APPENDIX 15

GEOTECHNICAL INSPECTION

OF

OPERATIONAL LANDFILL

November 10, 2003

EBA File: 0101-94-11552.003

Teck Cominco Ltd.
Little Cornwallis Island
Polaris, NU
X0A 0Y0

Attention: Mr. Bruce Donald

Subject: Landfill Cover 2003
Polaris, Nunavut

1.0 GENERAL

EBA Engineering Consultants Ltd. (EBA) was requested by Teck Cominco Ltd. (TC) to observe the Operational Landfill capping materials and review capping procedures that have been followed up to August 22, 2003 at Polaris Mine, Little Cornwallis Island, Nunavut. This work was carried out in conjunction with EBA's review of the Garrow Lake Dam on August 19 through 22, 2003.

EBA was authorized to carry out this work by Mr. Bruce Donald on behalf of TC on August 15, 2003. The work was carried out under TC PO# 21.19-P01.

2.0 BACKGROUND

The purpose of this review was to help TC respond to a letter by Indian and Northern Affairs Canada (DIAND) dated July 22, 2003. In DIAND's July 22 letter they report the following:

- "The landfill is being constructed according to the guidelines given in Volume 2 of the Polaris Mine Decommissioning and Reclamation Plan (GLL, 2001)."
- "Cover materials were selected to minimize erosion and remain stable over the long term."
- "Liner permeability is not a concern at the Polaris Landfill (s) as the waste is designed to be encapsulated in permafrost."
- "The cover design is meant to promote permafrost aggradation and to limit the active zone to the cover material itself."
- "It was not clear (to DIAND on July 2 and 3, 2003) who was responsible for inspecting construction of the cover material - - ."

DIAND requested that TC "ensure that the landfill cover is inspected to ensure it meets the guidelines in the reclamation plan". Specifically, DIAND requested the following information:

- Thermistor readings
- Materials testing results (moisture contents, grain-size, density)
- And as-built drawings.

DIAND stated that the thermal analysis for the cover design assumed certain properties for the cover material (s). TC should verify that these assumptions are valid for the actual materials being placed. The final thickness of the cover should be based on the actual cover material properties.

3.0 INFORMATION REVIEWED

EBA was also provided the following background information by TC:

- Decommissioning and Reclamation Plan Volumes 1,2 and 3 of 4, Supporting Documentation dated March 2001.
- Annotated Operational Landfill Drawings prepared by Gartner Lee Ltd. (GLL) dated May 27, 2003, that include:
  - Dwg 23306-0 - Specifications
  - Dwg 23306-1 - Operational Landfill Existing Top of Waste and Ground Surface (Spring 2003)
  - Dwg 23306-2 - Top of Waste After Regrading
  - Dwg 23306-3 - Top of Final Cover
  - Dwg 23306-4 - Sections 1, 2, 5 , 8 and 10
  - Dwg 23306-5 - Sections 13, 15, 18 and 20
  - Dwg 23306-6 - Sections 22, 23, 24 and 25

EBA was advised that hand written notes on TC's set of drawings had been agreed to with GLL and that revised drawings were to be provided by GLL. Specifications for the landfill cap materials that are described herein are based on the edited drawings provided by TC.

The Volume 2 reclamation guidelines referenced by DIAND call for a minimum 1.8 m thick cover of coarse shale or equivalent material and finished slopes of 4 Horizontal to 1 Vertical or flatter.

EBA was told that in subsequent communications between TC, GLL (the landfill closure designers) and the Regulatory Agencies, it was agreed that available hard limestones would be used in the top 0.6 of the cap instead of the shale to provide a more erosion resistant surface material. Shale was approved as cover for the initial 1.2 m above the landfill.

Specifications for material properties prepared by GLL comprise the following:

Cover Materials Description	Minimum Thickness of Layer	Maximum Size and Particle Size Distribution ASTM C136-01	Allowable Lift thickness (tolerance)	Test Frequency
Zone A (Bottom Layer): Beach Gravel, Shale or Limestone	1.2 m	Max. 300 mm Max. 10% passing US #200 sieve opening size.	600 mm (100 mm)	1 per 10,000 cu. m.
Zone B (Upper Layer): Limestone	0.6 m	Well Graded Max. 300 mm Max. 10% passing US #200 sieve opening size.	600 mm (100 mm)	1 per 10,000 cu. m.

Other parameters and procedures specified by GLL on the Drawings dated May 27, 2003 are:

- Owner should survey and review "before and after" results to confirm that adequate thicknesses of Capping Layers A and B are in-place and that the Operational Landfill Grading is carried out in accordance with the lines and grades.
- Owner should review and approve Plate Load Test results. These tests are to be carried out in accordance with the procedures described in Drawing 23306-0
- " Placement of the final cover material (Type A and B) shall be completed such that large void spaces are not created. Where void spaces are created (e.g. collection of large particles placed together) they should be removed by breaking of the large particles, regrading, excavating, or other means necessary before compacting."
- Compaction to consist of 4 passes of the track of a Caterpillar D8 or equivalent/minimum 5 ton vibratory compactor.

It is understood that Pierre Goinet of SNC Lavalin participated in the Operational Landfill Closure activities by providing before and after topographic survey and assistance with the Plate Load Testing program.

4.0 FIELD OBSERVATIONS AND REVIEW OF TC MONITORING PROGRAM

4.1 Description of Fieldwork

EBA was at the Polaris Mine site August 18 through August 22, 2003. Estimated daily average air temperatures were typically close to 0°C and were reported by TC to have been near these temperatures for at least 2 weeks. For the first two days of EBA's visit there was a light snowfall at night that thawed by the following afternoon. There was no further fresh snowfall for the remainder of the time, however, patches of snow that had developed prior to EBA's visit remained for the entire time.

Site reconnaissance work was carried out in the afternoon after any nightime snowfall had melted. Ground surface conditions were typically wet.

On August 19, August 20 and August 21, 2003, Mr. Mark Watson, P. Eng., of EBA visited the Operational Landfill and respective borrow site for the capping materials. On August 19, Mr. Watson was accompanied to site by Mr. Ian Dickie and Mr. John Knapp as part of an overall site orientation. Mr. Knapp accompanied Mr. Watson to site again on August 21, 2003 to provide more history on some localized features observed by Mr. Watson.

Mr. Watson walked the top and side slope of the landfill and took photographs of selected features. Selected photographs are provided in Appendix C.

4.2 Landfill Setting

The landfill is located on southeast facing terrain with slope gradients estimated from pre-existing contour information to be about 15 percent. The terrain immediately upslope is mapped as marine terrace and the terrain at the same elevation on either side is mapped as marine veneer over gently sloped bedrock. Surface soils are mapped as predominantly gravel or sand and gravel.

Figure 1 is a key plan of the layout of the road and landfill development with respect to the Polaris Mine.

4.3 Landfill Configuration

Plan and cross-sectional views of the before and after Operational Landfill configurations are shown in Figures 2 through 6. A typical design section prescribed by GLL is provided in Figure 4. A contour plan and a typical as-built section up to the time of EBA's site visit in August 2003 are provided in Figures 5 and 6, respectively. Photographs of the in-progress landfill on August 19 and 20, 2003 are provided in Appendix C.

The landfill forms a 50 to 70 m wide bench with side slopes reported to be about 4 Horizontal:1 Vertical (25 percent). Materials at the landfill consist predominantly of a surface layer of imported shale (Photos 1 and 2) overlying a frozen mix of construction debris and incinerated domestic refuse mixed with soil. Based on draft copies of the before and after survey data provided by SNC Lavalin Engineers and Constructors Inc. (SNC) on behalf of TC the shale cap fill is reported to be at least 1.2 m thick throughout the site. The fill overlies about 7 or 8 m of refuse at the deepest part of the landfill. An open excavation at an instrumentation location on the top bench of the landfill showed a fill thickness consistent with the TC draft survey values at that location.

EBA observed that the imported shale cover consists of angular gravel, with sand, trace to some silt and with platy to blocky angular cobble size shale fragments. Gradation test results are described in Section 4.4. Photographs of the shale stockpile taken at the borrow source are also provided as Photos 3 and 4.

Native materials on the slopes immediately up-gradient of the landfill are brown sand and gravel with some silt (Photos 5, 6 and 7).

A remnant pile of stockpiled “beach” gravel remains at the toe of the landfill at the north east toe of the landfill (Photo 8).

Some mixing of the shale fill with brown sand and gravel fill with silt occurred in on the top of the flat bench and in particular in an area of excavation and backfill that preceded the landfill capping (around June 2003, personal communication with John Knapp). The excavation and backfill was carried out in conjunction with the remediation of an old hydrocarbon spill located upslope of the landfill. A sketched plan showing the influenced area is provided in Appendix B. Some rutting of the fills on the top of the operational landfill coincident with the bottom of the remediated site is apparent. Rutting has occurred under the traffic of rubber tired vehicles and minor pooling of runoff (recent snowmelt) water was occurring in this area (Photos 9 and 10). TC has stated that the grades on the surface of the operational landfill, disturbed by rutting will be restored at the time the limestone cover materials are placed.

4.4 Moisture Content and Gradation Analysis

The results of two gradation analyses carried out by TC were provided to EBA (dated July 28 and August 18). Results of the gradation analyses are shown in Appendix B. Testing frequencies by TC are below that specified by GLL, however, the materials tested comply with the GLL gradation specification. TC reported that two or three other samples taken during cap placement remain to be tested.

In general the shale fill appears clast supported, however, the fractions of sand and silt vary somewhat. Some areas showed substantial segregation at finished grade comprising entirely of gravel to cobble size angular materials that are very pervious (Photo 1). In other areas the matrix material is sand with some silt.

Moisture content measured on the July 28 shale sample was 4.9 percent.

4.5 Density and Plate Load Test Results

There was no requirement in the GLL 2001 Decommissioning and Reclamation Plan or subsequent drawings and specifications (2003) to measure in situ density. Compaction procedures and plate load testing were, however, prescribed. It is understood that these tests were carried out in the presence of Pierre Goinet of SNC Lavalin.

TC carried out Plate Load Tests on the upper flat bench on August 7 and 8. Fourteen tests (14) were done on the bottom lift and nineteen (19) tests were done on the top lift. Minimum test frequency is about one test one 2000 sq. m. on the upper bench. SNC (conversation with Pierre Goinet, of SNC) reported that although excavations were made on the slope to check the fill thickness, no plate load testing was done on the side slopes for safety reasons.

Test results reported by TC for the upper bench comply with the GLL specifications.

4.6 Thermal Parameters

In permafrost the depth of annual thaw near surface ground surface is termed the active layer. In general, where mineral soils exist within the active layer and slope gradients are flat, the active layer thickness will be less for soils that retain more moisture than for soils that are dry. The same relationship holds true on slopes provided there is not any persistent flow of surface water.

Geothermal analyses reported by GLL were based on assumed soil parameters. For the purpose of the analyses the assumed moisture content for the shale cover was 0.1 percent which for practical purposes is dry.

The measured moisture content from a single sample of shale fill is about 5 percent. This moisture is consistent with the results of work done by EBA on shale fills at Garrow Dam (EBA, 2001 Project No101-94-11552.002).

The drainage catchment area for the landfill is minimal and there have been no reported perennial drainage paths in the area of the landfill. Therefore, based on the observed moisture content information and general compliance of the shale fill with the specified parameters, EBA would estimate the actual depth of active layer to be either the same or less than predicted in the GLL report.

4.7 Other Observations

Ground Temperature Information

TC provided EBA ground temperature measurements collected seasonally from March 1999 to June 2003 at 5 monitoring locations on the top of the Operational Landfill (See Appendix B). Ground temperatures were measured at 0.5 m depth increments to a maximum depth of 5 m using permanent thermistor string installations. The ground temperature information indicates that the landfill was frozen back at the monitoring locations to depths greater than 5 m and that an active layer thickness of less than 1.5 m existed.

Topographic Survey of Landfill

Redistribution of materials at the Operational Landfill was carried out under the direction of TC and surveyed by SNC Lavalin. TC forwarded draft copies of the plotted survey information to EBA. The survey information was prepared for TC by SNC Lavalin and showed the topography before and after placement of the initial lift of capping material. The draft profiles show general compliance with the GLL design grades. Based on the draft information provided the operational landfill is in fact close to the final design elevations and therefore the finished landfill cap elevation after placement of the 0.6 m of limestone in 2004 will be up to 0.6 m higher than the design grades specified.

TC have indicated that final surveyed profiles confirming the cap thickness of 1200 mm will be provided in subsequent reviews.

8.0 DISCUSSION AND CONCLUSIONS

Based on the results of a review of the information provided by TC and visual assessment of the materials. The majority of the fills placed and exposed at the ground surface are shales imported from the New Quarry. Some of the locally derived materials have also been used, however, it is difficult to be certain of the exact proportion.

The particle size distributions as determined by TC from two samples are in compliance with the GLL specification. Testing frequencies are below that specified, however TC report that other samples collected during placement have been taken and are in store awaiting testing.

Density testing was not specified by GLL in either the Decommissioning and Reclamation Plan or on the Operational Landfill Design documents, however, compaction procedures and quality control testing via a plate load test procedure were outlined by GLL and were followed by TC. Plate load test results were in compliance with the specification.

Moisture content tests were not a requirement of the specified GLL quality control program however, one moisture content was measured incidental to gradation test by TC. The result is consistent with test results on shale fill materials reported previously by EBA for the Garrow Lake Dam construction and is consistent with EBA's expectations for this material.

One of the underlying concerns expressed in the July 22, 2003 letter by DIAND was the expected depth of active layer. Based on the above information EBA expect that the active layer will equal or be less than predicted by GLL.

5.0 RECOMMENDATIONS

Based on EBA's observations in August 2003 the following recommendations are provided:

- Visually monitor the landfill cover during spring runoff and heavy rainfall events for evidence of concentrated surface runoff, heavy seepage emerging from the landfill cover, or subsidence which could in any way interfere with the ability of the cover to adequately protect the landfill from erosion or shallow instability.
- For at least the first year keep a stockpile of limestone fill to facilitate remediation, if needed.
- Areas rutted under the weight of rubber tired vehicles should be graded to remove the ruts and to positively shed surface water before placement of the 0.6 m thick limestone cap.

9.0 CLOSURE

We trust that this information meets your requirements at this time. Please contact the undersigned if you have any questions.

Yours truly,
EBA Engineering Consultants Ltd.

