APPENDIX 1

SITE INSPECTION MEMO

BGC ENGINEERING INC.

AN APPLIED EARTH SCIENCES COMPANY

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PROJECT MEMORANDUM

To:	**Kinross Gold Corp., Lupin Operation**	**Fax No.:**	**provided at site**
Attention:	**Mr. Dave Hohnstein**	**CC:**	**none**
From:	**Mr. Jim Cassie, P.Eng.**	**Date:**	**July 30, 2003**
Subject:	**2003 Annual Inspection of Tailings Dams and Miscellaneous Dikes Maintenance Recommendations**		
No. of Pages (including this page): 3 Pages		**Project No:**	**0256-007-01**

The following memo provides some comments on required maintenance, following the inspection of the tailings dams and waste containment dikes on July 29th and 30th, 2003.

External Tailings Dams

Dam 1A

- Some minor cracking is occurring adjacent to the siphon pipes at the downstream access road berm.
- No maintenance is suggested.

Dam 1B

- No maintenance suggested.

Dam 1C

- Grade minor erosional gullies on the downstream face.

Dam 2

- Minor erosional scarp, approximately 2.5 m below the crest on the upstream slope, should be backfilled with rip rap.

Dam 3

- Minor tension cracks were noted along the toe of the eastern arm of the dam and at the toe of the northwestern portion of the dam (where Dam 3 contacts Boomerang Lake). Some minor grading or slope flattening may be required.

Dam 4

- Dozer /construction activity on the upstream side has disturbed the rip rap placement. Consideration should be given to regrading the materials to an overall consistent slope to prevent the concentration of surface runoff.
- Erosional gullies on the downstream face, approximately 10 m west of Thermistor 4-1, should be backfilled.

Dam 5

- Backfill numerous erosional gullies on the downstream slope.

Dam 6

- Backfill numerous erosional gullies on the downstream slope.

Internal Tailings 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 cracking of the upstream side has resulted. Consideration should be given to regrading or protecting these eroded faces.
- One 0.5 m diameter sinkhole noted near the upstream side of the crest and this should be backfilled.

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.

L-Dam

- The tailings beach on the upstream side has left very little "freeboard" to the dam crest (within the northern portion of the dam) 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.
- Three transverse cracks were noted on the crest. The cracks and the associated settlement troughs should be backfilled to prevent the infiltration of water.
- Numerous sloughs and settled areas are occurring on the downstream face, generally due to scarps formed at the toe. A significant crack has formed in the northern portion of the crest, directly proximal to the tailings line. The crack should be backfilled and the downstream slope flattened to prevent further movement.

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.

Dam 3D

- No maintenance is required.

Other Waste Retaining Dams/Dikes

Upper Sewage Retention Dike

- Backfill and/or grade over longitudinal cracks located on both the upstream and downstream edges of the crest (some proximal to tailings line). Flatten slope on the upstream side to prevent further cracking.

Lower Sewage Retention Dike

- No maintenance is required.

Dump Pond #1 (closest to Mill) Retention Dike

- Grade over longitudinal cracks located on the upstream face of the dike.

Dump Pond #2 (closer to TCA) Retention Dike

- Grade over longitudinal cracks on the upstream face of the dike.

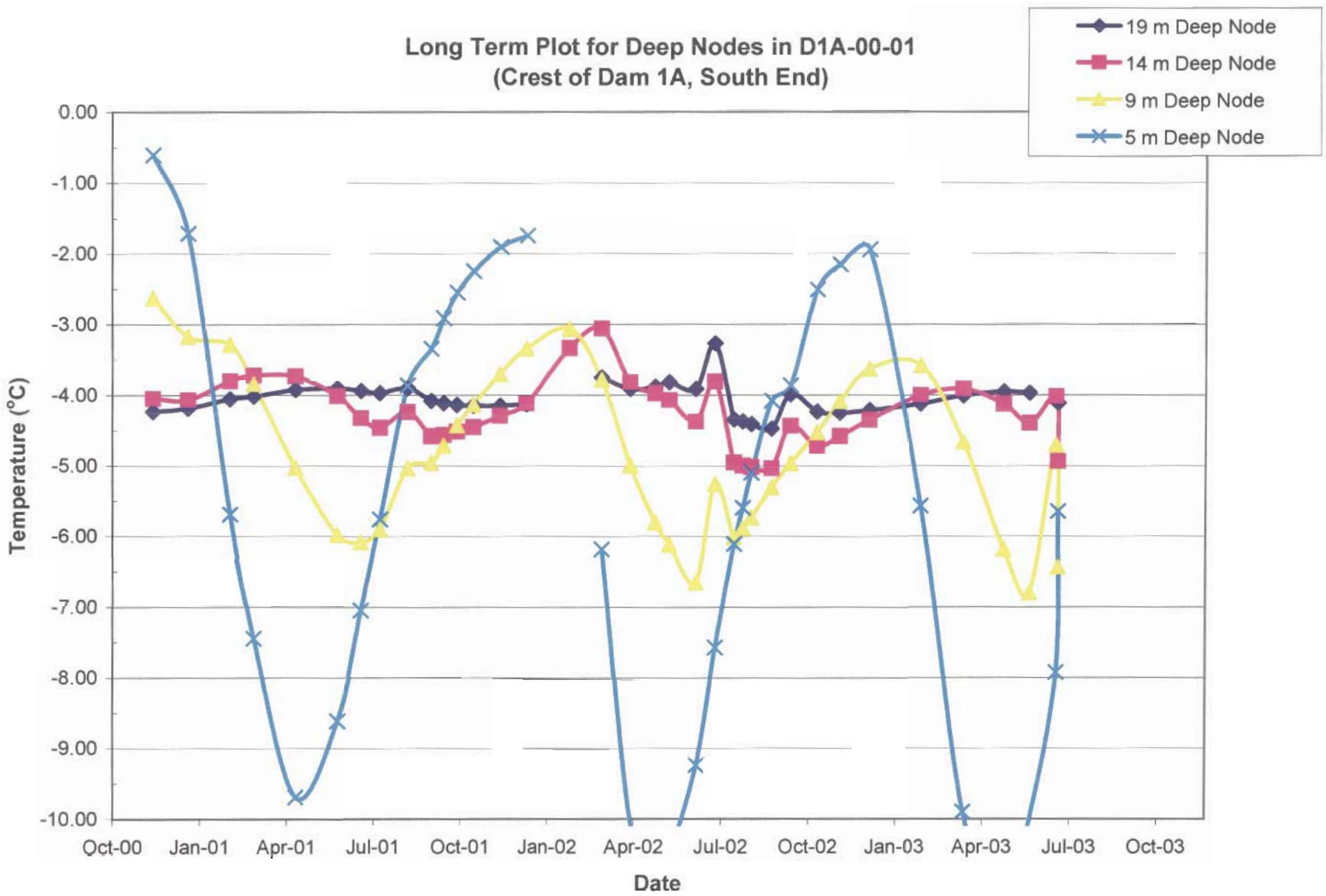
All of the noted work is relatively minor but should be undertaken in the near future before snowfall occurs to prevent potential further damage from occurring next Spring.

