Denison Environmental Services

2010 Annual Inspection
Waste and Water Management Facilities
Vangorda/Grum

Faro Mine Complex, Yukon

Prepared for:

Denison Environmental Services

Prepared by:

SRK Consulting
Engineers and Scientists

Project Reference Number
SRK 1CD009.003

February 2011

2010 Annual Inspection

Waste and Water Management Facilities

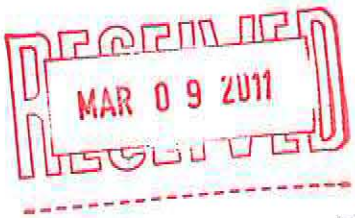
Vangorda/Grum

Faro Mine Complex, Yukon

FINAL

Prepared for

Denison Environmental Services



Report Prepared by

SRK Consulting
Engineers and Scientists

February 2011

2010 Annual Inspection

Waste and Water Management Facilities

Vangorda/Grum

Faro Mine Complex, Yukon

Denison Environmental Services

Box 280
Faro, YT Y0B1K0

SRK Consulting (Canada) Inc.
Suite 2200, 1066 West Hastings Street
Vancouver, B.C. V6E 3X2

Tel: 604.681.4196 Fax: 604.687.5532
E-mail: vancouver@srk.com Web site: www.srk.com

SRK Project Number 1CD009.003

February 2011

Prepared by
Peter Healey, P.Eng.

Table of Contents

List of Tables

List of Figures

List of Appendices

1 Introduction

At the request of Denison Environmental Services (DES), Mr. Peter Healey of SRK Consulting (Canada) Inc. (SRK) completed an inspection of the Vangorda/Grum waste and water management facilities at Faro Mine Complex on May 26 to 28, 2010. The Vangorda/Grum mine is located 16 km south of the Faro Mine, near Faro,Yukon as shown on Figure 1. The annual inspection of this area focuses on the geotechnical performance and stability of the following structures:

- Vangorda Waste Rock Containment Facility including the seepage collection system;
- Little Creek Dam;
- Vangorda Creek Diversion;
- Sludge Pond Embankments at the Water Treatment Plant;
- Till overburden dump and revegetation trials;
- Grum Settling Pond;
- V-15 Seepage Collection System and Moose Pond;
- The Grum Interceptor Ditch; and
- The Sheep Pad Sediment Ponds below the Overburden Stockpile.

A plan which identifies the above components is shown in Figures 2 and 3.

This report presents our observations and comments on the performance and stability of the structures and provides recommendations for any remedial action, where appropriate. The report also provides trigger and maximum values associated with the instrumentation installed within and around the Vangorda Waste Rock Dump and within the Little Creek Pond, dam structure. A separate memo on trigger levels has been forwarded to DES. A summary of this memo is provided within this report. The as-built report prepared by SRK for the five groundwater wells recently installed by SRK in the Vangorda Dump should be read in conjunction with this report.

2 Vangorda Waste Rock Pile

2.1 Observations

2.1.1 Seepage Collection System

Transverse Drains and Weirs

During construction of the original till starter dyke, six transverse drains were installed beneath the dyke to allow seepage to drain from the waste dump. These drains discharge into the seepage collection channel built during the 1994 upgrading of the channel around the dump. V-Notch weirs were installed by mine personnel in four of the drains to monitor the seepage.

During this year's inspection, seepage flow was observed at Weir #6 (Photo 1), Weir #5 (Photo 2), Weir #3 (Photo 4), Drain #4 (Photo 3) and Weir #2 (Photo 5). The flow in each of these drains varied from a trace to about 0.5L/min.

Sediment has built up behind the steel plates (V-notch) at some of the weirs as shown in the photo 1. SRK understands that DES Environmental crew cleared out the sediment buildup behind the weirs on June 15, 2010.

Seepage Collection Channel

As seen in the Photos 6, 7 and 8, seepage is collected in the Vangorda seepage collection channel around the Waste dump and discharges into Little Creek Pond.

Last fall (2010) DES excavated riprap from the bottom of the Vangorda Waste rock dump seepage collection ditch downgradient from Weir #3 over a distance of about 200m (see Photo 8). The objective was to improve drainage along the ditch and reduce the ponding that occurs around Weir #3. This ditch has a very flat grade overall (about 0.5%) and drainage is difficult at best. While SRK has no problem with the attempt to improve drainage, the material removed from the bottom of the channel was placed at too steep a slope for long-term stability.

2.1.2 Till Starter Dyke and 1994 Trial Till Cover

In 2006, a previous care and maintenance contractor resloped sections of the till dyke at the western end of the waste rock dump. During the 2008 inspection, a small shallow subsidence was observed on the sideslope of these resloped areas as shown on Photo 8. In addition to this subsidence, a number of wet spots and salt depositions were also noted near the crest of the dyke. In last year's report, SRK commented that a possible cause of the wet areas and the shallow subsidence is an elevated water table within the waste rock behind the dyke. The latter may also be a source of the salt deposits. However, another source of the deposits is runoff from the uncovered sulphide waste above the till dyke. During the 2010 inspection of the shallow subsidence on the till dyke at the western end of the dump (Photo 9), although there was evidence of previous seepage, we observed that the area was dry and no further subsidence had occurred since our inspection in 2009.

Photos 10 and 11 show the area of the resloped till dyke below the till cover trials. These slopes show some signs of erosion but not significant enough to warrant any immediate remedial action. There were no signs of major instability. DES continues to monitor the upper reaches of the ditch for infill by sediment caused by erosion of the cover.

2.1.3 Instrumentation

Water levels in the standpipe piezometers (P94 series see photos 12 to 14) located in the till dyke around the Vangorda Waste Rock Dump have normally been recorded twice a year since they were installed in 1994. A summary of the water level readings taken to date (Feb 2011) in the 94 series piezometers and wells and the recently installed wells (DH, or "PW-10-x"series) are presented in

Table 1. The location of all the piezometers and wells are shown on Figure 4. Figures 5 to 9 present sections through the waste rock dump that are aligned at close as possible with the 94 series piezometers, the 94 series groundwater wells, 2001 series wells and the 2010 groundwater wells. These sections also show the collar and base elevations of all the piezometers and wells. In an attempt to provide a reasonable correlation between the four systems, the maximum recorded water levels (mostly 2008) in the 94 Series piezometers and wells, the 2001 series and the water levels recorded in the 2010 wells have been plotted on each section and an inferred overall groundwater table was generated.

SRK's interpretation of these results indicate that while there appears to be a perched water table in the till dyke, the water table within the waste dump, based on the 2010 drill hole data, appears to be at or slightly below the original ground and does not present an immediate stability problem.

2.1.4 Trigger Water levels and Monitoring Schedule

Trigger levels were determined for each of the above referenced monitoring stations based on the results of a stability analysis on the till dyke completed recently by SRK (SRK Memo Jan 2011). The triggers represent the water level above which the factors of safety for seismic events are less than then 1.1. The trigger levels and actions that should be followed in event that trigger levels are reached are listed in Table 2.

2.1.5 Vangorda Waste Rock Dump

Old tension cracks are still evident in places along the crest at the northeast end of the dump. However there have been no changes to these cracks for several years.

2.2 Recommendations

2.2.1 Transverse Drains

The outlet of these drains should be inspected monthly for any signs of damage or deterioration of the steel v-notch weirs. The inspection should include recording of any flow or seepage rates.

2.2.2 Seepage Collection Channel

In the upper reaches of the seepage collection channel at the location of the till cover, DES should continue to monitor any sediment build-up and periodically remove the sediment that accumulates in the channel. DES should also regrade the riprap section of the channel to a more stable configuration.

2.2.3 Till Starter Dyke and 1994 Trial Till Cover

DES should inspect the resloped areas of the Till Starter dyke for any signs of instability or the development of significant erosion gullies. DES should also identify any wet or soft areas on the slopes. These inspections should be carried out on a monthly basis and any unusual observations should be forwarded to SRK.

2.2.4 Instrumentation

While water levels in the 94 series wells and piezometers have historically been recorded twice a year, there has been no consistency in timing of the recording sessions. This is primarily a function of fact that there are different field programs that make use of this data and the data is collected by multiple groups. In the future, SRK recommends that all three systems be monitored in accordance with the schedule provided in Table 2. Following water level collection, water levels should be evaluated against the respective expected range and trigger levels and if needed the actions recommended in the Table 2 should be followed.

Readings from Piezometer P94-4A have not been documented since July 2001 because of irregularities in the readings due to a blockage in the pipe. SRK had recommended in a previous report that if a drill rig was in the area for other reasons then the piezometer should be reinstalled. Given the current focus to better understand the water level fluctuations within the waste rock dump, SRK reiterates this recommendation.

However, if future monitoring indicates a rising trend of the water table and trigger levels are exceeded, pumping of the recently installed wells (DH series) will be implemented to control the water level.

The groundwater well GW-94-05 was last read on October 2000. During the 2010 site visit, SRK attempted to locate this well but was unsuccessful. Given the proximity of GW-94-03, SRK is not recommending a replacement to the GW-94-05 well.

SRK is recommending that DES consider the installation of leveloggers in each of the eight 94 series piezometers and the remaining four 94 series groundwater wells. SRK has already installed leveloggers in three of the new 2010 series wells in the dump and recommends that leveloggers are installed in the remaining two wells. SRK is of the opinion that to properly understand the behaviour of the water table in the waste rock dump, it will be necessary to monitor the seasonal variation of the water table more accurately. The continuous record provided by the leveloggers would provide this data.

SRK also recommends the installation of five shallow piezometers located at the toe of the till dyke around the Vangorda waste rock dump. The piezometers would be located at the approximate area of the five sections shown on Figure 4.

2.2.5 Rock Pile

DES should continue to inspect, monthly, the surface of the Vangorda rock fill for any signs of widening of the old tension cracks.

3 Little Creek Dam

3.1 Observations

Water level in the pond (Photo 15) during our inspection on May 26, 2010 was recorded at about 1109m. No cracks or major settlement of the dam were observed and no seepage was observed along the downstream toe. Erosion rills are evident on both the upstream and downstream slopes of the dam (Photos 15 and 16).

The upstream and downstream faces of the dam show no evidence of surficial movement, bulging or instability.

In 1994, six pneumatic piezometers and three thermistors were installed along the crest of the Little Creek dam. The six piezometers are located at three separate locations; two piezometers, one deep and one shallow, at each location. The levels are normally taken twice a year in May and August. However, in 2007 a number of abnormal fluctuations were noted in two of the piezometers (LCD2 and LCD 3). As a consequence, SRK requested that readings in all three piezometers be taken twice a week over the period April to September. In review of data collected, SRK found that the levels responded as expected with no unusual behaviour noted. In subsequent years, including 2010, there have been no further unusual readings noted.

The 900mm CMP emergency spillway (Photo 17) was inspected and is in good condition.

3.2 Trigger Water levels and Monitoring Schedule

As for Vangorda dump, trigger levels have been developed for the instrumentation at the Little Creek Dam and are presented in Table 3. The water level triggers are based on SRK's estimate of a critical phreatic surface that would impact the factors of safety of the slope stability of the Little Creek Dam. The performance of the piezometers and thermistors should be monitored and evaluated against the expected ranges and trigger levels. Actions in the event of any trigger exceedences are shown in Table 3.
SRK recommends that all the instruments in the dam be monitored in accordance to the schedule provided in Table 3.

The trigger levels for temperature variations in the dam are also shown on Table 3 and are based on SRK's experience.

3.3 Recommendations

DES should continue to regularly monitor the crest of the dam for any cracks, settlement or surficial movement of the slope.

Monitoring frequency of the piezometers and the thermistors should be conducted in accordance with the schedule provided in Table 3.

DES should also continue to remove any build-up of debris at the inlet end of the culvert spillway.

If the Little Creek pond is to become a long-term structure to collect seepage from the Vangorda Dump or to function as a polishing pond for the new treatment plant, the spillway would need to be modified to accommodate a larger flood event and should possibly be relocated to the north end of the dam in an open channel.

4 Vangorda Creek Diversion

4.1 Observations

In accordance with a recommendation from SRK, an emergency overflow spillway (2x1m diameter CSP's) was installed at the headworks of the diversion in August 2005 (Photo 18). DES continues to maintain the trash rack at the headworks and the 2.4m diameter flume (Photos 19) to facilitate safe passage of flow in Vangorda Creek. Boulders that fall into the flume are periodically removed. There are no signs of instability or settlement of the embankment at the headworks of the diversion. However, the cross braces that support the flume continue to deteriorate and water continues to escape through openings in the flume joints.

DES continues to pump water from a small seepage collection pond in the old Vangorda Creek ditch back into the flume. This is part of an overall plan to reduce flow of clean water into the Vangorda Pit.

The 2m diameter CMP culvert in the plunge pool shows signs of wear and tear around the entrance to the pipe. A trash rack has been installed at the entrance. SRK did notice that a log was wedged across the trash rack at the entrance to the 2000mm diameter culvert that feeds the drop box structure (Photo 21). However SRK understands that DES has removed most of the debris from the trashrack in the summer of 2010.

The exit culvert and the drop box structure remain intact and functioning satisfactorily.

There is an area halfway along the flume that in the past has been unstable due to heavy seepage (Photo 20). Since the remedial work to control this seepage several years ago, no further instability has occurred.

4.2 Recommendations

DES should continue to monitor the sideslopes above the flume for sloughing and areas of instability and should top-up riprap along the flume where the material has settled below the rim of the culvert sections. Any debris or rock that accumulates in the flume, at the entrance to the 2m CMP or at the headwork's trashrack should be removed. SRK should be notified of any excessive seepage from the flume and increase of discharge into the pit. If any damage to the cross braces and if the structural integrity of any of the flume sections is compromised by ice formation or slides, DES should replace the impacted sections.

SRK recommends that weekly inspections be made of the trash-racks to record any offending debris.

5 Sludge Pond Embankment-Vangorda Water Treatment Plant

5.1 Observations

At the time of our inspection, the sludge pond was almost empty (Photo 22). SRK inspected the downstream slopes and crests of the four embankments that make up the sludge pond. Neither subsidence of the slopes, nor settlement of the crest and no tension cracks were observed.

SRK was asked to comment on the location of a proposed overflow spillway at the WTP sludge pond. We believe the best location would be on the uphill north leg of the pond just east of the barge shown in photo 23. To provide access to the existing discharge pipeline, we suggest building an open channel with flatter sideslopes (like a ford) so that a pick up could still get across. This location has the added advantage of an existing outflow channel for the discharge and has less risk of impacting the slope.

5.2 Recommendations

- Ensure that the pond level does not exceed 2m. below crest; and
- Continue to monitor on a monthly basis, the crest and sideslopes for cracking or any signs of sloughing.

6 Grum Settling Pond

6.1 Observations

SRK inspected the riprapped open channel spillway (Photo 24 and 25), which conveys flow from the Grum settling pond to the Grum Interceptor Ditch (GID). The spillway is functioning normally. There was no sign or any instability or cracking in the surrounding dyke. No seepage was observed along the toe of the dyke.

6.2 Recommendations

The crest of the embankment around the pond should be monitored monthly for cracks and any seepage into and out of the pond.

7 Grum Interceptor Ditch and Sheep Pad Settling Pond

7.1 Observations

In the upper reaches of the GID, the ditch slopes remain stable and the vegetation continues to provide effective erosion control of the ditch sideslopes. However, debris and the odd boulder are beginning to partly block culvert outlets and entrances along the route.

SRK inspected the Sheep Pad Pond dyke (Photo 26) and found no sign of slope instability, settlement or cracking.

7.2 Recommendations

- Monitor monthly the crest of the settling pond dykes for any cracks;
- Monitor monthly the toe of the dykes for any seeps; and
- Clear any debris that accumulates at either end of the GID culverts and the settling pond spillway.

8 Grum Dump and V-15 Seepage Collection Ditch

8.1 Observations

In 2006, increasing concentrations of zinc were observed at the outlet of the V15 sedimentation pond (Photo 27) upstream of Tributary A. In response to this finding, a Bentomat lined diversion ditch (Photo 28) was constructed in August, 2007 to divert outflow from this pond to a naturally formed Kettle called Moose Pond. In previous years a subsidence on an upstream section of the ditch had occurred and blocked off the ditch. Last fall, DES removed the debris and reconstructed that section of the bank by placing additional riprap over the area in question. SRK inspected the ditch during the 2010 site visit and no further subsidence was noted. However the area was showing signs of ongoing seepage and it is likely that further subsidence could occur in the future. SRK also understands that during the winter, this ditch glaciates both upstream and downstream of the culvert crossing just below the V notch weir.

SRK also noted that debris had built up in front of the culvert just below the V notch weir in the Main Stem of Grum Creek (Photo 29). This blockage likely exacerbates the glaciation. SRK understands that DES has removed the debris.

Further downstream of the culvert, DES had excavated a ditch across the roadway to redirect the flow into the Moose Pond. Previously this flow had been conveyed across the roadway in two small pipes. Continual freezing of these pipes was problematic which prompted the need to build an open channel. However, the ditch was hastily constructed and was unstable and had sideslopes that would gradually collapse (Photo 30). However, since SRK's visit, DES has deepened and increased the grade of the ditch and resloped the sideslopes to 2:1(H:V).

The siphon pipeline that was installed to convey excess water from Moose Pond to Tributary A has been damaged in a number of places (Photo 31 and 32). However SRK understands that a pipeline and electrical infrastructure has been installed at the V-15 sump to facilitate pumping from the pond to the Vangorda Pit. The response to activate the system is a few days and this system could be used to reduce the risk of overflow from Moose Pond. This would reduce the immediate requirement to repair the damaged siphon pipeline.

8.2 Recommendations

DES should continue to monitor any sediment build-up in the V15 diversion ditch and clean it out when necessary. DES should also consider the placement of addition riprap in the one area that is susceptible to subsidence.

Although DES has flattened the slopes of the ditch to Moose Pond, riprap should be placed on the slopes to protect against erosion.

The culvert should be inspected monthly to ensure there are no blockages or restrictions to the flow.

9 Surface Runoff Diversion ditch above Vangorda Pit

9.1 Observation

SRK conducted an inspection of the surface runoff diversion ditch located uphill of the Vangorda Pit. Generally this ditch has performed well. However there are a number of areas along the ditch primarily in the overburden till where there have been a number of subsidences, which over time may restrict the flow in the ditch (see Photo 33).

9.2 Recommendations

SRK recommends that DES inspect this ditch on a monthly basis during the summer months looking for signs of subsidence similar to the one in photo 33. These occurrences should be noted and if found to restricting flow, should be excavated out.

This report, **"2010 Annual Inspection Waste and Water Management Facilities – Vangorda/Grum, Faro Mine Complex, Yukon"**, has been prepared by SRK Consulting (Canada) Inc.

Prepared by

Peter M Healey
Principal

Tables

Table 1: Vangorda Rock Dump Groundwater Wells and Piezometers - Static Water Levels and Piezometers Elevations

Measured Static Water Level (meters)

underlined readings (begin in 1998) indicate that no water was identified (hole was dry or frozen).
readings post Sep/98 given as metres below top of plastic piezometer pipe.
readings prior to Nov/98 could be metres below to top of piezo. pipe or steel casing.

