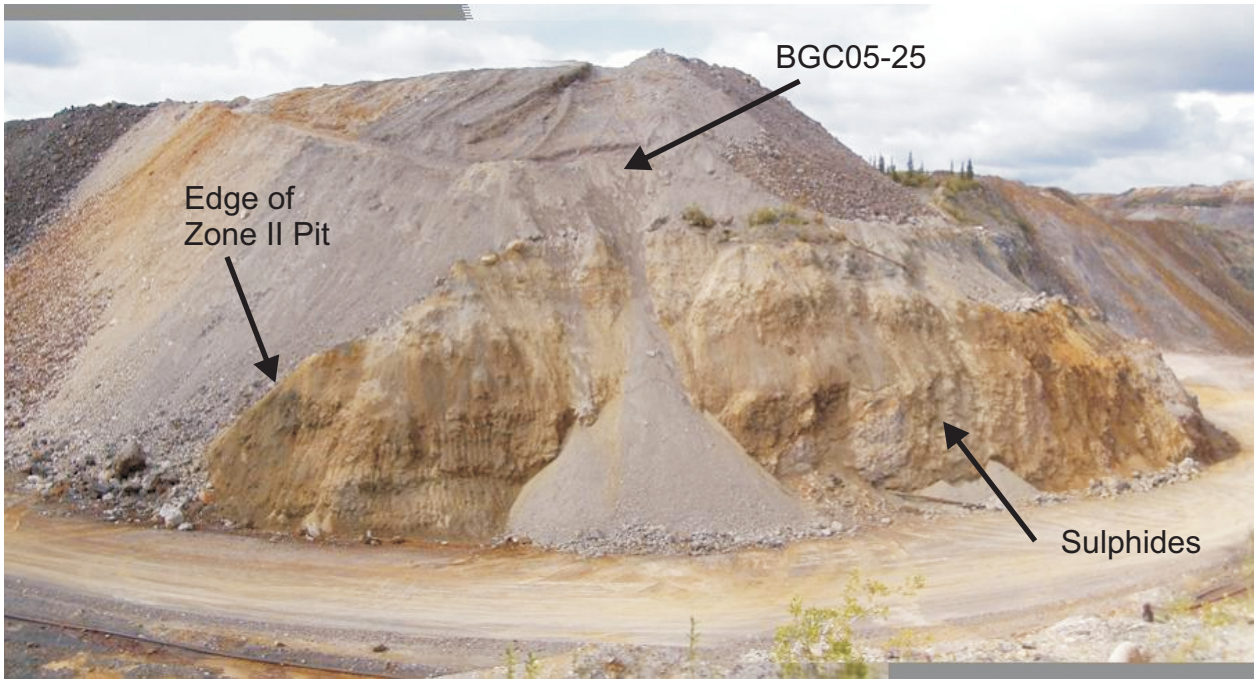
TITLE: RIGHT ABUTMENT

PROJECT No.	FIGURE No.	REV.
0257-031-01	PHOTO 3	0



Overview of left abutment.

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REFERENCED DRAWING DESCRIPTION			TITLE LEFT ABUTMENT		
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Showing the edge of the Zone 2 Pit and the right abutment area for the Plug Dam.



View of drilling on the left abutment.

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DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: LEFT AND RIGHT ABUTMENTS

PROJECT No.	FIGURE No.	REV.
0257-038-01	PHOTO 5	0



Small creek half way between where it cascades down the wall and the culvert under the access road.



The outlet end of the culvert.

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SCALE:	As Shown	DESIGNED:	EBN
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: DRAINAGE DITCH

PROJECT No.	FIGURE No.	REV.
0257-038-01	PHOTO 6	0



Small falls some 50 metres upstream of the weir plate. It appears that two small creeks join at this point, one coming from the waste dump and a second smaller one directing surface water.



The water is existing the toe of the dump. Note in this area there is a mix of schistose and calc-silicate rock.

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SCALE:	As Shown	DESIGNED:	EBN
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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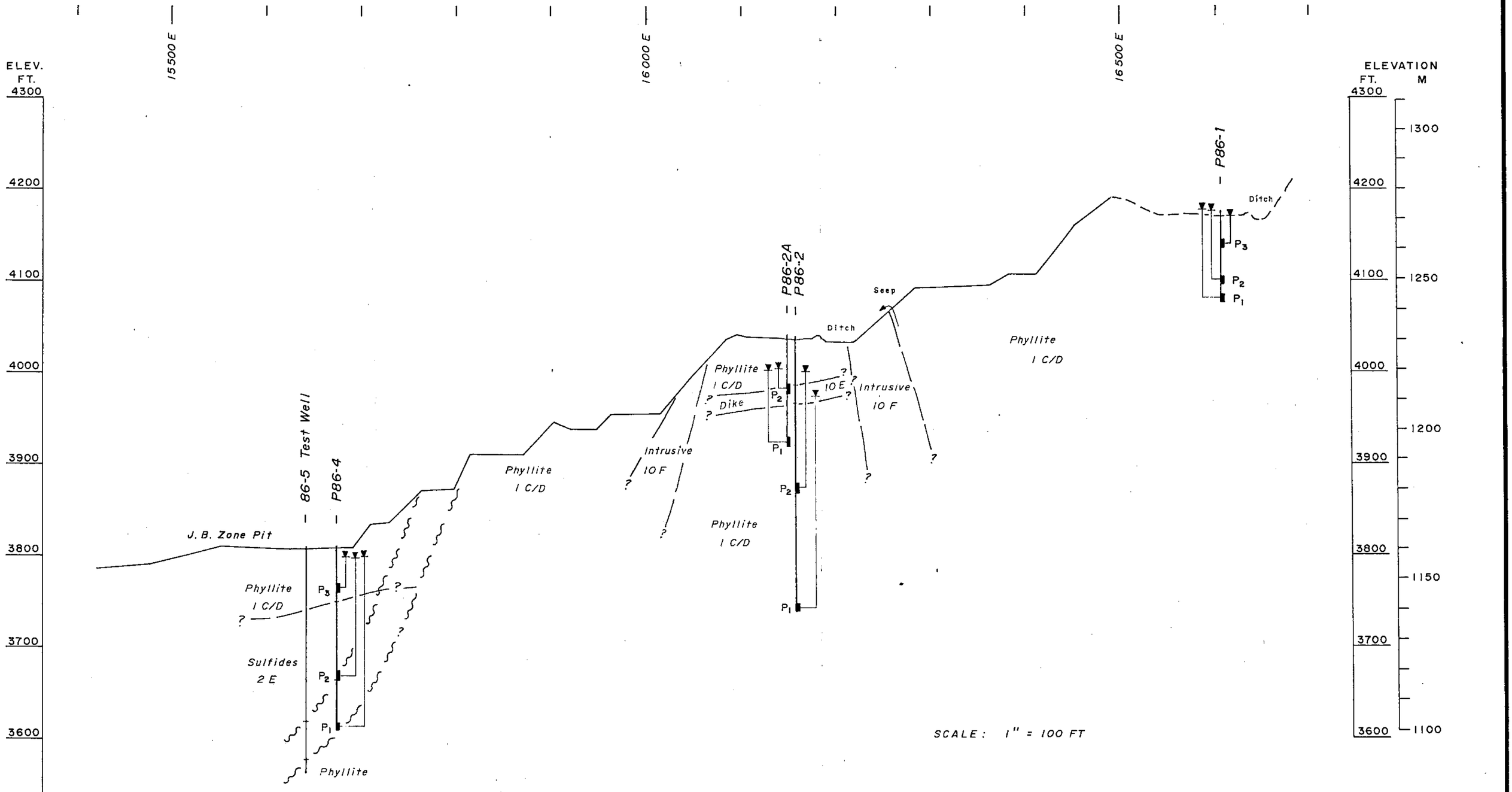
PROJECT: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

TITLE: DRAINAGE DITCH

PROJECT No.	FIGURE No.	REV.
0257-038-01	PHOTO 7	0

APPENDIX A – PAST INVESTIGATIONS
1986 BOREHOLE LOGS AND WATER PRESSURE TESTING RESULTS (PITEAU 1986)
1993 BOREHOLE LOGS AND WATER PRESSURE TESTING RESULTS (SRK 1993)

1986 INVESTIGATION



NOTE: See Fig. 1 for location section.

SCALE: 1" = 100 FT

CURRAGH RESOURCES - ANVIL MINE

PITEAU & ASSOCIATES
GEOTECHNICAL CONSULTANTS
VANCOUVER CALGARY

SECTION THROUGH EAST WALL ABOVE J.B. PIT

BY: HWR
DATE: 8-10-86
APPROVED:
DWG: 2

APPENDIX A

DRILLHOLE LOGS

HYDROGEOLOGIC LOG

DRILLHOLE No. P86-1
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole *Groundwater Monitoring*
Coordinates:
E *16608.40'* Angle from horizontal
N *8266.03'* Bearing °Azimuth

Type of drilling *Air Rotary*
Rig *Schram*
Drilling fluid *Air*

Reference elevation *1272.77* m - asl
Elevation type: Surveyed [X] Altimeter [ ] From map [ ]
Casing stick up *0.305* m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	(2)(4) Water Level (m)	(5) Water Flow (Lps)	(6) Other	After Drilling: (2)(7) Water Level (m)	(8) Hydraulic Conductivity: Test Type	Value (m/s)	(2) Depth (m)	Comments
Ground level 1272.461	+1.01 (1273.48); +0.90 (1273.36); 1.20 (1271.56)									Open hole 135mm Ø
Weathered Schist, rusty (I C/D)		4.26		Damp						Slotted PVC 22mm I.D.
		7.01		Damp						Slotted intervals with filter sand and bentonite seals.
	8.5–9.6 P3	10.36		Wet		1.20 (1271.56)	f	$< 10^{-6}$		
11.6 Schist, Quartz veins (I C) 12.8	12.1–13.0	11.6-12.2		Wet						Water levels measured on 22 July 1986.
		13.7		Wet						
Phyllite (I C)		16.2-17.1		Wet						
23.8	21.2–21.8 P2	23.8-24.4		Wet		+0.90 (1273.36)	r	9.4×10^{-8}		
Phyllite, large Mica flakes, gray to dark brown (I C/D)	24.2–25.0									
30.5	26.8–27.9 P1 30.5	30		0.06		+1.01 (1273.48)	r	2.4×10^{-8}		

Contractor *MIDNIGHT SUN*
Date started *12-07-86*
Date finished *15-07-86*

Logged by *NWR*
Checked by
Date *3-09-86*

SCALE: Vertical 1: *500* approximate
Horizontal - N.t.s.

*Bracketed numbers refer to notes preceding the logs

PITEAU & ASSOCIATES
GEOTECHNICAL CONSULTANTS
VANCOUVER CALGARY

HYDROGEOLOGIC LOG

DRILLHOLE No. P86-2
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole *Groundwater Monitoring*
Coordinates:
E *16152.05'* Angle from horizontal
N *8161.73'* Bearing °Azimuth

Type of drilling *Air Rotary*
Rig *Schram*
Drilling fluid *Air*

Reference elevation *1231.23* m - asl
Elevation type: Surveyed [X] Altimeter [ ] From map [ ]
Casing stick up *0.457* m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	During Drilling: (2)(4) Water Level (m)	During Drilling: (5) Water Flow (Lps)	During Drilling: (6) Other	After Drilling: (2)(7) Water Level (m)	After Drilling: (8) Hydraulic Conductivity: Test Type	After Drilling: (8) Hydraulic Conductivity: Value (m/s)	After Drilling: (8) Hydraulic Conductivity: (2) Depth (m)	Comments
Ground level 1230.77										
5										Open hole 135 mm Ø
Phyllite, gray to greenish (IC)										Slotted PVC 22mm I.D.
10	▼ 9.55 ▼ 10.80									Slotted intervals with filter sand and bentonite seals. Seal not placed above P3 due to caved hole.
15 16.2										
Biotite Porphyry, light gray (IOE)	▼ 19.07									
20 21.9										
25										
Phyllite, gray to dark brown (IC/D)		29.3		Damp						
30										
35	P3 33.6 36.6 37.2	34.4		Damp		9.55 (1221.23)	—	—		Water levels measured on 22 July 1986.
40 40.2										
Phyllite, gray to greenish (IC)										
45 46.0										
Phyllite with Quartz Veins (IC) 48.2	48.0 48.8									
50	P2 52.4 62.9	52.4		Trickle		10.80 (1219.98)	f	6.5×10^{-9}		
Phyllite, alternate gray and dark brown (IC/D)										
55		58.5		Trickle						
60										
65										
70										
75 77.1										
80										
Phyllite, gray to light gray (IC)										
85										
90 91.4	87.9 88.8 P1 91.4					19.07 (1211.71)	f	$<10^{-9}$		

Contractor *MIDNIGHT SUN*
Date started *10-07-86*
Date finished *10-07-86*

Logged by *HWR*
Checked by
Date *4-09-86*

SCALE: Vertical 1: *300* approximate
Horizontal - N.t.s.

*Bracketed numbers refer to notes preceding the logs

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HYDROGEOLOGIC LOG

DRILLHOLE No. P86-2A
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole Groundwater Monitoring
Coordinates:
E 16148.44' Angle from horizontal
N 8172.44' Bearing °Azimuth

Type of drilling Air Rotary
Rig Schram
Drilling fluid Air

Reference elevation 1231.12 m - asl
Elevation type: Surveyed [X] Altimeter [ ] From map [ ]
Casing stick up 0.406 m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	During Drilling: (2)(4) Water Level (m)	During Drilling: (5) Water Flow (Lps)	During Drilling: (6) Other	After Drilling: (2)(7) Water Level (m)	After Drilling: (8) Hydraulic Conductivity: Test Type	After Drilling: (8) Hydraulic Conductivity: Value (m/s)	After Drilling: (2) Depth (m)	Comments
Ground level 1230.72										
Phyllite, dark to light gray with Quartz veins (IC)	9.02 9.63									Open hole 135 mm Ø
	13.9									Slotted PVC 22 mm Ø
13.1	15.7									Slotted intervals with filter sand and bentonite seals.
Biotite Porphyry, gray to greenish (IOE) 17.7	P2 19.1 19.8	17.7-18.3		Damp		9.02 (1221.69)	f	2.0x10⁻⁸		Water levels measured on 22 July 1986.
Phyllite, light gray to dark brown with some massive Sulfides (IC/D)										
31.1	31.7									
Phyllite, light gray (IC) 34.1	33.2	34.1-35.1		Trickle		9.63 (1221.08)	f	5.1x10⁻⁸		
Phyllite, dark gray (IC) 36.6	P1 36.6									

Contractor MIDNIGHT SUN
Date started 11-07-86
Date finished 12-07-86

Logged by HWR
Checked by
Date 4-09-86

SCALE: Vertical 1: 300 approximate
Horizontal - N.t.s.

*Bracketed numbers refer to notes preceding the logs

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HYDROGEOLOGIC LOG

DRILLHOLE No. P 86-3
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole *Groundwater Monitoring*
Coordinates:
E *16256.01'*
N *9148.02'*
Angle from horizontal
Bearing °Azimuth

Type of drilling *Air Rotary*
Rig *Schram*
Drilling fluid *Air*

Reference elevation *1298.48* m - asl
Elevation type: Surveyed [X] Altimeter [ ] From-map [ ]
Casing stick up *0.381* m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	During Drilling: (2)(4) Water Level (m)	During Drilling: (5) Water Flow (Lps)	During Drilling: (6) Other	After Drilling: (2)(7) Water Level (m)	After Drilling: (8) Hydraulic Conductivity: Test Type	After Drilling: Hydraulic Conductivity: Value (m/s)	After Drilling: (2) Depth (m)	Comments
Ground level 1298.09										
Diorite, fine grained, gray (10E)										Open hole 135 mm Ø
5	▼ 6.48									
7.6	▼ 8.56	7.3-9.1		Dry-rusty						Slotted PVC 22mm I.D.
10		10.7		Damp						Slotted intervals with filter sand and bentonite seals.
Schist, altered and fractured fine grained, gray (1C)	15.2									
15 16.2	P2 16.2	16.2		Damp		6.48 (1291.62)	t	6.4×10^{-7}		
Schist, gray (1C)	18.3	17.7-20.4		Dry-rusty						Water levels measured on 22 July 1986.
20	19.4									
22.8										
25 Schist, gray-green and pinkish zones (1C)		26.8		Wet						
30										
35		36.3-37.8		Wet-rusty						
40										
		43.4		Wet						
45										
50	53.2									
55	P1 53.9 55.9 57.0	55.5		0.02		8.56 (1289.54)	t	$> 10^{-6}$		
58.2	58.2									
60										

Contractor *MIDNIGHT SUN*
Date started *21-07-86*
Date finished *21-07-86*

Logged by *HWR*
Checked by
Date *5-09-86*

SCALE: Vertical 1: *300* approximate
Horizontal - N.t.s.

*Bracketed numbers refer to notes preceding the logs

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HYDROGEOLOGIC LOG

DRILLHOLE No. P86-3A
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole Groundwater Monitoring
Coordinates: E 16236.25' N 9163.91'
Angle from horizontal ____ Bearing ____ °Azimuth
Type of drilling Air Rotary
Rig Schram
Drilling fluid Air

Reference elevation 1298.32 m - asl
Elevation type: Surveyed [X] Altimeter [ ] From map [ ]
Casing stick up 0.406 m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	(2)(4) Water Level (m)	(5) Water Flow (Lps)	(6) Other	After Drilling: (2)(7) Water Level (m)	(8) Hydraulic Conductivity: Test Type	Value (m/s)	(2) Depth (m)	Comments
Ground level 1297.92										
Diorite, fine grained, gray (10 E)	7.10 / 8.00									Open hole 135 mm Ø
	P2: 19.4–20.6, 22.9–23.6	22.6–25.5		Damp / Damp		7.10 (1290.82)	f	5.6x10⁻⁹		Slotted PVC 22 mm I.D.
24.4 Schist, altered, fractured, fine grained (1C) 26.8										Slotted intervals with filter sand and bentonite seals.
Schist, dark gray (1C)	P1: 26.4–27.4, 30.5	27.1		Wet		8.00 (1289.94)	f	2.3x10⁻⁹		Water levels measured on 7 August 1986.
30.2 / 30.5 Schist, pinkish (1C)										

Contractor MIDNIGHT SUN
Date started 21-07-86
Date finished 21-07-86
Logged by HWR
Checked by
Date 5-09-86

SCALE: Vertical 1: 300 approximate
Horizontal - N.t.s.
*Bracketed numbers refer to notes preceding the logs

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HYDROGEOLOGIC LOG

DRILLHOLE No. P86-4
Sheet 1 of .....

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole Groundwater Monitoring
Coordinates:
E 15675.71' Angle from horizontal .....
N 8007.97' Bearing ..... °Azimuth
Type of drilling Air Rotary
Rig Schram
Drilling fluid Air

Reference elevation 1161.16 m - asl
Elevation type: Surveyed [X] Altimeter [ ] From map [ ]
Casing stick up 0.457 m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	(2)(4) Water Level (m)	(5) Water Flow (Lps)	(6) Other	After Drilling: (2)(7) Water Level (m)	(8) Hydraulic Conductivity: Test Type	Value (m/s)	(2) Depth (m)	Comments
Ground level 1160.70										
Schist, Quartz veins, minor Sulfides; hard, gray (1C) (blasted zone)	2.88 ▼ 2.85 ▼ 2.92	3.0		0.04						Open hole 135 mm Ø
8.2 Phyllite, gray to brown (1C/D) 10.1		8.0		0.10						Slotted PVC 22 mm I.D.
Phyllite, light to dark gray, Quartz veins (1C) 14.9	P3: 11.3–12.2, 14.5–15.4					2.85 (1157.86)				Slotted intervals with filter sand and bentonite seals.
Massive Sulfides and Quartz (2E)	P2: 40.7–41.6, 44.0–44.7	44.2				2.92 (1157.78)	Pump test well r=10.8m	Transmissivity ≈ 7.1×10^{-5} m^2/s		Water levels measured on 22 July 1986.
44.2 Massive Sulfides and Quartz, highly fractured with Gouge (2E) 61.3	P1: 57.5–58.5, 61.3	61.3		9.5		2.88 (1157.82)		≈ 7.8×10^{-5} m^2/s		

Contractor MIDNIGHT SUN
Date started 14-07-86
Date finished 16-07-86
Logged by HWR
Checked by .....
Date 5-09-86

SCALE: Vertical 1: 300 approximate
Horizontal - N.I.S.
*Bracketed numbers refer to notes preceding the logs

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HYDROGEOLOGIC LOG

DRILLHOLE No. 86-5
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No.

Purpose of hole Pit Dewatering J.B. Zone
Coordinates:
E 15640.53' Angle from horizontal
N 8012.65' Bearing °Azimuth

Type of drilling Air Rotary
Rig Schram
Drilling fluid Air

Reference elevation 1161.00 m - asl
Elevation type: Surveyed [X] Altimeter [ ] From map [ ]
Casing stick up 0.457 m above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	During Drilling: (2)(4) Water Level (m)	During Drilling: (5) Water Flow (Lps)	During Drilling: (6) Other	After Drilling: (2)(7) Water Level (m)	After Drilling: (8) Hydraulic Conductivity: Test Type	After Drilling: (8) Hydraulic Conductivity: Value (m/s)	After Drilling: (2) Depth (m)	Comments
Ground level 1160.54										
5	250 mm I.D. surface casing									Surface casing in blasted zone. Hole drilled 135 mm to 74.7m and reamed 245 mm to 61.0m.
Phyllite, hard, gray; (1C)	9.1 Slotted casing									
10										Mild steel liner installed with slotted sections.
15	15.2									
17.7 Phyllite, some sulfides										
20 (1C) 21.0	Hole reamed to 245 mm	25.8		damp						Pump set at 60 m and discharged at 9.5 lps for approx. three days.
25		26.8		0.06						
Massive Sulfides and Quartz (2E)		33.2		0.19						
30										
35	200 mm I.D. liner casing									
40		39.6		0.20						
45		46.0		0.28						
50	48.8 Slotted casing	52.1		0.55						
55										
58.2		58.2-58.8		3.15						
60 Massive Sulfides and Quartz, highly fractured with gouge	61.0	61.6-63.1		6.31						
65 (2E)	135 mm ø	65.8-69.2		9.46						
70										
70.7 Phyllite, gray to brown (1C/D)										
74.7 75	74.7									
80										

Contractor MIDNIGHT SUN
Date started 15-07-86
Date finished 20-07-86

Logged by HWR
Checked by
Date 10-09-86

SCALE: Vertical 1: 300 approximate
Horizontal - N.t.s.

*Bracketed numbers refer to notes preceding the logs

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HYDROGEOLOGIC LOG

DRILLHOLE No. 86-6
Sheet 1 of

PROJECT CURRAGH RESOURCES - ANVIL MINE

Job No

Purpose of hole Test Dewatering J.B. Zone
Coordinates:
E 15430'
N 7220'
Angle from horizontal
Bearing °Azimuth
Type of drilling Air Rotary
Rig Schram
Drilling fluid Air

Reference elevation 1180 m - asl
Elevation type: Surveyed ☐ Altimeter ☐ From map ☒
Casing stick up n/a m-above ground

(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	(2)(4) Water Level (m)	(5) Water Flow (Lps)	(6) Other	After Drilling: (2)(7) Water Level (m)	(8) Hydraulic Conductivity: Test Type	Value (m/s)	(2) Depth (m)	Comments
Ground level 1180										
Massive Sulfides (2E)										Open hole 135 mm Ø drilled to total depth.
5.2		5.2		Trickle						
Phyllite, gray to light brown (1C)										No water-bearing structures encountered below contact with Massive Sulfides.
32.0										Hole abandoned.
Phyllite, gray-brown (1D)										
45.4										
Phyllite, light gray (1C)										
52.7										
Phyllite, gray to brown (1C/D)										
88.1	88.1									

Contractor MIDNIGHT SUN
Date started 14-08-86
Date finished 15-08-86
Logged by HWR
Checked by
Date 10-09-86

SCALE: Vertical 1: 300 approximate
Horizontal - N.t.s.

*Bracketed numbers refer to notes preceding the logs

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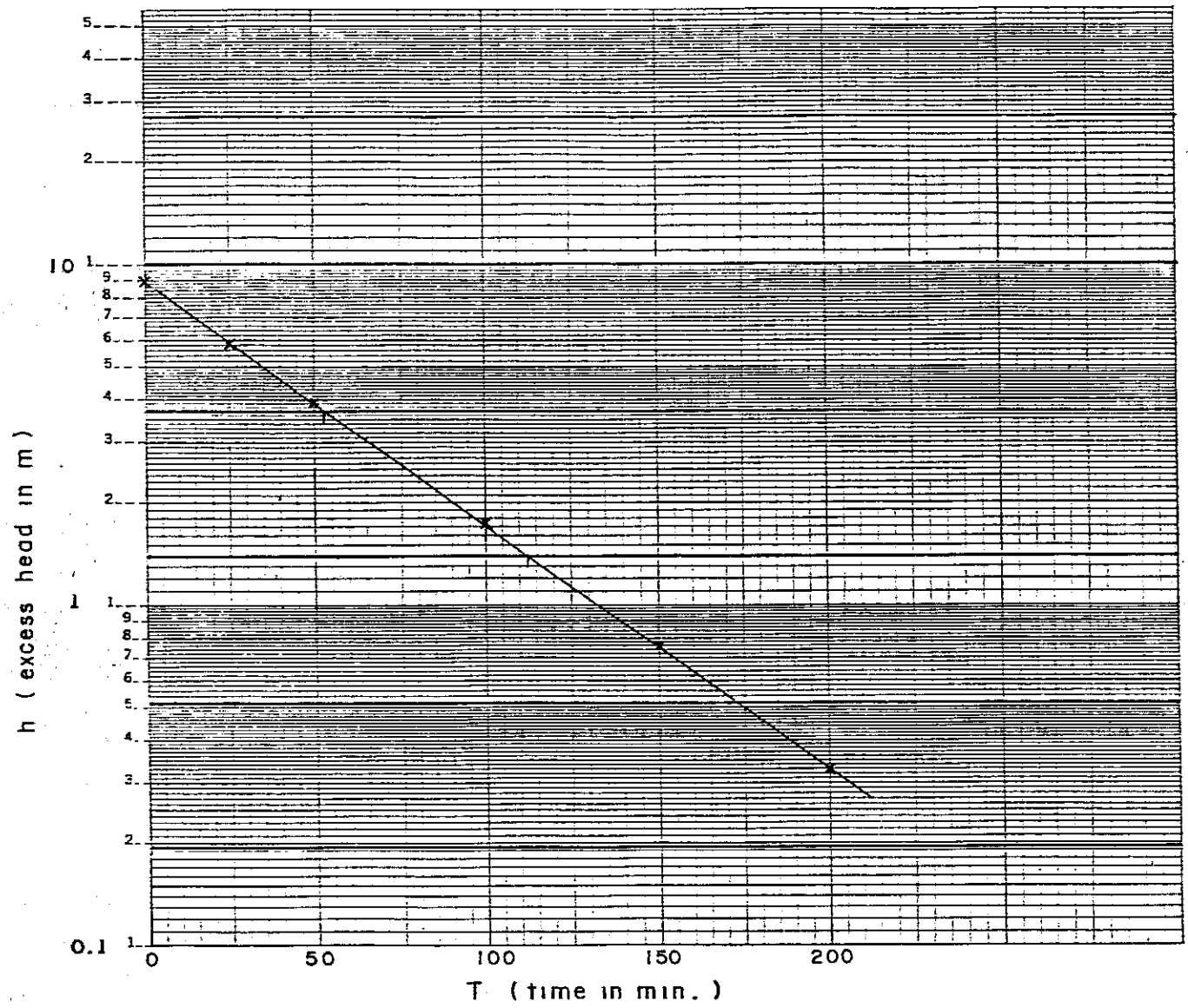
APPENDIX B

FALLING HEAD TEST PLOTS

JOB NUMBER _____

HOLE NO. P86-1 PIEZOMETER NO. 1

DEPTH INTERVAL 27.9 - 30.5 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 2.6 \times 3540} \times \ln\left(\frac{2 \times 2.6 \times 1}{0.133}\right) = 2.4 \times 10^{-8}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

M = K_H/K_V = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 2.6 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 5340 seconds

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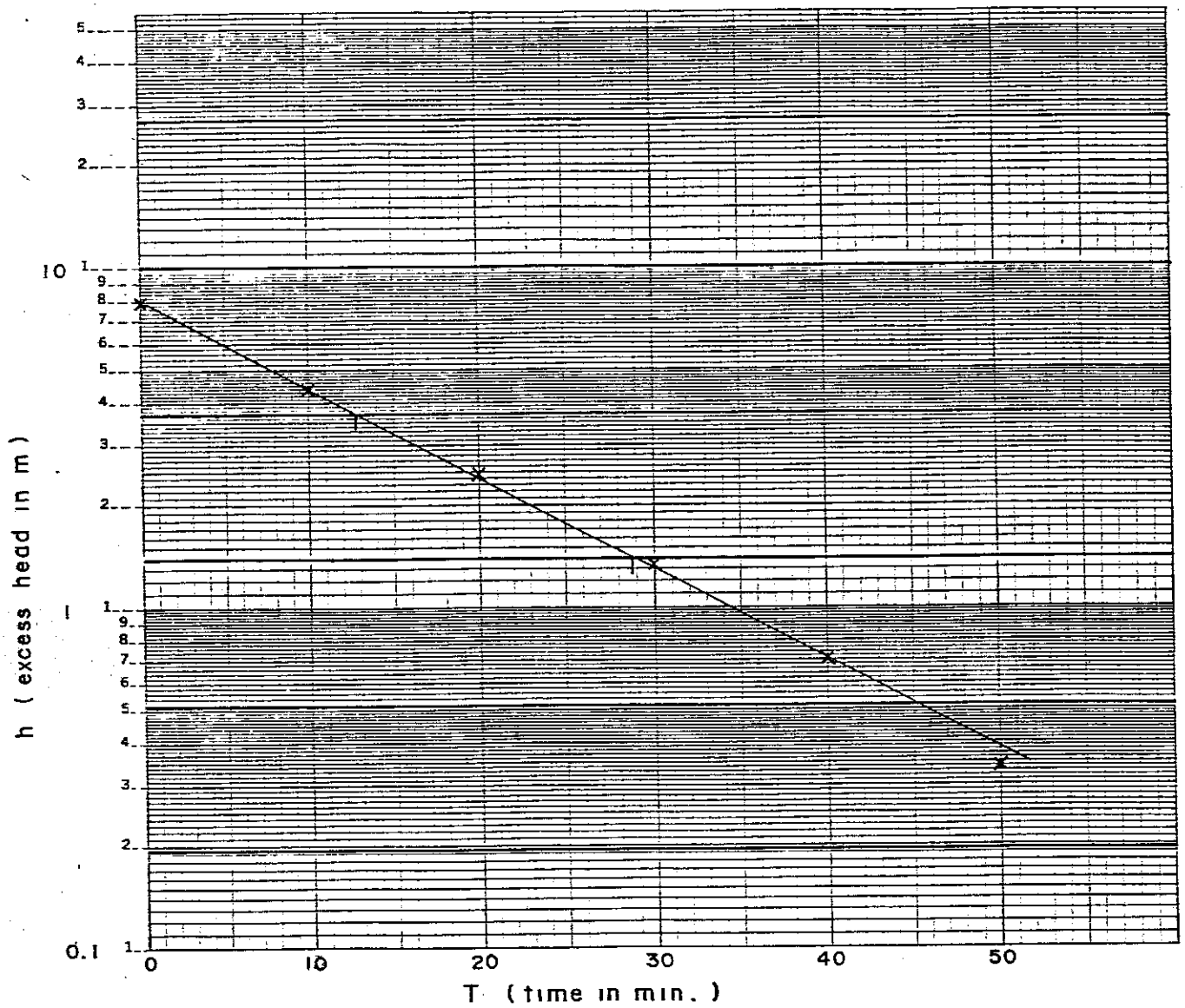
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	12-08-86
APPROVED:	DWG:

JOB NUMBER _____

HOLE NO. P86-1 PIEZOMETER NO. 2

DEPTH INTERVAL 21.9 - 24.2 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 2.4 \times 960} \times \ln\left(\frac{2 \times 2.4 \times 1}{0.133}\right) = 9.4 \times 10^{-8}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

M = K_H/K_V = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 2.4 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 960 seconds

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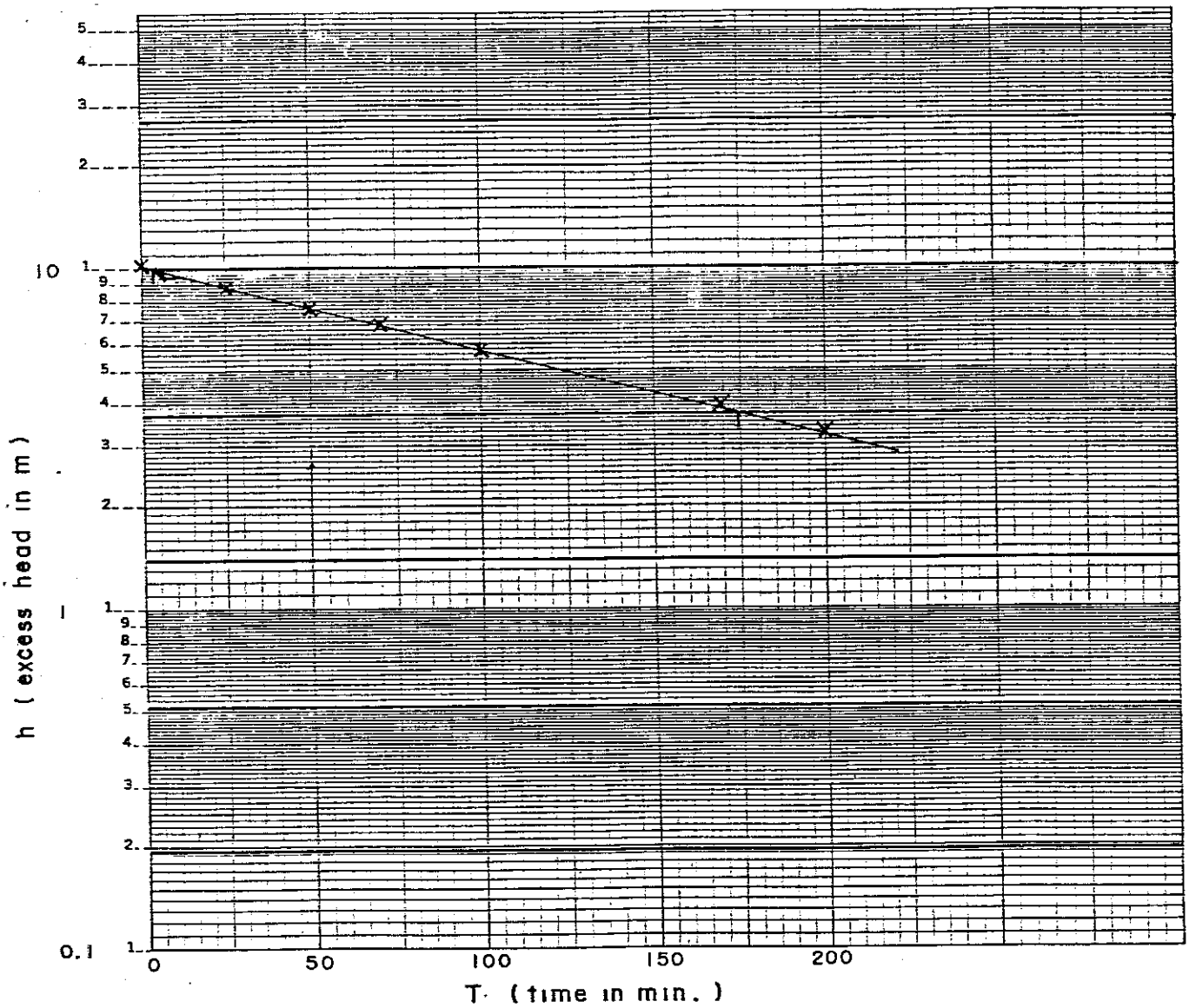
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	12-08-86
APPROVED:	DWG:

JOB NUMBER _____

HOLE NO. P86-2 PIEZOMETER NO. 2

DEPTH INTERVAL 48.8 - 52.4 m



CALCULATION: $K = \frac{d^2}{8LT_i} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 3.6 \times 10320} \times \ln\left(\frac{2 \times 3.6 \times 1}{0.133}\right) = 6.5 \times 10^{-9}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

M = K_H/K_V = Anisotropy

K = Hydraulic Conductivity

L = Test Length 3.6 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 10320 seconds

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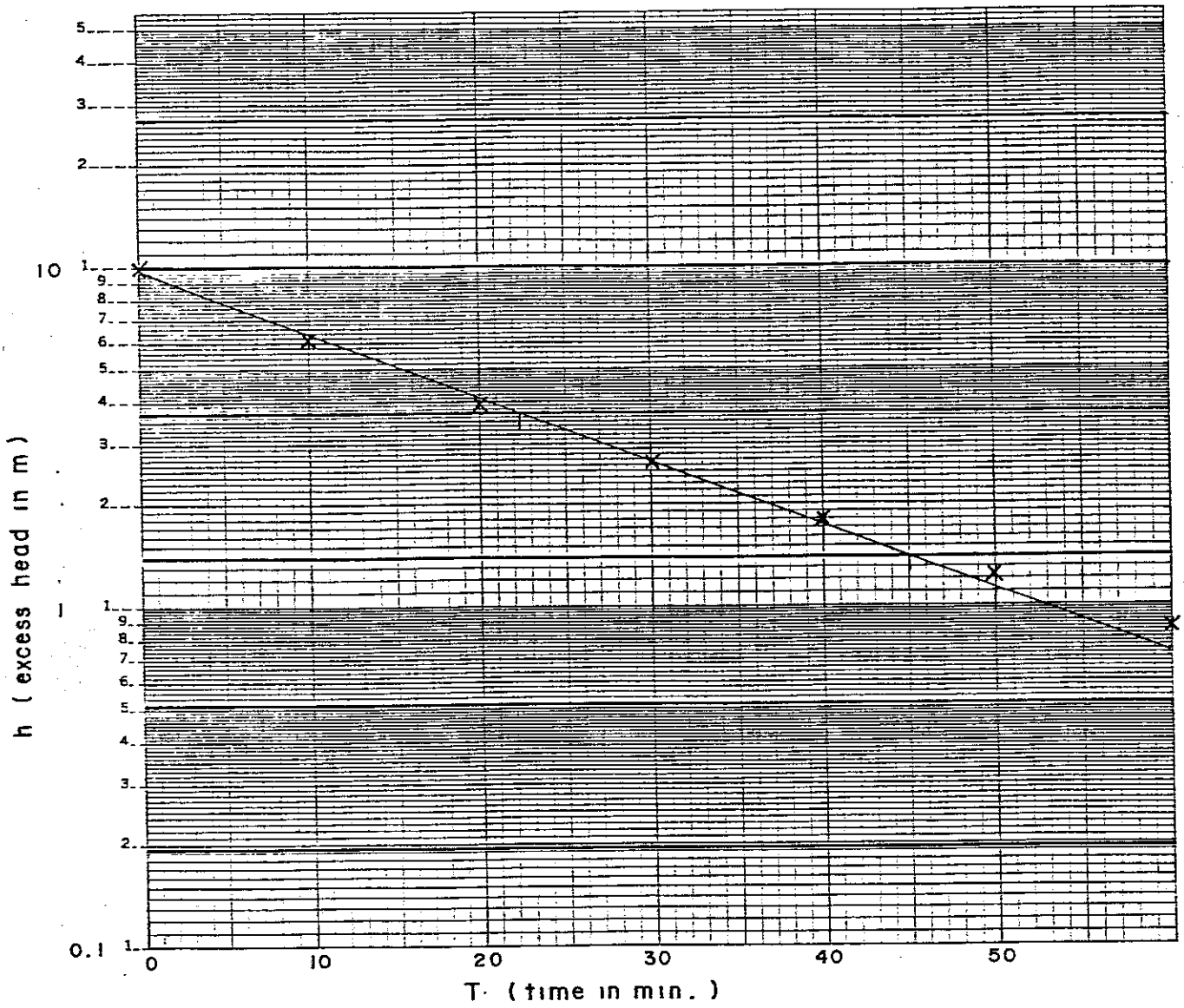
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	8-08-86
APPROVED:	DWG:
AH	

JOB NUMBER _____

HOLE NO. P86-2A PIEZOMETER NO. 1

DEPTH INTERVAL 33.2-36.6 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 3.4 \times 1360} \times \ln\left(\frac{2 \times 3.4 \times 1}{0.133}\right) = 5.1 \times 10^{-8}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

M = K_H/K_V = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 3.4 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 1360 seconds

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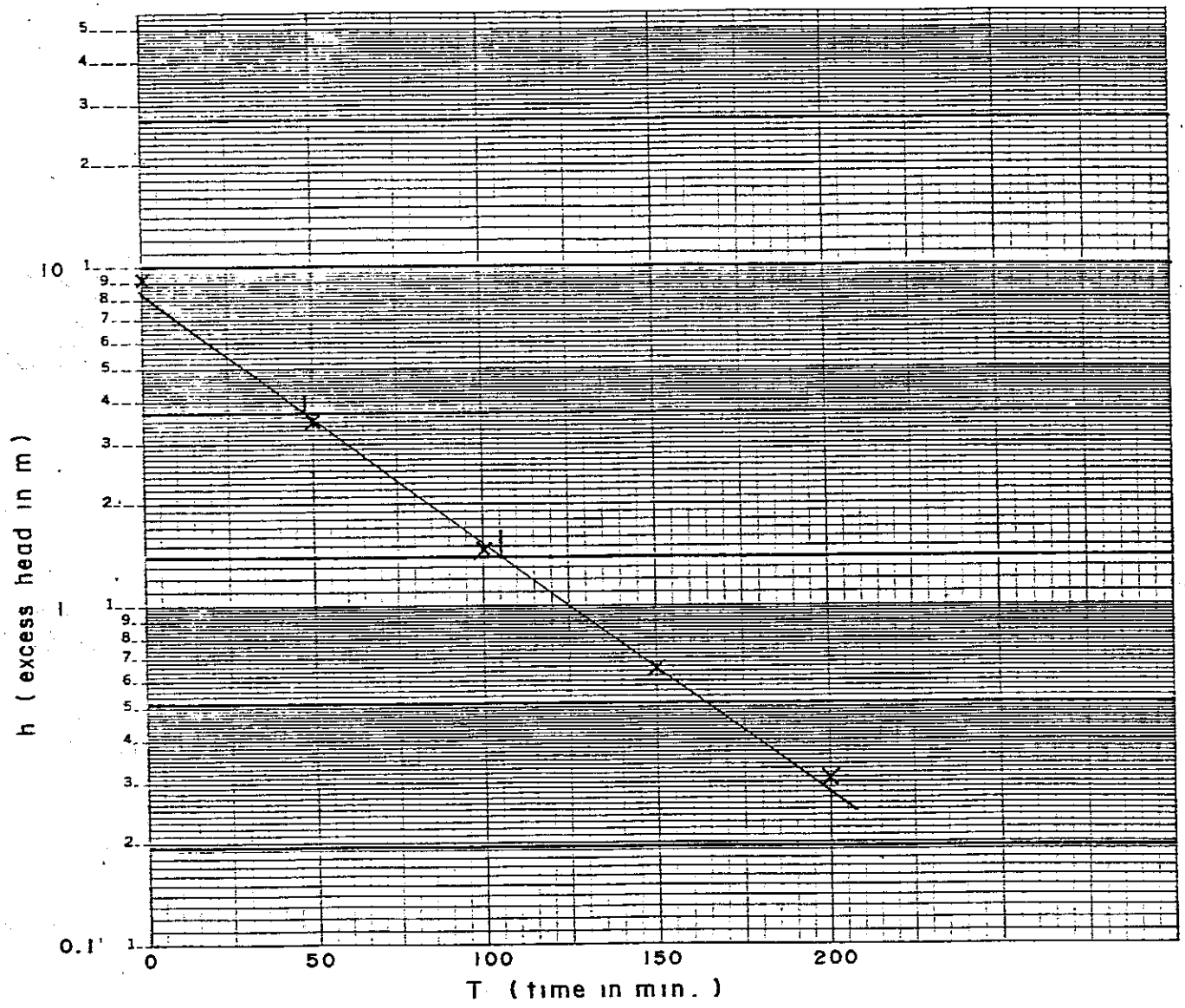
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	9-08-86
APPROVED:	DWG:
AH	

JOB NUMBER _____

HOLE NO. P86-2A PIEZOMETER NO. 2

DEPTH INTERVAL 15.7 - 19.1 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 3.4 \times 3480} \times \ln\left(\frac{2 \times 3.4 \times 1}{0.133}\right) = 2.0 \times 10^{-8}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

M = K_H/K_V = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 3.4 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 3480 seconds

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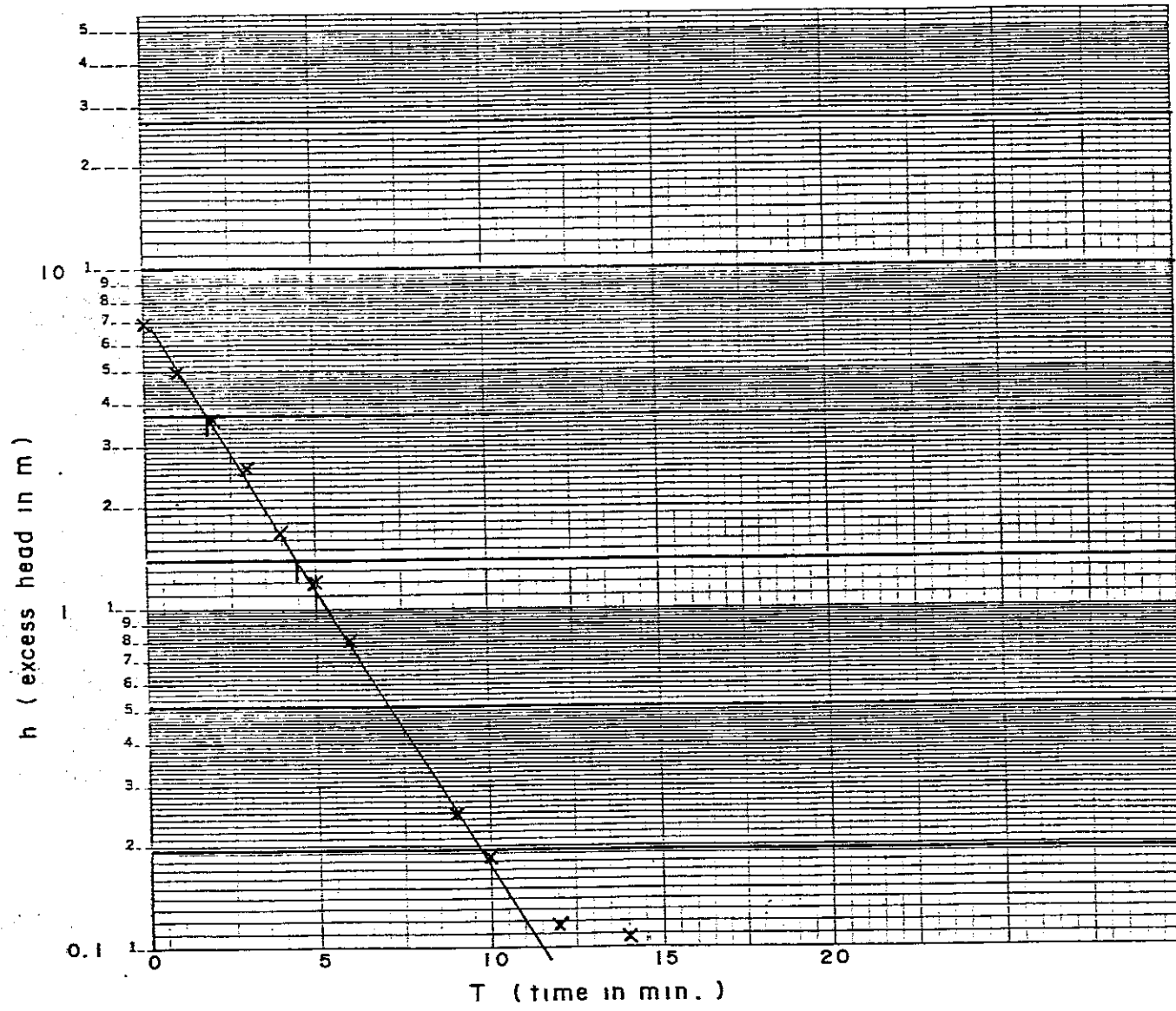
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	9-08-86
APPROVED:	DWG:
AH	

JOB NUMBER _____

HOLE NO. P 86-3 PIEZOMETER NO. 2

DEPTH INTERVAL 16.2 - 18.3 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 2.1 \times 155} \times \ln\left(\frac{2 \times 2.1 \times 1}{0.133}\right) = 6.4 \times 10^{-7}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

$M = K_H/K_V$ = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 2.1 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 155 seconds

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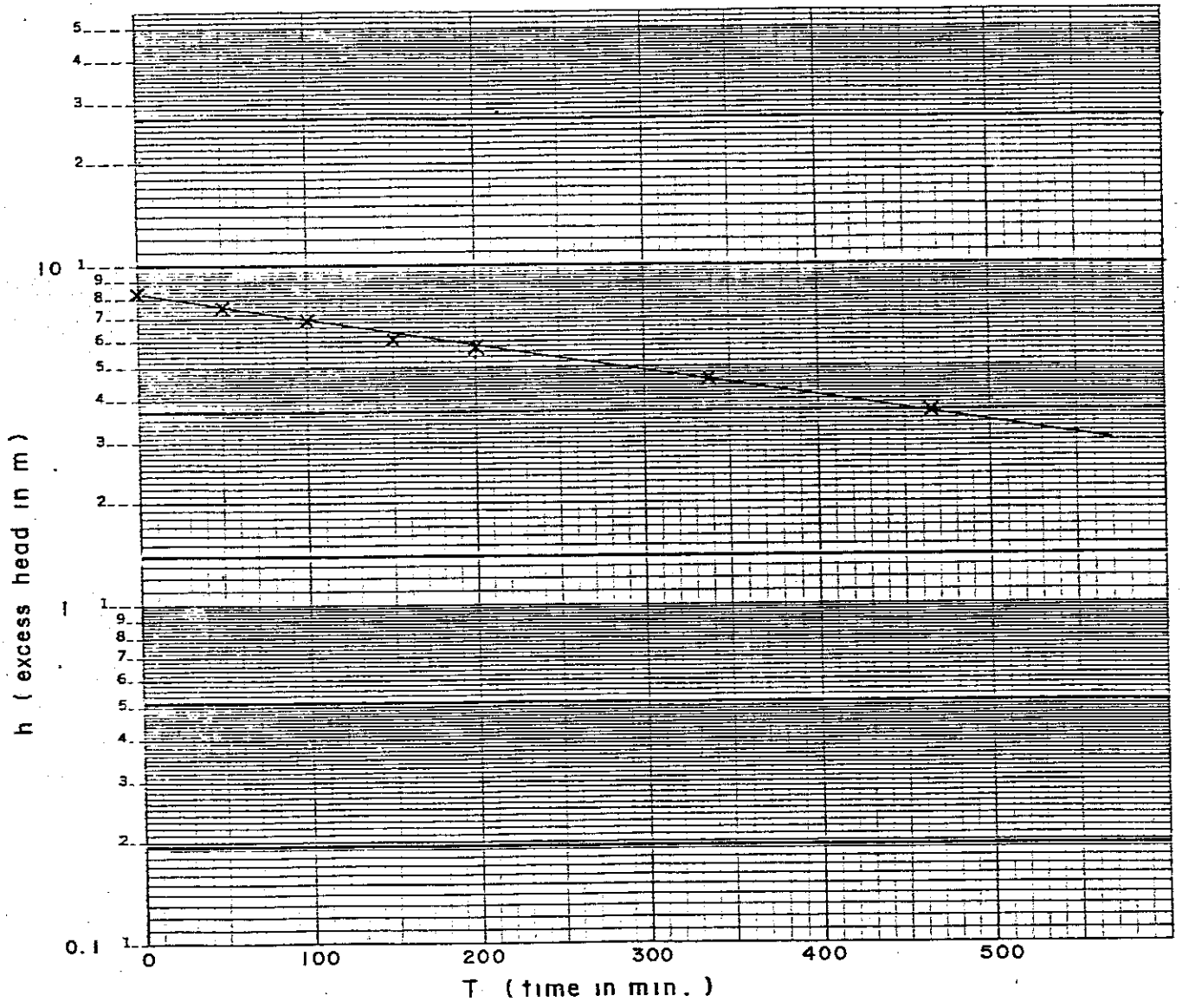
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	8-08-86
APPROVED:	DWG:
AH	

JOB NUMBER _____

HOLE NO. P 86-3A PIEZOMETER NO. 1

DEPTH INTERVAL 27.4-30.5 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 3.1 \times 33300} \times \ln\left(\frac{2 \times 3.1 \times 1}{0.133}\right) = 2.3 \times 10^{-9}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

M = K_H/K_V = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 3.1 m

T = Time interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 33300 seconds

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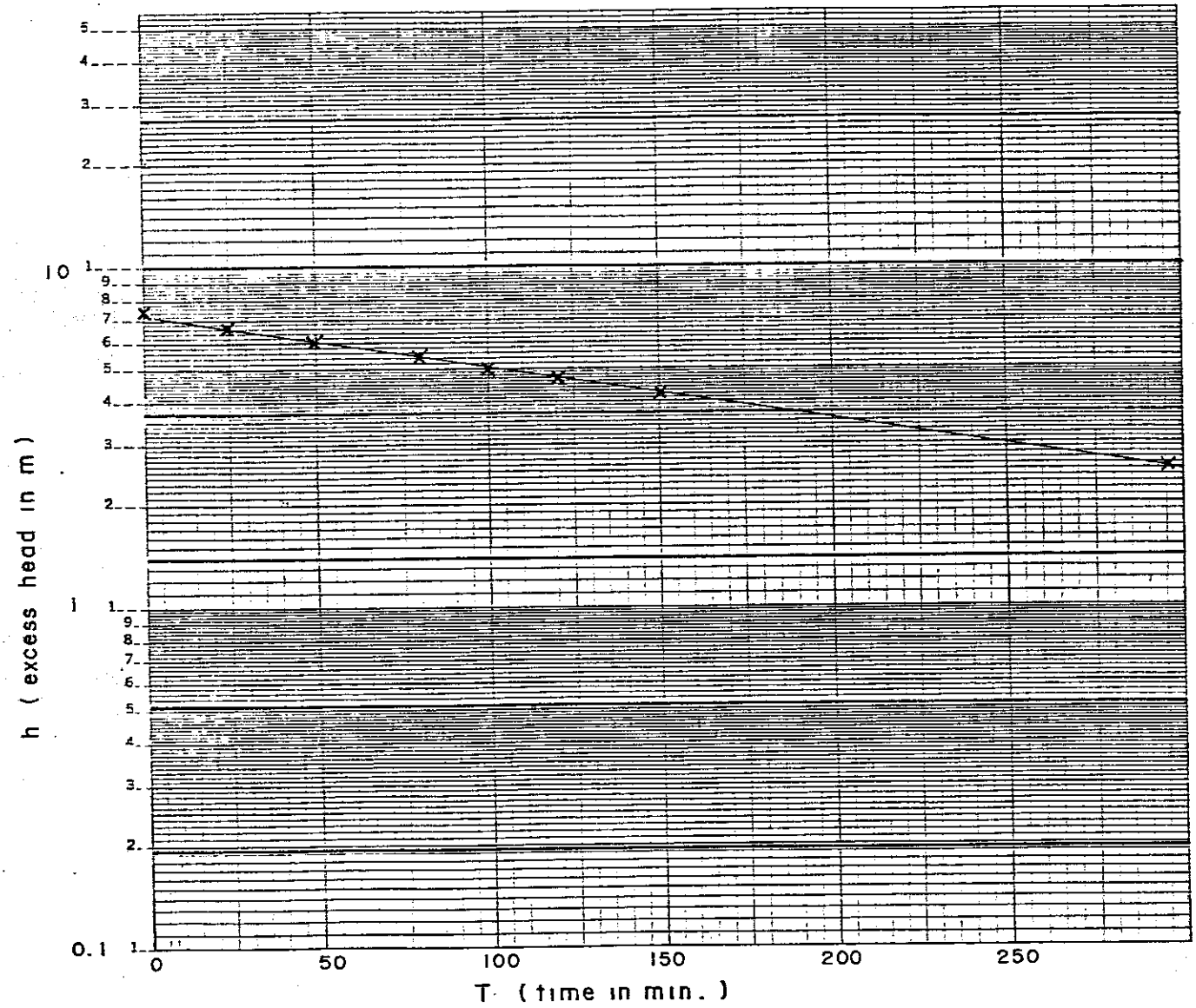
CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	8-08-86
APPROVED:	DWG:
AH	

JOB NUMBER _____

HOLE NO. P86-3A PIEZOMETER NO. 2

DEPTH INTERVAL 20.6-22.9 m



CALCULATION: $K = \frac{d^2}{8LT_1} \ln\left(\frac{2L\sqrt{M}}{D}\right) = \frac{(0.022)^2}{8 \times 2.3 \times 16500} \times \ln\left(\frac{2 \times 2.3 \times 1}{0.133}\right) = 5.6 \times 10^{-9}$ m/s

Where: D = Hole Diameter 0.133 m

d = Tube Diameter 0.022 m

$M = K_H/K_V$ = Anisotropy = 1

K = Hydraulic Conductivity

L = Test Length 2.3 m

T = Time Interval for Excess Head (h) to Decay by 63%
= Time for Excess to drop from One Bold Line to Next Bold Line = 16500 seconds

CURRAGH RESOURCES LTD.
ANVIL MINE, FARO, YUKON

PITEAU ASSOCIATES
GEOTECHNICAL CONSULTANTS
VANCOUVER CALGARY

CALCULATION OF PERMEABILITY FROM FALLING HEAD TEST

BY:	DATE:
HWR	8-08-86
APPROVED:	DWG:
AH	

1993 INVESTIGATION

PROPOSED PLUG DAM (SLIMES)

PROPOSED PLUG DAM (SLIMES)

MAIN PIT OUTLINE

NORTH FORK

BIG INDIAN

BIG INDIAN #2

#3

BIG INDIAN #4

NORTH FORK

BH86-3

BH86-5

BH86-4

BH86-6

BH86-2A

BH86-2

BH86-1

BH94-16A, B & C

PUMPING WELL

BH67-14

BH65-50

BH94-15A, B & C

BH76-D5-4

INTERMEDIATE WASTE DUMP

NORTH EAST WASTE DUMP

APPROX. OUTLINE OF ALLUVIAL OUTWASH

BH94-9

BH94-8

BH94-10A & B

BH90-2

BH94-11

BH94-7A & B

BH94-6

BH90-1

BH90-4

BH94-5

ZONE II PIT

BH94-13A & B

FARO CREEK DIVERSION

BH94-14A & B

BH94-12A & B

NORTH FORK ROSE CREEK

A
03

LEGEND

- EXPLORATION BOREHOLE
- BOREHOLE LOCATION
- FAULT LOCATION
- GRAVEL ROAD
- TREED AREA
- RIVER
- CONTOUR
- SPOT HEIGHT

Base Map supplied by the Orthoshop, January 1991
Universal Transverse Mercator Projection
Contour Interval = 50 metres

0 250 500 750 1000 1250 FEET

1"=500'

NO	DESCRIPTION	DATE	APPR'D
	REVISIONS		

STEFFEN ROBERTSON & KIRSTEN
Consulting Engineers

ANVIL RANGE MINING CORPORATION

FARO GROUNDWATER

SITE PLAN

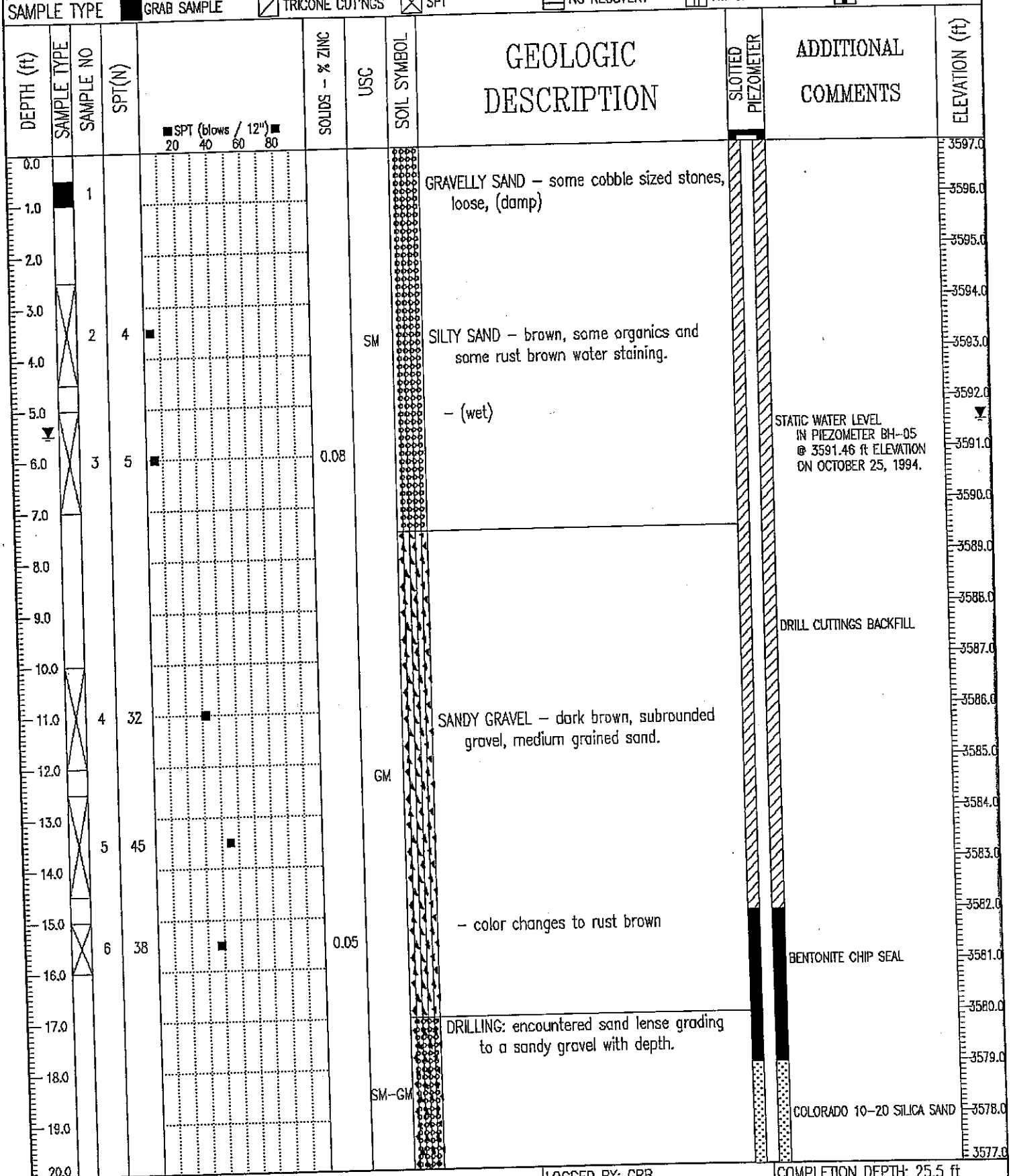
FILE REFERENCE	PROJECT NO.	DRAWING NO.	REV.
PLAN.DWG	A114101	2.1	0

APPENDIX A

BOREHOLE LOGS AND WELL INSTALLATION DETAILS

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-05
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 681 705 E 1 919 940	ELEVATION: 3597.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE



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LOGGED BY: GRB	COMPLETION DEPTH: 25.5 ft
REVIEWED BY: PMH	COMPLETE: 94/09/04
Fig. No: A-1	Page 1 of 2

94/12/21 11:00AM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-05
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 681 705 E 1 919 940	ELEVATION: 3597.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
20.0								– medium grained sandy gravel			3577.0
21.0		7	28	■	0.05	SM-GM				COLORADO 10-20 SILICA SAND	3576.0
22.0											3575.0
23.0								DRILLING: encountered cobbles			3574.0
24.0						GB				FALLING HEAD TEST RESULT k = 4.4E-04 cm/sec	3573.0
25.0											3572.0
26.0								END OF BOREHOLE: cobbles blocked the progress of drilling and SPT sampling			3571.0
27.0								MONITORING WELL INSTALLATION			3570.0
28.0								– 0.5 ft sand layer on bottom			3569.0
29.0								– 5 ft screen + 23.3 ft of 2" PVC pipe			3568.0
30.0								– 3 bags sand to 18 ft below grade			3567.0
31.0								– 1 bag bentonite chips to 15 ft			3566.0
32.0								– backfill borehole with drill cuttings			3565.0
33.0								– install friction (slip off) endcap			3564.0
34.0								– Top of PVC 3.3 ft above ground			3563.0
35.0											3562.0
36.0											3561.0
37.0											3560.0
38.0											3559.0
39.0											3558.0
40.0											3557.0

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LOGGED BY: GRB	COMPLETION DEPTH: 25.5 ft
REVIEWED BY: PMH	COMPLETE: 94/09/04
Fig. No: A-1	Page 2 of 2

94/12/21 11:01AM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-06
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 681 965 E 1 919 960	ELEVATION: 3602.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ⊠ SPT ▤ NO RECOVERY ▥ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS - % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
0.0											3602.0
1.0	■	1						GRAVELLY SAND – Brown, alluvial outwash – material, medium to coarse grained sand, medium grained gravel, loose, (damp).			3601.0
2.0											3600.0
3.0											3599.0
4.0						SM				DRILL CUTTINGS BACKFILL	3598.0
5.0	▨										3597.0
6.0		2	8	■	0.09			– some rust brown water staining.			3596.0
7.0											3595.0
8.0											3594.0
9.0											3593.0
10.0	▼					SW				STATIC WATER LEVEL IN PIEZOMETER BH-06 @ 3592.84 FT ELEVATION ON OCTOBER 25, 1994.	3592.0
11.0	▨	3	13	■	0.03			SAND – clean, grey, medium grained, some organics, native material.			3591.0
12.0											3590.0
13.0						CB		DRILLING: encountered cobble seam.		BENTONITE CHIP SEAL	3589.0
14.0						SM-SW		DRILLING: encountered interbedded gravelly sand and coarse grained sand.			3588.0
15.0											3587.0
16.0						SW		DRILLING: encountered sand lense.		COLORADO 10-20 SILICA SAND	3586.0
17.0								DRILLING: encountered dense sandy gravel.			3585.0
18.0						CB-GM				FALLING HEAD TEST RESULT k = 1.0E-04 cm/sec	3584.0
19.0											3583.0
20.0											3582.0

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LOGGED BY: GRB	COMPLETION DEPTH: 21.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/06
Fig. No: A-2	Page 1 of 2

94/12/21 11:02AM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-06
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 681 965 E 1 919 960	ELEVATION: 3602.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ⁄ TRICONE CUTTINGS ☒ SPT ▭ NO RECOVERY ▯ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
20.0						CB-GM				COLORADO 10-20 SILICA SAND	3582.0
21.0								END OF BOREHOLE: cobbles blocked the progress of drilling.			3581.0
22.0								MONITORING WELL INSTALLATION			3580.0
23.0								– 0.5 ft sand layer on bottom			3579.0
24.0								– 5 ft screen + 18.12 ft of 2" PVC pipe			3578.0
25.0								– 4 bags sand to 14 ft below grade			3577.0
26.0								– 1 bag bentonite chips to 11.5 ft			3576.0
27.0								– backfill borehole with drill cuttings			3575.0
28.0								– install friction (slip off) endcap			3574.0
29.0								– Top PVC 2.62 ft above ground			3573.0
30.0											3572.0
31.0											3571.0
32.0											3570.0
33.0											3569.0
34.0											3568.0
35.0											3567.0
36.0											3566.0
37.0											3565.0
38.0											3564.0
39.0											3563.0
40.0											3562.0

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LOGGED BY: GRB	COMPLETION DEPTH: 21.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/06
Fig. No: A-2	Page 2 of 2

94/12/21 01:21PM

FARO SEEPAGE INVESTIGATION
MONITORING WELL INSTALLATION
FARO MINE SITE, FARO, YUKON

ANVIL RANGE MINING CORPORATION
DRILL: CME 750 – HOLLOW STEM AUGERS
UTM ZONE: 8 N 22 682 260 E 1 920 080

BOREHOLE NO: BH–07
PROJECT NO: A114101
ELEVATION: 3623.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUT'NGS ☒ SPT ▤ NO RECOVERY ▥ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER A	SLOTTED PIEZOMETER B	ADDITIONAL COMMENTS	ELEVATION (ft)
0.0	■	1						GRAVELLY SAND – brown gravel–sand–silt mixture, loose, occasional cobble sized stones, (dry).				3623.0
1.0												3622.0
2.0												3621.0
3.0	▨	2	15	■	0.12	GM		– some organics, change in color to rust brown, (damp).				3620.0
4.0												3619.0
5.0											DRILL CUTTINGS BACKFILL	3618.0
6.0	▨	3	9	■	0.10			– angular to subrounded gravel, (moist).				3617.0
7.0								– (wet)				3616.0
8.0	▨	4	14	■				WEATHERED BEDROCK – looks like highly bedrock, phyllitic flakey gravel, rust brown, medium dense.				3615.0
9.0												3614.0
10.0												3613.0
11.0	▨	5,6	18	■	0.12							3612.0
12.0						BR					DRILL CUTTINGS (BH–07A) BENTONITE CHIP SEAL (BH–07B)	3611.0
13.0												3610.0
14.0	▨	7	28	■							STATIC WATER LEVEL IN PIEZOMETER BH–07A @ 3608.14 ft ELEVATION ON OCTOBER 25, 1994. STATIC WATER LEVEL IN PIEZOMETER BH–07B @ 3607.78 ft ELEVATION ON OCTOBER 25, 1994.	3609.0
15.0												3608.0
16.0	▨	8,9	21	■								3607.0
17.0								SAND – reddish brown, medium grained, medium dense.				3606.0
18.0						SW					DRILL CUTTINGS (BH–07A) COLORADO 10–20 SAND (BH–07B)	3605.0
19.0											FALLING HEAD TEST RESULT k = 1.2E–04 cm/sec	3604.0
20.0												3603.0

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LOGGED BY: GRB
REVIEWED BY: PMH
Fig. No: A–3

COMPLETION DEPTH: 30.0 ft
COMPLETE: 94/10/05

94/12/21 11:03AM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-07
MONITORING WELL INSTALLATION	DRILL: CME 750 - HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 260 E 1 920 080	ELEVATION: 3623.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ☒ SPT ▤ NO RECOVERY ▥ NW CASING ▥ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	■SPT (blows / 12")■ 20 40 60 80	SOLIDS - % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER A	SLOTTED PIEZOMETER B	ADDITIONAL COMMENTS	ELEVATION (ft)
20.0						SW						3603.0
21.0	☒	10,11	65	■				DRILLING: encountered cobble seam, or dense but highly weathered bedrock; air rotary triconed through seam, and cleaned out borehole with hollow stem auger.			BENTONITE CHIP SEAL (BH-07A) COLORADO 10-20 SAND (BH-07B)	3602.0
22.0												3601.0
23.0												3600.0
24.0											COLORADO 10-20 SAND (BH-07A)	3599.0
25.0	▨	12				BR-CB		TRICONE CUTTINGS: reddish brown, extremely weathered phyllitic bedrock.				3598.0
26.0												3597.0
27.0											RISING/FALLING HEAD TEST k = 1.8E-03 cm/sec	3596.0
28.0												3595.0
29.0												3594.0
30.0								END OF BOREHOLE: Could not progess any further with the air-rotary tricone or				3593.0
31.0								MONITORING WELL INSTALLATION BH-07A - 1.0 ft sand and slough on bottom - 5 ft screen + 26.56 ft of 2" PVC pipe - 3 bags sand to 22 ft below grade - 1 bag bentonite chips to 20 ft - backfill borehole with drill cuttings - install friction (slip off) endcap - Top of PVC 2.56 ft above ground				3592.0
32.0												3591.0
33.0												3590.0
34.0												3589.0
35.0								MONITORING WELL INSTALLATION BH-07B - 0.5 ft sand layer on bottom - 5 ft screen + 19.28 ft of 2" PVC pip - 4 bags sand to 14 ft below grade - 1 bag bentonite chips to 11 ft - backfill borehole with drill cuttings - install friction (slip off) endcap - Top of PVC 3.28 ft above ground				3588.0
36.0												3587.0
37.0												3586.0
38.0												3585.0
39.0												3584.0
40.0												3583.0

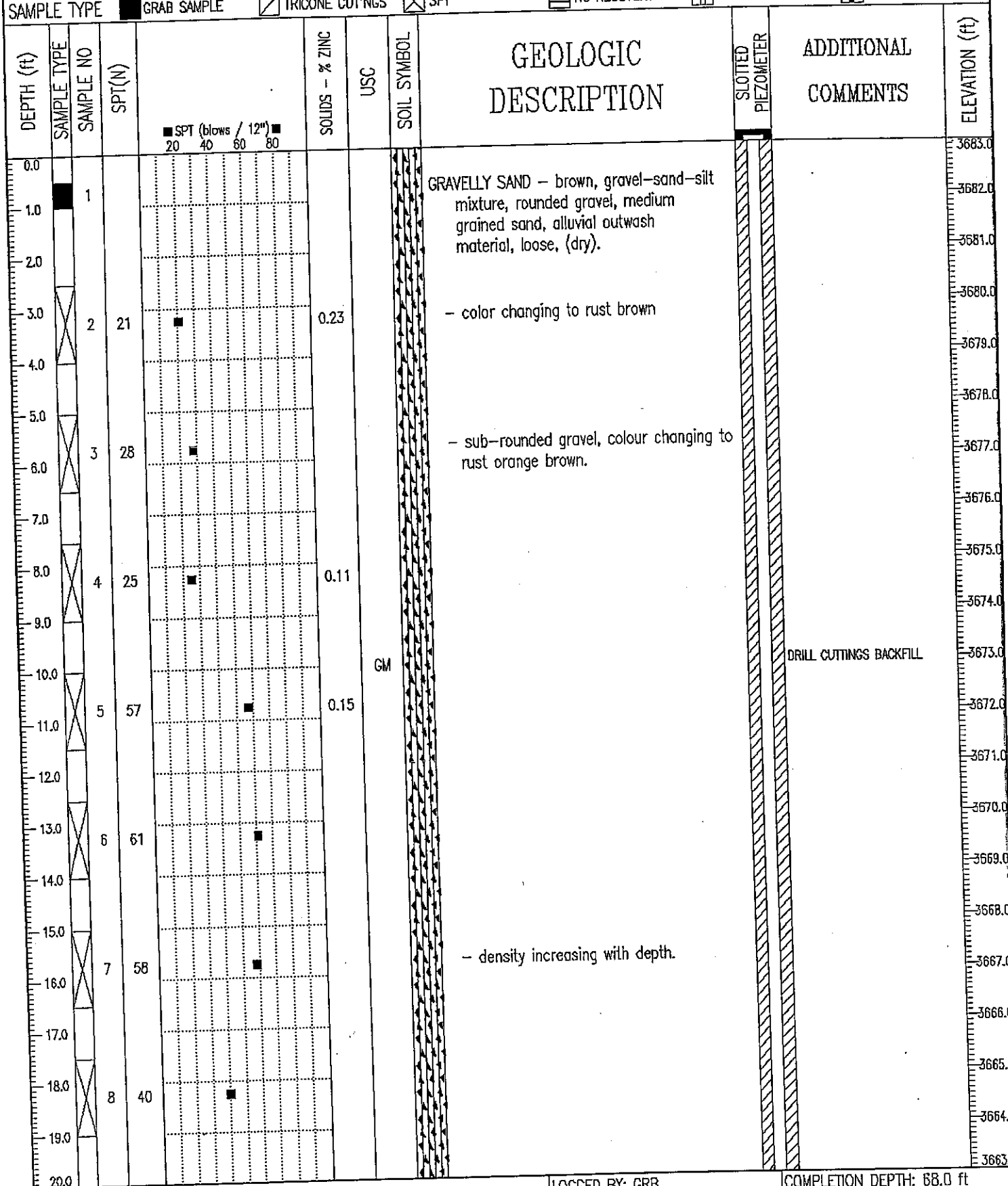
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LOGGED BY: GRB	COMPLETION DEPTH: 30.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/05
Fig. No: A-3	Page 2 of 2

94/12/21 11:04AM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-08
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 410 E 1 920 120	ELEVATION: 3683.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE



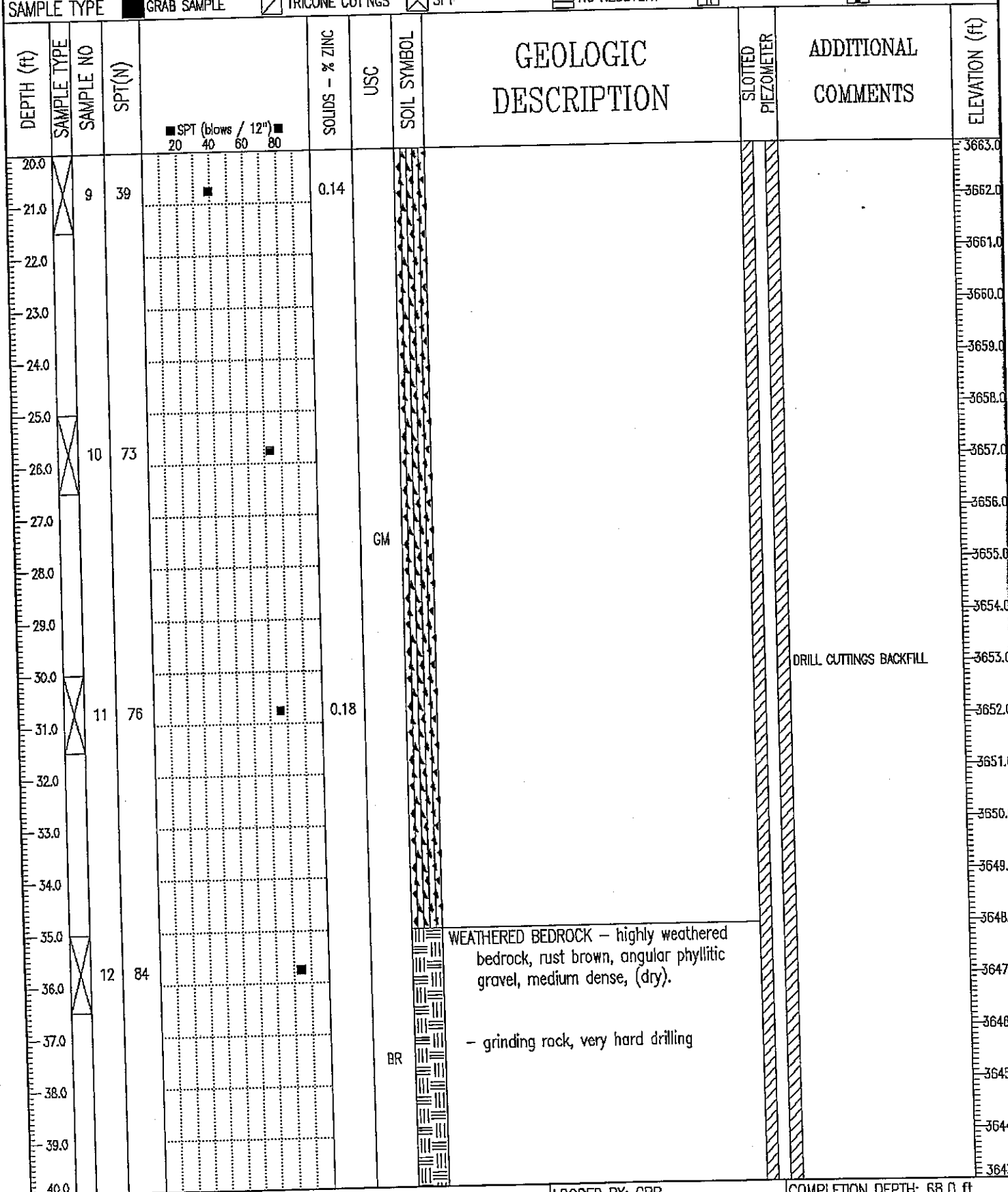
LOGGED BY: GRB	COMPLETION DEPTH: 68.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/01
Fig. No: A-4	Page 1 of 4

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94/12/21 11:06AM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-08
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 410 E 1 920 120	ELEVATION: 3683.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE



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LOGGED BY: GRB	COMPLETION DEPTH: 68.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/01
Fig. No: A-4	Page 2 of 4

94/12/21 01:22PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-08
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 410 E 1 920 120	ELEVATION: 3683.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ☒ SPT ▤ NO RECOVERY ▥ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
40.0	☒	13,14	100	■	■			– colour changes to light brown.			3643.0
41.0											3642.0
42.0											3641.0
43.0											3640.0
44.0											3639.0
45.0	☒	15,16	49	■				– colour changes to light grey.		DRILL CUTTINGS BACKFILL	3638.0
46.0											3637.0
47.0								– drilling is a bit easier.			3636.0
48.0											3635.0
49.0											3634.0
50.0	☒	17,18	20	■		BR					3633.0
51.0								– (damp)		STATIC WATER LEVEL IN PIEZOMETER BH-08 @ 3631.14 ft ELEVATION ON NOVEMBER 22, 1994.	3632.0
52.0	▼							– encountered water during drilling.			3631.0
53.0											3630.0
54.0										BENTONITIC GROUT SEAL	3629.0
55.0	☒	19,20	80	■				– (wet)			3628.0
56.0											3627.0
57.0								– grinding rock, very hard drilling			3626.0
58.0										COLORADO 10-20 SILICA SAND	3625.0
59.0											3624.0
60.0											3623.0

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LOGGED BY: GRB	COMPLETION DEPTH: 68.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/01
Fig. No: A-4	Page 3 of 4

94/12/21 01:23PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-08
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 410 E 1 920 120	ELEVATION: 3683.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
60.0											3623.0
61.0						BR					3622.0
62.0								DRILLING: broke from dense hardpan to softer sandy silt, low to medium plasticity, light grey, possible fault gouge zone.		COLORADO 10–20 SILICA SAND	3621.0
63.0											3620.0
64.0						ML					3619.0
65.0											3618.0
66.0		21,22	100					WEATHERED BEDROCK – very dense, highly weathered, light grey, phyllitic bedrock, incompetent.		RISING HEAD TEST RESULT k = 1.6E-06 cm/sec	3617.0
67.0						BR					3616.0
68.0								END OF BOREHOLE: attained design depth. MONITORING WELL INSTALLATION – 0.5 ft sand and slough at bottom – 5 ft screen + 65.09 ft 2" PVC pipe – 4 bags sand to 56 ft below grade – mixed 0.75 bags grout + 10 gal. water – grouted to 53.0 ft below grade – backfill borehole with drill cuttings – installed friction (slip off) endcap – Top of PVC 2.59 ft above ground			3615.0
69.0											3614.0
70.0											3613.0
71.0											3612.0
72.0											3611.0
73.0											3610.0
74.0											3609.0
75.0											3608.0
76.0											3607.0
77.0											3606.0
78.0											3605.0
79.0											3604.0
80.0											3603.0

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Consulting Engineers

LOGGED BY: GRB
REVIEWED BY: PMH
Fig. No: A-4

COMPLETION DEPTH: 68.0 ft
COMPLETE: 94/10/01

94/12/21 01:24PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-09
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 540 E 1 919 985	ELEVATION: 3744.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

DEPTH (ft)	SAMPLE TYPE	▲RECOVERY (%)▲ 20 40 60 80 / ●RQD (%)● 20 40 60 80	SOIL SYMBOL	GEOLOGIC DESCRIPTION	DEGREE OF BREAKAGE	PACKER TEST	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
0.0				TRICONED AND CASED TO 48 FT				BENTONITIC GROUT SEAL	3744.0
5.0									3739.0
10.0									3734.0
15.0									3729.0
20.0									3724.0
25.0									3719.0
30.0									3714.0
35.0									3709.0
40.0									3704.0
45.0									3699.0
50.0				HORNBLENDE BIOTITE DIORITE – Highly weathered, orange rust colored (oxidized) (originally grey color) VERY BROKEN UP CORE, surface water would have no trouble perculating through this rock type. A LOT OF MISSING CORE indicative of lots of sand and clay. CHUNKS OF BEDROCK themselves are fairly hard but so weathered that they can be pried apart by hand.					3694.0
55.0					B+				3689.0
60.0									3684.0
65.0									3679.0
70.0									3674.0
75.0					B–				3669.0

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Consulting Engineers

LOGGED BY: GRB	COMPLETION DEPTH: 180.0 ft
REVIEWED BY: PMH	COMPLETE: 94/11/17
Fig. No: A-8	Page 1 of 3

94/12/21 01:00PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-09
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 540 E 1 919 985	ELEVATION: 3744.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

DEPTH (ft)	SAMPLE TYPE	▲RECOVERY (%)▲ 20 40 60 80 / ●RQD (%)● 20 40 60 80	SOIL SYMBOL	GEOLOGIC DESCRIPTION	DEGREE OF BREAKAGE	PACKER TEST	SLOTTED PIEZOMETER	ADDITIONAL COMMENTS	ELEVATION (ft)
75.0				HORNBLENDE BIOTITE DIORITE					3669.0
80.0					B–				3664.0
85.0									3659.0
90.0					B				3654.0
95.0								BENTONITIC GROUT SEAL	3649.0
100.0				GRADING OUT OF THE OXIDIZED ZONE – colour changing from orange to creamy grey.	A				3644.0
105.0									3639.0
110.0					B–			STATIC WATER LEVEL IN PIEZOMETER BH-09 @ 3632.74 ft ELEVATION ON NOVEMBER 20, 1994.	3634.0
115.0				FAULT ZONE – MISSING ENTIRE LENGTH OF CORE	A–				3629.0
120.0				CHLORITIC BIOTITE SCHIST – dark olive green to black colour, some andulusite banding. NOT VERY MANY JOINTS; most dip at 50 degrees to the horizontal, are clean, with some crushed core on the surface, have a narrow separation, and are only slightly rough. – HOWEVER, HIGHLY FRACTURED AND BROKEN UP BY DRILLING; most of the fractures or drillbreaks are along biotite cleavage planes. – RECOVERY & RQD are low but improve slightly with depth.	B–				3624.0
125.0									3619.0
130.0					B				3614.0
135.0								COLORADO 10-20 SILICA SAND	3609.0
140.0					C–				3604.0
145.0					C–				3599.0
150.0					B+				3594.0

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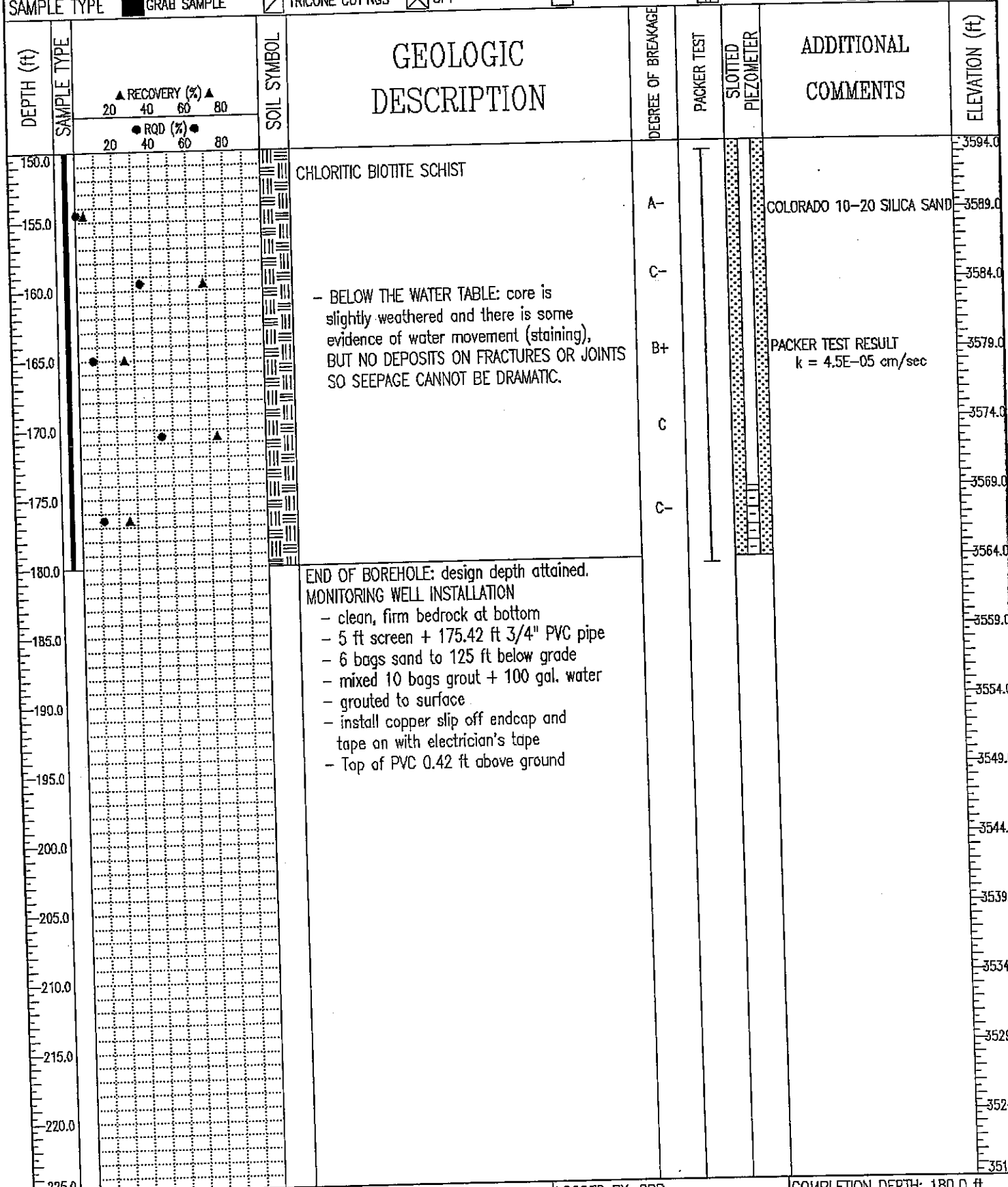
LOGGED BY: GRB | REVIEWED BY: PMH | Fig. No: A-8

COMPLETION DEPTH: 180.0 ft | COMPLETE: 94/11/17

94/12/21 01:02PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-09
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 540 E 1 919 985	ELEVATION: 3744.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

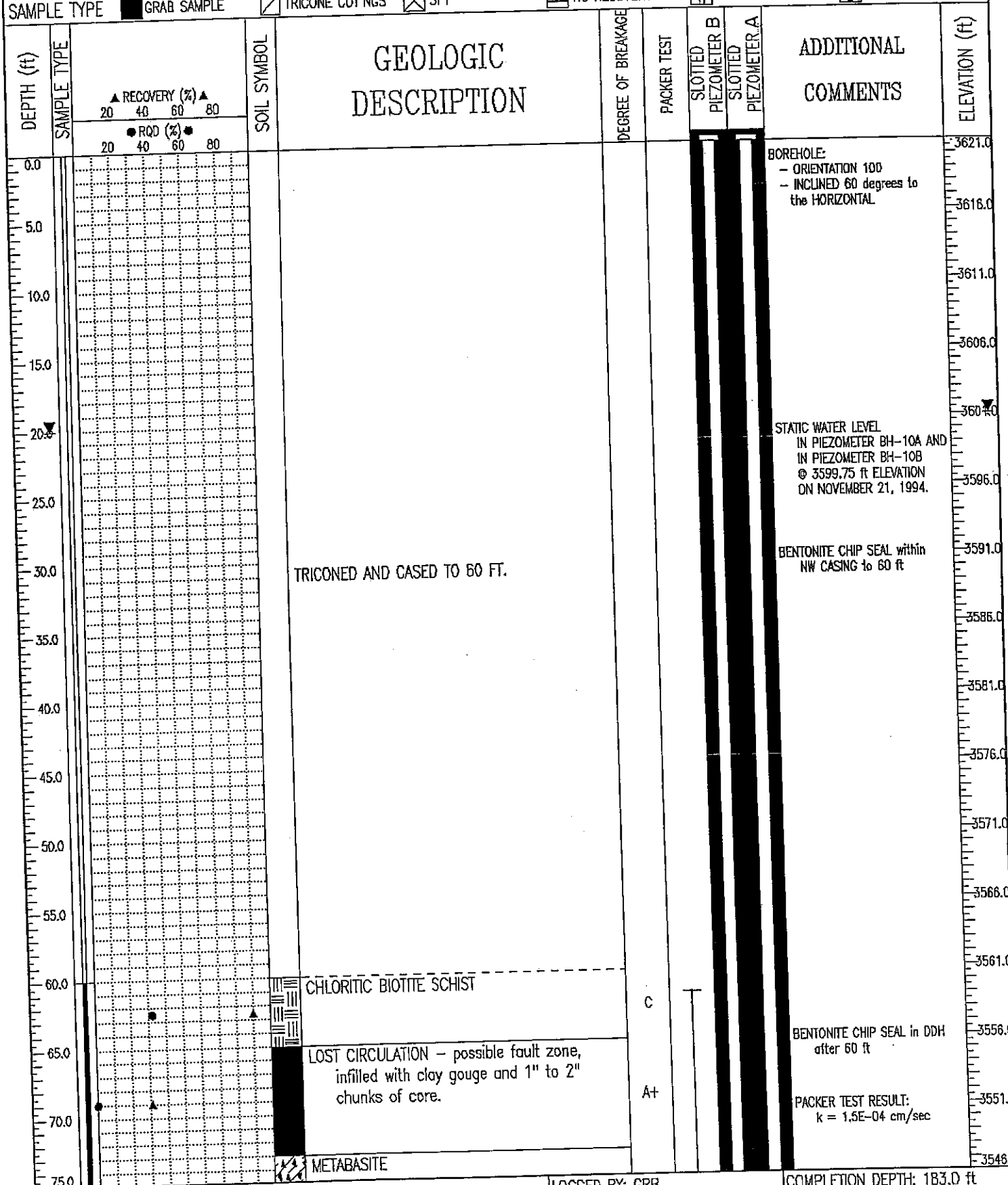


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB REVIEWED BY: PMH Fig. No: A–8	COMPLETION DEPTH: 180.0 ft COMPLETE: 94/11/17 Page 3 of 3

94/12/21 01:03PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-10
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 240 E 1 919 950	ELEVATION: 3621.00 (ft)

SAMPLE TYPE: GRAB SAMPLE; TRICONE CUTTINGS; SPT; NO RECOVERY; NW CASING; NQ CORE



STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 183.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/20
	Fig. No: A-9	Page 1 of 3

94/12/21 01:04PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-10
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 240 E 1 919 950	ELEVATION: 3621.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

DEPTH (ft)	SAMPLE TYPE	▲ RECOVERY (%) ▲ 20 40 60 80 / ● RQD (%) ● 20 40 60 80	SOIL SYMBOL	GEOLOGIC DESCRIPTION	DEGREE OF BREAKAGE	PACKER TEST	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
75.0				METABASITE – pale green, weakly banded, medium hardness. – FAIRLY BROKEN UP due to drillbreakage; any JOINTS are infilled w/fault gouge.	C+				BENTONITE CHIP SEAL	3546.0
80.0				CHLORITIC BIOTITE SCHIST						3541.0
85.0				METABASITE	B+				PACKER TEST RESULT: k = 1.9E-04 cm/sec	3536.0
90.0				NON-EXISTENT – 1/2" chunks of METABASITE and QUARTZ with some fault gouge.	B					3531.0
95.0				CHLORITIC BIOTITE SCHIST – dark green to to medium grey, well defined biotite cleavage, some andulusite banding, contains very thin anastomosing laminae of white to light green mica. – NOT MANY JOINTS, and any that exist are narrow, have medium roughness, and are either infilled with or have clay gouge and crushed core on their surfaces. – MOSTLY FRACTURES/DRILLBREAKS that are clean and tight occuring along biotite cleavage, some are wider and a bit worn by drilling. – LOST CIRCULATION at 111 ft	B+					3526.0
100.0					B				COLORADO 10-20 SILICA SAND	3521.0
105.0					C–					3516.0
110.0					B+				PACKER TEST RESULT: k = 2.0E-04 cm/sec	3511.0
115.0					C+					3506.0
120.0					D					3501.0
125.0					D+					3496.0
130.0					B+				BENTONITE CHIP SEAL	3491.0
135.0					C–					3486.0
140.0					C–				PACKER TEST RESULT: k = 1.22E-04 cm/sec	3481.0
145.0				– LOST CIRCULATION at 145 ft	C–				COLORADO 10-20 SILICA SAND	3476.0
150.0										3471.0

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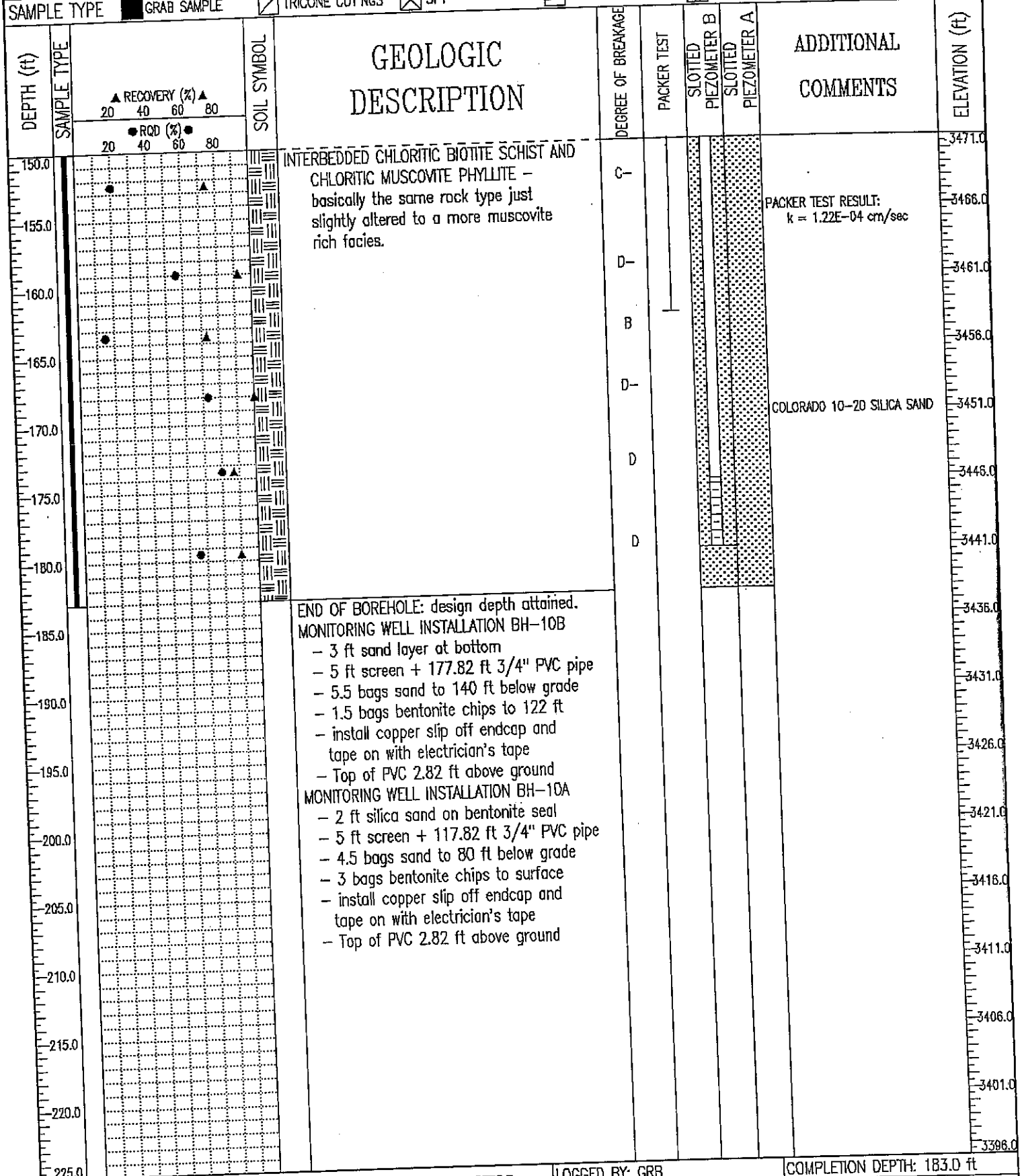
LOGGED BY: GRB
REVIEWED BY: PMH
Fig. No: A-9

COMPLETION DEPTH: 183.0 ft
COMPLETE: 94/10/20

94/12/21 01:05PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-10
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 240 E 1 919 950	ELEVATION: 3621.00 (ft)

SAMPLE TYPE: GRAB SAMPLE; TRICONE CUTTINGS; SPT; NO RECOVERY; NW CASING; NQ CORE

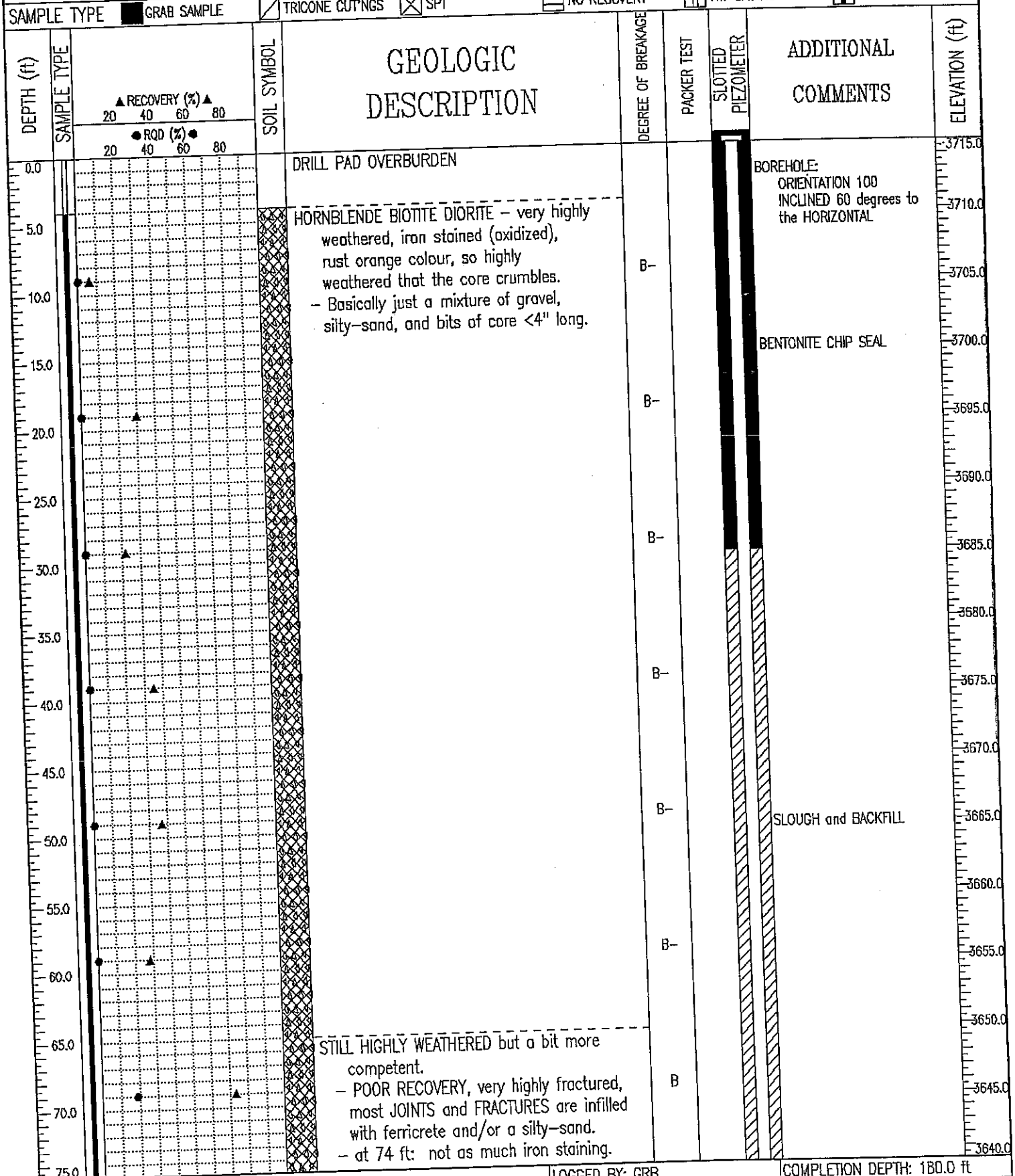


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 183.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/20
	Fig. No: A-9	Page 3 of 3

94/12/21 01:06PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-11
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 580 E 1 920 305	ELEVATION: 3715.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

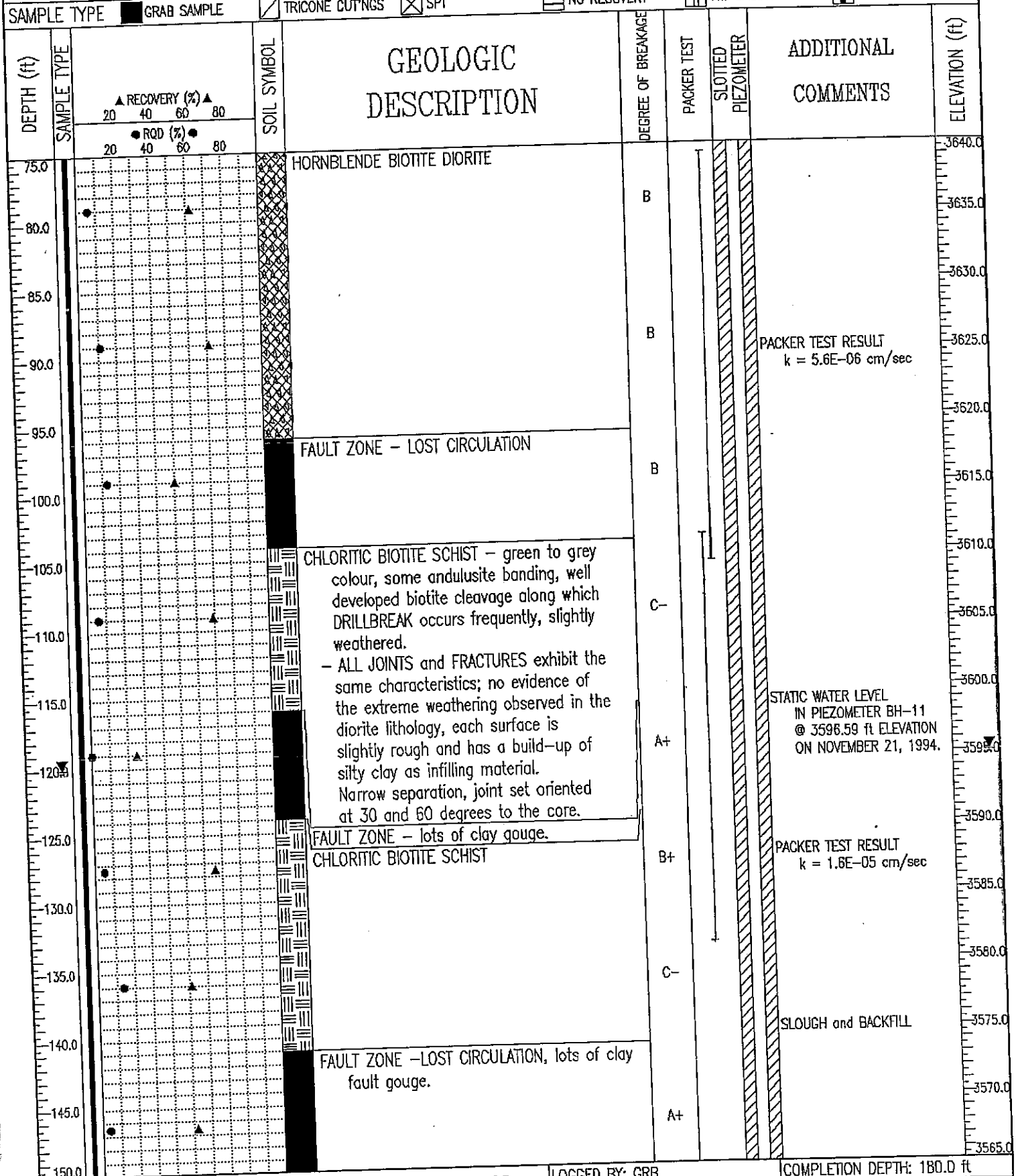


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 180.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/12
	Fig. No: A-10	Page 1 of 3

94/12/21 01:07PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-11
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 580 E 1 920 305	ELEVATION: 3715.00 (ft)