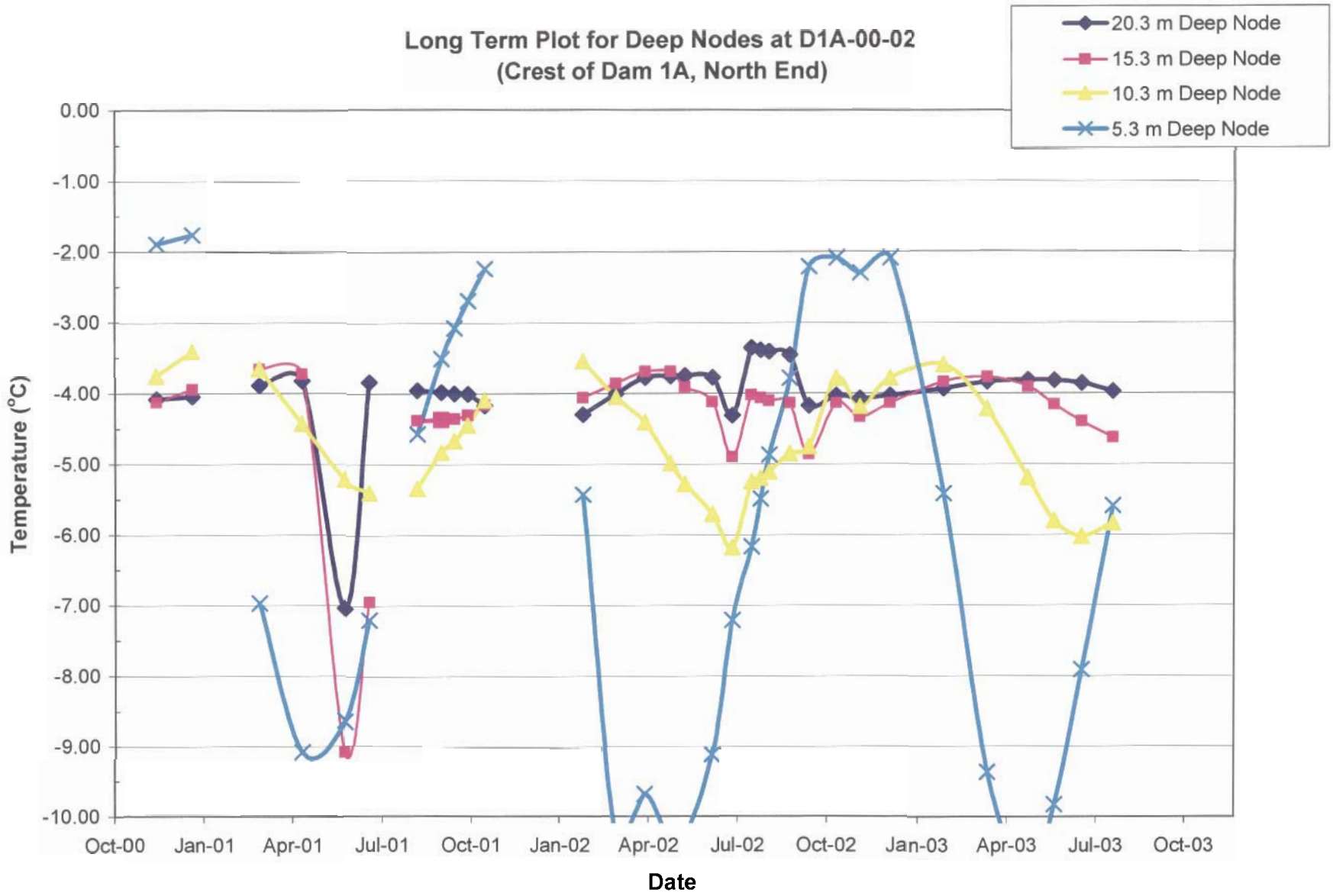
Respectfully submitted,
BGC Engineering Inc.
per:

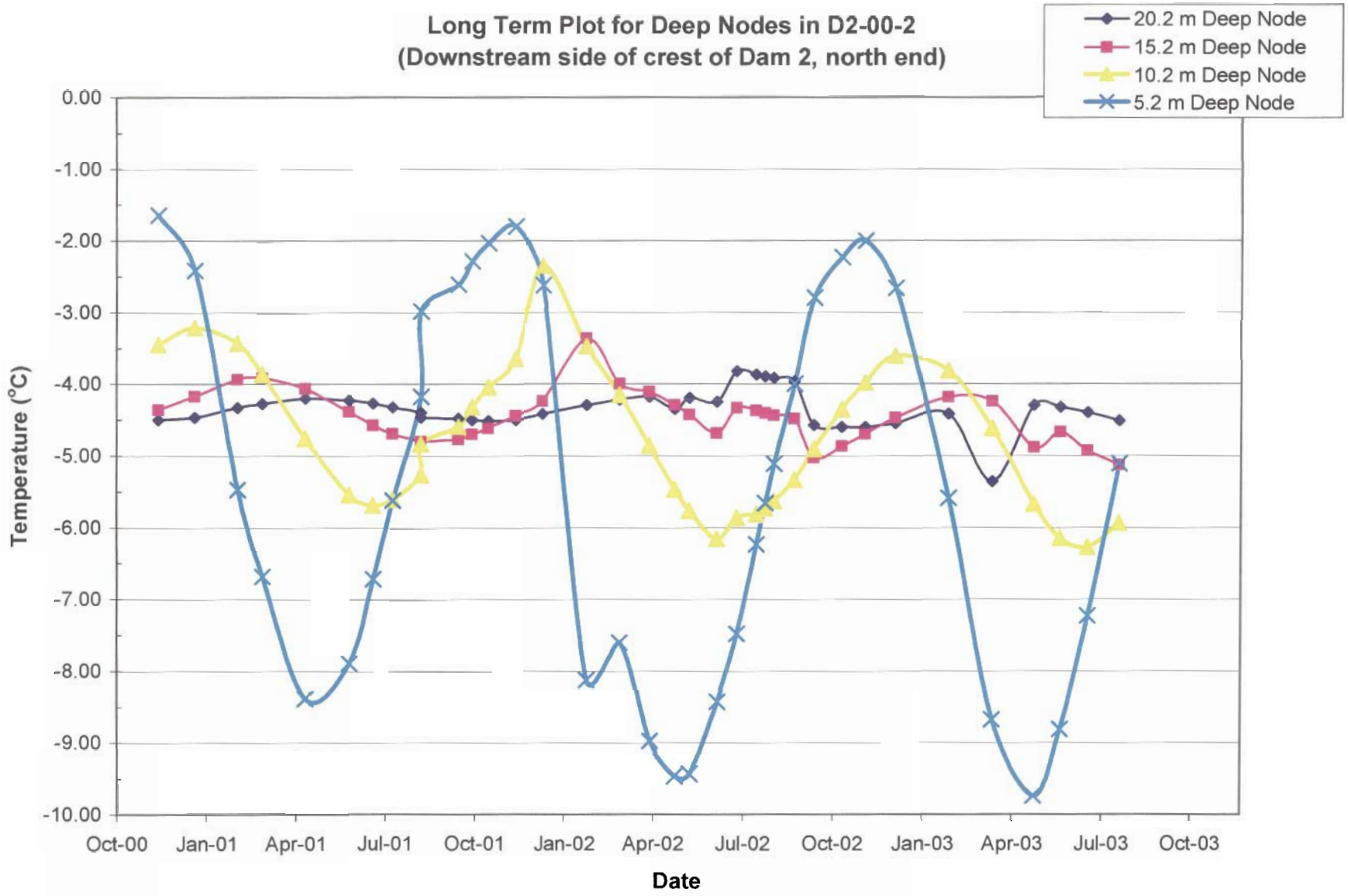
James W. Cassie, M.Sc., P.Eng.
Specialist Geotechnical Engineer