Date	V34	V35	V36	V37	V38	V39	V40	V41	V42	V43	V44	V45	V46	V47										DH1	DH2	DH3	DH4	DH5
	GW-94-01	GW-94-02	GW-94-03	GW-94-04	GW-94-05*	P-94-01A	P-94-01B	P-94-02A	P-94-02B	P-94-02C	P-94-03A	P-94-03B	P-94-04A	P-94-04B	P2001-02A	P2001-02B	P2001-03	P09-LCD-1	P09-LCD-2	P09-LCD-3	P09-LCD-4	P-09-LCD-6	P09-LCD-7	PW-10-01	PW-10-02	PW-10-03	PW-10-04	PW-10-05
3-May-94	8.28	14.33	11.28	14.33	11.56	12.37	6.05	10.57	6.12	13.08	14.10	9.80	12.17	8.99														
21-Jun-94	7.45	8.65	9.15	9.65		NR	NR	NR	NR	NR	NR	NR	NR	NR														
30-Jun-95						7.79	5.62	8.02	6.11	9.02	13.91	9.80	11.35	8.99														
13-Jul-95						7.80	5.59	NR	NR	NR	NR	NR	NR	NR														
30-Jul-95						7.86	5.48	7.99	6.12	8.81	13.68	9.80	11.83	8.99														
26-Aug-95	6.89	8.47		9.05		NR	NR	NR	NR	NR	NR	NR	NR	NR														
31-Aug-95	7.36					7.93	4.85	7.97	6.06	8.66	13.62	NR	12.60	NR														
17-Oct-95	7.14	8.28		9.37		7.90	4.23	8.70	5.76	8.54	13.41	NR	11.88	NR														
20-Nov-95	7.10	8.18		9.19		NR	NR	NR	NR	NR	NR	NR	NR	NR														
13-Mar-96	7.44	9.23		9.39		NR	NR	NR	NR	NR	NR	NR	NR	NR														
28-May-96	7.50	9.34	10.00	10.25		8.34	5.38	9.94	6.12	9.37	14.12	NR	12.77	NR														
24-Sep-96	7.50	7.43	7.95	9.17		10.40	5.30	8.30	6.12	8.66	13.68	9.88	12.80	8.99														
13-May-97	6.84	9.42	9.96	9.53		9.17	5.67	7.74	6.40	9.51	12.78	9.96	12.78	9.62														
11-Jul-97						9.80	5.90	7.92	6.12	8.97	14.10	9.80	9.97	9.00														
11-Aug-97	6.75	8.38	8.41	8.81	1.99	9.59	5.25	8.10	6.25	8.77	12.84	9.96	12.62	9.21														
14-Oct-97	6.76	8.58	9.15	8.99		9.51	4.96	7.99	6.23	8.94	12.96	9.96	12.73	9.21														
23-Dec-97	6.70	9.05	9.53	9.13		9.25	4.76	7.68	6.07	8.95	12.70	9.81	12.66	9.02														
31-May-98	6.72	8.60	9.73	9.59	1.86	9.52	5.25	8.05	6.24	9.20	12.87	9.95	12.77	9.20														
25-Jul-98						10.20	5.22	8.04	6.20	9.11	12.58	9.92	12.79	9.18														
15-Sep-98	6.67	8.85	9.52	9.10	2.40	10.02	5.22	7.98	6.20	9.22	12.54	9.92	12.83	9.19														
16-Nov-98						10.32	5.11	7.93	6.11	9.06	12.45	9.78	12.70	8.99														
31-Dec-98	6.70	9.06	9.91	9.23		NR	NR	NR	NR	NR	NR	NR	NR	NR														
18-Jun-99	6.88	9.24	10.24	10.18		9.96	5.09	8.35	6.11	9.48	12.48	9.77	12.70	8.99														
12-Oct-99	6.61	7.58	8.81	8.79		10.01	5.10	8.16	5.73	8.82	12.49	9.78	12.71	8.97														
31-May-00	5.75	8.68	8.26	9.33	1.84	10.20	5.10	7.85	5.93	8.97	12.48	9.78	12.66	8.88														
5-Sep-00	6.66					NR	NR	NR	NR	NR	NR	NR	NR	NR														
9-Oct-00	4.98	3.96	6.90	8.35	0.93	NR	NR	NR	NR	NR	NR	NR	NR	NR														
9-Jul-01						10.42	4.84	8.86	7.72	5.46	12.84	9.78	10.84	8.88														
11-Jun-02															4.72	4.76	30.00											
4-Sep-02						10.75	5.30	7.99	6.02	9.33	13.53	9.78	NR	8.91														
27-May-03						10.57	5.06	7.82	5.87	9.20	14.08	9.78	NR	8.93														
5-Jun-03															4.66	4.65												
9-Sep-03						10.65	5.04	7.84	5.87	9.15	13.86	9.78	NR	8.93														
8-May-04						10.61	5.26	8.03	5.94	9.21	14.08	9.78	NR	8.98														
8-Jun-04															4.64	4.62												
8-Sep-04						10.72	5.20	7.79	5.77	9.44	14.08	9.78	NR	8.99														
22-Sep-04															4.78	5.05												
3-May-05															5.10													
19-May-05						10.27	5.08	7.48	5.62	8.88	12.85	9.78	NR	8.99														
8-Sep-05															4.76													
9-Sep-05						10.37	4.88	7.44	5.45	8.91	13.28	9.78	NR	8.99														
16-May-06						10.70	5.39	8.09	6.11	9.35	14.08	9.78	NR	NR														
7-Jun-06															4.74	4.83												
11-Sep-06						11.04	5.54	7.99	5.84	9.17	13.89	9.78	NR	NR														
19-Sep-06															4.87	4.96												
10-May-07						10.62	5.89	7.95	6.12	9.57	14.07	9.77	NR	8.99														
29-May-07	6.52	9.16	9.989												5.11	5.14	38.36											
3-Jun-07				9.275																								
27-Aug-07						10.94	6.04	8.21	6.12	8.88	14.04	9.78	NR	8.99														
11-Oct-07	6.21	6.2	9.06	8.82											4.94	4.99												
4-Jun-08	6.037	7.44	7.802	8.754											3.52	3.55	30.50											
18-Sep-08	5.079	5.1	8.352	8.303		6.86	4.41	7.32	5.01	8.60	12.47	9.82	NR	8.89	3.78	3.78												
30-May-09		7.606	8.152																									
31-May-09	5.717			8.77																								
12-Sep-09	5.536	7.521	9	8.658											4.33	4.46	37.12											
3-Feb-10						10.31	5.11	7.62	5.94	NR	10.87	9.78	NR	8.89														
15-May-10	6.508	9.3	8.767	9.335		10.679	5.565	7.839	6.082	8.517	11.637	9.776	3.108	8.886														
12-Jun-10															4.590	4.340	37.000	3.823			3.739	5.710						
27-Jun-10						11.069	5.719	7.931	6.125	8.863	13.575	9.776	3.990	8.890														
13-Jul-10						11.706	5.832	8.145	6.117	5.707	13.635	9.780	3.130	8.899														
4-Aug-10						11.703	5.848	8.172	6.123	8.732	13.684	9.788	3.133	8.898														
3-Sep-10	5.902	5.275	9.404			11.738	5.813	8.189	6.181	9.023	13.666	9.778	3.129	8.889														
15-Sep-10															4.567	4.866	37.810											
20-Sep-10																		3.978			7.257	5.792						
14-Oct-10						11.478	5.854	8.045	6.113	8.574	13.723	9.827	3.130	8.990														
18-Oct-10																												
3-Nov-10						11.446	5.856	8.263	6.115	8.764	13.776	9.779	3.114	8.895										23.4	14.51	14.5		42.535
15-Nov-10				8.901																								
24-Jan-11						11.294	5.882	8.248	6.117	9.743	14.005	9.785	3.124	8.897										23.785	14.732	14.252	9.269	42.518
26-Jan-11																		4.078	4.431	1.877	5.765	5.808	4.754					
3-Feb-11	5.997	8.974	9.766	9.056											4.832	4.832	37.935											

NR Not recorded

*: depth to bottom of hole GW-94-05 (V38) checked as 14.7m on Sep 15/98. Data corrected

Note: Sept. 3, 2010 V37 water level (btoc) of 5.815m at V37 was removed from dataset as was likely erroneous, based on water level DES quality control check completed Nov 15, 2010;

Table 1: Vangorda Rock Dump Groundwater Wells and Piezometers - Static Water Levels and Piezometers Elevations

Top of Pipe Elevations (masl)

V34	V35	V36	V37	V38	V39	V40	V41	V42	V43	V44	V45	V46	V47									DH1	DH2	DH3	DH4	DH5
GW-94-01	GW-94-02	GW-94-03	GW-94-04	GW-94-05	P-94-01A	P-94-01B	P-94-02A	P-94-02B	P-94-02C	P-94-03A	P-94-03B	P-94-04A	P-94-04B	P2001-02A	P2001-02B	P2001-03	P09-LCD-1	P09-LCD-2	P09-LCD-3	P09-LCD-4	P09-LCD-6	P09-LCD-7	PW-10-01	PW-10-02	PW-10-03	PW-10-04	PW-10-05
1117.445	1117.405	1118.431	1116.165	1101.673	1136.555	1136.493	1138.41	1138.332	1129.84	1134.373	1134.459	1134.609	1134.327	1122.78	1122.77	1120	1097.53	1097.69	1093.71	1093.68	1096.21	1101.68	1149.08	1139.30	1137.72	1141.69	1180.39

Piezometric Elevation (masl)

Date	V34	V35	V36	V37	V38	V39	V40	V41	V42	V43	V44	V45	V46	V47									DH1	DH2	DH3	DH4	DH5
	GW-94-01	GW-94-02	GW-94-03	GW-94-04	GW-94-05	P-94-01A	P-94-01B	P-94-02A	P-94-02B	P-94-02C	P-94-03A	P-94-03B	P-94-04A	P-94-04B	P2001-02A	P2001-02B	P2001-03	P09-LCD-1	P09-LCD-2	P09-LCD-3	P09-LCD-4	P09-LCD-6	P09-LCD-7	PW-10-01	PW-10-02	PW-10-03	PW-10-04	PW-10-05
3-May-94	1109.165	1103.075	1107.151	1101.835	1090.113	1124.185	1130.443	1127.840	1132.212	1116.760	1120.273	1124.659	1122.439	1125.337														
21-Jun-94	1109.995	1108.755	1109.281	1106.515																								
30-Jun-95						1128.765	1130.873	1130.390	1132.222	1120.820	1120.463	1124.659	1123.259	1125.337														
13-Jul-95						1128.755	1130.903																					
30-Jul-95						1128.695	1131.013	1130.420	1132.212	1121.030	1120.693	1124.659	1122.779	1125.337														
26-Aug-95	1110.555	1108.935		1107.115																								
31-Aug-95	1110.085					1128.625	1131.643	1130.440	1132.272	1121.180	1120.753		1122.009															
17-Oct-95	1110.305	1109.145		1106.795		1128.655	1132.263	1129.710	1132.572	1121.300	1120.963		1122.729															
20-Nov-95	1110.345	1109.225		1106.975																								
13-Mar-96	1110.005	1108.175		1106.775																								
28-May-96	1109.945	1108.065	1108.431	1105.915		1128.215	1131.113	1128.470	1132.212	1120.470	1120.253		1121.839															
24-Sep-96	1109.945	1109.975	1110.481	1106.995		1126.155	1131.193	1130.110	1132.212	1121.180	1120.693	1124.579	1121.809	1125.337														
13-May-97	1110.605	1107.990	1108.476	1106.635		1127.385	1130.823	1130.670	1131.932	1120.330	1121.593	1124.499	1121.829	1124.707														
11-Jul-97						1126.755	1130.593	1130.490	1132.212	1120.870	1120.273	1124.659	1124.639	1125.327														
11-Aug-97	1110.695	1109.025	1110.021	1107.355	1099.683	1126.965	1131.243	1130.310	1132.082	1121.070	1121.533	1124.499	1121.989	1125.117														
14-Oct-97	1110.685	1108.825	1109.281	1107.175		1127.045	1131.533	1130.420	1132.102	1120.900	1121.413	1124.499	1121.879	1125.117														
23-Dec-97	1110.745	1108.355	1108.901	1107.035		1127.305	1131.733	1130.730	1132.262	1120.890	1121.673	1124.649	1121.949	1125.307														
31-May-98	1110.725	1108.805	1108.701	1106.575	1099.813	1127.035		1130.360		1120.640		1124.509	1121.839	1125.127														
25-Jul-98						1126.355		1130.370		1120.730			1121.819															
15-Sep-98	1110.775	1108.555	1108.911	1107.065	1099.273	1126.535		1130.430		1120.620			1121.779															
16-Nov-98						1126.235		1130.480		1120.780																		
31-Dec-98	1110.745	1108.345	1108.521	1106.935																								
18-Jun-99	1110.565	1108.165	1108.191	1105.985		1126.595		1130.060		1120.360																		
12-Oct-99	1110.835	1109.825	1109.621	1107.375		1126.545		1130.250		1121.020																		
31-May-00	1111.695	1108.725	1110.171	1106.835	1099.833	1126.355		1130.560	1132.402	1120.870			1121.949	1125.447														
5-Sep-00	1110.785																											
9-Oct-00	1112.465	1113.445	1111.531	1107.815	1100.743																							
9-Jul-01						1126.135	1131.653	1129.550	1130.612	1124.380	1121.533	1124.679	1123.769	1125.447														
11-Jun-02															1118.060	1118.010	1090.000											
4-Sep-02						1125.805	1131.193	1130.420	1132.312	1120.515	1120.848	1124.679		1125.417														
27-May-03						1125.985	1131.433	1130.590	1132.462	1120.640	1120.298	1124.679		1125.397														
5-Jun-03															1118.120	1118.120												
9-Sep-03						1125.910	1131.453	1130.570	1132.462	1120.690	1120.513	1124.679		1125.397														
8-May-04						1125.945	1131.233	1130.380	1132.397	1120.635	1120.298	1124.679		1125.352														
8-Jun-04															1118.140	1118.150												
8-Sep-04						1125.835	1131.293	1130.620	1132.562	1120.400	1120.293	1124.679		1125.337														
22-Sep-04															1118.000	1117.720												
3-May-05															1117.680													
19-May-05						1126.290	1131.412	1130.930	1132.712	1120.959	1121.528	1124.679		1125.337														
8-Sep-05															1118.020													
9-Sep-05						1126.185	1131.609	1130.970	1132.887	1120.930	1121.098	1124.679		1125.337														
16-May-06						1125.855	1131.103	1130.320	1132.222	1120.490	1120.293	1124.679																
7-Jun-06															1118.040	1117.940												
11-Sep-06						1125.515	1130.953	1130.420	1132.492	1120.670	1120.483	1124.679																
19-Sep-06															1117.910	1117.810												
10-May-07						1125.940	1130.603	1130.465	1132.212	1120.270	1120.303	1124.689		1125.337														
29-May-07	1110.925	1108.245	1108.442												1117.670	1117.630	1081.640											
3-Jun-07				1106.890																								
27-Aug-07						1125.615	1130.458	1130.200	1132.212	1120.960	1120.333	1124.679		1125.337														
11-Oct-07	1111.235	1111.205		1107.345											1117.840	1117.785												
4-Jun-08	1111.408	1109.965	1110.629	1107.411											1119.262	1119.225	1089.500											
18-Sep-08	1112.366	1112.305	1110.079	1107.862		1129.700	1132.088	1131.095	1133.322	1121.240	1121.908	1124.639		1125.442	1118.998	1118.986												
30-May-09		1109.799	1110.279																									
31-May-09	1111.728			1107.395																								
12-Sep-09	1111.909	1109.884	1109.431	1107.507											1118.454	1118.310	1082.879											
3-Feb-10						1126.241	1131.383	1130.793	1132.392		1123.503	1124.679		1125.442														
15-May-10						1125.876	1130.928	1130.571	1132.250	1121.323	1122.736	1124.683		1125.441														
12-Jun-10															1118.190	1118.430	1083.000	1093.707			1089.941	1090.500						
27-Jun-10						1125.486	1130.774	1130.479	1132.207	1120.977	1120.798	1124.683		1125.437														
13-Jul-10						1124.849	1130.661	1130.265	1132.215	1124.133	1120.738	1124.679		1125.428														
4-Aug-10						1124.852	1130.645	1130.238	1132.209	1121.108	1120.689	1124.671		1125.429														
3-Sep-10	1111.543	1112.130	1109.027			1124.817	1130.680	1130.221	1132.151	1120.817	1120.707	1124.681		1125.438														
15-Sep-10															1118.213	1117.904	1082.190											
20-Sep-10																		1093.552			1086.423	1090.418						
14-Oct-10						1125.077	1130.639	1130.365	1132.219	1121.266	1120.650	1124.632		1125.337														
18-Oct-10																												
3-Nov-10						1125.109	1130.637	1130.147	1132.217	1121.076	1120.597	1124.680		1125.432											1125.68	1124.79	1123.22		1137.86
15-Nov-10				1107.264																								
24-Jan-11						1125.261	1130.611	1130.162	1132.215	1120.097	1120.368	1124.674		1125.430											1125.30	1124.57	1123.47	1132.42	1137.87
26-Jan-11																		1093.452	1093.259	1091.833	1087.915	1090.402	1096.926					
3-Feb-11	1111.448	1108.431	1108.665	1107.109											1117.948	1117.938	1082.065											

Table 2: Vangorda Waste Rock Dump - Water Level Trigger Elevations and Monitoring Schedule

Instrument	Trigger Levels	Maximum Levels	Max Observed Levels	Date of Max Observed levels	Frequency	Comments
	(mamsl)	(mamsl)	(mamsl)	(mm/yy)		
P94-01A	1131	1132	1129.70	Sep-08	SF(M,S)*	
P94-01B	1133	1134	1132.26	Oct-95	SF(M,S)*	
P94-02A	1133	1135	1131.10	Sep-08	SF(M,S)*	
P94-02B	1134	1135	1133.32	Sep-08	SF(M,S)*	
P94-02C	1125	1126	1124.38	Jul-01	SF(M,S)*	Damaged (no plans to replace)
P94-03A	1126	1128	1123.50	Feb-10	SF(M,S)*	
P94-03B	1126	1128	1124.69	Sep-08	SF(M,S)*	
P94-04A	NA	NA	1124.64	Jul-97	SF(M,S)*	damaged (to be replaced)
P94-04B	1126	1135	1125.45	May-00	SF(M,S)*	
P2001-02A	1123	1124	1119.26	Jun-08	SF(M,S)	
P2001-02B	1123	1124	1119.23	Jun-08	SF(M,S)	
P2001-03	1120	1121	1090.00	Jun-02	SF(M,S)	
GW-94-01	1115	1118	1112.47	Oct-00	SF(M,S)*	
GW-94-02	1115	1118	1113.45	Oct-00	SF(M,S)*	
GW-94-03	1113	1116	1111.53	Oct-00	SF(M,S)*	
GW-94-04	1109	1112	1107.86	Oct-00	SF(M,S)*	
GW-94-05	NA	NA	1100.74	Sep-08	SF(M,S)*	Unable to find in field after 2008
DH-01	1135	1138	1125.68	Nov-10	SF(M,S)	levelogger installed
DH-02	1131	1132	1124.79	Nov-10	SF(M,S)	levelogger installed
DH-03	1130	1132	1123.22	Nov-10	SF(M,S)	levelogger installed
DH-04	1132	1135	dry	Nov-10	SF(M,S)*	
DH-05	1139	1142	1137.86	Nov-10	SF(M,S)*	
P11-01	1125	1128	NA	NA	SF(M,S)*	Proposed Toe Piezometer at Section AA
P11-02	1121	1123	NA	NA	SF(M,S)*	Proposed Toe Piezometer at Section BB
P11-03	1120	1122	NA	NA	SF(M,S)*	Proposed Toe Piezometer at Section CC
P11-04	1120	1121	NA	NA	SF(M,S)*	Proposed Toe Piezometer at Section DD

SF = Spring(May) and Fall (September)

* Recommend the Installation of levelloggers (transducers) in each piezometer/Drillhole/well to provide continuous water levels)

Actions if Trigger level reached:

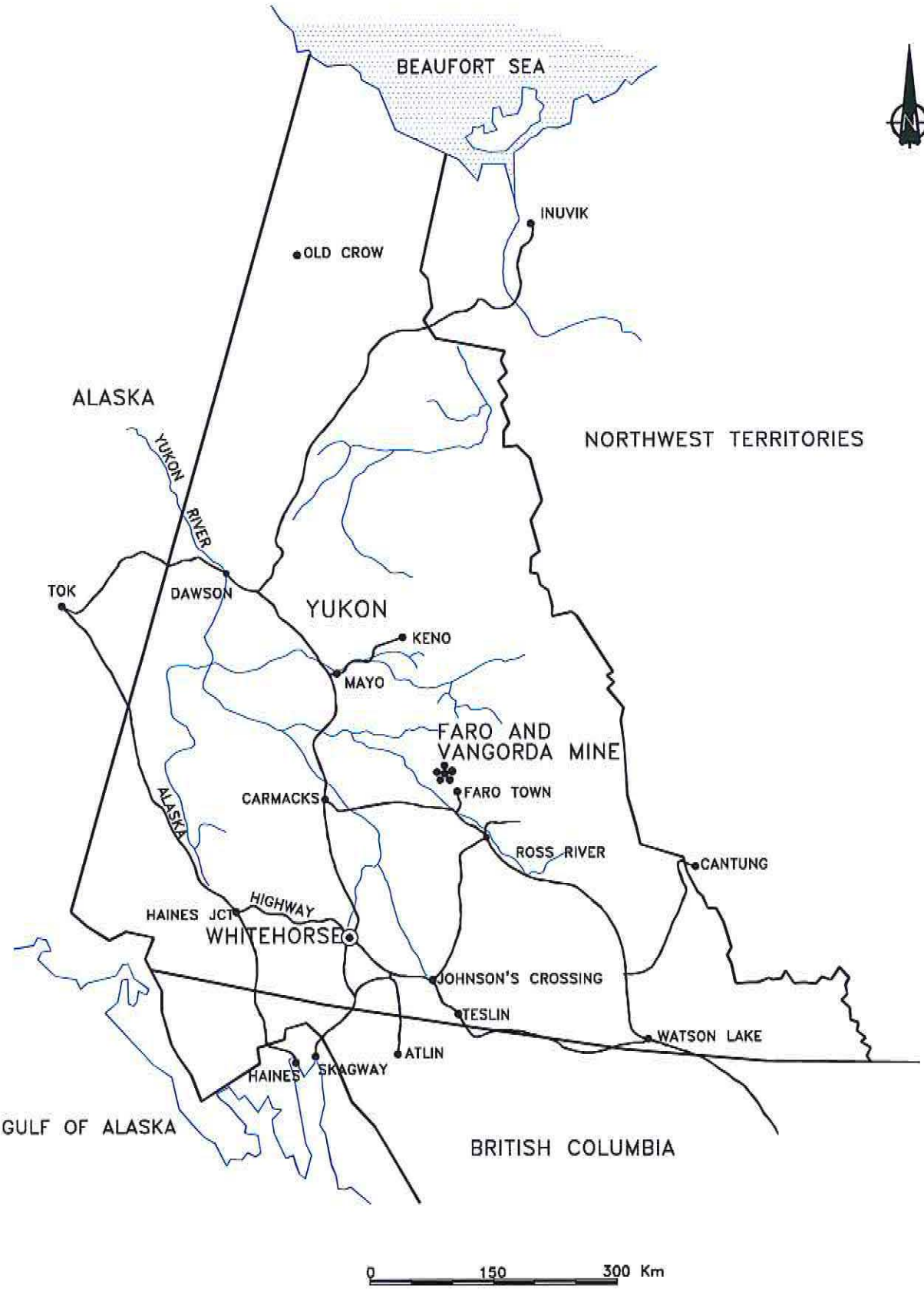
1. Recheck reading
2. Check instrument
3. Advise Environmental Coordinator and Site Manager
4. Notify Consultant

SRK Consulting
Fabruary 2011

Table 3: Little Creek Dam - Water Level Trigger Elevation and Monitoring Schedule

