CANADIAN SEABED RESEARCH LTD.

2007 WOLFE ISLAND CABLE ROUTE SURVEY

Geophysical Survey Results

FINAL REPORT

Submitted to:
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STATEMENT OF QUALITY

Canadian Seabed Research Ltd. warrants that its service with respect to this study was performed with a degree of skill and care equal to or greater than that ordinarily exercised under similar conditions by reputable members of our profession practising in the same or similar locality. No other warranty, expressed or implied, is made or intended.

EXECUTIVE SUMMARY

Canadian Seabed Research (CSR) was contracted by Canadian Renewable Energy Corporation (CREC) to perform a geophysical survey for a proposed submarine power cable between Wolfe Island and Kingston, Ontario. Survey operations were conducted between June 29th and May 21st, 2007 onboard the CSR survey vessel "Sea Star".

The bathymetry of the survey corridor ranges from 29m to as shallow as 1.0m. In Sand Bay water depths range between 1m to 4m to the mouth of the Bay where the lake floor quickly drops to water depths of 16 metres. Water depths ranging from 16m to as deep as 29m are present across the harbor channel before it shallows to 5m and 3m between Simcoe Island and Garden Island, and extending to the Wolfe Island shore.

The surficial sediments within the survey corridor are divided into five main units for the purpose of this report. These units are based on their signatures in the geophysical records (sidescan sonar, sub-bottom profiler and echo sounder) and ground truthed by surficial grab samples and underwater video. The units consist of soft, unconsolidated, fine sediments with varying amounts of shell fragments and coarse materials as well as cobbles and boulders. Bedrock is present at the lake floor in Sand Bay and at the bedrock shoal approximately 1000m from lakeward of Wolfe Island.

The unconsolidated sediments present across the survey corridor vary from more than 10 metres thick to not being present at all. The sediments are thickest in the harbour channel, between the Kingston mainland and Snake Island shoal where they are visible in the sub-bottom data as deep as 19 metres below the lake floor. On the south east side of the harbour channel and extending towards Wolfe Island, the unconsolidated sediments thin to between 5 metres and less than 1 metre thick along the cable route, however bedrock does not outcrop along the cable route centerline outside of Sand Bay.

The intake pipes located east of Sand Bay extend approximately 550 metres offshore to the 27 metre bathymetry contour. A large area of disturbed sediment and debris is present near the end of the intake pipes, and is most likely related to construction and maintenance of the intake pipes.

The Hydro One submarine power cables were found to be north of the designed locations at the head of Sand Bay. The cables were found on the lake floor as they crossed Sand Bay, and are buried just before entering the shore. In order to maintain 30 metres away from the Hydro One power cables, the proposed CREC power cable route was shifted north as it enters Sand Bay from the shore, and runs close to the north shore of Sand Bay before turning southeast towards the mouth of the Bay.

The proposed CREC power cable route passes between the Hydro One submarine power cables and the intake pipes with clearances of 30 metres and 51 metres respectively before turning east and heading across the harbour towards Wolfe Island.

1.0 INTRODUCTION

Canadian Seabed Research (CSR) was contracted by the Canadian Renewable Energy Corporation (CREC) to perform a geophysical survey for a proposed submarine cable installation between Wolfe Island and Kingston, Ontario (figure 1.1). During survey operations, approximately 300 km of geophysical data was collected within the survey corridor of the proposed cable route.

2.0 SURVEY OPERATIONS

Survey operations were conducted between June 29th and May 21st, 2007 onboard the CSR survey vessel "Sea Star". The "Sea Star" is a 22' fiberglass-hulled, Rosborough designed vessel. The survey equipment installed on the "Sea Star" included a differential GPS positioning system, dual frequency Odom Echotrac echo sounder, Klein 500 kHz sidescan sonar, Klein 3.5 kHz sub-bottom profiler and Marine Magnetics Seaspy magnetometer.

2.1 Survey Equipment

2.1.1 Integrated Navigation System

A real time differential GPS system was utilised for this survey. The integrated navigation system consisted of a CSI GBX PRO differential GPS system to receive satellite positional data and differential corrections throughout the survey. Differential corrections were received from a Canadian Coast Guard beacon and used to correct the data in real time. Data was logged directly into the Hypack survey navigation workstation and was used for real time navigation of the survey vessel. The system is capable of achieving ± 1 metre accuracy with a 95% confidence level. All survey data were collected in UTM coordinates (Zones 18) based on WGS84 ellipsoid and datum.

2.1.2 Odom Echotrac CV3 Dual Frequency Echo sounder

The Echotrac CV3 is a hydrographic echo sounder design incorporating cutting-edge technology, plus the ease and flexibility of operation of a networked Windows® interface. The Echotrac CV3 contains a Dual channel board with a robust design and frequency agility enabling the operator to precisely match the transceiver to almost any existing transducer. The Echotrac CV3 features interfacing flexibility, offering 4 serial ports that can be configured to interface with computers, positioning systems, motion reference units and remote displays. The Echotrac CV3 has an Ethernet port that outputs the 16 bit samples of the acoustic data in .XTF format for further processing or visualization.

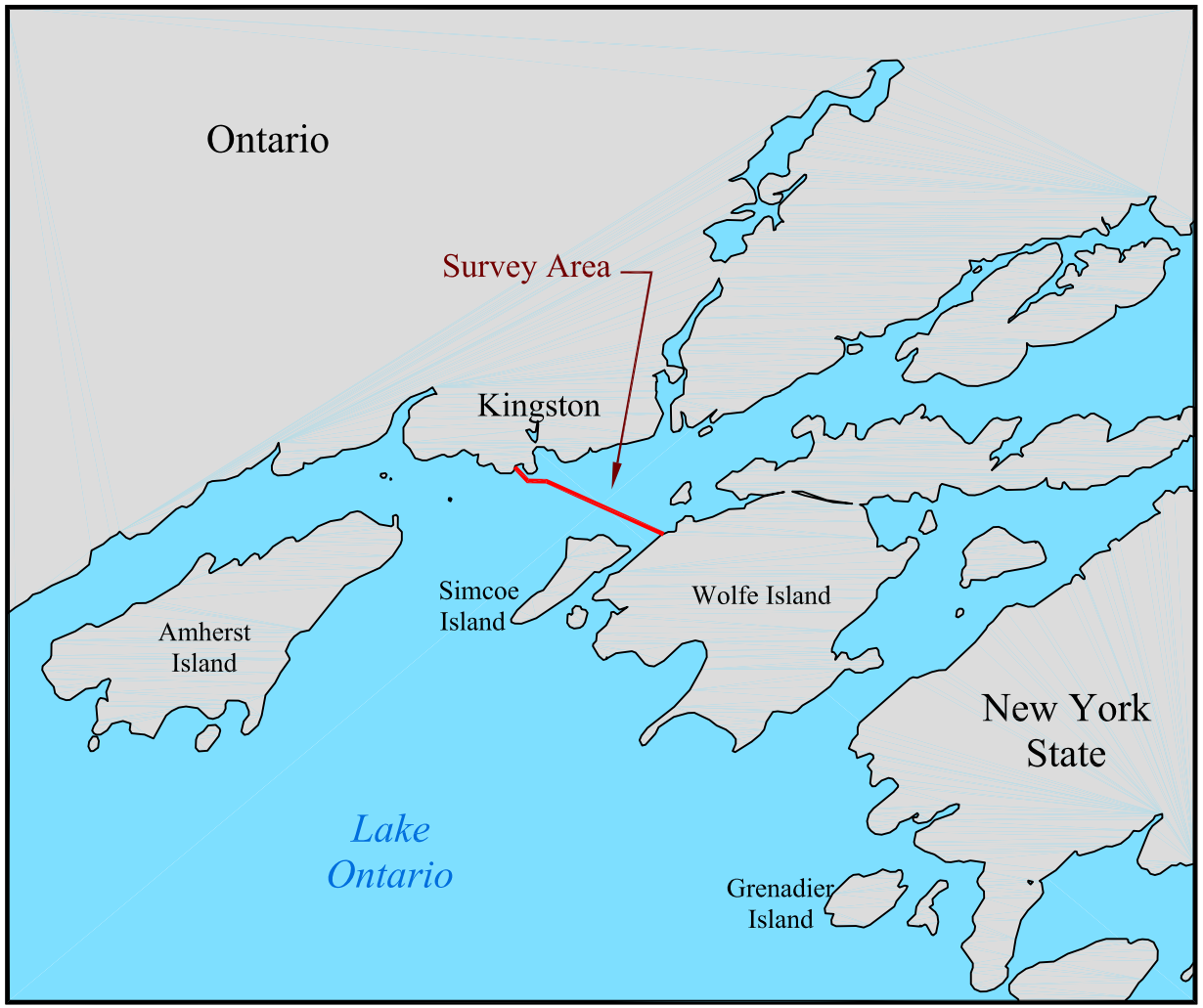


Figure 1.1 - Survey location map

2.1.3 Klein 500kHz Sidescan Sonar

Sidescan sonar data was obtained using a Klein 595 tow fish. The sidescan system was operated at 500 kHz, at a 50 meter range setting. The sidescan system offers real-time complete slant range and speed correction to preserve the dimensions and orientations of all seafloor features such as shipwrecks, debris, sediment bedforms, etc. Fix marks generated by the Hypack navigation software was annotated on the records at 50 metre intervals. Fix numbers were also annotated manually at each fix mark and the data was recorded digitally by the Coda acquisition system. Gain settings were manually adjusted to account for changing bottom types.

The Sidescan sonar tow fish was deployed from the port side of the aft deck of the survey vessel "Sea Star". The cable length deployed depending on water depth and was recorded on the survey line log each time adjustments were made. The sidescan sonar tow fish was deployed, retrieved, and adjusted by hand.

The Sidescan was interfaced with the CODA Octopus 160 unit and the CODA DA 100 digital acquisition system to digitally record the data.

Coda Digital Acquisition System

A Coda DA 50 digital acquisition system and CODA Octopus 160 sonar interface unit were used to interface the Klein tow fish and navigation system while surveying to collect geo-referenced sidescan sonar data in digital form. The stored data can be replayed by the Coda system in order to enhance the data or create sidescan mosaics. Processed or enhanced data can then be re-saved in Coda file format or converted to XTF or SEGY file format if required. Mosaics can be exported in geo-referenced TIFF file format. The small and rugged black box style setup of the Octopus 160 interface unit was also ideal for the limited space available in the small boat configuration on "Sea Star".

2.1.4 Klein 3.5 kHz Sub-Bottom Profiler

Sub-bottom geology data was obtained using the Klein 3.5 kHz Sub-bottom profiler. This profiler uses a 3.5 kHz frequency to obtain high resolution profiles in soft sediments. The profiler transducer was pole mounted over the side of the survey vessel. This system has the ability to resolve buried pipelines, and other anthropogenic material buried beneath the seafloor. The sub-bottom profiler was interfaced with the Coda acquisition system where the data was displayed and recorded digitally, as well as printed to hard copy using an EPC printer.

2.1.5 Marine Magnetics Seaspy Magnetometer

A SeaSPY magnetometer produced by Marine Magnetics was used to discern anthropogenic ferrous-based materials on or below the seafloor. The SeaSPY is a proton magnetometer utilizing the Overhauser effect. This effect allows the sensor to be polarized with a low power, high frequency, magnetic field, instead of a high power DC magnetic field. The advantages of this unit are that it does not produce a heading error, have a dead zone or display a temperature drift like many of the Cesium models. The SeaSPY operates at a resolution of 0.001nT, with a sensitivity of 0.015nT and an absolute accuracy of 0.2nT. All acquired data was logged directly to the integrated navigation workstation for post processing and positioning of anomalies.

2.2 Ground Truth Equipment

2.2.1 CSR Hand Dredge

Sediment samples were collected using the CSR hand dredge. The light weight dredge was designed to be deployed and recovered by hand, and collects the sediment sample while being pulled across the lake floor. Sediment samples were helpful with the interpretation of surficial sediment grain size, consistency and the percentages of each sediment type and shell fragments present within the surficial sedimentary unit.

2.2.2 Delta Vision HD Marine Video Splashcam

The Delta Vision, HD Marine Video Splashcam was used during the survey to obtain digitally recorded underwater video and still images of the lakebed. The Splashcam is a 3.6mm, black and white camera with a resolution of 400 TV lines. Its light weight allows it to be deployed and recovered by hand. The video footage was helpful with the interpretation of surficial sediment textures, as well a confirming the presence of bedrock, boulders, and lake floor organisms such a shellfish beds.

3.0 RESULTS

The site geology presented in this section is based on the interpretation of the geophysical data collected during survey operations.

3.1 Bathymetry

All bathymetric soundings were reduced to Chart Datum. Chart Datum in Lake Ontario is 74.2 metres above the International Great Lakes Datum (IGLD) 1985. IGLD is a datum established by the Canada – US Coordinating Committee on Great Lakes Basic Hydraulic and Hydrological Data to provide a unified datum for use in Hydrological studies on both sides of the boarder along the Great Lakes and St. Lawrence River. IGLD was extended throughout the St. Lawrence River and Great Lakes by a network of over-land leveling and water level transfers from the new (IGLD 1985) reference zero-point located at Rimouski, Quebec (Forrester, 1983). IGLD 1985 is approximately 4 to 5 cm below Canadian Geodetic Vertical Datum (CGVD) 1928 in the Kingston area according to CHS Benchmarks. The location and station information of the CHS benchmarks in the Kingston area have been included in Appendix A.

The bathymetry of the survey corridor ranges from 29m to as shallow as 1.0m. In Sand Bay water depths range between 1m to 4m to the mouth of the Bay where the lake floor quickly drops to water depths of 16 metres. Water depths ranging from 16m to as deep as 29m are present across the harbor channel for 2.5 km, where it quickly shallows. This shallow area is located between Simcoe Island and Garden Island, and extends to the Wolfe Island shore. The bathymetry in the shallow area ranges from 5m to 3m. Enclosure 1 displays the bathymetric data across the survey corridor.

Enclosure 1 also includes the sounding collected during 2006 survey operations and additional sounding data acquired from CHS (Canadian Hydrographic Service) Field Sheets 8078 (1981{sounding in metres}) and 3664 (1970 {soundings in feet}). The additional soundings are located outside of the 200 metre survey corridor. The soundings, (spaced approximately 50 to 100 metres apart on both field sheets), were incorporated into the CSR collected bathymetry data.

3.2 Surficial Geology

The surficial sediments within the survey corridor are broken into five main units. These units are classified based on their signature on geophysical records (sidescan sonar, sub-bottom profiler and echo sounder) and were ground truthed by surficial grab samples and underwater video. Enclosure 2 displays the distribution of the surficial geology across the survey corridor.

Unit-A
Unit A is the surficial unit extending from the mouth of Sand Bay, near the Kingston shore, for approximately 4.2 km across the channel and into the 5 metre bathymetry contour north east of Simcoe Island. This unit is comprised of clay sediments with varying amounts of shell fragments and shellfish beds (figure 3.1). Grab samples collected within this unit contained very saturated, olive grey coloured clay with some shell fragments and intact, white coloured clams.

Unit A also contains areas where dredge spoils and shellfish beds are present, characterized by the dark, circular features in the sidescan imagery, (figure 3.2). It appears that the shellfish beds correlate with the circular shaped dredge spoils, indicating that the shell fish habitat formed as a result of the dumped dredge spoils. Figure 3.3 presents still frame images from video footage collected of the shellfish beds within Unit A. The extents of Unit A are displayed in Enclosure 2.

Unit-B
Unit B is present on the lake floor south east of Unit A. This unit is interpreted to be fine sand sediments with abundant shell fragments. Gravel and cobble sized clasts are visible throughout the unit, as well as the occasional boulder up to 0.75 metres in size. Figure 3.4 displays sidescan imagery of Unit B. Figure 3.5 displays still frame images from video footage collected within Unit B. It is possible that the increased cobble and boulder content within this unit is a result of bedrock being close to the surface in this area (as discussed in section 3.3). The extents of Unit B are displayed in Enclosure 2

Unit-C
Unit C is present on the lake floor south east of Unit B, near the bedrock shoal and extends to Wolfe Island. This unit is comprised of sandy silt and an abundance of shell fragments. Gravel and cobble sized clasts are common within the unit, as well as numerous boulders, with some up to 1 metre in size. Figure 3.6 displays sidescan imagery of Unit C. Figure 3.7 displays still frame images from video footage collected within Unit C. It is likely that the increased cobble and boulder content within this unit is a result of bedrock being close to the surface in this area (as discussed in section 3.3). An area with abundant logs and boulders is present near the shoreline within this unit and are likely the remains of an old warf (figure 3.8). The extents of Unit C are displayed in Enclosure 2

Unit-D
Unit D is the local bedrock surface, and is found in Sand Bay at the Kingston shore, and at the bathymetric shoal, approximately 1000 metres lakeward of Wolfe Island. Erosion features such as fractures and glacial striations are visible in the video footage and sidescan data collected over the unit. Cobbles and many large boulders are visible resting on the top of the bedrock surface. It is likely that the boulders are fragments of bedrock that have been fractured off through freeze-thaw processes and further broken up by marine erosion and redistributed over the lake bed. Figures 3.9 and 3.10 display sidescan sonar and video still frame images of the bedrock surface in Sand Bay respectively.