SAMPLE TYPE: GRAB SAMPLE; TRICONE CUTTINGS; SPT; NO RECOVERY; NW CASING; NQ CORE

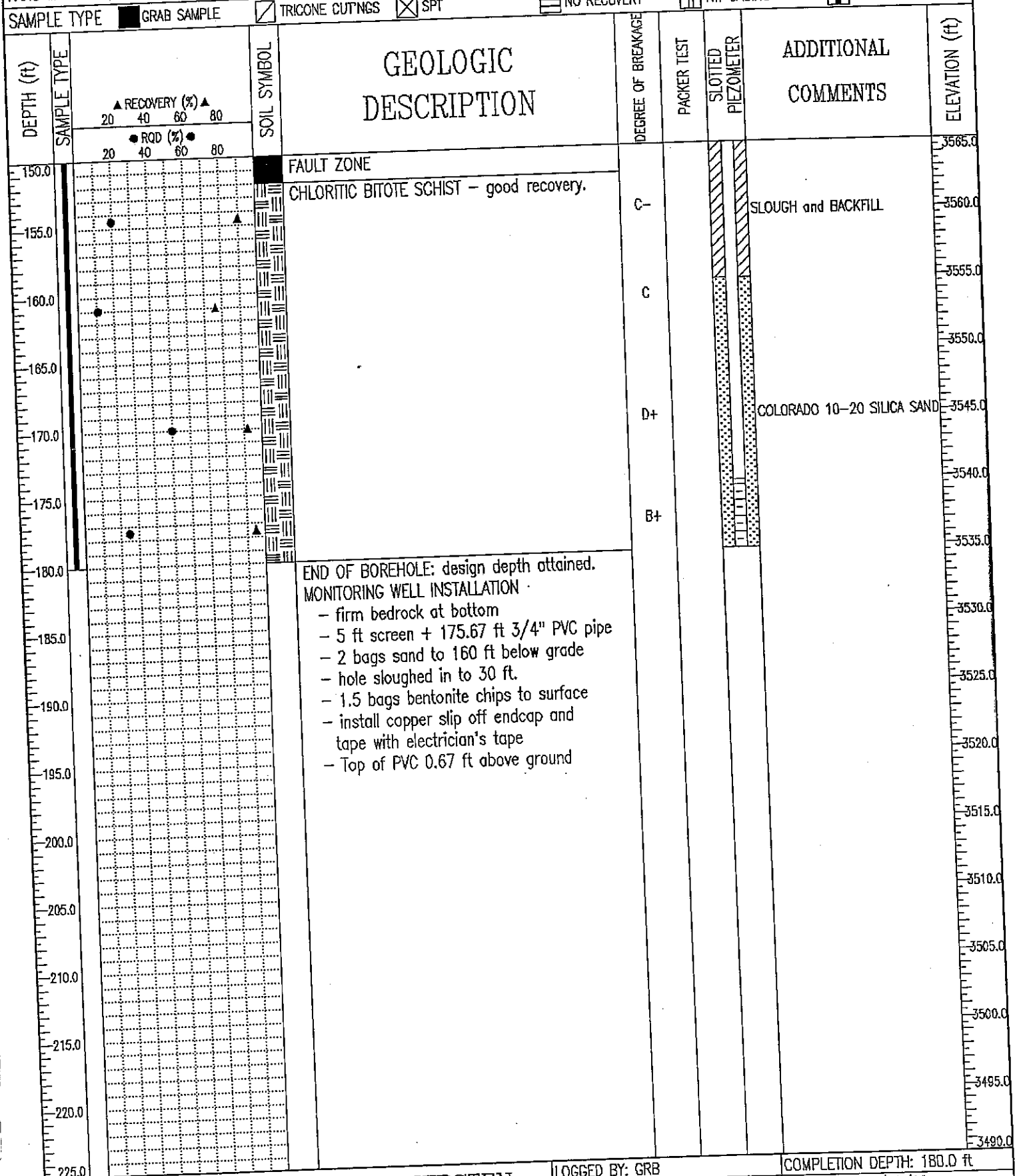


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 180.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/12
	Fig. No: A-10	Page 2 of 3

94/12/21 01:08PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH–11
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 682 580 E 1 920 305	ELEVATION: 3715.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ⊠ SPT ▤ NO RECOVERY ▥ NW CASING ▮ NQ CORE



STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 180.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/12
	Fig. No: A–10	Page 3 of 3

94/12/21 01:09PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-12
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 950 E 1 922 150	ELEVATION: 3795.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUT'NGS ⊠ SPT ▤ NO RECOVERY ▥ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS - % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
0.0												3795.0
1.0											BENTONITE CHIP SEAL	3794.0
2.0	■	1				SM		GRAVELLY SAND – light brown, medium grained, loose, (dry).				3793.0
3.0												3792.0
4.0	▼											3791.0
5.0	⊠	2	100					WEATHERED BEDROCK – very dense, light grey weathered bedrock, (wet).			STATIC WATER LEVEL IN PIEZOMETER BH-12B @ 3790.77 ft ELEVATION ON NOVEMBER 19, 1994. STATIC WATER LEVEL IN PIEZOMETER BH-12A @ 3790.40 ft ELEVATION ON NOVEMBER 19, 1994.	3790.0
6.0												3789.0
7.0						BR		– not consolidated enough to tricone.			COLORADO 10-20 SILICA SAND	3788.0
8.0	⊠	3	100								RISING/FALLING HEAD TEST k = 5.3E-04 cm/sec	3787.0
9.0												3786.0
10.0								BEDROCK – consolidated. – begin air-rotary triconing.				3785.0
11.0												3784.0
12.0												3783.0
13.0												3782.0
14.0												3781.0
15.0						BR					BENTONITE CHIP SEAL	3780.0
16.0												3779.0
17.0												3778.0
18.0	▨	4						– soft, phyllitic schist.				3777.0
19.0											COLORADO 10-20 SILICA SAND	3776.0
20.0												3775.0

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LOGGED BY: GRB	COMPLETION DEPTH: 27.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/08
Fig. No: A-5	Page 1 of 2

94/12/21 01:25PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-12
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 950 E 1 922 150	ELEVATION: 3795.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ⊠ SPT ▤ NO RECOVERY ▥ NW CASING ▥ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	■ SPT (blows / 12") ■ 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
20.0												3775.0
21.0											COLORADO 10–20 SILICA SAND	3774.0
22.0												3773.0
23.0	▨	5				BR		– soft, phyllitic schist.				3772.0
24.0											RISING HEAD TEST RESULT k = 2.4E–06 cm/sec	3771.0
25.0												3770.0
26.0								END OF BOREHOLE: design depth of 15 ft into bedrock attained.				3769.0
27.0								MONITORING WELL INSTALLATION BH–12B – firm bedrock at bottom – 5 ft screen + 24.56 ft 2" PVC pipe – 2.5 bags sand to 18 ft below grade – 1.5 bags bentonite chips to 10.5 ft – install friction (slip off) endcap – Top of PVC 2.56 ft above ground				3768.0
28.0												3767.0
29.0												3766.0
30.0								MONITORING WELL INSTALLATION BH–12A – 0.5 ft silica sand on bentonite seal – 5 ft screen + 7.19 ft 2" PVC pipe – 2.5 bags sand to 3 ft below grade – 0.5 bags bentonite chips to surface – install friction (slip off) endcap – Top of PVC 2.19 ft above ground				3765.0
31.0												3764.0
32.0												3763.0
33.0												3762.0
34.0												3761.0
35.0												3760.0
36.0												3759.0
37.0												3758.0
38.0												3757.0
39.0												3756.0
40.0												3755.0

STEFFEN, ROBERTSON AND KIRSTEN
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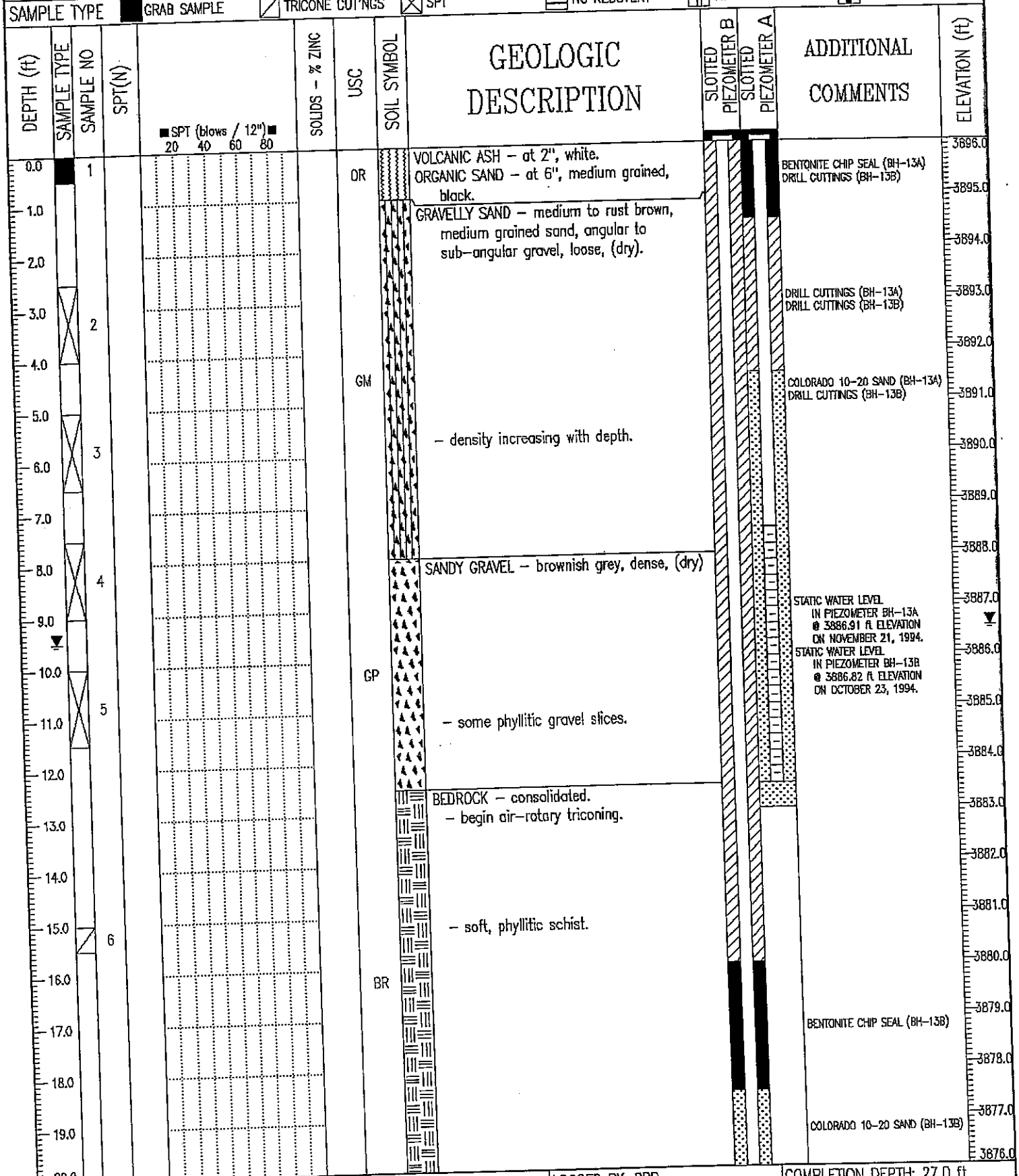
LOGGED BY: GRB
REVIEWED BY: PMH
Fig. No: A–5

COMPLETION DEPTH: 27.0 ft
COMPLETE: 94/10/08

94/12/21 01:26PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-13
MONITORING WELL INSTALLATION	DRILL: CME 750 - HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 684 830 E 1 922 060	ELEVATION: 3896.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE



STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB REVIEWED BY: PMH Fig. No: A-6	COMPLETION DEPTH: 27.0 ft COMPLETE: 94/09/30 Page 1 of 2

94/12/21 01:27PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-13
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 684 830 E 1 922 060	ELEVATION: 3896.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ⊠ SPT ▤ NO RECOVERY ▥ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
20.0												3876.0
21.0												3875.0
22.0												3874.0
23.0	▨	7				BR		– soft, phyllitic schist.			COLORADO 10-20 SAND (BH-13B)	3873.0
24.0												3872.0
25.0												3871.0
26.0												3870.0
27.0								END OF BOREHOLE: design depth of 15 ft into bedrock attained.				3869.0
28.0								MONITORING WELL INSTALLATION BH-13B – firm bedrock at bottom – 5 ft screen + 24.23 ft 2" PVC pipe – 3.5 bags sand to 18.5 ft below grade – mixed 0.75 bags grout + 10 gal. water – grouted to 16.0 ft below grade – backfill borehole with drill cuttings – install friction (slip off) endcap – Top of PVC 2.23 ft above ground				3868.0
29.0												3867.0
30.0												3866.0
31.0												3865.0
32.0								MONITORING WELL INSTALLATION BH-13A – 0.5 ft sand layer on bottom – 5 ft screen + 8.84 ft 2" PVC pipe – 2.5 bags sand to 4.5 ft below grade – backfill with drill cuttings to 1.5 ft – mixed 0.5 bags grout + 7 gal. water – grouted to surface – install friction (slip off) endcap – Top of PVC 1.34 ft above ground				3864.0
33.0												3863.0
34.0												3862.0
35.0												3861.0
36.0												3860.0
37.0												3859.0
38.0												3858.0
39.0												3857.0
40.0												3856.0

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LOGGED BY: GRB	COMPLETION DEPTH: 27.0 ft
REVIEWED BY: PMH	COMPLETE: 94/09/30
Fig. No: A-6	Page 2 of 2

94/12/21 01:28PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-14
MONITORING WELL INSTALLATION	DRILL: CME 750 - HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 155 E 1 921 510	ELEVATION: 3797.00 (ft)

SAMPLE TYPE: GRAB SAMPLE; TRICONE CUTTINGS; SPT; NO RECOVERY; NW CASING; NQ CORE

DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS - % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
0.0						OR		ORGANIC MATTER - to 2"				3797.0
1.0		1						VOLCANIC ASH - to 6"				3796.0
2.0								GRAVELLY SAND - dark brown, medium grained loose to medium density, (moist).				3795.0
3.0		2				GM						3794.0
4.0								- changing colour to light brown.				3793.0
5.0		3						- (dry)			DRILL CUTTINGS BACKFILL	3792.0
6.0								WEATHERED BEDROCK				3791.0
7.0												3790.0
8.0		4	100									3789.0
9.0											STATIC WATER LEVEL IN PIEZOMETER BH-14A @ 3786.60 ft ELEVATION ON NOVEMBER 19, 1994.	3788.0
10.0											STATIC WATER LEVEL IN PIEZOMETER BH-14B @ 3785.09 ft ELEVATION ON NOVEMBER 19, 1994.	3787.0
11.0												3786.0
12.0											BENTONITE CHIP SEAL	3785.0
13.0						BR						3784.0
14.0												3783.0
15.0		5	100					- weathered bedrock, not consolidated enough to air-rotary tricone.				3782.0
16.0											COLORADO 10-20 SILICA SAND	3781.0
17.0												3780.0
18.0												3779.0
19.0											RISING HEAD TEST RESULT k = 2.2E-05 cm/sec	3778.0
20.0												3777.0

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Consulting Engineers

LOGGED BY: GRB
REVIEWED BY: PMH
Fig. No: A-7

COMPLETION DEPTH: 30.5 ft
COMPLETE: 94/10/07

94/12/21 01:29PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-14
MONITORING WELL INSTALLATION	DRILL: CME 750 – HOLLOW STEM AUGERS	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 155 E 1 921 510	ELEVATION: 3797.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ⧸ TRICONE CUTTINGS ☒ SPT ☰ NO RECOVERY ▥ NW CASING ▮ NQ CORE

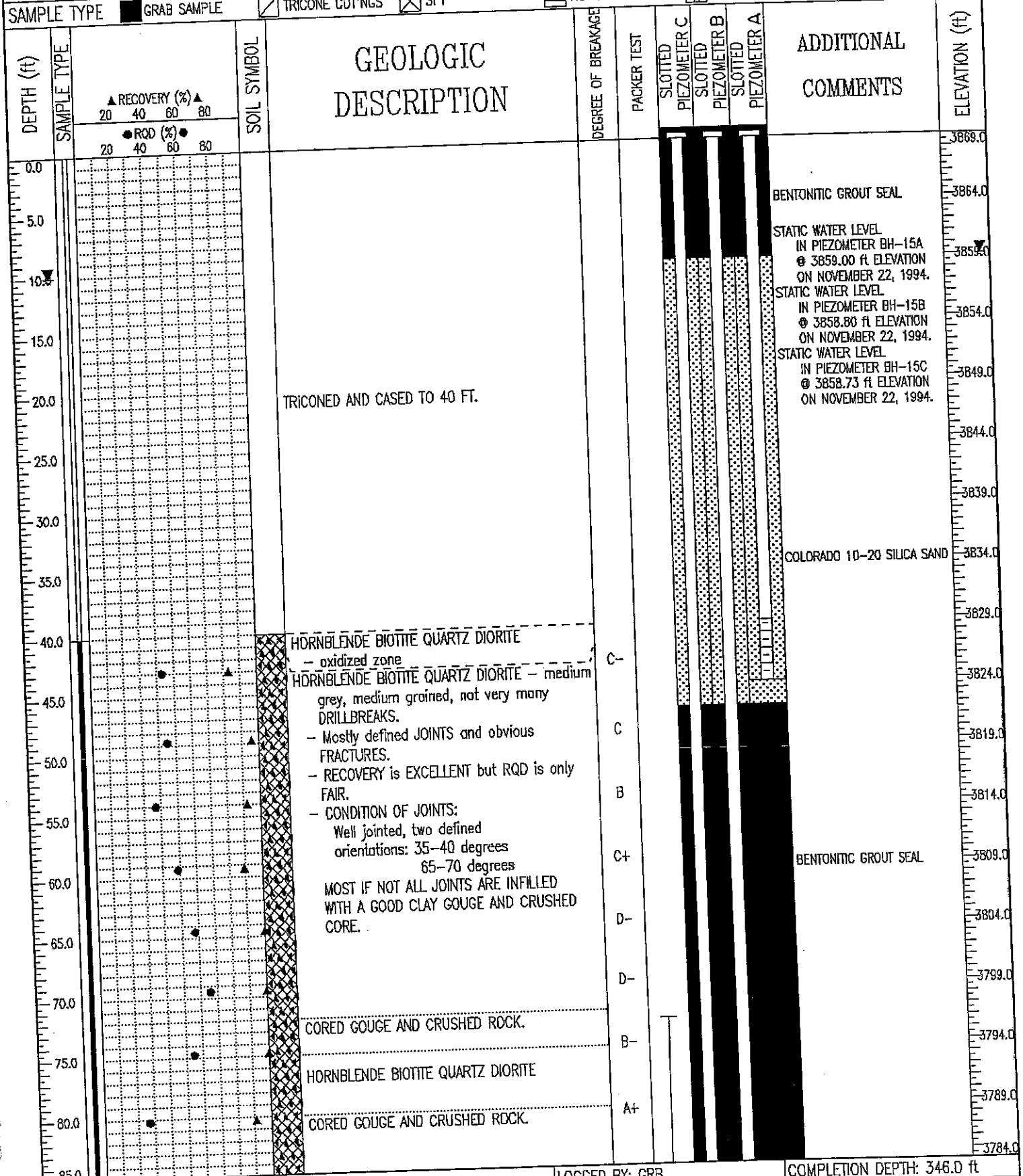
DEPTH (ft)	SAMPLE TYPE	SAMPLE NO	SPT(N)	SPT (blows / 12") 20 40 60 80	SOLIDS – % ZINC	USC	SOIL SYMBOL	GEOLOGIC DESCRIPTION	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
20.0								BEDROCK – consolidated – begin air–rotary triconing.			COLORADO 10–20 SILICA SAND	3777.0
21.0												3776.0
22.0											BENTONITIC CHIP SEAL	3775.0
23.0												3774.0
24.0												3773.0
25.0	⧸	6				BR		– hard quartz diorite			COLORADO 10–20 SILICA SAND	3772.0
26.0												3771.0
27.0												3770.0
28.0											RISING HEAD TEST RESULT k = 1.1E–05 cm/sec	3769.0
29.0												3768.0
30.0												3767.0
31.0								END OF BOREHOLE: design depth of 30 ft attained.				3766.0
32.0								MONITORING WELL INSTALLATION BH–14B – firm bedrock at bottom – 5 ft screen + 28.22 ft 2" PVC pipe – 3 bags sand to 23.5 ft below grade – 1 bag bentonite chips to 21 ft – install friction (slip off) endcap – Top of PVC 2.72 ft above ground				3765.0
33.0												3764.0
34.0												3763.0
35.0												3762.0
36.0												3761.0
37.0												3760.0
38.0												3759.0
39.0												3758.0
40.0								MONITORING WELL INSTALLATION BH–14A – 0.5 ft silica sand on bentonite seal – 5 ft screen + 16.12 ft 2" PVC pipe – 4 bags sand to 13.5 ft below grade – 1 bag bentonite chips to 10.5 ft – backfill borehole with drill cuttings – install flush threaded endcap – Top of PVC 0.62 ft above ground				3757.0

STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB REVIEWED BY: PMH Fig. No: A–7	COMPLETION DEPTH: 30.5 ft COMPLETE: 94/10/07 Page 2 of 2

94/12/21 01:30PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-15
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 - NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 915 E 1 919 980	ELEVATION: 3869.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

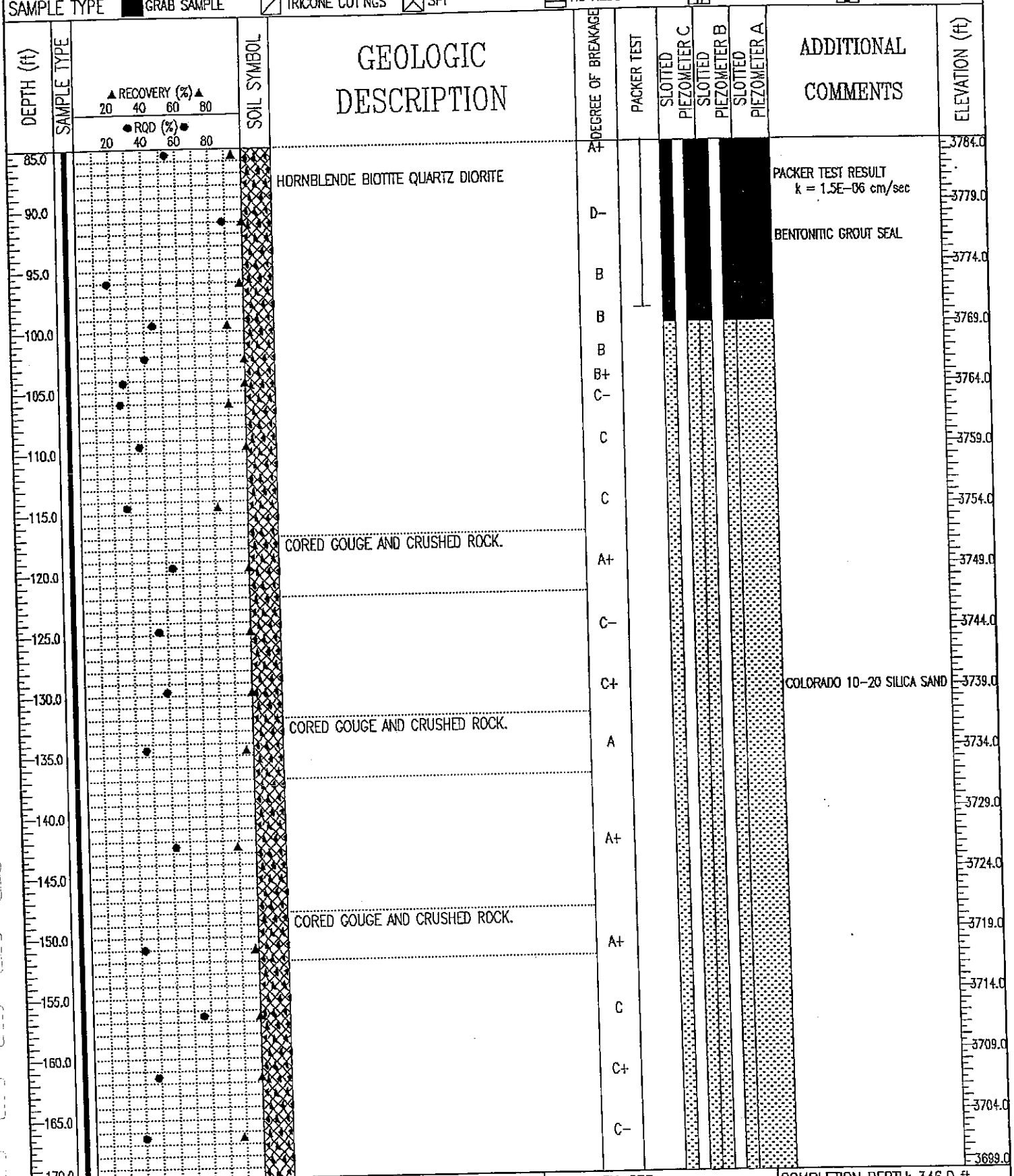


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 346.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/30
	Fig. No: A-11	Page 1 of 5

94/12/21 01:10PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-15
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 915 E 1 919 980	ELEVATION: 3869.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

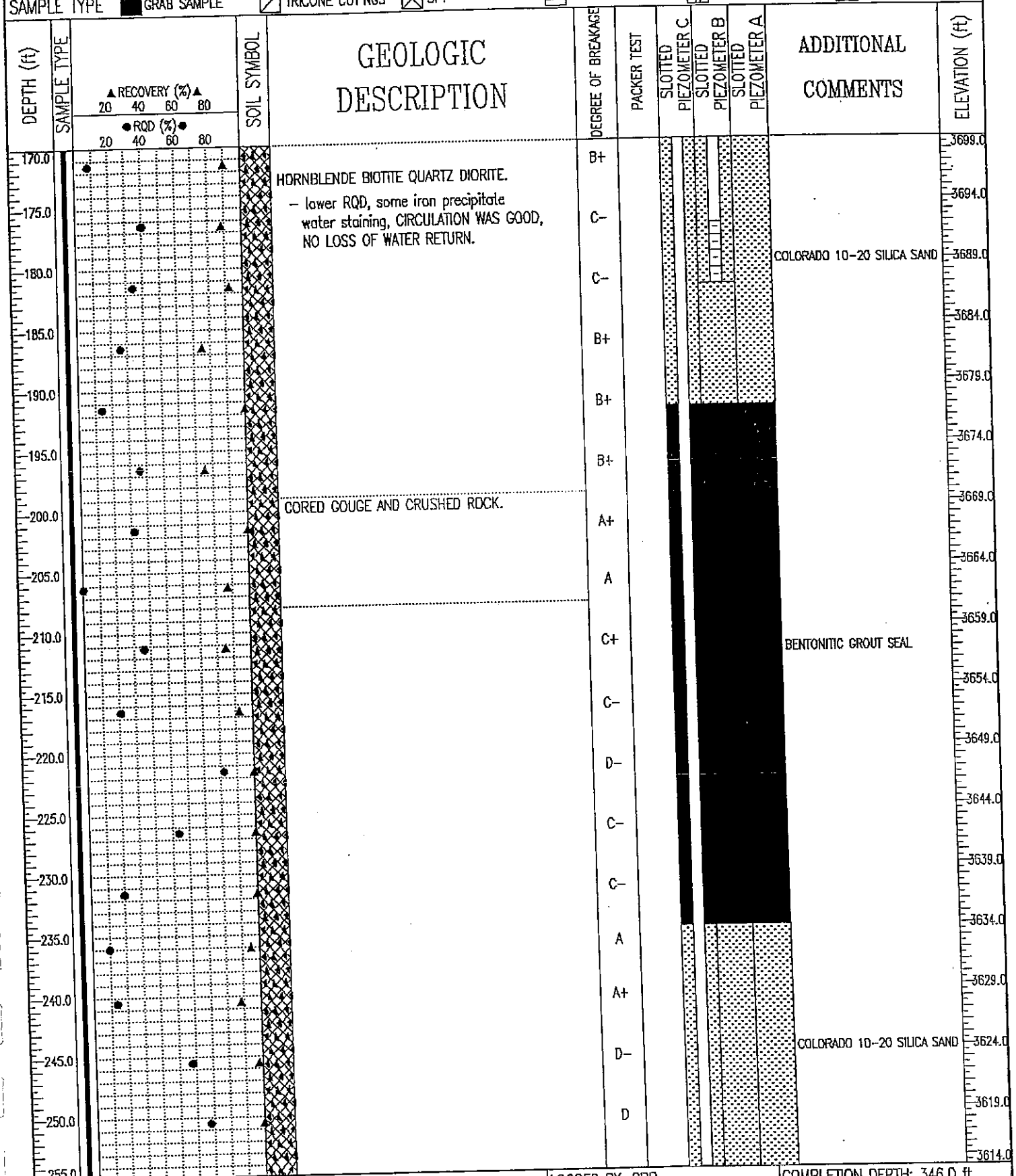


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB REVIEWED BY: PMH Fig. No: A-11	COMPLETION DEPTH: 346.0 ft COMPLETE: 94/10/30 Page 2 of 5

94/12/21 01:11PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-15
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 915 E 1 919 980	ELEVATION: 3869.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE

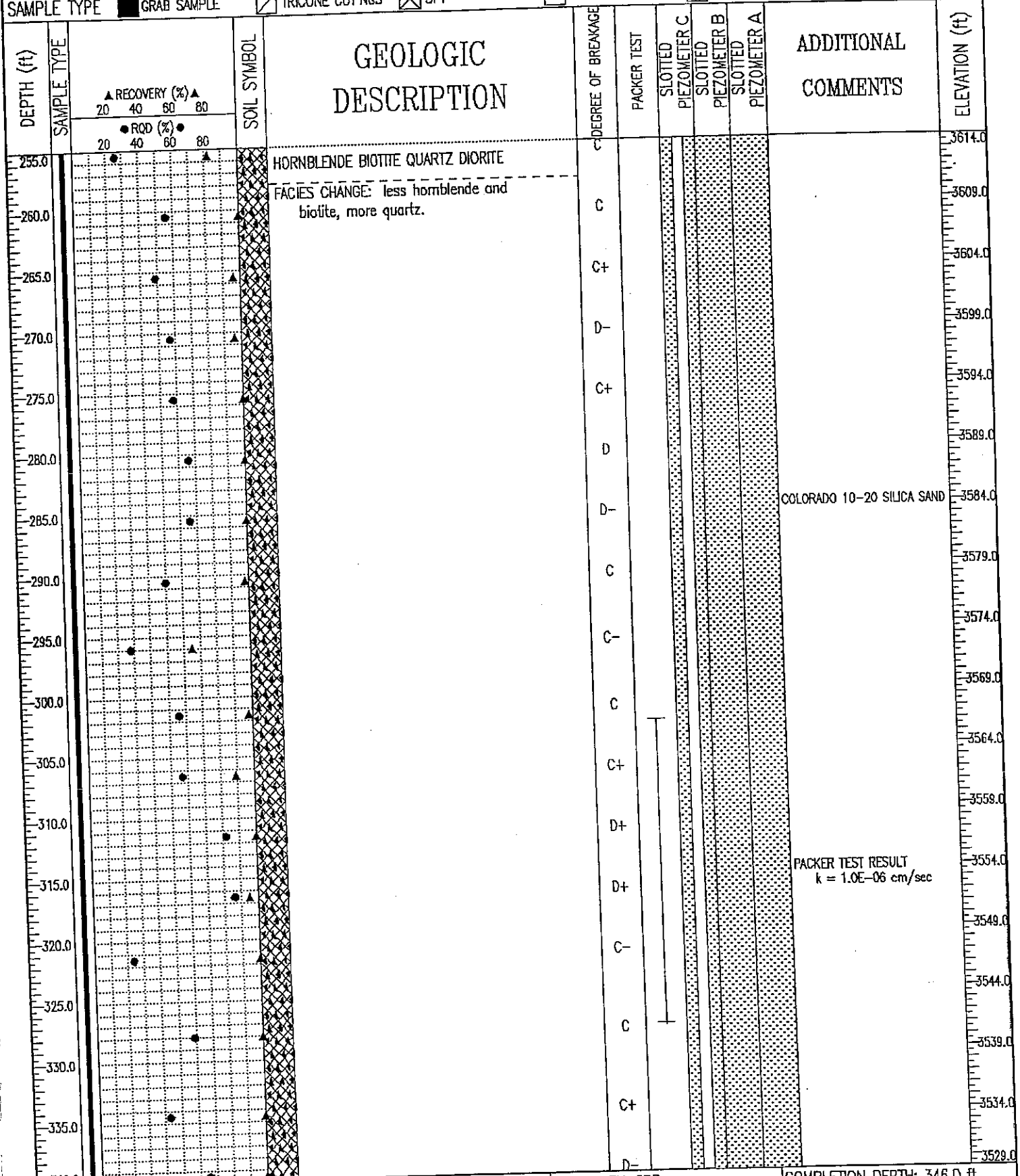


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 346.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/10/30
	Fig. No: A-11	Page 3 of 5

94/12/21 01:12PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-15
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 915 E 1 919 980	ELEVATION: 3869.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE



STEFFEN, ROBERTSON AND KIRSTEN
Consulting Engineers

LOGGED BY: GRB	COMPLETION DEPTH: 346.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/30
Fig. No: A-11	Page 4 of 5

94/12/21 01:13PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-15
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 915 E 1 919 980	ELEVATION: 3869.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ⁄ TRICONE CUTTINGS ⊠ SPT ▤ NO RECOVERY ▯ NW CASING ▮ NQ CORE

DEPTH (ft)	SAMPLE TYPE	▲RECOVERY (%)▲ 20 40 60 80 / ●RQD (%)● 20 40 60 80	SOIL SYMBOL	GEOLOGIC DESCRIPTION	DEGREE OF BREAKAGE	PACKER TEST	SLOTTED PIEZOMETER C	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
340.0				QUARTZ DIORITE – still in altered facies, less hornblende and biotite, more quartz.	D–					COLORADO 10-20 SILICA SAND	3529.0
345.0				END OF BOREHOLE: design depth attained. MONITORING WELL INSTALLATION BH-15C – 1 ft sand layer at bottom – 5 ft screen + 340.69 ft 3/4" PVC pipe – 11 bags sand to 235 ft below grade – mixed 2 bags grout + 25 gal. water – poured grout down borehole, brought level up to 192 ft below grade. – let grout set up overnight – install copper slip off endcap and tape on with electrician's tape. – Top of PVC 0.69 ft above ground MONITORING WELL INSTALLATION BH-15B – 10 ft sand layer at bottom – 5 ft screen + 177 ft 3/4" PVC pipe – 10 bags sand to 100 ft below grade – during installation, standpipe broke off at surface and sand was actually poured down pipe. – sand in pipe to 72 ft below grade but there is still water in standpipe so it may still be possible to sample. – mixed 3 bags grout + 40 gal. water – poured grout down borehole, brought level up to 47 ft below grade. – let grout set up overnight – install copper slip off endcap and tape on with electrician's tape – Top of PVC 0.00 ft above ground. MONITORING WELL INSTALLATION BH-15A – 2 ft sand layer at bottom – 5 ft screen + 40.69 ft 3/4" PVC pipe – 5 bags sand to 10 ft below grade – mixed 1 bag grout + 12 gal. water – poured grout down borehole, brought level up to surface. – install copper slip off endcap and tape on with electrician's tape – Top of PVC 0.69 ft above ground							3524.0
350.0											3519.0
355.0											3514.0
360.0											3509.0
365.0											3504.0
370.0											3499.0
375.0											3494.0
380.0											3489.0
385.0											3484.0
390.0											3479.0
395.0											3474.0
400.0											3469.0
405.0											3464.0
410.0											3459.0
415.0											3454.0
420.0											3449.0
425.0											3444.0

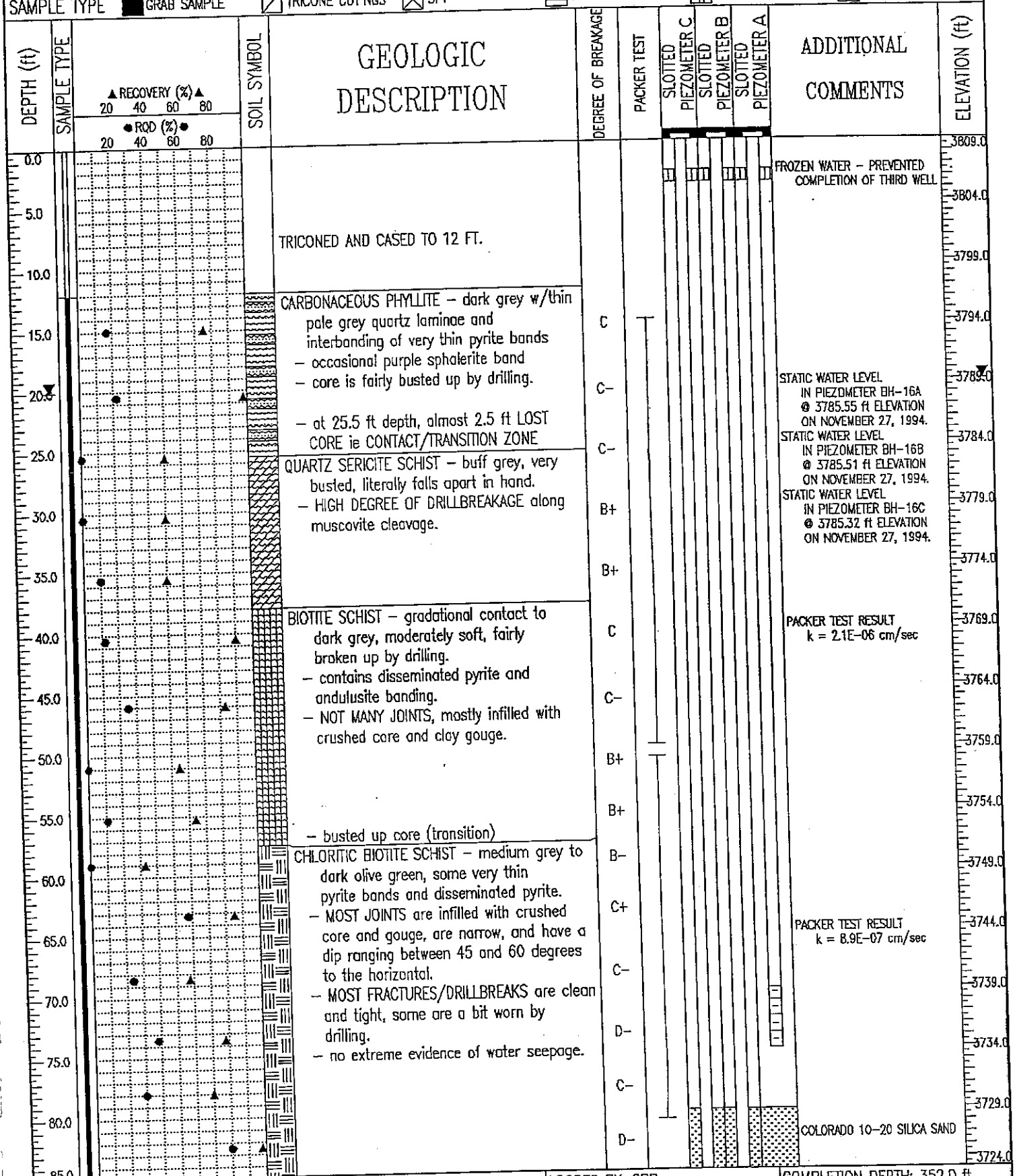
STEFFEN, ROBERTSON AND KIRSTEN
Consulting Engineers

LOGGED BY: GRB	COMPLETION DEPTH: 346.0 ft
REVIEWED BY: PMH	COMPLETE: 94/10/30
Fig. No: A-11	Page 5 of 5

94/12/21 01:14PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-16
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 710 E 1 919 145	ELEVATION: 3809.00 (ft)

SAMPLE TYPE: GRAB SAMPLE | TRICONE CUTTINGS | SPT | NO RECOVERY | NW CASING | NQ CORE



STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 352.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/11/09
	Fig. No: A-12	Page 1 of 5

94/12/21 01:16PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-16
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 710 E 1 919 145	ELEVATION: 3809.00 (ft)

SAMPLE TYPE: GRAB SAMPLE; TRICONE CUTTINGS; SPT; NO RECOVERY; NW CASING; NQ CORE

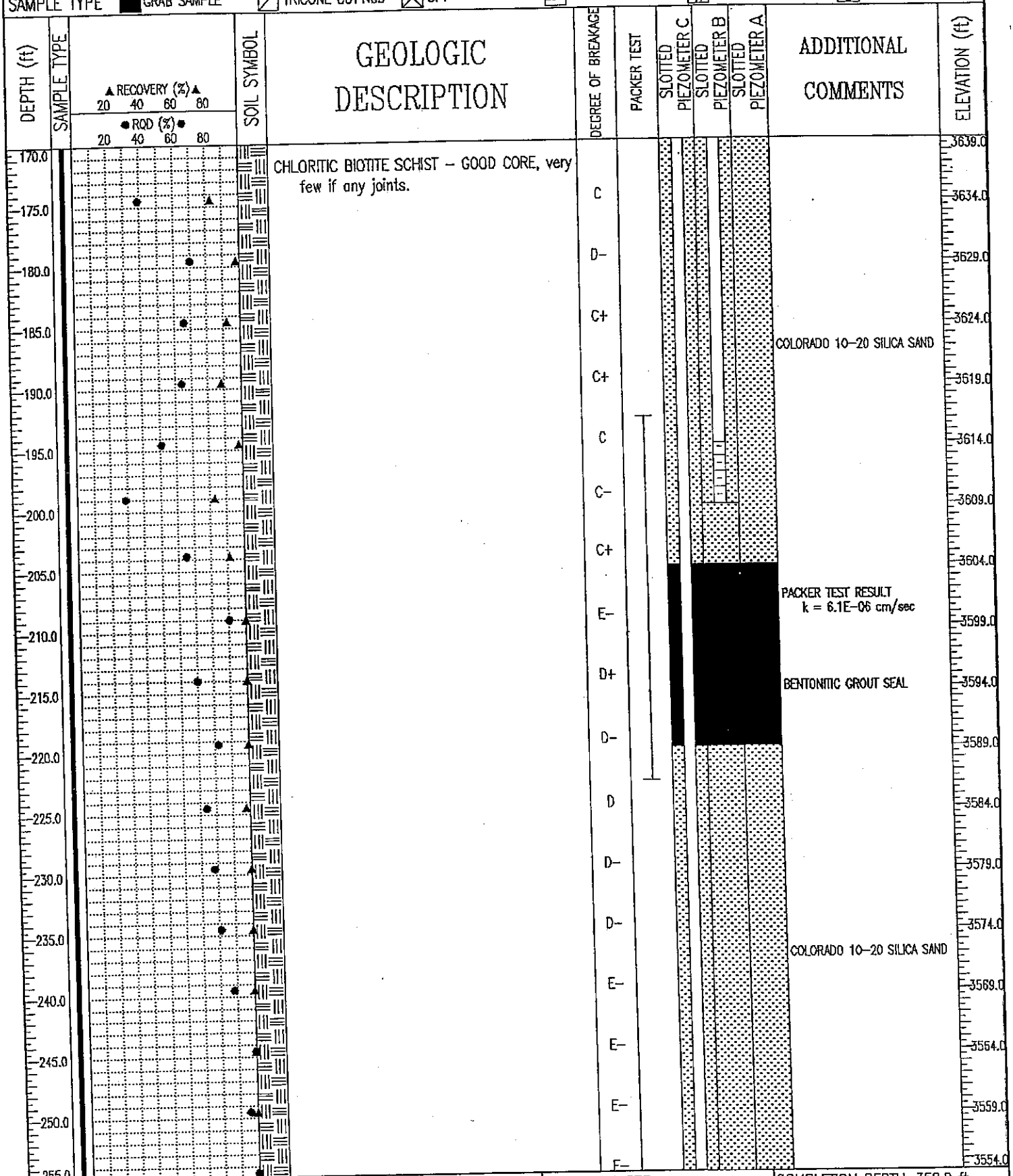
DEPTH (ft)	SAMPLE TYPE	▲RECOVERY (%)▲ 20 40 60 80 / ●RQD (%)● 20 40 60 80	SOIL SYMBOL	GEOLOGIC DESCRIPTION	DEGREE OF BREAKAGE	PACKER TEST	SLOTTED PIEZOMETER C	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
85.0				CHLORITIC BIOTITE SCHIST	D						3724.0
90.0					C+						3719.0
95.0					B+					BENTONITIC GROUT SEAL	3714.0
100.0					C						3709.0
105.0					C						3704.0
110.0					D–						3699.0
115.0					C–						3694.0
120.0					C+						3689.0
125.0				– gradational contact	C–						3684.0
130.0				QUARZITIC FELDSPATHIC BIOTITE SCHIST – well banded, medium grey, slightly harder than the chloritic schist but having the same general characteristics.	D–					COLORADO 10-20 SILICA SAND	3679.0
135.0					B+						3674.0
140.0				– gradational contact	D						3669.0
145.0				CHLORITIC BIOTITE SCHIST – still some disseminated pyrite. – core is improving with depth.	D						3664.0
150.0					D–						3659.0
155.0					C+						3654.0
160.0					C						3649.0
165.0					E–						3644.0
170.0					D–						3639.0

STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 352.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/11/09
	Fig. No: A-12	Page 2 of 5

94/12/21 01:17PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-16
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 710 E 1 919 145	ELEVATION: 3809.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ⁄ TRICONE CUTTINGS ☒ SPT ▤ NO RECOVERY ▥ NW CASING ▥ NQ CORE

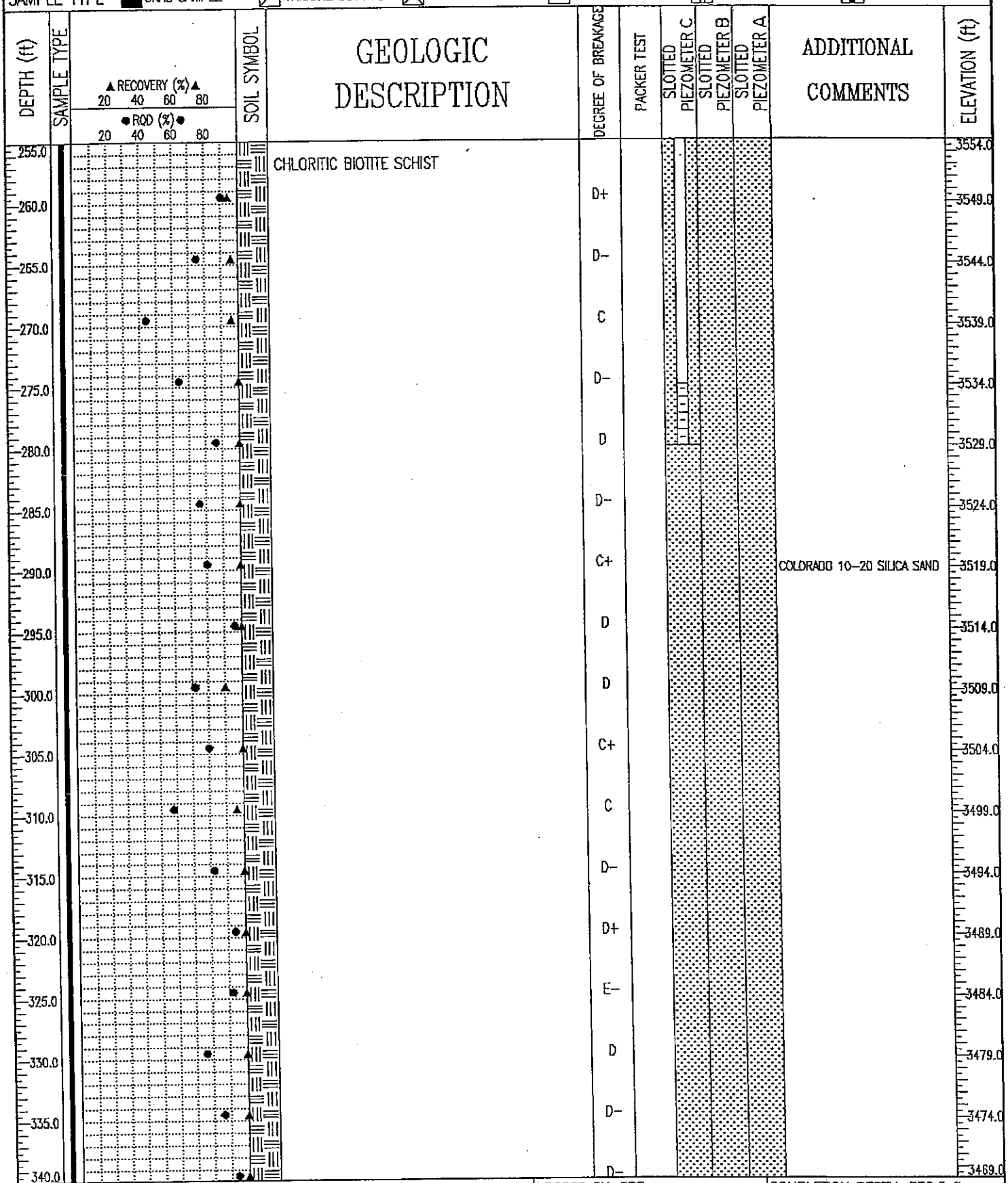


STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 352.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/11/09
	Fig. No: A-12	Page 3 of 5

94/12/21 01:16PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-16
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 710 E 1 919 145	ELEVATION: 3809.00 (ft)

SAMPLE TYPE ■ GRAB SAMPLE ▨ TRICONE CUTTINGS ⊠ SPT ▤ NO RECOVERY ▥ NW CASING ▥ NQ CORE



STEFFEN, ROBERTSON AND KIRSTEN Consulting Engineers	LOGGED BY: GRB	COMPLETION DEPTH: 352.0 ft
	REVIEWED BY: PMH	COMPLETE: 94/11/09
	Fig. No: A-12	Page 4 of 5

94/12/21 01:19PM

FARO SEEPAGE INVESTIGATION	ANVIL RANGE MINING CORPORATION	BOREHOLE NO: BH-16
MONITORING WELL INSTALLATION	DRILL: BOYLE OIL 3500 – NQ DIAMOND CORE	PROJECT NO: A114101
FARO MINE SITE, FARO, YUKON	UTM ZONE: 8 N 22 683 710 E 1 919 145	ELEVATION: 3809.00 (ft)

SAMPLE TYPE: GRAB SAMPLE; TRICONE CUTTINGS; SPT; NO RECOVERY; NW CASING; NQ CORE

DEPTH (ft)	SAMPLE TYPE	▲RECOVERY (%)▲ 20 40 60 80 / ●RQD (%)● 20 40 60 80	SOIL SYMBOL	GEOLOGIC DESCRIPTION	DEGREE OF BREAKAGE	PACKER TEST	SLOTTED PIEZOMETER C	SLOTTED PIEZOMETER B	SLOTTED PIEZOMETER A	ADDITIONAL COMMENTS	ELEVATION (ft)
340.0				CHLORITIC BIOTITE SCHIST	D-					COLORADO 10–20 SILICA SAND	3469.0
345.0											3464.0
350.0					B						3459.0
355.0				END OF BOREHOLE: design depth attained.							3454.0
360.0				MONITORING WELL INSTALLATION BH-16C – 72 ft sand layer at bottom – 5 ft screen + 275.33 ft 3/4" PVC pipe – 7 bags sand to 220 ft below grade – mixed 0.75 bags grout + 11 gal. water – pumped grout down hole and let it set up overnight. – install copper slip off endcap and tape on with electrician's tape – Top of PVC 0.33 ft above ground.							3449.0
365.0											3444.0
370.0				MONITORING WELL INSTALLATION BH-16B – 5 ft silica sand on grout seal – 5 ft screen + 195.49 ft 3/4" PVC pipe – 8.5 bags sand to 105 ft below grade – mixed 0.75 bags grout + 11 gal. water – pumped grout down hole and let it set up overnight. – install copper slip off endcap and tape on with electrician's tape – Top of PVC 0.49 ft above ground.							3439.0
375.0											3434.0
380.0											3429.0
385.0											3424.0
390.0				MONITORING WELL INSTALLATION BH-16A – 5 ft screen + 70.66 ft 3/4" PVC pipe – grout did not set up overnight – water in borehole froze 2.5 ft below grade, installation to be completed in spring when water thaws. – third standpipe piezometer held in place by taping it to 16B and 16C – install copper slip off endcap and tape on with electrician's tape. – Top of PVC 0.66 ft above ground.							3419.0
395.0											3414.0
400.0											3409.0
405.0											3404.0
410.0											3399.0
415.0											3394.0
420.0											3389.0
425.0											3384.0

STEFFEN, ROBERTSON AND KIRSTEN
Consulting Engineers

LOGGED BY: GRB	COMPLETION DEPTH: 352.0 ft
REVIEWED BY: PMH	COMPLETE: 94/11/09
Fig. No: A-12	Page 5 of 5

94/12/21 01:20PM

APPENDIX B

PACKER TEST DATA

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
BH-09 #1	150	180	111.26	8.5	119.76	11.5	26.565	146.325	4	0.00790609	5.40E-05
	150	180	111.26	8.5	119.76	44	101.64	221.4	5	0.00988261	4.46E-05
	150	180	111.26	8.5	119.76	84	194.04	313.8	5.5	0.01087087	3.46E-05
	150	180	111.26	8.5	119.76	44	101.64	221.4	5	0.00988261	4.46E-05
	150	180	111.26	8.5	119.76	12	27.72	147.48	3.5	0.00691783	4.69E-05
BH-10 #1	61	93	24.07	7.17	31.24	11	25.41	56.65	7	0.01312345	2.32E-04
	61	93	24.07	7.17	31.24	11	25.41	56.65	5.5	0.01031128	1.82E-04
	61	93	24.07	7.17	31.24	11	25.41	56.65	5.4	0.0101238	1.79E-04
	61	93	24.07	7.17	31.24	11	25.41	56.65	5.4	0.0101238	1.79E-04
	61	93	24.07	7.17	31.24	11	25.41	56.65	5.4	0.0101238	1.79E-04
	61	93	24.07	7.17	31.24	20	46.2	77.44	7.5	0.01406083	1.82E-04
	61	93	24.07	7.17	31.24	20	46.2	77.44	7.2	0.0134984	1.74E-04
	61	93	24.07	7.17	31.24	20	46.2	77.44	7	0.01312345	1.69E-04
	61	93	24.07	7.17	31.24	20	46.2	77.44	7	0.01312345	1.69E-04
	61	93	24.07	7.17	31.24	20	46.2	77.44	7	0.01312345	1.69E-04
	61	93	24.07	7.17	31.24	30	69.3	100.54	8.1	0.0151857	1.51E-04
	61	93	24.07	7.17	31.24	30	69.3	100.54	7.8	0.01462327	1.45E-04
	61	93	24.07	7.17	31.24	30	69.3	100.54	7.6	0.01424831	1.42E-04
	61	93	24.07	7.17	31.24	31	71.61	102.85	7.5	0.01406083	1.37E-04
	61	93	24.07	7.17	31.24	30	69.3	100.54	7.5	0.01406083	1.40E-04
	61	93	24.07	7.17	31.24	30	69.3	100.54	7.5	0.01406083	1.40E-04
	61	93	24.07	7.17	31.24	21	48.51	79.75	5.8	0.01087371	1.36E-04
	61	93	24.07	7.17	31.24	21	48.51	79.75	5.8	0.01087371	1.36E-04
	61	93	24.07	7.17	31.24	21	48.51	79.75	5.7	0.01068623	1.34E-04
	61	93	24.07	7.17	31.24	21	48.51	79.75	5.7	0.01068623	1.34E-04
	61	93	24.07	7.17	31.24	21	48.51	79.75	5.7	0.01068623	1.34E-04

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	H_g (feet)	Applied Pressure (psi)	H_p (feet)	$H_t=H_g+H_p$ (feet)	Q (gpm-US)	$(C_p)(Q)$	$K=(C_p)(Q)/Ht$ (cm/s)
	61	93	24.07	7.17	31.24	9	20.79	52.03	4	0.00749911	1.44E-04
	61	93	24.07	7.17	31.24	10	23.1	54.34	3.9	0.00731163	1.35E-04
	61	93	24.07	7.17	31.24	10	23.1	54.34	3.9	0.00731163	1.35E-04
	61	93	24.07	7.17	31.24	10	23.1	54.34	3.9	0.00731163	1.35E-04
BH-10 #2	95	120	24.07	7.17	31.24	11	25.41	56.65	4.6	0.01054797	1.86E-04
	95	120	24.07	7.17	31.24	11	25.41	56.65	4.6	0.01054797	1.86E-04
	95	120	24.07	7.17	31.24	11	25.41	56.65	4.6	0.01054797	1.86E-04
	95	120	24.07	7.17	31.24	11	25.41	56.65	4.6	0.01054797	1.86E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.1	0.01628056	1.83E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.1	0.01628056	1.83E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.1	0.01628056	1.83E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.1	0.01628056	1.83E-04
	95	120	24.07	7.17	31.24	42	97.02	128.26	9.1	0.02086664	1.63E-04
	95	120	24.07	7.17	31.24	42	97.02	128.26	9.1	0.02086664	1.63E-04
	95	120	24.07	7.17	31.24	42	97.02	128.26	9.1	0.02086664	1.63E-04
	95	120	24.07	7.17	31.24	42	97.02	128.26	9.1	0.02086664	1.63E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.5	0.01719778	1.93E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.3	0.01673917	1.88E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.3	0.01673917	1.88E-04
	95	120	24.07	7.17	31.24	25	57.75	88.99	7.3	0.01673917	1.88E-04
	95	120	24.07	7.17	31.24	10	23.1	54.34	5.4	0.0123824	2.28E-04
	95	120	24.07	7.17	31.24	10	23.1	54.34	5.4	0.0123824	2.28E-04
	95	120	24.07	7.17	31.24	10	23.1	54.34	5.4	0.0123824	2.28E-04
	95	120	24.07	7.17	31.24	10	23.1	54.34	5.4	0.0123824	2.28E-04
BH-10 #3	132	152	24.07	7.17	31.24	10	23.1	54.34	3.4	0.00933558	1.72E-04

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
	132	152	24.07	7.17	31.24	10	23.1	54.34	3.5	0.00961016	1.77E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	3.4	0.00933558	1.72E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	3.4	0.00933558	1.72E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	3.4	0.00933558	1.72E-04
	132	152	24.07	7.17	31.24	30	69.3	100.54	7.2	0.01976947	1.97E-04
	132	152	24.07	7.17	31.24	30	69.3	100.54	7.3	0.02004405	1.99E-04
	132	152	24.07	7.17	31.24	30	69.3	100.54	7.3	0.02004405	1.99E-04
	132	152	24.07	7.17	31.24	30	69.3	100.54	7.3	0.02004405	1.99E-04
	132	152	24.07	7.17	31.24	58	133.98	165.22	10	0.0274576	1.66E-04
	132	152	24.07	7.17	31.24	58	133.98	165.22	10	0.0274576	1.66E-04
	132	152	24.07	7.17	31.24	58	133.98	165.22	10	0.0274576	1.66E-04
	132	152	24.07	7.17	31.24	58	133.98	165.22	10	0.0274576	1.66E-04
	132	152	24.07	7.17	31.24	36	83.16	114.4	8.3	0.02278981	1.99E-04
	132	152	24.07	7.17	31.24	36	83.16	114.4	8.2	0.02251523	1.97E-04
	132	152	24.07	7.17	31.24	36	83.16	114.4	8.3	0.02278981	1.99E-04
	132	152	24.07	7.17	31.24	36	83.16	114.4	8.3	0.02278981	1.99E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	5.4	0.0148271	2.73E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	5.4	0.0148271	2.73E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	5.3	0.01455253	2.68E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	5.3	0.01455253	2.68E-04
	132	152	24.07	7.17	31.24	10	23.1	54.34	5.3	0.01455253	2.68E-04
BH-15 #1	72	98	10.69	7.75	18.44	11	25.41	43.85	0.15	0.00033317	7.60E-06
	72	98	10.69	7.75	18.44	11	25.41	43.85	0.1	0.00022211	5.07E-06
	72	98	10.69	7.75	18.44	11	25.41	43.85	0.05	0.00011106	2.53E-06
	72	98	10.69	7.75	18.44	11	25.41	43.85	0.05	0.00011106	2.53E-06
	72	98	10.69	7.75	18.44	11	25.41	43.85	0.05	0.00011106	2.53E-06

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.05	0.00011106	1.41E-06
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.05	0.00011106	1.41E-06
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.05	0.00011106	1.41E-06
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.05	0.00011106	1.41E-06
	72	98	10.69	7.75	18.44	43	99.33	117.77	0.07	0.00015548	1.32E-06
	72	98	10.69	7.75	18.44	43	99.33	117.77	0.06	0.00013327	1.13E-06
	72	98	10.69	7.75	18.44	43	99.33	117.77	0.07	0.00015548	1.32E-06
	72	98	10.69	7.75	18.44	43	99.33	117.77	0.06	0.00013327	1.13E-06
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.03	6.6634E-05	8.49E-07
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.03	6.6634E-05	8.49E-07
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.03	6.6634E-05	8.49E-07
	72	98	10.69	7.75	18.44	26	60.06	78.5	0.03	6.6634E-05	8.49E-07
BH-15 #2	302	327	10.69	7.75	18.44	20	46.2	64.64	0.05	0.00011465	1.77E-06
	302	327	10.69	7.75	18.44	20	46.2	64.64	0.05	0.00011465	1.77E-06
	302	327	10.69	7.75	18.44	20	46.2	64.64	0.05	0.00011465	1.77E-06
	302	327	10.69	7.75	18.44	65	150.15	168.59	0.05	0.00011465	6.80E-07
	302	327	10.69	7.75	18.44	65	150.15	168.59	0.05	0.00011465	6.80E-07
	302	327	10.69	7.75	18.44	65	150.15	168.59	0.05	0.00011465	6.80E-07
	302	327	10.69	7.75	18.44	65	150.15	168.59	0.05	0.00011465	6.80E-07
	302	327	10.69	7.75	18.44	100	231	249.44	0.08	0.00018344	7.35E-07
	302	327	10.69	7.75	18.44	100	231	249.44	0.07	0.00016051	6.43E-07
	302	327	10.69	7.75	18.44	100	231	249.44	0.06	0.00013758	5.52E-07
	302	327	10.69	7.75	18.44	100	231	249.44	0.06	0.00013758	5.52E-07
	302	327	10.69	7.75	18.44	100	231	249.44	0.06	0.00013758	5.52E-07
BH-16 #1	14	49	24.11	7.25	31.36	20	46.2	77.56	0.07	0.00012192	1.57E-06
	14	49	24.11	7.25	31.36	20	46.2	77.56	0.05	8.7087E-05	1.12E-06

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
	14	49	24.11	7.25	31.36	20	46.2	77.56	0.05	8.7087E-05	1.12E-06
	14	49	24.11	7.25	31.36	20	46.2	77.56	0.05	8.7087E-05	1.12E-06
	192	222	24.11	7.25	31.36	5	11.55	42.91	0.25	0.00049413	1.15E-05
BH-16 #2	192	222	24.11	7.25	31.36	5	11.55	42.91	0.25	0.00049413	1.15E-05
	192	222	24.11	7.25	31.36	5	11.55	42.91	0.25	0.00049413	1.15E-05
	192	222	24.11	7.25	31.36	10	23.1	54.46	0.2	0.0003953	7.26E-06
	192	222	24.11	7.25	31.36	10	23.1	54.46	0.2	0.0003953	7.26E-06
	192	222	24.11	7.25	31.36	10	23.1	54.46	0.15	0.00029648	5.44E-06
	192	222	24.11	7.25	31.36	10	23.1	54.46	0.15	0.00029648	5.44E-06
	192	222	24.11	7.25	31.36	10	23.1	54.46	0.15	0.00029648	5.44E-06
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.05	9.8826E-05	1.27E-06
BH-16 #3	50	80	24.11	7.25	31.36	20	46.2	77.56	0.05	9.8826E-05	1.27E-06
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.05	9.8826E-05	1.27E-06
	50	80	24.11	7.25	31.36	30	69.3	100.66	0.05	9.8826E-05	9.82E-07
	50	80	24.11	7.25	31.36	30	69.3	100.66	0.07	0.00013836	1.37E-06
	50	80	24.11	7.25	31.36	30	69.3	100.66	0.05	9.8826E-05	9.82E-07
	50	80	24.11	7.25	31.36	30	69.3	100.66	0.05	9.8826E-05	9.82E-07
	50	80	24.11	7.25	31.36	30	69.3	100.66	0.05	9.8826E-05	9.82E-07
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.05	9.8826E-05	1.27E-06
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.05	9.8826E-05	1.27E-06
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.03	5.9296E-05	7.65E-07
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.03	5.9296E-05	7.65E-07
	50	80	24.11	7.25	31.36	20	46.2	77.56	0.02	3.953E-05	5.10E-07

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)

Test Number	Test Interval In Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
BH-16 #1	14	49	24.11	7.25	31.5	20	46.2	77.7	0.07	0.000122	1.57E-06
Calc'd.	14	49	24.11	7.25	31.5	20	46.2	77.7	0.05	8.71E-05	1.12E-06
all above	14	49	24.11	7.25	31.5	20	46.2	77.7	0.05	8.71E-05	1.12E-06
W.L.	14	49	24.11	7.25	31.5	20	46.2	77.7	0.05	8.71E-05	1.12E-06
BH-16 #1	14	24.11	24.11	7.25	19.055	20	46.2	65.255	0.07	0.000329	5.04E-06
Calc'd. for	14	24.11	24.11	7.25	19.055	20	46.2	65.255	0.05	0.000235	3.60E-06
part above	14	24.11	24.11	7.25	19.055	20	46.2	65.255	0.05	0.000235	3.60E-06
W.L.	14	24.11	24.11	7.25	19.055	20	46.2	65.255	0.05	0.000235	3.60E-06
BH-16 #1	24.11	49	24.11	7.25	31.36	20	46.2	77.56	0.07	0.000161	2.08E-06
Calc'd. for	24.11	49	24.11	7.25	31.36	20	46.2	77.56	0.05	0.000115	1.48E-06
part below	24.11	49	24.11	7.25	31.36	20	46.2	77.56	0.05	0.000115	1.48E-06
W.L.	24.11	49	24.11	7.25	31.36	20	46.2	77.56	0.05	0.000115	1.48E-06
BH-11 #1	75	105	119.08	7.5	90	16	36.96	126.96	0.8	0.001581	1.25E-05
Calc'd. for	75	105	119.08	7.5	90	18	41.58	131.58	0.8	0.001581	1.20E-05
above the	75	105	119.08	7.5	90	19	43.89	133.89	0.4	0.000791	5.90E-06
W.L.	75	105	119.08	7.5	90	19	43.89	133.89	0.4	0.000791	5.90E-06
	75	105	119.08	7.5	90	20	46.2	136.2	0.4	0.000791	5.80E-06
	75	105	119.08	7.5	90	20	46.2	136.2	0.4	0.000791	5.80E-06
	75	105	119.08	7.5	90	20	46.2	136.2	0.4	0.000791	5.80E-06
BH-11 #1	75	105	119.08	7.5	90	26	60.06	150.06	0.4	0.000791	5.27E-06
Calc'd. for	75	105	119.08	7.5	90	26	60.06	150.06	0.45	0.000889	5.93E-06
above the	75	105	119.08	7.5	90	25	57.75	147.75	0.45	0.000889	6.02E-06
W.L.	75	105	119.08	7.5	90	25	57.75	147.75	0.45	0.000889	6.02E-06
	75	105	119.08	7.5	90	25	57.75	147.75	0.45	0.000889	6.02E-06
BH-11 #1	75	105	119.08	7.5	90	34	78.54	168.54	0.55	0.001087	6.45E-06
Calc'd. for	75	105	119.08	7.5	90	34	78.54	168.54	0.5	0.000988	5.86E-06

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
above the	75	105	119.08	7.5	90	34	78.54	168.54	0.5	0.000988	5.86E-06
W.L.	75	105	119.08	7.5	90	34	78.54	168.54	0.5	0.000988	5.86E-06
	75	105	119.08	7.5	90	34	78.54	168.54	0.5	0.000988	5.86E-06
BH-11 #1	75	105	119.08	7.5	90	25	57.75	147.75	0.3	0.000593	4.01E-06
Calc'd. for	75	105	119.08	7.5	90	24	55.44	145.44	0.4	0.000791	5.44E-06
above the	75	105	119.08	7.5	90	24	55.44	145.44	0.4	0.000791	5.44E-06
W.L.	75	105	119.08	7.5	90	24	55.44	145.44	0.4	0.000791	5.44E-06
	75	105	119.08	7.5	90	24	55.44	145.44	0.4	0.000791	5.44E-06
BH-11 #1	75	105	119.08	7.5	90	16	36.96	126.96	0.15	0.000296	2.34E-06
Calc'd. for	75	105	119.08	7.5	90	16	36.96	126.96	0.15	0.000296	2.34E-06
above the	75	105	119.08	7.5	90	16	36.96	126.96	0.2	0.000395	3.11E-06
W.L.	75	105	119.08	7.5	90	16	36.96	126.96	0.2	0.000395	3.11E-06
	75	105	119.08	7.5	90	16	36.96	126.96	0.3	0.000593	4.67E-06
	75	105	119.08	7.5	90	16	36.96	126.96	0.3	0.000593	4.67E-06
	75	105	119.08	7.5	90	16	36.96	126.96	0.3	0.000593	4.67E-06
BH-11 #2	75	105	119.08	7.5	90	10	23.1	113.1	0.4	0.000791	6.99E-06
Calc'd. for	75	105	119.08	7.5	90	10	23.1	113.1	0.4	0.000791	6.99E-06
above the	75	105	119.08	7.5	90	10	23.1	113.1	0.35	0.000692	6.12E-06
W.L.	75	105	119.08	7.5	90	10	23.1	113.1	0.35	0.000692	6.12E-06
	75	105	119.08	7.5	90	10	23.1	113.1	0.35	0.000692	6.12E-06
BH-11 #2	103	119.08	119.08	7.5	111.04	10	23.1	134.14	0.4	0.001307	9.75E-06
Calc'd. for	103	119.08	119.08	7.5	111.04	10	23.1	134.14	0.4	0.001307	9.75E-06
part above	103	119.08	119.08	7.5	111.04	10	23.1	134.14	0.35	0.001144	8.53E-06
W.L.	103	119.08	119.08	7.5	111.04	10	23.1	134.14	0.35	0.001144	8.53E-06
	103	119.08	119.08	7.5	111.04	10	23.1	134.14	0.35	0.001144	8.53E-06
BH-11 #2	119.08	133	119.08	7.5	126.58	10	23.1	149.68	0.4	0.001466	9.79E-06
Calc'd. for	119.08	133	119.08	7.5	126.58	10	23.1	149.68	0.4	0.001466	9.79E-06

Test Number	Test Interval In Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
part below	119.08	133	119.08	7.5	126.58	10	23.1	149.68	0.35	0.001282	8.57E-06
W.L.	119.08	133	119.08	7.5	126.58	10	23.1	149.68	0.35	0.001282	8.57E-06
	119.08	133	119.08	7.5	126.58	10	23.1	149.68	0.35	0.001282	8.57E-06
BH-11 #2	75	105	119.08	7.5	90	33	76.23	166.23	1.2	0.002372	1.43E-05
Calc'd. for	75	105	119.08	7.5	90	33	76.23	166.23	1.1	0.002174	1.31E-05
above the	75	105	119.08	7.5	90	34	78.54	168.54	1	0.001977	1.17E-05
W.L.	75	105	119.08	7.5	90	34	78.54	168.54	1	0.001977	1.17E-05
	75	105	119.08	7.5	90	34	78.54	168.54	1	0.001977	1.17E-05
BH-11 #2	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1.2	0.003922	2.09E-05
Calc'd. for	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1.1	0.003595	1.92E-05
part above	103	119.08	119.08	7.5	111.04	34	78.54	189.58	1	0.003269	1.72E-05
W.L.	103	119.08	119.08	7.5	111.04	34	78.54	189.58	1	0.003269	1.72E-05
	103	119.08	119.08	7.5	111.04	34	78.54	189.58	1	0.003269	1.72E-05
BH-11 #2	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1.2	0.004397	2.17E-05
Calc'd. for	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1.1	0.00403	1.99E-05
part below	119.08	133	119.08	7.5	126.58	34	78.54	205.12	1	0.003664	1.79E-05
W.L.	119.08	133	119.08	7.5	126.58	34	78.54	205.12	1	0.003664	1.79E-05
	119.08	133	119.08	7.5	126.58	34	78.54	205.12	1	0.003664	1.79E-05
BH-11 #2	75	105	119.08	7.5	90	50	115.5	205.5	2	0.003953	1.92E-05
Calc'd. for	75	105	119.08	7.5	90	51	117.81	207.81	2	0.003953	1.90E-05
above the	75	105	119.08	7.5	90	51	117.81	207.81	2	0.003953	1.90E-05
W.L.	75	105	119.08	7.5	90	51	117.81	207.81	2	0.003953	1.90E-05
	75	105	119.08	7.5	90	51	117.81	207.81	2	0.003953	1.90E-05
BH-11 #2	103	119.08	119.08	7.5	111.04	50	115.5	226.54	2	0.006537	2.89E-05
Calc'd. for	103	119.08	119.08	7.5	111.04	51	117.81	228.85	2	0.006537	2.86E-05
part above	103	119.08	119.08	7.5	111.04	51	117.81	228.85	2	0.006537	2.86E-05
W.L.	103	119.08	119.08	7.5	111.04	51	117.81	228.85	2	0.006537	2.86E-05

Test Number	Test Interval in Feet		Static W.L (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
	103	119.08	119.08	7.5	111.04	51	117.81	228.85	2	0.006537	2.86E-05
BH-11 #2	119.08	133	119.08	7.5	126.58	50	115.5	242.08	2	0.007328	3.03E-05
Calc'd. for	119.08	133	119.08	7.5	126.58	51	117.81	244.39	2	0.007328	3.00E-05
part below	119.08	133	119.08	7.5	126.58	51	117.81	244.39	2	0.007328	3.00E-05
W.L.	119.08	133	119.08	7.5	126.58	51	117.81	244.39	2	0.007328	3.00E-05
	119.08	133	119.08	7.5	126.58	51	117.81	244.39	2	0.007328	3.00E-05
BH-11 #2	75	105	119.08	7.5	90	33	76.23	166.23	1	0.001977	1.19E-05
Calc'd. for	75	105	119.08	7.5	90	33	76.23	166.23	1.1	0.002174	1.31E-05
above the	75	105	119.08	7.5	90	33	76.23	166.23	1.1	0.002174	1.31E-05
W.L.	75	105	119.08	7.5	90	33	76.23	166.23	1.1	0.002174	1.31E-05
	75	105	119.08	7.5	90	33	76.23	166.23	1.1	0.002174	1.31E-05
BH-11 #2	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1	0.003269	1.75E-05
Calc'd. for	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1.1	0.003595	1.92E-05
part above	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1.1	0.003595	1.92E-05
W.L.	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1.1	0.003595	1.92E-05
	103	119.08	119.08	7.5	111.04	33	76.23	187.27	1.1	0.003595	1.92E-05
BH-11 #2	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1	0.003664	1.81E-05
Calc'd. for	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1.1	0.00403	1.99E-05
part below	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1.1	0.00403	1.99E-05
W.L.	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1.1	0.00403	1.99E-05
	119.08	133	119.08	7.5	126.58	33	76.23	202.81	1.1	0.00403	1.99E-05
BH-11 #2	75	105	119.08	7.5	90	16	36.96	126.96	0.35	0.000692	5.45E-06
Calc'd. for	75	105	119.08	7.5	90	16	36.96	126.96	0.35	0.000692	5.45E-06
above the	75	105	119.08	7.5	90	16	36.96	126.96	0.35	0.000692	5.45E-06
W.L.	75	105	119.08	7.5	90	16	36.96	126.96	0.35	0.000692	5.45E-06
BH-11 #2	103	119.08	119.08	7.5	111.04	16	36.96	148	0.35	0.001144	7.73E-06

Test Number	Test Interval in Feet		Static W.L. (feet)	Swivel Height (feet)	Hg (feet)	Applied Pressure (psi)	Hp (feet)	Ht=Hg+Hp (feet)	Q (gpm-US)	(Cp)(Q)	K=(Cp)(Q)/Ht (cm/s)
Calc'd. for	103	119.08	119.08	7.5	111.04	16	36.96	148	0.35	0.001144	7.73E-06
part above	103	119.08	119.08	7.5	111.04	16	36.96	148	0.35	0.001144	7.73E-06
W.L.	103	119.08	119.08	7.5	111.04	16	36.96	148	0.35	0.001144	7.73E-06
BH-11 #2	119.08	133	119.08	7.5	126.58	16	36.96	163.54	0.35	0.001282	7.84E-06
Calc'd. for	119.08	133	119.08	7.5	126.58	16	36.96	163.54	0.35	0.001282	7.84E-06
part below	119.08	133	119.08	7.5	126.58	16	36.96	163.54	0.35	0.001282	7.84E-06
W.L.	119.08	133	119.08	7.5	126.58	16	36.96	163.54	0.35	0.001282	7.84E-06

APPENDIX B
2004/2005 DRILLING INVESTIGATION
BOREHOLE LOGS
JOINT LOGGING
CORE PHOTOGRAPHS

DRILL HOLE # BGC04-02

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Center of access road
Co-ordinates (m) : 584,927.00E, 6,914,164.00N
Ground Elevation (m) : 1152.6
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : HW **Cased To (m)** : 5.00

Start Date : 31 Aug 04
Finish Date: 31 Aug 04
Final Depth of Hole (m) : 19.8
Depth to Top of Rock (m) : Unknown
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description	Symbol	Fracture Angle wrt Core Axis (30° 60°)	Total Core Recovery % / RQD % (20 40 60 80)	Hydraulic Conductivity (m/sec) (10^{-8} 10^{-6} 10^{-4})
0					HW	9.5 cm casing installed to a depth of 4.25 m prior to start of diamond drilling with BGC supervision.				
1										
2										
3						Driller reported hard drilling at 3 m depth.				
4										
5					NW					
6	Light grey creamy	1	W1	R2	NQ3	Muscovite - Biotite Schist Slightly weathered, foliated, light grey green, weak Muscovite - Biotite Schist.				
7		2		R1/ R2	NQ3	Foliated at 45° wrt to core axis with folding on core scale.				
8		3	W1/ W0 WO	R2/ R3 R2	NQ3					

(Continued on next page)

DRILL HOLE # BGC04-02

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Center of access road
Co-ordinates (m) : 584,927.00E, 6,914,164.00N
Ground Elevation (m) : 1152.6
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : HW ***Cased To (m)*** : 5.00

Start Date : 31 Aug 04
Finish Date: 31 Aug 04
Final Depth of Hole (m) : 19.8
Depth to Top of Rock (m) : Unknown
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8	Light grey creamy	3	WO	R2	NQ3	at 8 m: Fresh
9				R5		Quartz, multiple fractures and healed zones, some calcite infill, vuggy.
	No visible return	4				Quartz veins, multiple quartz healed fractures.
					NQ3	5 cm quartz band at 10 m.
10						Heavy fractures, quartz healed, mica in matrix, thin calcite banding.
	White Grey return			R2		Thin calcite banding.
11	Grey	5		R1	NQ3	
				R3		Multiple quartz bands, metal flecks.
12				R3/ R4		Highly altered mica minerals, joints healed with calcite and metallic material.
			WO/ W1	R5		Quartz with 2 major veins, one 5 cm grey phyllite vein and one 4 cm galena vein.
13		6			NQ3	
				R4		Porous.
						5 cm quartz vein at 13.5 m.
						Copper coloured metal flecks, calcite.
14	Light grey					Light grey/green.
		7	WO	R2	NQ3	
15	Reddish tinge to grey			R0/ R1		Quartz bands.
		8		R4	NQ3	
16						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %

20 40 60 80

Hydraulic Conductivity (m/sec)

10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC04-02

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Center of access road
Co-ordinates (m) : 584,927.00E, 6,914,164.00N
Ground Elevation (m) : 1152.6
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : HW **Cased To (m)** : 5.00

Start Date : 31 Aug 04
Finish Date: 31 Aug 04
Final Depth of Hole (m) : 19.8
Depth to Top of Rock (m) : Unknown
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16	Light grey white	8	WO	R4	NQ3	
17	Light Grey	9			NQ3	
18						Calc silicate, mottled light grey, dark grey and white.
19	Grey	10		R4/ R5	NQ3	Marbled calc silicate, metallic flecks, foliated 70° wrt core axis with multiple local changes in foliation. Bands of white, dark grey and grey/green and some black minerals in foliation.
20						Backfilled with cement grout.
21						
22						
23						
24						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC04-02

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
1	schist	6.07	FO	PL	SM	Calcite	46		T	Iron Stained
2	schist	7.06	FO	PL	R	None	41		PO	Iron Stained
	schist	7.47	F	PL	R	Calcite	20		O	Iron Stained
	schist	7.52	FO	PL	R	None	59		PO	Iron Stained, Rubble in fracture
3	No loggable fractures due to broken core									
4	No loggable fractures due to broken core									
5	schist	11.48	FO	C	R	None	46		PO	Rubble above and below
	schist	11.51	FO	PL	SM	None	53		PO	Potential Drill Break
	schist	11.75	FO	PL	SM	Calcite	57		PO	Fragments only with one massive grey fragment included - no full core pieces
	schist	11.76	FO	PL	SM	None	57		T	phylitte fragments with heavy Fe staining on fragments mica / mucouite.
	schist	12.00	FO	PL	SM/R	None	56		T	
	schist	12.04	FO	PL	SM	Calcite	50		PO	Rubble between 12.04 and 12.12 m
	schist	12.12	F	ST	VR	None	44		O	
6	schist	12.95	F	PL	R	Calcite	6		O	
	schist	13.03	F	PL	R	Calcite	24		PO	
	schist	13.23	FO	PL	SM	None	56		PO	
7	schist	14.69	FO	PL	R	None	52		PO	
	schist	14.85	FO	PL	SM	Gouge	57		O	Fine phyllite mica gouge materials
8	schist	16.15	F	PL	VR	Silt	28		PO	
	schist	16.18	F	PL	VR	Sericite, Silt	20		PO	
	schist	16.40	FO	PL	SM	Sericite	40		T	
	schist	16.61	FO	PL	SM	Sericite	44		PO	
	schist	16.71	FO	PL	SM	Calcite, Sericite	30		T	
9	schist	17.22	F	PL	R	Calcite	5		PO	
	schist	17.31	FO	PL	SM	Silt, Sericite	40		T	
	schist	17.83	F	PL	R	Silt	40		O	
	schist	17.88	FO	PL	SM	Sericite	47		T	
	schist	18.19	F	U	VR	Sericite, Silt	52		O	
10	schist	19.02	J	PL	SM	Calcite	65		PO	
	schist	19.71	FO	U	R	Calcite	40		O	

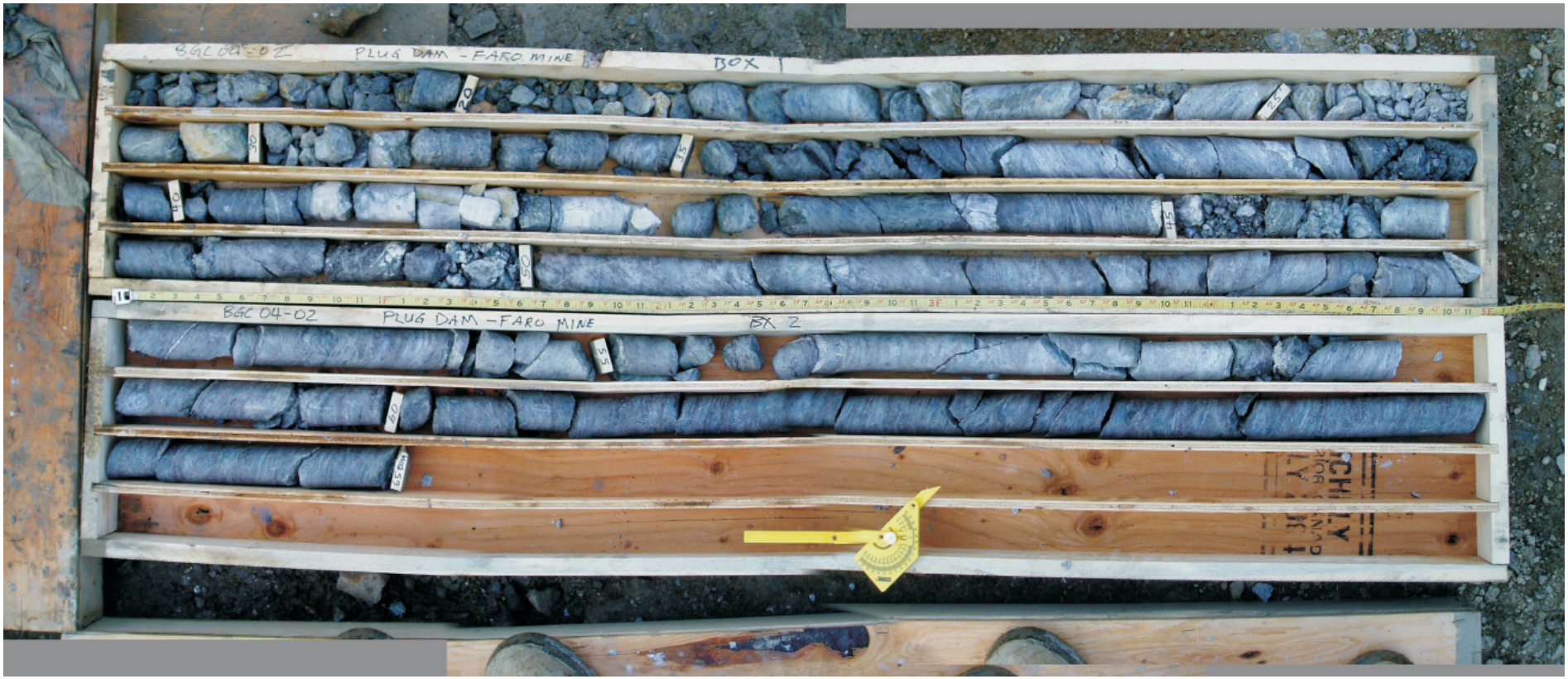
Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-027-01_____
Project Name:____2004 PLUG DAM_____
Depth Interval:_____19' - 53'_____
Logged By:___Gerry Ferris_____
Date:_____Aug 31, 2004_____



DATE: SEPT 2006	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT	TASK 20B - PLUG DAM CONCEPTUAL DESIGN	
REFERENCED DRAWING DESCRIPTION			TITLE	BGC04-02 CORE BOX 1 & 2	
		CLIENT Deloitte & Touche	PROJECT No. 0257-038-01	FIGURE B1	REV. 0

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

DRILL HOLE # BGC04-03

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Right Abutment, Bench 1
Co-ordinates (m) : 584,896.00E, 6,914,159.00N
Ground Elevation (m) : 1158.2
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 0.91

Start Date : 03 Mar 04
Finish Date: 04 Sep 04
Final Depth of Hole (m) : 21.0
Depth to Top of Rock (m) : 0.6
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
0					NW	Overburden
1	Metallic lustre	1	W1	R3	NQ3	Muscovite - Biotite schist. Slightly weathered, moderately strong, foliated, grey Muscovite - Biotite schist.
2	Creamy grey	2		R3/ R4	NQ3	Foliated at 75° with respect to core axis. 1.29 to 1.37 m: Quartz. 2.47 m: foliated at 60° wrt core axis.
3	Dark grey	3		R4	NQ3	
4						
5		4		R2	NQ3	Carbonaceous Schist. Slightly weathered, foliated, weak, black to dark grey Carbonaceous Schist. Some pyrite/sulphide minerals present.
6	No return	5		R2/ R3	NQ3	
7			WO	R5		Quartz.
		6		R3	NQ3	Muscovite - Biotite Schist. Fresh, foliated, medium strong, grey to grey green Muscovite-Biotite Schist.
8						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC04-03

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Right Abutment, Bench 1
Co-ordinates (m) : 584,896.00E, 6,914,159.00N
Ground Elevation (m) : 1158.2
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 0.91

Start Date : 03 Mar 04
Finish Date: 04 Sep 04
Final Depth of Hole (m) : 21.0
Depth to Top of Rock (m) : 0.6
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8	Light metallic lustre	6	WO	R3	NQ3	
9	No return	7		R2	NQ3	
10				R4		Dark grey with thin 3 mm grey-green bands.
	Medium metallic lustre	8		R2	NQ3	Grey-green with thin bands of dark grey and occasional quartz within matrix.
11						
12		9			NQ3	
13				R3/R4		Light grey, foliated at 66° wrt core axis. At 14.83 m: 3 mm quartz intrusion at 14.83 m.
14		10		R2	NQ3	
15		11		R1/R2	NQ3	More porous structure, mottled grey-green and dark grey.
16						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC04-03

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Right Abutment, Bench 1
Co-ordinates (m) : 584,896.00E, 6,914,159.00N
Ground Elevation (m) : 1158.2
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 0.91

Start Date : 03 Mar 04
Finish Date: 04 Sep 04
Final Depth of Hole (m) : 21.0
Depth to Top of Rock (m) : 0.6
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16	Medium metallic lustre	11	WO	R3	NQ3	15.98 m to 16.0 m: Massive quartz. Foliated at 45° wrt core axis.
17		12		R4	NQ3	17.24 m: 13 mm quartz vein.
18	Creamy light grey	13			NQ3	Foliated at 40° wrt core axis. Calcite on some fractures.
19				R2		
20		14			NQ3	
21	Grey			R5		Massive quartz.
22	Creamy grey	15		R2	NQ3	
23		16		R1	NQ3	22.53 m to 22.56 m: quartz vein. Quartz vein at 40° wrt core axis, 50 mm thick with a vuggy surface and associated black metallic flecks.
24						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC04-03

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Right Abutment, Bench 1
Co-ordinates (m) : 584,896.00E, 6,914,159.00N
Ground Elevation (m) : 1158.2
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 0.91

Start Date : 03 Mar 04
Finish Date: 04 Sep 04
Final Depth of Hole (m) : 21.0
Depth to Top of Rock (m) : 0.6
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description	Symbol	Fracture Angle wrt Core Axis (30° 60°)	Total Core Recovery % / RQD % (20 40 60 80)	Hydraulic Conductivity (m/sec) (10^{-8} 10^{-6} 10^{-4})
24										
25	Light creamy grey	17		R2	NQ3					
						Backfilled with cement grout.				
26										
27										
28										
29										
30										
31										
32										

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB *Phone (403) 250-5185*

Client: Deloitte & Touche Inc. Faro Mine

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole:BGC04-03

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
1	schist	1.42	FO	PL	R	None	85		PO	
	schist	1.44	FO	PL	R	None	75		O	Iron Stained
	schist	1.49	FO	PL	R	None	80		O	
	schist	1.51	F	PL	SM	None	75		T	Iron Stained
2	schist	2.07	FO	PL	SM	Calcite	86		T	
	schist	2.34	FO	PL	R	None	80		O	Heavily Iron Stained
	schist	2.43	J	PL	VR	Calcite	28		O	Iron Stained
	schist	2.49	FO	PL	R	None	66		T	Lightly Iron Stained
	schist	2.55	FO	PL	SM	None	62		PO	Heavily Iron Stained
	schist	2.62	J	PL	VR	None	32		O	Heavily Iron Stained
	schist	2.64	FO	PL	SM	Calcite	66		PO	
	schist	2.69	FO	U	SM	None	65		PO	Lightly Iron Stained
	schist	2.72	J	PL	R	None	0		T	Heavily Iron Stained
	schist	2.74	FO	PL	SM	None	64		T	
3	schist	3.05	FO	PL	R	None	70		PO	
	schist	3.17	F	PL	SM	Healed	55		T	
	schist	3.23	FO	PL	R	None	60		T	
	schist	3.38	J	PL	SM	None	45		PO	Heavily Iron Stained
	schist	3.40	FO	PL	R	None	60		T	
	schist	3.57	FO	PL	R	None	62		T	
	schist	3.63	FO	PL	SM	None	60		T	
	schist	3.78	FO	PL	SM	None	60		T	
	schist	3.81	F	PL	VR	None	15		O	
	schist	3.89	FO	PL	SM	None	65		PO	Heavily Iron Stained
	schist	3.92	FO	PL	R	None	59		O	Heavily Iron Stained
	schist	4.04	FO	PL	R	None	53		O	Heavily Iron Stained
	schist	4.11	FO	ST	R	Calcite	54		O	
	schist	4.24	FO	PL	R	None	54		PO	Heavily Iron Stained

Type:	Shape:	Surface:	Fracture Spacing:	
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open	Project Number:___0257-027-01_____
F Fault	**C** Curved	**K** Slickensided	**O** Open	Project Name:____2004 PLUG DAM_____
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open	Depth Interval:_____0 - 26 m_____
B Bedding	**ST** Stepped	**R** Rough	**T** Tight	Logged By:___Gerry Ferris_____
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed	Date:_____Sept 3, 2004_____

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Core Logging Sheet - Fracture Logging

Borehole:BGC04-03

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
4	schist	4.70	FO	ST	R	None	40		T	Iron Staining
	schist	4.94	J	PL	R	None	0		PO	iron Staining
	schist	5.05	J	PL	SM	None	60		T	Iron Staining
	schist	5.24	FO	PL	R	None	50		PO	Iron Staining
	schist	5.52	FO	PL	R	Rubble in joint	60		T	Platey, Iron Staining
	schist	5.66	J	PL	R	None	15		PO	Heavy iron staining
	schist	5.75	J	U	VR	None	10		PO	Heavy iron staining
5	schist	6.73	J	PL	R	None	30		PO	Heavy iron staining
	schist	6.88	J	PL	R	None	79		PO	Heavy iron staining
	schist	7.01	J	PL	R	None	0		PO	Heavy iron staining
7	schist	10.29	FO	PL	SM/R	Calcite	60		PO	Heavy iron staining
8	schist	11.60	FO	PL	R	None	76		O	
	schist	11.79	FO	ST	R	None	80		O	
	schist	11.85	FO	PL	R	None	70		T	
	schist	11.89	FO	PL	VR	silt	64		PO	
9	schist	13.39	F	PL	R	None	18		T	Iron Staining
10	schist	13.92	FO	PL	R	None	64		T	Slight iron staining
	schist	14.50	F	PL	R	Calcite	21		T	
	schist	14.80	F	PL	R	None	46		PO	Slight iron staining
11	schist	15.14	FO	PL	SM	Silt	56		T	Iron Staining
	schist	16.00	FO	PL	SM	Silt	15		O	Possible drill break
	schist	16.23	FO	PL	R	Silt	62		PO	Rubble

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-027-01_____
Project Name:____2004 PLUG DAM_____
Depth Interval:_____0 - 26 m_____
Logged By:___Gerry Ferris_____
Date:_____Sept 3, 2004_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC04-03

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
12	schist	17.04	FO	PL	SM	None	56		PO	Slight iron staining
	schist	17.23	J	PL	R	None	1		O	Slight iron staining
	schist	17.29	J	PL	VR	Calcite	90		O	
	schist	17.40	FO	PL	SM	None	50		PO	Slight iron staining
	schist	17.53	FO	PL	SM	None	56		T	Broken core at this location
	schist	17.67	FO	PL	SM	Calcite	61		T	
	schist	17.68	F	PL	P	Calcite	3		PO	Partially healed with calcite.
	schist	17.94	FO	PL	SM	Silt, Calcite	62		PO	
14	schist	20.92	FO	PL	SM	Calcite	40		O	
	schist	21.02	J	PL	R	Calcite	5		O	
15	schist	22.40	F	PL	SM	Sericite	24		O	
	schist	22.47	F	PL	R	Sericite	30		PO	
	schist	22.52	FO	PL	SM	Sericite	24		PO	
16	schist	23.19	FO	PL	SM	Sericite	44		PO	
	schist	23.52	FO	PL	SM	None	38		T	
	schist	23.76	FO	PL	SM	None	52		T	
	schist	23.77	J	PL	R	Healed	25		T	drill break
	schist	23.80	FO	PL	SM	None	52		T	
	schist	23.99	J	PL	R	Healed	24		T	drill break
	schist	24.00	F	PL	R	None	25		T	
	schist	24.04	FO	PL	R	None	80		T	
17	schist	25.43	F	PL	R	None	71		PO	
	schist	25.51	FO	PL	VR	None	63		PO	Possible drill break
	schist	25.57	F	PL	R	None	30		T	

Type:	Shape:	Surface:	Fracture Spacing:	
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open	Project Number:___0257-027-01_____
F Fault	**C** Curved	**K** Slickensided	**O** Open	Project Name:____2004 PLUG DAM_____
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open	Depth Interval:_____0 - 26 m_____
B Bedding	**ST** Stepped	**R** Rough	**T** Tight	Logged By:___Gerry Ferris_____
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed	Date:_____Sept 3, 2004_____



DATE: SEPT 2006	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT	TASK 20B - PLUG DAM CONCEPTUAL DESIGN	
REFERENCED DRAWING DESCRIPTION			TITLE	BGC04-03 CORE BOXES 1, 2 & 3	
		CLIENT Deloitte & Touche	PROJECT No. 0257-038-01	FIGURE B2	REV. 0

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

DRILL HOLE # BGC04-04

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left Abutment
Co-ordinates (m) : 584,978.00E, 6,914,192.00N
Ground Elevation (m) : 1172.3
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 0.61

Start Date : 07 Sep 04
Finish Date: 08 Sep 04
Final Depth of Hole (m) : 37.8
Depth to Top of Rock (m) : 0.5
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
0	Creamy tan				NW	
1	Creamy grey	1	W1	R5	NQ3	Quartz rubble, heavy iron staining.
						Quartz with phyllite infill.
		2		R3	NQ3	Muscovite - Biotite Schist. Slightly weathered; foliated; medium strong; light grey. Muscovite - Biotite Schist. More altered, higher mica content; foliated at 57° wrt core axis; most fractures are iron stained; fresh.
3		3	W0	R2	NQ3	Dark grey to black. Minor chlorite.
4		4			NQ3	
5						50 mm quartz vein
6		5		R3	NQ3	High concentration of black crystals. Thinly banded grey, dark grey and white.
7		6			NQ3	
8						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC04-04

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left Abutment
Co-ordinates (m) : 584,978.00E, 6,914,192.00N
Ground Elevation (m) : 1172.3
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 0.61

Start Date : 07 Sep 04
Finish Date: 08 Sep 04
Final Depth of Hole (m) : 37.8
Depth to Top of Rock (m) : 0.5
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8	Creamy grey	6	W0	R3	NQ3	
9		7			NQ3	
10						50 mm quartz vein.
11	Reddish tinge	8			NQ3	
12						Dark grey, thinly banded with light grey-green.
13		9			NQ3	
14	Light grey	10		R2	NQ3	50 mm quartz vein.
15						Four quartz veins between 14.69 m and 14.81 m. One is 75 mm thick.
16	Creamy grey	11		R2/ R3	NQ3	

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB *Phone (403) 250-5185*

Client: Deloitte & Touche Inc. Faro Mine

DRILL HOLE # BGC04-04

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left Abutment
Co-ordinates (m) : 584,978.00E, 6,914,192.00N
Ground Elevation (m) : 1172.3
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 0.61

Start Date : 07 Sep 04
Finish Date: 08 Sep 04
Final Depth of Hole (m) : 37.8
Depth to Top of Rock (m) : 0.5
Logged by : GWF
Reviewed by : GWF

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16	Creamy grey	11	W0	R2/R3	NQ3	Multiple drill breaks in this zone.
17		12			NQ3	
18	Dark grey	13		R2	NQ3	25 mm quartz vein.
19						Grey green with some dark purple banding.
20	Creamy grey to whitish grey	14		R2/R3	NQ3	Dark purple inclusion. 19.81 to 19.91 m: this zone is covered and filled with a reddish-brown silt.
21						20.52 m: Quartz inclusion.
22		15			NQ3	Quartz rubble.
23		16			NQ3	22.32 m: 6 mm quartz vein. Dark grey-green with yellow silt cutting through foliation, mica.
24						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

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DRILL HOLE # BGC04-04

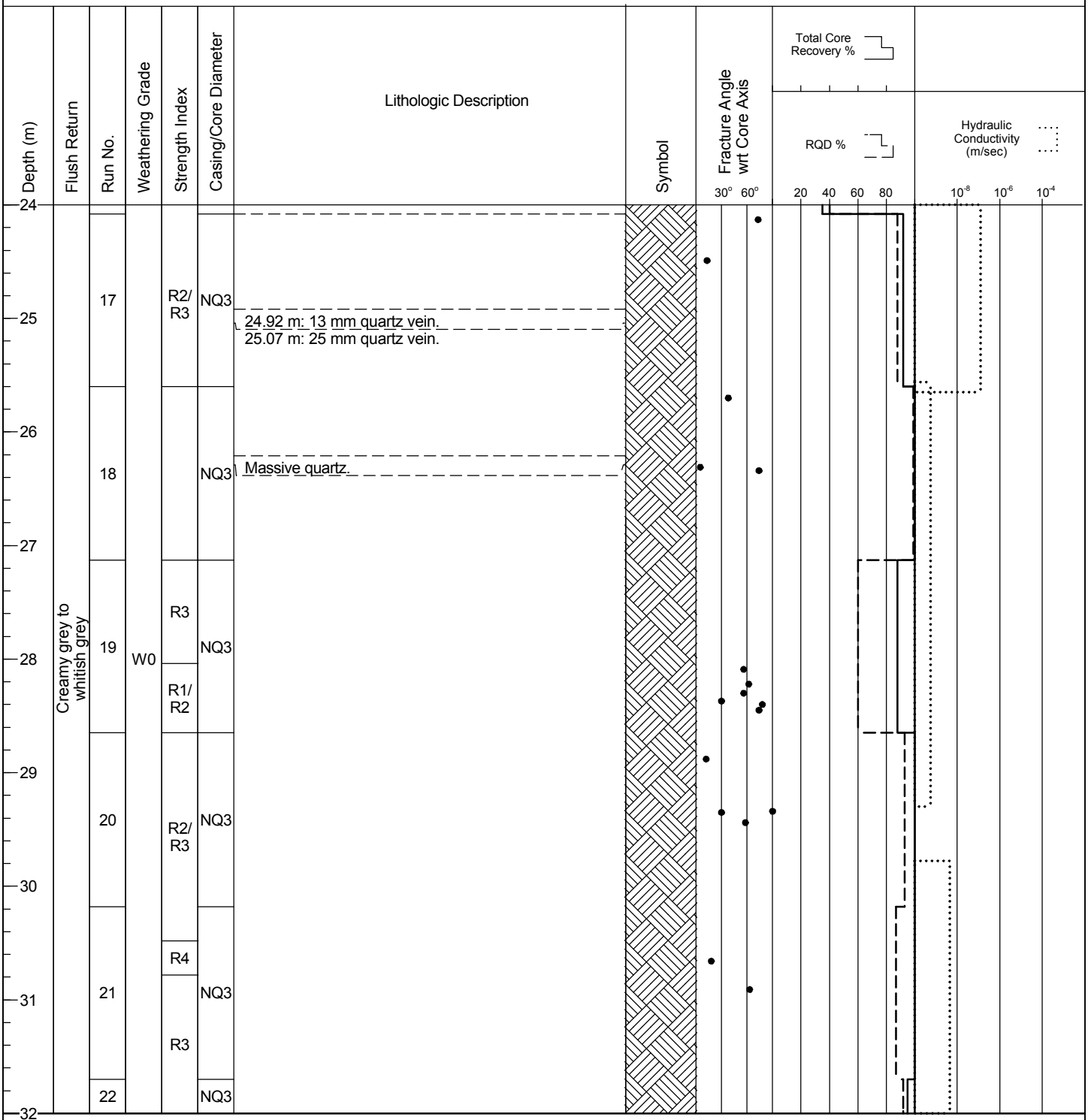
Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left Abutment
Co-ordinates (m) : 584,978.00E, 6,914,192.00N
Ground Elevation (m) : 1172.3
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : -

Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
Drill Method : Diamond
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 0.61

Start Date : 07 Sep 04
Finish Date: 08 Sep 04
Final Depth of Hole (m) : 37.8
Depth to Top of Rock (m) : 0.5
Logged by : GWF
Reviewed by : GWF



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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB *Phone (403) 250-5185*

Client: Deloitte & Touche Inc. Faro Mine

DRILL HOLE # BGC04-04

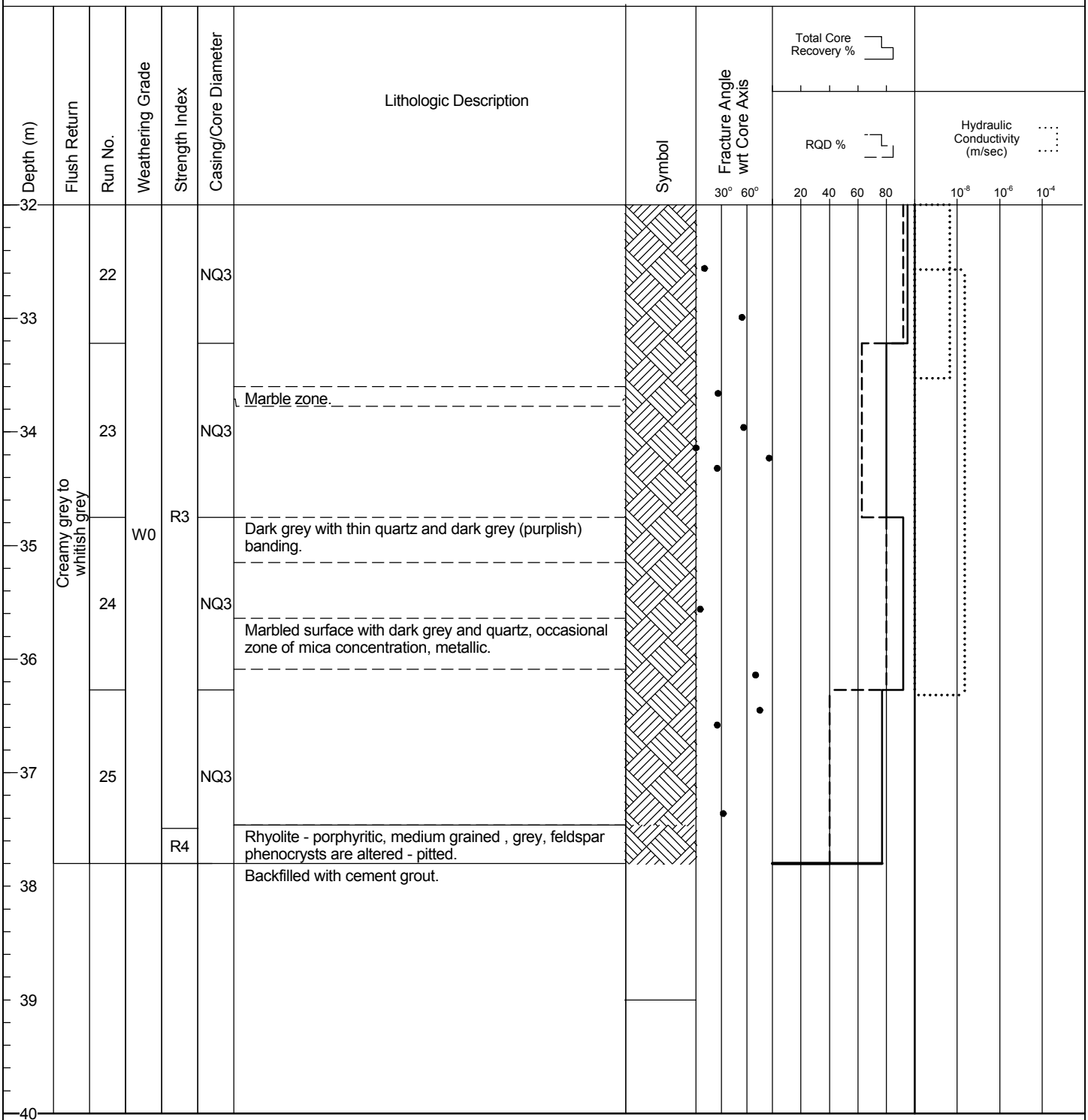
Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left Abutment
Co-ordinates (m) : 584,978.00E, 6,914,192.00N
Ground Elevation (m) : 1172.3
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Drill Designation : Rig 6
Drilling Contractor : Midnight Sun Drilling
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Core : NQ3
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Logged by : GWF
Reviewed by : GWF



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB *Phone (403) 250-5185*

Client: Deloitte & Touche Inc. Faro Mine

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC04-04

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
2	schist	2.26	FO	ST	R	None	68		O	Heavy iron staining.
	schist	2.41	FO	U	SM	None	68		PO	Heavy iron staining.
	schist	2.54	J	PL	SM	None	28		PO	Heavy iron staining.
3	schist	2.92	FO	PL	R	Silt	73		T	
	schist	4.04	J	PL	VR	Silt	0		T	
	schist	4.17	FO	PL	R	Silt	32		T	Trace silt on joint surface.
4	schist	4.75	FO	PL	SM	Silt	65		PO	
	schist	5.31	J	PL	R	Silt	14		PO	
	schist	5.56	J	PL	SM	None	20		PO	Rubble, broken core
5	schist	6.05	FO	PL	R	Silt	56		T	Yellow silt on joint surface.
	schist	6.20	J	PL	R	None	40		T	
	schist	6.88	J	PL	SM	Silt	37		T	Yellow silt on joint surface.
	schist	7.24	FO	PL	SM	Silt	64		PO	
6	schist	7.90	FO	PL	SM	Sand	49		Filled	Sand and rubble, 38 mm thick.
	schist	8.76	FO	PL	SM	Silt and sand	40		Filled	Silt and Sand, 3 mm thick.
7	schist	9.88	FO	PL	SM	Silt	47		T	Yellow silt on joint surface.
8	schist	11.76	FO	PL	R	Sand	24		Filled	Sand, 3 mm thick.
9	schist	13.06	J	PL	SM	Silt	77		Filled	Silt, 3 mm thick.
	schist	13.20	FO	PL	SM	Silt	47		T	
	schist	13.31	FO	ST	R	Sand	46		Filled	Sand, 25 mm thick.
10	schist	14.33	J	PL	SM	Silt	22		T	Silt coating on joint surfaces.
	schist	14.63	FO	PL	SM	Silt	47		Filled	Silt, 6 mm thick.
	schist	14.73	J	ST	R	None	22		PO	

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:___0257-027-01_____
Project Name:____2004 PLUG DAM_____
Depth Interval:_____0 - 38 m_____
Logged By:___Gerry Ferris_____
Date:_____Sept 7, 2004_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC04-04

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
11	schist	15.14	J	PL	R	None	24		PO	
12	schist	17.68	J	PL	R	None	39		T	
	schist	17.77	FO	PL	SM	None	44		Coated	Rubble.
	schist	17.78	FO	PL	SM	None	50		Coated	
13	schist	18.16	FO	PL	SM	None	70		Rubble	
	schist	18.82	F	ST	R	None	86		PO	Silt, 13 mm thick.
	schist	19.20	F	PL	SM	None	80		Filled	
	schist	19.43	FO	PL	R	None	26		T	
14	schist	19.84	FO	PL	R	None	54		PO	
	schist	20.27	F	PL	SM	None	22		PO	
15	schist	21.64	F	PL	R	None	32		T	Drill break.
16	schist	23.70	F	PL	R	None	48		T	
	schist	23.55	FO	ST	R	None	48		PO	
17	schist	24.13	FO	PL	SM	None	73		PO	Reddish silt.
	schist	24.49	F	PL	R	None	13		T	
18	schist	25.70	F	PL	R	None	38		T	
	schist	26.31	F	PL	R	None	5		T	
	schist	26.34	FO	PL	R	None	74		T	
19	schist	28.09	F	PL	VR	None	56		T	
	schist	28.22	F	PL	SM	None	62		Filled	Silt, 25 mm thick.
	schist	28.30	F	PL	R	None	56		Filled	Sand, 25 mm thick.
	schist	28.37	F	PL	R	None	30		PO	
	schist	28.40	FO	PL	SM	None	78		Coated	
	schist	28.45	FO	PL	SM	None	74		Filled	Silt, 13 mm thick.