Instrument		Trigger Levels	Maximum Levels	Max Observed Levels	Date of Max Observed levels	Frequency	Action when Trigger level reached	Comments
		(mamsl)	(mamsl)	(mamsl)	(mm/yy)			
BH94 LCD1	Deep	1107	1108	1105.82	Aug-01	SF(M,S)	1. Check Little Creek Pond Level 2. Recheck reading 3. Check instrument 4. Advise Environmental Coordinator and Site Manager 5. Lower Little Creek pond level 6. Notify Consultant	
BH94 LCD1	Shallow	1107	1108	1105.77	Sep-96	SF(M,S)		
BH94 LCD2	Deep	1103	1104	1102.32	Sep-06	SF(M,S)		
BH94 LCD2	Shallow	1103	1104	1101.76	Sep-06	SF(M,S)		
BH94 LCD3	Deep	1109	1110	1108.62	Sep-06	SF(M,S)		
BH94 LCD3	Shallow	1107	1108	1106.76	Sep-06	SF(M,S)		
Pond Level		1111.6	1112.6	1111.70	May-08		Lower pond Level	
		(°C)	(°C)	(°C)				
BH94 LCD4	+0.0 to -3m	+10 < X < -3	+10 < X < -3	+11.5 < X < -2.8	Mar-08	SF(M,S)	1. Recheck reading 2. Check Instrument 3. Advise Environmental Coordinator and Site Manager 4. Notify Consultant	
	-15 to -18m	+8 < X < +1	+8 < X < +1	+6.7 < X < +2	Jun-94	SF(M,S)		
BH94 LCD5	+0.0 to -3m	+10 < X < -3	+10 < X < -3	+9.8 < X < -2	Jun-08	SF(M,S)		
	-15 to -18m	+8 < X < +1	+8 < X < +1	+7.8 < X < +1.8	Sep-00	SF(M,S)		
BH94 LCD6	+0.0 to -3m	+10 < X < -3	+10 < X < -3	+13 < X < -2	Apr-08	SF(M,S)		
	-15 to -18m	+8 < X < +1	+8 < X < +1	+8.2 < X < +2.2	Jun-00	SF(M,S)		
SF = Spring(May) and Fall (September)								

Figures



SRK Consulting
Engineers and Scientists
Vancouver

Denison Environmental Services

2010 Vangorda Annual Inspection

LOCATION MAP

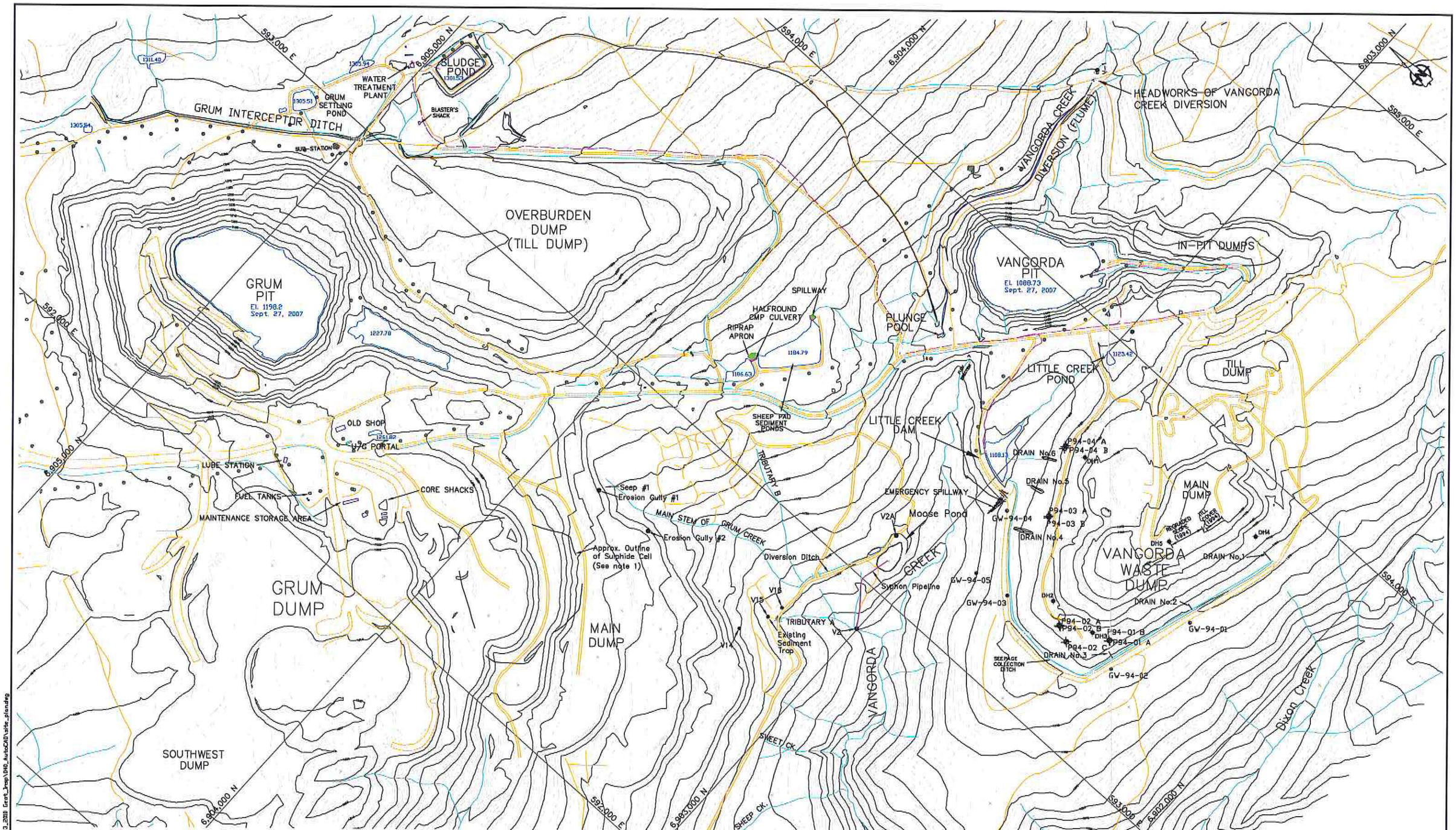
SRK JOB NO.: 1CD009.003

FILE NAME: yukon.dwg

FARO MINE COMPLEX

DATE:	APPROVED:	FIGURE:
Feb. 2011		1

I:\01_SITES\FARO\1107_1CD009.003_2010 Geol_Insp\040_AutoCAD\yukon.dwg



Map Scale: 1:2500
Contour Interval: 2m
Date of Photography: 03/07/25
Scale of Photography: 1:20000
Survey control derived from existing 1:20000 photography
Survey control based on: UTM Projection, NAD27
Compiled by The ORTHOSHOP, Calgary, September 2003
WO 8856

0 100 200 300 400 500
Scale 1:10,000

SRK Consulting
Engineers and Scientists
Vancouver

SRK JOB NO.: 1CD009.003
FILE NAME: site_plan.dwg

Denison Environmental Services

FARO MINE COMPLEX

2010 Vangorda Annual Inspection

General Arrangement Plan

DATE: Feb. 2011
APPROVED:
FIGURE: 2

J:\01_SITES\FARO\1107_1CD009.003_2010 Grnt_Insp\040_AutoCAD\site_plan.dwg

Map Scale: 1:2500
Contour Interval: 2m
Date of Photography: 18/09/09
Survey control derived from existing 1:20000 photography
Survey control based on: UTM Projection, NAD27

0 100 200 300 400 500
Scale 1:10,000

SRK Consulting
Engineers and Scientists
Vancouver

SRK JOB NO.: 1CD009.003
FILE NAME: site_plan_photo.dwg

Denison Environmental Services

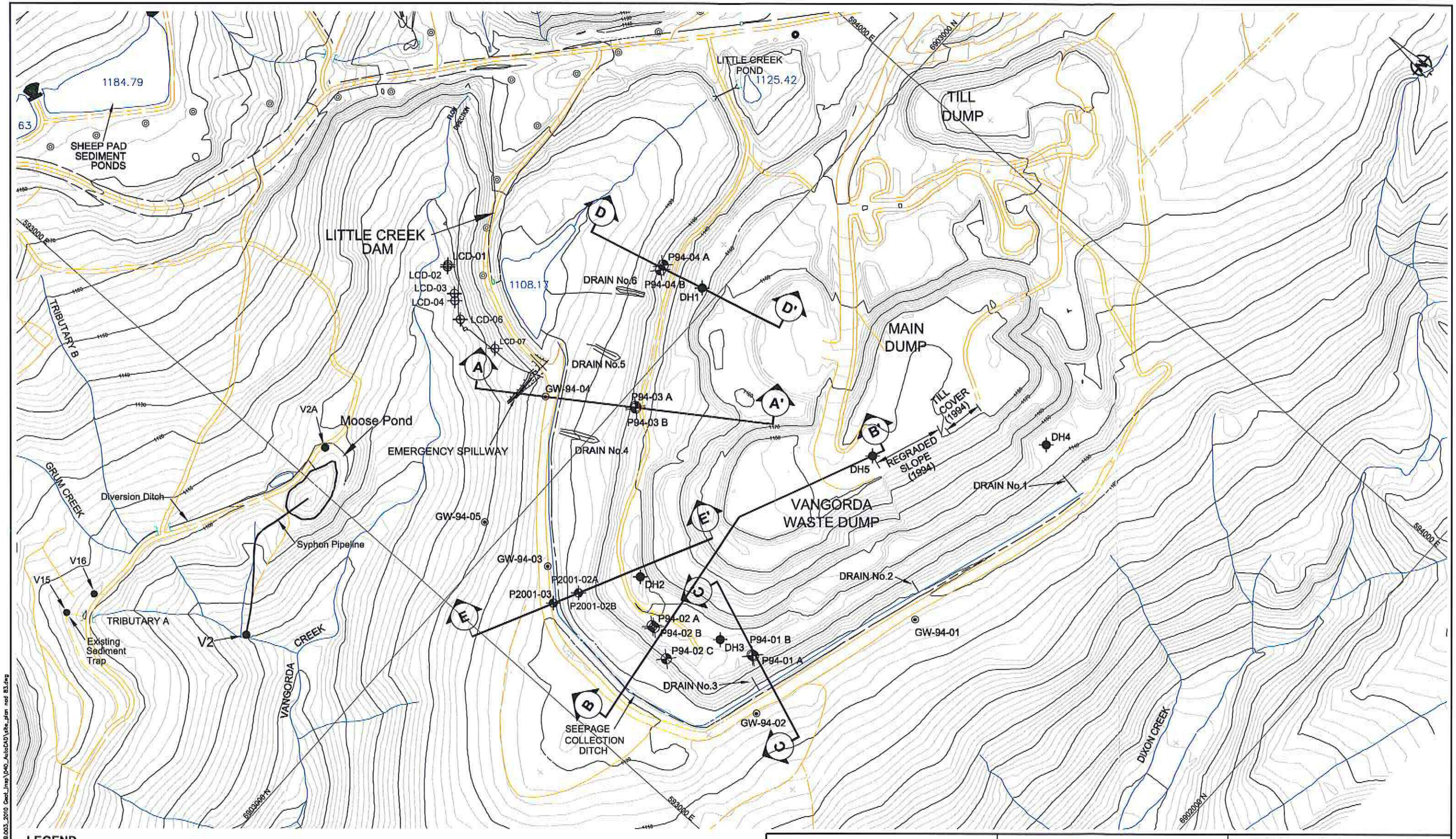
FARO MINE COMPLEX

2010 Vangorda Annual Inspection

ORTHO-RECTIFIED MOSAIC, WITH CONTOURS, OF VANGORDA PLATEAU AREA

DATE:	APPROVED:	FIGURE:
Feb. 2011	PMH	3

J:\01_SITES\FARO\187_1CD009003_2010 Geo'l_Insp\140_ArcGIS\site_plan_photo.dwg



LEGEND

- Piezometer Location
- Monitoring Well Location (1994)
- Monitoring Well Location (2010)
- Monitoring Well Location (2009)

Contour Interval: 2m
Survey control based on: UTM Projection, NAD83
Based on The ORTHOSHOP, Calgary, September 2003

0 50 100 150 200 250
Scale in Metres

SRK Consulting
Engineers and Scientists
Vancouver

SRK JOB NO.: 1CD009.003
FILE NAME: site_plan nad 83.dwg

Denison Environmental Services

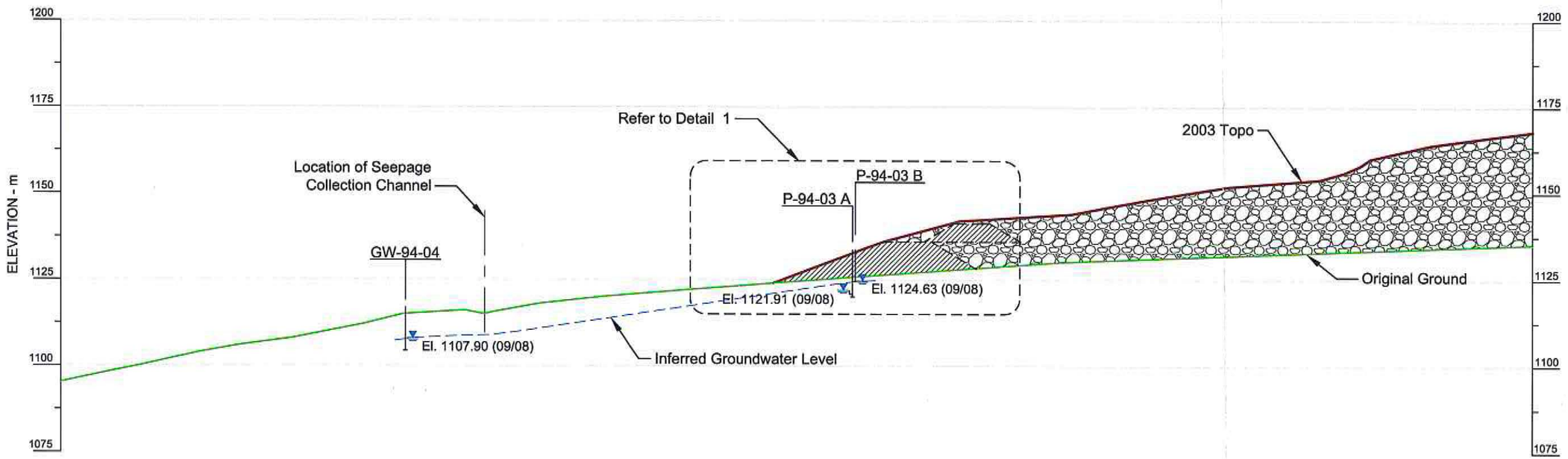
FARO MINE COMPLEX

2010 Vangorda Annual Inspection

General Arrangement Plan
Vangorda Waste Rock Dump

DATE:	APPROVED:	FIGURE:
Feb. 2011	JK	4

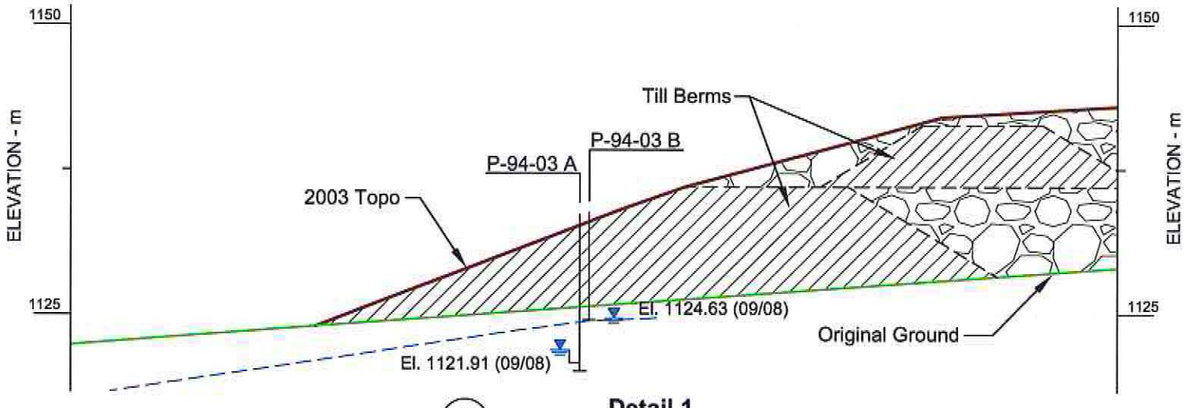
J:\01_SITES\FARO\1107_1CD009.003_2010 Geot_Insp\040_AutoCAD\site_plan nad 83.dwg



A **SECTION A-A'**

0 10 20 30 40 50

Scale in Metres



1 **Detail 1**

0 5 10 15 20 25

Scale in Metres

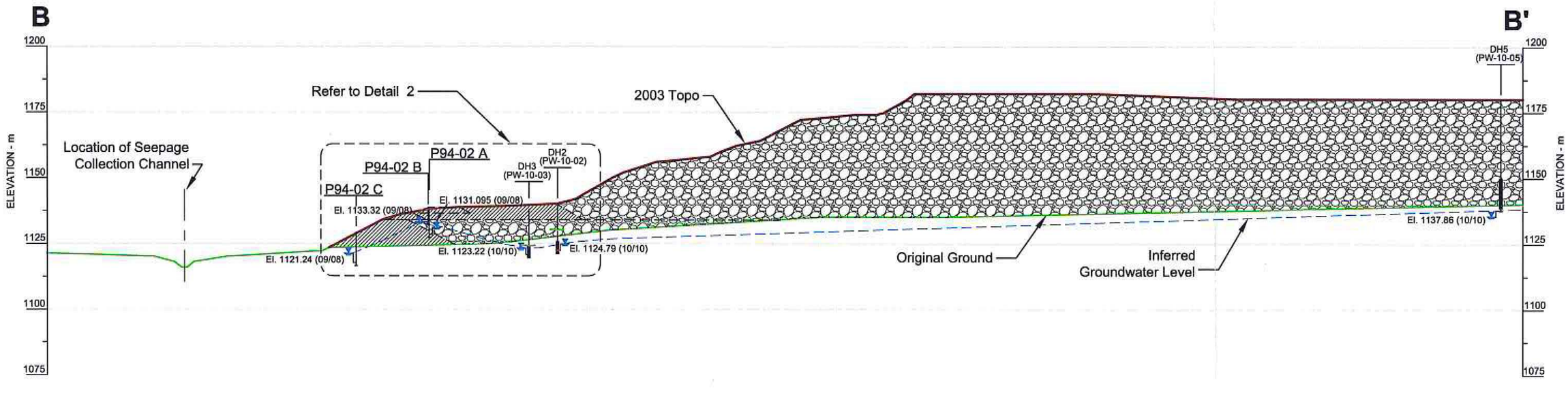
LEGEND

- Phyllite Waste Rock
- Till

NOTE

1. Till berm locations based on available 1994 construction data.

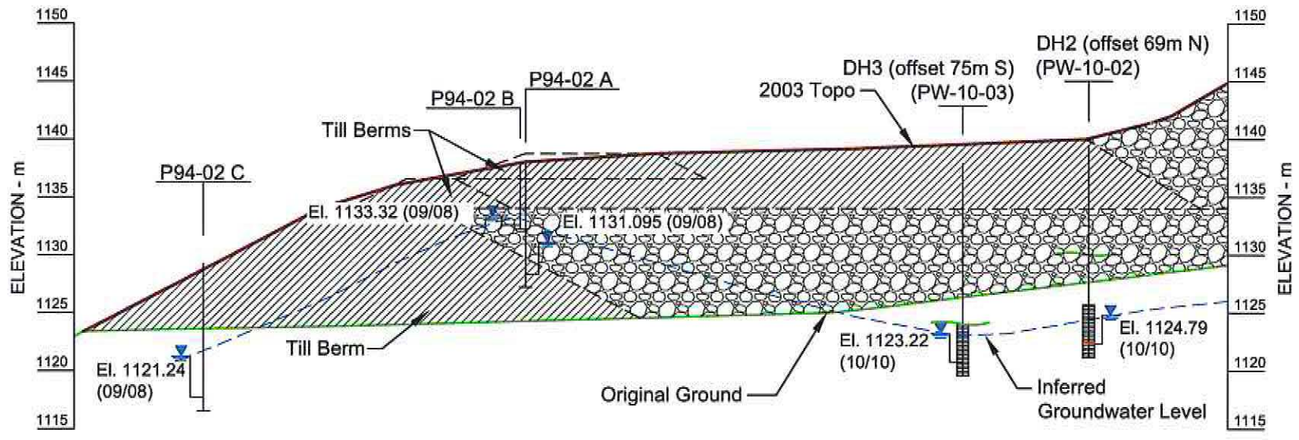
SRK Consulting Engineers and Scientists (Vancouver B.C.)	Denison Environmental Services	2010 Vangorda Annual Inspection
SRK JOB NO.: 1CD009.003	FARO MINE COMPLEX	Vangorda Waste Dump Section A
FILE NAME: SectionA.dwg		DATE: Feb. 2011 / APPROVED: PMH / FIGURE: 5



B SECTION B-B'

0 10 20 30 40 50

Scale in Metres



2 DETAIL 2

0 5 10 15 20 25

Scale in Metres

LEGEND

- Phyllite Waste Rock
- Till
- Original 1990 Topography (pre-mining)
- Original Ground Interpreted During Drilling

NOTE

1. Till berm locations based on available 1994 construction data.
2. Water level is in sump below screen indicating water level is not currently within the dump.

SRK Consulting
Engineers and Scientists
Vancouver B.C.