Figure 3.11 and 3.12 display sidescan sonar and video still frame images of the bedrock surface at the bathymetric shoal respectively. The extents of Unit D are displayed in Enclosure 2

Unit-E
Unit E is present at the landfall area in Sand Bay, extending approximately 200 metres from the shore. The Unit is composed of a coarse cobble till within fine sand and silt sediments. This unit is less than 0.5 metres thick and lies overtop of bedrock. Figure 3.13 displays still frame images from video footage collected within Unit E. The extents of Unit E are displayed in Enclosure 2.

Stantec Consulting asked CSR to collect two sediment samples within Sand Bay to be tested for contaminants and practical size in order to meet environmental regulations required for trenching operations in Sand Bay. Both samples were collected within Unit E and sent to Maxxam Analytics for analysis. The sample locations and analysis results are included in Appendix B.

3.3 Shallow Sub-Bottom Geology

The sub-bottom profiler used during the survey is able to obtain high resolution profiles in soft unconsolidated sediments; however, the 3.5 kHz system is unable to penetrate through sediments that contain coarse material such as gravel or till. It is possible that deeper sedimentary units are present in the survey area beneath the deepest reflectors outlined in this report.

The 2006 Wolfe Island Cable Route Survey Report discussed four primary sub-bottom reflectors. In an effort to simplify this report, the sub-bottom geologic interpretation for the 2007 Cable Route Survey has been re-organized to outline the thickness of unconsolidated sediments overlying the deepest reflector resolved by the 3.5 kHz sub-bottom profiler.

Enclosure 3 is an isopach map displaying the thickness of unconsolidated sediments visible in the sub-bottom data. The location and depths where gas is visible is also presented on the Enclosure.

Enclosure 4 displays an interpreted profile showing the thickness of unconsolidated sediments along the centerline of proposed cable route.

Unconsolidated Sediments
The unconsolidated sediments present across the survey corridor vary from more than 10 metres thick to not being present at all. The sediments are thickest in the harbour channel, between the Kingston shore and Snake Island shoal where they are visible in the sub-bottom data as deep as 19 metres below the lake floor before thinning to 2 metres north east of the Snake Island shoal navigational port-hand buoy (figure 3.14). Thick unconsolidated sediments are also present near the Wolfe Island shore, where they extend

past 14 metres, and below the maximum resolvable depth of the sub-bottom profiler (figure 3.15). The thick sediments here have filled in a deeper channel most likely created when lower water levels in the past eroded the channel between Simcoe Island and Wolfe Island.

On the south east side of the harbour channel and extending towards Wolfe Island, where water depths range from 10 metres to 3 metres, the unconsolidated sediments thin to between 5 metres and less than 2 metres thick along the cable route (figure 3.16). Although it is not possible to determine lithology of the underlying unit across the entire shallow water area without ground truth data such as boreholes, it can be traced to where bedrock outcrops at the shoal near Wolfe Island (figure 3.17). Other areas have a 'step-like' appearance similar to that seen of the bedrock in Sand Bay, where a deeper hole is present near the head of the Bay. It is likely that the flat lying bedrock has been eroded forming the step appearance, where the height of each step is the thickness of each limestone layer, (figure 3.18). The increased cobble and boulder content within the surficial sediments may also be an indication that bedrock is close to the lake floor. It is likely that the upper surface of bedrock has been fractured off and weathered, mixing boulder and cobble sized clasts into the overlying sediments. The thicknesses of the unconsolidated sediments are displayed in Enclosure 3.

Bedrock
Bedrock is characterized by a strong continuous reflector, with no coherent reflectors visible beneath it. It is visible in the sub-bottom data over short distances, trending at steep angles away from the lake bed beneath the marine sediments and out of range of the sub-bottom profiler (figures 3.14 and 3.17). The areas were bedrock is at the surface are displayed in Enclosure 3.

Gas
Shallow gas is visible in multiple areas within the survey corridor in water depths deeper then 15 metres. Gas within the sediments prevents the penetration of the acoustic energy from the sub-bottom profiler, masking the underlying geologic reflectors, (Figure 3.19). The top of the gas reflector is flat lying, and visible at depths averaging 2.5m below the lake bed.

The origin of the shallow gas in the survey area can not be determined from the data collected during this survey. The gas could be originating from shallow, decomposed organic material or from deep underlying formations. It is possible that the gas originated from the decomposition of vegetation that may have grown during low lake levels, and was then buried as the lake level rose. The areas where shallow gas has masked the underlying geologic reflectors are displayed in Enclosure 3.

3.4 Lake Bed Features

Several lakebed features have been identified in the geophysical data. These features are discussed below.

Dredge Spoils and Shellfish Beds
Multiple areas of dark, circular features typical of dumped dredge spoils are present in the sidescan data, (figure 3.2). Dredge spoils are on the bathymetric slope leading away from Sand Bay, at the ends of the intake pipes, and approximately 1800m lakeward of the Kingston shore. Shellfish bed accumulations are also present within the same areas, seemingly associated with the dredge spoils. It appears that the thick clusters of shellfish beds correlate with the circular shaped dredge spoils, indicating that the shell fish habitat formed as a result of the dumped dredge spoils (figure 3.3).

Scour Marks
Linear areas of disturbed sediment are visible in the sidescan data, and are most likely the results of anchors being dragged across the soft lake floor sediments. It is possible that the anchor drags were created during construction and maintenance of the intake pipes as well as by pleasure boats. Kingston Harbour hosts many sailing regattas during the summer season, including the Canadian Olympic Trials (CORK). Race markers and committee boats are all anchored in the area during such events.

Raised Relief Features
A number of targets raised above the seafloor are visible within the sidescan data. The dredge spoils identified within the survey area are one such feature. The majority of the spoils are relatively flat lying; however in places, possibly where multiple spoil dumps were made over top of one another, larger mounds have been created. It is difficult to establish an accurate measurement for the relief of the larger mounds because they have a very broad and rounded shape, which doesn't create a shadow in the sidescan image that can be measured. However, based on the video footage collected, a general since of their size can be estimated to be up to 0.5 metres above the surrounding lake floor.

Boulders up to 1 metre in size, and logs up to 4 metres long and 0.25 metres high are also present in the survey area, noted on the sidescan data as round objects resting on the lake bed. They are most common near the shoreline areas of the survey, as well as at the bedrock shoal.

Intake Pipes
3 intake pipes are located east of Sand Bay, extending approximately 550 metres offshore to the 27 metre bathymetry contour. A large area of disturbed sediment and debris is also present beyond the ends of the intake pipes, and is most likely from construction and maintenance of the intake pipes. Figure 3.20 displays sidescan sonar and sub-bottom profiler images of the intake pipes. Figure 3.21 displays video still frame images of the intake pipes. The figures also show the well cap located at the end of the western most intake pipe. The extents of the intake pipes are displayed on Enclosures 1, 2 and 3.

Hydro One Submarine Power Cables
3 active submarine power cable owned by Hydro One are located between Simcoe Island and Sand Bay. The power cables have been identified using a combination of sidescan sonar, submersible video camera equipment and marine magnetometer. The Hydro One submarine power cables have been identified on the lake floor running from the western

shore of Sand Bay into the harbour channel towards Snake Island shoal. The marine magnetometer was used to locate the cables where they are buried by the soft surficial sediments lakeward of Sand Bay. Figures 3.22 and 3.23 display sidescan sonar and video still frame images of the Hydro One submarine power cables where they are visible on the lake floor respectively. Enclosures 1, 2 and 3 display the location of the cables where they were identified.

3.5 Magnetometer data

Magnetometer data was collected inside the survey corridor to identify any ferrous targets that may pose a concern to the cable.

CHS has identified the Kingston area to be one of erratic magnetic readings, and has labeled the region as a magnetic anomaly on the Hydrographic Navigation Chart 2017. This magnetic anomaly accounts for the large variations in magnetic flux found in the magnetometer data collected across the survey area.

Other anomalous values in the magnetometer data could be correlated to the Hydro One submarine power cables, the intake pipes, dredge spoils, or near the steep bathymetric slopes where bedrock trends close to the lake floor.

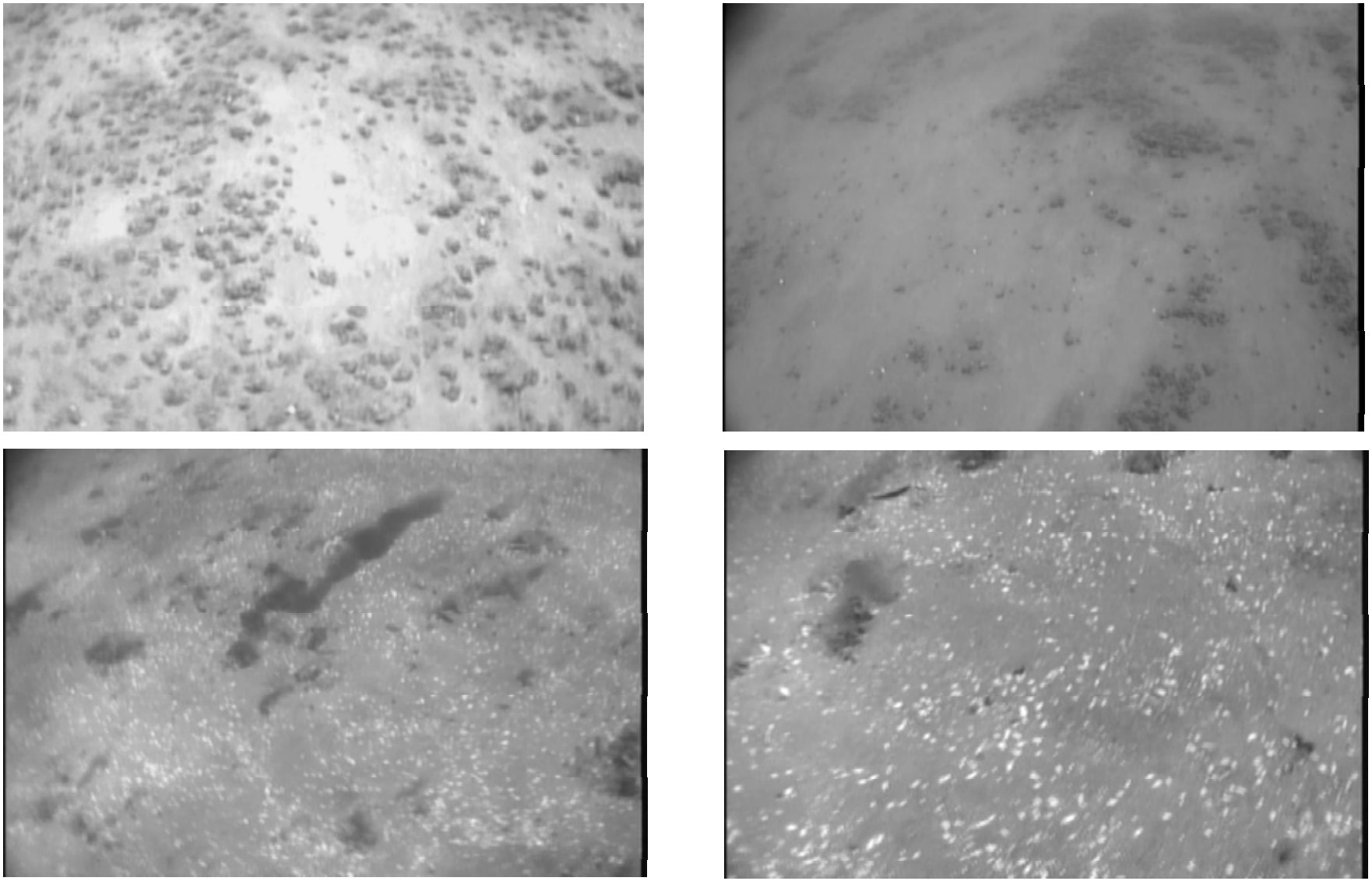


Figure 3.1 - Video still frame images of the surficial sediments present within Unit A. The images show soft clay sediments with abundant shell fragments and shell beds. Algae is also present on the lake floor, visible in the bottom two images.

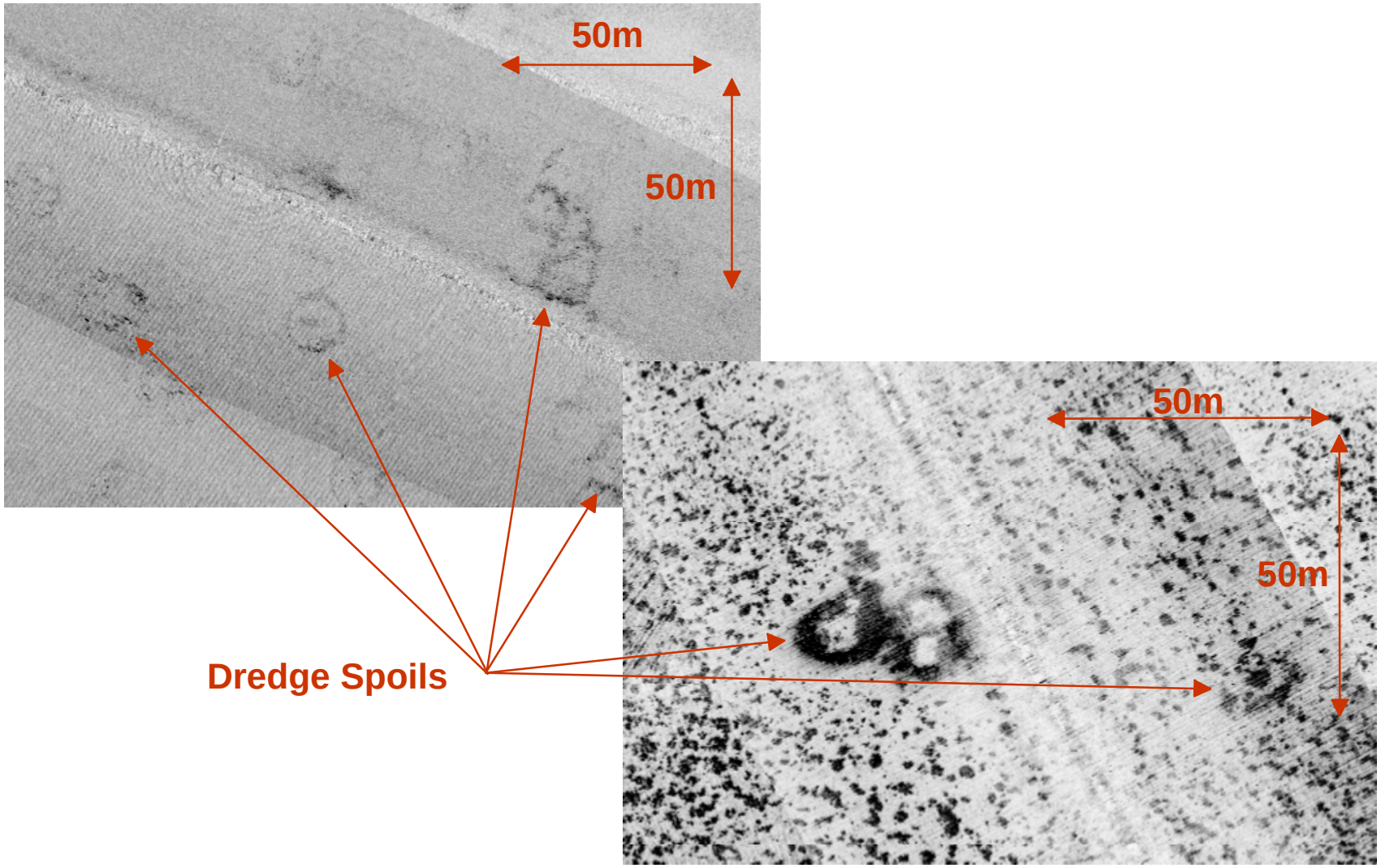


Figure 3.2 - Sidescan sonar images of dredge spoils present within Unit A.