Reviewed by:

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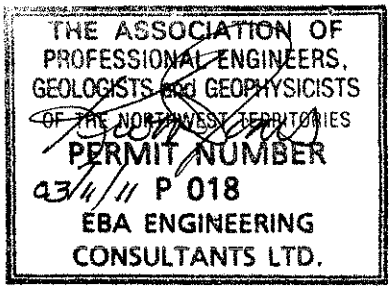
MDW:ln

Attachments

Figures 1 through 6
Appendix A - EBA General Conditions
Appendix B - Information Provided by TC
Appendix C - Photographs of Landfill in August 2003



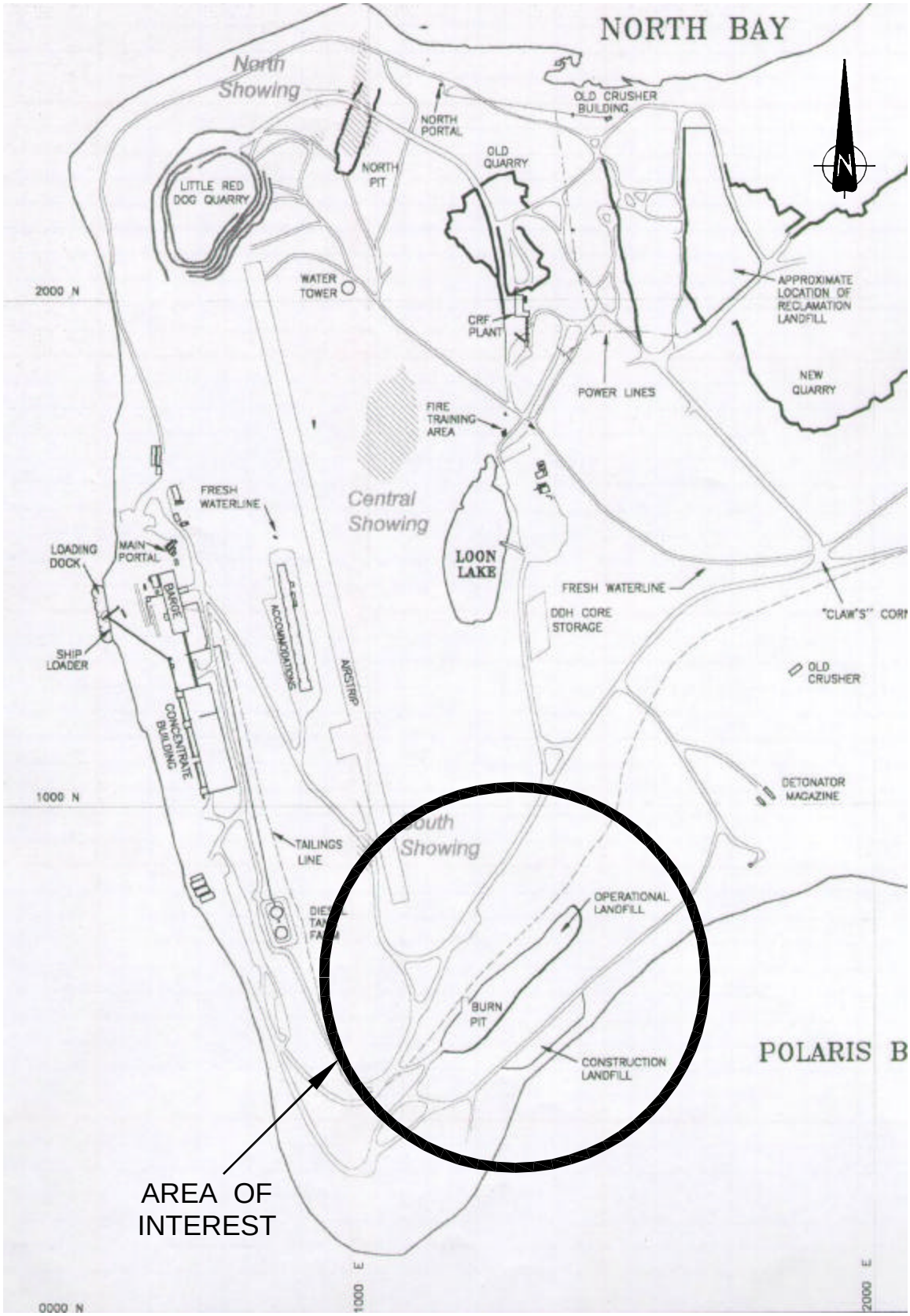


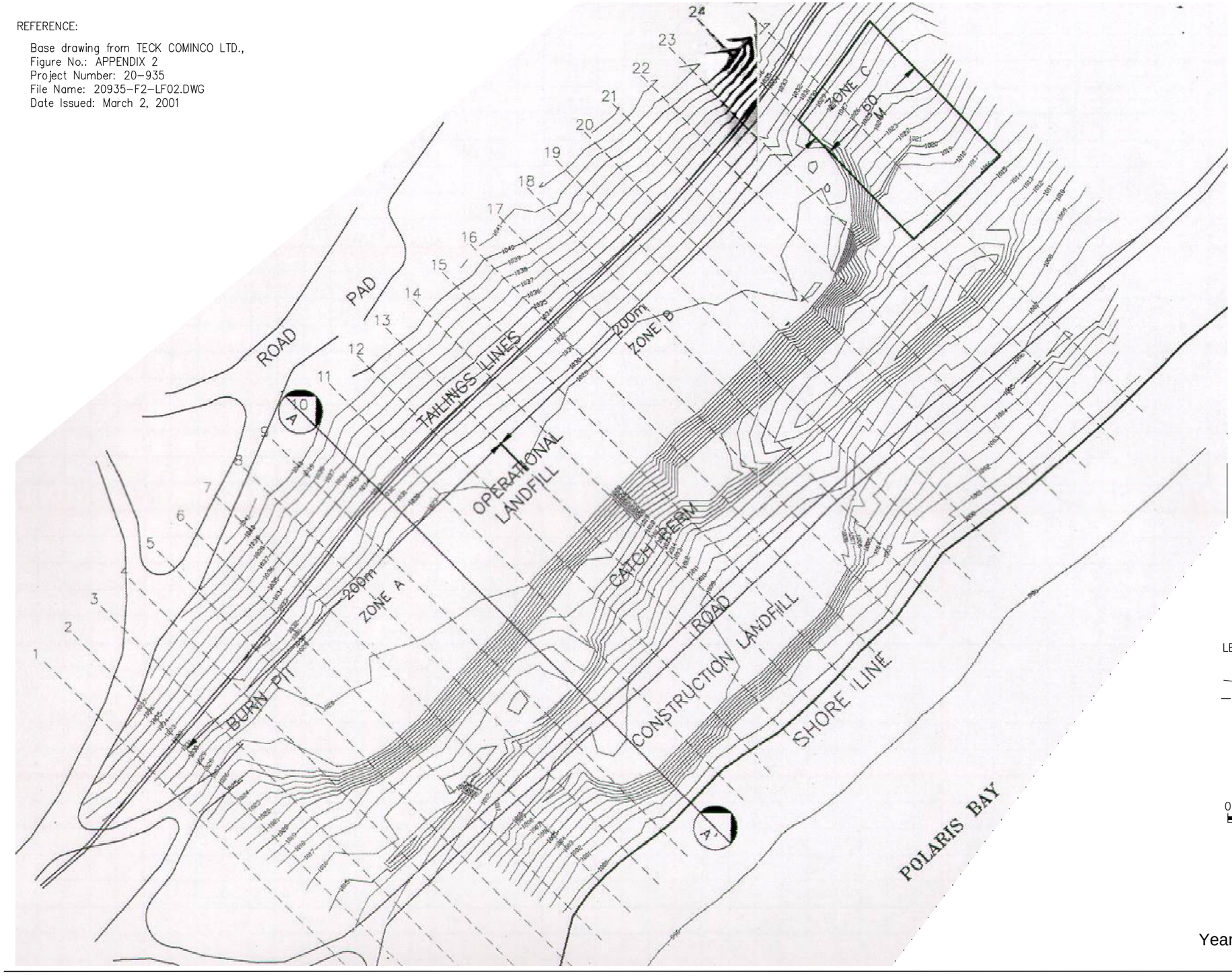
Figure 1

Key Plan

11552R23B.dwg

REFERENCE:

Base drawing from TECK COMINCO LTD.,
Figure No.: APPENDIX 2
Project Number: 20-935
File Name: 20935-F2-LF02.DWG
Date Issued: March 2, 2001



N

LEGEND:

– CONTOUR LINE
– – – – – REFERENCE GRID LINE

0 100
metres

Figure 2
Year 2000 Operational Landfill and Construction Landfill Contours

11552R24B.dwg

REFERENCE:

Base drawing from TECK COMINCO LTD.,
Figure No.: APPENDIX 7
Project Number: 20-935
File Name: 20935-F2-LF07.DWG
Date Issued: March 2, 2001

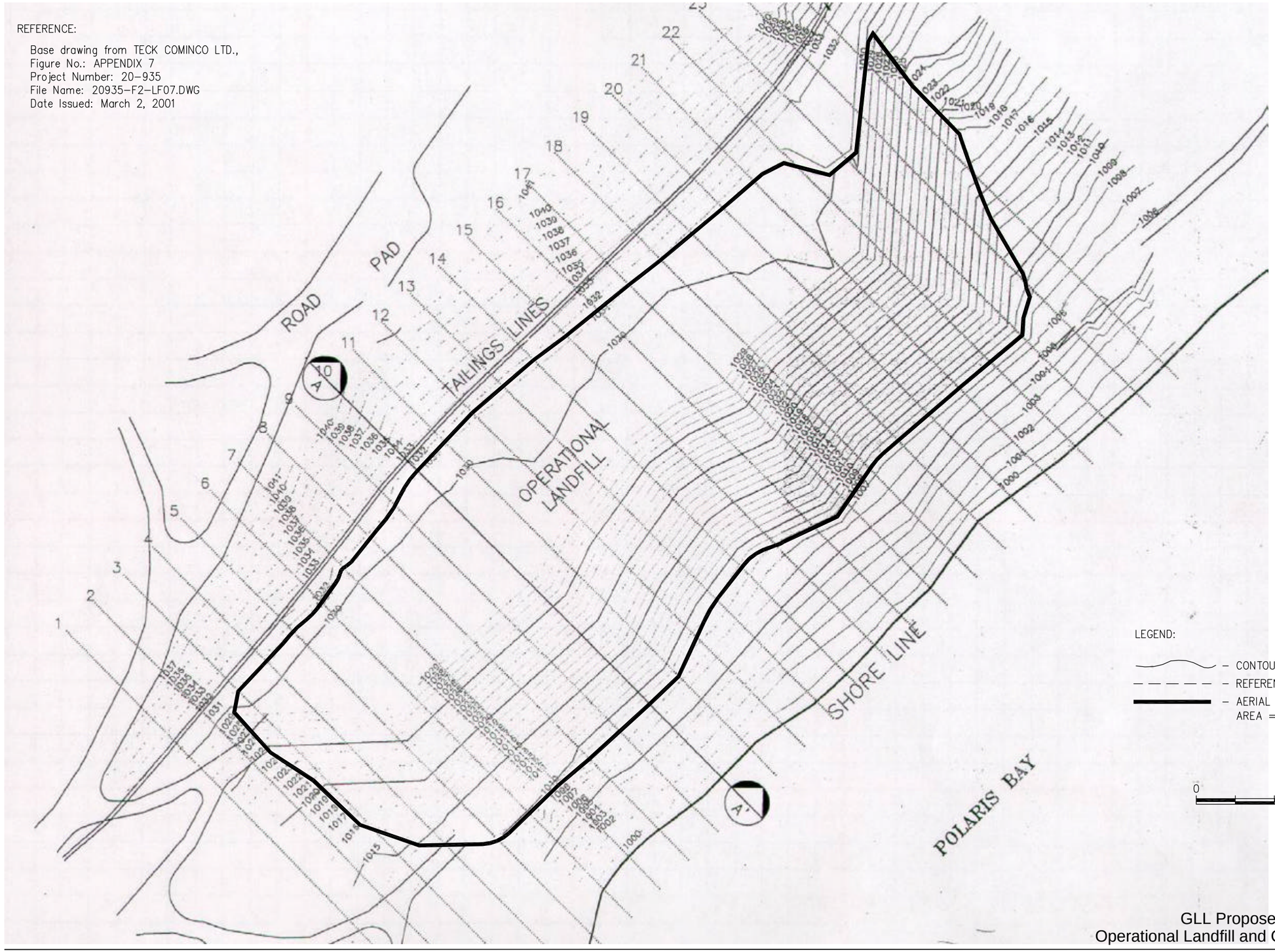


Figure 3
GLL Proposed Final Contours for
Operational Landfill and Construction Landfill

REFERENCE:

Base drawing from TECK COMINCO LTD.,
Figure No.: APPENDIX 8
Project Number: 20-935
File Name: 20935-F2-LF08.DWG
Date Issued: March 21, 2001

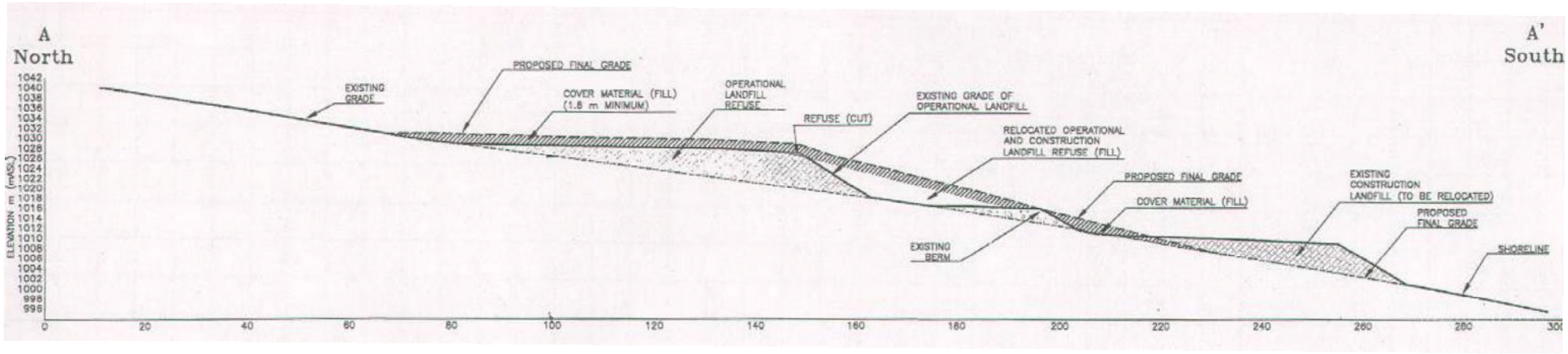
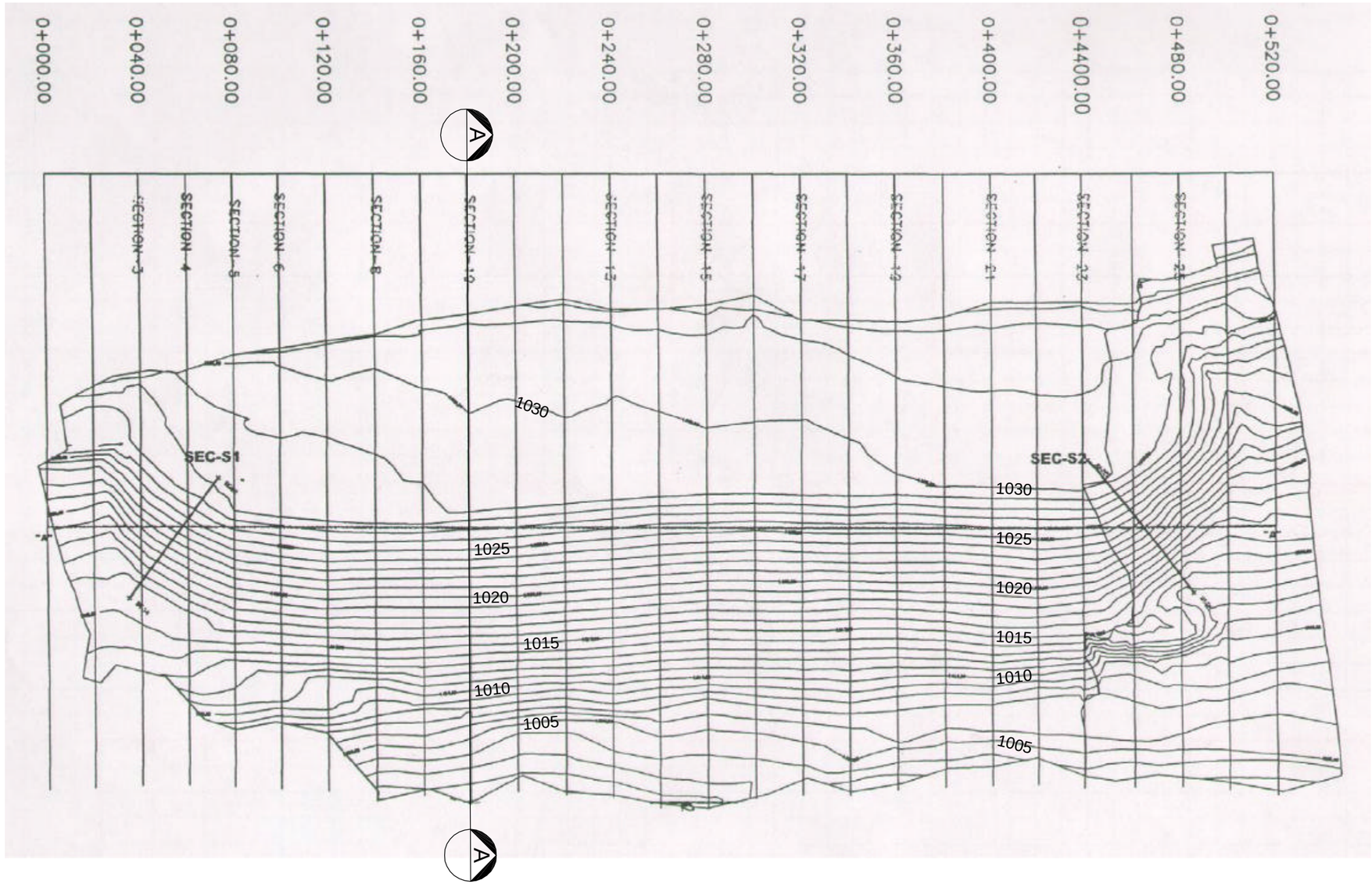