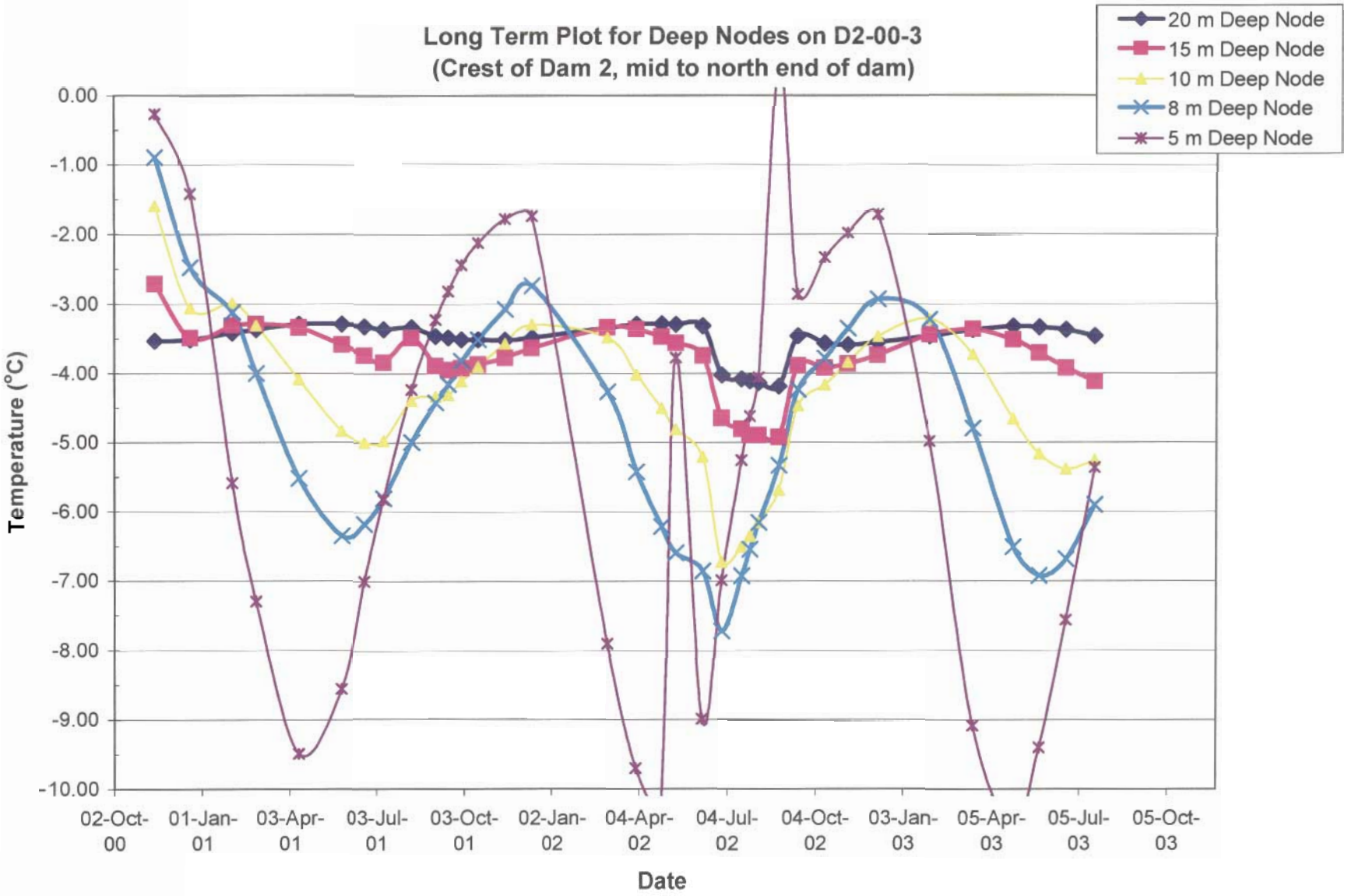
APPENDIX 2

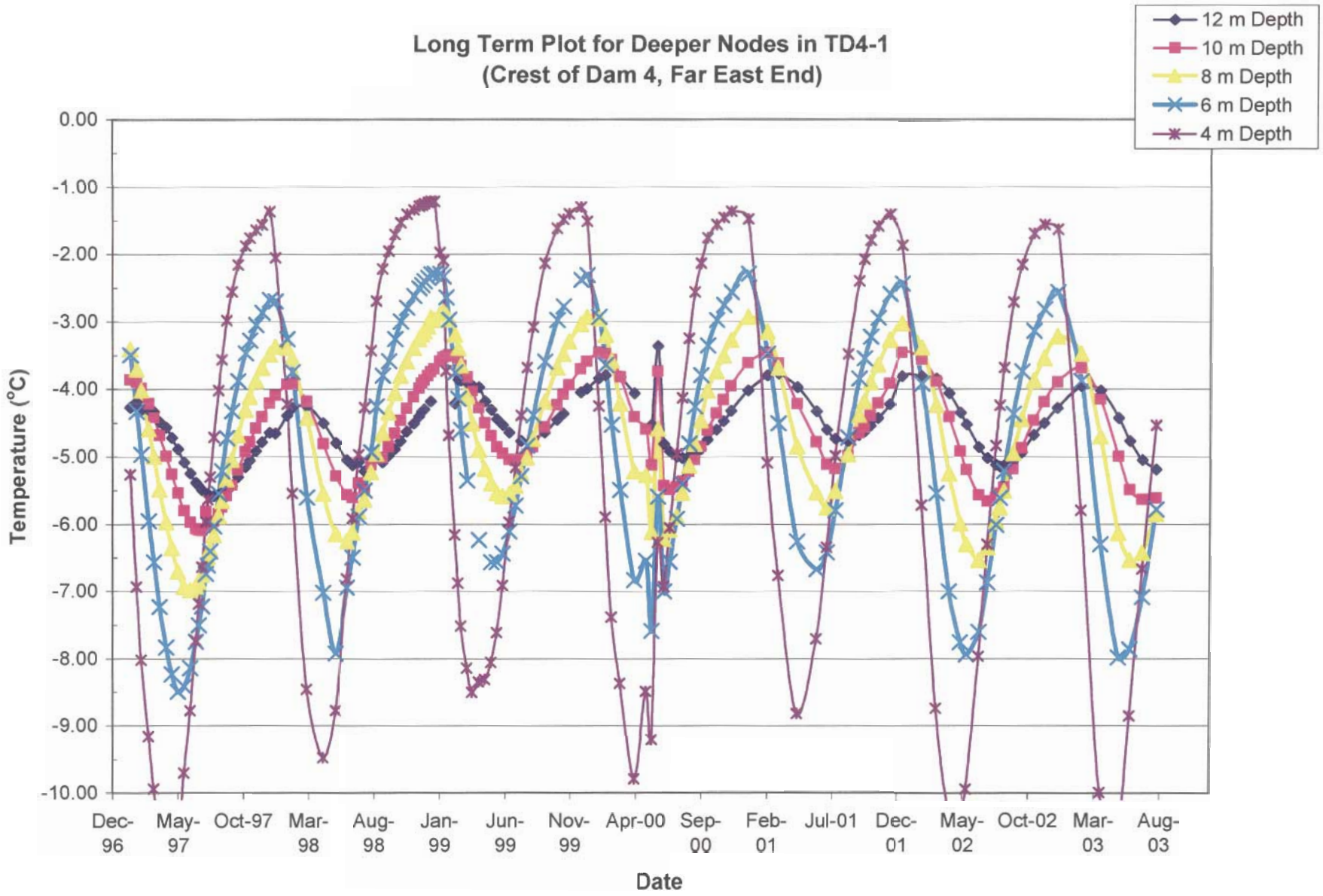
THERMISTOR PLOTS FOR VARIOUS DAMS

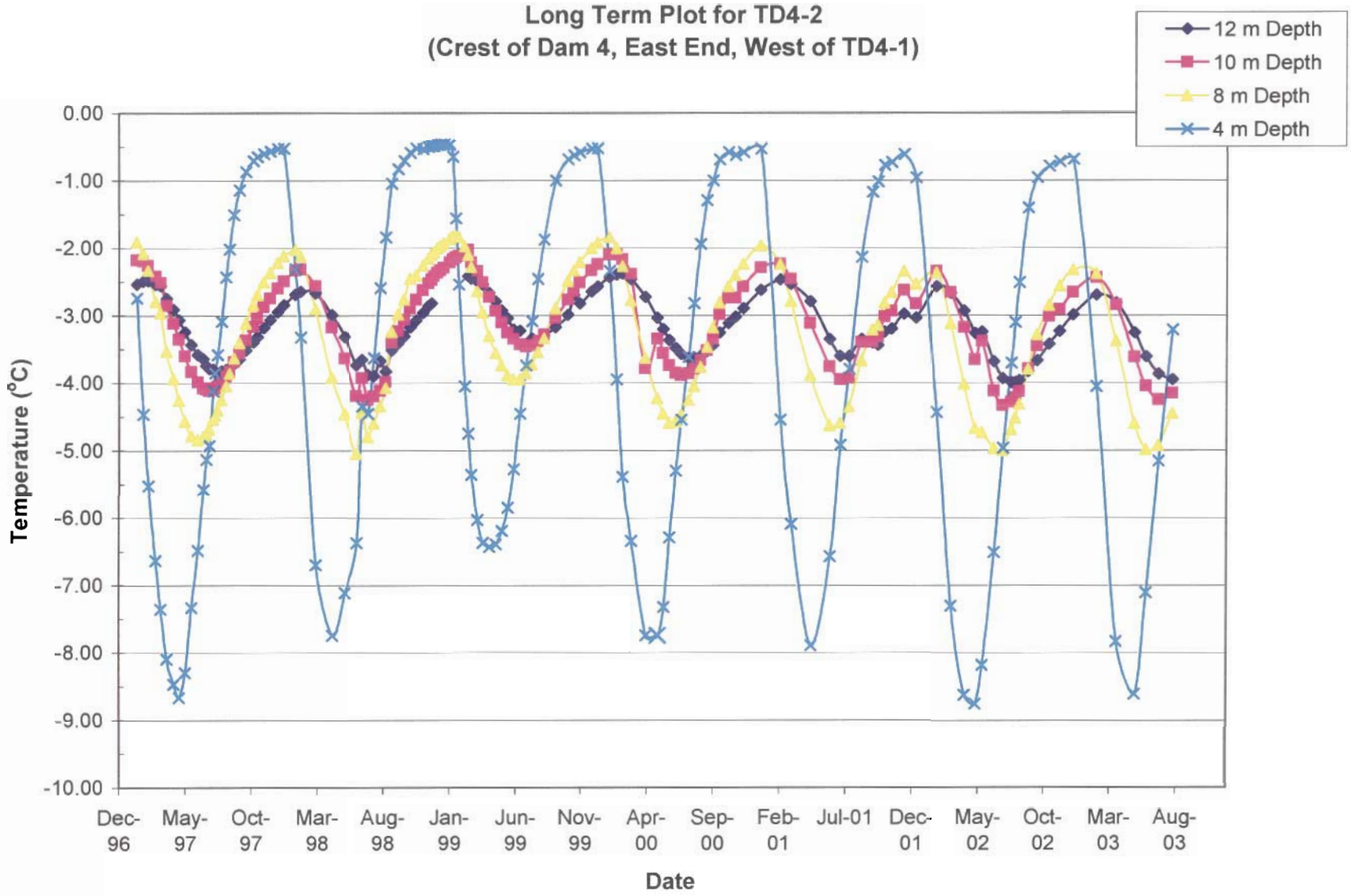

Long Term Plot for Deep Nodes in D1A-00-01
(Crest of Dam 1A, South End)
19 m Deep Node
14 m Deep Node
9 m Deep Node
5 m Deep Node
Temperature (°C)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Date

