

Avalon Rare Metals Inc.

**RESPONSE TO THE JANUARY 12, 2012 INFORMATION REQUESTS FROM
TRANSPORT CANADA
FOR THE THOR LAKE RARE EARTH ELEMENT PROJECT
DEVELOPER'S ASSESSMENT REPORT**

**Submitted To:
MACKENZIE VALLEY ENVIRONMENTAL IMPACT REVIEW BOARD**

January 23, 2012

Avalon Rare Metals Inc. (Avalon) is pleased to provide the following responses to Transport Canada's information requests provided via Mackenzie Valley Environmental Impact Review Board (MVEIRB) on January 12, 2012. Avalon's responses are found after each information request.

IR Number:	TC #1
Source:	Transport Canada
To:	Avalon Rare Metals Inc.
Subject:	Access Roads
DAR Section:	4.7.5.6, 4.8.5.5
TOR Section:	

Preamble

The DAR has identified the upgrading of road infrastructure for the project site. Minimal information describing the improvements of the access roads and haul roads at the Nechalacho Mine Site, Flotation Plant site, and the Hydrometallurgical Plant site were provided.

TC Request #1

1. In order for Transport to determine if any proposed/existing crossing may have an impact to navigation, please provide the following information regarding any proposed/existing crossing related to the project:
 - i) Details to clarify what type of crossing will be installed and the associated structures that will be within the water.
 - ii) Provide details of the proposed structure including plan and cross section drawings of the crossing with all dimensions including high/low water mark, and the height above the bed of the waterway.
 - iii) If applicable, please provide any Photographs at the site of the crossing and surrounding area, and any preliminary drawings or engineered plans.
2. For the construction and installation of any culvert, please provide the following:
 - i) A map identifying the culvert locations with the latitude/longitude coordinates.
 - ii) Depth and width of the watercourse and number of culverts associated with those crossings.
 - iii) If applicable, please provide any Photographs at the site of the culvert and surrounding area, and any preliminary drawings or engineered plans.

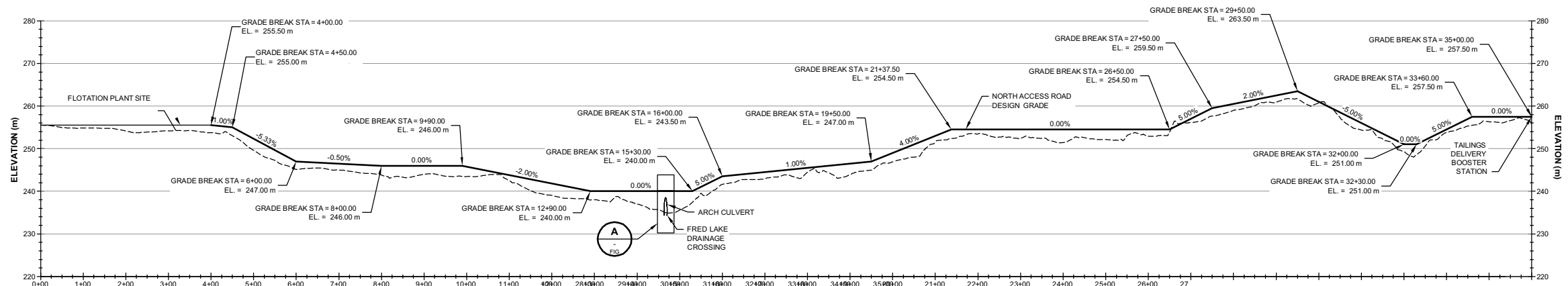
Avalon Response #1

Regarding proposed access road stream crossings at the Nechalacho Mine site, Avalon will need to install a stream crossing downstream of the Fred Lake outlet stream.. This stream has been determined by Stantec (2011) (Appendix A.1 of the DAR) to have intermittent seasonal flow. This small stream passes through a long wetland reach and according to Stantec, did not retain a deep enough wetted channel to allow fish passage during normal peak flows. During spring freshet, channel depth was only 30 cm (measured over 150 m, 4-6 times) and it became significantly shallower through the summer (i.e., residual pool depth was 0.02 m); this would classify this stream as a minor water

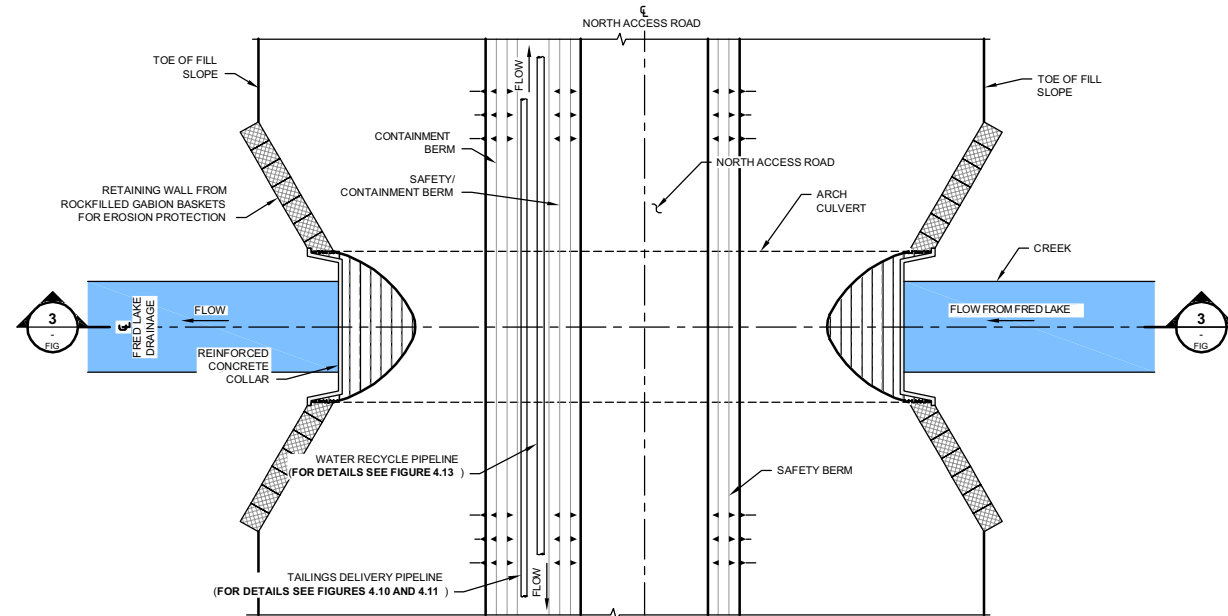
Nevertheless as shown in Figure 4 , Avalon plans to install an arch culvert at this stream crossing site to prevent impacts to the existing creek bed and to maintain continuous roadway with continuous pipeline containment (safety berms). During installation of the culvert and associated earthworks near the drainage, silt fences will be employed to prevent sediment reporting to the natural drainage courses.

In addition, as described in the DAR, ventilation raises will be required to supply fresh air to the underground workings and act as primary emergency escapeway for workers. These raises are planned in the area between Thor Lake and Long Lake. These two lakes are connected by a short wetland channel which was blocked by a beaver dam at the time of Stantec's baseline studies.

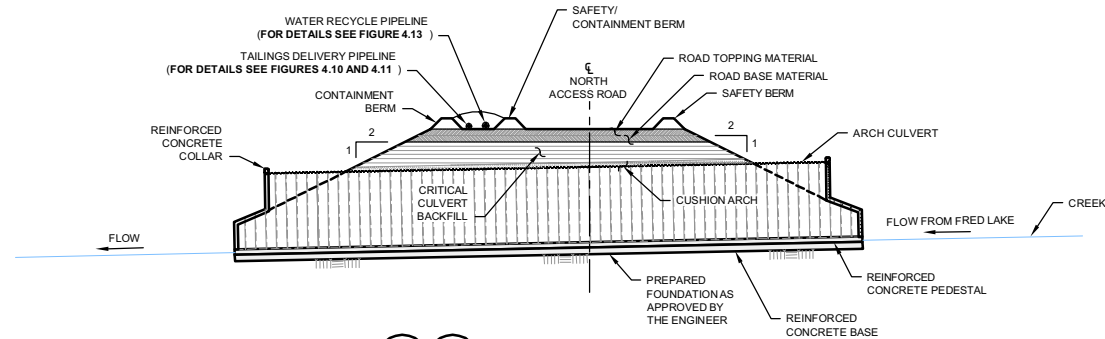
At some point in the future it is anticipated that the existing one lane crossing between Thor lake and Long Lake will need to be upgraded. If that is determined to be required, Avalon would propose to install a comparable arrangement as that proposed for the Fred Lake crossing, namely the use of an arch culvert would be employed to protect and maintain the existing fish habitat at this crossing site.



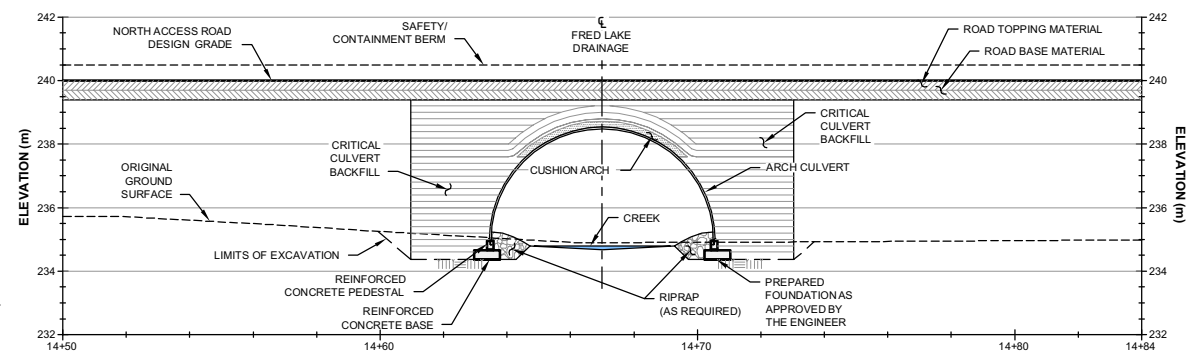
1
SECTION
PROFILE ALONG NORTH ACCESS ROAD
HORIZONTAL SCALE A
VERTICAL SCALE B



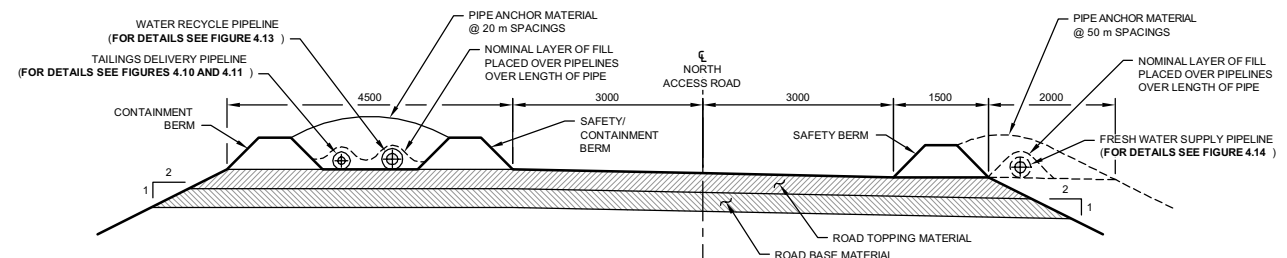
PLAN VIEW
FRED LAKE DRAINAGE CROSSING
SCALE E



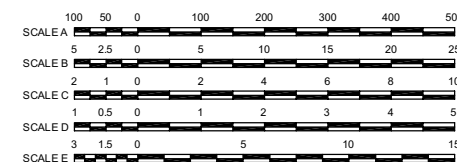
3
SECTION
FRED LAKE DRAINAGE CROSSING
SCALE E



A
DETAIL
FRED LAKE DRAINAGE CROSSING
SCALE C



4
SECTION
TYPICAL NORTH ACCESS ROAD DESIGN SECTION
SCALE D



LEGEND

	WATER		CONCRETE
	CUSHION ARCH		RIPRAP
	CRITICAL CULVERT BACKFILL		ROCKFILLED GABION BASKET

NOTES

1. Dimensions are in millimetres and elevations are in metres, unless noted otherwise.
2. Actual crossing dimensions to be determined based on hydraulic design.

Figure Source: Knight Piesold (2012).

CLIENT



THOR LAKE PROJECT

North Access Road Profile, Sections and Details

PROJECT NO. V15101007.004	DWN SL	CKD RH	APVD RH	REV 0
OFFICE EBA-VANC	DATE January 6, 2012			

Figure 4

STATUS
ISSUED FOR USE

IR Number:	TC #2
Source:	Transport Canada
To:	Avalon Rare Metals Inc.
Subject:	Docks
DAR Section:	4.7.5.7, 4.8.5.6
TOR Section:	

Preamble

Transport Canada has reviewed the description of the barging/docking facilities at the Nechalacho Mine, Flotation Plant site, and Hydrometallurgical Plant site. Figure 4.7-11 and Figure 4.8.8 does not provided sufficient details as to what structures will be placed within the high water level.