SRK JOB NO.: 1CD009.003
FILE NAME: SectionB.dwg

Denison
Environmental
Services

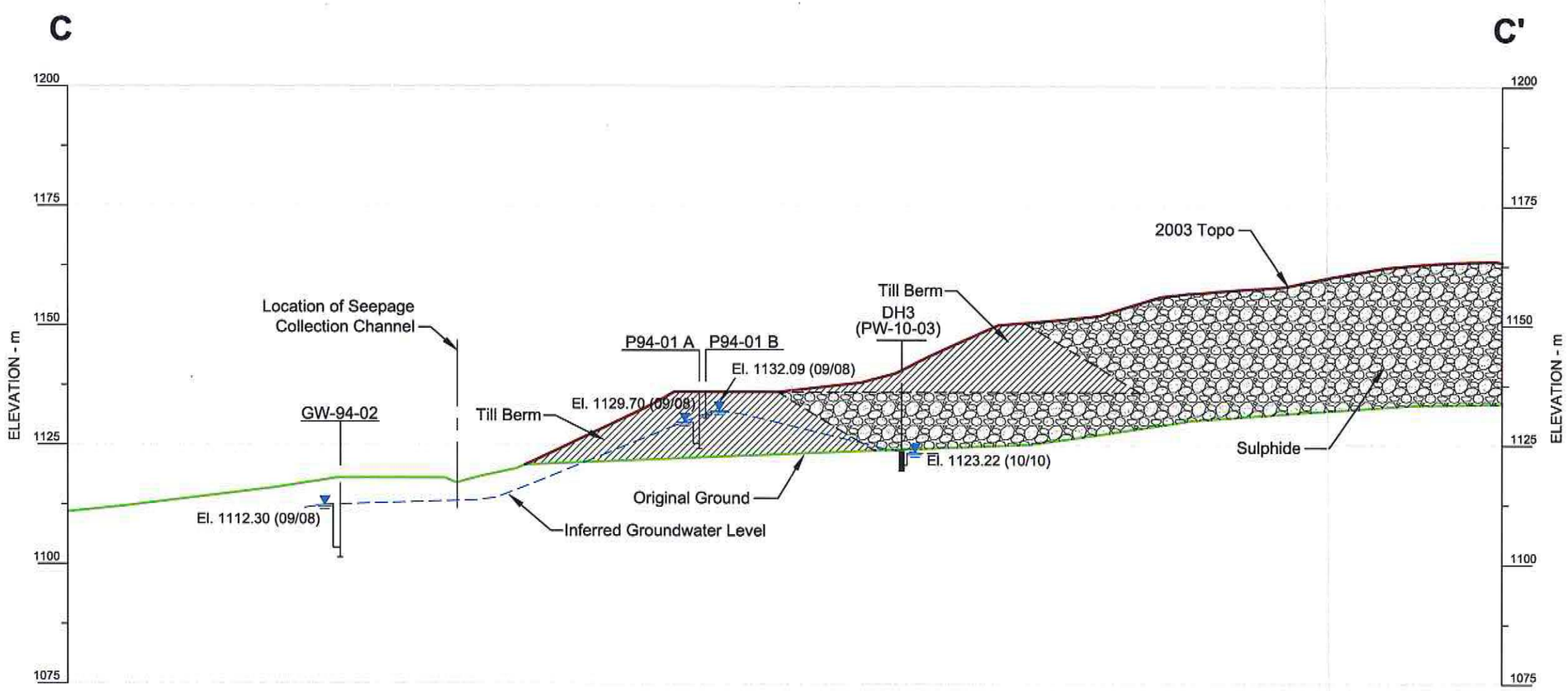
FARO MINE COMPLEX

2010 Vangorda Annual Inspection

Vangorda Waste Dump
Section B

DATE:	APPROVED:	FIGURE:
Feb. 2011	JK	6

J:\01_SITES\FARO\1107_1CD009.003_2010 Geot_Insp\04D_AutoCAD\SectionB.dwg



C SECTION C-C'

0 10 20 30 40 50

Scale in Metres

LEGEND

Phyllite Waste Rock

Till

NOTE

1. Till berm locations based on available 1994 construction data.

SRK Consulting
Engineers and Scientists
Vancouver B.C.

SRK JOB NO.: 1CD009.003
FILE NAME: SectionC.dwg

Denison
Environmental
Services

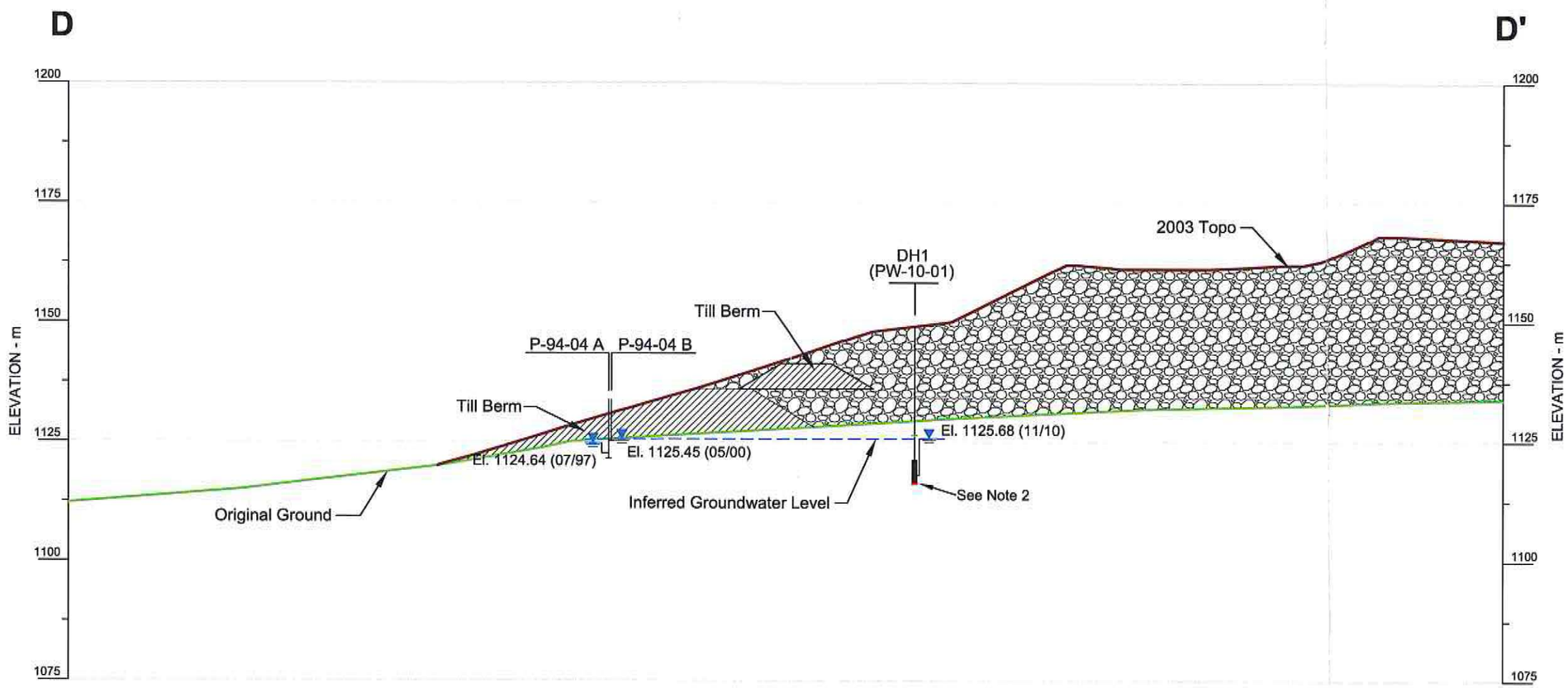
FARO MINE COMPLEX

2010 Vangorda Annual Inspection

Vangorda Waste Dump
Section C

DATE:	APPROVED:	FIGURE:
Feb. 2011	PMH	7

x:\01_SITES\FARO\1107_1CD009.003_2010 Geol_Insp\040_AutoCAD\SectionC.dwg



D **SECTION D-D'**

0 10 20 30 40 50

Scale in Metres

LEGEND

- Phyllite Waste Rock
- Till
- Original 2003 Topography

NOTE

1. Till berm locations based on available 1994 construction data.
2. Original ground not clearly identified during drilling. Screen possibly installed in bedrock.

SRK Consulting
Engineers and Scientists
Vancouver B.C.

SRK JOB NO.: 1CD009.003
FILE NAME: SectionD.dwg

Denison Environmental Services

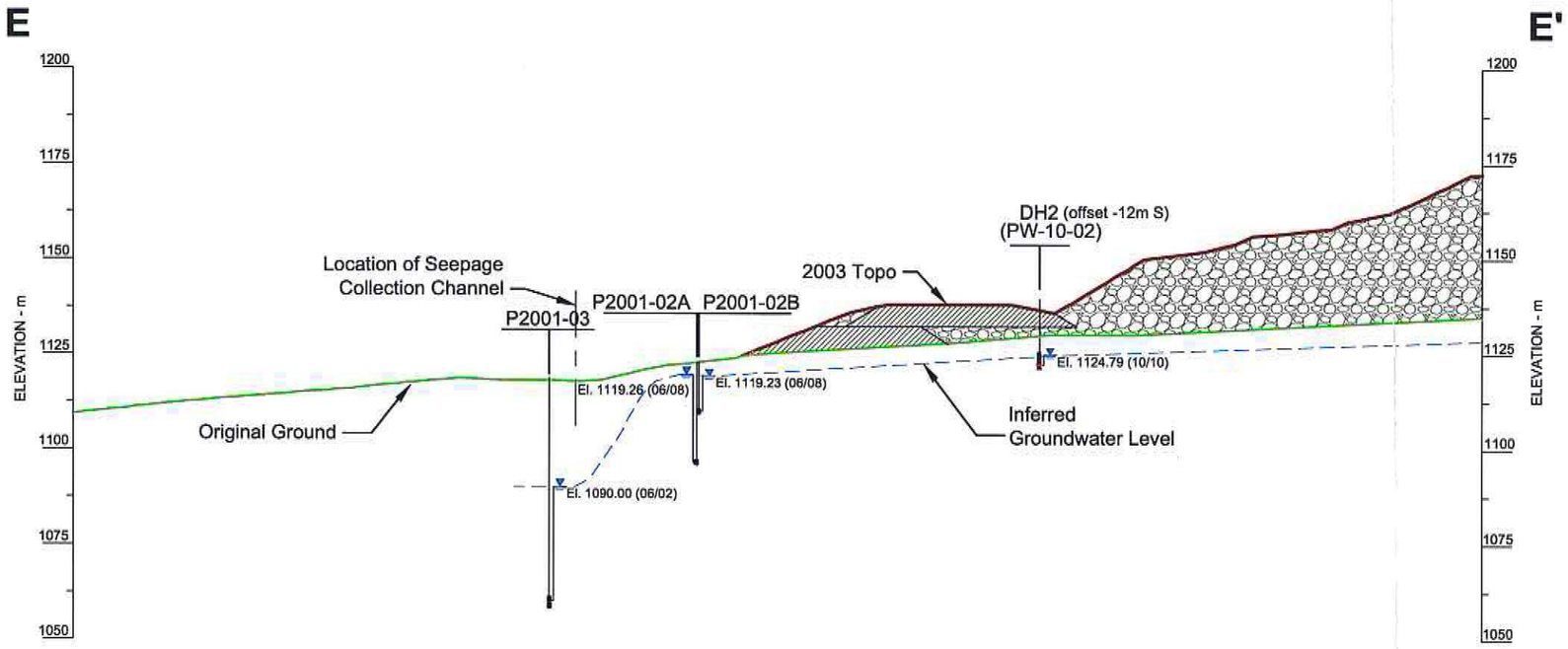
FARO MINE COMPLEX

2010 Vangorda Annual Inspection

Vangorda Waste Dump
Section D

DATE:	APPROVED:	FIGURE:
Feb. 2011	PMH	8

J:\01_SITES\YA800\1107_1CD009.003_2010 Geol_Inst\04D_AutoCAD\SectionD.dwg



E **SECTION E-E'**

0 10 20 30 40 50

Scale in Metres

LEGEND

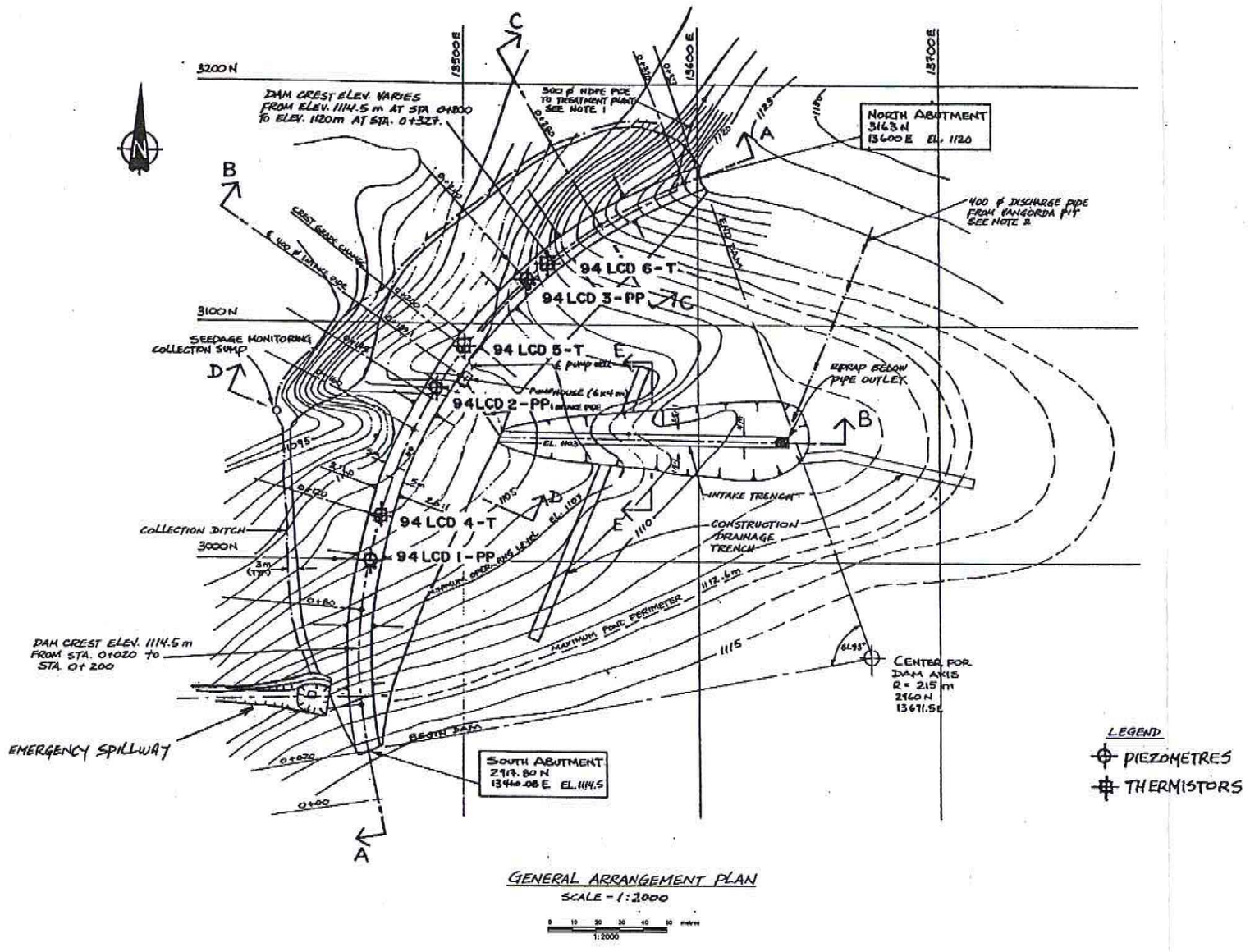
- Phyllite Waste Rock
- Till
- Original 1990 Topography (pre-mining)
- Original Ground Interpreted During Drilling

NOTE

1. Till berm locations based on available 1994 construction data.
2. Water level is in sump below screen indicating water level is not currently within the dump.

SRK Consulting Engineers and Scientists Vancouver B.C.	Denison Environmental Services	2010 Vangorda Annual Inspection
SRK JOB NO.: 1CD009.003	FARO MINE COMPLEX	Vangorda Waste Dump Section E
FILE NAME: SectionB.dwg		DATE: Feb. 2011 / APPROVED: JK / FIGURE: 9

J:\01_SITES\FARO\1107_1CD009.003_2010 Geol_Insp\04Q_AutoCAD\Section8.dwg



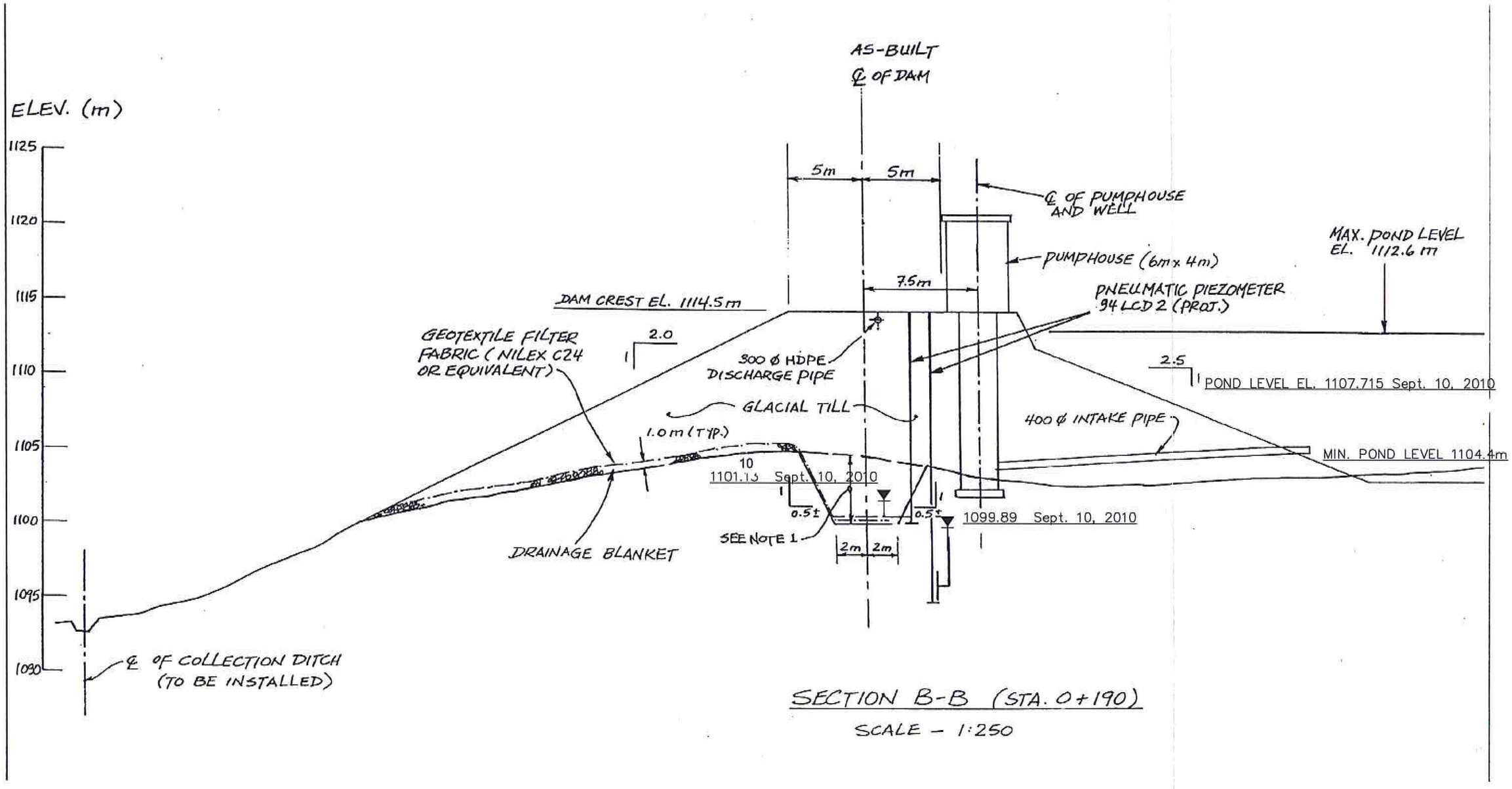
GENERAL ARRANGEMENT PLAN

SCALE - 1:2000

1:2000

SRK Consulting Engineers and Scientists Vancouver	Denison Environmental Services	2010 Vangorda Annual Inspection
SRK JOB NO.: 1CD009.003	FARO MINE COMPLEX	LITTLE CREEK DAM GENERAL ARRANGEMENT PLAN
FILE NAME: FIG-9.dwg		DATE: Feb. 2011 / APPROVED: PMH / FIGURE: 10