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-027-01_____
Project Name:____2004 PLUG DAM_____
Depth Interval:_____0 - 38 m_____
Logged By:___Gerry Ferris_____
Date:_____Sept 7, 2004_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC04-04

Core Run	Rock Type	Depth (m)	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
20	schist	28.88	J	PL	R	Silt	12		PO	
	schist	29.35	F	PL	R	None	30		T	
	schist	29.34	J	PL	R	None	90		T	
	schist	29.44	FO	PL	R	Silt	58		T	
21	schist	30.66	F	PL	R	None	18		PO	
	schist	30.91	F	PL	SM	Silt	63		T	
22	schist	32.56	J	PL	R	None	10		T	
	schist	32.99	FO	PL	SM	Silt	54		PO	
23	schist	33.66	F	PL	SM	None	26		T	
	schist	33.96	FO	PL	R	Silt	56		T	
	schist	34.14	J	PL	R	None	0		T	
	schist	34.23	F	PL	VR	Sand	86		O	
	schist	34.32	J	PL	SM	None	25		T	
24	schist	35.56	J	PL	R	Silt	5		PO	
	schist	36.14	FO	PL	SM	Silt	70		T	
25	schist	36.45	FO	PL	SM	Silt	75		T	
	schist	36.58	J	PL	R	None	25		PO	
	schist	37.36	J	PL	R	Silt	32		T	Possible drill break.

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:___0257-027-01_____
Project Name:____2004 PLUG DAM_____
Depth Interval:_____0 - 38 m_____
Logged By:___Gerry Ferris_____
Date:_____Sept 7, 2004_____

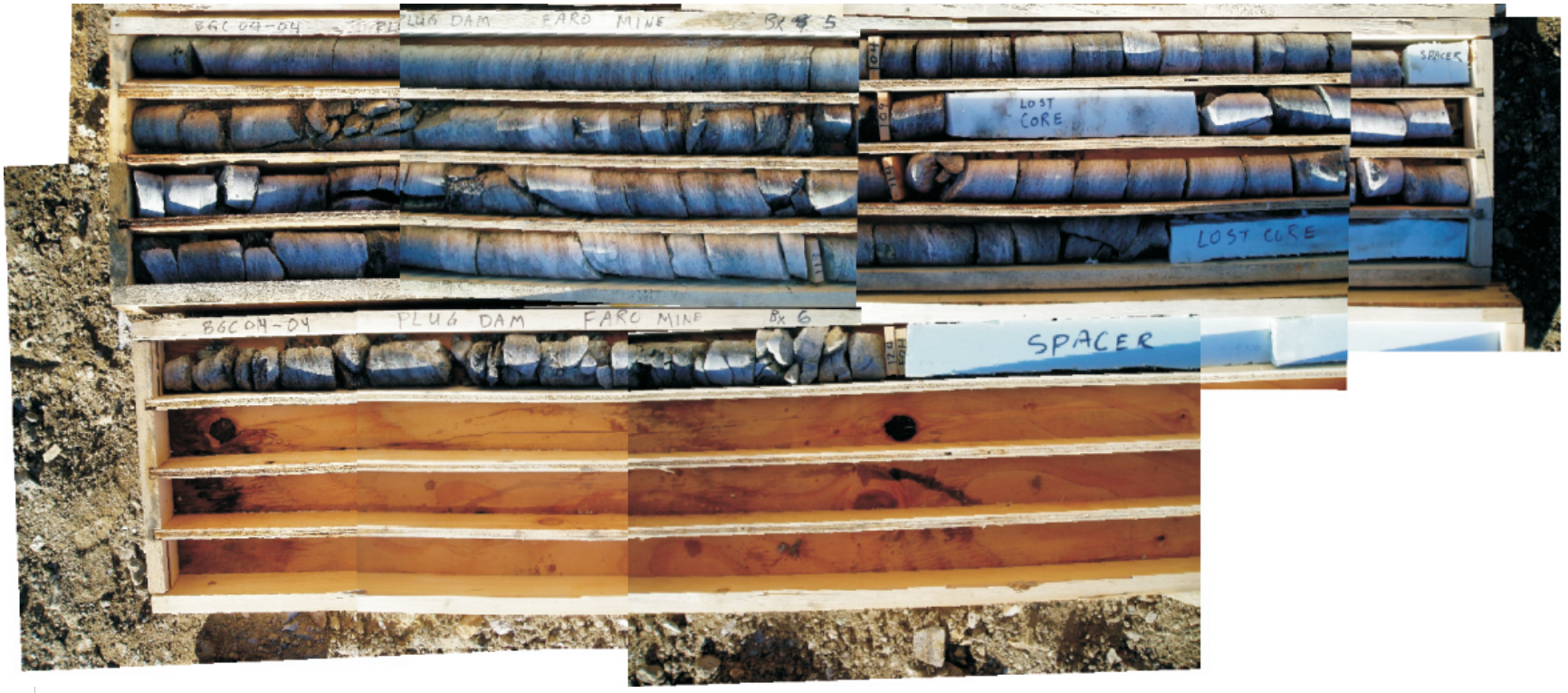


DATE: SEPT 2006	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT TASK 20B - PLUG DAM CONCEPTUAL DESIGN
REFERENCED DRAWING DESCRIPTION			TITLE BGC04-04 BOXES 1 & 2
AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.		CLIENT Deloitte & Touche	PROJECT No. 0257-038-01 / FIGURE B3 / REV. 0



DATE: SEPT 2006	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT TASK 20B - PLUG DAM CONCEPTUAL DESIGN
REFERENCED DRAWING DESCRIPTION			TITLE BGC04-04 BOXES 3 & 4
CLIENT Deloitte & Touche		PROJECT No. 0257-038-01	FIGURE B4 / REV. 0

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.



DATE: SEPT 2006	DRAWN SLF	PROJECT	TASK 20B - PLUG DAM CONCEPTUAL DESIGN
REFERENCED DRAWING DESCRIPTION		TITLE	BGC04-04 BOXES 5 & 6
CLIENT Deloitte & Touche	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT No. 0257-038-01	FIGURE B5 / REV. 0

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

DRILL HOLE # BGC05-24

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 585,019.10E, 6,914,179.40N
Ground Elevation (m) : 1182.8
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : 53

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 6.55

Start Date : 22 Aug 05
Finish Date : 28 Aug 05
Final Depth of Hole (m) : 45.7
Depth to Top of Rock (m) : 6.6
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
0	Tan to Light Tan					SILT (OVERBURDEN) some Sand, trace Cobble, tan, moist, low plasticity Based on cutting returns and drill response. Drill advanced by washing in NW casing.
6						Driller noted Bedrock at 21 ft (6.4 m)
7	Brown and Yellow	1	W2	R1		COBBLES and GRAVEL of various lithologies
		2	W2	R1		Muscovite-Biotite SCHIST (BEDROCK) Sericite and Fe staining on joints, slight weathering on joints, foliated at 60° wrt core axis Changes to a green Chloritic Schist at 7.6 m
8						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

Location : Left Abutment
Co-ordinates (m) : 585,019.10E, 6,914,179.40N
Ground Elevation (m) : 1182.8
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : 53

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 6.55

Start Date : 22 Aug 05
Finish Date : 28 Aug 05
Final Depth of Hole (m) : 45.7
Depth to Top of Rock (m) : 6.6
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8		2	W2	R1		Mottled green and black . Heavy Fe staining until 8.1 m 4 cm Quartz vein at 8.4 m
9	Creamy Grey	3	W1	R0/ R1		1.5 cm Quartz vein at 9.6 m Black mineral dominated with sand particles Mineralization 50% Green, 50% Black
10		4	W1	R0/ R1		
11						
12	Creamy White to Light Grey	5	W1	R0		Schist core weak and broken during drilling. Foliation in less distinct. Green Colour. Coating present from some previous cementing.
13		6	W1	R0/ R1		2.5 cm Quartz vein at 14.7 m, which extends then in a vertical direction consisting of 20% of the core. Tortuous foliation until 15.5 m. Sericite from 14.7 to 14.9 m within the structure as random lines.
14						
15	Grey	7	W1	R2/ R3		No distinct foliation. The core is mottled green with dark black wavy lines.
16	Dark Grey					Foliation at 42^0 wrt core axis at 15.9 m. Some

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-24

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 585,019.10E, 6,914,179.40N
Ground Elevation (m) : 1182.8
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : 53

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 6.55

Start Date : 22 Aug 05
Finish Date : 28 Aug 05
Final Depth of Hole (m) : 45.7
Depth to Top of Rock (m) : 6.6
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16						Quartz veining dominated by green minerals.
						Redrilled zone of broken rock at 16.3 m
	Creamy Grey	8	W1	R2/ R3		Zone with hardness of R0/R1 at 16.7 m
17						Foliation at 34^0 wrt core axis at 17.1 m. 1.5 cm Quartz vein with 10% black minerals and 90% green.
		9	W1	R2/ R3		
18						Green colour with occasional Sericite (yellow) veins with 15% black minerals in structure.
19	Creamy Light Grey / White					
		10	W1	R2		
20						Sericite becomes more prevalent at 20.4 m.
						Fault gouge, soft, wet, light grey / white colour. Quartz rubble zone to depth of 21.3 m.
21		11	W1	R2/ R3		
						Sericite less prevalent. Quartz veining between 21.3 and 22.6 m.
22						
	Creamy Light Grey	12	W1	R3		
23						
		13	W1			
24						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

Location : Left Abutment
Co-ordinates (m) : 585,019.10E, 6,914,179.40N
Ground Elevation (m) : 1182.8
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : 53

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 6.55

Start Date : 22 Aug 05
Finish Date : 28 Aug 05
Final Depth of Hole (m) : 45.7
Depth to Top of Rock (m) : 6.6
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
24	Creamy Light Grey	13	W1	R3/ R4		
25						
26		14	W1	R3/ R4		Foliation at 20^0 wrt core axis at 25.8 m.
27		15	W1	R3/ R4		Foliation at 30^0 wrt core axis at 27.4 m. Mineral colours are 40% green, 30% black, 30% quartz with some thin Sericite veins.
28	Creamy White					
29		16	W1	R4		
30	Creamy Light Grey to Creamy Grey	17	W1	R3/ R4		Quartz vein at 30.8 m until 30.9 m Tortuous foliation at 31.1 m. 80% green minerals.
31						
32		18	W1	R4		

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %

20 40 60 80

Hydraulic Conductivity (m/sec)

10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-24

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 585,019.10E, 6,914,179.40N
Ground Elevation (m) : 1182.8
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : 53

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 6.55

Start Date : 22 Aug 05
Finish Date : 28 Aug 05
Final Depth of Hole (m) : 45.7
Depth to Top of Rock (m) : 6.6
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
32	Creamy Light Grey to Grey	18	W1	R4		Foliation at 20^0 wrt core axis at 32.3 m.
33						Biotite 50% Muscovite 50%
		19	W1	R4		4 cm Quartz vein at 33.6 m, some green minerals
34	Creamy Light Grey					Foliation at 30^0 wrt core axis at 34.1 m. Quartz vein 2.5 cm thick. 2.5 cm Quartz vein at 34.3 m 1.5 cm Quartz vein at 34.4 m
35		20	W1	R3/ R4		
36						
	Creamy White	21	W1	R4		Foliation at 30^0 wrt core axis at 36.6 m.
37						
38	Grey	22	W1	R3/ R4		Very dark green and black mineral at 37.5 m, minor Quartz veining to 40.2 m.
39						End of Run 22 had Quartz fragments in end with some Silt sized fragments at 39.0 m.
		23	W1	R4		
40						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-24

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 585,019.10E, 6,914,179.40N
Ground Elevation (m) : 1182.8
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : 53

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 6.55

Start Date : 22 Aug 05
Finish Date : 28 Aug 05
Final Depth of Hole (m) : 45.7
Depth to Top of Rock (m) : 6.6
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
40	Grey	23	W1	R4 / R6		Quartz, very hard, fresh with some black veining, clear to white, massive at 40.3 m. PHYLLITE Greyish green colour, some white massive minerals in fractures at 40.5 m.
41	Creamy White	24	W1	R3		
42	Dull Grey					
		25	W1	R3 / R4 / R4/R5		8 cm Quartz vein at 43.0 m. RHYOLITE Fresh, medium to coarse grained, light grey with greenish tinged inclusions, Hard, R4/R5, mostly Quartz.
43	Creamy White	26	W1	R3/R4		
44		27	W1	R3		
45						
46						Backfilled with cement grout.
47						
48						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 1/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
1	Rubble of various origins from black rock, Quartz and rounded gravel sizes to full core pieces between 22'5" to									
	Schist	23' 5"	FO	PL	R		70		O	50/50 Black & Green Minerals
2	Schist	25' 3"	J	PL	SM	H.Fe	32		O	
	Schist	25' 3"	J	I	R	H.Fe	50		O	
	Schist	25' 5.5"	FO	PL	VR	Fe	82		PO	
	Schist	25' 8.5"	J	I	VR	H.Fe	80		O	
	Schist	25' 11"	FO	PL	R	H.Fe	75		O	
	Schist	25' 11.5"	FO	PL	R	H.Fe	75		O	
	Schist	26' 1"	MECH				74			
	Schist	26' 3.5"	FO	PL	R	H.Fe	73		O	
	Schist	26' 4"	J	PL	SM	H.Fe	15		O	
	Schist	26' 7" - 26' 10"								Rubble zone with gravel sizes and some Fe Staining
	Schist	27' 3"	MECH				68			
	Schist	27' 5"								Rounded Quartz rubble with silt &sand sized schist
	Schist	27' 7.5"	FO	PL	SM	Sericite	62		T	Some Sericite
	Schist	27' 9" - 28'								Rubble Zone
3	Schist	30' 7" - 30' 9"								Quartz & schist rubble of the gravel sized schist
	Schist	30' 10"	MECH				90			
	Schist	31'	MECH				90			
	Schist	31' 4.5"	MECH				90			
	Schist	31' 7" - 31' 8"								Quartz rubble from a vein
	Schist	31' 8.5"	F	PL	R	Sand	50		T	
	Schist	31' 11"	MECH			Sand	90			
	Schist	32' 2"	F	PL	R	Sericite	0		T	
	Schist	32' 1"	FO	PL	SM		64		T	
	Schist	32' 3.5"	MECH				90			
	Schist	32' 5"	J	PL	SM	Sericite	20			

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed
MECH Mechanical Break			

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	21' 5" - 32' 6"
Logged By:	Gerry Ferris
Date:	August 26, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 2/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
4	Schist	37' 11.5"	FO	PL	R	Sericite	45		T	
5	Schist	42' - 42' 1"								Quartz vein to rubble.
	Schist	42' 1" - 43' 2"								Silt & sand sized gouge material - some cement coating from previous grouting.
	Schist	42' 4"	MECH							
	Schist	42' 5"	F	PL	R	None	0		T	Potentially mechanical break of soft core.
6	Schist	44' 9"	MECH				74			
	Schist	45' 1"	MECH				83			
	Schist	45' 3.5"	FO	PL	VR		62		PO	
	Schist	45' 7"	MECH				88			
	Schist	45' 8.5" - 45' 10.5"								Rubble zone with fn. Gravel - sand sized schist particles.
	Schist	46' 9"	F	PL	SM	Sericite	24		T	
	Schist	46' 9" - 47' 6"								Highly broken up zone with multiple factures and the core breaking easily to sand and gravel sizes. Conjugate joints at 40°.
	Schist									Quartz fragments
7	Schist	47' 10" - 47' 11"								
	Schist	48' 2.5"	MECH				67			With 3 pieces broken up in this zone.
	Schist	48' 11.5"	F	PL	SM	Silt	45		T	
	Schist	49' 2"	MECH				72			
	Schist	49' 3.5"	MECH				90			
	Schist	49' 5.5"	MECH				90			
	Schist	50' 6"	J	PL	R		20		T	
	Schist	51'	MECH				31			
	Schist	51' 1.5"	MECH				90			
	Schist	51' 10.5"	MECH				57			
	Schist	52' 6"	MECH				40			
8	Schist	53' 2"	MECH				62			
	Schist	53' 2" - 53' 3"								Quartz Vein rubble.
	Schist	53' 3"	MECH				90			
	Schist	53' 5" - 54'								Rubble Zone with some evidence of re-drill

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed
MECH Mechanical Break			

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	32' 6" - 54'
Logged By:	Gerry Ferris
Date:	August 26, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 3/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
8	Schist	54' 4"	MECH				55			
	Schist	54' 6.5"	MECH				75			
	Schist	54' 9"	F	PL	SM	None	22		T	Conjugate or associated
	Schist	54' 10.5"	F	PL	R	Sericite	30		T	Conjugate or associated
	Schist	55' 1"	F	PL			22			
	Schist	55' 4"	MECH				80			
	Schist	56' 1"	MECH				80			
	Schist	56' 2"	MECH				80			
	Schist	57' 3"	F	PL	VR	None	12		T	Three mechanical breaks associated
	Schist	57' 3.3"	MECH				90			
	Schist	57' 4.5"	MECH				90			
	Schist	57' 6"	MECH				90			
9	Schist	58' 3"	MECH				90			
	Schist	58' 5"	FO	PL	SM	Sericite	82		PO	Mechanical
	Schist	58' 7"	MECH				90			
	Schist	58' 10"								Disked and rubble zone
	Schist	59'	FO	PL	SM	Sericite	63		T	
	Schist	59' 2"	J	I	VR		23		T	
	Schist	59' 7.5"	MECH				64			Broken on foliation
	Schist	60' 7"	MECH				80			Broken on foliation
	Schist	61' 7"	U				90			Quartz vein above this
	Schist	62' 3"	J	PL	VR		20		T	
	Schist	62' 4"	FO	PL	R		70		T	
	Schist	62' 6"	FO	PL	SM	Sericite	62		T	
10	Schist	66' 1.5"								Fragmented core, broken into C.GR sizes - Sericite on fragments
	Schist	66' 9.5"	MECH				90			
	Schist	66' 11.5"	F	PL	SM	Silt	62			1.5" thick zone
	Schist	67' 1"	MECH				60			Broken on foliation

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	34'
Logged By:	Gerry Ferris
Date:	August 26, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 4/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
10	Schist	67' 7"	F	PL	R	Soricite	8		H	
	Schist	67' 6"	MECH				53			Broken on Foliation
	Schist	67' 11"	F			Silt &Sand	43			3" Length of silt and sand
11	Schist									Silt & sand until 69' 8"
	Schist	68' 8" - 69' 9.5"								Silt & sand from mica mixed with quartz fragments m.Gr sized
	Schist	70' 8" - 70' 11"								Very soft broken core / mica of silt &sand sized - retains original structure
	Schist	71' 2.5"	MECH				69			
	Schist	72' 1"	MECH				53			
	Schist	72' 6"	MECH				52			
	Schist	72' 9"	MECH				85			
12	Schist	73' 10"	J	PL	VR	Sericite	5		T	
	Schist	74' 1.5"	MECH				90			
	Schist	74' 3.5"	MECH	I			90			
	Schist	74' 9"	F	PL	R	Sericite	25		T	
	Schist	75'	MECH				90			
	Schist	75' 3"	MECH				90			
	Schist	75' 7"	MECH				90			
	Schist	76' 11"	MECH				90			
	Schist	77' 2"	F	I	R	Sand & GR	80		T	
	Schist	77' 8"	MECH				80			
13	Schist	78' 8" - 79' 9"								Quartz Rubble
	Schist	79' 10.5"	MECH				90			
	Schist	79' 2"	MECH				90			
	Schist	79' 6" - 79' 9"								Rubble Zone Sericite coatings
	Schist	79' 10.5"	MECH				40			Across foliation
	Schist	80' 6"	MECH				76			
	Schist	81'	F	C	R	Sericite	45		T	
	Schist	81' 2"	FO	PL	R		44		T	Quartz associated in this.

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Name:	2005 Plug Dam
Depth Interval:	67' - 81'
Logged By:	Gerry Ferris
Date:	August 26, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 5/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
13	Schist	82' 3"	MECH				28			
	Schist	82' 7"	MECH				45			
	Schist	82' 9.5"	FO	PL	R	Sericite	84		T	MECH?
14	Schist	85' 10"	MECH				64			
	Schist	86'	MECH				60			
	Schist	86' 4"	MECH				85			
	Schist	86' 5.5"	MECH				70			Broken on Foliation
	Schist	86' 7"	MECH				65			
	Schist	86' 9"	J	PL	SM		48		T	
	Schist	86' 11"	FO	PL	SM	Sand/Silt	33		T	3" Thick zone
	Schist	87' 4"	J	U	VR	Sericite	32		PO	
	Schist	87' 8"	88'							Very soft weathered Zone Silt with Sericite
15	Schist	88' 9"	88' 11.5"							Quartz rubble cobble sizes broken core and some redrill.
	Schist	88' 11.5	89' 1"							Fragments of schist
	Schist	89' 1"	MECH				90			
	Schist	89' 2"	F	PL	SM	Sand/Silt	45			3" Thick Zone
	Schist	90' 0.5"	J	PL	R	Sand	77		T	1/8" Thick
	Schist	90' 4"	MECH				61			
	Schist	90' 6.5"	MECH				86			
	Schist	91' 6.5"	MECH				73			
	Schist	92'	MECH	ST	R		56		T	Possibly J not MECH
	Schist	92' 3"	MECH				83			
	Schist	92' 10"	J	PL	VR	Sand/Silt	42		T	Also sericite associated
	Schist	92' 10"	FO	PL	R		45		T	
16	Schist	93' 1"	MECH				71			
	Schist	93' 3"	MECH				80			
	Schist	93' 3.5"	MECH				85			
	Schist	93' 5.5"	MECH				90			

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	
Logged By:	Gerry Ferris
Date:	August 26, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 6/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
16	Schist	93' 10"	FO	PL	SM		90		T	Possibly MECH.
	Schist	94' 1"	MECH				90			
	Schist	94' 3.5"	MECH				90			
	Schist	94' 6"	FO	PL	R		80		T	
	Schist	95' 8"	J	PL	R		5		T	
	Schist	95' 0.5"	MECH				87			
	Schist	95' 2"	FO	PL	SM		77		T	
	Schist	95' 3"	F/S	PL	SM	Silt	84		T	1/4 " Thick
	Schist	95' 3.5"	FO	PL	SM		85		T	
	Schist	95' 7.5"	FO	PL	SM	Sericite	73		T	
	Schist	95' 9.5"	MECH				90			
	Schist	96'	MECH				53			
	Schist	96' 1"	FO	PL	R	Sericite	64		T	
	Schist	96' 2.5"	MECH				74			
	Schist	96' 5.5"	FO	PL	SM	Sericite	76		T	
	Schist	96' 7"	MECH				62			
	Schist	97' 1"	MECH				90			
	Schist	97' 5"	J	PL	SM		48		T	MECH?
	Schist	97' 9.5" - 98'								Rubble due to removal from core catcher.
17	Schist	100' 4.5"	MECH				90			
	Schist	100' 5.5"	J	PL	SM		43		T	
	Schist	100' 7"	MECH				50			
	Schist	100' 8"	MECH				90			
	Schist	100' 11" - 101' 3.5"								Quartz Broken into fragments.
	Schist	101' 4"	F	PL	R	Sand	36		T	
	Schist	101' 7"	J	PL	VR	Sericite	47		T	
	Schist	101' 7"	MECH				52			
	Schist	101' 11"	MECH				58			

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	94' - 102'
Logged By:	Gerry Ferris
Date:	August 28, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 7/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
17	Schist	102' 7"	J	U	R	Silt coat	85		T	Silt coating & Sericite
	Schist	102' 7.25"	F	PL	SM	Sericite	85		T	
	Schist	102' 7.5"	F	PL	SM	Silt	75		T	1/8" Thick
	Schist	102' 8.5"	F	U	SM	Sericite	71		T	
	Schist	102' 9.5"	F	PL	SM	Silt/Gard	70		T	1/8" Thick
	Schist	102' 10"	MECH				58			
18	Schist	103' 4.5"	MECH				78			
	Schist	103' 6"	MECH				86			
	Schist	103' 7"	J	PL	R	Sericite	85		T	
	Schist	103' 8"	MECH				90			
	Schist	103' 10.5"	MECH				30			
	Schist	104'	J	U	R	Sericite	90		T	
	Schist	104' 3"	MECH				78			
	Schist	104' 5"	MECH/J	PL	UR	Sericite	65		T	Maybe MECH
	Schist	104' 8"	MECH				65			
	Schist	104' 11"	MECH				88			
	Schist	105' 2"	MECH				90			
	Schist	105' 4"	J	PL	R		14		T	
	Schist	105' 5"	MECH				90			
	Schist	105' 6.5"	MECH				90			
	Schist	106' 10"	MECH				80			
	Schist	107' 0.5"	J	PL	R	Sand	72		T	
	Schist	107' 3.5"	MECH				77			
	Schist	107' 4.5" - 107' 6"								Broken Zone? Mech? With some sericite on lower fracture
	Schist	107' 9"	MECH				74			
19	Schist	108' 8"	MECH				90			
	Schist	108' 9.5"	MECH				90			
	Schist	109' 0.5"	FO	PL	SM	Sericite	66		T	

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	102'
Logged By:	Gerry Ferris
Date:	August 28, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 8/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
19	Schist	109' 2.5"	FO	PL	SM	Sericite	64		T	
	Schist	109' 4.5"	MECH				85			
	Schist	110' 0.5"	MECH				85			
	Schist	110' 11"	FO	PL	SM	Sericite	73		T	Some day
	Schist	111' 2.5"	MECH				86			
	Schist	111' 7"	MECH				70			
	Schist	111' 10.5"	FO	U	SM		70		H	mechanical
	Schist	112' 0.5"	MECH				90			
	Schist	112' 5"	F	PL	SM	Mica Sill	77		T/H	
	Schist	112' 8"	FO	PL	R		54		T	MECH
	Schist	112' 9.5"	MECH				55			
20	Schist	113' 7" - 117' 7"								Broken up zone with some real factures & some mech two notes on fractures are
	Schist	113' 11.5"	FO	PL	R	Sericite	53		T	
	Schist	114' 7.5"	FO	PL	SM	Silt	68		T	
	Schist	115' 2"	MECH				64			
	Schist	115' 6.5"	MECH				90			2" - 3" Thick
	Schist	117' 2"	F	RL	R	Silt / Sand	45		?	
	Schist	117' 7"	J	U/ST	R	L.sericite	12		T	
	Schist	117' 9" - 117' 10"								
21	Schist	119' 10"	MECH				78			
	Schist	120' 5"	J	PL	R	Sericite	44		T	
	Schist	120' 8.5"	MECH				50			Broken on Foliation
	Schist	121'	MECH				74			Some Quartz rubble here - lost core
	Schist	121' 3.5"	FO	PL	SM	Silt	56		T	
	Schist	121' 7"	MECH				86			
	Schist	121' 8"	MECH				60			
	Schist	122' 1.5"	MECH				66			Broken on Foliation
	Schist	122' 9.5" - 123"								Broken core zone from core catcher

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	109' - 123'
Logged By:	Gerry Ferris
Date:	August 28, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 9/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
22	Schist	126' 8.5"	MECH				62			Broken on Foliation
	Schist	126' 10"	F	U	R	Sericite	85		PO	
	Schist	127'	F	PL	R	Sericite	90		T	
	Schist	127' 0.5"	MECH				90			
	Schist	127' 4"	F	PL	R	Sericite	46		T	Silt
	Schist	127' 8"	J	PL	R		22		T	
	Schist	127' 9.5" - 128'								Broken core from catcher - Quartz rubble with some silt / gouge material.
23	Schist	129' 3.5"								1/2" of Broken core
	Schist	129' 7"	MECH				72			
	Schist	129' 10.5"	MECH				72			
	Schist	130' 2"	MECH				90			
	Schist	130' 10.5"	J	PL	R	Silt	45		T	
	Schist	131' 3"	F	PL	R	Silt	73		T	
	Schist	131' 6"	F	PL	R	Silt	75		T	
	Schist	131' 6" - 137'								Weathered to WR all is soft silt / sand sizes retaining its original structure. Shear Zone (weathered)
	Schist	131' 10"	F	PL	SM	Silt	46		T	
	Schist	131' 11"	MECH				90			
	Schist	132' 1" - 132' 2.5"								Broken core Quartz fragments
	Phyllite	132' 7" - 132' 9"								Broken up to sand / Silt in an intrusion in Quartz white minerals
	Phyllite	132' 8"	F	PL	R	White	34		T	
	Phyllite	132' 10"	133'							Broken core Quartz fragments
24	Phyllite	136' 1" - 136' 2"								Broken Quartz Rubble
	Phyllite	136' 2.5"	MECH				88			
	Phyllite	136' 3.5"	J	U	R	Limestone	32		PO	
	Phyllite	136' 5"	FO	PL	R	White	40		T	
	Phyllite	136' 7.5"	MECH				90			
	Phyllite	136' 11.5"	MECH				90			

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	123'
Logged By:	Gerry Ferris
Date:	August 30, 2005

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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 10/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
24	Phyllite	137' 1"	J	PL	R	Carbonites	62		T	1/2" WIDE
	Phyllite	137' 5"	MECH				86			
	Phyllite	137' 7"	S	PL	R	Sericite	50		T	
	Phyllite	137' 9" - 138'								Quartz rubble
25	Phyllite	140' 4.5" - 140' 5"								Quartz rubble
	Phyllite	140' 5"	MECH				90			
	Phyllite	140' 8.5"	MECH							
	Phyllite	141'	FO	PL	SM	Carbonites	32		T	
	Phyllite	141' 2.5"	MECH				85			
	Phyllite	141' 4.5"	FO	PL	R	Sericite	45		T/PO	White blebs from rhyolite
	Phyllite	141' 6.5"	MECH				90			
	Phyllite	141' 8.5"	FO	U	R	Carbonites	70		O	
	Phyllite	141' 10.5" - 142' 1"								Shear Zone. Soft with sand & silt sizes. Carbonates on some fragments/ also areas
	Rhyolite	142' 1.5"	S	PL	SM		27		T	
	Rhyolite	142' 4.5"	J/S	PL	SM	Carbonates	32		T	
	Rhyolite	142' 5.5"	J	C	SM		22		T	
	Rhyolite	142' 9" - 143'								Broken core from catcher
26	Rhyolite	143' 1"	J	PL	SM	White M.	37		PO	Note core run 26 was actually Drilled to 145.5' not 145 as other sheets
	Rhyolite	143' 2"	MECH				80			Note core run 26 was actually Drilled to 145.5' not 145 as other sheets
	Rhyolite	143' 5"	MECH				75			Note core run 26 was actually Drilled to 145.5' not 145 as other sheets
	Rhyolite	143' 6.5"	J	PL	SM	Carbonites	22		PO	
	Rhyolite	143' 11"	S/J	PL	SM		31		PO/O	1/4" Thick Zone
	Rhyolite	144' 2" - 144' 4"								Broken core zone mechanical & mech fracture with carbonates
	Rhyolite	144' 7.5"	MECH				90			
	Rhyolite	144' 9.5"	J	PL	SM	Carbonites	13		T	
	Rhyolite	145' 1"	J	PL	SM	Carbonites	23		T	
	Rhyolite	145' 2.5" - 145' 6"								Broken core from catcher

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed
MECH Mechanical Break			

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	
Logged By:	Gerry Ferris
Date:	August 30, 2005

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Core Logging Sheet - Fracture Logging

Borehole: BGC05-24 (pg. 11/11)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
27	Rhyolite	148' 7.5"	J	PL	SM	White	33		PO	Soft white silt sized material
	Rhyolite	149'	J	PL	SM	White	12		PO	White soft silt sized material
	Rhyolite	149' 1"	MECH				90			
	Rhyolite	149' 4.0"	J	PL	SM	White	22		PO	
	Rhyolite	147' 7" - 150'								Rubble Zone partly from drilling but also this may be a shear Zone which is broken down to sand sized with 10% silt sizes which are soft and white in color.

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation
- **MECH** Mechanical Break

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	145' - 150'
Logged By:	Gerry Ferris
Date:	August 31, 2005





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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B -PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-24 BOXES 1 & 2

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B6





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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-24 BOXES 3 AND 4

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B7

Rhyolite



AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project:	TASK 20B - PLUG DAM CONCEPTUAL DESIGN
Title:	BGC05-24 BOX 5

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B8

DRILL HOLE # BGC05-25

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Right Abutment
Co-ordinates (m) : 584,919.60E, 6,914,104.50N
Ground Elevation (m) : 1181.0
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 5.79

Start Date : 31 Aug 05
Finish Date : 09 May 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 5.5
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
0	Tan					Sandy SILT (OVERBURDEN) some Clay, light brown, moist, returns mostly silt/clay size. Based on cutting returns and drill response. Drill advanced by washing in NW casing.
1						
2						
3	Dark Brown to Dark Grey with Tan					
4						
5						
5.5	Grey					BEDROCK Very dark grey, Fe Staining on fracture surfaces. Metallic sheen to rock surface, gold colour, massive, fine-grained. Faro Ore?
6		1	W2	R4		
6.5				R3		Massive, dark grey to black with some Fe and Sulphur on fractures, reddish orange flecks within the metallic sheen rock.
7		2	W1	R3		
8						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Right Abutment
Co-ordinates (m) : 584,919.60E, 6,914,104.50N
Ground Elevation (m) : 1181.0
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 5.79

Start Date : 31 Aug 05
Finish Date : 09 May 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 5.5
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8	Grey	2	W1	R3		Driller noted that this was very easy drilling and fast even with 1/2 of normal drill head pressure. Water was slowed as well.
9	Reddish Brown to Dark Grey intermixed with Creamy Yellow	3	-	-		
10		4	-	-		
11		5	W2	R5		from 10.7 to 11.6 m, lightly Fe to brown colour occasionaly stained. Quartz fragments, no full core pieces, metallic sheen to dark grey attachments to Quartz. One Quartz fragment was slightly vuggy on side of fragment.
12		6	W2	R2/ R3		
13	Creamy Yellow Grey	7	W2	R3		MUSCOVITE PHYLLITE trace Biotite and some other micaceous mineral, black crystalline inclusions. Slightly to moderately weathered, foliated (Tortutous on core scale), dark grey, foliated at 70^0 wrt core axis.
14						Heavy Fe staining
15	Creamy Light Grey	8	W1	R2		
16						at 15.7 m, Fe staining stops. Core becomes green colour.

Symbol | Fracture Angle wrt Core Axis (30° 60°) | Total Core Recovery % / RQD % (20 40 60 80) | Hydraulic Conductivity (m/sec) (10^{-8} 10^{-6} 10^{-4})

(Continued on next page)

DRILL HOLE # BGC05-25

Project : 2005 Plug Dam Investigation

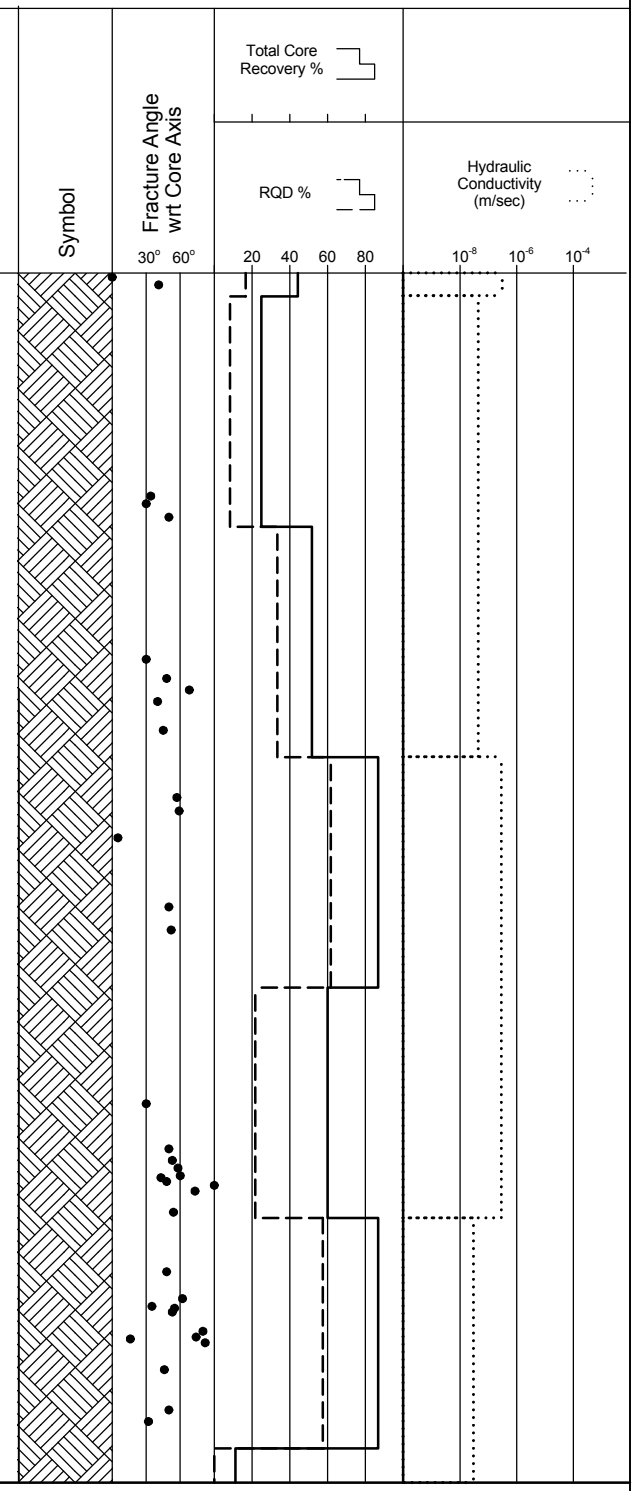
Project No. : 0257-038-01

Location : Right Abutment
Co-ordinates (m) : 584,919.60E, 6,914,104.50N
Ground Elevation (m) : 1181.0
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 5.79

Start Date : 31 Aug 05
Finish Date : 09 May 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 5.5
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16	Creamy Grey	8	W1	R2		Muscovite-Mica Phyllite. Carbonates and Sericite on fractures between 16.2 and 17.4 m.
17	Creamy Grey	9	W1	R2		Faro Ore - from 17.3 to 17.4 m
18	Grey	10	W1	R2/ R3		Massive, metallic black, occasional Quartz inclusions, some gold / metallic silver zones, carbonate coatings, heavy 13 cm thick Quartz vein at 17.4 m Phyllite at 17.5 m
19	Grey			R4		Green colour, mostly Biotite with 10% Muscovite, some Sericite coatings on fractures. Carbonaceous Phyllite / Schist from 18.4 to 18.6 m
20	Creamy Light Grey / Dark Grey	11	W1	R3		Foliation at 30^0 wrt core axis. Black with two small, soft, white and grey speckled weathered inclusion zones. Light Grey with Black inclusions at 18.6 m. Tortuously foliated with light Fe staining. Dark grey at 19.1 m Quartz stringer 1.5 cm thick at 19.4 m. Below stringer is light Greenish Grey with occasional Quartz inclusions and some red coloured areas included in the matrix. 8 cm Quartz vein at 20.7 m Carbonaceous Phyllite (Black) at 20.7 m
21	Creamy Light Grey to Grey	12	W1	R2/ R3		Some very washed zones within Copper coloured veining and partial foliation. Carbonaceous Schist / Phyllite from 20.7 to 21.6 m
22	Creamy Light Grey to Grey					Black with occasional light Green bands (Muscovite / Chlorite) with some Sericite coatings. Banded Black and Grey Green Schist with light Fe staining on fractures with red crystalline inclusions in matrix at 21.6 m. Green zone with intermixed Green Schist (Chlorite) and Quartz with some Red metallic areas and Gold coloured inclusions from 22.0 to 22.1 m.
23	Creamy Light Grey to Grey	13	W1	R3		Mica Schist with Biotite at 22.1 m 5 cm Quartz vein at 22.2 m Dark Grey with Green zones associated with Quartz veins at 22.56 m. Orange coatings on fractures and within Schist Matrix. 1.5 cm Quartz vein at 23.0 m
24	Creamy Light Grey to Grey	14	W1	R0		1.5 cm Quartz vein at 23.3 m



(Continued on next page)

DRILL HOLE # BGC05-25

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Right Abutment
Co-ordinates (m) : 584,919.60E, 6,914,104.50N
Ground Elevation (m) : 1181.0
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 5.79

Start Date : 31 Aug 05
Finish Date : 09 May 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 5.5
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
24		14	W1	R0		5 cm Quartz vein at 23.7 m
25						Quartz at 25.1 m
26		15	W1	R5		
27						5 cm Quartz vein at 26.6 m
28	Creamy Light Grey	16	W1	R3		Carbonate coatings from 27.9 to 28.2 m 1.5 cm Quartz vein at 27.9 m 5 cm zone with Quartz-rich Schist and red areas up to 0.7 cm and copper coloured metallic inclusions at 28.2 m,.
29		17	W1	R3		5 cm of Quartz rubble at 28.8 m
30	Creamy Dark Grey	18	W1	R6		
31	Creamy Light Grey	19	W1	R3		15 cm Quartz vein at 30.4 m Interbedded Schist and Quartz veins with some metallic green minerals associated with Quartz, some Sericite and light Green minerals on one fratureat 30.6 m.
		20	-	-		Schist from 30.7 to 32.9 m
32		21	W1	R3		Carbonaceous with some red tinged bands in matrix. 2.5 cm Quartz vein at 30.8 m

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-25

Project : 2005 Plug Dam Investigation

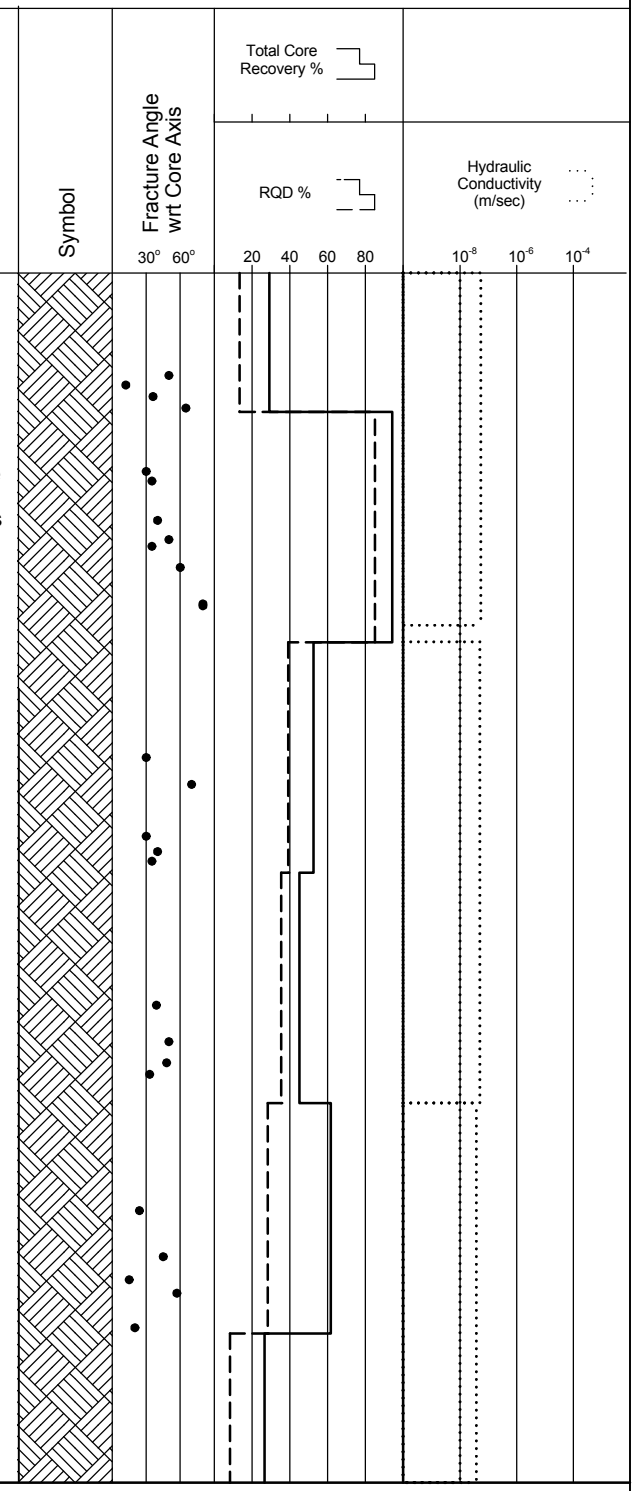
Project No. : 0257-038-01

Location : Right Abutment
Co-ordinates (m) : 584,919.60E, 6,914,104.50N
Ground Elevation (m) : 1181.0
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 5.79

Start Date : 31 Aug 05
Finish Date : 09 May 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 5.5
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
32	Creamy Light Grey	21	W1	R3		5 cm Quartz vein at 31.0 m 5 cm Quartz vein with copper / silver inclusions at 32.5 m 9 cm Quartz vein at 32.7 m
33		22	W1	R3		Carbonaceous Schist to Carbonaceous and Chlorite (50%/50%) at 33.2 m. This section included a Yellow to Orange 0.5 mm band within structure. This material is also located on fractures.
34	Creamy Light Grey to White	23	W1	R3		Orange coating up to 1 cm thickness at interface between Quartz and Schist at 34.4 m. This is associated with some dark Green minerals.
35						Chlorite 70% and carbonaceous 20% Quartz 10% Schist with the orange / yellow thin bands within the matrix at 35.2 m.
36		24	W1	R3		
37						Driller noted "Soft Drilling" at 36.9 m Above the Schist is Carbonaceous with minor chlorite at 37.0 m. below 37.0 m, Chlorite with 5% carbonaceous in a shear zone upon initial formation with some Quartz inclusions. Two zones ith carbonates on fractures.
38	Creamy Grey	25	W1	R3		Chlorite shear zone from 38.5 to 38.8 m
39						Carbonaceous Schist in a shear zone from 38.8 to 38.9 m Chloritic Schist from 38.9 to 39.0 m Carbonaceous Schist from 39.0 to 40.5 m
40		26	W1	R3		



(Continued on next page)

DRILL HOLE # BGC05-25

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Right Abutment
Co-ordinates (m) : 584,919.60E, 6,914,104.50N
Ground Elevation (m) : 1181.0
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 5.79

Start Date : 31 Aug 05
Finish Date : 09 May 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 5.5
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description	Symbol	Fracture Angle wrt Core Axis (30° 60°)	Total Core Recovery % / RQD % (20 40 60 80)	Hydraulic Conductivity (m/sec) (10^{-8} 10^{-6} 10^{-4})
40		26	W1	R3		10 cm of broken Quartz at 40.4 m				
41						Backfilled with cement grout.				
42										
43										
44										
45										
46										
47										
48										

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 1/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
1	4 Fragments of redrilled / moved during drilling of Gravel sized - no complete core fragments. Fe stained on fracture surfaces? Recovery 2" multpe fragments of massive dark grey / black rock with signs of both Fe staining and sulphur? (bright yellow) on fractures. some thin quartz veining and orangeish red inclusions throughout metallic sheen to wet rock.									
2										
3		28- 33'								no recovery - washed away
4		33 - 35'								no recovery - washed away
5	Quartz									Fragments only with one massive grey fragment included - no full core pieces
6	phyllite	42' 6" - 42' 9.5"								phyllite fragments with heavy Fe staining on fragments mica / muscovite.
	phyllite	42' 9.5"	mech				90			
	phyllite	42' 10.5"	mech				90			
7	phyllite	46' 8.5" - 47' 1.5"								Fragments that are heavily Fe stained, some full core recovered as thin disks.
	phyllite	47' 1.5"	J	U	SM	Fe stain	83		O	
	phyllite	47' 3"	J	U	R	Fe stain	43		O	
	phyllite	47' 5"	FO	PL	SM	Fe stain	53		O	
	phyllite	47' 7"	FO	PL	VR	Fe stain	71		O	
	phyllite	47' 10"	FO	PL	R	light Fe	68		T	
8	phyllite	50' 9.5" - 50' 10"								fragments of light grey, W2 phyllite - micaceous
	phyllite	50' 10" - 50' 11"								shear zone W4/W5 material silt sizes - no Fe staining RO
	phyllite	50' 11" - 51' 3.5"								W4 weathered zone R1 micaceous phyllite which flakes pressure.
	phyllite	51' 3.5" - 51' 6.5"								W5 Zone or shear zone silt sizes. RO light Fe staining
	phyllite	51' 9"	mech				68			
	phyllite	51' 10.5"	mech				37			
	phyllite	52' 0.5"	mech				85			
	phyllite	52' 5"	FO / S	PL	R	Silt / Sand	34		T	1/2" Thick zone R1 / W4
	phyllite	52' 7"	J	U	VR	Quartz	0		H	
	phyllite	52' 9"	S	PL	R	Silt	41		T	
	phyllite	53	mech				45			

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____19' - 53'_____
Logged By:___Gerry Ferris_____
Date:_____Sept 4, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 2/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
9	phyllite	56' 9" - 56' 10.5"								phyllite muscovite fragments with carbonates and sericite fractures.
	phyllite	56' 10.5" - 57' 1.5"								Black one no joints
	Marble	57' 1.5" - 57' 6"								Marble
	phyllite/Schist	57' 6" - 58'								
	Marble	57' 4"	J	R	R	carbonate	34		PO	
		28- 33'	J	R	R	carbonate	30		PO	
		33 - 35'	FO	R	R	sericite	50		T	1/2" thick broken zone.
10	phyllite	60' 3.5" - 60' 8.5"		R	R					
	phyllite	60' 8.5"	mech				90			
	phyllite	60' 10.5"	J	U	SM		30		T	
	phyllite	61' 1.5"	mech				46			
	phyllite	61' 3.5"	FO	PL	VR	carbonate	48		PO	
	phyllite	61' 6.5"	J/FO	PL	SM	carbonate	68		T	1" Thick light Fe / 61' - 62'
	phyllite	61' 8"	mech				5			
	phyllite	61' 9.5"	FO	C	SM	carbonate	40		T	
	phyllite	62'	mech				35			
	phyllite	62' 5"	FO/ S	PL	R	Sericite	45		T	Silt on fracture
	phyllite	62' 7.0"	mech				35			
	phyllite	62' 9.5"	mech							Rubble zone from core catcher.
11	phyllite	63' 8" - 63' 9"							T	
	phyllite	63' 10.5"	FO	PL	SM	carbonate	57		T	
	phyllite	63' 11.5"	mech				52			On foliation
	phyllite	64' 1"	mech				59			
	phyllite	64' 2"	J	PL	R		59		T	
	phyllite	64' 3"	mech				35			
	phyllite	64' 4.5"	mech				30			
	phyllite	64' 5"	mech				35			
	phyllite	64' 9"	J	PL	R	carbonate	5		T	

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____53'_____
Logged By:___Gerry Ferris_____
Date:_____Sept 5, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 3/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
11	phyllite	64' 8"	mech				70			
	phyllite	64' 10.5"	mech				48			
	phyllite	65' 1"	mech				40			
	phyllite	65' 2"	mech				40			
	phyllite	65' 5.5"	mech				86			
		28- 33'	FO	PL	R	carbonate	50		T	
		33 - 35'	FO	PL	R	Silt / Sand	52		T	
	phyllite	66' 10"	mech				42			
	phyllite	66' 10.5"	mech				66			
	phyllite	3.5"	mech				90			
	phyllite	67' 7.5"	mech				67			Broken on Foliation
	phyllite	67' 9"	mech				72			
	phyllite	67' 9"								Marble? Or Quartz with some dark green silt sizes of sericite on broken core.
12	Schist	70' - 70' 2"								Fragments of both Quartz and carbonaceous schist.
	Schist	70' 3"	mech				43			Broken on Foliation
	Schist	70' 4"	mech				40			Broken on Foliation
	Schist	70' 6"	mech				87			
	Schist	70' 6.25"	J	U	R	minor carbonate	30		T	
	Schist	70' 7"	mech				50			
	Schist	70' 9.5"	mech				43			Broken on Foliation
	Schist	71' 0.5"	J	PL	R	carbonate / Sericite	53			90° on Foliation
	Schist	71' 4"	mech				50			Broken on Foliation
	Schist	71' 6"	FO	PL	R	carbonate	50		T	Broken on Foliation
	Schist	71' 9"	FO	PL	R	carbonate	53		T	
	Schist	71' 11"	FO	PL	R		58		T	
	Schist	71' 11.5"	mech				47			
	Schist	72' 0.5"	mech				36			
	Schist	72' 1"	FO	PL	SM	carbonate	60		T	

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____64'_____
Logged By:___Gerry Ferris_____
Date:_____Sept 5, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 4/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
12	Schist	72' 1.5"	J	PL	S	light Fe	43		T	
	Schist	72' 2.5"	F	PL	R		48		T	
	Schist	72' 3.5"	F		VR	sand	90		PO	some silt sizes
	Schist	72' 5"	F	U	S	light Fe	73		T	
	Schist	72' 7.5" - 72' 9.5"								W4/W5 material of silt and some sand sizes material
		28- 33'	S			silt/sand				
		33 - 35'	J	U	VR	sericite carbon	54		T	
13	Schist	73' 8"	mech				60			broken on foliation
	Schist	73' 9.5"	mech				59			broken on foliation
	Schist	74'	mech				86			
	Schist	74' 1"	mech				87			
	Schist	74' 2"	FO	PL	R	orange	48		T	
	Schist	74' 3"	J	ST	R	orange	33			mechanical? Breaking on orange
	Schist	74' 4"	mech				90			
	Schist	74' 5"	mech				60			
	Schist	74' 7.5"	mech				68			
	Schist	74' 9"	FO	PL	VR	sand sizes	62		PO	
	Schist	74' 11"	J	PL	VR	carbonates	35		T	
	Schist	74' 11.5"	S	PL	R	sand	55		PO	
	Schist	75' 0.5"	FO	PL	SM		53		T	broke at contact with Quartz - mech?
	Schist	75' 4"	mech				67			
	Schist	75' 5"	mech				68			
	Schist	75' 5.5"	FO	C	R	orange	80		T	broke at Quartz contact
	Schist	75' 7"	FO	C	R	carbonates	74		T	
	Schist	75' 7.5"	J	U	SM	carbonates	16		T	
	Schist	75' 8.5"	FO	C	SM	carbonates	82		T	
	Schist	76' 3.5"	S	PL	R	carbonates	46	1 1/2 zone	PO	broken into Gr& sn size
	Schist	76' 5.25"	mech				85			

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:____72 - 77_____
Logged By:___Gerry Ferris_____
Date:_____Sept 6, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 5/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
13	Schist	76' 7.5"	mech				90			
	Schist	76' 8.5"	mech			orange	90			
	Schist	77' 1.5"	mech				80			
	Schist	77' 2"	F	ST	R	none	50		T	
	Schist	77' 4"	mech				66			
		28- 33'	F	PL	R	orange	32		T	
		33 - 35'	mech				40			
	Schist	77' 7.5"	mech				54			broke on foliation
	Schist	77' 8.5"	mech				72			
	Schist	77' 9.5"	mech				64			broke at Quartz contact
14	Schist									highly broken up core - Due to drilling
	Schist									2" of Quartz remainder of the 7.5" of material is a light greenish grey schist consiting of W3/W4 material which was either a shear zone or is broken by drilling?
	Schist									
	Schist									one slightly discernable fracture is noted in zone with light orange coloured coating
	Schist									
15	Schist									total recovery of 9" of broken fragments due to bit size problems
	Schist									the fragments consist of 1" yellow / orange. Metallic coating
	Schist									3" of schist (mica) fragments metallic look with minor yellow coatings on some sides
	Schist									
	Schist									2" of Quartz with some yellow coating and reddish metallic blue
	Schist									Remainder in a shear zone with in the schist broken down to sand sizes trace silt
16	Schist	91' 3.5"	91' 9"							broken fragments - likely from drilling
	Schist	91' 10"	mech				90			
	Schist	91' 10.5"	mech				90			trace carbonate coatings
	Schist	91' 11"	mech				90			
	Schist	91' 11.5"	mech				90			
	Schist	91' 11.5" - 92' 0.5"								broken core zone
	Schist	91' 1"	S	PL	Smooth	Sand	54		PO	1.5" thick slean

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____77' - 92'_____
Logged By:___Gerry Ferris_____
Date:_____Sept 8, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 6/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
16	Schist	92' 2.5"	mech				62			broken on foliation
	Schist	92' 3" - 92' 6"								broken core zone
	Schist	92' 7.5"	mech				85			
	Schist	92' 9"	S	PL	SM	Silt	29	T		
	Schist	94' - 95'					90			broken up core from diamond bit being out of size other is missing core
17										C94 mica / chorite schist with some carbonated coating until 94' 7"
		94' 8"								Quartz view with light bright green coatings
	Schist	94' 8"- 95'								broken up carbonaceous schist Black
	Schist	95' - 98'								Quartz fragments - due to diamond bit wear
18	Schist	99' 3" - 99' 4.5"								Quartz view
19	Schist	99' 4.5" - 99' 10.5"								Rubble zone with schist & Quartz fragments
		99' 10.5" - 100' 4"								Quartz Zone
		100' 4" - 100' 9"								Shear zone with 1/2" thick silt
	C.schist	100' 8.5"	S	PL	R	Sand	40			
		100' 10"	mech				71			light grey, WS 1/4"
		101' 0.5"	S	PL	SM	Silt	67			
		101' 4"	mech				58			broken foliation
		101' 5.5" - 101' 8"								shear zone silt, WS
		101' 9"	mech				80			
		101' 10" - 102'								Quartz minor carbonate coating
20										no recovery
21	C.schist									Quartz/rubble for 2" - likely location for lost core
		106' 8.5" - 106' 10.5"								carbonaceous schist rubble - alteration minerals at 106' 10.5" likely Shear zone

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____92' - 106' 10"_____
Logged By:___Gerry Ferris_____
Date:_____Sept 8, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 7/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
21	C.schist	106' 10.5'	S	PL	R	orange alternations	63			
	C.schist	107' 2.5"	FO	PL	SM		50		T	
	Quarts	107' 5"	F/J	U	SM	carbonates	12		PO	
	C.schist	107' 8"	J	ST	R	carbonates	36		PO	
	C.schist	107' 11"	FO	PL	R		65		T	
		108'								broken core in catcher
22		108' 4.5"								Quartz rubble
	Schist	108' 4.5" - 108' 5"								schist rubble
	Schist	108' 5"	mech				90			
	Schist	108' 7"	mech				62			on foliation - lost core
	Schist	109'	mech				72			on foliation - lost core
	Schist	109' 3"	mech				90			
	Schist	109' 3.5"	J	PL	R	orange alternations	30		T	
	Schist	109' 6"	J	PL	R	orange alternations	35		T	
	Schist	109' 9"	mech				85			
	Schist	110' 2.25"	mech				80			
	Schist	110' 4.25"	S	PL	R	silt/sand	40		T	orangecoating 5 mm thick
	Schist	110' 7.5"	mech				80			
	Schist	110' 9.25"	J	PL	SM	orange	50		T	
	Schist	110' 11"	F	ST	R		35		T	
	Schist	111' 1"	FO	PL	R	silt & orange	50			
	Schist	111' 4.5"	FO	PL	R		60		T	
	Schist	111' 7.75"	mech				80			
	Schist	112' 0.25"	mech				75			
	Quartz	112' 2"	S	U	VR	orange	80		H	carbonates
	Quartz	112' 2.5"	S	U	VR		80		H	carbonates
	Quartz	112' 7.75"	mech				50			
	Quartz	112' 10" - 113'								Quartz rubble from core catcher - coated fractures with light green minerals and white / orange carbonate

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____106' 10" - 113'_____
Logged By:___Gerry Ferris_____
Date:_____Sept 8, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 8/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
23	Quartz	115' 6"	F	U	UR	orange	30		T	
	Schist	115' 7"	mech				85			
	Schist	115' 10"	mech				45			broken on foliation
	Schist	116' 1"	FO	PL	SM	orange	70		T	
	Schist	116' 7"	mech	PL	UR		50			broken on foliation
		28- 33'	mech				90			
		33 - 35'	mech				75			
	Schist	117' 2.5"	J	PL	SM		30		T	
	Schist	117' 3"	mech				90			
	Schist	117' 6.5"	J	PL	UR		40		T	
	Schist	117' 6"	mech				50			
	Schist	117' 9"	J	PL	UR		35		T	
24	Schist	120' 9"	mech				48			broken on foliation
	Schist	120' 10.5"	FO	PL	R	orange	39		PO	
	Schist	121' 1.5"	mech				89			
	Schist	121' 3.5"	mech				90			
	Schist	121' 8"	FO	PL	SM	orange	50		T	
	Schist	121' 11"	S	PL	K	grey silt	40			
	Schist	122'	mech				88			
	Schist	122' 1.5"	S	C	R	silt carbonate	48		T	
	Schist	122' 4.5"	S	C	R	silt carbonate	33		T	
	Schist	122' 7.5"	mech				90			
	Schist	122' 10"	mech				55			broken on foliation
	Schist	122' 10.5" - 125' 1"								
25	Schist	125'								
	Schist	125' 1½"	mech				73			
	Schist	125' 3"	mech				62			broken on foliation
	Schist	125' 4"	J	PL	R	carbonates	24		H	1-2 mm thick coating

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____113'_____
Logged By:___Gerry Ferris_____
Date:_____Sept 11, 2005_____

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole:BGC05-25 (pg. 9/9)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
25	Schist	125' 4¼"	mech				73			broken on foliation
	Schist	125' 6½"	mech				88			
	Schist	125' 6.5" - 125' 9"								broken core zone fragments of schist, Qtz broken to S+G size evidence of carbonate coating on some fragments.
	Schist									
	Schist	125' 9"	mech				76			
		28- 33'	S	PL	SM	minor carbonate	52			
		33 - 35'	FO	PL	VR	carbonate	45		PO	½" sand - size material in shear
	Schist	126' 8½"	mech				82			
	Quartz	126' 10"	J	PL	R	carbonate	15		T	Quartz - schist interface
	Quartz	126' 11"	mech				67			
	Schist	127' 1½"	S	PL	SM	minor carbonate	57		T	3/4" widebroken gravel size likely lost core above this 1½" W4 zone
	Schist	127' 2½"	mech				72			
	Schist	127' 3½"	S							
	Schist	127' 5.5" - 127' 7"								shear zone, silt,minor carbonate, RO
	Schist	127' 7"	mech				80			likely lost core above this
	Schist	127' 10½"	J	PL	R		20		T	
26	Schist	131' 9"	FO	PL	P	sulfids	76			
	Schist	132'	mech							broke on foliation
	Schist	132' 1.5"	FO	PL	R	carbonate	63			
	Schist	132' 3.5"	FO	PL	R	micarbonates	85		T	
	Quartz	132' 4.75"	mech				80			broke on contact
	Quartz	132' 5" - 132' 9"								Quartz rubble zone, minor sericite, Fe & minor carbonates coating
	Schist	132' 11"								rubble zone from core catcher

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:___0257-038-01_____
Project Name:____2005 PLUG DAM_____
Depth Interval:_____
Logged By:___Gerry Ferris_____
Date:_____Sept 11 , 2005_____





AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-25 BOXES 1 & 2

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B9



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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-25 BOX 3

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B10

DRILL HOLE # BGC05-26

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Road
Co-ordinates (m) : 584,948.50E, 6,914,152.00N
Ground Elevation (m) : 1153.8
Datum : Geodetic
Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 3.05

Start Date : 08 Sep 05
Finish Date : 12 Sep 05
Final Depth of Hole (m) : 26.8
Depth to Top of Rock (m) : 5.4
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
0	Grey	1	W2	R5		Pink Granite (Boulders and Cobbles) No Recovery to 5.4 m
1	Creamy Light Grey	2	W2			
2						
3	Light Yellow Grey	3	W2			
4		4	W2	R3		
5						SCHIST (BEDROCK) Slightly weathered, foliated at 45^0, light grey with greenish tinge, banding of sericite, R3, Muscovite and mica SCHIST Fresh, foliated, dark green banded core with black minerals, Biotite-Muscovite SCHIST
6	Creamy White	5	W1	R3		
7						Fracture parallel to core axis
8		6	W1	R3		

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %
RQD %
20 40 60 80

Hydraulic Conductivity (m/sec)
10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-26

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

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Depth to Top of Rock (m) : 5.4
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8	Creamy Light Grey	6	W1	R3		Fracture Fracture Broken core zone, some quartz, gravel and cobble size 8 cm Shear zone Broken core zone, gravel and cobble size
9		7	W1	R3		Carbonaceous SCHIST Shallow fracture Chlorite Biotite Muscovite SCHIST
10		8	W1	R3		Shallow fracture Shallow fracture
11						Fracture Fracture Fracture Fracture Fracture
12	Reddish Tinge	9	W1	R3		4 cm Quartz vein Broken Quartz zone
13						2 cm Quartz vein 8 cm Quartz vein
14	Grey	10	W1	R3		Carbonaceous SCHIST 4 cm Shear zone
15	Creamy Light Grey	11	W1	R3		2 cm Shear zone
16						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-26

Project : 2005 Plug Dam Investigation

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Fluid : Water
Casing : NW ***Cased To (m)*** : 3.05

Start Date : 08 Sep 05
Finish Date : 12 Sep 05
Final Depth of Hole (m) : 26.8
Depth to Top of Rock (m) : 5.4
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16	Reddish Tinge	11	W1	R3		Quartz vug Quartz vug 8 cm Quartz stringer
17		12	W1	R3		
18	Creamy Light Grey with Grey intermixed	13	W1	R2		2 cm Quartz stringer with sulphides 2 cm Quartz vein Fracture with sand and gravel infill Broken core zone 5 cm Quartz vein
19						
20		14	W1	R3		Shear zone 10 cm Broken core zone 3 cm zone of R0 Silt
21		15	W1	R3		8 cm Broken core zone Shear with silt and sand infill
22						Fracture Fracture and alteration
23		16	W1	R3		Broken core and alteration Fracture Fracture and alteration
24		17	W1	R3		Silt and Sand from core catcher

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %

20 40 60 80

Hydraulic Conductivity (m/sec)

10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-26

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Road
Co-ordinates (m) : 584,948.50E, 6,914,152.00N
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Dip (degrees from horizontal) : 90
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 3.05

Start Date : 08 Sep 05
Finish Date : 12 Sep 05
Final Depth of Hole (m) : 26.8
Depth to Top of Rock (m) : 5.4
Logged by : G. Ferris
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
24						
		17	W1	R3		Very shallow fracture and alteration Fracture with carbonate infill
25						Fracture
						Gravel in core catcher
26	Light Grey to Grey	18	W1	R3		Fracture Shallow fracture with alteration
27						Backfilled with cement grout.
28						
29						
30						
31						
32						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-26 (pg. 1/6)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
1	Fill	1'3"	granite fragment. 2-2" micaceous schist with mettalic flecs. 1-1.5" fragment from							WASTE ROCK FILL
			cobbles/boulders. Remainder is gravel sized fragments.							
2	Fill	1-1.5"	Schist fragment. Remainder are sand and gravel sized fragments of micaceous							WASTE ROCK FILL
			schist with metallic inclusions							Fe Stained
3	Fill		Quartz and Mica Fragments							
4	Fill									
	Schist									
5	Fill	21'4"-22'1"	Broken core fragments - gravel size - qtz, shist							WASTE ROCK FILL
	Schist	22'1"-22'4"	J	P	R	Chlorite	10		?	
		22'4"-22'6"	J	P	R	Silt	10		?	
		22'6.5"	J	U	R	Carbonates	45		PO	
		22'7"	MECH				90			
		22'8.5"	MECH				90			
		23'	MECH				45			
		25'9.5"	J	ST	R	minor carb.	73		O	
		26'	J	U	K	minor carbonate, chlorites	67		PO	
		26'2"-26'11"	Broken core - qtz, schist, gravel and cobbles							
		27'1.5"	MECH				70			
		27'3"-27'6"	S	P	Smooth	micaceous	55		PO	high biotite mica content
		27'6.5"	MECH				25			
		27'6.5"-28'	Broken core - Shcist							
		30'3"					90			
		30'6"	J	ST	VR		65		?	
		30'5"	J	P	SM	Chlorite, carbonates	17		PO	
		30'6.5"-30'8.5"	Broken Core							
		30'11"	MECH				90			

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	1'-30'11"
Logged By:	Gerry Ferris
Date:	Sept. 9, 2005

H. Fe	Heavy Iron Stain
Fe	Iron Staining

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-26 (pg. 2/6)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
7	Schist	31'1.5"	J	ST	VR	Carbonates	50		?	
		31'3.5"	MECH				80			
		31'5"	MECH				70			
		31'8.5"	MECH				85			
		31'11"	J	C	SM	Carbonates	56		PO	
		32'1"	J	U	R	Carbonates	60		?	
		32'4"	J	ST	R	Carbonates + Chlorites	30		T/PO	
		32'5"	J	C	SM	Carbonates + Chlorites	35		?	
		32'6"-32'9"		Broken Core						
8		35'9.6"	MECH				65			Break on foliation
		36	MECH				65			Break on foliation
		35'9.5"-36'5"		Broken Core - Schist, high chlorite content						
		36'7.5"	MECH				62			Break on foliation
		36'8.5"	FO	PL	SM	Carbonates	55		PO	
		36'11.5"	FO	U	SM	Carbonates	55		T/PO	
		37'1"	FO	PL	SM	Carbonates	55		PO	
		37'2"	FO	ST	R	Carbonates	55		O	
		37'5.5"	MECH				58			Break on foliation
		37'7"	J	PL	K	Carbonates	45		?	
		37'8.5"	MECH				55			
		37'8.5"-38'	MECH	Broken core - gravel sized						
9		40'.5"	J	PL	SM	Carbonates	10		PO	
		40'3.5"	MECH				70			
		40'5"	FO	PL	SM	Chlorites	55		?	Break on foliation
		40'7"	J	PL	C	minor	85		T	
		40'11"	MECH				55-90			Partially broken on foliation
		41'2.25"	MECH				53			Break on foliation
		41'5"	J	C	R	Carbonates + Chlorites	37		?	

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	30'11" - 41'5"
Logged By:	Cathy Banton
Date:	September 13, 2005

H. Fe	Heavy Iron Stain
Fe	Iron Staining

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-26 (pg. 3/6)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
9		41'7.5"	MECH				90			
		41'11"	FO	ST	Rough		55		T	
		42'1"	J	PL	Smooth	Chlorite	21		O	
		42'9"	Contact between schist and qtz vein				50			minor silt and carbonates infill
10	Carbonaceous Schist	44'11.5"	FO	PL	Rough	Carbonates	64		PO	
		45'2"	MECH				90			
		45'3.5"	Broken core zone							
		45'8"	J	U	Rough	carbonates	33		?	
			S	ST	Rough	S+G	60			1.5" of infill sand and gravel
		46'6"	FO	PL	Smooth		68		T	
		46'9.5"	MECH				85			
		47'0.5"	FO	PL	Smooth		58		?	
		47'4.5"	FO	PL	Smooth	minor Carbonates	58		PO	
		47'5.75"	MECH				58			break on foliation
			S	PL	Smooth	S+G	67		?	
	Muscovite Schist	47'11.5"	FO	PL	ST	minor carbonates	50		?	
11		48'4"-48'10.5"								
		48'11"	FO	PL	Rough	chlorite + Carbonates	65		T	
		49'1"	MECH				990			
		49'4"	MECH				67			break on foliation
		49'8"	F	C	VR	chlorite + Carbonates	60		?	
		49'9.5"	MECH				26			
		49'11.5"	MECH				90			
		50'2"	FO	PL	Smooth		80		T	
		50'3.25"	FO	PL	Smooth		80		T	
		50'9.5"	MECH				65			
		51'2.5"	MECH				85			
		51'9.5"	MECH				85			

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	41'5" - 51'9.5"
Logged By:	Cathy Banton
Date:	August 26, 2005

H. Fe	Heavy Iron Stain
Fe	Iron Staining

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-26 (pg. 4/6)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
11	muscovite	51'11"	MECH				80			
	schist	52'9"	FO	PL	K		75		PO	
		52'6.5"-5'9"	Broken core - Minor Silt							
12		54'5"	MECH				90			
		54'7"	MECH				85			
		54'10.5"	MECH				85			
		55'-55'6"	90							
		55'9"	MECH				90			
		56'0.5"	MECH				90			
		56'3.25"	MECH				90			
		56'7"-56'10"	Broken core - Minor Silt							
		57'-57'2.75"	Stepped	PL	Smooth	silt+sand	60		2.75" Silt+sand	
		57'5.5"	MECH				43			
		57'7"	J	U	Smooth	carbonates + chlorites	5		?	
13		60'7"	MECH				75			Broke at contact with qtz stringer
		60'8.75"	MECH				75			Broke at contact with qtz stringer
		61'	MECH				76			Break on foliation
		61'4"	MECH				90			
		61'7.5"	bBreak at contact with qtz stringer							
		61'10"	J	U	VR	S+G	27		O	sand and gravel, filled
14		64'8.5"	FO	PL	K	Chlorites	53		PO	
		65'4.25"	MECH				60			Break on foliation
		65'8.5"	Stepped	PL	Rough	Carbonates	30		O	
		66'1"-66'5"	zone of broken core							
		66'8"	MECH				35			Break on foliation
		66'9.5"	FO	U	Smooth	minor Carbonates	66		PO	
		67'8.5"	FO	PL	Smooth		75		PO	
		67'9.5"	FO	PL	Smooth	Silty Surface	70		O	

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	51'11" - 67'9.5"
Logged By:	Catthy Banton
Date:	September 13, 2005

H. Fe	Heavy Iron Stain
Fe	Iron Staining

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-26 (pg. 5/6)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
15	biotite	69'3"	J	PL	Rough	minor carbonates	38		PO	
	muscovite	70'7.5"	MECH				70			Break on foliation
	schist	70'9"	Stepped	PL	Smooth	sand+silt	65		0.25" Silt+Sand	
		71'2"	MECH				70			Break on foliation
		71'6.5"	MECH				70			Break on foliation
		71'8"	MECH				50			
		72'0.5"	MECH			stepped fracture, ave 70 deg				
		72'4"	J	U	Rough	carbonates	20		PO	
		72'5.75"	MECH			chlor/carb	70			Break on foliation
		72'8.25"	MECH			carbonates	72			Break on foliation
		72'10"	FO	PL	K		70		PO	
16		73'1.5"	FO	U	Rough		57		PO	
		73'2"								
		74'5.25"								
		74'11"	MECH				48		T	
		75'1.5"	FO	PL	Smooth	minor	68			
		75'2.5"	FO	ST	Rough	carbonates	64		PO	
		75'4.5"	MECH				66			
		75'5.25"	J	PL	Smooth	carbonates	25		PO	
		75'6"	FO	PL	Rough	chlor/carb	70		O	
		75'9"	FO	PL	Smooth	chlor/carb	60		PO	
		75'11"	MECH				60			Break on foliation
		76'1"	FO	FL	Smooth	carbonates	68		O	
		76'3"	MECH				60			Break on foliation
		76'4.5"	MECH				60			Break on foliation
		76'6.75"	MECH				63			
		76'7.5"	MECH				55			
		76'9.75"	MECH				65			Break on foliation

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	68'-76'9.75"
Logged By:	Cathy Banton
Date:	September 13, 2005

H. Fe	Heavy Iron Stain
Fe	Iron Staining

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-26 (pg. 6/6)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
16	biovite	76'11.25"	J	U	VR	minor carb.	60		O	
	muscovite	77'1.75"	FO	PL	SM	minor carb.	72		PO	
	schist	77'4.5"	FO	U	R	minor carb.	55		PO	
		77'6"	J	ST	R	carbonates	40			
		77'7.25"	MECH				70			Break on foliation
		77'9.5"	MECH				63			Break on foliation
17	biot. Musc.	78'4"	FO	PL	SM		73		?	
	Schist	78'6.75"	FO	ST	R		62		O	
		78'10.25"	J	C	R	chlorite	63		?	
		78'11"	FO	U	R	carbonates	60		O	
		79'2.25"	FO	PL	VR	carbonates	61		O	
		79'3.75"-79'	J	PL	R	sulphides+ chlorites	5		PO	
		80'6"	J	PL	R	carbonates	60		PO	
		80'9.5"	FO	PL	SM		75		T	
		81'1"	FO	PL	SM		75		T	
		81'5"	FO	PL	SM	minor carb.	80		PO	
		81'6.5"	J	ST	R	chlor/carb	26		PO	
		81'7.5"	MECH				75			Break on foliation
		82'1"	MECH				75			Break on foliation
		82'6.25"	MECH				80			Break on foliation
		82'10.5"	MECH				80			
18		86'1.75"	MECH				68			
		86'7"	J	PL	VR	chlor/carb	40		PO	
		86'8.258"	FO	PL	SM	minor carb.	65		PO	
		87'	J	PL	SM	chlor/carb	25		O	
		87'3"	J	U	R	chlorite	90			
		87'9"-88'	Crushed rock - sand + gravel							EOH

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	76'9.75" - 88' (EOH)
Logged By:	Cathy Banton
Date:	September 13, 2005





AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-26 BOXES 1 & 2

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B11



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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-26 BOX 3

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B12

DRILL HOLE # BGC05-27

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 584,850.30E, 6,914,171.10N
Ground Elevation (m) : 1159.4
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 3.96

Start Date : 13 Sep 05
Finish Date : 18 Sep 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 4.0
Logged by : C. Banton
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description	Symbol	Fracture Angle wrt Core Axis (30° 60°)	Total Core Recovery % / RQD % (20 40 60 80)	Hydraulic Conductivity (m/sec) (10^{-8} 10^{-6} 10^{-4})
0	No Return	1	W2			WASTE ROCK Fragmented quartz and carbonaceous schist				
1										
2						No recovery between 1.5 m and 4.0 m				
3										
4	Brown	2	W2	R3		15 cm of gravel sized Waste Rock Carbonaceous SCHIST (BEDROCK)				
5	Grey					Shallow Fracture				
6		3	W2	R3						
7		4	W1	R0		Biotite Muscovite SCHIST Quartz Inclusion (10 cm) Biotite Muscovite Chlorite SCHIST				
8										>>

(Continued on next page)

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 584,850.30E, 6,914,171.10N
Ground Elevation (m) : 1159.4
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Fluid : Water
Casing : NW ***Cased To (m)*** : 3.96

Start Date : 13 Sep 05
Finish Date : 18 Sep 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 4.0
Logged by : C. Banton
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
8	Creamy Light Grey intermixed with Grey	4	W1	R0		1 cm Quartz stringer 10 cm shear zone Biotite Muscovite SCHIST
9		5	W1	R3		1 cm shear zone
10		6	W1	R3		Biotite Muscovite SCHIST some sulphide mineralization
11						4 cm Quartz vein High muscovite content 2 cm Quartz vein
12		7	W1	R3		
13		8	W1	R3/ R4		Fractured core 8 cm Quartz vein
14						15 cm Quartz vein Localized sulphide mineralization 30 cm Quartz vein
15		9	W1	R3		
16						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-27

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 584,850.30E, 6,914,171.10N
Ground Elevation (m) : 1159.4
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 3.96

Start Date : 13 Sep 05
Finish Date : 18 Sep 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 4.0
Logged by : C. Banton
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
16	Creamy Light Grey intermixed with Grey					
17		10	W1	R3		7 cm Quartz vein
						Fracture
18		11	W1	R3		
19						Garnet phenocryst
	Intermixed Dark and Light Grey	12	W1	R3		Minor sulphides, minor chlorite throught run
20						
21		13	W1	R3		
	Creamy Light Grey intermixed with Grey					
22						10 cm Quartz vein
						Carbonaceous SCHIST
						7 cm Quartz vein
23		14	W1	R0		
						Very soft carbonaceous SCHIST (gouge?)
24		15	W1	R2		

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-27

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 584,850.30E, 6,914,171.10N
Ground Elevation (m) : 1159.4
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 3.96

Start Date : 13 Sep 05
Finish Date : 18 Sep 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 4.0
Logged by : C. Banton
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
24	Creamy Light Grey intermixed with Grey	15	W1	R2		Biotite Muscovite Chlorite SCHIST
25						2 cm Quartz stringer Fracture, Sand infill 5 cm Quartz stringer
26		16	W1	R3		Quartz fragments and broken core
27		17	W1	R2		2 cm Quartz vein 5 cm Quartz vein
28						
29		18	W1	R2		Soft, core breaks easily on foliation in run
30		19	W1	R3		7 cm Shear zone 2 cm Quartz stringer
31						5 cm Quartz vein
32		20	W1	R3		

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-27

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 584,850.30E, 6,914,171.10N
Ground Elevation (m) : 1159.4
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW ***Cased To (m)*** : 3.96

Start Date : 13 Sep 05
Finish Date : 18 Sep 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 4.0
Logged by : C. Banton
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description
32	Creamy White to Creamy Light Grey	20	W1	R3		Shallow fracture
33		21	W1	R3		Fracture 3 cm Quartz vein
34						
35	Grey	22	W1	R3		
36						2 cm Quartz vein
37	Creamy Light Grey intermixed with Grey	23	W1	R3		Fracture
38		24	W1	R1		Biotite Chlorite Muscovite SCHIST Soft and Broken (R1)
39		25	W1	R3		
40						

Symbol

Fracture Angle wrt Core Axis: 30° 60°

Total Core Recovery %

RQD %: 20 40 60 80

Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

(Continued on next page)

DRILL HOLE # BGC05-27

Project : 2005 Plug Dam Investigation

Project No. : 0257-038-01

Location : Left Abutment
Co-ordinates (m) : 584,850.30E, 6,914,171.10N
Ground Elevation (m) : 1159.4
Datum : Geodetic
Dip (degrees from horizontal) : 70
Direction : N/A

Drill Designation : CME 75
Drilling Contractor : Midnight Sun Ltd.
Drill Method : Diamond Drill
Core : NQ3
Fluid : Water
Casing : NW **Cased To (m)** : 3.96

Start Date : 13 Sep 05
Finish Date : 18 Sep 05
Final Depth of Hole (m) : 40.5
Depth to Top of Rock (m) : 4.0
Logged by : C. Banton
Reviewed by : G. Ferris

Depth (m)	Flush Return	Run No.	Weathering Grade	Strength Index	Casing/Core Diameter	Lithologic Description	Symbol	Fracture Angle wrt Core Axis	Total Core Recovery % / RQD %	Hydraulic Conductivity (m/sec)
40	Dark Grey	25	W1	R3		Fracture Fracture				
41										
42										
43										
44										
45										
46										
47										
48										

Fracture Angle wrt Core Axis: 30° 60°
Total Core Recovery % / RQD %: 20 40 60 80
Hydraulic Conductivity (m/sec): 10^{-8} 10^{-6} 10^{-4}

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Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 1/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
	Fill	10" if waste rock fill; gravel-sized, minor to moderate oxidation (iron staining); rock types include qtz, granitic rock, Schist								
	Fill	6" of waste rock fill - quartz, granitoid, massive sulphide fragments								
	carbonaceous	17' 0.5"	FO	PL	Rough	carbonate	70		?	
	Schist	17' 2.5"	J	U	VR	carbonates oxidation	0		PO	
		17' 5.25"	MECH				64			Break on Foliation
		17' 6.5"	FO	U	Rough		85		PO	
		17' 7.25"	MECH				71			Break on Foliation
		17' 8.5"	FO	ST	Rough	Oxidized Carbonates	76		PO	
		17' 9.5"	MECH				55			Break on Foliation
3		22' 1"	MECH				61			Break on Foliation
		22' 2"	FO	PL	Smooth	Oxidized Carbonates	64		PO	
	biot. Clor.	22' 2.75"	MECH				54			Break on Foliation
	musc. Schist	22' 3.25"	4.5" broken core, discing along foliation, iron-staining, minor sand sized infill							
		22' 6.5"	MECH				80			Break on Foliation
		22' 7"	MECH				73			Break on Foliation
		22' 7.75"	MECH				73			Break on Foliation
		22' 10.25"	MECH				65			Break on Foliation
4	Fill	26' 6.5" - 26' 9"		Waste rock fill (fallen in hole from upper interval?)						
		26' 9.25"	FO	U	Rough	carbonates oxidation	78		?	
		26' 10"	FO	PL	Smooth		70			
	carbonaceous	26' 10"		Broken Core						
	Schist	26' 11"	MECH				80			Break on Foliation
		27'	MECH				82			
		27' 1.25"	MECH				82			Break on Foliation
		27' 1.5" - 27' 4"		Broken core - very thin discs along foliation						
		27' 4.5"	MECH				64			Break on Foliation
		27' 5"	MECH				64			

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	0' - 27'5"
Logged By:	Cathy Banton
Date:	Sept. 19, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 2/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
4	Carbonaceous Schist	27' 9.75"	MECH				75			break on foliation
		27' 11"	MECH				80			break on foliation
5	Biot. Musc.	28'	FO	PL	Smooth		90		?	
	Chlor. Schist	30' 7.5" - 30' 9.75"		Broken core, gravel-sized						
		30' 11"	MECH				73			break on foliation
		30' 11" - 31' 0.5"		Broken Core - gravel-sized						
		31' 0.5"	FO	PL	Rough	chlorite	78		?	
		31' 3.75"	MECH				72			break on foliation
		31' 4.5"	Stepped	PL	Rough	silt+sand	65		0	
		31' 6.25"	MECH				63			break on foliation
		31' 9.5" - 31' 11.25"		Broken Core						
		31' 11.25"	FO	C	Rough	carbonates	80		?	
		31' 11.5"	J	C	VR	minor carbonates	55		?	
		32' 2.25"	MECH				85			break on foliation
		32' 6.5"	FO	U	Rough	minor carbonates	85		PO	
		32' 7.25"	FO	P	Rough	carbonates	75		T	
		32' 8"	FO	PL	Rough	minor carbonates	72		T	
		32' 9"	FO	ST	Rough		64		PO	
		32' 10.5"	FO	PL	Rough	carbonates	63		T	
		32' 11.5"	MECH				70			break on foliation
6		35' 11" - 36' 4"		Broken Core						
		36' 4"	FO	PL	Smooth	carbonates	73		?	
		36' 4.5"	FO	PL	Smooth	Carbonates	68		?	
		36' 6.25"	MECH				73			break on foliation
		36' 7.5" - 36' 10.75"		Broken Core						
		36' 10.75"	FO	C	VR		74		?	
		37' 1.5"	J	C	Smooth	sand-sized crushed rock	47		O	
		37' 3.25"	J	ST	VR	carbonates + sulphides	47		O	

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	27'9.75"-37'3.25"
Logged By:	Cathy Banton
Date:	September 19, 2005

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Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 3/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
6	biot chlor musc	37' 5"	MECH				65			
	Schist	37' 7.5"	FO	PL	Smooth	chlor+carb	70		?	
7	Schist	42' 0.25"	FO	U	Smooth	minor carbonates	76		PO	
	Schist	42' 2.25"	FO	PL	Smooth	carbonates	68		?	
	Schist	42' 4.5"	J	U	Rough	minor chlor.	25		O	
	Schist	42' 5.25" - 42' 9.5"		broken core - sand + gravel-sized						
	Schist	42' 9.5"	MECH				90			
	Schist	46' 2.25"	FO	PL	Smooth	minor	75		?	
	Schist	46' 3.5"	FO	C	Smooth	carbonates	69		O	
	Schist	46' 5"	MECH				87			
	Schist	46' 7" - 46' 8"		broken core						
	Schist	46' 8"	MECH				57			break on foliation
	Schist	46' 10.25"	MECH				85			
	Schist	46' 11" - 47' 9.5"		broken core - gravel-sized, minor sand						
	Schist	47' 9.5"	MECH				67			break on foliation
9	Schist	51' 7.25"	MECH				59			break on foliation
	Schist	51' 10.75"	MECH				55			break on foliation
	Schist	51' 11.5"	MECH				50			break on foliation
	Schist	52' 3"	MECH				48			break on foliation
	Schist	52' 10.5"	MECH				35			break on foliation
10	Schist	55' 1.75" - 55' 6"		broken core, gravel-sized						
	Schist	55' 6"	Contact with Qtz vein				55			
	Schist	55' 9.5"	MECH				62			break on foliation
	Schist	55' 11.5"	FO	ST	Rough	carbonates	57		?	
	Schist	56' 1.25"	FO	PL	Rough	carbonates	65		?	
		56' 3" - 56' 5"		broken core, gravel-sized						
		56' 7.5"	MECH				63			break on foliation
		56' 9.5"	FO	ST	VR		45		T	

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	37-5"-56'9.5"
Logged By:	Cathy Banton
Date:	September 19, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 4/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
10	musc. Chlor.	56' 5.5"	MECH				73			partial break on foliation
	Schist	56' 11.5"	FO	PL	Smooth	carbonates	50		PO	
	Schist	57' 2"	FO	PL	Smooth	carbonates	50		T	
	Schist	57' 2.25"	FO	PL	Smooth	carbonates	53		T	
	Schist	57' 5" - 58'		Broken core, sand+gravel sized pieces, some thin discing						
	Schist	57' 8.25"	J	PL	VR	chlor. Carb.	37		?	
11	Schist	60' 9.5"	MECH				47			
	Schist	60' 11.25" - 61' 1.5"		Broken core, sand+gravel sized pieces						
	Schist	61' 1.5"	MECH				61			break on foliation
	Schist	61' 3.25"	FO	U	Rough	chlor. Carb.	64		PO	
	Schist	61'5"	MECH				52			
	Schist	61' 7.5"	FO	PL	Smooth		78		PO	
	Schist	61'8.25"	FO	PL	Rough	Carbonates	50		?	
	Schist	61' 9.25"	MECH				85			
	Schist	61' 10.75"	MECH				57			break on foliation
	Schist	62' 0.5"	FO	PL	Smooth	chlor. Carb.	60		PO	
	Schist	62' 2.25"	MECH				55			break on foliation
	Schist	62' 3.75"	J	C	Rough		30		T	
	Schist	62' 5.5"	FO	PL	Smooth	minor	59			
	Schist	62' 5.5" - 62' 7.5"		Broken core, sand+gravel sized pieces, minor silt						
	Schist	62' 7.5"	MECH				60			break on foliation
	Schist	62' 9.5"	FO	PL	Smooth		61		T	
	Schist	62' 10.75" - 63'		broken core from core catcher, sand+silt						
12	Schist	64' 8" - 64' 9.5"		broken core						
	Schist	64' 10"	FO	PL	Smooth		53		T	
	Schist	64' 11"	MECH				53			break on foliation
		65' 2.5" - 65' 5"		broken core						
		65' 8"	MECH				85			

Type:
- **J** Joint
- **F** Fault
- **S** Shear
- **B** Bedding
- **FO** Foliation

Shape:
- **PL** Planar
- **C** Curved
- **U** Undulating
- **ST** Stepped
- **I** Irregular

Surface:
- **P** Polished
- **K** Slickensided
- **SM** Smooth
- **R** Rough
- **VR** Very Rough

Fracture Spacing:
- **WO** Wide Open
- **O** Open
- **PO** Partly Open
- **T** Tight
- **H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	56'5.5" - 56'8"
Logged By:	Cathy Banton
Date:	September 19, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 5/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
12	biot chlorite	66' 1"	MECH			jagged and irregular				
	musc. Schist	66' 7.5"	MECH			jagged and irregular				
	musc. Schist	66' 9.5" - 68'		broken core						
	musc. Schist	67' 3"	J	U	VR	carbonates	10		PO	
13	musc. Schist	71' 0.75" - 71' 2.25"		broken core						
	musc. Schist	71' 6"	,E				80			
	musc. Schist	71' 7.75"	FP	U	Rough	-	60		T	
	musc. Schist	71' 9"	MECH				65			break on foliation
	musc. Schist	71' 9.5" - 73'		fragmented qtz vein (chlorite, sulphides)						
14	carbonaceous	73' 11.5"	MECH				90			
	Schist	74' 3.25"	MECH				85			
	Schist	74' 7"	J	C	Smooth	-	18		T	
	Schist	74' 10.25"	FO	ST	Rough	carbonates	63		T	
	Schist	75' 1.5"	FO	PL	Rough	carbonates	54		T	
	Schist	75' 2.75"	FO	PL	Smooth	-	65		PO	
	Schist	75' 6.5" - 76' 0.5"		broken, softened core, silt+sand infill						
	Schist	76' 0.5"	FO	PL	Smooth	-	80		T	
	Schist	76' 0.5" - 78'		very soft, soil-like (clay, silt) material, lacking rock-type structures/fractures - Fault gouge??						
	biot chlorite	81' 1.5" - 81' 4.5"		broken core, gravel-sized with minor silt infill						
15	musc. Schist	81' 8.5"	MECH				65			
	musc. Schist	81' 11.75"	MECH				68			
	musc. Schist	82' 2.5"		fracture at contact w qtz stringer			46		PO	sand qtz fragment in-fill
	musc. Schist	82' 6"	FO	PL	Smooth	-	70		T	
	musc. Schist	82' 8"	J	U	VR		46		O	
16		86' 4" - 86' 7.75"		broken core						
		86' 8.75"	FO	PL	Smooth	-	70		T	
		86' 10.75"	MECH				76			
		86' 10.75" - 87' 2"		broken core						

Type:
J Joint
F Fault
S Shear
B Bedding
FO Foliation

Shape:
PL Planar
C Curved
U Undulating
ST Stepped
I Irregular

Surface:
P Polished
K Slickensided
SM Smooth
R Rough
VR Very Rough

Fracture Spacing:
WO Wide Open
O Open
PO Partly Open
T Tight
H Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	66'1" - 86'10.75"
Logged By:	Cathy Banton
Date:	Sept 19, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 6/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
16	biot clor	87' 1.25"	J	U	VR	-	43		O	
	musc schist	87' 1.5" - 87' 7.5"		broken core, w qtz stringer						
	musc schist	87' 7.75"	FO	PL	Smooth	-	73		T	
17	musc schist	90' 1" - 90' 1.75"		broken core (discs)						
	musc schist	90' 1.75"	FO	PL	Rough	-	70		?	
	musc schist	90' 3.25"	MECH				68			
	musc schist	90' 4.25"	FO	PL	Smooth	-	79		PO	
	musc schist	90' 6"	MECH				68			break on foliation
	musc schist	90' 9.25"	MECH				87			
	musc schist	90' 10"	MECH				85			
	musc schist	90' 10.75"	J	PL	Smooth	carbonates	27		O	
	musc schist	91' 0.25"	MECH				66			
	musc schist	91' 1.75"	FO	U	Smooth	-	60		T	
	musc schist	91' 4"	MECH			jagged and irregular				
	musc schist	91' 5"	J	C	Smooth	carbonates	30		PO	
	musc schist	91' 6"	MECH				77			
	musc schist	91' 9.25"	MECH				67			break on foliation
	musc schist	91' 10"	MECH				67			break on foliation
	musc schist	92' 1.5"	MECH				56			
	musc schist	92' 3.75"	MECH				63			break on foliation
	musc schist	92' 8.5" - 93'		broken core from core catcher						
18	musc schist	95' 8" - 95' 10"		broken core						
	musc schist	95'10"	FO	PL	Smooth	-	70		?	
		95' 11"	MECH				54			break on foliation
		96'	FO	C	Smooth	carbonates	74		?	
		96' 0.75"	FO	PL	Smooth	-	62		T	
		96' 2.5"	J	PL	VR	carbonates	40		O	

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	87'1.25"-96'2.5"
Logged By:	Cathy Banton
Date:	Sept 19, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 7/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
18	biot chlor	96' 6"	FO	PL	Smooth	carbonates	66		T	
musc schist	musc schist	96' 7.75"	MECH				72			break on foliation
	musc schist	96' 9.5"	Stepped	PL	Smooth	silt+sand	77		O	
	musc schist	96' 11"								
	musc schist	97' 2"	MECH				74			
	musc schist	97' 2.5"	J	U	Smooth	carbonates	43		O	
	musc schist	97' 2.5" - 97' 7"		broken core						
	musc schist	97' 8.25"	FO	ST	Rough	carbonates	69		PO	
	musc schist	97' 9.25" - 98'		broken core from core catcher						
19	musc schist	99' 3" - 99' 4.5"		broken core (qtz) (gravel sized)						
	musc schist	99' 7.5"	FO	PL	Smooth	clay, carbonates	53		T	
	musc schist	99' 10.5"	MECH				85			
	musc schist	99' 11.5" - 100' 1"		broken core, sand+gravel sized						
	musc schist	100' 7.5"	MECH				60			break on foliation
	musc schist	101' 4.5"	MECH				59			break on foliation
	musc schist	101' 7.25"	FO	PL	Rough	carbonates	53		T	
	musc schist	101' 8"	MECH				45			break on foliation
	musc schist	102' 1.75"	FO	ST	Rough	carbonates	70		?	
	musc schist	102' 4.5"	FO	PL	Smooth	carbonates, silt	74		WO	
	musc schist	102' 8.5" - 103'		broken core from core catcher						
20		105' - 105' 3.25"		broken core, gravel sized						
		105' 6"	MECH				85			
		105' 9"	J	PL	Smooth	minor carbonates	20		O	
		105' 9"	FO	U	Rough	carbonates	74		PO	
		106' 0.5"	J	ST	VR	carbonates	30		O	
		106' 2"	FO	PL	Smooth	carbonates	76		?	
		106' 3.5" - 106' 4.5"		broken core						
		106' 5"	J	C	VR	carbonates	40		O	

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	96.5'-106'5"
Logged By:	Cathy Banton
Date:	September 19, 2005

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Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 8/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
20	biot musc	106' 6.75"	MECH				76			break on foliation
	chlor schist	106' 8.25"	J	PL	Rough	carbonates	35		O	
	chlor schist	107'	FO	PL	VR	carbonates	64		PO	
	chlor schist	107' 3.5"	FO	PL	Smooth	minor carbonates	65		PO	
	chlor schist	107' 4.75"	MECH				72			break on foliation
	chlor schist	107' 6.5"	MECH				72			partial break on foliation
	chlor schist	107' 9.5" - 108'	broken core from core catcher							
21	chlor schist	110' 1" - 110' 5"	broken core from core catcher							
	chlor schist	110' 6"	J	PL	Smooth	chlorites carbonates	15		?	
	chlor schist	110' 7.5"	MECH				82			break on foliation
	chlor schist	110' 11"	MECH				85			
	chlor schist	111' - 111' 2"	broken core							
	chlor schist	111' 2"	FO	PL	Smooth	carbonates	87		?	
	chlor schist	111' 3"	FO	PL	Smooth	carbonates	85		?	
	chlor schist	111' 6.5"	MECH				70			
	chlor schist	111' 8" - 111' 9.5'	broken core, sand + gravel sized							
	chlor schist	112' 0.75"	MECH				90			
	chlor schist	112' 4.25"	MECH				72			break on foliation
	chlor schist	112' 5" - 113'	broken core							
22	chlor schist	114' 7.5" - 115' 5'	broken core, sand + gravel sized							
	chlor schist	115' 5.5"	J	C	VR	carbonates	33		O	
	chlor schist	115' 6.75"	MECH				78			
	chlor schist	115' 11"	J	PL	VR	minor carbonates	37		T	
	chlor schist	116' 1.5"	J	ST	VR	-	42		PO	
	chlor schist	116' 3" - 116' 5"	broken core							
	chlor schist	116' 5"	FO	PL	Smooth	-	70			
		116' 6.5"	J	PL	Smooth	minor carbonates	14		H	
		116' 8.25"	MECH				61			

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	106'6.75" - 116'8.25"
Logged By:	Cathy Banton
Date:	Sept 19, 2005

BGC ENGINEERING INC.
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Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 9/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
22	biot musc	116' 11.5"	FO	ST	VR	sand+silt	75		O	
	chlor schist	117' 3.75"	FO	PL	Rough	sand+silt	66		O	
	chlor schist	117' 4.5"	MECH				90			
	chlor schist	117' 6.75"	FO	PL	Smooth	minor carbonates	64		PO	
	chlor schist	117'7.5"-108'	broken core							
23	chlor schist	118' 11" - 119' 5.25"	broken core							
	chlor schist	119' 7.75"	MECH				90		PO	
	chlor schist	119' 8.5"	J	U	Rough	carbonates	5		?	
	chlor schist	119' 9.5"	FO	U	Rough	minor carbonates	39			
	chlor schist	120' 2.25"	MECH				55			
	chlor schist	120' 11"	MECH				90			
	chlor schist	121' 1.75"	MECH				90			
	chlor schist	121' 7"	J	PL	Rough	carbonates	29		?	
	chlor schist	122' 0.25"	FO	PL	Smooth	carbonates	78		T	
	chlor schist	122' 5.25"	MECH				73			fracture in qtz vein
	carbonaceous	122' 9.75"	MECH				76			
24	schist	125'8.5"	MECH				75			
	schist	126' - 126' 0.5"	broken qtz fragments, gravel sized							
	biot musc	126' 7.25"	FO	U	Rough		64		?	
	chlor schist	126' 8.25"	FO	PL	Rough		67		?	
	chlor schist	126' 8.25 - 127' 4.25"	broken core				63			
	chlor schist	127' 7"	MECH							break on foliation
	chlor schist	127' 9.5" - 128'	broken core from core catcher							
25	chlor schist	129' 8.75"	MECH				82			
	chlor schist	130'	MECH				86			
	chlor schist	130' 0.5"	MECH				85			
		130' 2.25"	J	PL	VR	minor carbonates	45		T	
		130' 3.25"	MECH				85			

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	116'11.5" - 130'3.25"
Logged By:	Cathy Banton
Date:	Sept 19, 2005

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Core Logging Sheet - Fracture Logging

Borehole: BGC05-27 (pg. 10/10)

Core Run	Rock Type	Depth	Type	Shape	Surface	Infill	Angle wrt core axis	Joint Set	Fracture spacing	Comments
25	biot chlor muscovite	130'4.5"	MECH				73			along foliation
	schist	130' 6.25"	FO	ST	R	-	70		O	
		130' 8.25"	J	PL	SM	carbonates	26			
		130' 9"	MECH				90			
		130' 11.25"	MECH				58			
		131'	J	U	R	carbonates	30		O	
		131' 0.75"	MECH				85			
		131' 2"	FO	PL	R	-	85		?	
		131' 3"	MECH				63			
		131' 3.75"	FO	U	SM	-	81		PO	
		131' 4.5"	MECH				84			break on foliation
		131' 5"	J	PL	SM	minor	10		T	
		131' 5.75"	FO	PL	SM	silt	85		O	
		131' 7" - 131' 7.5"	broken core							
		131' 7.5	FO	C	R	-	80			
		131' 9"	MECH				62			
		131' 11.75" - 132' 1"	broken core, partly along foliation							
		132' 1.5"	MECH				80			
		132' 5.5"	MECH				55			
		132' 5.5" - 133'	broken core - gravel, sand, silt fragments							EOH

Type:	Shape:	Surface:	Fracture Spacing:
J Joint	**PL** Planar	**P** Polished	**WO** Wide Open
F Fault	**C** Curved	**K** Slickensided	**O** Open
S Shear	**U** Undulating	**SM** Smooth	**PO** Partly Open
B Bedding	**ST** Stepped	**R** Rough	**T** Tight
FO Foliation	**I** Irregular	**VR** Very Rough	**H** Healed

Project Number:	0257-038-01
Project Name:	2005 Plug Dam
Depth Interval:	130'4.5"-132'5.5"
Logged By:	Cathy Banton
Date:	Sept 19, 2005





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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-27 BOXES 1 & 2

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B13





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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta
Phone: (403) 250-5185

Client: Deloitte & Touche

Project: TASK 20B - PLUG DAM CONCEPTUAL DESIGN

Title: BGC05-27 BOXES 3 & 4

Project #:	Date:	Scale:	Drawn:	Approved:	Figure:
0257-038-01	SEPT 2006	NA	EBN	GWF	B14

APPENDIX C
WATER PRESSURE TESTING

BGC04-02

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-02

Date: 01-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Center of road
Personnel: Gerry Ferris
Depth to WT: 25 feet
Height of Gauge: 3 feet 9 inches
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure: 180 psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 6:57PM
Start Flushing:
End Flushing:
End Packer Testing: 8:00PM

Test #	Gauge Pressure psi	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Litres Start / Finish	Volume	Rate (L/min)	Remarks
		48		6:57		59.4			
1	20	63	15	6:58	1	60.2	0.800		
		48		6:58		60.2			
	20	63	15	7:03	5	61.3	1.100	0.220	
		48		7:03		61.3			
	20	63	15	7:04	1	61.6	0.300	0.300	
		48		7:04		61.6			
	20	63	15	7:05	1	62.1	0.500		
		48		7:14		25			
	39	63	15	7:15	1	283.3	139.900	27.700	likely leaking around packer
		48		7:15		283.3			
	39	63		7:20		422.2	139.900	27.980	likely leaking around packer
		48		7:21		423.2			
	39	63	15	7:21	1	452	28.800	28.800	likely leaking around packer
		48		7:23		530			
		63	15	7:28	5	795	265.000	53.000	Leakage noted at surface
		48		7:28		795			
	60	63		7:29	1	847	52.000	52.000	Leakage noted at surface
		48		7:29		847			
	60	63	15	7:30	1	898	51.000	51.000	Leakage noted at surface
		48		7:38		31.2			
	40	63	15	7:45	7	185.2	154.000	22.000	likely leaking around packer
		48		7:45		185.2			
	40	63	15	7:46	1	196.2	11.000	11.000	likely leaking around packer
		48		7:46		196.2			
	40	63	15	7:48	2	238.2	42.000	21.000	likely leaking around packer
		48		7:52		259.1			
	20	63	15	7:53	1	259.3	0.200	0.200	
		48		7:53		259.3			
	20	63	15	7:57	4	259.3	0.000	0.000	
		48		7:57		259.3			
	20	63	15	7:58	1	259.3	0.000	0.000	

Ignore this test due to leakage around Packers and problems with flow totalizer in this flow rate range

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

2. The flow totalizer used for borehole BGC04-02 was later discovered to not read correctly in the 0 to 5 Igal per minute range.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-02

Date: 02-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Center of road
Personnel: Gerry Ferris
Depth to WT: 25 feet
Height of Gauge: 3 feet 9 inches
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 11:28PM
Start Flushing:
End Flushing:
End Packer Testing: 12:16PM

Test #	Gauge Pressure psi	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Litres Start / Finish	Volume	Rate (L/min)	Remarks
		39		11:28		1.5			
2	13	54	15	11:29	1	1.5	0.000	0.000	
		39		11:29		1.5			
	13	54	15	11:35	6	1.5	0.000	0.000	
		39		11:35		1.5			
	13	54	15	11:36	1	1.5	0.000	0.000	
		39		11:40		1.5			
	18	54	15	11:41	1	1.5	0.000	0.000	
		39		11:41		1.5			
	18	54	15	11:44	3	1.5	0.000	0.000	
		39		11:44		1.5			
	18	54	15	11:45	1	1.5	0.000	0.000	
		39		11:48		3.1			
	31	54	15	11:49	1	3.3	0.200	0.200	
		39		11:49		3.3			
	31	54	15	11:53	4	3.6	0.300	0.050	
		39		11:53		3.6			
	31	54	15	11:54	1	3.6	0.000	0.000	
		39		11:54		3.6			
	31	54	15	11:55	1	3.7	0.100	0.100	
		39		11:55		3.7			
	31	54	15	11:56	1	3.7	0.000	0.000	
		39		11:59		3.7			
		54		12:00	1	3.7	0.000	0.000	
		39		12:00		3.7			
	20	54	15	12:05	5	3.7	0.000	0.000	
		39		12:05		3.7			
	20	54	15	12:06	1	3.7	0.000	0.000	
		39		12:09		3.7			
	14	54	15	12:10	1	3.7	0.000	0.000	
		39		12:10		3.7			
	14	54	15	12:15	5	3.7	0.000	0.000	
		39		12:15		3.7			
	14	54	15	12:16	1	3.7	0.000	0.000	

Ignore this test due to problems with flow totalizer in this flow rate range

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.
2. The flow totalizer used for borehole BGC04-02 was later discovered to not read correctly in the 0 to 5 Igal per minute range.

BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-02

Date: 02-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Center of road
Personnel: Gerry Ferris
Depth to WT: 25 feet
Height of Gauge: 3 feet 9 inches
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 1:30PM
Start Flushing:
End Flushing:
End Packer Testing: 2:13PM

Test #	Gauge Pressure psi	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Litres Start / Finish	Volume	Rate (l/min)	Remarks
3	15	48 / 63	15	1:30 / 1:31	1	0 / 0	0.000	0.000	
	15	48 / 63	15	1:31 / 1:35	4	0 / 0	0.000		
	15	48 / 63	15	1:35 / 1:36		0 / 0	0.000	0.000	
	24	48 / 63	15	1:38 / 1:3	1	0 / 0	0.000	0.000	
	24	48 / 63	15	1:39 / 1:43	4	0 / 0	0.000	0.000	
	24	48 / 63	15	1:43 / 1:44		0 / 0	0.000	0.000	
		48 / 63		1:44 / 1:45	1	0 / 0	0.000	0.000	
	24	48 / 63	15	1:45 / 1:48	3	0 / 0	0.000	0.000	
	38	48 / 63	15	1:50 / 1:55	5	0 / 0	0.000	0.000	
	38	48 / 63	15	1:55 / 1:59	4	0 / 0	0.000	0.000	
	25	48 / 63	15	2:00 / 2:05	5	0 / 0	0.000	0.000	
	25	48 / 63	15	2:05 / 2:07	2	0 / 0	0.000	0.000	
	15	48 / 63	15	2:08 / 2:13	5	0 / 0	0.000	0.000	

Ignore this test due to problems with flow totalizer in this flow rate range

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.
2. The flow totalizer used for borehole BGC04-02 was later discovered to not read correctly in the 0 to 5 Igal per minute range.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-02

Date: 02-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Center of road
Personnel: Gerry Ferris
Depth to WT: 25 feet
Height of Gauge: 3 feet 9 inches
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 3:27PM
Start Flushing:
End Flushing:
End Packer Testing: 5:42PM

Test #	Gauge Pressure psi	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Litres Start / Finish	Volume	Rate (L/min)	Remarks
		28		3:27		176.3			
4	10	43	15	3:28	1	217.3	41.000	41.000	
		28		3:28		217.3			
	10	43	15	3:34	6	460.3	243.000	40.500	
		28		3:34		460.3			
	10	43	15	3:35	1	500.8	40.500	40.500	
		28		3:35		500.8			
	10	43	15	3:40	5	703.3	202.500	40.500	
		28		3:40		703.3			
	10	43	15	3:41	1	743.3	40.000	40.000	
		28		3:48					
	35	43	15	3:50	2			78.000	flow rate measured directly for remainder of test
		28		3:50					
	35	43	15	3:51	1			77.000	Ran out of water
		28		4:27					
	40	43	15	4:29	2			83.000	
		28		4:29					
	40	43	15	4:31	2			82.000	
		28		4:31					
	40	43	15	4:33	2			82.000	
		28		4:33					
	40	43	15	4:37	4			81.000	
		28		4:37					
	40	43	15	4:42	5			79.000	
		28		4:46					
	19	43	15	4:48	2			55.000	
		28		4:48					
	19	43	15	4:51	3			52.000	
		28		4:51					
	19	43	15	4:53	2			50.000	
		28		4:56					
	60	43	15	5:00	4			98.000	
		28		5:00					
	60	43	15	5:06	6			100.000	
		28		5:06					
	60	43	15	5:11	5			100.000	
		28		5:20					
	40	43	15	5:25	5			67.000	
		28		5:25					
	40	43	15	5:30	5			70.000	
		28		5:32					
	20	43	15	5:36	4			44.000	
		28		5:36					
	20	43	15	5:42	6			44.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

2. The flow totalizer used for borehole BGC04-02 was later discovered to not read correctly in the 0 to 5 Igal per minute range.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-02

Water Test Interval: 9.71m to 11.93m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Center of Road
Coordinates*:	6914164 N
	584927 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 2/04
Static W.L. below stick-up:	7.62 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	7.62 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	11.93 m
Top of Interval B.G.L.:	9.71 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	10.82 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
13	10	68.95	81.44	-12.50	73.44	7.5			40.5	18.2	248			
7	19	131.00	116.03	14.97	100.90	10.3			52.3	23.6	233			
9	40	275.79	216.47	59.32	145.25	14.8			80.0	36.0	248			
11	60	413.69	305.78	107.91	193.84	19.8			100.0	45.0	232	>100		maximum pump capacity
10	40	275.79	173.35	102.44	188.37	19.2			69.0	31.1	165			
10	20	137.90	91.19	46.70	132.64	13.5			44.0	19.8	149			

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

average

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in directly in litres per minute using flow totalizer. Double Packer arrangement used. System compliance measured prior to testing (large diameter variation between delivery line and flow totalizer).

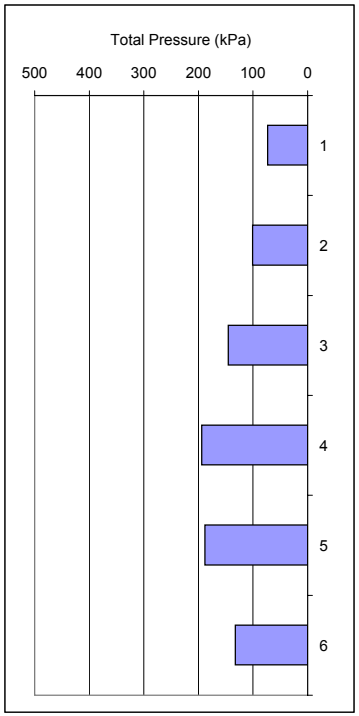
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

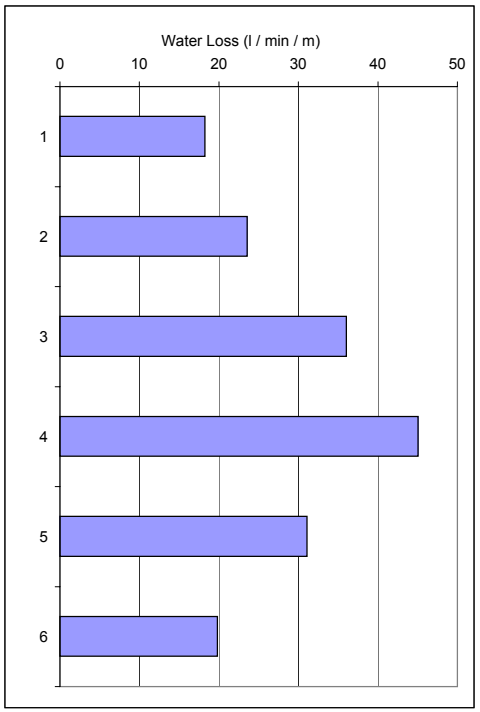
Interpreted Lugeon Value: >100

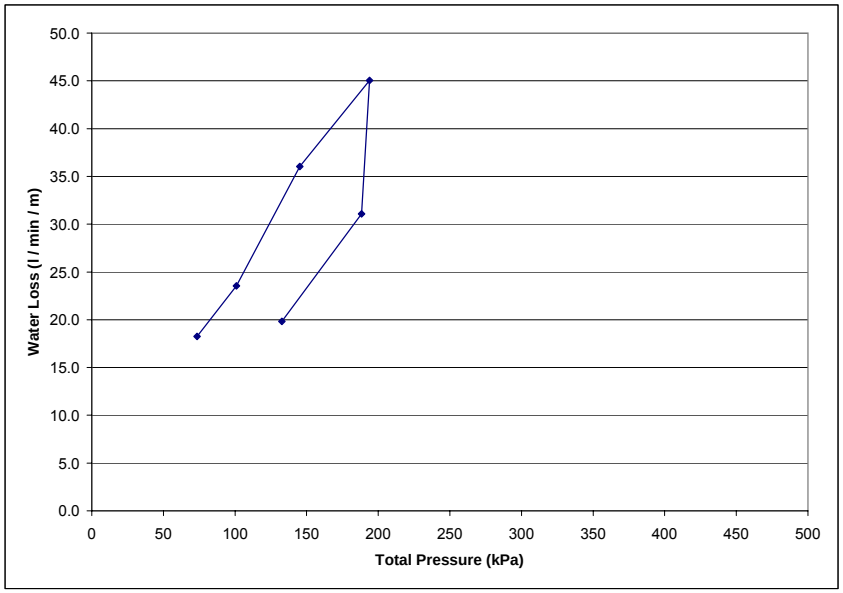
Interpreted flow pattern (Houlsby 1990) : High flow rate

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

K = not calculated (pump capacity exceeded)







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-02

Date: 02-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Center of road
Personnel: Gerry Ferris
Depth to WT: 25 feet
Height of Gauge: 3 feet 9 inches
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 6:30PM
Start Flushing:
End Flushing:
End Packer Testing: 7:29PM

Test #	Gauge Pressure psi	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Litres Start / Finish	Volume	Rate (L/min)	Remarks
		20		6:30		1.8			
5	4	35	15	6:31	1	7.6	5.800	5.800	
		20		6:31					Flow totalizer was used to directly measure the flow rate for the remainder of testing.
	4	35	15	6:34	3			17.000	
		20		6:34					
	4	35	15	6:41	7			17.000	
		20		6:45					
	34	35	15	6:50	5			76.000	
		20		6:50					
	34	35	15	6:55	5			77.000	
		20		6:56					
	44	35	15	7:07	11			90.000	
		20		7:07					
	44	35	15	7:12	5			89.000	
		20		7:14					
	24	35	15	7:19	5			63.000	
		20		7:21					
	14	35	15	7:25	4			45.000	
		20		7:25					
	14	35	15	7:29	4			44.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

2. The flow totalizer used for borehole BGC04-02 was later discovered to not read correctly in the 0 to 5 Igal per minute range.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-02
Water Test Interval: 8.45m to 10.67m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Center of Road
Coordinates*:	6914164 N
	584927 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 2/04
Static W.L. below stick-up:	7.62 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	7.62 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	10.67 m
Top of Interval B.G.L.:	8.45 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	9.56 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	4	27.58	21.63	5.95	91.89	9.4			14	6.31	69			
10	34	234.42	200.30	34.12	120.06	12.2			76	34.23	285			
11	44	303.37	259.37	44.00	129.94	13.2			90	40.54	312	>100		maximum pump capacity
5	24	165.47	151.63	13.84	99.78	10.2			63	28.38	284			
8	14	96.53	91.19	5.33	91.27	9.3			44	19.82	217			
												average		

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in directly in litres per minute using flow totalizer. Double Packer arrangement used. System compliance measured prior to testing (large diameter variation between delivery line and flow totalizer).

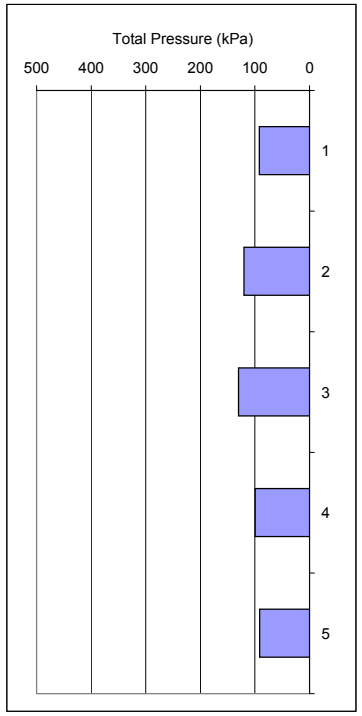
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

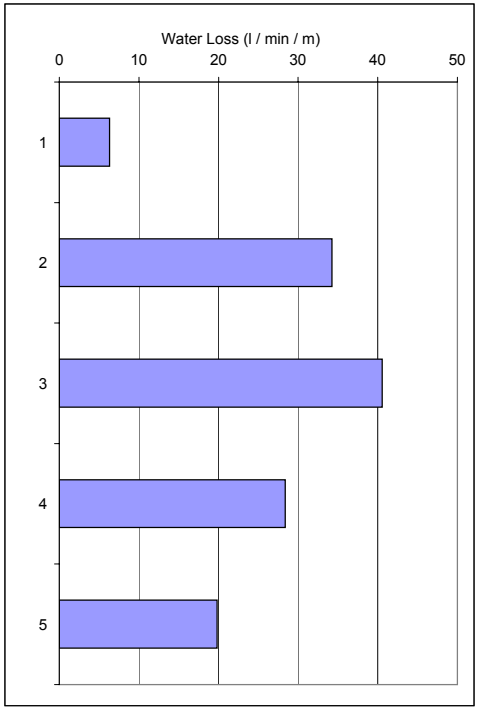
Interpreted Lugeon Value: >100

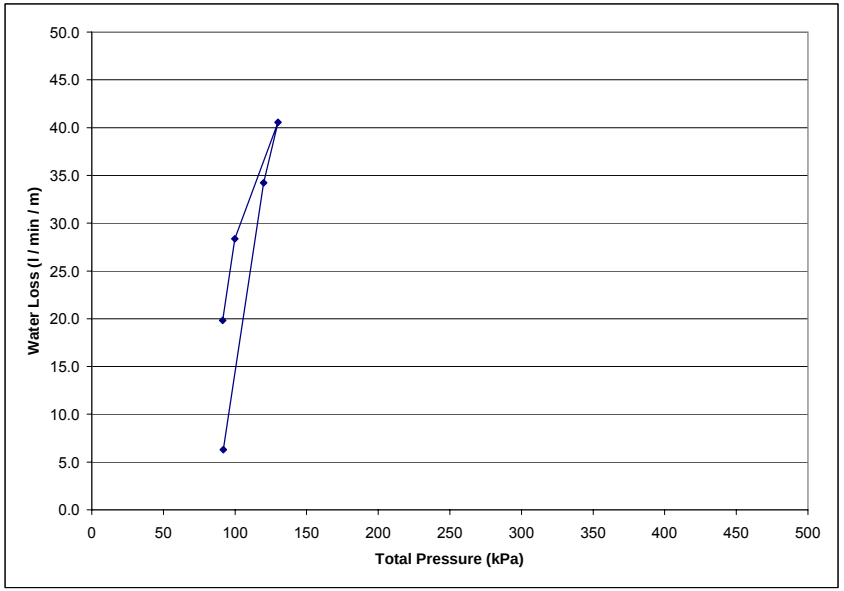
Interpreted flow pattern (Houlsby 1990) : High flow rate

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

K = not calculated (pump capacity exceeded)







BGC04-03

BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (right abutment)
Personnel: Gerry Ferris
Depth to WT: 4.0 m
Height of Gauge: 1.14 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (Core diam. 47.6mm and hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1158.2 m amsl
Packer Inflation Pressure: 210 psi
Water Flushed (Until Clean):

Time Start Packer Testing: 10:15am
Start Flushing:
End Flushing:
End Packer Testing: 11:34 AM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
		68	15'	10:15		345.42			
1	15	83		10:20	5	345.77	0.35	0.07	
				10:20		345.77			
	15			10:25	5	346.05	0.28	0.056	
				10:25		346.05			
	15			10:30	5	346.23	0.18	0.036	
		68		10:31		346.75			
	30	83	15	10:36	5	348.03	1.28	0.256	
				10:36		348.03			
	30			10:41	5	349.22	1.19	0.238	
				10:41		349.22			
	30			10:46	5	350.4	1.18	0.236	
		68		10:47		351.11			
	45	83	15	10:52	5	354.92	3.81	0.762	
				10:52		354.92			
	45			10:57	5	359.08	4.16	0.832	
				10:57		359.08			
	45			11:02	5	363.21	4.13	0.826	
		68		11:03		363.68			
	30	83	15	11:08	5	366.8	3.12	0.624	
				11:08		366.8			
	30			11:13	5	367.22	0.42	0.084	
				11:13		367.22			
	30			11:18	5	368.49	1.27	0.254	
		68		11:19		368.58			
	15	83	15	11:24	5	368.95	0.37	0.074	
				11:24		368.95			
	15			11:29	5	369.2	0.25	0.05	
				11:29		369.2			
	15			11:34	5	369.41	0.21	0.042	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03
Water Test Interval: 21.9m to 24.12m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914159 N
	584896 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/04
Static W.L. below stick-up:	4.00 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	4.00 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	24.12 m
Top of Interval B.G.L.:	21.90 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	23.01 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	15	103.42	0.17	103.26	153.68	15.7	0.46	2.09	0.2091	0.094	0.613		6.51E-08	
10	30	206.84	0.92	205.92	256.34	26.1	2.37	10.77	1.0774	0.485	1.893		2.01E-07	
10	45	310.26	4.01	306.25	356.67	36.4	8.29	37.69	3.7687	1.698	4.760	2	5.05E-07	potential leakage around packer?
10	30	206.84	0.64	206.20	256.62	26.2	1.69	7.68	0.7683	0.346	1.349		1.43E-07	
10	15	103.42	0.17	103.26	153.68	15.7	0.46	2.09	0.2091	0.094	0.613		6.51E-08	
												average	1.19E-07	Ignore possible leakage

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used.

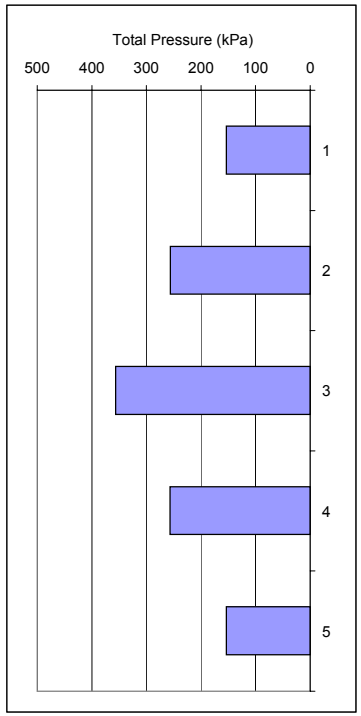
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

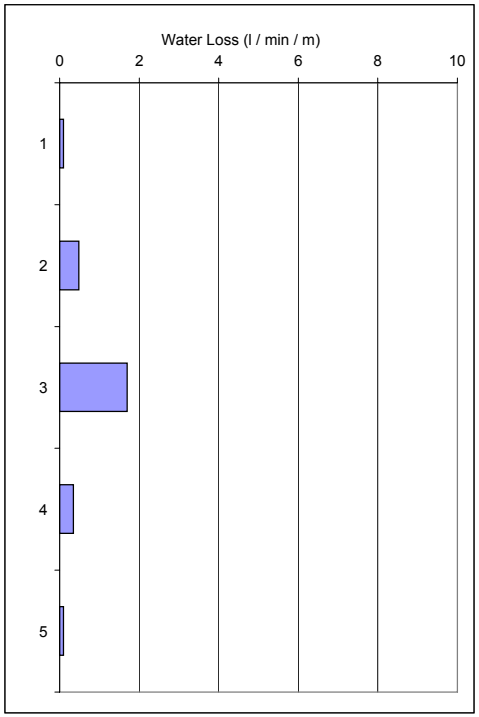
Interpreted Lugeon Value: 2

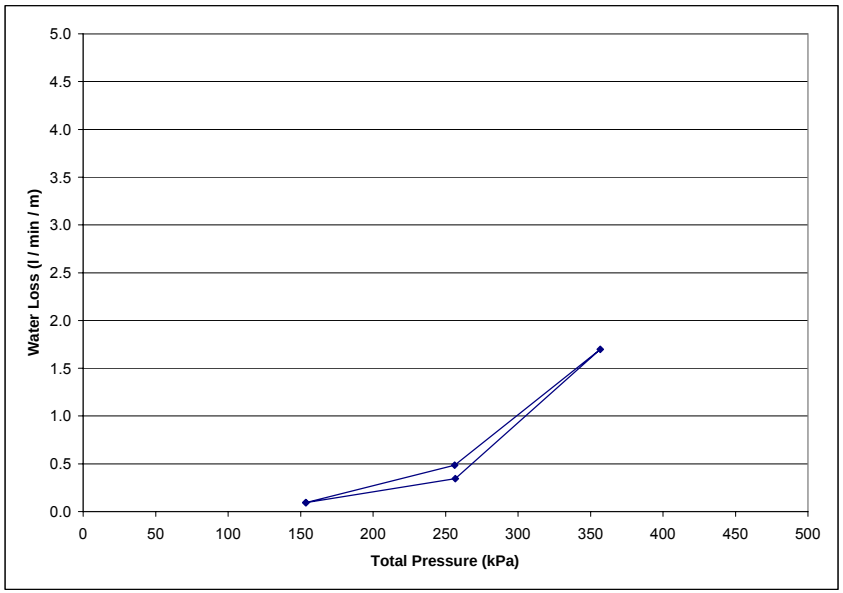
Interpreted flow pattern (Houlsby 1990) : Dilation

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.2 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01

Project: 2004 Plug Dam

Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.0 m
Height of Gauge: 1.14 m

Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min

Collar El.: 1158.2 m amsl

Packer Inflation Pressure: 250 psi
Water Flushed (Until Clean):

Time Start Packer Testing: 11:57am
Start Flushing:
End Flushing:
End Packer Testing: 11:17 AM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
		60	15	11:57		369.98			
2	14	75		12:02	5	370.28	0.3	0.06	
		60		12:02		370.28			
	14	75	15	12:07	5	370.52	0.24	0.048	
		60		12:07		370.52			
	14	75	15	12:13	6	370.74	0.22	0.037	
		60		12:14		371.08			
	29	75	15	12:19	5	371.23	0.15	0.03	
		60		12:19		371.23			
	29	75	15	12:24	5	371.33	0.1	0.02	
		60		12:24		371.33			
	29	75	15	12:29	5	371.42	0.09	0.018	
		60		12:30		371.78			
	43	75	15	12:35	5	373.56	1.78	0.356	
		60		12:35		373.56			
	43	75	15	12:40	5	375.18	1.62	0.324	
		60		12:40		375.18			
	43	75	15	12:45	5	376.26	1.08	0.216	
		60		12:46		376.27			
	29	75	15	12:51	5	376.3	0.03	0.006	
		60		12:51		376.3			
	29	75	15	12:56	5	376.39	0.09	0.018	
		60		12:56		376.39			
	29	75	15	1:01	5	376.43	0.04	0.008	
		60		1:02		376.39			
	14	75	15	1:07	5	376.39	0.000	0.000	
		60		1:07		376.39			
	14	75	15	1:12	5	376.4	0.010	0.002	
		60		1:12		376.4			
	14	75	15	1:17	5	376.4	0.000	0.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03
Water Test Interval: 19.46m to 21.68m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914159 N
	584896 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/04
Static W.L. below stick-up:	4.00 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	4.00 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	21.68 m
Top of Interval B.G.L.:	19.46 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	20.57 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
11	14	96.53	0.15	96.38	146.80	15.0	0.46	2.09	0.1901	0.086	0.583		6.19E-08	
10	29	199.95	0.07	199.88	250.30	25.5	0.19	0.86	0.0864	0.039	0.155		1.65E-08	
10	43	296.47	1.07	295.41	345.83	35.3	2.70	12.27	1.2274	0.553	1.599	1	1.70E-07	
10	29	199.95	0.05	199.90	250.33	25.5	0.13	0.59	0.0591	0.027	0.106		1.13E-08	
10	14	96.53	0.00	96.52	146.95	15.0	0.01	0.05	0.0045	0.002	0.014		1.48E-09	
												average	5.22E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used.

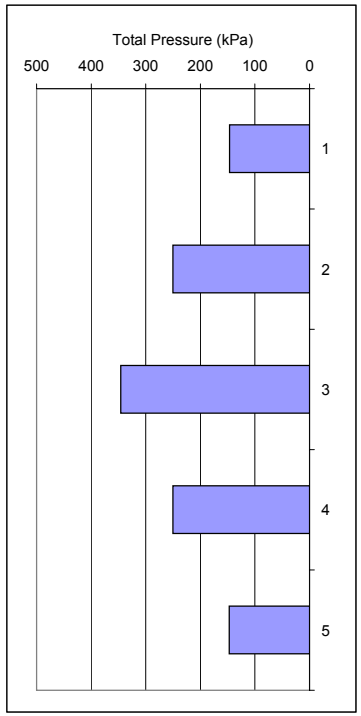
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

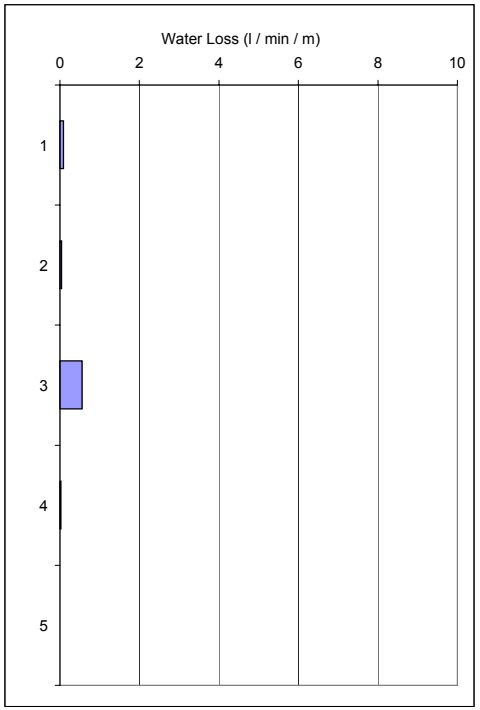
Interpreted Lugeon Value: 1

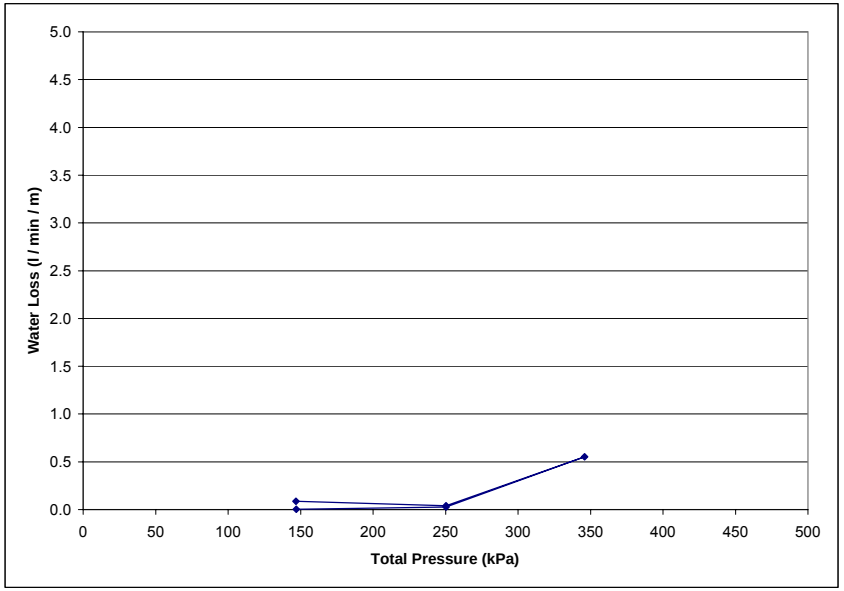
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 5.2 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.0 m
Height of Gauge: 1.14 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1158.2 m amsl
Packer Inflation Pressure: 210 psi
Water Flushed (Until Clean):

Time Start Packer Testing: 1:33PM
Start Flushing:
End Flushing:
End Packer Testing: 2:52PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
		51	15'	1:33		378.01			
3	11	66		1:38	5	377.7	-0.31	-0.06	
		51		1:38		377.7			
	11	66		1:43	5	377.46	-0.24	-0.05	
		51		1:43		377.46			
	11	66		1:48	5	377.34	-0.12	-0.02	
		51		1:49		377.58			
	23	66	15	1:54	5	377.4	-0.18	-0.04	
		51		1:54		377.4			
	23	66		1:59	5	377.27	-0.13	-0.03	
		51		1:59		377.27			
	23	66		2:04	5	377.27	0.00	0.00	
		51		2:05		377.46			
	36	66	15	2:10	5	377.47	0.01	0.00	
		51		2:10		377.47			
	36	66		2:15	5	377.48	0.01	0.00	
		51		2:15		377.48			
	36	66	15	2:20	5	377.48	0.00	0.00	
		51		2:21		377.03			
	23	66	15	2:26	5	376.93	-0.10	-0.02	
		51		2:26		376.93			
	23	66	15	2:31	5	376.63	-0.30	-0.06	
		51		2:31		376.63			
	23	66	15	2:36	5	376.62	-0.01	0.00	
		51		2:37		376.07			
	11	66	15	2:42	5	375.68	-0.39	-0.08	
		51		2:42		375.68			
	11	66	15	2:47	5	375.13	-0.55	-0.11	
		51		2:47		375.13			
	11	66	15	2:52	5	374.63	-0.50	-0.10	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03

Water Test Interval: 16.72m to 18.94m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914159 N
	584896 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/04
Static W.L. below stick-up:	4.00 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	4.00 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	18.94 m
Top of Interval B.G.L.:	16.72 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	17.83 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	11	75.84	0.00	75.84	126.26	12.9	0.01	0.05	0.0045	0.002	0.016		1.72E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	23	158.58	0.00	158.58	209.00	21.3	0.01	0.05	0.0045	0.002	0.010		1.04E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	36	248.21	0.00	248.21	298.63	30.4	0.01	0.05	0.0045	0.002	0.007	1	7.28E-10	
10	23	158.58	0.00	158.58	209.00	21.3	0.01	0.05	0.0045	0.002	0.010		1.04E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	11	75.84	0.00	75.84	126.26	12.9	0.01	0.05	0.0045	0.002	0.016		1.72E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
												average	7.28E-10	Ignore assumed flow

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Measured flow was negative, assumed flow rate used in above calculations.

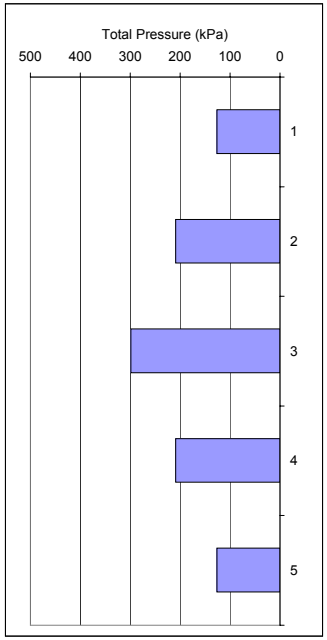
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

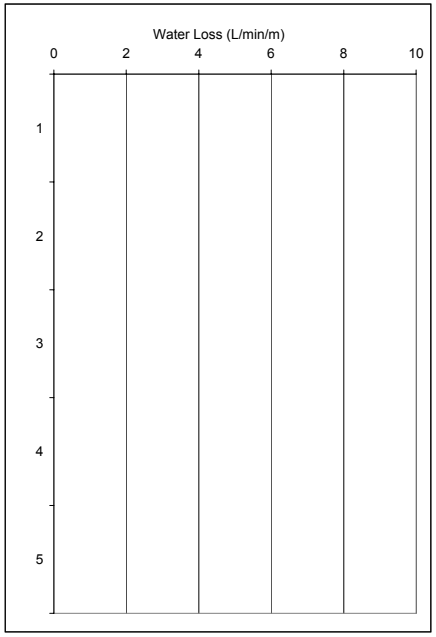
Interpreted Lugeon Value: 1

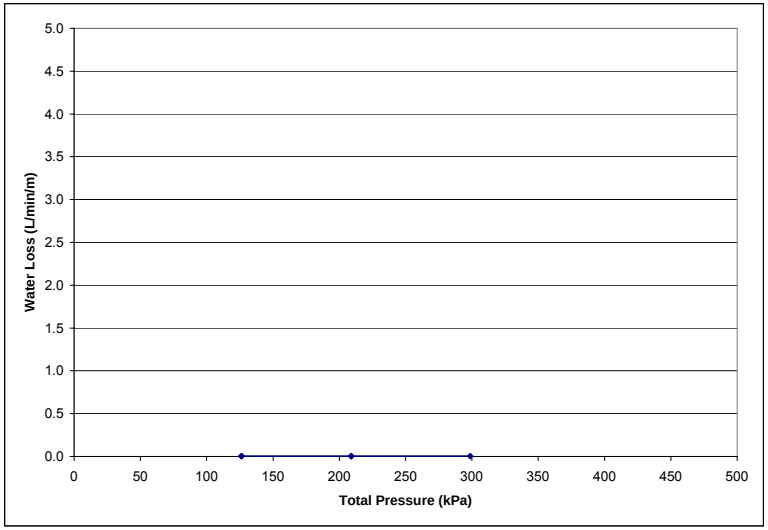
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 7.3 \times 10^{-10}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.0 m
Height of Gauge: 1.14 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.: 1158.2 m amsl
Packer Inflation Pressure: 190 psi
Water Flushed (Until Clean):

Time
Start Packer Testing: 3:06PM
Start Flushing:
End Flushing:
End Packer Testing: 4:06PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
		42	15	3:06		377.55			
4	8	57		3:11	5	377.19	-0.36	-0.07	
		42		3:11		377.19			
	8	57		3:16	5	377	-0.19	-0.04	
		42		3:18		377.13			
	20	57	15	3:23	5	377.13	0.00	0.00	
		42		3:23		377.13			
	20	57		3:28	5	377.13	0.00	0.00	
		42		2:05		377.74			
	32	57	15	2:10	5	377.77	0.03	0.01	
		42		2:10		377.77			
	32	57	15	2:15	5	377.77	0.00	0.00	
		42		2:21		377.64			
	19	57	15	2:26	5	377.64	0.00	0.00	
		42		2:26		377.64			
	19	57	15	2:31	5	377.64	0.00	0.00	
		42		2:37		377.88			
	8.5	57	15	2:42	5	377.18	-0.70	-0.14	
		42		2:42		377.18			
	8.5	57	15	2:47	5	377.15	-0.03	-0.01	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03

Water Test Interval: 13.98m to 16.2m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914159 N
	584896 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/04
Static W.L. below stick-up:	4.00 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	4.00 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	16.20 m
Top of Interval B.G.L.:	13.98 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	15.09 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	8	55.16	0.00	55.15	105.58	10.8	0.01	0.05	0.0045	0.002	0.019		2.06E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	20	137.90	0.00	137.89	188.32	19.2	0.01	0.05	0.0045	0.002	0.011		1.15E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	32	220.63	0.01	220.62	271.05	27.6	0.03	0.14	0.0136	0.006	0.023	1	2.41E-09	
10	19	131.00	0.00	131.00	181.42	18.5	0.01	0.05	0.0045	0.002	0.011		1.20E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	8.5	58.61	0.00	58.60	109.03	11.1	0.01	0.05	0.0045	0.002	0.019		1.99E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
												average	2.41E-09	Ignore assumed flow

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Measured flow was negative, assumed flow rate used in above calculations.

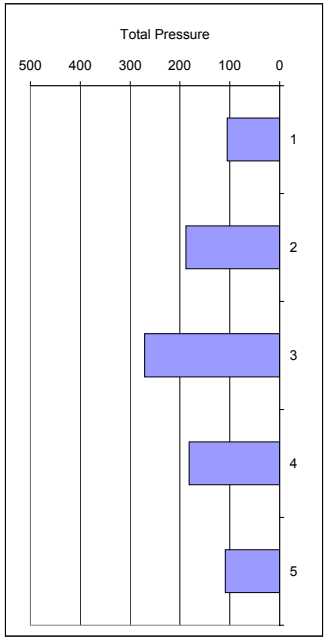
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

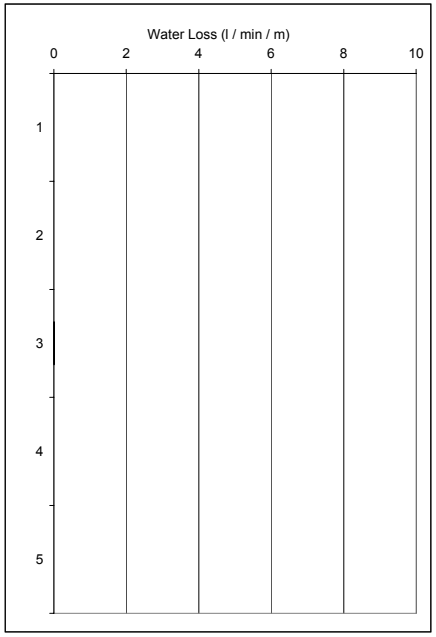
Interpreted Lugeon Value: 1

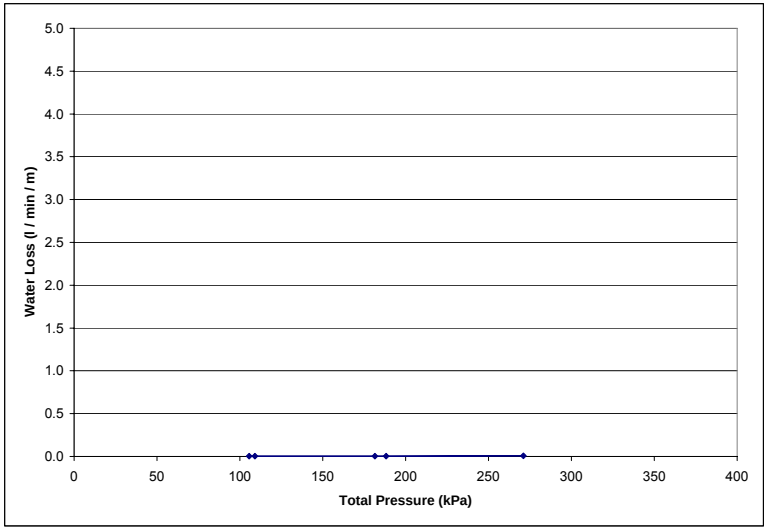
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.4 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.0 m
Height of Gauge: 1.14 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1158.2 m amsl
Packer Inflation Pressure:
Water Flushed (Until Clean):

Time
Start Packer Testing: 4:18PM
Start Flushing:
End Flushing:
End Packer Testing: 5:16PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
5	10	33 / 48	15	4:18 / 4:23	5	386.45 / 386.4	-0.05	-0.010	
	10	33 / 48	15	4:23 / 4:28	5	386.4 / 386.29	-0.11	-0.022	
	16	33 / 48	15	4:30 / 4:35	5	386.37 / 386.33	-0.04	-0.008	
	16	33 / 48	15	4:35 / 4:40	5	386.33 / 386.29	-0.04	-0.008	
	25	33 / 48	15	4:42 / 4:47	5	386.42 / 386.42	0.00	0.000	
	25	33 / 48	15	4:47 / 4:52	5	386.42 / 386.42	0.00	0.000	
	13	33 / 48	15	4:54 / 4:59	5	385.9 / 385.89	-0.01	-0.002	
	13	33 / 48	15	4:59 / 5:04	5	385.89 / 385.85	-0.04	-0.008	
	7	33 / 48	15	5:06 / 5:11	5	385.38 / 385.38	0.00	0.000	
	7	33 / 48	15	5:11 / 5:16	5	385.38 / 385.38	0.00	0.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03

Water Test Interval: 11.12m to 13.46m

Project Number: 0257-027-01

Client: Deloitte & Touche Inc.

Project Site: Plug Dam

General Location: Bench (Right Abutment)

Coordinates*: 6914159 N, 584896 E

Collar Elevation: 1158.2 m

Azimuth: deg

Dip: 90 deg

Date: Sept 4/04

Static W.L. below stick-up: 4.00 m

Stick-up A.G.L. along dip: 0.00 m

Static W.L. below G.L.: 4.00 m (vertical)

Height of gauge A.G.L.: 1.14 m (vertical)

Bottom of Interval B.G.L.: 13.46 m

Top of Interval B.G.L.: 11.24 m

Length of Interval L: 2.22 m

Middle of Interval to D.F.: 12.35 m (vertical)

Open Hole Radius R: 0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	10	68.95	0.00	68.94	119.37	12.2	0.01	0.05	0.0045	0.002	0.017		1.82E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	16	110.32	0.00	110.31	160.74	16.4	0.01	0.05	0.0045	0.002	0.013		1.35E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	25	172.37	0.00	172.37	222.79	22.7	0.01	0.05	0.0045	0.002	0.009	1	9.76E-10	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	13	89.63	0.00	89.63	140.05	14.3	0.01	0.05	0.0045	0.002	0.015		1.55E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	7	48.26	0.00	48.26	98.68	10.1	0.01	0.05	0.0045	0.002	0.021		2.20E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
												average	1.58E-09	Average of the assumed values

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typ values for the system used. Measured flow was negative, assumed flow rate used in above calculations.

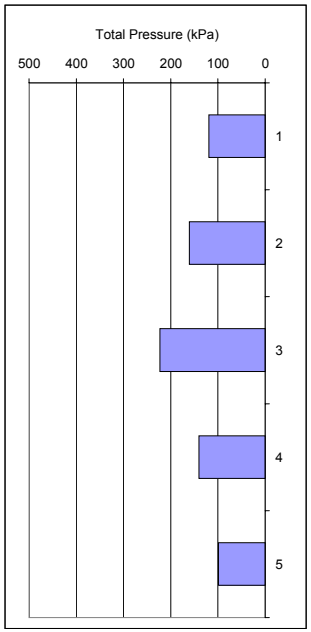
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

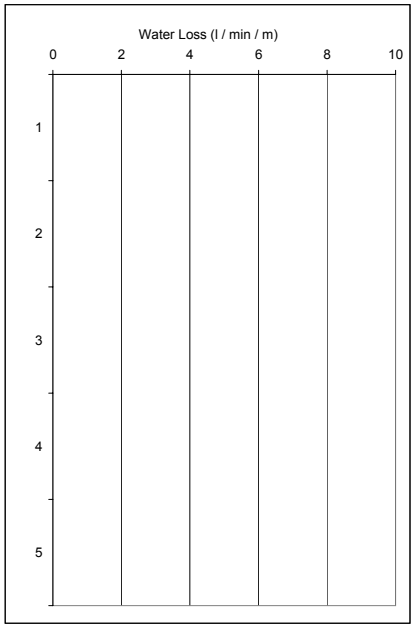
Interpreted Lugeon Value: 1

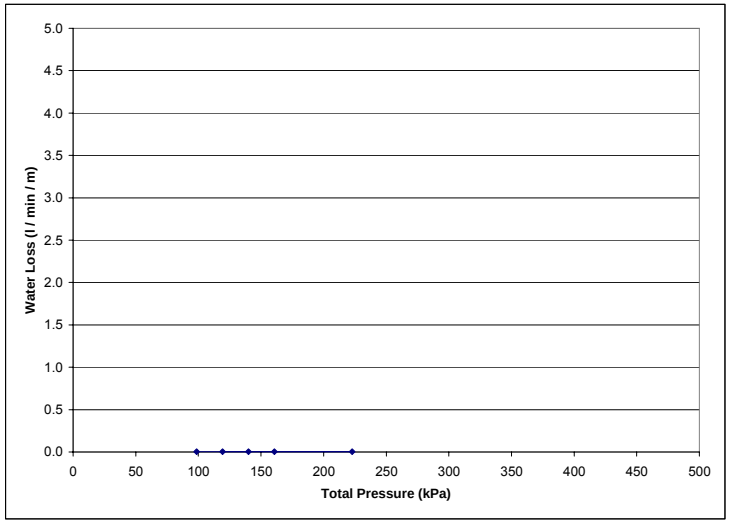
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.6 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.00
Height of Gauge: 1.14
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGAL/min
Collar El.:
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean Until Clean

Time Start Packer Testing: 5:30PM
Start Flushing:
End Flushing:
End Packer Testing: 6:03PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
6	6	24 / 39	15	5:30 / 5:35	5	391.88 / 391.88	0.00	0.000	
	6	24 / 39	15	5:35 / 5:40	5	391.88 / 391.88	0.00	0.000	
	13	24 / 39	15	5:42 / 5:47	5	391.94 / 392.11	0.17	0.034	
	13	24 / 39	15	5:47 / 5:52	5	392.11 / 392.11	0.00	0.000	
	20	24 / 39	15	5:53 / 5:58	5	392.35 / 392.38	0.03	0.006	
	20	24 / 39	15	5:58 / 6:03	5	392.38 / 392.37	-0.01	-0.002	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03
Water Test Interval: 8.49m to 10.71m

Project Number: 0257-027-01
Client: Deloitte & Touche Inc.
Project Site: Plug Dam
General Location: Bench (Right Abutment)
Coordinates*: 6914159 N, 584896 E
Collar Elevation: 1158.2 m
Azimuth: deg
Dip: 90 deg
Date: Sept 4/04
Static W.L. below stick-up: 4.00 m
Stick-up A.G.L. along dip: 0.00 m
Static W.L. below G.L.: 4.00 m (vertical)
Height of gauge A.G.L.: 1.14 m (vertical)
Bottom of Interval B.G.L.: 10.71 m
Top of Interval B.G.L.: 8.49 m
Length of Interval L: 2.22 m
Middle of Interval to D.F.: 9.60 m (vertical)
Open Hole Radius R: 0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (Igallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	6	41.37	0.00	41.37	91.79	9.4	0.01	0.05	0.0045	0.002	0.022		2.37E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
10	13	89.63	0.06	89.57	139.99	14.3	0.17	0.77	0.0773	0.035	0.249	1	2.64E-08	
10	20	137.90	0.01	137.89	188.31	19.2	0.02	0.09	0.0091	0.004	0.022		2.31E-09	
												average	1.44E-08	K calculated based on assumed flow was ignored in this calculation

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

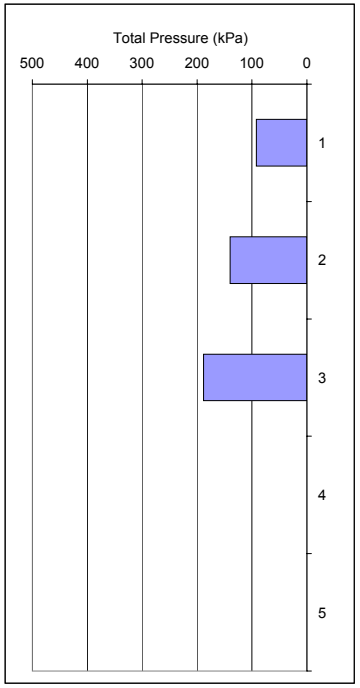
Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

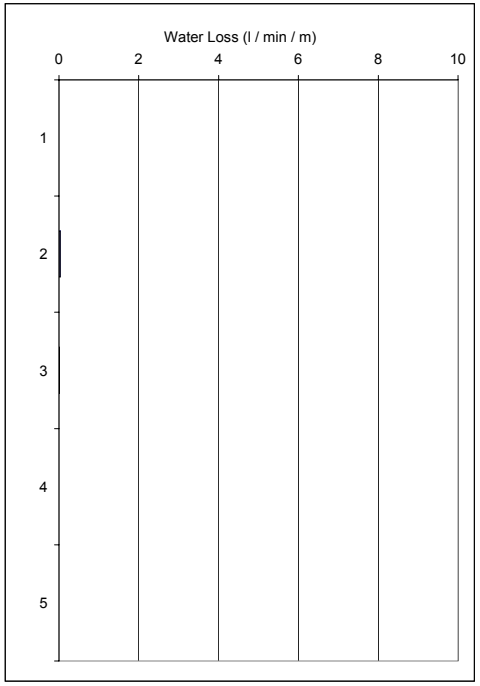
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

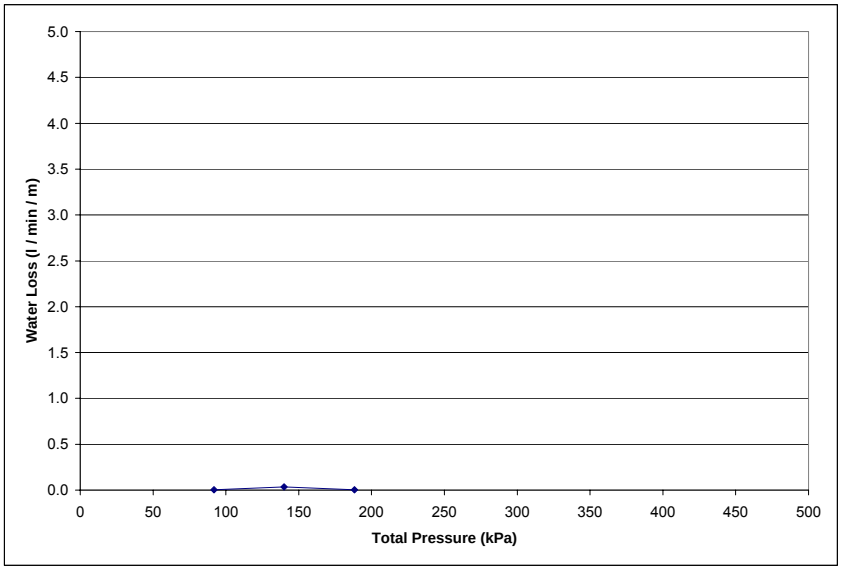
Interpreted Lugeon Value: 1
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.4 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-03

Date: 04-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.00
Height of Gauge: 1.14
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean Until Clean

Time Start Packer Testing: 6:19PM
Start Flushing:
End Flushing:
End Packer Testing: 7:10PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter IGal Start / Finish	Volume	Rate (Igal/min)	Remarks
		15		6:19		394.58			
7	5.5	30	15	6:24	5	394.66	0.08	0.016	
		15		6:24		394.66			
	5.5	30	15	6:29	5	394.73	0.07	0.014	
		15		6:30		394.83			
	12	30	15	6:35	5	395.13	0.30	0.060	
		15		6:35		395.13			
	12	30	15	6:40	5	395.45	0.32	0.064	
		15		6:41		395.59			
	16.5	30	15	6:46	5	396.14	0.55	0.110	
		15		6:46		396.14			
	16.5	30	15	6:51	5	396.76	0.62	0.124	
		15		6:52		396.8			
	10	30	15	6:57	5	396.99	0.19	0.038	
		15		6:57		396.99			
	10	30	15	7:02	5	397.11	0.12	0.024	
		15		7:03		397.11			
	5.5	30	15	7:05	5	397.11	0.00	0.000	
		15		7:05		397.11			
	5.5	30	15	7:10	5	397.11	0.00	0.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03
Water Test Interval: 5.75m to 7.97m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914159 N
	584896 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/04
Static W.L. below stick-up:	4.00 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	4.00 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	7.97 m
Top of Interval B.G.L.:	5.75 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	6.86 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	5.5	37.92	0.05	37.87	88.29	9.0	0.15	0.68	0.0682	0.031	0.348		3.69E-08	
10	12.5	86.18	0.22	85.96	136.38	13.9	0.62	2.82	0.2819	0.127	0.931		9.89E-08	
10	16	110.32	0.43	109.88	160.31	16.3	1.17	5.32	0.5319	0.240	1.495		1.59E-07	
10	10	68.95	0.11	68.84	119.26	12.2	0.31	1.41	0.1409	0.063	0.532	1	5.65E-08	
10	5.5	37.92	0.00	37.92	88.34	9.0	0.01	0.05	0.0045	0.002	0.023		2.46E-09	Assumed a volume of 0.01 IGal assumed as this was lowest measureable.
												average	8.78E-08	Assumed flow is ignored

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

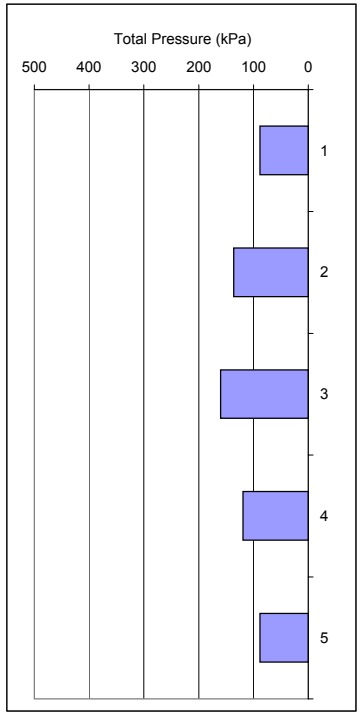
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

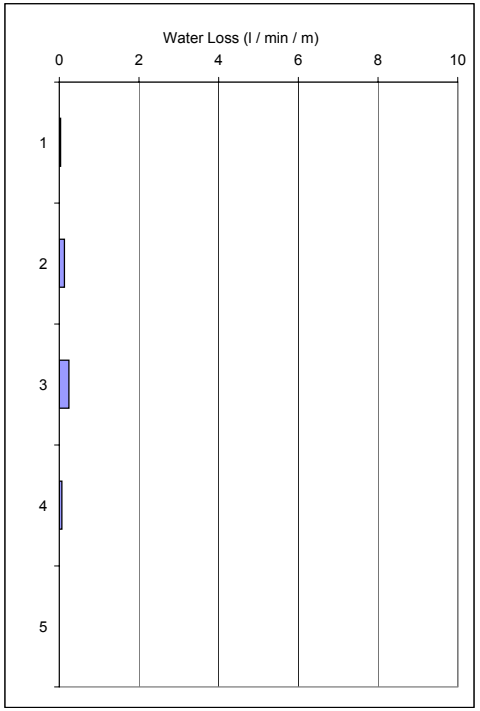
Interpreted Lugeon Value: 1

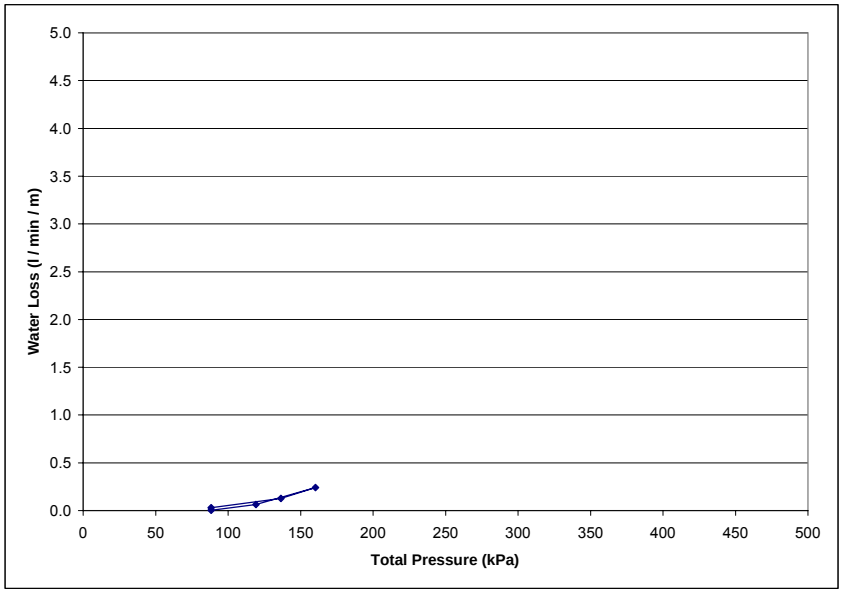
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 8.8 \times 10^{-8}$ m/sec







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Packer Test - Field Form

Hole # BGC04-03

Date: 05-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Bench (Right Abutment)
Personnel: Gerry Ferris
Depth to WT: 4.00
Height of Gauge: 1.14
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean Until Clean

Time Start Packer Testing: 12:43PM
Start Flushing:
End Flushing:
End Packer Testing: 1:39PM

Test #	Gauge Pressure (psi)	Depth ft From	Depth ft To	Test Length (ft)	Time Start	Time Finish	Elapsed Time (min)	Flow Meter IGal Start	Flow Meter IGal Finish	Volume	Rate (Igal/min)	Remarks
		6			12:41							
8	9	21		15	12:43		2				4.40	Leakage. Increased pressure in packer to
		6			12:43							
	9	21		15	12:45		2				4.30	eliminate the leakage.
	9	6			12:45		2					
		21		15	12:50						4.20	ignore first set of tests at 9 psi
	9	6			12:50		2					ignore first set of tests at 9 psi
		21		15	12:55						4.15	
	9	6			12:55		2					ignore first set of tests at 9 psi
		21		15	12:57						4.11	
	9	6			12:57		2					ignore first set of tests at 9 psi
		21		15	12:59						4.20	
		6			1:02							
	16	21		15	1:07		5				3.80	no leakage noted
		6			1:07							
	16	21		15	1:12		5				3.70	
		6			1:13							
	26	21		15	1:18		5				5.40	
		6			1:18							
	26	21		15	1:23		5				5.50	
		6			1:24							
	16	21		15	1:29		5				3.60	
		6			1:29							
	16	21		15	1:34		5				3.60	
		6			1:34							
	9	21		15	1:39		5				2.60	
		6			1:39							
	9	21		15	1:44		5				2.62	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-03
Water Test Interval: 3.01m to 5.23m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914159 N
	584896 E
Collar Elevation:	1158.2 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 5/04
Static W.L. below stick-up:	4.00 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	4.00 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	5.23 m
Top of Interval B.G.L.:	3.01 m
Length of Interval L:	2.22 m
Middle of Interval to D.F.:	4.12 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
														ignore this result due to leakage around packer
10	16	110.32	35.56	74.75	125.18	12.8	37.50	170.48	17.0478	7.679	61	60	6.51E-06	
10	26	179.26	66.40	112.86	163.29	16.6	54.50	247.76	24.7762	11.160	68		7.26E-06	
10	16	110.32	33.28	77.03	127.46	13.0	36.00	163.66	16.3659	7.372	58		6.14E-06	
10	9	62.05	20.02	42.03	92.45	9.4	26.10	118.65	11.8653	5.345	58		6.14E-06	
												average	6.51E-06	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

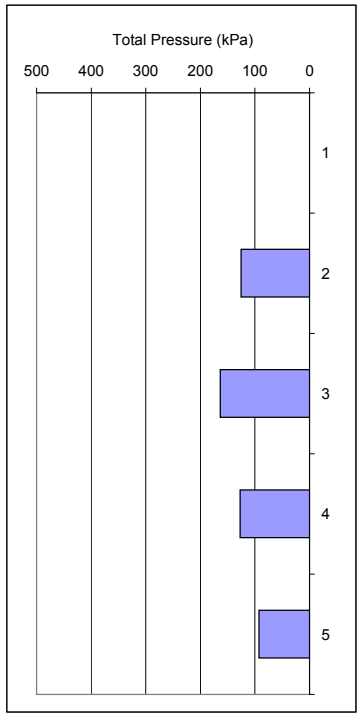
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

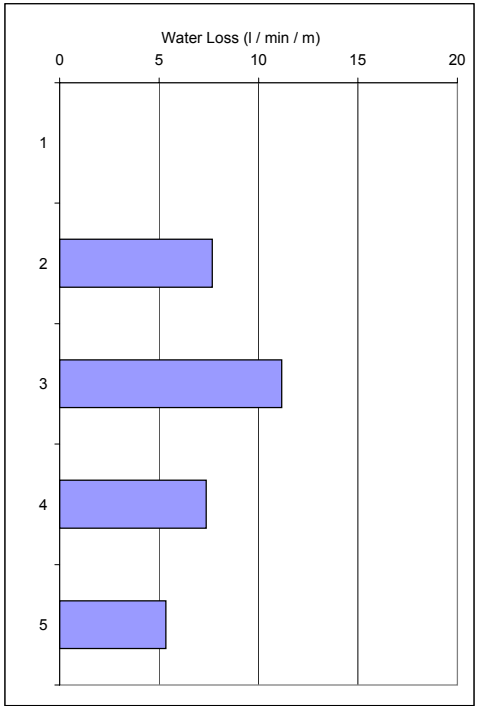
Interpreted Lugeon Value: 60

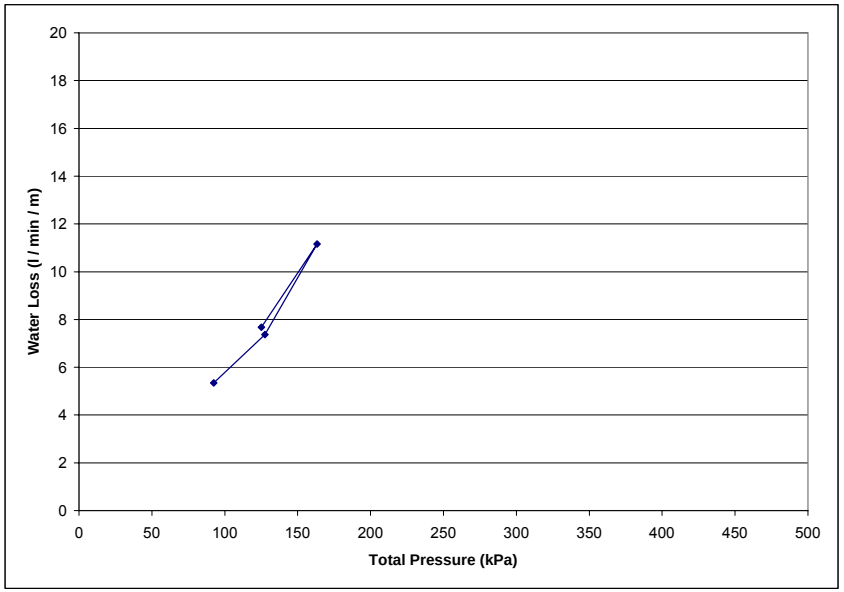
Interpreted flow pattern (Houlsby 1990) : High flow rate

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 6.5 \times 10^{-6}$ m/sec







BGC04-04

BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-04

Date: 07-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Single

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 10:26AM
Start Flushing:
End Flushing:
End Packer Testing: 10:36AM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
1	7	9 / 19	10	/ 10:26				0.88	water was slightly cloudy
	7	9 / 19	10	/ 10:31				0.69	
	7	9 / 19	10	/ 10:36				0.58	

Note:

1. The listed depths are for the bottom of the single packer and the base of the hole.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 2.74m to 5.79m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 7/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	5.79 m
Top of Interval B.G.L.:	2.74 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	4.27 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
5	15	103.42	4.33	99.09	168.25	17.2	4.40	20.00	4.0006	1.312	7.796	8	8.92E-07	water was slightly cloudy, therefore used the high flow rate measured
												average	8.92E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Single Packer arrangement used. System compliance estimated based on typical values for the system used.

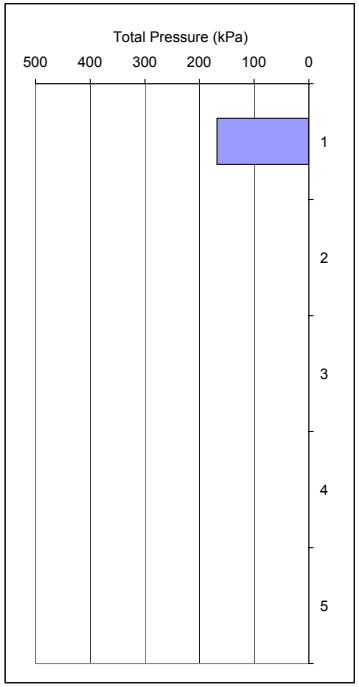
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

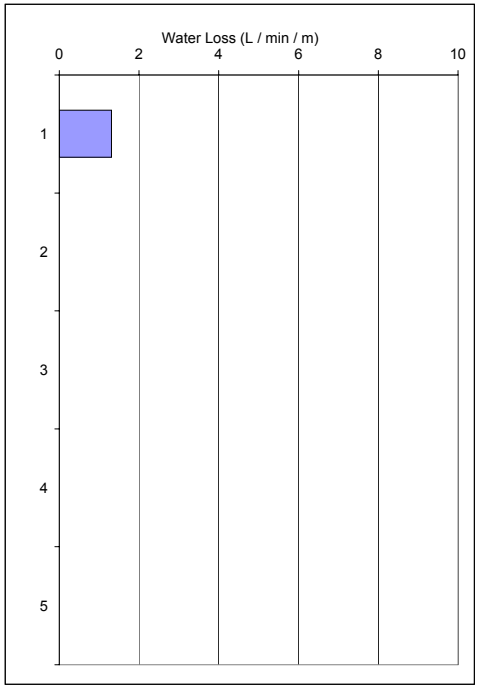
Interpreted Lugeon Value: 8

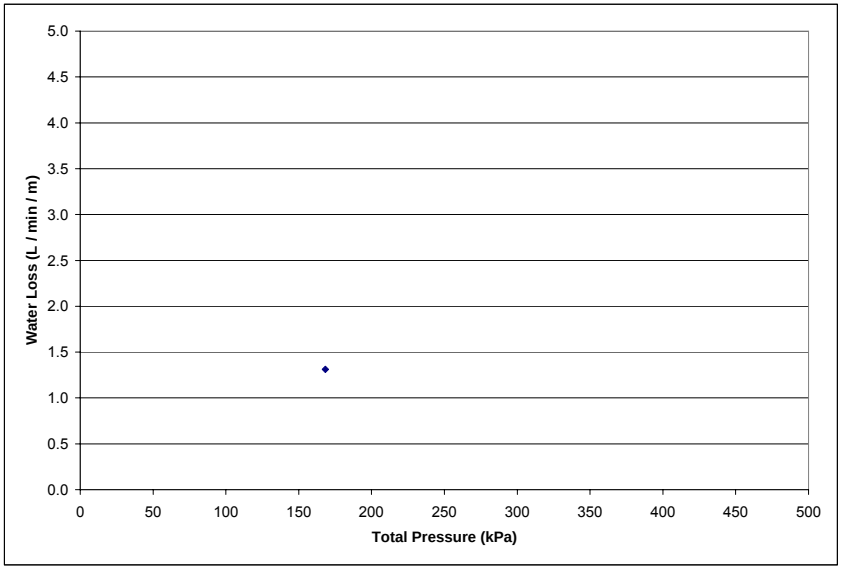
Interpreted flow pattern (Houlsby 1990) : Unable to interpret.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 9.0 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 11:52AM
Start Flushing:
End Flushing:
End Packer Testing: 12:52AM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		103		11:52		903.81			
2	20	123	20	11:57	5	903.34	-0.470	-0.094	
		103		11:57		903.34			
	20	123	20	12:02	5	903.12	-0.220	-0.044	
		103		12:02		903.12			
	20	123	20	12:07	5	903.12	0.000	0.000	
		103		12:08		903.82			
	40	123	20	12:13	5	903.82	0.000	0.000	
		103		12:13		903.82			
	40	123	20	12:15	2	903.82	0.000	0.000	
		103		12:15		903.82			
	40	123	20	12:20	5	903.79	-0.030	-0.006	
		103		12:21		904.4			
	64	123	20	12:26	5	904.83	0.430	0.086	
		103		12:26		904.83			
	64	123	20	12:31	5	905.39	0.560	0.112	
		103		12:31		905.39			
	64	123	20	12:36	5	905.8	0.410	0.082	
		103		12:36		905.8			
	64	123	20	12:41	5	906.19	0.390	0.078	
		103		12:43		905.18			
	37	123	20	12:48	5	905.18	0.000	0.000	
		103		12:48		905.18			
	37	123	20	12:52	5	905.18	0.000	0.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 32.57m to 36.32m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	36.32 m
Top of Interval B.G.L.:	32.57 m
Length of Interval L:	3.75 m
Middle of Interval to D.F.:	34.45 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20	137.90	0.00	137.89	207.05	21.1	0.01	0.05	0.0045	0.001	0.006		7.02E-10	Assumed a volume of 0.01 lgal assumed as this was lowest measureable.
10	40	275.79	0.00	275.79	344.95	35.2	0.01	0.05	0.0045	0.001	0.004	1	4.21E-10	Assumed a volume of 0.01 lgal assumed as this was lowest measureable.
10	64	441.26	0.29	440.97	510.13	52.0	0.80	3.64	0.3637	0.097	0.190		2.28E-08	
10	37	255.11	0.00	255.10	324.26	33.1	0.01	0.05	0.0045	0.001	0.004		4.48E-10	Assumed a volume of 0.01 lgal assumed as this was lowest measureable.
												average	2.28E-08	Ignore assumed flow

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

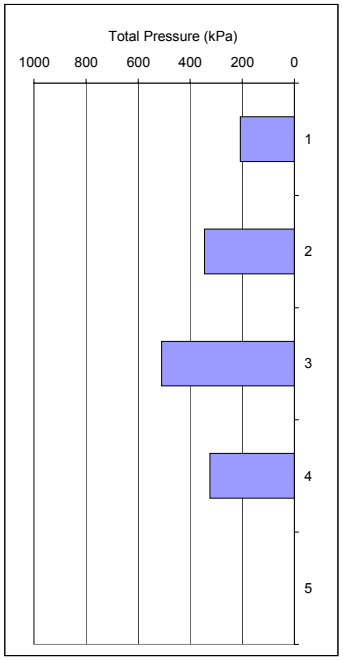
Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

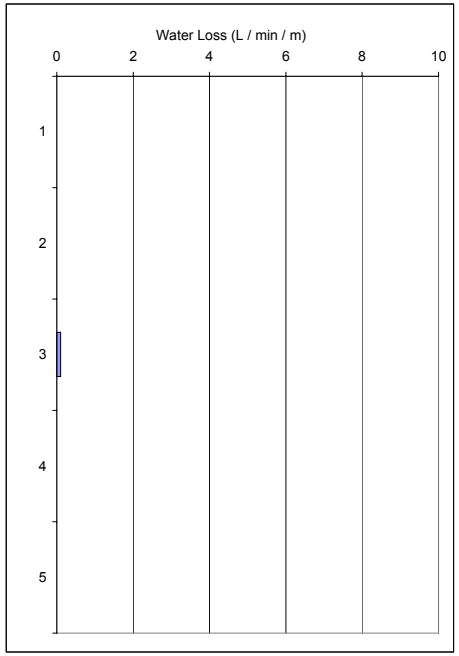
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

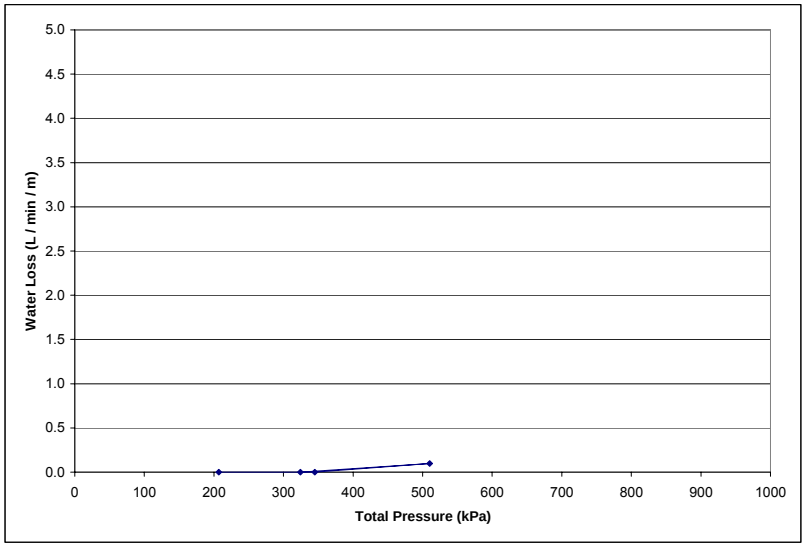
Interpreted Lugeon Value: 1
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.3 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 1:11PM
Start Flushing:
End Flushing:
End Packer Testing: 1:46PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		90		1:11		906.5			
3	16	110	20	1:16	5	906.57	0.070	0.014	
		90		1:16		906.57			
	16	110	20	1:21	5	906.57	0.000	0.000	
		90		1:22		906.91			
	40	110	20	1:27	5	907.2	0.290	0.058	
		90		1:27		907.2			
	40	110	20	1:32	5	906.99	-0.210	-0.042	
		90		1:36		906.51			
	57	110	20	1:41	5	906.51	0.000	0.000	
		90		1:41		906.51			
	57	110	20	1:46	5	906.51	0.000	0.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 29.78m to 33.53m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	33.53 m
Top of Interval B.G.L.:	29.78 m
Length of Interval L:	3.75 m
Middle of Interval to D.F.:	31.66 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	16	110.32	0.02	110.29	179.45	18.3	0.07	0.32	0.0318	0.008	0.047		5.67E-09	
10	40	275.79	0.03	275.76	344.92	35.2	0.08	0.36	0.0364	0.010	0.028		3.37E-09	
10	57	393.00	0.00	393.00	462.16	47.1	0.01	0.05	0.0045	0.001	0.003	1	3.14E-10	Assumed a volume of 0.01 lgal assumed as this was lowest measureable.
												average	4.52E-09	Ignore assumed flow

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

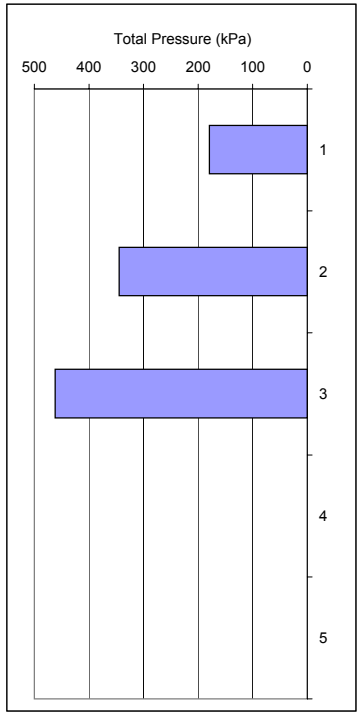
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

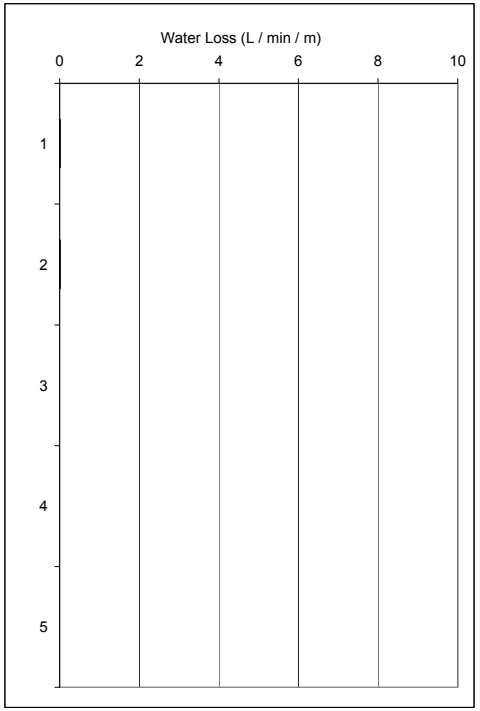
Interpreted Lugeon Value: 1

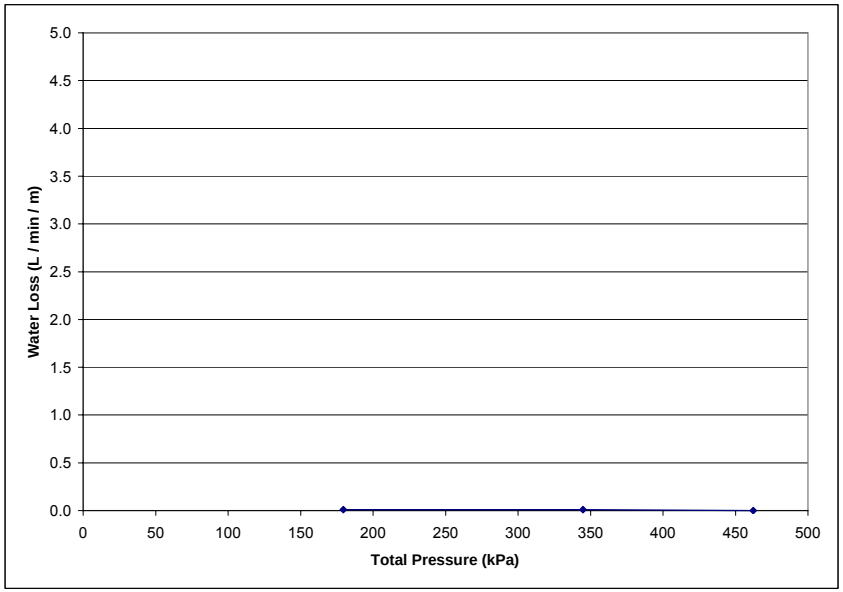
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.5 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 2:00PM
Start Flushing:
End Flushing:
End Packer Testing: 2:36PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		80		2:00		912.5			
4	16	100	20	2:05	5	912.4	-0.14	-0.028	
		80		2:05		912.4			
	16	100	20	2:10	5	912.0	-0.38	-0.076	
		80		2:12		912.3			
	26	100	20	2:17	5	912.2	-0.07	-0.014	
		80		2:17		912.2			
	26	100	20	2:23	5	912.2	0.00	0.000	
		80		2:26		913.1			
	47	100	20	2:31	5	913.1	0.00	0.000	
		80		2:31		913.1			
	47	100	20	2:36	5	913.1	0.00	0.000	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 25.56m to 29.30m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	29.30 m
Top of Interval B.G.L.:	25.56 m
Length of Interval L:	3.74 m
Middle of Interval to D.F.:	27.43 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (Igallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	16	110.32	0.00	110.31	179.47	18.3	0.01	0.05	0.0045	0.001	0.007		8.11E-10	Assumed a volume of 0.01 Igal assumed as this was lowest measureable.
11	26	179.26	0.00	179.26	248.42	25.3	0.01	0.05	0.0041	0.001	0.004	1	5.33E-10	Assumed a volume of 0.01 Igal assumed as this was lowest measureable.
10	47	324.05	0.00	324.05	393.21	40.1	0.01	0.05	0.0045	0.001	0.003		3.70E-10	Assumed a volume of 0.01 Igal assumed as this was lowest measureable.
												average	5.71E-10	Average of the assumed values

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in Igal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

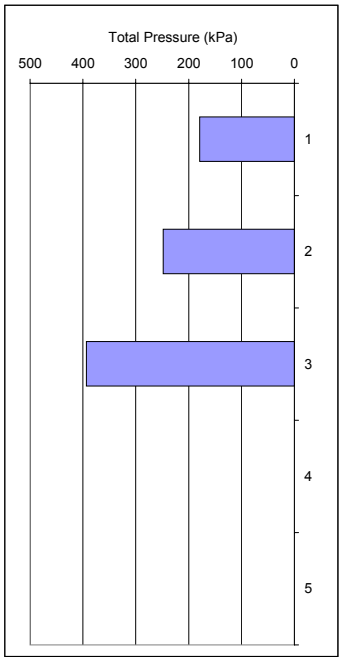
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

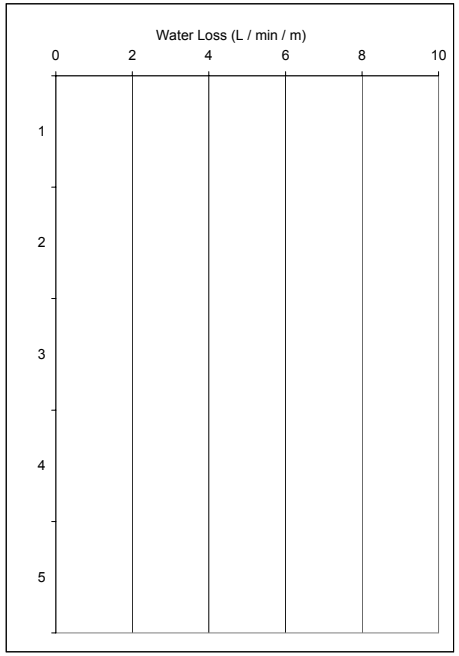
Interpreted Lugeon Value: 1

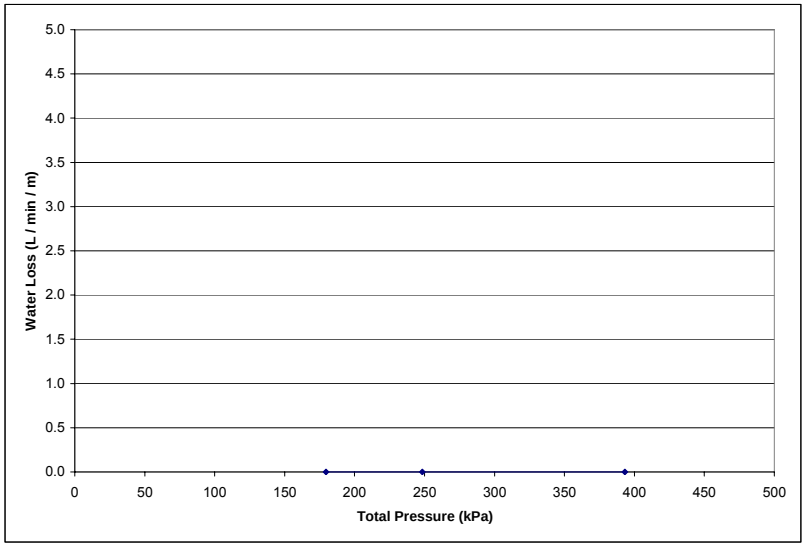
Interpretated flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 5.7 \times 10^{-10}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 2:47PM
Start Flushing:
End Flushing:
End Packer Testing: 3:12PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		68		2:47		912.81			
5	15	88	20	2:54	7	913.58	0.77	0.11	
		68		2:54		913.58			
	15	88	20	2:59	5	914.38	0.80	0.16	
		68		3:02		915.21			
	33	88	20	3:07	5	916.79	1.58	0.32	
		68		3:07		916.79			
	33	88	20	3:12	5	918.11	1.32	0.26	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 21.90m to 25.65m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	25.54 m
Top of Interval B.G.L.:	21.90 m
Length of Interval L:	3.64 m
Middle of Interval to D.F.:	23.72 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
12	15	103.42	0.49	102.93	172.09	17.5	1.57	7.14	0.59	0.163	0.95		1.13E-07	
10	33	227.53	1.16	226.37	295.53	30.1	2.90	13.18	1.32	0.362	1.23		1.46E-07	
												1		
												average	1.29E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

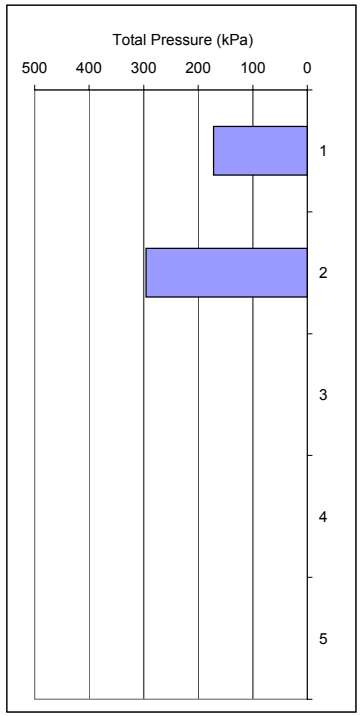
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

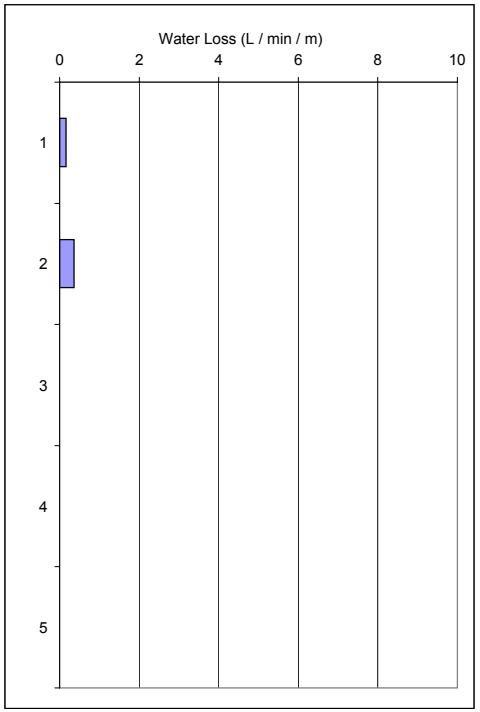
Interpreted Lugeon Value: 1

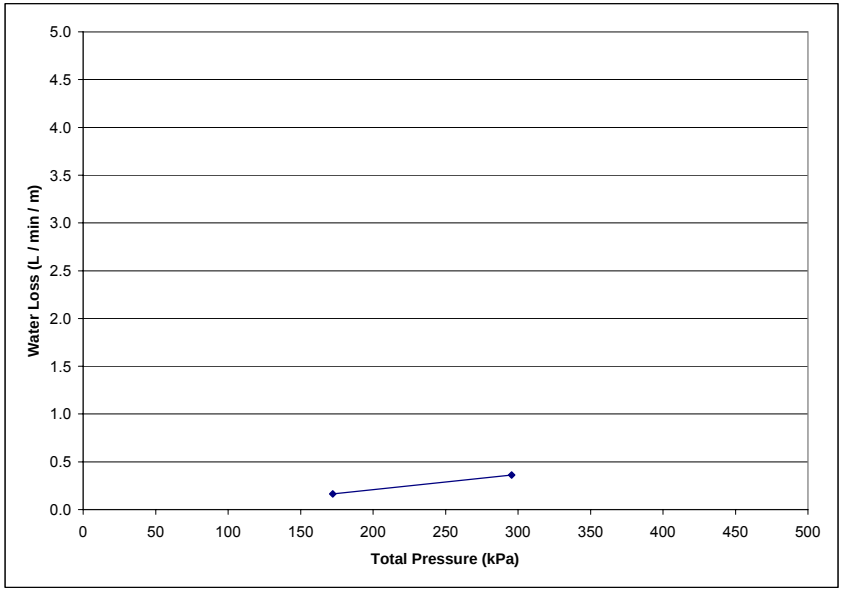
Interpreted flow pattern (Houlsby 1990) : Tenatively considered Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.3 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 4:12PM
Start Flushing:
End Flushing:
End Packer Testing: 4:20PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		56		4:12		938.82			
6	27	76	20	4:17	5	939.80	0.980	0.20	
		56		4:17		939.80			
	27	76	20	4:19	2	940.22	0.420	0.21	
		56		4:19		940.22			
	27	76	20	4:20	1	940.38	0.160	0.16	Water supply pump failure.

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 18.24m to 21.99m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	21.99 m
Top of Interval B.G.L.:	18.24 m
Length of Interval L:	3.75 m
Middle of Interval to D.F.:	20.12 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
8	27	186.16	0.75	185.41	254.57	25.9	1.57	7.14	0.89	0.238	0.93	1	1.12E-07	
												average	1.12E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

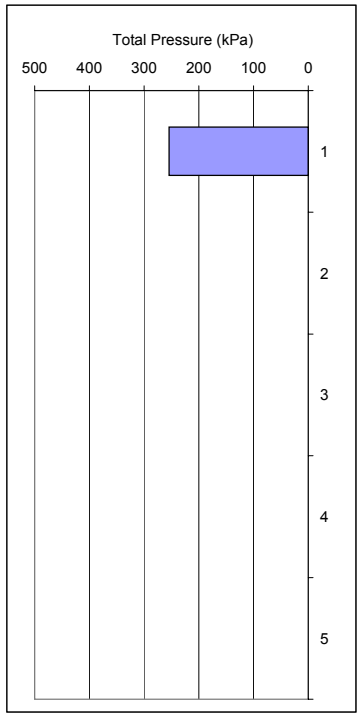
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

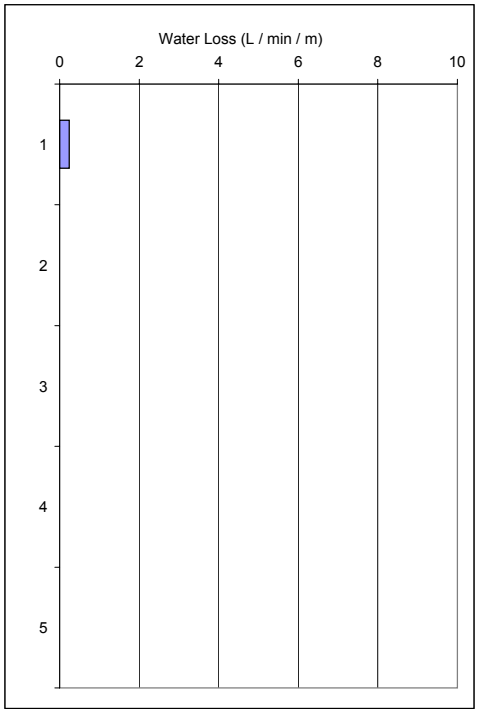
Interpreted Lugeon Value: 1

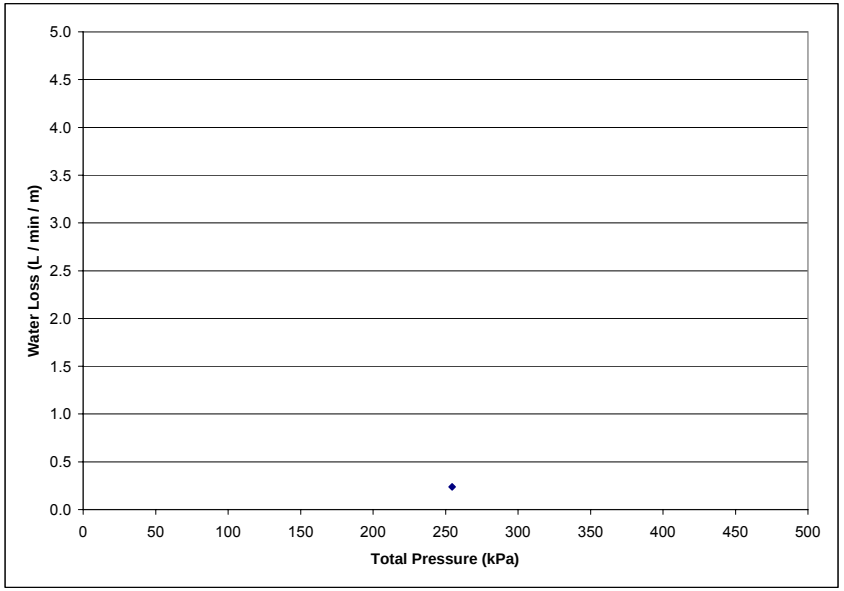
Interpreted flow pattern (Houlsby 1990) : unable to determine.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.1 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 5:11PM
Start Flushing:
End Flushing:
End Packer Testing: 5:22PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		44		5:11		954.22			
7	22	64	20	5:16	5	954.35	0.13	0.03	
		44		5:16		954.35			
	22	64	20	5:21	5	954.46	0.11	0.02	
		44		5:21		954.46			
	22	64	20	5:22	1	954.52	0.06	0.06	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 14.58m to 18.33m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	18.33 m
Top of Interval B.G.L.:	14.58 m
Length of Interval L:	3.75 m
Middle of Interval to D.F.:	16.46 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	22	151.68	0.09	151.60	220.76	22.5	0.24	1.09	0.1091	0.029	0.132	1	1.58E-08	
												average	1.58E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

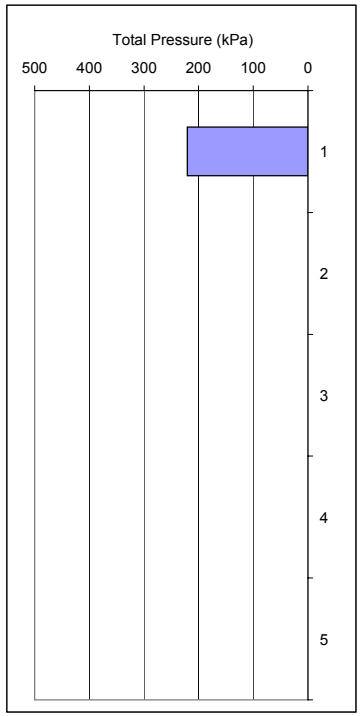
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

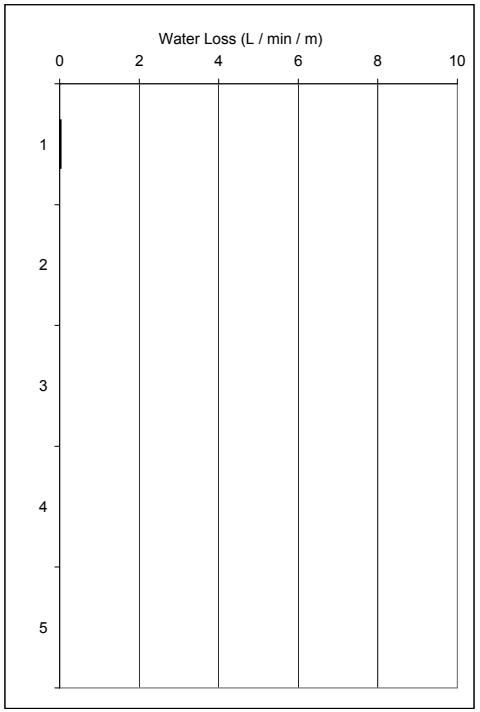
Interpreted Lugeon Value: 1

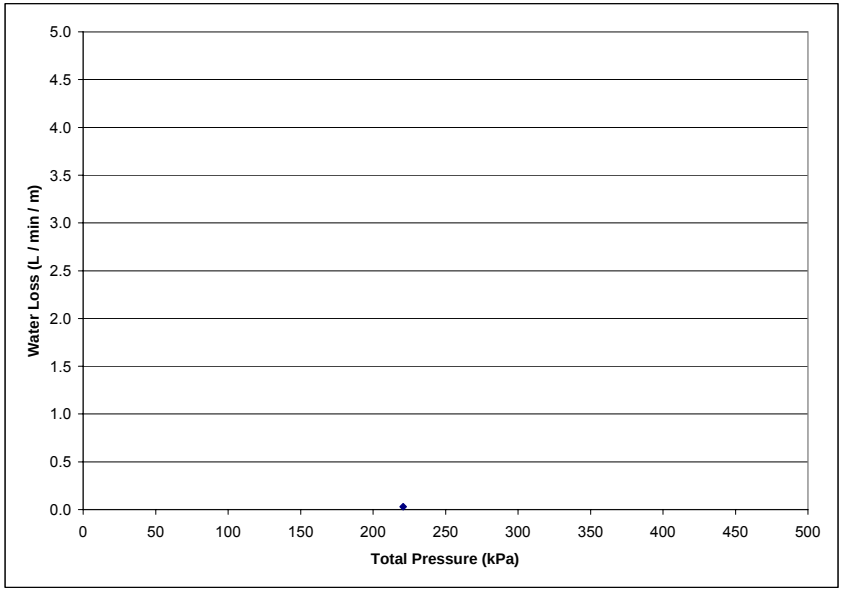
Interpreted flow pattern (Houlsby 1990) : unable to determine.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.6 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 5:35PM
Start Flushing:
End Flushing:
End Packer Testing: 5:50PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		32		5:35		961.67			
8	19	52	20	5:40	5	961.67	0.00	0.00	
		32		5:40		961.67			
	19	52	20	5:45	5	961.68	0.01	0.00	
		32		5:45		961.68			
	19	52	20	5:50	5	961.73	0.05	0.01	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 10.92m to 14.67m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	14.67 m
Top of Interval B.G.L.:	10.92 m
Length of Interval L:	3.75 m
Middle of Interval to D.F.:	12.80 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	19	131.00	0.02	130.98	200.14	20.4	0.06	0.27	0.03	0.01	0.04	1	4.36E-09	
												average	4.36E-09	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

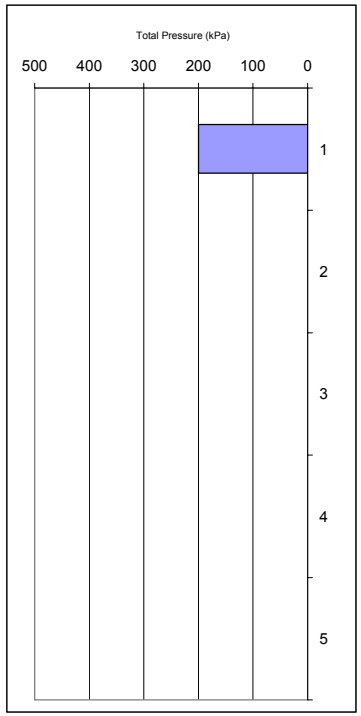
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

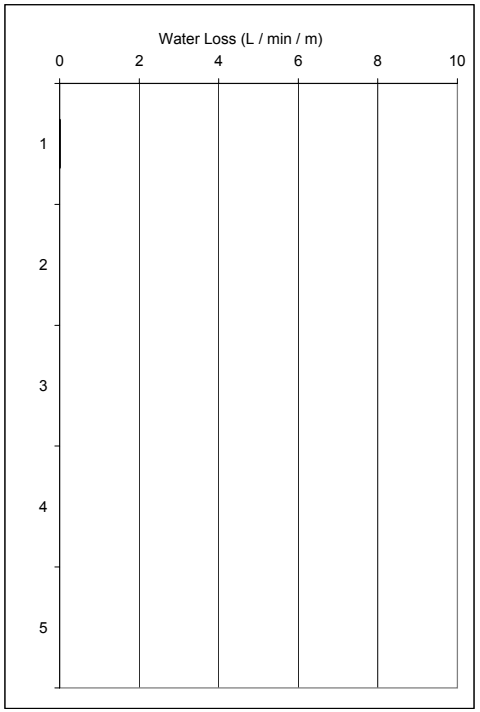
Interpreted Lugeon Value: 1

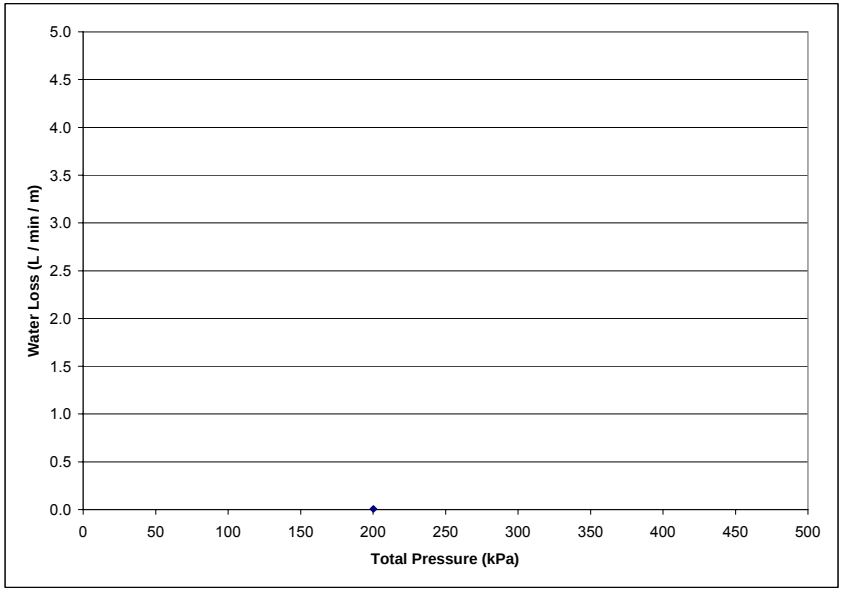
Interpreted flow pattern (Houlsby 1990) : unable to determine.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.4 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC04-04

Date: 08-Sep-04
Client: D & T
Project #: 0257-027-01
Project: 2004 Plug Dam
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5.75 m
Height of Gauge: 1.30 m
Stick Up:

Packer Setup Type: Double

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 90
Pump Capacity: 24 IGal/min
Collar El.: 1172.3 m amsl
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 6:01PM
Start Flushing:
End Flushing:
End Packer Testing: 6:11PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter Igal Start / Finish	Volume	Rate (IGal/min)	Remarks
		20		6:01		974.11			
9	12	40	20	6:06	5	974.17	0.06	0.01	
		20		6:06		974.17			
	12	40	20	6:11	5	974.21	0.04	0.01	

Note:

1. The listed depths are for the bottom and top of the double packers. The zone tested is 1.175 m higher than the bottom depth, the total length of the zone being tested is 2.2 m.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC04-04
Water Test Interval: 7.27m to 11.02m

Project Number:	0257-027-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914192 N
	584978 E
Collar Elevation:	1172.3 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 8/04
Static W.L. below stick-up:	5.75 m
Stick-up A.G.L. along dip:	0.00 m
Static W.L. below G.L.:	5.75 m (vertical)
Height of gauge A.G.L.:	1.30 m (vertical)
Bottom of Interval B.G.L.:	11.02 m
Top of Interval B.G.L.:	7.27 m
Length of Interval L:	3.75 m
Middle of Interval to D.F.:	9.15 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (lgallons)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	12	82.74	0.04	82.70	151.86	15.5	0.10	0.45	0.0455	0.012	0.080	1	9.57E-09	
												average	9.57E-09	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in lgal using Neptune meter and converted. Double Packer arrangement used. System compliance estimated based on typical values for the system used. Assumed flow rate used in above calculations where noted.