TC Request #2

1. In order for Transport to determine if any proposed dock facilities may have an impact to navigation, please provide the following information:
 - i) Provide details of the proposed structure including plan and cross section drawings of the crossing with all dimensions including high/low water mark, and the height above the bed of the waterway.
 - ii) If applicable, please provide any photographs at the site of the crossing and surrounding area, and any preliminary drawings or engineered plans.

Avalon Response #2

Avalon appreciates and understands that Navigable Waters Protection approval (NWPA) will be required from Transport Canada for the proposed seasonal barge/docking facilities at the Nechalacho Mine/Flotation Plant site and the Hydrometallurgical Plant site.

More detailed information on the location, footprint and installation methods to be employed for the proposed seasonal docks at both sites was provided in the Transportation Assessment prepared by Red Sky Enterprises, which was included as Attachment 2 to Avalon's response to MVEIRB IR# 1.7. A copy of that same report is provided as Attachment 1 to this response. The following text, extracted from this report outlines the general plan for both sites.

Seasonal docks comprised of flat deck barges will be used at each site. A mooring arrangement will be developed to adequately secure the dock barges during the open water season. Careful consideration will be given to the configuration of the barge dock to enhance loading/offloading operations.

Under the current arrangement as described in the DAR, NTCL 1000 series barges are considered for use as dock barges and 1500 series barges for cargo. The moulded depth of each barge series differs by 0.77 metres (2.5 ft.), therefore ramping will be required, up or down, as the draft of the cargo barge changes.

Figure 3.1.1 in the Transportation Assessment (Attachment 1) describes the current proposed mooring arrangement at the Nechalacho Dock. One 1000 series barge is moored alongside the shore with lines running to 4 dead men (anchor points) ashore. A ramp can be set about amidships of the dock barge. One cargo barge is then moored alongside the dock barge for loading. Other barges in the tow (2) can be anchored nearby or tied to the shore and shuttled into the loading dock when barge 1 is loaded.

Figure 3.2 in the Transportation Assessment (Attachment 1) describes the current proposed mooring arrangement at the Pine Point Dock. Due to the shallow nearshore area that exists at this site, three 1000 series dock barges, secured in line, would be required to moor the cargo barge). A well planned securing arrangement for the dock barges will be required to withstand adverse weather conditions. Grounding the dock barges by ballast water is another possibility but would require further investigation and approval by the barging contractor.

More detailed design information for the two proposed barge docking structures, including plan and cross section drawings, will be provided to Transport Canada in the future NWPA applications that will be prepared and submitted to the Department for review and approval.

ATTACHMENTS

Attachment 1: Avalon Rare Metals Inc. Transportation Assessment. Report prepared by Red Sky Enterprises Inc. September 21, 2011.

Attachment 1

AVALON RARE METALS INC. TRANSPORTATION ASSESSMENT

RED SKY ENTERPRISES INC.

September 21, 2011

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1.0 Introduction: This report provides an assessment of the proposed method to transport moist concentrate from the Nechalacho, Thor Lake mine (Thor) across Great Slave Lake to Pine Point where the concentrate will be further processed before onward shipping to southern destinations. Fuel, reagents and other commodities will be shipped to Thor from Hay River, which may or may not be a separate operation.

Information pertaining to quantities, port location/infrastructure, load/offload operations and lay down areas was provided by Avalon Rare Minerals Inc. (Avalon).

Various over water transportation modes have been investigated; however, the current mode described in Developer's Assessment Report (DAR) is predicated upon tug and barge transport. Most criteria pertaining to marine equipment and cost estimates have been provided by the Northern Transportation Company Limited (NTCL).

Three tug and barge options have been considered for the transportation of Moist concentrates from Thor to Pine Point:

- Option 1 – 2 tugs, 6 1500 series barges
- Option 2 – 1 towing tug, 6 1500 series barges & 2 port tugs
- Option 3 – 2 tugs, 6 1000 series barges

Three tug and barge options have been considered for the transportation of fuel, reagents and other commodities from Hay River to Thor:

- Option 1 – 1 tug, 3 1500 series barges
- Option 2 – 1 tug, 3 1000 series barges
- Option 3 – 1 tug, 1 port tug, 6 1000 series barges

Detailed and summary schedules have been developed for all of the above options which are based on current tonnage data for all commodities. Cost estimates according to the above schedules and information received from NTCL are also included.

Two other local marine companies were contacted to ascertain their potential interest in this project. Both companies, which are described below, had positive responses.

Suggested docking arrangements at the Ports of Thor and Pine Point have been altered from what was initially envisaged by Avalon. This new arrangement should decrease load/offload times, but will require further consultation with tug and barge operators.

Transportation by Hovercraft was also investigated. Details of these craft was provided by Dale Wilson and followed by discussions with Paul Schmidt. It should be noted that the writer has had previous experience with 3 separate Hovercraft models, 2 working the Beaufort Sea off Tuktoyaktuk, NT and 1 working as a Pilot Project along the Athabasca River at Fort McMurray, AB. These machines were much smaller than proposed herein; however, it is believed that operational characteristics may be similar.

2.0 Commodities to be Transported: Listed below are the recent estimates of annual quantities of the various commodities to be transported by barge.

- 2.1 **Moist Concentrates:** 144,540 tonnes – Thor to Pine Point. Concentrates are intended to be loaded in 40 tonne purpose built low rise containers having dimensions of 6.1 x 2.4 x 1.3 m. The containers will be stored at laydown areas located adjacent to the Thor and Pine Point docks.
- 2.2 **Diesel Fuel:** 18,136 tonnes (21,800,000 litres) from Hay River to Thor.
- 2.3 **Reagents :** 4,025 tonnes from Hay River or Pine Point to Thor.
- 2.4 **Mill Equipment:** Approximately 4280 tonnes from Hay River to Thor. A part of this equipment may be shipped from Pine Point.
- 2.5 **Underground Equipment:** Approximately 480 tonnes of which the majority may be brought into Thor by ice road.
- 2.6 **Other Commodities:** To be determined.

3.0 Port Access, Infrastructure, Loading and Offloading: Initially, seasonal docks comprised of flat deck barges will be used at each site. A mooring arrangement will be developed to adequately secure the dock barges during the open water season. Careful consideration must be given to the configuration of the barge dock to enhance loading/offloading operations. Where practicable, the preferred arrangement for the dock barge is an alongside mooring rather than bow on. These reasons include:

- easier to moor the cargo barge to be loaded;
- less travel for the lift trucks; and
- cargo barge can be loaded from center rather than over the bow or stern, therefore more efficient in keeping the cargo barge in trim.

In cases where the dock barge(s) are moored bow on (Pine Point), preference would be to moor the cargo barge across the stern of the dock barge, again for ease of mooring and cargo operations. If this is not possible, the cargo barge should be moored stern to the dock barge to eliminate the requirement to cross the raised bow of the 1500 series barge. In any event only one cargo barge should be moored to the dock barge during loading/offloading operations. Other barges would be tended by the towing tug. *Note: In the case of a 1 towing tug, 6 cargo barge operation (Option 2) it would be necessary to have a smaller tending tug at each Port.*

Under the current arrangement as described in the DAR, NTCL 1000 series barges are considered for use as dock barges and 1500 series barges for cargo. The moulded depth of each barge series differ by 0.77 metres (2.5 ft.) (Figures 3.0, 3.0.1), therefore ramping will be required, up or down, as the draft of the cargo barge changes. Ramping between barges can be eliminated by either ballasting or a lift truck pass-pass operation. Either method would add time to the load/offload operation.

As well, adverse weather conditions will be a limiting factor throughout operations; floating barge docks may have to be disassembled to avoid damage. During these conditions operations would cease until weather moderates to safely continue.

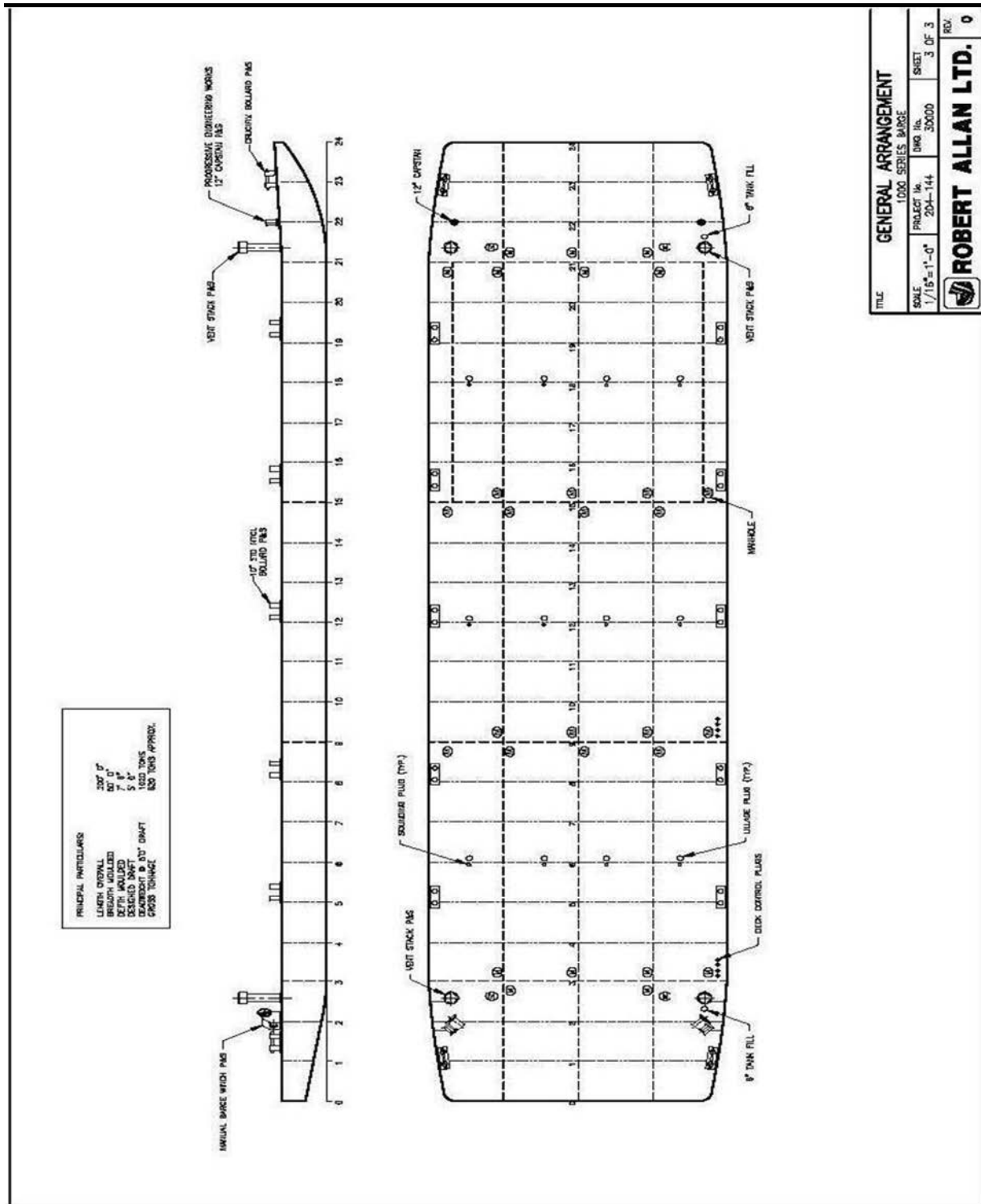


Figure 3.0 – NTCL 1000 Series Barge. Moulded Depth – 2.31 m (7' 6")

3.1 ***Nechalacho, Thor Lake Mine:*** Located along the north shore of Great Slave Lake (Hearne Channel), the port is reasonably protected from adverse winds except those originating from the westerly to south westerly quadrants. Access is believed to be satisfactory for equipment having a draft of not more than 3 metres (near shore). For more certainty a bathymetric survey is recommended. The recommended bathymetric survey was subsequently completed by EBA (2011) and the results are provided as Appendix 1 to this report.

3.1.1 ***Mooring Arrangement:*** Figure 3.1.1 describes the mooring arrangement at the Thor Dock. One 1000 series barge is moored alongside the shore with lines running to 4 dead men (anchor points) ashore. A ramp can be set about amidships of the dock barge. One cargo barge is then moored alongside the dock barge for loading. Other barges in the tow (2) can be anchored nearby or tied to the shore and shuttled into the loading dock when barge 1 is loaded.

A second mooring arrangement for the discharge of fuel should be considered as this is a time-sensitive operation and will interrupt cargo operations. As well, for safety reasons, fuel is not normally discharged in an isolated area. For fuel discharge 1 dock barge may be required; however, subject to near shore water depth, the fuel barge can be nosed into the beach and moored to deadmen ashore. Reagents and other commodities can be offloaded over the primary docking arrangement with little interruption to concentrate operations (Figure 3.1.1 of Avalon's Image shows inserted comment for recommended fuel discharge area).