Figure 4
Cross-Section A-A Showing
Proposed Redistribution of Material and Final Cover

REFERENCE:

Draft survey plan provided by TECK COMINCO LTD.,
Contour Interval: 1 m



0 100
metres

Figure 5

Draft Plan Showing Contours on
August 2003 and before Final Placement of
600 mm Thick Cap of Limestone (Scheduled for 2004)

11552R27B.dwg

REFERENCE:

Draft cross-section drawing provided by TECK COMINCO LTD.,

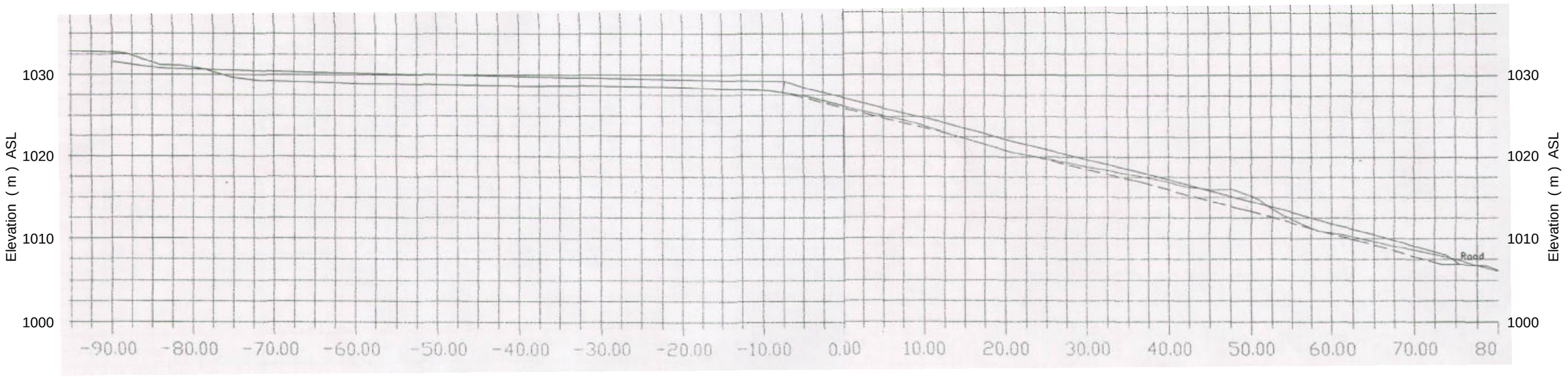


Figure 6
Draft Cross-Section A-A showing As-Built (in progress)
Operational Landfill on August 2003 and before Final Placement of
600 mm Thick Cap of Limestone Cover Material Scheduled for 2004

APPENDIX A

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

2.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

3.0 LOGS OF TEST HOLES

The test hole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

4.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

5.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgmental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

6.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

7.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

8.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

9.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

10.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

11.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

12.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the client's expense upon written request, otherwise samples will be discarded.

13.0 STANDARD OF CARE

Services performed by EBA for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practising under similar conditions in the jurisdiction in which the services are provided. Engineering judgement has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

14.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

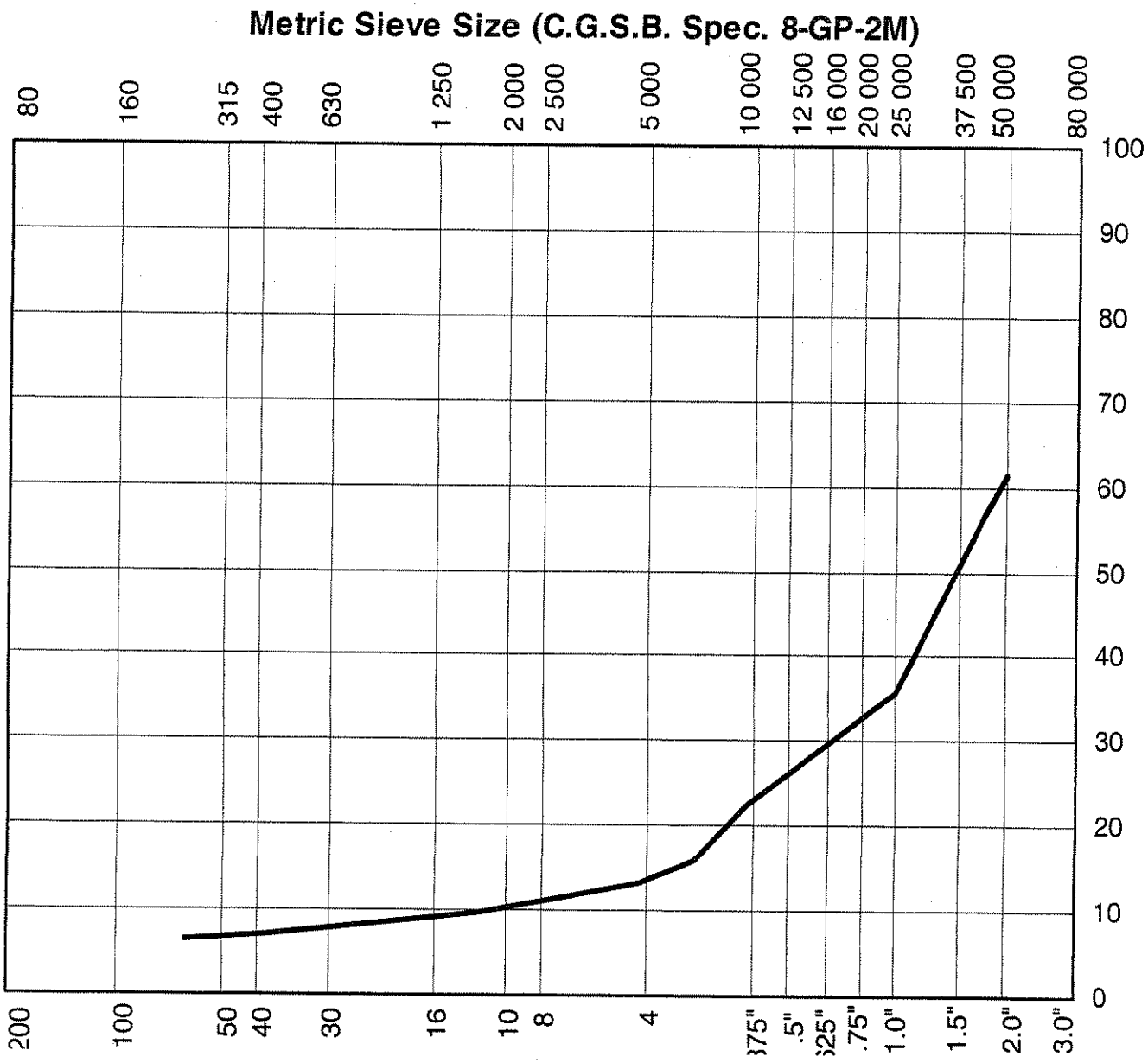
15.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by EBA shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by EBA shall be deemed to be the overall original for the Project.

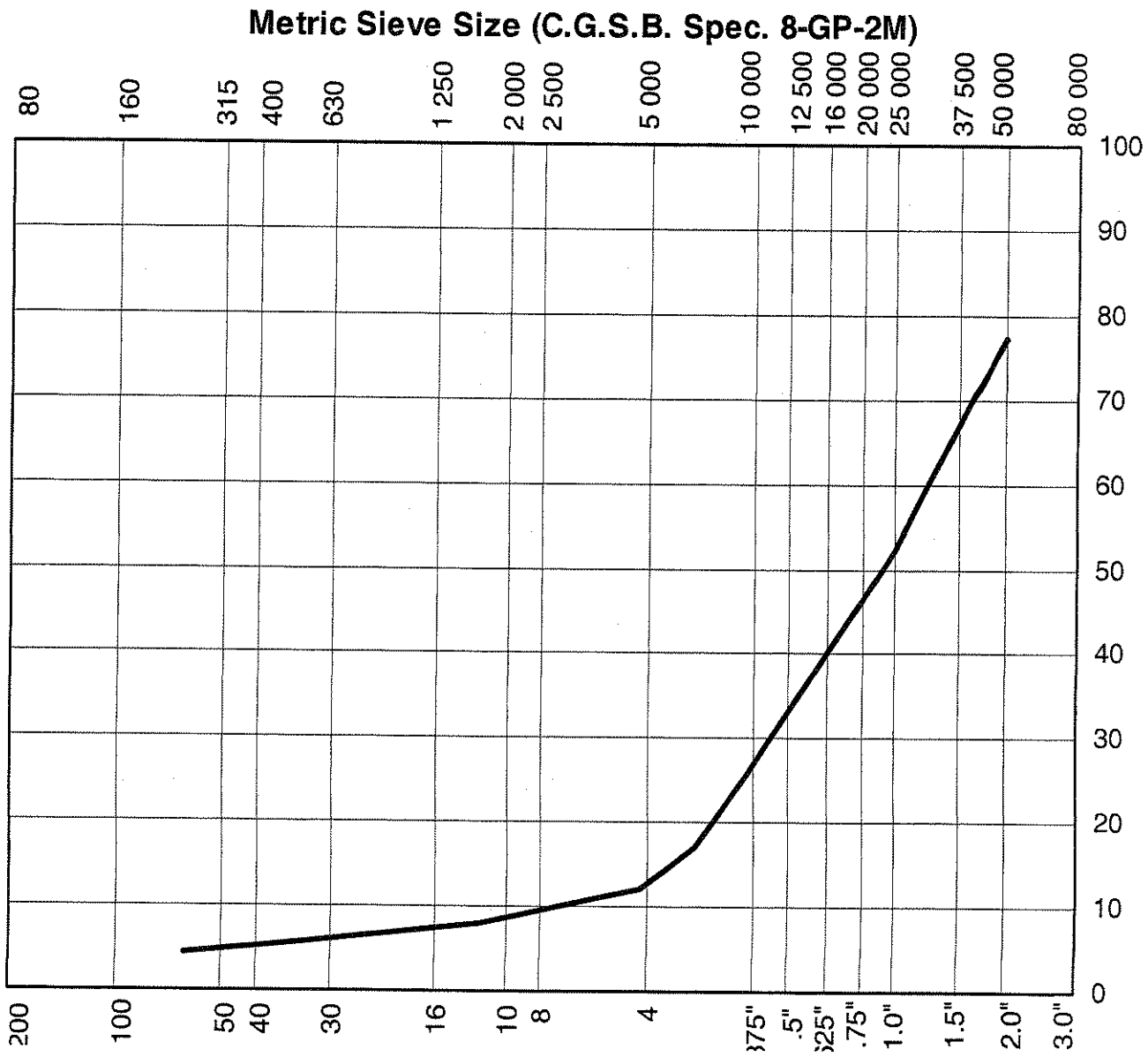
The Client agrees that both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

The Client recognizes and agrees that electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

