Appendix V5-3G

Bathymetric Surveys: Hope Bay Project, Hope Bay, Nunavut

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REPORT ON

BATHYMETRIC SURVEYS
HOPE BAY PROJECT
HOPE BAY, NUNAVUT

Submitted to:

SRK Consulting Canada Inc.
#800, 1066 West Hastings Street
Vancouver, BC
V6E 3X2

DISTRIBUTION:

6 Copies - SRK Consulting Canada Inc.
2 Copies - Golder Associates Ltd.

October 20, 2006 06-1419-007

EXECUTIVE SUMMARY

Golder Associates Ltd. (Golder) was retained by SRK Consulting Canada Inc. (SRK) to conduct bathymetric surveys for the proposed development of the Hope Bay Gold Project. This report is carried out in accordance with our proposal 06-1419-007, dated March 7, 2006. The field investigations were completed during a period extending from July 31 to August 29, 2006.

The objective of the site investigation was to provide single-beam bathymetric data on selected lakes in the area of the Hope Bay Project. Low-density bathymetric coverage was required on Doris, Windy, Patch, and Spyder Lakes and high-density coverage was required in Tail Lake, two areas of Roberts Bay, and approximately one-third of each of Windy, Patch and Spyder Lakes.

In particular, high-density information is required at specific areas of various lakes to aid the design of docking facilities, volume calculations and general mine design. The detailed bathymetric data can also provide a visual aid for the evaluation of potential faults and possible sediment flows. To complete this work single-beam bathymetry with real-time sub-metre positioning was used. In addition, low-resolution sidescan sonar imaging was observed during bathymetric fieldwork on selected lines for qualitative evaluation that the chosen density coverage was sufficient to map the terrain.

The bathymetry data provided good resolution of subsurface features. All of the lakes presented a non-uniform topography similar to surface topography in the areas. Many lineaments, including probable bedrock ridges are seen to extend into the lakes.

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by SRK Consulting Canada Inc. (SRK) to conduct bathymetric surveys for the proposed development of the Hope Bay Gold Project. This report presents the results from these investigations.

The objective of the site investigation was to provide single-beam bathymetric data on selected lakes in the area of the Hope Bay Project. Low-density bathymetric coverage was required on Doris, Windy, Patch, and Spyder Lakes and high-density coverage was required in Tail Lake, two areas of Roberts Bay, and approximately one-third of each of Windy, Patch and Spyder Lakes.

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2.0 SCOPE OF WORK

The proposed scope of work was as follows:

- General bathymetry of Doris, Windy, Patch and Spyder Lakes at 50-m line spacing;
- Detailed bathymetry (10-m line spacing) of approximately one-third of the survey areas of Windy, Patch and Spyder Lakes;
- Detailed bathymetry of Tail Lake;
- Detailed bathymetry of two areas within Roberts Bay;
- Global positioning system (GPS) positioning with 1-m to 2-m accuracy presented in NAD83 datum; and
- Preparation of bathymetric drawings based on supplied AutoCAD base maps.

In consultation with SRK, (the prime consultant to Miramar Hope Bay Ltd. for the mine design) the following techniques were selected to achieve the stated objectives in the survey area:

- Single-beam echo sounding;
- Low-resolution sidescan sonar to evaluate density coverage; and
- Real-time differential navigation utilizing the Canadian Differential Global Positioning System (CDGPS) with tide monitoring and tie-in to locally provided reference locations.

3.0 INSTRUMENTATION AND FIELD OPERATIONS

The surveys were carried out using a winterized Zodiac inflatable boat powered by a 15-horsepower outboard motor supplied by Miramar Hope Bay Ltd. This provided a lightweight boat that was moveable by helicopter and also provided relatively rapid surveying and good access and maneuverability to the frequent shallow areas encountered during the surveys.

The work was completed during the period July 31 to August 29, 2006. The sea state was generally good during data collection. As the survey progressed, the weather conditions deteriorated. In all, there were three days with no data collection due to adverse weather conditions affecting GPS quality, bathymetry accuracy (due to wave height) and safety. On these days, data processing and equipment maintenance was undertaken. The geophysical instruments and navigation system all operated within specification throughout the course of the entire survey. No reportable health and safety incidents occurred during the fieldwork.

The vessel position was acquired with a single-frequency code-based Trimble DGPS (Ag132) which in good GPS conditions can be accurate to approximately +/-0.5 m (see Section 3.2).

The bathymetry was measured using an ODOM® Hydrotrac Survey Echo Sounder with a 200-kHz transducer. This provided high-resolution bottom detection at a rate of 10 Hz. Velocity calibrations were completed at each of the lakes for accurate determination of sound velocity in water.

To ensure good coverage of lake-bottom features, especially for 50-m line spacing, we operated a low-resolution sidescan sonar during data collection. The sidescan sonar provides qualitative images (seismically) of bottom topographical variations to indicate whether additional bathymetric coverage should be completed.