3.1.2 ***Loading:*** It is anticipated that loading will be performed by 2 Hyster 1050 Series Lift Trucks, each carrying 40 tonne containers from a nearby laydown area. The weight of the lift truck is approximately 61 tonnes, therefore ramps onto the dock barge and/or cargo barge should be certified for a minimum 110 tonne weight. In the stow plan shown in Figure 3.1.2, the lift truck(s) will board the cargo barge at amidships, then place the containers fore and aft to keep the barge in trim. Figure 3.1.3 shows an alternate stow plan which provides more room at the center of the barge for the lift trucks to manoeuvre.

Thirty eight (38) containers, each loaded with 40 tonnes of moist concentrate, are loaded on each cargo barge. Including container weight (estimated at 5 tonnes each) total load will be 1710 tonnes, which translates into a barge draft of 1.93 metres. Lighter containers would reduce the loaded draft of the barge which would be beneficial for docking at Pine Point.

Estimated cycle time to load 1 container is 10 minutes. With 2 machines, a barge can be loaded in 3.2 hours. Unloading empty containers will take about half the time (1.6 hrs) as 2 containers can be moved at one time; therefore 1 barge load equals 4.8 hours. Shuttling time would be about 1 hour per barge times 2 barges equals 2 hours. Total estimated time for each tow load (3 barges) would be approximately 16.4 hours. Tow

preparation for departure would take an additional 2 hours for a total sum of approximately 18.4 hours. Stow plans are shown in Figures 3.1.2 and 3.1.3.

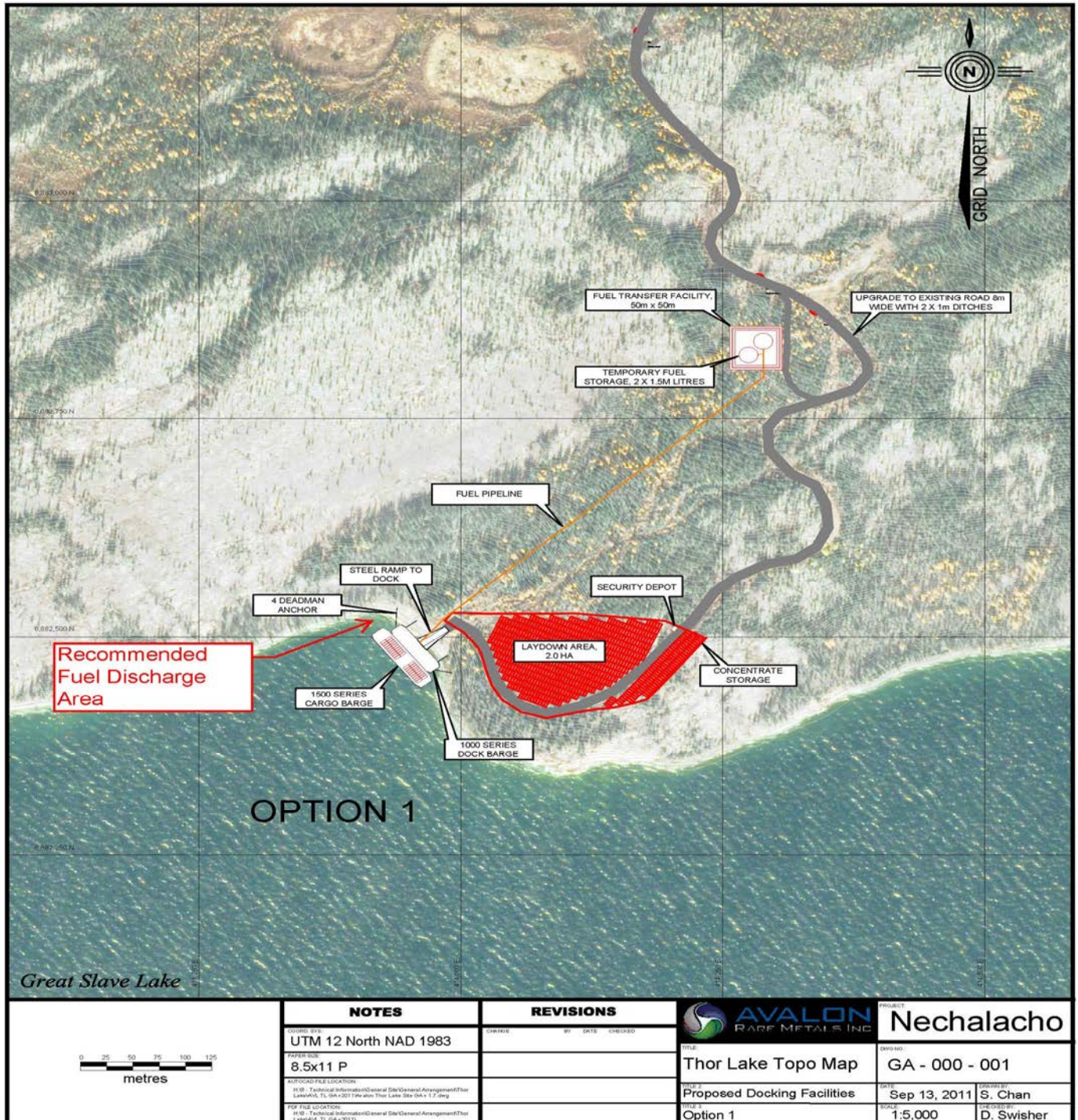


Figure 3.1.1 Avalon image with inserted caption showing recommended fuel discharge area



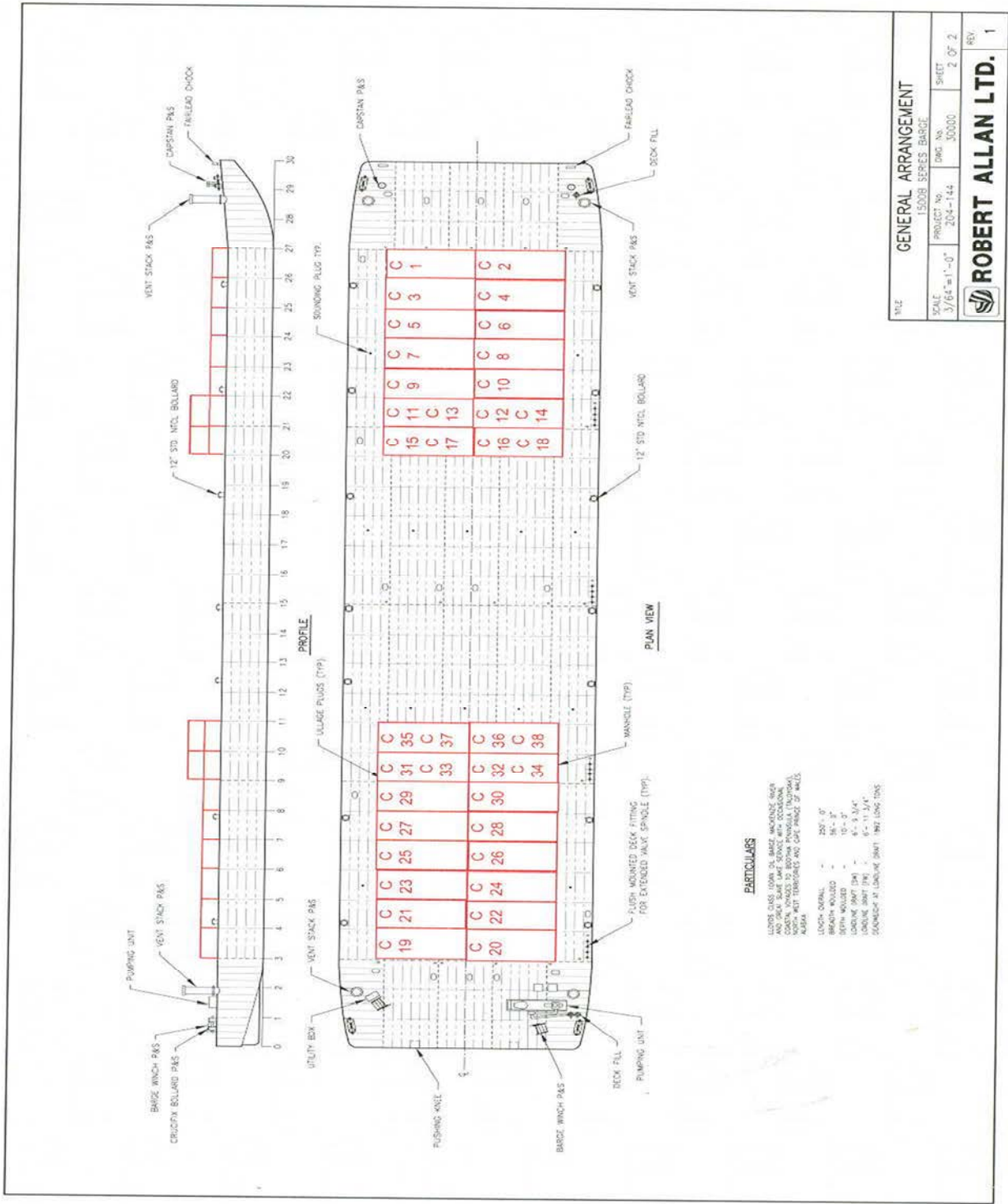


Figure 3.1.3 Alternate Stow Plan

- 3.2 **Pine Point:** Located along the southern shores of Great Slave Lake, the Port is essentially unprotected from adverse winds originating from the south southwest through north to the north northeasterly quadrant (SSW-N-NNE). In other words, most weather conditions may affect offloading operations.
- 3.3 This area is mostly low lying causing shallow approaches into the Port. A thru-ice bathymetric survey was conducted by EBA Engineering Consultants Ltd. in 2010 to determine the boundary of the 2 meter curve. The result suggested the 2 meter curve was 194 meters (630 ft.) offshore. This becomes problematic for cargo barges having a draft of 1.93 meters. It is recommended that an in water bathymetric survey be conducted of this area plus surrounding areas nearby to ascertain water depth and bottom configuration. The recommended bathymetric survey was subsequently completed by EBA (2011) and the results are provided as Appendix 2 to this report.

Assuming that the existing Pine Point docking area (end of the road) were to be used, 3 1000 series dock barges, secured in line, would be required to moor the cargo barge (see Figure 3.2). A well planned securing arrangement for the dock barges would be required to withstand adverse weather conditions. Grounding the dock barges by ballast water is another possibility but would require further investigation and approval by the barging contractor.

Offloading and reloading empty containers across this arrangement would be time consuming, probably 2 times, or more, longer than the loading operation. As well, weather related delays can be expected, especially later in the barging season.

For future use, Dawson Bay might be considered as an alternative landing site (see Figure 3.2.1, Google and Figure 3.2.2 CHS Chart 6371). As opposed to Pine Point, Dawson Bay provides some protection from adverse winds however updated bathymetry would be required to ascertain its suitability as a landing site. An analysis of the area was conducted and it was determined that it was not economic at this time and also would require further environmental investigations. Further studies for use of Dawson Bay as a landing site should be undertaken at a later time.

