ECHO BAY MINES LTD.
9818 International Airport
Edmonton, Alberta
T5J 2T2

October 14, 2002

Our File: NWB1LUP0008 Annual02
Your File: Water Register
NWB1LUP0008

Executive Director
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0

Dear Sir:

RE: Echo Bay Mines Ltd., Lupin Gold Mine, Contwoyto Lake, NT.; Water Licence NWB1LUP0008; 2002 Annual Geotechnical Inspection

As partial fulfillment of Part D, Item 6(g) of Water Licence NWB1LUP0008, please find enclosed three copies of the final Report entitled "**2002 Geotechnical Inspection of Perimeter Tailings Dams; Lupin Mine, Nunavut".** Further to the emailed PDF version that was sent on October 10, 2002, this final report contains all the figures that were excluded from the electronic copy due to file size.

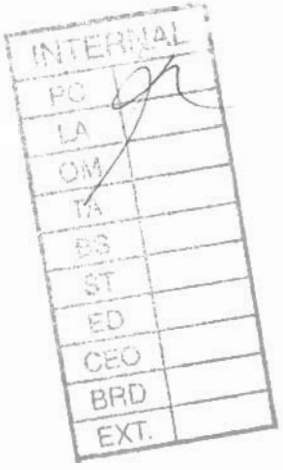
If you have any questions as to the above or attached reports, please feel free to contact me at (780) 890-8794, Lupin.

Yours truly,

D. Hohnstein
Environmental Coordinator, Lupin

Incl.
3 Copies of Final Report

cc H. Ducasse
B. Danyluk
Mill Operations



021014LUP 2002 Annual Geotechnical Inspection. LAE

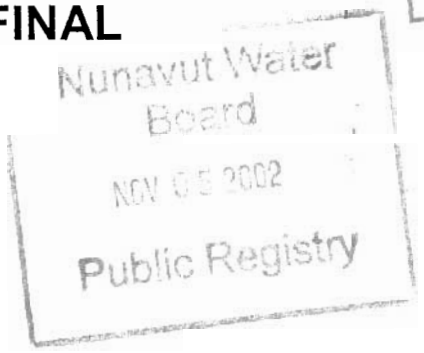
BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

ECHO BAY MINES LTD.

2002 GEOTECHNICAL INSPECTION OF PERIMETER TAILINGS DAMS

LUPIN MINE
NUNAVUT

FINAL



PROJECT NO.: 0256-004-02
DATE: OCOBER 9, 2002

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BGC ENGINEERING INC.
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Project No. 0256-004-02
October 9, 2002

Mr. Dave Hohnstein
Echo Bay Mines Ltd.
Lupin Operation
9818 International Airport
Edmonton, Alberta
T5J 2T2

Re: 2002 Report on Annual Geotechnical Inspection
Perimeter Tailings Dams, Lupin Mine, Nunavut

Dear Dave:

Please find attached our final report on the annual geotechnical inspection of the perimeter tailings dams at Lupin Mine, which was carried out on August 12 and 13, 2002. As is the custom, a site inspection memo was left with you outlining items requiring maintenance.

Thank you to you and your staff for the hospitality shown during my site visit. If there are any questions regarding this report, please contact the undersigned at your convenience.

Yours truly,
BGC ENGINEERING INC.
per:

James W. Cassie, M.Sc., P.Eng.
Specialist Geotechnical Engineer
(direct line 403/250-5185 ext. 103)

encl.: Final Report

JWC/sf

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LIMITATIONS OF REPORT

This report was prepared by BGC Engineering Inc. (BGC) for Echo Bay Mines Ltd. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of report preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be based on it are the responsibility of such Third Parties. BGC Engineering Inc. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

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

4.0 FINDINGS AND CONCLUSIONS

The results of the inspection of each of the structures are presented on the following pages in standardised format, complemented by a selection of site photographs. Refer to Figure 2 for the location of each structure. Specific maintenance requirements are documented on each of the individual sheets and again in the summary memo provided in Appendix 1.

In general, the inspection confirms that the perimeter embankments are in good condition. Minor longitudinal cracking and some minor erosional gullies are visible at the toe of some of the dams, but no significant concerns are expressed at the current time.

Currently, four thermistors are installed in Dams 1A and 2 and some recommended cables are still to be installed. Four cables are also monitored in Dam 4. Over the last year, the subsurface thermal regime has remained subzero with no signs of warming at depth. Continued vigilance with regards to thermistor monitoring should be undertaken, especially when summer pond levels are high. It should be noted and stressed that subsurface thermal data should be input and plotted immediately after its collection. The objective of collecting this data is to provide proactive assessment of potentially deteriorating performance of the dams, and hence, the data should be interpreted immediately after its collection.

In addition to monitoring of instrumentation, visual inspection of the downstream toe area of all Pond 2 dams should be carried out to determine if any seepage is being initiated as pond levels increase. Should the Pond 2 level rise such that water is impounded by Dams #1B and #1C, then visual inspection of the toe of these dams should also be initiated.

Figures 3 and 4 provide a graphical representation of the 2001 and 2002 (to-date) monthly temperature and precipitation values versus the long-term mean values (which have been recorded since 1982). Figure 3 indicates that the 2001 temperature values were slightly warmer than typical in the initial portion of the year. The 2002 readings were colder than average except for the months of June and July when typical values were recorded. Figure 4 illustrates that precipitation in 2001 was significantly wetter in the months of March to May followed by a drier than typical June. Overall, the total precipitation in 2001 amounted to 286 mm, approximately 7% lower than the mean value of 309 mm. Precipitation values for 2002 were variable versus the monthly mean values but both June and July were wetter than typical.

3.0 INSPECTION CONDITIONS AND APPROACH

3.1 General

Mr. Jim Cassie, P. Eng., conducted the inspection on August 12, 2002, commencing at about 12:30 a.m. and concluding the next day. The temperature during the inspection was approximately 5°C under cloudy, but generally clear, visual conditions. Some rain fell on the morning of August 13th. In the week preceding the inspection (since Aug. 6th), approximately 38 mm of rain had fallen, including 29 mm on a single day.

At the time of the inspection, tailings were being deposited on the southern side of Cell 3, uphill from Dam 6. Both of the sets of decant siphon pipes at J-dam (Pond 1 water into Pond 2) and Dam 1A (Pond 2 water discharge to the environment) were in use during the inspection.

Each of the embankments was inspected on foot. A camera and Dictaphone were used to record pertinent observations concerning both the physical conditions and seepage. In general, the crest and upstream slope of a given embankment were inspected first, followed by inspection of the downstream slope by walking along the toe of the slope. The transcribed Dictaphone notes and photographs constitute the field record (the Field Memo which remains in the office of BGC) and provide the basis for this formal report. Before leaving the site, a summary memo regarding tailings area maintenance items was prepared and reviewed with Mr. Dave Hohnstein from Echo Bay; this memo is attached in Appendix 1. Messrs Cassie and Hohnstein also toured the TCA on the morning August 15th to discuss the inspection findings.

3.2 Instrumentation

Seacor Environmental Engineering Inc. previously installed four thermistor strings in Dam #4 in October 1995, along with several other cables in the reclaimed tailings area. In addition, BGC (2000)[2] outlines the installation details of an additional four thermistor cables in Dams 1A and 2. Long term plots of the instrumentation data still being monitored by site staff are provided in Appendix 2. An interpretation of this data is provided on the individual dam sheets.

[2] BGC Engineering Inc. 2000. Thermistor Installation Program, Dam 1A, Dam 2, M Dam, Cell 1 and Esker, Lupin Mine, Nunavut. Report submitted to Echo Bay Mines Ltd., Project No. 0256-002-01, December 11, 2000, 7 pages plus figures and appendices.

DAM 1A

LOCATION:	West side of Pond 2.
FUNCTION:	Major perimeter closure for water retention; carries siphon pipes for water decant system.
LENGTH:	+/- 250 m
MAX HEIGHT:	+/- 8 m above d/s tundra.
AS-BUILT ELEVATION:	486.268 m
CREST WIDTH AND CONDITION:	7 to 8 m; surfaced with esker material, but not travelled because of the siphons. One minor sinkhole noted on crest proximal to thermistor installation. No significant cracking evident; condition is good.
RIPRAP:	Run of Mine rockfill; broadly graded; good condition.
BACKSLOPE:	Approx. 1.5H:1V; variably armoured with cobbles and boulders; some runoff erosion rills present; no evidence of cracking.
TOE BERM:	Minor longitudinal cracking and slumping still occurring at oversteepended toe, adjacent to decant pipes.
SEEPAGE:	No evidence of seepage.
INSTRUMENTATION:	Thermistor D1A-00-1, just south of the mid-point of the dam, displayed an active layer of just less than 3 m in October 2001 and approximately 2 m depth by mid-September 2002. All nodes below active layer depth are subzero. Nodes below depth of 9 m (situated approximately below the embankment fill) are colder than –3°C with no signs of significant warming. Thermistor D1A-00-02 is located towards the north end of the dam. Active layers depths in excess of 3.3 m were recorded in October 2001 and mid-September 2002. No indications of warming at depth. Nodes below depth of 10 m appear to be colder than –3.5°C.

DAM 1A CONTINUED

MAINTENANCE RECOMMENDATIONS: Minor crest sinkhole to be backfilled. Downstream toe berm sideslope needs to be flattened to prevent recurrence of cracking.

CONCLUSIONS: The dam is in good condition with no evidence of seepage passing through or beneath the dam. Need to monitor instrumentation regularly and visually inspect downstream toe as Pond 2 level increases.

DAM 1B

LOCATION:	West side of Pond 2.
FUNCTION:	Minor perimeter closure for water retention; pond level is below dam base elevation thus currently functioning only as a road embankment.
LENGTH:	+/- 200 m
MAX HEIGHT:	+/- 2.5 m above d/s tundra.
AS-BUILT ELEVATION:	485.826 m
CREST WIDTH AND CONDITION:	5 to 6 m wide; surfaced with esker material so that this dam may also function as a roadway for access around the perimeter of the area. Crest condition is good.
RIPRAP:	Run of Mine rockfill; variable sizes; undulating; disturbed in areas but in good condition overall.
BACKSLOPE:	Approx. 1.5H:1V with minor runoff erosion rills and a toe-of-slope roadway berm. No cracking observed.
SEEPAGE:	No comment possible; no water head being retained by the structure.
MAINTENANCE RECOMMENDATIONS:	None currently required.
CONCLUSIONS:	The structure is in good condition; it should be monitored for seepage if Pond 2 rises sufficiently to place a water head against the dam.