The sidescan sonar was recorded using an Imagenex digital dual sidescan sonar (SportsScan). The SportScan utilizes two transducers of 330 kHz to provide a low resolution image of the lake bottom up to 60 m from the sensor in each direction. The data was recorded in conjunction with the GPS stream from the Ag 132 using the Imagenex software, Win881SS. The sonar was braced to the side of the boat at a depth of 1.2 m.

3.1 Survey Coverage

The boundaries of the survey were outlined and SRK requested coverage of all the selected lakes at a minimum of 50-m intervals. This line spacing ensured adequate

coverage for volume calculations and identification of any unusual topographical features on the lake floors. Higher density areas were required in the following areas:

- the northern half of Patch Lake;
- the southern third of Windy Lake;
- all of Tail Lake and both Roberts Bay areas; and
- the western half of the Spyder Lake survey area.

Sidescan sonar data were obtained at Roberts Bay, Windy, Patch, and Tail Lakes. The survey lines were profiled on multiple traverses to provide a good overview of the lakebed features. Due to time constraints and adverse weather conditions, no sidescan data were obtained on Doris and Spyder Lakes.

3.2 Navigation

Positioning of the survey vessel and the sonar equipment was provided by Trimble Differential Global Positioning System (DGPS) receivers. Real-time corrections were obtained using industry-standard Canadian Differential GPS (CDGPS) corrections, and Wide-Area Augmentation System (WAAS) system as a backup. Vessel navigation data were acquired with a single-frequency code-based Trimble DGPS (Ag132) accurate to approximately +/-0.5 m. The navigation GPS antenna was installed directly above the bathymetry transducer to minimize offset errors. The onboard receiver provided differentially corrected WGS84 latitude and longitude values at 5 Hz to both the navigation computer and SportScan sonar.

Hypack Max software produced by Coastal Oceanographics was used for navigation. During the survey, the vessel position was continuously plotted on a chart showing the planned and actual survey lines. This information was displayed to the helmsman on a LCD monitor along with additional navigation parameters. The vessel position and single-beam bathymetric data were acquired digitally and stored on the navigation computer. Fix marks were recorded at 60-second intervals.

3.3 Datum and Tidal Corrections

At each of the sites, a stake was driven into the lake and water levels were recorded daily. Each of the stakes was surveyed by the on-site surveyor to the Miramar Hope Bay datum. All horizontal positioning was recorded internally as latitude and longitude using the WGS84 datum, then displayed as UTM Zone 13 coordinates using the NAD83 datum. All coordinates given in this report use the NAD83 datum, and UTM coordinates are plotted on the relevant deliverable figures.

Tidal corrections were obtained at Roberts Bay by observations of water levels noted on a wooden tidal post, placed in a sheltered cove at Area A. Our tidal measurements have confirmed that predicted tides from Canadian Hydrographic Service (CHS) models have similar phases and peak values to predicted tides. To convert the observed water level readings to the mine datum, the tidal post was surveyed in by Miramar Hope Bay surveyors.

4.0 RESULTS AND INTERPRETATION

This section summarizes the results of the bathymetric surveys. The data coverage and the interpreted bathymetry data are presented in Figures 2 to 8, in combination with the land topography. The water depths are contoured to 1-m intervals and blue-shaded to enhance visualization. The actual survey tracklines are presented on Figures 9 through 15. All figures are provided in electronic format on CD and were provided on an FTP site for downloading. The bathymetric data are also provided on CDs contained in each hardcopy report.

4.1 Positioning

Due to continued excellent satellite coverage, the Trimble DGPS positioning equipment provided high quality location fixes continuously throughout the surveys.

Real-time CDGPS corrections provided differential correction during most of the survey. Occasional loss of this differential signal occurred during the survey, due to rough water conditions or blocking of the satellite signal behind nearby topographical highs. During these periods, the system was set to utilize the WAAS corrections which still provided sub-metre differential corrections.

In post-processing, the navigation data are automatically filtered for any non-differential, high Horizontal Dilution of Precision (HDOP), or anomalous GPS data. This occurred in rare cases but not for any long time periods. When weather conditions were too rough to reliably gain a differential fix, a standby day was required.

The position in NAD83 coordinates and water elevation (at the time of surveying) of each of the survey stakes as provided by Miramar Hope Bay Ltd. are summarized below:

Survey Area	Easting	Northing	Elevation (m)
Patch	433893.3	7552217.8	26.28
Windy	432569.5	7550525.0	18.24
Doris	433800.0	7559050.0	21.42
Roberts Bay	432221.7	7563305.5	temporary mark = 0.92 m
Spyder	441135.5	7505824.0	65.63
Tail	435263.0	7557635.5	28.12

To record the tidal fluctuations at Roberts Bay, a stake was placed in the shallows at the coordinates mentioned above. A temporary depth scale was drawn on the stake and referenced each hour whilst surveying. The surveyors then calculated a true elevation for the temporary scale marked on the stake. True tidal elevations were calculated using the corrected information.