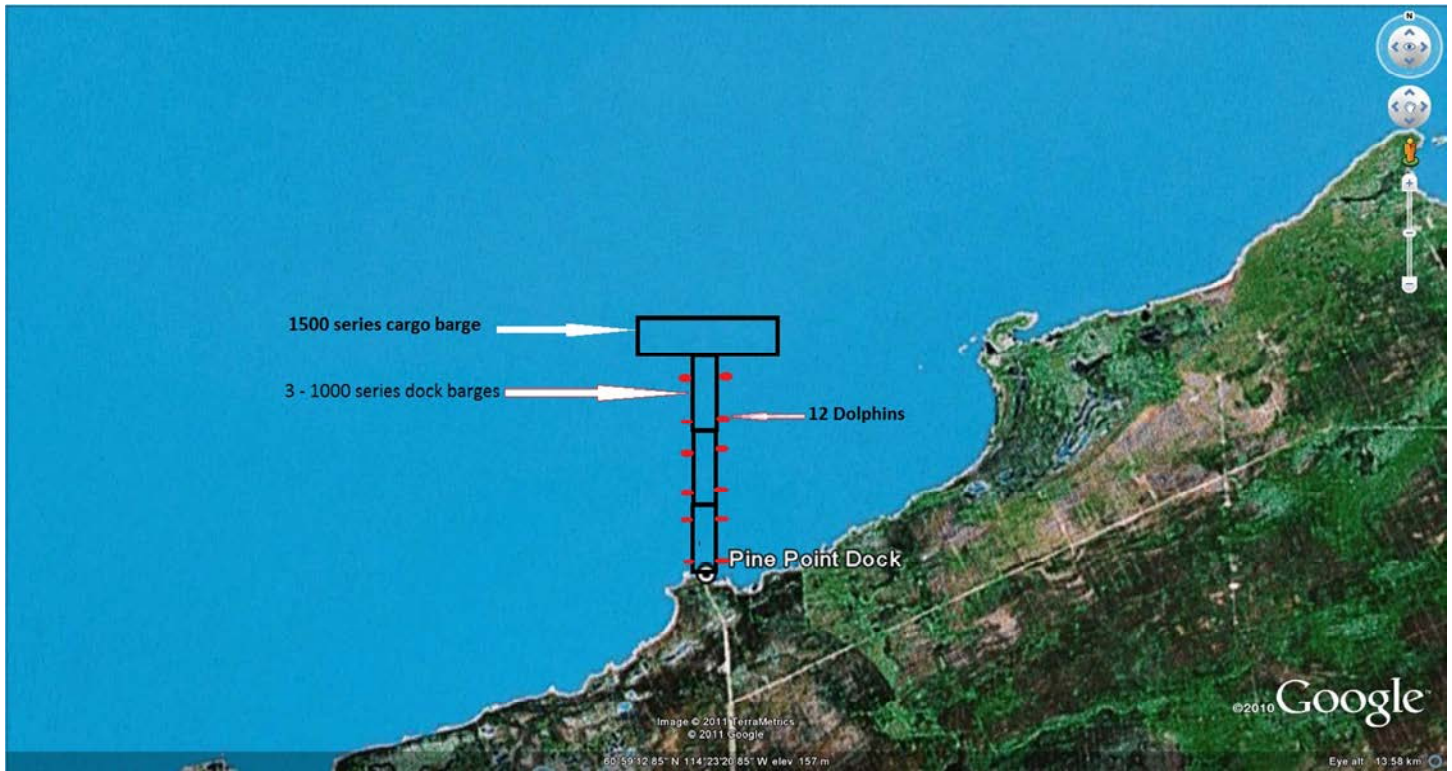


Figure 3.2 – Pine Point Docking Arrangement



Figure 3.2.1 – Dawson Bay

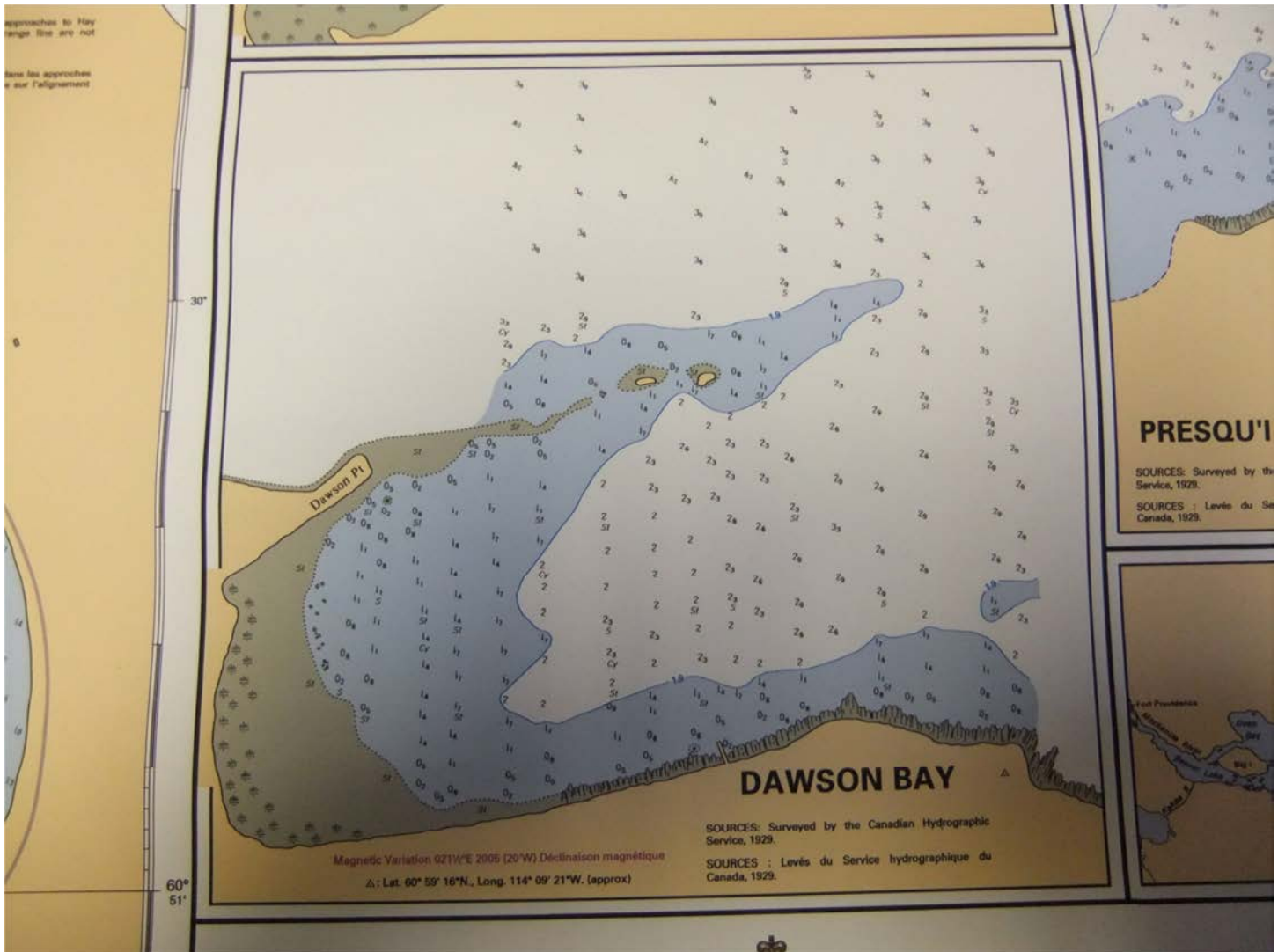


Figure 3.2.2 – Dawson Bay – CHS Chart 6371

- 4.0 Sea Fastenings:** A lashing arrangement for securing concentrate containers must be developed and, preferably, approved by Class or Transport Canada. Several options are available for this task all of which are standard within the industry.
- 5.0 Routing:** Figure 5.0 and 5.0.1 each show 2 routes from Thor to Pine Point and Hay River to Thor. It will be the mariner's decision which route is chosen.

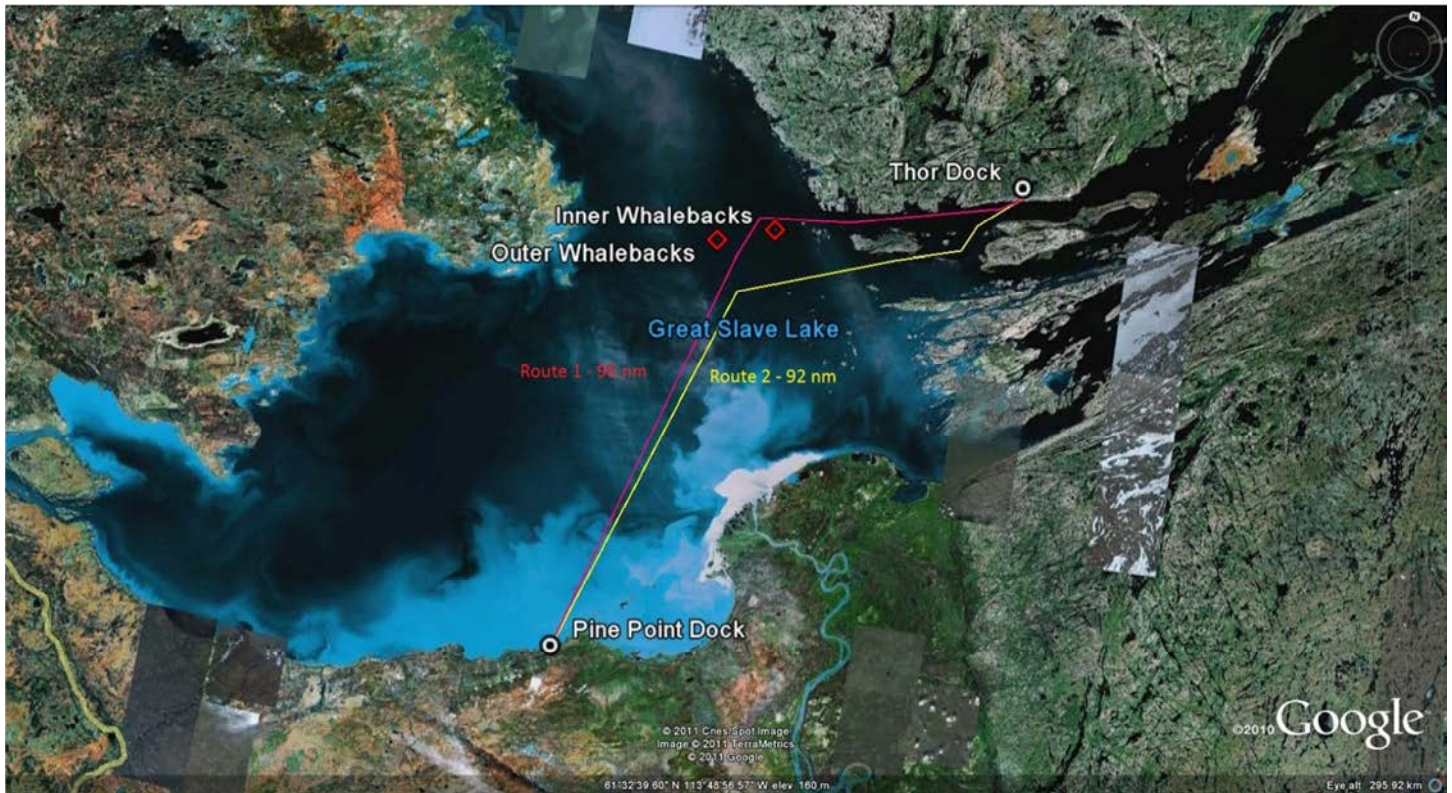


Figure 5.0 – Thor to Pine Point



Figure 5.0.1 Hay River to Thor

6.0 Weather and Wave Data: Random data for wave and wind measurements has been collected from 4 wave buoys on Great Slave Lake (Figure 6.0);

- Wave buoy C45141 – West Great Slave Lake
- Wave buoy C45150 – North Great Slave Lake
- Wave buoy MEDS089 – Hay River (operational 1975 only)
- Wave buoy MEDS326 – Fort Resolution (operational 1995 only)

This information, provided on line by Fisheries and Oceans Canada, is randomly selected to ensure best data quality. The MED Stations listed above did not provide wind direction or wind speed.

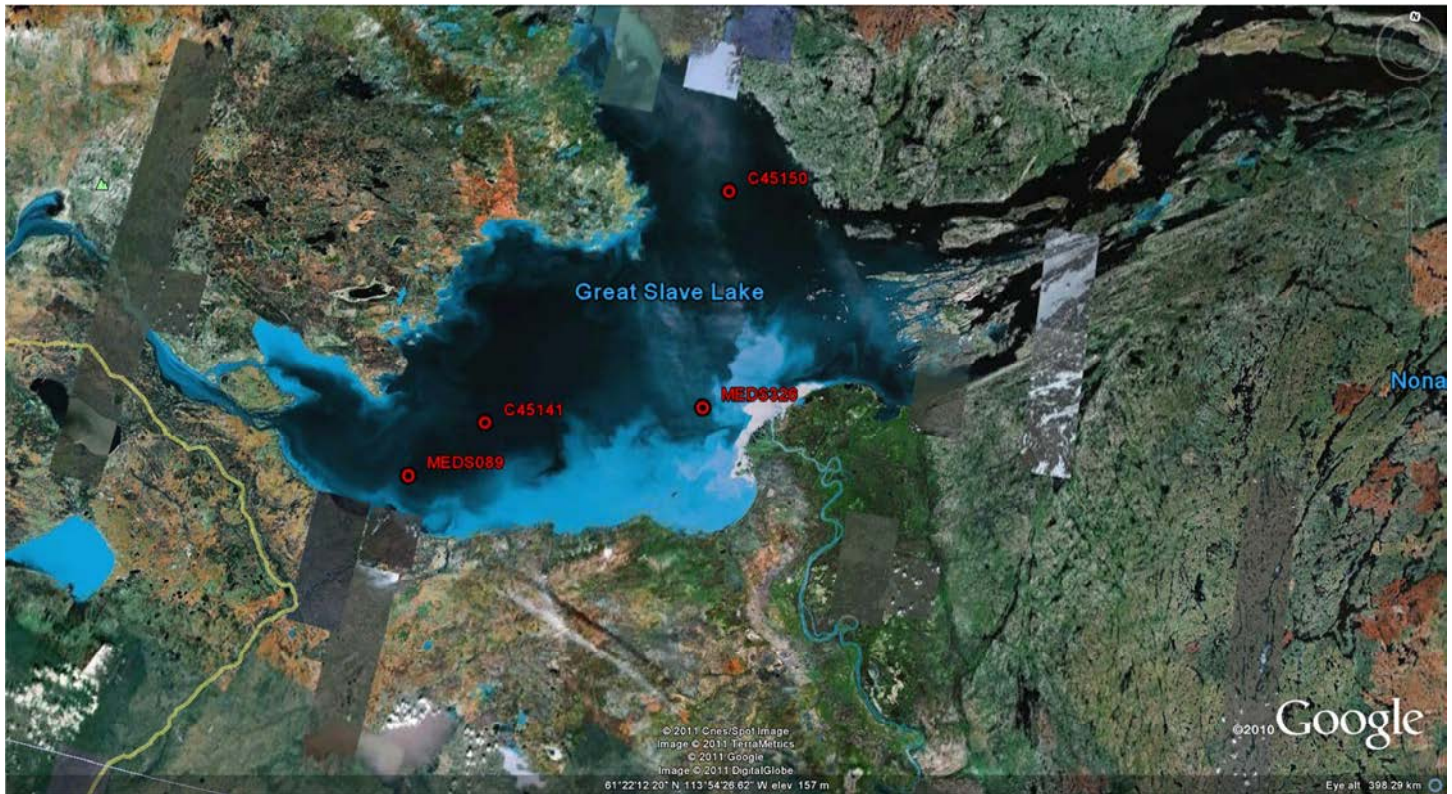


Figure 6.0 Buoy Stations on Great Slave Lake

Limiting weather conditions for sailing across Great Slave Lake is generally based upon:

- 20 knot wind speed (10.3meters/second) but dependent upon direction
- 0.91 meter (3 foot) sea state

Figures 6.0.1 and 6.0.2 show wind direction speed and wave heights. In all cases strongest winds are from the west through north quadrant. Wave heights tend to increase as the season progresses. Figures 6.0.3 and 6.0.4 show wave heights only which also indicates an increase in heights as the season progresses.