DAM 1C

LOCATION:	West side of Pond 2.
FUNCTION:	Minor perimeter closure for water retention: currently retaining no water other than small puddles. Currently functioning only as a road embankment.
LENGTH:	+/- 230 m
MAX HEIGHT:	+/- 2.0 m above d/s tundra.
AS-BUILT ELEVATION:	485.88 m
CREST WIDTH AND CONDITION:	+/- 9 m wide; surfaced with esker material, so that this dam may also function as a roadway, although the downstream toe roadway appears more commonly used. Crest condition is good.
RIPRAP:	Run of Mine rockfill; some minor disturbances noted; overall condition satisfactory.
BACKSLOPE:	Approx. 3H:1V, smooth slope. Some erosional gullies formed. Access road berm appears in good condition.
SEEPAGE:	No comment possible; no water currently being retained by the structure.
MAINTENANCE RECOMMENDATIONS:	No maintenance required currently.
CONCLUSIONS:	The structure is in good condition; it should be monitored for seepage if Pond 2 rises sufficiently to place a water head against the dam.

DAM 2

LOCATION:	North end of Pond 2.
FUNCTION:	Major perimeter closure for water retention; natural pond downstream of the dam.
LENGTH:	+/- 350 m
MAX HEIGHT:	+/- 5.5 m above d/s tundra.
AS-BUILT ELEVATION:	486.305 m
CREST WIDTH AND CONDITION:	Approx. 6 m; surfaced with esker material and used as the primary traffic route. There is a toe-of-slope berm roadway along the northeast portion of the dam. Crest condition is good; no cracking is evident.
RIPRAP:	Run of Mine rock forms convex-upward, gently sloped upstream face; slight erosional scarp formed at higher water level; good condition.
BACKSLOPE:	Approx. 1.5H:1V with one significant erosion gulley near the north abutment. Minor longitudinal cracking at the toe of the access road berm.
SEEPAGE:	One small seepage discharge point again noted at the toe of the northeast abutment. In 1998, a survey shot of same seepage discharge point indicated that the point was higher in elevation than the upstream pond level. This seepage discharge appeared recently (according to site staff) in response to rainfall.
INSTRUMENTATION:	Thermistor D2-00-02 is located at the north end of the crest. Active layer depth was greater than 2.2 m in October 2001 and mid-September 2002. Temperatures at depth are subzero. Below 5 m depth (approximate bottom of embankment fill), temperatures are colder than –1.5°C. At depth, foundation zone appears to be cooling over the longer term.

DAM 2 CONTINUED

INSTRUMENTATION: Thermistor D2-00-03 is situated near the mid-point of the dam. Active layer depths of greater than 2 m in October 2001 and 3 m in August 2002. One warm temperature reading recorded on August 26, 2002 at a depth of 5 m. Following reading after that warm reading was subzero again. Unsure if reading was an error or if some seepage at this depth may have occurred.

MAINTENANCE RECOMMENDATIONS: Backfill one erosional gulley on the backslope, situated towards the north abutment. Monitor Thermistor D2-00-03 to ensure subzero conditions over the short term.

CONCLUSIONS: The dam is in satisfactory condition. Continue with vigilant monitoring of instrumentation and visual condition assessment.

DAM 3

LOCATION:	East end of now-covered tailings storage area, east of Cells 1 and 2.
FUNCTION:	Minor perimeter closure for tailings retention; Boomerang Lake downstream of the dam. The dam retains tailings covered with an esker material cap, thickened in 1995 by one meter using esker material.
LENGTH:	+/- 600 m
MAX HEIGHT:	+/- 2.5 m above d/s tundra.
AS-BUILT ELEVATION:	488.4 m
CREST WIDTH AND CONDITION:	Approx. 8 m; surfaced with esker material. Crest condition is good and no cracking is evident. Poorly constructed swale located at the southeast corner of the dam. Several remnant and new erosional gullies located on the east arm of the dam.
RIPRAP:	Inside slope buried with tailings and then covered over.
BACKSLOPE:	Variable in inclination; locally meets the shoreline of Boomerang Lake. Old cracks are now active where the dam intersects the lake shoreline, along the northwest arm. Some new, discontinuous cracks also noted on the east arm at the toe.
SEEPAGE:	None observed near the toe of the east arm of the dam.
MAINTENANCE RECOMMENDATIONS:	Replace poorly constructed swale with a properly graded swale, appropriately armoured to drain surface runoff. Backfill and grade over the erosional gullies situated along the east arm of the dam. Flatten the backslope along Boomerang Lake for the northwest part of the dam to prevent cracks from opening any further. Also grade and flatten the toe where cracks are present along the east arm.
CONCLUSIONS:	The dam is in good condition.

DAM 4

LOCATION: South end of Cell 4 for K Dam sub-pond.

FUNCTION: Perimeter closure for water retention at present; natural pond downstream of the dam at its west end.

LENGTH: +/- 900 m

MAX HEIGHT: +/- 6 m above u/s native ground elevation.

AS-BUILT ELEVATION: 489.586 m

CREST WIDTH AND CONDITION: Approximately 12 m wide crest width in good condition, no cracks found. Crest must have been regraded since last year given boulders on the edge of the upstream side.

RIPRAP: Run of Mine rockfill in generally good condition on upstream slope. Some construction machinery/dozer activity on the upstream side has disturbed the overall slope of the riprap.

BACKSLOPE: Esker sand; slope steeper in upper portion and flattens in the lower portion, approximately 2H:1V. Geogrid exposed in places. Some minor cracks parallel the contours in the lower portion of the slope (seen previously and not of concern), adjacent to the steep toe.

SEEPAGE: No apparent seepage but the head of water across the dam is relatively low. Temporary cofferdams, which were on the downstream side of dam, have been graded along the toe; the west end cofferdam remains. After pumping of the toe berm pond was undertaken, seepage into pond was coming from downstream lake side, not from the upstream side of the dam. This case has been previously observed.

INSTRUMENTATION: Four thermistors are currently monitored in Dam 4. From east to west across the crest, the four cables are numbered TD4-1 to –4.

Thermistor TD4-1 displayed just over 2 m of active layer thaw in October 2001 and about the same thaw depth in mid-September 2002. Below a depth of 6 m (approximately embankment fill thickness), the subsurface temperatures have all been colder than –2.2°C with no signs of significant warming.

DAM 4 CONTINUED

INSTRUMENTATION:

Thermistor TD4-2 displayed just over 3 m of active layer thaw in October 2001 and just less than 3 m in mid-September 2002. Below a depth of 8 m, the subsurface temperatures have all been colder than –2°C and the subsurface points appear to be cooling over the longer term.

Thermistor TD4-3 displayed over 2 m of active layer thaw in October 2001 and slight more thaw depth in mid-September 2002. Below a depth of 6 m (approximately embankment fill thickness), the subsurface temperatures have all been colder than –1.7°C with no signs of significant warming.

Thermistor TD4-4 displayed just over 2 m of active layer thaw in October 2001 and slightly more thaw depth in mid-September 2002. Below a depth of 6 m (approximately embankment fill thickness), the subsurface temperatures have all been colder than –2.2°C with no signs of significant warming.

MAINTENANCE RECOMMENDATIONS:

Repair disturbed rip rap on the upstream side and investigate if underlying liner has been disturbed as well.

CONCLUSIONS:

The dam is in good condition and is functioning without apparent seepage. Any plan for significantly increasing the pond water level should include considerations for beach placement in view of its contribution to potential seepage mitigation.

DAM 5

LOCATION:	Southeast corner of Cell 3, just northwest of Dam 4.
FUNCTION:	Minor perimeter closure intended for future tails and water retention; currently functioning as a road embankment.
LENGTH:	+/- 250 m
MAX HEIGHT:	+/- 1.5 m above d/s tundra.
AS-BUILT ELEVATION:	491.537 m
CREST WIDTH AND CONDITION:	Approximately 8 m wide and esker surfaced so that the dam may also function as roadway. Crest is in good condition with no evidence of cracking.
RIPRAP:	Angular rockfill, maximum particle size from 20 to 30 cm, has been placed on the upstream face. Approximate slope of 3H:1V and in good condition.
BACKSLOPE:	About 1.5 to 2H:1V with till and esker sand. Slope appears in satisfactory condition.
SEEPAGE:	No comment possible; no water head being retained by the structure.
MAINTENANCE RECOMMENDATIONS:	No maintenance required.
CONCLUSIONS:	The dam is in good condition and should be inspected for seepage when pond levels place a water head against it.

DAM 6

LOCATION:	West side of Cell 3 retaining tailings placed behind K-dam.
FUNCTION:	Minor perimeter closure. Retaining some tailings beach and ponded water on the northern portion of the dam.
LENGTH:	+/- 300 m
MAX HEIGHT:	+/- 2.5 m above d/s tundra.
AS-BUILT ELEVATION:	490.246 m
CREST WIDTH AND CONDITION:	Approximately 10 m wide and esker surfaced so that dam may also function as a roadway. Crest in good condition, no cracking evident. One minor sinkhole noted in the crest, approximately 50 m north of south abutment.
RIPRAP:	Run of mine rockfill in good condition on upstream slope; slightly steeper in southern portion. Some rutting noted due to vehicle traffic.
BACKSLOPE:	About 2H:1V with till and esker sand; no evidence of previously indicated cracking. One significant erosional gully located 40 m south of north abutment.
SEEPAGE:	No seepage observed.
MAINTENANCE RECOMMENDATIONS:	Backfill and grade over the sinkhole on the crest and the erosional gully at the toe.
CONCLUSIONS:	The dam is in good condition. Monitor for seepage if retained pond level continues to rise.

5.0 CLOSURE

We trust the above meets your present requirements and we thank Echo Bay Mines Ltd., for the opportunity to be of service at Lupin Mine. If you have any questions or require additional information, please contact the undersigned.