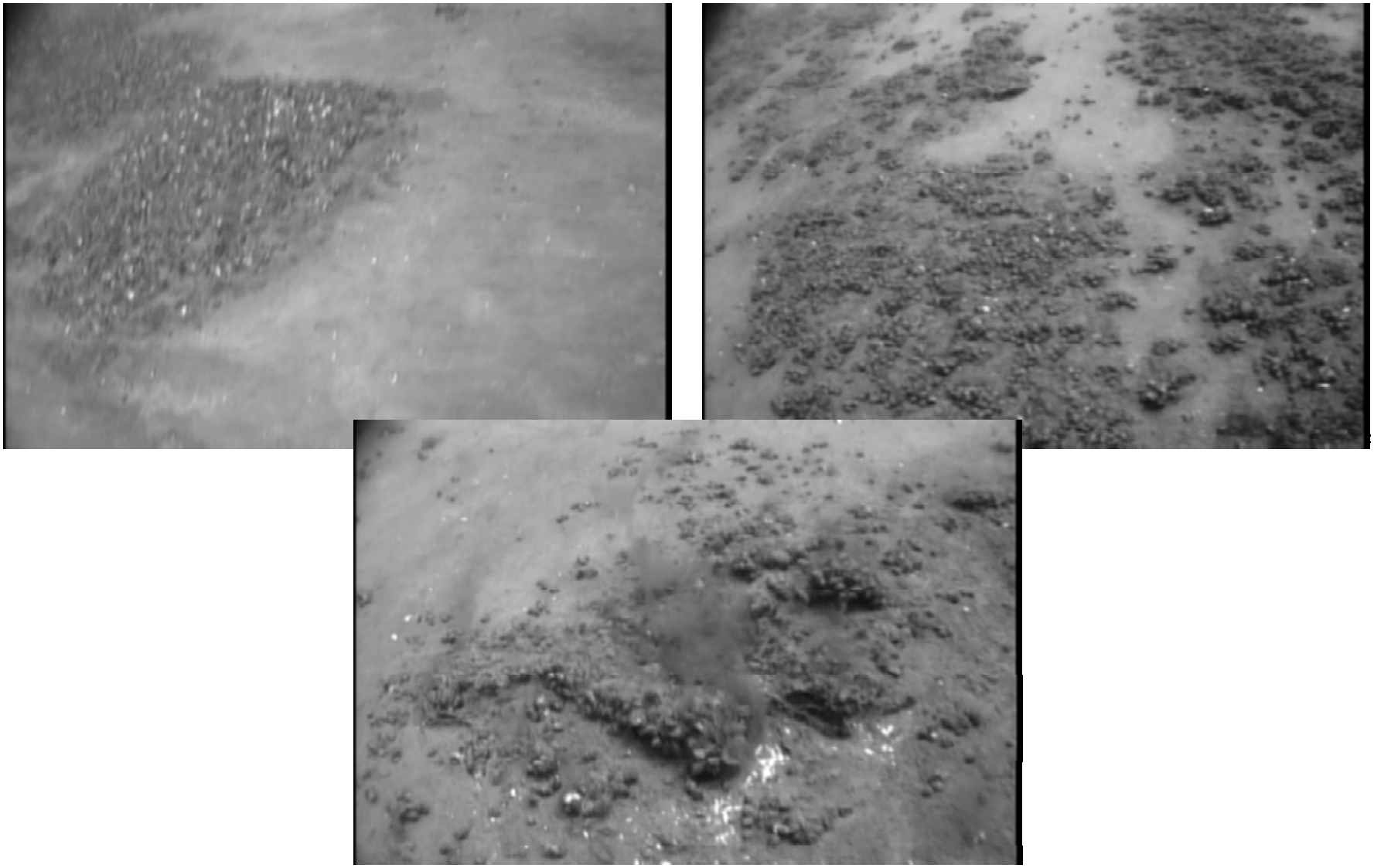


Figure 3.3 - Video still frame images of the shellfish beds present within Unit A.

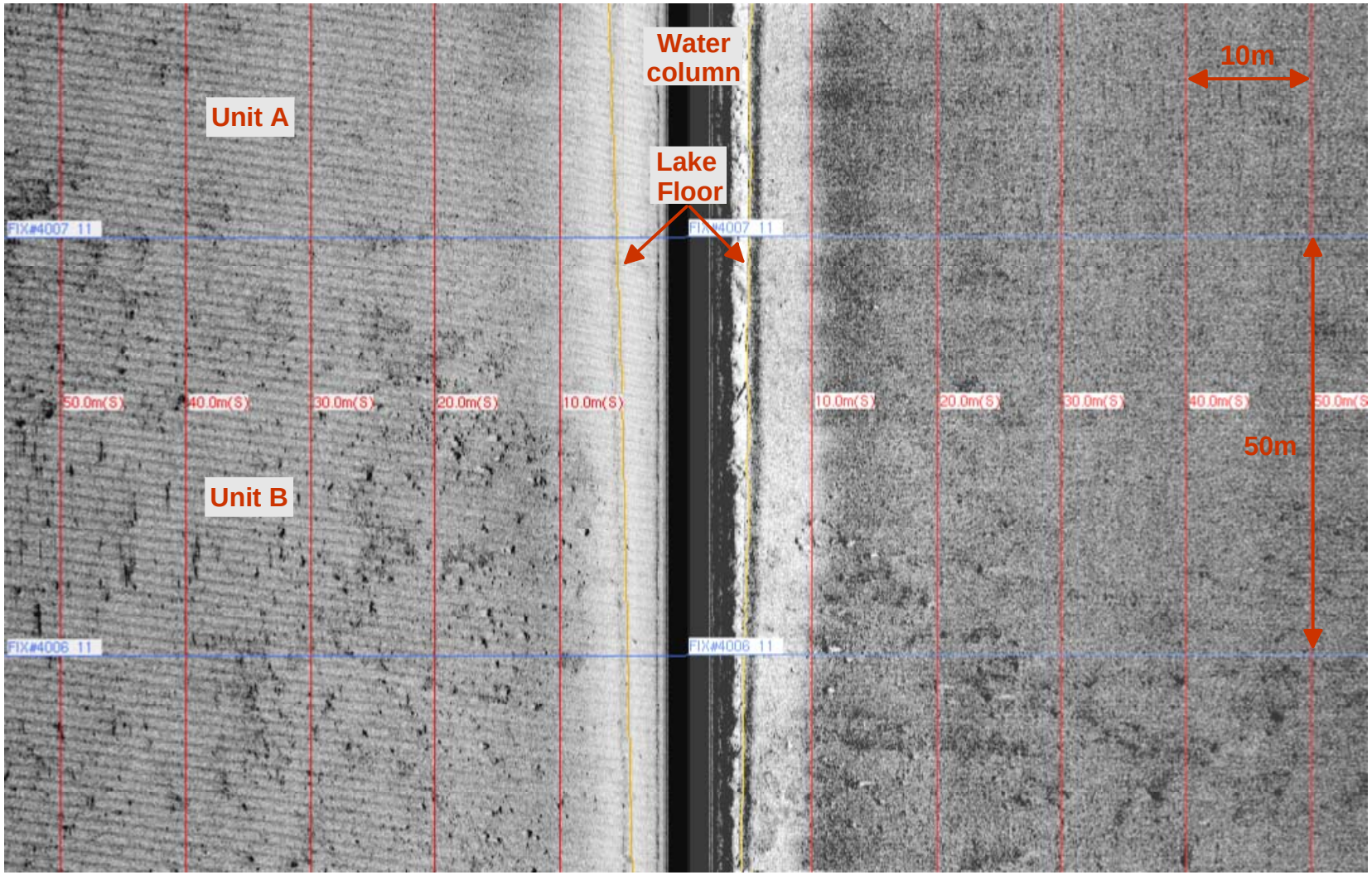


Figure 3.4 - Sidescan sonar image of surficial sedimentary Unit B.

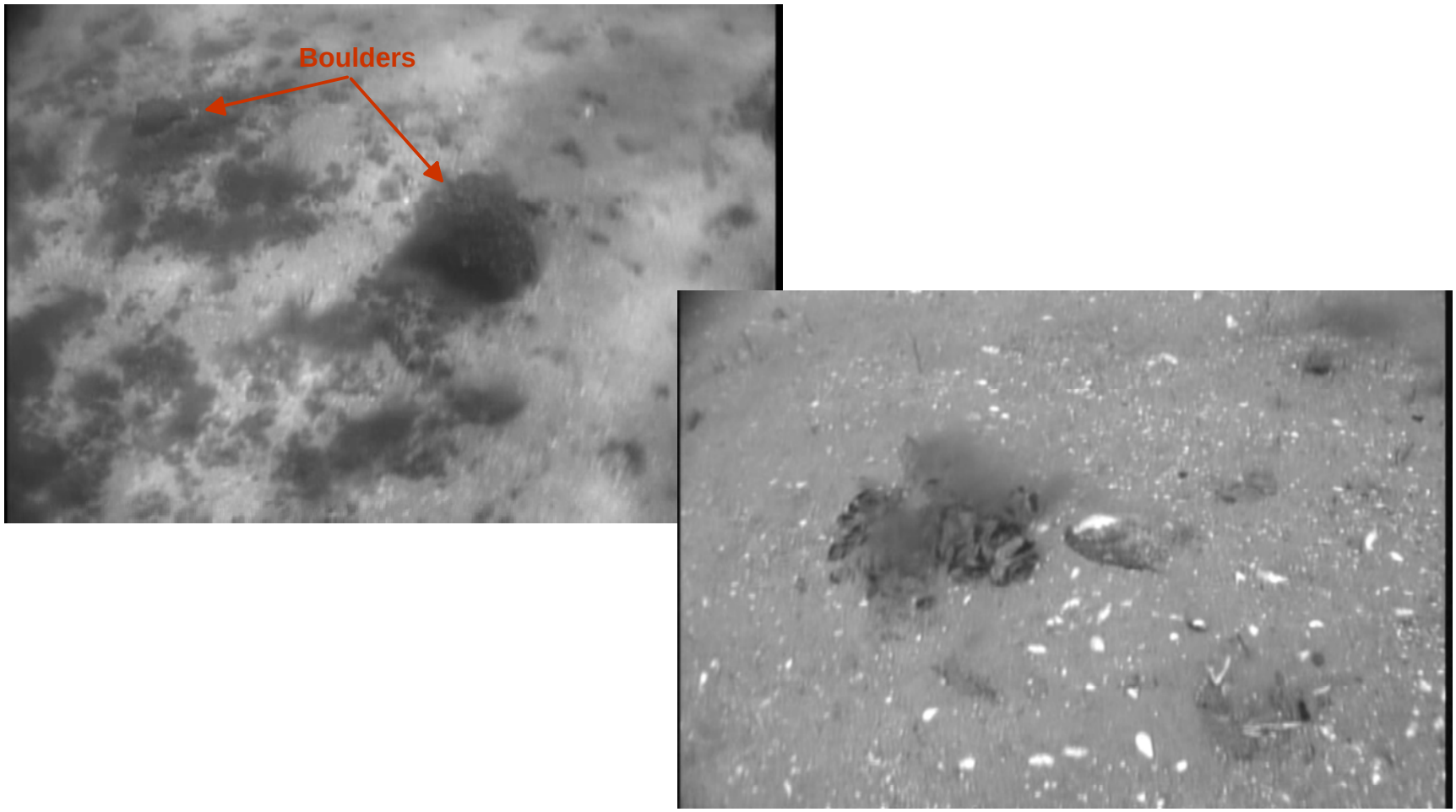


Figure 3.5 - Video still frame images of the surficial sediments present within Unit B. The images show abundant shell fragments, coarser sediments and small boulders. Due to the configuration of the drop video camera, it is not possible to accurately measure the size of features in the still frame images. Boulders identified in Unit B are typically less than 0.5 metres in size and as large as 0.75 metres.

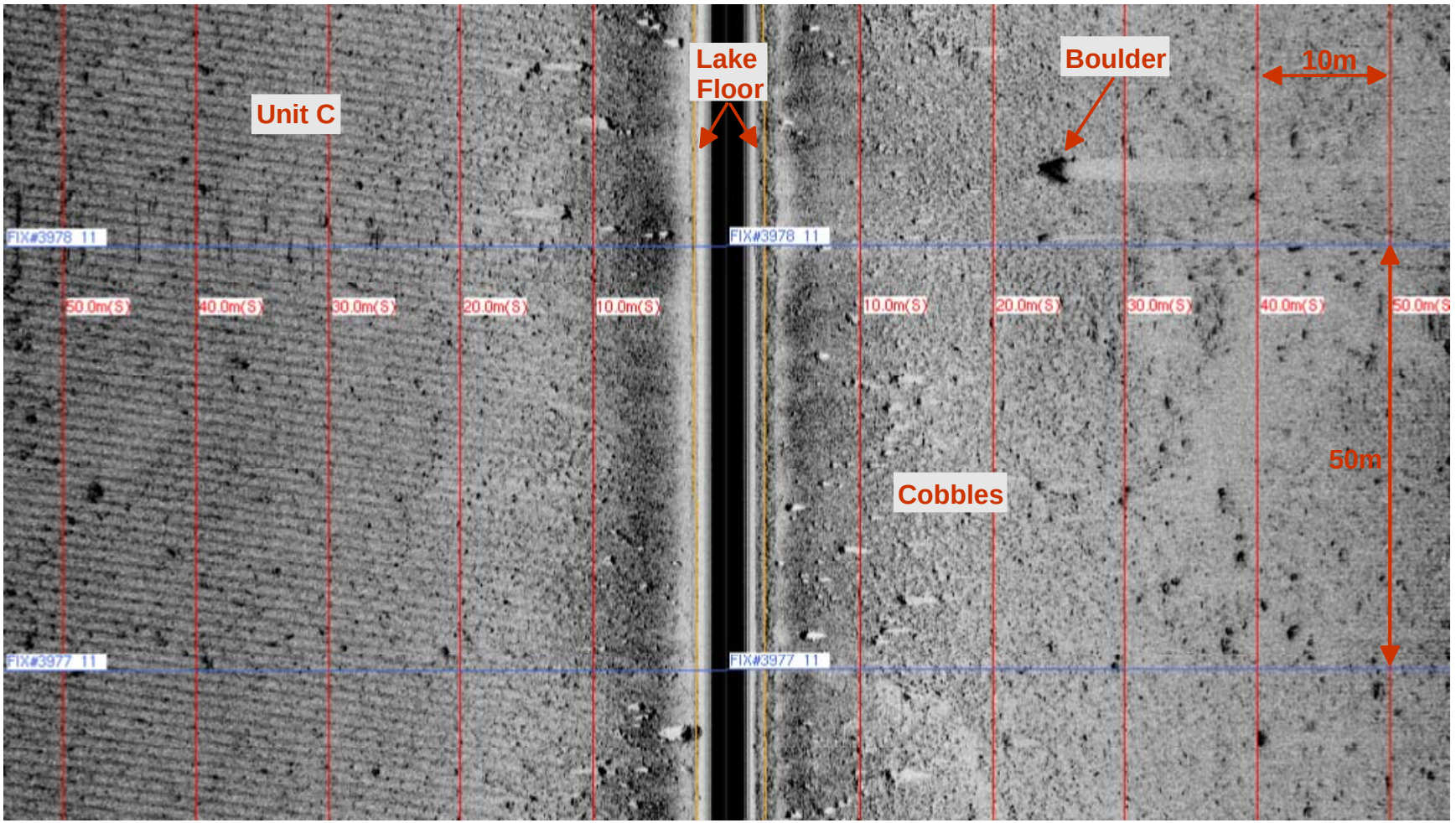


Figure 3.6 - Sidescan sonar image of surficial sedimentary Unit C. The image shows boulders and cobbles within the sandy-silt lake floor sediments.