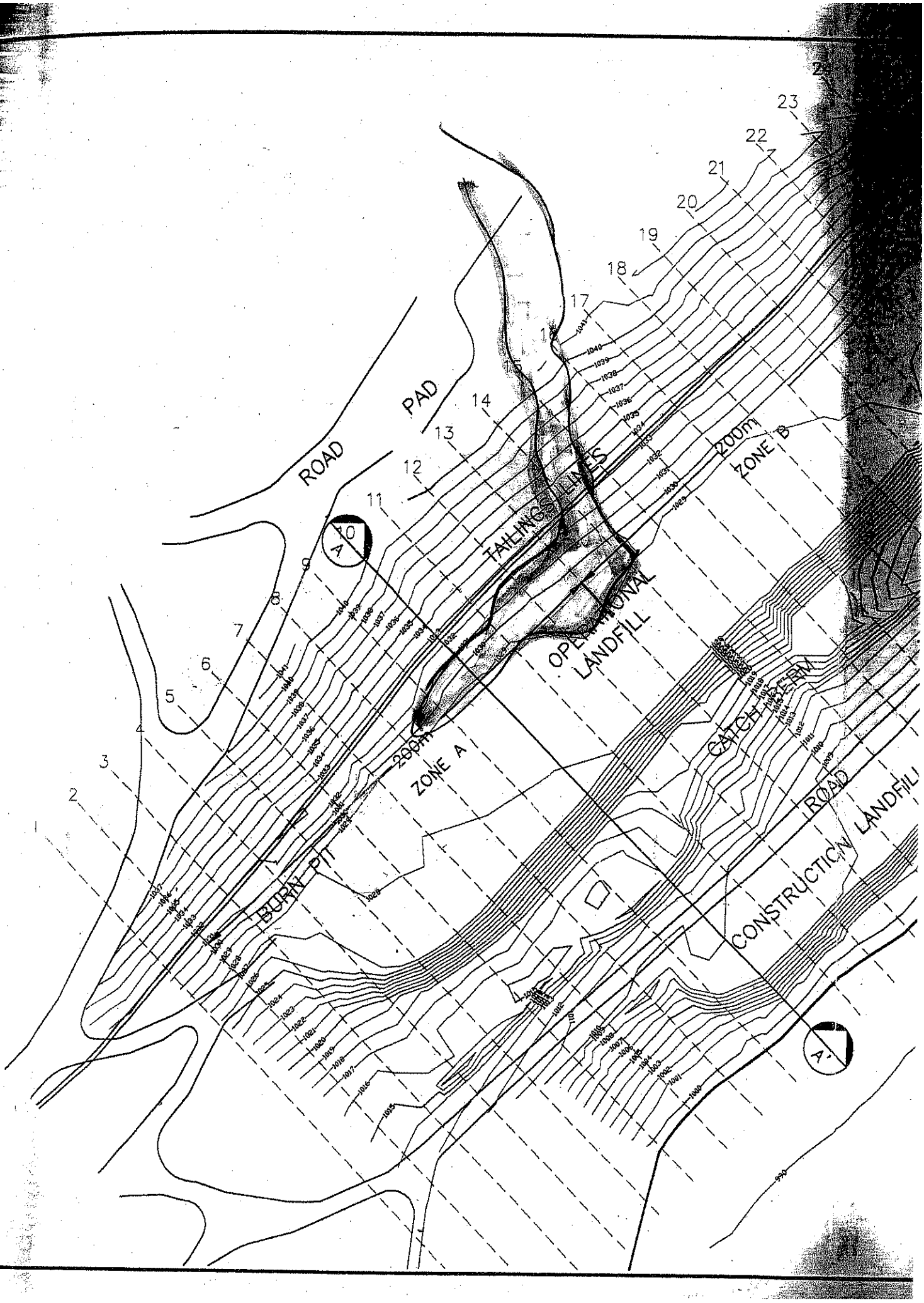
APPENDIX B

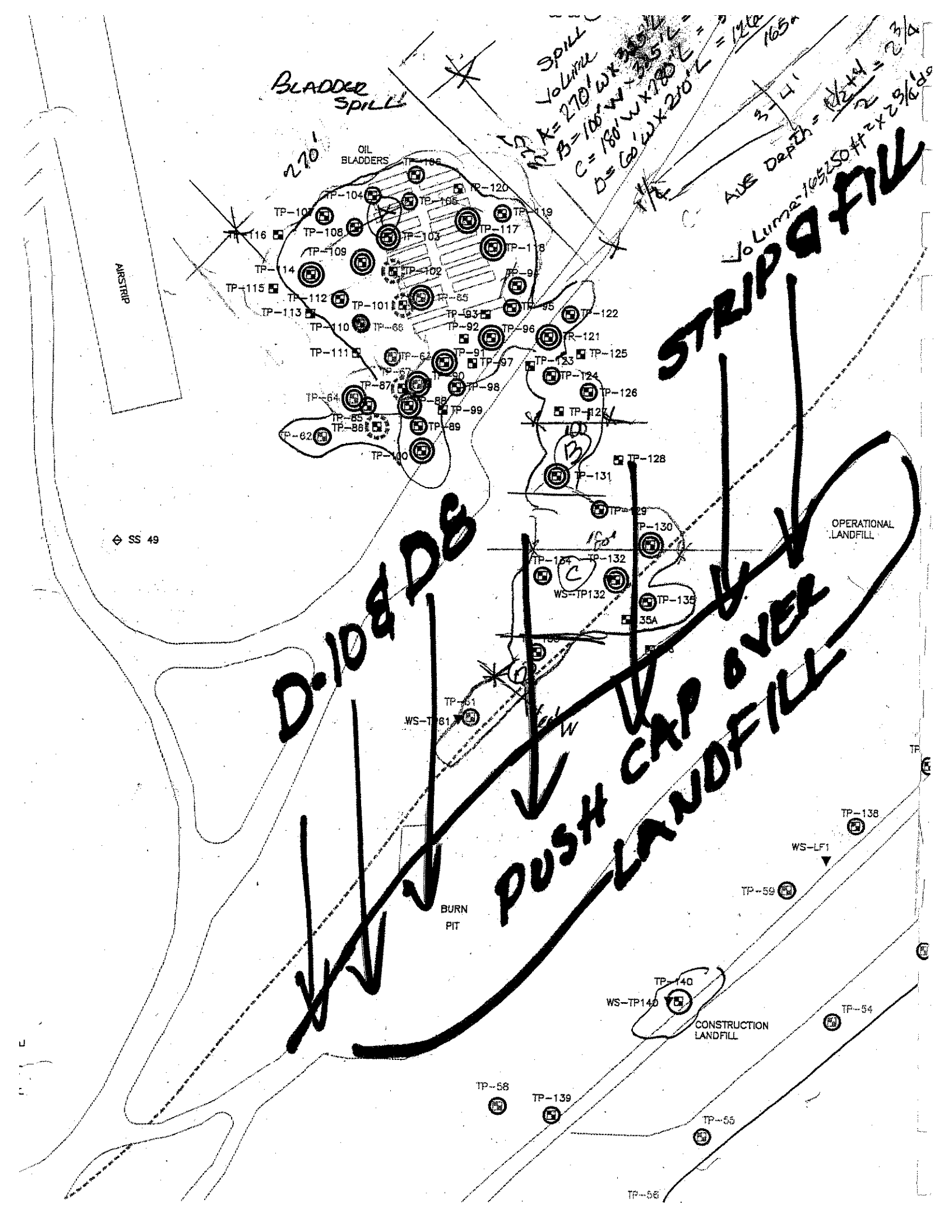


Plotted August 18th Results of Sieve Analysis by TC for 200 mm minus Material– Only 80 mm minus portion plotted



Plotted July 28th Results of Sieve Analysis by TC for 150 mm minus Material– Only 80 mm minus portion plotted


ROAD
PAD
TAILINGS LINES
OPERATIONAL LANDFILL
200m ZONE B
200m ZONE A
CATCH BERM
ROAD
CONSTRUCTION LANDFILL
BURN PIT
A'
A


BLADDER SPILL
270'
OIL BLADDERS
AIRSTRIP
SS 49
TP-104
TP-106
TP-120
TP-107
TP-108
TP-103
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TP-117
TP-116
TP-109
TP-118
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TP-89
TP-62
TP-100
TP-128
TP-131
TP-129
TP-130
OPERATIONAL LANDFILL
TP-132
WS-TP132
TP-135
35A
TP-61
WS-TP61
TP-138
WS-LF1
TP-59
BURN PIT
TP-140
WS-TP140
CONSTRUCTION LANDFILL
TP-54
TP-58
TP-139
TP-55
TP-56
SPILL VOLUME
A= 270' W x 330' L =
B= 100' W x 325' L =
C= 180' W x 180' L =
D= 60' W x 210' L =
AVE DEPTH =
VOLUME = 165,250 ft³ x 2 3/16' ft
STRIP & FILL
D-10 & D8
PUSH CAP OVER LANDFILL

TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10
Installation Depth Below Collar (M)	-0.5	-1.0	-1.5	-2.0	-3.0	-4.0	-4.5	-5.0	-5.5	-6.0
Calibration Factors	-0.01	0.12	-0.02	-0.02	-0.18	-0.03	-0.01	-0.1	-0.03	-0.07

Temperatures

20-Mar-99	-22.9	-23.9	-24.0	-23.7	-21.7	-17.0	-15.9	-15.0	-14.2	-13.5
22-Mar-99	-22.7	-23.3	-23.5	-23.3	-21.6	-17.1	-16.0	-15.2	-14.3	-13.6
23-Mar-99	-22.5	-23.2	-23.3	-23.1	-21.5	-17.2	-16.0	-15.2	-14.4	-13.6
24-Mar-99	-22.4	-23.0	-23.2	-22.9	-21.4	-17.2	-16.1	-15.3	-14.4	-13.7
25-Mar-99	-22.4	-22.9	-23.0	-22.8	-21.4	-17.2	-16.2	-15.4	-14.5	-13.8
26-Mar-99	-23.1	-22.8	-22.9	-22.6	-21.3	-17.3	-16.2	-15.4	-14.5	-13.8
27-Mar-99	-23.7	-23.0	-22.8	-22.5	-21.2	-17.3	-16.3	-15.5	-14.6	-13.9
29-Mar-99	-24.7	-23.4	-22.8	-22.4	-21.0	-17.4	-16.4	-15.6	-14.7	-14.0
30-Mar-99	-25.9	-23.9	-23.0	-22.3	-21.0	-17.4	-16.4	-15.6	-14.7	-14.0
6-Apr-99	-24.1	-24.1	-23.5	-22.7	-20.9	-17.5	-16.6	-15.9	-15.0	-14.3
13-Apr-99	-22.7	-22.8	-22.6	-22.2	-20.8	-17.6	-16.8	-16.0	-15.3	-14.5
20-Apr-99	-19.9	-20.6	-21.2	-21.3	-20.6	-17.7	-16.9	-16.2	-15.5	-14.7
26-Apr-99	-18.4	-19.8	-20.5	-20.6	-20.0	-17.7	-17.0	-16.4	-15.6	-14.9
4-May-99	-16.2	-18.0	-19.0	-19.5	-19.4	-17.6	-17.0	-16.4	-15.7	-15.1
11-May-99	-14.1	-16.2	-17.4	-18.2	-18.7	-17.4	-16.9	-16.4	-15.8	-15.2
18-May-99	-9.6	-12.8	-15.0	-16.5	-17.7	-17.2	-16.8	-16.4	-15.8	-15.3
25-May-99	-6.7	-10.1	-12.6	-14.5	-16.5	-16.8	-16.6	-16.3	-15.8	-15.3
1-Jun-99	-5.0	-8.4	-10.7	-12.7	-15.1	-16.3	-16.2	-16.0	-15.7	-15.3
8-Jun-99	-0.5	-2.9	-7.0	-10.2	-13.6	-15.7	-15.8	-15.8	-15.5	-15.2
15-Jun-99	-0.7	-2.7	-5.6	-8.3	-12.0	-15.0	-15.3	-15.4	-15.3	-15.1
22-Jun-99	0.2	-1.8	-4.5	-7.1	-10.7	-14.2	-14.7	-14.9	-15.0	-14.9
29-Jun-99	1.3	-1.3	-3.5	-5.9	-9.4	-13.2	-14.0	-14.3	-14.5	-14.6
5-Jul-99	4.3	-0.5	-2.3	-4.7	-8.8	-12.8	-13.5	-13.9	-14.2	-14.4
13-Jul-99	3.9	2.9	-1.6	-4.3	-8.0	-12.2	-13.0	-13.5	-13.8	-14.1
20-Jul-99	3.3	1.3	-1.3	-3.8	-7.4	-11.6	-12.5	-13.0	-13.4	-13.8
27-Jul-99	3.9	1.7	-1.1	-3.4	-6.8	-11.1	-12.0	-12.5	-13.1	-13.4
3-Aug-99	4.8	2.0	-0.8	-3.0	-6.4	-10.6	-11.5	-12.1	-12.7	-13.2
10-Aug-99	4.8	2.4	-0.8	-2.8	-6.0	-10.3	-11.1	-11.8	-12.3	-12.8
17-Aug-99	3.9	2.0	-0.7	-2.6	-5.7	-9.9	-10.7	-11.4	-12.0	-12.5
24-Aug-99	1.4	0.7	-0.7	-2.5	-5.4	-9.6	-10.4	-11.1	-11.7	-12.3
31-Aug-99	0.0	0.1	-0.7	-2.4	-5.2	-9.3	-10.2	-10.8	-11.4	-12.0
7-Sep-99	-0.2	-0.1	-0.2	-1.5	-4.3	-8.2	-9.5	-10.2	-10.8	-11.5
14-Sep-99	-0.4	-0.1	-0.3	-1.6	-4.1	-8.0	-9.3	-10.0	-10.6	-11.2
22-Sep-99	-1.3	-0.4	-0.4	-1.6	-4.0	-7.8	-9.1	-9.7	-10.4	-11.1
28-Sep-99	-1.0	-0.5	-0.5	-1.6	-3.9	-7.6	-8.8	-9.5	-10.2	-10.9
5-Oct-99	-5.9	-3.0	-1.4	-1.8	-3.9	-7.4	-8.6	-9.3	-10.0	-10.7
12-Oct-99	-8.1	-5.4	-3.7	-2.8	-3.9	-7.3	-8.5	-9.1	-9.8	-10.5
19-Oct-99	-12.9	-9.4	-6.3	-4.5	-4.3	-7.2	-8.3	-9.0	-9.6	-10.3
26-Oct-99	-14.3	-11.3	-8.4	-6.4	-5.2	-7.2	-8.2	-8.8	-9.5	-10.1
2-Nov-99	-15.8	-13.7	-10.8	-8.3	-6.3	-7.3	-8.2	-8.7	-9.3	-10.0
9-Nov-99	-21.1	-16.7	-12.7	-10.0	-7.6	-7.6	-8.2	-8.7	-9.3	-9.9
16-Nov-99	-20.7	-17.0	-13.7	-11.5	-9.0	-8.1	-8.4	-8.8	-9.3	-9.8
23-Nov-99	-18.6	-17.8	-15.7	-13.3	-10.3	-8.7	-8.8	-9.0	-9.4	-9.8
30-Nov-99	-19.3	-16.7	-15.1	-13.6	-11.4	-9.4	-9.2	-9.3	-9.5	-9.9
7-Dec-99	-24.9	-21.4	-17.8	-15.2	-12.3	-10.0	-9.6	-9.6	-9.8	-10.0
13-Dec-99	-26.8	-23.8	-20.3	-17.3	-13.6	-10.6	-10.1	-10.0	-10.0	-10.2
22-May-00	-12.3	-14.1	-15.7	-16.9	-18.2	-18.1	-17.8	-17.4	-16.9	-16.4
29-May-00	-10.3	-13.2	-14.7	-15.9	-17.2	-17.6	-17.4	-17.2	-16.8	-16.4
6-Jun-00	-0.3	-0.1	-1.0	-2.3	-10.8	-12.2	-13.0	-15.6	-16.6	-16.2
16-Jun-00	1.0	-2.0	-5.7	-9.6	-13.9	-16.2	-16.4	-16.4	-16.2	-16.0
26-Jun-00	5.3	1.2	-1.8	-5.6	-10.9	-14.8	-15.5	-15.8	-15.8	-15.7
4-Jul-00	2.1	0.7	-1.3	-4.4	-9.3	-13.7	-14.7	-15.1	-15.3	-15.4
11-Jul-00	2.8	1.0	-1.2	-3.9	-8.2	-12.8	-14.0	-14.5	-14.8	-15.0
18-Jul-00	2.5	1.2	-1.1	-3.5	-7.5	-12.1	-13.3	-13.9	-14.3	-14.6
19-Sep-00	-3.9	-0.4	-1.0	-2.1	-4.6	-8.4	-9.6	-10.3	-11.0	-11.6
26-Sep-00	-6.3	-3.7	-2.4	-2.6	-4.5	-8.2	-9.4	-10.1	-10.8	-11.4
10-Oct-00	-9.9	-7.4	-5.6	-4.9	-5.2	-7.9	-9.0	-9.7	-10.3	-10.9
10-Nov-00	-18.7	-16.8	-14.2	-12.0	-9.5	-8.8	-9.2	-9.5	-9.9	-10.4
27-Apr-01	-19.8	-21.5	-23.0	-23.7	-23.5	-21.0	-19.8	-19.1	-18.2	-17.3
22-May-01	-9.9	-12.8	-15.5	-17.6	-19.7	-19.6	-19.1	-18.7	-18.2	-17.5
18-Jun-01	1.9	-0.7	-3.9	-7.3	-12.1	-16.0	-16.8	-17.0	-17.0	-16.9
19-Jul-01	8.5	2.4	-1.1	-3.4	-7.3	-12.0	-13.4	-14.1	-14.6	-15.0
21-Aug-01	0.0	0.0	-0.1	-2.0	-5.3	-9.8	-11.2	-11.9	-12.6	-13.2
21-Aug-01	0.0	0.0	-0.1	-2.0	-5.3	-9.8	-11.2	-11.9	-12.6	-13.2
16-Nov-02	-14.3	-13.3	-11.4	-9.7	-8.1	-8.5	-9.1	-9.5	-10.0	-10.6
18-Dec-02	-18.6	-17.6	-16.8	-15.8	-13.7	-11.0	-10.6	-10.5	-10.5	-10.7
10-Feb-03	-27.6	-25.3	-23.4	-21.6	-18.6	-14.8	-13.8	-13.3	-12.9	-12.5
11-Mar-03	-28.3	-26.2	-24.9	-23.8	-21.4	-17.0	-15.7	-15.0	-14.3	-13.8
17-Apr-03	-24.7	-24.5	-24.0	-23.3	-21.9	-18.6	-17.4	-16.7	-16.0	-15.2
15-May-03	-15.2	-17.1	-18.1	-18.8	-19.4	-18.3	-17.6	-17.1	-16.6	-15.9
17-Jun-03	-24.7	-24.5	-24.0	-23.3	-21.9	-18.6	-17.4	-16.7	-16.0	-15.2

TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10
Installation Depth Below Collar (M)	-0.5	-1.0	-1.5	-2.0	-2.5	-3.0	-3.5	-4.0	-4.5	-5.0
Calibration Factors	-0.02	-0.04	-0.08	-0.06	-0.03	0.04	-0.03	-0.14	-0.12	-0.01

Temperatures

20-Mar-99	-24.2	-24.8	-24.9	-24.5	-23.8	-22.7	-21.5	-20.0	-18.6	-17.4
22-Mar-99	-24.0	-24.2	-24.5	-24.2	-23.5	-22.5	-21.5	-20.1	-18.7	-17.5
23-Mar-99	-23.7	-24.2	-24.3	-24.0	-23.4	-22.5	-21.4	-20.1	-18.8	-17.6
24-Mar-99	-23.5	-24.0	-24.1	-23.9	-23.3	-22.4	-21.4	-20.1	-18.8	-17.6
25-Mar-99	-23.5	-23.8	-23.9	-23.7	-23.1	-22.3	-21.3	-20.1	-18.8	-17.6
26-Mar-99	-24.0	-23.8	-23.8	-23.6	-23.0	-22.2	-21.3	-20.1	-18.9	-17.7
27-Mar-99	-24.3	-24.0	-23.7	-23.5	-22.9	-22.2	-21.3	-20.1	-18.9	-17.7
29-Mar-99	-25.2	-24.4	-23.8	-23.3	-22.8	-22.0	-21.2	-20.1	-18.9	-17.8
30-Mar-99	-26.1	-25.0	-23.9	-23.3	-22.7	-21.9	-21.2	-20.0	-18.9	-17.8
6-Apr-99	-24.7	-24.8	-24.3	-23.6	-22.8	-21.9	-21.0	-20.0	-19.0	-18.0
13-Apr-99	-23.5	-23.6	-23.4	-23.0	-22.5	-21.8	-21.0	-20.0	-19.0	-18.1
20-Apr-99	-20.9	-21.5	-22.0	-22.2	-21.9	-21.4	-20.8	-20.0	-19.1	-18.2
26-Apr-99	-19.9	-20.7	-21.4	-21.5	-21.3	-20.9	-20.5	-19.8	-19.0	-18.3
4-May-99	-18.1	-19.3	-20.1	-20.4	-20.5	-20.4	-20.1	-19.6	-18.9	-18.2
11-May-99	-16.1	-17.6	-18.8	-19.4	-19.7	-19.7	-19.5	-19.2	-18.7	-18.2
18-May-99	-12.5	-14.6	-16.6	-17.8	-18.5	-18.8	-18.9	-18.8	-18.5	-18.0
25-May-99	-10.2	-12.3	-14.5	-15.9	-17.0	-17.7	-18.1	-18.2	-18.1	-17.8
1-Jun-99	-7.6	-10.4	-12.7	-14.3	-15.6	-16.5	-17.1	-17.5	-17.5	-17.4
8-Jun-99	-3.3	-6.2	-9.6	-11.9	-13.8	-15.2	-16.0	-16.7	-16.9	-17.0
15-Jun-99	-1.4	-4.1	-7.4	-9.8	-11.9	-13.6	-14.7	-15.7	-16.2	-16.5
22-Jun-99	-0.4	-2.1	-5.0	-7.7	-10.2	-12.1	-13.4	-14.7	-15.5	-15.9
29-Jun-99	1.6	-1.0	-3.6	-6.1	-8.4	-10.4	-11.9	-13.3	-14.4	-15.1
5-Jul-99	4.2	0.0	-2.7	-5.3	-7.6	-9.6	-11.2	-12.7	-13.8	-14.6
13-Jul-99	3.9	1.1	-1.9	-4.4	-6.7	-8.7	-10.3	-11.9	-13.1	-13.9
20-Jul-99	3.1	1.0	-1.5	-3.8	-6.0	-7.9	-9.5	-11.1	-12.4	-13.3
27-Jul-99	4.0	1.2	-1.3	-3.4	-5.4	-7.3	-8.8	-10.4	-11.7	-12.7
3-Aug-99	4.3	1.6	-1.1	-3.1	-5.0	-6.8	-8.3	-9.9	-11.1	-12.1
10-Aug-99	4.2	1.7	-1.0	-2.8	-4.7	-6.4	-7.8	-9.4	-10.6	-11.7
17-Aug-99	3.3	1.7	-0.8	-2.6	-4.4	-6.0	-7.4	-8.9	-10.2	-11.2
24-Aug-99	1.0	0.5	-0.7	-2.4	-4.2	-5.7	-7.1	-8.6	-9.8	-10.8
31-Aug-99	0.0	0.0	-0.9	-2.4	-4.0	-5.5	-6.7	-8.2	-9.4	-10.4
7-Sep-99	-0.1	-0.2	-1.0	-2.4	-3.9	-5.3	-6.5	-7.9	-9.1	-10.1
14-Sep-99	-0.2	-0.3	-1.2	-2.3	-3.7	-5.1	-6.3	-7.6	-8.8	-9.8
21-Sep-99	-0.8	-0.5	-1.4	-2.5	-3.7	-5.0	-6.1	-7.4	-8.6	-9.5
28-Sep-99	-1.1	-1.2	-1.8	-2.6	-3.7	-4.9	-6.0	-7.2	-8.3	-9.3
5-Oct-99	-4.7	-3.2	-2.7	-3.0	-3.9	-4.9	-5.9	-7.1	-8.1	-9.1
12-Oct-99	-6.8	-5.2	-4.3	-4.0	-4.3	-5.0	-5.8	-6.9	-7.9	-8.8
19-Oct-99	-11.7	-9.0	-6.7	-5.6	-5.2	-5.4	-6.1	-7.0	-7.9	-8.7
26-Oct-99	-13.9	-11.3	-9.0	-7.6	-6.7	-6.4	-6.6	-7.2	-7.9	-8.6
2-Nov-99	-15.9	-14.0	-11.5	-9.7	-8.3	-7.6	-7.5	-7.7	-8.1	-8.7
9-Nov-99	-19.7	-16.3	-13.2	-11.3	-9.9	-8.9	-8.5	-8.3	-8.5	-8.9
16-Nov-99	-20.3	-17.0	-14.3	-12.7	-11.3	-10.2	-9.6	-9.1	-9.0	-9.2
23-Nov-99	-19.1	-18.1	-16.1	-14.4	-12.7	-11.4	-10.6	-9.9	-9.6	-9.6
30-Nov-99	-18.7	-17.0	-15.6	-14.6	-13.4	-12.3	-11.5	-10.8	-10.3	-10.1
7-Dec-99	-24.2	-21.2	-18.1	-16.0	-14.4	-13.1	-12.2	-11.4	-10.8	-9.9
13-Dec-99	-26.6	-23.8	-20.7	-18.3	-16.1	-14.4	-13.2	-12.1	-11.4	-11.0
22-May-00	-11.9	-13.3	-15.0	-16.3	-17.3	-18.1	-18.5	-18.8	-18.9	-18.6
29-May-00	-11.0	-12.7	-14.2	-15.3	-16.3	-17.1	-17.7	-18.1	-18.3	-18.2
6-Jun-00	-7.2	-10.0	-12.3	-13.9	-15.2	-16.2	-16.8	-17.4	-17.6	-17.7
16-Jun-00	0.0	-2.3	-6.7	-10.2	-12.6	-14.3	-15.4	-16.3	-16.8	-17.1
26-Jun-00	2.4	-1.0	-4.3	-7.1	-9.7	-11.9	-13.3	-14.8	-15.7	-16.2
4-Jul-00	1.4	-0.4	-3.2	-5.8	-8.2	-10.3	-11.9	-13.6	-14.7	-15.4
11-Jul-00	1.7	-0.2	-2.8	-5.0	-7.3	-9.3	-10.9	-12.6	-13.9	-14.7
18-Jul-00	1.8	-0.2	-2.4	-4.5	-6.6	-8.6	-10.1	-11.8	-13.0	-14.1
19-Sep-00	-3.8	-2.4	-2.5	-3.2	-4.3	-5.4	-6.5	-7.9	-9.0	-10.0
26-Sep-00	-5.7	-4.1	-3.7	-3.9	-4.6	-5.6	-6.5	-7.8	-8.9	-9.8
10-Oct-00	-9.5	-7.7	-6.6	-6.1	-6.1	-6.4	-7.0	-7.8	-8.7	-9.5
10-Nov-00	-18.6	-16.8	-14.7	-13.0	-11.6	-10.6	-10.1	-9.8	-9.8	-10.0
27-Apr-01	-20.5	-22.2	-23.3	-23.9	-23.9	-23.6	-23.1	-22.3	-21.3	-20.4
22-May-01	-15.1	-17.4	-18.9	-20.0	-20.6	-21.0	-21.0	-20.8	-20.5	-20.0
18-Jun-01	-0.3	-3.2	-6.6	-9.4	-12.1	-14.2	-15.6	-17.0	-17.7	-18.2
19-Jul-01	4.3	-0.1	-2.4	-4.7	-7.0	-9.0	-10.5	-12.3	-13.6	-14.7
21-Aug-01	-0.1	-0.1	-1.3	-3.0	-4.9	-6.5	-8.0	-9.6	-11.0	-12.1
14-Sep-02	-0.1	-0.4	-1.6	-3.0	-4.5	-5.9	-7.2	-8.6	-9.8	-10.9
23-Oct-02	-6.9	-6.9	-6.8	-6.8	-6.8	-7.0	-7.5	-8.1	-8.9	-9.6
16-Nov-02	-14.8	-13.1	-11.7	-10.5	-9.6	-9.2	-9.1	-9.2	-9.5	-9.9
18-Dec-02	-18.4	-17.7	-17.0	-16.1	-15.1	-14.0	-13.1	-12.3	-11.7	-11.4
10-Feb-03	-27.0	-25.2	-23.5	-21.9	-20.2	-18.8	-17.7	-16.4	-15.4	-14.6
11-Mar-03	-28.0	-26.4	-25.3	-24.2	-22.9	-21.6	-20.3	-18.9	-17.6	-16.5
17-Apr-03	-24.9	-24.9	-24.4	-23.7	-15.8	-22.2	-21.4	-20.4	-19.3	-18.4
15-May-03	-16.0	-17.3	-18.1	-18.9	-19.4	-19.7	-19.7	-19.5	-19.1	-18.6
17-Jun-03	-1.5	-4.0	-6.6	-8.9	-11.0	-12.8	-14.0	-15.2	-16.1	-16.5

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #3
TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10
Installation Depth Below	0.2	-0.3	-0.8	-1.3	-2.3	-3.3	-3.8	-4.3	-4.8	-5.3
Calibration Factors	0.05	-0.04	-0.02	-0.03	-0.02	-0.02	-0.36	-0.02	-0.13	-0.01