Respectfully submitted,
BGC ENGINEERING INC.
per:

REGISTERED PROFESSIONAL ENGINEER
J. W. CASSIE
LICENSEE
N.W.T.
09-OCT-02

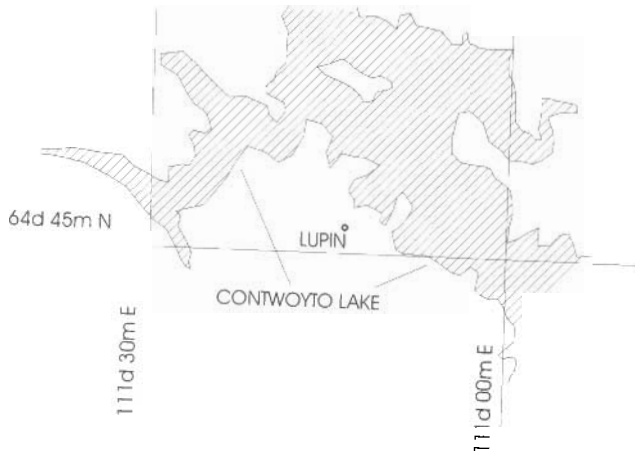
James W. Cassie, M.Sc., P.Eng.
Specialist Geotechnical Engineer

Reviewed by:

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

PERMIT TO PRACTICE
BGC ENGINEERING INC.
Signature
Date 09-OCT-02
PERMIT NUMBER: P 285
The Association of Professional Engineers, Geologists and Geophysicists of the Northwest Territories

FIGURES



SCALE:	As shown	DESIGNED:	JWC
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CLIENT: ECHO BAY MINES LTD.

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

PROJECT: Annual Inspection of Perimeter Tailings Dams

TITLE: Lupin Mine Location Map

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 1	0

REV	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: SEPT. 2002
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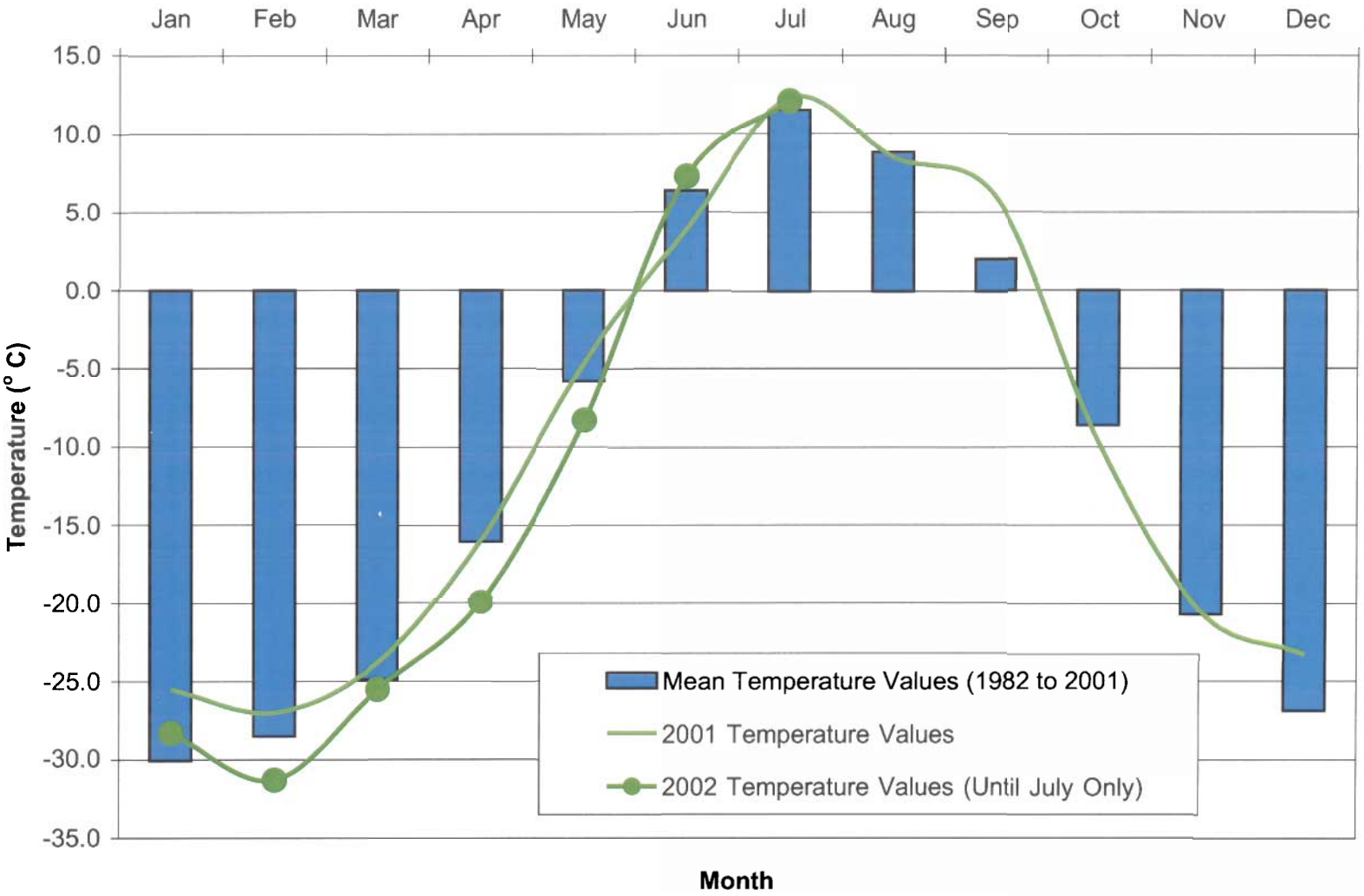
CLIENT: ECHO BAY MINES LTD.

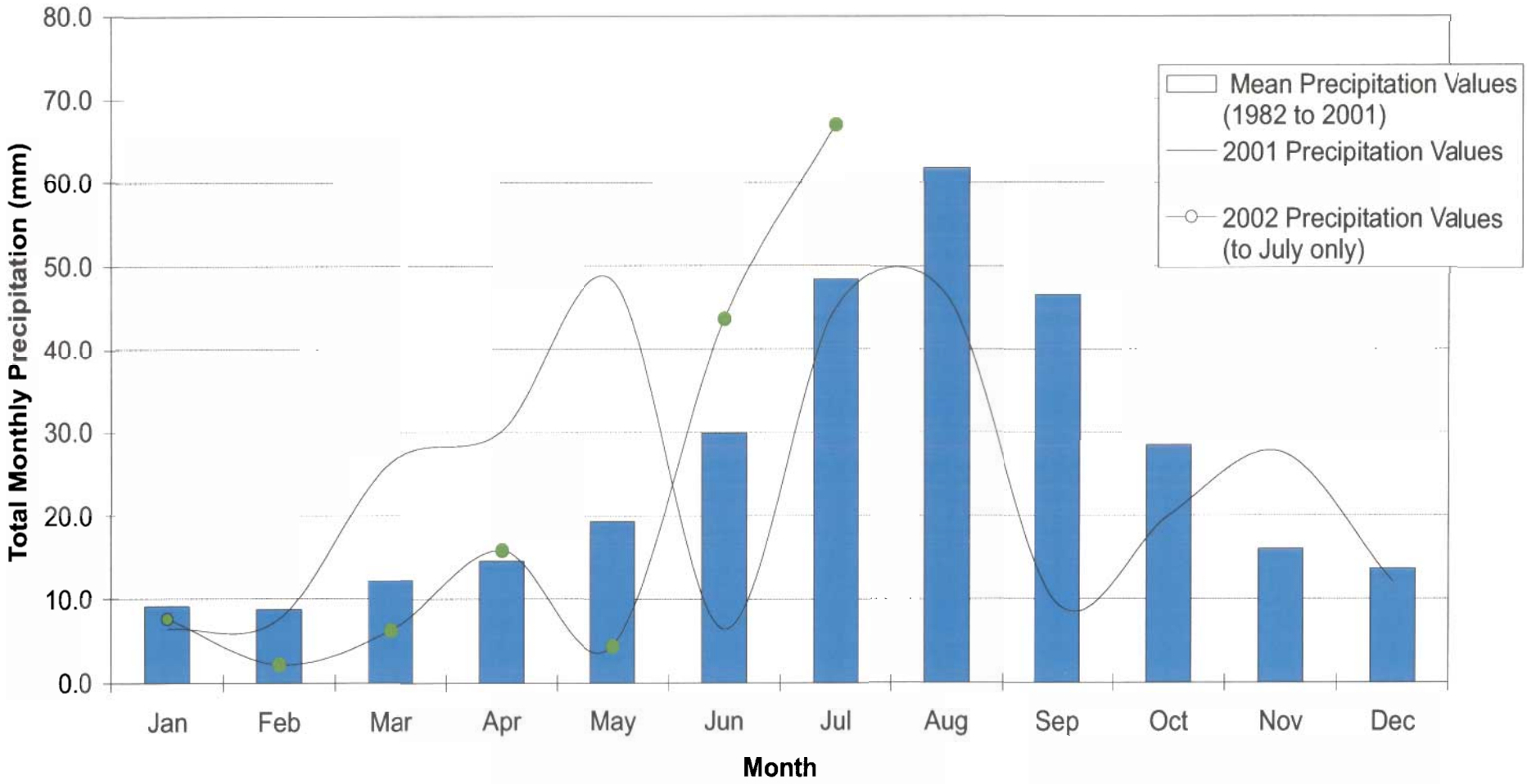
PROJECT: Annual Inspection of Perimeter Tailings

TITLE: Tailings Containment Area Plan

PROJECT No	FIGURE No.	REV
0256-004-02	Figure 2	0.



DATE: Sept. 2002	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT Annual Inspection of Perimeter Tailings Dams	
REFERENCED DRAWING DESCRIPTION			TITLE Comparison of Monthly Temperature Means to 2001 & 2002	
CLIENT ECHO BAY MINES LTD.			PROJECT No. 0256-004-02	DWG. No. Figure 3 / REV. 0



DATE: Sept. 2002	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT Annual Inspection of Perimeter Tailings Dams
REFERENCED DRAWING DESCRIPTION			TITLE Comparison of Monthly Precipitation Means to 2001 & 2002
CLIENT ECHO BAY MINES LTD.		PROJECT No. 0256-004-02	DWG. No. Figure 4 / REV. 0

Photo 63 shows a view of the upstream side. These slopes appear to be a consistent grade.