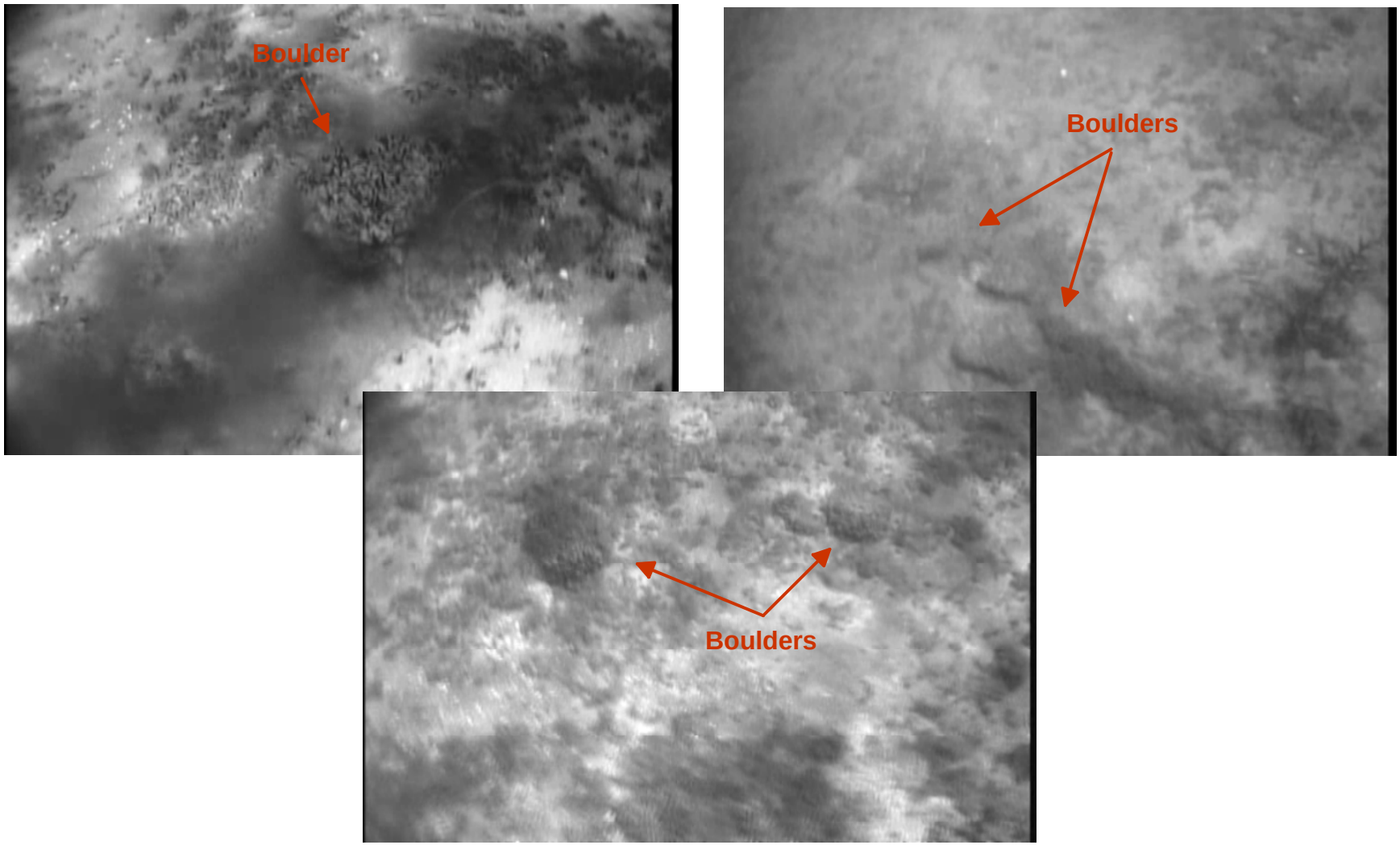


Figure 3.7 - Video still frame images of the surficial sediments present within Unit C. The images show cobbles and abundant shell fragments present within the unit. The images also show boulders resting on the seafloor. Due to the configuration of the drop video camera, it is not possible to accurately measure the size of features in the still frame images. Boulders identified in Unit C are typically less than 0.5 metres in size and as large as 1 metre.

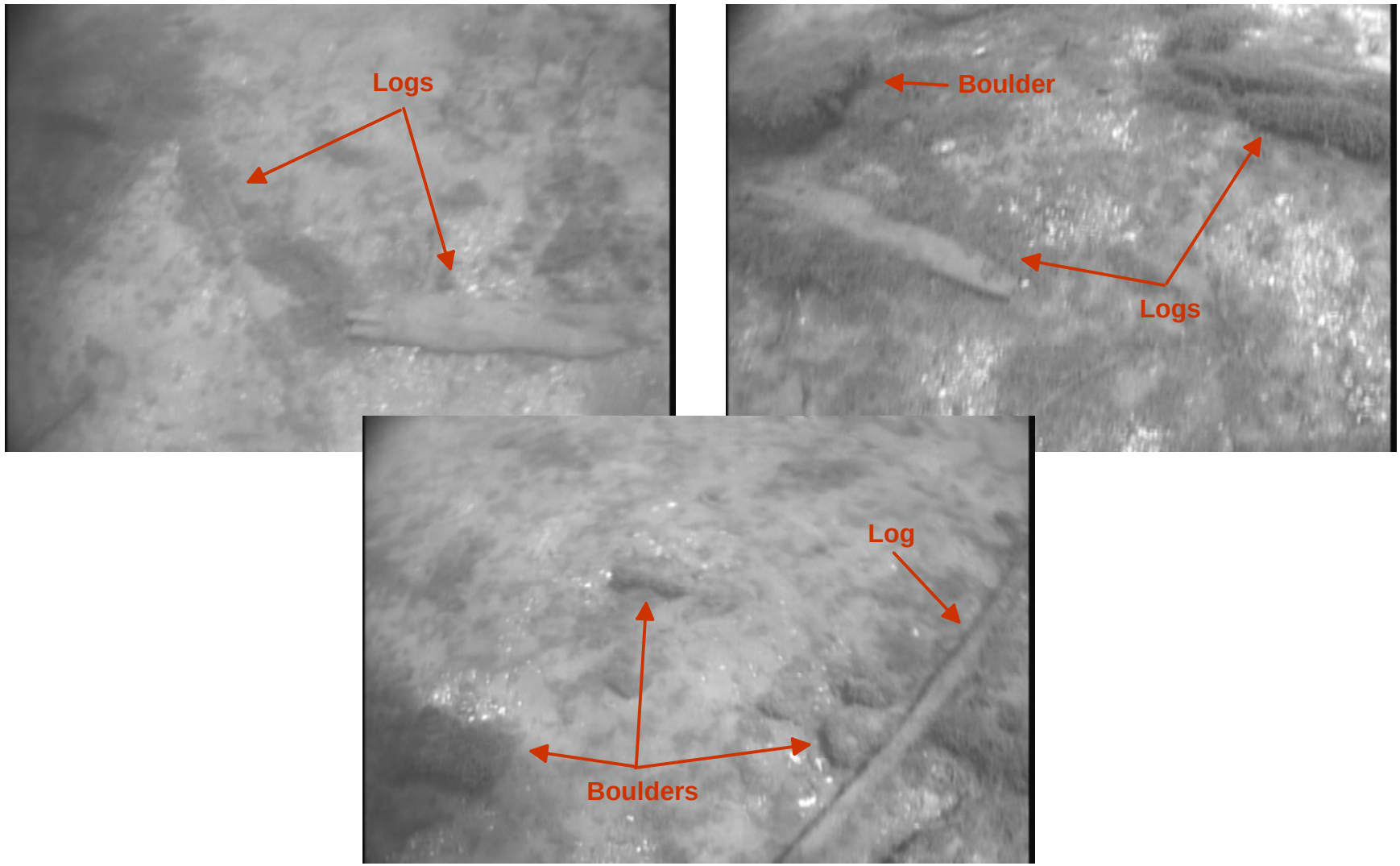


Figure 3.8 - Video still frame images of boulders and logs present near the Shore of Wolfe Island. Due to the configuration of the drop video camera, it is not possible to accurately measure the size of features in the still frame images. Logs identified in the sidescan sonar data were up to 4 metres long, and approximately 0.25 metres round. The logs are likely the remains of an old warf.

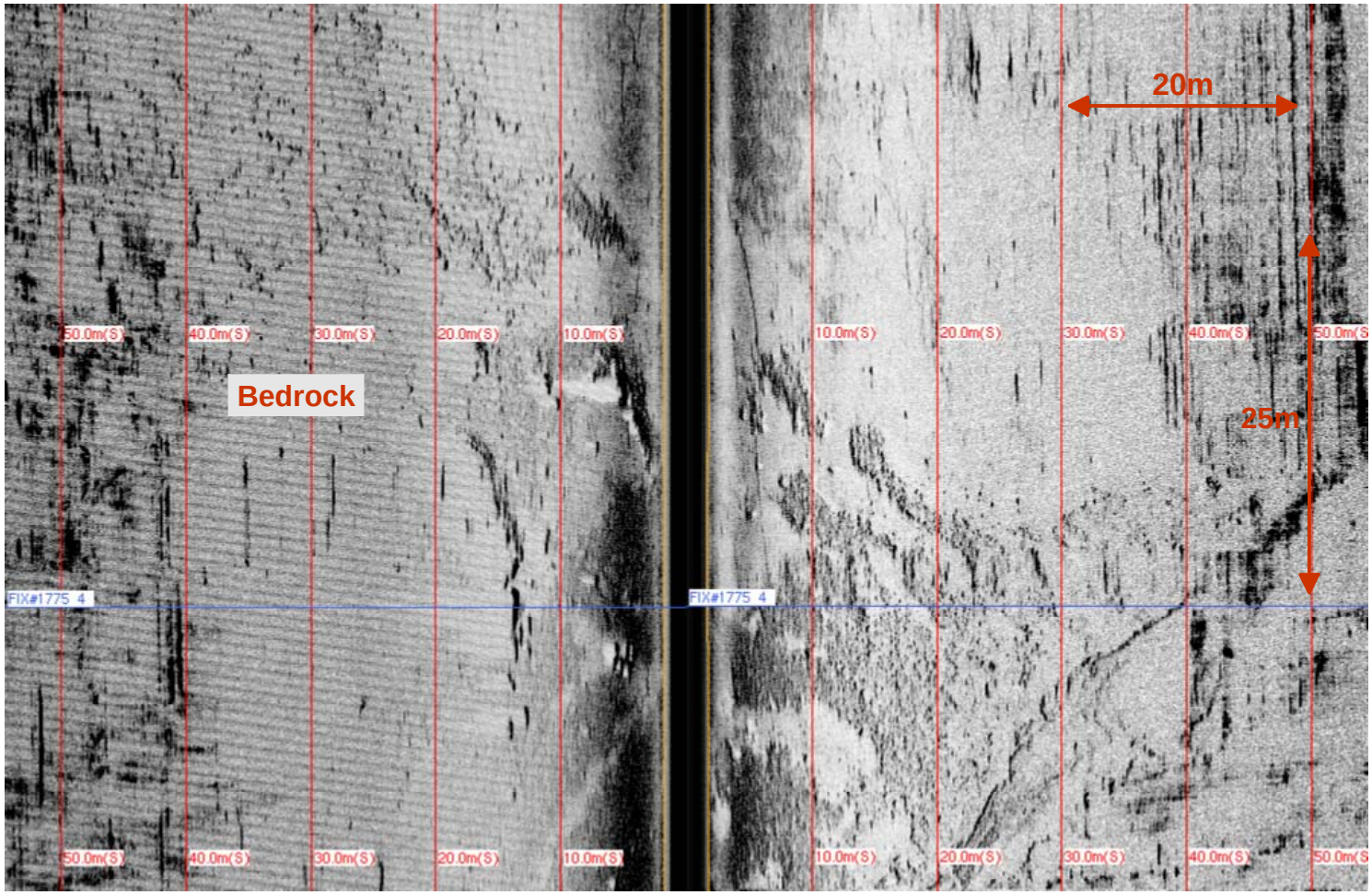


Figure 3.9 - Sidescan sonar image of bedrock where it is present at the lake floor in Sand Bay.

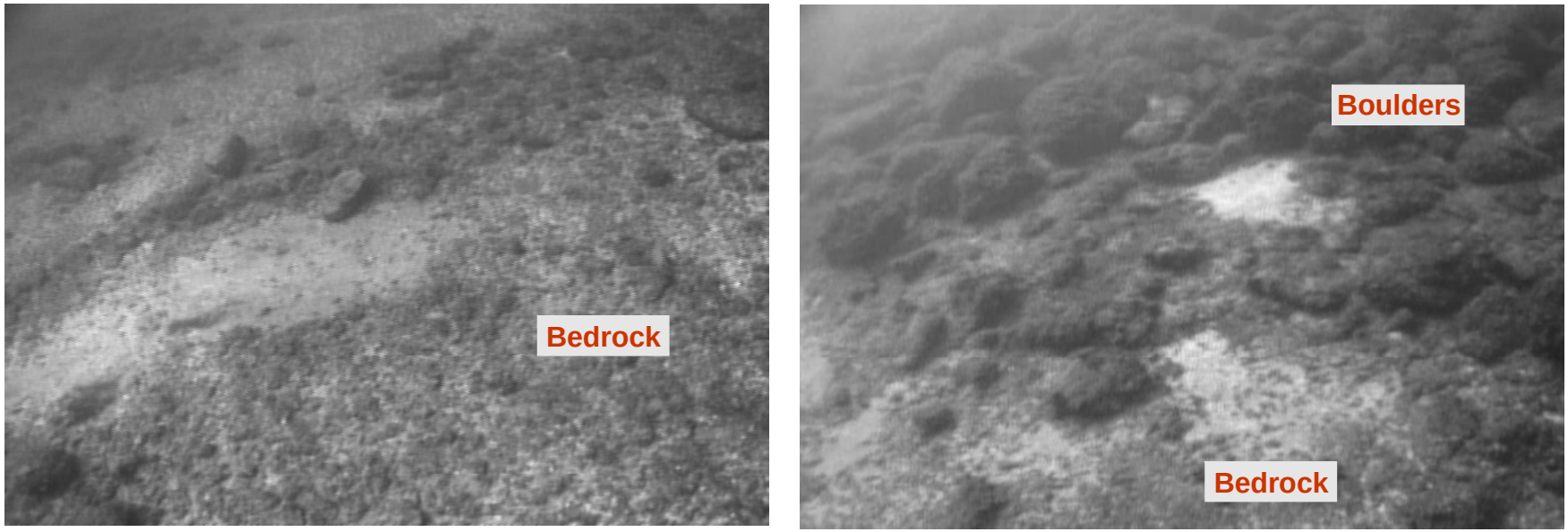


Figure 3.10 - Video still frame images of bedrock where it is present at the lake floor in Sand Bay.

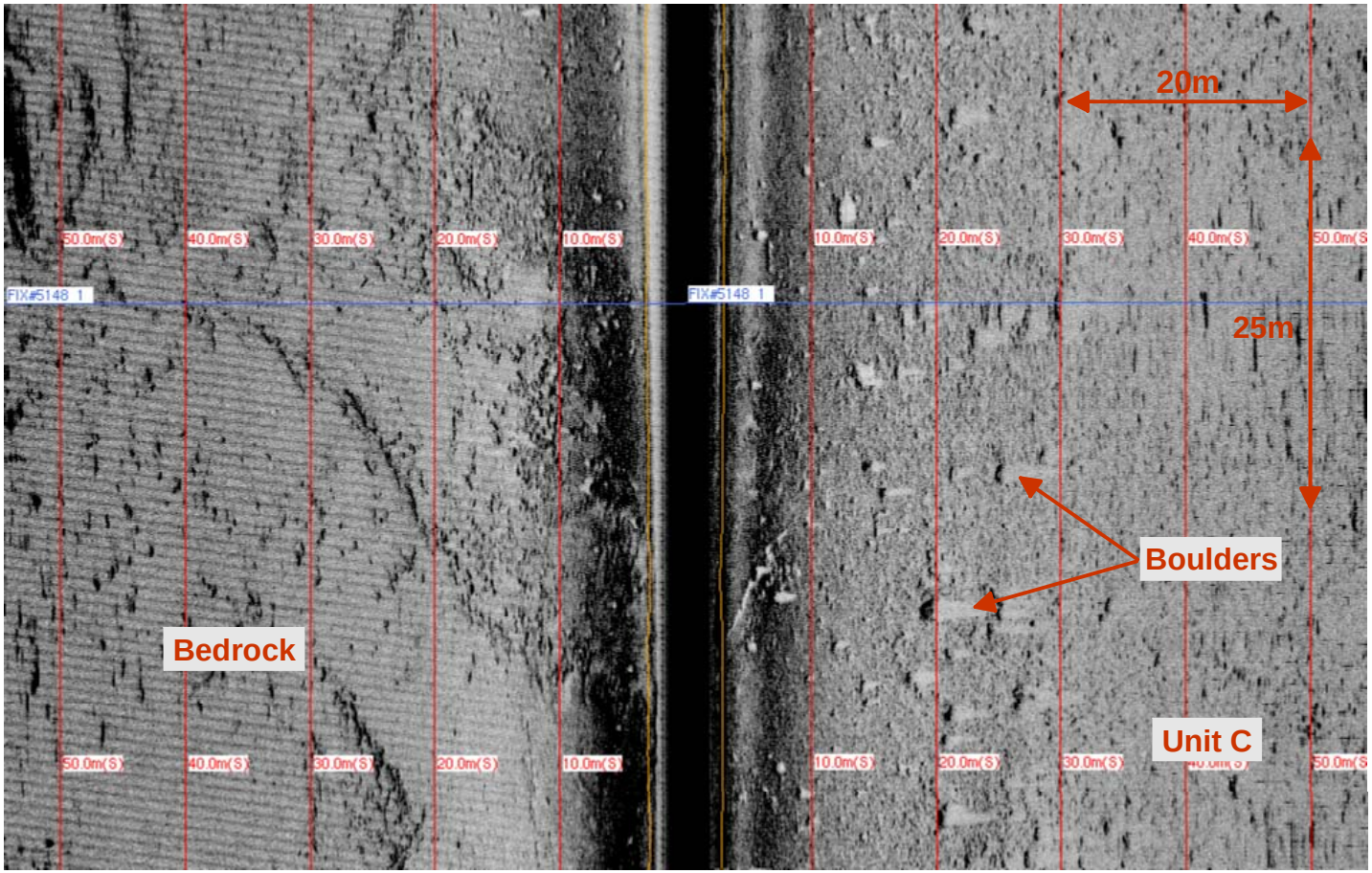
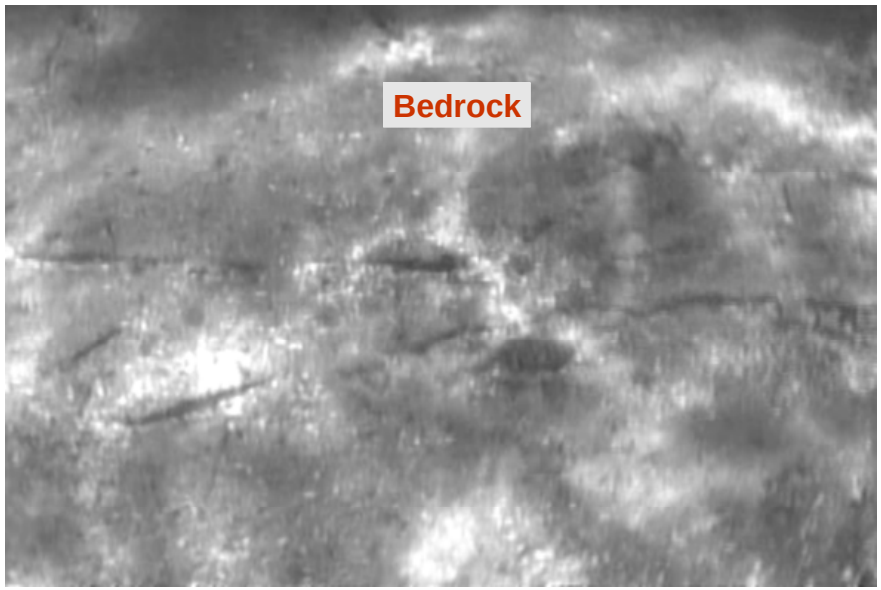


Figure 3.11 - Sidescan sonar image of bedrock where it is present at the bedrock shoal near Wolfe Island.