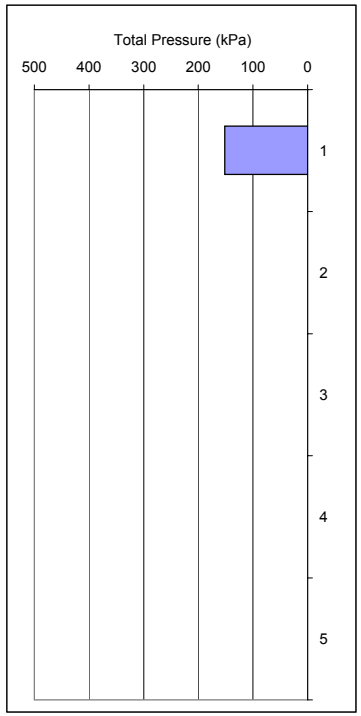
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

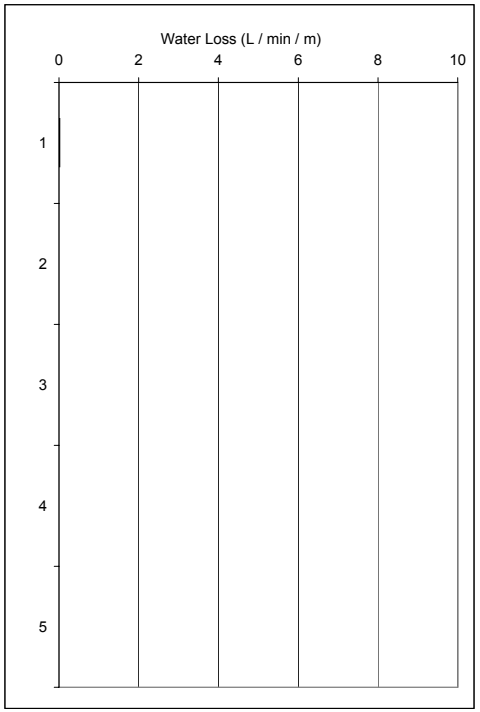
Interpreted Lugeon Value: 1

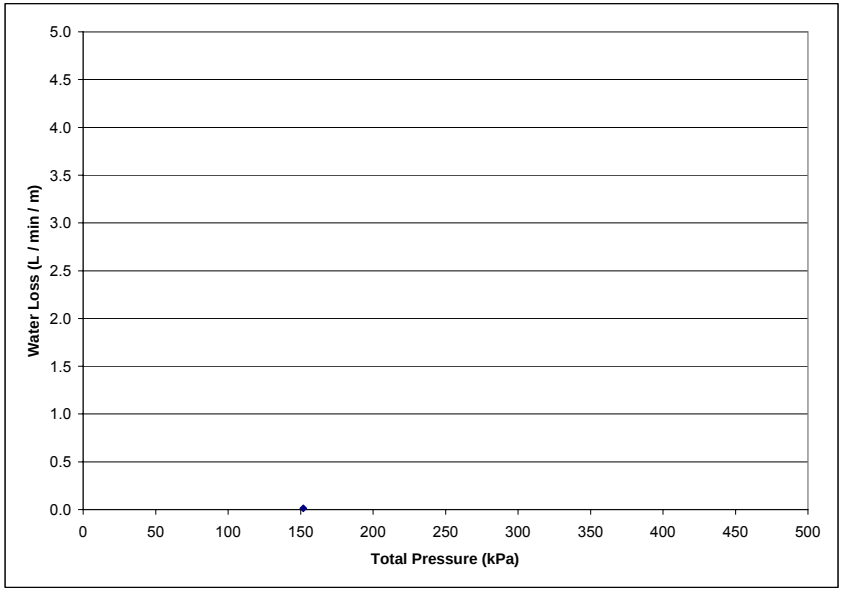
Interpreted flow pattern (Houlsby 1990) : unable to determine.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 9.6 \times 10^{-9}$ m/sec







BGC05-24

BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC05-24

Date: 24-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: Average of morning readings 28'
Height of Gauge: 0 m
Stick Up:

Packer Setup Type: Single

Hole Diameter: NQ3 (hole diam. 75.7mm)
Plunge: 70 at 53" wrt m. North
Pump Capacity: 24 lGal/min
Collar El.:
Packer Inflation Pressure: 150 psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 4:40PM
Start Flushing: 4:44PM
End Flushing: 4:59PM
End Packer Testing: 10:17 AM on August 24, 2005

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
1	2.5	27 / 38	11	9:11 / 9:13	2	4.10 / 4.11	0.01	6.50	Slighty turbid water used for this test
	3	27 / 38	11	9:13 / 9:15	2	4.11 / 4.12	0.01	5.95	
	3	27 / 38	11	9:15 / 9:17	2	4.12 / 4.14	0.01	5.35	
	3	27 / 38	11	9:17 / 9:19	2	4.14 / 4.15	0.01	4.95	
	3	27 / 38	11	9:19 / 9:21	2	4.15 / 4.15	0.01	4.55	
	3	27 / 38	11	9:21 / 9:23	2	4.15 / 4.16	0.01	4.10	
	3	27 / 38	11	9:23 / 9:25	2	4.16 / 4.17	0.01	3.80	
	3	27 / 38	11	9:25 / 9:27	2	4.17 / 4.18	0.01	3.55	
	5	27 / 38	11	9:29 / 9:31	2	4.19 / 4.20	0.01	3.70	
	5	27 / 38	11	9:31 / 9:33	2	4.20 / 4.22	0.02	8.70	
	5.5	27 / 38	11	9:33 / 9:35	2	4.22 / 4.23	0.01	5.50	
	5	27 / 38	11	9:35 / 9:37	2	4.23 / 4.24	0.01	5.40	
	5.5	27 / 38	11	9:37 / 9:39	2	4.24 / 4.25	0.01	5.10	
	5.5	27 / 38	11	9:39 / 9:41	2	4.25 / 4.26	0.01	5.05	
	5	27 / 38	11	9:41 / 9:43	2	4.26 / 4.27	0.01	4.95	
	8	27 / 38	11	9:44 / 9:46	2	4.28 / 4.30	0.02	10.80	
	9	27 / 38	11	9:46 / 9:48	2	4.30 / 4.32	0.02	10.65	
	9	27 / 38	11	9:48 / 9:50	2	4.32 / 4.34	0.02	10.05	
	9	27 / 38	11	9:50 / 9:52	2	4.34 / 4.36	0.02	9.80	
	9	27 / 38	11	9:52 / 9:54	2	4.36 / 4.38	0.02	10.15	
	5.5	27 / 38	11	9:56 / 9:58	2	4.39 / 4.39	0.00	0.10	
	5.5	27 / 38	11	9:58 / 10:00	2	4.39 / 4.39	0.00	0.10	
	5.5	27 / 38	11	10:00 / 10:02	2	4.39 / 4.39	0.00	0.10	
	5.5	27 / 38	11	10:02 / 10:04	2	4.39 / 4.39	0.00	0.00	
	6	27 / 38	11	10:04 / 10:06	2	4.39 / 4.39	0.00	0.05	
	3	27 / 38	11	10:07 / 10:09	2	4.39 / 4.39	0.00	0.00	
	3	27 / 38	11	10:09 / 10:11	2	4.39 / 4.39	0.00	0.00	
	3	27 / 38	11	10:11 / 10:13	2	4.39 / 4.39	0.00	0.00	
	3	27 / 38	11	10:13 / 10:15	2	4.39 / 4.39	0.00	0.00	
	3	27 / 38	11	10:15 / 10:17	2	4.39 / 4.39	0.00	0.00	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 8.23m to 11.58m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 24/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.03 m
Static W.L. below G.L.:	6.11 m (vertical)
Height of gauge A.G.L.:	0.00 m (vertical)
Bottom of Interval B.G.L.:	11.58 m
Top of Interval B.G.L.:	8.23 m
Length of Interval L:	3.35 m
Middle of Interval to D.F.:	9.80 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	3	20.68	4.60	16.09	76.00	7.7	0.04	41.90	4.1900	1.251	16.5		1.92E-06	water was slightly turbid
10	5.3	36.54	6.11	30.43	90.35	9.2	0.05	52.00	5.2000	1.552	17.2		2.01E-06	
10	8.8	60.67	16.12	44.55	104.47	10.6	0.10	102.90	10.2900	3.072	29.4	17	3.44E-06	
10	5.6	38.61	0.04	38.57	98.49	10.0	0.00	0.50	0.0500	0.015	0.2		1.77E-08	
10	3	20.68	0.01	20.68	80.60	8.2	0.00	0.10	0.0100	0.003	0.0		4.33E-09	Assumed flow value as 0.0001 cubic metre
														Ignore last two K values, likely affected by the turbid water
												average	2.46E-06	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

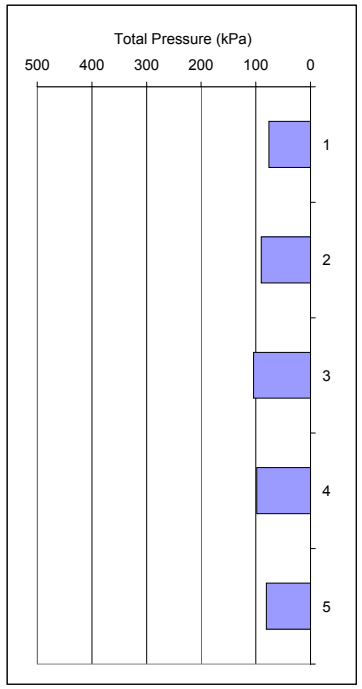
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

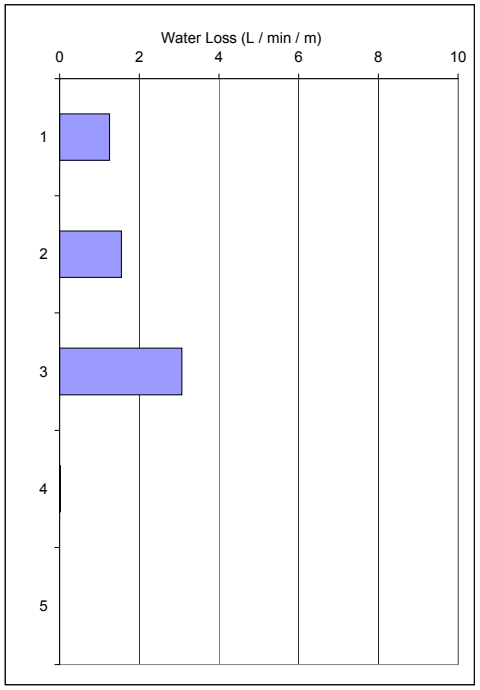
Interpreted Lugeon Value: 17

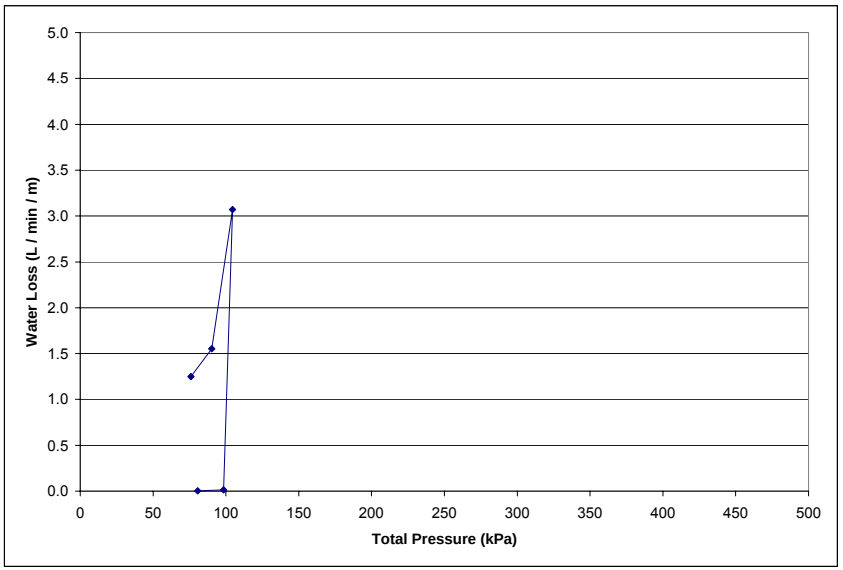
Interpreted flow pattern (Houlsby 1990) : Dilation, with filling of voids due to the use of turbid water.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.5 \times 10^{-6}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 25-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: Use average of 28'
Height of Gauge: 43'
Stick Up: 74'

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70 °
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 225 psi
Water Flushed (Vol/time/Until Clean):

Time Start Packer Testing: 10:15 AM
Start Flushing: 9:44 AM
End Flushing: 9:54 AM
End Packer Testing: 2:12 PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		37.5		1:00		4.53			
2	8	47.5	10	1:02	2	4.53	0.00	0.95	Redid the air line joints and resealed
		37.5		1:02		4.53			
	7	47.5	10	1:04	2	4.53	0.00	1.40	The packers by 12:45 pm
		37.5		1:04		4.53			
	8	47.5	10	1:06	2	4.54	0.00	1.85	
		37.5		1:06		4.54			
	9	47.5	10	1:08	2	4.54	0.00	1.10	
		37.5		1:08		4.54			
	9	47.5	10	1:10	2	4.54	0.00	1.55	
		37.5		1:12		4.55			
	15	47.5	10	1:14	2	4.56	0.00	2.45	
		37.5		1:14		4.56			
	17	47.5	10	1:16	2	4.56	0.01	2.65	
		37.5		1:16		4.56			
	17	47.5	10	1:18	2	4.57	0.01	3.00	
		37.5		1:18		4.57			
	18	47.5	10	1:20	2	4.57	0.01	3.00	
		37.5		1:20		4.57			
	17	47.5	10	1:22	2	4.58	0.01	2.80	
		37.5		1:28		4.60			
	26	47.5	10	1:30	2	4.61	0.01	5.15	Slight leakage? Overpressured or joint leaks
		37.5		1:30		4.61			
	28	47.5	10	1:32	2	4.62	0.01	4.85	
		37.5		1:32		4.62			
	26	47.5	10	1:34	2	4.63	0.01	3.90	
		37.5		1:34		4.63			
	26	47.5	10	1:36	2	4.64	0.01	4.25	
		37.5		1:36		4.64			
	27	47.5	10	1:38	2	4.65	0.01	4.50	
		37.5		1:40		4.65			
	16	47.5	10	1:42	2	4.66	0.01	3.10	
		37.5		1:42		4.66			
	14	47.5	10	1:44	2	4.66	0.00	1.80	TROUBLE maintaining the right pressure.
		37.5		1:44		4.66			
	20	47.5	10	1:47	2	4.67	0.01	4.95	TROUBLE maintaining the right pressure.
		37.5		1:50		4.68			
	16	47.5	10	1:52	2	4.69	0.01	3.15	
		37.5		1:52		4.69			
	16	47.5	10	1:54	2	4.69	0.01	3.25	
		37.5		1:54		4.69			
	15	47.5	10	1:56	2	4.70	0.01	3.60	
		37.5		1:56		4.70			
	16	47.5	10	1:58	2	4.71	0.01	3.25	
		37.5		1:58		4.71			
		47.5	10	2:00	2	4.71	0.01	3.45	
		37.5		2:02		4.72			
	9	47.5	10	2:04	2	4.72	0.00	2.50	
		37.5		2:04		4.72			
	8	47.5	10	2:06	2	4.73	0.00	1.65	
		37.5		2:06		4.73			
	8	47.5	10	2:08	2	4.73	0.00	2.00	
		37.5		2:08		4.73			
	8	47.5	10	2:10	2	4.73	0.00	2.20	
		37.5		2:10		4.73			
	9	47.5	10	2:12	2	4.74	0.00	2.20	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 11.43m to 14.48m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 25/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	1.88 m
Static W.L. below G.L.:	6.25 m (vertical)
Height of gauge A.G.L.:	1.09 m (vertical)
Bottom of Interval B.G.L.:	14.48 m
Top of Interval B.G.L.:	11.43 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	12.86 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	8.2	56.54	1.21	55.33	127.33	13.0	0.01	13.70	1.3700	0.449	3.5		4.04E-07	
10	16.8	115.83	2.75	113.08	185.08	18.9	0.03	27.80	2.7800	0.911	4.9		5.64E-07	
10	26.6	183.40	5.09	178.31	250.30	25.5	0.05	45.30	4.5300	1.485	5.9	5	6.79E-07	
10	15.8	108.94	3.07	105.87	177.86	18.1	0.03	30.40	3.0400	0.997	5.6		6.41E-07	
10	8.4	57.92	1.98	55.94	127.93	13.0	0.02	21.10	2.1100	0.692	5.4		6.19E-07	
												average	5.81E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Compandy flowmeter and converted. Single Packer arrangement used. System compliance calculated based on a calibration test conducted at start of program.

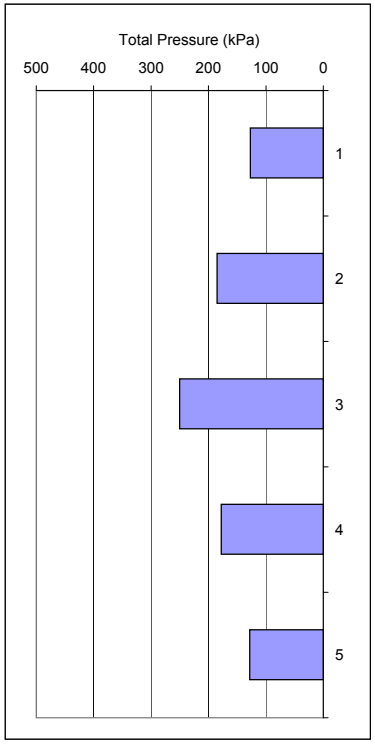
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

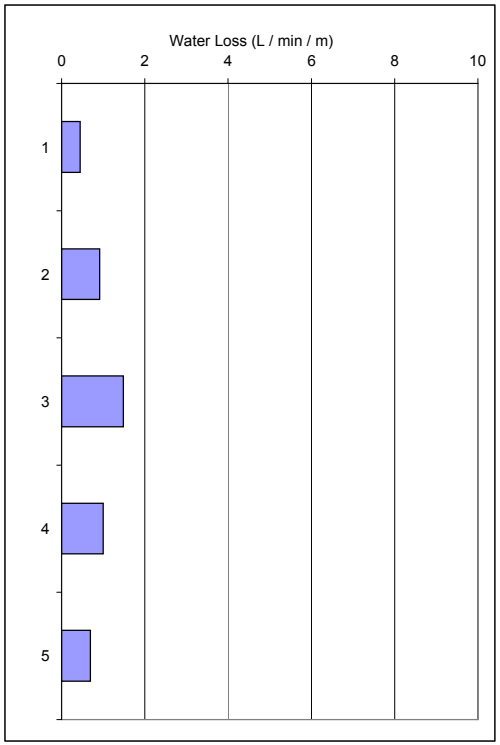
Interpreted Lugeon Value: 5

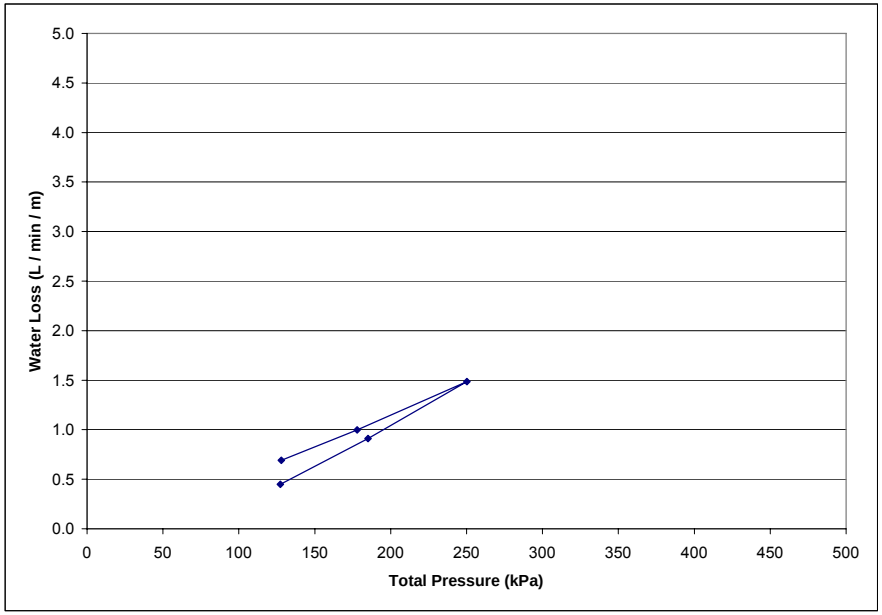
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 5.8 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 25-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: Use average of 28'
Height of Gauge: 45" or 3.75'
Stick Up: 80" or 6.67'

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70° at 53° wrt m. North
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 300psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 3:50 PM
Start Flushing: 3:31 PM
End Flushing: 3:42 PM
End Packer Testing: 5:57 PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		47		4:59		4.80			
3	10	57.5	10.5	5:01	2	4.80	0.01	2.95	
				5:01		4.80			
				5:03	2	4.81	0.00	1.85	
				5:03		4.81			
				5:05	2	4.81	0.00	2.15	
				5:05		4.81			
				5:07	2	4.82	0.00	2.25	
				5:07		4.82			
				5:09	2	4.82	0.00	2.00	
				5:09		4.82			
				5:11	2	4.82	0.00	2.05	Lu =7
		47		5:12		4.83			
	20	57.5	10.5	5:14	2	4.83	0.00	2.45	
				5:14		4.83			
				5:16	2	4.84	0.00	2.45	
				5:16		4.84			
				5:18	2	4.84	0.00	2.40	
				5:18		4.84			
				5:20	2	4.85	0.01	2.55	Lu =5
				5:20		4.85			
				5:22	2	4.85	0.00	2.40	
		47		5:23		4.85			
	32	57.5	10.5	5:25	2	4.86	0.01	2.90	
				5:25		4.86			
				5:27	2	4.87	0.01	3.35	
				5:27		4.87			
				5:29	2	4.87	0.01	2.65	
				5:29		4.87			
				5:31	2	4.88	0.01	2.60	Lu = 3
				5:31		4.88			
				5:33	2	4.88	0.01	2.85	
		47		5:35		4.89			
	21	57.5	10.5	5:37	2	4.89	0.00	2.25	
				5:37		4.89			
				5:39	2	4.90	0.00	2.15	
				5:39		4.90			
				5:41	2	4.90	0.00	2.20	
				5:41		4.90			
				5:43	2	4.91	0.00	2.15	Lu =4
				5:43		4.91			
				5:45	2	4.91	0.00	2.05	
		47		5:47		4.91			
	10	57.5	10.5	5:49	2	4.92	0.00	1.40	
				5:49		4.92			
				5:51	2	4.92	0.00	1.15	Lu = 4
	10	47	10.5	5:51		4.92			
		57.5		5:53	2	4.92	0.00	1.25	
				5:53		4.92			
				5:55	2	4.92	0.00	-1.25	
				5:55		4.92			
				5:57	2	4.92	0.00	-1.10	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 14.33m to 17.53m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 25/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.03 m
Static W.L. below G.L.:	6.11 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	17.53 m
Top of Interval B.G.L.:	14.33 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	15.83 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	10	68.95	1.92	67.02	138.13	14.1	0.02	20.60	2.06	0.64	4.7		5.39E-07	
10	20	137.90	2.36	135.53	206.64	21.1	0.02	24.50	2.45	0.77	3.7		4.29E-07	
10	32	220.63	2.86	217.77	288.88	29.4	0.03	28.70	2.87	0.90	3.1	3	3.59E-07	
10	21	144.79	1.99	142.80	213.90	21.8	0.02	21.20	2.12	0.66	3.1		3.58E-07	
10	10	68.95	1.07	67.88	138.98	14.2	0.01	12.30	1.23	0.38	2.8		3.20E-07	
												average	4.01E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

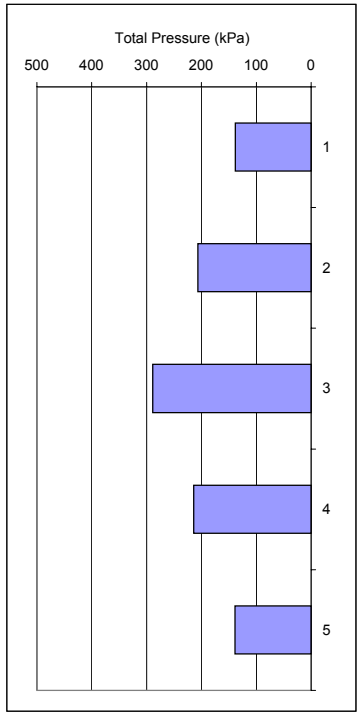
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

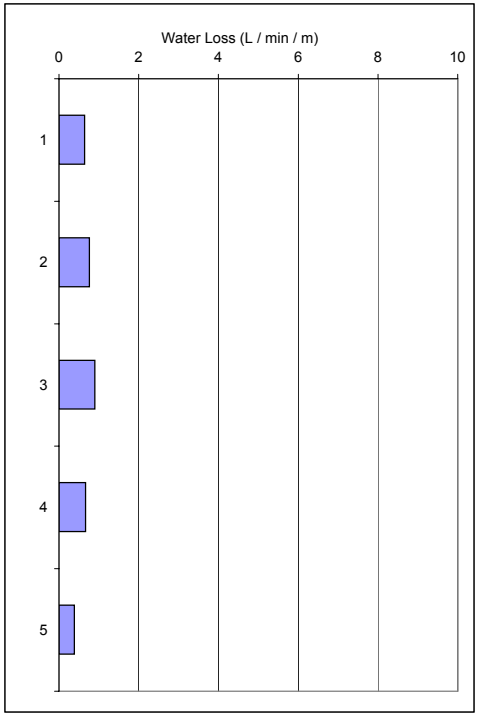
Interpreted Lugeon Value: 3

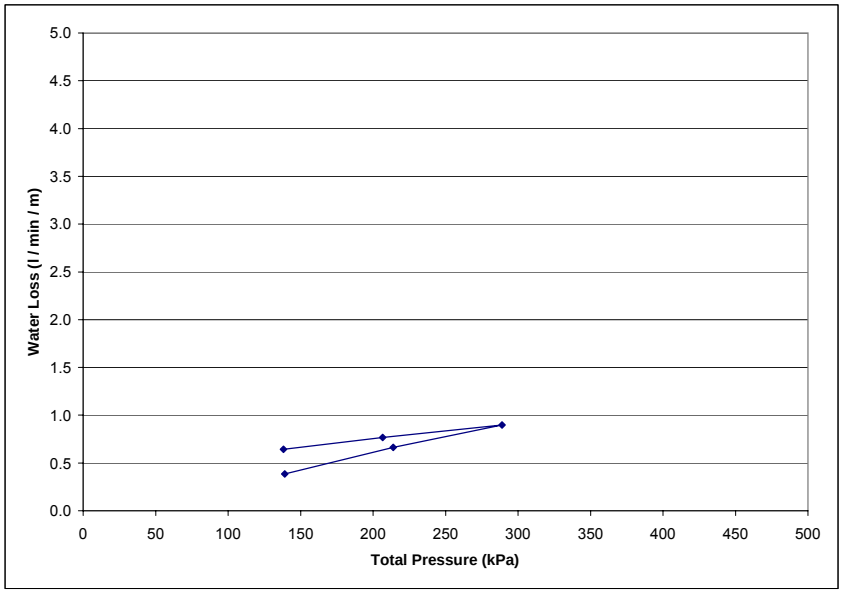
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.1 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 26-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: Use average of 28'
Height of Gauge: 47"
Stick Up: 76"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 300 psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 8:30AM
Start Flushing:
End Flushing:
End Packer Testing: 10:12AM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		58		9:06		4.960			
4	14	68	10	9:08	2	4.960	0.000	0.10	
				9:08		4.960			
	14			9:10	2	4.961	0.001	0.30	
				9:10		4.961			
	14			9:12	2	4.962	0.001	0.35	
				9:12		4.962			
	14			9:14	2	4.962	0.000	0.15	
				9:14		4.962			
	14			9:16	2	4.962	0.000	0.15	
		58		9:18		4.965			
	27	68	10	9:20	2	4.966	0.003	1.45	
				9:20		4.966			
	27			9:22	2	4.966	0.000	0.10	
				9:22		4.966			
	26			9:24	2	4.966	0.000	0.10	
				9:24		4.966			
	26			9:26	2	4.967	0.001	0.60	
				9:26		4.967			
	27			9:29	3	4.967	0.000	0.10	
				9:29		4.967			
	27			9:31	2	4.967	0.000	0.05	
		58		9:33		4.969			
	40	68	10	9:35	2	4.969	0.000	0.00	
				9:35		4.969			
	40			9:37	2	4.969	0.000	0.05	
				9:37		4.969			
	38			9:39	2	4.969	0.000	0.15	
				9:39		4.969			
	40			9:41	2	4.970	0.001	0.30	
				9:41		4.970			
	40			9:43	2	4.970	0.000	0.10	
				9:43		4.970			
	42			9:45	2	4.971	0.001	0.55	
				9:45		4.971			
	41			9:47	2	4.972	0.000	0.20	
		58		9:49		4.972			
	27	68	10	9:51	2	4.972	0.000	0.00	
				9:51		4.972			
	27			9:53	2	4.972	0.000	0.00	
				9:53		4.972			
	27			9:55	2	4.972	0.000	0.00	
				9:55		4.972			
	27			9:57	2	4.972	0.000	0.00	
				9:57		4.972			
	27			9:59	2	4.972	0.000	0.00	
		58		10:01		4.972			
	14	68	10	10:03	2	4.972	0.000	0.00	
		58		10:03		4.972			
	14	68	10	10:05	2	4.972	0.000	0.00	
		58		10:05		4.972			
	14	68	10	10:07	2	4.972	0.000	0.00	
		58		10:07		4.972			
	14	68	10	10:09	2	4.972	0.000	-0.05	This is likely spread over previous pressure range and this pressure.
		58		10:09		4.972			
	14	68	10	10:11	2	4.972	0.000	0.00	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24

Water Test Interval: 17.68m to 20.73m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 26/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	1.93 m
Static W.L. below G.L.:	6.20 m (vertical)
Height of gauge A.G.L.:	1.19 m (vertical)
Bottom of Interval B.G.L.:	20.73 m
Top of Interval B.G.L.:	17.68 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	19.11 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	14	96.53	0.17	96.36	168.88	17.2	0.00	2.10	0.2100	0.069	0.4		4.67E-08	
11	26.7	184.09	0.12	183.97	256.48	26.1	0.00	1.70	0.1545	0.051	0.2		2.26E-08	
10	40.1	276.48	0.21	276.27	348.79	35.6	0.00	2.60	0.2600	0.085	0.2	1	2.80E-08	
10	27	186.16	0.01	186.15	258.67	26.4	0.00	0.10	0.0100	0.003	0.0		1.45E-09	Assumed the total flow was 0.0001 cubic meters
10	14	96.53	0.01	96.52	169.03	17.2	0.00	0.10	0.0100	0.003	0.0		2.22E-09	
												average	2.49E-08	Assumed flow is ignored

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

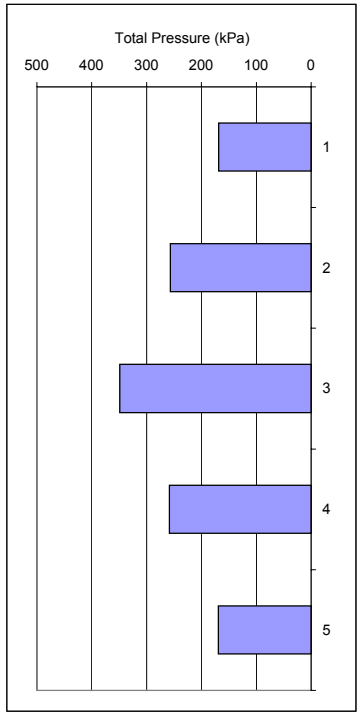
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

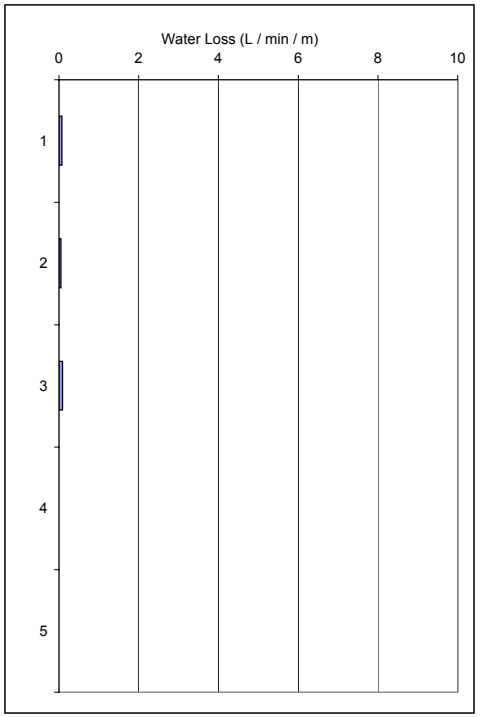
Interpreted Lugeon Value: 1

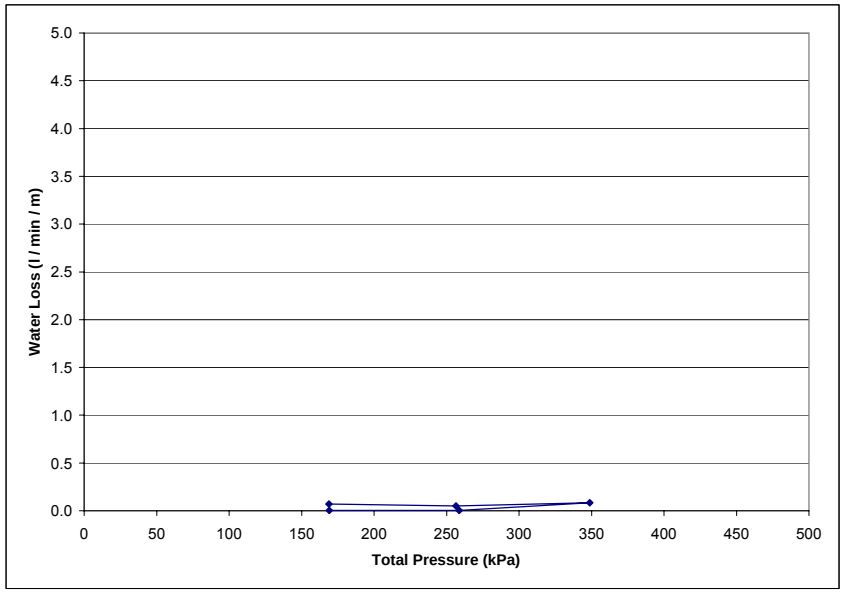
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.5 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 26-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Lest Abutment
Personnel: Gerry Ferris
Depth to WT: 12:17 at 18.6" 12:27 at 18.35'
Height of Gauge: 43"
Stick Up: 79"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity:
Collar El.:
Packer Inflation Pressure:
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing:
Start Flushing:
End Flushing:
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m³ Start / Finish	Volume	Rate (l/min)	Remarks
		68		12:42		4.997			
5	18	78	10	12:44	2	5.002	0.005	2.60	
				12:44		5.002			
	19			12:46	2	5.005	0.003	1.70	
				12:46		5.005			
	18			12:48	2	5.007	0.002	0.85	
				12:48		5.007			
	19			12:50	2	5.010	0.003	1.75	
				12:50		5.010			
	18			12:52	2	5.012	0.002	0.85	
				12:52		5.012			
	19			12:54	2	5.014	0.002	1.00	
				12:54		5.014			
	19			12:56	2	5.016	0.002	0.85	
		68		1:00		5.024			
	39	78	10	1:02	2	5.027	0.003	1.40	
				1:02		5.027			
	38			1:04	2	5.029	0.002	0.85	
				1:04		5.029			
	39			1:06	2	5.031	0.002	0.85	
				1:06		5.031			
	40			1:08	2	5.033	0.002	0.95	
				1:08		5.033			
	38			1:10	2	5.034	0.002	0.90	
				1:10		5.034			
	41			1:12	2	5.036	0.001	0.70	
		68		1:14		5.039			
	55	78	10	1:16	2	5.042	0.003	1.30	
				1:16		5.042			
	55			1:18	2	5.044	0.002	0.85	
				1:18		5.044			
	55			1:20	2	5.044	0.000	0.00	
				1:20		5.046			
	55			1:22	2	5.048	0.002	1.05	
				1:22		5.048			
	54			1:24	2	5.050	0.002	1.05	
				1:24		5.050			
	54			1:26	2	5.052	0.002	1.15	
		68		1:27		5.052			
	39	78	10	1:29	2	5.053	0.001	0.35	
				1:29		5.053			
	38			1:31	2	5.054	0.001	0.60	
				1:31		5.054			
	41			1:33	2	5.562	0.508	253.90	
				1:33		5.562			
	40			1:35	2	5.057	-0.505	-252.35	
		68		1:35		5.057			
	39	78	10	1:37	2	5.059	0.002	0.95	
		68		1:39		5.059			
	19	78	10	1:41	2	5.059	0.000	-0.05	
				1:41		5.059			
	20			1:43	2	5.059	0.000	0.00	
				1:43		5.059			
	19			1:45	2	5.059	0.000	0.00	
				1:45		5.059			
	20			1:47	2	5.059	0.000	-0.10	
				1:47		5.059			
	21			1:49	2	5.060	-0.001	-0.35	
				1:49		5.060			
	20			1:51	2	5.061	0.000	-0.20	
				1:51		5.061			
	20			1:53	2	5.061	-0.001	-0.30	
				1:53		5.061			
	20			1:55	2	5.062	-0.001	-0.30	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 20.73m to 23.78m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 26/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.01 m
Static W.L. below G.L.:	6.13 m (vertical)
Height of gauge A.G.L.:	1.09 m (vertical)
Bottom of Interval B.G.L.:	23.78 m
Top of Interval B.G.L.:	20.73 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	22.16 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	18.6	128.24	0.91	127.33	198.13	20.2	0.01	10.60	1.06	0.35	1.8		2.01E-07	
10	39.2	270.27	0.71	269.56	340.36	34.7	0.01	8.50	0.85	0.28	0.8		9.37E-08	
10	54.6	376.45	0.87	375.58	446.38	45.5	0.01	10.20	1.02	0.33	0.7	1	8.58E-08	
10	39.4	271.65	0.57	271.08	341.88	34.8	0.01	6.90	0.69	0.23	0.7		7.57E-08	Assumed the total flow was 0.0001 cubic meters
10	20.2	139.27	0.20	139.08	209.87	21.4	0.00	2.50	0.25	0.08	0.4		4.47E-08	
												average	1.06E-07	Assumed flow is ignored

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

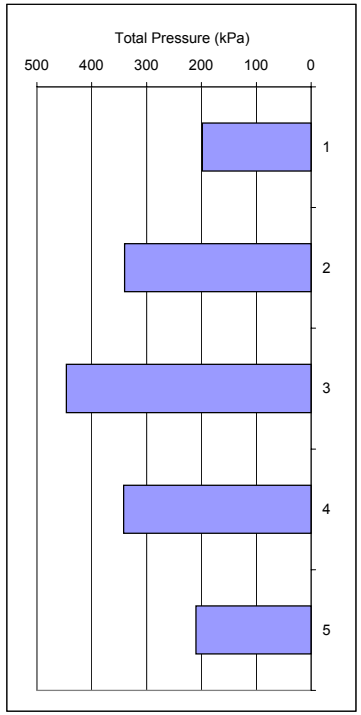
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

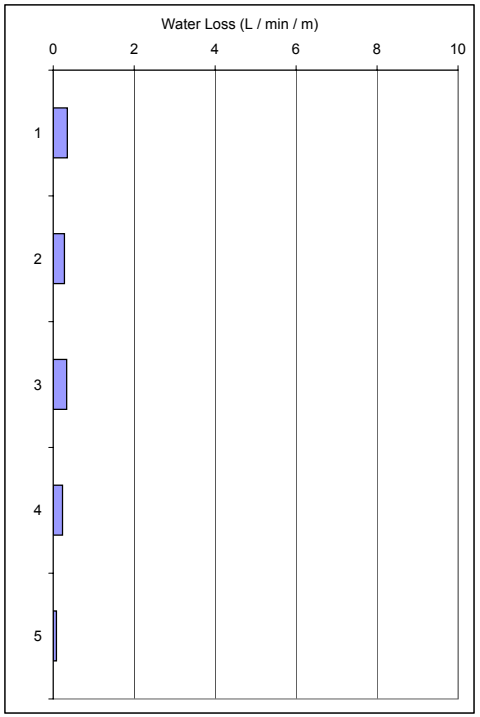
Interpreted Lugeon Value: 1

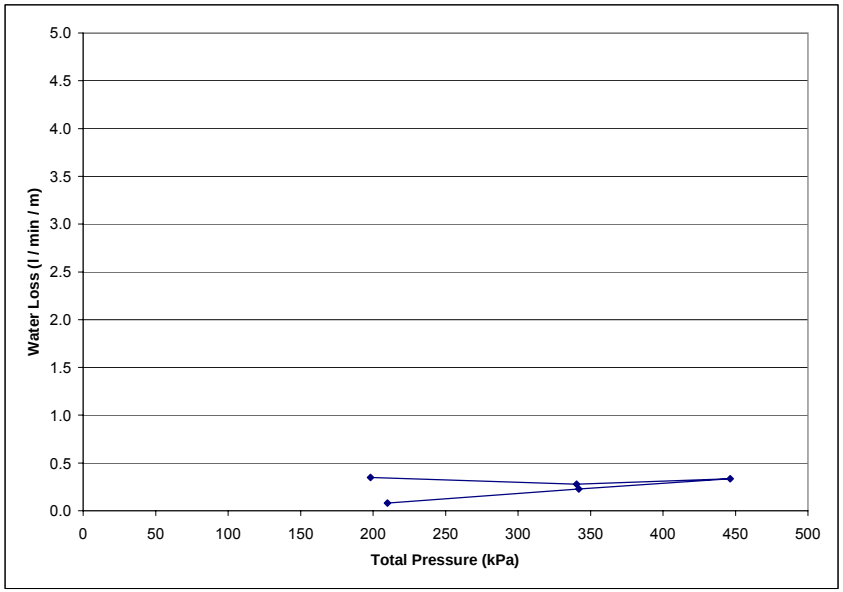
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.1 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 26-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 7'8 at 3:34PM 12.6' at 3:49PM 16.3" at 4:00PM 16.3 " at 4:10PM
Height of Gauge: 48"
Stick Up: 79"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70° wrt 53°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 320psi - 380 psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 3:20PM
Start Flushing: 1:55PM
End Flushing: 2:11PM
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		78		4:19		5.077			
6	26	88	10	4:21	2	5.080	0.003	1.75	
				4:21		5.080			
	26			4:23	2	5.083	0.003	1.55	
				4:23		5.083			
	25			4:25	2	5.086	0.003	1.55	
				4:25		5.086			
	27			4:27	2	5.090	0.004	1.90	
				4:27		5.090			
	26			4:29	2	5.094	0.004	1.75	
							0.000	#DIV/0!	Attemt to put pressure to 55psi - leakage detected in casing - turned packer pressure up to 380psi.
							0.000	#DIV/0!	The same result at 50psi
							0.000	#DIV/0!	Stopped the test pulled the packers and reset them about 2' higher. START doing this at 4:39pm. - 5:21pm back in readiness filling packers.
		76		5:31		5.139			
	26	88	12	5:33	2	5.143	0.004	2.15	
				5:33		5.143			
				5:35			-5.143	#DIV/0!	
				5:35					
							0.000	#DIV/0!	
							0.000	#DIV/0!	Water leaking around the casing again Drillers pulling rods at 5:48pm.
							0.000	#DIV/0!	Drillers back to having rods in position at 6:38pm. Clean up for the day start tommorrow.
							0.000	#DIV/0!	8:15am on aug.27, 2005 drillers at drill. Inflation 340psi.
		78		8:58		5.395			
	19	88	10	9:00	2	5.395	0.000	0.05	
		78		9:00		5.395			
	19	88		9:02	2	5.395	0.000	0.00	
				9:02		5.395			
	20			9:04	2	5.395	0.000	0.00	
				9:04		5.395			
	19			9:06	2	5.395	0.000	0.00	
				9:06		5.395			
	20			9:08	2	5.395	0.000	0.00	
				9:10		5.395			
	46			9:12	2	5.395	0.000	0.00	
				9:12		5.395			
	45			9:14	2	5.395	0.000	0.00	
		78		9:14		5.395			
	45	88	10	9:16	2	5.395	0.000	0.00	
				9:16		5.395			
	44			9:18	2	5.395	0.000	0.00	
				9:20		5.395			
	47			9:22	2	5.395	0.000	0.00	
		78		9:22		5.296			
	76	88	10	9:24	2	5.296	0.000	0.00	
				9:24		5.296			
	76			9:26	2	5.296	0.000	0.00	
				9:26		5.296			
	76			9:28	2	5.296	0.000	0.00	
				9:28		5.296			
	76			9:30	2	5.296	0.000	0.00	
				9:30		5.296			
	76			9:32	2	5.296	0.000	0.00	
		78		9:34		5.295			
	46	88	10	9:36	2	5.295	0.000	0.00	
				9:36		5.295			
	45			9:38	2	5.295	0.000	0.00	
				9:38		5.295			
	48			9:40	2	5.295	0.000	0.00	
				9:40		5.295			
	47			9:42	2	5.295	0.000	0.00	
				9:42		5.295			
	46			9:44	2	5.295	0.000	0.00	
		78		9:45		5.295			
	21	88	10	9:47	2	5.295	0.000	0.05	
				9:47		5.295			
	22			9:49	2	5.294	0.001	0.60	
				9:49		5.294			
	20			9:51	2	5.292	0.002	0.75	
				9:51		5.292			
	23			9:53	2	5.292	0.000	0.00	
				9:53		5.292			
	22			9:55	2	5.291	0.002	0.90	
				9:55		5.291			
	20			9:57	2	5.290	0.001	0.50	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24

Water Test Interval: 23.77m to 26.82m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 26/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.01 m
Static W.L. below G.L.:	6.13 m (vertical)
Height of gauge A.G.L.:	1.09 m (vertical)
Bottom of Interval B.G.L.:	26.82 m
Top of Interval B.G.L.:	23.77 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	25.20 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	19.4	133.76	0.01	133.75	204.55	20.9	0.00	0.10	0.01	0.003	0.0		1.83E-09	
10	45.4	313.02	0.01	313.01	383.81	39.1	0.00	0.10	0.01	0.003	0.0		9.78E-10	Assumed the total flow was 0.0001 cubic meters
10	76	524.00	0.01	523.99	594.79	60.6	0.00	0.10	0.01	0.003	0.0	1	6.31E-10	Assumed the total flow was 0.0001 cubic meters
10	46.4	319.92	0.01	319.91	390.71	39.8	0.00	0.10	0.01	0.003	0.0		9.61E-10	Assumed the total flow was 0.0001 cubic meters
10	21.4	147.55	0.01	147.54	218.34	22.3	0.00	0.10	0.01	0.003	0.0		1.72E-09	Assumed the total flow was 0.0001 cubic meters
												average	1.22E-09	Average of the assumed values

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

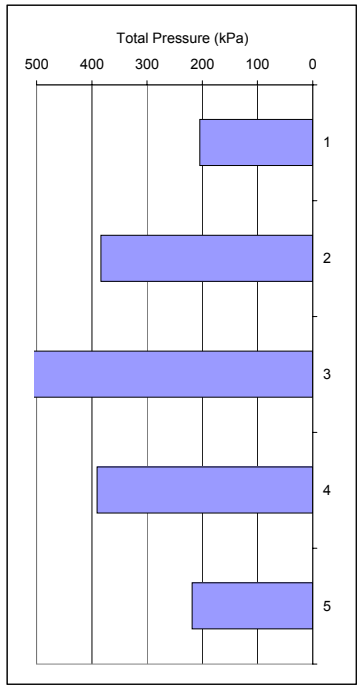
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

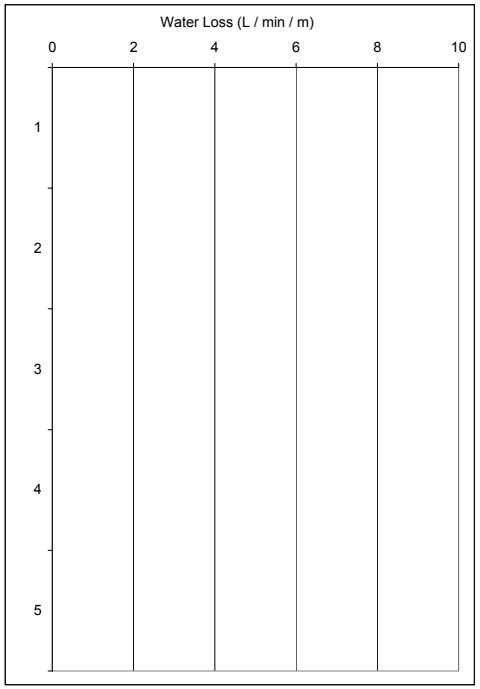
Interpreted Lugeon Value: 1

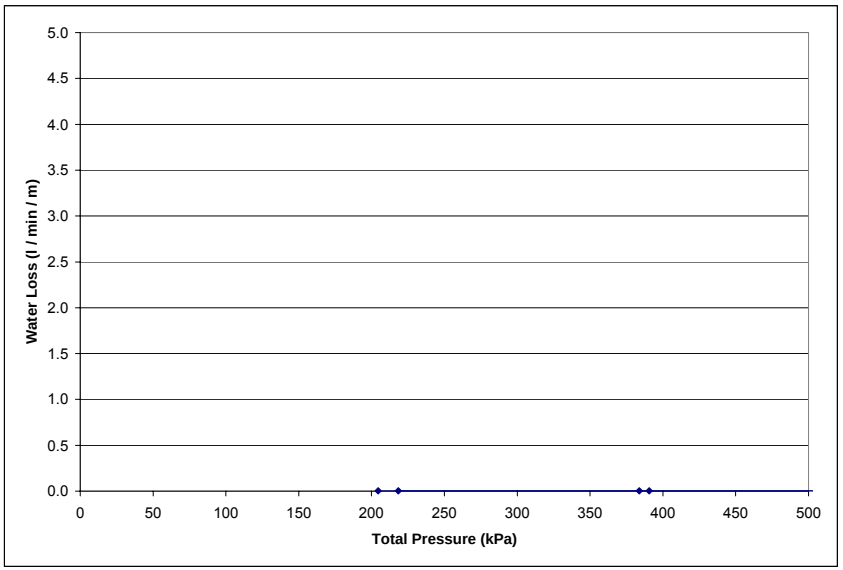
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.2 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 27-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: Average of 28'
Height of Gauge: 44"
Stick Up: 79"

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70° at 53° wrt mag. North
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 370psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 11:52AM
Start Flushing: 10:57AM
End Flushing: 11:10AM
End Packer Testing: 12:53 PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		88		11:52		5.298			
7	30	98.5	10.5	11:54	2	5.298	0.0000	0.00	
				11:54		5.298			
	30			11:56	2	5.298	0.0000	0.00	
				11:56		5.298			
	31			11:58	2	5.298	0.0000	0.00	
				11:58		5.298			
	30			12:00	2	5.298	0.0000	0.00	
				12:00		5.298			
	30			12:02	2	5.298	0.0000	0.00	
		88		12:05		5.298			
	60	98.5	10.5	12:07	2	5.298	0.0000	0.00	
				12:07		5.298			
	62			12:09	2	5.298	0.0001	0.05	
				12:09		5.298			
	60			12:11	2	5.298	0.0000	0.00	
				12:11		5.298			
	60			12:13	2	5.298	0.0001	0.05	
				12:13		5.298			
	58			12:15	2	5.298	0.0000	0.00	
		88		12:19		5.299			
	90	98.5	10.5	12:21	2	5.300	0.0004	0.20	
				12:21		5.300			
	84			12:23	2	5.300	0.0003	0.15	
				12:23		5.300			
	90			12:25	2	5.300	0.0003	0.15	
				12:25		5.300			
	86			12:27	2	5.301	0.0003	0.15	
				12:27		5.301			
	90			12:29	2	5.301	0.0001	0.05	
		88		12:31		5.301			
	60	98.5	10.5	12:33	2	5.301	0.0000	0.00	
				12:33		5.301			
	60			12:35	2	5.301	0.0000	0.00	
				12:35		5.301			
	60			12:37	2	5.301	0.0000	0.00	
				12:37		5.301			
	60			12:39	2	5.301	0.0000	0.00	
				12:39		5.301			
	60			12:41	2	5.301	-0.0001	-0.05	
		88		12:43		5.301			
	30	98.5	10.5	12:45	2	5.301	-0.0002	-0.10	
				12:45		5.301			
	32			12:47	2	5.300	-0.0007	-0.35	
				12:47		5.300			
	28			12:49	2	5.299	-0.0008	-0.40	
		88		12:49		5.299			
	30	98.5	10.5	12:51	2	5.299	-0.0003	-0.15	
				12:51		5.299			
				12:53	2	5.299	0.0000	0.00	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 26.82m to 30.02m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 27/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.01 m
Static W.L. below G.L.:	6.13 m (vertical)
Height of gauge A.G.L.:	1.12 m (vertical)
Bottom of Interval B.G.L.:	30.02 m
Top of Interval B.G.L.:	26.82 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	28.32 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	L / min / m	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	30.2	208.22	0.01	208.21	279.30	28.5	0.00	0.10	0.0100	0.003	0.0		1.29E-09	Assumed the total flow was 0.0001 cubic meters
10	60	413.69	0.01	413.68	484.77	49.4	0.00	0.10	0.0100	0.003	0.0		7.46E-10	Assumed the total flow was 0.0001 cubic meters
10	88	606.74	0.13	606.61	677.70	69.1	0.00	1.60	0.1600	0.050	0.1	1	8.54E-09	
10	60	413.69	0.01	413.68	484.77	49.4	0.00	0.10	0.0100	0.003	0.0		7.46E-10	Assumed the total flow was 0.0001 cubic meters
10	30	206.84	0.01	206.83	277.93	28.3	0.00	0.10	0.0100	0.003	0.0		1.30E-09	Assumed the total flow was 0.0001 cubic meters
												average	8.54E-09	Ignore assumed flow

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

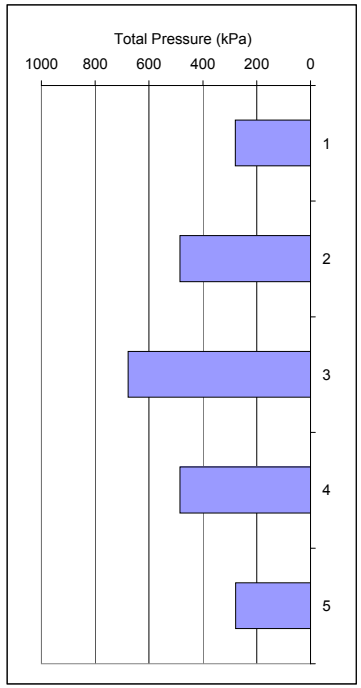
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

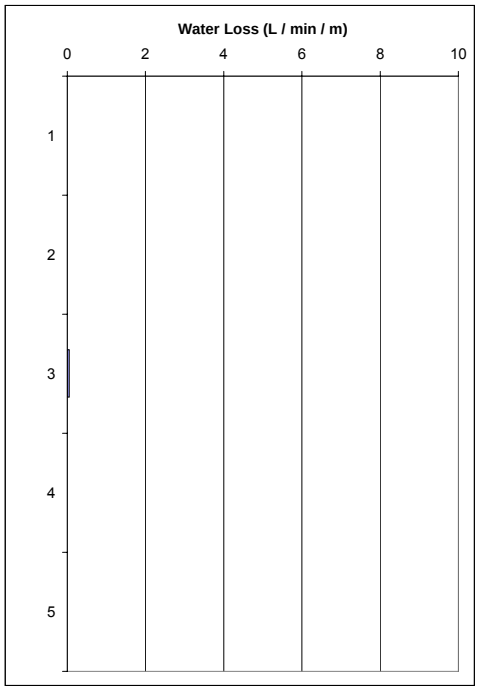
Interpreted Lugeon Value: 1

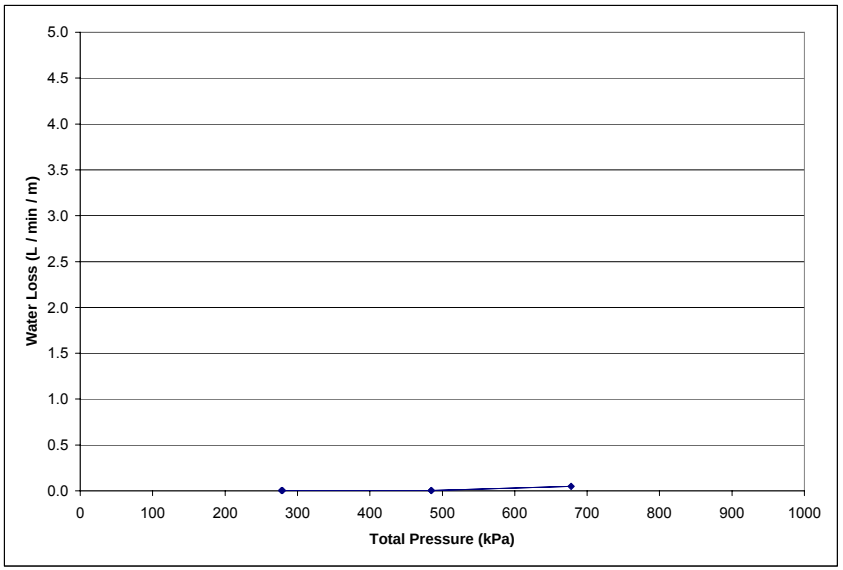
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 8.5 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 27-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 2:31pm 15.3'/ 2:40pm 17' 2:51pm/ 18.9' 2:59pm 19.5'
Height of Gauge: 43"
Stick Up: 78"

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 370psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 3:07PM
Start Flushing: 1:55PM
End Flushing: 2:06PM
End Packer Testing: 4:14PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		98		3:07		5.297			
8	35	108	10	3:09	2	5.297	0.0003	0.15	
				3:09		5.297			
	34			3:11	2	5.297	0.0000	0.00	
				3:11		5.297			
	37			3:13	2	5.297	0.0000	0.00	
				3:13		5.297			
	35			3:15	2	5.297	0.0000	0.00	
				3:15		5.297			
	35			3:17	2	5.297	0.0000	0.00	
				3:17		5.297			
	35			3:19	2	5.297	0.0000	0.00	
		98		3:21		5.303			
	68	108	10	3:23	2	5.304	0.0011	0.55	
				3:23		5.304			
	64			3:25	2	5.305	0.0010	0.50	
				3:25		5.305			
	64			3:27	2	5.306	0.0010	0.50	
				3:27		5.306			
	64			3:29	2	5.307	0.0010	0.50	
				3:29		5.307			
	64			3:31	2	5.308	0.0011	0.55	
		98		3:34		5.318			
	100	108	10	3:36	2	5.325	0.0070	3.50	
				3:36		5.325			
	100			3:38	2	5.331	0.0061	3.05	
				3:38		5.331			
	104			3:40	2	5.336	0.0057	2.85	
				3:40		5.336			
	100			3:42	2	5.341	0.0045	2.25	
				3:42		5.341			
	104			3:44	2	5.346	0.0048	2.40	
				3:44		5.346			
	100			3:46	2	5.350	0.0043	2.15	
		98		3:48		5.352			
	64	108	10	3:50	2	5.355	0.0026	1.30	
				3:50		5.355			
	60			3:52	2	5.357	0.0024	1.20	
				3:52		5.357			
	64			3:54	2	5.359	0.0020	1.00	
				3:54		5.359			
	62			3:56	2	5.361	0.0000	0.00	
				3:56		5.361			
	64			3:58	2	5.363	0.0005	0.25	
		98		4:00		5.363			
	37	108	10	4:02	2	5.364	0.0008	0.40	
		98		4:02		5.364			
	36	108	10	4:04	2	5.365	0.0007	0.35	
				4:04		5.365			
	36			4:06	2	5.365	0.0006	0.30	
				4:06		5.365			
	36			4:08	2	5.366	0.0010	0.50	
				4:08		5.366			
	36			4:10	2	5.367	0.0006	0.30	
				4:10		5.367			
	36			4:12	2	5.368	0.0007	0.35	
				4:12		5.368			
	36			4:14	2	5.368	0.0001	0.05	
									Likely some washing out of fractures is occuring.

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 29.87m to 32.92m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 27/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	1.98 m
Static W.L. below G.L.:	6.15 m (vertical)
Height of gauge A.G.L.:	1.09 m (vertical)
Bottom of Interval B.G.L.:	32.92 m
Top of Interval B.G.L.:	29.87 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	31.30 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (litre per minute)	L / min / m	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	35.2	242.70	0.01	242.69	313.76	32.0	0.00	0.10	0.0100	0.003	0.0		1.20E-09	Assumed the total flow was 0.0001 cubic meters
10	64.8	446.78	0.42	446.36	517.43	52.7	0.01	5.20	0.5200	0.170	0.3		3.77E-08	
10	101.6	700.51	2.47	698.04	769.11	78.4	0.03	25.40	2.5400	0.833	1.1	1	1.24E-07	
10	62.8	432.99	0.90	432.09	503.16	51.3	0.01	10.50	1.0500	0.344	0.7		7.83E-08	
10	36	248.21	0.29	247.92	319.00	32.5	0.00	3.60	0.3600	0.118	0.4		4.24E-08	
												average	7.06E-08	Ignore assumed flow

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

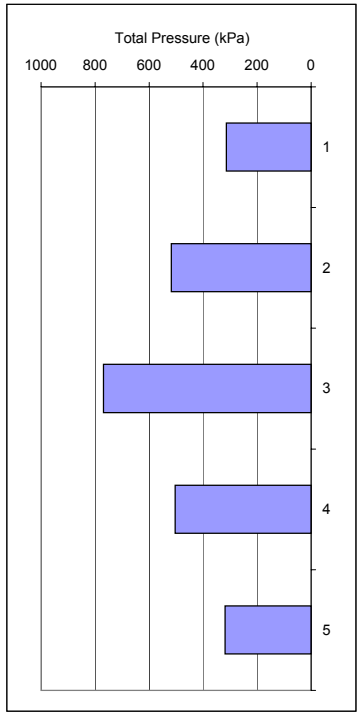
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

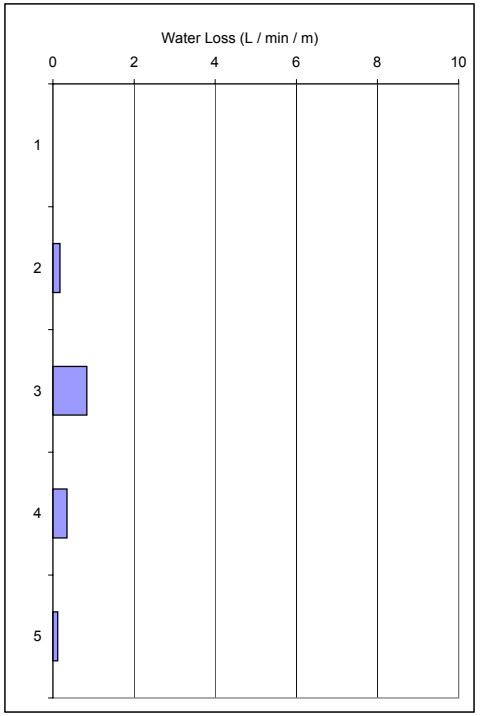
Interpreted Lugeon Value: 1

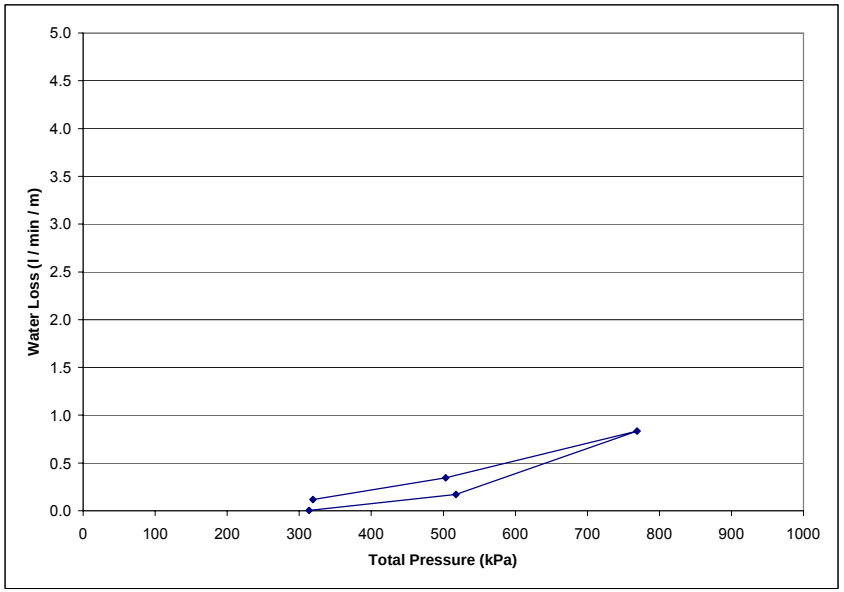
Interpreted flow pattern (Houlsby 1990) : Laminar, minor washout occurring.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 7.1 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC05-24

Date: 27-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 5:55pm- 24.8' / 6:05pm - 23.5' / 6:14pm - 22.9'
Height of Gauge: 44"
Stick Up: 81"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 380psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing:
Start Flushing: 5:15PM
End Flushing: 5:25PM
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		108		6:23		5.392			
9	36	118	10	6:25	2	5.393	0.0007	0.35	
		108		6:25		5.393			
	35	118	10	6:27	2	5.393	0.0003	0.15	
				6:27		5.393			
	35			6:29	2	5.393	0.0002	0.10	
				6:29		5.393			
	35			6:31	2	5.394	0.0002	0.10	
				6:31		5.394			
	35			6:33	2	5.394	0.0004	0.20	
		108		6:35		5.395			
	64	118	10	6:37	2	5.396	0.0007	0.35	
				6:37		5.396			
	62			6:39	2	5.397	0.0008	0.40	
				6:39		5.397			
	66			6:41	2	5.397	0.0007	0.35	
				6:41		5.397			
	64			6:43	2	5.398	0.0005	0.25	
				6:43		5.398			
	64			6:45	2	5.398	0.0006	0.30	
		108		6:46		5.399			
	100	118	10	6:48	2	5.400	0.0007	0.35	
				6:48		5.400			
	100			6:50	2	5.401	0.0009	0.45	
				6:50		5.401			
	100			6:52	2	5.401	0.0007	0.35	
				6:52		5.401			
	104			6:54	2	5.402	0.0009	0.45	
				6:54		5.402			
	100			6:56	2	5.403	0.0009	0.45	
		108		6:58		5.403			
	64	118	10	7:00	2	5.404	0.0005	0.25	
				7:00		5.404			
	64			7:02	2	5.404	0.0005	0.25	
				7:02		5.404			
	64			7:04	2	5.405	0.0005	0.25	
				7:04		5.405			
	64			7:06	2	5.405	0.0004	0.20	
				7:06		5.405			
	64			7:08	2	5.406	0.0004	0.20	
				7:10		5.406			
	36			7:12	2	5.406	0.0002	0.10	
				7:12		5.406			
	36			7:14	2	5.406	0.0002	0.10	
				7:14		5.406			
	36			7:16	2	5.406	0.0002	0.10	
				7:16		5.406			
	36			7:18	2	5.406	0.0001	0.05	
				7:18		5.406			
	36			7:20	2	5.407	0.0002	0.10	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 32.92m to 35.97m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 27/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.06 m
Static W.L. below G.L.:	6.08 m (vertical)
Height of gauge A.G.L.:	1.12 m (vertical)
Bottom of Interval B.G.L.:	35.97 m
Top of Interval B.G.L.:	32.92 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	34.35 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (litre per minute)	L / min / m	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	35.2	242.70	0.14	242.55	313.18	31.9	0.00	1.80	0.1800	0.059	0.2		2.16E-08	
10	64	441.26	0.26	441.00	511.63	52.2	0.00	3.30	0.3300	0.108	0.2		2.42E-08	
10	100.8	694.99	0.33	694.66	765.29	78.0	0.00	4.10	0.4100	0.134	0.2	1	2.01E-08	
10	64	441.26	0.19	441.07	511.70	52.2	0.00	2.40	0.2400	0.079	0.2		1.76E-08	
10	36	248.21	0.07	248.14	318.77	32.5	0.00	0.90	0.0900	0.030	0.1		1.06E-08	
												average	1.88E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

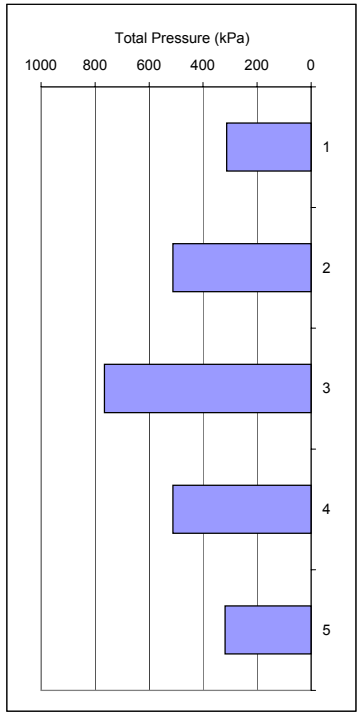
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

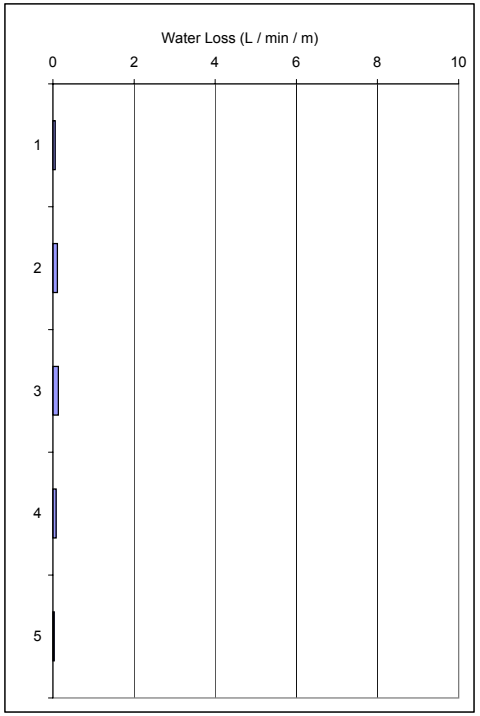
Interpreted Lugeon Value: 1

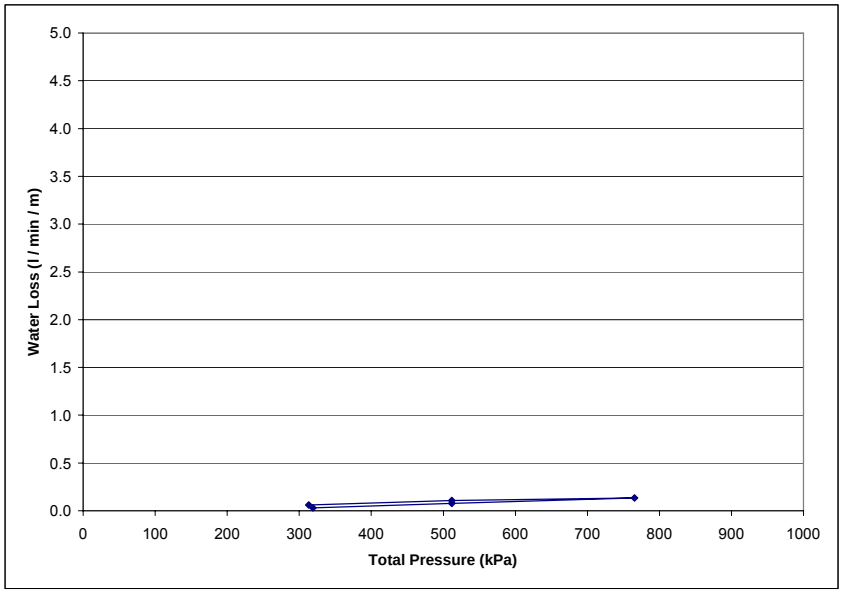
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.9 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 28-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: average of 28'
Height of Gauge: 44"
Stick Up: 78"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°at 53° wrt Mag N.
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 10:30AM
Start Flushing: 9:20AM
End Flushing: 9:35AM
End Packer Testing: 11:33AM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		118		10:37		5.431			
10	35	128	10	10:39	2	5.433	0.0022	1.10	
				10:39		5.433			
	36			10:41	2	5.435	0.0017	0.85	
				10:41		5.435			
	37			10:43	2	5.436	0.0014	0.70	
				10:43		5.436			
	36			10:45	2	5.438	0.0014	0.70	
				10:45		5.438			
	36			10:47	2	5.439	0.0010	0.50	
				10:47		5.439			
	36			10:49	2	5.439	0.0009	0.45	
		118		10:50		5.441			
	64	128	10	10:52	2	5.442	0.0009	0.45	
				10:52		5.442			
	64			10:54	2	5.443	0.0008	0.40	
				10:54		5.443			
	64			10:56	2	5.443	0.0007	0.35	
				10:56		5.443			
	64			10:58	2	5.444	0.0008	0.40	
				10:58		5.444			
	64			11:00	2	5.445	0.0007	0.35	
		118		11:01		5.446			
	100	128	10	11:03	2	5.447	0.0014	0.70	
				11:03		5.447			
	100			11:05	2	5.449	0.0011	0.55	
				11:05		5.449			
	100			11:07	2	5.450	0.0010	0.50	
				11:07		5.450			
	104			11:09	2	5.451	0.0012	0.60	
				11:09		5.451			
	100			11:11	2	5.452	0.0008	0.40	
		118		11:13		5.452			
	64	128	10	11:15	2	5.452	0.0006	0.30	
				11:15		5.452			
	64			11:17	2	5.453	0.0003	0.15	
				11:17		5.453			
	64			11:19	2	5.453	0.0005	0.25	
				11:19		5.453			
	64			11:21	2	5.454	0.0004	0.20	
				11:21		5.454			
	64			11:23	2	5.454	0.0000	0.00	
		118		11:25		5.454			
	37	128	10	11:27	2	5.454	0.0000	0.00	
				11:27		5.454			
	36			11:29	2	5.454	0.0001	0.05	
				11:29		5.454			
	37			11:31	2	5.455	0.0002	0.10	
				11:31		5.455			
	36			11:33	2	5.455	0.0001	0.05	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 35.97m to 39.01m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 27/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.06 m
Static W.L. below G.L.:	6.08 m (vertical)
Height of gauge A.G.L.:	1.12 m (vertical)
Bottom of Interval B.G.L.:	39.01 m
Top of Interval B.G.L.:	35.97 m
Length of Interval L:	3.04 m
Middle of Interval to D.F.:	37.40 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (litre per minute)	L / min / m	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	36.2	249.59	0.53	249.06	319.69	32.6	0.01	6.40	0.6400	0.211	0.7		7.53E-08	
10	64	441.26	0.31	440.95	511.58	52.1	0.00	3.90	0.3900	0.128	0.3		2.87E-08	
10	100.8	694.99	0.45	694.54	765.17	78.0	0.01	5.50	0.5500	0.181	0.2	1	2.70E-08	
10	64	441.26	0.19	441.07	511.70	52.2	0.00	2.40	0.2400	0.079	0.2		1.76E-08	
10	36.5	251.66	0.04	251.62	322.25	32.8	0.00	0.50	0.0500	0.016	0.1		5.84E-09	
												average	3.09E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

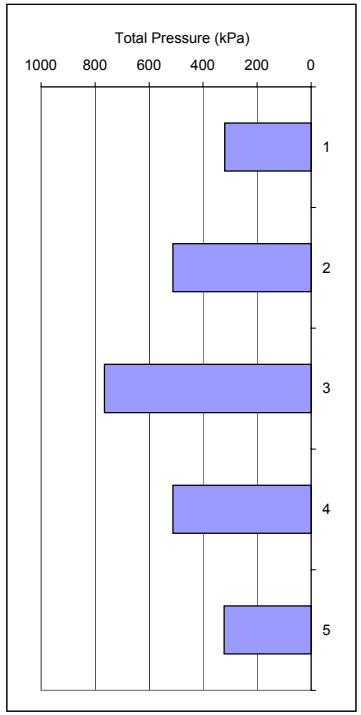
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

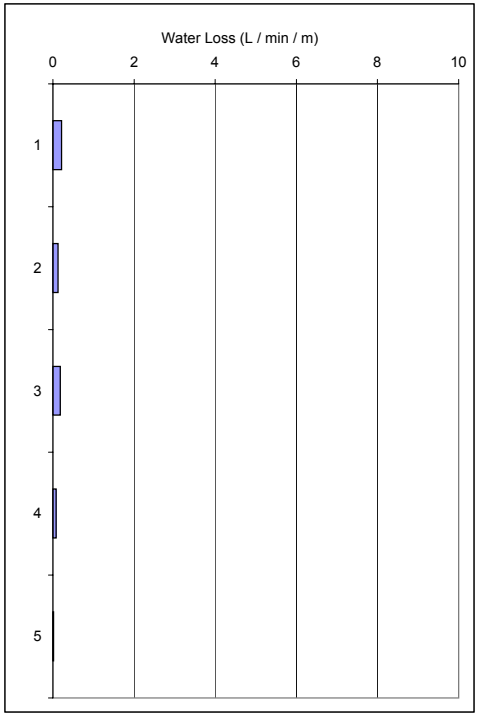
Interpreted Lugeon Value: 1

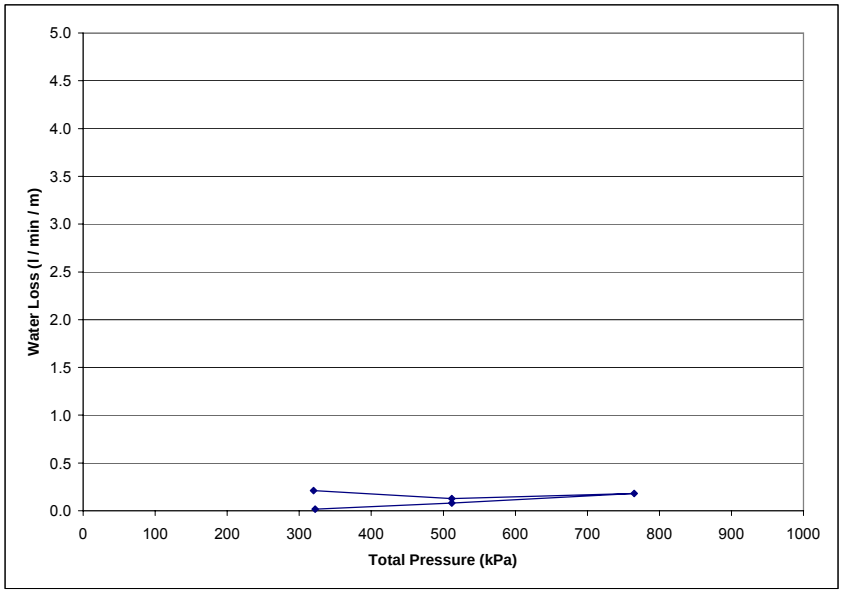
Interpreted flow pattern (Houlsby 1990) : Laminar, minor void filling.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 3.1 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 28-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: average of 28'
Height of Gauge: 44"
Stick Up: 79"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity:
Collar El.: Limiting Pressure on Reg.
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 1:30PM
Start Flushing: 12:37PM
End Flushing: 12:46PM
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m³ Start / Finish	Volume	Rate (l/min)	Remarks
		128		1:40		5.510			
11	35	138	10	1:42	2	5.523	0.014	6.95	
				1:42		5.523			
	35			1:44	2	5.534	0.010	5.10	
				1:44					
	35			1:46	2		0.000	0.00	
									Looking around the packer - water coming up the casing, pulled packer and replaced at some depth. By 2:05pm no Leakage in casing.
		128		2:16		5.593			
	35	138	10	2:18	2	5.600	0.007	3.45	
				2:18		5.600			
	36			2:20	2	5.606	0.007	3.30	
				2:20		5.606			
	37			2:22	2	5.613	0.007	3.30	
				2:22		5.613			
	36			2:24	2	5.619	0.006	3.25	
				2:24		5.619			
	37			2:26	2	5.626	0.007	3.30	
		128		2:28		5.637			
	64	138	10	2:30	2	5.647	0.010	5.10	
				2:30		5.647			
	66			2:32	2	5.656	0.009	4.65	
				2:32		5.656			
	64			2:34	2	5.665	0.008	4.20	
				2:34		5.665			
	64			2:36	2	5.673	0.009	4.40	
				2:36		5.673			
	64			2:38	2	5.682	0.009	4.35	
				2:38		5.682			Some Leakage out of the stuffing box.
	64			2:40	2	5.691	0.008	4.20	
				2:47		5.726			Capturing the water in a cup, but note leakage around casing, try to reset packer.
	64			2:49	2	5.736	0.010	4.95	
				2:49		5.736			Capturing the water in a cup, but note leakage around casing, try to reset packer.
	64			2:51	2	5.746	0.010	4.90	
				2:51		5.746			Capturing the water in a cup, but note leakage around casing, try to reset packer.
	64			2:53	2	5.756	0.010	5.15	
				2:53		5.756			Capturing the water in a cup, but note leakage around casing, try to reset packer.
	64			2:55	2	5.766	0.010	4.85	
				2:55		5.766			Capturing the water in a cup, but note leakage around casing, try to reset packer.
	64			2:57	2	5.776	0.010	5.20	
									Leakage around casing noted so we stopped the test and reset packers.
		123		3:21		5.805			
	35	138	15	3:23	2	5.812	0.007	3.40	
				3:23		5.812			
	35			3:25	2	5.818	0.007	3.35	
		123		3:25		5.818			
	35	138	15	3:27	2	5.825	0.006	3.25	
				3:27		5.825			Again some seepage noted around casing
	35			3:29	2	5.831	0.007	3.30	
				3:29		5.831			Again some seepage noted around casing
	35			3:31	2	5.839	0.007	3.65	
		12		3:33		5.842			This text result over estimates the flow rates by about 1/3 to 1/2.
	64	138	15	3:35	2	5.856	0.014	7.15	
				3:35		5.856			This text result over estimates the flow rates by about 1/3 to 1/2.
	64			3:37	2	5.870	0.014	7.00	
				3:37		5.870			This text result over estimates the flow rates by about 1/3 to 1/2.
	64			3:39	2	5.880	0.010	4.80	
				3:39		5.880			This text result over estimates the flow rates by about 1/3 to 1/2.
	64			3:41	2	5.889	0.010	4.85	
				3:41		5.889			This text result over estimates the flow rates by about 1/3 to 1/2.
	64			3:43	2	5.899	0.010	4.90	
		123		3:44		5.907			This text result over estimates the flow rates by about 1/3 to 1/2.
	100	138	15	3:46	2	5.920	0.012	6.15	
				3:46		5.920			Leakage at surface is slowing.
	100			3:48	2	5.931	0.011	5.70	
				3:48		5.931			
	98			3:50	2	5.939	0.008	4.00	
				3:50		5.939			
	96			3:52	2	5.949	0.010	5.15	
				3:52		5.949			
	96			3:54	2	5.959	0.009	4.60	
		123		3:55		5.961			Leakage at casing is a small trickle about 1/3 of previous.
	64	138	15	3:57	2	5.969	0.008	4.10	
				3:57		5.969			Leakage at casing is a small trickle about 1/3 of previous.
	64			3:59	2	5.977	0.008	4.00	
				3:59		5.977			Leakage at casing is a small trickle about 1/3 of previous.
	64			4:01	2	5.985	0.008	3.95	
				4:01		5.985			Leakage at casing is a small trickle about 1/3 of previous.
	64			4:03	2	5.994	0.009	4.40	
				4:03		5.994			Leakage at casing is a small trickle about 1/3 of previous.
	64			4:05	2	6.001	0.007	3.70	
		123		4:06		6.002			No surface leakage.
	35	138	15	4:08	2	6.006	0.004	2.15	
		123		4:08		6.006			
	35	138		4:10	2	6.011	0.004	2.20	
				4:10		6.011			
	36			4:12	2	6.016	0.005	2.70	
				4:12		6.016			
	35			4:14	2	6.021	0.005	2.55	
				4:14		6.021			
	36			4:16	2	6.027	0.005	2.70	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 37.49m to 42.06m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 28/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.01 m
Static W.L. below G.L.:	6.13 m (vertical)
Height of gauge A.G.L.:	1.12 m (vertical)
Bottom of Interval B.G.L.:	42.06 m
Top of Interval B.G.L.:	37.49 m
Length of Interval L:	4.57 m
Middle of Interval to D.F.:	39.64 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	L / min / m	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	35	241.32	3.51	237.80	308.89	31.5	0.03	33.9	3.39	0.74	2.4		3.00E-07	leakage noted
10	64	441.26	6.98	434.28	505.37	51.5	0.06	57.4	5.74	1.26	2.5		3.11E-07	leakage noted
10	98	675.69	5.99	669.70	740.79	75.5	0.05	51.2	5.12	1.12	1.5	2	1.89E-07	leakage noted
10	64	441.26	4.37	436.89	507.98	51.8	0.04	40.3	4.03	0.88	1.7		2.17E-07	leakage noted
10	35.4	244.07	2.37	241.70	312.79	31.9	0.02	24.6	2.46	0.54	1.7		2.15E-07	leakage noted
												average	2.46E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

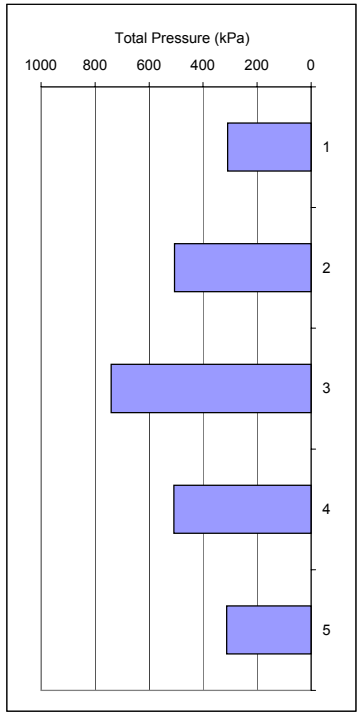
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

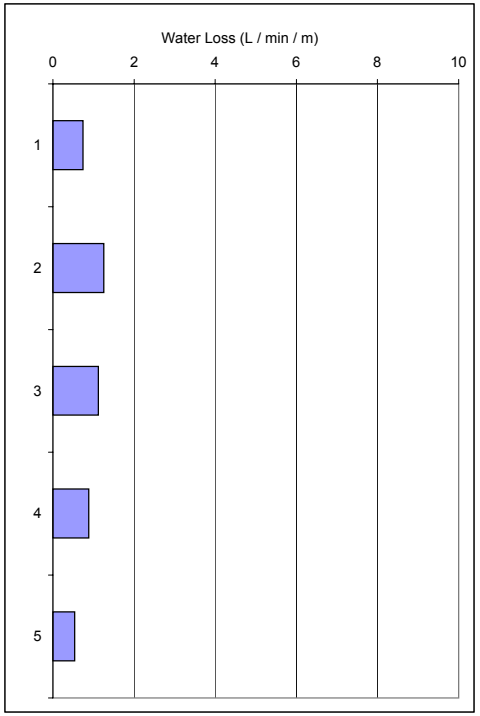
Interpreted Lugeon Value: 2

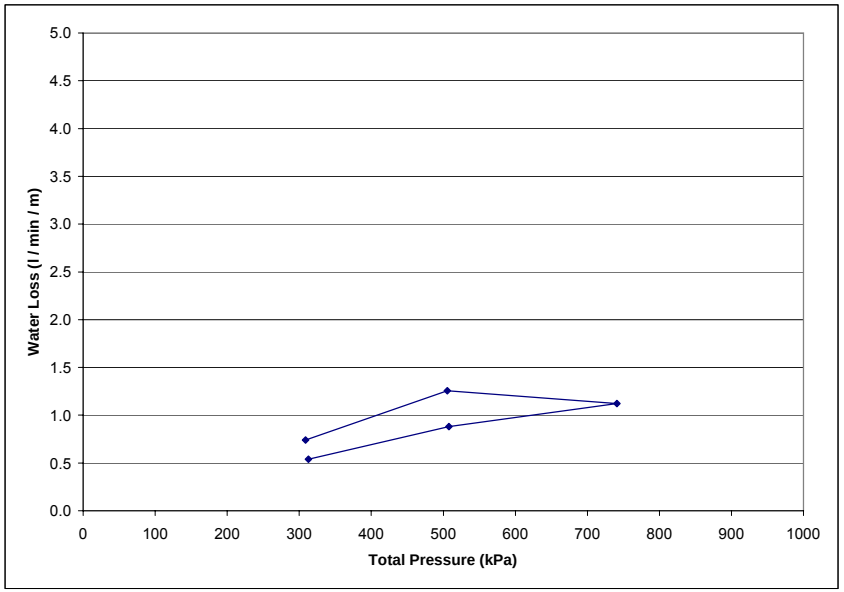
Interpreted flow pattern (Houlsby 1990) : Laminar - note that this is an over-estimate due to the noted leakage.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

K = 2.5 x 10^{-8} m/sec, note this is an over estimate due to the leakage







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 29-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT: 28.8' at 5:25pm / 30' at 6:35pm / 30.15' at 6:47pm / 47.8' at 8:45pm
Height of Gauge: 44"
Stick Up: 80"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 9:50AM
Start Flushing: 5:47PM
End Flushing: 5:57PM
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		138		9:53		6.089			Slightly turbid water used.
12	35	150	12	9:55	2	6.097	0.008	4.05	
				9:55		6.097			
	35			9:57	2	6.103	0.006	3.20	
				9:57		6.103			
	36			9:59	2	6.111	0.008	3.80	
				9:59		6.111			
	35			10:01	2	6.118	0.007	3.70	
				10:01		6.118			
	35			10:03	2	6.124	0.005	2.70	
		138		10:05		6.137			
	64	150	12	10:07	2	6.100	-0.037	-18.50	Some leakage noted due to over pressure of water supply up to 160psi lowered pressure in water to reseal packer pressures
				10:16					Would not reseal pulled packer and checked use to lower pressurs.
	60				2		0.000	0.00	
		137		10:50		6.201			
	25	150	13	10:52	2	6.210	0.009	4.45	TURBID Water
				10:52		6.210			
	25			10:54	2	6.219	0.009	4.70	
				10:54		6.219			
	25			10:56	2	6.226	0.007	3.65	
				10:56		6.226			Some leakage noted at casing.
	25			10:58	2	6.234	0.008	4.10	
				10:58		6.234			
	25			11:00	2	6.242	0.008	3.95	
		137		11:02		6.257			50% Leakage
	40	150	13	11:04	2	6.267	0.010	5.10	
				11:04		6.267			50% Leakage
	40			11:06	2	6.279	0.012	6.05	
		137		11:08		6.297			50% Leakage
	60	150	13	11:10	2	6.309	0.012	6.00	
				11:10		6.309			Leakage is slowing too small trickle.
	60			11:12	2	6.321	0.012	6.25	
				11:12		6.321			
	64			11:14	2	6.333	0.012	6.15	
				11:14		6.333			
	64			11:16	2	6.346	0.012	6.10	
		137		11:17		6.348			Leakage almost unnoticable.
	40	150	13	11:19	2	6.356	0.008	4.00	
				11:19		6.356			
	40			11:21	2	6.364	0.007	3.70	
				11:21		6.364			
	41			11:23	2	6.371	0.007	3.70	
				11:23		6.371			
	42			11:25	2	6.379	0.007	3.70	
		137		11:25		6.379			No noticable leakage at surface
	42	150	13	11:27	2	6.385	0.006	3.25	
		137		11:30		6.388			No leakage
	20	150	13	11:32	2	6.393	0.005	2.35	
				11:32		6.393			No leakage
	20			11:34	2	6.393	0.000	0.00	
				11:34		6.397			
	20			11:36	2	6.402	0.004	2.15	
				11:36		6.402			
	20			11:38	2	6.406	0.005	2.30	
				11:38		6.406			
	20			11:42	2	6.414	0.008	4.05	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-24
Water Test Interval: 41.76m to 45.72m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Left Abutment
Coordinates*:	6914179 N
	585019 E
Collar Elevation:	1182.8 m
Azimuth:	53 deg
Dip:	70 deg
Date:	Aug 29/05
Static W.L. below stick-up:	8.53 m
Stick-up A.G.L. along dip:	2.03 m
Static W.L. below G.L.:	6.11 m (vertical)
Height of gauge A.G.L.:	1.12 m (vertical)
Bottom of Interval B.G.L.:	45.72 m
Top of Interval B.G.L.:	41.76 m
Length of Interval L:	3.96 m
Middle of Interval to D.F.:	43.62 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	L / min / m	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	25	172.37	4.57	167.80	238.70	24.3	0.04	41.7	4.17	1.053	4.4		5.35E-07	leakage noted
4	40	275.79	6.71	269.08	339.98	34.7	0.02	22.3	5.58	1.408	4.1		5.02E-07	leakage noted
8	62	427.47	7.63	419.84	490.75	50.0	0.05	49.0	6.13	1.547	3.2	3	3.82E-07	leakage noted
10	41	282.69	3.88	278.80	349.71	35.6	0.04	36.7	3.67	0.927	2.7		3.21E-07	leakage slowing
10	20	137.90	2.58	135.31	206.22	21.0	0.03	26.4	2.64	0.667	3.2		3.92E-07	leakage slowing
												average	4.26E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a AMCO Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test performed at start of program.

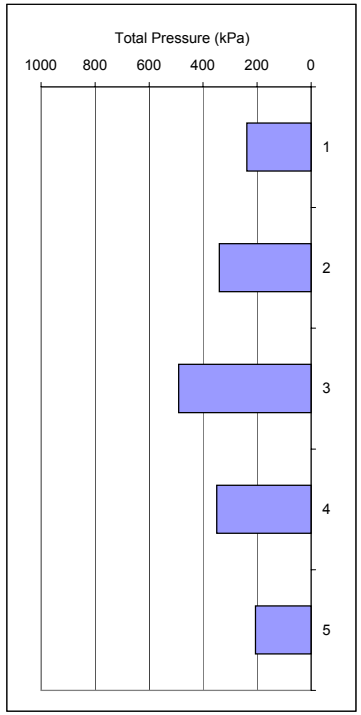
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

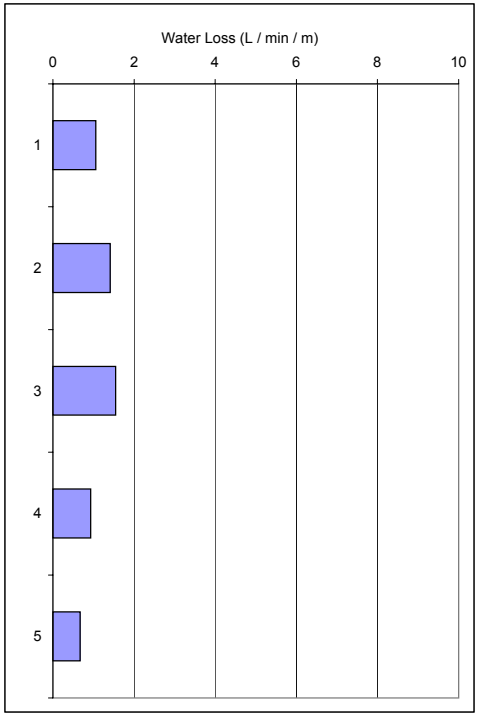
Interpreted Lugeon Value: 3

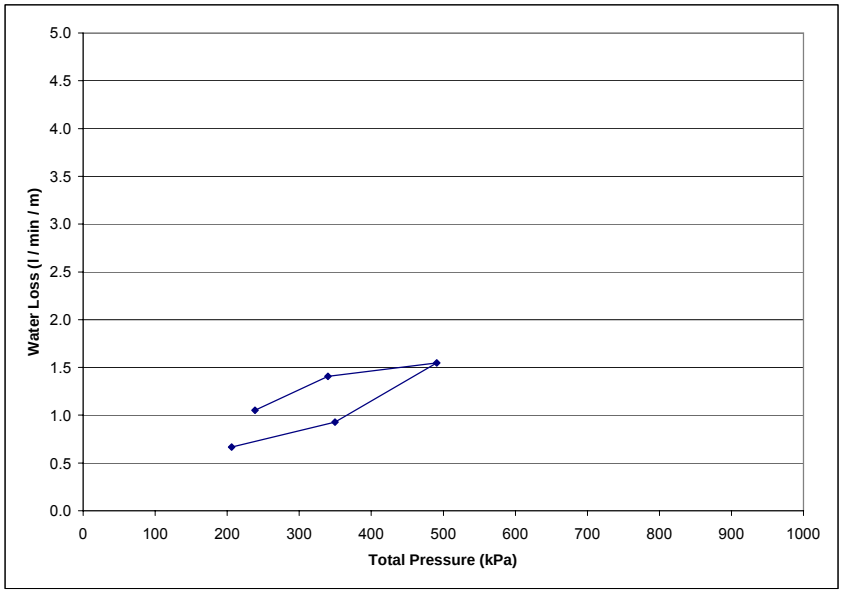
Interpreted flow pattern (Houlsby 1990) : Laminar, minor void filling. Note this is an overestimate due to the leakage noted.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.3 \times 10^{-7}$ m/sec, this is an overestimate due to the leakage noted.







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-24

Date: 29-Aug-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Left Abutment
Personnel: Gerry Ferris
Depth to WT:
Height of Gauge:
Stick Up: 91"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing:
Start Flushing:
End Flushing:
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		137							
13		150	13	Fallling head test		Depth to Water			
				Elasped time (min)		(ft from stickup)			
				0		0			
				1		0.71			
				3		3.25			
				4		4.48			
				5		5.53			
				6		6.57			
				7		7.7			
				8		8.84			
				9		9.8			
				10		10.7			
				11		11.65			
				23		20.45			
				25		20.95			
				30		24.32			
				35		26.6			
				40		28.5			
				45		30.7			
				60		33.997			Use 47.8' as depth to water, which was measured with a stickup of 80 inches

Falling Head Test

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

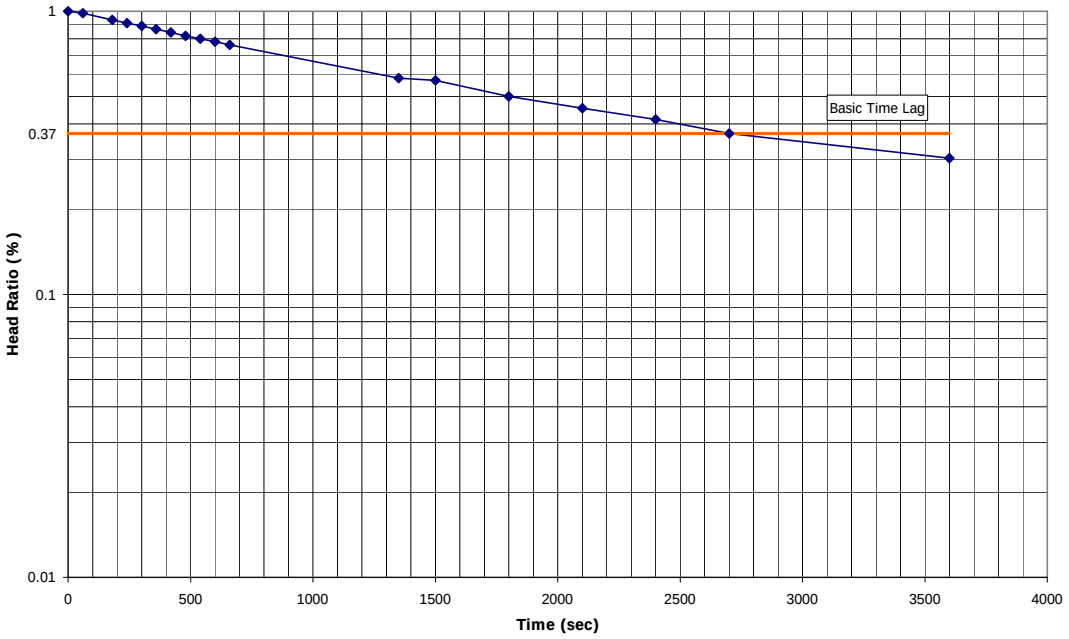
Client:	Deloitte & Touche Inc.
Project:	2005 Plug Dam Investigation
Project Number:	0257-038-01
Borehole Number:	BGC05-24
Date of Test:	29-Aug-05

Static Water Level:	13.95	m
Stick-up:	2.31	m
Piezometer Radius (r):	0.0375	m
Drill Hole Radius (R):	0.0375	m
Test Interval (L):	3.96	m
T_0 (from graph below):	45 minutes	seconds

K = 3.06E-07 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Change in Water Level (h)}}{\text{Initial Change in Water Level } (h_0)}$$

Elaspsed Time		Total Elapsed Time (S)	Measured Depth to Water Level (m)	Vertical Depth to Water Level (m)	Change in Water Level (m)	Head Ratio (%)
Minutes	Seconds					
Initial Level		0	14.85	13.95	0.00	
0	0	0	0.00	0.00	13.95	100%
1	0	60	0.22	0.20	13.75	99%
3	0	180	0.99	0.93	13.02	93%
4	0	240	1.37	1.28	12.67	91%
5	0	300	1.69	1.58	12.37	89%
6	0	360	2.00	1.88	12.07	87%
7	0	420	2.35	2.21	11.75	84%
8	0	480	2.69	2.53	11.42	82%
9	0	540	2.99	2.81	11.15	80%
10	0	600	3.26	3.06	10.89	78%
11	0	660	3.55	3.34	10.62	76%
22	30	1350	6.23	5.86	8.10	58%
25	0	1500	6.39	6.00	7.95	57%
30	0	1800	7.42	6.97	6.98	50%
35	0	2100	8.11	7.62	6.34	45%
40	0	2400	8.69	8.16	5.79	42%
45	0	2700	9.36	8.79	5.16	37%
60	0	3600	10.35	9.73	4.22	30%



BGC05-25

BGC Engineering Inc.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 01-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 17' at 2:57 pm / 18.34' at 3:09pm
Height of Gauge: 36"
Stick Up: 69"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 300psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 3:30PM
Start Flushing: 2:10PM
End Flushing: 2:30PM
End Packer Testing: 4:43PM

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m³ Start / Finish	Volume	Rate (l/min)	Remarks
		25		3:35		6.545			No surface leaks clean water UL=8
1	8	35	10	3:37	2	6.551	0.005	2.55	
				3:37		6.551			
	8			3:39	2	6.555	0.005	2.35	
				3:39		6.555			
	8			3:41	2	6.560	0.005	2.40	
				3:41		6.560			
	8.5			3:43	2	6.565	0.005	2.40	
				3:43		6.565			
	8			3:45	2	6.569	0.005	2.25	
		25		3:47		6.576			
	16	35	10	3:49	2	6.583	0.007	3.60	
				3:49		6.583			
	16			3:51	2	6.590	0.007	3.30	
				3:51		6.590			
	16			3:53	2	6.597	0.007	3.45	
				3:53		6.597			
	16			3:55	2	6.603	0.006	3.15	
				3:55		6.603			
	16			3:57	2	6.610	0.006	3.15	
		25		4:00		6.623			
	26	35	10	4:02	2	6.632	0.008	4.15	
				4:02		6.632			
	26			4:04	2	6.640	0.009	4.30	
				4:04		6.640			
	26			4:06	2	6.649	0.009	4.55	
				4:06		6.649			
	26			4:08	2	6.658	0.009	4.40	
				4:08		6.658			1.5 l/min/m at 226 kpa 7UL
	26			4:10	2	6.668	0.009	4.65	
				4:10		6.668			
	26			4:12	2	6.675	0.008	3.95	
		25		4:14		6.683			
	16	35	10	4:16	2	6.688	0.005	2.40	
				4:16		6.688			
	16			4:18	2	6.694	0.006	2.95	
				4:18		6.694			
	16			4:20	2	6.700	0.006	3.25	
				4:20		6.700			
	16			4:22	2	6.705	0.005	2.70	
				4:22		6.705			
	16			4:24	2	6.711	0.001	0.65	
		25		4:25		6.712			
	8	35	10	4:27	2	6.716	0.000	0.00	
				4:27		6.716			
	8			4:29	2	6.720	0.004	1.85	
		25		4:29		6.720			
	8	35	10	4:31	2	6.723	0.004	1.90	
				4:31		6.723			
	8			4:33	2	6.727	0.004	1.85	
				4:33		6.727			
	8			4:35	2	6.731	0.004	1.90	
		25		4:37		6.741			Flow rates had dropped in comparision to ascending leg. Retest at Pmax to see results at this presure.
	26	35	10	4:39	2	6.750	0.009	4.65	
				4:39		6.750			
	26			4:41	2	6.758	0.009	4.25	
				4:41		6.758			These are about the same as original Pmax
	26			4:43	2	6.767	0.009	4.55	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 7.62m to 10.67m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 1/05
Static W.L. below stick-up:	6.10 m
Stick-up A.G.L. along dip:	1.75 m
Static W.L. below G.L.:	4.35 m (vertical)
Height of gauge A.G.L.:	0.91 m (vertical)
Bottom of Interval B.G.L.:	10.67 m
Top of Interval B.G.L.:	7.62 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	9.15 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	8.1	55.85	2.29	53.55	105.19	10.7	0.02	23.9	2.39	0.78	7.4	8.53E-07	
10	16	110.32	3.44	106.88	158.52	16.2	0.03	33.3	3.33	1.09	6.9	7.88E-07	
10	26	179.26	4.86	174.41	226.05	23.0	0.04	43.7	4.37	1.43	6.3	7.25E-07	
10	16	110.32	2.80	107.52	159.16	16.2	0.03	28.2	2.82	0.92	5.8	6.65E-07	
10	8	55.16	1.70	53.46	105.10	10.7	0.02	18.5	1.85	0.61	5.8	6.61E-07	
6	26	179.26	5.02	174.24	225.88	23.0	0.03	26.9	4.48	1.47	6.5	7.45E-07	
											average	7.39E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

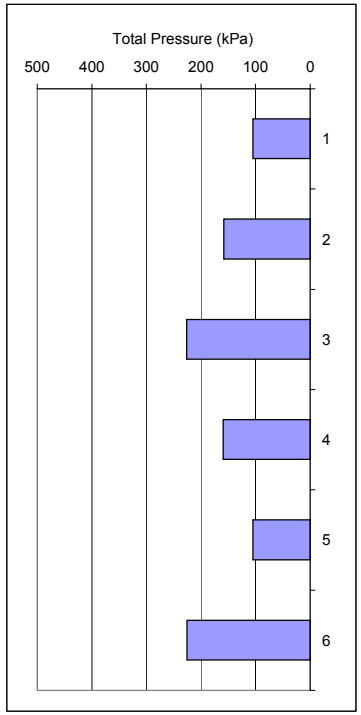
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

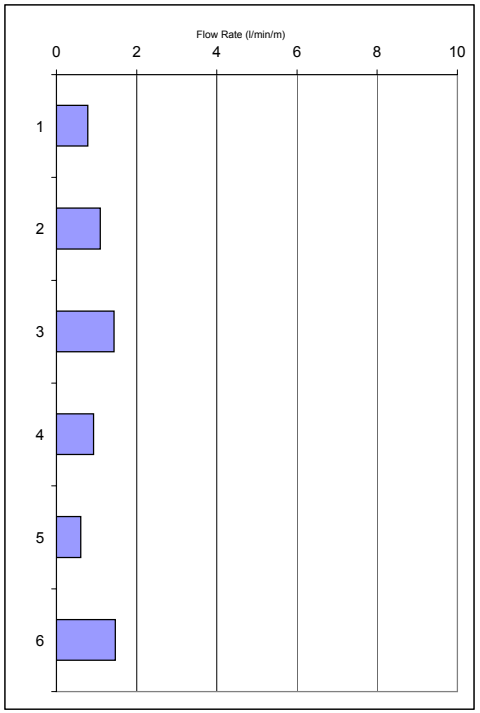
Interpreted Lugeon Value: 6

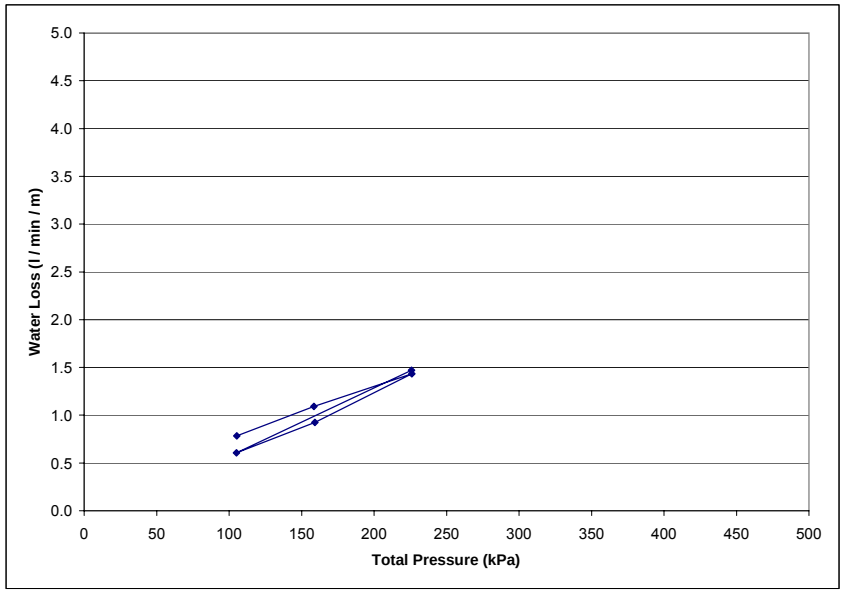
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 7.4 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 02-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 13.47' at 11:10am / 14.54' at 11:18am / 15.44' at 11:26am
Height of Gauge: 39"
Stick Up: 70.25" or 5.85

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 300psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 11:26am
Start Flushing: 10:26am
End Flushing: 10:42am
End Packer Testing: 1:20pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
2	15	35 / 43	8	11:54 / 11:56	2	6.798 / 6.798	0.0004	0.20	0.16 4min 0.0657 l/min/m UL=0.4
	15			11:56 / 11:58	2	6.798 / 6.798	0.0002	0.10	
	16			11:58 / 12:00	2	6.798 / 6.799	0.0004	0.20	
	15			12:00 / 12:02	2	6.799 / 6.799	0.0004	0.20	
	15			12:02 / 12:04	2	6.799 / 6.799	0.0002	0.10	No leakage noted. Clean water.
	30	35 / 43	8	12:05 / 12:07	2	6.800 / 6.800	0.0005	0.25	
	30			12:07 / 12:09	2	6.800 / 6.801	0.0007	0.35	
	30			12:09 / 12:11	2	6.801 / 6.801	0.0004	0.20	pressure surging more than previous.
	30			12:11 / 12:13	2	6.801 / 6.802	0.0005	0.25	0.26 l/min 0.106 l/min/m UL=0.4
	30			12:13 / 12:15	2	6.802 / 6.802	0.0005	0.25	
	45	35 / 43	8	12:16 / 12:18	2	6.803 / 6.804	0.0008	0.40	
	45			12:18 / 12:20	2	6.804 / 6.805	0.0010	0.50	0.41 l/min 0.168 l/min/m
	45			12:20 / 12:22	2	6.805 / 6.806	0.0008	0.40	UL=0.44
	45			12:22 / 12:24	2	6.806 / 6.806	0.0008	0.40	
	45			12:24 / 12:26	2	6.806 / 6.807	0.0007	0.35	
	30	35 / 43	8	12:27 / 12:29	2	6.807 / 6.808	0.0004	0.20	0.21 l/min 0.086 l/min/m
	31			12:29 / 12:31	2	6.808 / 6.808	0.0005	0.25	
	30			12:31 / 12:33	2	6.808 / 6.809	0.0004	0.20	UL=0.3
	30			12:33 / 12:35	2	6.809 / 6.809	0.0004	0.20	
	30			12:35 / 12:37	2	6.809 / 6.809	0.0004	0.20	
	15	35 / 43	8	12:38 / 12:40	2	6.809 / 6.809	0.0000	0.00	
	15			12:40 / 12:42	2	6.809 / 6.810	0.0000	0.00	
	15			12:42 / 12:44	2	6.810 / 6.810	0.0002	0.10	
	15	35 / 43	8	12:44 / 12:46	2	6.810 / 6.810	0.0002	0.10	
	15			12:46 / 12:48	2	6.810 / 6.810	0.0001	0.05	
	45	35 / 43	8	12:49 / 12:51	2	6.811 / 6.813	0.0020	1.00	Back to Pmax to check
	45			12:51 / 12:53	2	6.813 / 6.816	0.0027	1.35	
	45			12:53 / 12:55	2	6.816 / 6.819	0.0036	1.80	
	45			12:55 / 12:57	2	6.819 / 6.824	0.0044	2.20	
	45			12:57 / 12:59	2	6.824 / 6.828	0.0040	2.00	
	30	35 / 43	8	1:00 / 1:02	2	6.829 / 6.832	0.0023	1.15	2P/3
	31			1:02 / 1:04	2	6.832 / 6.835	0.0031	1.55	
	45	35 / 43	8	1:05 / 1:07	2	6.838 / 6.846	0.0077	3.85	Pmax again
	45			1:07 / 1:09	2	6.846 / 6.855	0.0090	4.50	
	30	35 / 43	8	1:10 / 1:12	2	6.858 / 6.864	0.0058	2.90	2P/3
	30			1:12 / 1:14	2	6.864 / 6.870	0.0058	2.90	
	15	35 / 43	8	1:15 / 1:17	2	6.872 / 6.875	0.0030	1.50	P/3
	15			1:17 / 1:19	2	6.875 / 6.877	0.0027	1.35	
									Joint washing at high pressures or hydro fracture?