Photo 66 shows a small sinkhole just immediately to the right of the thermistor installed previously. This sinkhole had been noted previously.

Photo 67 shows a view of the crest looking towards the north abutment. No signs of settlement, deformation or cracking noted on the crest.

Photo 70 shows the little scarps formed by the retrogression of the material right at the toe of the access road berm.

CLIENT:

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
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PROJECT
Annual Inspection of Perimeter Tailings Dams

TITLE
Dam 1A Inspection Photos

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 5	0

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Photo 77 shows some rutting on the crest that progresses over to the upstream side as well.

Photo 74 shows a view of the crest and the upstream side. This dam is not retaining any water at the current time.

Photo 79 shows the downstream side and the crest of the dam looking towards north. Some minor vegetation is catching onto the slope.

Photo 80 is a view along the downstream toe. No signs of seeping water were noted.

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
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APPROVED:	JWC

PROJECT
Annual Inspection of Perimeter Tailings Dams

TITLE
Dam 1B Inspection Photos

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 6	0

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Photo 44 shows a view of the upstream side, taken from waterline perspective. As can be seen and has previously been noted, there are some small scarps at the transition from the light brown to the gray material.

Photo 45 shows a view looking towards the south abutment. The crest appears to be smooth and flat with no signs of cracking or settlement.

Photo 51 shows some minor cracking along the downstream toe. This cracking has been previously noted.

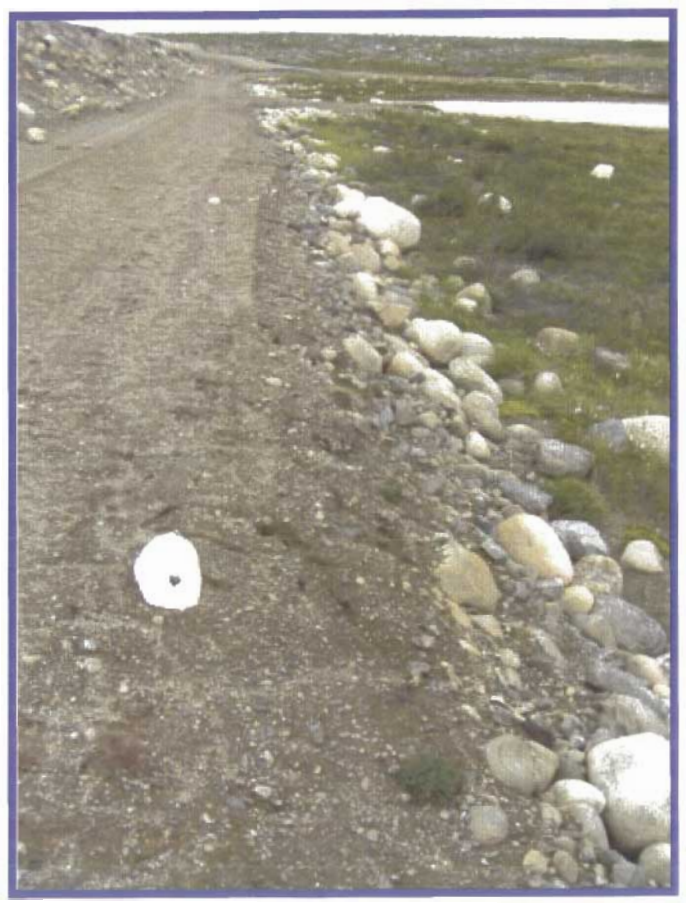

Photo 59 shows one significant erosional gully located on the downstream face at the north abutment.

CLIENT:

ECHO BAY MINES LTD.

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
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APPROVED:	JWC

PROJECT
Annual Inspection of Perimeter Tailings Dams

TITLE
Dam 2 Inspection Photos

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 8	0

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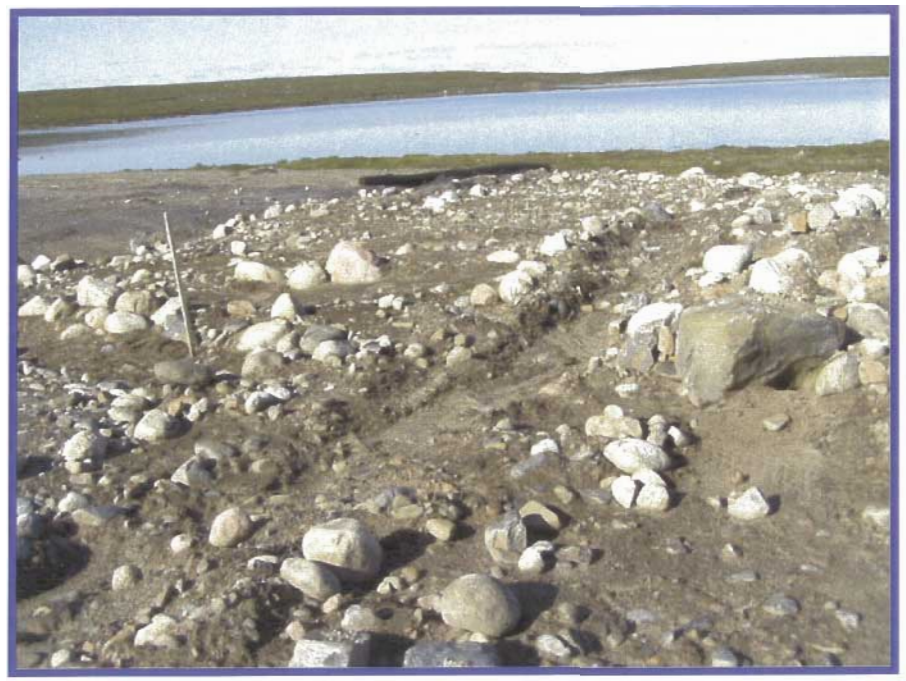

Photo 137 Shows some boulders and cobbles that appear to have been placed in a low swale area. At the current time, the swale work is very disturbed and would likely be ineffective in transmitting any water. The material should be excavated and a proper swale should be laid out.

Photo 141 Shows a remnant erosional gully located at the toe.

Photo 139 Shows the toe of this dam. There are 6 erosional gullies existing at the edge and progressing to the crest. Each of these gullies should be backfilled.

Photo 142 Shows a number of tension cracks within this toe area. The cracks are discontinuous but can generally be observed over a distance of some 10 to 15 m.

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
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-	-	-	-	-	-
-	-	-	-	-	-

SCALE:	N/A
DATE:	September 2002
DRAWN:	SLF
DESIGNED:	JWC
CHECKED:	JWC
APPROVED:	JWC

PROJECT
Annual Inspection of Perimeter Tailings Dams

TITLE
Dam 3 Inspection Photos

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 9A	0

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Photo 149 Shows the continuation of longitudinal cracks at the toe. In viewing the morphology and the color of the cracks, it appears that these cracks are opening over time.

Photo 152 Shows a view of the crest looking back towards the truck.

SCALE:	As shown	DESIGNED:	JWC
DATE:	Sept. 2002	CHECKED:	JWC
DRAWN:	SLF	APPROVED:	JWC

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PROJECT: Annual Inspection of Perimeter Tailings Dams

TITLE: Dam 3 Inspection Photos

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 9B	0

Photo 113 shows a view of the broad, well-travelled crest.

Photo 115 shows some of the disturbed area on the upstream side riprap. It appears that additional material has been placed on the crest and was graded over, perhaps to correct some of the earlier rutting caused by construction activity. The large number of boulders that have segregated out on the side of the fill to confirm appears that assumption.

Photo 119 shows another view of the disturbed area on the upstream side, likely as a result of original construction activity.

Photo 121 shows a view of the relatively steep toe of this dam, followed by the flat graded area below the toe. No signs of sloughing or significant erosion are noted from this vantage point.

Photo 130 Shows the small pond which is located between the toe of Dam 4 and the small berm on the left of the photo. This area is pumped dry for the following two reasons; 1.) allow inspection of the downstream toe and 2.) to confirm the origin of the water in the pond.

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REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
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-	-	-	-	-	-
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SCALE:	N/A
DATE:	September 2002
DRAWN:	SLF
DESIGNED:	JWC
CHECKED:	JWC
APPROVED:	JWC

PROJECT
Annual Inspection of Perimeter Tailings Dams

TITLE
Dam 4 Inspection Photos

PROJECT No.	DWG. No.	REV.
0256-004-02	Figure 10	0

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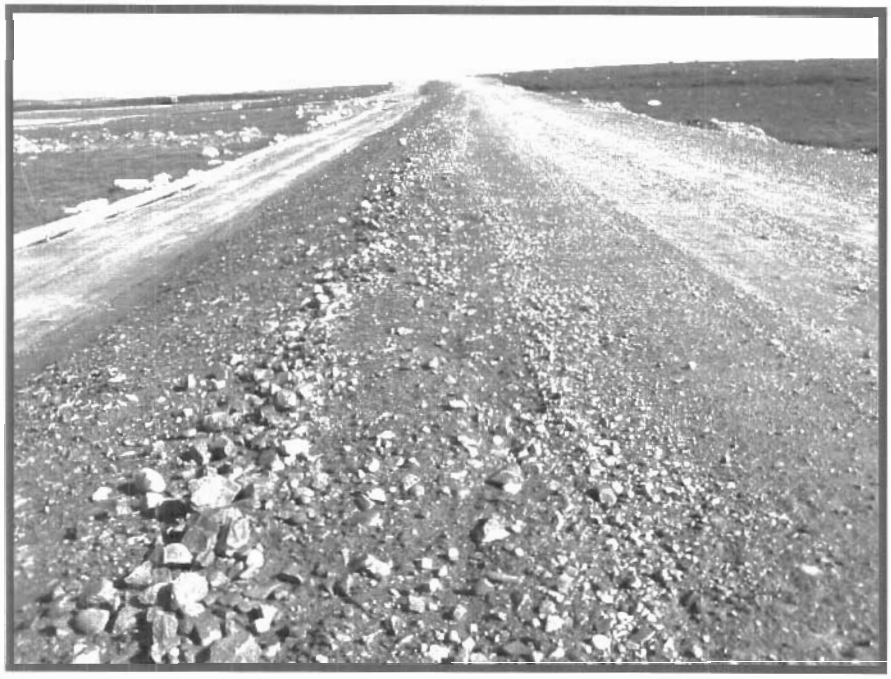
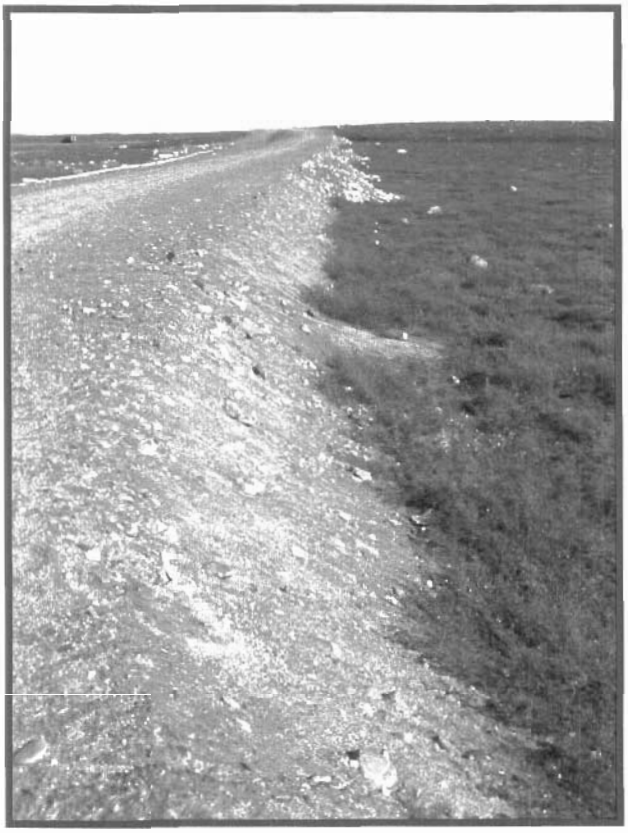