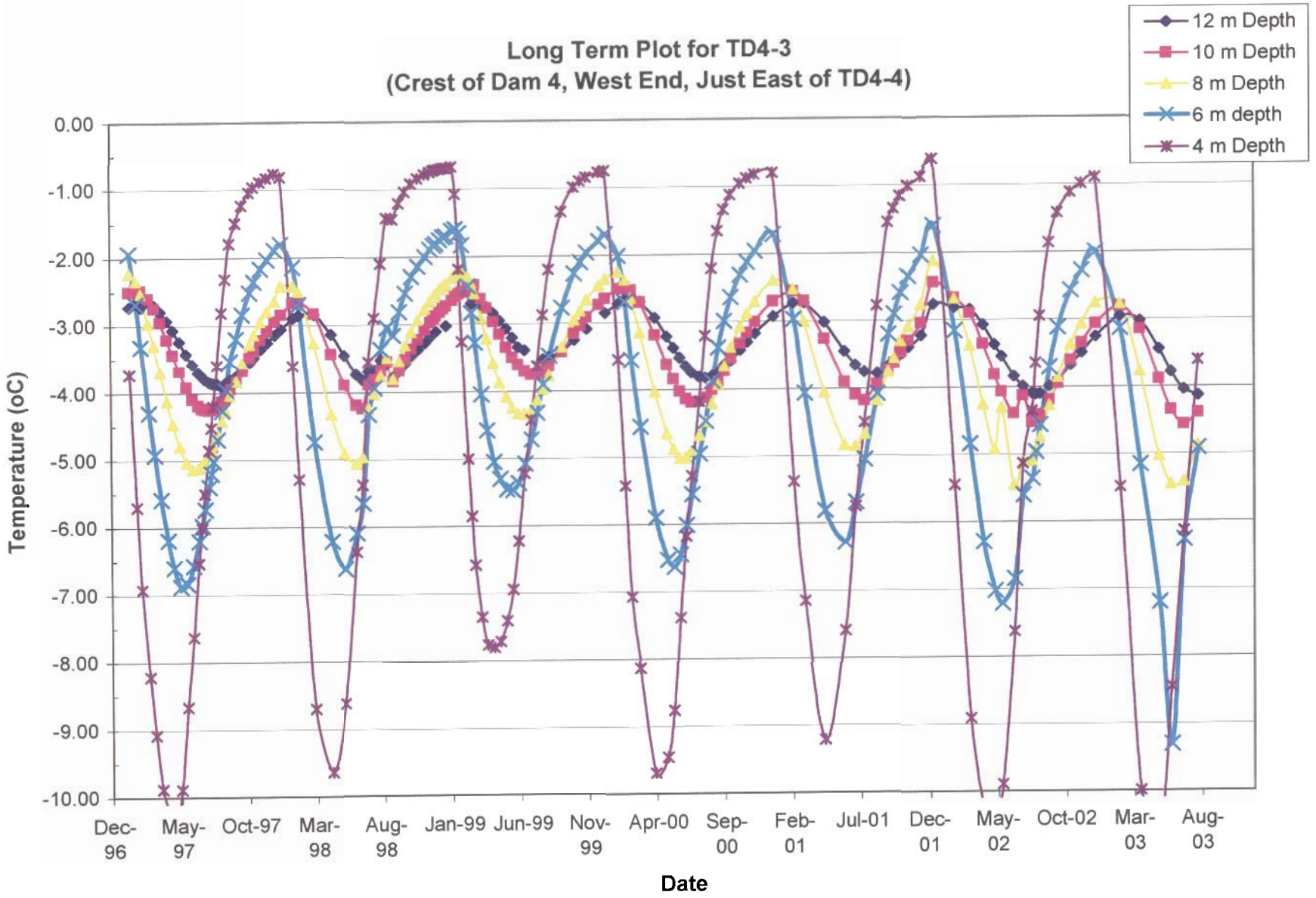

Long Term Plot for Deep Nodes at D1A-00-02
(Crest of Dam 1A, North End)
20.3 m Deep Node
15.3 m Deep Node
10.3 m Deep Node
5.3 m Deep Node
Temperature (°C)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Date

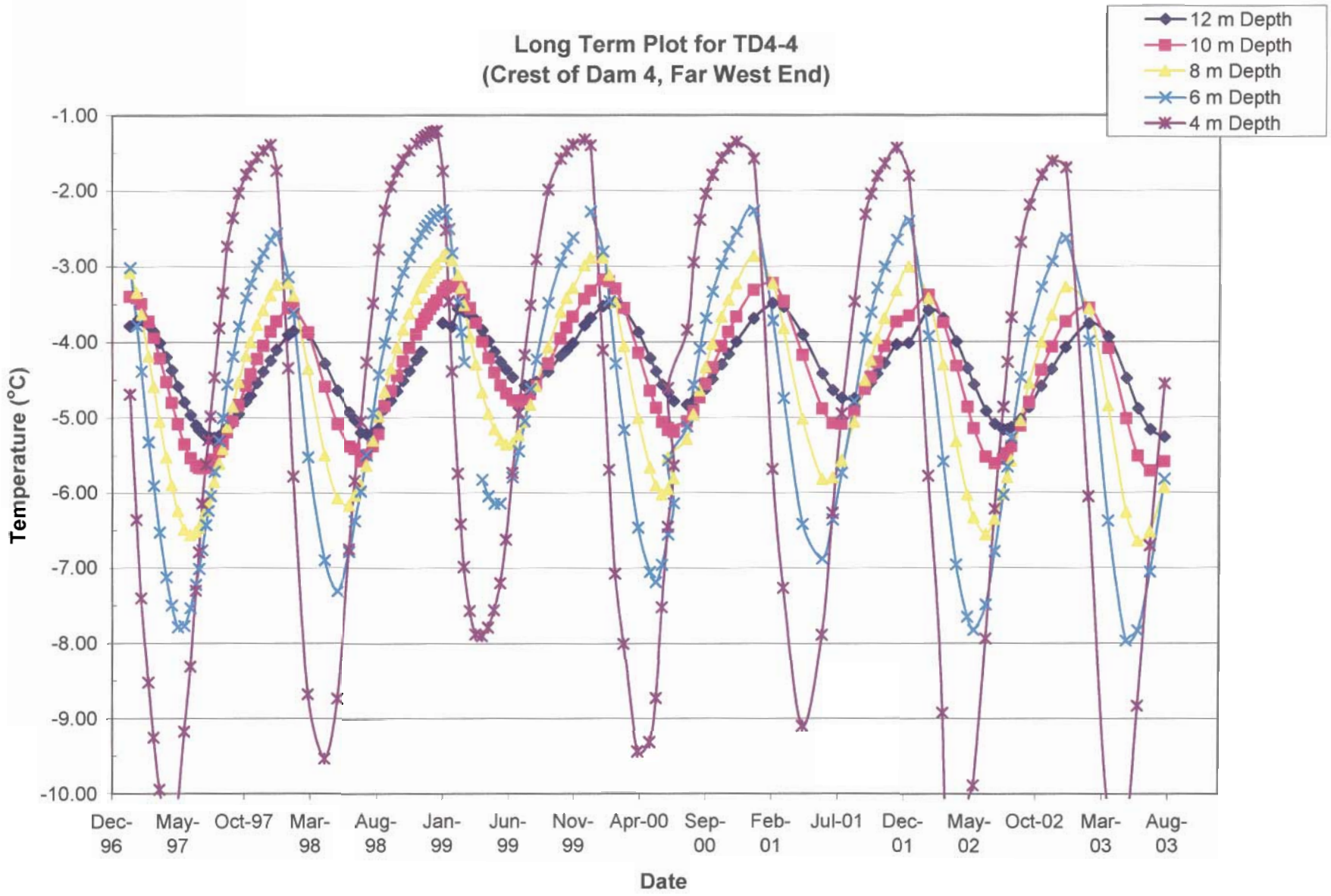

Long Term Plot for Deep Nodes in D2-00-2
(Downstream side of crest of Dam 2, north end)
20.2 m Deep Node
15.2 m Deep Node
10.2 m Deep Node
5.2 m Deep Node
Temperature (°C)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Date