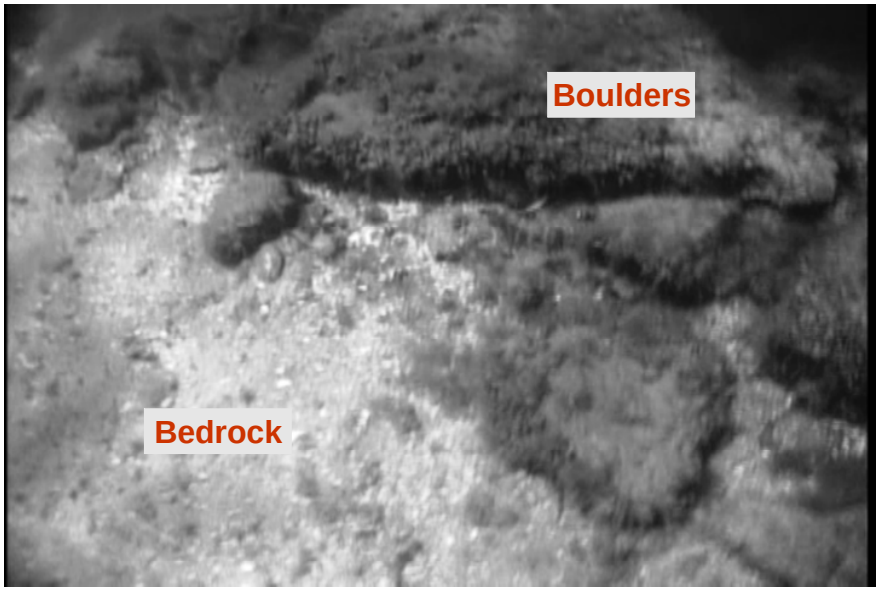


Figure 3.12 - Video still frame images of bedrock where it is present at the bedrock shoal near Wolfe Island.

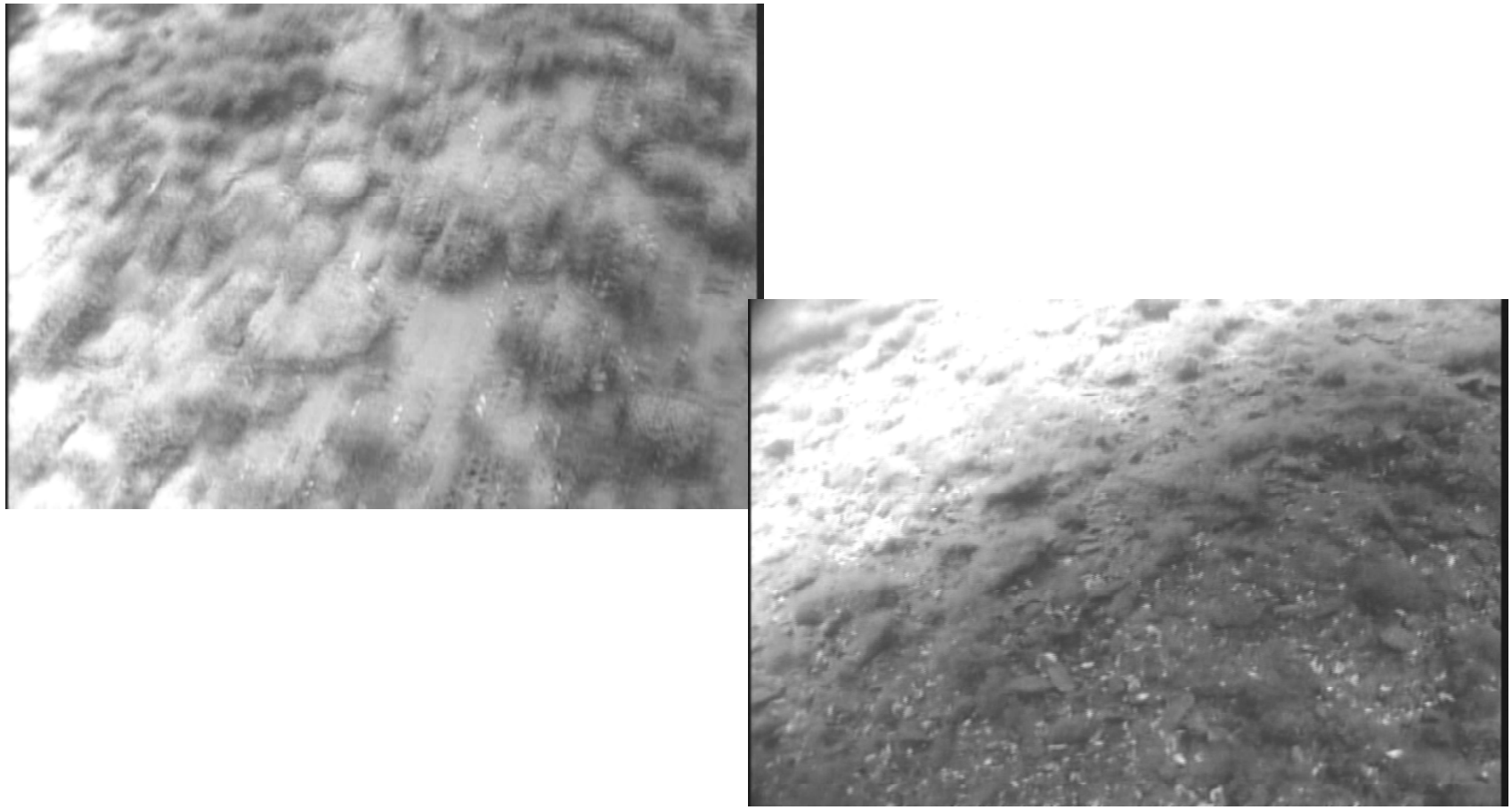


Figure 3.13 - Video still frame images of the cobble till present at the Sand Bay landfall area, (Unit E).

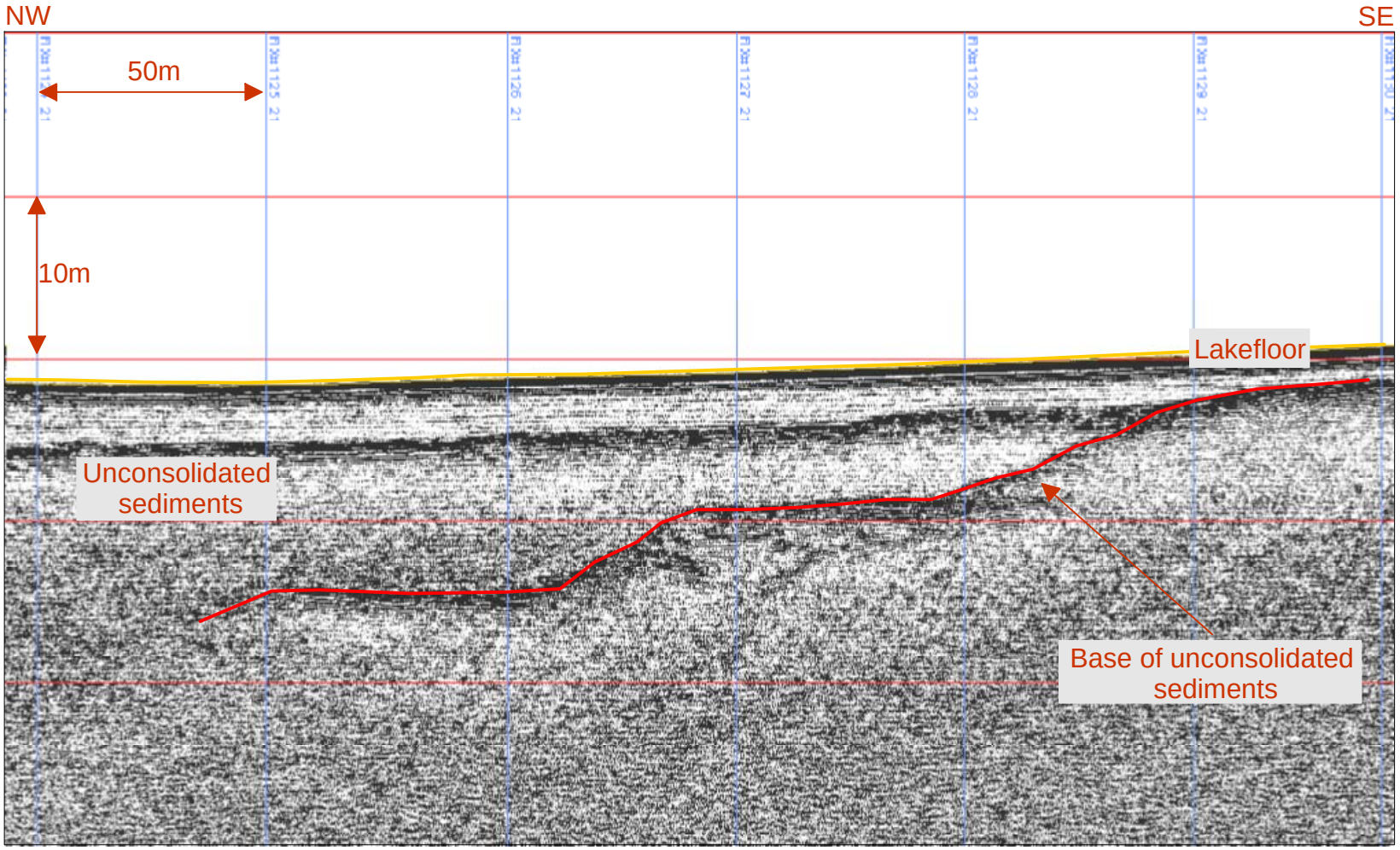


Figure 3.14 - Sub-bottom profiler image displaying thick unconsolidated sediments in the harbour channel before thinning north east of Snake Island Shoal.

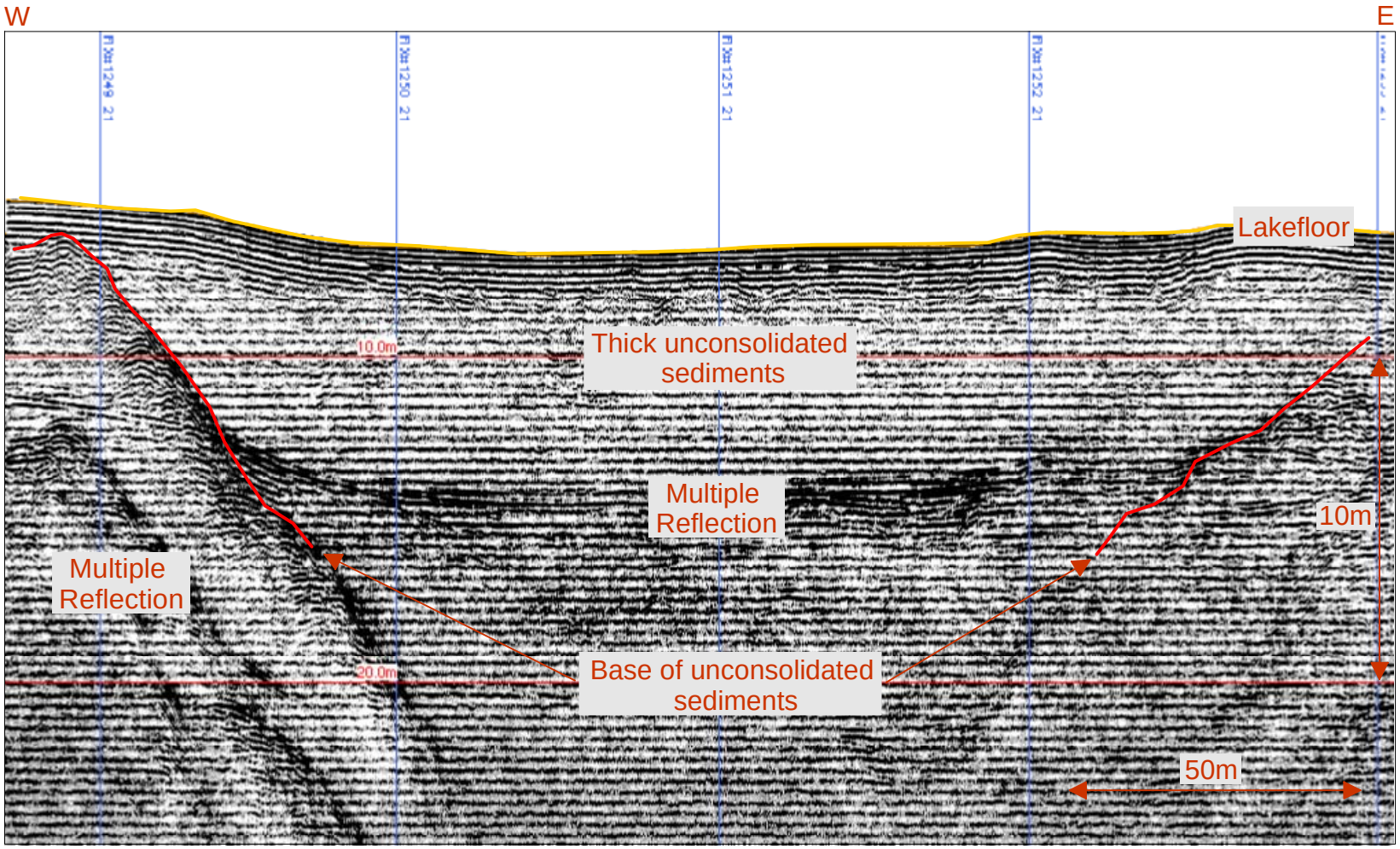


Figure 3.15 - Sub-bottom profiler image displaying thick unconsolidated sediments near the Shore of Wolfe Island.