Photo 107 is a view of the broad, well travelled crest looking towards the southeast.

Photo 111 shows a view of the downstream toe looking towards the southeast. There are no signs of cracking, deformation or seepage at the current time.



SCALE:	As shown	DESIGNED:	JWC
DATE:	Sept. 2002	CHECKED:	JWC
DRAWN:	SLF	APPROVED:	JWC

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PROJECT: Annual Inspection of Perimeter Tailings Dams

TITLE: Dam 5 Inspection Photos

PROJECT No	DWG. No.	REV.
0256-004-02	Figure 11	0

Photo 92 shows some rutting caused by vehicle traffic on the upstream side of the crest, towards its north abutment.

Photo 93 shows a view of the upstream side. From the pond level to the physical crest would be approximately 1.2 to 1.5 m.

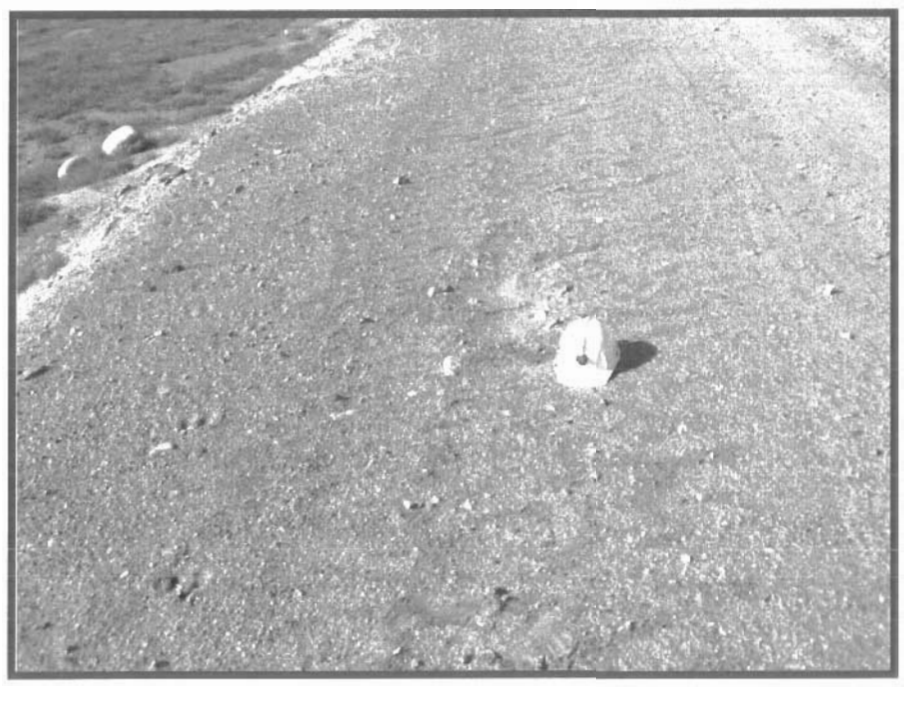

Photo 99 shows one minor sinkhole located near the downstream side of the crest. This sinkhole is located some 50 m north of the south abutment.

Photo 102 shows a significant erosional gully located on the downstream toe. This gully is located some 40 m south of the north abutment.

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REV	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED
-	-	-	-	-	-
-	-	-	-	-	-
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SCALE:	N/A
DATE:	September 2002
DRAWN:	SLF
DESIGNED:	JWC
CHECKED:	JWC
APPROVED:	JWC

PROJECT
Annual Inspection of Perimeter Tailings Dams

TITLE
Dam 6 Inspection Photos

PROJECT No.	DWG No.	REV.
0256-004-02	Figure 12	0

BGC Engineering Inc.
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Calgary Alberta
Phone: (403) 250-5185

APPENDIX 1

SITE INSPECTION MEMO

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
#1605 - 840 7th Avenue S.W., Calgary, Alberta, Canada. T2P 3G2
Phone (403) 250-5185 Fax (403) 250-5330

PROJECT MEMORANDUM

To:	Echo Bay Mines Ltd.	Fax No.:	provided at site
Attention:	Mr. Dave Hohnstein	CC:	none
From:	Mr. Jim Cassie, P.Eng.	Date:	August 13, 2002
Subject:	2002 Annual Inspection of Tailings Dams – Maintenance Requirements		
No. of Pages (including this page): 3 Pages		Project No:	0256-004-01

The following memo provides some comments on required maintenance, following the inspection of the tailings dams on August 12th and 13th, 2002.

External Dams

Dam 1A

- One small sinkhole situated on the crest that should be backfilled over.
- Some minor cracking and slumping is occurring adjacent to the erosional gullies previously formed adjacent to the siphon pipes at the downstream access road berm.
- No other maintenance suggested beyond these two issues.

Dam 1B

- No maintenance suggested.

Dam 1C

- No maintenance suggested.

Dam 2

- Minor erosional gulley on the downstream slope near the north abutment should be backfilled.
- Very small amount (<1 l/min) of seepage observed again at the toe of the north abutment. Continue to monitor seepage for any increases in quantity and to observe if seepage water contains any sediment.

Dam 3

- An informal "swale", consisting of sand, gravel and cobbles, appears to have been constructed near the southeast corner to convey surface cell water to Boomerang Lake. The swale is poorly constructed and appears ineffective in conveying water to the toe of the dam. The swale should be reconstructed to properly convey water across the dam.
- Several remnant and possibly new erosional gullies were observed at the toe of the east arm. All of these gullies should be backfilled to prevent any further erosion from occurring.
- Several longitudinal and oblique tension cracks were noted along the toe of the eastern arm of the dam. The cracks should be graded over to prevent the infiltration of any surface water.
- The longitudinal tension cracks at the toe of the northwestern portion of the dam (where Dam 3 contacts Boomerang Lake) appear to opening more and perhaps lengthening in extent. It will be necessary to flatten the toe slope or apply some riprap to the downstream slope along where these cracks are located.

Dam 4

- Dozer /construction activity on the upstream side has disturbed the rip rap placement, exposing the underlying sand at some locations. Consideration should be given to regrading the materials to an overall consistent slope to prevent the concentration of surface runoff.
- No other maintenance is suggested.

Dam 5

- No maintenance is suggested.

Dam 6

- One minor sinkhole in the crest and one erosional gully at the toe (~40 m south of north abutment) should be backfilled and graded.
- No other maintenance is suggested.

Internal Dams

J-Dam

- High water level has resulted in erosion of the upstream face of the dam. The vertical scarp created is quite extensive and consideration should be given to regrading or protecting these eroded faces.

K-Dam

- The tailings beach on the upstream side has left very little "freeboard" to the dam crest should a significant precipitation event occurs. If pond drainage overtops the dam crest, significant erosion and possible failure of the dam could result. Measures should be taken to ensure that extreme precipitation events can be retained by the dam.
- Significant erosional scarps have formed at the toe of the downstream slope, due to the previous and current water levels of Pond #2. Regrading of this eroded toe and/or placement of protective rip rap should be undertaken to prevent further erosion leading to progressive slumping of the face.

M-Dam

- Significant cracking and settlement of the outer portion of the upstream face of the dam has occurred. The upstream slope needs to be flattened so that the cracking does not progress any further.

All of the noted work should be undertaken in the near future before snowfall occurs to prevent potential further damage from occurring.

Respectfully submitted,

BGC Engineering Inc.