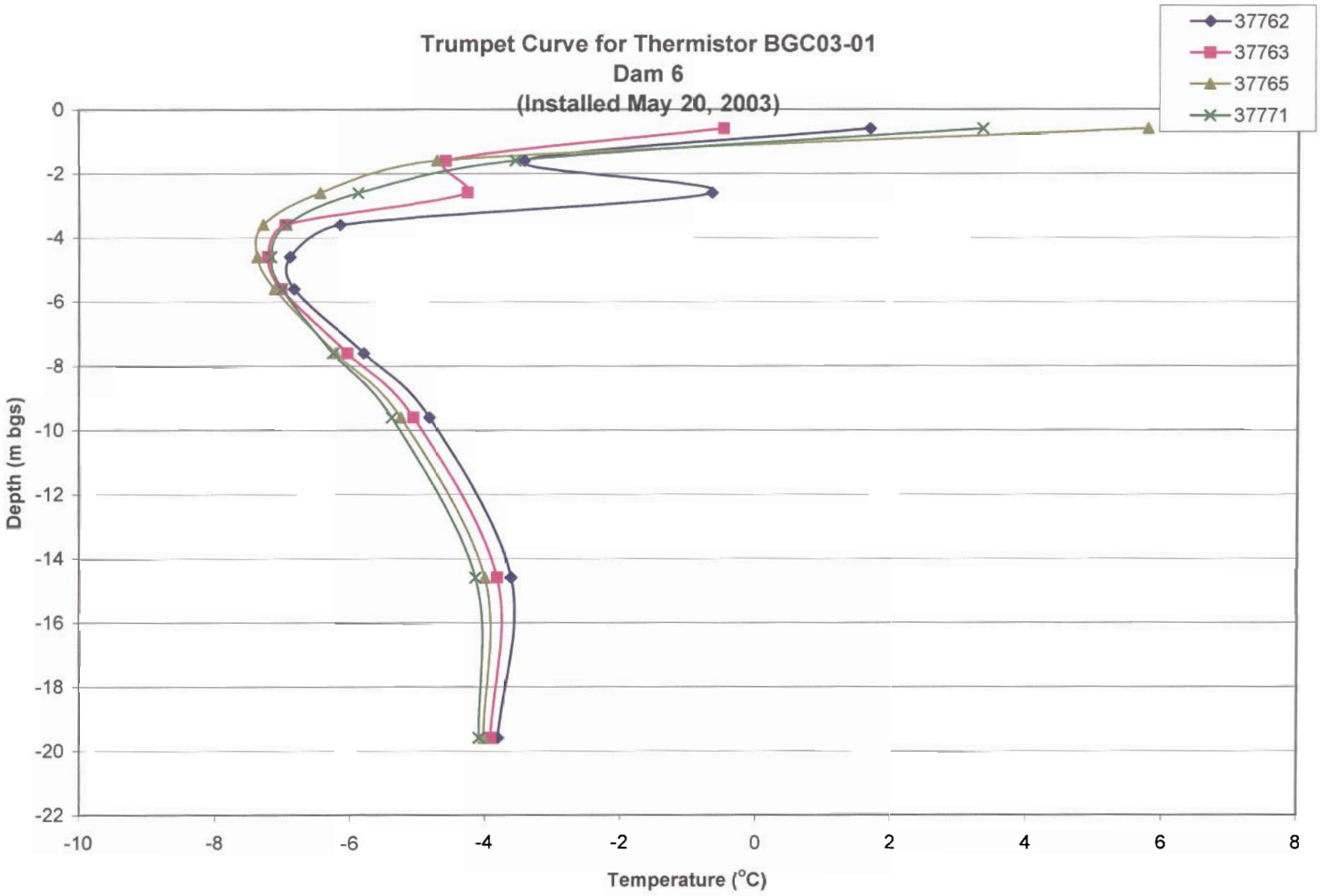

Long Term Plot for Deep Nodes on D2-00-3
(Crest of Dam 2, mid to north end of dam)
20 m Deep Node
15 m Deep Node
10 m Deep Node
8 m Deep Node
5 m Deep Node
Temperature (°C)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
02-Oct-00
01-Jan-01
03-Apr-01
03-Jul-01
03-Oct-01
02-Jan-02
04-Apr-02
04-Jul-02
04-Oct-02
03-Jan-03
05-Apr-03
05-Jul-03
05-Oct-03
Date