J:\01_SITES\FARO\1107_1CD009.003_2010 Geol_Insp\040_AutoCAD\FIG-9.dwg

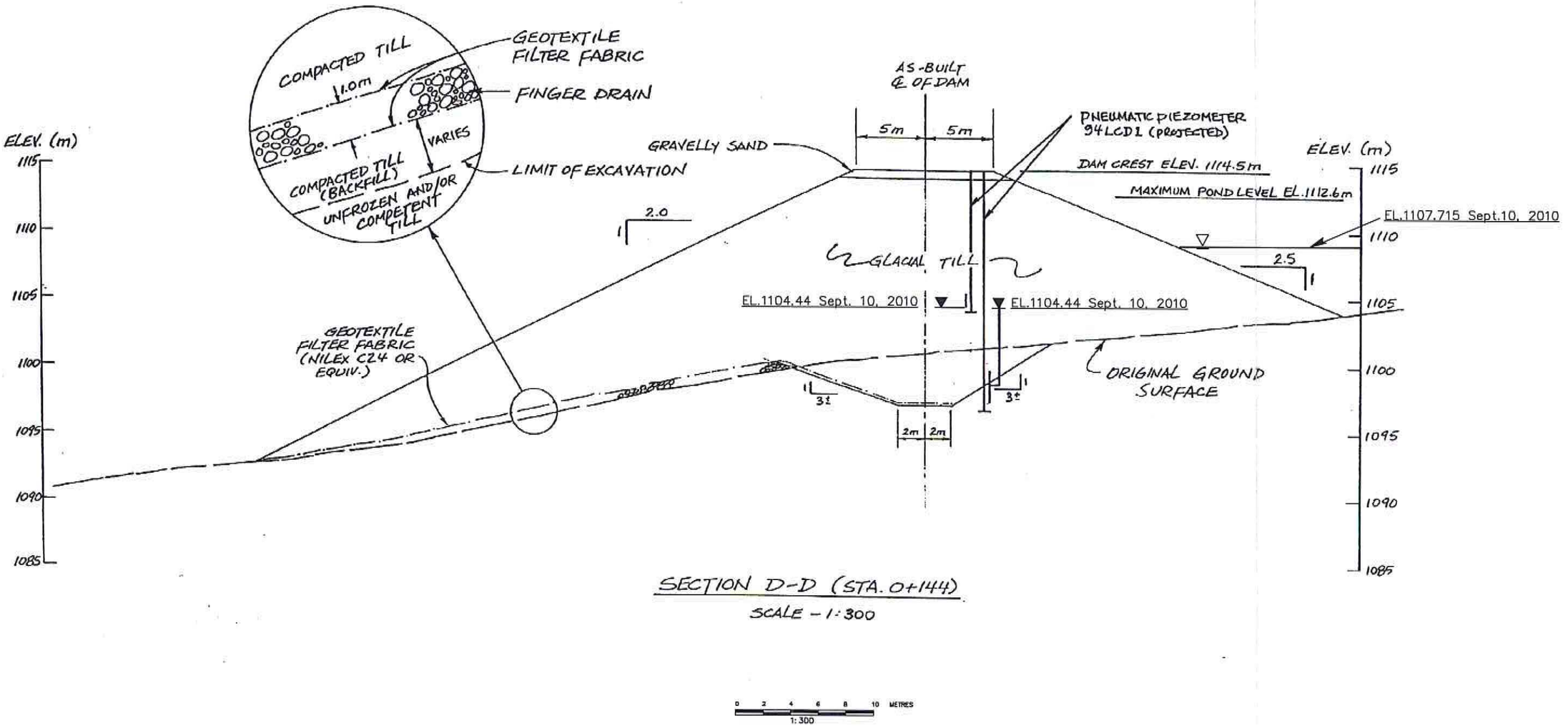


SECTION B-B (STA. 0+190)

SCALE – 1:250

SRK Consulting Engineers and Scientists	Denison Environmental Services	2010 Vangorda Annual Inspection
SRK JOB NO.: 1CD009.003	FARO MINE COMPLEX	LITTLE CREEK DAM SECTION B-B
FILE NAME: FIG-10.dwg		DATE: Feb. 2011 / APPROVED: PMH / FIGURE: 11

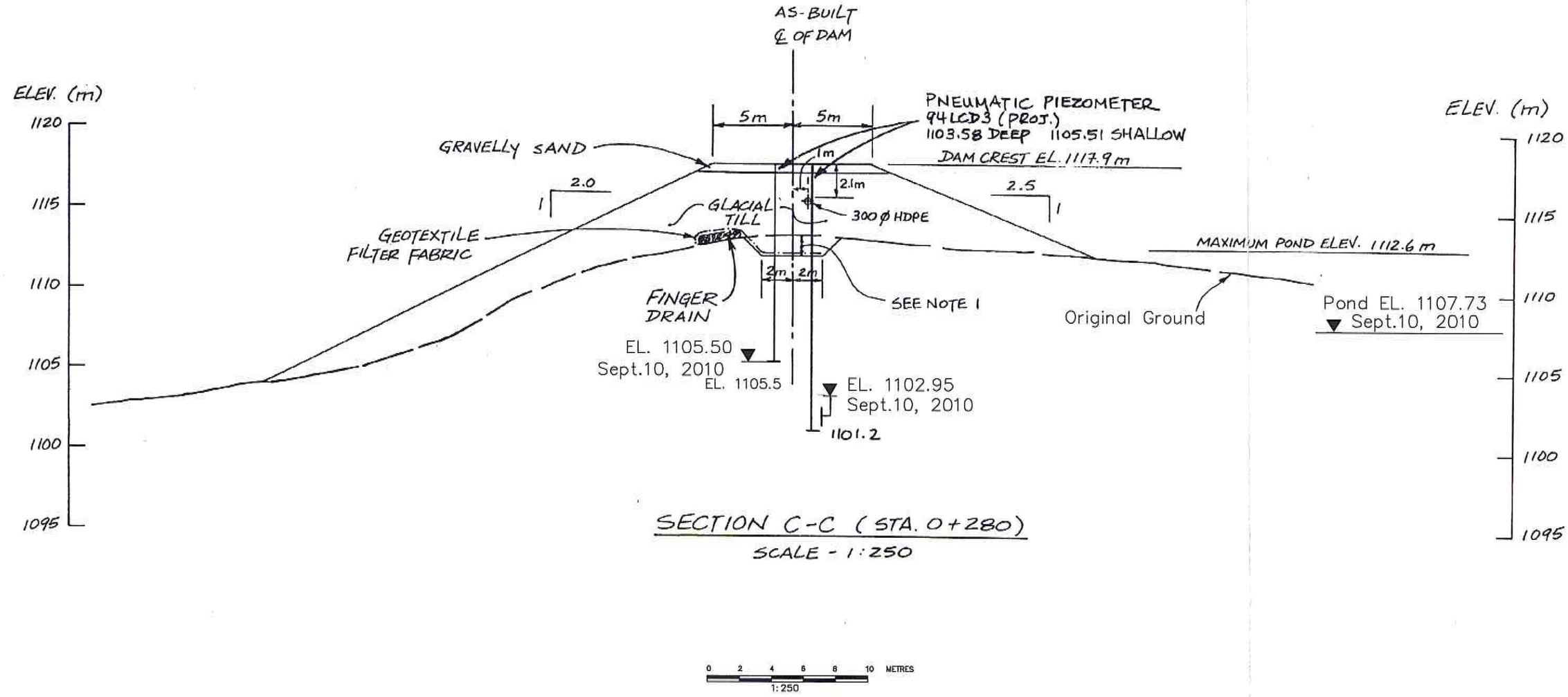
J:\01_SITES\FARO\1107_1CD009.003_2010 Geol_Insp\040_AutoCAD\FIG-10.dwg



SECTION D-D (STA. 0+144)

SCALE - 1:300

SRK Consulting Engineers and Scientists Vancouver	Denison Environmental Services	2010 Vangorda Annual Inspection
SRK JOB NO.: 1CD009.003	FARO MINE COMPLEX	LITTLE CREEK DAM SECTION D-D
FILE NAME: FIG-11.dwg	DATE: Feb. 2011 / APPROVED: PMH	FIGURE: 12



SECTION C-C (STA. 0+280)

SCALE - 1:250

0 2 4 6 8 10 METRES
1:250

J:\01_SITES\FARO\1107_1CD009.003_2010 Geol_Insp\040_AutoCAD\FIG-12.dwg

SRK Consulting Engineers and Scientists	Denison Environmental Services	2010 Vangorda Annual Inspection
SRK JOB NO.: 1CD009.003	FARO MINE COMPLEX	LITTLE CREEK DAM SECTION C-C
FILE NAME: FIG-12.dwg		DATE: Feb. 2011 / APPROVED: PMH / FIGURE: 13

Appendix A

Photos

Photo 1: Drain #6

Photo 2: Drain #5

Photo 3: Drain # 4

Photo 4: Drain #3

Photo 5: Drain #2

Photo 6: Seepage Collection looking back towards Drain #3

Photo 7: Seepage Collection Ditch looking downstream towards Drain #4

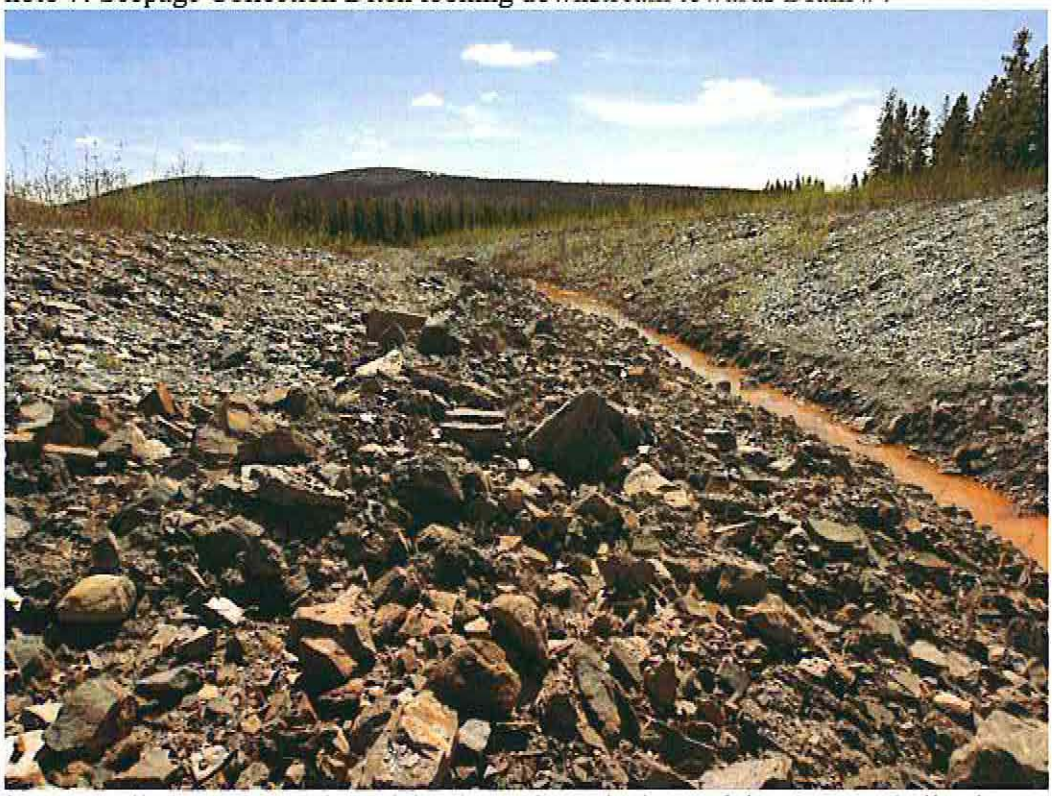


Photo 8: Fall 2009 Excavation of the riprap from the base of the seepage Collection Ditch

Photo 9: Shallow subsidence on till Dyke above seepage collection ditch

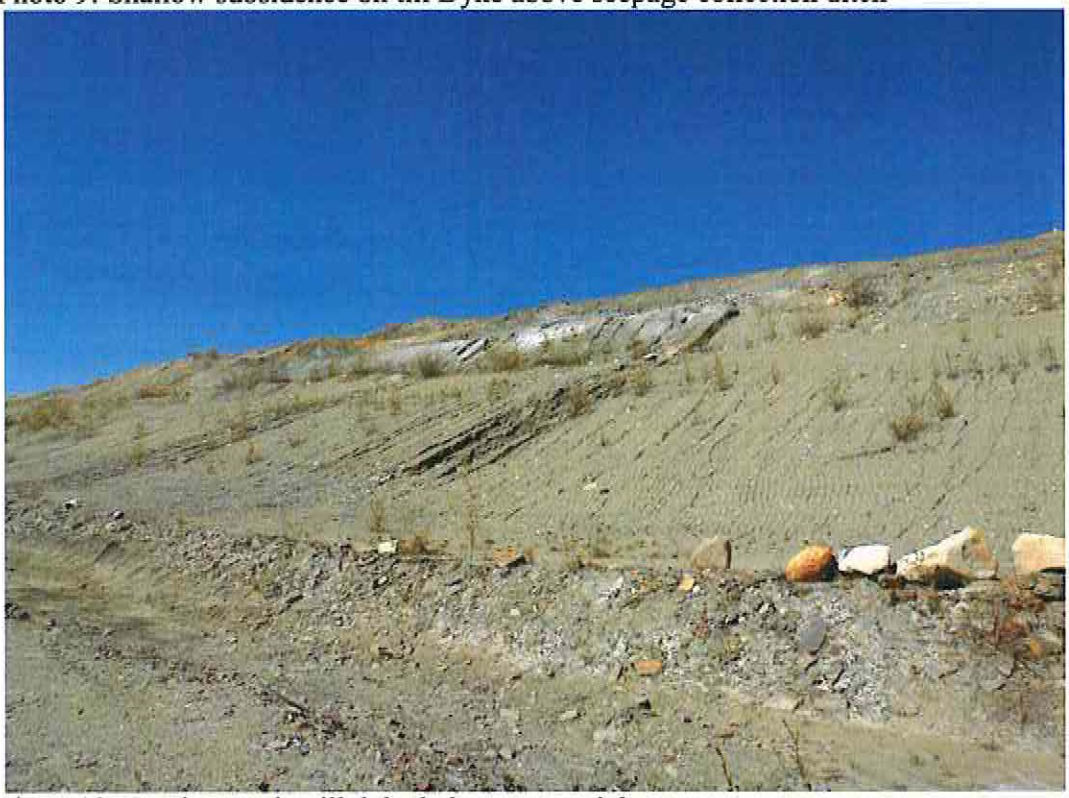


Photo 10: Erosion on the till dyke below cover trials

Photo 11: Erosion on the till dyke blow cover trials

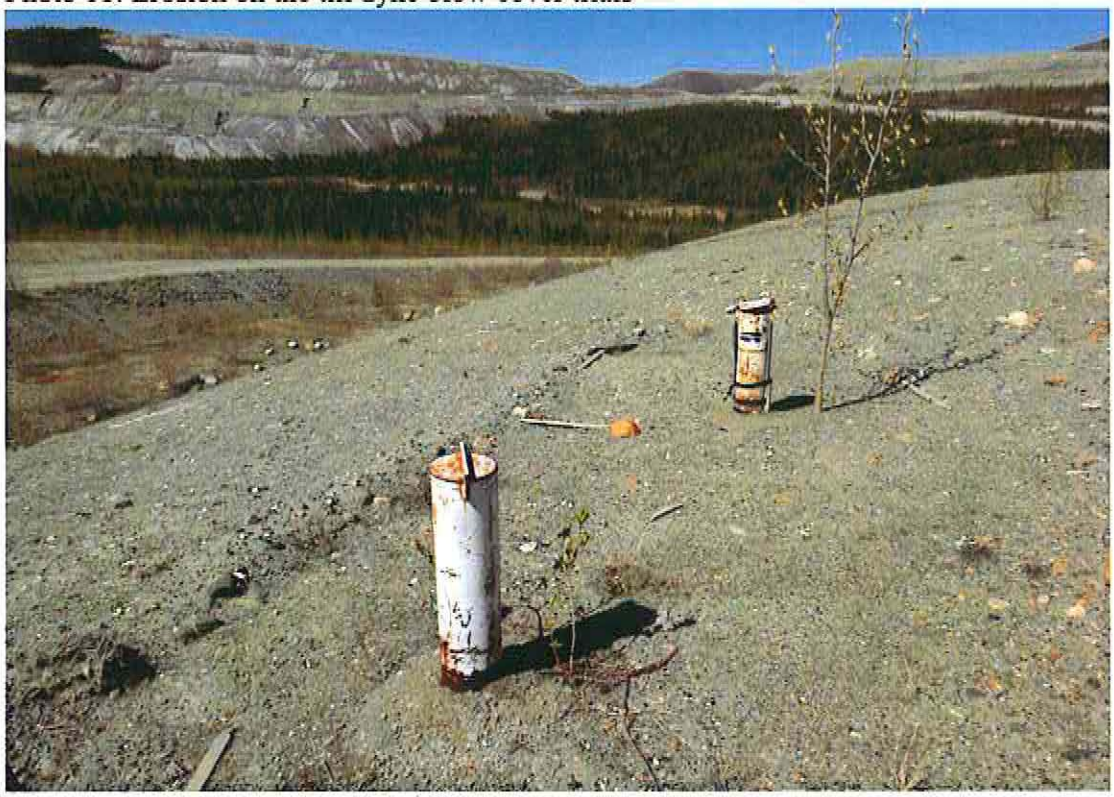


Photo 12: Piezometers 94-2A and 2B

Photo 13: Piezometer P94-2C

Photo 14: Piezometers P94-1A and 1B

Photo 15: Little Creek Pond

Photo 16: Downstream face of Little Creek Pond

Photo 17: Inlet to the Emergency spillway at The Little Creek Pond

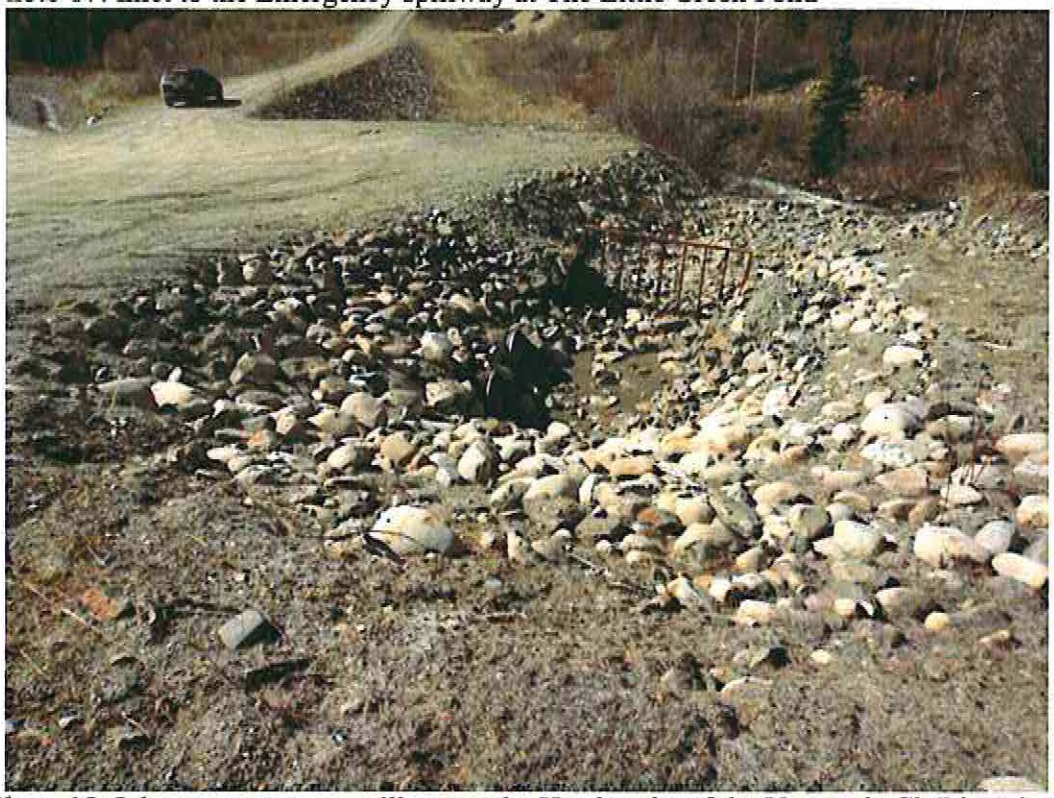


Photo 18: Inlet to emergency spillway at the Headworks of the Vangorda Ck Diversion