4.2 Bathymetric Results

The single-beam bathymetric data were of high quality and provide reliable depth data for the required lakes and ocean areas. The data have been combined, filtered, and contoured using AutoCAD and Surfer by Golden software.

The bathymetric results are presented in Figures 2 to 8 and have been provided in electronic format to SRK for incorporation into engineering drawings. For interpretation and planning purposes, we have also combined the bathymetric data with land topographical data that were provided by Miramar Hope Bay Ltd. through SRK.

Post-processing of the data included tidal corrections, removal of outliers and erroneous GPS positions.

4.2.1 Roberts Bay

The two areas within Roberts Bay were surveyed over two days during extremely calm weather, which provided reliable data and consistent tidal matches between days. Area A bathymetry data (Figure 2) indicate that water depths gradually increase to more than 7 m at the mouth of the cove. A shallow gradient shelf extends from shoreline to approximately 100 m into the cove. The water depths deepen rapidly from 3 m to 6 m at the edge of this shelf. The eastern side of Area A indicates a very shallow area which limited surveying due to insufficient draft for boat operation.

The data from Area B (Figure 3) shows the sea floor topography to be consistent with the shoreline trend. The near-shore area is characterized by shallow gradients. At 3 m depth, the gradient increases and depths increase to beyond 13 m at the edge of the survey area. Both areas within Roberts Bay were surveyed in a grid with a 20-m line spacing.

4.2.2 Doris Lake

The Doris Lake data (Figure 4) indicate water depths ranging up to 20 m. Notable features are a steep cliff at shoreline on the eastern shore of the lake which deepens to more than 16 m within a few metres from shore. The southern third of the lake is characterized by a relatively flat, shallow lake bottom, with depths not in excess of 6 m. Doris lake was surveyed at 50-m line spacing.

4.2.3 Tail Lake

Tail Lake (Figure 5) was surveyed at 10-m line spacing and indicates water depths of up to 7 m. Two north-south channels are present in the centre of the lake which are both approximately 1.5 m deeper than the surrounding area.

4.2.4 Windy Lake

The Windy Lake data (Figure 6) indicates water depths in excess of 22 m at a deep bowl located in the area of 431400E, 7553900N. An isolated shallow ridge occurs in the centre of Windy Lake with depths slightly less than 5 m encountered. The southern third of the lake was surveyed at 10-m line spacing, and indicates a gradual shoaling of water depth to the south with no major anomalies.

4.2.5 Patch Lake

The Patch Lake data (Figure 7) indicate a shallow lake of approximately 5 m in depth with three significant deep bowls of up to 16 m in depth. These depressions are indicated by the darker colours on the contour plan. The northern half of Patch Lake was surveyed at 10-m line spacing which delineated a number of smaller features such as a steep cliff down to 6 m in depth, located at 434500E, 7550800N.

A smaller lake (centered on 433700E, 7551400N) was attempted on three separate occasions. However, no GPS lock could be gained, due to the large cliff on the southwest shoreline obstructing the view of the satellites. This effect was also noticed in the northernmost area of Patch Lake where CDGPS correction could not be gained and the WAAS system was exclusively used. The depths observed in the small lake were all less than 4 m and a shallow area of under 1 m in depth occurs at the northeastern shore. Unfortunately due to lack of GPS signal, we did not record any data at this lake.

4.2.6 Spyder Lake

The Spyder Lake data shown on Figure 8 indicate water depths up to 19 m. The western half of the survey area reveals a deep, irregular channel which was surveyed with a line spacing of 25 m to provide extra delineation of the features. The eastern half of the survey area is generally flat with water depths of less than 5 m. Due to extremely low water conditions at the time of surveying, a few areas were too shallow and could not be surveyed. This includes; south of 7503300N and the small inlet near camp, centered at 441600E, 7505600N. A shallow reef is present at 440600E, 7505700N which broke the surface at the time of surveying and may also present a hazard to boats during times of higher water levels.

5.0 DISCUSSION AND SUMMARY OF INTERPRETED RESULTS

The bathymetry data provides accurate resolution of the underwater topography, especially in the high-resolution areas where 10-m line spacing was undertaken. The GPS data was consistently within sub-metre accuracy and multiple velocity calibrations were completed at each site to ensure using accurate sound velocity values.

Low-resolution sidescan sonar was conducted whilst surveying to help identify any major anomalies or highly variable lake bottom, that would require additional survey lines. This data was reviewed at the end of each day to ensure adequate coverage at the time of surveying. In general, this data presented few reflectors and anomalies in the centre of the lakes and significant boulders in near-shore areas.

All of the surveying was undertaken during a particularly dry summer which produced low water levels, especially in the case of Spyder Lake. We note that Spyder Lake at the time of surveying had an elevation of 65.63 m (approximately 1.5 m lower than springtime water levels) which resulted in many drill casings being partially exposed creating a safety hazard. The low water levels created problems entering certain bays (Figure 8) and also slowed survey progress due to frequent shallows. If more detail is required in these areas, it is recommended to conduct extra bathymetry during the high-water levels in the springtime or alternatively conduct an over-ice program, utilizing ground-penetrating radar.