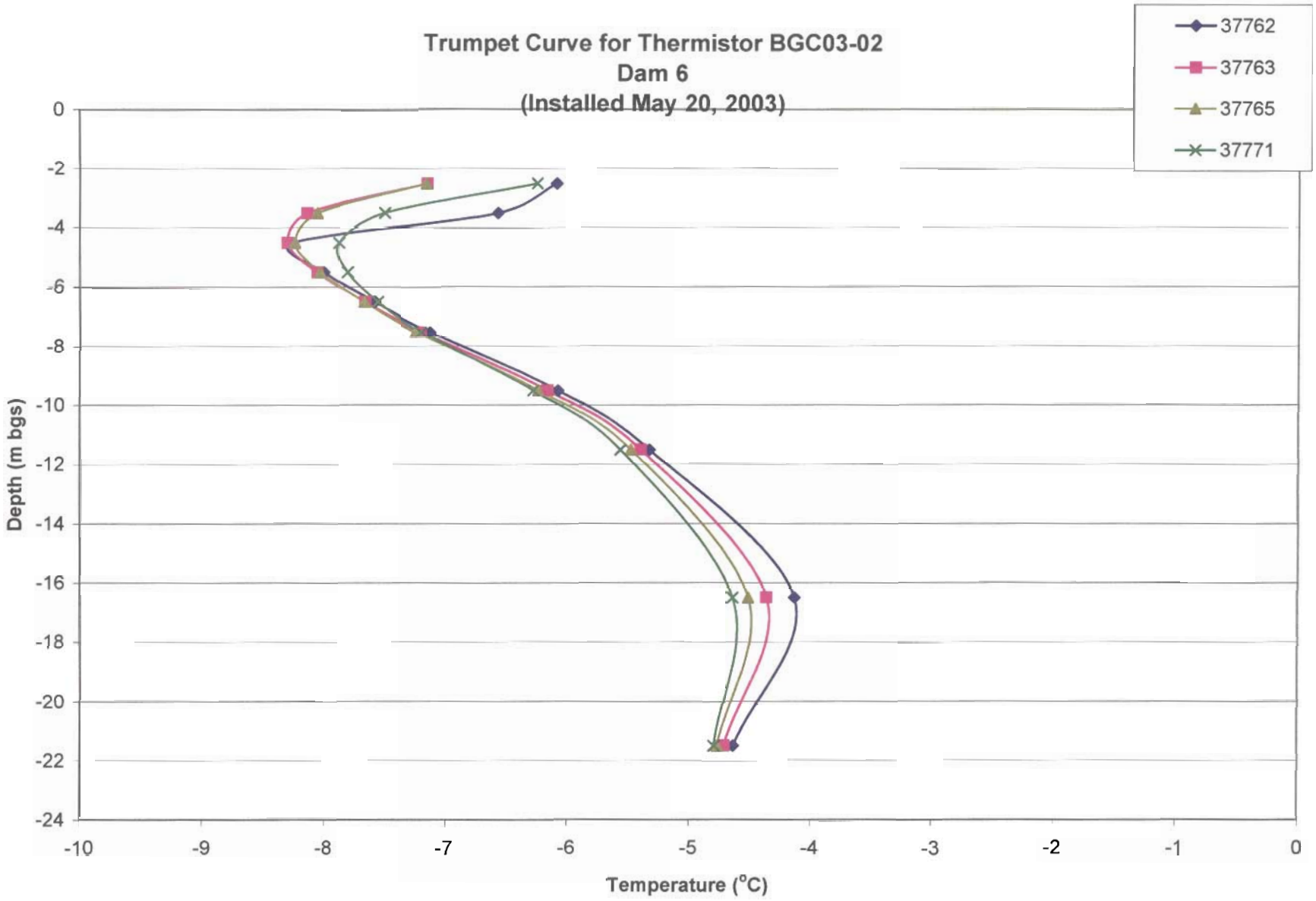

Long Term Plot for Deeper Nodes in TD4-1
(Crest of Dam 4, Far East End)
12 m Depth
10 m Depth
8 m Depth
6 m Depth
4 m Depth
Temperature (°C)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Dec-96
May-97
Oct-97
Mar-98
Aug-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Oct-02
Mar-03
Aug-03
Date

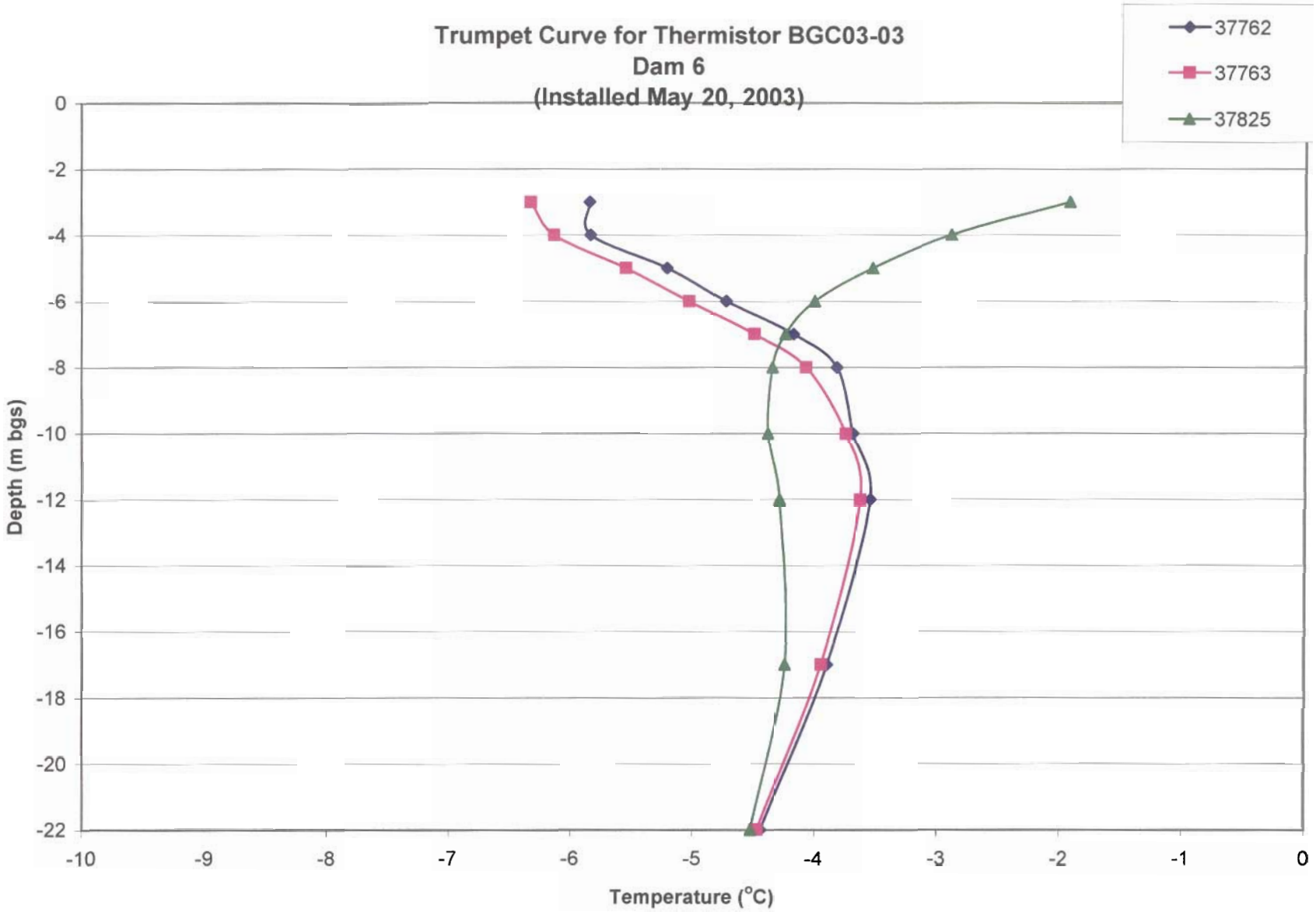

Long Term Plot for TD4-2
(Crest of Dam 4, East End, West of TD4-1)
12 m Depth
10 m Depth
8 m Depth
4 m Depth
Temperature (°C)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Dec-96
May-97
Oct-97
Mar-98
Aug-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Oct-02
Mar-03
Aug-03
Date