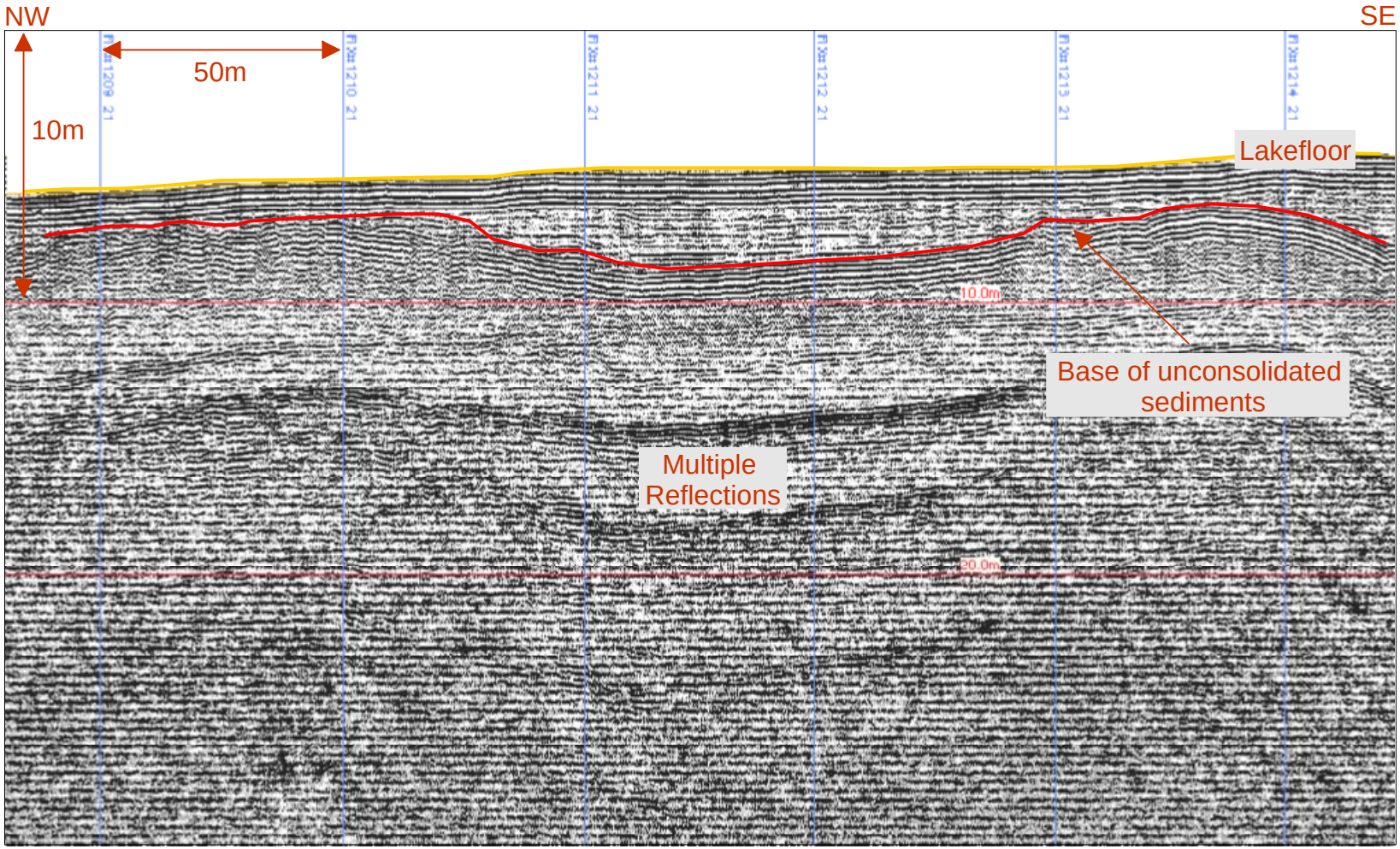


Figure 3.16 - Sub-bottom profiler image displaying thin unconsolidated sediments north east of Simcoe Island.

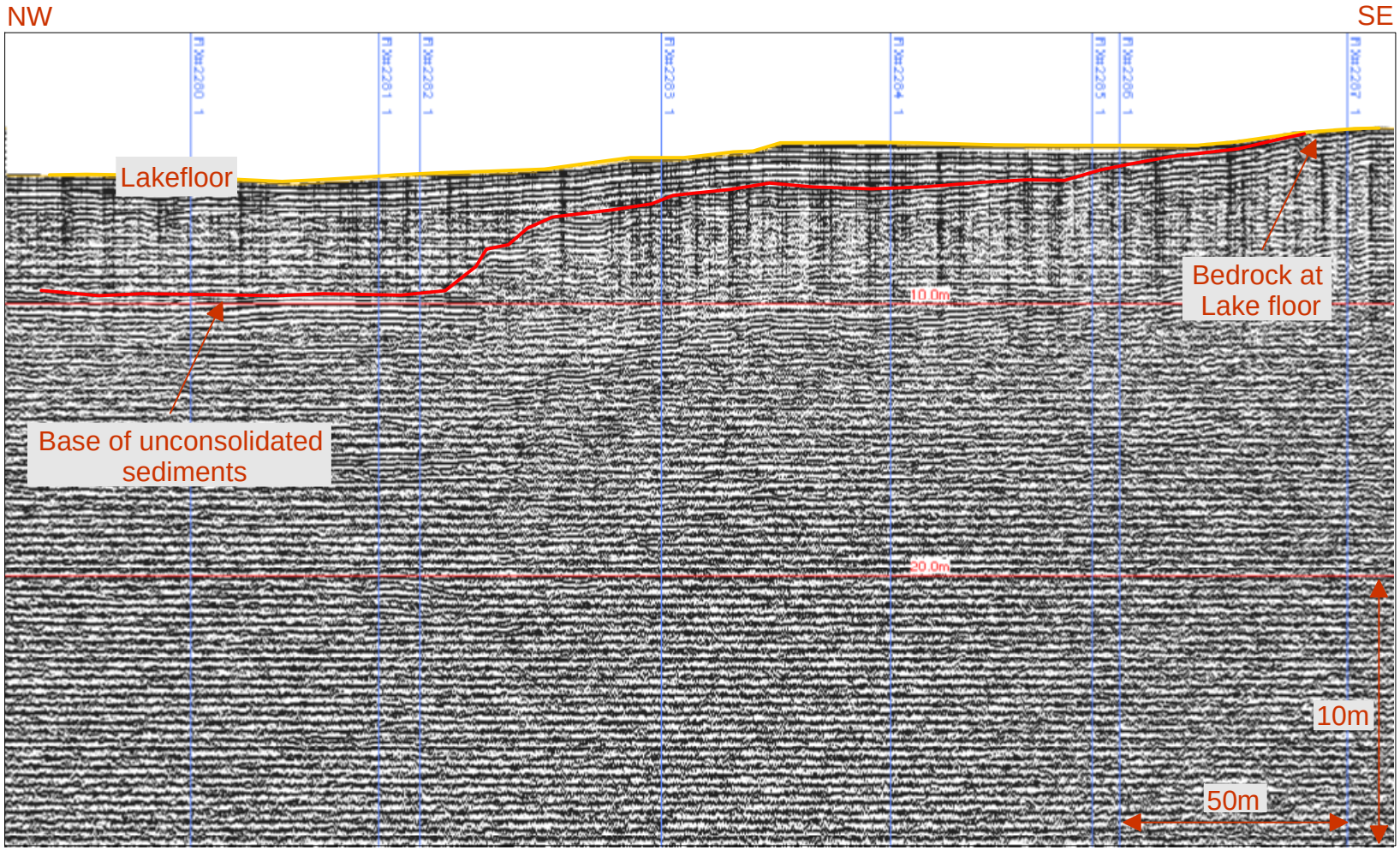


Figure 3.17 - Sub-bottom profiler image displaying the base of the unconsolidated sediments reflector leading towards, and outcropping at the bedrock shoal near Wolfe Island.

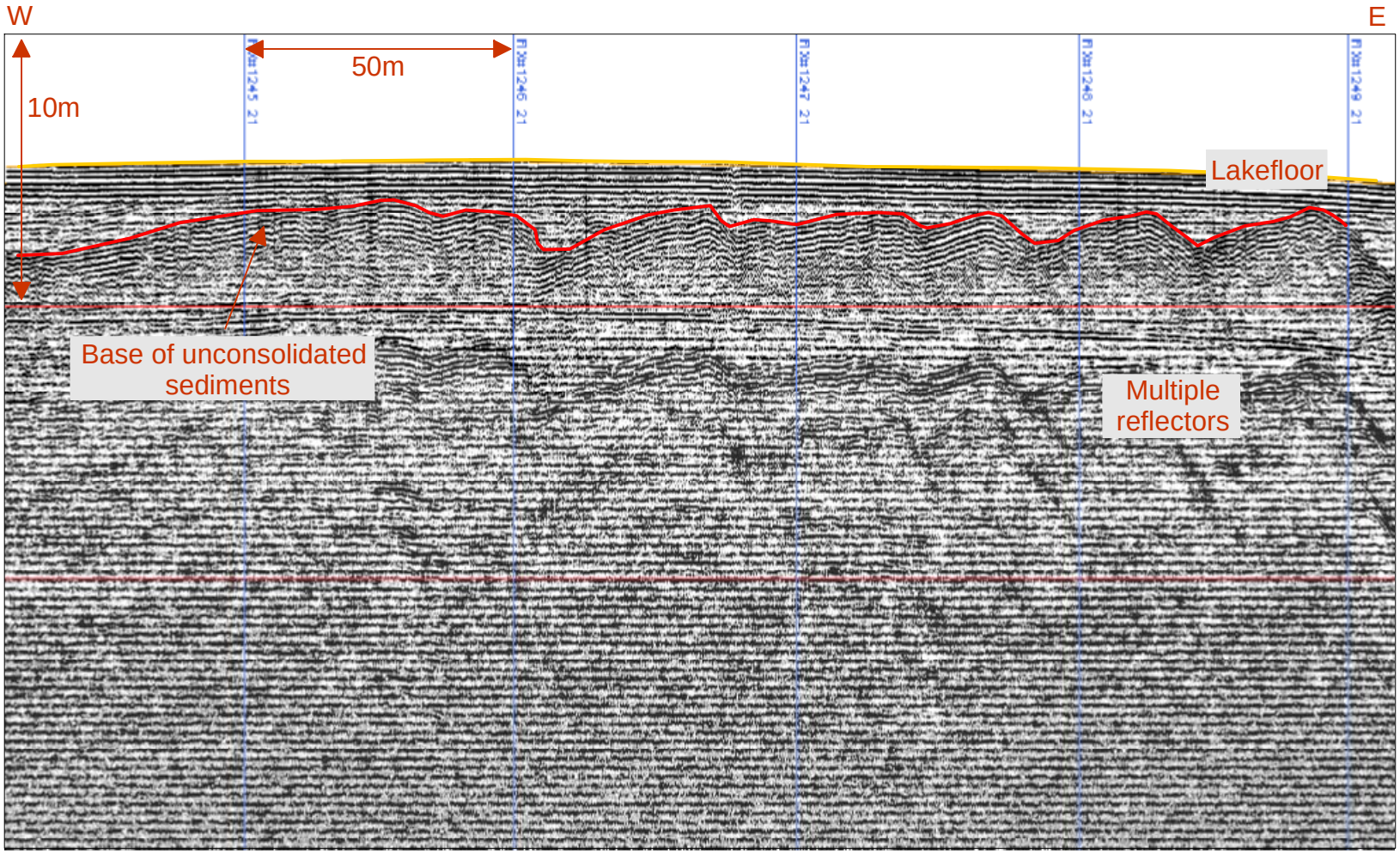


Figure 3.18 - Sub-bottom profiler image displaying the base of unconsolidated sediments reflector where it has a 'step like' appearance. It is likely that bedrock has been eroded forming the step appearance, where the height of each step is the thickness of each limestone layer.

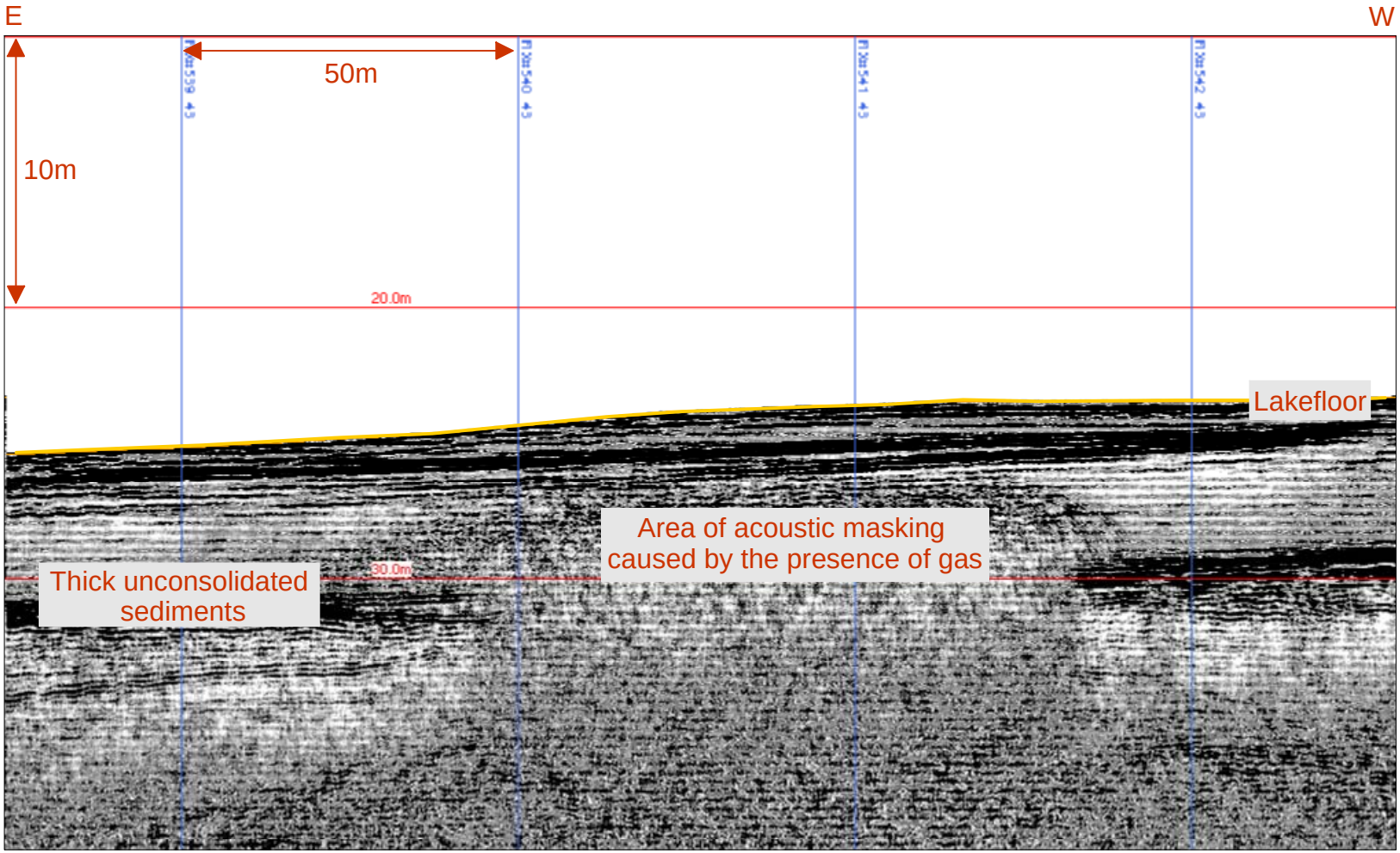


Figure 3.19 - Sub-bottom profiler image displaying acoustic masking caused by the presence of shallow gas.

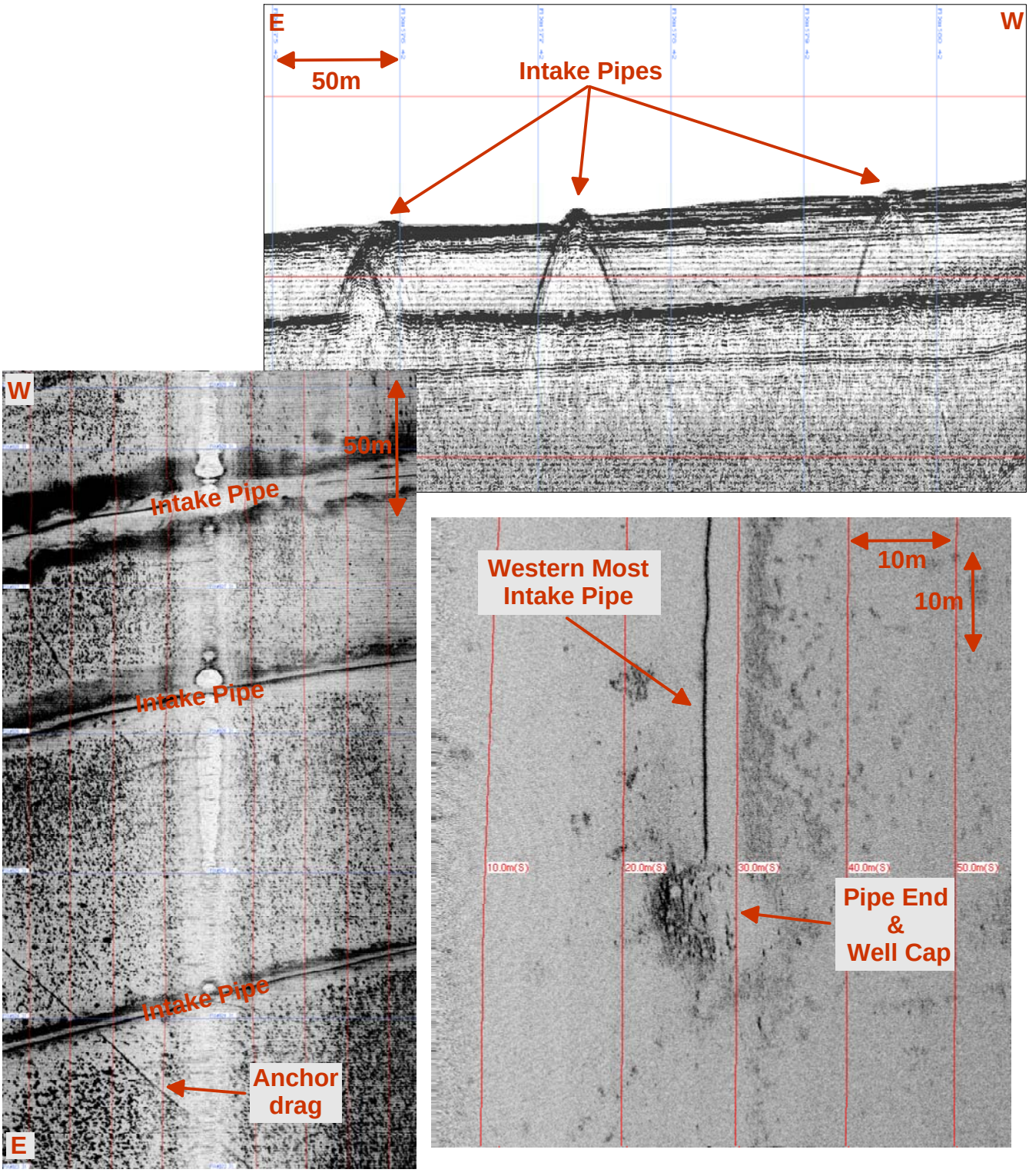


Figure 3.20 - Sub-bottom profiler and sidescan sonar images of the intake pipes located east of Sand Bay. The well cap, (also displayed in figure 3.21) is located directly at the end of the western most intake pipe.