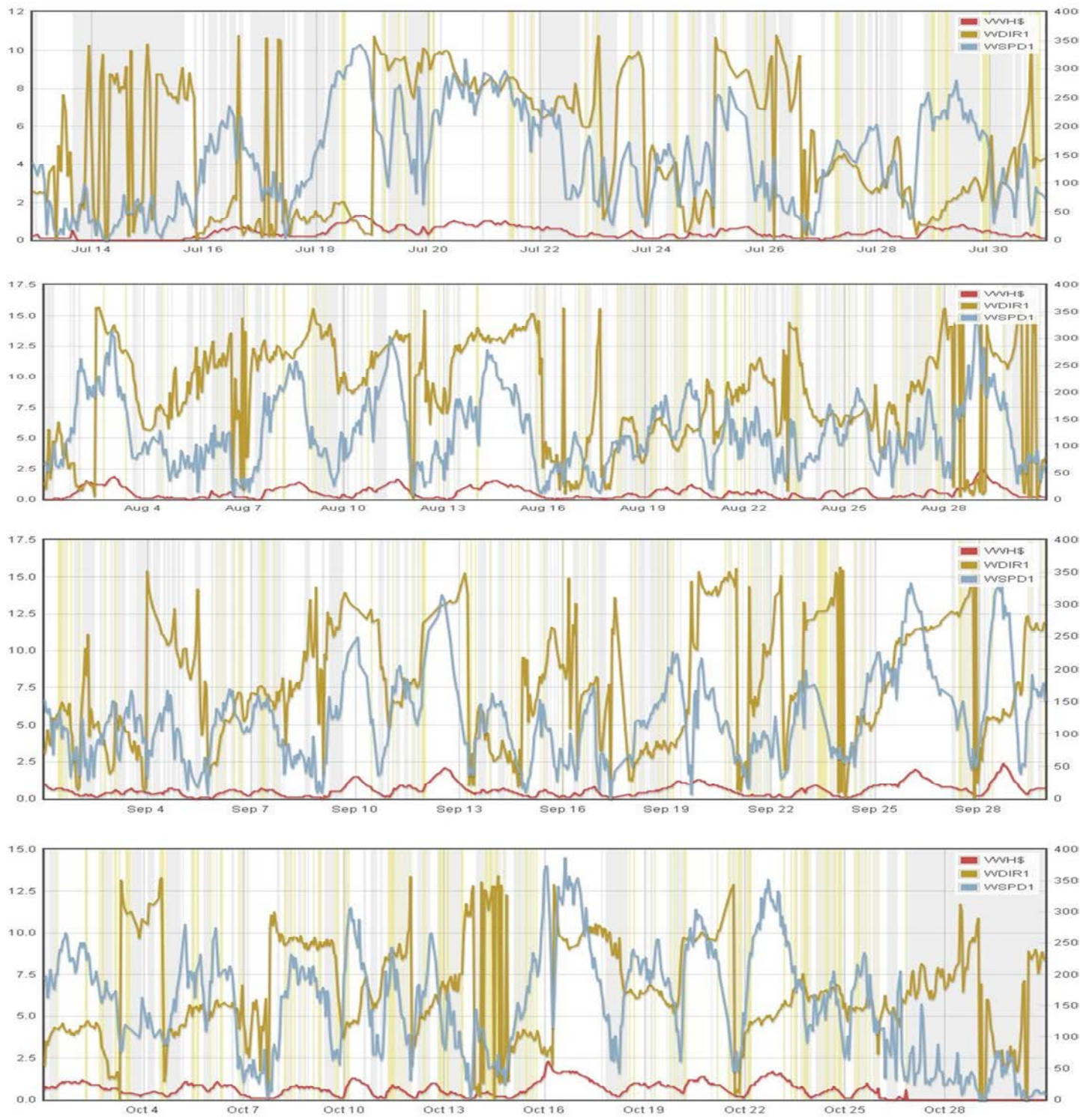


Figure 6.0.1 Buoy C45141 2005

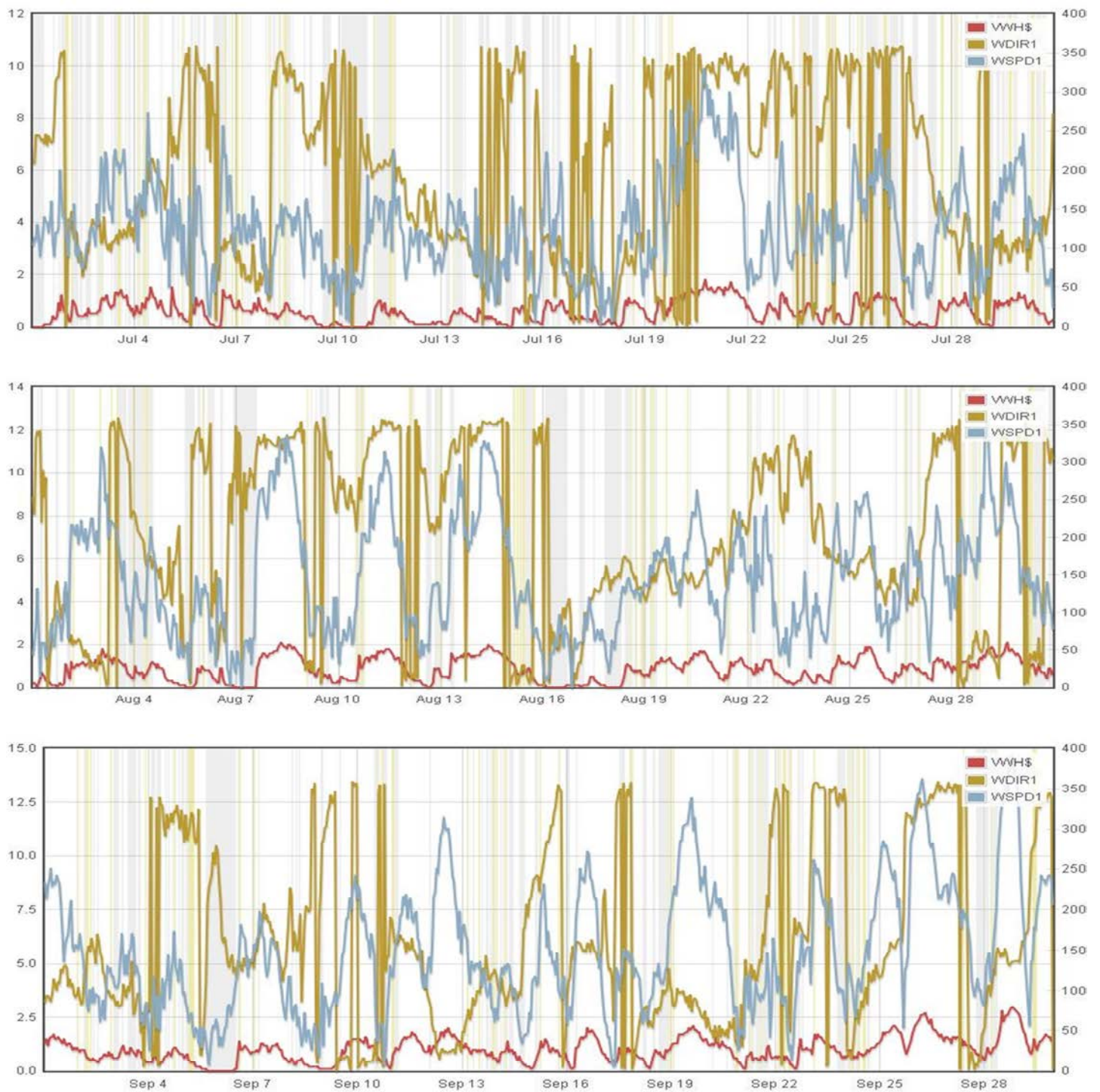


Figure 6.0.2 Buoy C45150 2005

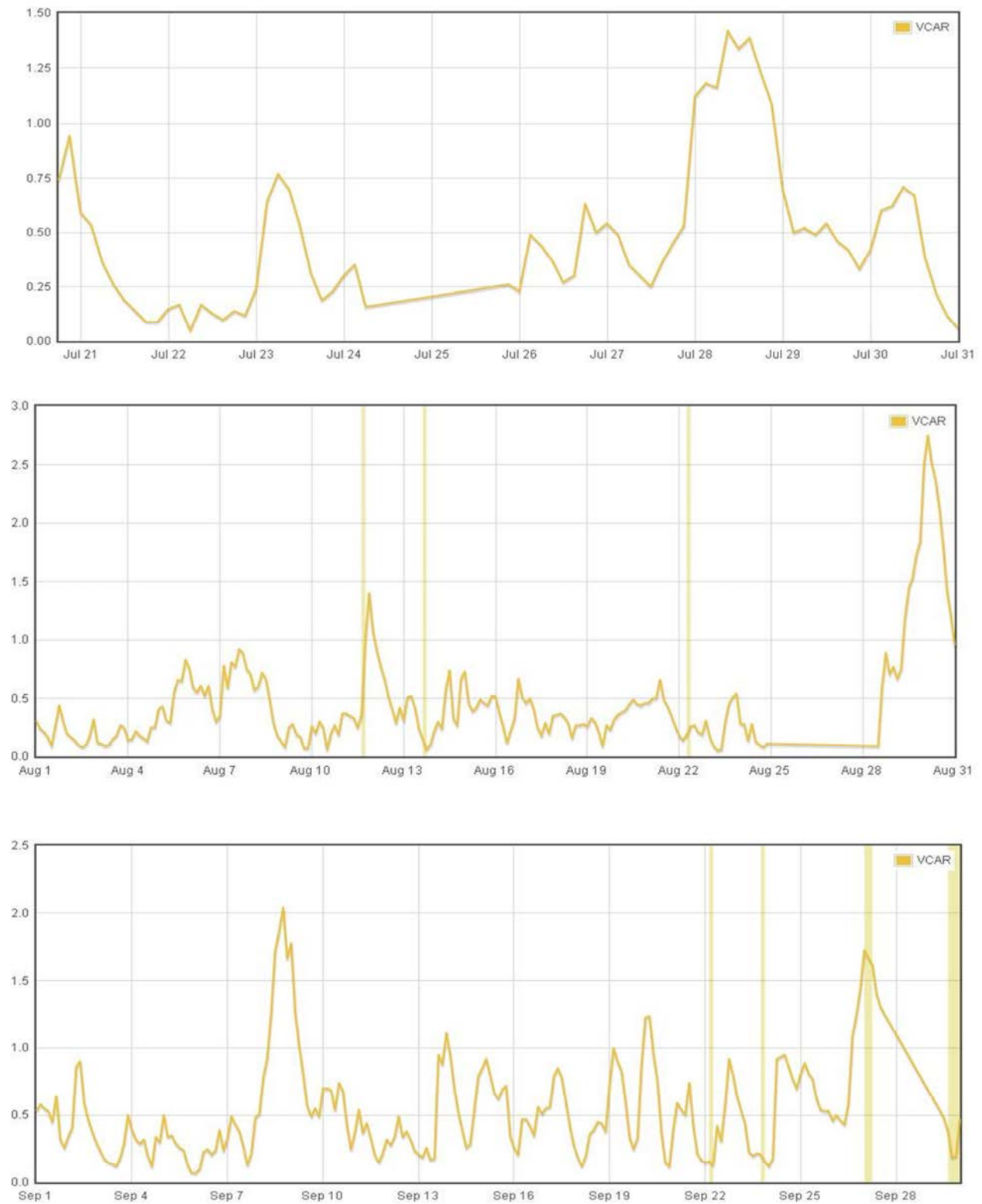


Figure 6.0.3 Buoy MEDS089 – Hay River 1975

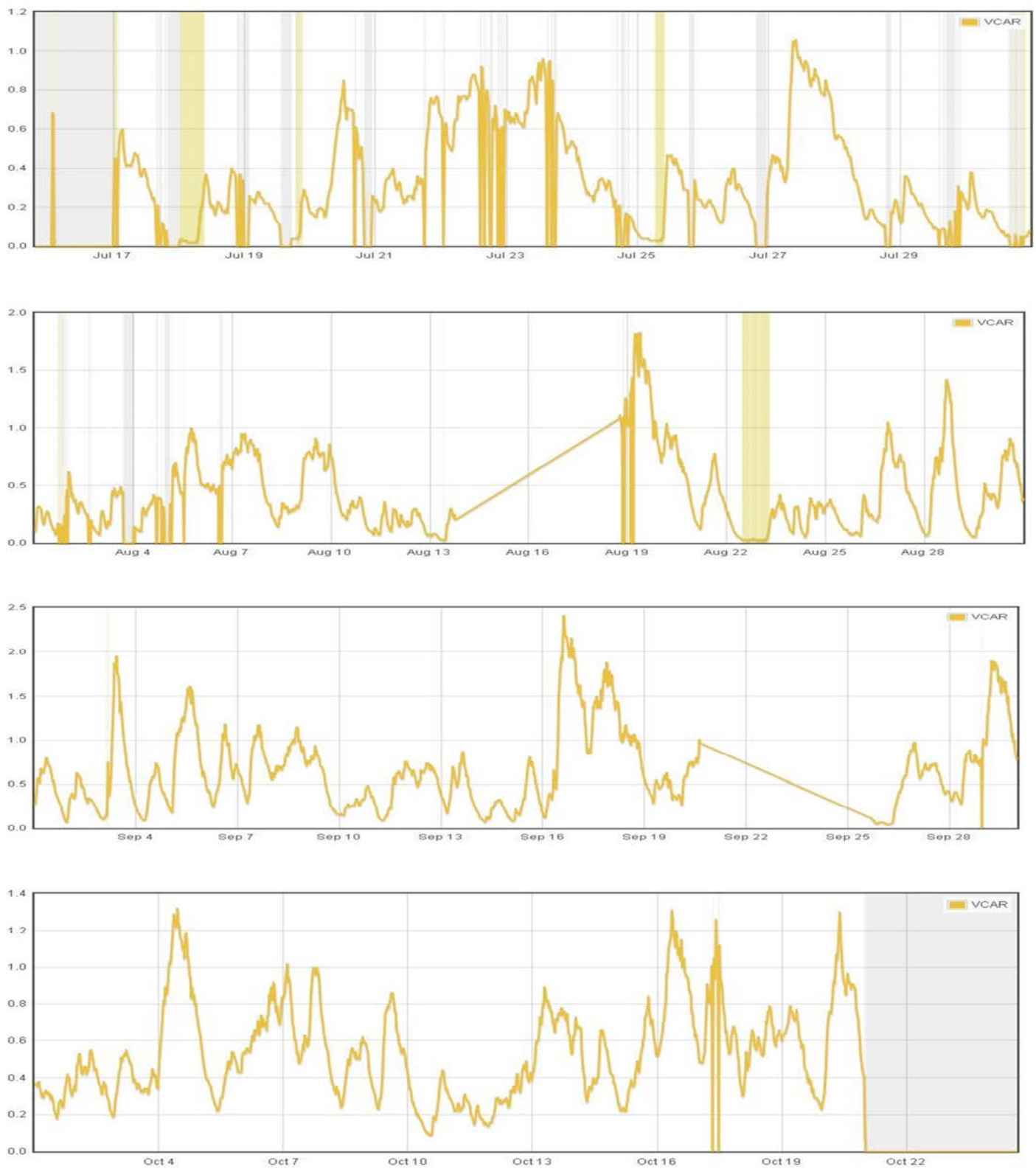


Figure 6.0.4 Buoy MEDS326 – Fort Resolution 1995

7.0 Preliminary Schedules: Detail and summary schedules have been developed to indicate days and timelines to transport by barge all commodities destined for Thor and Pine Point. These schedules, which are based on current tonnage estimates, are indications only and are subject to change. Two separate operations have been scheduled as two operations limit overall time and take advantage of favourable weather conditions on Great Slave Lake. Summary schedules are shown as tables; detail is attached as Appendix 1.

7.1 Moist Concentrates: 3 options have been considered to transport 144,500 tonnes of concentrate from Thor to Pine Point (Table 1)

Thor Cargo - Metric Tonnes												
	Barge Series	Quantities	Container WT	Container Cargo	Total Wt	No. Of Containers	Barge DW Capacity	Containers per Barge	Product per Barge	Barge Loads	Barge Trips	
Concentrate	1500	144,500	5	40	45	3,613	1710	38	1520	96	32	
Concentrate	1000	144,500	5	40	45	3,613	900	20	800	181	60	

Option 1 - 2 4500 HP Tugs, 6 1500 Series Barges												
	No. Tugs	No. Barges	Voyage Distance (nm)	Speed (nmh)	Voyage Time (hrs.)	Offload Time (hrs.)	Load Time (hrs.)	Lapsed Time (hrs.)	Contin. (%)	Contin. Time (hrs.)	Total Time (hrs.)	Round Trip (hrs.)
Concentrate	2	6	92	6.5	14		18.4	33	10%	3.3	35.8	61.24
Empty	2	6	92	6.5	14	36.8		51	10%	5.1	56.0	
Total Days												61.24

Option 2 - 1 4500 Hp Tug, 2 Port Tugs, 6 1500 Series Barges												
	No. Tugs	No. Barges	Voyage Distance (nm)	Speed (nmh)	Voyage Time (hrs.)	Offload Time (hrs.)	Load Time (hrs.)	Lapsed Time (hrs.)	Contin. (%)	Contin. Time (hrs.)	Total Time (hrs.)	Round Trip (hrs.)
Concentrate	1	3	92	6.5	14		6	20	10%	2.0	22.2	67.92
Empty	1	3	92	6.5	14	12		26	10%	2.6	28.8	
Total Days												67.92

Option 3 - 2 4500 Hp Tugs, 6 1000 Series Barges												
	No. Tugs	No. Barges	Voyage Distance (nm)	Speed (nmh)	Voyage Time (hrs.)	Offload Time (hrs.)	Load Time (hrs.)	Lapsed Time (hrs.)	Contin. (%)	Contin. Time (hrs.)	Total Time (hrs.)	Round Trip (hrs.)
Concentrate	1	3	92	6.5	14		12	26	10%	2.6	28.8	88.91
Empty	1	3	92	6.5	14	24		38	10%	3.8	42.0	
Total Days												88.91

Table 1 - Concentrates

7.2 Diesel Fuel, Reagents & Mine Supplies: These commodities, totalling 26,444 tonnes, have been combined as all are transported from Hay River to Thor (Table 2). 3 options have been considered. Load and offload times for fuel has been provided by NTCL; load offload times for general cargo is based upon 150 tonnes per hour. Option 2 or 3 appears to be the best solution due to significantly less time to load and offload fuel.

Due to the length of time it takes to load and offload fuel (more than 50% of total days) consideration should be given to using more barges and having a port tug at the Thor site to perform offload operations. This port tug would also be useful to assist in concentrate loading operations.

Hay River Cargo - Metric Tonnes								
	Quantities	Conversion	Tonnes	Barge Draft (m)	1500 Series DW Capacity	1000 Series DW Capacity	1500 Series Barge Loads	1000 Series Barge Loads
Fuel (litres)	21,800,000	0.000832	18,138	1.69	1,300	900	13.95	20.15
Reagents			4,026	1.69	1,300	900	3.10	4.47
Mine Supplies			4,280	1.69	1,300	900	3.29	4.76
Totals			26,444				20.34	29.38