Photo 19: Vangorda Creek Diversion Flume

Photo 20: Area of previous instability above the flume

Photo 21: Plunge Pool at base of Vangorda Creek Diversion

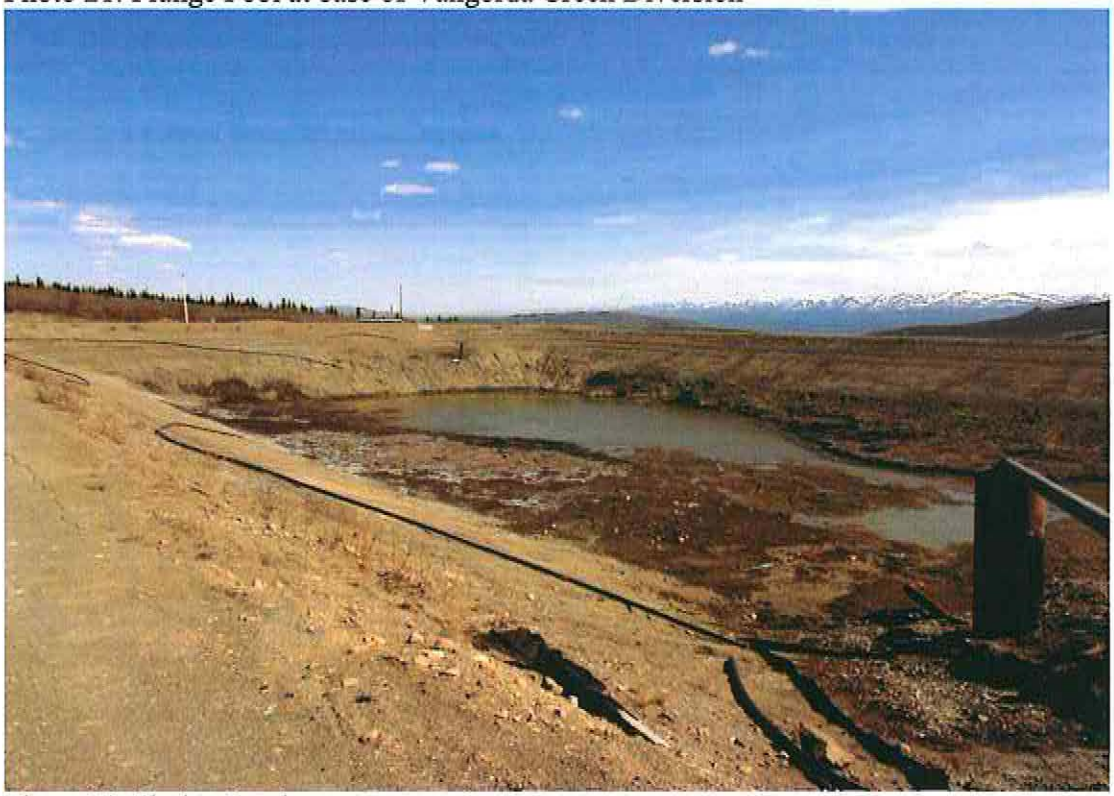


Photo 22: Sludge Pond

Photo 23: Proposed location of the emergency spillway at the sludge pond

Photo 24: Spillway from Grum Settling Pond to GID

Photo 25 Grum Interceptor Ditch

Photo 26: Sheep Pad Pond perimeter dyke

Photo 27: V15 Seepage collection Pond

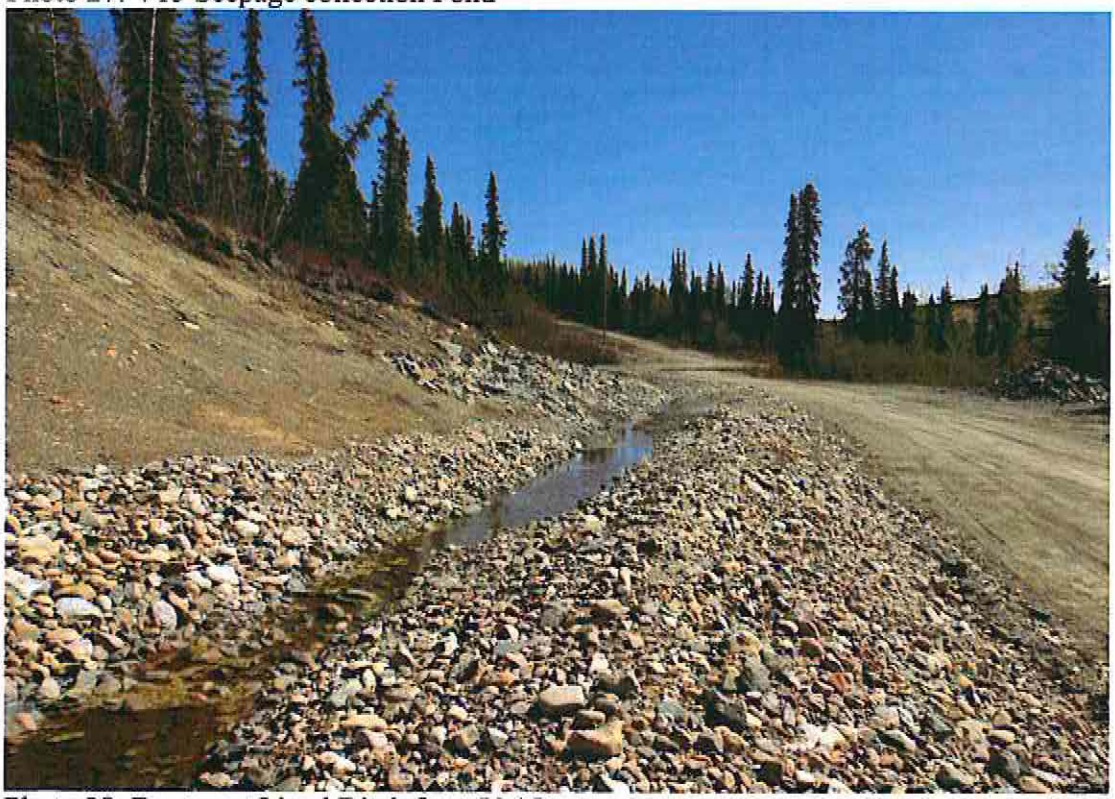


Photo 28: Bentomat Lined Ditch from V-15

Photo 29: Culvert below V-notch weir on Grum creek

Photo 30: Diversion ditch to Moose Pond below V2A

Photo 31: Break in siphon line from Moose Pond

Photo 32: Damage to Siphon Line

Photo 33: Subsidence in the Surface water runoff diversion ditch above the Vangorda Pit

Appendix B

Pneumatic Piezometer and Thermistor Readings – Little Creek Dam

Denison Environmental Services

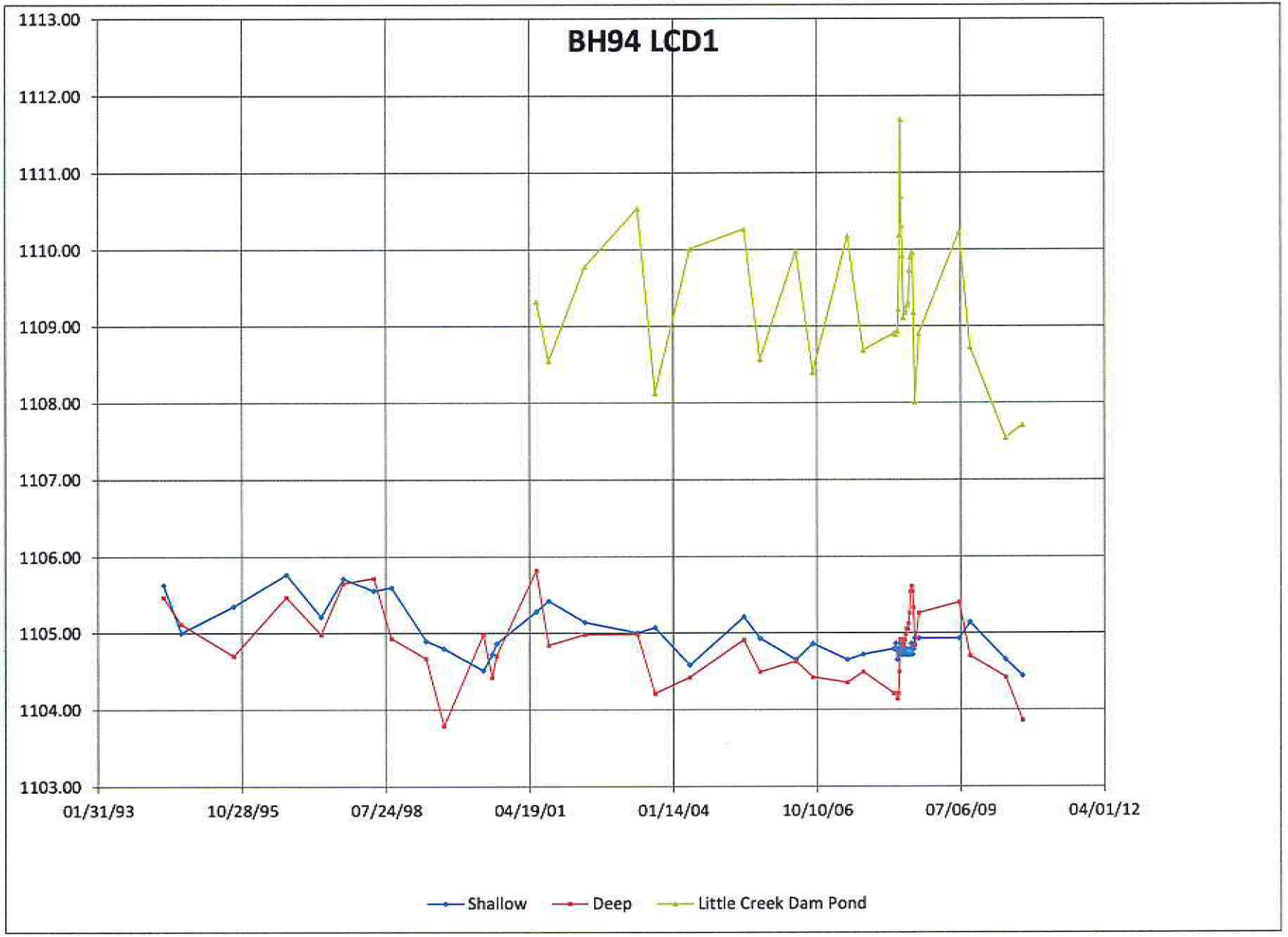
Little Creek Dam Pneumatic Piezometers
Location: Little Creek Dam Crest Elevation: 1114.5m

BH94 LCD1	Date Installed:	June '94	Shallow Tip Elevation:	Deep Tip Elevation:	
	Surface Protector	yes	1103.6	1097.0	

Date	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
	Shallow	Deep	Shallow	Deep		
May-94	2.9	12.1	1105.63	1105.47		
Sep-94	2.0	11.6	1105.00	1105.12		
Sep-95	2.5	11.0	1105.35	1104.70		
Sep-96	3.1	12.1	1105.77	1105.47		
May-97	2.3	11.4	1105.21	1104.98		
Oct-97	3.02	12.36	1105.71	1105.65		
May-98	2.79	12.46	1105.55	1105.72		
Sep-98	2.85	11.33	1105.60	1104.93	~1109.5	
May-99	1.85	10.95	1104.90	1104.67		
Sep-99	1.71	9.70	1104.80	1103.79	~1105	
Jun-00	1.30	11.40	1104.51	1104.98		
Aug-00	1.60	10.60	1104.72	1104.42		
Sep-00	1.80	11.00	1104.86	1104.70		
5-Jun-01	2.40	12.60	1105.28	1105.82	1109.33	
30-Aug-01	2.60	11.20	1105.42	1104.84	1108.55	
9-May-02	2.20	11.40	1105.14	1104.98	1109.78	
10-May-03	2.00	11.40	1105.00	1104.98	1110.54	
9-Sep-03	2.10	10.30	1105.07	1104.21	1108.13	
8-May-04	1.40	10.60	1104.58	1104.42	1110.01	
19-May-05	2.30	11.30	1105.21	1104.91	1110.27	
9-Sep-05	1.90	10.70	1104.93	1104.49	1108.57	
16-May-06	1.50	10.90	1104.65	1104.63	1109.99	
11-Sep-06	1.80	10.60	1104.86	1104.42	1108.40	
10-May-07	1.50	10.50	1104.65	1104.35	1110.18	
27-Aug-07	1.60	10.70	1104.72	1104.49	1108.69	
27-Mar-08	1.7	10.3	1104.79	1104.21	1108.91	
4-Apr-08	1.70	10.30	1104.79	1104.21	1108.90	
10-Apr-08	1.80	10.30	1104.86	1104.21	1108.90	
21-Apr-08	1.50	10.20	1104.65	1104.14	1108.94	
28-Apr-08	1.70	10.30	1104.79	1104.21	1109.225	
5-May-08	1.60	10.70	1104.72	1104.49	1110.191	
12-May-08	1.80	11.30	1104.86	1104.91	1111.696	
15-May-08	1.70	11.30	1104.79	1104.91	1110.697	
20-May-08	1.60	11.30	1104.72	1104.91	1110.311	
26-May-08	1.60	11.30	1104.72	1104.91	1109.919	
2-Jun-08	1.80	11.20	1104.86	1104.84	1109.116	
11-Jun-08	1.60	11.30	1104.72	1104.91	1109.176	
18-Jun-08	1.60	11.40	1104.72	1104.98	1109.213	
24-Jun-08	1.70	11.50	1104.79	1105.05	1109.272	
2-Jul-08	1.60	11.50	1104.72	1105.05	1109.295	
7-Jul-08	1.60	11.60	1104.72	1105.12	1109.323	
15-Jul-08	1.60	11.80	1104.72	1105.26	1109.732	
22-Jul-08	1.70	12.20	1104.79	1105.54	1109.903	
29-Jul-08	1.80	12.30	1104.86	1105.61	1109.948	
4-Aug-08	1.60	12.20	1104.72	1105.54	1109.968	
11-Aug-08	1.70	11.90	1104.79	1105.33	1109.181	
21-Aug-08	1.90	11.20	1104.93	1104.84	1108.010	
18-Sep-08	1.90	11.80	1104.93	1105.26	1108.909	
26-Jun-09	1.90	12.00	1104.93	1105.40	1110.237	
9-Sep-09	2.20	11.00	1105.14	1104.70	1108.731	
15-May-10	1.50	10.60	1104.65	1104.42	1107.545	
10-Sep-10	1.20	09.80	1104.44	1103.86	1107.715	

Note: Data to the end of 2009 as reported by SRK Consulting Engineers and Geoscientists; 2010 data reported Denison Environmental Services

Denison Environmental Services



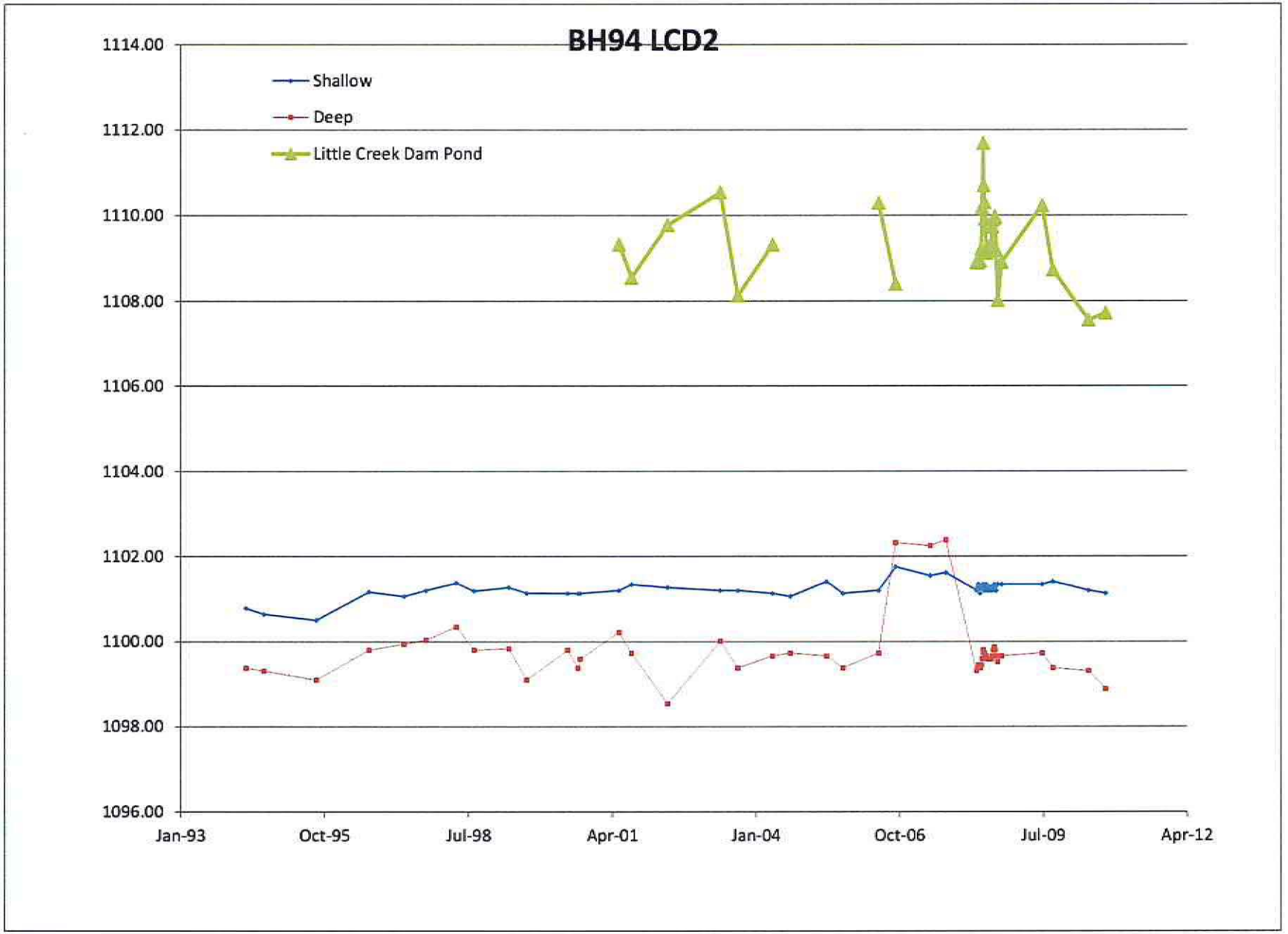
LCD Pneumatic Piezos_To2010\BH94 LCD1 Figure

BH94 LCD2	Date Installed:	June '94	Shallow Tip Elevation:	1100.5	Deep Tip Elevation:	1094.9	
	Surface Protector	yes					

	Reading (psi)		Piezometric Elevation (m asl)		Pond Elevation (m asl)	Comment
Date	Shallow	Deep	Shallow	Deep		
May-94	0.4	6.4	1100.78	1099.38		
Sep-94	0.2	6.3	1100.64	1099.31		
Sep-95	0.0	6.0	1100.50	1099.10		
Sep-96	0.95	7.0	1101.17	1099.80		
May-97	0.8	7.2	1101.06	1099.94		
Oct-97	1.00	7.34	1101.20	1100.04		
May-98	1.25	7.78	1101.38	1100.35		
Sep-98	0.98	7.00	1101.19	1099.80	~1109.5	
May-99	1.10	7.05	1101.27	1099.84		
Sep-99	0.91	6.00	1101.14	1099.10	~1105	
12-Jun-00	0.90	7.00	1101.13	1099.80		
23-Aug-00	0.90	6.40	1101.13	1099.38		
8-Sep-00	0.90	6.70	1101.13	1099.59		
5-Jun-01	1.00	7.60	1101.20	1100.22	1109.33	
30-Aug-01	1.20	6.90	1101.34	1099.73	1108.55	
9-May-02	1.10	5.20	1101.27	1098.54	1109.78	
10-May-03	1.00	7.30	1101.20	1100.01	1110.538	
9-Sep-03	1.00	6.40	1101.20	1099.38	1108.127	
8-May-04	0.90	6.80	1101.13	1099.66	1109.323	
8-Sep-04	0.80	6.90	1101.06	1099.73		
19-May-05	1.30	6.80	1101.41	1099.66		
9-Sep-05	0.9	6.4	1101.13	1099.38		
16-May-06	1.00	6.90	1101.20	1099.73	1110.293	
11-Sep-06	1.80	10.60	1101.76	1102.32	1108.403	
10-May-07	1.50	10.50	1101.55	1102.25		
27-Aug-07	1.60	10.7	1101.62	1102.39		
27-Mar-08	1	6.3	1101.20	1099.31	1108.909	
4-Apr-08	1.10	6.40	1101.27	1099.38	1108.904	
10-Apr-08	1.20	6.50	1101.34	1099.45	1108.904	
21-Apr-08	0.90	6.40	1101.13	1099.38	1108.943	
28-Apr-08	1.10	6.50	1101.27	1099.45	1109.225	
5-May-08	1.10	6.70	1101.27	1099.59	1110.191	
12-May-08	1.20	7.00	1101.34	1099.80	1111.696	
15-May-08	1.10	6.90	1101.27	1099.73	1110.697	
20-May-08	1.00	6.90	1101.20	1099.73	1110.311	
26-May-08	1.00	6.80	1101.20	1099.66	1109.919	
2-Jun-08	1.20	6.80	1101.34	1099.66	1109.116	
11-Jun-08	1.00	6.70	1101.20	1099.59	1109.176	
18-Jun-08	1.00	6.70	1101.20	1099.59	1109.213	
24-Jun-08	1.10	6.70	1101.27	1099.59	1109.272	
2-Jul-08	1.00	6.70	1101.20	1099.59	1109.295	
7-Jul-08	1.10	6.70	1101.27	1099.59	1109.323	
15-Jul-08	1.00	6.80	1101.20	1099.66	1109.732	
22-Jul-08	1.10	7.00	1101.27	1099.80	1109.903	
29-Jul-08	1.20	7.10	1101.34	1099.87	1109.948	
4-Aug-08	1.00	7.00	1101.20	1099.80	1109.968	
11-Aug-08	1.00	6.80	1101.20	1099.66	1109.181	
21-Aug-08	1.20	6.60	1101.34	1099.52	1108.010	
18-Sep-08	1.20	6.80	1101.34	1099.66	1108.909	
26-Jun-09	1.20	6.90	1101.34	1099.73	1110.237	
9-Sep-09	1.30	6.40	1101.41	1099.38	1108.731	
15-May-10	1.00	6.30	1101.20	1099.31	1107.545	
10-Sep-10	0.90	5.70	1101.13	1098.89	1107.715	

Note: Data to the end of 2009 as reported by SRK Consulting Engineers and Geoscientists; 2010 data reported Denison Environmental Services