In general, the strike and shape of the lake bottom topography reflects lineaments present on land, which may aid visual interpretation of faults and possible landslides.

No specific sediment or rock information can be gained from the bathymetry data. However, shape and gradient of slope may be useful in identifying areas of possible bedrock exposure. In all of the shallow areas encountered during the survey where bottom characteristics could be viewed by field personnel, the lake bottom consisted of soft silts interspersed with medium-sized boulders.

6.0 CLOSURE

This report has been prepared based on the information obtained for the purposes outlined above.

We trust that this report meets your immediate requirements. Please contact the undersigned should you have any questions or concerns.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED BY

John Woods, E.I.T.
Geophysicist

ORIGINAL SIGNED BY

Michael Maxwell, Ph.D.
Senior Geophysicist, Principal

JKW/MGM/vee
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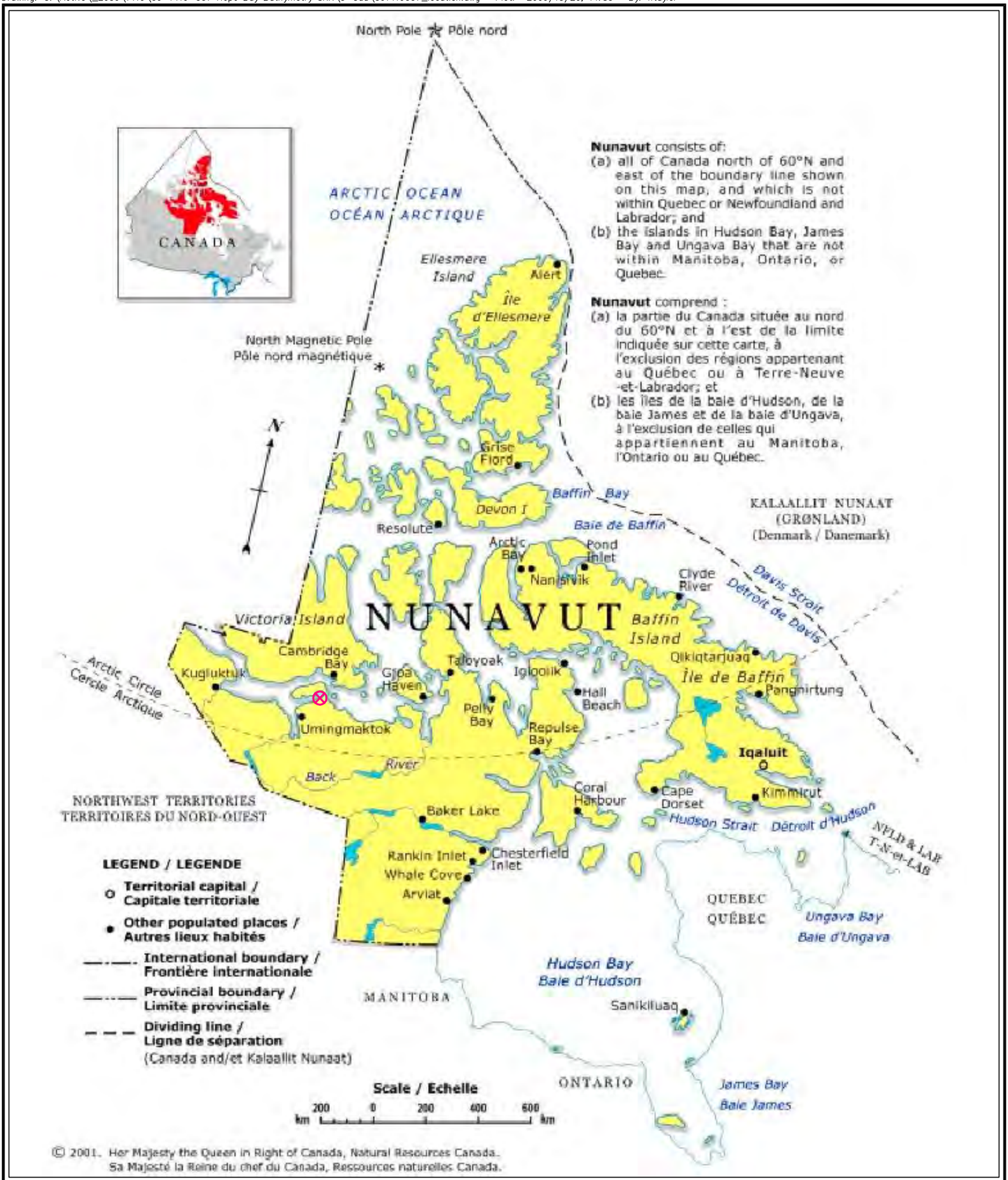

Nunavut consists of:
(a) all of Canada north of 60°N and east of the boundary line shown on this map, and which is not within Quebec or Newfoundland and Labrador; and
(b) the islands in Hudson Bay, James Bay and Ungava Bay that are not within Manitoba, Ontario, or Quebec.