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 10.67m to 13.11m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 2/05
Static W.L. below stick-up:	6.10 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	4.32 m (vertical)
Height of gauge A.G.L.:	0.99 m (vertical)
Bottom of Interval B.G.L.:	13.11 m
Top of Interval B.G.L.:	10.67 m
Length of Interval L:	2.44 m
Middle of Interval to D.F.:	11.89 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	15	103.42	0.13	103.30	155.39	15.8	0.00	1.60	0.16	0.07	0.4		4.59E-08	
10	30	206.84	0.21	206.64	258.73	26.4	0.00	2.60	0.26	0.11	0.4		4.47E-08	
10	45	310.26	0.33	309.93	362.02	36.9	0.00	4.10	0.41	0.17	0.5		5.04E-08	
10	30.2	208.22	0.17	208.06	260.15	26.5	0.00	2.10	0.21	0.09	0.3		3.59E-08	
10	15	103.42	0.07	103.35	155.44	15.8	0.00	0.90	0.09	0.04	0.2		2.58E-08	
10	45	310.26	1.51	308.75	360.85	36.8	0.02	16.70	1.67	0.68	1.9	4	2.06E-07	
4	30.5	210.29	1.19	209.10	261.19	26.6	0.01	5.40	1.35	0.55	2.1		2.30E-07	
4	45	310.26	4.58	305.69	357.78	36.5	0.02	16.70	4.18	1.71	4.8		3.59E-08	
4	30	206.84	2.90	203.95	256.04	26.1	0.01	11.60	2.90	1.19	4.6		5.04E-07	
4	15	103.42	1.26	102.16	154.25	15.7	0.01	5.70	1.43	0.58	3.8		4.11E-07	
												average	2.95E-07	Ignore all but the last four increments

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

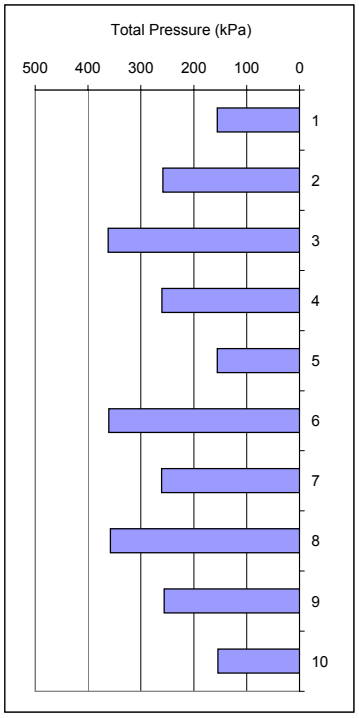
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

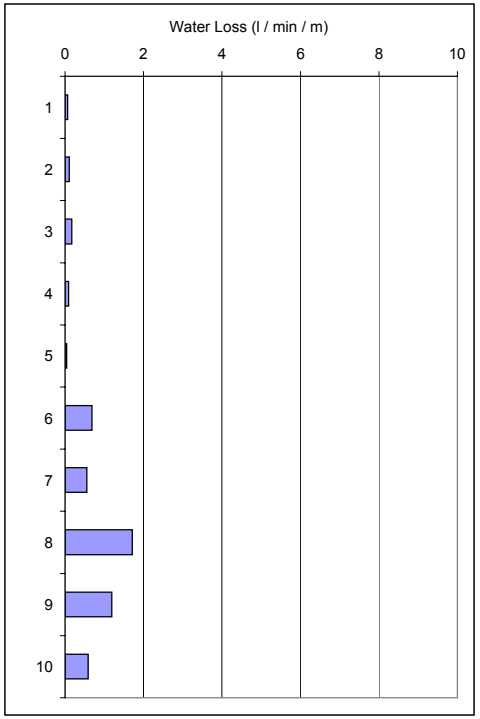
Interpreted Lugeon Value: 4

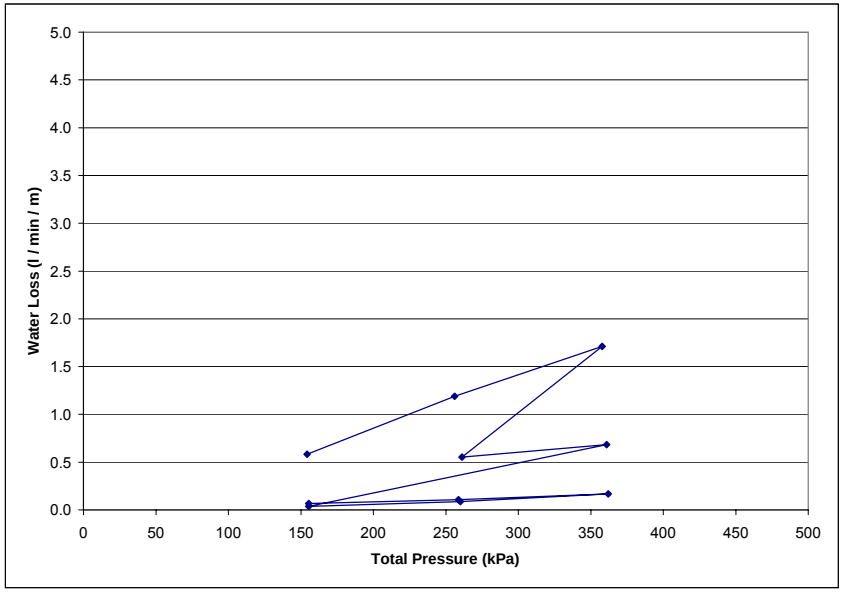
Interpreted flow pattern (Houlsby 1990) : Wash-out.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.9 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 02-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 14.23' at 5:53pm / 16.34' at 6:20pm / 17.35' at 6:09pm
Height of Gauge: 38"
Stick Up: 71"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 6:35pm
Start Flushing: 5:24pm
End Flushing: 5:36pm
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		43		6:38		6.9122			surging 30psi occasionally.
3	20	53	10	6:40	2	6.916	0.0038	1.90	
				6:40		6.916			
	20			6:42	2	6.9198	0.0038	1.90	
				6:42		6.9198			
	20			6:44	2	6.9237	0.0039	1.95	
				6:44		6.9237			
	20			6:46	2	6.9262	0.0025	1.25	
				6:46		6.9262			
	20			6:48	2	6.9293	0.0031	1.55	
				6:48		6.9293			
	20			6:50	2	6.9321	0.0028	1.40	
		43		6:51		6.9362			Surging to 50psi occasionally.
	35	53	10	6:53	2	6.9415	0.0053	2.65	
				6:53		6.9415			
	35			6:55	2	6.9466	0.0051	2.55	
				6:55		6.9466			
	34			6:57	2	6.9517	0.0051	2.55	
				6:57		6.9517			
	36			6:59	2	6.9565	0.0048	2.40	
				6:59		6.9565			
	35			7:01	2	6.9611	0.0046	2.30	
		43		7:02		6.967			pressures staying fairly constant.
	54	53	10	7:04	2	6.9771	0.0101	5.05	
				7:04		6.9771			
	54			7:06	2	6.986	0.0089	4.45	
				7:06		6.986			
	54			7:08	2	6.9945	0.0085	4.25	
				7:08		6.9945			
	54			7:10	2	7.0029	0.0084	4.20	
				7:10		7.0029			
	54			7:12	2	7.0106	0.0077	3.85	
				7:12		7.0106			
	54			7:14	2	7.0188	0.0082	4.10	
		43		7:15		7.02			Pressures steady.
	35	53	10	7:18	3	7.0248	0.0048	1.60	
				7:18		7.0248			
	35			7:19	1	7.0267	0.0019	1.90	
				7:19		7.0267			
	35			7:21	2	7.0304	0.0037	1.85	
				7:21		7.0304			
	35			7:23	2	7.0347	0.0000	0.00	
				7:23		7.0347			
	35			7:25	2	7.0383	0.0009	0.45	
		43		7:27		7.0392			surging 30psi occasionally.
	20	53	10	7:29	2	7.0404	0.0012	0.60	
		43		7:29		7.0404			Surges to 30psi occasionally
	20	53	10	7:31	2	7.0435	0.0031	1.55	
				7:31		7.0435			
	20			7:33	2	7.0447	0.0012	0.60	
				7:33		7.0447			
	20			7:35	2	7.0473	0.0026	1.30	
				7:35		7.0473			
	20			7:37	2	7.0496	0.0023	1.15	
		43		7:38		7.0573			Back - up to Pmax
	56	53	10	7:40	2	7.0665	0.0092	4.60	
				7:40		7.0665			
	56			7:42	2	7.0752	0.0087	4.35	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 13.11m to 16.15m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 2/05
Static W.L. below stick-up:	6.10 m
Stick-up A.G.L. along dip:	1.80 m
Static W.L. below G.L.:	4.30 m (vertical)
Height of gauge A.G.L.:	0.96 m (vertical)
Bottom of Interval B.G.L.:	16.15 m
Top of Interval B.G.L.:	13.11 m
Length of Interval L:	3.04 m
Middle of Interval to D.F.:	14.63 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20	137.90	1.45	136.45	188.01	19.2	0.02	16.10	1.61	0.53	2.8		3.22E-07	
10	35	241.32	2.41	238.91	290.47	29.6	0.02	24.90	2.49	0.82	2.8		3.23E-07	
10	54	372.32	4.57	367.75	419.31	42.7	0.04	41.70	4.17	1.37	3.3	3	3.74E-07	
10	35	241.32	1.68	239.64	291.20	29.7	0.02	18.30	1.83	0.60	2.1		2.36E-07	
10	20	137.90	0.89	137.01	188.57	19.2	0.01	10.40	1.04	0.34	1.8		2.08E-07	
4	54	372.32	5.01	367.31	418.87	42.7	0.02	17.90	4.48	1.47	3.5		4.02E-07	
												average	3.11E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

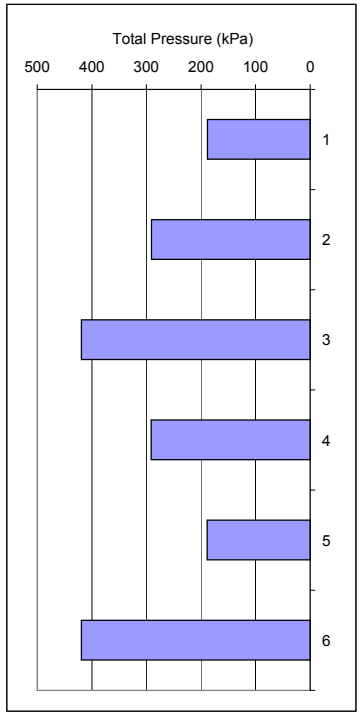
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

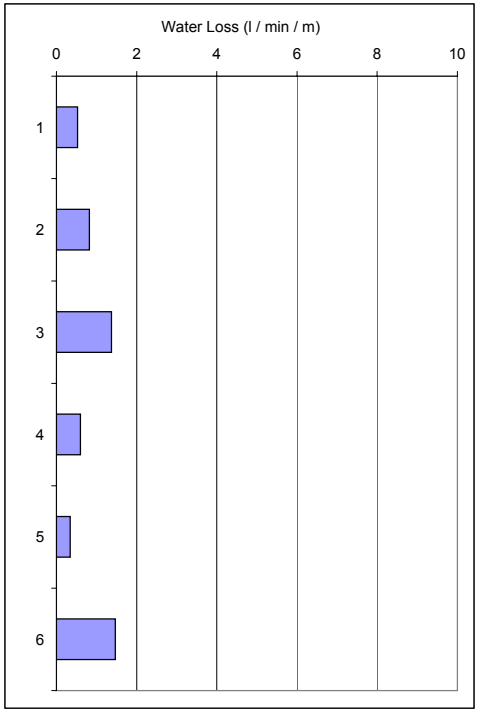
Interpreted Lugeon Value: 3

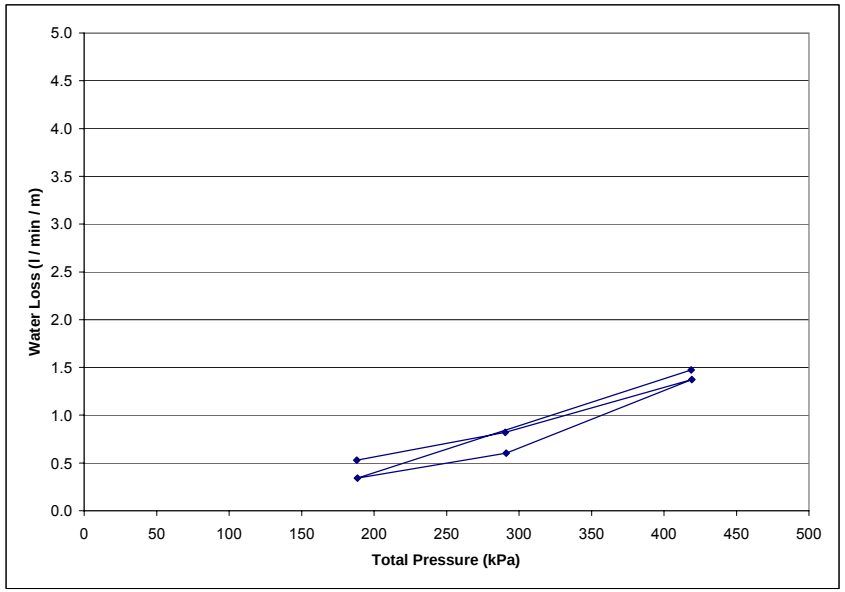
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 3.1 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 03-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 13.18' at 10:04am, 15.63 at 10:13am,16.94 at 10:26am, 17.65' at 10:39am
Height of Gauge: 37"
Stick Up: 71"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 10:45am
Start Flushing: 9:35am
End Flushing: 9:45am
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		53		10:57		7.094			No leakage, clean water
4	30	63	10	10:59	2	7.094	0.0004	0.20	
				10:59		7.094			3-4psi surging
	30			11:01	2	7.095	0.0006	0.30	
				11:01		7.095			
	30			11:03	2	7.095	0.0005	0.25	
				11:03		7.095			
	30			11:05	2	7.096	0.0007	0.35	
		45		11:05		7.096			temporary pressure up to 45psi
	30			11:07	2	7.097	0.0013	0.65	
				11:07		7.097			use in analysis
	30			11:09	2	7.097	0.0001	0.05	
		53		11:10		7.099			
	45	63	10	11:12	2	7.100	0.0008	0.40	
				11:12		7.100			
	45			11:14	2	7.100	0.0008	0.40	
				11:14		7.100			
	45			11:16	2	7.101	0.0008	0.40	
				11:16		7.101			
	45			11:18	2	7.102	0.0008	0.40	
				11:18		7.102			
	45			11:20	2	7.103	0.0010	0.50	
		53		11:22		7.105			no surface leaks
	70	63	10	11:24	2	7.106	0.0016	0.80	
				11:24		7.106			
	70			11:26	2	7.108	0.0016	0.80	
				11:26		7.108			
	70			11:28	2	7.109	0.0014	0.70	
				11:28		7.109			
	80			11:30	2	7.112	0.0021	1.05	
				11:30		7.112			
	70			11:32	2	7.113	0.0017	0.85	
				11:32		7.113			use in analysis
	70			11:34	2	7.115	0.0017	0.85	
		53		11:35		7.115			
	45	63	10	11:37	2	7.116	0.0007	0.35	
				11:37		7.116			use in analysis
	47			11:39	2	7.117	0.0011	0.55	
				11:39		7.117			
	45			11:41	2	7.118	0.0010	0.50	
				11:41		7.118			
	45			11:43	2	7.119	0.0000	0.00	
				11:43		7.119			
	45			11:45	2	7.120	0.0002	0.10	
		53		11:47		7.120			
	30	63	10	11:49	2	7.121	0.0008	0.40	
		53		11:49		7.121			
	32	63	10	11:51	2	7.121	0.0005	0.25	
				11:51		7.121			
	35			11:53	2	7.122	0.0009	0.45	
				11:53		7.122			
	30			11:55	2	7.123	0.0006	0.30	
				11:55		7.123			
	30			11:57	2	7.124	0.0007	0.35	
				11:57		7.124			
	30			11:59	2	7.124	0.0005	0.25	
		53		12:00		7.125			Check at Pmax
	70	63	10	12:02	2	7.127	0.0018	0.90	
				12:02		7.127			
	70			12:04	2	7.129	0.0018	0.90	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 16.15m to 19.20m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 3/05
Static W.L. below stick-up:	7.62 m
Stick-up A.G.L. along dip:	1.80 m
Static W.L. below G.L.:	5.82 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	19.20 m
Top of Interval B.G.L.:	16.15 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	17.68 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	30	206.84	0.18	206.66	272.98	27.8	0.00	2.30	0.2300	0.075	0.3		3.16E-08	
10	45	310.26	0.34	309.92	376.24	38.4	0.00	4.20	0.4200	0.138	0.4		4.19E-08	
10	70	482.63	0.52	482.11	548.43	55.9	0.01	6.30	0.6300	0.207	0.4	1	4.31E-08	
10	45.4	313.02	0.38	312.64	378.96	38.6	0.00	4.70	0.4700	0.154	0.4		4.65E-08	
10	31.4	216.50	0.26	216.24	282.55	28.8	0.00	3.20	0.3200	0.105	0.4		4.25E-08	
4	70	482.63	0.76	481.87	548.19	55.9	0.00	3.60	0.9000	0.295	0.5		6.16E-08	
												average	4.45E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

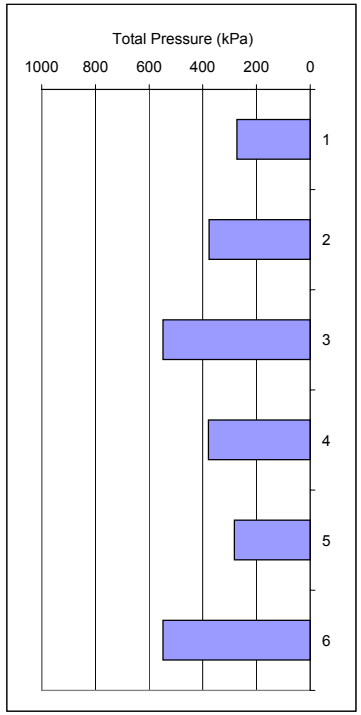
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

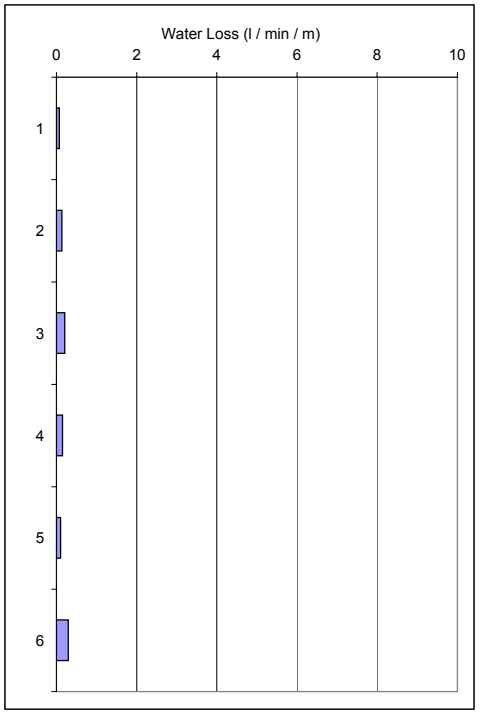
Interpreted Lugeon Value: 1

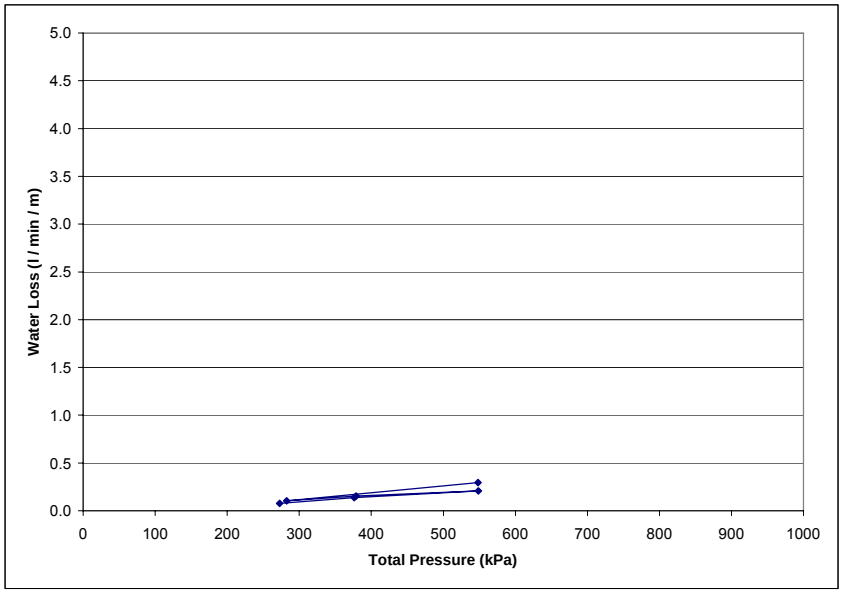
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.5 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 03-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 12.28' at 1:50pm, 13.6' at 2:00pm, 14.47 at 2:10pm, 15.99 ' at 2:24pm
Height of Gauge: 37"
Stick Up: 79"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 2:25pm
Start Flushing: 1:17pm
End Flushing: 1:32pm
End Packer Testing: 3:59pm

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		63		2:42		7.1829			occasionally dropping to 20psi.
5	35	73	10	2:44	2	7.1832	0.0003	0.15	
				2:44		7.1832			
	35			4:46	2	7.1834	0.0002	0.10	
				4:46		7.1834			
	35			2:48	2	7.1836	0.0002	0.10	
				2:48		7.1836			no leakage detected
	35			2:50	2	7.1838	0.0002	0.10	
				2:50		7.1838			
	35			2:52	2	7.184	0.0002	0.10	
		63		2:53		7.1843			occasionally dropping to 35psi
	50	73	10	2:55	2	7.1845	0.0002	0.10	
				2:55		7.1845			
	50			2:57	2	7.1849	0.0004	0.20	
				2:57		7.1849			use in analysis
	50			2:59	2	7.1853	0.0004	0.20	
				2:59		7.1853			
	50			3:01	2	7.1858	0.0005	0.25	
				3:01		7.1858			
	50			3:03	2	7.1862	0.0004	0.20	
				3:03		7.1862			
	50			3:05	2	7.1867	0.0005	0.25	
		63		3:07		7.1903			consistent pressures
	84	73	10	3:09	2	7.1942	0.0039	1.95	
				3:09		7.1942			
	84			3:11	2	7.198	0.0038	1.90	
				3:11		7.198			
	84			3:13	2	7.2014	0.0034	1.70	
				3:13		7.2014			
	84			3:15	2	7.205	0.0036	1.80	
				3:15		7.205			
	84			3:17	2	7.209	0.0040	2.00	
		63		3:19		7.2103			consistent pressure
	50	73	10	3:21	2	7.2114	0.0011	0.55	
				3:21		7.2114			
	50			3:23	2	7.2126	0.0012	0.60	
				3:23		7.2126			
	50			3:25	2	7.2136	0.0010	0.50	
				3:25		7.2136			
	50			3:27	2	7.2145	0.0009	0.45	
				3:27		7.2145			
	50			3:29	2	7.2154	0.0006	0.30	
		63		3:31		7.216			pressure occasionly dropping to 25psi.
	35	73	10	3:33	2	7.2165	0.0000	0.00	
				3:33		7.2165			
	35			3:35	2	7.217	0.0005	0.25	
		63		3:35		7.217			occasional pressure drops to 20psi
	35	73	10	3:37	2	7.2175	0.0005	0.25	
				3:37		7.2175			
	35			3:39	2	7.2182	0.0007	0.35	
				3:39		7.2182			
	35			3:41	2	7.2187	0.0005	0.25	
		63		3:43		7.2278			
	84	73	10	3:45	2	7.2388	0.0110	5.50	Back to Pmax
				3:45		7.2388			
	84			3:47	2	7.249	0.0102	5.10	This is double previous
				3:47		7.249			
	84			3:49	2	7.2594	0.0104	5.20	
		63		3:50		7.2622			
	50	73	10	3:52	2	7.2662	0.0040	2.00	Consistent pressure
				3:52		7.2662			
	50			3:54	2	7.2697	0.0035	1.75	
		63		3:55		7.2738			
	84	73	10	3:57	2	7.286	0.0122	6.10	Back to Pmax
				3:57		7.286			
	84			3:59	2	7.3012	0.0152	7.60	
									Progressive washout in evidenc

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 19.20m to 22.25m

Project Number:	0257-038-01	
Client:	Deloitte & Touche Inc.	
Project Site:	Plug Dam	
General Location:	Right Abutment	
Coordinates*:	6914104 N	
	585919 E	
Collar Elevation:	1181	m
Azimuth:		deg
Dip:	90	deg
Date:	Sept 3/05	
Static W.L. below stick-up:	9.14	m
Stick-up A.G.L. along dip:	2.01	m
Static W.L. below G.L.:	7.13	m (vertical)
Height of gauge A.G.L.:	0.94	m (vertical)
Bottom of Interval B.G.L.:	22.25	m
Top of Interval B.G.L.:	19.20	m
Length of Interval L:	3.05	m
Middle of Interval to D.F.:	20.73	m (vertical)
Open Hole Radius R:	0.0375	m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	35	241.32	0.09	241.23	320.40	32.7	0.00	1.10	0.1100	0.036	0.1		1.29E-08	
10	50	344.74	0.17	344.56	423.73	43.2	0.00	2.20	0.2200	0.072	0.2		1.95E-08	
10	84	579.16	1.72	577.44	656.61	66.9	0.02	18.70	1.8700	0.613	0.9		1.07E-07	
10	50	344.74	0.42	344.32	423.49	43.2	0.01	5.10	0.5100	0.167	0.4	3	4.52E-08	
10	35	241.32	0.22	241.10	320.27	32.6	0.00	2.70	0.2700	0.089	0.3		3.16E-08	
6	84	579.16	6.22	572.94	652.11	66.5	0.03	31.60	5.2667	1.727	2.6		3.03E-07	
4	50	344.74	1.72	343.01	422.18	43.0	0.01	7.50	1.8750	0.615	1.5		1.67E-07	
4	84	579.16	8.92	570.24	649.41	66.2	0.03	27.40	6.8500	2.246	3.5		3.96E-07	
											average	2.89E-07	Use only the last three data points

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

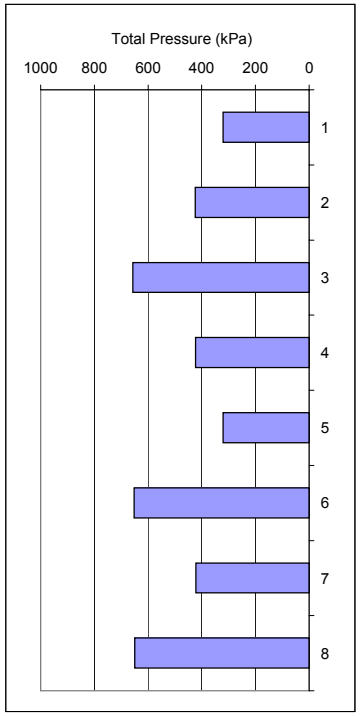
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

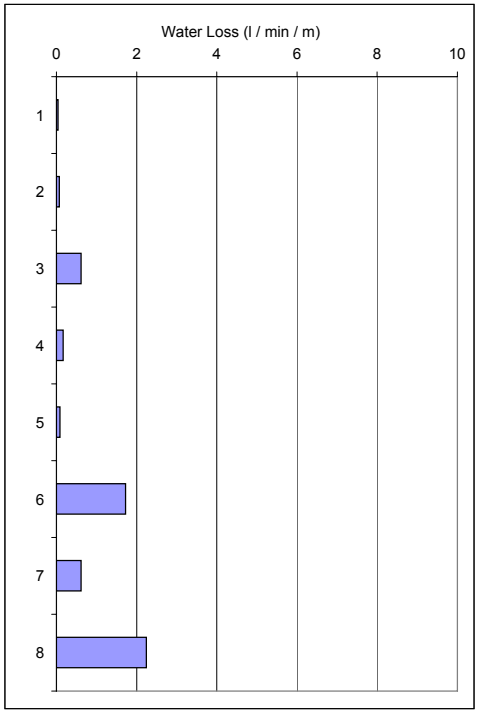
Interpreted Lugeon Value: 3

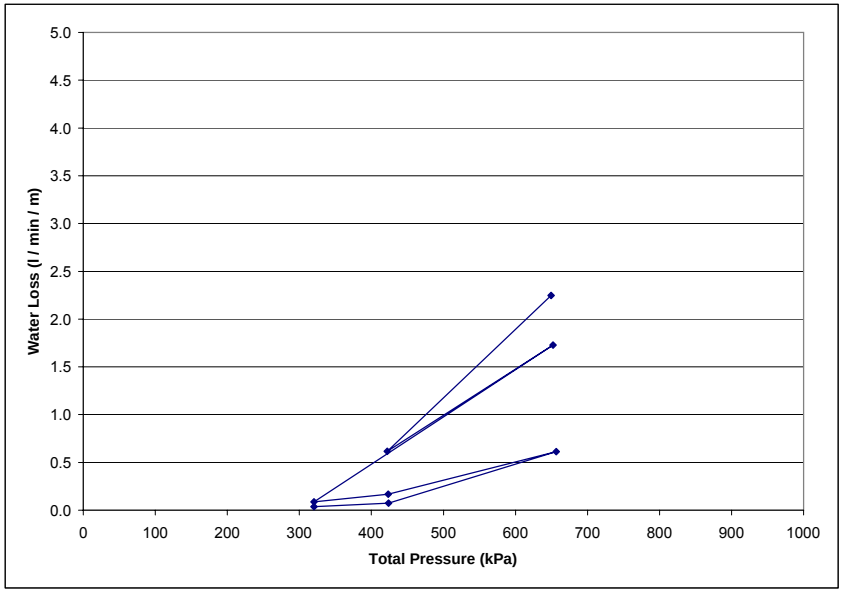
Interpreted flow pattern (Houlsby 1990) : Wash-out.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.9 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 03-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 12.58' at 5:58pm, 14.27' at 6:12pm, 14.54' at 6:15pm, 15.02' at 6:20pm
Height of Gauge: 37"
Stick Up: 68"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 6:25pm
Start Flushing: 5:21pm
End Flushing: 5:38pm
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		73		6:35		7.3327			occasional surges up to 45 psi
6	35	83	10	6:37	2	7.3332	0.0005	0.25	
				6:37		7.3332			
	35			6:39	2	7.3335	0.0003	0.15	
				6:39		7.3335			Surges up to 50 psi occasionally
	42			6:41	2	7.3339	0.0004	0.20	
				6:41		7.3339			no leakage
	42			6:43	2	7.3342	0.0003	0.15	
				6:43		7.3342			
	42			6:45	2	7.3344	0.0002	0.10	
				6:45		7.3344			
	42			6:47	2	7.3346	0.0002	0.10	
				6:47		7.3346			
	42			6:49	2	7.3347	0.0001	0.05	
		73		6:50		7.3356			
	70	83	10	6:52	2	7.3362	0.0006	0.30	
				6:52		7.3362			
	70			6:54	2	7.3365	0.0003	0.15	
				6:54		7.3365			
	74			6:56	2	7.3368	0.0003	0.15	
				6:56		7.3368			
	72			6:58	2	7.3371	0.0003	0.15	
				6:58		7.3371			
	72			7:00	2	7.3375	0.0004	0.20	
		73		7:01		7.3397			
	100	83	10	7:03	2	7.3477	0.0080	4.00	
				7:03		7.3477			
	100			7:05	2	7.3551	0.0074	3.70	
				7:05		7.3551			
	100			7:07	2	7.365	0.0099	4.95	
				7:07		7.365			
	100			7:09	2	7.3753	0.0103	5.15	
				7:09		7.3753			slight leakage at surface.
	100			7:11	2	7.3861	0.0108	5.40	
		73		7:12		7.3915			leakage noted around casing.
	70	83	10	7:14	2	7.4026	0.0111	5.55	
				7:14		7.4026			leakage noted around casing.
	70			7:16	2	7.4148	0.0122	6.10	
				7:16		7.4148			leakage noted around casing.
	70			7:18	2	7.4248	0.0100	5.00	
				7:18		7.4248			leakage noted around casing.
	70			7:20	2	7.4358	0.0000	0.00	
				7:20		7.4358			leakage noted around casing.
	70			7:22	2	7.4476	0.0047	2.35	
		73		7:23		7.4523			leakage slows
	42	83	10	7:25	2	7.4602	0.0079	3.95	
		73		7:25		7.4602			leaking to surface
	42	83	10	7:27	2	7.4675	0.0073	3.65	
				7:27		7.4675			
	42			7:29	2	7.4734	0.0059	2.95	
				7:29		7.4734			no leakage
	42			7:31	2	7.4758	0.0024	1.20	
				7:31		7.4758			
	42			7:33	2	7.4772	0.0014	0.70	
				7:33		7.4772			
	42			7:35	2	7.479	0.0018	0.90	
				7:35		7.479			
	42			7:37	2	7.4801	0.0011	0.55	
				7:37		7.4801			
	42			7:39	2	7.4812	0.0011	0.55	
				0.31875		7.4812			
	42			7:41	2	7.4826	0.0014	0.70	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 22.25m to 25.30m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 3/05
Static W.L. below stick-up:	10.67 m
Stick-up A.G.L. along dip:	1.73 m
Static W.L. below G.L.:	8.94 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	25.30 m
Top of Interval B.G.L.:	22.25 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	23.78 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	42	289.58	0.09	289.49	386.41	39.4	0.00	1.20	0.1200	0.039	0.1		1.17E-08	
10	71.6	493.66	0.15	493.51	590.44	60.2	0.00	1.90	0.1900	0.062	0.1		1.21E-08	
10	100	689.48	5.25	684.22	781.14	79.6	0.05	46.40	4.6400	1.521	1.9	1	2.23E-07	leakage noted
10	70	482.63	6.77	475.86	572.79	58.4	0.06	56.10	5.6100	1.839	3.2		3.68E-07	leakage noted
10	42	289.58	0.56	289.02	385.94	39.3	0.01	6.80	0.6800	0.223	0.6		6.61E-08	leakage mostly stopped
											average	3.00E-08	Ignore the two tests with leakage noted

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

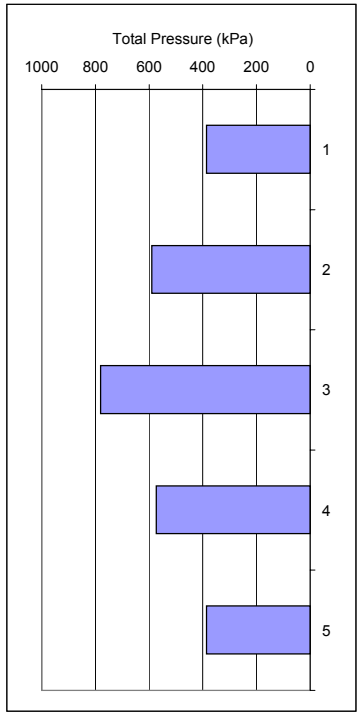
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

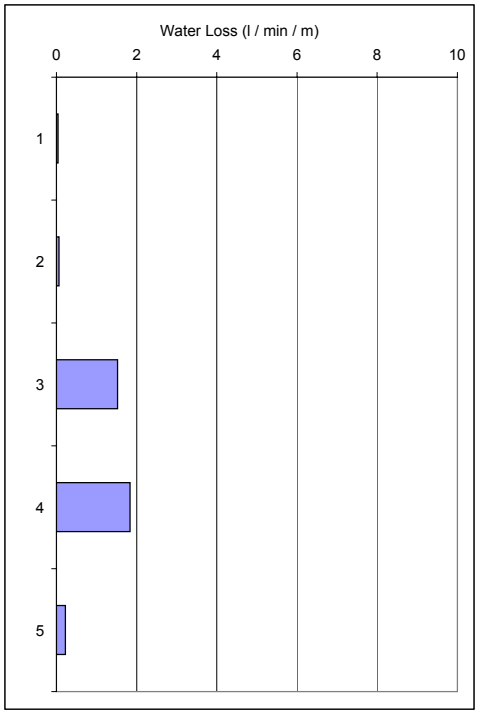
Interpreted Lugeon Value: 1

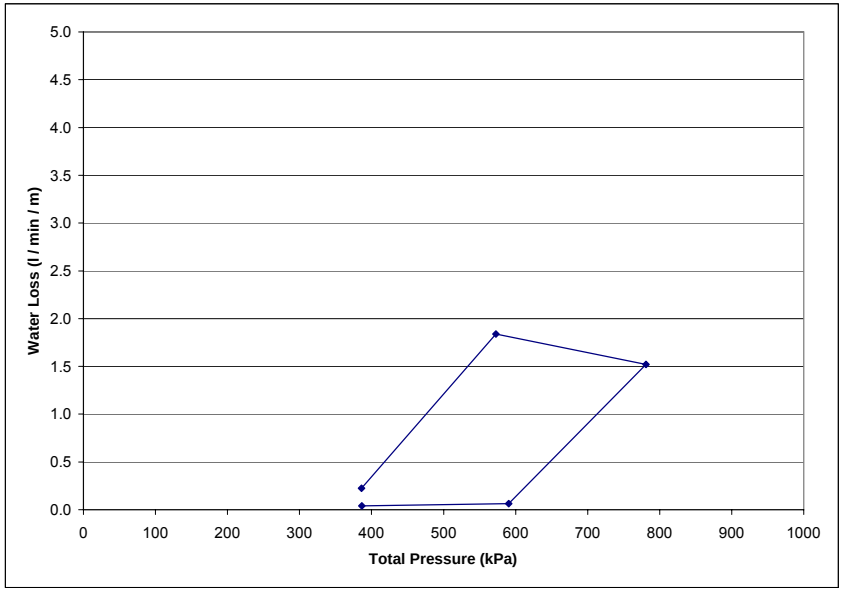
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 3.0 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 04-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 40.28' at 8:20am left open over night
Height of Gauge:
Stick Up: 76"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing: 8:30am
Start Flushing:
End Flushing:
End Packer Testing: 9:41am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
7		73 / 83	10						
This is a retest with a new Nitrogen supply beside to determine if the reason for leaks on test 6 was unseating of packer due to not enough Nitrogen.									
	45	73 / 83	10	8:48 / 8:50	2	7.5513 / 7.5585	0.0072	3.60	No surface leakage noted.
	45			8:50 / 8:52	2	7.5585 / 7.5644	0.0059	2.95	Clean water
	45			8:52 / 8:54	2	7.5644 / 7.5698	0.0054	2.70	
	70	73 / 83	10	8:56 / 8:58	2	7.5762 / 7.5826	0.0064	3.20	No leakage noted.
	70	73 / 83	10	8:58 / 9:00	2	7.5826 / 7.5884	0.0058	2.90	
	70			9:00 / 9:02	2	7.5884 / 7.5942	0.0058	2.90	
	100	73 / 83	10	9:03 / 9:05	2	7.5978 / 7.6043	0.0065	3.25	
	100			9:05 / 9:07	2	7.6043 / 7.6103	0.0060	3.00	
	100			9:07 / 9:09	2	7.6103 / 7.6158	0.0055	2.75	
	100			9:09 / 9:11	2	7.6158 / 7.621	0.0052	2.60	
	100			9:11 / 9:13	2	7.621 / 7.6261	0.0051	2.55	
	100			9:13 / 9:15	2	7.6261 / 7.6334	0.0073	3.65	
	100			9:15 / 9:17	2	7.6334 / 7.6405	0.0071	3.55	
	100			9:17 / 9:19	2	7.6405 / 7.6485	0.0080	4.00	Surface leakage noted
	70	73 / 83	10	9:20 / 9:22	2	7.6522 / 7.6596	0.0074	3.70	Slight leakage noted
	70			9:22 / 9:24	2	7.6596 / 7.6673	0.0077	3.85	
	70			9:24 / 9:26	2	7.6673 / 7.675	0.0077	3.85	
	70			9:26 / 9:28	2	7.675 / 7.6824	0.0074	3.70	Leakage at surface steps.
	70			9:28 / 9:30	2	7.6824 / 7.6897	0.0073	3.65	
	45	73 / 83	10	9:31 / 9:33	2	7.6926 / 7.6985	0.0059	2.95	
	45	73 / 83	10	9:33 / 9:35	2	7.6985 / 7.7038	0.0053	2.65	No leakage
	45			9:35 / 9:37	2	7.7038 / 7.7094	0.0056	2.80	No leakage
	45			9:37 / 9:39	2	7.7094 / 7.7147	0.0053	2.65	No leakage
	45			9:39 / 9:41	2	7.7147 / 7.7199	0.0052	2.60	No leakage

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 22.25m to 25.30m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/05
Static W.L. below stick-up:	12.28 m
Stick-up A.G.L. along dip:	1.73 m
Static W.L. below G.L.:	10.55 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	25.30 m
Top of Interval B.G.L.:	22.25 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	23.78 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
6	45	310.26	3.12	307.14	419.86	42.8	0.02	18.50	3.08	1.01	2.4	2.76E-07	
6	70	482.63	3.02	479.61	592.33	60.4	0.02	18.00	3.00	0.98	1.7	1.90E-07	
10	100	689.48	3.36	686.12	798.83	81.4	0.03	32.70	3.27	1.07	1.3	1.54E-07	leakage noted
10	70	482.63	3.99	478.64	591.36	60.3	0.04	37.50	3.75	1.23	2.1	2.38E-07	leakage noted
10	45	310.26	2.69	307.57	420.29	42.8	0.03	27.30	2.73	0.90	2.1	2.44E-07	minor leakage
											2		
											average	2.36E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

This is a re-test of the 22.25 to 25.3m deep zone. Retest after replacing the Nitrogen supply, potentially not enough pressure in the Packer, leading to unseating of the packer in test 6.

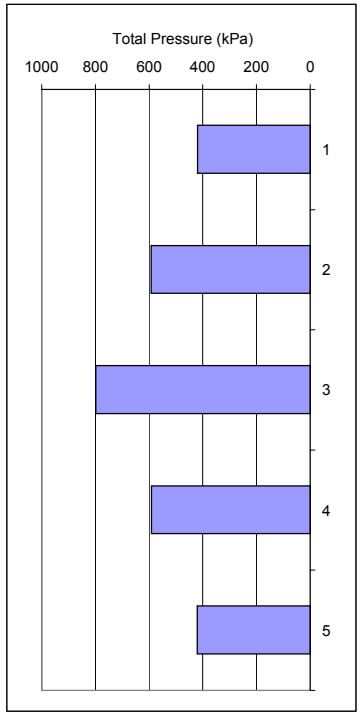
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

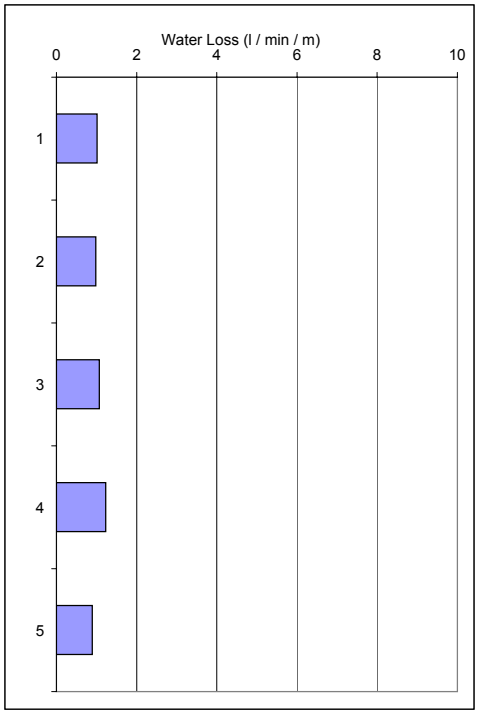
Interpreted Lugeon Value: 2, over estimated due to leakage - use value from test 6.

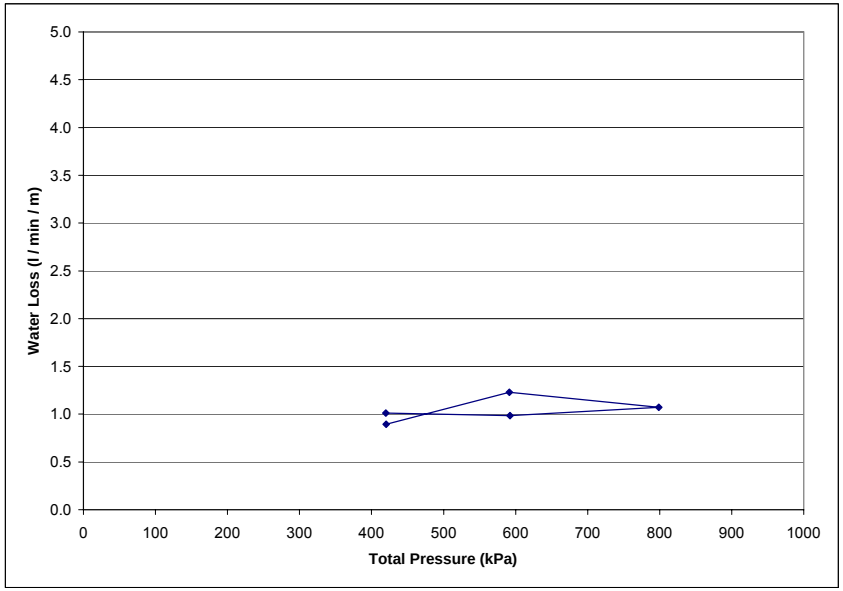
Interpretated flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.4 \times 10^{-7}$ m/sec, over estimate - use value from test 6







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 04-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: See test #9
Height of Gauge: 38"
Stick Up: See test #9

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 360psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 5:20pm
Start Flushing: 4:20pm (pump problem)
End Flushing: 5:05pm
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		83		5:37		7.7461			Pressure occasionally dropped to 25psi.
8	45	93	10	5:39	2	7.7595	0.0134	6.70	
				5:39		7.7595			Leakage at surface.
				5:41	2	7.7731	0.0136	6.80	
				5:41		7.7731			Leakage at surface.
				5:43	2	7.7855	0.0124	6.20	
									Moved packers up by 1' to attempt to seal hole.
		84		6:07		7.8184			No leakage Pressure steady to 2psi.
	45	93	11	6:09	2	7.8203	0.0019	0.95	
				6:09		7.8203			
	45			6:11	2	7.8218	0.0015	0.75	
				6:11		7.8218			
	45			6:13	2	7.8233	0.0015	0.75	
				6:13		7.8233			
	45			6:15	2	7.8248	0.0015	0.75	
				6:15		7.8248			
	45			6:17	2	7.826	0.0012	0.60	
				6:17		7.826			
	45			6:19	2	7.8273	0.0013	0.65	
		84		6:20		7.8282			Pressure occasionally dropping to 40psi.
	70	93	11	6:22	2	7.8301	0.0019	0.95	
				6:22		7.8301			
	70			6:24	2	7.8316	0.0015	0.75	
				6:24		7.8316			No leakage.
	70			6:26	2	7.8333	0.0017	0.85	
				6:26		7.8333			
	70			6:28	2	7.835	0.0017	0.85	
				6:28		7.835			
	70			6:30	2	7.8367	0.0017	0.85	
		84		6:31		7.838			No leakage.
	100	93	11	6:33	2	7.8402	0.0022	1.10	
				6:33		7.8402			occasionally drops to 45psi.
	100			6:35	2	7.8421	0.0019	0.95	
				6:35		7.8421			
	100			6:37	2	7.8441	0.0020	1.00	
				6:37		7.8441			
	100			6:39	2	7.846	0.0019	0.95	
				6:39		7.846			
	100			6:41	2	7.848	0.0027	1.35	
		84		6:42		7.8487			
	70	93	11	6:44	2	7.8502	0.0000	0.00	
				6:44		7.8502			
	70			6:46	2	7.8518	0.0000	0.00	
				6:46		7.8518			
	70			6:48	2	7.8535	0.0017	0.85	
		84		6:48		7.8535			
	70	93	11	6:50	2	7.8551	0.0016	0.80	
				6:50		7.8551			
	70			6:52	2	7.8568	0.0017	0.85	
		84		6:53		7.8573			
	45	93	11	6:55	2	7.8585	0.0012	0.60	
				6:55		7.8585			
	45			6:57	2	7.86	0.0015	0.75	
				6:57		7.86			
	45			6:59	2	7.8616	0.0016	0.80	
				6:59		7.8616			
	45			7:01	2	7.863	0.0014	0.70	
				7:01		7.863			
	45			7:03	2	7.8645	0.0015	0.75	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 25.60m to 28.35m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 4/05
Static W.L. below stick-up:	15.64 m
Stick-up A.G.L. along dip:	1.65 m
Static W.L. below G.L.:	13.99 m (vertical)
Height of gauge A.G.L.:	0.97 m (vertical)
Bottom of Interval B.G.L.:	28.35 m
Top of Interval B.G.L.:	25.60 m
Length of Interval L:	2.75 m
Middle of Interval to D.F.:	26.98 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45	310.26	0.58	309.68	456.44	46.5	0.01	7.00	0.7000	0.255	0.6		6.23E-08	
10	70	482.63	0.71	481.92	628.68	64.1	0.01	8.50	0.8500	0.309	0.5		5.49E-08	
10	100	689.48	0.85	688.62	835.38	85.2	0.01	10.00	1.0000	0.364	0.4	1	4.87E-08	
10	70	482.63	0.68	481.95	628.71	64.1	0.01	8.10	0.8100	0.295	0.5		5.24E-08	
10	45	310.26	0.60	309.67	456.42	46.5	0.01	7.20	0.7200	0.262	0.6		6.41E-08	
												average	5.65E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

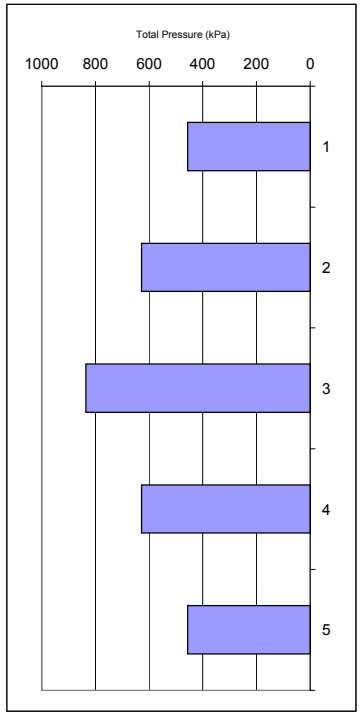
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

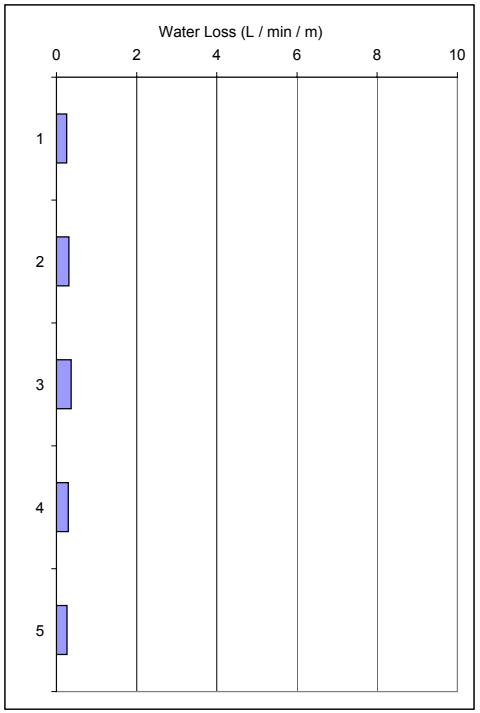
Interpreted Lugeon Value: 1

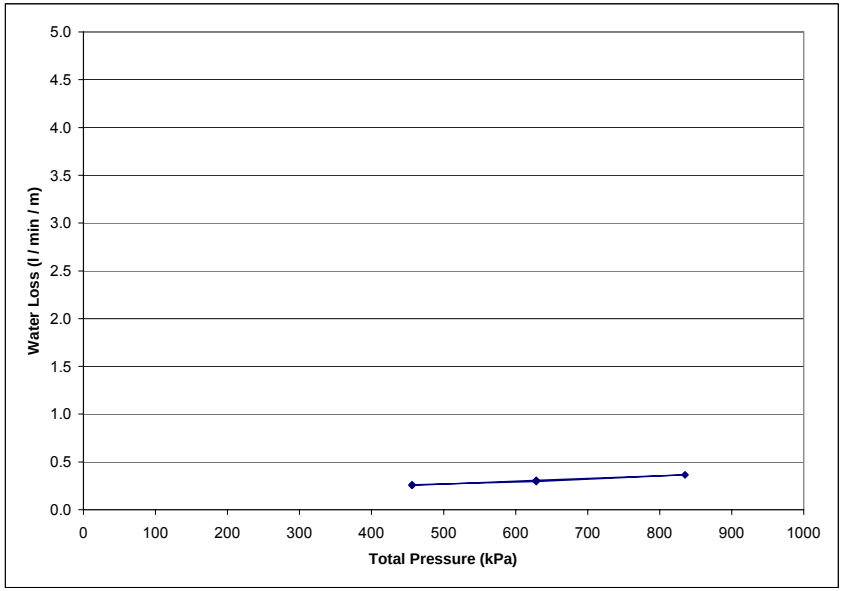
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 5.6 \times 10^{-8}$ m/sec







BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 05-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 51.31' measured in morning after sitting over night.
Height of Gauge: 37"
Stick Up: 65"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 360psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 12:20pm
Start Flushing: 11:58pm
End Flushing: 12:12pm
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		93							
9	45	103	10						
									leakage noted in casing at 8psi pressure prio to start of testing packer was holding pressure ok.
									Lower pressure in packer and more up by 1'.
		94							
		103	11						
									leakage noted in casing during the attempt to fill drill rods prior to test - only nominal pressure applied 3psi.
									Pull up packer to check that it is ok. No issues attemt to set packer at 88'.
		88		1:36		7.951			leakage at surface - bubbles surface quickly
	45	103	15	1:38	2	7.9594	0.0084	4.20	
				1:38		7.9594			slight leakage
	45			1:40	2	7.9648	0.0054	2.70	
				1:40		7.9648			leakage stops
	45			1:42	2	7.968	0.0032	1.60	
				1:42		7.968			occasionally pressure drops to 30psi
	45			1:44	2	7.9701	0.0021	1.05	
				1:44		7.9701			
	45			1:46	2	7.9719	0.0018	0.90	
				1:46		7.9719			
	45			1:48	2	7.9731	0.0012	0.60	
				1:48		7.9731			
	45			1:50	2	7.9741	0.0010	0.50	
				1:50		7.9741			
	45			1:52	2	7.975	0.0009	0.45	
				1:52		7.975			
	45			1:54	2	7.9759	0.0009	0.45	
				1:54		7.9759			
	45			1:56	2	7.9767	0.0008	0.40	
				1:56		7.9767			no leakage
	45			1:58	2	7.9773	0.0006	0.30	
		88		1:59		7.9773			surging occasionlly between 20 - 40psi
	30	103	15	2:01	2	7.9777	0.0004	0.20	
				2:01		7.9777			
	30			2:03	2	7.978	0.0003	0.15	
				2:03		7.978			
	32			2:05	2	7.9785	0.0005	0.25	
				2:05		7.9785			
	30			2:07	2	7.979	0.0000	0.00	
				2:07		7.979			
	30			2:09	2	7.9795	0.0008	0.40	
		88		2:10		7.9803			
	45	103	15	2:12	2	7.981	0.0007	0.35	
		88		2:12		7.981			no leakage occasional surges.
	45	103	15	2:14	2	7.9816	0.0006	0.30	
				2:14		7.9816			between 30-50psi
	45			2:16	2	7.9822	0.0006	0.30	
				2:16		7.9822			
	45			2:18	2	7.9829	0.0007	0.35	
				2:18		7.9829			
	45			2:20	2	7.9834	0.0005	0.25	
		88		2:21		7.9845			occasional surges between 60-85psi
	70	103	15	2:23	2	7.9853	0.0008	0.40	
				2:23		7.9853			
	70			2:25	2	7.9862	0.0009	0.45	
				2:25		7.9862			
	70			2:27	2	7.9871	0.0009	0.45	
				2:27		7.9871			
	70			2:29	2	7.988	0.0009	0.45	
				2:29		7.988			
	70			2:31	2	7.989	0.0010	0.50	
		88		2:32		7.9902			occasionaly dripping to 80psi
	100	103	15	2:34	2	7.9915	0.0013	0.65	
				2:34		7.9915			
	100			2:36	2	7.993	0.0015	0.75	
				2:36		7.993			
	100			2:38	2	7.9943	0.0013	0.65	
				2:38		7.9943			no leakage
	100			2:40	2	7.9956	0.0013	0.65	
				2:40		7.9956			
	100			2:42	2	7.9969	0.0013	0.65	
		88		2:43		7.997			
	70	103	15	2:45	2	7.9979	0.0009	0.45	
				2:45		7.9979			
	70			2:47	2	7.9988	0.0009	0.45	
				2:47		7.9988			
	70			2:49	2	7.9999	0.0011	0.55	
				2:49		7.9999			
	70			2:51	2	8.0008	0.0009	0.45	
				2:51		8.0008			
	70			2:53	2	8.0018	0.0010	0.50	
		88		2:54		8.0017			
	45	103	15	2:56	2	8.0017	0.0000	0.00	
				2:56		8.0017			
	45			2:58	2	8.0023	0.0006	0.30	
				2:58		8.0023			
	45			3:00	2	8.0028	0.0005	0.25	
				3:00		8.0028			
	45			3:02	2	8.0034	0.0006	0.30	
				3:02		8.0034			
	45			3:04	2	8.0041	0.0007	0.35	
				3:06		8.0041			
	45			3:08	2	8.0047	0.0006	0.30	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 26.82m to 31.39m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 5/05
Static W.L. below stick-up:	15.64 m
Stick-up A.G.L. along dip:	1.65 m
Static W.L. below G.L.:	13.99 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	31.98 m
Top of Interval B.G.L.:	26.82 m
Length of Interval L:	5.16 m
Middle of Interval to D.F.:	29.40 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45	310.26	0.34	309.92	456.39	46.5	0.00	4.20	0.4200	0.081	0.2		2.29E-08	
10	30.4	209.60	0.17	209.43	355.89	36.3	0.00	2.20	0.2200	0.043	0.1		1.54E-08	
10	45	310.26	0.25	310.02	456.48	46.5	0.00	3.10	0.3100	0.060	0.1		1.69E-08	
10	70	482.63	0.36	482.27	628.73	64.1	0.00	4.50	0.4500	0.087	0.1	1	1.78E-08	
10	100	689.48	0.55	688.92	835.38	85.2	0.01	6.70	0.6700	0.130	0.2		1.99E-08	
10	70	482.63	0.39	482.24	628.71	64.1	0.00	4.80	0.4800	0.093	0.1		1.90E-08	
10	45	310.26	0.24	310.02	456.49	46.5	0.00	3.00	0.3000	0.058	0.1		1.63E-08	
												average	1.83E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

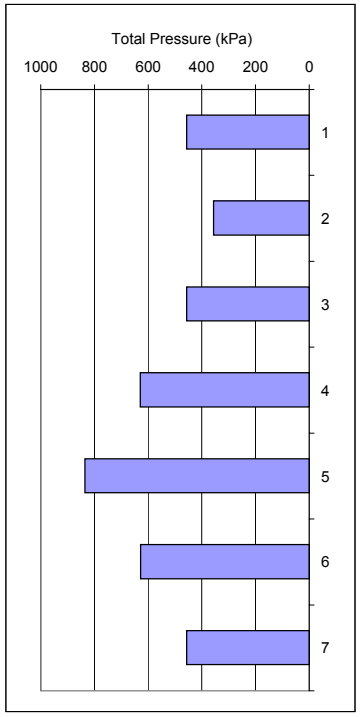
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

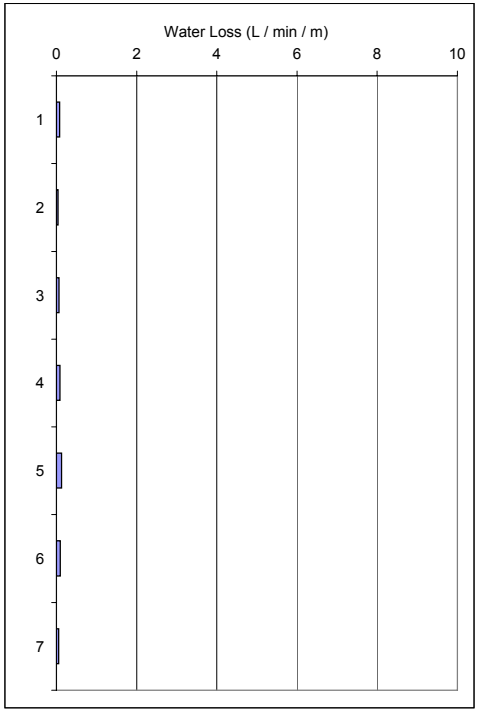
Interpreted Lugeon Value: 1

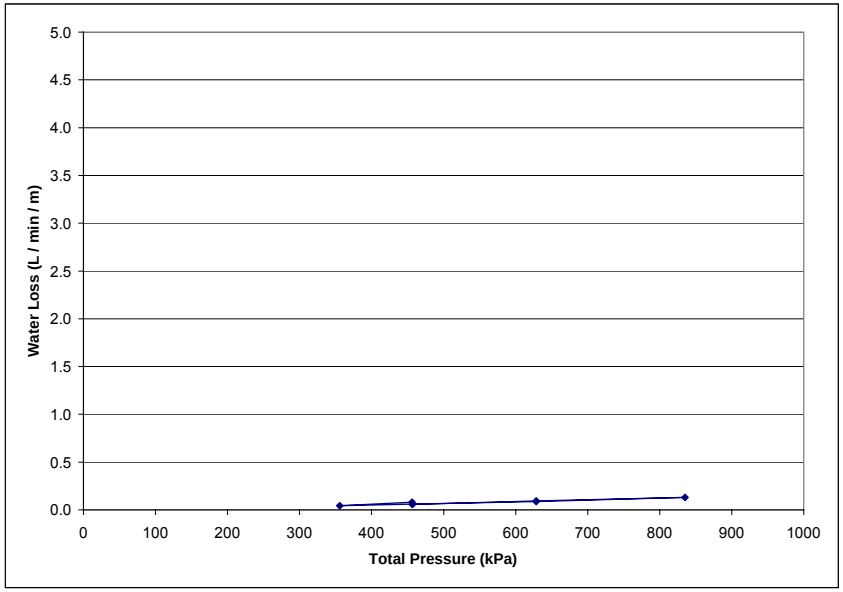
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.8 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 05-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 51.31'
Height of Gauge: 37"
Stick Up: 65"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 360 psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 4:50pm
Start Flushing: 4:15pm
End Flushing:
End Packer Testing:

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m³ Start / Finish	Volume	Rate (l/min)	Remarks
		103		5:03		8.0176			no leaks
10	45	113	10	5:05	2	8.0217	0.0041	2.05	
				5:05		8.0217			pressure drops to 20psi occur occasionally.
	45			5:07	2	8.0254	0.0037	1.85	
				5:07		8.0254			No leakage
	46			5:09	2	8.0286	0.0032	1.60	
				5:09		8.0286			clean water
	46			5:11	2	8.0311	0.0025	1.25	
				5:11		8.0311			
	46			5:13	2	8.033	0.0019	0.95	
				5:13		8.033			
	45			5:15	2	8.0348	0.0018	0.90	
				5:15		8.0348			
	45			5:17	2	8.0363	0.0015	0.75	
				5:17		8.0363			
	45			5:19	2	8.038	0.0017	0.85	
				5:19		8.038			
	45			5:21	2	8.0398	0.0018	0.90	
		103		5:23		8.0418			pressure drops to 40psi occasionally
	70	113	10	5:25	2	8.0438	0.0020	1.00	
				5:25		8.0438			
	72			5:27	2	8.0456	0.0018	0.90	
				5:27		8.0456			
	70			5:29	2	8.0476	0.0020	1.00	
				5:29		8.0476			
	72			5:31	2	8.0497	0.0021	1.05	
				5:31		8.0497			
	72			5:33	2	8.0515	0.0018	0.90	
		103		5:34		8.0525			consistent pressure
	100	113	10	5:36	2	8.0544	0.0019	0.95	
				5:36		8.0544			
	100			5:38	2	8.0561	0.0017	0.85	
				5:38		8.0561			
	100			5:40	2	8.0577	0.0016	0.80	
				5:40		8.0577			
	100			5:42	2	8.0593	0.0016	0.80	
				5:42		8.0593			
	100			5:44	2	8.0606	0.0013	0.65	
				5:44		8.0606			
	100			5:46	2	8.0622	0.0026	1.30	
		103		5:47		8.0632			
	70	113	10	5:49	2	8.0654	0.0000	0.00	
				5:49		8.0654			
	70			5:51	2	8.0686	0.0000	0.00	
				5:51		8.0686			
	70			5:53	2	8.0722	0.0036	1.80	
		103		5:53		8.0722			
	70	113	10	5:55	2	8.0753	0.0031	1.55	
				5:55		8.0753			no leakage noted
	70			5:57	2	8.0787	0.0034	1.70	
				5:57		8.0787			occasional pressure drops to 40psi
	70			5:59	2	8.0822	0.0035	1.75	
		103		6:00		8.0837			occasional drops to 25psi
	45	113	10	6:02	2	8.0867	0.0030	1.50	
				6:02		8.0867			
	45			6:04	2	8.0897	0.0030	1.50	
				6:04		8.0897			
	45			6:06	2	8.0925	0.0028	1.40	
				6:06		8.0925			
	45			6:08	2	8.0956	0.0031	1.55	
				6:08		8.0956			
	45			6:10	2	8.0987	0.0031	1.55	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 31.39m to 34.33m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 5/05
Static W.L. below stick-up:	15.64 m
Stick-up A.G.L. along dip:	1.65 m
Static W.L. below G.L.:	13.99 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	34.44 m
Top of Interval B.G.L.:	31.39 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	32.92 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45.2	311.64	0.73	310.91	457.37	46.6	0.01	8.70	0.87	0.29	0.6		7.14E-08	
10	71.2	490.91	0.82	490.08	636.55	64.9	0.01	9.70	0.97	0.32	0.5		5.72E-08	
10	100	689.48	0.65	688.82	835.29	85.1	0.01	7.80	0.78	0.26	0.3		3.50E-08	
10	70	482.63	1.52	481.11	627.58	64.0	0.02	16.80	1.68	0.55	0.9	1	1.00E-07	suspect leakage at lower Packer joint, see test 13 and 14
10	45	310.26	1.34	308.93	455.39	46.4	0.02	15.00	1.50	0.49	1.1		1.24E-07	suspect leakage at lower Packer joint, see test 13 and 14
												average	5.45E-08	ignore the last two increaments

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

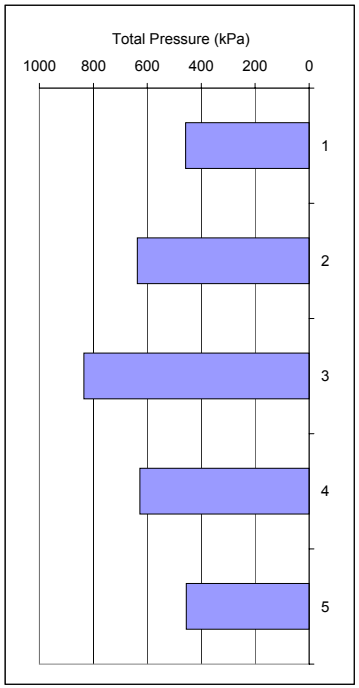
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

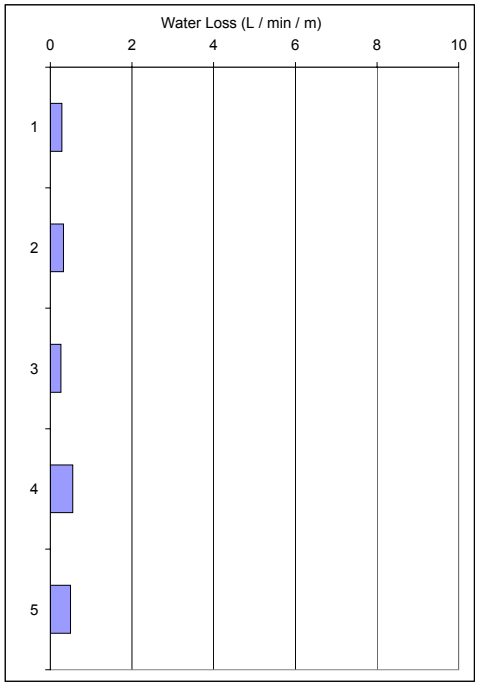
Interpreted Lugeon Value: 1

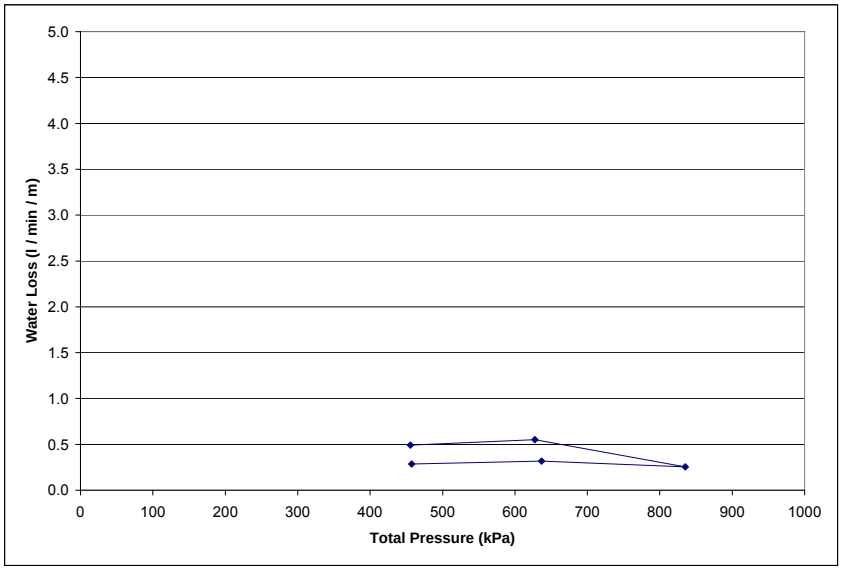
Interpreted flow pattern (Houlsby 1990) : Laminar

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 5.4 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 01-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT: 60.15'
Height of Gauge: 37"
Stick Up: 70"

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 360psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 8:20am
Start Flushing: 7:15pm Sep.5
End Flushing: 7:30pm Sep. 5
End Packer Testing: 11:11am

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
11		113 / 123	10	8:20					upon start in the morning surface leakage was evident ran pump with an applied pressure of 6psi for 10 min.
									Tried to apply pressure & leakage at the surface was immediate. Pulled packers and checked - it looked like the nitrogen come out of the packers too quick - maybe blockage in supply line or leakin supply line.
									Pulled looks, ok hot some water in the N2 line which was removed back
	45	113 / 123	10	9:54 / 9:56	2	8.2287 / 8.2335	0.0048	2.40	
	45			9:56 / 9:58	2	8.2335 / 8.2382	0.0047	2.35	occasional pressure drops to 25psi.
	45			9:58 / 10:00	2	8.2382 / 8.2424	0.0042	2.10	
	45			10:00 / 10:02	2	8.2424 / 8.2464	0.0040	2.00	No leakage noted.
	45			10:02 / 10:04	2	8.2464 / 8.25	0.0036	1.80	
	45			10:04 / 10:06	2	8.25 / 8.2534	0.0034	1.70	
	46			10:06 / 10:08	2	8.2534 / 8.256	0.0026	1.30	
	46			10:08 / 10:10	2	8.256 / 8.2584	0.0024	1.20	
	45			10:10 / 10:12	2	8.2584 / 8.2605	0.0021	1.05	
	45			10:12 / 10:14	2	8.2605 / 8.2618	0.0013	0.65	
	45			10:14 / 10:16	2	8.2618 / 8.2634	0.0016	0.80	
	45			10:16 / 10:18	2	8.2634 / 8.2647	0.0013	0.65	
	45			10:18 / 10:20	2	8.2647 / 8.2666	0.0019	0.95	
	70	113 / 123	10	10:21 / 10:23	2	8.2664 / 8.2681	0.0017	0.85	
	70			10:23 / 10:25	2	8.2681 / 8.2697	0.0016	0.80	
	70			10:25 / 10:28	3	8.2697 / 8.2721	0.0024	0.80	
	70			10:28 / 10:31	3	8.2721 / 8.2742	0.0021	0.70	
	70			10:31 / 10:33	2	8.2742 / 8.2756	0.0014	0.70	
	100	113 / 123	10	10:34 / 10:36	2	8.2765 / 8.2781	0.0000	0.00	
	100			10:36 / 10:38	2	8.2781 / 8.2799	0.0018	0.90	
	100			10:38 / 10:40	2	8.2799 / 8.2816	0.0017	0.85	no leakage occasional pressure drops to 60psi
	100			10:40 / 10:42	2	8.2816 / 8.2834	0.0018	0.90	
	100			10:42 / 10:44	2	8.2834 / 8.2853	0.0019	0.95	
	70	113 / 123	10	10:45 / 10:47	2	8.286 / 8.2878	0.0018	0.90	
	70			10:47 / 10:49	2	8.2878 / 8.2897	0.0019	0.95	
	70			10:49 / 10:51	2	8.2897 / 8.2913	0.0016	0.80	
	70			10:51 / 10:53	2	8.2913 / 8.2933	0.0020	1.00	
	70			10:53 / 10:55	2	8.2933 / 8.2951	0.0018	0.90	no leakage noted.
	45	113 / 123	10	10:56 / 10:58	2	8.2959 / 8.2972	0.0000	0.00	
	45			10:58 / 11:00	2	8.2972 / 8.2984	0.0012	0.60	occasional pressure drops to 25psi.
	45			11:00 / 11:02	2	8.2984 / 8.2998	0.0014	0.70	
	45			11:02 / 11:04	2	8.2998 / 8.301	0.0012	0.60	
	45			11:04 / 11:06	2	8.301 / 8.3022	0.0012	0.60	
	100	113 / 123	10	11:07 / 11:09	2	8.3032 / 8.3052	0.0020	1.00	back to Pmax.
	100			11:09 / 11:11	2	8.3052 / 8.3073	0.0021	1.05	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 34.44m to 37.49m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 6/05
Static W.L. below stick-up:	18.33 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	16.55 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	37.49 m
Top of Interval B.G.L.:	34.44 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	35.97 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45	310.26	0.69	309.58	481.15	49.0	0.01	8.20	0.82	0.27	0.6		6.40E-08	
10	70	482.63	0.78	481.85	653.43	66.6	0.01	9.20	0.92	0.30	0.5		5.28E-08	
10	100	689.48	0.74	688.73	860.31	87.7	0.01	8.80	0.88	0.29	0.3	1	3.84E-08	
10	70	482.63	0.77	481.86	653.44	66.6	0.01	9.10	0.91	0.30	0.5		5.23E-08	
10	45.2	311.64	0.52	311.12	482.70	49.2	0.01	6.30	0.63	0.21	0.4		4.90E-08	
4	100	689.48	0.88	688.60	860.18	87.7	0.00	4.10	1.03	0.34	0.4		4.47E-08	
												average	5.02E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

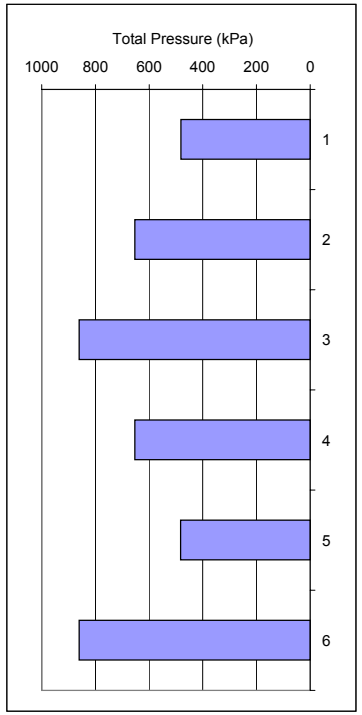
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

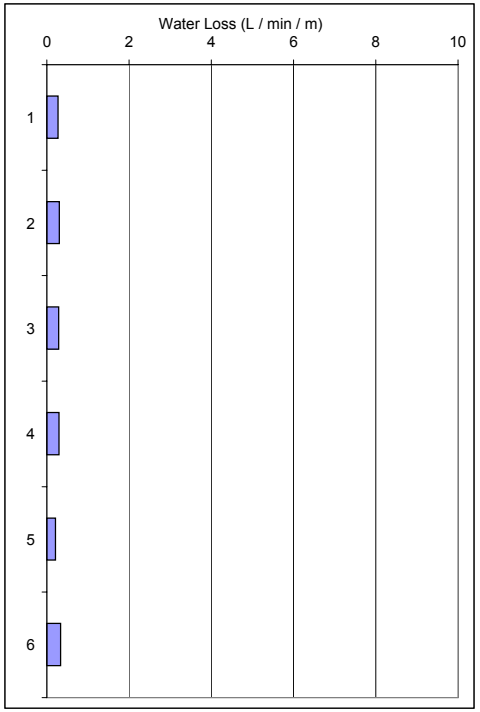
Interpreted Lugeon Value: 1

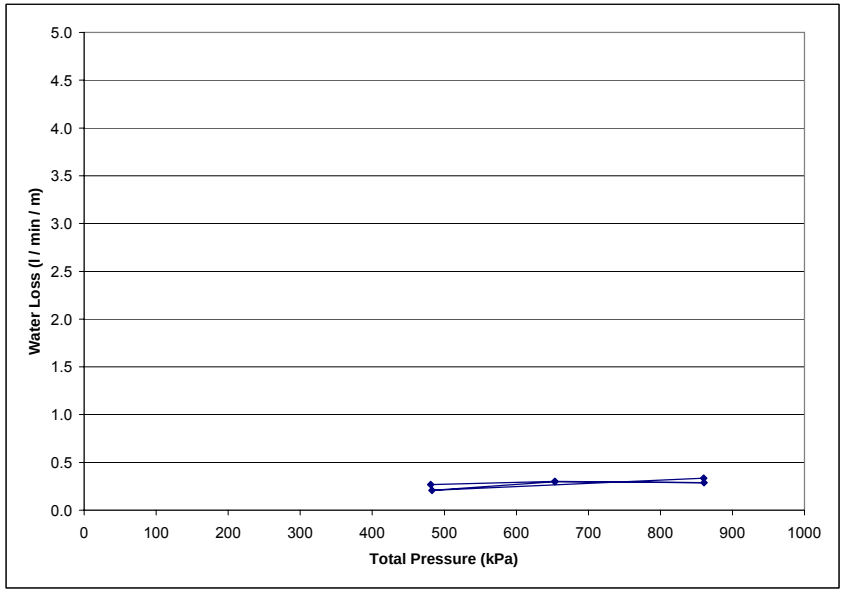
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 5.0 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 06-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT:
Height of Gauge: 37"
Stick Up:

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 360psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 1:10pm
Start Flushing: 12:17pm
End Flushing: 12:35pm
End Packer Testing: 2:24pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m³ Start / Finish	Volume	Rate (l/min)	Remarks
		123		1:10		8.3337			presssure occasonally dropping to 20psi, leakage to surface.
12	45	133	10	1:12	2	8.3435	0.0098	4.90	
				1:12		8.3435			clean water
	45			1:14	2	8.3525	0.0090	4.50	
				1:14		8.3525			leakage continues
	47			1:16	2	8.358	0.0055	2.75	
				1:16		8.358			leakage slows
	45			1:18	2	8.3602	0.0022	1.10	
				1:18		8.3602			leakage stops
	45			1:20	2	8.3615	0.0013	0.65	
				1:20		8.3615			
	45			1:22	2	8.3623	0.0008	0.40	
				1:22		8.3623			
	46			1:24	2	8.3632	0.0009	0.45	
				1:24		8.3632			
	46			1:26	2	8.3639	0.0007	0.35	
				1:26		8.3639			
	46			1:28	2	8.3646	0.0007	0.35	
		123		1:30		8.3659			no leakage
	70	133	10	1:32	2	8.3677	0.0018	0.90	
				1:32		8.3677			pressure occasionally drops to 50 psi
	70			1:34	2	8.3692	0.0015	0.75	
				1:34		8.3692			
	70			1:36	2	8.3705	0.0013	0.65	
				1:36		8.3705			
	70			1:38	2	8.3721	0.0016	0.80	
				1:38		8.3721			
	70			1:40	2	8.3737	0.0016	0.80	
		123		1:41		8.3749			no leakage
	100	133	10	1:43	2	8.3772	0.0023	1.15	
				1:43		8.3772			
	100			1:45	2	8.3791	0.0019	0.95	
				1:45		8.3791			
	100			1:47	2	8.3809	0.0018	0.90	
				1:47		8.3809			
	100			1:49	2	8.3824	0.0015	0.75	
				1:49		8.3824			ok
	100			1:51	2	8.3847	0.0023	1.15	maybe recorded
				1:51		8.3847			at wrong times
	100			1:53	2	8.3853	0.0006	0.30	ok
				1:53		8.3853			
	100			1:55	2	8.3866	0.0006	0.30	
		123		1:56		8.3872			
	70	133	10	1:58	2	8.3881	0.0000	0.00	
				1:58		8.3881			
	70			2:00	2	8.389	0.0009	0.45	
		123		2:00		8.389			occasional pressure drops to 50psi
	70	133	10	2:02	2	8.39	0.0010	0.50	
				2:02		8.39			
	70			2:04	2	8.3908	0.0008	0.40	
				2:04		8.3908			
	72			2:06	2	8.3917	0.0009	0.45	
		123		2:07		8.392			occasional drop in pressure to 20psi
	45	133	10	2:09	2	8.3924	0.0004	0.20	
				2:09		8.3924			no leakage
	45			2:11	2	8.3929	0.0005	0.25	
				2:11		8.3929			
	45			2:13	2	8.3935	0.0006	0.30	
				2:13		8.3935			
	45			2:15	2	8.3941	0.0006	0.30	
				2:15		8.3941			
	45			2:17	2	8.3945	0.0004	0.20	
		123		2:18		8.3954			Pmax check
	100	133	10	2:20	2	8.3987	0.0033	1.65	
				2:20		8.3987			
	100			2:22	2	8.4019	0.0032	1.60	
				2:22		8.4019			
	100			2:24	2	8.405	0.0031	1.55	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 37.49m to 40.54m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 6/05
Static W.L. below stick-up:	18.33 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	16.55 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	40.54 m
Top of Interval B.G.L.:	37.49 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	39.02 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45.6	314.40	0.36	314.04	485.62	49.5	0.00	4.40	0.440	0.144	0.3		3.40E-08	
10	70	482.63	0.65	481.98	653.56	66.6	0.01	7.80	0.780	0.256	0.4		4.48E-08	
10	100	689.48	0.62	688.85	860.43	87.7	0.01	7.50	0.750	0.246	0.3	1	3.27E-08	
10	70.4	485.39	0.36	485.03	656.60	66.9	0.00	4.50	0.450	0.148	0.2		2.57E-08	
10	45	310.26	0.20	310.07	481.64	49.1	0.00	2.50	0.250	0.082	0.2		1.95E-08	
6	100	689.48	1.44	688.04	859.61	87.6	0.01	9.60	1.600	0.525	0.6		6.98E-08	
												average	3.78E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

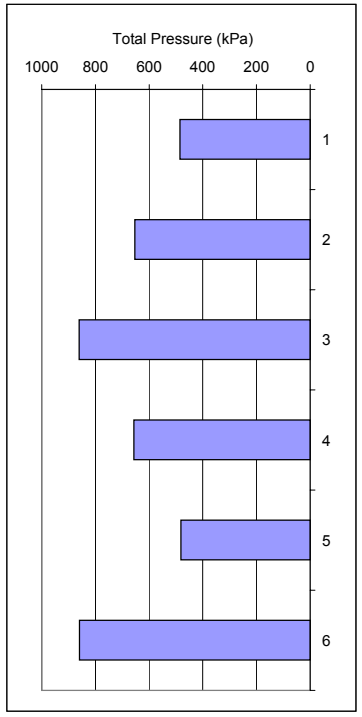
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

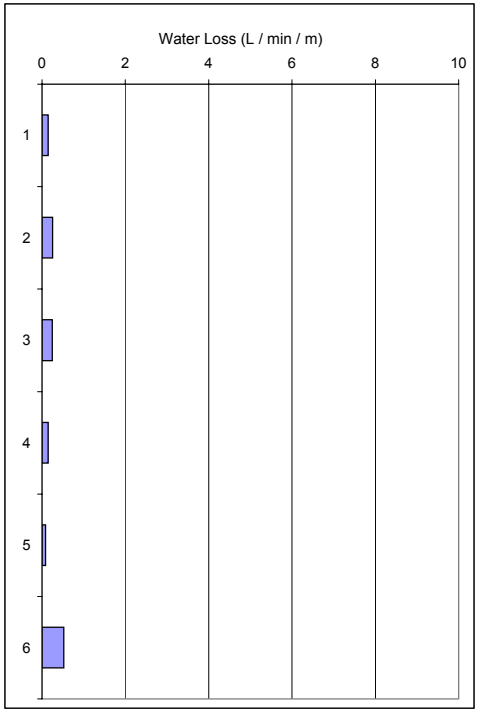
Interpreted Lugeon Value: 1

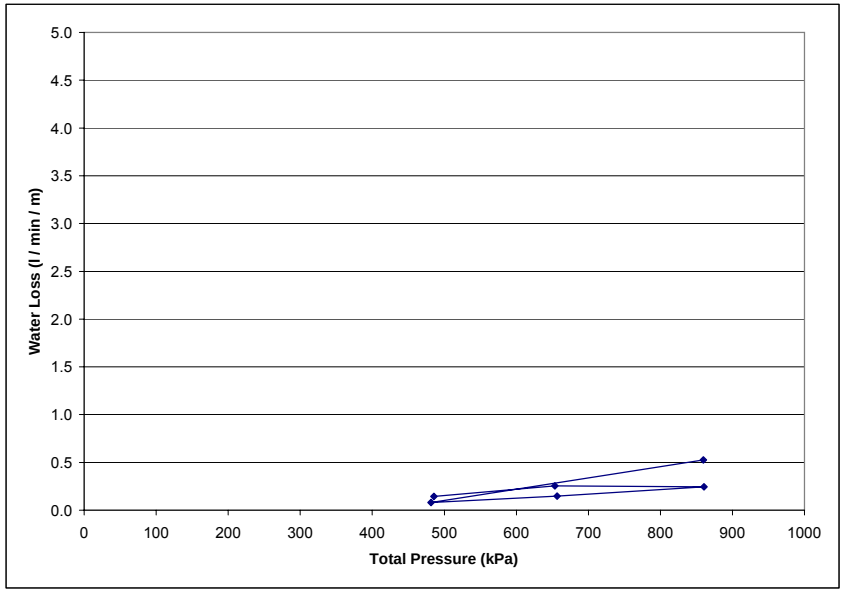
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 3.8 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 06-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT:
Height of Gauge:
Stick Up:

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 630psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing:
Start Flushing:
End Flushing:
End Packer Testing:

Packer Setup Type: Single

BLANK TEST - No water flow out of Bottem Paker

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
				3:10		8.4179			
13	10	133		3:11	1	8.4193	0.0014	1.40	
				3:11		8.4193			
	10			3:12	1	8.421	0.0017	1.70	
				3:12		8.421			
	10			3:13	1	8.4225	0.0015	1.50	
				3:14		8.4254			
	20			3:15	1	8.4275	0.0021	2.10	
				3:15		8.4275			
	20			3:16	1	8.429	0.0015	1.50	
				3:16		8.429			
	20			3:17	1	8.431	0.0020	2.00	
				3:18		8.434			
	30			3:19	1	8.4367	0.0027	2.70	
				3:19		8.4367			
	30			3:20	1	8.4392	0.0025	2.50	
				3:20		8.4392			
	30			3:21	1	8.4417	0.0025	2.50	
				3:22		8.4453			
	40			3:23	1	8.4485	0.0032	3.20	
				3:23		8.4485			
	40			3:25	2	8.4538	0.0000	0.00	
				3:26		8.458			
	50			3:27	1	8.4619	0.0081	4.05	
				3:27		8.4619			Surface leak
	50			3:28	1	8.466	0.0041	4.10	
				3:28					
	50			3:30	1		0.0000	0.00	
									Something is very WRONG with this test since the leakage from the system is much greater than in any other test.
									Stopped and looked at packer even at very low pressures.
									Following lowering of the pressure the top packer came out but the lower packer remained in hole.
									Couple phone calls and the decision was to try to get the packer with drill rods if not then cement it in place. 4:00 - 5:30pm
									Drillers went out at 5:15 to attempt.
									By the looks of the threads, it looks like the lower packer just came unthreaded when it was lowered.
									This partial threading maybe the reason behind the initial leaks.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 07-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT:
Height of Gauge: 37"
Stick Up:

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time
Start Packer Testing:
Start Flushing:
End Flushing:
End Packer Testing:

Packer Setup Type: Single BLANK TEST

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
									Total of 128' of drill rods.
14	10			11:39 11:41	2	8.5583 8.5583	0.0000	0.00	
	10			11:41 11:43	2	8.5583 8.5584	0.0001	0.05	
	30			11:44 11:46	2	8.5585 8.5586	0.0001	0.05	
	30			11:46 11:48	2	8.5586 8.5587	0.0001	0.05	
	50			11:49 11:51	2	8.5587 8.5588	0.0001	0.05	
	50			11:51 11:53	2	8.5588 8.5588	0.0000	0.00	
	70			11:54 11:56	2	8.559 8.5591	0.0001	0.05	
	70			11:56 11:58	2	8.5591 8.5591	0.0000	0.00	
	100			11:59 12:01	2	8.5591 8.5592	0.0001	0.05	
	100			12:01 12:03	2	8.5592 8.5592	0.0000	0.00	

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-25

Date: 07-Sep-05
Client: D & T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Right Abutment
Personnel: Gerry Ferris
Depth to WT:
Height of Gauge: 37"
Stick Up:

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350psi
Water Flushed (Vol/time/Until Clean): Until Clean

Time Start Packer Testing: 12:25pm
Start Flushing:
End Flushing:
End Packer Testing: 1:40pm

Test #	Gauge Pressure (psi)	Depth ft From / TO	Test Length (ft)	Time Start / Finish	Elapsed Time (min)	Flow Meter m^3 Start / Finish	Volume	Rate (l/min)	Remarks
		103		12:40		8.6644			Clean water
15	45	133	30	12:42	2	8.6651	0.0007	0.35	
				12:42		8.6651			occasional pressure surges upto 55psi
	45			12:44	2	8.6658	0.0007	0.35	
				12:44		8.6658			
	45			12:46	2	8.6663	0.0005	0.25	
				12:46		8.6663			
	45			12:48	2	8.6668	0.0005	0.25	
				12:48		8.6668			
	45			12:50	2	8.6676	0.0008	0.40	
		103		12:51		8.6684			
	70	133	30	12:53	2	8.6693	0.0009	0.45	
				12:53		8.6693			pressure occasionally dropping to 45psi
	74			12:55	2	8.6702	0.0009	0.45	
				12:55		8.6702			
	72			12:57	2	8.6712	0.0010	0.50	
				12:57		8.6712			
	74			12:59	2	8.6721	0.0009	0.45	
				12:59		8.6721			
	72			1:01	2	8.673	0.0009	0.45	
		103		1:02		8.6736			no leakage
	100	133	30	1:04	2	8.6748	0.0012	0.60	
				1:04		8.6748			not sure about these readings top one ok
	100			1:07	3	8.6773	0.0025	0.83	
				1:07		8.6773			not sure about these readings
	100			1:08	1	8.6769	-0.0004	-0.40	
				1:08		8.6769			not sure about these readings bottom one ok
	100			1:10	2	8.678	0.0011	0.55	
				1:10		8.678			
	100			1:12	2	8.6791	0.0011	0.55	
				1:12		8.6791			
	100			1:14	2	8.6802	0.0011	0.55	
		103		1:15		8.6804			
	70	130	30	1:17	2	8.6813	0.0009	0.45	
				1:17		8.6813			
	70			1:19	2	8.6822	0.0009	0.45	
				1:19		8.6822			
	72			1:21	2	8.6829	0.0007	0.35	
				1:21		8.6829			
	72			1:23	2	8.6837	0.0008	0.40	
				1:23		8.6837			
	70			1:25	2	8.6845	0.0008	0.40	
		103		1:26		8.6845			
	46	130	30	1:28	2	8.685	0.0005	0.25	
				1:28		8.685			
	45			1:30	2	8.6856	0.0006	0.30	
		103		1:30		8.6856			
	45	130	30	1:32	2	8.6862	0.0006	0.30	
				1:32		8.6862			
	46			1:34	2	8.6869	0.0007	0.35	
				1:34		8.6869			
	46			1:36	2	8.6876	0.0007	0.35	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-25
Water Test Interval: 31.39m to 40.54m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Right Abutment
Coordinates*:	6914104 N
	585919 E
Collar Elevation:	1181 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 7/05
Static W.L. below stick-up:	18.33 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	16.55 m (vertical)
Height of gauge A.G.L.:	0.94 m (vertical)
Bottom of Interval B.G.L.:	40.54 m
Top of Interval B.G.L.:	31.39 m
Length of Interval L:	9.15 m
Middle of Interval to D.F.:	35.97 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45	310.26	0.26	310.01	481.58	49.1	0.00	3.20	0.3200	0.035	0.1		1.04E-08	
10	72.4	499.18	0.37	498.81	670.38	68.3	0.00	4.60	0.4600	0.050	0.1		1.07E-08	
10	100	689.48	0.44	689.03	860.61	87.7	0.01	5.40	0.5400	0.059	0.1	1	9.81E-09	
10	70.8	488.15	0.33	487.82	659.39	67.2	0.00	4.10	0.4100	0.045	0.1		9.72E-09	
10	45.4	313.02	0.25	312.77	484.35	49.4	0.00	3.10	0.3100	0.034	0.1		1.00E-08	
												average	1.01E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

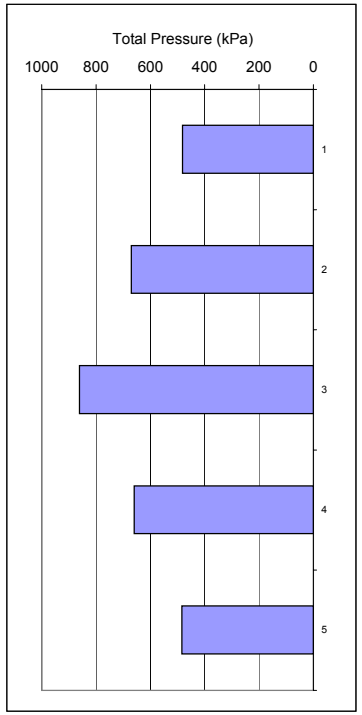
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

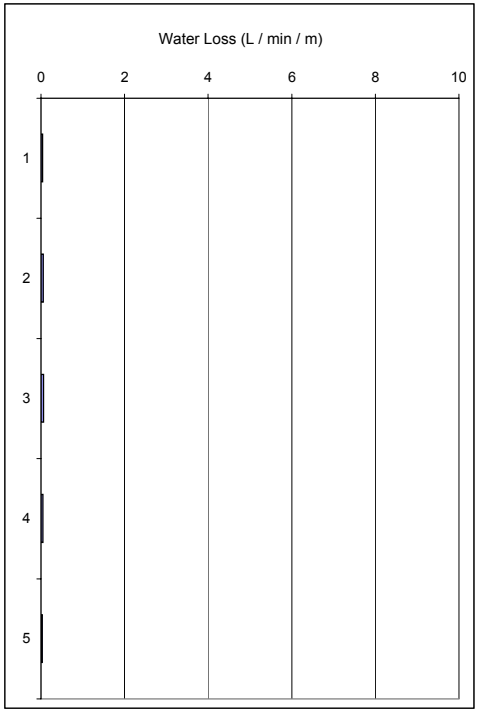
Interpreted Lugeon Value: 1

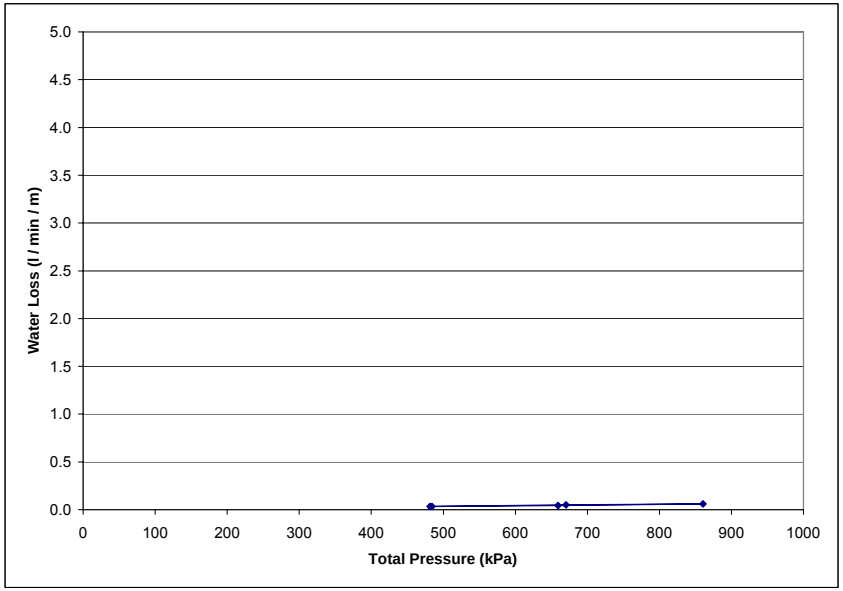
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.0 \times 10^{-8}$ m/sec







BGC05-26

BGC Engineering Inc.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-26

Date: 09-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: Gerry Ferris
Depth to WT: 3.84 m
Height of Gauge: 0.813 m
Stick Up: 1.7526 m

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 9:20am
Start Flushing: 8:30am
End Flushing: 9:15am
End Packer Testing: 11:11am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		17.5		9:53		8.7231			
1	5	28	10.5	9:55	2	8.7284	0.0053	2.65	
				9:55		8.7284			
	5			9:58	3	8.7362	0.0078	2.60	
				9:58		8.7362			
	5			9:59	1	8.7385	0.0023	2.30	
				9:59		8.7385			
	5			10:01	2	8.7435	0.0050	2.50	
				10:01		8.7435			
	5			10:03	2	8.7483	0.0048	2.40	
		17.5		10:05		8.7685			
	10	28	10.5	10:07	2	8.7858	0.0173	8.65	
				10:07		8.7858			
	10			10:09	2	8.8017	0.0159	7.95	
				10:09		8.8017			
	10			10:11	2	8.817	0.0153	7.65	
				10:11		8.817			
	10			10:13	2	8.8303	0.0133	6.65	
				10:13		8.8303			
	10			10:15	2	8.8447	0.0144	7.20	
				10:15		8.8447			
	10			10:17	2	8.8588	0.0141	7.05	
				10:17		8.8588			
	10			10:19	2	8.8723	0.0135	6.75	
		17.5		10:21		8.8986			
	20	28	10.5	10:23	2	8.922	0.0234	11.70	
		17.5		10:23		8.922			
	20	28	10.5	10:25	2	8.9465	0.0245	12.25	
				10:25		8.9465			
	20			10:27	2	8.9685	0.0220	11.00	
				10:27		8.9685			
	20			10:29	2	8.9938	0.0253	12.65	
				10:29		8.9938			
	20			10:31	2	9.0184	0.0246	12.30	
				10:31		9.0184			
	20			10:33	2	9.0425	0.0241	12.05	
		17.5		10:34		9.0442			
	10	28	10.5	10:36	2	9.0521	0.0079	3.95	
		17.5		10:36		9.0521			
	10	28	10.5	10:38	2	9.0627	0.0106	5.30	
		17.5		10:38		9.0627			
	10	28	10.5	10:40	2	9.0745	0.0118	5.90	
				10:40		9.0745			
	10			10:42	2	9.0853	0.0108	5.40	
				10:42		9.0853			
	10			10:44	2	9.096	0.0107	5.35	
				10:44		9.096			
	10			10:46	2	9.1064	0.0104	5.20	
				10:46		9.1064			
	10			10:48	2	9.1169	0.0105	5.25	
		17.5		10:49		9.1198			
	6	28	10.5	10:51	2	9.1229	0.0031	1.55	
		17.5		10:51		9.1198			
	6	28	10.5	10:53	2	9.1229	0.0031	1.55	
		17.5		10:53		9.1198			
	6	28	10.5	10:55	2	9.1229	0.0031	1.55	
				10:55		9.1229			
	6			10:57	2	9.1257	0.0028	1.40	
				10:57		9.1257			
	6			10:59	2	9.1289	0.0032	1.60	
				10:59		9.1289			
	6			11:01	2	9.1317	0.0028	1.40	
				11:01		9.1317			
	6			11:03	2	9.1339	0.0022	1.10	
		17.5		11:05		9.1578			
	20	28	10.5	11:07	2	9.187	0.0292	14.60	
				11:07		9.187			
	20			11:09	2	9.2147	0.0277	13.85	
				11:09		9.2147			
	20			11:11	2	9.2425	0.0278	13.90	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26
Water Test Interval: 5.33m to 8.53m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 9/05
Static W.L. below stick-up:	3.81 m
Stick-up A.G.L. along dip:	1.75 m
Static W.L. below G.L.:	2.06 m (vertical)
Height of gauge A.G.L.:	0.81 m (vertical)
Bottom of Interval B.G.L.:	8.53 m
Top of Interval B.G.L.:	5.33 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	6.93 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	5	34.47	2.44	32.03	60.19	6.1	0.03	25.20	2.52	0.79	13.1		1.51E-06	
10	10	68.95	9.31	59.64	87.80	8.9	0.07	70.60	7.06	2.21	25.1		2.91E-06	
10	20	137.90	27.08	110.82	138.97	14.2	0.14	143.90	14.39	4.50	32.4	13	3.74E-06	
10	10	68.95	6.46	62.49	90.64	9.2	0.05	54.20	5.42	1.69	18.7		2.16E-06	
10	6	41.37	1.25	40.12	68.28	7.0	0.01	14.10	1.41	0.44	6.5		7.47E-07	
6	20	137.90	26.27	111.63	139.78	14.2	0.08	84.70	14.12	4.41	31.6		3.65E-06	
												average	2.45E-06	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

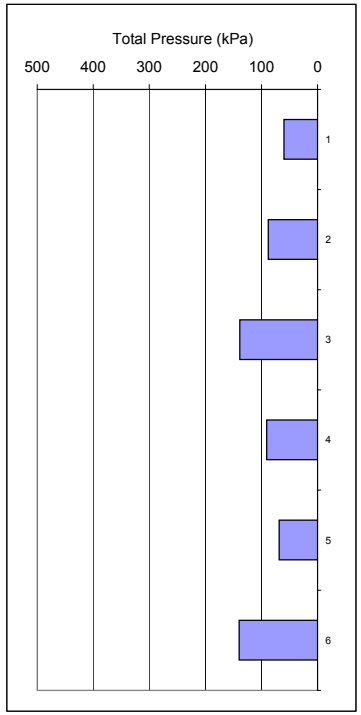
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

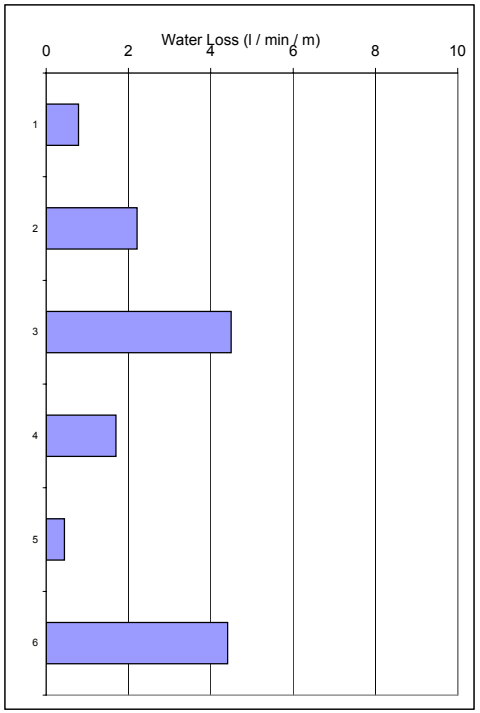
Interpreted Lugeon Value: 13

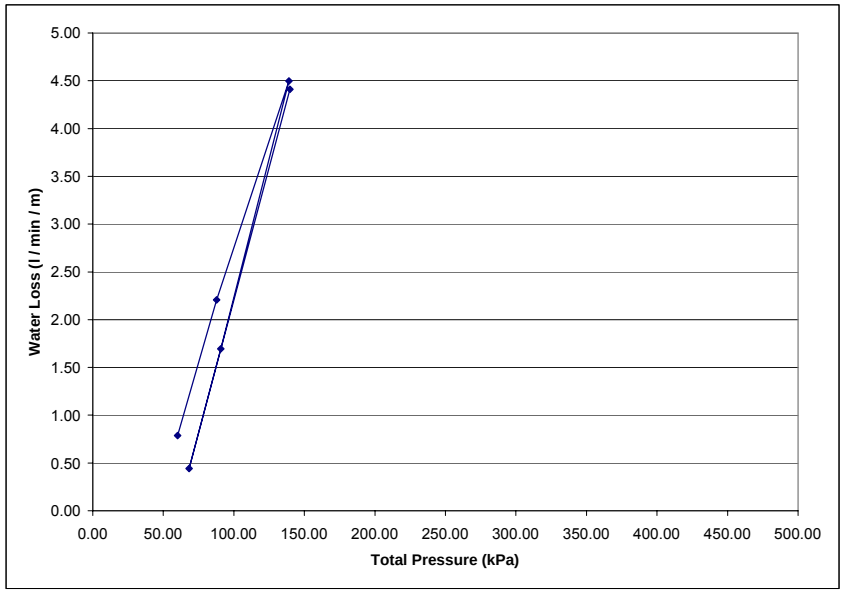
Interpreted flow pattern (Houlsby 1990) : Dilation.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.4 \times 10^{-6}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-26

Date: 09-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: Gerry Ferris
Depth to WT: 2.74 m
Height of Gauge: 0.813 m
Stick Up: 1.5494 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 90°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 6:02pm
Start Flushing: 5:10pm
End Flushing: 5:40pm
End Packer Testing: 7:06pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		27.5		6:02		9.2559			
2	15	38	10.5	6:04	2	9.2573	0.0014	0.700	
				6:04		9.2573			
				6:06	2	9.2586	0.0013	0.650	
				6:06		9.2586			
				6:08	2	9.26	0.0014	0.700	
				6:08		9.26			
				6:10	2	9.261	0.0010	0.500	
				6:10		9.261			
				6:12	2	9.2623	0.0013	0.650	
		27.5		6:13		9.2637			
	28	38	10.5	6:15	2	9.2658	0.0021	1.050	
				6:15		9.2658			
				6.17	2	9.2681	0.0023	1.150	
				6:17		9.2681			
				6:19	2	9.2701	0.0020	1.000	
				6:19		9.2701			
				6:21	2	9.2723	0.0022	1.100	
				6:21		9.2723			
				6:23	2	9.2743	0.0020	1.000	
		27.5		6:25		9.278			
	43	38	10.5	6:27	2	9.2816	0.0036	1.800	
				6:27		9.2816			
				6:29	2	9.2853	0.0037	1.850	
				6:29		9.2853			
				6:31	2	9.2889	0.0036	1.800	
				6:31		9.2889			
				6:33	2	9.2928	0.0039	1.950	
				6:33		9.2928			
				6:35	2	9.2965	0.0037	1.850	
		27.5		6:37		9.2985			
	28	38	10.5	6:39	2	9.3012	0.0027	1.350	
				6:39		9.3012			
				6:41	2	9.3034	0.0022	1.100	
				6:41		9.3034			
				6:43	2	9.306	0.0026	1.300	
				6:43		9.306			
				6:45	2	9.3082	0.0022	1.100	
				6:45		9.3082			
				6:47	2	9.3105	0.0023	1.150	
		27.5		6:49		9.3117			
	15	38	10.5	6:51	2	9.3132	0.0015	0.750	
				6:51		9.3132			
				6:53	2	9.3146	0.0014	0.700	
				6:53		9.3146			
				6:55	2	9.316	0.0014	0.700	
				6:55		9.316			
				6:57	2	9.3173	0.0013	0.650	
				6:57		9.3173			
				6:59	2	9.3188	0.0015	0.750	potentially some washout?
		27.5		7:00		9.3218			
	43	38	10.5	7:02	2	9.3259	0.0041	2.050	
				7:02		9.3259			
				7:04	2	9.33	0.0041	2.050	
				7:04		9.33			
				7:06	2	9.3335	0.0035	1.750	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26
Water Test Interval: 8.53m to 11.58m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 9/05
Static W.L. below stick-up:	2.74 m
Stick-up A.G.L. along dip:	1.55 m
Static W.L. below G.L.:	1.19 m (vertical)
Height of gauge A.G.L.:	0.81 m (vertical)
Bottom of Interval B.G.L.:	11.58 m
Top of Interval B.G.L.:	8.53 m
Length of Interval L:	3.05 m
Middle of Interval to D.F.:	10.06 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	15	103.42	0.53	102.89	122.51	12.5	0.01	6.40	0.6400	0.210	1.7		1.96E-07	
10	28	193.05	0.91	192.14	211.76	21.6	0.01	10.60	1.0600	0.348	1.6		1.88E-07	
10	43	296.47	1.70	294.78	314.40	32.0	0.02	18.50	1.8500	0.607	1.9	2	2.21E-07	
10	28	193.05	1.04	192.01	211.63	21.6	0.01	12.00	1.2000	0.393	1.9		2.13E-07	
10	15	103.42	0.59	102.83	122.45	12.5	0.01	7.10	0.7100	0.233	1.9		2.18E-07	
6	43	296.47	1.80	294.67	314.29	32.0	0.01	11.70	1.9500	0.639	2.0		2.33E-07	
												average	2.11E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

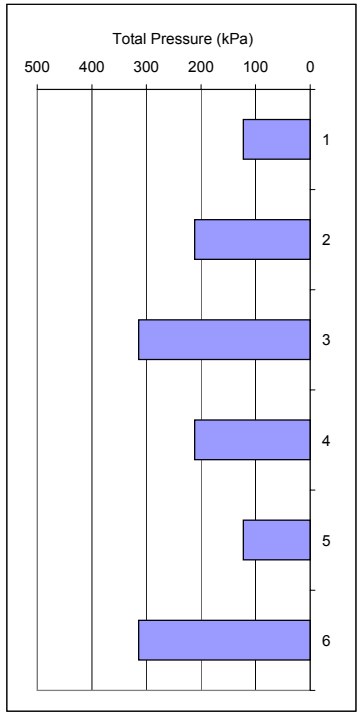
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