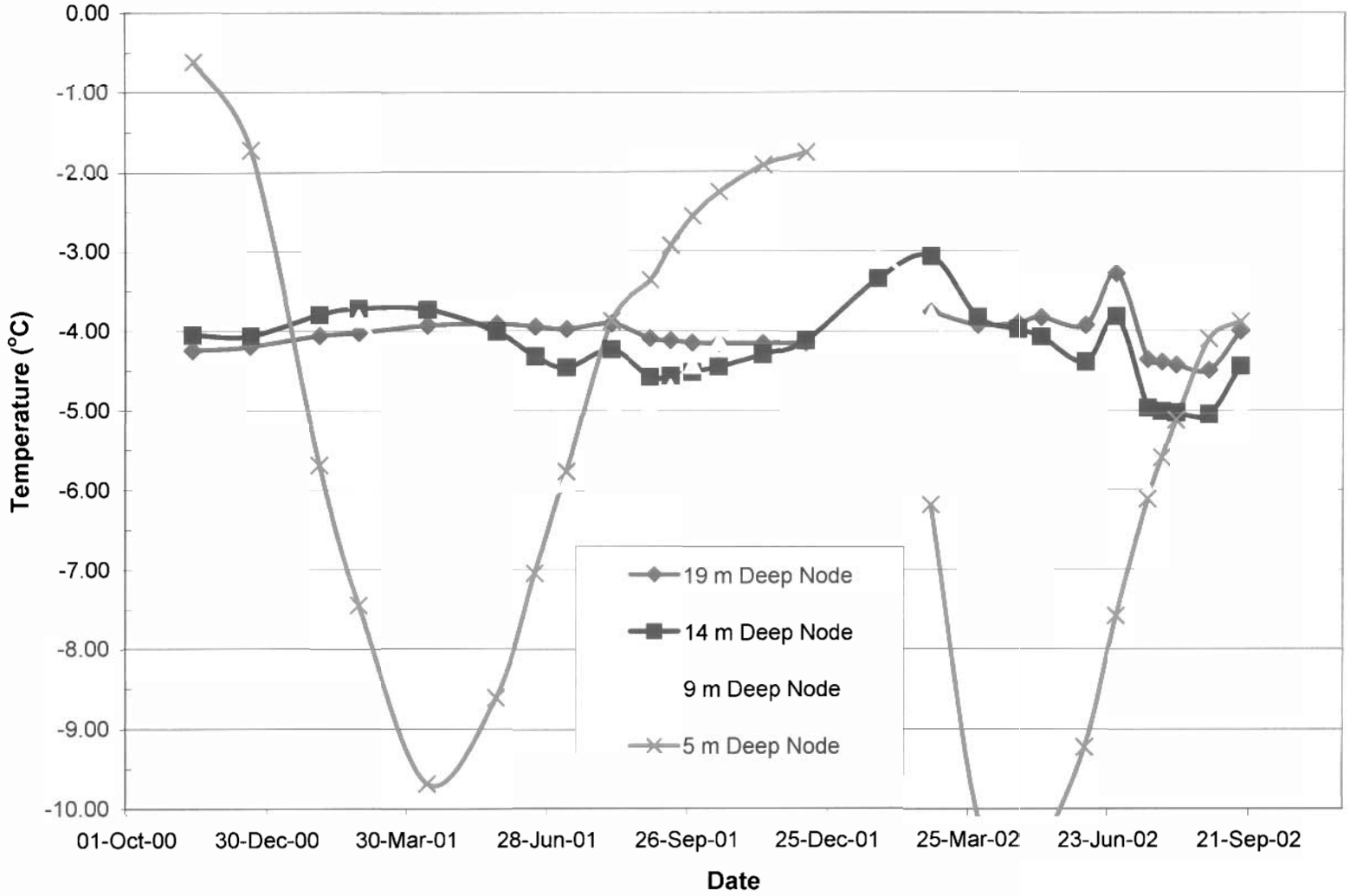
per:

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

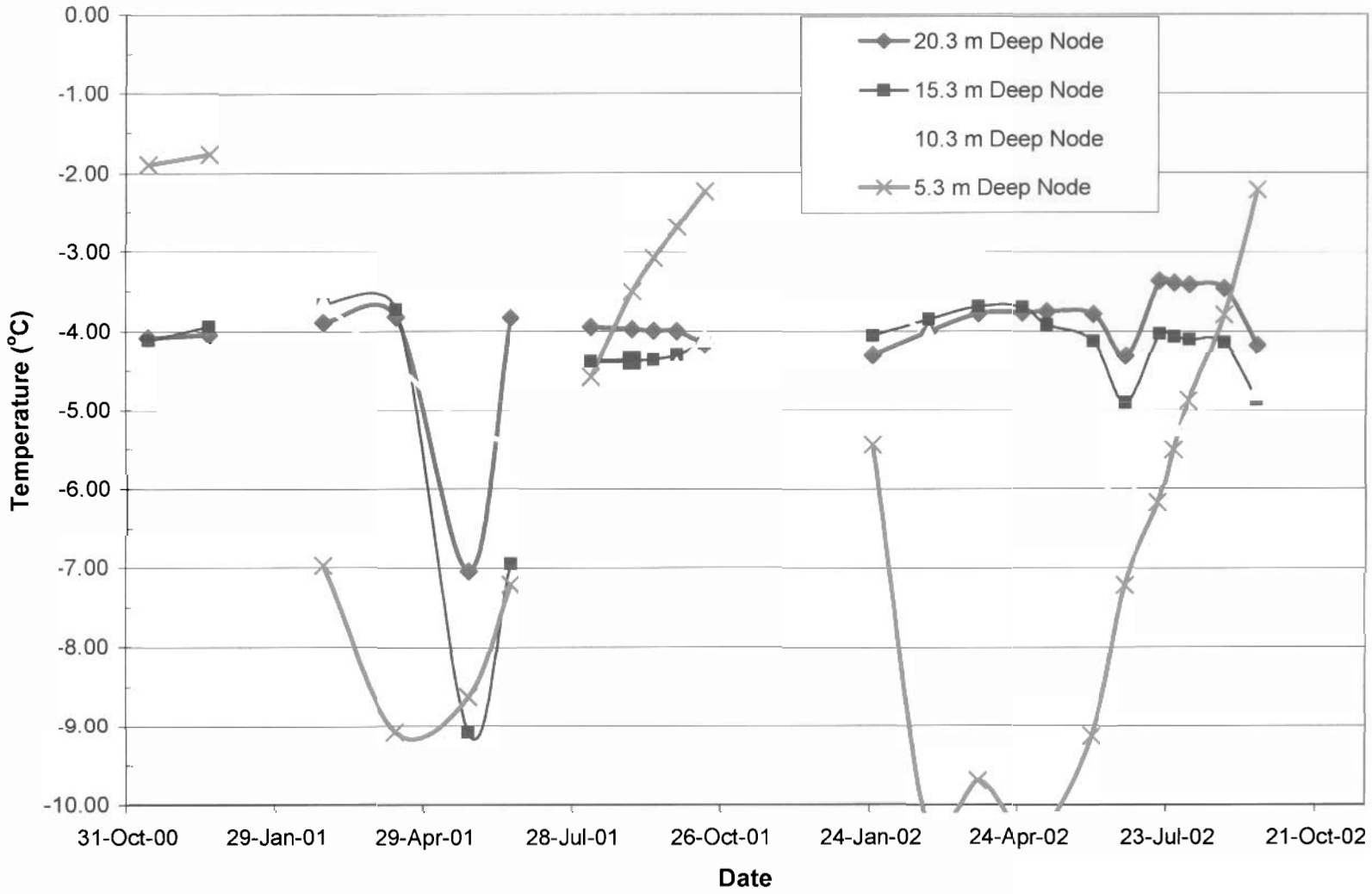
APPENDIX 2

THERMISTOR PLOTS FOR VARIOUS DAMS

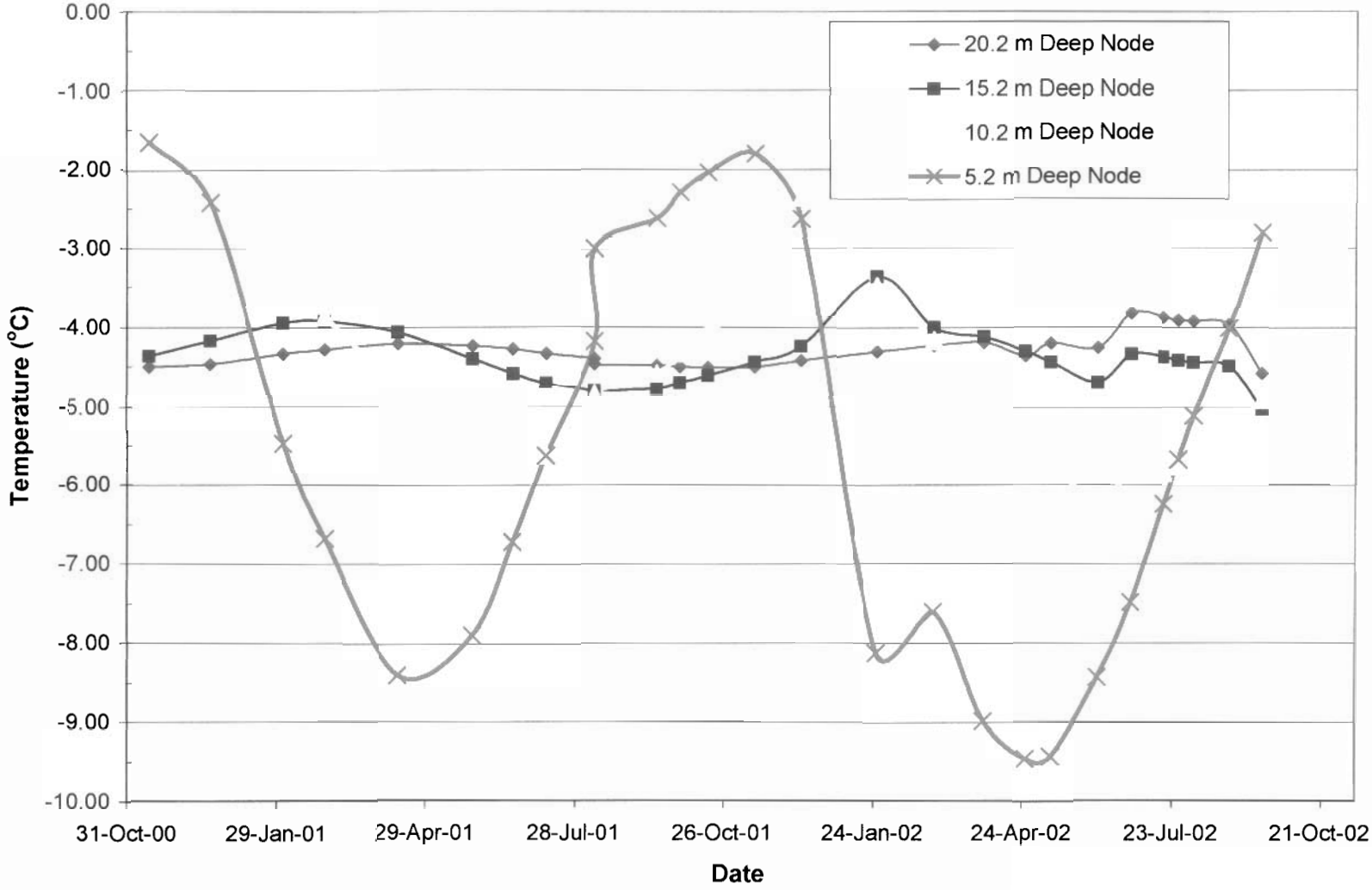
Long Term Plot for Deep Nodes in D1A-00-01
(Crest of Dam 1A, South End)