Option 1 - 1 4500 HP Tug, 3 1500 Series Barges													
	No. Tugs	No. Barges	Voyage Distance (nm)	Speed (nmh)	Voyage Time (hrs)	Offload Time (hrs)	Load Time (hrs)	Lapsed Time (hrs)	Contingency (%)	Contingency Time (hrs)	Total Time (hrs)	Round Trip (hrs)	Days Required
Fuel	1	3	121	6.5	20	90	54	164	10%	16.4	180.9	203.5	39.43
Reagents	1	3	121	6.5	20	27	27	74	10%	7.4	81.6	104.1	4.48
Supplies	1	3	121	6.5	20	29	29	78	10%	7.8	85.3	107.8	4.93
Empty	1	3	121	6.5	20			20	10%	2.0	22.5		
Total Days													48.83

Option 2 - 1 4500 HP Tug, 3 1000 Series Barges													
	No. Tugs	No. Barges	Voyage Distance (nm)	Speed (nmh)	Voyage Time (hrs)	Offload Time (hrs)	Load Time (hrs)	Lapsed Time (hrs)	Contingency (%)	Contingency Time (hrs)	Total Time (hrs)	Round Trip (hrs)	Days Required
Fuel	1	3	121	6.5	20	45	30	95	10%	9.5	105.0	127.6	35.70
Reagents	1	3	121	6.5	20	18	18	56	10%	5.6	62.1	84.7	5.26
Supplies	1	3	121	6.5	20	18	18	56	10%	5.6	62.1	84.7	5.59
Empty	1	3	121	6.5	20			20	10%	2.0	22.5		
Total Days													46.55

Option 3 - 1 4500 HP Tug, 1 Port Tug, 6 1000 Series Barges													
	No. Tugs	No. Barges	Voyage Distance (nm)	Speed (nmh)	Voyage Time (hrs)	Offload Time (hrs)	Load Time (hrs)	Lapsed Time (hrs)	Contingency (%)	Contingency Time (hrs)	Total Time (hrs)	Round Trip (hrs)	Days Required
Fuel	1	3	121	6.5	20	4	30	54	10%	5.4	59.9	82.5	23.08
Reagents	1	3	121	6.5	20	4	2	26	10%	2.6	28.6	51.2	3.18
Supplies	1	3	121	6.5	20	4	0	25	10%	2.5	27.4	49.9	3.30
Empty	1	3	121	6.5	20			20	10%	2.0	22.5		
Total Days													29.55

Table 2 – Fuel, Reagents & Mine Supplies

8.0 Northern Tug & Barge Companies: Described below are 3 tug and barge companies currently operating in the Northwest Territories.

8.1 Northern Transportation Company Limited (NTCL): Jointly owned by the Inuvialuit of the Northwest Territories and the Nunasi of Nunavut, NTCL is the largest tug and barge company operating in the area. They have ample equipment to satisfy the needs of this project; however, they have suggested this may not be the case in the future as their equipment may be dedicated to other projects. Fleet details of the company can be viewed on line at www.ntcl.com.

8.2 Horizon North Logistics Inc. (HNL): HNL is a public company trading on the TSX. They are headquartered in Calgary and have a marine operations base at Inuvik, NT. Except for 2 tugs that could be used as towing or port support tugs, their equipment is not suitable to meet Avalon's project requirements. HNL has shown a keen interest in this project and wish to be included in any tender process that may occur. It would be their intent to partner with a West Coast Company (Seaspan International or Island Tug and Barge) and possibly a First Nations

Group, and then build equipment to satisfy the needs of the project. HNL's web site is www.horizonnorth.ca.

- 8.3 **Cooper Barging Service Ltd. (CBSL):** CBSL is a private company with headquarters in Fort Nelson, BC and operations base in Ft. Simpson, NT. Except for barges suitable for dock barges and possibly port support tugs, they currently do not have adequate equipment to satisfy the requirement for this project. CBSL web site is www.cooperservices.ca

9.0 **Hovercraft:** Use of a hovercraft to transport concentrates has introduced as an alternative to tug and barge. Craft proposed for this project is the SRN 4 model which previously operated in a car/passenger ferry service across the English Channel. Paul Schmidt has developed the economics of this craft, so the following will be an elaboration based on previous experience by the writer.