Temperatures

20-Mar-99	-17.7	-23.6	-24.8	-25.2	-24.4	-21.7	-20.2	-18.9	-17.6	-16.6
22-Mar-99	-16.9	-23.6	-24.2	-24.7	-24.0	-21.6	-20.2	-19.0	-17.8	-16.7
23-Mar-99	-17.1	-23.2	-24.2	-24.5	-23.8	-21.6	-20.2	-19.1	-17.8	-16.8
24-Mar-99	-18.6	-23.1	-23.9	-24.3	-23.7	-21.5	-20.2	-19.1	-17.8	-16.8
25-Mar-99	-20.5	-23.1	-23.7	-24.1	-23.5	-21.4	-20.2	-19.1	-17.9	-16.9
26-Mar-99	-20.8	-23.8	-23.7	-23.9	-23.4	-21.4	-20.2	-19.1	-17.9	-16.9
27-Mar-99	-23.9	-24.3	-23.9	-23.9	-23.3	-21.3	-20.2	-19.1	-18.0	-17.0
29-Mar-99	-29.2	-25.5	-24.5	-24.0	-23.1	-21.2	-20.1	-19.1	-18.0	-17.1
30-Mar-99	-24.5	-26.7	-25.1	-24.3	-23.0	-21.2	-20.1	-19.1	-18.0	-17.1
6-Apr-99	-15.4	-24.5	-24.8	-24.6	-23.2	-21.0	-20.0	-19.1	-18.1	-17.3
13-Apr-99	-16.8	-23.4	-23.6	-23.6	-22.7	-21.0	-20.0	-19.2	-18.2	-17.4
20-Apr-99	-14.8	-20.8	-21.6	-22.1	-22.1	-20.7	-19.8	-19.2	-18.3	-17.5
26-Apr-99	-14.4	-19.8	-21.0	-21.5	-21.4	-20.4	-19.6	-19.1	-18.3	-17.6
4-May-99	-11.3	-18.3	-19.6	-20.2	-20.6	-20.0	-19.4	-18.9	-18.3	-17.6
11-May-99	-5.2	-16.2	-18.0	-18.9	-19.7	-19.5	-19.0	-18.7	-18.2	-17.6
18-May-99	-4.0	-12.1	-14.7	-16.4	-18.3	-18.9	-18.5	-18.4	-18.0	-17.5
25-May-99	-2.6	-9.6	-12.2	-14.0	-16.6	-18.0	-17.9	-18.0	-17.7	-17.3
1-Jun-99	6.1	-5.9	-9.9	-12.0	-14.9	-16.9	-17.1	-17.4	-17.3	-17.1
8-Jun-99	6.1	-2.9	-6.0	-8.6	-12.8	-15.8	-16.3	-16.7	-16.8	-16.7
15-Jun-99	10.4	-1.1	-3.8	-6.2	-10.7	-14.4	-15.2	-15.9	-16.2	-16.3
22-Jun-99	3.5	-0.4	-2.6	-4.8	-9.2	-13.1	-14.1	-15.0	-15.6	-15.8
29-Jun-99	9.5	1.8	-1.2	-3.4	-7.6	-11.7	-12.8	-13.9	-14.6	-15.0
5-Jul-99	9.3	4.9	0.1	-2.5	-6.9	-11.0	-12.2	-13.3	-14.1	-14.6
13-Jul-99	8.9	4.2	1.0	-1.6	-5.9	-10.1	-11.4	-12.6	-13.5	-14.0
20-Jul-99	8.7	3.3	0.9	-1.3	-5.2	-9.4	-10.7	-11.9	-12.9	-13.4
27-Jul-99	11.2	4.5	1.2	-1.1	-4.7	-8.7	-10.0	-11.3	-12.3	-12.9
3-Aug-99	9.3	4.5	1.6	-0.8	-4.3	-8.2	-9.5	-10.7	-11.7	-12.4
10-Aug-99	10.2	4.5	1.8	-0.6	-4.0	-7.7	-9.0	-10.2	-11.2	-11.9
17-Aug-99	6.3	3.4	1.7	-0.4	-3.7	-7.3	-8.5	-9.8	-10.8	-11.5
24-Aug-99	1.4	1.0	0.5	-0.4	-3.5	-6.9	-8.2	-9.4	-10.4	-11.1
31-Aug-99	-0.3	0.0	-0.1	-0.6	-3.3	-6.6	-7.8	-9.0	-10.1	-10.7
7-Sep-99	-0.1	-0.2	-0.1	-0.7	-3.2	-6.4	-7.5	-8.7	-9.7	-10.4
14-Sep-99	-0.7	-0.4	-0.1	-0.8	-3.2	-6.2	-7.2	-8.4	-9.4	-10.2
21-Sep-99	-1.3	-1.5	-0.9	-1.0	-3.1	-6.0	-7.0	-8.2	-9.2	-9.9
28-Sep-99	-2.3	-1.4	-1.4	-1.7	-3.3	-5.9	-6.8	-8.0	-8.9	-9.6
5-Oct-99	-9.6	-5.8	-3.6	-2.9	-3.6	-5.8	-6.7	-7.8	-8.7	-9.4
12-Oct-99	-13.8	-7.6	-5.6	-4.8	-4.5	-5.9	-6.7	-7.7	-8.5	-9.2
19-Oct-99	-15.6	-13.0	-9.4	-7.4	-5.7	-6.3	-6.8	-7.6	-8.4	-9.0
26-Oct-99	-16.5	-14.8	-11.7	-9.9	-7.6	-7.0	-7.2	-7.8	-8.4	-9.0
2-Nov-99	-18.6	-16.6	-14.5	-12.5	-9.3	-7.9	-7.7	-8.1	-8.6	-9.0
9-Nov-99	-25.7	-21.1	-16.8	-14.2	-10.9	-8.9	-8.5	-8.6	-8.8	-9.1
16-Nov-99	-24.6	-21.4	-17.5	-15.2	-12.3	-10.0	-9.3	-9.2	-9.2	-9.4
23-Nov-99	-17.7	-19.6	-18.6	-17.1	-13.7	-11.0	-10.1	-9.8	-9.7	-9.7
30-Nov-99	-25.4	-19.3	-17.4	-16.4	-14.3	-11.8	-10.9	-10.4	-10.2	-10.1
7-Dec-99	-28.6	-25.6	-21.8	-19.1	-15.3	-12.5	-11.5	-11.1	-10.6	-10.5
13-Dec-99	-30.4	-27.4	-24.4	-21.9	-17.3	-13.5	-12.3	-11.7	-11.2	-10.9
22-May-00	-5.0	-11.8	-13.5	-14.9	-17.1	-18.4	-18.5	-18.6	-18.4	-18.2
29-May-00	2.3	-11.2	-12.9	-14.1	-16.1	-17.6	-17.8	-18.0	-18.0	-17.8
6-Jun-00	3.8	-7.0	-10.3	-12.3	-15.0	-16.8	-17.1	-17.4	-17.5	-17.4
16-Jun-00	15.4	5.9	-0.5	-4.8	-11.1	-15.2	-15.9	-16.5	-16.8	-16.9
26-Jun-00	14.4	3.3	-0.4	-3.0	-8.3	-12.9	-14.1	-15.2	-15.8	-16.2
4-Jul-00	7.2	1.7	-0.1	-2.3	-7.0	-11.6	-12.9	-14.1	-15.0	-15.4
11-Jul-00	7.6	2.5	-0.1	-2.0	-6.2	-10.6	-12.0	-13.3	-14.2	-14.8
18-Jul-00	4.6	2.2	0.0	-1.7	-5.7	-9.8	-11.2	-12.6	-13.5	-14.2
19-Sep-00	-6.3	-4.5	-2.8	-2.7	-4.0	-6.6	-7.6	-8.7	-9.7	-10.4
26-Sep-00	-10.4	-6.1	-4.3	-3.8	-4.5	-6.6	-7.5	-8.5	-9.5	-10.2
10-Oct-00	-9.3	-9.8	-7.5	-6.6	-6.2	-7.1	-7.6	-8.4	-9.2	-9.8
10-Nov-00	-19.2	-18.7	-16.5	-14.8	-11.9	-10.1	-9.6	-9.7	-9.8	-10.0
27-Apr-01	-17.6	-19.6	-21.6	-22.8	-23.5	-22.6	-21.8	-21.1	-20.2	-19.4
22-May-01	-1.2	-11.9	-14.6	-16.3	-18.9	-20.0	-19.8	-19.8	-19.5	-19.1
18-Jun-01	5.5	0.6	-1.9	-4.7	-10.0	-14.4	-15.6	-16.5	-17.1	-17.4
19-Jul-01	18.8	4.9	-0.3	-2.0	-5.9	-10.0	-11.3	-12.7	-13.8	-14.4
21-Aug-01	2.7	0.0	0.0	-1.0	-4.1	-7.7	-8.9	-10.2	-11.3	-12.1

DESTROYED

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #4
TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10	Bead # 11	Bead # 12
Installation Depth Below Collar (M)	-0.5	-1.0	-1.5	-2.0	-2.5	-3.0	-4.0	-5.0	-5.5	-6.0	-6.5	-7.0
Calibration Factors	-0.06	-0.01	-0.04	-0.02	-0.01	0.03	-0.03	-0.04	-0.04	-0.15	-0.06	-0.09

Temperatures

20-Mar-99	-23.1	-23.8	-23.7	-23.3	-22.5	-21.2	-18.1	-15.3	-14.2	-13.3	-12.5	
22-Mar-99	-22.7	-23.2	-23.3	-22.9	-22.2	-21.1	-18.2	-15.4	-14.3	-13.4	-12.6	
23-Mar-99	-22.7	-23.1	-23.1	-22.7	-22.1	-21.0	-18.2	-15.5	-14.3	-13.5	-12.7	
24-Mar-99	-22.4	-22.9	-22.9	-22.6	-22.0	-20.9	-18.2	-15.5	-14.4	-13.5	-12.7	
25-Mar-99	-22.3	-22.7	-22.7	-22.4	-21.8	-20.8	-18.2	-15.6	-14.4	-13.6	-12.8	
26-Mar-99	-22.7	-22.6	-22.5	-22.3	-21.7	-20.7	-18.2	-15.6	-14.5	-13.6	-12.8	
27-Mar-99	-23.2	-22.6	-22.4	-22.2	-21.6	-20.6	-18.2	-15.6	-14.5	-13.7	-12.8	
29-Mar-99	-24.3	-23.0	-22.4	-22.0	-21.4	-20.5	-18.2	-15.7	-14.6	-13.7	-12.9	
30-Mar-99	-25.4	-23.4	-22.6	-21.9	-21.3	-20.4	-18.1	-15.7	-14.6	-13.8	-13.0	
6-Apr-99	-23.9	-23.6	-23.0	-22.3	-21.4	-20.3	-18.1	-15.8	-14.8	-14.0	-13.2	
13-Apr-99	-22.4	-22.3	-22.0	-21.7	-21.1	-20.2	-18.1	-15.9	-15.0	-14.2	-13.4	
20-Apr-99	-20.3	-20.8	-21.0	-20.9	-20.6	-19.8	-18.0	-16.0	-15.1	-14.4	-13.6	
26-Apr-99	-18.8	-20.0	-20.3	-20.2	-19.9	-19.3	-17.8	-16.0	-15.2	-14.5	-13.8	-13.2
4-May-99	-17.6	-18.7	-19.0	-19.2	-19.1	-18.8	-17.6	-16.0	-15.3	-14.6	-13.9	-13.3
11-May-99	-15.3	-17.0	-17.7	-18.1	-18.3	-18.1	-17.3	-15.9	-15.2	-14.6	-14.0	-13.5
18-May-99	-10.5	-13.7	-15.3	-16.4	-17.0	-17.2	-16.9	-15.7	-15.2	-14.6	-14.1	-13.6
25-May-99	-8.0	-11.2	-13.0	-14.4	-15.4	-16.0	-16.2	-15.5	-15.1	-14.6	-14.1	-13.6
1-Jun-99	-6.2	-9.5	-11.2	-12.7	-13.8	-14.7	-15.5	-15.2	-14.8	-14.5	-14.0	-13.6
8-Jun-99	-1.9	-4.7	-7.7	-10.1	-11.9	-13.3	-14.6	-14.7	-14.5	-14.2	-13.9	-13.6
15-Jun-99	-1.3	-3.5	-5.9	-8.1	-9.9	-11.5	-13.6	-14.2	-14.2	-14.0	-13.7	-13.5
22-Jun-99	-0.4	-2.5	-4.7	-6.7	-8.4	-10.1	-12.4	-13.6	-13.7	-13.7	-13.5	-13.3
29-Jun-99	0.3	-1.8	-3.7	-5.5	-7.1	-8.7	-11.1	-12.6	-13.0	-13.1	-13.2	-13.1
5-Jul-99	2.1	-1.4	-3.2	-4.9	-6.5	-8.0	-10.6	-12.2	-12.6	-12.8	-13.0	-12.9
13-Jul-99	3.1	-0.8	-2.6	-4.3	-5.8	-7.3	-9.9	-11.5	-12.1	-12.4	-12.6	-12.7
20-Jul-99	2.4	-0.6	-2.2	-3.7	-5.2	-6.7	-9.2	-11.0	-11.6	-11.9	-12.2	-12.4
27-Jul-99	3.1	-0.4	-1.9	-3.3	-4.7	-6.1	-8.6	-10.4	-11.0	-11.4	-11.8	-12.0
3-Aug-99	3.5	-0.2	-1.7	-3.0	-4.3	-5.7	-8.1	-10.0	-10.6	-11.1	-11.5	-11.7
10-Aug-99	3.6	0.0	-1.5	-2.8	-4.0	-5.3	-7.7	-9.6	-10.2	-10.7	-11.2	-11.5
17-Aug-99	3.2	0.2	-1.3	-2.5	-3.7	-5.0	-7.3	-9.2	-9.9	-10.4	-10.9	-11.1
24-Aug-99	1.1	0.0	-1.2	-2.3	-3.4	-4.7	-7.0	-8.8	-9.5	-10.1	-10.5	-10.9
7-Sep-99	0.0	-0.3	-0.1	-0.6	-1.5	-2.4	-4.6	-6.6	-7.5	-8.4	-9.1	-9.6
14-Sep-99	-0.6	-0.6	-0.2	-0.9	-1.6	-2.4	-4.4	-6.3	-7.3	-8.1	-8.8	-9.3
21-Sep-99	-1.3	-1.8	-1.5	-1.4	-1.9	-2.5	-4.3	-6.1	-7.0	-7.9	-8.6	-9.1
28-Sep-99	-2.4	-1.6	-1.7	-2.0	-2.3	-2.8	-4.3	-5.9	-6.8	-7.6	-8.3	-8.8
5-Oct-99	-10.1	-6.9	-4.3	-3.1	-3.0	-3.1	-4.3	-5.8	-6.7	-7.4	-8.1	-8.7
12-Oct-99	-14.6	-8.7	-6.2	-4.8	-4.2	-4.0	-4.5	-5.8	-6.6	-7.3	-7.9	-8.4
19-Oct-99	-15.7	-14.1	-10.2	-7.0	-5.7	-5.0	-4.9	-5.8	-6.4	-7.1	-7.7	-8.2
26-Oct-99	-16.5	-15.6	-12.1	-9.1	-7.6	-6.6	-5.7	-6.0	-6.6	-7.1	-7.7	-8.1
2-Nov-99	-18.9	-16.9	-14.6	-11.4	-9.5	-8.1	-6.5	-6.4	-6.7	-7.2	-7.7	-8.1
9-Nov-99	-25.9	-22.1	-16.9	-12.7	-10.8	-9.4	-7.5	-6.9	-7.0	-7.4	-7.7	-8.1
16-Nov-99	-24.7	-21.6	-17.0	-13.5	-11.8	-10.6	-8.4	-7.4	-7.4	-7.6	-7.9	-8.2
23-Nov-99	-17.4	-19.1	-17.6	-15.2	-13.4	-11.8	-9.3	-8.1	-7.9	-7.9	-8.1	-8.3
30-Nov-99	-25.6	-19.3	-16.4	-14.7	-13.5	-12.4	-10.2	-8.7	-8.4	-8.2	-8.3	-8.4
7-Dec-99	-28.8	-25.7	-21.0	-17.0	-14.9	-13.3	-10.8	-9.3	-8.9	-8.6	-8.6	-8.6
13-Dec-99	-30.5	-27.3	-23.4	-19.5	-17.1	-15.0	-11.7	-9.9	-9.3	-9.0	-8.9	-8.8
22-May-00	-3.3	-10.4	-11.9	-13.8	-14.9	-15.7	-16.7	-16.7	-16.4	-16.0	-15.5	-15.0
29-May-00	3.3	-9.5	-11.7	-13.2	-14.1	-14.9	-15.9	-16.1	-16.0	-15.7	-15.3	-14.9
6-Jun-00	4.3	-5.8	-9.3	-11.7	-13.0	-13.9	-15.2	-15.5	-15.5	-15.3	-15.1	-14.7
16-Jun-00	16.3	6.8	2.5	-1.8	-5.7	-8.8	-13.1	-14.6	-14.8	-14.9	-14.7	-14.5
26-Jun-00	15.8	5.5	2.0	-1.1	-3.5	-5.8	-10.2	-12.8	-13.6	-14.0	-14.1	-14.1
4-Jul-00	7.5	2.9	1.6	-0.8	-2.9	-4.8	-8.8	-11.5	-12.5	-13.1	-13.5	-13.6
11-Jul-00	7.1	3.2	-1.7	-6.6	-10.9	-13.5	-15.0	-15.3	-15.5	-15.6	-15.3	-15.1
18-Jul-00	4.8	3.0	-1.5	-5.9	-10.0	-12.5	-14.4	-14.8	-15.1	-15.3	-15.1	-15.0
19-Sep-00	-6.1	-3.8	-1.5	-1.4	-1.9	-2.6	-4.6	-6.5	-7.4	-8.3	-9.0	-9.5
26-Sep-00	-10.4	-5.6	-3.5	-2.6	-2.6	-3.0	-4.6	-6.3	-7.2	-8.1	-8.7	-9.3
10-Oct-00	-9.4	-10.0	-7.3	-5.5	-5.0	-4.7	-5.1	-6.3	-7.0	-7.7	-8.4	-8.9
10-Nov-00	-19.4	-19.0	-16.4	-13.1	-11.4	-10.1	-8.2	-7.6	-7.7	-8.0	-8.3	-8.6
27-Apr-01	-17.5	-18.2	-20.1	-21.9	-22.4	-22.4	-21.3	-19.5	-18.5	-17.4	-16.5	-15.8
22-May-01	-0.2	-8.9	-12.0	-15.1	-16.7	-17.8	-18.7	-18.3	-17.8	-17.2	-16.6	-16.1
18-Jun-01	6.4	1.7	-0.8	-3.6	-6.3	-8.6	-12.6	-14.9	-15.4	-15.7	-15.6	-15.5
19-Jul-01	18.4	5.9	0.0	-1.8	-3.5	-5.1	-8.4	-10.8	-11.9	-12.7	-13.2	-13.5
21-Aug-01	2.3	0.0	0.0	-1.0	-2.3	-3.5	-6.3	-8.6	-9.6	-10.5	-11.2	-11.7
14-Sep-02	3.5	-0.1	-0.6	-1.5	-2.5	-3.5	-6.0	-8.1	-9.1	-10.0		
23-Oct-02	-6.8	-6.7	-6.7	-6.6	-6.6	-6.5	-6.8	-7.6	-8.2	-8.9	-9.5	-10.0
16-Nov-02	-19.4	-17.0	-14.8	-13.1	-11.6	-10.3	-8.8	-8.5	-8.8	-9.1	-9.5	-9.8
18-Dec-02	-22.1	-19.3	-18.7	-18.2	-17.5	-16.6	-14.0	-11.9	-11.2	-10.8	-10.5	-10.5
10-Feb-03	-31.7	-29.2	-27.1	-25.4	-23.8	-22.1	-18.8	-16.1	-15.0	-14.1	-13.5	-13.0
11-Mar-03	-25.5	-29.6	-27.6	-26.6	-25.7	-24.7	-21.7	-18.7	-17.3	-16.2	-15.2	-14.5
17-Apr-03	-21.6	-24.8	-25.1	-24.9	-24.5	-23.9	-22.3	-20.2	-19.1	-18.0	-17.1	-16.3
15-May-03	-6.1	-13.6	-15.6	-16.9	-18.0	-18.8	-19.7	-19.3	-18.8	-18.2	-17.6	-17.0
17-Jun-03	8.2	-0.3	-2.9	-5.8	-8.3	-10.5	-13.8	-15.5	-15.4	-15.9	-16.2	-16.2