Nunavut comprend :
(a) la partie du Canada située au nord du 60°N et à l'est de la limite indiquée sur cette carte, à l'exclusion des régions appartenant au Québec ou à Terre-Neuve-et-Labrador; et
(b) les îles de la baie d'Hudson, de la baie James et de la baie d'Ungava, à l'exclusion de celles qui appartiennent au Manitoba, l'Ontario ou au Québec.

Reference:
Location image provided by SRK.

Legend:
⊗ Survey Area Location

Golder Associates

TITLE: SITE LOCATION PLAN

PROJECT: SRK Hope Bay, NT

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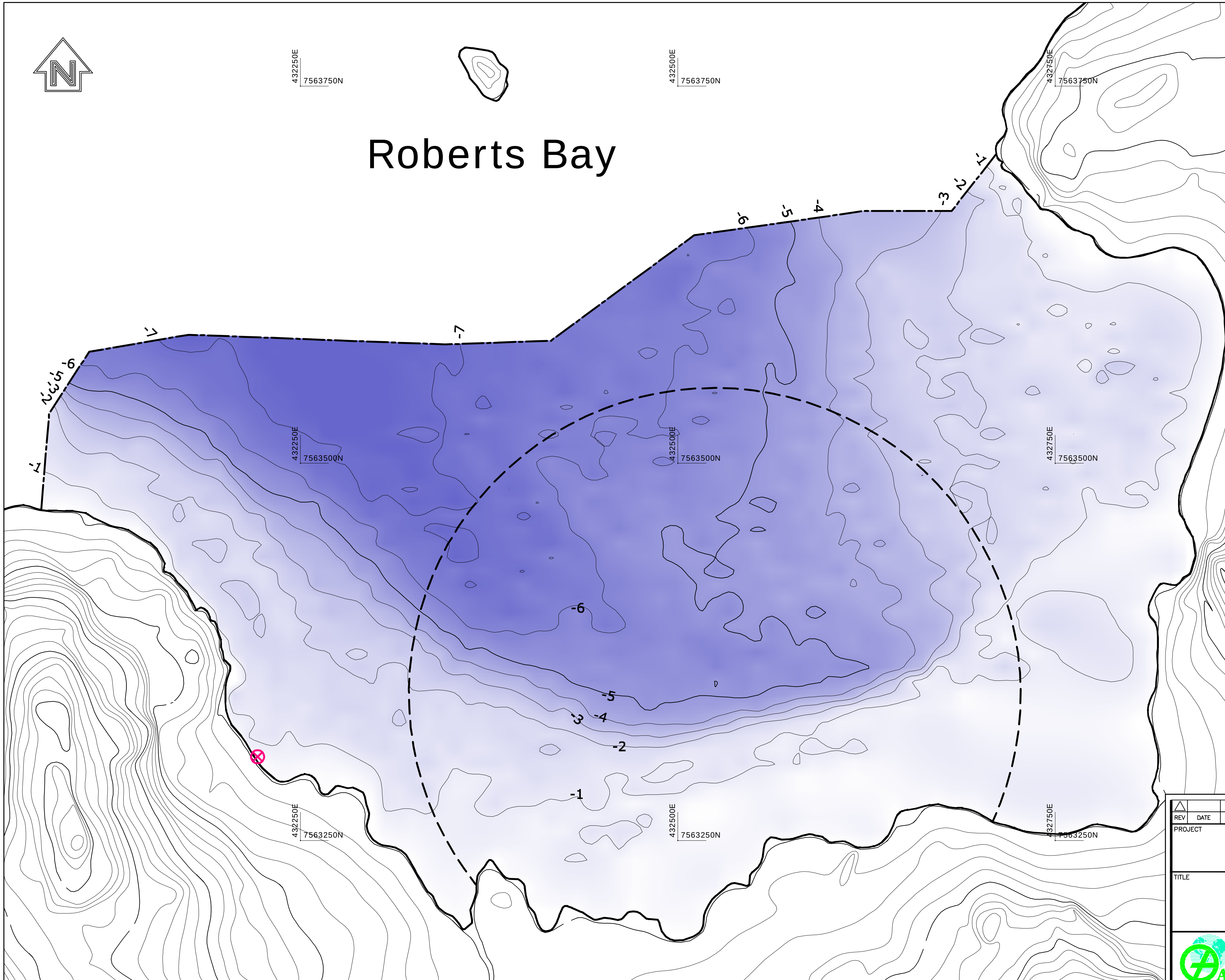
REVIEW	20061019		

Figure 1



Reference:

Topographic information (NAD83, Zone 13N) generated by BHP 1997 and provided by MHBL.

Legend:

- Sea-bed Contour, Major
- Sea-bed Contour, Minor
- Shoreline
- SRK Survey Area
- Golder Survey Limit
- Survey Stake

Note:

1. Sea-bed contours are at geodetic elevation are shown at 1m intervals.
2. Grid coordinates are NAD83, Zone 13N.
3. Topographic contour intervals are 1m.
4. Roberts Bay shoreline is shown at -0.05m elevation in topographic base map.
5. Figure to be read in conjunction with Golder report "Rpt1019_06 - SRK - Hope Bay Bathymetry".