- 1973-74 - Bell Voyageur – Mackenzie Delta. A jet propulsion cargo craft chartered to Imperial Oil, primary use was to provide a “hot shot” service on a year round basis from base camp to drill sites. This was essentially a pilot project to evaluate performance in cold climates. Winter operations, coupled with very high maintenance costs, were problematic. In extreme cold (-30+ degrees), skirts became brittle and tore very easily. As well, rough ice very abrasive to fingers. In fairness, skirt material is more advanced today. The pilot project was not considered a success.
- 1985-1989 – Larus – Beaufort Sea. Larus was a Finnish craft constructed by Wartsila in 1981. In 1985, Wartsila Arctic and Arctic Transportation Ltd. formed a joint venture (Arctic Hovertrans), Canadianized the craft and transported her to station in Tuktoyaktuk, NT. The purpose of this venture was to introduce an alternate means of transportation to the offshore industry. The craft was diesel propelled, carried 46 passengers or 25 tonnes of cargo. It was a learning experience in terms of capabilities over ice. Fully loaded, operators could not get the craft on cushion over thin ice. In attempting to do so, fingers and skirts were severely damaged. To avoid this problem, an ice thickness of 17 inches was required. Rough ice and ridging proved to be a problem as well. Rough ice was very abrasive to the skirts and ridges over 0.5 meters had to be avoided due to skirt height. Visibility over ice and determining ice objects well in advance proved to be a challenge. Due to the suspension of activities in the Beaufort (1988 and onwards) the craft was demobilized from the Arctic and transported to Singapore.
- 2008 – 2009 – AP 1-88 – Fort McMurray. The craft was owned by Alaska Hovercraft (Lynden Transport) and chartered by NTCL for a period of 1 year. Canadian duty was paid on the 1/120 basis to bring the craft into Canada. This was a pilot project initiated by Canadian Natural Resources and Petro Canada (chartered from NTCL) to move personnel from Fort McMurray to CNRL's Base Camp 40+ miles north and along the Athabasca River. This was primarily a winter operation, but transit did occur over open water as well. The pilot project proved to be reasonably successful; however, there were issues with the navigation system for night travel. At the end of the term the craft was moved back to Prudhoe Bay, AK.

Transportation of concentrates by Hovercraft can be a viable alternative to tug and barge. From an economic perspective (developed by Paul Schmidt) this appears to be the case. Unfortunately (except for Russian craft) long term operational history in cold climates is very limited. The SRN4, proposed for this operation, has had a very successful operation as a passenger/car ferry crossing the English Channel. Channel crossings were very short to what is contemplated here. Even with the short runs, maintenance and running costs appear to be on the high side. For cold climate operations some things that must be considered are:

- Skirt flexibility in -40 degree C temperatures;
- High wind conditions for control of the craft;
- Cabin insulation for crew members;
- Navigation equipment to identify ice obstacles, especially during the hours of darkness;
- Skirt height to navigate ice ridging;
- Finger abrasion on rough ice;
- Ice thickness required to achieve "on cushion" with full load; and
- Speed over ice in darkness

There are many other considerations; however, these can be discussed in the next phase of the project.

10.0 Preliminary Transportation Cost:

Note..This section has been removed from this copy of the report for reasons of corporate confidentiality.

11.0 Other Transportation Options: Two other options that should be considered are:

- Transporting concentrates in bulk. This would entail installing conveyor systems but could reduce dock infrastructure.
- Building purpose built power barges having shallow draft and a deadweight capacity of about 6,000 tonnes. This may also reduce dock infrastructure. *Note; A Naval Architectural firm was engaged to evaluate using large shallow draft self-propelled barges to transport moist concentrates from Thor to Pine Point. This proved to be uneconomical due to the large dimensional requirements of the barge and high horsepower required to propel the unit at a reasonable speed. Their recommendation was using a tug/barge system employing a drop/swap operation with 2 shallow draft tugs, each having about 1200 kW horsepower, and 4 1350 tonnes DWT barges. A single barge would be pushed rather than towed using an ATB connecting system Articouple KD type or equal deck-mounted pin connectors. These barges would not be fuel capable therefore only suitable for the transportation of deck cargo.*

12.0 Summary & Recommendations: Several alternatives have been considered to perform Avalon's transportation requirements across Great Slave Lake. tug and barge appears to be the best solution for this task. Weather will be a factor, in particular at Pine Point, where delays in offloading/loading operations can be expected. It is important therefore, to start operations early in the season when ice conditions permit. From a weather point of view, June, July and August are the most favourable months. Beginning in early September, weather conditions begin to deteriorate causing considerably more lost time in operations.

A number of recommendations are suggested:

1. In-water bathymetry surveys should be conducted at Thor and Pine Point to determine bottom conditions as well as water depth. *The recommended bathymetric surveys of both sites were completed by EBA (2011) and the results provided in Appendix 1 to this report.* The possibility of using Dawson Bay as an alternative to Pine Point should be examined. Dawson location would provide more shelter, which would reduce weather down time. This area would also require an in-water bathymetry survey to determine bottom conditions and water depth. *For future study*
2. Contact should be made with Canadian Coast Guard at Hay River to request setting buoys and marking a channel into Pine Point. This contact should occur 1 or 2 years in advance of transportation operations so the Coast Guard can budget accordingly. *Completed. CCG Hay River has advised, subject to confirmation from head office, that they would buoy a channel into Pine Point at the beginning of each season and retrieve the buoys at the end of each season. This would be a user pay operation.*
3. For safety reasons, a port tug will be required at Thor and Pine Point unless line haul tugs stand by during load and offload operations. *After further investigation a port tug may not be required at Thor*
4. For safety reasons, a separate location for offloading fuel should be planned. This will also eliminate interference with concentrate operations. *A separate location for the discharge of fuel at Thor has been identified.*
5. For fuel discharge, consideration should be given to using floater hose to connect the barge discharge line to the shore pipeline *Potential operators have advised that this is not a problem*
6. All barges should be fitted with an anchor and a means to deploy and retrieve. *This is only necessary if mooring buoys are not installed at Pine Point and Thor.*
7. For securing purposes, all barges should be fitted with hand or mechanical winches.
8. Deck strength of all barges must be suitable for heavy lift trucks carrying 45 tonne containers and point loading for containers stacked 2 high. *The RFP will describe this requirement.*
9. All ramps need to be certified for the heaviest load. *Aspen Trailer in Nisku, AB was contacted and they provided a price indication for constructing 110 tonne ramps*
10. Engage a naval architect to do a preliminary design of a shallow draft power barge capable of lifting up to 6,000 tonnes. *Completed. Resolve advised that a power barge for shallow water operations was not cost effective*
11. Submit a competitive tender to interested marine companies for the work to ensure best overall price and guaranteed equipment availability. *An RFP is currently being developed*

APPENDIX I

EBA BATHYMETRY REPORT

October 27, 2011

ISSUED FOR USE
EBA FILE: V15101007.011

Avalon Rare Minerals Inc.
330 – 6165 Hwy 17
Delta, BC V4K 5B8

Confidential

Attention: David Swisher

Subject: Thor Lake Mine – Environmental Services
Bathymetry and Side-Scan Study of Proposed Barge Landing Locations
Avalon Rare Minerals Inc.

1.0 INTRODUCTION

EBA, a Tetra Tech Company (EBA) was retained by Avalon Rare Minerals Inc. (Avalon) to perform a bathymetric and side-scan sonar investigation at two proposed barge landing locations on Great Slave Lake, Northwest Territories. The objective of the survey was to provide preliminary maps of the water depth and any underwater obstructions, such as rocks and boulders, which may inhibit the docking and mooring of barges at the two sites. The two proposed barge landing locations are near Pine Point (641073 E, 6762112 N, UTM Zone 11) on the southern shore of Great Slave Lake; and near Thor Lake (413945 E, 6882576 N, UTM Zone 12), on the northern shore of Great Slave Lake at the beginning of the Eastern Arm.

EBA acquired bathymetric and side-scan sonar data, and surveyed complete water-bottom coverage within the proposed barge landing footprint. The surveys were performed on October 15th, 2011 by Mr. James Mickle, M.Sc., P. Geoph. (pending), by floatplane (Arctic Sunwest's DHC-2 Turbo Beaver). Rocky areas were identified at the Pine Point site that will need to be considered with respect to the mooring plan usage and draft of the barges to be used.

2.0 METHODOLOGY: BATHYMETRY AND SIDE-SCAN SONAR

2.1 Bathymetry Data Collection

Bathymetry data at both locations was acquired using a hydrographic grade echosounder. The data collected provides water depths in metres in relation to the surface of the lake water at the time of the survey. It has not been referenced to a geodetic datum as this was beyond the defined work scope authorized. It therefore should be considered suitable for general proof of concept use only. Echosounders measure water depth by emitting a short-duration sound pulse from an acoustic transducer and measuring the elapsed time for the pulse to travel to the water bottom and back to the transducer. The elapsed time is combined with the speed of sound in water to determine the depth to the bottom. The system was calibrated at each site by determining site-specific sound velocity values by measuring true water depth with a weighted rope at a specific calibration location.

2.2 Side-Scan Sonar Data Collection

Side-scan sonar produces a full-coverage image of the bottom by repetitively illuminating the bottom with a short-duration pulse of sound shaped into a beam that is very wide (typically 60°) in the direction perpendicular to travel, and very narrow (typically 1° to 2°) in the direction parallel to travel. Typically, two channels of data are collected: one beam is directed to port, and one to starboard. The sound pulse reflects off rough features on the bottom and back to the side-scan system (even sand and silt are sufficiently rough to reflect some sound energy back to the sonar transducer). Features that stand proud above the water bottom reflect back relatively more energy than does a flat soft bottom, resulting in higher-amplitude responses. In addition, these features produce 'shadow zones' behind them, as for a limited period of time immediately after these higher-amplitude responses, no sound energy is reflected back. The time duration of these shadow zones can be used to determine the height of the feature above the bottom.

Since the side-scan beam is wide, it insonifies a strip or swath of the sediments on the water bottom either side of the track travelled by the survey boat. These systems can resolve items on the bottom that are a few decimetres in size depending on the frequency used and the distance of the side-scan fish from the bottom. In the case of this survey, the area was surveyed using a nominal line spacing of 25 m, with a nominal side-scan coverage of 50 m to either side of the boat, for greater than 100 percent bottom coverage. The side-scan data and GPS positions were recorded to a laptop computer for post processing and mapping using the commercial software Hypack.

3.0 EQUIPMENT

3.1 Bathymetry Equipment

Bathymetry data was acquired using a SonarLite portable echo sounder, manufactured by Ohmex Instrumentation in the UK. Its specifications are:

- Transducer frequency: 200 kHz Active Transducer
- Beam spread: 8° to 10 °
- Depth range: 0.30 m to 50.00 m (Software limited)
- Accuracy: ±0.025 m (RMS)
- Sound velocity range: 1390 to 1500 m/sec
- Pulse frequency: 1 Hz

The echosounder was mounted 1 m aft of the GPS antenna, 50 cm below the water surface. All positional offsets have been applied to the data presented.

3.2 Side-Scan Sonar Equipment

Side-scan sonar data was acquired using a Starfish 450F system manufactured by Trittech International Ltd. of the UK. Its specifications are:

- Acoustic frequency: 450 kHz
- Range: 1 m to 100 m
- Transmitted power: < 210 db relative to 1 μ Pa at 1 m
- Vertical beam width: 60°
- Horizontal beam width: 1.7°
- Transducer arrangement: dual fin-mounted transducers, with 30° down-angle

The side-scan towfish was towed off the float plane, 4 m aft of the GPS antenna, approximately 1 m below the water surface. Use of the floatplane as the survey platform precluded operations in very shallow water (less than 2 m) due to safety concerns expressed by the pilot.

3.3 GPS Equipment

Survey track lines were recorded using a Novatel Smart V1 GPS system. The GPS was configured to output NMEA data strings every second. This data stream was split and then merged with the side-scan and echosounder data as the survey data was collected. In addition to the NMEA data strings, the GPS system was also configured to output RINEX positional data that was logged every 5 seconds. This data was used for GPS post processing using Natural Resources Canada's online CSRS service. The post-processed GPS positions are of sub-metre accuracy. Post-processed positions were compared with the NMEA positions, and the differences calculated. These differences, along with the data offset from GPS layback, were applied to the final figures to correct the absolute position of the data in the horizontal plane. GPS data is reported in UTM coordinates. It should be noted that Pine Point and Thor Dock are in different UTM zones. Pine Point is in UTM Zone 11 and Thor Dock is in UTM Zone 12.

4.0 RESULTS

4.1 Pine Point

Figure 01 shows the results of the bathymetry and side-scan sonar data. All data has been corrected for transducer and GPS offsets. The Pine Point survey area is the more shallow of the two survey areas, ranging in depth from 2 to 7 m, with water depths gradually decreasing towards the shoreline. The shoreline was approximately 150 m southeast from the edge of the survey area. It was imprudent to survey closer to the shore due to the increasing possibility of rocks being present that would reduce water depths abruptly to less than 1 metre, the maneuvering required to collect the survey data, and the risk of damage to the floatplane's floats. Bathymetry contour spacing on Figure 01 is 0.2 m.

The side-scan data has been mosaicked using Hypack and laid underneath the bathymetry contours. Ten rocks, generally less than 0.5 m in diameter, have been picked and are shown as red crosses on the figure.

Five areas containing several rocks with rock sizes generally less than 0.5 m in diameter are shown as orange rectangles. A list of specific rock targets and their locations is included in the following Tables section.