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #5

TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10	Bead # 11	Bead # 12
Installation Depth Below Collar (M)	0.2	-0.3	-1.3	-2.3	-3.3	-4.3	-5.3	-5.8	-6.3	-6.8	-7.3	-7.8
Calibration Factors	-0.01	-0.07	-0.01	-0.12	0.03	0.03	-0.02	-0.06	0.02	-0.02	-0.12	0.02

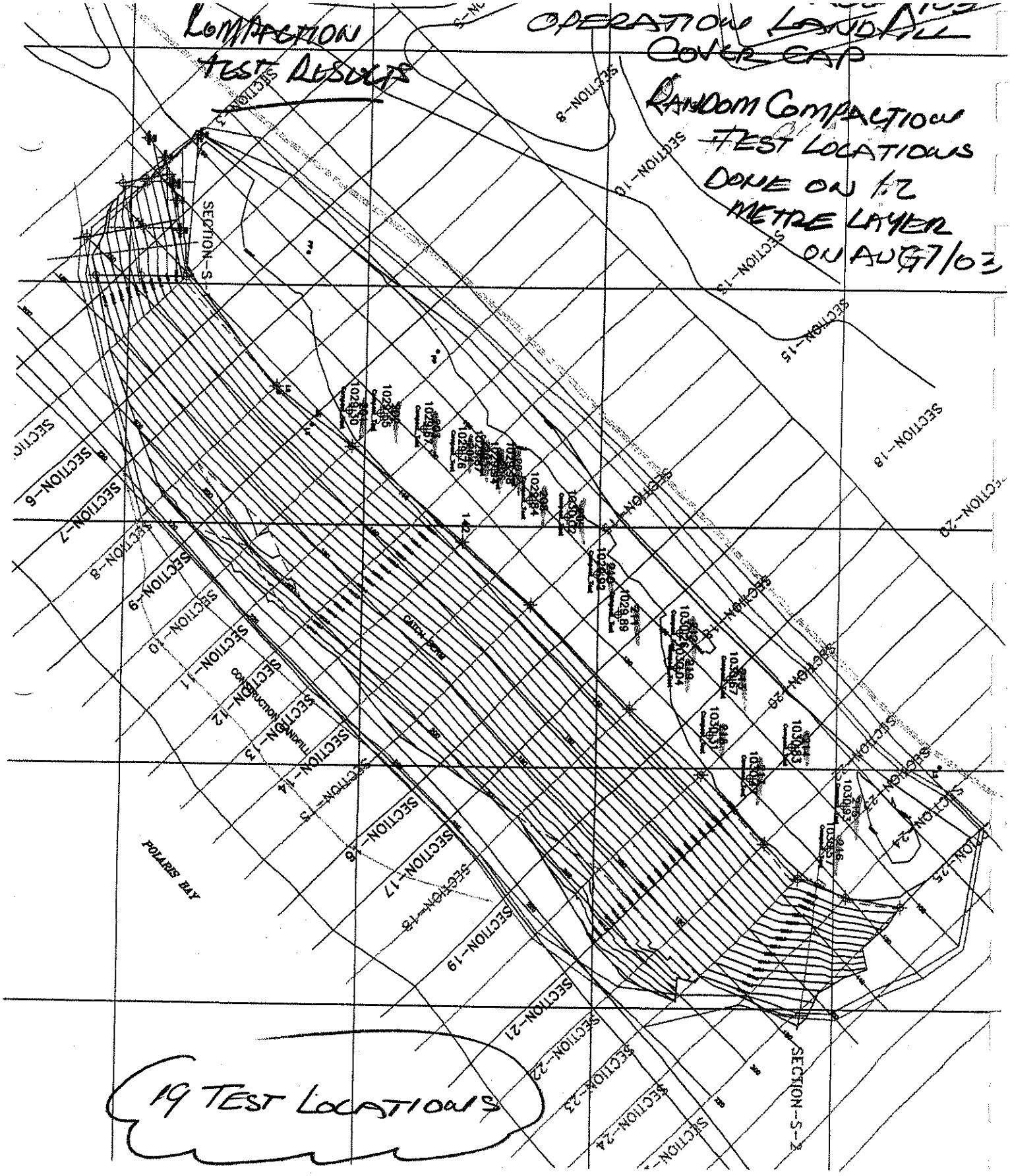
Temperatures

20-Mar-99	-19.9	-23.6	-25.1	-23.9	-21.4	-18.5	-15.5	-14.6	-13.9	-13.1	-12.4	
22-Mar-99	-19.0	-23.5	-24.5	-23.6	-21.4	-18.6	-15.7	-14.8	-14.1	-13.2	-12.5	
23-Mar-99	-19.1	-23.3	-24.3	-23.4	-21.3	-18.6	-15.8	-14.9	-14.1	-13.2	-12.6	
24-Mar-99	-20.5	-23.1	-24.1	-23.3	-21.3	-18.7	-15.8	-14.9	-14.2	-13.3	-12.7	
25-Mar-99	-21.6	-23.0	-23.9	-23.1	-21.2	-18.7	-15.9	-15.0	-14.3	-13.3	-12.7	
26-Mar-99	-22.6	-23.5	-23.7	-23.0	-21.2	-18.7	-16.0	-15.1	-14.3	-13.4	-12.7	
27-Mar-99	-24.9	-23.9	-23.6	-22.9	-21.1	-18.7	-16.0	-15.1	-14.3	-13.4	-12.8	
29-Mar-99	-29.1	-25.0	-23.6	-22.7	-21.0	-18.7	-16.1	-15.2	-14.5	-13.5	-12.8	
30-Mar-99	-25.6	-26.2	-23.8	-22.6	-21.0	-18.8	-16.2	-15.3	-14.5	-13.6	-12.9	
6-Apr-99	-18.8	-24.6	-24.4	-22.7	-20.8	-18.8	-16.5	-15.6	-14.9	-14.0	-13.2	
13-Apr-99	-20.1	-23.1	-23.3	-22.3	-20.8	-18.9	-16.7	-15.9	-15.2	-14.3	-13.5	
20-Apr-99	-16.6	-20.7	-21.9	-21.8	-20.6	-18.9	-16.8	-16.1	-15.5	-14.5	-13.7	
26-Apr-99	-16.4	-19.8	-21.2	-21.0	-20.2	-18.8	-17.0	-16.3	-15.6	-14.8	-14.0	-13.3
4-May-99	-14.4	-18.1	-19.9	-20.3	-19.8	-18.7	-17.1	-16.4	-15.8	-15.0	-14.2	-13.6
11-May-99	-8.9	-16.1	-18.6	-19.5	-19.3	-18.5	-17.1	-16.5	-16.0	-15.1	-14.4	-13.8
18-May-99	-6.0	-11.8	-16.1	-18.2	-18.7	-18.2	-17.0	-16.5	-16.0	-15.3	-14.6	-13.9
25-May-99	-5.0	-9.2	-13.6	-16.5	-17.8	-17.7	-16.9	-16.5	-16.1	-15.4	-14.7	-14.1
1-Jun-99	2.4	-6.3	-11.5	-14.9	-16.8	-17.1	-16.7	-16.4	-16.0	-15.4	-14.8	-14.2
8-Jun-99	3.3	-3.3	-9.0	-13.2	-15.6	-16.4	-16.4	-16.2	-15.9	-15.4	-14.8	-14.2
15-Jun-99	7.1	-2.0	-7.2	-11.5	-14.5	-15.7	-16.0	-16.0	-15.7	-15.3	-14.8	-14.3
22-Jun-99	2.4	-0.8	-5.4	-10.1	-13.3	-14.9	-15.6	-15.6	-15.5	-15.2	-14.8	-14.3
29-Jun-99	6.7	1.7	-3.8	-8.3	-11.9	-13.8	-15.0	-15.1	-15.1	-14.9	-14.7	-14.3
5-Jul-99	8.2	4.9	-1.1	-7.3	-11.2	-13.2	-14.6	-14.8	-14.9	-14.8	-14.6	-14.2
13-Jul-99	7.5	5.0	-1.5	-6.4	-10.2	-12.5	-14.0	-12.2	-14.5	-14.5	-14.4	-14.1
20-Jul-99	6.4	3.6	-1.0	-5.6	-9.4	-11.7	-13.5	-13.9	-14.1	-14.2	-14.2	-14.0
27-Jul-99	9.8	4.3	-0.8	-5.0	-8.7	-11.0	-12.9	-13.4	-13.7	-13.9	-14.0	-13.9
3-Aug-99	10.0	5.0	-0.5	-4.6	-8.1	-10.5	-12.4	-12.9	-13.2	-13.6	-13.7	-13.7
10-Aug-99	10.3	4.8	-0.4	-4.2	-7.6	-9.9	-11.9	-12.5	-12.9	-13.3	-13.5	-13.5
17-Aug-99	6.2	4.0	-0.2	-3.9	-7.2	-9.5	-11.5	-12.1	-12.5	-12.9	-13.2	-13.3
24-Aug-99	1.5	1.6	-0.2	-3.6	-6.8	-9.1	-11.1	-11.7	-12.1	-12.6	-12.9	-13.1
31-Aug-99	-0.3	0.2	-0.3	-3.4	-6.5	-8.7	-10.7	-11.4	-11.8	-12.3	-12.7	-12.9
7-Sep-99	0.0	-0.2	-0.4	-3.3	-6.2	-8.4	-10.4	-11.0	-11.5	-12.0	-12.4	-12.7
15-Sep-99	-0.7	-0.3	-0.5	-3.2	-5.9	-8.1	-10.1	-10.7	-11.1	-11.7	-12.2	-12.5
21-Sep-99	-1.3	-0.8	-0.7	-3.1	-5.7	-7.8	-9.8	-10.4	-10.9	-11.5	-12.0	-12.3
28-Sep-99	-1.9	-0.7	-0.9	-3.1	-5.5	-7.6	-9.5	-10.1	-10.6	-11.2	-11.8	-12.1
5-Oct-99	-8.8	-4.1	-1.5	-3.1	-5.4	-7.4	-9.2	-9.9	-10.3	-11.0	-11.5	-11.9
12-Oct-99	-13.0	-6.3	-3.2	-3.5	-5.3	-7.2	-9.0	-9.6	-10.1	-10.8	-11.3	-11.6
19-Oct-99	-15.4	-12.1	-5.8	-4.4	-5.4	-6.9	-8.7	-9.4	-9.9	-10.5	-11.1	-11.5
26-Oct-99	-16.5	-14.2	-8.6	-6.2	-5.8	-7.0	-8.6	-9.2	-9.7	-10.3	-10.9	-11.3
2-Nov-99	-18.4	-16.4	-11.4	-7.8	-6.6	-7.2	-8.5	-9.1	-9.5	-10.2	-10.7	-11.2
9-Nov-99	-25.5	-20.7	-13.2	-9.4	-7.6	-7.5	-8.5	-9.0	-9.4	-10.0	-10.5	-11.0
16-Nov-99	-24.3	-20.6	-14.4	-10.9	-8.7	-8.1	-8.6	-9.4	-9.4	-9.9	-10.5	-10.9
23-Nov-99	-18.2	-19.8	-16.5	-12.3	-9.8	-8.7	-8.8	-9.1	-9.4	-9.9	-10.4	-10.7
30-Nov-99	-24.7	-18.8	-16.0	-13.2	-10.8	-9.4	-9.1	-9.3	-9.5	-9.9	-10.3	-10.7
7-Dec-99	-28.4	-25.4	-18.5	-14.1	-11.5	-10.1	-9.5	-9.5	-9.6	-10.0	-10.3	-10.6
13-Dec-99	-30.3	-27.5	-21.4	-15.9	-12.6	-10.7	-9.9	-9.8	-9.9	-10.1	-10.4	-10.6
22-May-00	-5.2	-11.4	-14.4	-16.8	-18.3	-18.5	-18.0	-17.7	-17.3	-16.5	-15.8	-15.2
29-May-00	1.0	-10.7	-13.6	-15.9	-17.4	-18.0	-17.7	-17.5	-17.1	-16.5	-15.9	-15.2
6-Jun-00	2.7	-7.0	-12.0	-14.9	-16.6	-17.3	-17.4	-17.2	-16.9	-16.4	-15.9	-15.3
16-Jun-00	13.3	-1.0	-7.8	-12.5	-15.3	-16.4	-16.8	-16.8	-16.6	-16.2	-15.8	-15.3
26-Jun-00	13.9	3.3	-3.8	-9.5	-13.4	-15.3	-16.2	-16.3	-16.2	-16.0	-15.7	-15.2
4-Jul-00	7.5	2.3	-2.1	-7.8	-12.0	-14.3	-15.6	-15.9	-15.9	-15.8	-15.5	-15.2
11-Jul-00	7.6	3.5	1.8	-0.9	-2.5	-4.3	-7.8	-10.6	-11.6	-12.3	-13.0	-13.0
18-Jul-00	5.2	3.2	1.6	-0.8	-2.3	-3.9	-7.2	-9.9	-10.9	-11.6	-12.4	-12.5
19-Sep-00	-5.8	-2.2	-1.4	-3.6	-6.2	-8.3	-10.4	-11.0	-11.5	-12.1	-12.6	-12.9
26-Sep-00	-9.7	-4.3	-2.3	-3.8	-6.0	-8.1	-10.1	-10.7	-11.2	-11.9	-12.4	-12.7
10-Oct-00	-9.1	-8.6	-5.4	-5.1	-6.1	-7.8	-9.6	-10.2	-10.7	-11.3	-11.9	-12.3
10-Nov-00	-19.2	-18.2	-13.8	-10.6	-8.9	-8.6	-9.3	-9.7	-10.0	-10.6	-11.1	-11.5
27-Apr-01	-17.9	-20.2	-23.2	-23.8	-22.9	-21.4	-19.3	-18.5	-17.8	-16.8	-15.8	-15.1
22-May-01	-1.9	-11.5	-16.4	-19.3	-20.4	-20.2	-19.2	-18.7	-18.1	-17.3	-16.5	-15.7
18-Jun-01	4.7	-0.5	-6.4	-11.6	-15.3	-17.0	-17.7	-17.7	-17.5	-17.1	-16.6	-16.0
19-Jul-01	17.4	4.8	-1.8	-6.4	-10.3	-12.9	-14.9	-15.4	-15.6	-15.8	-15.8	-15.5
21-Aug-01	2.5	0.0	-0.7	-4.3	-7.7	-10.2	-12.4	-13.0	-13.5	-14.0	-14.4	-14.5
14-Sep-02	2.6	-0.1	-1.2	-4.0	-6.8	-9.1	-11.1	-11.8	-12.3	-13.0	-13.5	-13.8
23-Oct-02	-6.7	-6.6	-6.3	-6.2	-6.7	-8.0	-9.7	-10.3	-10.8	-11.5	-12.1	-12.5
16-Nov-02	-18.7	-16.1	-12.6	-9.8	-8.5	-8.6	-9.6	-10.0	-10.4	-10.9	-11.6	-11.9
18-Dec-02	-21.5	-19.5	-18.6	-16.3	-13.6	-11.7	-10.8	-10.7	-10.8	-10.9	-11.3	-11.6
10-Feb-03	-30.9	-28.8	-25.6	-21.9	-18.5	-16.1	-14.2	-13.6	-13.2	-12.8	-12.5	-12.4
11-Mar-03	-27.7	-29.1	-27.1	-24.7	-21.6	-18.7	-16.2	-15.5	-14.9	-14.1	-13.6	-13.2
17-Apr-03	-22.8	-25.5	-25.4	-24.2	-22.5	-20.6	-18.4	-18.4	-16.8	-15.9	-15.1	-14.5
15-May-03	-8.9	-15.5	-18.0	-19.8	-20.5	-20.0	-18.8	-18.2	-17.6	-16.8	-16.0	-15.3
17-Jun-03	5.3	-2.1	-7.4	-11.8	-15.0	-16.6	-17.3	-17.3	-17.1	-16.8	-16.3	-15.8