Denison Environmental Services



LCD Pneumatic Piezos_To2010\BH94 LCD2 Figure

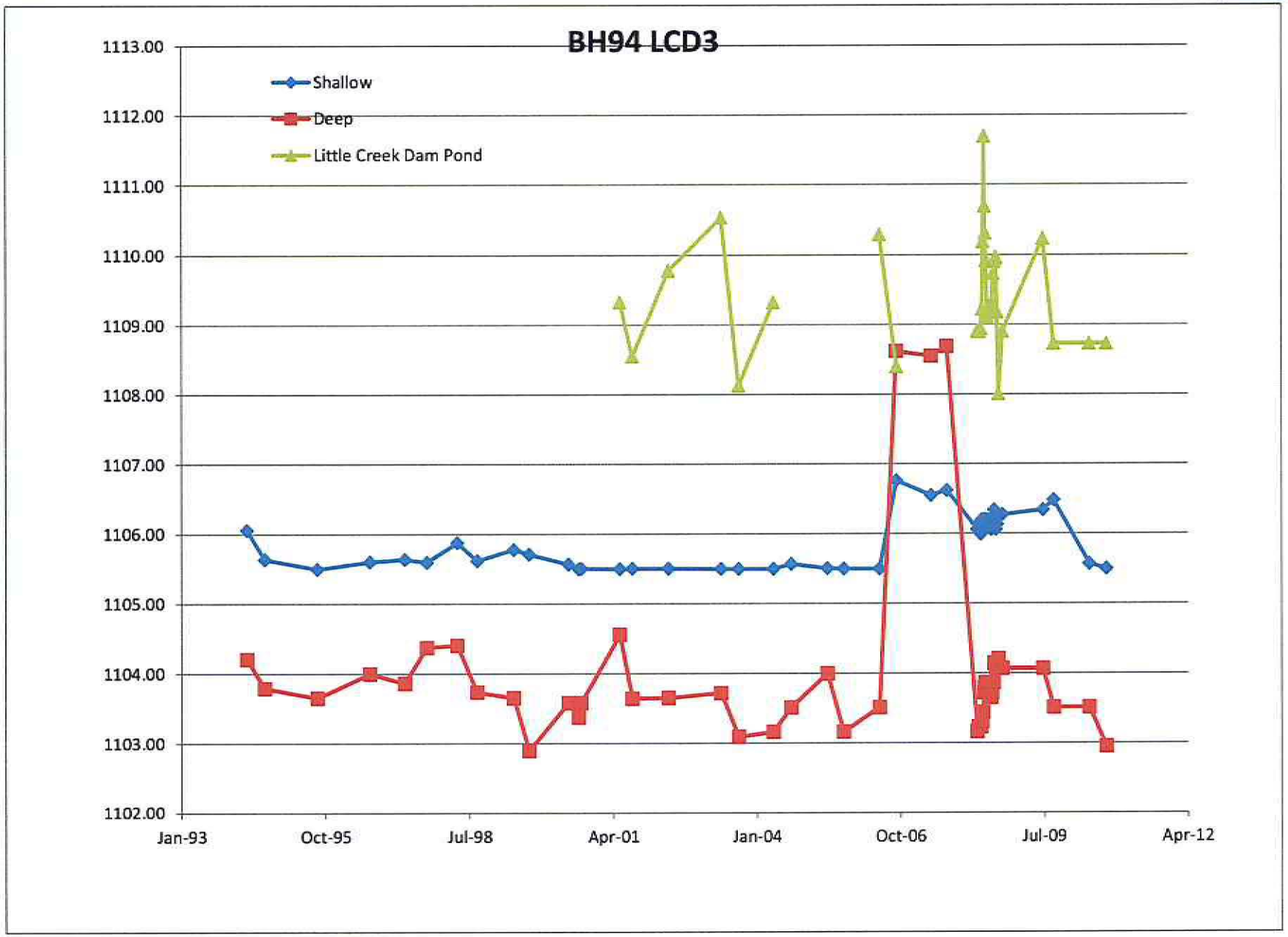
Denison Environmental Services

Little Creek Dam Pneumatic Piezometers
Location: Little Creek Dam Crest Elevation: 1114.5m

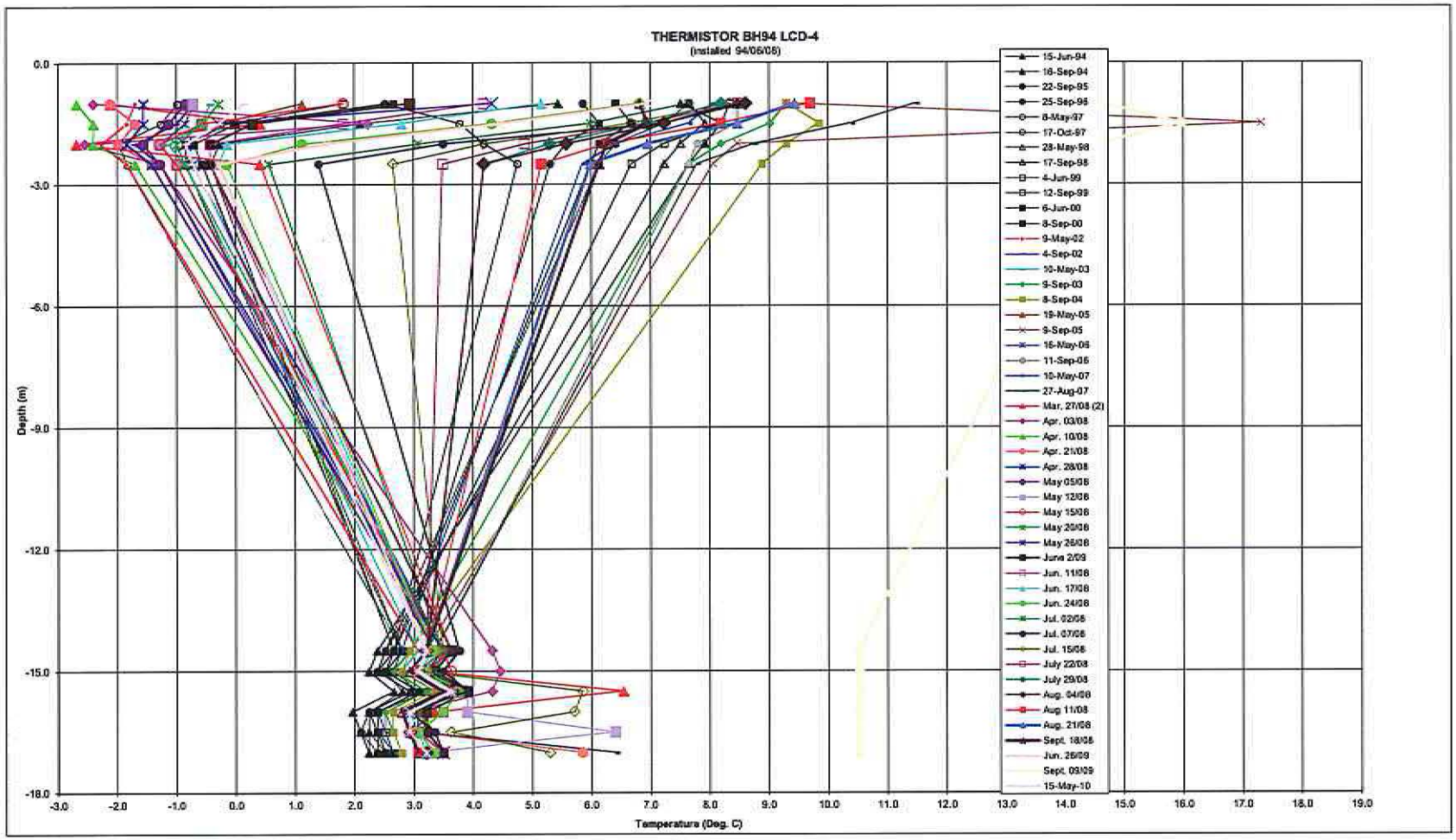
BH94 LCD3	Date Installed:	June '94	Shallow Tip Elevation:	Deep Tip Elevation:		
	Surface Protector	yes	1105.5	1101.2		
		Reading (psi)	Piezometric Elevation	(m asl)	Pond Elevation (m asl)	Comment
Date	Shallow	Deep	Shallow	Deep		
May-94	0.8	4.3	1106.06	1104.21		
Sep-94	0.2	3.7	1105.64	1103.79		
Sep-95	0.0	3.5	1105.50	1103.65		
Sep-96	0.15	4.0	1105.61	1104.00		
May-97	0.2	3.8	1105.64	1103.86		
Oct-97	0.14	4.54	1105.60	1104.38		
May-98	0.54	4.58	1105.88	1104.41		
17-Sep-98	0.17	3.62	1105.62	1103.73	~1109.5	
29-May-99	0.40	3.50	1105.78	1103.65		
12-Sep-99	0.30	2.42	1105.71	1102.89	~1105	
12-Jun-00	0.10	3.40	1105.57	1103.58		
23-Aug-00	0.00	3.10	1105.50	1103.37		
8-Sep-00	0.01	3.40	1105.51	1103.58		
5-Jun-01	0.00	4.80	1105.50	1104.56	1109.33	
30-Aug-01	0.01	3.49	1105.51	1103.64	1108.55	
9-May-02	0.01	3.50	1105.51	1103.65	1109.78	
10-May-03	0.00	3.60	1105.50	1103.72	1110.538	
9-Sep-03	0.00	2.70	1105.50	1103.09	1108.127	
8-May-04	0.00	2.80	1105.50	1103.16	1109.323	
8-Sep-04	0.10	3.30	1105.57	1103.51		
19-May-05	0.01	4.00	1105.51	1104.00		
9-Sep-05	0.00	2.80	1105.50	1103.16		
16-May-06	0.00	3.30	1105.50	1103.51	1110.293	
11-Sep-06	1.80	10.60	1106.76	1108.62	1108.403	
10-May-07	1.50	10.50	1106.55	1108.55		
27-Aug-07	1.60	10.70	1106.62	1108.69		
27-Mar-08	0.8	2.8	1106.06	1103.16	1108.909	
4-Apr-08	0.90	2.90	1106.13	1103.23	1108.904	
10-Apr-08	0.90	2.90	1106.13	1103.23	1108.904	
21-Apr-08	0.70	2.90	1105.99	1103.23	1108.943	
28-Apr-08	1.00	3.00	1106.20	1103.30	1109.225	
5-May-08	0.80	3.20	1106.06	1103.44	1110.191	
12-May-08	0.90	3.60	1106.13	1103.72	1111.696	
15-May-08	1.00	3.70	1106.20	1103.79	1110.697	
20-May-08	0.90	3.80	1106.13	1103.86	1110.311	
26-May-08	0.90	3.80	1106.13	1103.86	1109.919	
2-Jun-08	1.00	3.80	1106.20	1103.86	1109.116	
11-Jun-08	0.90	3.60	1106.13	1103.72	1109.176	
18-Jun-08	0.90	3.50	1106.13	1103.65	1109.213	
25-Jun-08	1.00	3.60	1106.20	1103.72	1109.272	
2-Jul-08	0.80	3.50	1106.06	1103.65	1109.295	
7-Jul-08	0.90	3.60	1106.13	1103.72	1109.323	
15-Jul-08	0.90	3.80	1106.13	1103.86	1109.732	
22-Jul-08	1.20	4.20	1106.34	1104.14	1109.903	
29-Jul-08	1.00	4.20	1106.20	1104.14	1109.948	
4-Aug-08	0.80	4.10	1106.06	1104.07	1109.968	
11-Aug-08	0.90	4.10	1106.13	1104.07	1109.181	
21-Aug-08	1.10	4.30	1106.27	1104.21	1108.010	
18-Sep-08	1.10	4.10	1106.27	1104.07	1108.909	
26-Jun-09	1.20	4.10	1106.34	1104.07	1110.237	
9-Sep-09	1.40	3.30	1106.48	1103.51	1108.731	
15-May-10	0.10	3.30	1105.57	1103.51	1108.731	
10-Sep-10	0.00	2.50	1105.50	1102.95	1108.731	

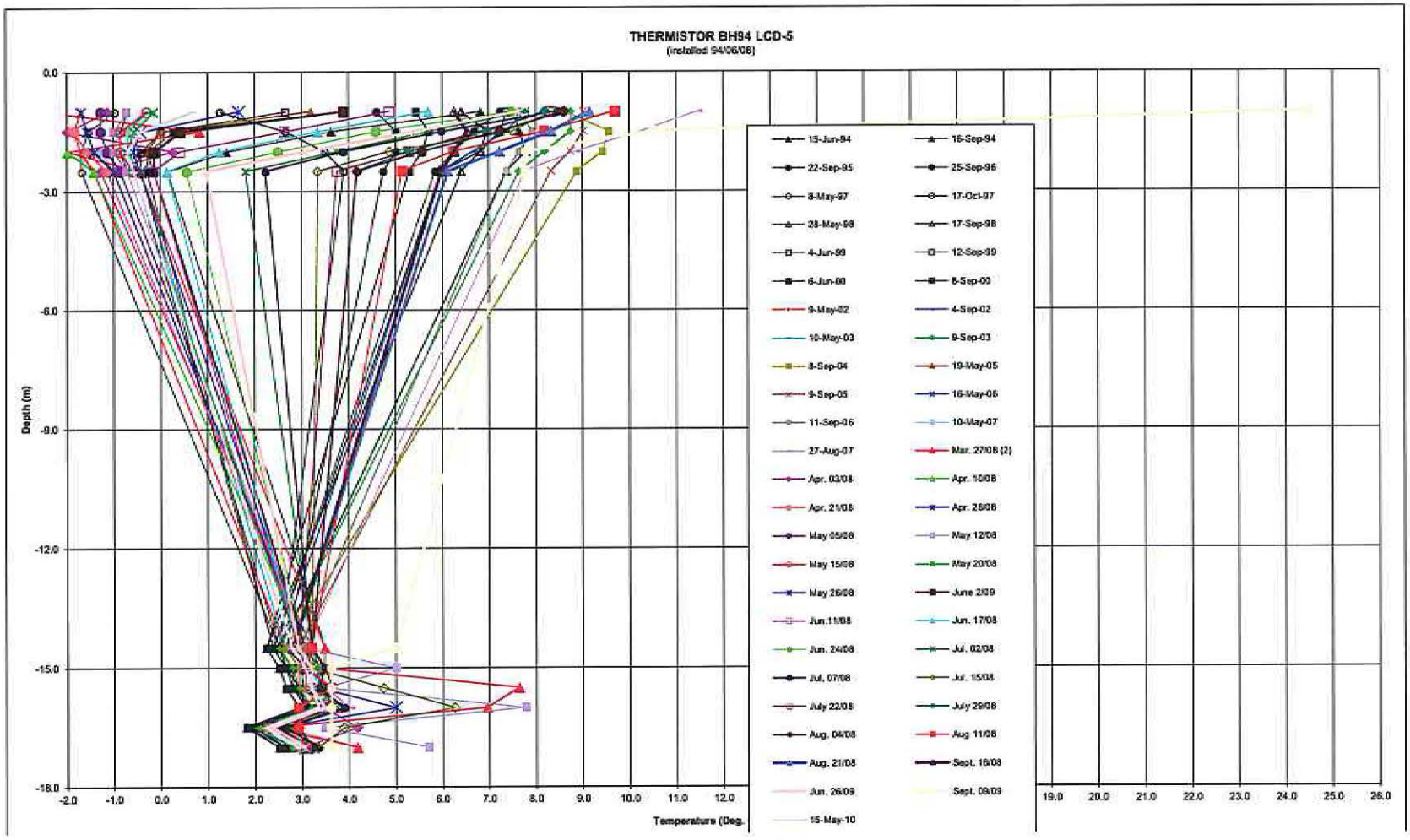
Note: Data to the end of 2009 as reported by SRK Consulting Engineers and Geoscientists; 2010 data reported Denison Environmental Services

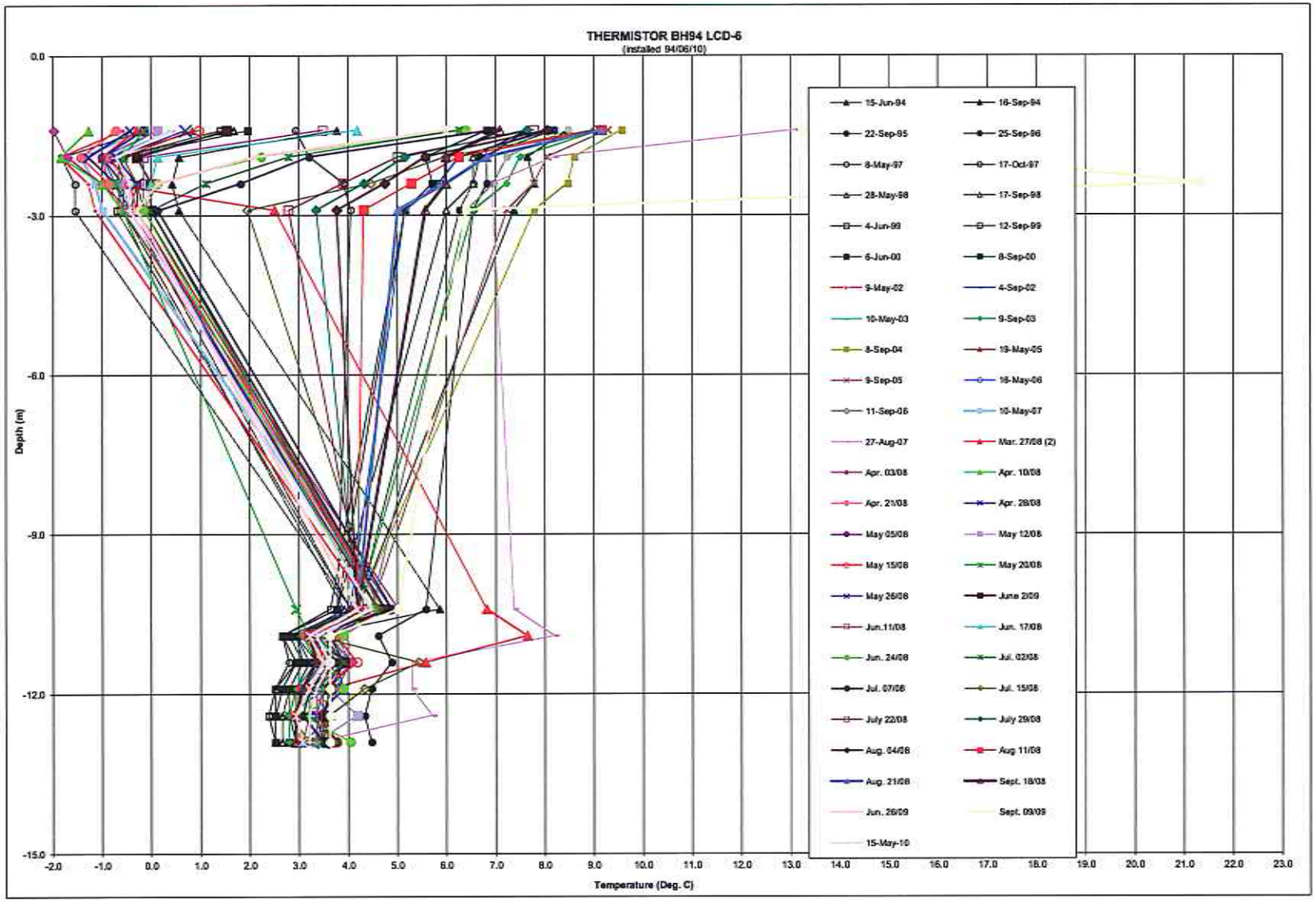
Denison Environmental Services



LCD Pneumatic Piezos_To2010\BH94 LCD3 Figure

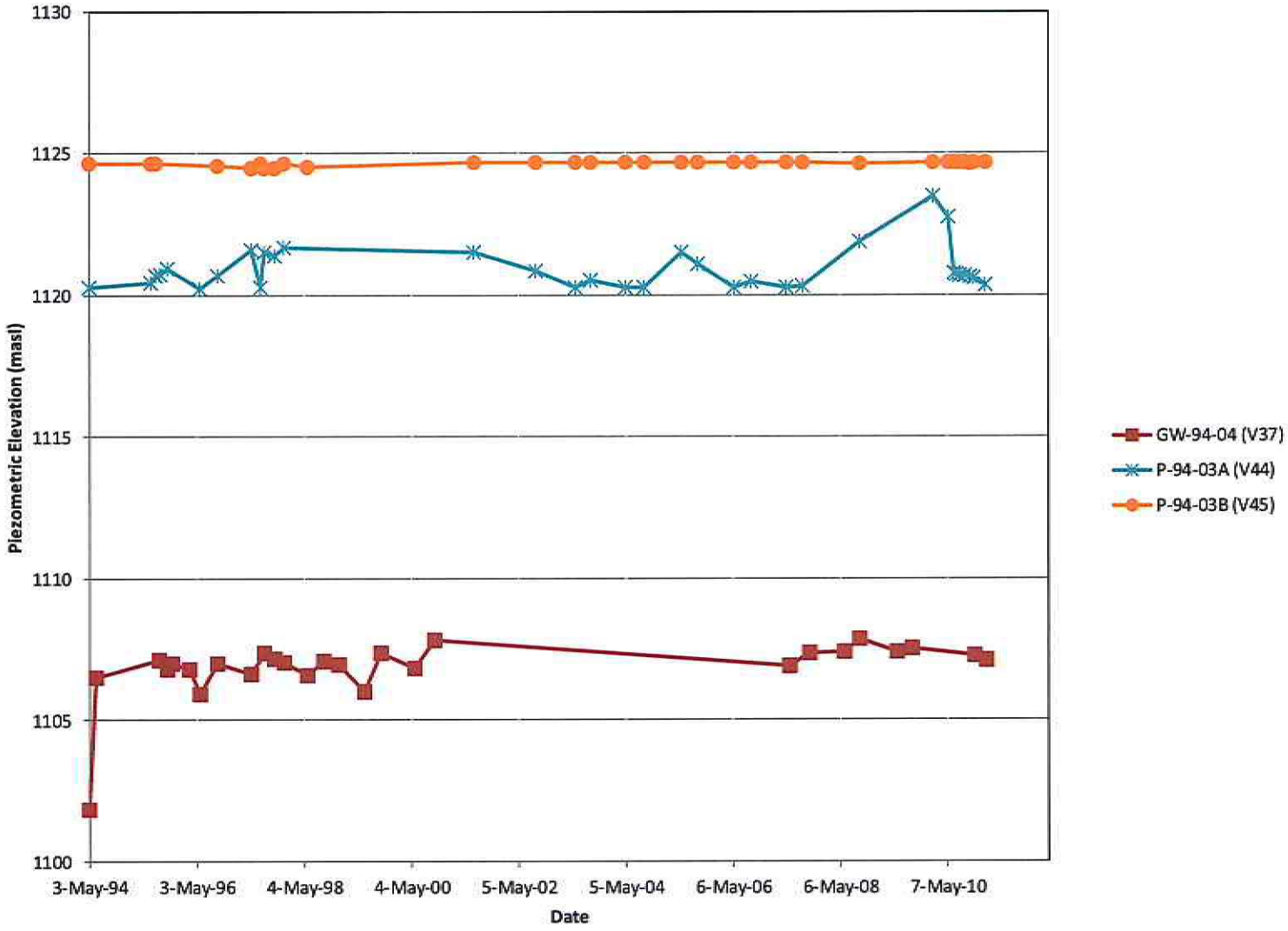

THERMISTOR BH94 LCD-4
(installed 94/06/08)
Depth (m)
0.0
-3.0
-6.0
-9.0
-12.0
-15.0
-18.0
-3.0
-2.0
-1.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0
17.0
18.0
19.0
Temperature (Deg. C)
15-Jun-94
16-Sep-94
22-Sep-95
25-Sep-96
8-May-97
17-Oct-97
28-May-98
17-Sep-98
4-Jun-99
12-Sep-99
6-Jun-00
8-Sep-00
9-May-02
4-Sep-02
10-May-03
9-Sep-03
8-Sep-04
19-May-05
9-Sep-05
16-May-06
11-Sep-06
10-May-07
27-Aug-07
Mar. 27/08 (2)
Apr. 03/08
Apr. 10/08
Apr. 21/08
Apr. 28/08
May 05/08
May 12/08
May 15/08
May 20/08
May 26/08
June 2/09
Jun. 11/08
Jun. 17/08
Jun. 24/08
Jul. 02/08
Jul. 07/08
Jul. 15/08
July 22/08
July 29/08
Aug. 04/08
Aug 11/08
Aug. 21/08
Sept. 18/08
Jun. 26/09
Sept. 03/09
15-May-10