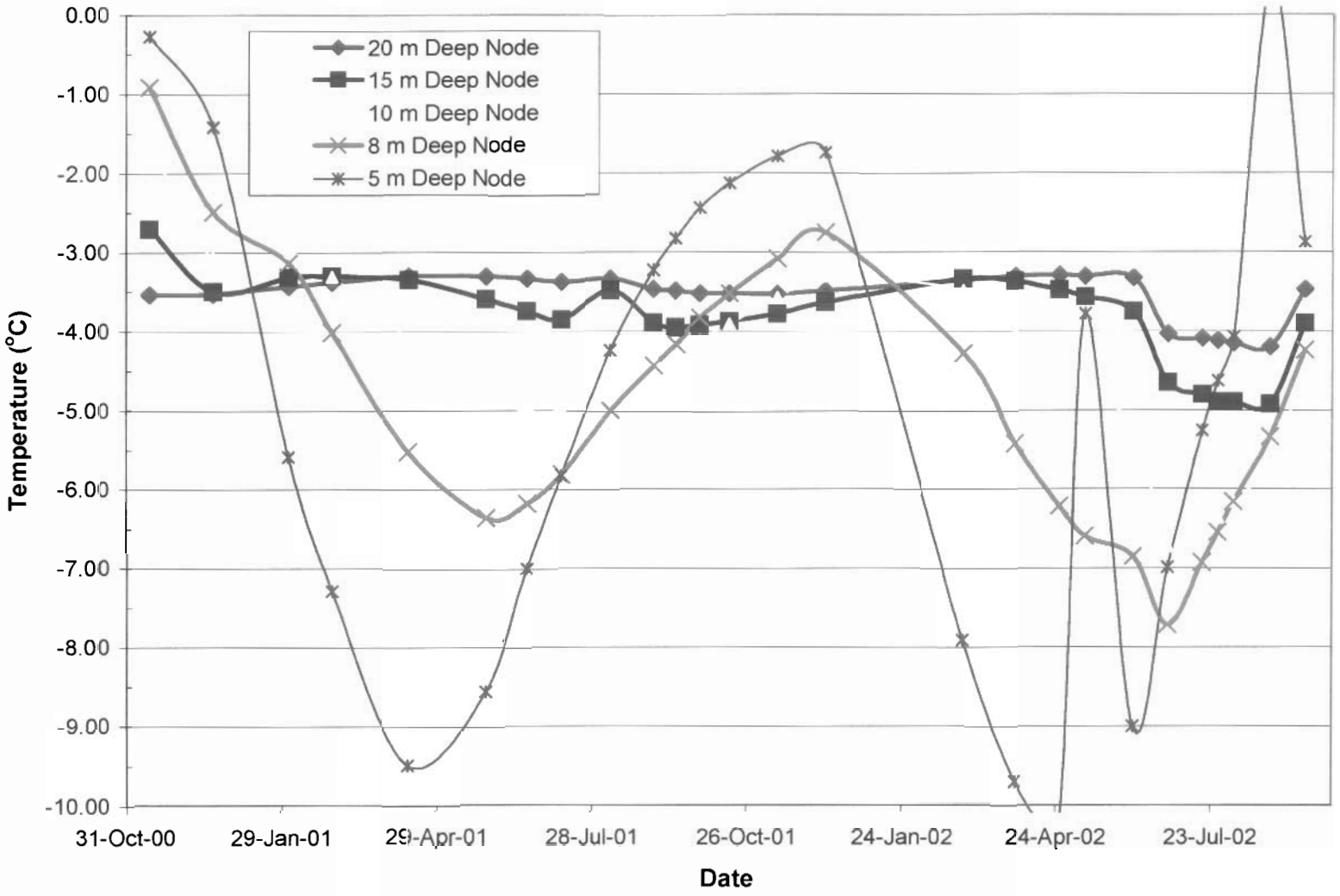
Long Term Plot for Deep Nodes at D1A-00-02
(Crest of Dam 1A, North End)



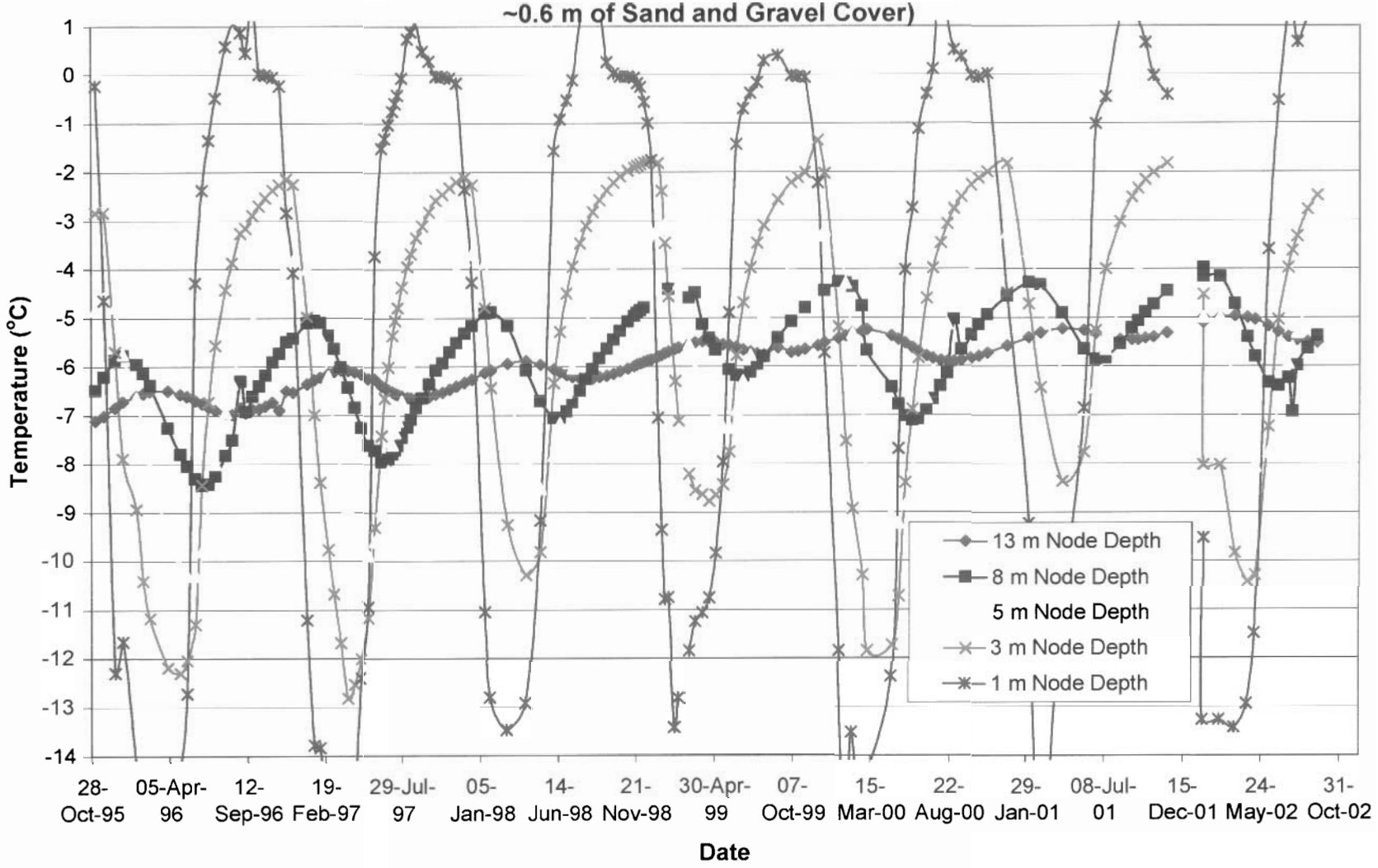
Long Term Plot for Deep Nodes in D2-00-2
(Downstream side of crest of Dam 2, north end)