As a general comment, the nature of the side-scan data suggests a coarse hard bottom material with some cobbles and rocks. Areas with softer finer grained materials show in the side-scan data as patches or bands of darker colours.

4.2 Thor Dock

Figure 02 shows the results of the bathymetry and side-scan sonar data at Thor Dock. The Thor Dock survey area is very deep, ranging in depth from 3 to over 70 m, with water depths decreasing steeply towards the north shoreline, which has been approximately shown on the figure. The shoreline is also visible in the side-scan mosaic as a dark region of low signal return along the north edge of the side-scan mosaic caused by the side-scan signal being lost between the bottom and the water's surface where the water is shallow. Bathymetry contour spacing on Figure 02 is 1 m..

The side-scan data has been mosaicked using Hypack and laid underneath the bathymetry contours. Two rocks, generally less than 0.5 m in diameter, have been picked and are shown as red crosses on the figure. A list of specific rock targets and their locations is included in the following Tables section.

In general little detail is visible with respect to the character of the bottom at Thor Dock. This is because of the steeply dipping bathymetry and resulting slopes coupled with the distance from the side-scan fish to the bottom over much of the survey area. In order to obtain more detailed data of the character of the bottom material at this site, it would have been necessary to fit a depressor weight to the side-scan fish and repeat the survey varying the cable length so the side-scan fish was kept a constant distance off the bottom. This was beyond the work scope provided for, given the time budgeted at this site, and considering the deeper water depths, it was not considered critical.

5.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Avalon Rare Minerals Inc. and their agents. EBA, A Tetra Tech Company, does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Avalon Rare Minerals Inc. or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. EBA's General Conditions are provided in Appendix A of this report.

6.0 CLOSURE

We trust this report meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

Sincerely,
EBA, A Tetra Tech Company



October 27, 2011

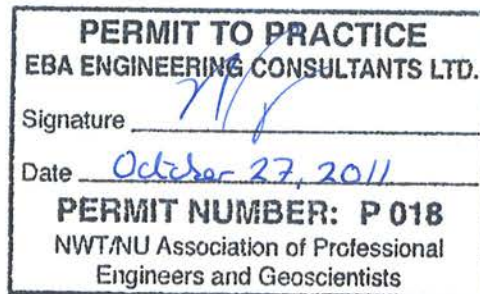
Patrick Finlay, P.Geoph.
Project Geophysicist
Engineering & Environmental Geophysics
Direct Line: 613.692.1944 x224
pfinlay@eba.ca

/ln



October 27, 2011

Reviewed by:
Neil Parry, MBA, P.Geoph.
Project Director
Engineering & Environmental Geophysics
Direct Line: 780.451.2130 x274
nparry@eba.ca



TABLES

Table: Side-Scan Targets

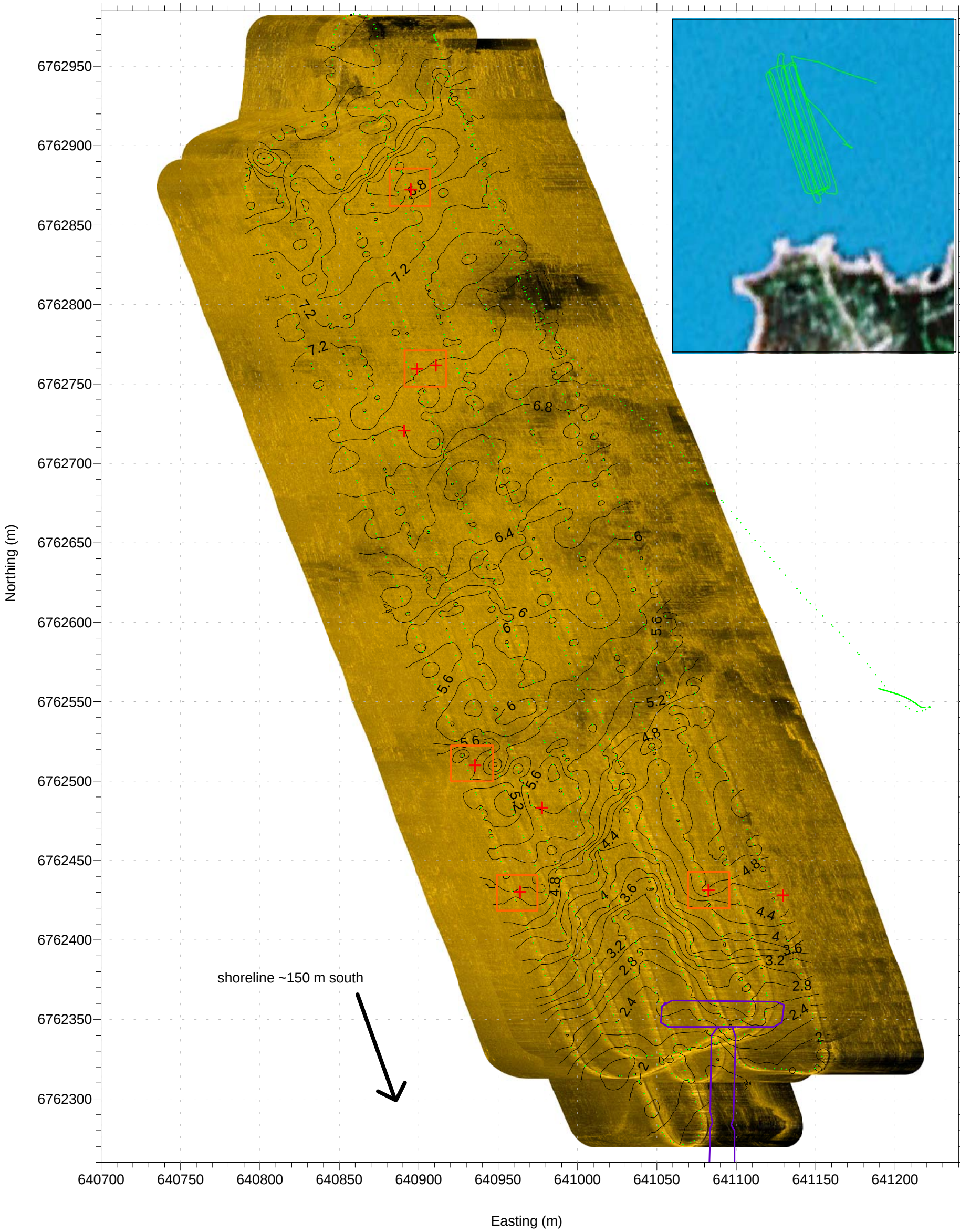
Pine Point (UTM Zone 11)		
Easting (m)	Northing	Comments
640898.9	6762759.6	Height: 1.8 Length: 2.9 Width: 1.5
640895	6762872.4	Height: 0.5 Length: 1.4 Width: 1.5
641129.4	6762428.2	Height: 0.7 Length: 1.8 Width: 1.5
641082.5	6762431.3	Height: 0.6 Length: 1.4 Width: 4.5 rocky area
640963.8	6762430.4	Height: 0.7 Length: 5.8 Width: 12.2 rocky area
640935.5	6762510	Height: 2.6 Length: 3.5 Width: 3.0 big shadow
640890.8	6762720.7	Height: 0.9 Length: 1.4 Width: 2.9
640977.7	6762483.3	Height: 1.0 Length: 0.6 Width: 0.6 Rocky Area
640910.8	6762761.8	Height: 0.6 Length: 4.6 Width: 3.8 Rocky area
Thor Dock (UTM Zone 12)		
Easting (m)	Northing	Comments
413939.4	6882501	Height: 0.4 Length: 0.5 Width: 1.2
413878.2	6882387.2	Height: 1.5 Length: 3.4 Width: 3.0

FIGURES

- Figure 01 Pine Point Barge Area
Bathymetry and Side-Scan Sonar
- Figure 02 Thor Dock Barge Area
Bathymetry and Side-Scan Sonar



UTM ZONE 11
NAD 83 DATUM
Scale 1:2500



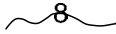
LEGEND



Rocky Areas



Rocks



Bathymetry Contours



GPS Trackline



Proposed Dock Infrastructure

CLIENT



Thor Lake Project
Northwest Territories

Pine Point Barge Area
Bathymetry and Side-scan Sonar

PROJECT NO.
V15101007.011

OFFICE
EBA-OTT

DWN
PIF

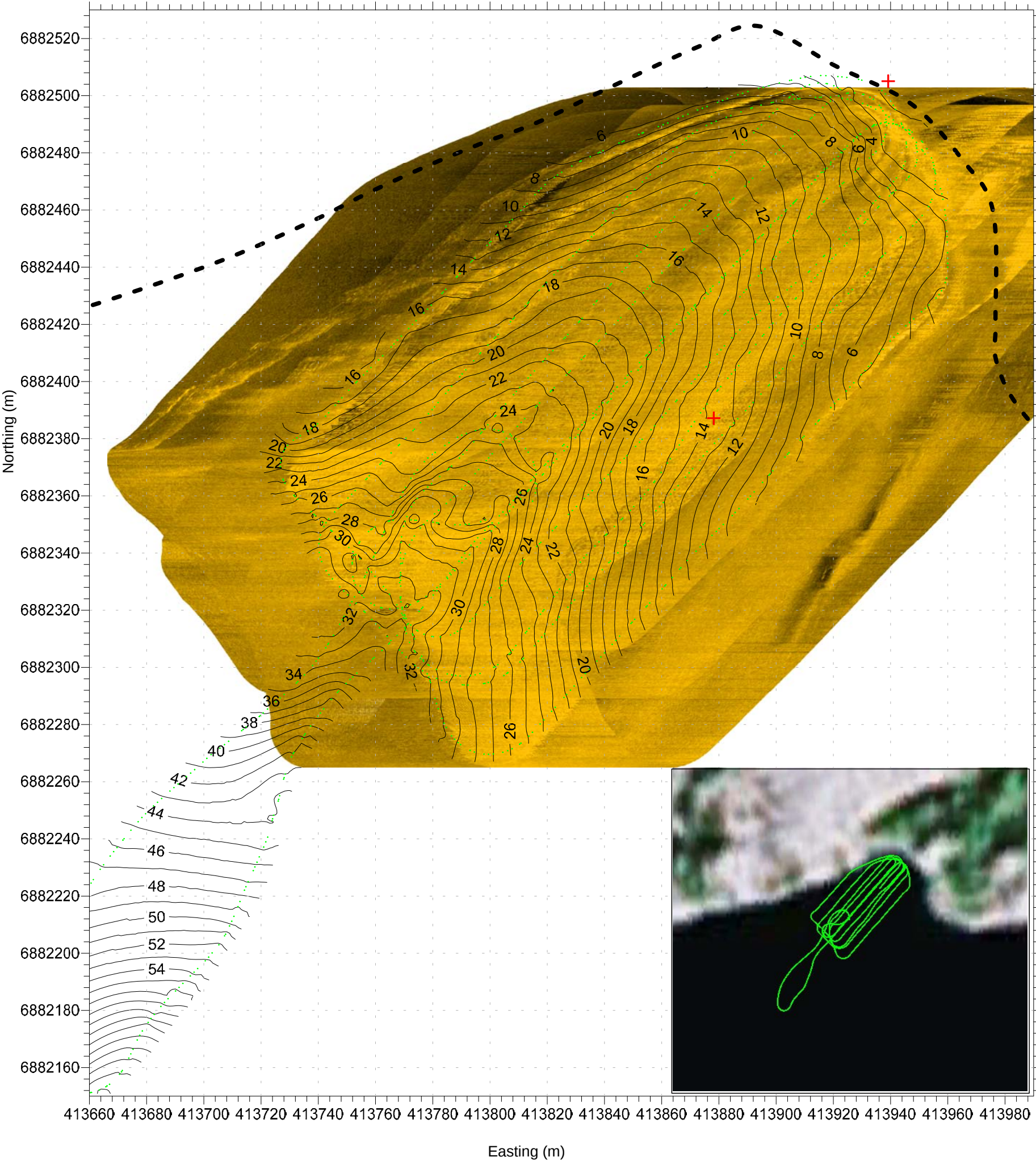
DATE
October 27, 2011

CKD
RJM

APVD
NSP

REV
000

Figure 01



APPENDIX A

APPENDIX A EBA'S GENERAL CONDITIONS

GENERAL CONDITIONS

GEOPHYSICAL REPORT

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

1.0 USE OF REPORT

This geophysical 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 those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and 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 analysis 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.

This report contains figures, maps, drawings and sketches that represent processed geophysical data collected at a specific site. This processed data will have inherent interpretation assumptions and accuracies that are discussed in the report. Consequently, the report can only be considered in its entirety and individual figures, maps, drawings and sketches shall not be distributed without the text of the report unless authorized in writing by EBA.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 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/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the project.

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. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

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.

3.0 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 the development of the site.

4.0 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 judgemental 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.

5.0 LOGS OF TEST HOLES

The testhole 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.

6.0 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.

7.0 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 meteorological 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.

8.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.