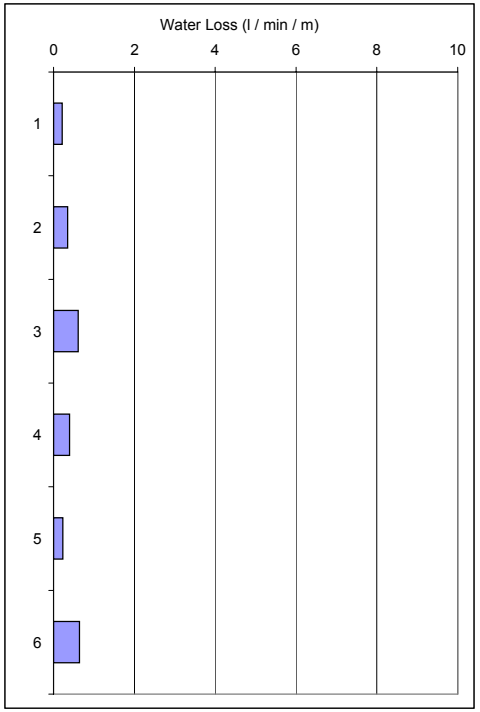
Interpreted Lugeon Value: 2

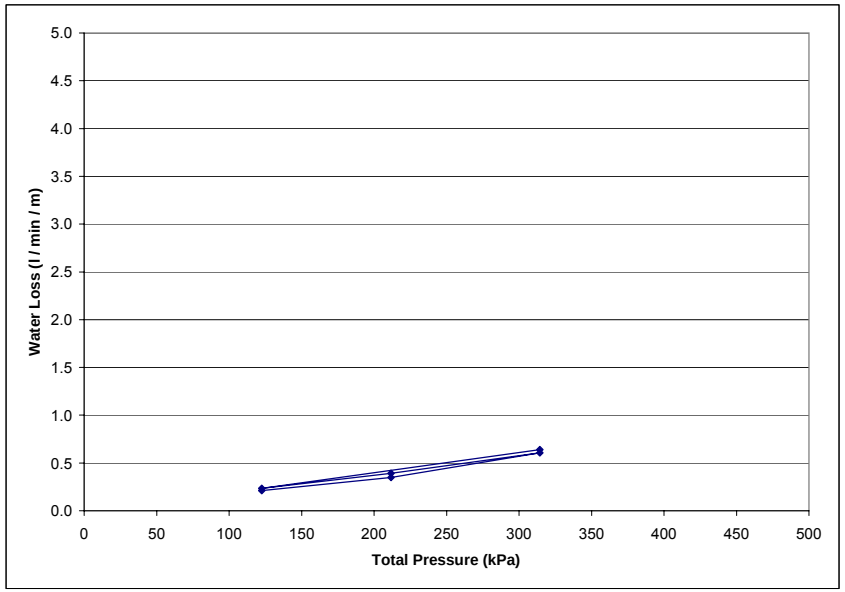
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.1 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-26

Date: 10-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: GWF & CB
Depth to WT: 2.74 m
Height of Gauge: 0.762 m
Stick Up: 1.55 m

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 90°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 1:11pm
Start Flushing: 12:42pm
End Flushing: 1:00pm
End Packer Testing: 2:44pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		35.5		2:13		9.4984			
3	7	48	12.5	2:15	2	9.5138	0.0154	7.70	sevre leakage
				2:15		9.5138			
	6			2:17	2	9.5285	0.0147		
				2:17		9.5285			
	6			2:19	2	9.5433	0.0148	7.40	
				2:19		9.5433			
	6			2:21	2	9.5584	0.0151	7.55	
				2:21		9.5584			
	6			2:23	2	9.5743	0.0159	7.95	
		35.5		2:24		9.5898			
	20	48	12.5	2:26	2	9.621	0.0312	15.60	
				2:26		9.621			
	20			2:28	2	9.6493	0.0283	14.15	
				2:28		9.6493			
	20			2:30	2	9.6771	0.0278	13.90	
				2:30		9.6771			
	20			2:32	2	9.7055	0.0284	14.20	
				2:32		9.7055			
	20			2:34	2	9.7331	0.0276	13.80	
		35.5		2:34		9.7331			
	20	48	12.5	2:36	2	9.7605	0.0274	13.70	
				2:36		9.7605			
	20			2:38	2	9.7895	0.0290	14.50	
				2:38		9.7895			
	20			2:40	2	9.8185	0.0290	14.50	
				2:40		9.8185			
	20			2:42	2	9.848	0.0295	14.75	
				2:42		9.848			
	20			2:44	2	9.8765	0.0285	14.25	severe leakage continued for entire test
	The leakage is likely the result of a kink in the nitrogen supply line, this was not reconized until attempting test 6.								
	This test result should be ignored								

This test should be ignored due to the leakage

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Packer Test - Field Form

Hole # BGC05-26

Date: 10-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: CB
Depth to WT: 2.737104 m
Height of Gauge: 0.76 m
Stick Up: 1.5494 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 3:50pm
Start Flushing:
End Flushing:
End Packer Testing: 5:25pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		27.5		4:01		10.0873			
4	20	48	20.5	4:03	2	10.0909	0.0036	1.80	
				4:03		10.0909			
	20			4:05	2	10.0941	0.0032	1.60	
				4:05		10.0941			
	20			4:07	2	10.0972	0.0031	1.55	
				4:07		10.0972			
	20			4:09	2	10.1001	0.0029	1.45	
				4:09		10.1001			
	20			4:11	2	10.1057	0.0056	2.80	likely reading noted for 4:11 is actually at 4:12
				4:11		10.1001			
	20			4:13	2	10.1057	0.0056	2.80	
		27.5		4:15		10.1111			
	39	48	20.5	4:17	2	10.1152	0.0041	2.05	
				4:17		10.1152			
	39			4:19	2	10.1191	0.0039	1.95	
				4:19		10.1191			
	39			4:21	2	10.123	0.0039	1.95	
				4:21		10.123			
	39			4:23	2	10.1268	0.0038	1.90	
				4:23		10.1268			
	39			4:25	2	10.1307	0.0039	1.95	
		27.5		4:28		10.1565			
	55	48	20.5	4:30	2	10.178	0.0215	10.75	likely unseated the Packer
		27.5		4:30		10.178			
	55	48	20.5	4:32	2	10.2083	0.0303	15.15	likely unseated the Packer
		27.5		4:32		10.2083			
	55	48	20.5	4:34	2	10.2492	0.0409	20.45	likely unseated the Packer
		27.5		4:34		10.2492			
	55	48	20.5	4:36	2	10.2955	0.0463	23.15	likely unseated the Packer
		27.5		4:36		10.2955			
	55	48	20.5	4:38	2	10.3445	0.0490	24.50	likely unseated the Packer
		27.5		4:38		10.3445			
	55	48	20.5	4:40	2	10.393	0.0485	24.25	likely unseated the Packer
				4:40		10.393			
	55			4:42	2	10.446	0.0530	26.50	
				4:42		10.446			
	55			4:44	2	10.4982	0.0522	26.10	
				4:44		10.4982			
	55			4:46	2	10.5608	0.0626	31.30	
				4:46		10.5608			
	55			4:48	2	10.6385	0.0777	38.85	
		27.5		4:50		10.6385			
	38	48	20.5	4:52	2	10.7755	0.1370	68.50	
		27.5		4:52		10.7755			
	38	48	20.5	4:54	2	10.8435	0.0680	34.00	
		27.5		4:54		10.8435			
	38	48	20.5	4:56	2	10.915	0.0715	35.75	
				4:56		10.915			
	38			4:58	2	10.9855	0.0705	35.25	
				4:58		10.9855			
	38			5:00	2	11.0605	0.0750	37.50	
				5:00		11.0605			
	38			5:02	2	11.139	0.0785	39.25	
				5:02		11.139			
	38			5:04	2	11.2152	0.0762	38.10	
		27.5		5:05		11.242			
	20	48	20.5	5:07	2	11.2855	0.0435	21.75	
				5:07		11.2855			
	20			5:09	2	11.3315	0.0460	23.00	
				5:09		11.3315			
	20			5:11	2	11.378	0.0465	23.25	
				5:11		11.378			
	20			5:13	2	11.4229	0.0449	22.45	
				5:13		11.4229			
	20			5:15	2	11.4671	0.0442	22.10	
		27.5		5:17		11.5525			
	45	48	20.5	5:19	2	11.653	0.1005	50.25	
				5:19		11.653			
	55			5:21	2	11.7458	0.0928	46.40	
				5:21		11.7458			
	55			5:23	2	11.8347	0.0889	44.45	
				5:23		11.8347			
	55			5:25	2	11.9132	0.0785	39.25	This test likely included the un seating of the packer at the 55 psi increament, and therefor the last series of tests should be ignored.
				5:25		11.9132			
	55			5:27	2	11.998	0.0848	42.40	Use only the first two pressure increament

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26

Water Test Interval: 8.53m to 14.63m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 10/05
Static W.L. below stick-up:	2.74 m
Stick-up A.G.L. along dip:	1.55 m
Static W.L. below G.L.:	1.19 m (vertical)
Height of gauge A.G.L.:	0.76 m (vertical)
Bottom of Interval B.G.L.:	14.63 m
Top of Interval B.G.L.:	8.53 m
Length of Interval L:	6.10 m
Middle of Interval to D.F.:	11.58 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20.2	139.27	1.41	137.87	157.00	16.0	0.02	15.70	1.5700	0.257	1.6		2.17E-07	
10	39	268.90	1.82	267.08	286.21	29.2	0.02	19.60	1.9600	0.321	1.1		1.49E-07	
												2		
											average		1.83E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

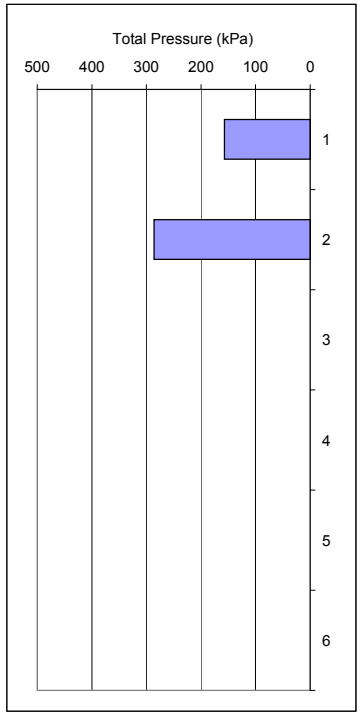
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

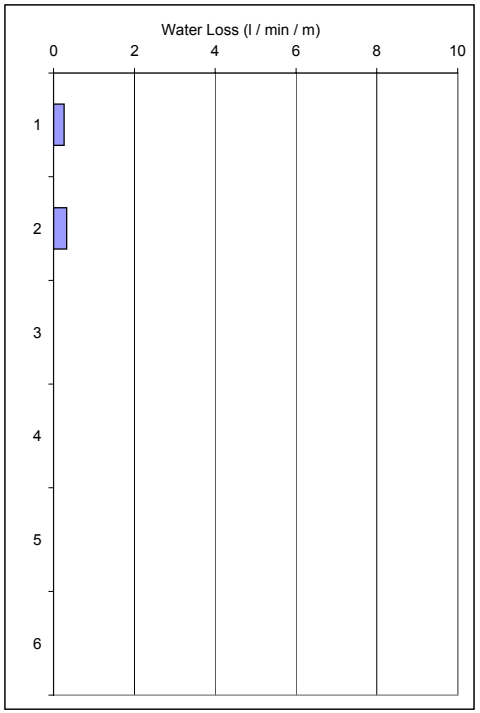
Interpreted Lugeon Value: 2

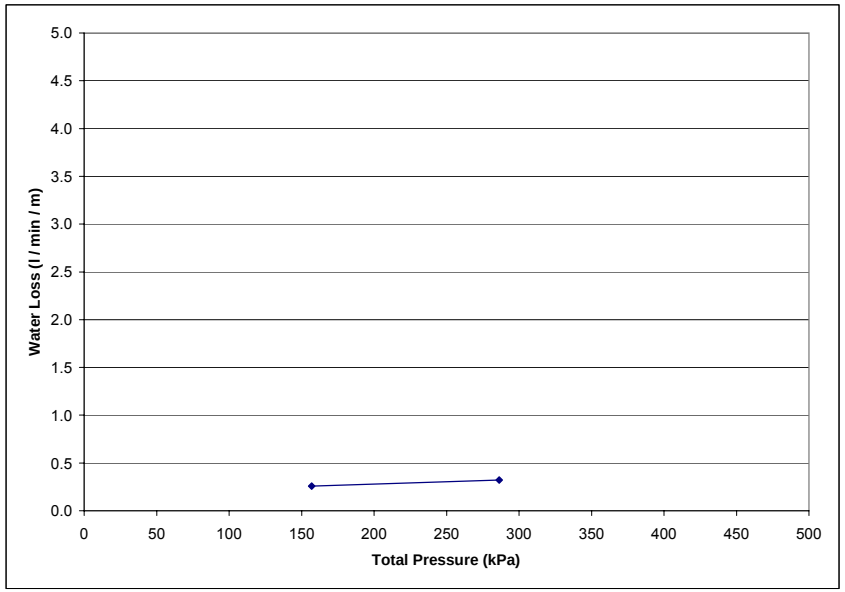
Interpreted flow pattern (Houlsby 1990) : Likely Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.8 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
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Packer Test - Field Form

Hole # BGC05-26

Date: 11-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Road
Personnel: GWF & CB
Depth to WT: 3.18516 m
Height of Gauge:
Stick Up: 1.778 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 90°
Pump Capacity:
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 9:12am
Start Flushing: 8:45am
End Flushing: 9:05am
End Packer Testing: 10:25am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		47.5		9:12		12.0063			
5	21	58	10.5	9:14	2	12.0063	0.0000	0.00	
				9:14		12.0063			
	21			9:16	2	12.0064	0.0001	0.05	
				9:16		12.0064			
	20			9:18	2	12.0064	0.0000	0.00	
				9:18		12.0064			
	21			9:20	2	12.0064	0.0000	0.00	
				9:20		12.0064			
	21			9:22	2	12.0064	0.0000	0.00	
		47.5		9:23		12.0069			
	45	58	10.5	9:25	2	12.0072	0.0003	0.15	
				9:25		12.0072			
	44			9:27	2	12.0075	0.0003	0.15	
				9:27		12.0075			
	45			9:29	2	12.008	0.0005	0.25	
				9:29		12.008			
	45			9:31	2	12.0083	0.0003	0.15	
				9:31		12.0083			
	45			9:33	2	12.0087	0.0004	0.20	
		47.5		9:35		12.0095			
	74	58	10.5	9:37	2	12.01	0.0005	0.25	
				9:37		12.01			
	74			9:39	2	12.0108	0.0008	0.40	
				9:39		12.0108			
	74			9:41	2	12.0112	0.0004	0.20	
				9:41		12.0112			
	74			9:43	2	12.0119	0.0007	0.35	
				9:43		12.0119			
	74			9:45	2	12.0125	0.0006	0.30	
		47.5		9:48		12.0127			
	45	58	10.5	9:50	2	12.0129	0.0002	0.10	
		47.5		9:50		12.0129			
	45	58	10.5	9:52	2	12.0131	0.0002	0.10	
				9:52		12.0131			
	45			9:54	2	12.0133	0.0002	0.10	
				9:54		12.0133			
	45			9:56	2	12.0135	0.0002	0.10	
				9:56		12.0135			
	45			9:58	2	12.0139	0.0004	0.20	
				9:58		12.0139			
	45			10:00	2	12.014	0.0001	0.05	
		47.5		10:01		12.014			
	21	58	10.5	10:03	2	12.014	0.0000	0.00	
				10:03		12.0141			
	21			10:05	2	12.0141	0.0000	0.00	
				10:06		12.0141			
	21			10:08	2	12.0141	0.0000	0.00	
				10:08		12.0141			
	21			10:10	2	12.0141	0.0000	0.00	
				10:10		12.0141			
	21			10:12	2	12.0141	0.0000	0.00	
		47.5		10:12		12.0145			
	70	58	10.5	10:14	2	12.0152	0.0007	0.35	
				10:14		12.0152			
	70			10:16	2	12.0155	0.0003	0.15	
				10:16		12.0155			
	70			10:18	2	12.0162	0.0007	0.35	
				10:18		12.0162			
	70			10:20	2	12.0168	0.0006	0.30	
				10:20		12.0168			
	70			10:22	2	12.0172	0.0004	0.20	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26
Water Test Interval: 14.49m to 17.68m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 11/05
Static W.L. below stick-up:	3.19 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	1.41 m (vertical)
Height of gauge A.G.L.:	0.71 m (vertical)
Bottom of Interval B.G.L.:	17.68 m
Top of Interval B.G.L.:	14.49 m
Length of Interval L:	3.19 m
Middle of Interval to D.F.:	16.09 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20.8	143.41	0.01	143.40	164.20	16.7	0.00	0.10	0.01	0.003	0.0		2.21E-09	
10	44.8	308.89	0.14	308.74	329.54	33.6	0.00	1.80	0.18	0.056	0.2		1.98E-08	
10	74	510.21	0.24	509.97	530.77	54.1	0.00	3.00	0.30	0.094	0.2	1	2.05E-08	
10	45	310.26	0.09	310.18	330.98	33.7	0.00	1.10	0.11	0.034	0.1		1.20E-08	
10	20.4	140.65	0.01	140.65	161.44	16.5	0.00	0.10	0.01	0.003	0.0		2.25E-09	
10	70	482.63	0.22	482.42	503.22	51.3	0.00	2.70	0.27	0.085	0.2		1.94E-08	
												average	1.27E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

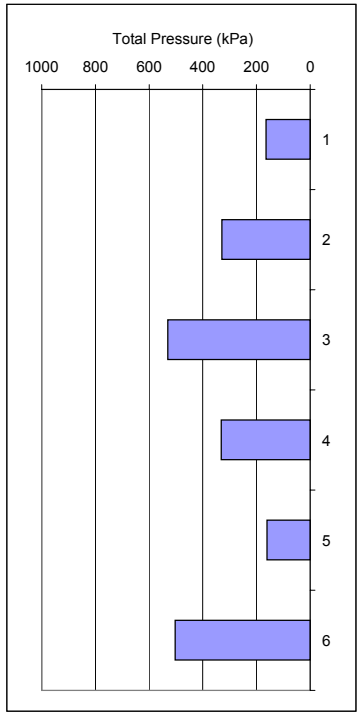
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

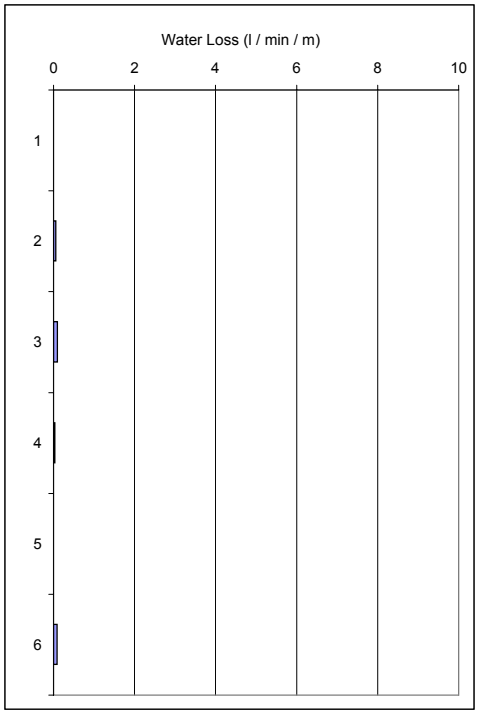
Interpreted Lugeon Value: 1

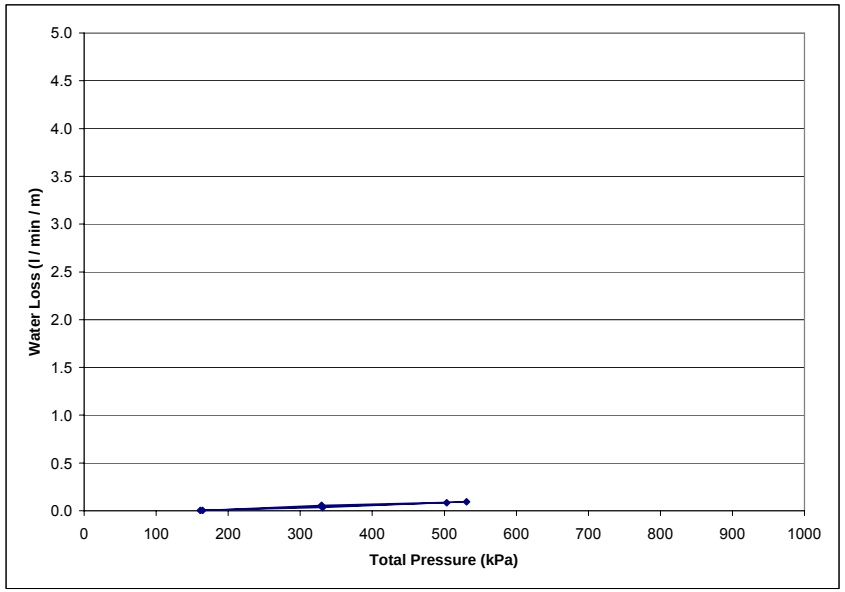
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.3 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-26

Date: 11-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: GWF & CB
Depth to WT: 3.19 m
Height of Gauge: 0.91 m
Stick Up: 1.78 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 90°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time Start Packer Testing: 6:16pm
Start Flushing: 3:00pm
End Flushing: 3:25pm
End Packer Testing: 7:21pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		57.5		6:16		16.5431			
6	45	68	10.5	6:18	2	16.5439	0.0008	0.40	
				6:18		16.5439			
	45			6:20	2	16.5444	0.0005	0.25	
				6:20		16.5444			
	45			6:22	2	16.5451	0.0007	0.35	
				6:22		16.5451			
	45			6:24	2	16.5455	0.0004	0.20	
				6:24		16.5455			
	45			6:26	2	16.546	0.0005	0.25	
		57.5		6:27		16.5464			
	70	68	10.5	6:29	2	16.5475	0.0011	0.55	
				6:29		16.5475			
				6:31	2	16.5485	0.0010	0.50	
				6:31		16.5485			
				6:33	2	16.5496	0.0011	0.55	
				6:33		16.5496			
				6:35	2	16.5508	0.0012	0.60	
				6:35		16.5508			
				6:37	2	16.5517	0.0009	0.45	
		57.5		6:38		16.5525			
	90	68	10.5	6:40	2	16.5541	0.0016	0.80	
				6:40		16.5541			
				6:42	2	16.5557	0.0016	0.80	
				6:42		16.5557			
				6:44	2	16.5571	0.0014	0.70	
				6:44		16.5571			
				6:46	2	16.5588	0.0017	0.85	
				6:46		16.5588			
				6:48	2	16.5601	0.0013	0.65	
		57.5		6:49		16.5605			
	70	68	10.5	6:51	2	16.5614	0.0009	0.45	
				6:51		16.5614			
				6:53	2	16.5623	0.0009	0.45	
				6:53		16.5623			
				6:55	2	16.5633	0.0010	0.50	
				6:55		16.5633			
				6:57	2	16.5642	0.0009	0.45	
				6:57		16.5642			
				6:59	2	16.565	0.0008	0.40	
		57.5		7:00		16.5651			
	45	68	10.5	7:02	2	16.5655	0.0004	0.20	
				7:02		16.5655			
				7:04	2	16.566	0.0005	0.25	
				7:04		16.566			
				7:06	2	16.5662	0.0002	0.10	
				7:06		16.5662			
				7:08	2	16.5669	0.0007	0.35	
				7:08		16.5669			
				7:10	2	16.5673	0.0004	0.20	
		57.5		7:11		16.5682			
	90	68	10.5	7:13	2	16.5694	0.0012	0.60	
				7:13		16.5694			
				7:15	2	16.5707	0.0013	0.65	
				7:15		16.5707			
				7:17	2	16.572	0.0013	0.65	
				7:17		16.572			
				7:19	2	16.5731	0.0011	0.55	
				7:19		16.5731			
				7:21	2	16.5742	0.0011	0.55	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26
Water Test Interval: 17.53m to 20.73m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 11/05
Static W.L. below stick-up:	3.19 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	1.41 m (vertical)
Height of gauge A.G.L.:	0.91 m (vertical)
Bottom of Interval B.G.L.:	20.73 m
Top of Interval B.G.L.:	17.53 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	19.13 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45	310.26	0.23	310.03	332.79	33.9	0.00	2.90	0.29	0.091	0.3		3.15E-08	
10	70	482.63	0.43	482.20	504.96	51.5	0.01	5.30	0.53	0.166	0.3		3.80E-08	
10	90	620.53	0.63	619.89	642.65	65.5	0.01	7.60	0.76	0.238	0.4	1	4.28E-08	
10	70	482.63	0.36	482.27	505.03	51.5	0.00	4.50	0.45	0.141	0.3		3.22E-08	
10	45	310.26	0.17	310.09	332.85	33.9	0.00	2.20	0.22	0.069	0.2		2.39E-08	
10	90	620.53	0.49	620.04	642.79	65.5	0.01	6.00	0.60	0.188	0.3		3.38E-08	
												average	3.37E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

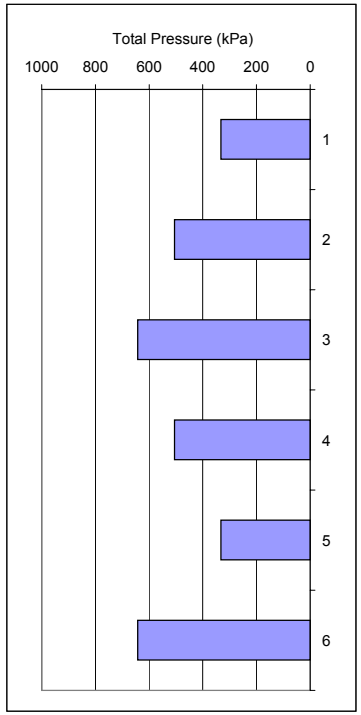
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

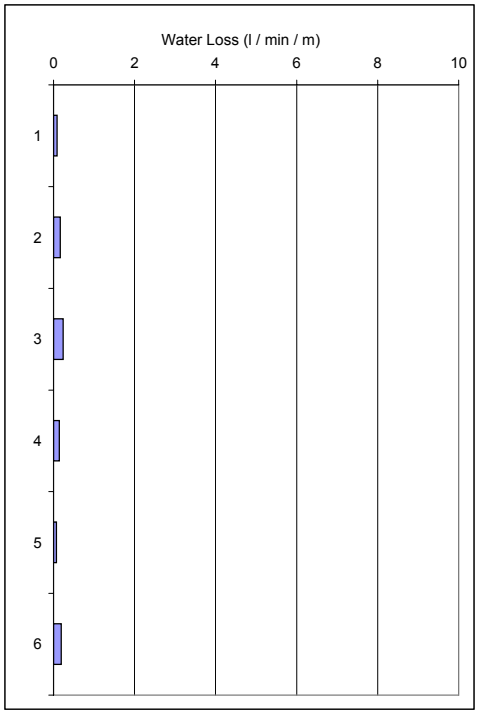
Interpreted Lugeon Value: 1

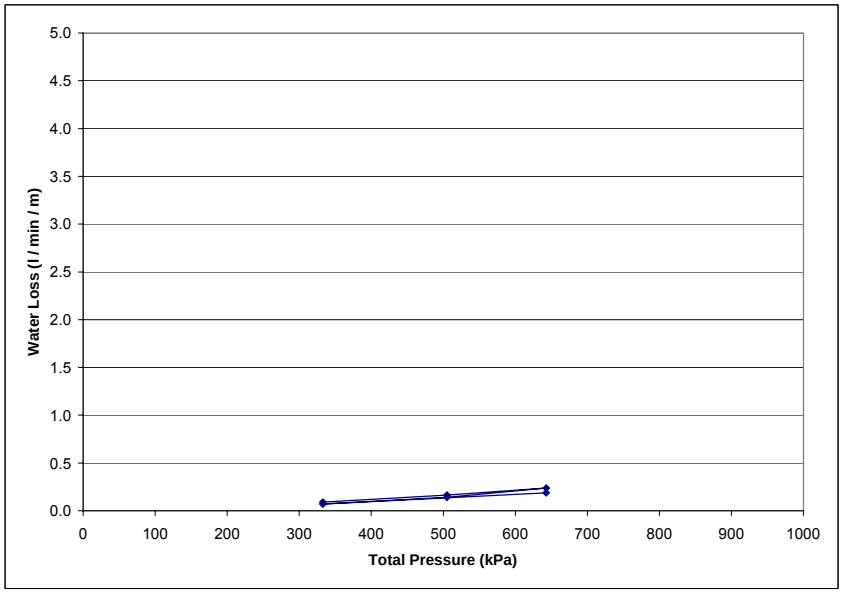
Interpretated flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 3.4 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-26

Date: 12-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: CB
Depth to WT: 2.01 m
Height of Gauge: 0.88 m
Stick Up: 1.73 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 90°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 9:40am
Start Flushing: 9:00am
End Flushing: 9:15am
End Packer Testing: 10:53am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		67.5		9:45		16.5819			
7	45	78	10.5	9:47	2	16.5823	0.0004	0.20	
				9:47		16.5823			
				9:49	2	16.5828	0.0005	0.25	
				9:49		16.5828			
				9:51	2	16.5831	0.0003	0.15	
				9:51		16.5831			
				9:53	2	16.5834	0.0003	0.15	
				9:53		16.5834			
				9:55	2	16.5835	0.0001	0.05	
		67.5		9:56		16.5838			
	70	78	10.5	9:58	2	16.5839	0.0001	0.05	
				9:58		16.5839			
				10:00	2	16.584	0.0001	0.05	
				10:00		16.584			
				10:02	2	16.5842	0.0002	0.10	
				10:02		16.5842			
				10:04	2	16.5843	0.0001	0.05	
				10:04		16.5843			
				10:06	2	16.5843	0.0000	0.00	
		67.5		10:07		16.5843			
	95	78	10.5	10:09	2	16.5843	0.0000	0.00	
				10:09		16.5843			
				10:11	2	16.5843	0.0000	0.00	
				10:11		16.5843			
				10:13	2	16.5844	0.0001	0.05	
				10:13		16.5844			
				10:15	2	16.5844	0.0000	0.00	
				10:15		16.5844			
				10:17	2	16.5844	0.0000	0.00	
		67.5		10:18		16.5844			
	70	78	10.5	10:20	2	16.5844	0.0000	0.00	
				10:20		16.5844			
				10:22	2	16.5844	0.0000	0.00	
				10:22		16.5844			
				10:24	2	16.5844	0.0000	0.00	
				10:24		16.5844			
				10:26	2	16.5844	0.0000	0.00	
				10:26		16.5844			
				10:28	2	16.5844	0.0000	0.00	
		67.5		10:29		16.5844			
	45	78	10.5	10:31	2	16.5844	0.0000	0.00	
				10:31		16.5844			
				10:33	2	16.5844	0.0000	0.00	
				10:33		16.5844			
				10:35	2	16.5844	0.0000	0.00	
				10:35		16.5844			
				10:37	2	16.5844	0.0000	0.00	
				10:37		16.5844			
				10:39	2	16.5844	0.0000	0.00	
				10:39		16.5844			
				10:41	2	16.5844	0.0000	0.00	
		67.5		10:43		16.5845			
	95	78	10.5	10:45	2	16.5846	0.0001	0.05	
				10:45		16.5846			
				10:47	2	16.5846	0.0000	0.00	
				10:47		16.5846			
				10:49	2	16.5846	0.0000	0.00	
				10:49		16.5846			
				10:51	2	16.5847	0.0001	0.05	
				10:51		16.5847			
				10:53	2	16.5847	0.0000	0.00	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26
Water Test Interval: 20.57m to 23.77m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 12/05
Static W.L. below stick-up:	2.01 m
Stick-up A.G.L. along dip:	1.72 m
Static W.L. below G.L.:	0.29 m (vertical)
Height of gauge A.G.L.:	0.88 m (vertical)
Bottom of Interval B.G.L.:	23.77 m
Top of Interval B.G.L.:	20.57 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	22.17 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	45	310.26	0.13	310.14	321.62	32.8	0.00	1.60	0.1600	0.050	0.2		1.80E-08	
10	70	482.63	0.04	482.59	494.07	50.4	0.00	0.50	0.0500	0.016	0.0		3.66E-09	
10	95	655.00	0.01	654.99	666.47	67.9	0.00	0.10	0.0100	0.003	0.0		5.43E-10	
10	70	482.63	0.01	482.63	494.10	50.4	0.00	0.10	0.0100	0.003	0.0	1	7.32E-10	assume total flow was 0.0001 as the lowest measureable
10	45	310.26	0.01	310.26	321.73	32.8	0.00	0.10	0.0100	0.003	0.0		1.12E-09	assume total flow was 0.0001 as the lowest measureable
10	95	655.00	0.02	654.99	666.46	67.9	0.00	0.20	0.0200	0.006	0.0		1.09E-09	
												average	4.19E-09	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

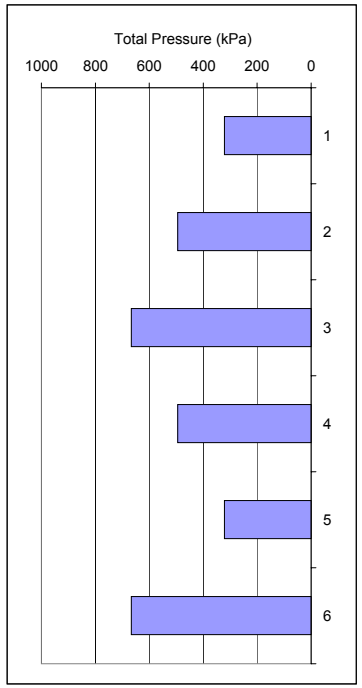
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

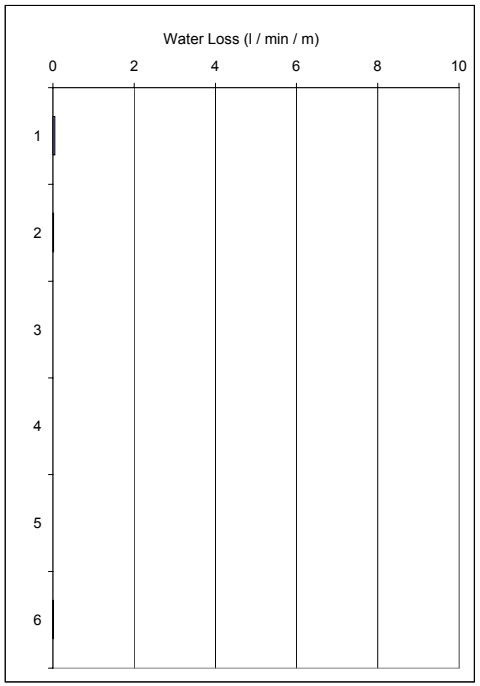
Interpreted Lugeon Value: 1

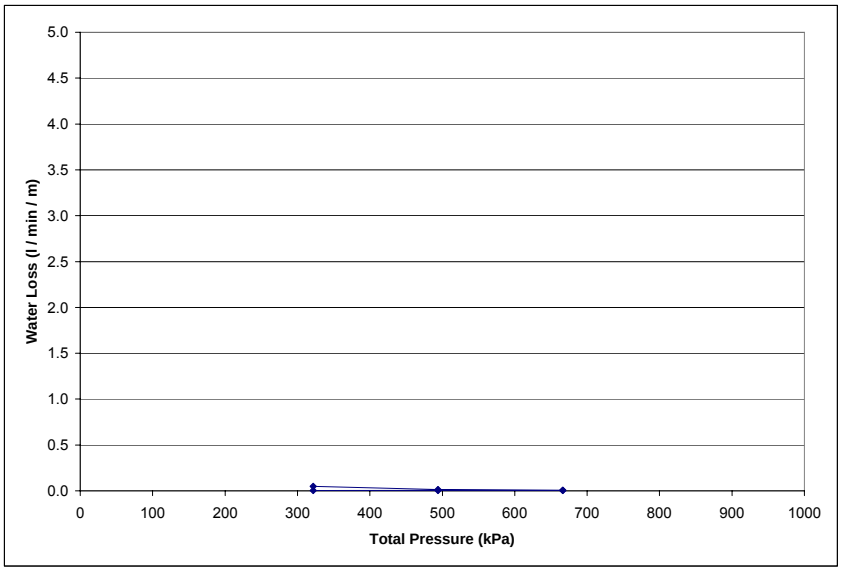
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.2 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-26

Date: 12-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Road
Personnel: CB
Depth to WT: 2.01 m
Height of Gauge:
Stick Up: 1.7272 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 90°
Pump Capacity: 24 lGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 12:30pm
Start Flushing: 11:52pm
End Flushing: 12:08pm
End Packer Testing: 1:39pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		77.5		12:30		16.5982			
8	45	88	10.5	12:32	2	16.5991	0.0009	0.45	
				12:32		16.5991			
	45			12:34	2	16.6	0.0009	0.45	
				12:34		16.6			
	45			12:36	2	16.6007	0.0007	0.35	
				12:36		16.6007			
	43			12:38	2	16.6012	0.0005	0.25	
				12:38		16.6012			
	45			12:40	2	16.602	0.0008	0.40	
		77.5		12:41		16.6026			
	70	88	10.5	12:43	2	16.6035	0.0009	0.45	
				12:43		16.6035			
	70			12:45	2	16.6043	0.0008	0.40	
				12:45		16.6043			
	70			12:47	2	16.6053	0.0010	0.50	
				12:47		16.6053			
	70			12:49	2	16.6061	0.0008	0.40	
				12:49		16.6061			
	70			12:51	2	16.6069	0.0008	0.40	
		77.5		12:52		16.6074			
	100	88	10.5	12:54	2	16.6083	0.0009	0.45	
				12:54		16.6083			
	100			12:56	2	16.6092	0.0009	0.45	
				12:56		16.6092			
	100			12:58	2	16.6099	0.0007	0.35	
				12:58		16.6099			
	100			1:00	2	16.6109	0.0010	0.50	
				1:00		16.6109			
	100			1:02	2	16.6115	0.0006	0.30	
		77.5		1:03		16.6119			
	70	88	10.5	1:05	2	16.6124	0.0005	0.25	
				1:05		16.6124			
	70			1:08	3	16.6135	0.0011	0.37	
				1:08		16.6135			
	70			1:10	2	16.6141	0.0006	0.30	
				1:10		16.6141			
	70			1:12	2	16.6149	0.0008	0.40	
				1:12		16.6149			
	70			1:14	2	16.6155	0.0006	0.30	
		77.5		1:15		16.6158			
	45	88	10.5	1:17	2	16.6162	0.0004	0.20	
				1:17		16.6162			
	45			1:19	2	16.6166	0.0004	0.20	
				1:19		16.6166			
	45			1:21	2	16.6171	0.0005	0.25	
				1:21		16.6171			
	45			1:23	2	16.6175	0.0004	0.20	
				1:23		16.6175			
	45			1:25	2	16.618	0.0005	0.25	
		77.5		1:27		16.6189			
	100	88	10.5	1:29	2	16.6199	0.0010	0.50	
		77.5		1:29		16.6199			
	98	88	10.5	1:31	2	16.6206	0.0007	0.35	
				1:31		16.6206			
	100			1:33	2	16.6213	0.0007	0.35	
				1:33		16.6213			
	100			1:35	2	16.6221	0.0008	0.40	
				1:35		16.6221			
	100			1:37	2	16.6229	0.0008	0.40	
				1:37		16.6229			
	100			1:39	2	16.6235	0.0006	0.30	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-26
Water Test Interval: 23.62m to 26.82m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Road
Coordinates*:	6914152 N
	585948 E
Collar Elevation:	1153.8 m
Azimuth:	deg
Dip:	90 deg
Date:	Sept 12/05
Static W.L. below stick-up:	2.01 m
Stick-up A.G.L. along dip:	1.72 m
Static W.L. below G.L.:	0.29 m (vertical)
Height of gauge A.G.L.:	0.88 m (vertical)
Bottom of Interval B.G.L.:	26.82 m
Top of Interval B.G.L.:	23.62 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	25.22 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	44.6	307.51	0.31	307.20	318.68	32.5	0.00	3.80	0.38	0.12	0.4		4.31E-08	
10	70	482.63	0.35	482.29	493.76	50.3	0.00	4.30	0.43	0.13	0.3		3.15E-08	
10	100	689.48	0.33	689.14	700.62	71.4	0.00	4.10	0.41	0.13	0.2	1	2.12E-08	
11	70	482.63	0.26	482.37	493.85	50.3	0.00	3.60	0.33	0.10	0.2		2.40E-08	
10	45	310.26	0.17	310.09	321.57	32.8	0.00	2.20	0.22	0.07	0.2		2.47E-08	
10	99.6	686.72	0.29	686.43	697.91	71.1	0.00	3.60	0.36	0.11	0.2		1.87E-08	
												average	2.72E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

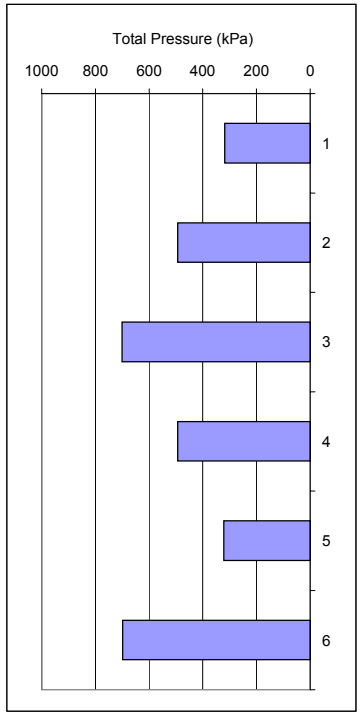
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

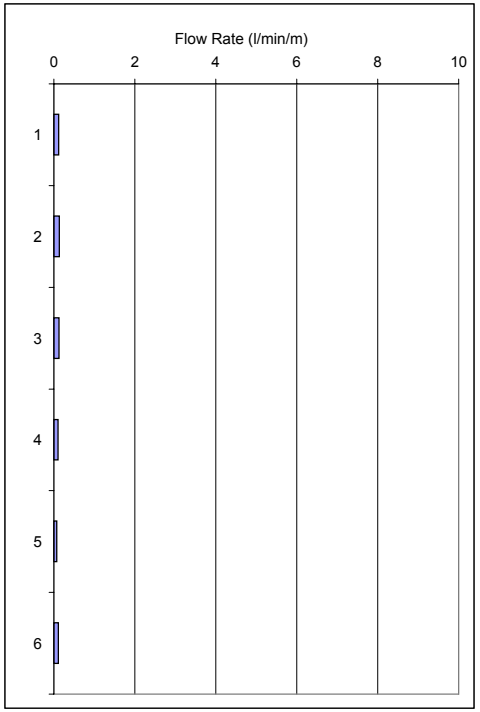
Interpreted Lugeon Value: 1

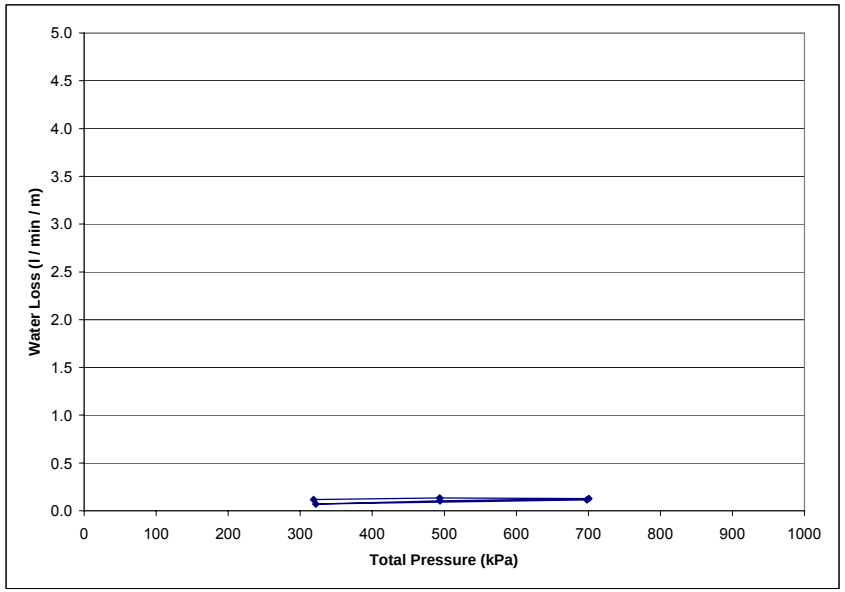
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.7 \times 10^{-8}$ m/sec







BGC05-27

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 14-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (Right Abutment)
Personnel: CB
Depth to WT: 4.66 m
Height of Gauge: 1.08 m
Stick Up: 1.78 m

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 5:18pm
Start Flushing: 4:22pm
End Flushing: 4:40pm
End Packer Testing: 6:57pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
1	10	12.5 / 28	15.5	5:18 / 5:20	2	16.683 / 16.727	0.043	21.70	
	12			5:20 / 5:22	2	16.727 / 16.770	0.044	21.95	
	10			5:22 / 5:25	3	16.770 / 16.834	0.063	21.03	
	10			5:25 / 5:27	2	16.834 / 16.875	0.041	20.70	
	10			5:27 / 5:29	2	16.875 / 16.914	0.039	19.35	
	10			5:29 / 5:31	2	16.875 / 16.914	0.039	19.35	
	18	12.5 / 28	15.5	5:32 / 5:34	2	16.973 / 17.032	0.059	29.55	
	15	12.5 / 28	15.5	5:34 / 5:37	3	16.973 / 17.032	0.059	19.70	
	15			5:37 / 5:39	2	17.032 / 17.107	0.075	37.45	
	15			5:39 / 5:41	2	17.107 / 17.155	0.048	24.05	
	15			5:41 / 5:43	2	17.155 / 17.203	0.048	24.15	
	15			5:43 / 5:45	2	17.203 / 17.251	0.048	23.75	
	23	12.5 / 28	15.5	5:46 / 5:48	2	17.333 / 17.402	0.069	34.70	
	23			5:48 / 5:50	2	17.402 / 17.468	0.066	32.80	
	23			5:50 / 5:52	2	17.468 / 17.534	0.066	33.05	
	23			5:52 / 5:54	2	17.534 / 17.601	0.067	33.75	
	23			5:54 / 5:56	2	17.601 / 17.667	0.066	32.95	
	15	12.5 / 28	15.5	5:58 / 6:00	2	17.716 / 17.760	0.044	22.15	
	15			6:00 / 6:02	2	17.760 / 17.805	0.044	22.25	
	15			6:02 / 6:04	2	17.805 / 17.848	0.043	21.75	
	15			6:04 / 6:06	2	17.848 / 17.892	0.044	22.00	
	15			6:06 / 6:08	2	17.892 / 17.934	0.042	21.10	
	10	12.5 / 28	15.5	6:09 / 6:11	2	17.947 / 17.978	0.031	15.35	
	10			6:11 / 6:13	2	17.978 / 18.010	0.033	16.25	
	10			6:13 / 6:15	2	18.010 / 18.042	0.032	16.00	
	10			6:15 / 6:17	2	18.042 / 18.075	0.033	16.50	
	10			6:17 / 6:19	2	18.075 / 18.108	0.032	16.10	
	23	12.5 / 28	15.5	6:20 / 6:22	2	18.138 / 18.207	0.068	34.20	
	23	12.5 / 28	15.5	6:22 / 6:24	2	18.207 / 18.272	0.065	32.65	
	23	12.5 / 28	15.5	6:24 / 6:26	2	18.272 / 18.340	0.068	34.00	
	23			6:26 / 6:28	2	18.340 / 18.406	0.066	33.15	
	23			6:51 / 6:53	2	18.482 / 18.552	0.070	34.95	
	23			6:53 / 6:55	2	18.552 / 18.622	0.070	35.00	
	23			6:55 / 6:57	2	18.622 / 18.690	0.068	34.10	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 3.81m to 8.53m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 14/05
Static W.L. below stick-up:	4.66 m
Stick-up A.G.L. along dip:	1.78 m
Static W.L. below G.L.:	2.71 m (vertical)
Height of gauge A.G.L.:	1.08 m (vertical)
Bottom of Interval B.G.L.:	8.53 m
Top of Interval B.G.L.:	3.81 m
Length of Interval L:	4.72 m
Middle of Interval to D.F.:	6.03 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
11	10.4	71.71	47.67	24.04	61.18	6.2	0.22	224.00	20.36	4.31	70.5	8.87E-06	
11	15	103.42	64.07	39.35	76.49	7.8	0.27	266.90	24.26	5.14	67.2	8.46E-06	
10	23	158.58	111.95	46.63	83.77	8.5	0.33	334.50	33.45	7.09	84.6	1.06E-05	
10	15	103.42	53.64	49.78	86.92	8.9	0.22	218.50	21.85	4.63	53.3	6.70E-06	
10	10	68.95	32.22	36.73	73.87	7.5	0.16	160.40	16.04	3.40	46.0	5.79E-06	
8	23	158.58	112.25	46.33	83.48	8.5	0.27	268.00	33.50	7.10	85.0	1.07E-05	
											80		
											average	8.53E-06	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

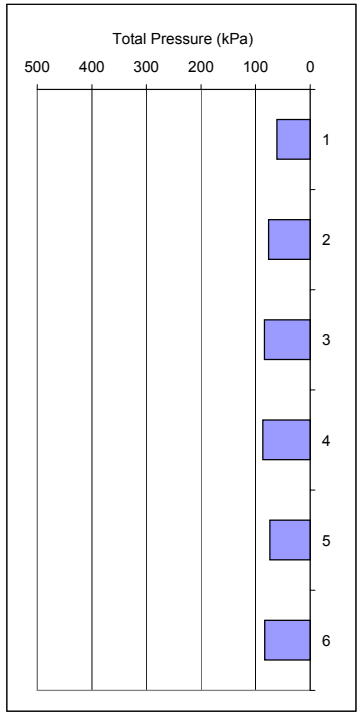
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

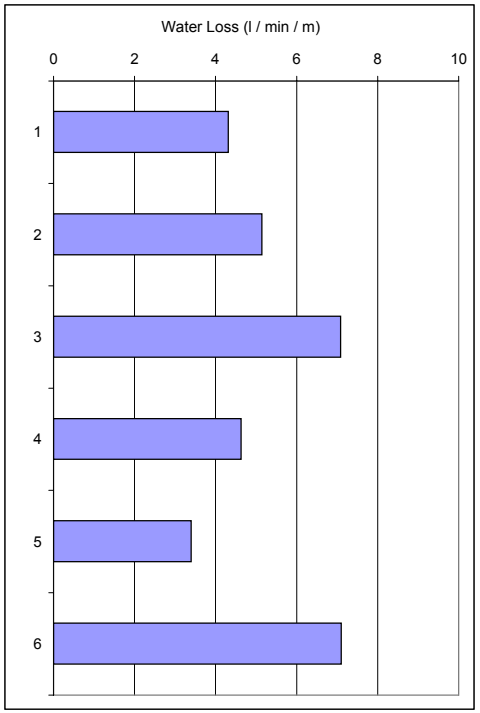
Interpreted Lugeon Value: 80

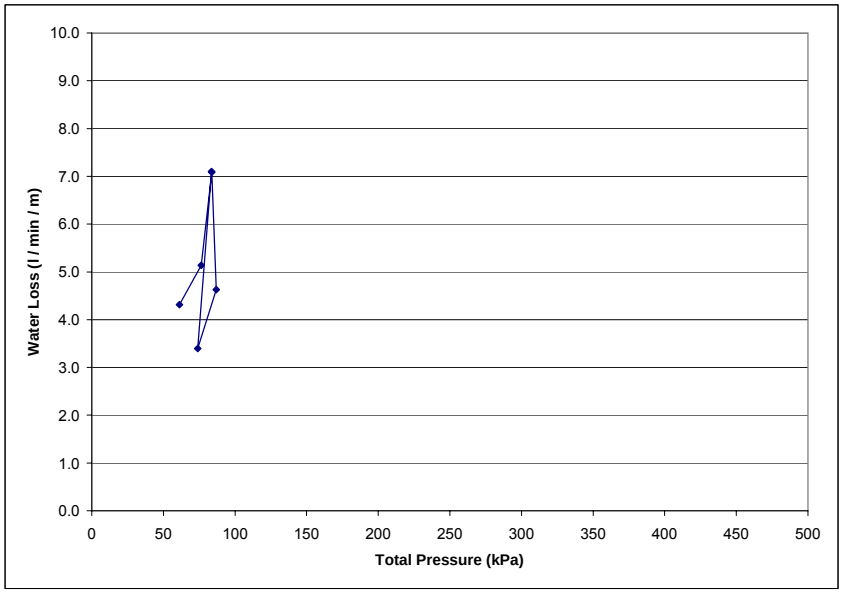
Interpreted flow pattern (Houlsby 1990) : Highly permeable section, potential void filling.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 8.5 \times 10^{-5}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 15-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 3.90 m
Height of Gauge: 1.21 m
Stick Up: 2.01 m

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 1:43pm
Start Flushing: 12:35pm
End Flushing: 1:15pm
End Packer Testing: 3:03pm

Packer Setup Type: Single

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		27.5		1:43		18.720			
2	15	38	10.5	1:45	2	18.723	0.003	1.45	
				1:45		18.723			
	15			1:47	2	18.725	0.002	1.15	
				1:47		18.725			
	15			1:49	2	18.727	0.002	1.15	
				1:49		18.727			
	15			1:51	2	18.730	0.003	1.40	
				1:51		18.730			
	15			1:53	2	18.733	0.003	1.25	
		27.5		1:55		18.753			
	30	38	10.5	1:57	2	18.804	0.052	25.85	
		27.5		1:57		18.804			
	30	38	10.5	1:59	2	18.862	0.058	28.90	
				1:59		18.862			
	30			2:01	2	18.922	0.060	30.05	
				2:01		18.922			
	30			2:03	2	18.981	0.059	29.65	
				2:03		18.981			
	30			2:05	2	19.043	0.062	30.90	
				2:05		19.043			
	30			2:07	2	19.106	0.063	31.30	
		27.5		2:09		19.187			
	43	38	10.5	2:11	2	19.281	0.094	46.80	
		27.5		2:11		19.281			
	45	38	10.5	2:13	2	19.381	0.100	50.20	
				2:13		19.381			
	45			2:15	2	19.481	0.100	49.95	
				2:15		19.481			
	45			2:17	2	19.580	0.099	49.65	
				2:17		19.580			
	45			2:19	2	19.682	0.102	51.10	
				2:19		19.682			
	45			2:21	2	19.784	0.102	50.85	
		27.5		2:22		19.825			
	30	38	10.5	2:24	2	19.901	0.076	38.15	
		27.5		2:24		19.901			
	30	38	10.5	2:26	2	19.978	0.076	38.05	
		27.5		2:26		19.978			
	30	38	10.5	2:28	2	20.052	0.075	37.30	
				2:28		20.052			
	30			2:30	2	20.130	0.078	38.75	
				2:30		20.130			
	30			2:32	2	20.202	0.072	36.05	
				2:32		20.202			
	30			2:34	2	20.274	0.072	35.90	
				2:34		20.274			
	30			2:36	2	20.346	0.073	36.25	
		27.5		2:37		20.361			
	15	38	10.5	2:39	2	20.392	0.031	15.55	
				2:39		20.392			
	15			2:41	2	20.425	0.033	16.60	
				2:41		20.425			
	15			2:43	2	20.459	0.033	16.70	
				2:43		20.459			
	15			2:45	2	20.492	0.033	16.60	
				2:45		20.492			
	15			2:47	2	20.526	0.034	17.10	
		27.5		2:49		20.603			
	45	38	10.5	2:51	2	20.699	0.096	48.05	
		27.5		2:51		20.699			
	48	38	10.5	2:53	2	20.798	0.098	49.25	
		27.5		2:53		20.798			
	45	38	10.5	2:55	2	20.900	0.103	51.30	
				2:55		20.900			
	45			2:57	2	20.001	-0.899	-449.70	
				2:57		20.001			
	45			2:59	2	21.106	1.105	552.65	
				2:59		21.106			
	45			3:01	2	21.208	0.102	51.00	
				3:01		21.208			
	45			3:03	2	21.309	0.101	50.60	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 8.38m to 11.58m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 15/05
Static W.L. below stick-up:	3.90 m
Stick-up A.G.L. along dip:	2.00 m
Static W.L. below G.L.:	1.79 m (vertical)
Height of gauge A.G.L.:	1.21 m (vertical)
Bottom of Interval B.G.L.:	11.58 m
Top of Interval B.G.L.:	8.38 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	9.88 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	15	103.42	1.12	102.30	131.69	13.4	0.01	12.80	1.28	0.40	3.0		3.51E-07	
11	30	206.84	79.05	127.79	157.18	16.0	0.30	301.60	27.42	8.57	54.5		6.31E-06	
10	45	310.26	233.92	76.35	105.73	10.8	0.50	503.50	50.35	15.73	148.8	>100	1.72E-05	
10	30	206.84	132.96	73.88	103.27	10.5	0.37	368.50	36.85	11.52	111.5		1.29E-05	
10	15	103.42	33.76	69.66	99.05	10.1	0.17	165.10	16.51	5.16	52.1		6.03E-06	
8	45	310.26	364.08	-53.82	-24.44	-2.5	0.51	511.70	63.96	19.99	-818.0		-9.47E-05	
												average	8.56E-06	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

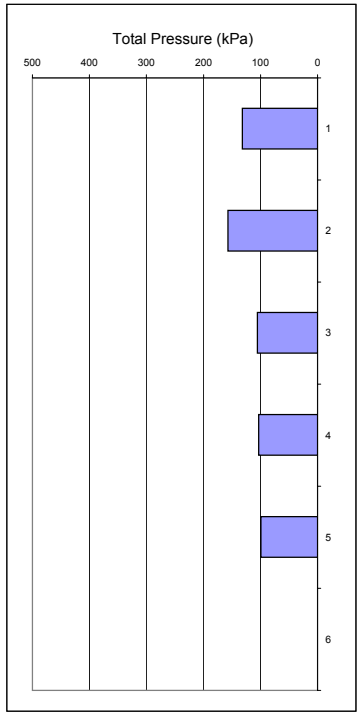
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

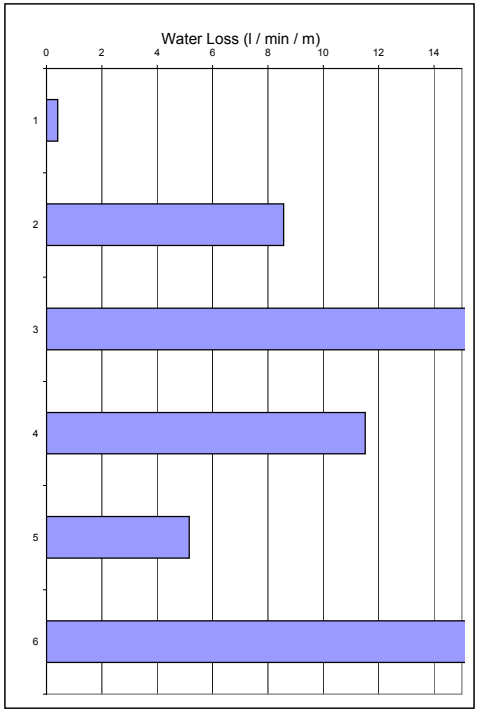
Interpreted Lugeon Value: >100

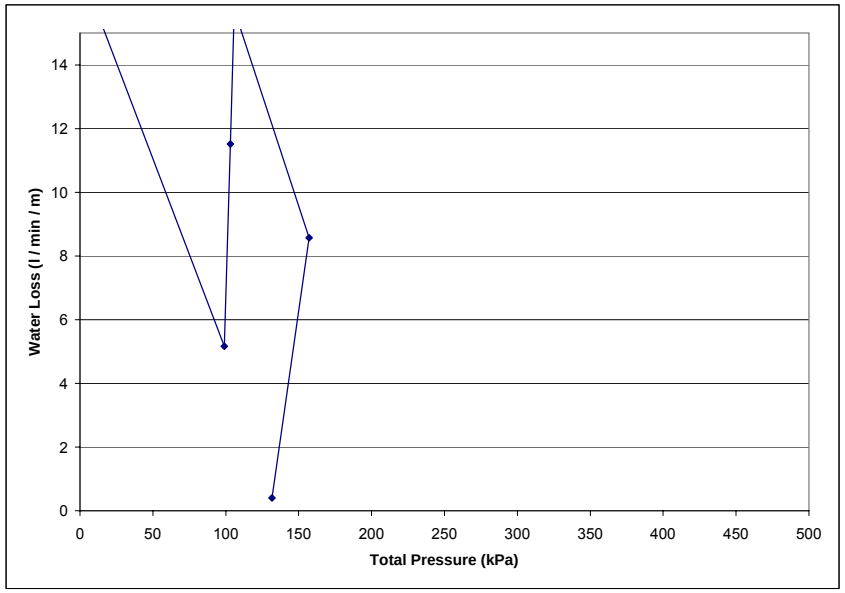
Interpreted flow pattern (Houlsby 1990) : Highly permeable section.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 8.6 \times 10^{-6}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 16-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 9.30 m
Height of Gauge: 1.14 m
Stick Up: 1.83 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time Start Packer Testing: 9:15am
Start Flushing: 8:39am
End Flushing: 8:52am
End Packer Testing: 10:36am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		37.5		9:15		21.341			
3	20	48	10.5	9:17	2	21.342	0.001	0.50	
				9:17		21.342			
	20			9:19	2	21.343	0.001	0.50	
				9:19		21.343			
	20			9:21	2	21.344	0.001	0.50	
				9:21		21.344			
	20			9:23	2	21.345	0.001	0.45	
				9:23		21.345			
	20			9:25	2	21.345	0.001	0.35	
		37.5		9:26		21.347			
	43	48	10.5	9:28	2	21.350	0.003	1.55	
		37.5		9:28		21.350			
	43	48	10.5	9:30	2	21.354	0.004	1.80	
		37.5		9:30		21.354			
	43	48	10.5	9:32	2	21.359	0.005	2.30	
		37.5		9:32		21.359			
	43	48	10.5	9:34	2	21.364	0.006	2.80	
				9:34		21.364			
	43			9:36	2	21.370	0.006	2.95	
				9:36		21.370			
	43			9:38	2	21.376	0.006	2.80	
				9:38		21.376			
	43			9:40	2	21.382	0.006	2.95	
				9:40		21.382			
	43			9:42	2	21.388	0.006	3.00	
		37.5		9:43		21.395			
	56	48	10.5	9:45	2	21.414	0.018	9.25	
				9:45		21.424			
	56			9:47	2	21.440	0.016	8.15	
				9:47		21.440			
	56			9:49	2	21.461	0.021	10.55	
				9:49		21.461			
	56			9:51	2	21.483	0.022	11.00	
				9:51		21.483			
	56			9:53	2	21.507	0.024	12.00	
				9:53		21.507			
	56			9:55	2	21.530	0.023	11.60	
		37.5		9:56		21.539			
	43	48	10.5	9:58	2	21.553	0.014	7.15	
				9:58		21.553			
	43			10:00	2	21.567	0.013	6.55	
				10:00		21.567			
	43			10:02	2	21.580	0.014	6.85	
				10:02		21.580			
	43			10:04	2	21.594	0.014	6.80	
				10:04		21.594			
	43			10:06	2	21.608	0.014	6.95	
		37.5		10:07		21.611			
	18	48	10.5	10:09	2	21.613	0.002	0.95	
		37.5		10:09		21.613			
	20	48	10.5	10:11	2	21.618	0.005	2.60	
				10:11		21.618			
	20			10:13	2	21.624	0.006	2.75	
				10:13		21.624			
	20			10:15	2	21.629	0.005	2.55	
				10:15		21.629			
	20			10:17	2	21.634	0.005	2.70	
				10:17		21.634			
	20			10:19	2	21.639	0.005	2.35	
		37.5		10:20		21.649			
	56	48	10.5	10:22	2	21.673	0.025	12.45	
		37.5		10:22		21.673			
	56	48	10.5	10:24	2	21.700	0.027	13.40	
		37.5		10:24		21.700			
	53	48	10.5	10:26	2	21.726	0.026	13.10	
		37.5		10:26		21.726			
	56	48	10.5	10:28	2	21.757	0.030	15.15	
				10:28		21.757			
	56			10:30	2	21.792	0.035	17.50	
				10:30		21.792			
	56			10:32	2	21.827	0.035	17.70	
				10:32		21.827			
	56			10:34	2	21.862	0.035	17.35	
				10:34		21.862			
	56			10:36	2	21.892	0.030	15.15	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 11.43m to 14.63m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 16/05
Static W.L. below stick-up:	9.30 m
Stick-up A.G.L. along dip:	1.83 m
Static W.L. below G.L.:	7.02 m (vertical)
Height of gauge A.G.L.:	1.14 m (vertical)
Bottom of Interval B.G.L.:	14.63 m
Top of Interval B.G.L.:	11.43 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	12.93 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20	137.90	0.37	137.52	217.57	22.2	0.00	4.60	0.46	0.14	0.7		7.65E-08	
10	43	296.47	2.90	293.58	373.62	38.1	0.03	29.00	2.90	0.91	2.4		2.81E-07	
10	56	386.11	19.49	366.61	446.66	45.5	0.12	116.60	11.66	3.64	8.2	12	9.44E-07	
10	43	296.47	8.94	287.54	367.58	37.5	0.07	68.60	6.86	2.14	5.8		6.75E-07	
10	20	137.90	2.52	135.37	215.42	22.0	0.03	25.90	2.59	0.81	3.8		4.35E-07	
10	56	386.11	33.96	352.15	432.19	44.1	0.17	165.70	16.57	5.18	12.0		1.39E-06	
												average	6.33E-07	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

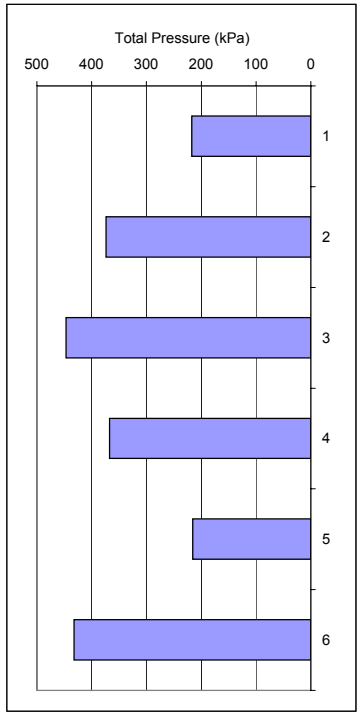
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

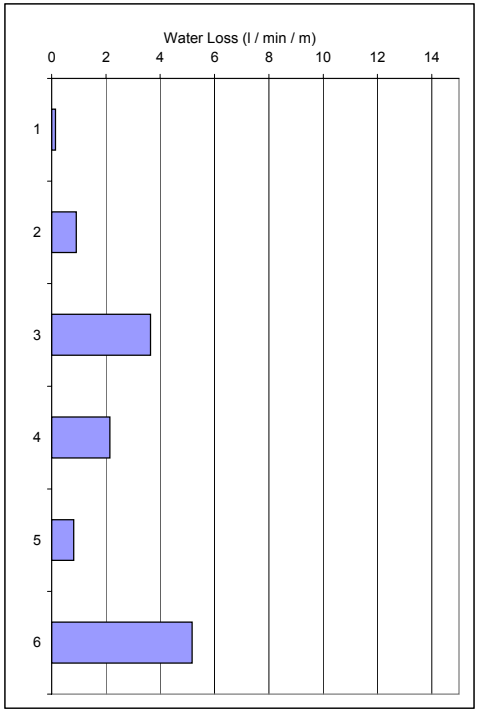
Interpreted Lugeon Value: 12

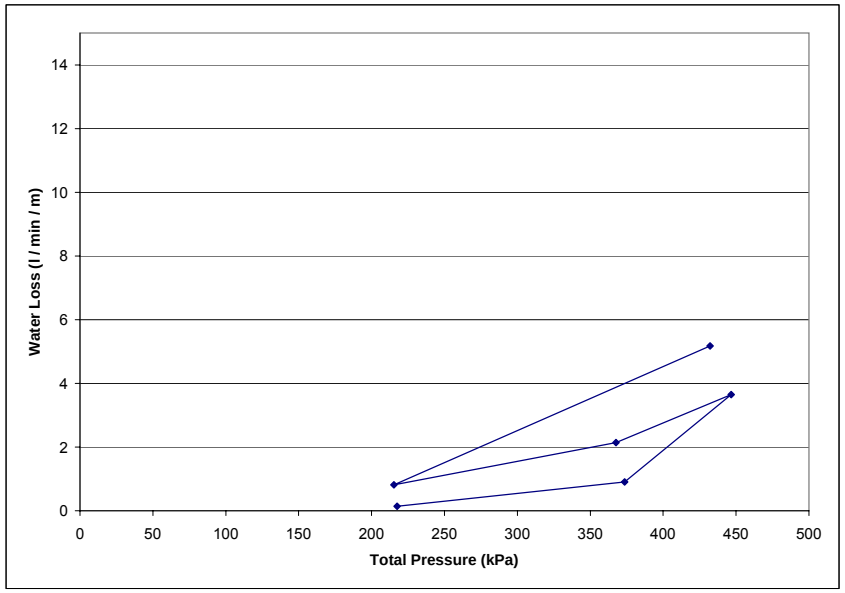
Interpreted flow pattern (Houlsby 1990) : Washing out.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 6.3 \times 10^{-7}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 16-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 9.33 m
Height of Gauge: 1.04 m
Stick Up: 1.83 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 lGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 2:49pm
Start Flushing: 1:55pm
End Flushing: 2:21pm
End Packer Testing: 3:58pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
4	20	47.5 / 58	10.5	2:49 / 2:51	2	21.916 / 21.917	0.0010	0.50	
	20			2:51 / 2:53	2	21.917 / 21.918	0.0010	0.50	
	20			2:53 / 2:55	2	21.918 / 21.919	0.0008	0.40	
	20			2:55 / 2:57	2	21.919 / 21.920	0.0009	0.45	
	20			2:57 / 2:59	2	21.920 / 21.921	0.0007	0.35	
	45	47.5 / 58	10.5	2:59 / 3:01	2	21.922 / 21.923	0.0008	0.40	
	45	47.5 / 58	10.5	3:01 / 3:03	2	21.923 / 21.924	0.0014	0.70	
	45			3:03 / 3:05	2	21.924 / 21.925	0.0012	0.60	
	45			3:05 / 3:07	2	21.925 / 21.926	0.0011	0.55	
	45			3:07 / 3:09	2	21.926 / 21.927	0.0010	0.50	
	45			3:09 / 3:11	2	21.927 / 21.928	0.0010	0.50	
	72	47.5 / 58	10.5	3:12 / 3:14	2	21.929 / 21.930	0.0011	0.55	
	72	47.5 / 58	10.5	3:14 / 3:16	2	21.930 / 21.931	0.0007	0.35	
	72			3:16 / 3:18	2	21.931 / 21.931	0.0005	0.25	
	72			3:18 / 3:20	2	21.931 / 21.932	0.0006	0.30	
	72			3:20 / 3:22	2	21.932 / 21.932	0.0005	0.25	
	72			3:22 / 3:24	2	21.932 / 21.933	0.0003	0.15	
	45	47.5 / 58	10.5	3:26 / 3:28	2	21.933 / 21.933	0.0001	0.05	
	45			3:28 / 3:30	2	21.933 / 219331.000			
	45			3:30 / 3:32	2	219331.000 / 21.933			
	45			3:32 / 3:34	2	21.933 / 21.934	0.0002	0.10	
	45			3:34 / 3:36	2	21.934 / 21.934	0.0002	0.10	
	20	47.5 / 58	10.5	3:37 / 3:39	2	21.934 / 21.934	0.0001	0.05	
				3:39 / 3:41	2	21.934 / 21.934	0.0000	0.00	
				3:41 / 3:43	2	21.934 / 21.934	0.0000	0.00	
				3:43 / 3:45	2	21.934 / 21.934	0.0000	0.00	
				3:45 / 3:47	2	21.934 / 21.934	0.0000	0.00	
	72	47.5 / 58	10.5	3:48 / 3:50	2	21.934 / 21.934	0.0003	0.15	
				3:50 / 3:52	2	21.934 / 21.935	0.0002	0.10	
				3:52 / 3:54	2	21.935 / 21.935	0.0002	0.10	
				3:54 / 3:56	2	21.935 / 21.935	0.0001	0.05	
				3:56 / 3:58	2	21.935 / 21.935	0.0002	0.10	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 14.48m to 17.68m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 16/05
Static W.L. below stick-up:	9.33 m
Stick-up A.G.L. along dip:	1.83 m
Static W.L. below G.L.:	7.05 m (vertical)
Height of gauge A.G.L.:	1.04 m (vertical)
Bottom of Interval B.G.L.:	17.68 m
Top of Interval B.G.L.:	14.48 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	15.98 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20	137.90	0.36	137.54	216.88	22.1	0.00	4.40	0.44	0.14	0.6		7.34E-08	
10	45	310.26	0.47	309.80	389.14	39.7	0.01	5.70	0.57	0.18	0.5		5.30E-08	
10	72	496.42	0.21	496.22	575.56	58.7	0.00	2.60	0.26	0.08	0.1	1	1.63E-08	
10	45	310.26	0.06	310.20	389.54	39.7	0.00	0.80	0.08	0.03	0.1		7.43E-09	
10	20	137.90	0.01	137.89	217.23	22.1	0.00	0.10	0.01	0.00	0.0		1.66E-09	
10	72	496.42	0.08	496.34	575.68	58.7	0.00	1.00	0.10	0.03	0.1		6.28E-09	
												average	2.63E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

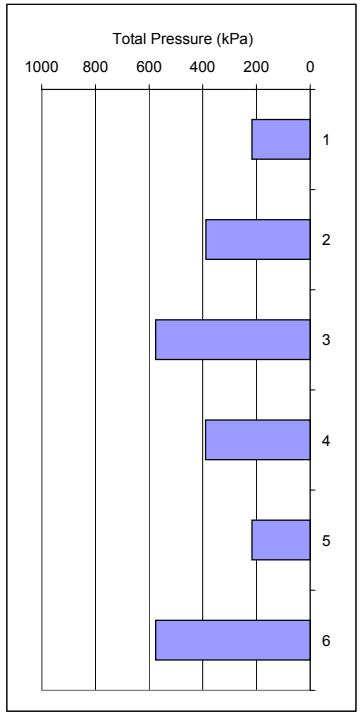
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

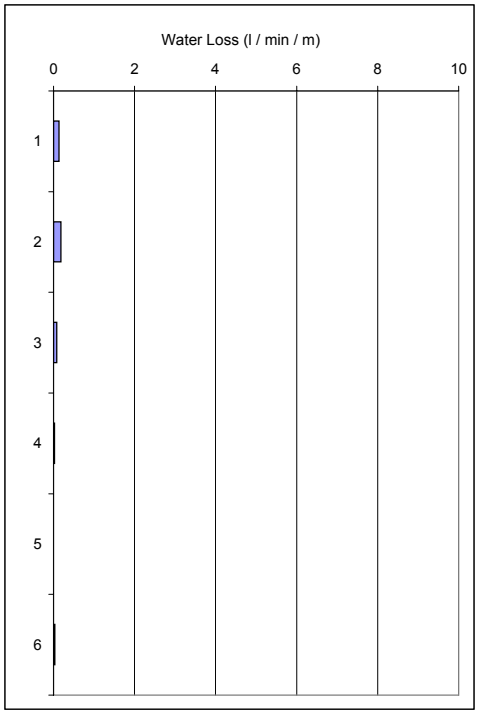
Interpreted Lugeon Value: 1

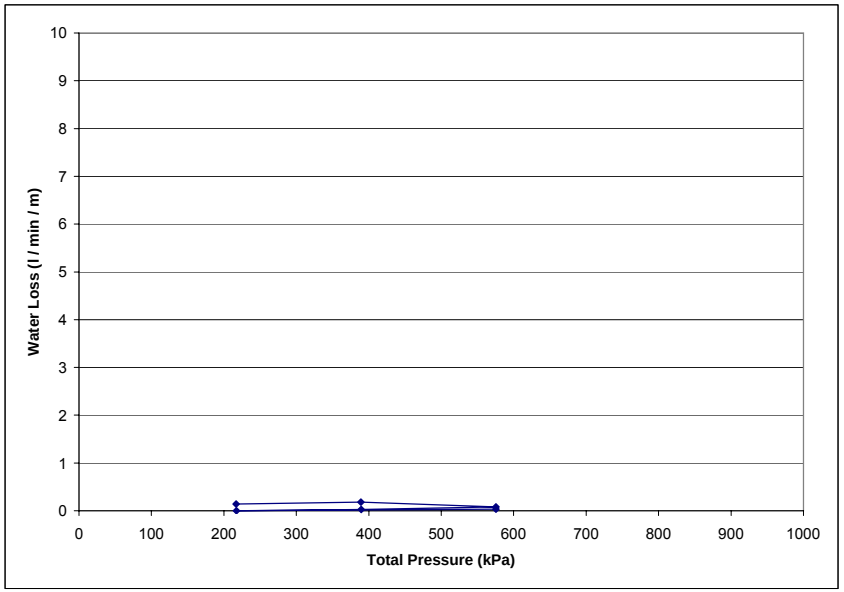
Interpreted flow pattern (Houlsby 1990) : Laminar, minor void filling

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.6 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 16-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Dam Plug
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 9.30 m
Height of Gauge: 1.04 m
Stick Up: 1.83 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 5:41pm
Start Flushing: 4:48pm
End Flushing: 5:13pm
End Packer Testing: 6:35pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		57.5		5:41		21.947			
5	20	68	10.5	5:43	2	21.948	0.0010	0.50	
				5:43		21.948			
	20			5:45	2	21.949	0.0006	0.30	
				5:45		21.949			
	20			5:47	2	21.949	0.0006	0.30	
				5:47		21.949			
	20			5:49	2	21.950	0.0006	0.30	
				5:49		21.950			
	20			5:51	2	21.950	0.0005	0.25	
		57.5		5:52		21.951			
	45	68	10.5	5:54	2	21.952	0.0011	0.55	
				5:54		21.952			
	45			5:56	2	21.953	0.0012	0.60	
				5:56		21.953			
	45			5:58	2	21.954	0.0010	0.50	
				5:58		21.954			
	45			6:00	2	21.956	0.0012	0.60	
				6:00		21.956			
	45			6:02	2	21.957	0.0012	0.60	
		57.5		6:03		21.958			
	87	68	10.5	6:05	2	21.959	0.0014	0.70	
				6:05		21.959			
	87			6:07	2	21.961	0.0015	0.75	
				6:07		21.961			
	87			6:09	2	21.962	0.0015	0.75	
				6:09		21.962			
	87			6:11	2	21.964	0.0016	0.80	
				6:11		21.964			
	87			6:13	2	21.965	0.0014	0.70	
		57.5		6:14		21.966			
	45	68	10.5	6:16	2	21.967	0.0010	0.50	
				6:16		21.967			
	45			6:18	2	21.967	0.0008	0.40	
				6:18		21.967			
	45			6:20	2	21.968	0.0008	0.40	
				6:20		21.968			
	45			6:22	2	21.969	0.0009	0.45	
				6:22		21.969			
	45			6:24	2	21.970	0.0008	0.40	
		57.5		6:25		21.970			
	20	68	10.5	6:27	2	21.970	0.0003	0.15	
				6:27		21.970			
	20			6:29	2	21.971	0.0003	0.15	
				6:29		21.971			
	20			6:31	2	21.971	0.0004	0.20	
				6:31		21.971			
	20			6:33	2	21.971	0.0003	0.15	
				6:33		21.971			
	20			6:35	2	21.972	0.0004	0.20	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 17.53m to 20.73m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 16/05
Static W.L. below stick-up:	9.30 m
Stick-up A.G.L. along dip:	1.83 m
Static W.L. below G.L.:	7.02 m (vertical)
Height of gauge A.G.L.:	1.04 m (vertical)
Bottom of Interval B.G.L.:	20.73 m
Top of Interval B.G.L.:	17.53 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	19.03 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	20	137.90	0.26	137.63	216.69	22.1	0.00	3.30	0.3300	0.103	0.5		5.51E-08	
10	45	310.26	0.47	309.80	388.86	39.6	0.01	5.70	0.5700	0.178	0.5		5.30E-08	
10	87	599.84	0.62	599.23	678.29	69.1	0.01	7.40	0.7400	0.231	0.3	1	3.94E-08	
10	45	310.26	0.35	309.92	388.98	39.7	0.00	4.30	0.4300	0.134	0.3		4.00E-08	
10	20	137.90	0.13	137.76	216.82	22.1	0.00	1.70	0.1700	0.053	0.2		2.83E-08	
												average	4.32E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

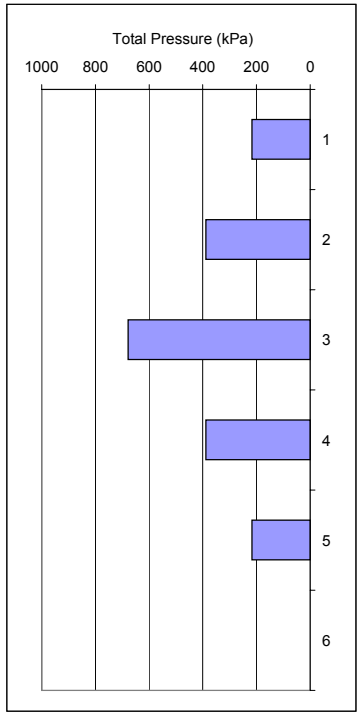
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

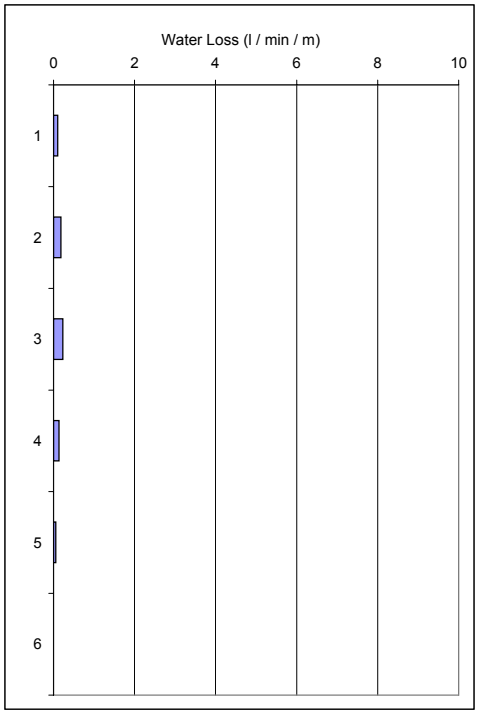
Interpreted Lugeon Value: 1

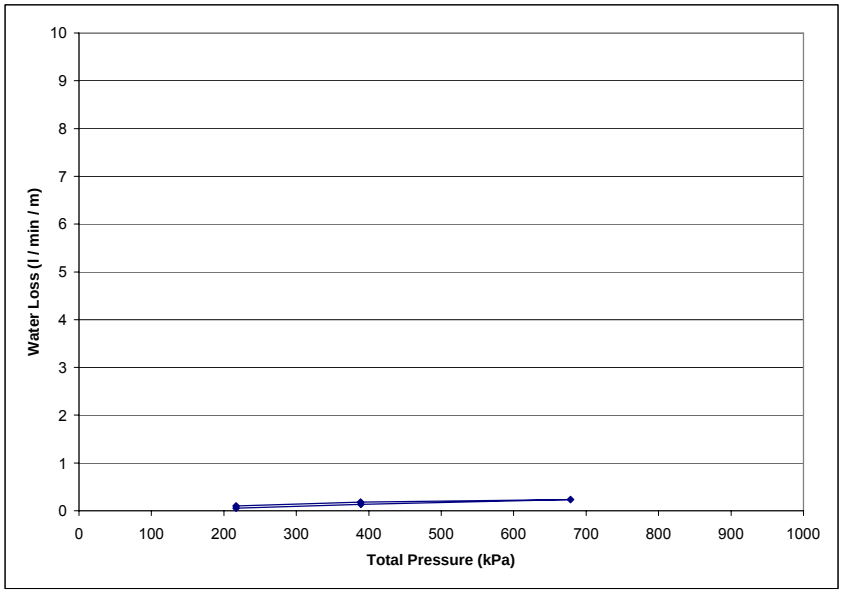
Interpreted flow pattern (Houlsby 1990) : Laminar, minor void filling

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.3 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 17-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 9.04 m
Height of Gauge: 1.02 m
Stick Up: 1.88 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 9:14am
Start Flushing: 8:22am
End Flushing: 8:43am
End Packer Testing: 10:31am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		67.5		9:14		21.990			
6	43	78	10.5	9:16	2	21.992	0.0020	1.00	
				9:16		21.992			
	43			9:18	2	21.994	0.0023	1.15	
				9:18		21.994			
	43			9:20	2	21.996	0.0020	1.00	
				9:20		21.996			
	43			9:22	2	21.998	0.0020	1.00	
				9:22		21.998			
	43			9:24	2	22.002	0.0037	1.85	
		67.5		9:25		22.002			
	72	78	10.5	9:27	2	22.004	0.0024	1.20	
		67.5		9:27		22.004			
	72	78	10.5	9:29	2	22.005	0.0008	0.40	
		67.5		9:29		22.007			
	72	78	10.5	9:31	2	22.025	0.0186	9.30	
				9:31		22.025			
	72			9:33	2	22.010	-0.0149	-7.45	
				9:33		22.010			
	72			9:35	2	22.012	0.0018	0.90	
				9:35		22.012			
	72			9:37	2	22.014	0.0019	0.95	
				9:37		22.014			
	72			9:39	2	22.016	0.0017	0.85	
		67.5		9:40		22.017			
	100	78	10.5	9:42	2	22.019	0.0020	1.00	
		67.5		9:42		22.019			
	100	78	10.5	9:44	2	22.021	0.0017	0.85	
		67.5		9:44		22.021			
	100	78	10.5	9:46	2	22.022	0.0018	0.90	
		67.5		9:46		22.022			
	100	78	10.5	9:48	2	22.024	0.0016	0.80	
				9:48		22.024			
	100			9:50	2	22.025	0.0012	0.60	
				9:50		22.027			
	100			9:52	2	22.028	0.0010	0.50	
				9:52		22.027			
	100			9:54	2	22.028	0.0010	0.50	
				9:54		22.028			
	100			9:56	2	22.029	0.0013	0.65	
				9:56		22.029			
	100			9:58	2	22.030	0.0010	0.50	
		67.5		9:59		22.030			
	72	78	10.5	10:01	2	22.031	0.0008	0.40	
				10:01		22.031			
	72			10:03	2	22.032	0.0007	0.35	
				10:03		22.032			
	72			10:05	2	22.032	0.0008	0.40	
				10:05		22.032			
	72			10:07	2	22.033	0.0008	0.40	
				10:07		22.033			
	72			10:09	2	22.034	0.0008	0.40	
		67.5		10:10		22.034			
	43	78	10.5	10:12	2	22.035	0.0008	0.40	
				10:12		22.035			
	43			10:14	2	22.036	0.0007	0.35	
				10:14		22.036			
	43			10:16	2	22.036	0.0008	0.40	
				10:16		22.036			
	43			10:18	2	22.037	0.0009	0.45	
				10:18		22.037			
	43			10:20	2	22.038	0.0009	0.45	
		67.5		10:21		22.039			
	100	78	10.5	10:23	2	22.040	0.0012	0.60	
				10:23		22.040			
	100			10:25	2	22.041	0.0012	0.60	
				10:25		22.041			
	100			10:27	2	22.043	0.0011	0.55	
				10:27		22.043			
	100			10:29	2	22.044	0.0010	0.50	
				10:29		22.044			
	100			10:31	2	22.045	0.0019	0.95	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 20.57m to 23.77m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 17/05
Static W.L. below stick-up:	9.04 m
Stick-up A.G.L. along dip:	1.88 m
Static W.L. below G.L.:	6.73 m (vertical)
Height of gauge A.G.L.:	1.02 m (vertical)
Bottom of Interval B.G.L.:	23.77 m
Top of Interval B.G.L.:	20.57 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	22.07 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	43	296.47	0.87	295.60	371.61	37.9	0.01	10.20	1.02	0.32	0.9		9.92E-08	
10	72	496.42	0.77	495.65	571.66	58.3	0.01	9.10	0.91	0.28	0.5		5.76E-08	
10	100	689.48	0.48	688.99	765.00	78.0	0.01	5.90	0.59	0.18	0.2	1	2.79E-08	
10	72	496.42	0.31	496.11	572.12	58.3	0.00	3.90	0.39	0.12	0.2		2.46E-08	
10	43	296.47	0.33	296.14	372.15	37.9	0.00	4.10	0.41	0.13	0.3		3.98E-08	
10	100	689.48	0.53	688.95	764.96	78.0	0.01	6.40	0.64	0.20	0.3		3.03E-08	
												average	4.66E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

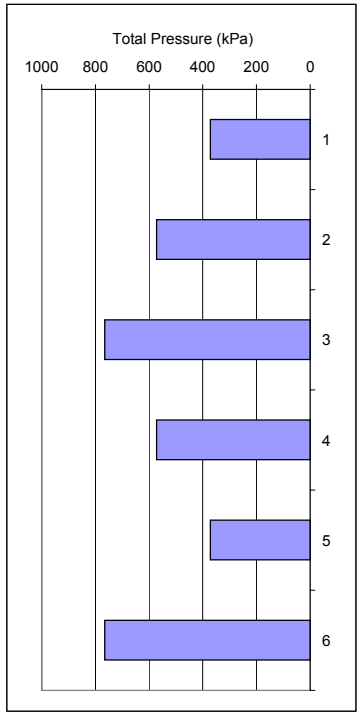
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

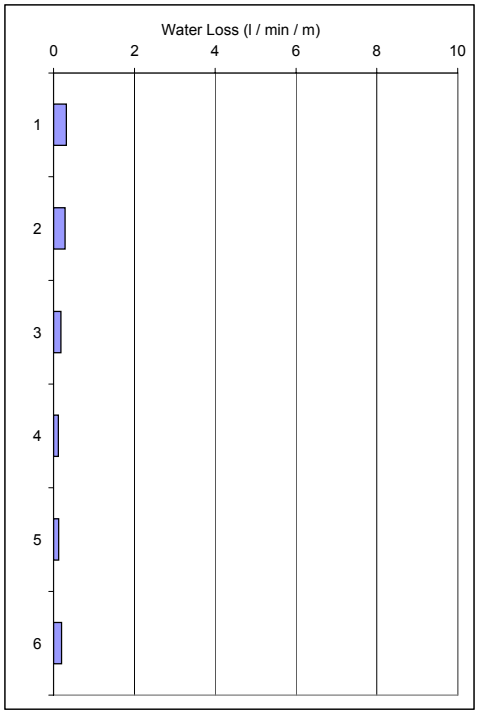
Interpreted Lugeon Value: 1

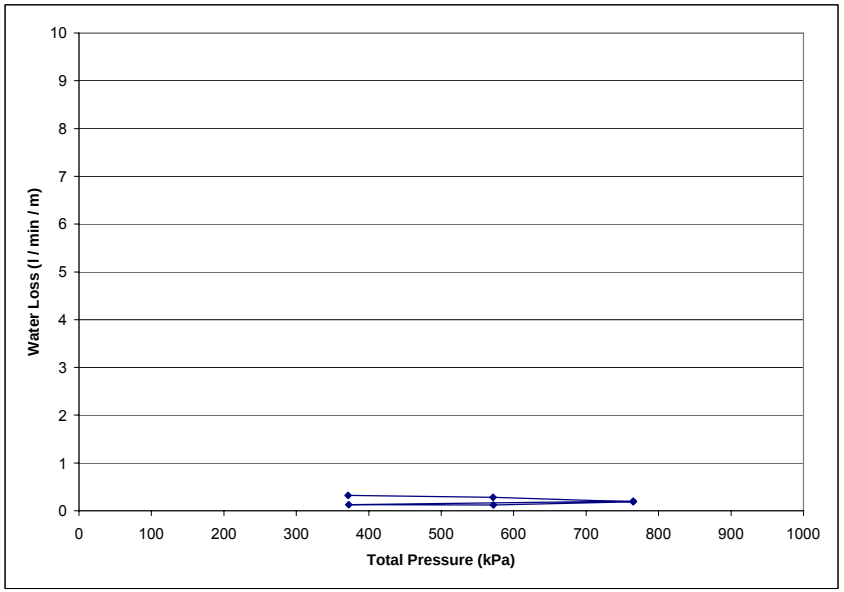
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.7 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 17-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 7.1628 m
Height of Gauge:
Stick Up: 1.8796 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 lGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 3:23pm
Start Flushing: 12:15pm
End Flushing: 12:27pm
End Packer Testing: 4:31pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
7	43	87.5 / 98	10.5	3:23 / 3:25	2	22.563 / 22.564	0.0007	0.35	skipped test between 78 and 88' since packer would not seal.
	43			3:25 / 3:27	2	22.564 / 22.565	0.0006	0.30	
	43			3:27 / 3:29	2	22.565 / 22.565	0.0005	0.25	
	43			3:29 / 3:31	2	22.565 / 22.565	0.0004	0.20	
	43			3:31 / 3:33	2	22.565 / 22.566	0.0004	0.20	
	72	87.5 / 98	10.5	3:34 / 3:36	2	22.566 / 22.567	0.0006	0.30	
	72			3:36 / 3:38	2	22.567 / 22.567	0.0005	0.25	
	72			3:38 / 3:40	2	22.567 / 22.568	0.0005	0.25	
	72			3:40 / 3:42	2	22.568 / 22.568	0.0005	0.25	
	72			3:42 / 3:44	2	22.568 / 22.569	0.0005	0.25	
	100	87.5 / 98	10.5	3:45 / 3:47	2	22.569 / 22.570	0.0006	0.30	
	100			3:47 / 3:49	2	22.570 / 22.570	0.0006	0.30	
	100			3:49 / 3:51	2	22.570 / 22.571	0.0006	0.30	
	100			3:51 / 3:53	2	22.571 / 22.571	0.0007	0.35	
	100			3:53 / 3:55	2	22.571 / 22.572	0.0007	0.35	
	72	87.5 / 98	10.5	3:56 / 3:58	2	22.573 / 22.573	0.0008	0.40	
	72			3:58 / 4:00	2	22.573 / 22.574	0.0008	0.40	
	72			4:00 / 4:02	2	22.574 / 22.575	0.0008	0.40	
	72			4:02 / 4:04	2	22.575 / 22.576	0.0006	0.30	
	72			4:04 / 4:06	2	22.576 / 22.576	0.0005	0.25	
	72			4:06 / 4:08	2	22.576 / 22.577	0.0007	0.35	
	43	87.5 / 98	10.5	4:09 / 4:11	2	22.577 / 22.577	0.0004	0.20	
	43			4:11 / 4:13	2	22.577 / 22.578	0.0003	0.15	
	43			4:13 / 4:15	2	22.578 / 22.578	0.0004	0.20	
	43			4:15 / 4:17	2	22.578 / 22.578	0.0003	0.15	
	43			4:17 / 4:19	2	22.578 / 22.579	0.0004	0.20	
	100	87.5 / 98	10.5	4:19 / 4:21	2	22.579 / 22.579	0.0003	0.15	
	100			4:21 / 4:23	2	22.579 / 22.580	0.0007	0.35	
	100			4:23 / 4:25	2	22.580 / 22.581	0.0005	0.25	
	100			4:25 / 4:27	2	22.581 / 22.581	0.0006	0.30	
	100			4:27 / 4:29	2	22.581 / 22.582	0.0005	0.25	
	100			4:29 / 4:31	2	22.582 / 22.582	0.0005	0.25	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 26.67m to 29.87m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 17/05
Static W.L. below stick-up:	9.04 m
Stick-up A.G.L. along dip:	1.88 m
Static W.L. below G.L.:	6.73 m (vertical)
Height of gauge A.G.L.:	1.02 m (vertical)
Bottom of Interval B.G.L.:	29.87 m
Top of Interval B.G.L.:	26.67 m
Length of Interval L:	3.20 m
Middle of Interval to D.F.:	28.17 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	43	296.47	0.21	296.27	372.28	37.9	0.00	2.60	0.2600	0.081	0.2		2.53E-08	
10	72	496.42	0.21	496.22	572.23	58.3	0.00	2.60	0.2600	0.081	0.1		1.64E-08	
10	100	689.48	0.30	689.18	765.19	78.0	0.00	3.70	0.3700	0.116	0.2	1	1.75E-08	
10	72	496.42	0.27	496.15	572.16	58.3	0.00	3.40	0.3400	0.106	0.2		2.15E-08	
10	43	296.47	0.14	296.33	372.34	38.0	0.00	1.80	0.1800	0.056	0.2		1.75E-08	
10	100	689.48	0.22	689.25	765.26	78.0	0.00	2.80	0.2800	0.088	0.1		1.32E-08	
												average	1.86E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

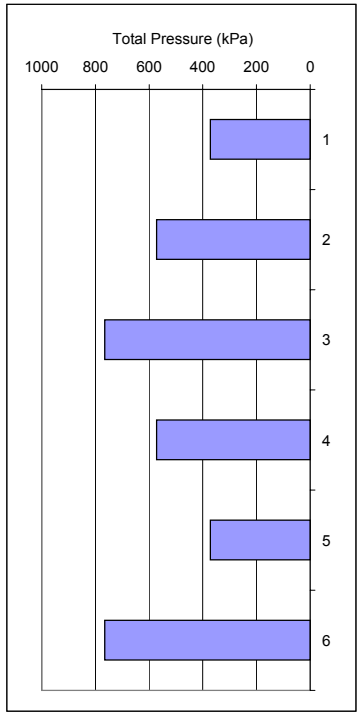
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

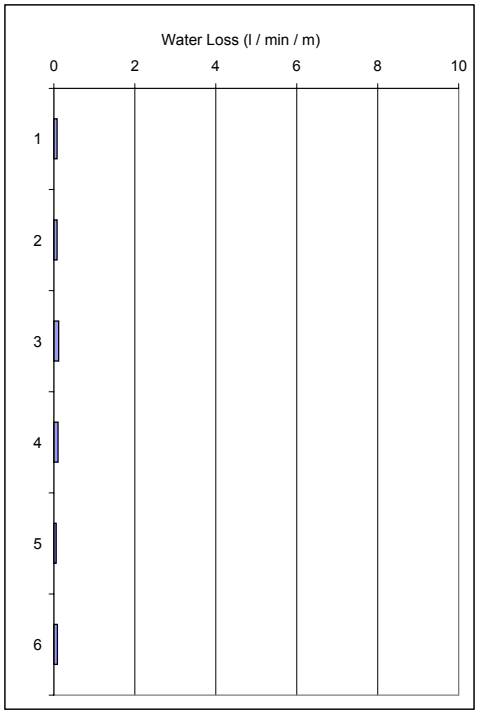
Interpreted Lugeon Value: 1

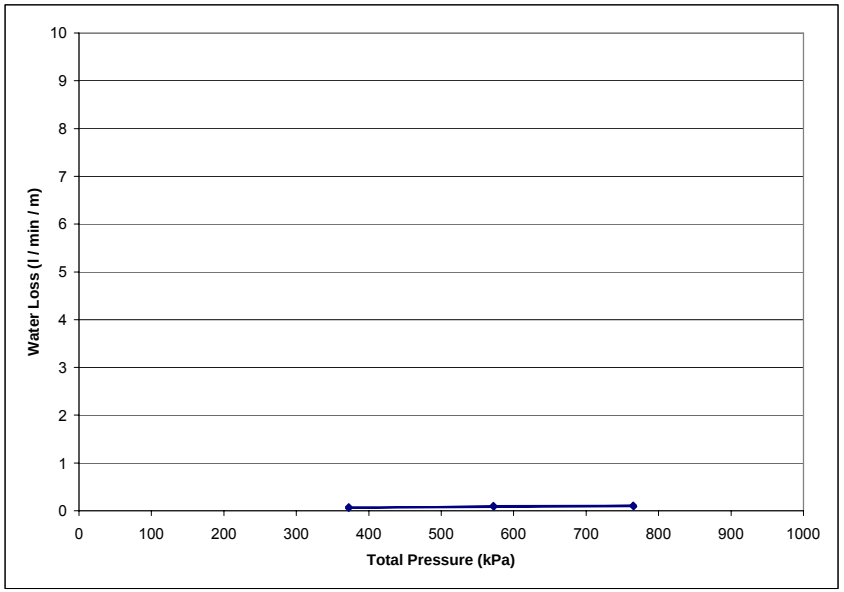
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 1.9 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 18-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 9.60 m
Height of Gauge: 1.02 m
Stick Up: 1.83 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time
Start Packer Testing: 9:16am
Start Flushing: 8:20am
End Flushing: 8:46am
End Packer Testing: 10:21am

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		97.5		9:16		22.601			
8	43	118	20.5	9:18	2	22.604	0.0031	1.55	
				9:18		22.604			
	43			9:20	2	22.607	0.0032	1.60	
				9:20		22.607			
	43			9:22	2	22.610	0.0030	1.50	
				9:22		22.610			
	43			9:24	2	22.613	0.0032	1.60	
				9:24		22.613			
	43			9:26	2	22.616	0.0030	1.50	
		97.5		9:27		22.619			
	72	118	20.5	9:29	2	22.623	0.0043	2.15	
				9:29		22.623			
	72			9:31	2	22.627	0.0041	2.05	
				9:31		22.627			
	72			9:33	2	22.632	0.0043	2.15	
				9:33		22.632			
	72			9:35	2	22.636	0.0041	2.05	
				9:35		22.636			
	72			9:37	2	22.640	0.0040	2.00	
		97.5		9:38		22.642			
	100	118	20.5	9:40	2	22.647	0.0050	2.50	
				9:40		22.647			
	100			9:42	2	22.652	0.0046	2.30	
				9:42		22.652			
	100			9:44	2	22.657	0.0047	2.35	
				9:44		22.657			
	100			9:46	2	22.661	0.0047	2.35	
				9:46		22.661			
	100			9:48	2	22.666	0.0045	2.25	
		97.5		9:49		22.668			
	72	118	20.5	9:51	2	22.671	0.0034	1.70	
				9:51		22.671			
	72			9:53	2	22.675	0.0035	1.75	
				9:53		22.675			
	72			9:55	2	22.678	0.0034	1.70	
				9:55		22.678			
	72			9:57	2	22.682	0.0036	1.80	
				9:57		22.682			
	72			9:59	2	22.685	0.0034	1.70	
		97.5		10:00		22.686			
	43	118	20.5	10:02	2	22.689	0.0027	1.35	
				10:02		22.689			
	43			10:04	2	22.691	0.0025	1.25	
				10:04		22.691			
	43			10:06	2	22.694	0.0025	1.25	
				10:06		22.694			
	43			10:08	2	22.697	0.0029	1.45	
				10:08		22.697			
	43			10:10	2	22.700	0.0027	1.35	
		97.5		10:11		22.702			
	100	118	20.5	10:13	2	22.706	0.0045	2.25	
				10:13		22.706			
	100			10:15	2	22.711	0.0043	2.15	
				10:15		22.711			
	100			10:17	2	22.715	0.0044	2.20	
				10:17		22.715			
	100			10:19	2	22.719	0.0043	2.15	
				10:19		22.719			
	100			10:21	2	22.723	0.0042	2.10	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 29.72m to 35.97m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 18/05
Static W.L. below stick-up:	9.60 m
Stick-up A.G.L. along dip:	1.83 m
Static W.L. below G.L.:	7.30 m (vertical)
Height of gauge A.G.L.:	1.02 m (vertical)
Bottom of Interval B.G.L.:	35.97 m
Top of Interval B.G.L.:	29.72 m
Length of Interval L:	6.25 m
Middle of Interval to D.F.:	32.66 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	43	296.47	1.39	295.09	376.72	38.4	0.02	15.50	1.5500	0.248	0.7		8.76E-08	
10	72	496.42	1.95	494.48	576.11	58.7	0.02	20.80	2.0800	0.333	0.6		7.69E-08	
10	100	689.48	2.25	687.23	768.86	78.4	0.02	23.50	2.3500	0.376	0.5	1	6.51E-08	
10	72	496.42	1.57	494.85	576.48	58.8	0.02	17.30	1.7300	0.277	0.5		6.39E-08	
10	43	296.47	1.17	295.31	376.94	38.4	0.01	13.30	1.3300	0.213	0.6		7.52E-08	
10	100	689.48	2.05	687.43	769.06	78.4	0.02	21.70	2.1700	0.347	0.5		6.01E-08	
												average	7.15E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

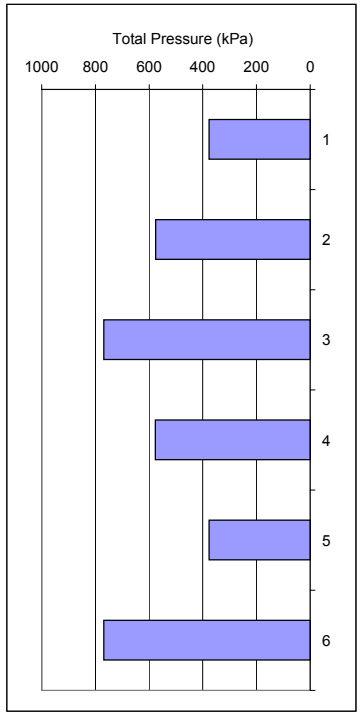
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

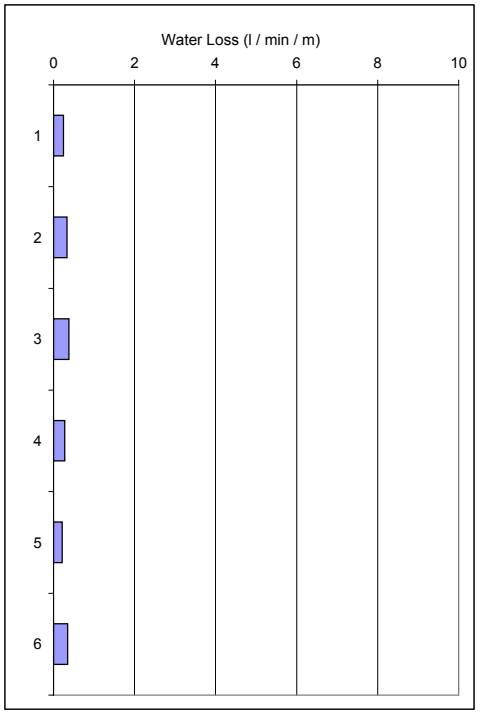
Interpreted Lugeon Value: 1

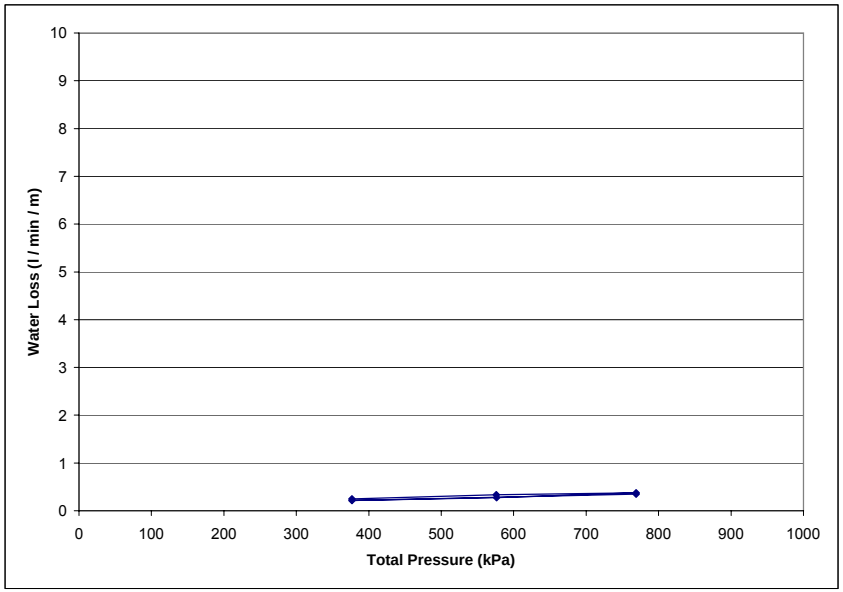
Interpretated flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 7.2 \times 10^{-8}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 18-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right Abutment)
Personnel: CB
Depth to WT: 9.6 m
Height of Gauge: 1.02 m
Stick Up: 1.83 m

Packer Setup Type: Single

Hole Diameter: NQ3
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time Start Packer Testing: 11:53am
Start Flushing:
End Flushing:
End Packer Testing: 12:51pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		67.5		11:53		22.769			
9	43	118	50.5	11:55	2	22.770	0.0006	0.30	
		67.5		11:55		22.770			
	43	118	50.5	11:57	2	22.770	0.0005	0.25	
				11:57		22.770			
	43			11:59	2	22.771	0.0002	0.10	
				11:59		22.771			
	43			12:01	2	22.771	0.0004	0.20	
				12:01		22.771			
	43			12:03	2	22.771	0.0004	0.20	
				12:03		22.771			
	43			12:05	2	22.772	0.0003	0.15	
		67.5		12:06		22.773			
	72	118	50.5	12:08	2	22.774	0.0010	0.50	
				12:08		22.774			
	72			12:10	2	22.775	0.0009	0.45	
				12:10		22.775			
	72			12:12	2	22.776	0.0009	0.45	
				12:12		22.776			
	72			12:14	2	22.776	0.0006	0.30	
				12:14		22.776			
	72			12:16	2	22.777	0.0008	0.40	
		67.5		12:17		22.778			
	100	118	50.5	12:19	2	22.779	0.0012	0.60	
				12:19		22.779			
	100			12:21	2	22.780	0.0010	0.50	
				12:21		22.780			
	100			12:23	2	22.781	0.0009	0.45	
				12:23		22.781			
	100			12:25	2	22.782	0.0008	0.40	
				12:25		22.782			
	100			12:27	2	22.783	0.0009	0.45	
		67.5		12:28		22.783			
	72	118	50.5	12:30	2	22.783	0.0002	0.10	
		67.5		12:30		22.783			
	72	118	50.5	12:32	2	22.784	0.0005	0.25	
				12:32		22.784			
	72			12:34	2	22.784	0.0005	0.25	
				12:34		22.784			
	72			12:36	2	22.785	0.0006	0.30	
				12:36		22.785			
	72			12:38	2	22.785	0.0005	0.25	
				12:38		22.785			
	72			12:40	2	22.786	0.0005	0.25	
		67.5		12:41		22.786			
	43	118	50.5	12:43	2	22.786	0.0001	0.05	
				12:43		22.786			
	43			12:45	2	22.786	0.0000	0.00	
				12:45		22.786			
	43			12:47	2	22.786	0.0000	0.00	
				12:47		22.786			
	43			12:49	2	22.786	0.0000	0.00	
				12:49		22.786			
	43			12:51	2	22.786	0.0001	0.05	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 20.57m to 35.97m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 18/05
Static W.L. below stick-up:	9.60 m
Stick-up A.G.L. along dip:	1.83 m
Static W.L. below G.L.:	7.30 m (vertical)
Height of gauge A.G.L.:	1.02 m (vertical)
Bottom of Interval B.G.L.:	35.97 m
Top of Interval B.G.L.:	20.57 m
Length of Interval L:	15.40 m
Middle of Interval to D.F.:	27.81 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	43	296.47	0.14	296.33	377.97	38.5	0.00	1.80	0.18	0.012	0.0		4.84E-09	
10	72	496.42	0.34	496.08	577.72	58.9	0.00	4.20	0.42	0.027	0.0		7.39E-09	
10	100	689.48	0.39	689.09	770.72	78.6	0.00	4.80	0.48	0.031	0.0	1	6.33E-09	
10	72	496.42	0.21	496.22	577.85	58.9	0.00	2.60	0.26	0.017	0.0		4.58E-09	
10	43	296.47	0.02	296.46	378.09	38.5	0.00	0.20	0.02	0.001	0.0		5.38E-10	
												average	4.74E-09	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

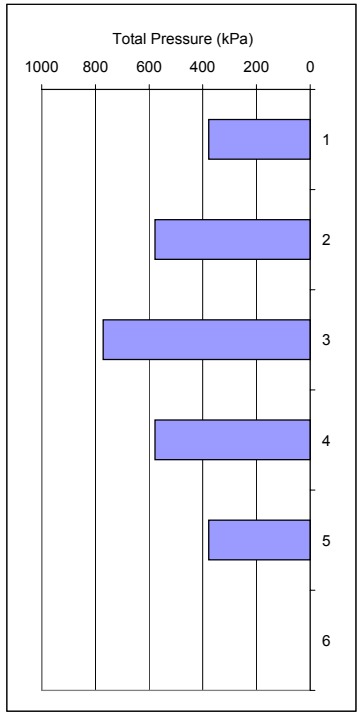
This test (20.6 to 35.9m) was performed to provide data on the 23.8 to 26.7 m zone that was previouly untested due to problems sealing the packer in that zone. Note that the total 'take' of this 15.4 m interval is less than the sum of the three other zones that were tested (Tests 6,7 and 8 which comprized 12.65 m of this interval). However, all tests indicated a Lugeon value of less than 1.