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SRK
Hope Bay, NT

TITLE

ROBERTS BAY, AREA A
SEA-BED ELEVATIONS

Golder Associates

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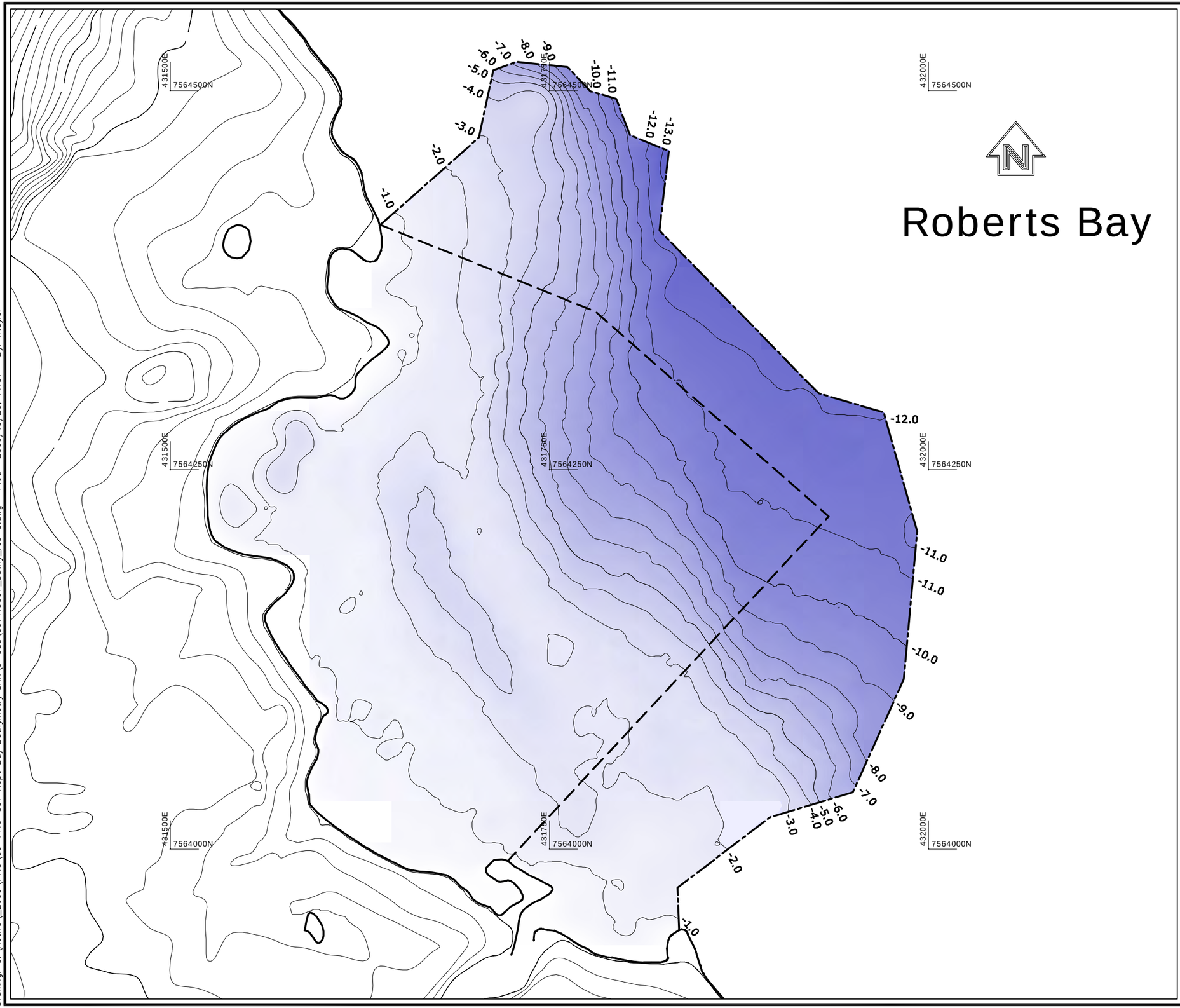
Figure 2



Reference:

Topographic information (NAD83, Zone 13N) generated by BHP 1997 and provided by MHBL.

Legend:

- Sea-bed Contour, Major
- Sea-bed Contour, Minor
- Shoreline
- SRK Survey Area
- Golder Survey Limit
- Survey Stake

Note:

1. Sea-bed contours at geodetic elevation are shown at 1m intervals.
2. Grid coordinates are NAD83, Zone 13N.
3. Topographic contour intervals are 1m.
4. Roberts Bay shoreline is shown at -0.05m elevation in topographic base map.
5. Figure to be read in conjunction with Golder report "Rpt1019_06 - SRK - Hope Bay Bathymetry".