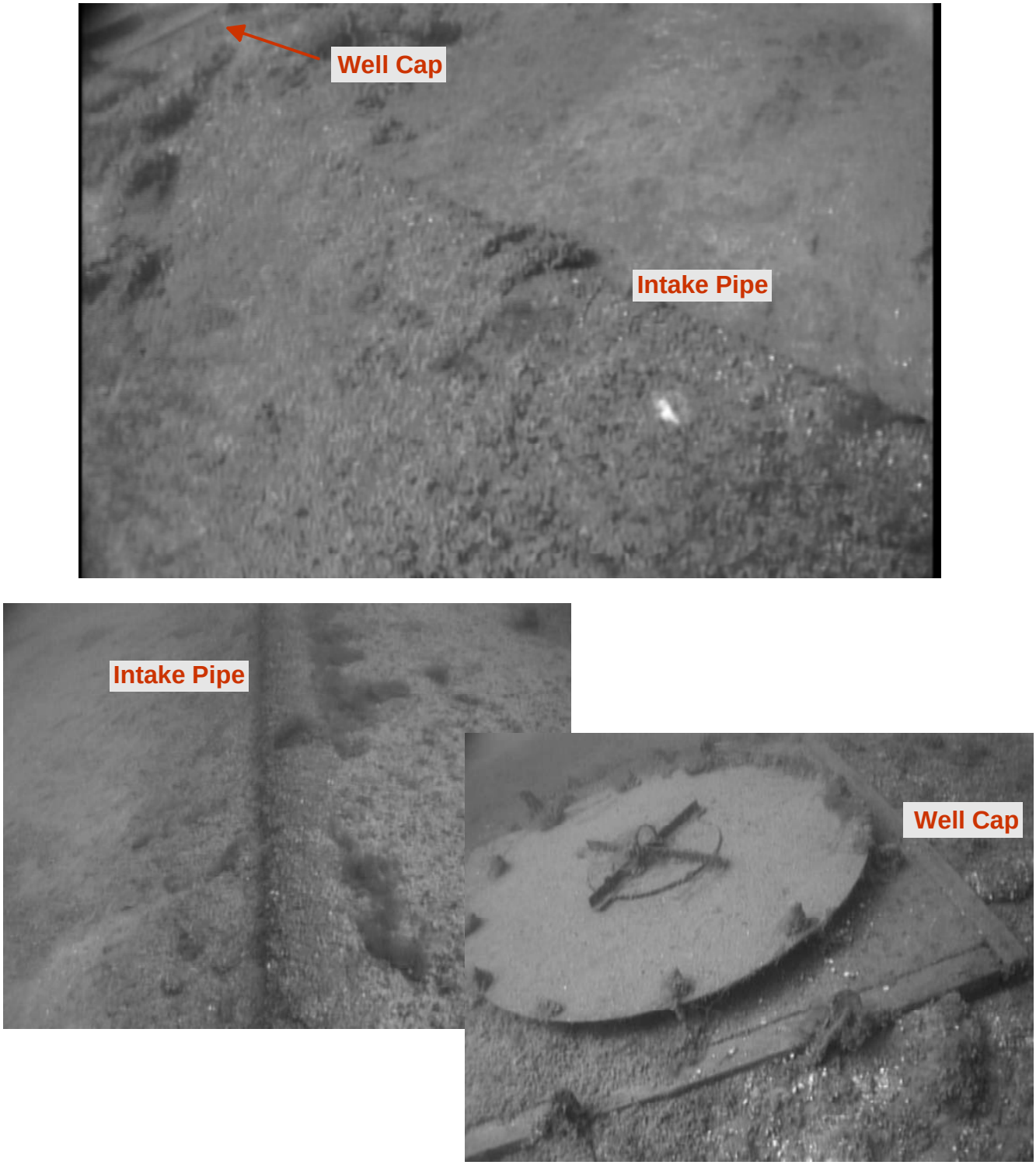


Figure 3.21 - Video still frame images of the intake pipes located east of Sand Bay. The well cap is located at the end of the western most intake pipe as shown in the top image.

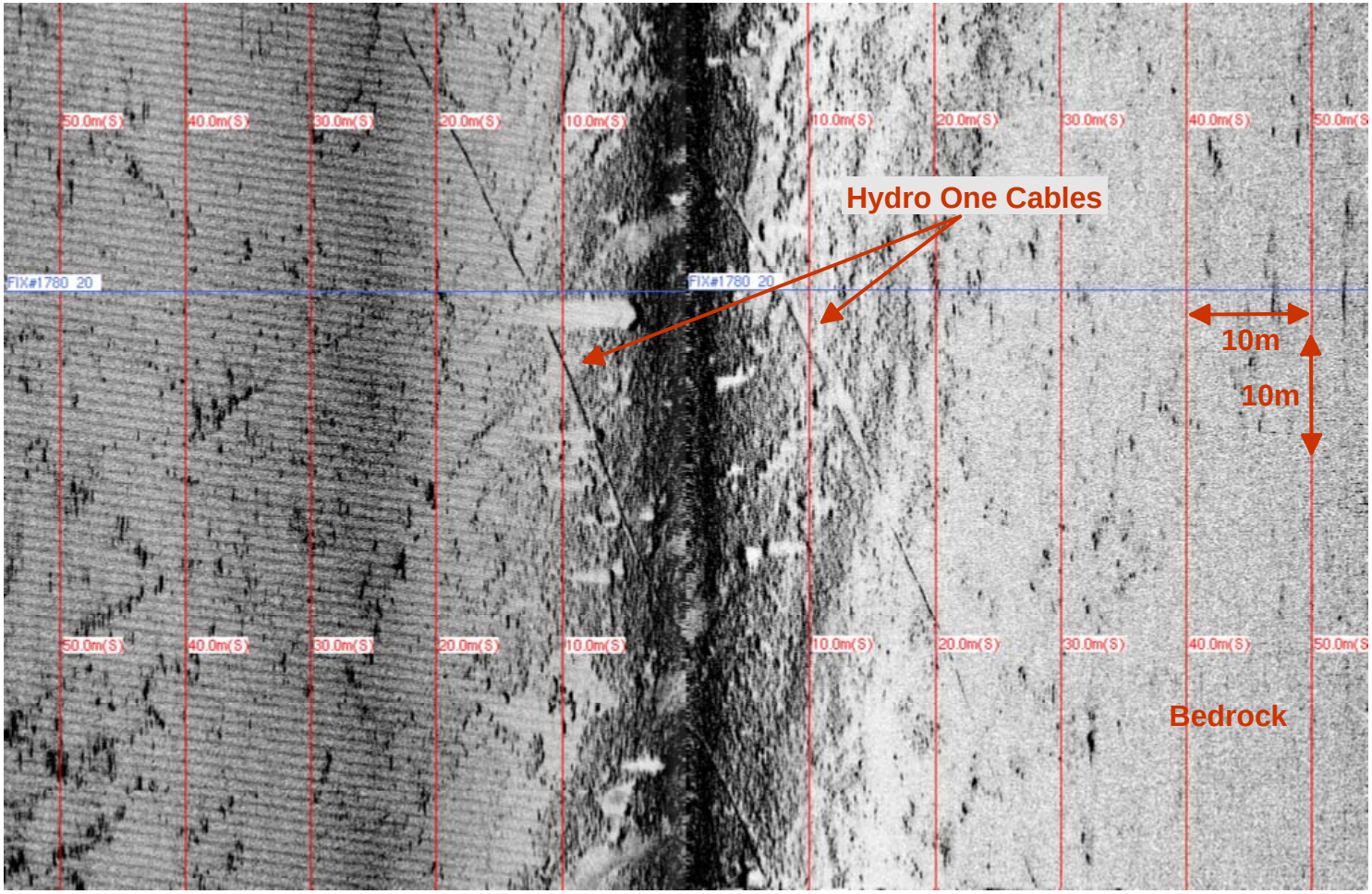
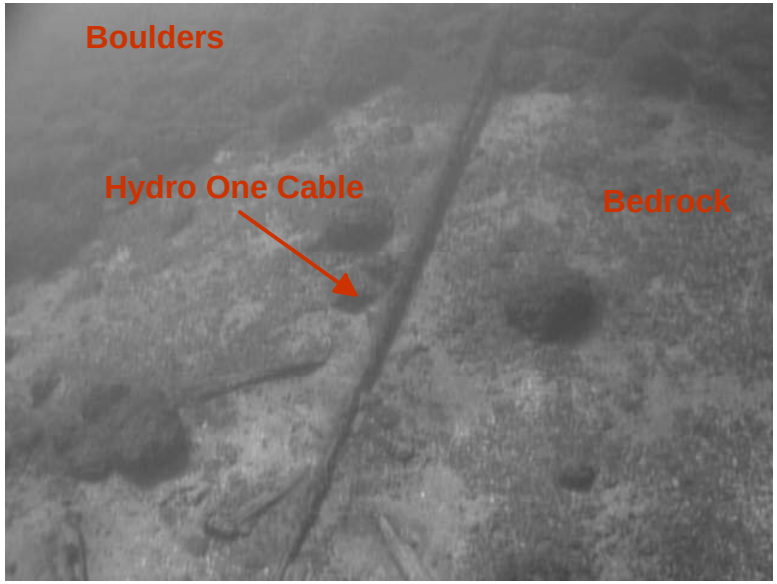


Figure 3.22 - Sidescan sonar image of the Hydro One submarine power cables where they are visible on the lake floor in Sand Bay.



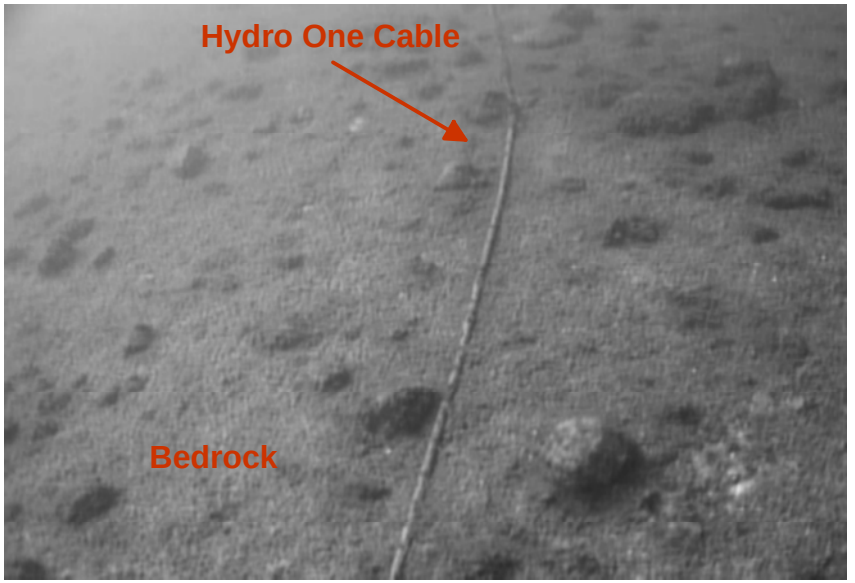


Figure 3.23 - Video still frame images of the Hydro One submarine power cables where they are visible on the lake floor in Sand Bay.

4.0 ROUTE CONSIDERATIONS

The following section outlines engineering considerations that may need to be addressed prior to installation of the CREC power cable.

The deep water sections of the survey area are relatively free of engineering constraints, and thick unconsolidated sediments should provide adequate protection if the cable is to be buried. Lake floor features in these areas include dredge spoils, shellfish beds, and shallow sub-bottom gas. Unconsolidated sediments thin to 2 metres near the Snake Island Shoal; however water depths in this area are 25 meters deep. In the shallow water area south east of the harbour, unconsolidated sediments thin to within 2 metres of the lake floor; however, bedrock does not outcrop along the cable route centerline outside of Sand Bay. Cobbles and boulders can be seen distributed throughout much of this area in the sidescan imagery within the sand and silt sediments. Cobbles visible in the data less than 0.25 metres in size are common throughout the shallow water section, and boulders as large as 1 metre are present, but not frequent.

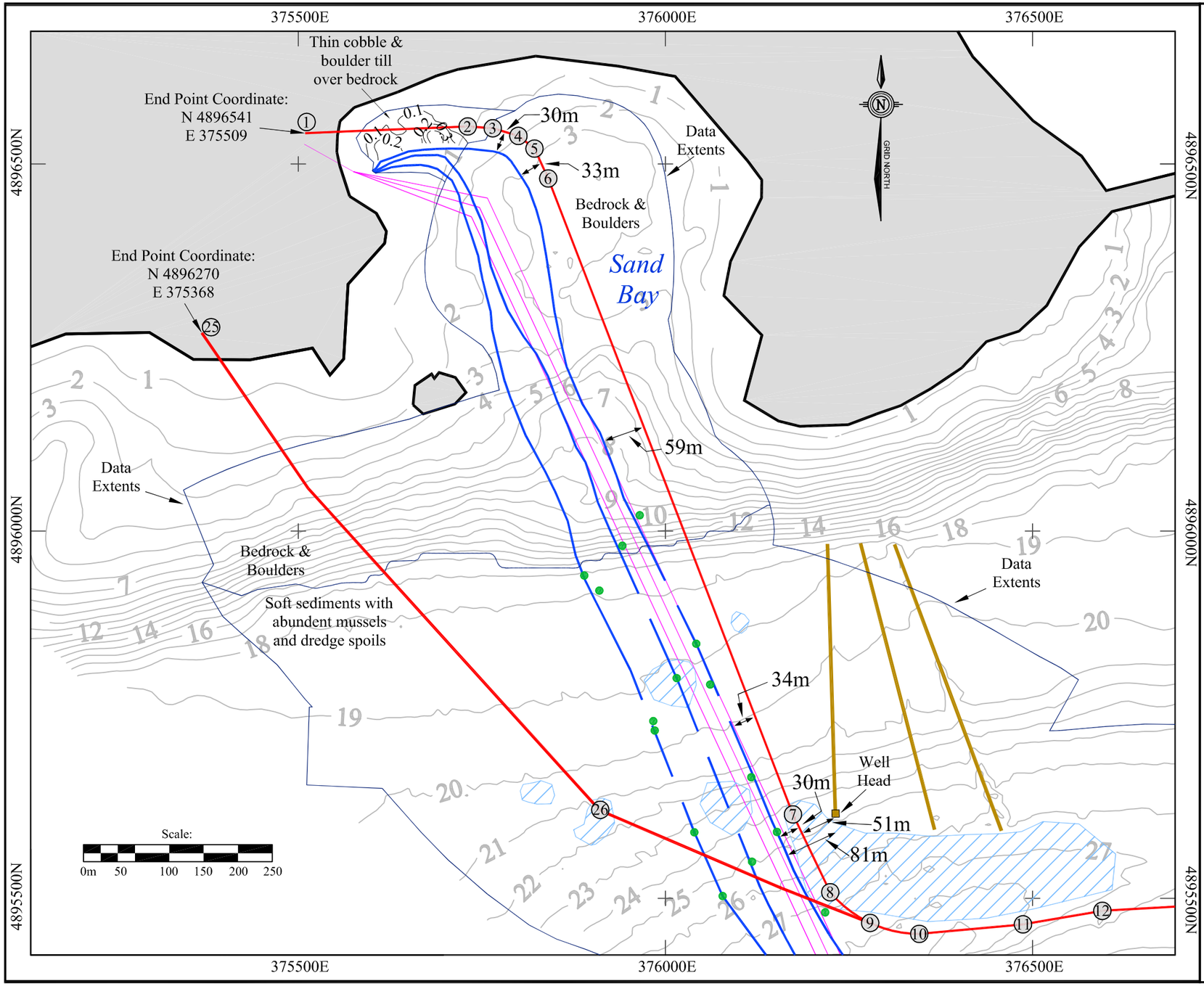
Bedrock was found at the lake floor near the 13 metre bathymetry contour on the bathymetric slope at the mouth of Sand Bay, and continues at the lake floor to the 1 metre bathymetry contour at the head of the Bay. Boulders are also visible resting on the bedrock surface scattered throughout Sand Bay.