THERMISTOR BH94 LCD-5
(installed 94/06/08)
Depth (m)
0.0
-3.0
-6.0
-9.0
-12.0
-15.0
-18.0
-2.0
-1.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
Temperature (Deg.
19.0
20.0
21.0
22.0
23.0
24.0
25.0
26.0
15-Jun-94
16-Sep-94
22-Sep-95
25-Sep-96
8-May-97
17-Oct-97
28-May-98
17-Sep-98
4-Jun-99
12-Sep-99
6-Jun-00
8-Sep-00
9-May-02
4-Sep-02
10-May-03
9-Sep-03
8-Sep-04
19-May-05
9-Sep-05
16-May-06
11-Sep-06
10-May-07
27-Aug-07
Mar. 27/08 (2)
Apr. 03/08
Apr. 10/08
Apr. 21/08
Apr. 28/08
May 05/08
May 12/08
May 15/08
May 20/08
May 26/08
June 2/09
Jun.11/08
Jun. 17/08
Jun. 24/08
Jul. 02/08
Jul. 07/08
Jul. 15/08
July 22/08
July 29/08
Aug. 04/08
Aug 11/08
Aug. 21/08
Sept. 18/08
Jun. 26/09
Sept. 09/09
15-May-10


THERMISTOR BH94 LCD-6
(installed 94/06/10)
Depth (m)
0.0
-3.0
-6.0
-9.0
-12.0
-15.0
-2.0
-1.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0
17.0
18.0
19.0
20.0
21.0
22.0
23.0
Temperature (Deg. C)
15-Jun-94
16-Sep-94
22-Sep-95
25-Sep-96
8-May-97
17-Oct-97
28-May-98
17-Sep-98
4-Jun-99
12-Sep-99
6-Jun-00
8-Sep-00
9-May-02
4-Sep-02
10-May-03
9-Sep-03
8-Sep-04
19-May-05
9-Sep-05
16-May-06
11-Sep-06
10-May-07
27-Aug-07
Mar. 27/08 (2)
Apr. 03/08
Apr. 10/08
Apr. 21/08
Apr. 28/08
May 05/08
May 12/08
May 15/08
May 20/08
May 26/08
June 2/09
Jun.11/08
Jun. 17/08
Jun. 24/08
Jul. 02/08
Jul. 07/08
Jul. 15/08
July 22/08
July 29/08
Aug. 04/08
Aug 11/08
Aug. 21/08
Sept. 18/08
Jun. 26/09
Sept. 09/09
15-May-10

Appendix C

Water levels in Piezometers and groundwater Wells – Vangorda Rock Pile



SRK Consulting
Engineers and Scientists
VANCOUVER

Denison Environmental Services

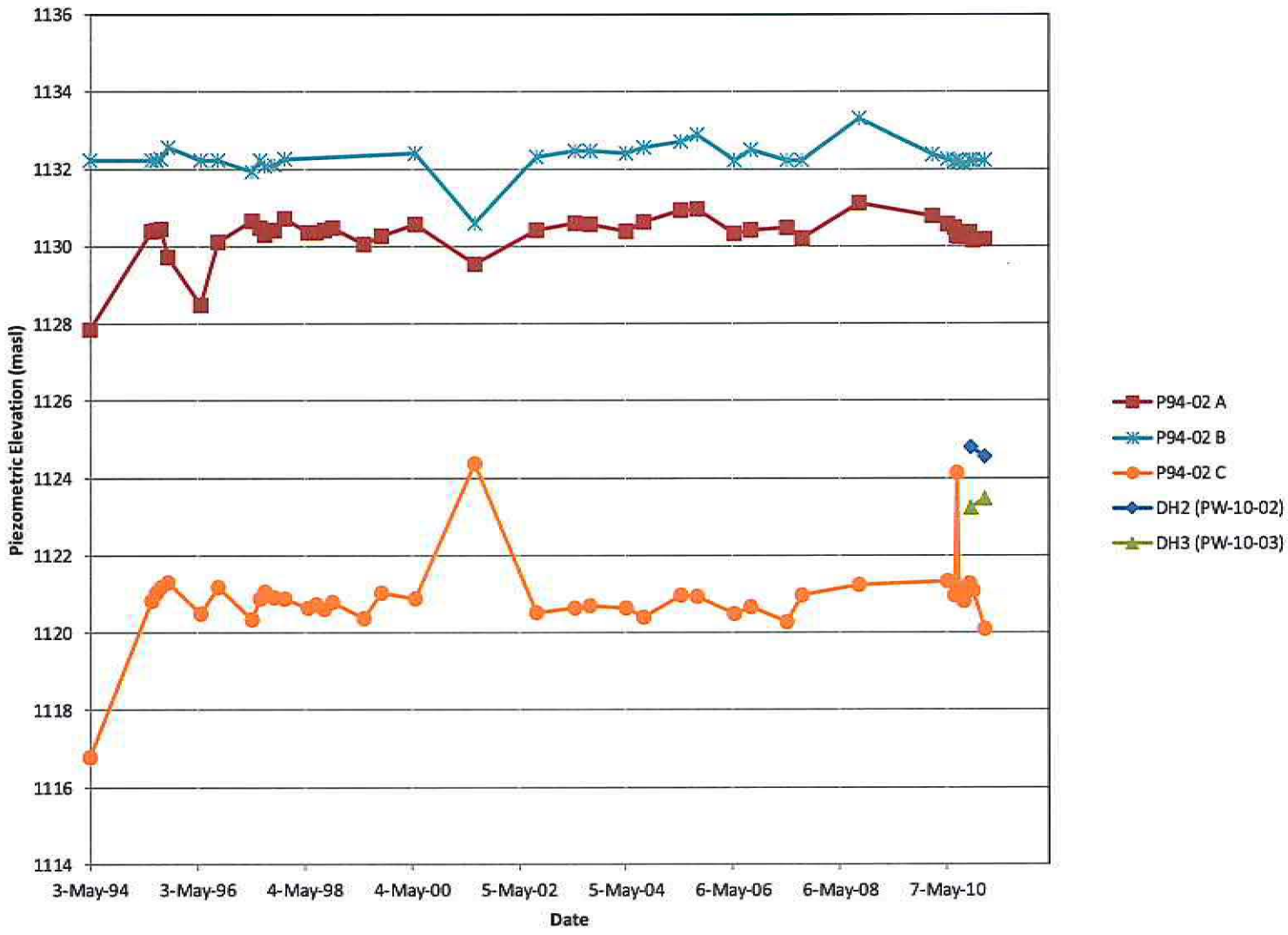
2010 Vangorda Annual Inspection
Waste and Water Management Facilities

Water Level Trends
Section AA

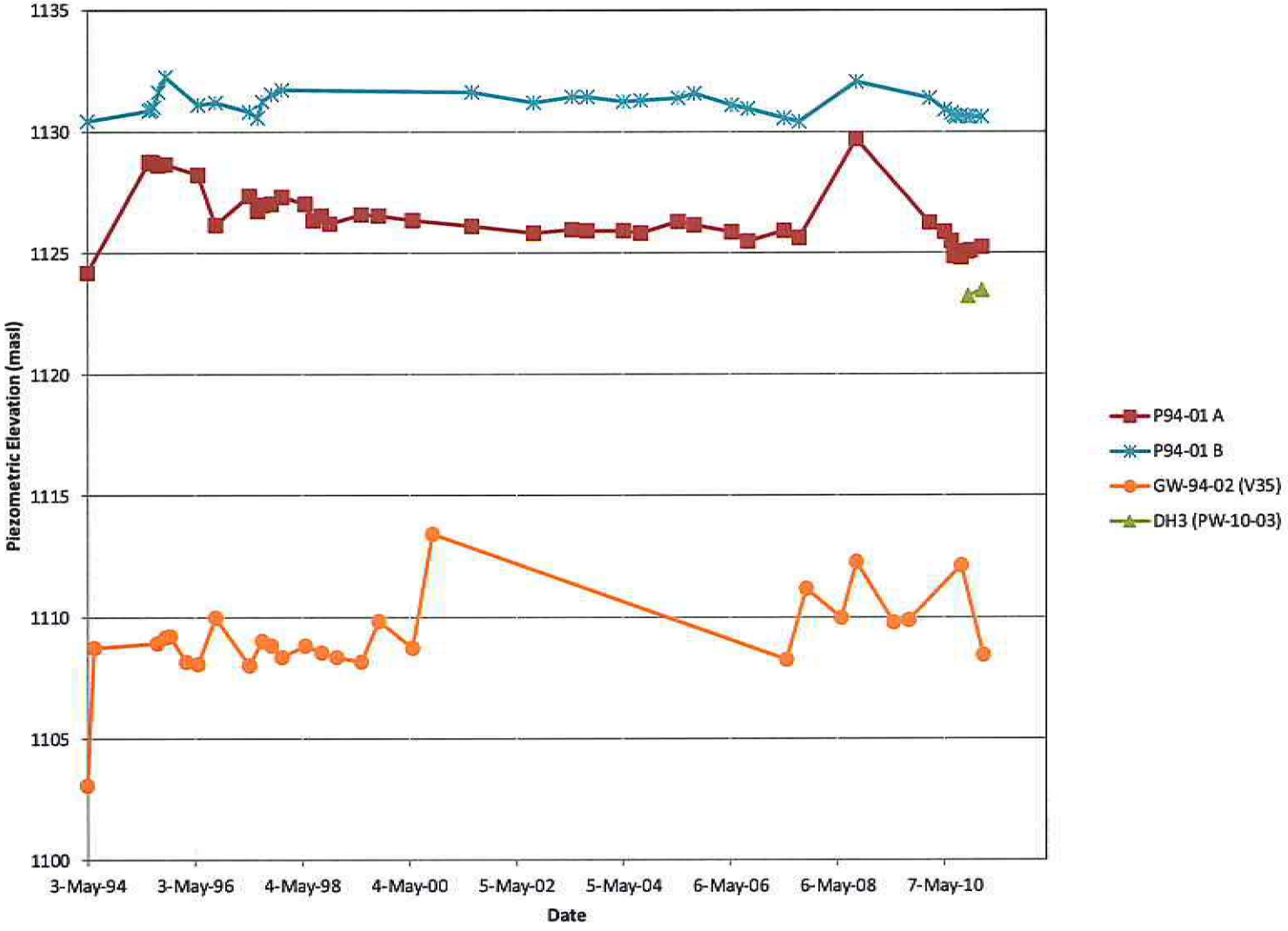
Job No: 1CD009.003
Filename: Figures C-1-5_WaterLevels_20110209.pptx

Faro Mine Complex

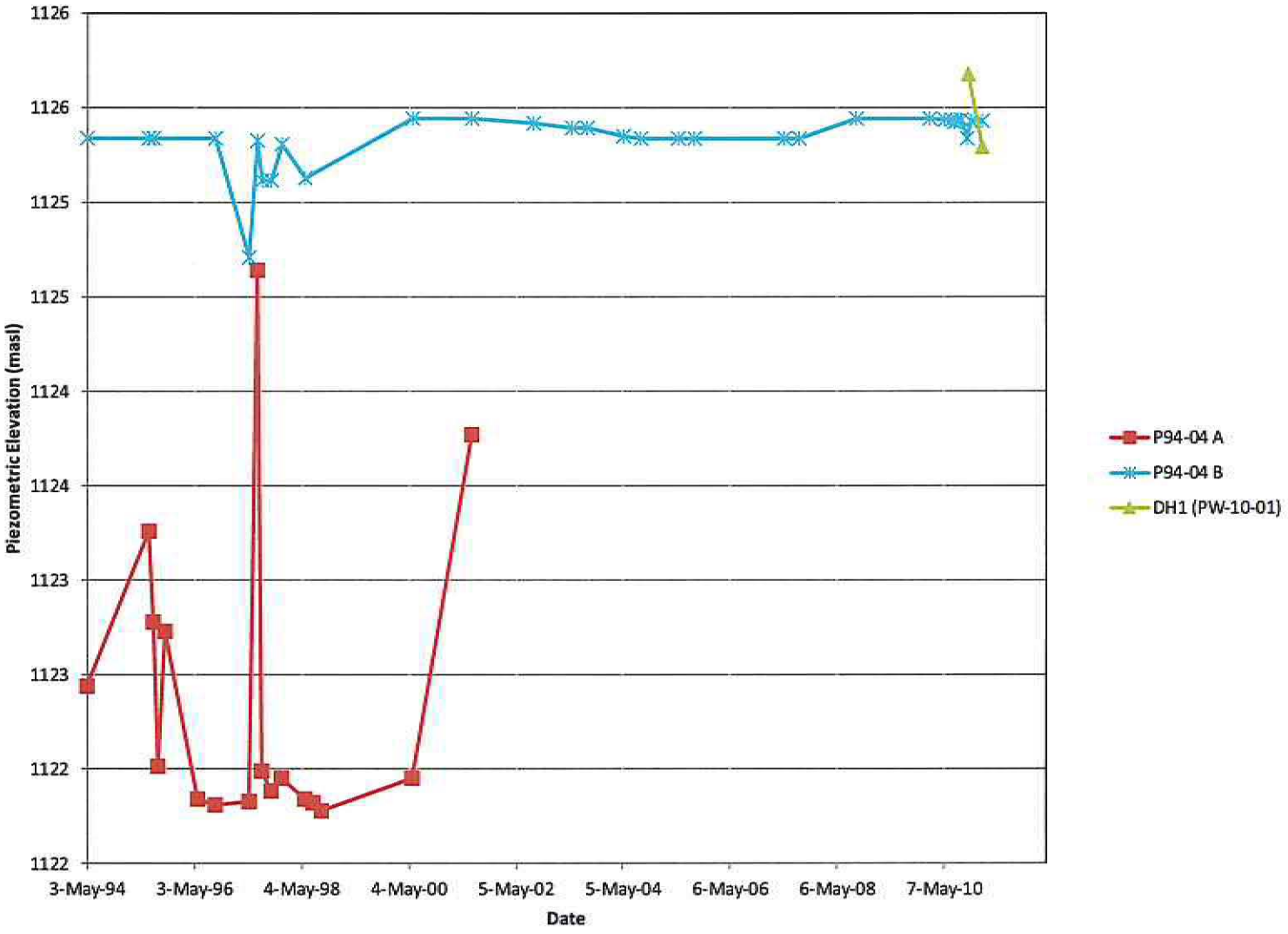
Date:	Approved:	Figure:
February 2011	PMH	C-1



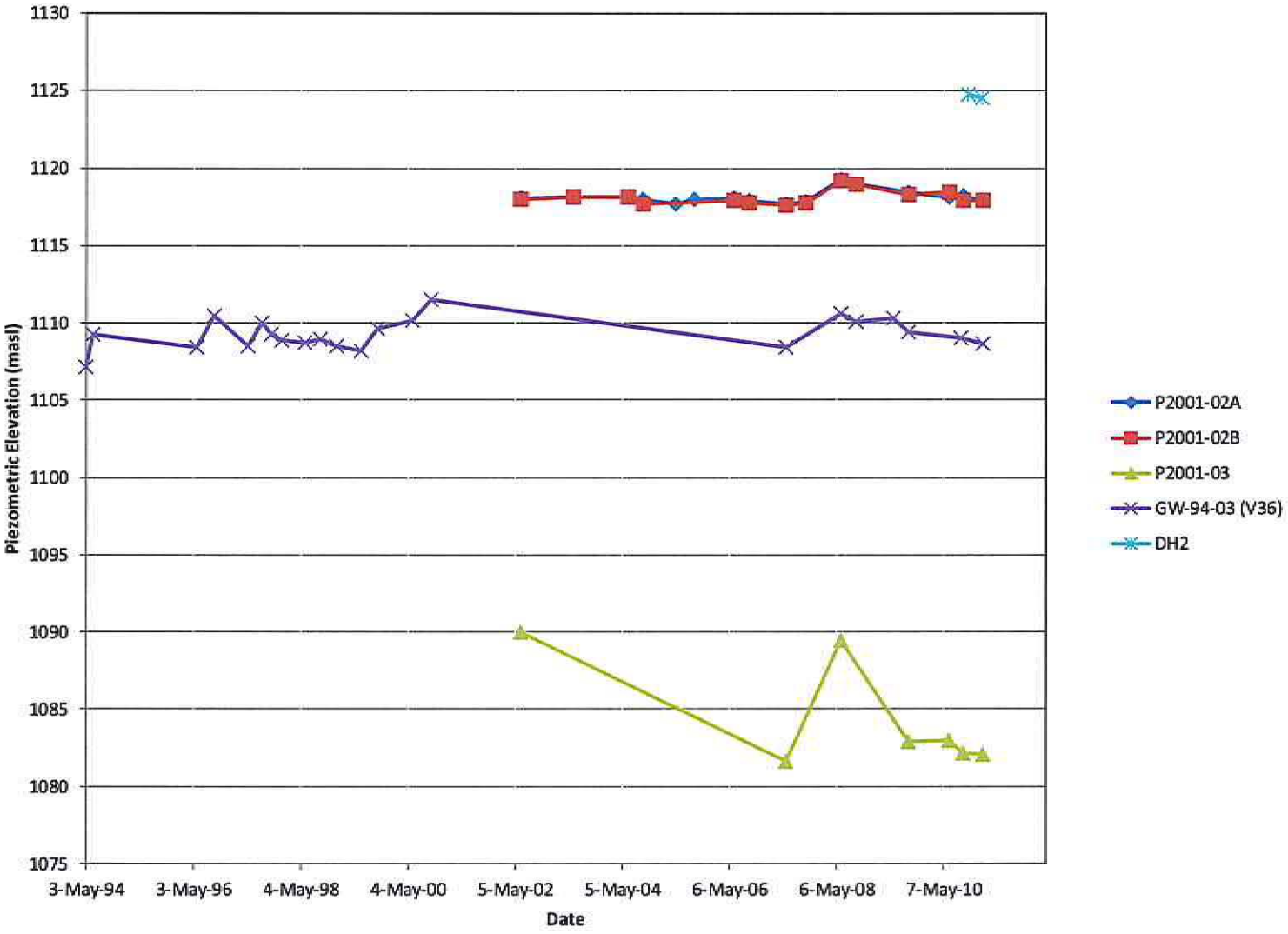
SRK Consulting *Engineers and Scientists* VANCOUVER	Denison Environmental Services	2010 Vangorda Annual Inspection Waste and Water Management Facilities **Water Level Trends Section BB**
Job No: 1CD009.003 Filename: Figures C-1-5_WaterLevels_20110209.ppbx	**Faro Mine Complex**	Date: February 2011 | Approved: PMH | Figure: **C-2**



SRK Consulting Engineers and Scientists VANCOUVER	Denison Environmental Services	2010 Vangorda Annual Inspection Waste and Water Management Facilities
Job No: 1CD009.003 Filename: Figures C-1-5_WaterLevels_20110209.pptx	Faro Mine Complex	**Water Level Trends** **Section CC**
		Date: February 2011 / Approved: PMH / Figure: C-3



SRK Consulting Engineers and Scientists VANCOUVER	Denison Environmental Services	2010 Vangorda Annual Inspection Waste and Water Management Facilities
		Water Level Trends Section DD
Job No: 1CD009.003 Filename: Figures C-1-5_WaterLevels_20110209.pptx	**Faro Mine Complex**	Date: February 2011 / Approved: PMH / Figure: **C-4**



SRK Consulting Engineers and Scientists VANCOUVER	Denison Environmental Services	2010 Vangorda Annual Inspection Waste and Water Management Facilities
		Water Level Trends **Section EE**
Job No: 1CD009.003 Filename: Figures C-1-5_WaterLevels_20110209.pptx	**Faro Mine Complex**	Date: February 2011 | Approved: PMH | Figure: **C-5**