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SRK
Hope Bay, NT

TITLE

ROBERTS BAY, AREA B
SEA-BED ELEVATIONS

Golder Associates

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REVIEW	MM	20061004		

Figure 3

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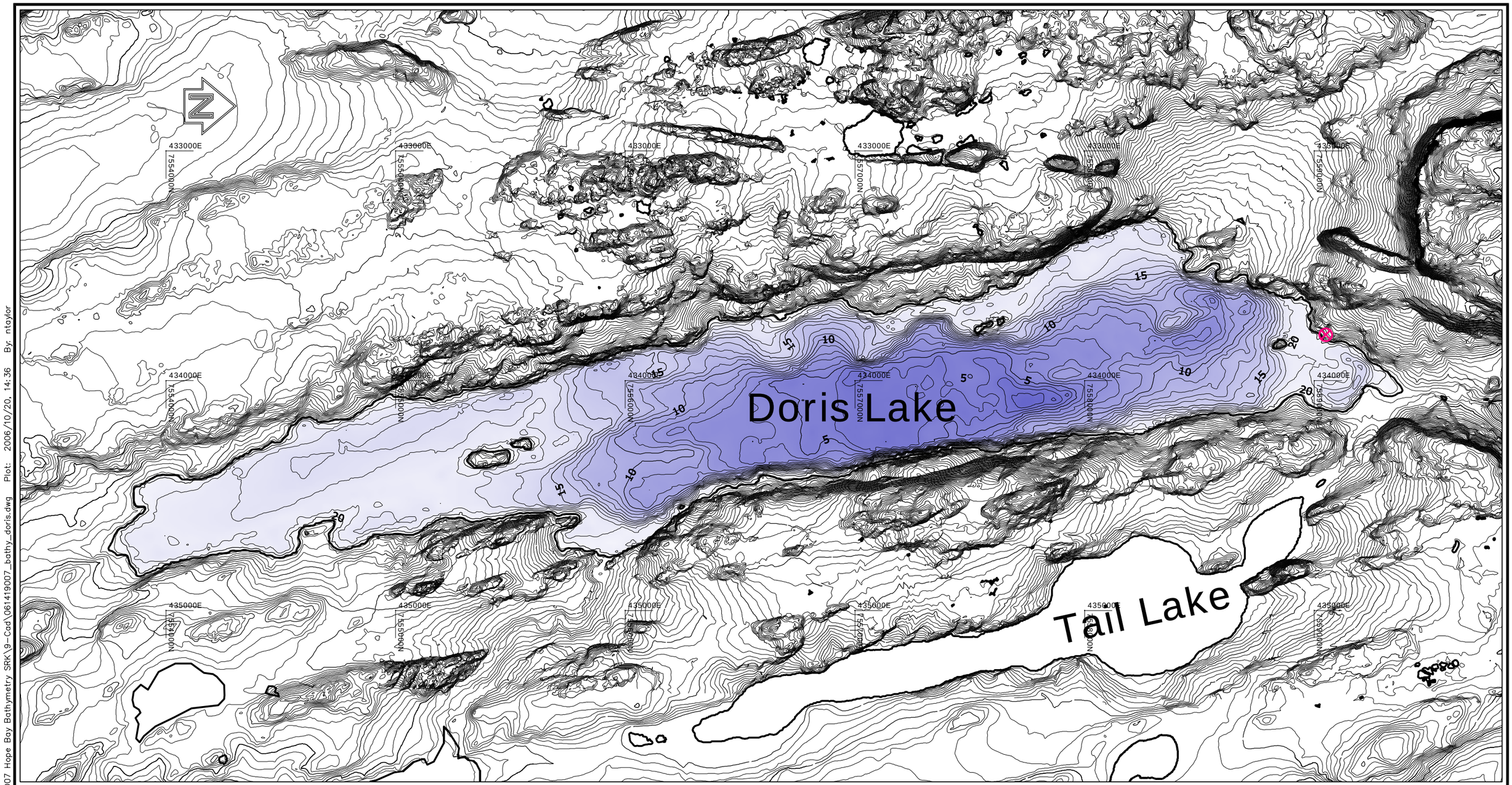

Drawing: O:\Active_2006\1419\06-1419-007 Hope Bay Bathymetry SRK\9-Cad\061419007_bathy_doris.dwg Plot: 2006/10/20, 14:36 By: ntaylor

Legend:

- Lake-bed Contour, Major
- Lake-bed Contour, Minor
- Shoreline
- Survey Stake

Note:

1. Lake-bed contours at geodetic elevation are shown at 1m intervals.
2. Grid coordinates are NAD83, Zone 13N.
3. Topographic contour intervals are 1m and 2m.
4. Doris Lake shoreline at +21.42m elevation geodetic interpolated from topography and survey data.
5. Figure to be read in conjunction with Golder report "Rpt1019_06 - SRK - Hope Bay Bathymetry".