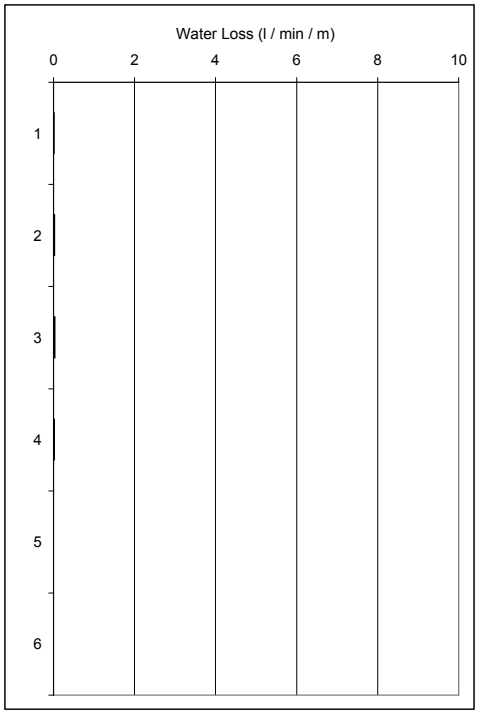
Interpreted Lugeon Value: 1

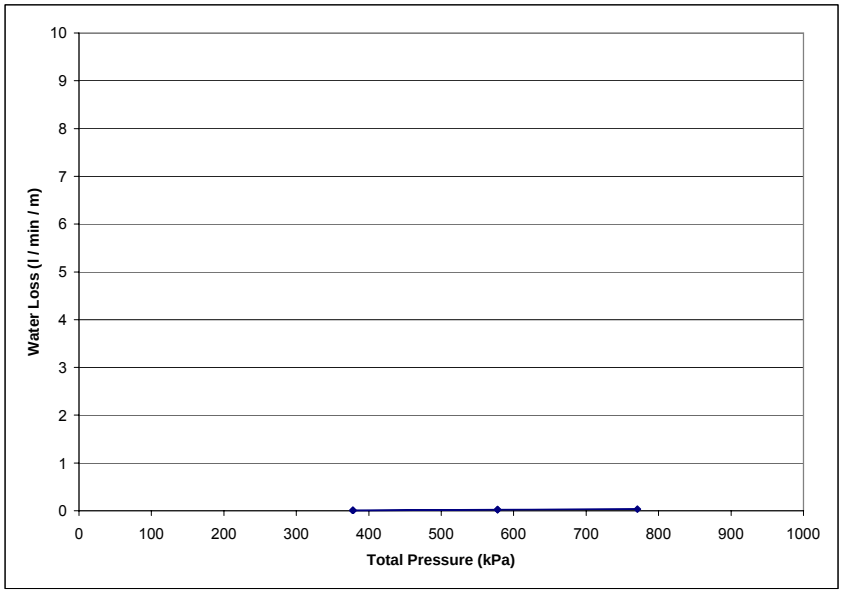
Interpreted flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 4.7 \times 10^{-9}$ m/sec







BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Packer Test - Field Form

Hole # BGC05-27

Date: 18-Sep-05
Client: D&T
Project #: 0257-038-01
Project: 2005 Plug Dam
Location: Bench (right abutment)
Personnel: CB
Depth to WT: 9.60 m
Height of Gauge: 1.02 m
Stick Up: 1.83 m

Packer Setup Type: Single

Hole Diameter: NQ
Plunge: 70°
Pump Capacity: 24 IGal/min
Collar El.:
Packer Inflation Pressure: 350 psi
Water Flushed (Vol/Time/Until Clean): Until Clean

Time Start Packer Testing: 2:27pm
Start Flushing: 2:27pm
End Flushing: 2:46pm
End Packer Testing: 4:20pm

Test #	Gauge Pressure (psi)	Depth ft From / To	Test Length	Time Start / Finish	Elapsed (min)	Flow Meter: cubic metres Start / Finish	Volume (m^3)	Rate (L/min)	Remarks
		117.5		3:13		22.7913			
10	43	133	15.5	3:15	2	22.7923	0.0010	0.50	
				3:15		22.7923			
	43			3:17	2	22.7931	0.0008	0.40	
				3:17		22.7931			
	43			3:19	2	22.794	0.0009	0.45	
				3:19		22.794			
	43			3:21	2	22.7949	0.0009	0.45	
				3:21		22.7949			
	43			3:23	2	22.7958	0.0009	0.45	
		117.5		3:24		22.7964			
	72	133	15.5	3:26	2	22.7975	0.0011	0.55	
				3:26		22.7975			
	72			3:28	2	22.7987	0.0012	0.60	
				3:28		22.7987			
	72			3:30	2	22.7999	0.0012	0.60	
				3:30		22.7999			
	72			3:32	2	22.8011	0.0012	0.60	
				3:32		22.8011			
	72			3:34	2	22.8022	0.0011	0.55	
		117.5		3:35		22.8028			
	100	133	15.5	3:37	2	22.8044	0.0016	0.80	
		117.5		3:37		22.8044			
	100	133	15.5	3:39	2	22.8058	0.0014	0.70	
				3:39		22.8058			
	100			3:41	2	22.8073	0.0015	0.75	
				3:41		22.8073			
	100			3:43	2	22.8085	0.0012	0.60	
				3:43		22.8085			
	100			3:45	2	22.8098	0.0013	0.65	
				3:45		22.8098			
	100			3:47	2	22.8111	0.0013	0.65	
		117.5		3:48		22.8115			
	72	133	15.5	3:50	2	22.8128	0.0013	0.65	
				3:50		22.8128			
	72			3:52	2	22.814	0.0012	0.60	
				3:52		22.814			
	72			3:54	2	22.8152	0.0012	0.60	
				3:54		22.8152			
	72			3:56	2	22.8163	0.0011	0.55	
				3:56		22.8163			
	72			3:58	2	22.8174	0.0011	0.55	
		117.5		3:59		22.8177			
	43	133	15.5	4:01	2	22.8184	0.0007	0.35	
				4:01		22.8184			
	43			4:03	2	22.8191	0.0007	0.35	
				4:03		22.8191			
	43			4:05	2	22.8199	0.0008	0.40	
				4:05		22.8199			
	43			4:07	2	22.8205	0.0006	0.30	
				4:07		22.8205			
	43			4:09	2	22.8213	0.0008	0.40	
		117.5		4:10		22.822			
	100	133	15.5	4:12	2	22.8234	0.0014	0.70	
				4:12		22.8234			
	100			4:14	2	22.8248	0.0014	0.70	
				4:14		22.8248			
	100			4:16	2	22.8259	0.0011	0.55	
				4:16		22.8259			
	100			4:18	2	22.827	0.0011	0.55	
				4:18		22.827			
	100			4:20	2	22.8281	0.0011	0.55	

Constant Head (Lugeon) Test Analysis - Summary Information

Diamond Drillhole: BGC05-27
Water Test Interval: 35.81m to 40.54m

Project Number:	0257-038-01
Client:	Deloitte & Touche Inc.
Project Site:	Plug Dam
General Location:	Bench (Right Abutment)
Coordinates*:	6914171 N
	585850 E
Collar Elevation:	1159.4 m
Azimuth:	deg
Dip:	70 deg
Date:	Sept 18/05
Static W.L. below stick-up:	9.60 m
Stick-up A.G.L. along dip:	1.83 m
Static W.L. below G.L.:	7.30 m (vertical)
Height of gauge A.G.L.:	1.02 m (vertical)
Bottom of Interval B.G.L.:	40.54 m
Top of Interval B.G.L.:	35.81 m
Length of Interval L:	4.73 m
Middle of Interval to D.F.:	38.03 m (vertical)
Open Hole Radius R:	0.0375 m

*** Note: Coordinates and elevation based on UTM Nad 27**

Duration of Test (min)	Field Gauge Reading (psi)	Gauge Reading (kPa)	System Compliance (kPa)	Net Gauge Pressure* (KPa)	Total Pressure ** (KPa)	Total Head (m of water)	Field Water Loss (m^3)	Water Loss (Litres)	Water Loss (litre per minute)	Water Loss (L/min/m)	Lugeon	Representative Lugeon	K (m/sec)	Comments
10	43	296.47	0.36	296.11	377.74	38.5	0.00	4.50	0.45	0.10	0.3		3.17E-08	
10	72	496.42	0.48	495.95	577.58	58.9	0.01	5.80	0.58	0.12	0.2		2.67E-08	
10	100	689.48	0.55	688.92	770.55	78.5	0.01	6.70	0.67	0.14	0.2	1	2.31E-08	
10	72	496.42	0.48	495.94	577.57	58.9	0.01	5.90	0.59	0.12	0.2		2.72E-08	
10	43	296.47	0.29	296.19	377.82	38.5	0.00	3.60	0.36	0.08	0.2		2.54E-08	
10	100	689.48	0.50	688.97	770.61	78.6	0.01	6.10	0.61	0.13	0.2		2.11E-08	
												average	2.59E-08	

* Net Gauge Pressure = Raw Gauge Pressure - System Compliance

** Total Pressure = Net Gauge Pressure + Excess Hydrostatic Pressure (height of gauge above static water)

Comments: Flow measured in cubic metres using a Amco Elstermeter Company flowmeter and converted. Single Packer arrangement used. System compliance calculated based on calibration test conducted at start of program.

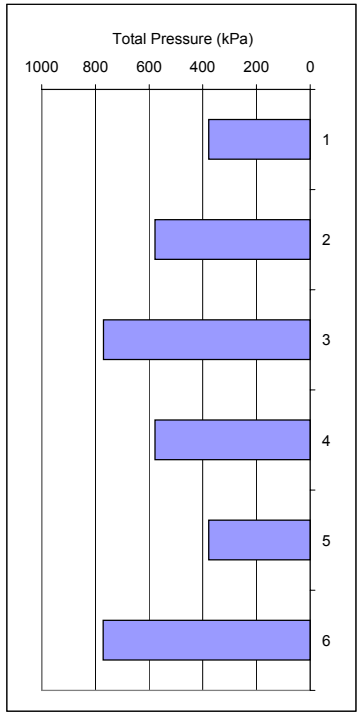
Lugeon calculated based on the ratio of 1000/ total pressure as per Houlsby 1990

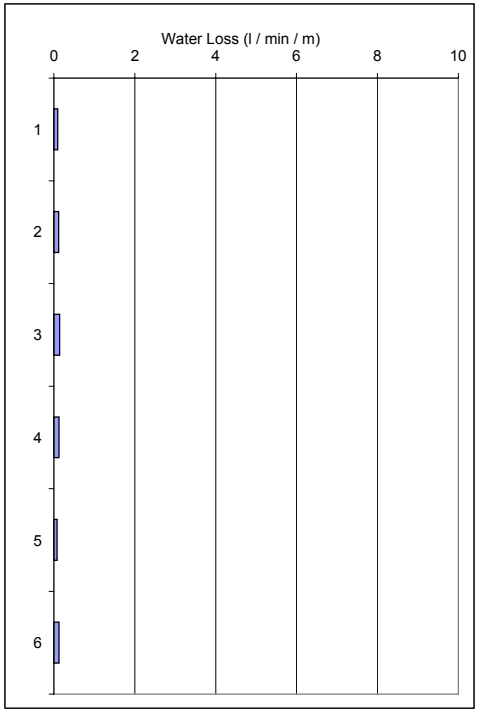
Interpreted Lugeon Value: 1

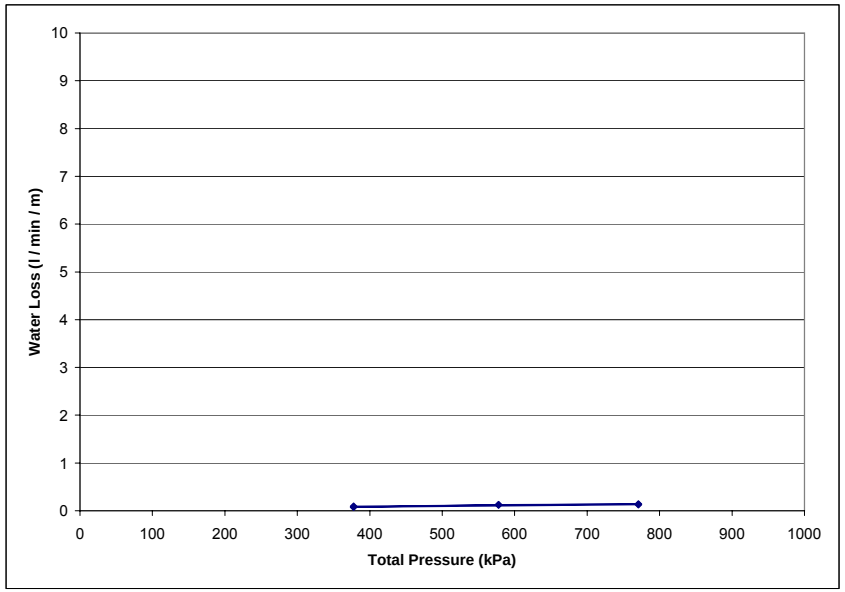
Interpretated flow pattern (Houlsby 1990) : Laminar.

Hydraulic Conductivity (K) = Q ln(L/R) / 2πLH where Q is measured in m^3/sec, H is total head of water in meters (converted from total pressure) and K is calculated in m/sec

$K = 2.6 \times 10^{-8}$ m/sec







APPENDIX D
PRESSURE GROUT TESTING

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 13 psi

Date:Aug. 24, 2005	**Elevation: 1182.8 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 11' (3.35 m)- 12.8 litres**	**Depth: 27' - 38'**	**Bearing: 53 Mag. N.**
Client: D&T	**Hole Diameter: NQ3**	**Location: Left Abutment - Plug Dam**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure (psi)**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
			13	1:1	1.52	200			118				
									91	27	19		Filling the supply lines, not included in the injected total
		0	4						75	16	11		Fill hole
4:59	5:14	15	13						79			0	Bleed at 5:17
5:14	5:31	17	13						86			0	Bleed at 5:33
5:31	5:46	15	13						83			0	Complete
													The grout plant included both an agitator and hopper. The volume contained in the hopper was not measured in this test - therefore the volume of injected grout varies.
Totals:										**43**	**30**		**Sheet _____1___ of ____1_____**

Cement: 12.64 kg	**Other 10 min mixing**	**Qty Check: 9 kg/m**	**Hole No. BGC05-24**
Sand: kg	**Packer Settings / Pressure 100psi**	**Insp: Gerry Ferris**	
Bentonite: kg	**Complete ☐**	**Control:**	

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total: 141 psi

Target Gauge Pressure: 80 psi

Date:Aug. 29, 2005	**Elevation: 1182.8 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 40' (12.19 m)- 46.7 litres**	**Depth: 110' - 150'**	**Bearing: 53 Mag. N.**
Client: D&T	**Hole Diameter: NQ3**	**Location: Left Abutment - Plug Dam**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Water 0.2m³**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
5:20				2:1	1.29	100	4		111.02				
5:23									101.37	9.65	4.3		Filling the supply lines, it is not included in the injected amounts
5:34									88.43	12.94	5.35		Filling the hole.
5:51									88.76	0.00			
6:08									85.34	3.42	1.4		
6:17									86.94	0.00			Checked and the lines were clogged, this test should be ignored.
Totals:										**16.36**	**6.75**		**Sheet ____1____ of _____1____**

Cement: 6.75 kg	**Other**	**Qty Check: 0.56 kg/m**	**Hole No. BGC05-24**
Sand: kg	**Packer Settings / Pressure 350**	**Insp: Gerry Ferris**	
Bentonite: kg	**Complete ☐**	**Control:**	

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total: 141 psi

Target Gauge Pressure: 80 psi

Date:Aug. 30, 2005	**Elevation: 1182.8 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 111' (33.83 m) - 134 litres**	**Depth: 39' - 150'**	**Bearing: 53 Mag. N.**
Client: D&T	**Hole Diameter: NQ3**	**Location: Left Abutment - Plug Dam**	

Time				**Grout Batched (by weight)**					**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
				3:1	1.21	80	4	126				
									126	39		This grout was tremied into hole prior to setting the packer
3:26								114				Starting volume of grout in system.
3:26	3:31	5	0					108	6	2		filled the hole
3:32	3:37	5	10					103	5	2	1.03	
3:37	3:45	8	50					13	90	28	11.20	
3:56				3:1	1.21	80		141				mixed second batch of grout
3:59	4:04	5	40					1	140	43	27.98	
4:05								103				
4:14	4:18	4						17	86	26	5*	
4:21				3:1	1.21	80		146				
4:21	4:26	5	45					28	117	36	23.48	
4:28								150				
4:37	4:43	6	50					1	149	46	24.78	End of 3:1 batch.
4:47				2:1	1.29	100		144				
4:49	4:56	7	55					17	127	53	18.21	
5:06								109				
5:07	5:25	18	60					3	106	44	5.87	
5:49				1:1	1.52	200		144				
5:52	5:58	6	60					13	132	93	21.93	
6:04								129				
6:06	6:14	8	60					26	103	72	12.82	
6:20				1:1	1.52	200		140				
6:22	6:37	15	60					47	93	66	6.20	
6:37	6:42	5	60					49	0	0	0.00	
6:45								130				
6:45	7:00	15	60					105	25	18	1.69	
7:00	7:12	12	60					102	3	2	0.27	
7:12	7:27	15	60					104	0			Grouting test complete
Totals:						**740**			**1181.09**	**530.96**		**Sheet ____1____ of ___1_____**

Cement: 531.0 kg	**Other**	**Qty Check: 15.7 kg/m**
Sand: kg	**Packer Settings / Pressure 350**	**Insp: Gerry Ferris**
Bentonite: 4.0 kg	**Complete** ☐	**Control:**

Hole No. BGC05-24

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 20psi

Date: Sept. 1, 2005	**Elevation: 1181.0 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" / 10' (3.05 m) - 11.7 L**	**Depth: 25' - 35'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3**	**Location: Right Abutment - Plug Dam**	
		NOTE: Water pressure gives 8UL	

Time				**Grout Batched by weight**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
				1:1	1:52	200	0						about 100 l of this batch was wasted
										11	8		Used to fill hole
6:30	6:40	10	20							unknown			Return line fell from agitator, unknown injection volume
6:43									90.8				
6:45	6:51	6	20						85.2	6	4	0.93	
6:51	6:58	7	20						82.3	3	2	0.41	
6:58	7:00	2	20						79.7	3	2	1.30	
7:00	7:10	10	20						75.1	5	3	0.46	
7:10	7:20	10	20						70.6	5	3	0.45	
7:20	7:30	10	20						72.1	0	0	0.00	
7:30	7:40	10	20						75.1	0	0	0.00	Grouted to refusal
Totals:										**31.2**	**22.0**		**Sheet ____1____ of _____1__**

Cement: 22 kg kg	**Other Gauge is 40" above ground**	**Qty Check: 7.2 kg/m**
Sand: kg	**Packer Settings / Pressure 150psi**	**Insp: Gerry Ferris**
Bentonite: kg	**Complete** ☐	**Control:**

Hole No. BGC05-25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 35psi (having problem getting packer below 30 feet)

Date: Sept. 2, 2005	**Elevation: 1181.0 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" / 13' (3.96 m) - 15.2 L**	**Depth: 30' - 43'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3**	**Location: Right Abutment - Plug Dam**	

NOTE: Water pressure test

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Started Batch**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
2:38				3:1	1.21	80	6	1:45pm	132.78				
2:39									122.03	10.75	3.31		To fill lines
2:43									122.08	0	0.00		To fill hole
2:44	2:49	5	10						115.78	6.29	1.94	1.26	
2:49	2:59	10	35						105.16	10.62	3.27	1.06	
2:59	3:09	10	35						97.93	7.23	2.23	0.72	
3:09	3:19	10	35						91.74	6.19	1.91	0.62	
3:19	3:29	10	35						84.71	7.03	2.17	0.70	
3:29	3:39	10	35						79.42	5.29	1.63	0.53	
3:39	3:49	10	35						74.40	5.02	1.55	0.50	DONE TEST
Totals:				**Plus waste other 1/2 batch which never left mixer110L**						**47.68**	**14.69**		**Sheet ____1____ of ___1____**

Cement: 14.7 kg	**Other Gauge is 42" above ground**	**Qty Check: 3.01 kg/m**
Sand: kg	**Packer Settings / Pressure 250psi**	**Insp: Gerry Ferris**
Bentonite: 1 kg	**Complete** ☐	**Control:**

Hole No. BGC05-25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 70psi

Date: Sept. 4, 2005	**Elevation: 1181.0 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" - 43' (13.11 m) -50.2 litres (46.7L for 40')**	**Depth: 40-83'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3 - 2.75"**	**Location: Right Abutment - Plug Dam**	
	Gauge is 41" above ground		

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
				3:1	1.21	80	6						
10:59			0						135.82				full agitator
10:59	11:01	2	0						124.13	11.69	3.62	5.85	filled lines
11:01	11:03	2							126.72	0.00	0.00		filled hole
11:03	11:09	6	15						104.36	22.36	6.93	3.73	likely filling hole
11:09	11:14	5	15						96.56	7.80	2.42	1.56	
11:14	11:15	1	15	Fill Agitator					145.24	N/A			
11:15	11:26	9	40						123.44	21.80	6.76	2.42	likely filling hole
11:26	11:31	5	70						108.93	14.51	4.50	2.90	
11:31	11:32	1	70	Fill Agitator					156.56	N/A			
11:32	11:40	8	70						138.42	18.15	5.63	2.27	at 11:36 am mixed another batch (3:1)
11:40	11:55	15	70						111.42	27.00	8.37	1.80	
	11:55			3:1	1.21	80	6		115	152 from page 1			2nd batch mixed
11:55	12:10	15	70						84.22	27.2	8.43	1.81	
12:10	12:15	5	70						67.98	16.24	5.03	3.25	
12:15	12:25	10	70						57.28	10.70	3.32	1.07	
12:25	12:27								167.92	N/A	N/A		Filled Agitator
12:25	12:40	15	70						150.22	17.70	5.49	1.18	5-10L waste due to over flow
12:40	12:50	10	70						134.86	15.35	4.76	1.54	
12:50	1:00	10	70						124.68	10.19	3.16	1.02	
1:00	1:10	10	70						110.78	13.90	4.31	1.39	
													146L injected
Totals:										**222.89**	**69.10**		**Sheet ___1___ of ___1___**

Cement: 69.1 kg	**Other Gauge is 41" above ground**	**Qty Check: 5.27 kg/m**
Sand: kg	**Packer Settings / Pressure 300psi**	**Insp: Gerry Ferris**
Bentonite: 5.2 kg	**Complete ☐**	**Control:**

Hole No. BGC05-25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 140psi

Date: Sept. 7, 2005	**Elevation: 1181.0 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.78" / 93' (28.35 m) -109 litres (58.4 litres for 50')**	**Depth: 40' - 133'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3 - 2.75"**	**Location: Right Abutment -Plug Dam**	
		NOTE: 83' - 133' Has not been previously grouted.	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
				3:1	1.21	80	6	0.24	167.00				
2:41	2:44	3	0						114.02	52.98	16.42	17.66	To fill lines
2:44	3:03	19	0						109.85	4.17	1.29	0.22	To fill hole
3:03	3:13	10	20						97.12	12.72	3.94	1.27	
3:13	3:18	5	80						87.00	10.13	3.14	2.03	
3:18	3:23	5	80						79.42	7.58	2.35	1.52	
3:23	3:28	5	75						44.50	34.92	10.83	6.98	
3:28	3:29	1							142.13				Refill Agitator
3:29	3:36	7	75-80						28.32	113.80	35.28	16.26	
3:36	3:43	7							150.99				Refill Agitator
3:43	3:50	7	75-80						40.12	110.86	34.37	15.84	
3:50	3:57	7		Refill Agitator					138.40				
3:57	4:04	7	75-80						28.19	110.21	34.17	15.74	
4:04	4:18	14		Refill Agitator					157.07				
4:20	4:27	7	75-80						21.51	135.56	42.03	19.37	
4:27	4:31	4		Refill Agitator					159.21				
4:31	4:43	12	75-80						27.72	131.49	40.76	10.96	
4:43	4:47	4		Refill Agitator					55.69				Refilled agitator with last of 3:1 mix
4:47	4:53	7							30.01	25.68	7.96	3.67	
4:53	5:02	9		Refill Agitator		100			141.13				Added 2:1 mix to hole
5:02	5:10	8	75-80						12.56	128.58	54.45	16.07	
5:10	5:15	5		Refill Agitator					124.03				Filled agitator with remaining 2:1 mix
5:15	5:25	10							28.50	95.53	40.6	9.55	
5:25	5:38	13	80			200			154.28				Refill Agitator. Refilled with 1:1 mix
5:38	5:48	10							17.71	136.56	109.25	13.66	
5:48	5:50	2	80-90						145.14				Refill Agitator
5:50	6:05	15	0						97.72	47.42	37.94	3.16	
6:05	6:20	15	75						76.52	21.20	16.96	1.41	
6:20	6:30	10	75						54.88	21.64	17.31	2.16	
6:30	6:40	10	75						47.37	7.51	6.01	0.75	
6:40	6:50	10	75						30.42	16.94	13.55	1.69	
EOH									142.65				Remainder of batch plus 5 bag 1:1 mix for tremi down the hole.
Totals:										**1172.52**	**471.58**		**Sheet ____1____ of ___1___**

Cement: 471.6 kg	**Other**	**Qty Check: 17 kg/m**	**Hole No. BGC05-25**
Sand: 0.24 kg	**Packer Settings / Pressure 300psi**	**Insp: Gerry Ferris**	
Bentonite: 6.0 kg	**Complete** ☐	**Control:**	

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 20psi

Date: Sept. 9, 2005	**Elevation: 1153.8 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" / 10.5' (3.20 m) - 12.3 litres**	**Depth: 17.5'-28'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3**	**Location: Road**	

Time				**Grout Batched**					**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
12:40				1:1	1.52	200		134.67				
12:40	12:42	2						130.25	4.42	3.53	2.21	Fill Lines
12:42	12:49	7						129.17	1.08	0.86	0.15	Fill Hole
12:49	12:54	5	0					115.36	13.81	11.05	2.76	Likely filling hole
12:54	1:01	7	10					94.86	20.50	16.40	2.93	
1:01	1:05	4	20					78.58	16.28	13.02	4.07	
1:05	1:15	10	20					78.20	0.38	0.30	0.04	
1:15	1:25	10	20					69.80	8.40	6.72	0.84	
1:25	1:27	2	20					33.50	36.30	29.04	18.15	
1:27	1:34							141.81				Filling Agitator
1:34	1:40	6	10-15					16.07	125.74	100.59	20.96	
1:40	1:50			1:1		200		166.49				Refill the Agitator
1:50	2:00	10	15-20					11.69	154.80	123.84	15.48	
2:00	2:11			1:1				135.09				Refill the Agitator
2:11	2:19	8	20					16.88	118.21	94.57	14.78	
2:19	2:30			0.8:1		260		168.17				Refill the Agitator
2:30	2:45	15	20					64.78	103.38	95.11	6.89	
2:45	2:55	10	20					9.16	55.62	51.17	5.56	
2:55	3:04			0.8:1				151.34				Refill the Agitator
3:04	3:14	10	20					149.98	1.37	1.26	0.14	
3:14	3:24	10	20					147.49	2.49	2.29	0.25	
Totals:									**658.36**	**546.23**		**Sheet ____1____ of ___1___**

Cement: 546.2 kg	**Other Gauge is 96" above ground**	**Qty Check: 171 kg/m**
Sand: kg	**Packer Settings / Pressure 300 psi**	**Insp: Gerry Ferris**
Bentonite: kg	**Complete ☐**	**Control:**

Hole No. BGC05-26

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 30psi

Date: Sept. 10, 2005	**Elevation: 1153.8 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" / 10' (3.05 m) - 11.7 litres**	**27.5'-38'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3**	**Location: Road**	

Time				**Grout Batched**					**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
				2:1	1.29	100	8					
10:00	10:02							123.34				Fill the lines
10:02	10:06	3						112.80	10.54	4.53	3.51	Fill the hole. Spilled 4L out bleed valve.
10:06	10:12	5						116.01	0.00	0.00	0.00	
10:12	10:22	10	10					103.69	12.32	5.30	1.23	
10:22	10:32	10	30					107.64	0.00	0.00	0.00	
10:32	10:42	10	30					105.36	2.28	0.98	0.23	
10:42	10:52	10	30					98.36	7.00	3.01	0.70	
10:52	10:55	3	30					98.36	0.00	0.00	0.00	
10:55	10:56							138.59				Refilled Agitator.
10:56	11:06	10	30					130.14	8.45	3.63	0.84	
Totals:									**40.59**	**17.46**		**Sheet ____1____ of ___1___**

Cement: 17.5 kg	**Other Gauge is 95" above ground**	**Qty Check: 5.73 kg/m**	**Hole No. BGC05-26**
Sand: kg	**Packer Settings / Pressure 350 psi**	**Insp: Gerry Ferris**	
Bentonite: 1.4 kg	**Complete ☐**	**Control:**	

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 45psi

Date: Sept. 11, 2005	**Elevation: 1153.8 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" / 20' (6.10m) - 23.4 litres**	**Depth: 27.5'-58'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3**	**Location: Road**	

Time				**Grout Batched**					**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
11:15		5	10	2:1	1.29	100	6	130.11				Total Volume
11:17								125.33	4.78			Grout in lines
11:30								123.48	1.85	0.76		Grout in hole
11:30	11:35	5						52.38	71.11	29.15	14.22	
11:35	11:40	5	10					16.36	36.02	14.77	7.20	
11:40	11:44	4	10					118.75				
11:44	11:45	1	10					87.56	31.19	12.79	31.19	
11:45	11:55	10	10					58.13	29.43	12.07	2.94	
11:55	11:58	3	27					14.08	44.05	18.06	14.68	
11:58	12:00	2	15					149.11				
12:00	12:05	5	15	1:1	1.52	200	6	56.52	92.58	74.07	18.52	
12:05	12:07	2	25					141.46				
12:07	12:15	8	25					7.18	134.28	107.42	16.78	
12:15	12:21	6	25					136.69				
12:21	12:26	5	25					42.82	93.87	75.09	18.77	
12:26	12:33	7	25					4.87	37.96	30.36	5.42	
12:33		7	30					166.13				
12:33	12:40	3	35					88.05	78.09	62.47	26.03	
12:40	12:43	4	45					7.68	80.37	64.30	20.09	
12:43	12:47	5	45	0.8:1	1.61	260		154.47				
12:47	12:52	5	45					127.74	26.73	24.59	5.35	
12:52	12:57	5	45					121.66	6.08	5.59	1.22	
12:57	1:02	10	45					123.94	0.00	0.00	0.00	
1:02	1:12	10	45					116.22	7.72	7.10	0.77	
1:12	1:22	10	45					116.19	0.03	0.03	0.00	
Totals:									**771.35**	**538.62**		**Sheet ____1____ of ___1___**

Cement: 538.62 kg	**Other Gauge is 96" above ground**	**Qty Check: 88.2kg/m**
Sand:	**Packer Settings / Pressure 350 psi**	**Insp: Gerry Ferris**
Bentonite: 18 kg	**Complete** ☐	**Control:**

Hole No. BGC05-26

K:\Projects\0257 D&T\038 2005 Plug Dam\Report\Appendix D - pressure grout\BGC05-26\Grout Injection record BGC05-26.xls

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 95psi

Date: Sept. 12, 2005	**Elevation: 1153.8 m**	**Type: Investigation**	**Inclination: 90**
Project # 0257-038-01	**DIA / Length: 2.75" / 30' (9.14 m) - 35 litres**	**Depth:54.5'-88'**	**Bearing:**
Client: D&T	**Hole Diameter: NQ3**	**Location: Road**	

Time				**Grout Batched**					**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
3:50				3:1	1.21	80		134.67				Agitator
								134.57	0.09			Fill Lines
4:00								121.31	13.26	4.11		Fill Hole
4:04	4:08	4	10					126.29	0.00	0.00	0.00	
4:08	4:13	5	10					124.27	2.02	0.63	0.40	
4:13	4:18	5	10					120.36	3.90	1.21	0.78	
4:18	4:23	5	20					120.78	0.00	0.00	0.00	
4:23	4:28	5	20					114.99	5.78	1.79	1.16	
4:29	4:34	3	50					110.47	4.52	1.40	1.51	
4:34	4:39	5	50					106.64	3.83	1.19	0.77	
4:39	4:49	10	95					98.58	8.06	2.50	0.81	
4:49	4:59	10	95					90.75	7.83	2.43	0.78	
Totals:									**49.21**	**15.26**		**Sheet ____1____ of ___1___**

Cement: 15.3 kg	**Other Gauge is 96" above ground**	**Qty Check: 1.66 kg/m**	**Hole No. BGC05-26**
Sand: kg	**Packer Settings / Pressure 350 psi**	**Insp: Gerry Ferris**	
Bentonite: kg	**Complete ☐**	**Control:**	

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 10psi

Date: Sept. 14, 2005	**Elevation: 1159.4 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 10.5' (3.20 m) - 12.3 litres**	**Depth: 4.5'-15'**	**Bearing: 92^0 E**
Client: D&T	**Hole Diameter: NQ3**	**Location: Bench**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
10:20			0	0.8:1	1.61	260			118.80				Agitator
									113.49	5.30	4.88		Lines
10:27									88.98	24.51	22.55		Hole
10:27	10:32	5							24.07	64.91	59.72	12.98	
10:32	10:33	1	0						0.11	23.96	22.05	23.96	
10:33									136.20				
10:38	10:43	5	0						33.93	102.26	94.08	20.45	
10:43	10:44	1	0						15.22	18.72	17.22	18.72	
10:54									155.16				
10:54	10:59	5	0						38.17	116.99	107.63	23.40	
10:59	11:01	2	0						5.31	32.86	30.23	16.43	
11:07									130.80				
11:07	11:12	5	0						35.67	95.13	87.52	19.03	
11:12	11:14	2	0						5.49	30.18	27.77	15.09	
11:24									154.39				
11:24	11:29	5	0						30.81	123.58	113.70	24.72	
11:29	11:30	1	0						1.69	29.12	26.79	29.12	
11:39									114.32				
11:42	11:47	5	5						67.48	46.84	43.09	9.37	
11:47	11:57	10	5						69.08	0.00	0.00	0.00	
11:57	12:07	10	5						68.26	0.82	0.76	0.08	
12:08	12:18	10	10						68.04	0.21	0.20	0.02	
12:18	12:28	10	10						69.98	0.00	0.00	0.00	
12:28	12:38	10	10						70.90	0.00	0.00	0.00	
Totals:										**685.60**	**630.75**		**Sheet ____1____ of ____1__**

Cement: 630.8 kg	**Other**	**Qty Check: 197 kg/m**
Sand: kg	**Packer Settings / Pressure: 350 psi**	**Insp: Gerry Ferris**
Bentonite: kg	**Complete Gauge height: 8'11"**	**Control:**

Hole No. BGC05-27

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 20psi

Date: Sept. 15, 2005	**Elevation: 1159.4 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 10.5' (3.20 m) - 12.3 litres**	**Depth: 17.5'-28'**	**Bearing: 92^0 E**
Client: D&T	**Hole Diameter: NQ3**	**Location: Bench**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
9:35				1:1	1.52	200			117.71				Fill Lines
									98.77	18.94	15.15		Fill Hole
9:41	9:46	5							4.90	93.87	75.09	18.77	
9:46									120.48				
9:52	9:57	5	5						99.33	21.15	16.92	4.23	
9:57	10:07	10	5						80.48	18.85	15.08	1.88	
10:07	10:12	5	15						5.31	75.17	60.14	15.03	
10:12									133.00				
10:12	10:19	7	15	0.8:1	1.61	260			8.71	124.29	114.34	17.76	
10:19									133.49				
10:22	10:32	10	20						45.53	87.96	80.93	8.80	
10:32	10:42	10	20						20.94	24.60	22.63	2.46	
10:42	10:52	10	20						22.81	0.00	0.00	0.00	
10:52	11:02	10	20						21.09	1.72	1.58	0.17	
Totals:							**Totals**			**447.60**	**386.71**		**Sheet ____1____ of ___1___**

Cement: 469.1 kg	**Other**	**Qty Check: 121 kg/m**
Sand: kg	**Packer Settings / Pressure: 350 psi**	**Insp: Gerry Ferris**
Bentonite: kg	**Complete Gauge height: 9'6"**	**Control:**

Hole No. BGC05-27

BGC ENGINEERING INC.
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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 35psi

Date: Sept. 15, 2005	**Elevation: 1159.4 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 10.5' (3.20 m) - 12.3 litres**	**Depth: 27.5'-38'**	**Bearing: 92^0 E**
Client: D&T	**Hole Diameter: NQ3**	**Location: Bench**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
3:51				0.8:1	1.61				118.25				In Lines
									94.08	24.17			In Hole
4:01	4:06	5	5						44.24	49.83	45.85		
4:06	4:11	5	5						34.44	9.80	9.02		
4:11	4:16	10	15						30.48	3.96	3.64		
4:16	4:26	5	15						8.51	21.98	20.22		
4:26	4:31	5	25						7.76	0.75	0.69		
4:31	4:35								129.15				
4:35	4:45	10	35						132.16	0.00	0.00		
4:45	4:55	10	35						128.93	3.23	2.97		
Totals:							**Totals**			**113.72**	**82.39**		**Sheet ____1____ of ___1___**

Cement: **kg**	**Other**	**Qty Check: 26 kg/m**	**Hole No. BGC05-27**
Sand: **kg**	**Packer Settings / Pressure: 350 psi**	**Insp: Gerry Ferris**	
Bentonite: **kg**	**Complete Gauge height: 9'6"**	**Control:**	

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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 50psi

Date: Sept. 16, 2005	**Elevation: 1159.4 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 10.5' (3.20 m) - 12.3 litres**	**Depth: 37.5'-48'**	**Bearing: 92^0 E**
Client: D&T	**Hole Diameter: NQ3**	**Location: Bench**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
11:30				1:1	1.52	200			122.25				Fill Lines
									118.87	3.38	2.71		Fill Hole
11:47	11:57	10	10						101.88	16.98	13.59	1.70	
11:57	12:07	10	30						94.44	7.45	5.96	0.74	
12:07	12:17	10	50						90.98	3.46	2.77	0.35	
12:17	12:27	10	50						90.24	0.75	0.60	0.07	
Totals:										**32.02**	**25.61**		**Sheet ____1____ of ___1___**

Cement: 25.6 kg	**Other**	**Qty Check: 8 kg/m**
Sand: kg	**Packer Settings / Pressure: 350 psi**	**Insp: Gerry Ferris**
Bentonite: kg	**Complete Gauge height:**	**Control:**

Hole No. BGC05-27

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Grout Injection Record

Target Pressure Total:

Target Gauge Pressure: 70psi

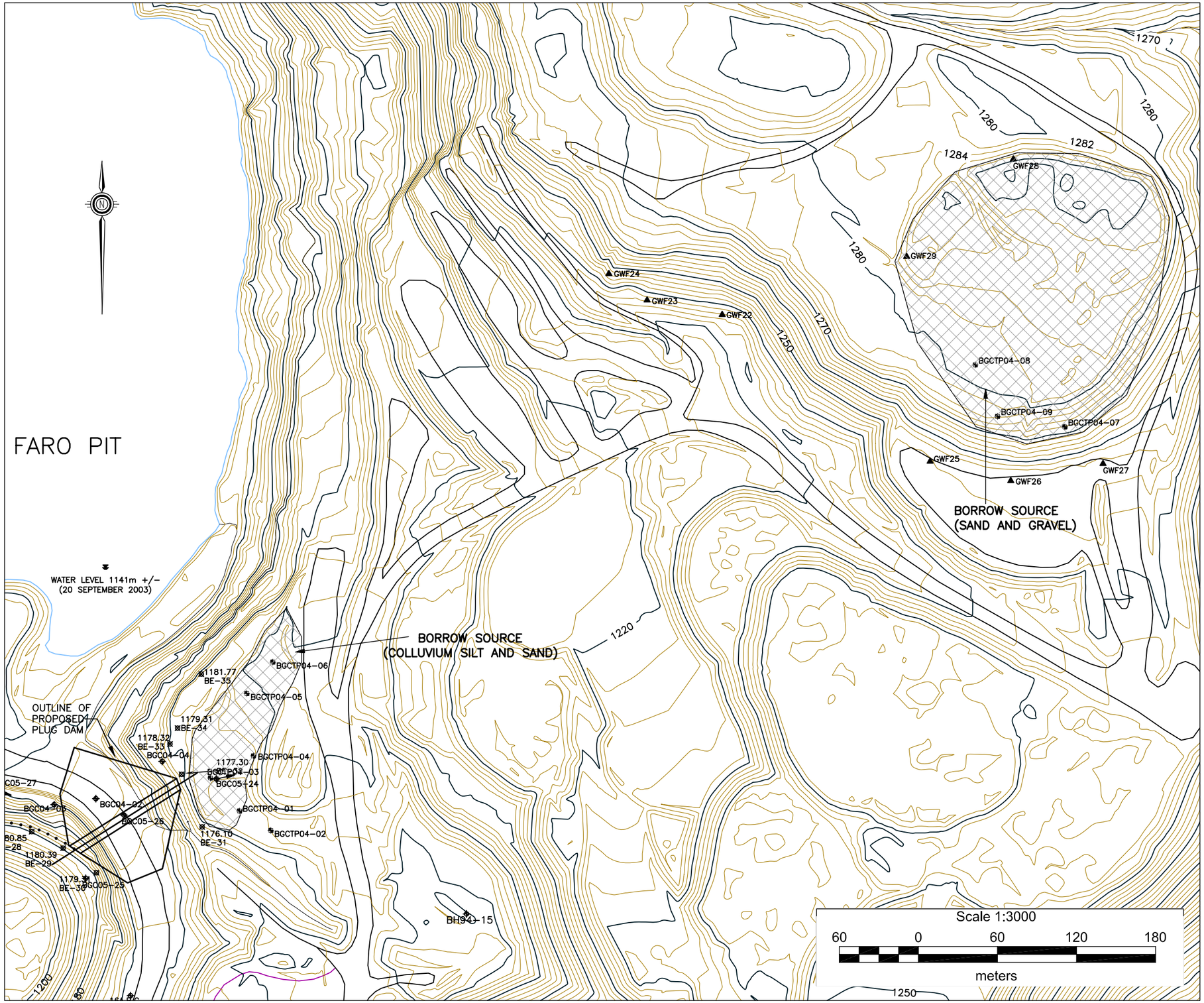
Date: Sept. 18, 2005	**Elevation: 1159.4 m**	**Type: Investigation**	**Inclination: 70**
Project # 0257-038-01	**DIA / Length: 2.75" / 85' (25.91 m) - 99.3 litres**	**Depth: 47.5'-133'**	**Bearing: 92^0 E**
Client: D&T	**Hole Diameter: NQ3**	**Location: Bench**	

Time				**Grout Batched**						**Injected**			
From	**To**	**Elapsed (Min)**	**Gauge Pressure**	**Mix**	**Unit Weight**	**Cement (kg)**	**Bentonite (kg)**	**Sand (kg)**	**Total Grout Volume (L)**	**Volume (L)**	**Cement (kg)**	**Acceptance Rate (L/min)**	**Remarks (Always Include Packer Settings)**
5:40				3:1	1.21	80	16		134.70				Agitator
5:40									130.05	4.65	4.28		To fill lines
5:45									124.40	5.65	5.20		To fill hole
5:46	5:56	10	25						115.52	8.89	8.17	0.89	
5:56	6:06	10	70						107.45	8.07	7.43	0.81	
6:06	6:16	10	70						101.66	5.79	5.32	0.58	
													Borehole did not require the calculated 99L that it would take to fill hole. EOH
													Filled hole with leftover grout.
Totals:										**28.39**	**26.12**		**Sheet ____1____ of ___1___**

Cement: 26.1 kg	**Other**	**Qty Check: 1 kg/m**
Sand: kg	**Packer Settings / Pressure: 350 psi**	**Insp: Gerry Ferris**
Bentonite: 5.2 kg	**Complete Gauge height: 4"**	**Control:**

Hole No. BGC05-27

APPENDIX E
BORROW AREA INVESTIGATIONS



CLIENT:

Deloitte & Touche

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	AS SHOWN
DATE:	SEPT. 2006
DRAWN:	EBN
DESIGNED:	EBN
CHECKED:	GWF
APPROVED:	JWC

PROJECT
TASK 20 B – PLUG DAM CONCEPTUAL DESIGN

TITLE
BORROW PIT AREA
BOREHOLE LOCATIONS

PROJECT No.	FIGURE No.	REV.
0257-038-01	E-1	0

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Calgary, AB Phone: (403) 250 5185

K:\Projects\0257 D&T\038 2005 Plug Dam\01\Graphics\Drawings\0257-038-01 FIG E-1.dwg

TEST PIT # BGC TP04-01

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left abutment
Co-ordinates (m): 585036 E, 6914154 N
Ground Elevation (m) : 1182.7
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.9
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			WASTE ROCK Cobbles to sand sized, reddish colour.
1			ORGANICS Mix of topsoil, volcanic ash and decaying trees.
2			
3			SAND Silty, some gravel, trace clay, trace cobbles; olive brown; moist; low plasticity; stiff.
4		GWF-01	
5			Backfilled with excavcated material. No seepage. Some sloughing of waste rock and organic layer.
6			
7			
8			

Su - kPa: 40, 80, 120, 160

VANE: FIELD / LAB
PEAK: ◆ / ■
REMOLD: ◇ / □
▲ UC/2
△ Pocket Pen /2

Moisture Content
W_P% × — — — — — ○ — — — — — × W_L%
20, 40, 60, 80

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Calgary, AB Phone (403) 250 5185

Client: Deloitte & Touche Inc. Faro Mine



Photo 7a waste rock and upper part of organics.



Photo 7b view of wall of test pit, showing waste rock, organics and the lower silty sand.



Photo 7c base of test pit.

CLIENT:

Deloitte & Touche

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A
DATE:	SEPTEMBER 2006
DRAWN:	SLF
DESIGNED:	GWF
CHECKED:	GWF
APPROVED:	JWC

PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
BGCTP04-01

PROJECT No.	DWG. No.	REV.
0257-038-01	E2	0

BGC Engineering Inc.
AN APPLIED EARTH SCIENCES COMPANY
Calgary Alberta
Phone: (403) 250-5185

TEST PIT # BGC TP04-02

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left abutment
Co-ordinates (m): 585060 E, 6914139 N
Ground Elevation (m) : 1183.0
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.6
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			WASTE ROCK Cobbles, some gravel, some sand; reddish colour.
3			SAND (FILL) Reddish colour.
			TOPSOIL Sand, organics, trace volcanic ash.
4			SAND
		GWF-03	Silty, some gravel, trace clay, trace cobbles; moist; low plasticity; olive brown.
			Backfilled with excavcated material. No seepage. Some sloughing of waste rock.
8			

Su - kPa: 40, 80, 120, 160

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ Pocket Pen /2

Moisture Content: W_P% × — — — ○ — — — × W_L%; W%: 20, 40, 60, 80

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Client: Deloitte & Touche Inc. Faro Mine

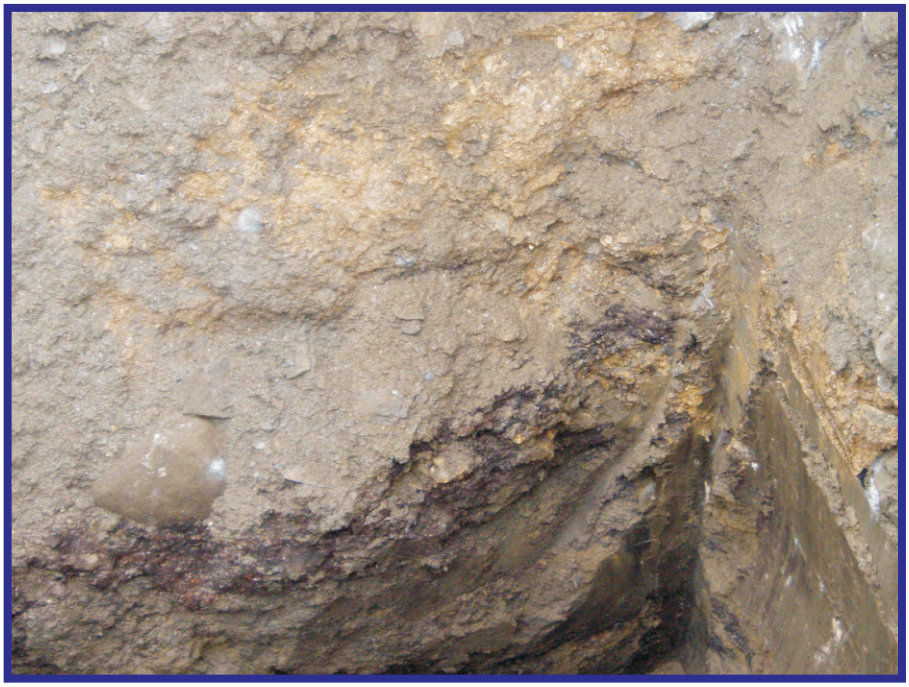


Photo 8a transition from waste rock, organics to silty sand.



Photo 8b view of base of pit, note sloughing of waste rock.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
BGCTP04-02

PROJECT No.	DWG. No.	REV.
0257-038-01	E3	0

TEST PIT # BGC TP04-03

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left abutment
Co-ordinates (m): 585014 E, 6914179 N
Ground Elevation (m) : 1183.1
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to confirmationn of bedrock surface.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.0
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			TOPSOIL Black, organics.
			SAND
		GWF-09	Silty, gravelly, some clay, trace cobbles; moist; olive brown; low plasticity. 0.7 m: 39.1% silt, 41.2% sand, 19.7% gravel.
1		GWF-04	1.5 m: 38.8% silt, 41.4% sand, 19.8% gravel.
2		GWF-05	2.4 m: 20.9% silt, 43.3% sand, 35.8% gravel.
3		GWF-06	3.2 m: 24.2% silt, 43.3% sand, 32.5% gravel.
		GWF-07	
4		GWF-08	WEATHERED SCHISTOSE BEDROCK Backfilled with excavated material. No seepage or sloughing.
5			
6			
7			
8			

Su - kPa
40 80 120 160
VANE FIELD LAB
PEAK ◆ ■
REMOLD ◇ □
▲ UC/2
△ Pocket Pen /2

Moisture Content
W_P% W% W_L%
20 40 60 80

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Client: Deloitte & Touche Inc. Faro Mine



Photo 8a upper part of test pit.



Photo 8b base of test pit.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT: TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE: BGCTP04-03

PROJECT No.	DWG. No.	REV.
0257-038-01	E4	0

TEST PIT # BGC TP04-04

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left abutment
Co-ordinates (m): 585047 E, 6914196 N
Ground Elevation (m) : 1184.8
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.5
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			TOPSOIL Black organic topsoil and volcanic ash.
		GWF-11	SAND Silty, some gravel, trace cobbles; moist; reddish brown. 0.5 m: 28.5% silt, 55.9% sand, 15.6% gravel.
1			SILT
		GWF-10	AND SAND, some gravel, some clay, trace cobbles; moist; olive brown; low plasticity.
2			
3			
		GWF-12	
4			
			Backfilled with excavated material. No seepage or sloughing.
5			
6			
7			
8			

Su - kPa

40 80 120 160

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ Pocket Pen /2

Moisture Content

W_P% W% W_L%

20 40 60 80

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Client: Deloitte & Touche Inc. Faro Mine



Photo 10a upper part of test pit.

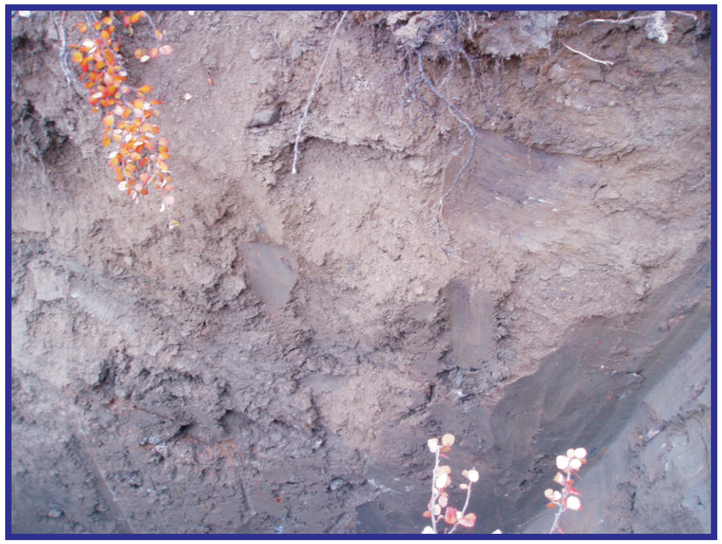


Photo 10b upper soil, just below the organics.



Photo 10c base to test pit.

CLIENT:

Deloitte & Touche

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A
DATE:	SEPTEMBER 2006
DRAWN:	SLF
DESIGNED:	GWF
CHECKED:	GWF
APPROVED:	JWC

PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
BGCTP04-04

PROJECT No.	DWG. No.	REV.
0257-038-01	E5	0

BGC Engineering Inc.
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Calgary Alberta Phone: (403) 250-5185

TEST PIT # BGC TP04-05

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left abutment
Co-ordinates (m): 585042 E, 6914243 N
Ground Elevation (m) : 1188.3
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.4
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			TOPSOIL Black organics and volcanic ash.
			SAND Silty, some gravel, trace clay; moist; reddish tan colour; low plasticity.
1			SAND Silty, gravelly, some clay, trace cobble; moist; tan; low plasticity.
		GWF-13	
2		GWF-14	
3		GWF-15	
4		GWF-16	4.0 m: Some cobbles. Backfilled with excavated material. No seepage or sloughing.
5			
6			
7			
8			

Su - kPa

40 80 120 160

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ Pocket Pen /2

Moisture Content

W_P% W% W_L%

20 40 60 80

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Client: Deloitte & Touche Inc. Faro Mine



Photo 11a upper part of test pit.

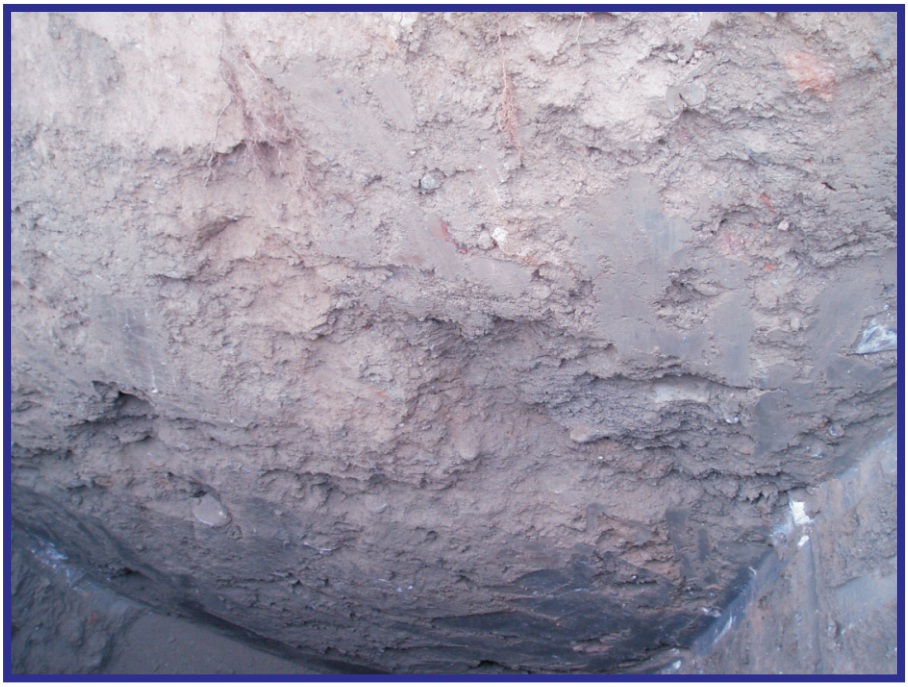


Photo 11b lower part of test pit.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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Calgary, Alberta. Phone: (403) 250-5185

PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
BGCTP04-05

PROJECT No.	DWG. No.	REV.
0257-038-01	E6	0

TEST PIT # BGC TP04-06

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Left abutment
Co-ordinates (m): 585062 E, 6914267 N
Ground Elevation (m) : 1190.2
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.4
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			TOPSOIL Black organic soil and volcanic ash.
			SAND Silty, some gravel, trace clay; moist; tan.
1			SAND Silty, some gravel, trace cobbles; low plasticity to non-plastic; olive; moist.
		GWF-19	1.5 m: 23.9% silt, 51.0% sand, 25.1% gravel.
2			
3			
4		GWF-17	3.9 m: 31.6% silt, 57.0% sand, 11.4% gravel.
		GWF-18	4.2 m: 26.9% silt, 54.6% sand, 18.5% gravel.
			Backfilled with excavated material. No seepage or sloughing.
5			
6			
7			
8			

Su - kPa: 40, 80, 120, 160

VANE: FIELD PEAK ◆, FIELD REMOLD ◇, LAB PEAK ■, LAB REMOLD □, ▲ UC/2, △ Pocket Pen /2

Moisture Content: W_P% × — W% ○ — W_L% ×; 20, 40, 60, 80

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Calgary, AB Phone (403) 250 5185

Client: Deloitte & Touche Inc. Faro Mine



Photo 12a showing the organic soil.



Photo 12b upper portion of soil deposit.



Photo 12c base of test pit.

CLIENT:

Deloitte & Touche

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SCALE:

DATE: SEPTEMBER 2006

DRAWN: SLF

DESIGNED: GWF

CHECKED: GWF

APPROVED: JWC

PROJECT: TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE: BGCTP04-06

PROJECT No.	DWG. No.	REV.
0257-038-01	E7	0

BGC Engineering Inc.
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Calgary Alberta Phone: (403) 250-5185

TEST PIT # BGC TP04-07

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Top of north dump
Co-ordinates (m): E, N
Ground Elevation (m) :
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.0
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			WASTE ROCK Boulders to sand sized particles, dominated by cobble size; reddish brown.
4			Backfilled with excavated material. No seepage. Extensive sloughing of waste rock.

Su - kPa: 40, 80, 120, 160

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ Pocket Pen /2

Moisture Content: W_P% × — — — — — O — — — — — × W_L%; W%: 20, 40, 60, 80

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Calgary, AB Phone (403) 250 5185

Client: Deloitte & Touche Inc. Faro Mine

TEST PIT # BGC TP04-08

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Top of north dump
Co-ordinates (m): E, N
Ground Elevation (m) :
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 5.0
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			WASTE ROCK Boulders to sand sized particles, dominated by cobbles; angular; reddish brown.
3			SAND (FILL) Some cobbles, some gravel, some silt; moist. Placed as part of a dump.
5		GWF-20	Backfilled with excavated material. No seepage. Extensive sloughing of waste rock.

Su - kPa
40 80 120 160

VANE PEAK: ◆ FIELD, ■ LAB
VANE REMOLD: ◇ FIELD, □ LAB
▲ UC/2
△ Pocket Pen /2

Moisture Content
W_P% × — — —

TEST PIT # BGC TP04-09

Project : Plug Dam Investigation

Project No. : 0257-027-01

Location : Top of north dump
Co-ordinates (m): E, N
Ground Elevation (m) :
Datum : Geodetic

Excavator : Anvil's 235 Hoe
Operator : John Salo
Comments : Excavated to maximum reach of excavator.

Start Date : 13 Sep 04
Finish Date: 13 Sep 04
Final Depth of Pit (m) : 4.2
Logged by : GWF
Reviewed by : GWF

Depth (m)	Sample Type	Sample No.	Lithologic Description
0			WASTE ROCK Boulders to sand sized particles, dominated by cobbles; angular; reddish brown.
4			Backfilled with excavated material. Extensive sloughing of waste rock. Dry.
8			

Su - kPa

40 80 120 160

VANE	FIELD	LAB	
PEAK	◆	■	▲ UC/2
REMOLD	◇	□	△ Pocket Pen /2

Moisture Content

W_P% W% W_L%

20 40 60 80

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Calgary, AB Phone (403) 250 5185

Client: Deloitte & Touche Inc. Faro Mine



Photo 13, till dump sample location. Soil sample GWF 22 collected from here.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

BGC Engineering Inc.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, Alberta. Phone: (403) 250-5185

PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF22

PROJECT No.	DWG. No.	REV.
0257-038-01	E8	0



Photo 14a, photo of till dump prior to sample collection.



Photo 14b, sample GWP 23 collected.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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Calgary, Alberta. Phone: (403) 250-5185

PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF23

PROJECT No.	DWG. No.	REV.
0257-038-01	E9	0



Photo 15a dump face prior to sampling.



Photo 15b, Soil sample GWF24 collected

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF24

PROJECT No.	DWG. No.	REV.
0257-038-01	E10	0



Photo 16a, surface prior to sampling.



Photo 16b, following collection of sample GWF 25.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF25

PROJECT No.	DWG. No.	REV.
0257-038-01	E11	0



Photo 17a, prior to disturbance.



Photo 17b, following collection of sample GWF 26.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF26

PROJECT No.	DWG. No.	REV.
0257-038-01	E12	0



Photo 18a, prior to disturbance.



Photo 18b, following collection of GWF 27.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT: TASK 20B PLUGPLUG DAM CONCEPTUAL DESIGN NO. 2

TITLE: SURFACE SAMPLE GWF27

PROJECT No.	DWG. No.	REV.
0257-038-01	E13	0



Photo 19a, prior to sampling.



Photo 19b, following collection of sample GWF 28.

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF28

PROJECT No.	DWG. No.	REV.
0257-038-01	E14	0



Photo 120a, face of dump prior to disturbance.



Photo 20b, collection of sample GWF 29.

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SCALE:	N/A	DESIGNED:	GWF
DATE:	SEPTEMBER 2006	CHECKED:	GWF
DRAWN:	SLF	APPROVED:	JWC

CLIENT: Deloitte & Touche

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PROJECT
TASK 20B PLUG DAM CONCEPTUAL DESIGN

TITLE
SURFACE SAMPLE GWF29

PROJECT No.	DWG. No.	REV.
0257-038-01	E15	0

Laboratory Testing Summary
BGC - Anvil Range Mine September 2004
Project # 1200091.015

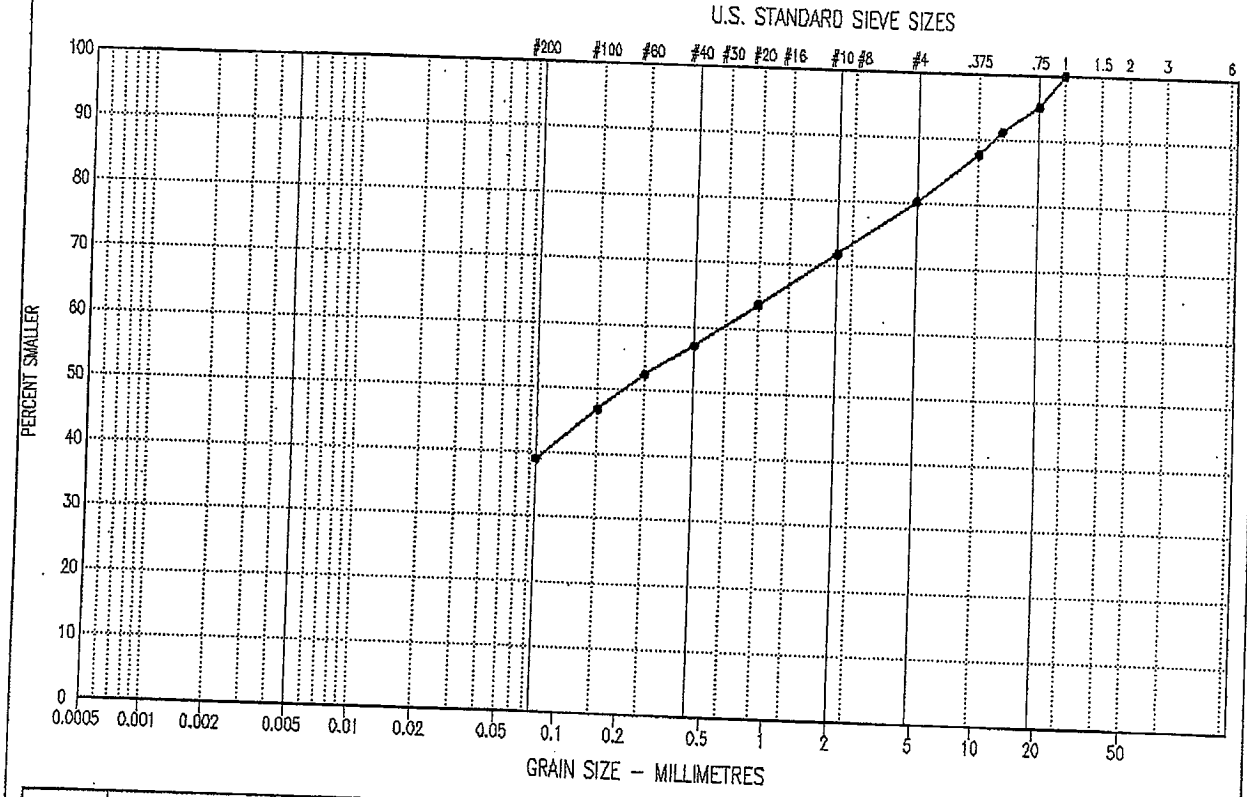
Borehole Number	Sample Number	Moisture Content (%)	Grain Size Distribution (%)				Atterberg Limits (%)			Standard Proctor			
			Clay	Silt	Sand	Gravel	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Dry Density	Optimum Water Content		
BGCTP04-01	GWF - 1	10.7											
BGCTP04-02	GWF - 3	11.1											
BGCTP04-03	GWF - 4	8.9	38.8		41.4	19.8	22	13	9				
BGCTP04-03	GWF - 5	8.5	20.9		43.3	35.8	22	15	7				
BGCTP04-03	GWF - 6	10.1	24.2		43.3	32.5	19	10	9				
BGCTP04-03	GWF - 7	8.2	27.3		52.1	20.6	21	8	13				
BGCTP04-03	GWF - 8	5.3	13.2		28.4	58.4	25	15	10				
BGCTP04-03	GWF - 9	10.0	39.1		41.2	19.7	21	7	14				
BGCTP04-04	GWF - 10	10.1											
BGCTP04-04	GWF - 11	8.8	28.5		55.9	15.6	18	7	11				
BGCTP04-04	GWF - 12	8.6											
BGCTP04-05	GWF - 13	7.9								2,065 kg/m^3	11%		
BGCTP04-05	GWF - 14	9.5					23	10	13				
BGCTP04-05	GWF - 15	8.0											
BGCTP04-05	GWF - 16	6.8											
BGCTP04-06	GWF - 17	8.0	31.6		57.0	11.4	17	13	4				
BGCTP04-06	GWF - 18	9.0	26.9		54.6	18.5							
BGCTP04-06	GWF - 19	8.4	23.9		51.0	25.1							
BGCTP04-08	GWF - 20	8.9											
	GWF - 21	10.0											
	GWF - 22	8.1											
	GWF - 23	8.0											
	GWF - 24	6.5											
	GWF - 25	7.2											
	GWF - 26	7.6											
	GWF - 27	8.7											
	GWF - 28	9.0	15.6		43.6	40.8							
	GWF - 29	8.8	17.2		53.7	29.1							
	GWF - 30	5.5	13.4		44.3	42.3							

eba

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●	TP04–03	1.50	39	41	20	–	–	

Project: 0201–1200091.015

Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

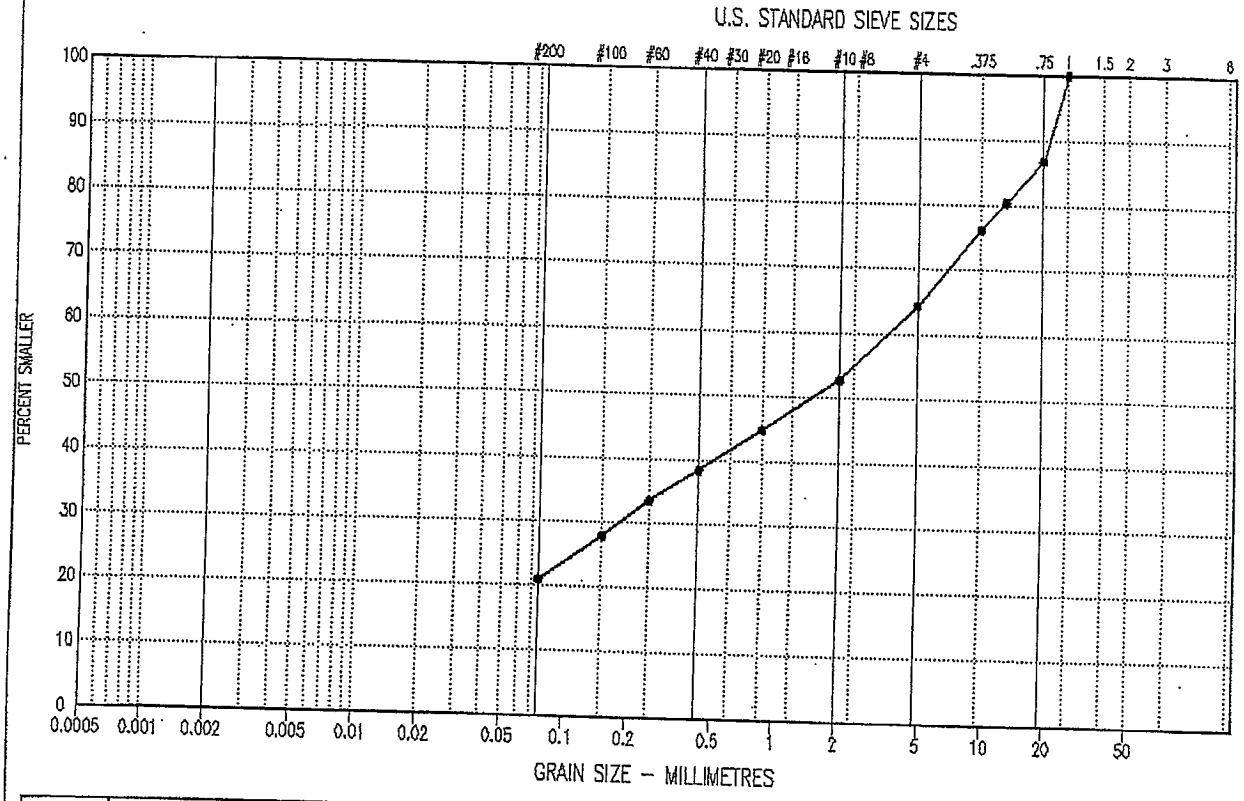
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EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●	TP04–03	2.40	21	43	36	–	–	

Project: 0201–1200091.015 Date Tested: 04/09/22 BY: MS

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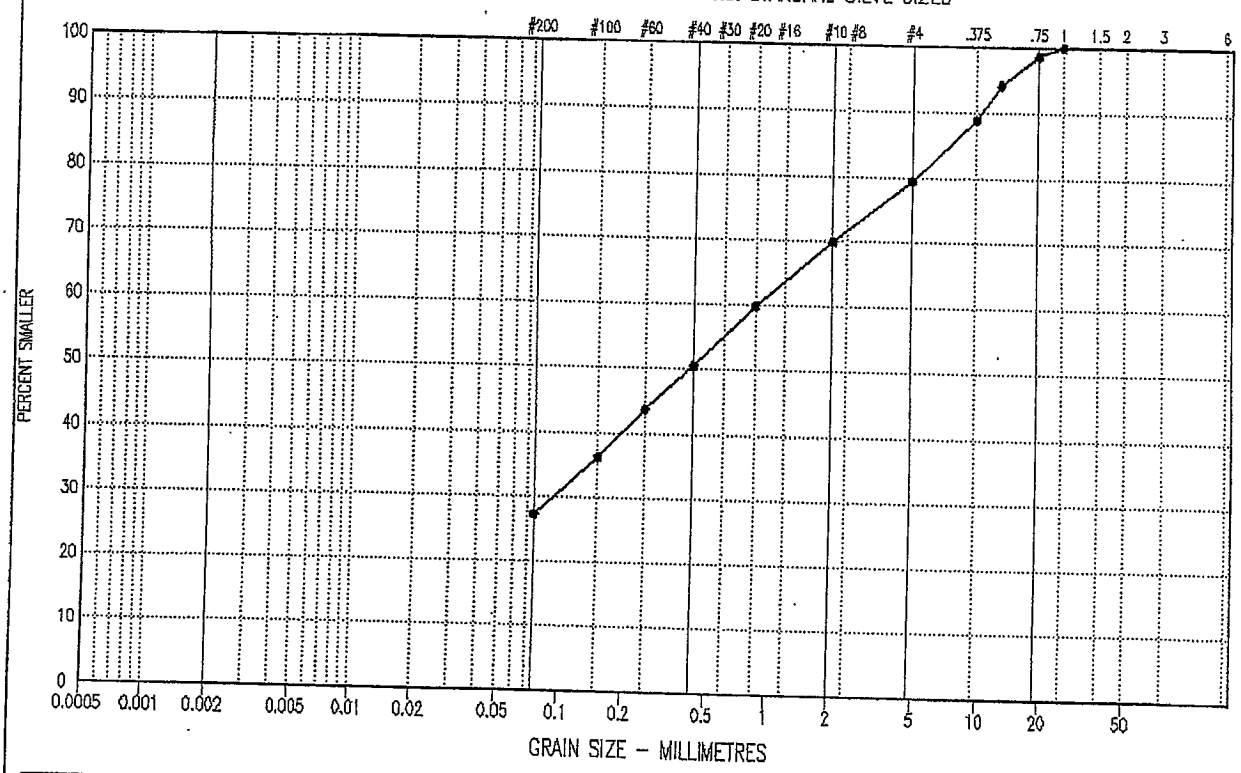
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-03	3.80	27	52	21	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

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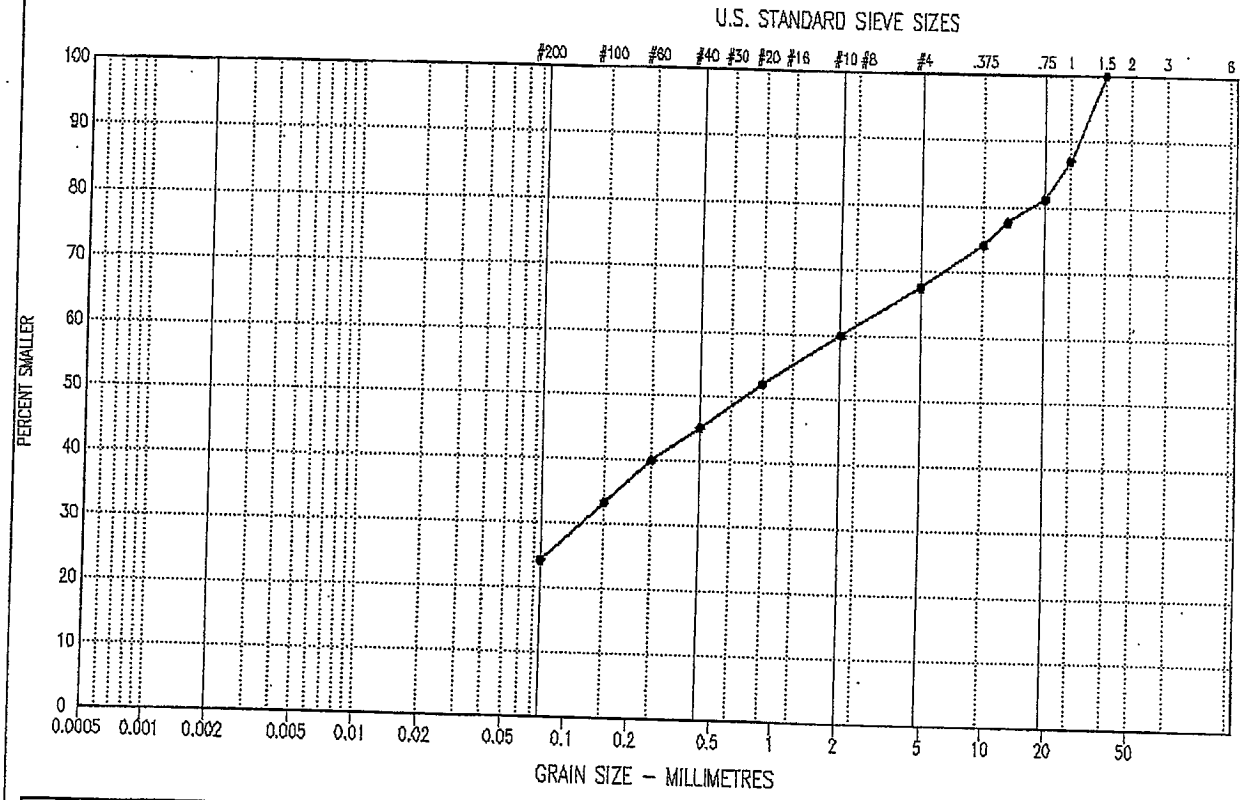
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●	TP04-03	3.20	24	43	33	–	–	

Project: 0201-1200091.015

Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

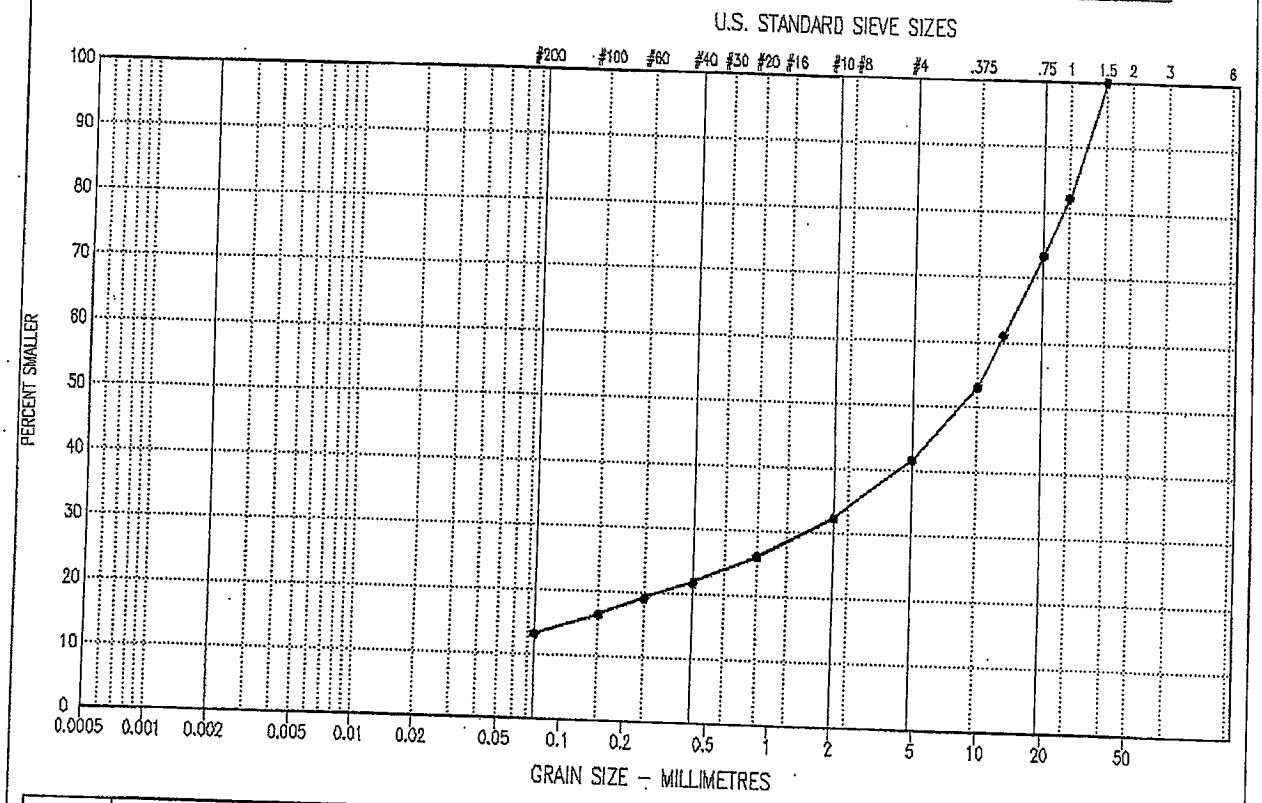
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-03	4.00	13	28	59	–	–	

Project: 0201-1200091.015

Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

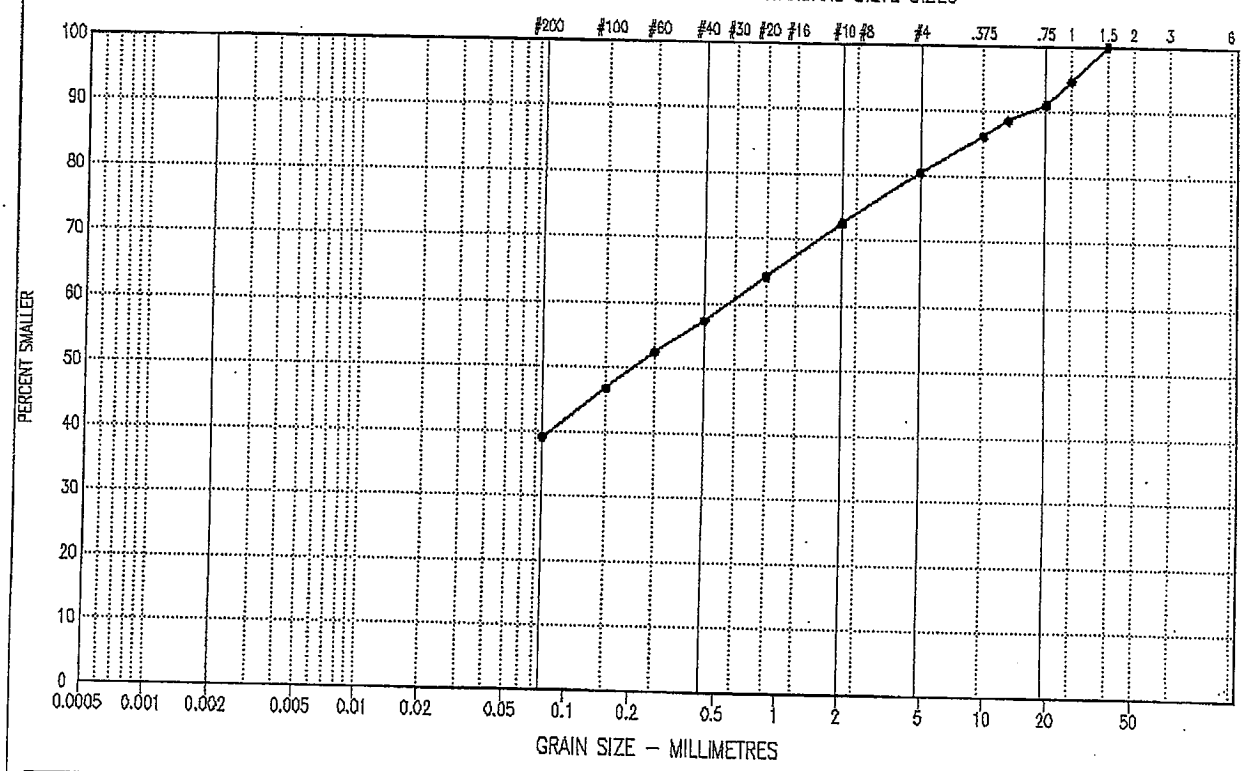
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-03	0.70	39	41	20	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

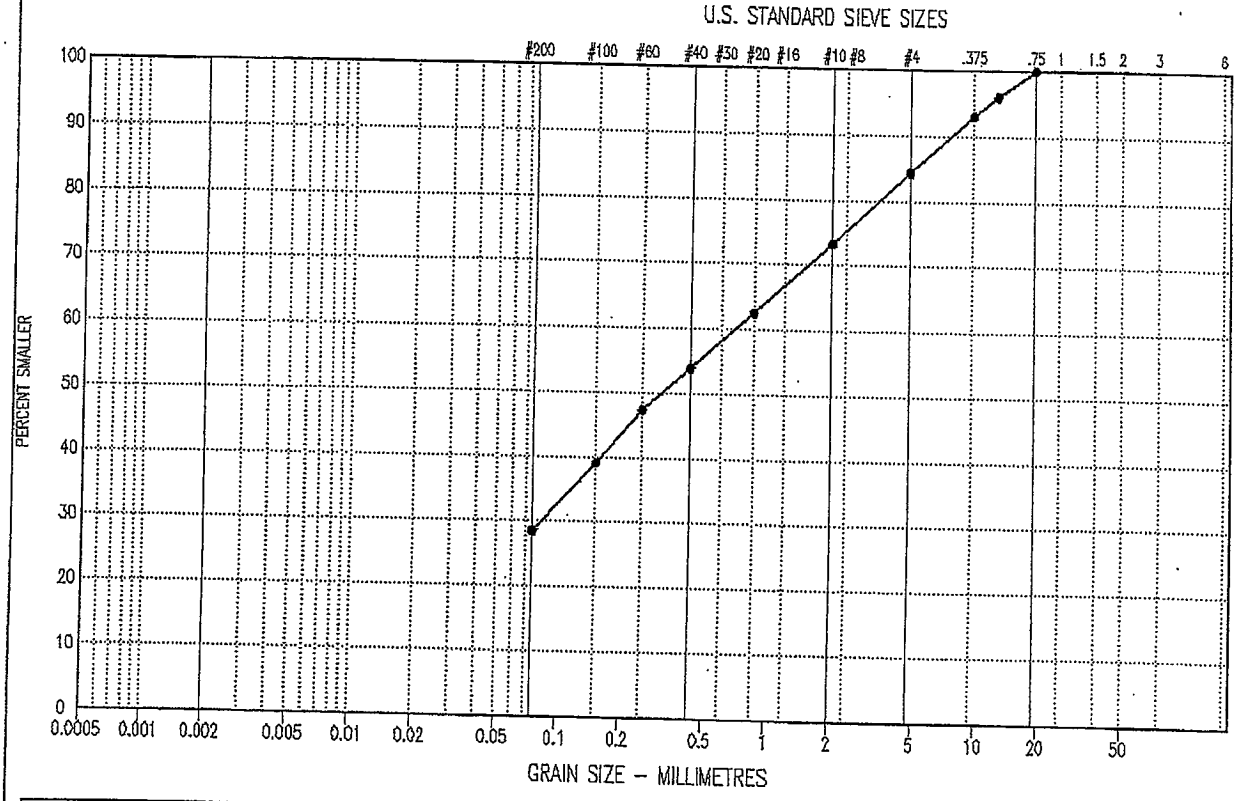
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-04	0.50	28	56	16	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

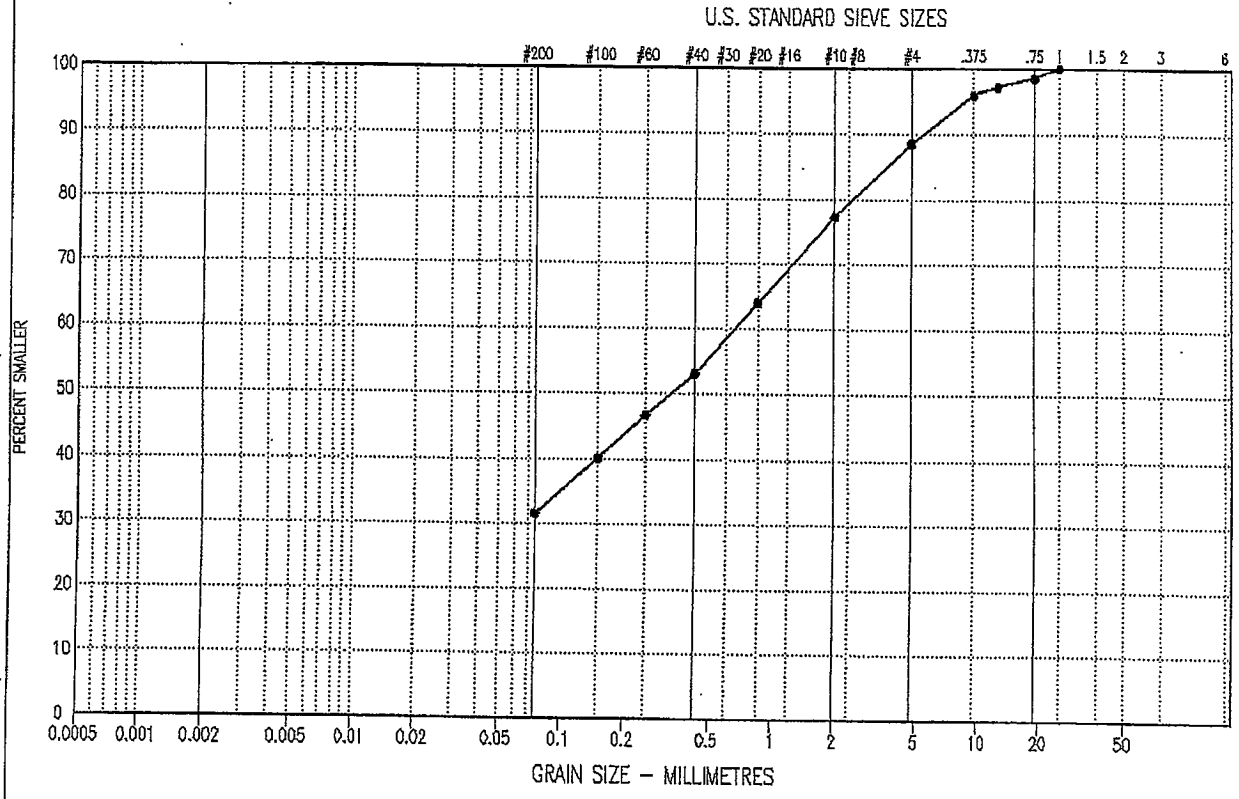
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-06	3.90	32	57	12	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

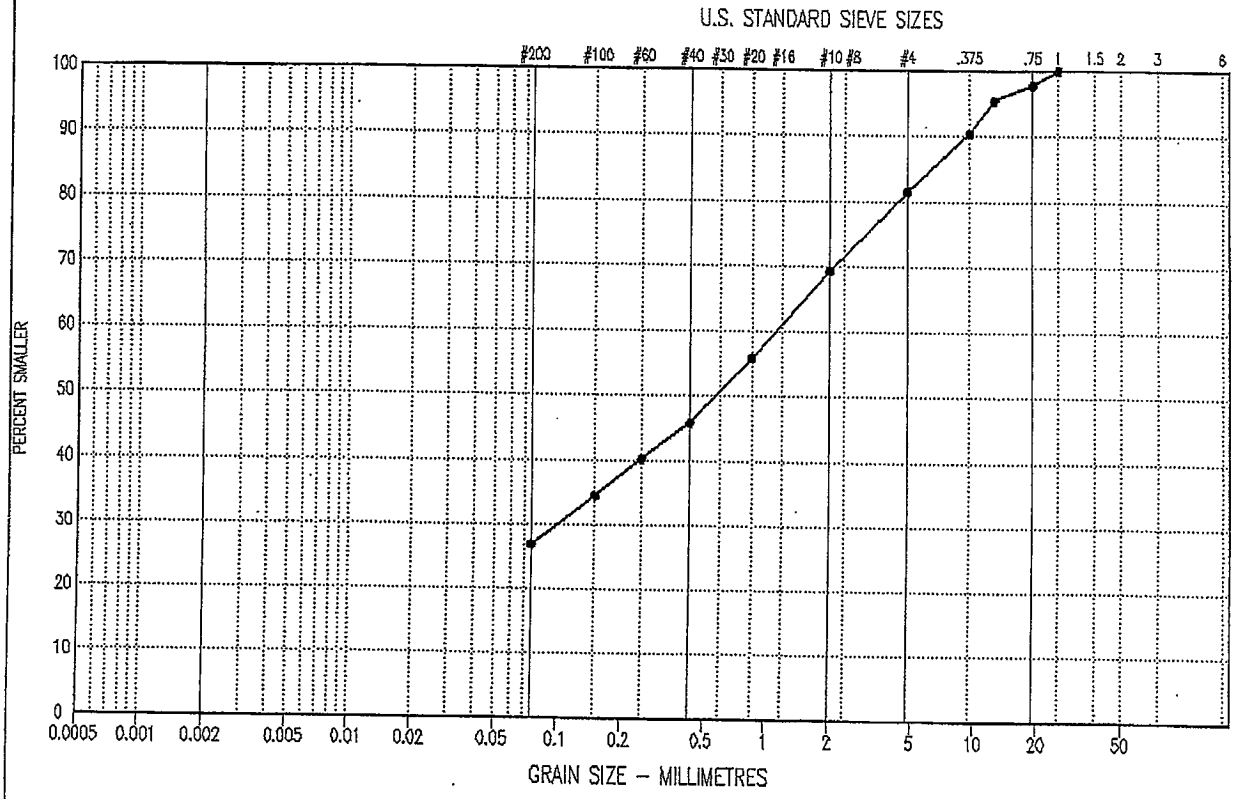
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-06	4.20	27	55	19	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

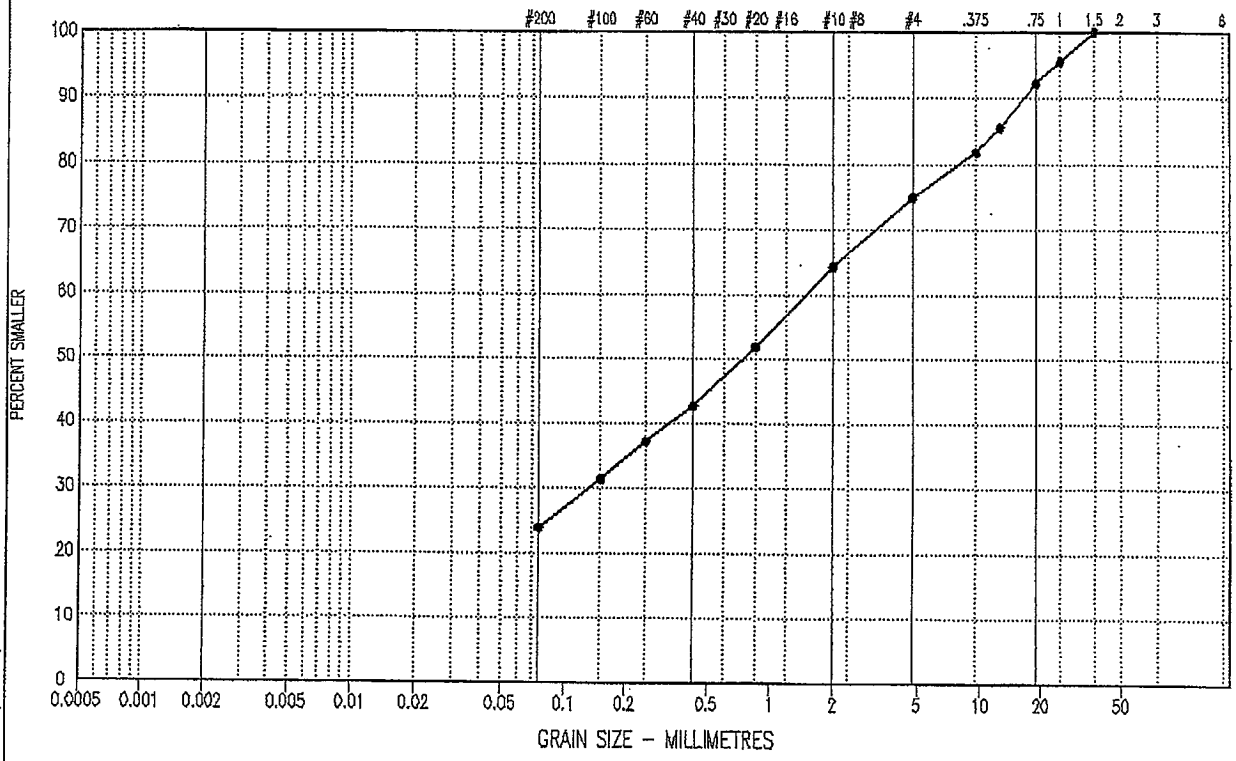
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PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-06	1.50	24	51	25	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

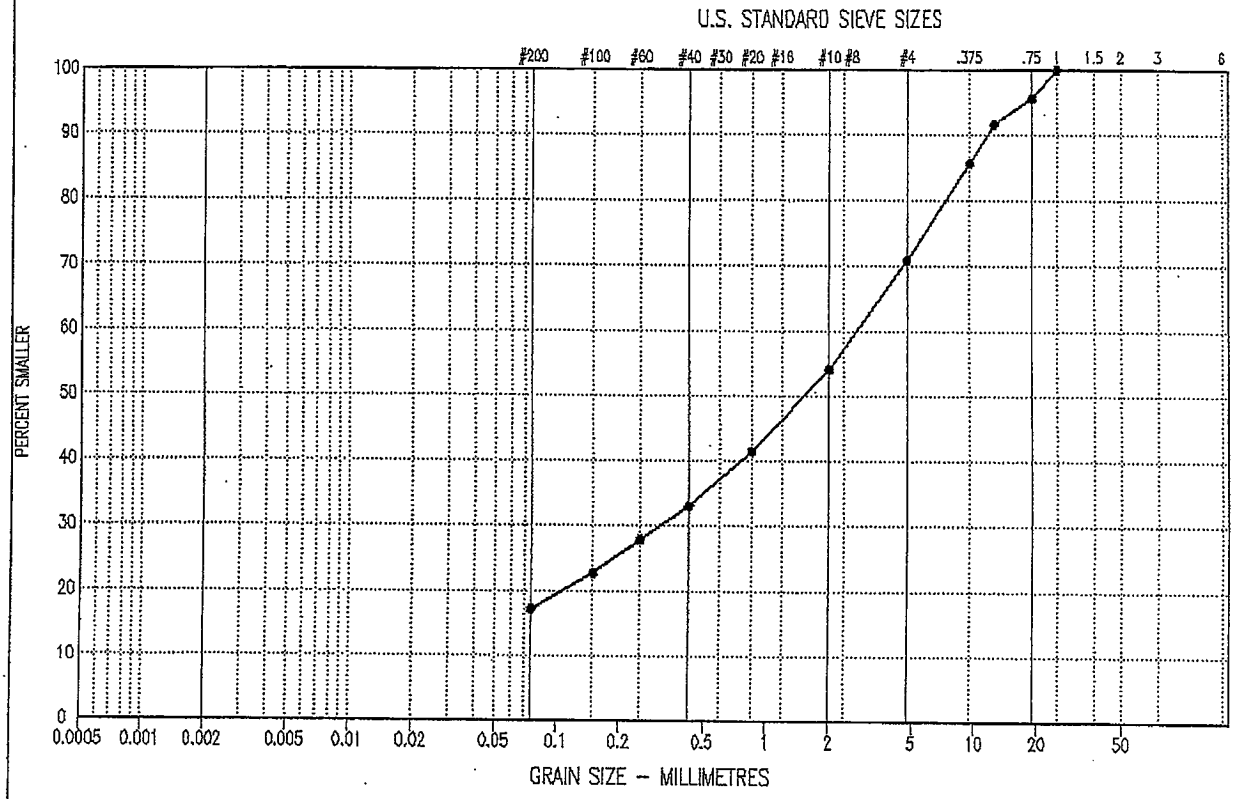
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EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (ft)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-08	0.00	17	54	29	–	–	

Project: 0201-1200091.015 Date Tested: 04/09/22 BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

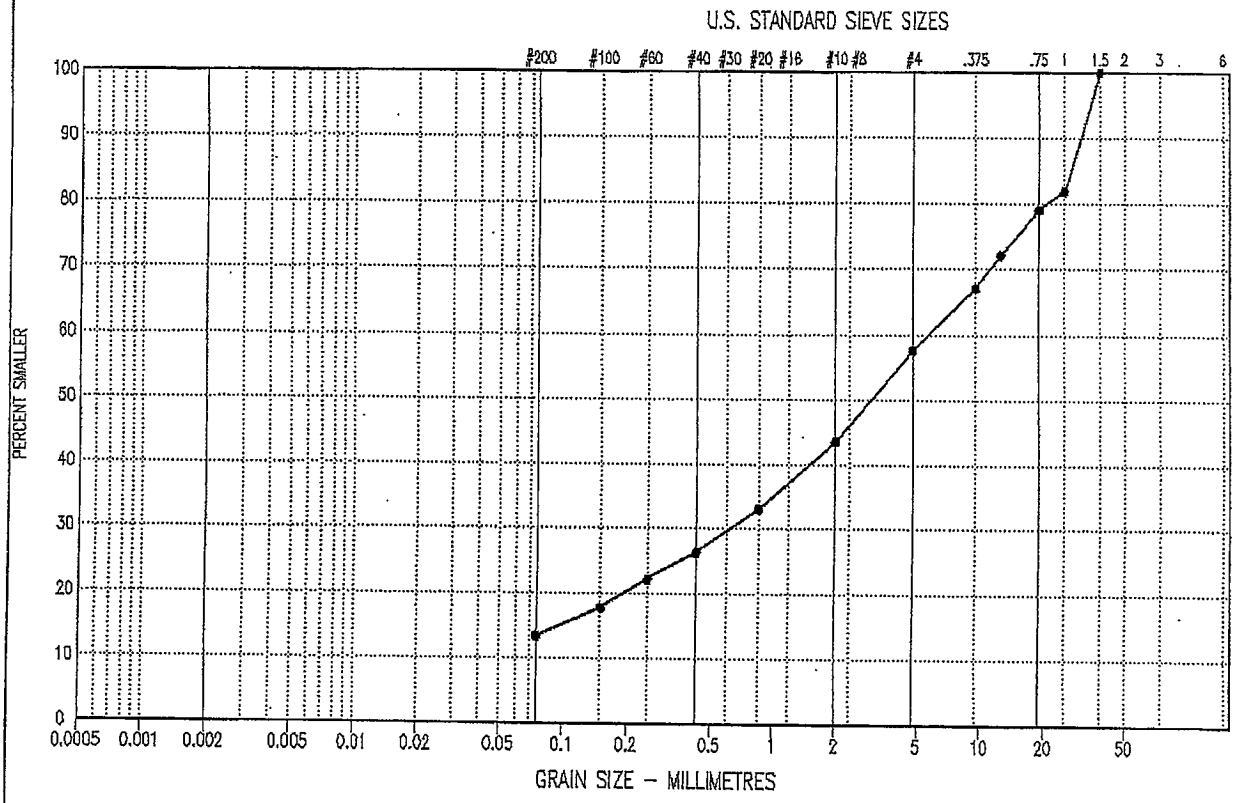
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EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (ft)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	TP04-08	0.05	13	44	42	–	4.5	SM

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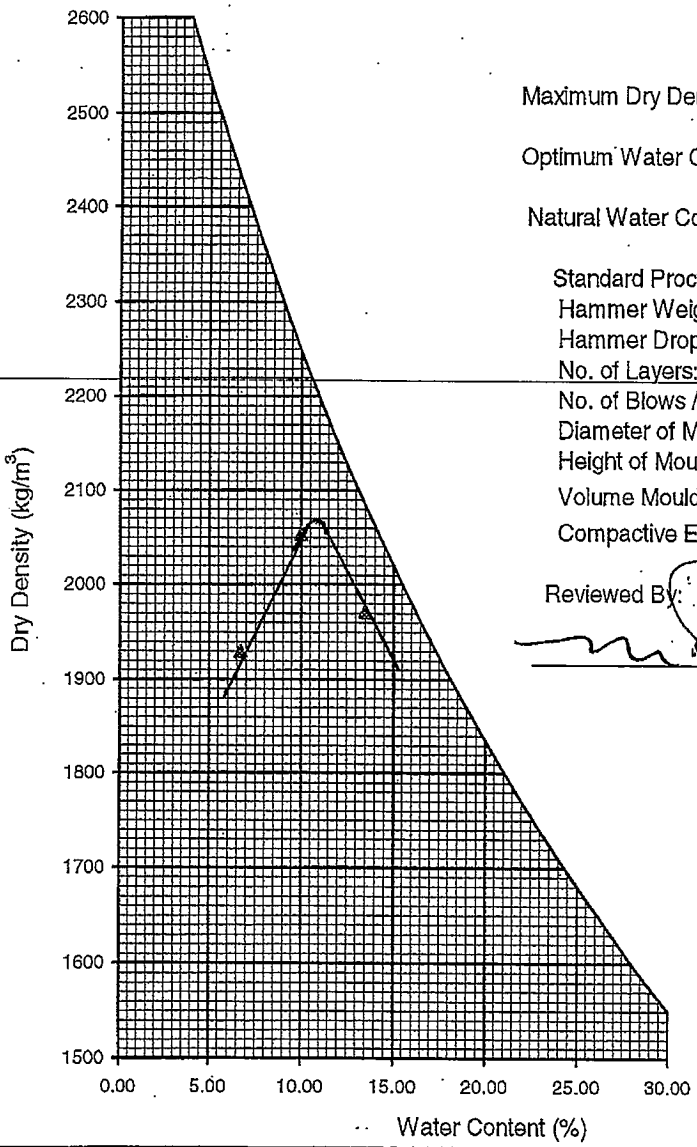
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EBA Engineering Consultants Ltd.

MOISTURE-DENSITY RELATIONSHIP

Project:	Anvil Range Mine	Sample No.:	GSF 13-16
Address:	Faro, YT	Date Sampled:	
		Sample Location:	
Project No.:	0201-1200091.015		
Date Tested:	7-Oct-04 By: MS	Sample Description:	SAND & GRAVEL - silty
Client:	BGC		
Attention:	Gerry Ferris		



Maximum Dry Density : 2065 kg/m^3

Optimum Water Content: 11.0 %

Natural Water Content: 6.7 %

Standard Proctor (ASTM D 698)

Hammer Weight:	2.5	kg
Hammer Drop:	305	mm
No. of Layers:	3	
No. of Blows / Layer:	25	
Diameter of Mould:	102	mm
Height of Mould:	116	mm
Volume Mould	9.44 x 10^{-4}	m^3
Compactive Effort	600	kJ/m^3

Reviewed By:

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