11552Q03A.cdr

a) Plate load tests should be completed on each lift to verify that adequate compaction has been achieved. b) The plate load tests should be completed at a frequency of one test for every 5,000 square metres. A minimum 25 mm thick, round steel plate with an area of 0.0929 square metres (1 square foot) (diameter of plate = 0.344 m) shall be placed on the surface of the compacted cover material. The edge of the plate should be flat not rounded. Prior to starting the test, the surface of the test location (over an area with a diameter of 0.6 m) shall be groomed smooth using the steel plate. c) A force of 13.3 kN (3,000 lbs) shall be applied to the plate (located in the center of the smooth area) in a manner that the load reaches the soil as a static load, without impact, fluctuation or eccentricity. The load shall be applied for a period of 5 minutes. The plate shall be removed without disturbing the soil around the edge of the plate. The displacement of the soil shall be measured at four equidistant locations along the edge of the test area to the nearest 1 mm. All four displacement measurements at each test location should be recorded as well as the average displacement. The average displacement shall not exceed 10.0 mm for any test. e) For each test location, the following information shall be recorded: date, time, material type, lift number, location (co-ordinates or shown on a plan drawing), applied load, the four displacement measurements, the average displacement, pass/fail compaction requirement. f) If a plate load test fails, the area between passing plate load tests should be recompacted and retested until the compaction standard is achieved. g) All test results are to be forwarded to the Owner for review and approval after each lift is tested and before subsequent lifts are placed.

T/C & SDC will address



OP. LANDFILL COMPACTION TEST

CC IAN DICKIE TECKCOMI
HERB MCLEAN SLE&C

Weather - Cold - 4°C
Windy

OPERATIONAL LAND FILL COMPACTION TEST LOCATIONS

	Point Num	Northing	Easting	Elevation	Descriptor/Name
1	201	593.460	1252.379	1029.299	Quey 7/03
2	202	606.115	1253.433	1029.552	"
3	203	623.709	1259.794	1029.669	
4	204	638.672	1270.042	1029.759	
5	205	648.079	1271.376	1029.873	
6	206	654.436	1276.802	1029.943	
7	207	659.050	1275.635	1029.983	
8	208	670.131	1289.238	1029.837	
9	209	685.956	1296.020	1030.015	
10	210	699.009	1319.504	1029.924	
11	211	707.997	1336.406	1029.889	
12	212	733.266	1344.157	1030.255	
13	213	754.039	1363.459	1030.666	
14	214	781.081	1390.836	1030.831	
15	215	803.700	1415.462	1030.927	
16	216	797.234	1433.457	1030.572	
17	217	763.152	1404.141	1030.474	
18	218	745.922	1386.018	1030.305	
19	219	732.255	1358.949	1030.043	
20					

3000 lb / 12" dia

Time Start	Time End	Plate displacement
3:00	3:10	0 0 0
3:12	3:20	0 0 2
3:20	3:27	0 0 0
3:27	3:35	2 0 0
3:35	3:42	2 0 0
3:42	3:50	1 0 2
3:50	3:57	0 0 0
3:57	4:05	0 0 2
4:05	4:12	3 0 0
4:12	4:19	2 0 0
4:19	4:26	0 0 0
4:26	4:35	0 0 0
4:35	4:42	2 0 0
4:42	4:50	0 0 0
4:50	4:58	0 0 0
5:05	5:12	2 3 0
5:12	5:19	0 0 0
5:19	5:26	0 0 0
5:26	5:35	0 0 0

TEST MATERIAL

NEW QUARRY BLASTED ROCK

SURV

FRI 8 AUG/03

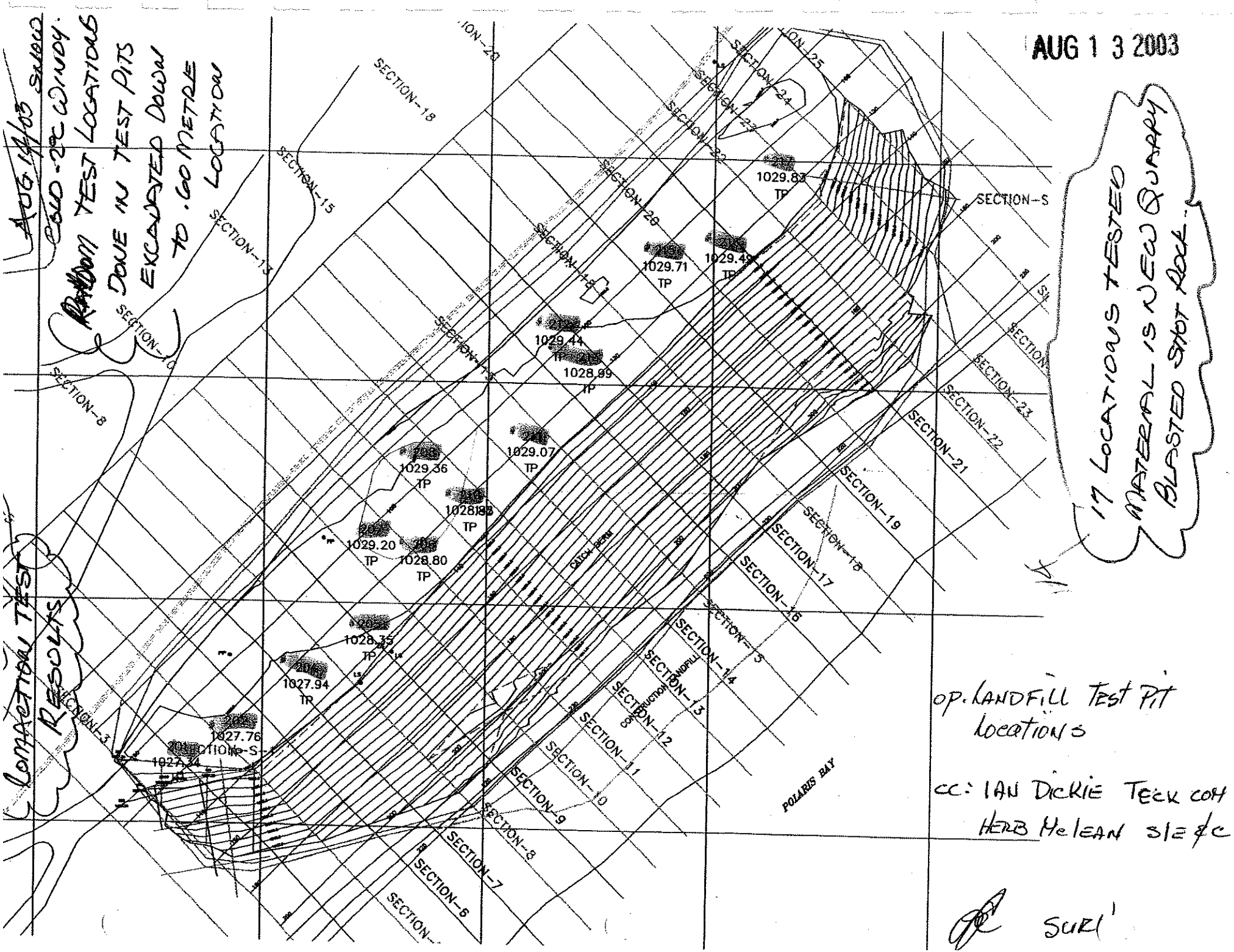
C.C. IAN DICKIE TECK Coming

HERB McLEAN SLEMC

TEST WERE DONE WITH A 3000 LB WEIGHT

@ 12" dia

Aug 11/03



op. LANDFILL TEST PIT LOCATIONS

cc: IAN DICKIE TECK COMINCO
HERB HELEAN SIE &C

SURI

Operational LANDFILL
Test Pit Locations

3000LB DT

	Point Num	Northing	Easting	Elevation	Descriptor/Name
1	201	527.148	1163.258	1027.336	TP
2	202	539.217	1188.929	1027.756	TP
3	XXX	XXX	XXX	XXX	XXX
4	204	563.479	1220.310	1027.944	TP
5	205	583.413	1248.532	1028.349	TP
6	206	619.386	1271.940	1028.797	TP
7	207	625.825	1248.996	1029.203	TP
8	208	660.925	1271.591	1029.362	TP
9	XXX	XXX	XXX	XXX	XXX
10	210	641.966	1292.397	1028.848	TP
11	211	669.164	1319.550	1029.070	TP
12	212	719.456	1331.364	1029.439	TP
13	213	705.308	1344.190	1028.990	TP
14	XXX	XXX	XXX	XXX	
15	215	752.686	1377.931	1029.715	TP
16	216	756.761	1406.586	1029.486	TP
17	217	792.912	1428.963	1029.833	TP
18					

AUG 14/03

Time Start	Time End	Displacement 1	2	3	4
3:40	3:18	0	0	0	0
3:18	3:25	0	0	2m	0
3:25	3:32	2m	0	0	0
3:32	3:39	2m	2m	2m	0
3:39	3.46	0	0	0	0
3.46	3.54	0	0	0	0
3.54	4.04	water in pit			
4.04	4:10	water in pit			
4:10	4:17	0	0	2m	0
4.18	4.25	0	0	0	0
4:25	4.33	2	3	0	0
4.33	4:39	0	0	0	0
4.39	4:46	0	2	0	0
4:46	4:54	3	0	0	0
4:54	5.06	0	2	0	0
5:06	5.16	0	0	0	0

SURV
TUES: 12 AUGUST/03

cc: IAN DICKIE TEEK COMINCO
HERB HOLGAN SLEDC

APPENDIX C

Photo 1
Typical segregated shale surface on landfill bench top.

Photo 2
Panoramic view of top of landfill on August 19, 2003.

Photo 3
View of cut in shale stockpile at borrow pit.

Photo 4
View of shale stockpile at borrow pit.

Photo 5
Graded slope in area of hydrocarbon remediation upslope of Operational Landfill on August 20, 2003. Soils are reworked locally derived soils.

Photo 6
Locally derived soils upslope of Operational Landfill on August 20, 2003.

Photo 7
Panoramic view of slope above landfill, Looking west on August 19, 2003.

Photo 8
Typical view of graded slope downslope of bench at northeast end of operational landfill on August 20, 2003.

Photo 9
Rutting in of top of landfill bench downslope of June 2003 hydrocarbon remediation site on August 19, 2003.

Photo 10
Ponded water on top of landfill at southwest end on August 20, 2003. Ponding occurs where reworked native materials are mixed with shale (below hydrocarbon clean-up) and where fines have been tracked onto the landfill from access roads.

Photo 11
Typical view of graded slope downslope of bench at southwest end looking northeast on August 20, 2003.