Reference:

Topographic information (NAD83, Zone 13N) generated by BHP 1997 and provided by MHBL.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SRK
Hope Bay, NT

TITLE

DORIS LAKE
LAKE-BED ELEVATIONS

Golder Associates

PROJECT No. 06-1419-007			FILE No. 061419007_bathy_doris		
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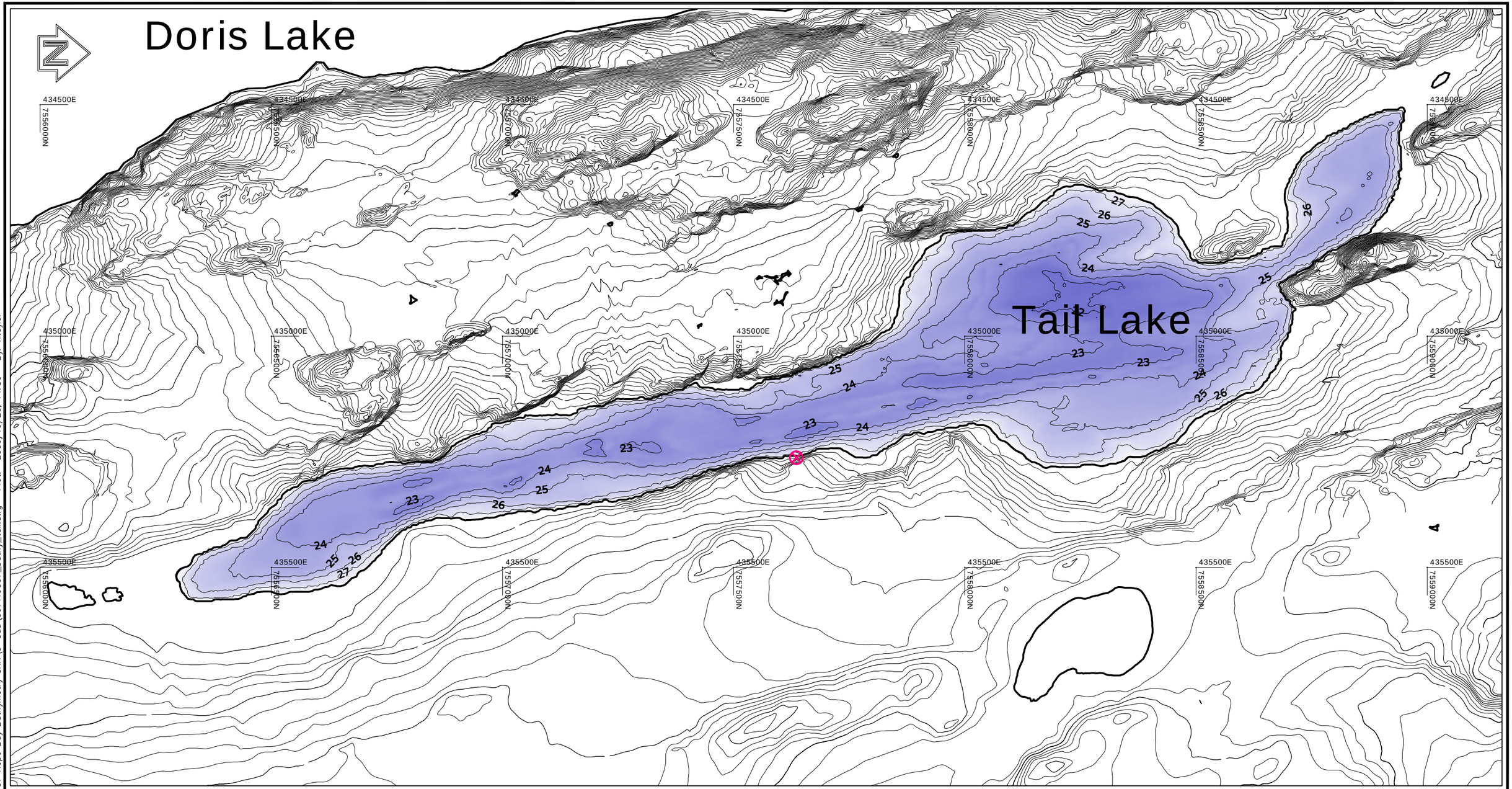
Doris Lake

Tail Lake



Legend:

- Lake-bed Contour, Major
- Lake-bed Contour, Minor
- Shoreline
- Survey Stake

Note:

1. Lake-bed contours at geodetic elevation are shown at 1m intervals.
2. Grid coordinates are NAD83, Zone 13N.
3. Topographic contour intervals are 1m and 2m.
4. Tail Lake shoreline at +28.12m elevation geodetic interpolated from topography and survey data.
5. Figure to be read in conjunction with Golder report "Rpt1019_06 - SRK - Hope Bay Bathymetry".

Reference:

Topographic information (NAD83, Zone 13N) generated by BHP 1997 and provided by MHBL.

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PROJECT

SRK
Hope Bay, NT

TITLE

TAIL LAKE
LAKE-BED ELEVATIONS

Golder Associates

PROJECT No. 06-1419-007			FILE No.	061419007_bathy_tail	
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