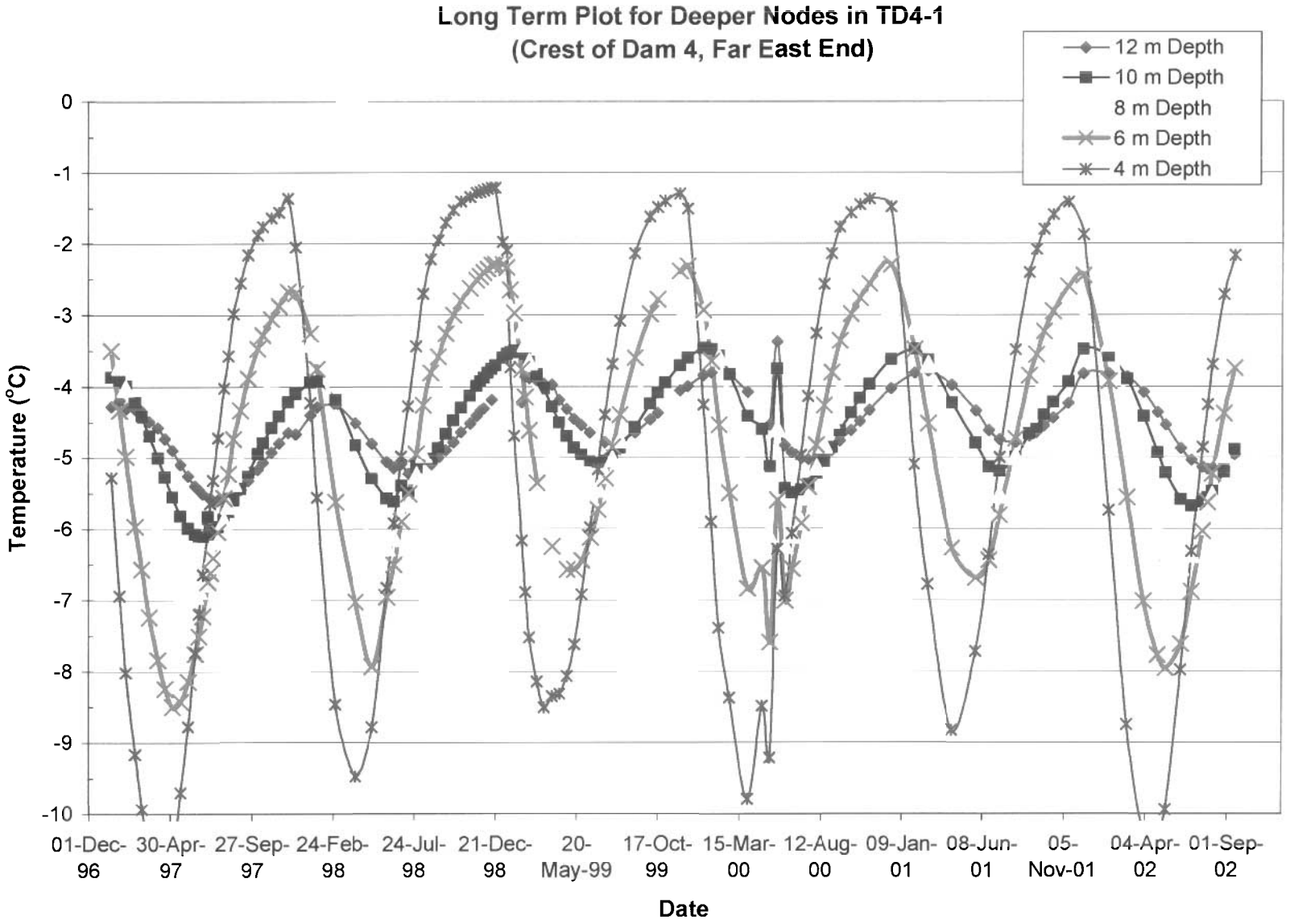


Long Term Plot for Deep Nodes on D2-00-3
(Crest of Dam 2, mid to north end of dam)

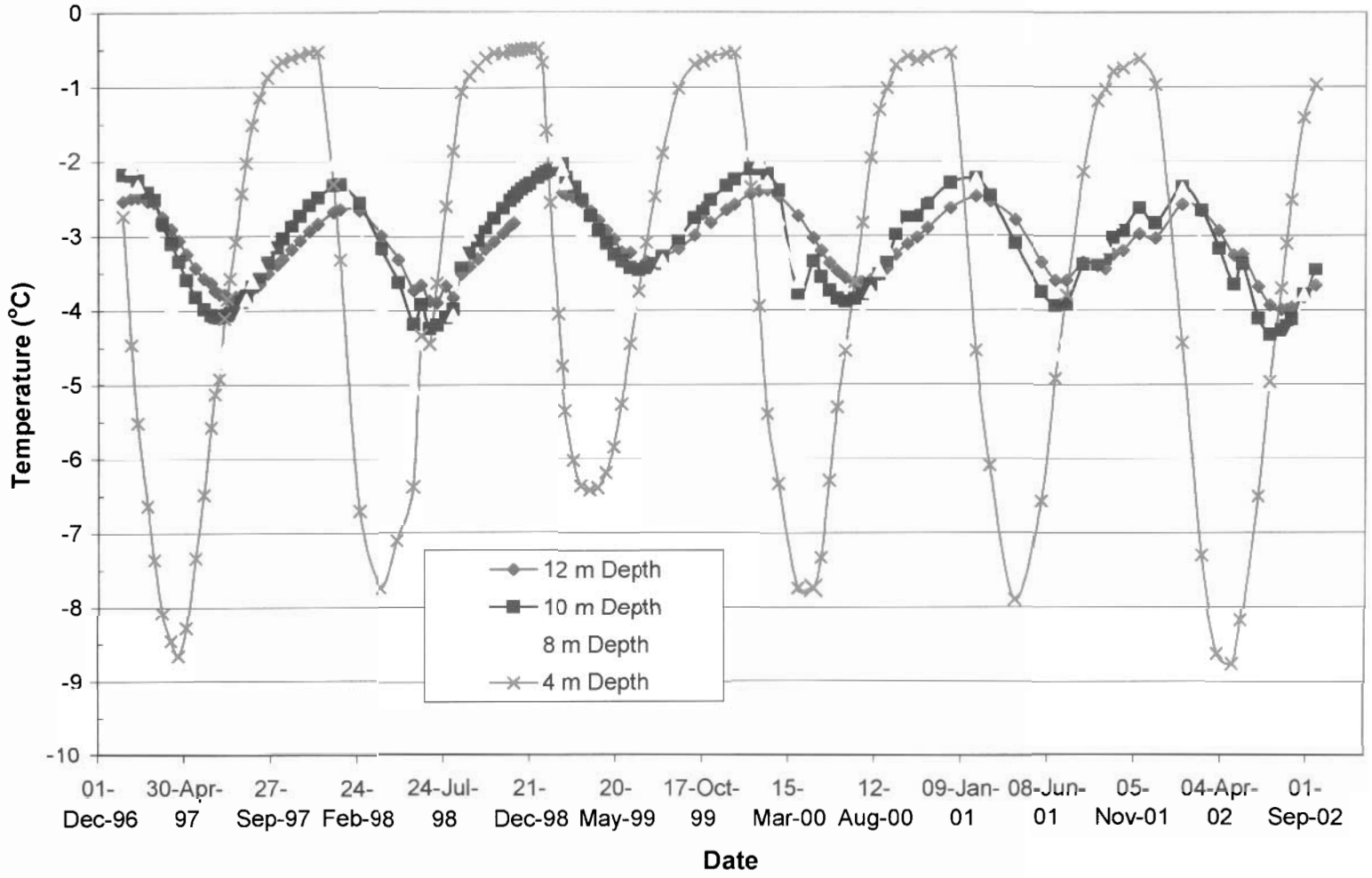


Long Term Plot for Nodes in TC1-3 (Located in Reclaimed Tailings Area in Cell 1 with ~0.6 m of Sand and Gravel Cover)

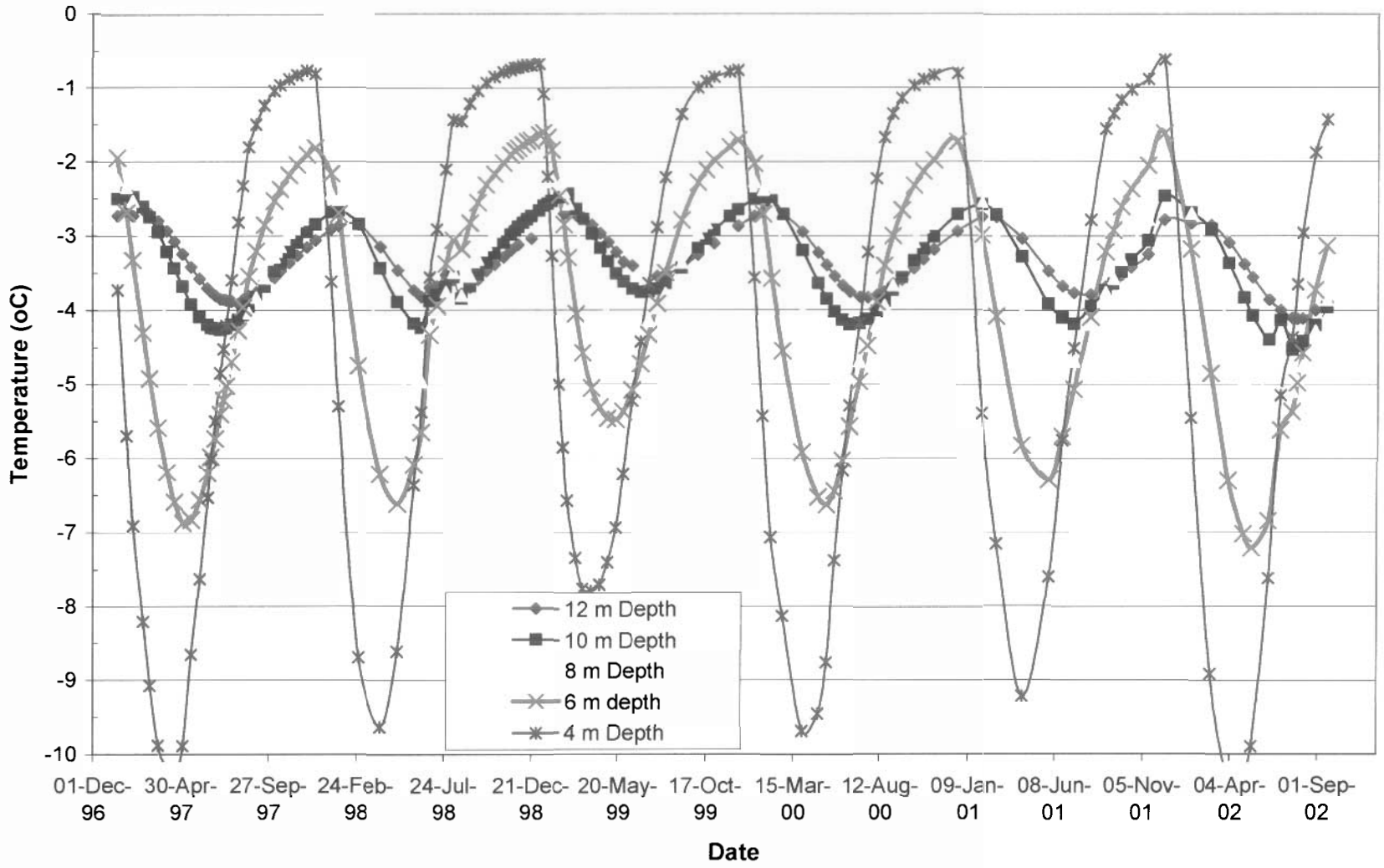



Long Term Plot for Deeper Nodes in TD4-1
(Crest of Dam 4, Far East End)
12 m Depth
10 m Depth
8 m Depth
6 m Depth
4 m Depth
Temperature (°C)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
01-Dec-96
30-Apr-97
27-Sep-97
24-Feb-98
24-Jul-98
21-Dec-98
20-May-99
17-Oct-99
15-Mar-00
12-Aug-00
09-Jan-01
08-Jun-01
05-Nov-01
04-Apr-02
01-Sep-02
Date

Long Term Plot for TD4-2
(Crest of Dam 4, East End, West of TD4-1)



Long Term Plot for TD4-3
(Crest of Dam 4, West End, Just East of TD4-4)



Long Term Plot for TD4-4
(Crest of Dam 4, Far West End)