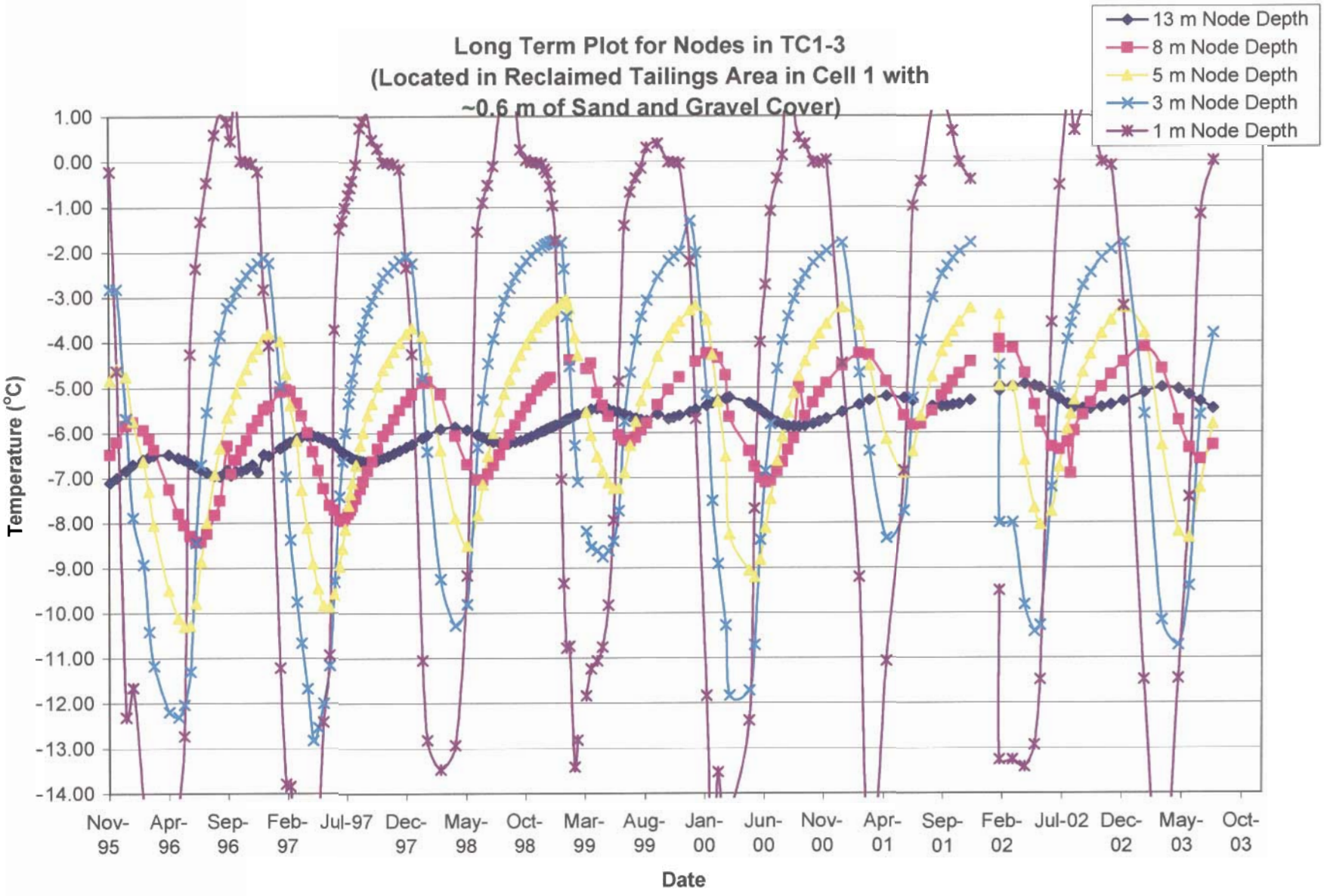

Long Term Plot for TD4-3
(Crest of Dam 4, West End, Just East of TD4-4)
12 m Depth
10 m Depth
8 m Depth
6 m depth
4 m Depth
Temperature (oC)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Dec-96
May-97
Oct-97
Mar-98
Aug-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Oct-02
Mar-03
Aug-03
Date


Long Term Plot for TD4-4
(Crest of Dam 4, Far West End)
12 m Depth
10 m Depth
8 m Depth
6 m Depth
4 m Depth
Temperature (°C)
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Dec-96
May-97
Oct-97
Mar-98
Aug-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Oct-02
Mar-03
Aug-03
Date


Trumpet Curve for Thermistor BGC03-01
Dam 6
(Installed May 20, 2003)
37762
37763
37765
37771
Depth (m bgs)
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-10
-8
-6
-4
-2
0
2
4
6
8
Temperature (°C)


Trumpet Curve for Thermistor BGC03-02
Dam 6
(Installed May 20, 2003)
37762
37763
37765
37771
Depth (m bgs)
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
Temperature (°C)


Trumpet Curve for Thermistor BGC03-03
Dam 6
(Installed May 20, 2003)
37762
37763
37825
Depth (m bgs)
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
Temperature (°C)


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)
13 m Node Depth
8 m Node Depth
5 m Node Depth
3 m Node Depth
1 m Node Depth
Temperature (°C)
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
Nov-95
Apr-96
Sep-96
Feb-97
Jul-97
Dec-97
May-98
Oct-98
Mar-99
Aug-99
Jan-00
Jun-00
Nov-00
Apr-01
Sep-01
Feb-02
Jul-02
Dec-02
May-03
Oct-03
Date

APPENDIX 3

DAM INSPECTION FORM

LUPIN NU

Dam Inspection Form

Date (Yr/Mn/Dy):_____ **Inspector:**_____

Dam No: _____ **Weather:**_____

1. Upstream face:
   - ❑ Location of water level relative to crest?_____
   - ❑ Location of beach (tailings) level relative to crest? _____
   - ❑ Any cracks or erosional features?_____
   - ❑ Displaced or eroded rip rap?_____
   - ❑ Sinkholes or settlement of the slope or nearby beach?_____
   - ❑ Water entering into the upstream face?_____
2. Crest (access road):
   - ❑ Erosional features?_____
   - ❑ Sinkholes, settlement or depressed areas?_____
   - ❑ Visible cracks?_____
   - ❑ If Yes, note length, width and direction:_____
3. Downstream face and toe area:
   - ❑ Cracks or erosional features?_____
   - ❑ Bulging or deformation along the slope or the toe?_____
   - ❑ Visible seepage?_____
   - ❑ If Yes, note location, quantity and if any sediment within the seepage water:__ _____
4. Any other comments indicating different or atypical conditions?
   - ❑ _____
5. Record thermistor (where installed) readings at least monthly on separate recording sheet.

Sketches / Diagrams – provide more detail on any issues noted above

BGC Engineering Inc.
Emergency Contact, Jim Cassie, P.Eng.
Office 403/250-5185 Ext. 103, Cell 403/651-2464, Home 403/240-0089