Figure 4.1 is a detailed drawing of the proposed CREC cable route as it nears the intake pipes and the Hydro One submarine power cables, and as it runs through Sand Bay to the landfall.

The intake pipes located east of Sand Bay extend approximately 550 metres offshore to the 27 meter bathymetry contour. A large area of disturbed sediment and debris is present near the ends of the intake pipes, and is most likely a result of construction and maintenance of the intake pipes. To stay clear of the debris area, the proposed CREC cable route has been adjusted south, away from the ends of the intake pipes and the debris area.

The Hydro One submarine power cables were found to be north of the design locations provided to CSR by the client at the head of Sand Bay. The north western most Hydro One cable is as far as 60 metres north east of the design location. The cables were found on top of the lake floor as they crossed Sand Bay, and are buried just as they enter the shore. It is possible that the cables have been pushed deeper into the Bay by ice, or during storm events. In order to maintain 30 metres away from the Hydro One cables, the proposed CREC cable route was shifted north as it enters Sand Bay from the shore, and runs closer to the north shore of Sand Bay before turning southeast towards the mouth of the Bay. Where the proposed CREC power cable route passes between the Hydro One submarine power cables, and the intake pipes, the CREC cable route is 30 metres from the Hydro One cables, and 51 metres from the intake pipes.

Coordinates for the proposed CREC cable route as it turns in Sand Bay and runs between the Hydro One cables and the Intake pipes are listed in figure 4.1. Table 4.1 lists the coordinates of the proposed CREC cable route at the land fall locations and at cable turns across the full cable route.



Legend

- Bathymetric Contour (metres below Chart Datum)
- Proposed CREC Cable Route
- Design Location of Hydro One Submarine Power Cables
- As-found Location of Hydro One Submarine Power Cables
- Interpolated Location of Hydro One Submarine Power Cables
- Possible Hydro One Cable Identified using Magnetometer
- As-found Submarine Intake Pipes
- (1) Cable Turn with Point Number (Coresponds to Cable Turn Coordinate Table)
- Area of Dredge Spoils
- 2007 Survey Extents
- UTM Graticule

Cable Turn Coordinate Table:

Primary Landfall (Sand Bay):

Point	Easting	Northing
1	375509	4896541
2	375730	4896551
4	375799	4896538
5	375821	4896520
6	375840	4896480
7	376173	4895614
8	376224	4895508
9	376345	4895451
10	376486	4895464
11	376594	4895482
12	376694	4895488

Secondary Landfall (West of Sand Bay):

Point	Easting	Northing
25	375368	4896270
26	375911	4895620
9	376345	4895451
10	376486	4895464
11	376594	4895482
12	376694	4895488

Note:

The Hydro One submarine power cables were located using sidescan sonar and submersible video camera equipment. In the area's where the cable was not visible on the lake bed surface, a marine magnetometer was used, and labeled as "possible location of Hydro One Submarine Power Cables".

The distance between the eastern most as-found Hydro One submarine power cable to the western most intake pipe is approximately 81 metres. Using the guide lines provided to CSR by CREC to maintain a distance of 30 metres away from the Hydro One power cables, and 50 metres away from the intake pipes, the proposed CREC submarine power cable route has been placed 30 metres east of the eastern most Hydro One power cable, and 51 metres west of the western most intake Pipe.

Bathymetric contour data is a combination of raw soundings collected by CSR in 2006 and 2007 and digitized soundings from CHS Field Sheets 8078 and 3664. The soundings are projected in UTM (Zone18) NAD83 and reduced to Chart Datum, (see report for details).

Figure 4.1: Detailed drawing of the proposed CREC cable route as it passes the intake pipes and Hydro One power cables, and runs into Sand Bay.

Table 5.1 Cable Turn Coordinate Table

Primary Landfall Location (Sand Bay)

Point	Easting	Northing	Note
1	375509	4896542	Landfall - Sand Bay
2	375731	4896551	
3	375765	4896549	
4	375800	4896538	
5	375822	4896521	
6	375840	4896480	
7	376174	4895614	
8	376224	4895508	
9	376279	4895466	
10	376346	4895452	
11	376487	4895465	
12	376595	4895483	
13	376697	4895489	
14	377001	4895483	
15	377022	4895482	
16	377039	4895480	
17	377056	4895476	
18	377070	4895471	
19	380990	4893628	
20	381018	4893621	
21	382185	4893473	
22	382195	4893470	
23	382201	4893461	
24	382215	4893425	Wolfe Island Landfall

Secondary Landfall Location (West of Sand Bay)

Point	Easting	Northing	Note
25	375368	4896270	Landfall - West of Sand Bay
26	375911	4895620	
9	376279	4895466	
10	376346	4895452	
11	376487	4895465	
12	376595	4895483	
13	376697	4895489	
14	377001	4895483	
15	377022	4895482	
16	377039	4895480	
17	377056	4895476	
18	377070	4895471	
19	380990	4893628	
20	381018	4893621	
21	382185	4893473	
22	382195	4893470	
23	382201	4893461	
24	382215	4893425	Wolfe Island Landfall

5.0 SUMMARY

Canadian Seabed Research (CSR) was contracted by the Canadian Renewable Energy Corporation (CREC) to perform a geophysical survey for a proposed submarine power cable between Wolfe Island and Kingston, Ontario. Survey operations were conducted between June 29th and May 21st, 2007 onboard the CSR survey vessel "Sea Star".

The bathymetry of the survey corridor ranges from 29m to as shallow as 1.0m. In Sand Bay water depths range between 1m to 4m to the mouth of the Bay where the lake floor quickly drops to water depths of 16 metres. Water depths ranging from 16m to as deep as 29m are present across the harbor channel before shallowing to 5m and 3m between Simcoe Island and Garden Island, and extending to the Wolfe Island shore.

The surficial sediments within the survey corridor are divided into five main units for the purpose of this report. These units are based on their signatures in the geophysical records (sidescan sonar, sub-bottom profiler and echo sounder) and ground truthed by surficial grab samples and underwater video. The units consist of soft, unconsolidated, fine sediments with varying amounts of shell fragments and coarse materials as well as cobbles and boulders. Bedrock is present at the lake floor in Sand Bay and at the bedrock shoal approximately 1000m from lakeward of Wolfe Island.

The unconsolidated sediments present across the survey corridor vary from more than 10 metres thick to not being present at all. The sediments are thickest in the harbour channel, between the Kingston mainland and Snake Island shoal where they are visible in the sub-bottom data as deep as 19 metres below the lake floor. On the south east side of the harbour channel and extending towards Wolfe Island, the unconsolidated sediments thin to between 5 metres and less than 2 metre thick along the cable route, however bedrock does not outcrop along the cable route centerline outside of Sand Bay.

The intake pipes located east of Sand Bay extend approximately 550 metres offshore to the 27 meter bathymetry contour. A large area of disturbed sediment and debris is present near the ends of the intake pipes, and is most likely a result of construction and maintenance of the intake pipes.

The Hydro One submarine power cables were found to be north of the designed locations at the head of Sand Bay. The cables were found on the lake floor as they crossed Sand Bay, and where buried just before entering the shore. In order to maintain 30 metres away from the Hydro One power cables, the proposed CREC cable was shifted north as it enters Sand Bay from the shore, and runs close to the north shore of Sand Bay before turning southeast towards the mouth of the Bay.

The proposed CREC power cable route passes between the Hydro One submarine power cables and the intake pipes with clearances of 30 metres and 51 metres respectively before turning east and heading across the harbour towards Wolfe Island.

6.0 RECOMMENDATIONS

This section offers some recommendations for future consideration.

1. The acquisition of sub-surface geology was successful over the survey area using the 3.5 kHz sub-bottom profiler. Due to its inability to penetrate coarse sediments, it is possible that deeper sedimentary units are present in the survey area beneath the reflectors identified in this report. If a stronger seismic system such as a surface towed boomer was used, deeper penetration through coarse materials could be achieved.

2. Ground truthing was obtained through surficial grab samples and video footage collected over the survey area. Both systems proved invaluable to the interpretation of the surficial sediments and confirming the presence of bedrock at the seafloor. There was however no ground truth information collected to correspond with the sub-bottom data. If core samples were collected over strategic positions, especially in the shallow areas of the survey, more precise unit descriptions could be made concerning the consistency and lithology of the underlying units, and whether they pose a potential problem for any trenching operations being conducted while laying the power cable.

   For such a program, CSR would be able to recommend areas within the survey corridor where core samples would prove most valuable based on the current sub-bottom data set.

3. For ease of presentation in this report, CSR has created separate map sheets for each of the primary themes; (Bathymetry Chart, Surficial Geology and Seabed Features, Thickness of Unconsolidated Sediments and Proposed Cable Route Profile). These themes can be combined into one map sheet commonly known as an “alignment sheet”. Cable engineers and installers may prefer this format.

7.0 REFERENCES

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Appendix A

CHS Benchmark Information

http://www.meds-sdmm.dfo-mpo.gc.ca/meds/Prog_Nat/benchmark/single_station2_e.asp?T1=13988

Single Station Retrieval

Station Number	Station Name	Station Status
13988	KINGSTON, ONTARIO	PERMANENT

Latitude	44.216667	**Latitude (DDD/MM/SS.S)**	44° 13‘ 0"
Longitude	76.516667	**Longitude (DDD/MM/SS.S)**	76° 31‘ 0"
Established	9999	**Province**	ON
Tide_Table_Volume	0	**Country**	CANADA
Ownership	CA	**Reference Station**	999999
CGVD28_CD2000			

Comments

Datum of Elevations

STATUS	DE NAME	ELEVATION	DE REF DATUM	EPOCH
ACTIVE	HIGH WATER LEVEL	1.3	CD	1961

Memo

Benchmarks

Unique Number	Station Number	Benchmark Number
58U9507	13988	1-1958 H.S.EST

Latitude	44.225	**Latitude (DDD/MM/SS.S)**	44° 13‘ 30"
Longitude	79.483333	**Longitude (DDD/MM/SS.S)**	79° 29‘ 0"
Established	1958	**Agency**	CHS
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

A C.H.S. bronze tablet set horizontally in west wall of the old dry dock, located just west of the Marine Museum of the Great Lakes on Ontario St. It is 61cm below the top course of stonework and 2.35m north of the Lundy fence. It is 1.55m east of the remains of a railway track. The pier is directly south of the Ontario and Union Streets intersection.

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	HISTORICAL	IGLD55	75.693		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	75.875		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	1.688		9.999	9.999	9999	1961
NO	ACTIVE	CDIGLD1985	1.671		9.999	0.004	1992	1992

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
75.83				

Unique Number	Station Number	Benchmark Number
25U1531	13988	1531

Latitude	44.225	**Latitude (DDD/MM/SS.S)**	44° 13‘ 30"
Longitude	76.488333	**Longitude (DDD/MM/SS.S)**	76° 29‘ 18"
Established	1925	**Agency**	GSC
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

A G.S.C. fundamental BM 1531 in City Park, near Wellington Street entrance 33m from nearest street line of West Street, and 75m from nearest street line of King Street. Tablet in top of pier.

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	8.741		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	82.764		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	82.945		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	8.759		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
82.9				

Unique Number	Station Number	Benchmark Number
58U9508	13988	2-1958 H.S. EST

Latitude	44.225	**Latitude (DDD/MM/SS.S)**	44° 13‘ 30"
Longitude	76.483333	**Longitude (DDD/MM/SS.S)**	76° 29‘ 0"
Established	1958	**Agency**	CHS
Benchmark condition	Destroyed	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

A C.H.S. bronze tablet stamped H.S. 2-1958 set horizontally in south wall of Canadian Locomotive Company's brick building, directly below first window east of gate No 2 of Kingston Shipbuilding Company, 4.5m north at end of dry dock, 30cm above ground level.

""DESTROYED""

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	2.739		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	76.773		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	76.943		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	2.768		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
76.9				

Unique Number	Station Number	Benchmark Number
67U197	13988	67-U-197

Latitude	44.221667	**Latitude (DDD/MM/SS.S)**	44° 13‘ 18"
Longitude	76.503333	**Longitude (DDD/MM/SS.S)**	76° 30‘ 12"
Established	1967	**Agency**	GSC
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

Water Purfication Plant at the south side of King Street West, 2.24km west of City Hall, 61m west of Beverley Street, across from 305 King St. W., tablet in north concrete foundation, 0.6m from northwest corner of entrance way, 3.6m west of door, 15cm below stone.

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	2.588		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	76.609		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	76.792		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	2.605		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
76.75				

Unique Number	Station Number	Benchmark Number
70U682	13988	70-U-682

Latitude	44.221667	**Latitude (DDD/MM/SS.S)**	44° 13‘ 18"
Longitude	76.515	**Longitude (DDD/MM/SS.S)**	76° 30‘ 54"
Established	1970	**Agency**	GSC
Benchmark condition	Destroyed	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

Federal Penitentiary (Womens Prison), on Sir John A. Macdonald Boulevard, 0.16km north of King Street, tablet in east face of concrete footing from iron gate, 4.2m north of centre line of gate, 0.5m below top.

""DESTROYED""

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	19.279		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	93.3		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	93.483		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	19.295		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
93.44				

Unique Number	Station Number	Benchmark Number
75U501	13988	75-U-501

Latitude	44.22	**Latitude (DDD/MM/SS.S)**	44° 13‘ 12"
Longitude	76.516667	**Longitude (DDD/MM/SS.S)**	76° 31‘ 0"
Established	1975	**Agency**	GSC
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

A G.S.C. brass tablet on the north end of a north-south concrete abutment wall running next to the water, at the most northerly and westerly part of the marina, on the south side of King St. just east of Younge St., 2.2m south of the north end wall, 25cm from the east and west edges. The tablet is slightly above the paved parking lot level, north of the Olympic complex.

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	1.826		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	75.847		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	76.03		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	1.842		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
75.98				

Unique Number	Station Number	Benchmark Number
75U502	13988	75-U-502

Latitude	44.216667	**Latitude (DDD/MM/SS.S)**	44° 13‘ 0"
Longitude	76.518333	**Longitude (DDD/MM/SS.S)**	76° 31‘ 6"
Established	1975	**Agency**	GSC
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

Brass tablet in concrete floor of gauge house directly in front of the door. The gauge house is in the new Olympic Complex on the south side of the building next to the power room.

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
YES	ACTIVE	CDIGLD1985	2.445		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	76.468		9.999	9.999	9999	1961
YES	ACTIVE	IGLD85	76.649		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	2.463		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
76.6				

Unique Number	Station Number	Benchmark Number
75U503	13988	75-U-503

Latitude	44.216667	**Latitude (DDD/MM/SS.S)**	44° 13‘ 0"
Longitude	76.518333	**Longitude (DDD/MM/SS.S)**	76° 31‘ 6"
Established	1975	**Agency**	GSC
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

A Brass tablet set in the top of a 63cm high concrete parapet/abutment on south side of government wharf at the land end, 18cm from west end of parapet, 31cm from the north and south edges. The government wharf is the wharf on the south side of the Olympic complex. The southeast corner of the Coast Guard house is 1.92m from the northwest corner of the parapet.

HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	2.781		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	76.802		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	76.985		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	2.797		9.999	9.999	9999	1961

NRCAN Elevations

CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
76.94				

Unique Number	Station Number	Benchmark Number
XXU9571	13988	STEEL RIVET

Latitude	44.225	**Latitude (DDD/MM/SS.S)**	44° 13‘ 30"
Longitude	79.483333	**Longitude (DDD/MM/SS.S)**	79° 29‘ 0"
Established	9999	**Agency**	CHS
Benchmark condition	Not Known	**Last Inspected**	9999
Type	Permanent Agency Marker	**Setting**	NA

Description

Steel Rivet set vertically in stone plinth of south wall, 1.72m from the southwest corner of the old Pumphouse and 0.5m from ground level. It is 1.64m north of the small dry dock and it is 75cm west of the most westerly doors. It is 1.68m from the southwest corner of the Marine Museum of the Great Lakes. The Museum and Pumphouse are east of the Ontario and Union Streets intersection.

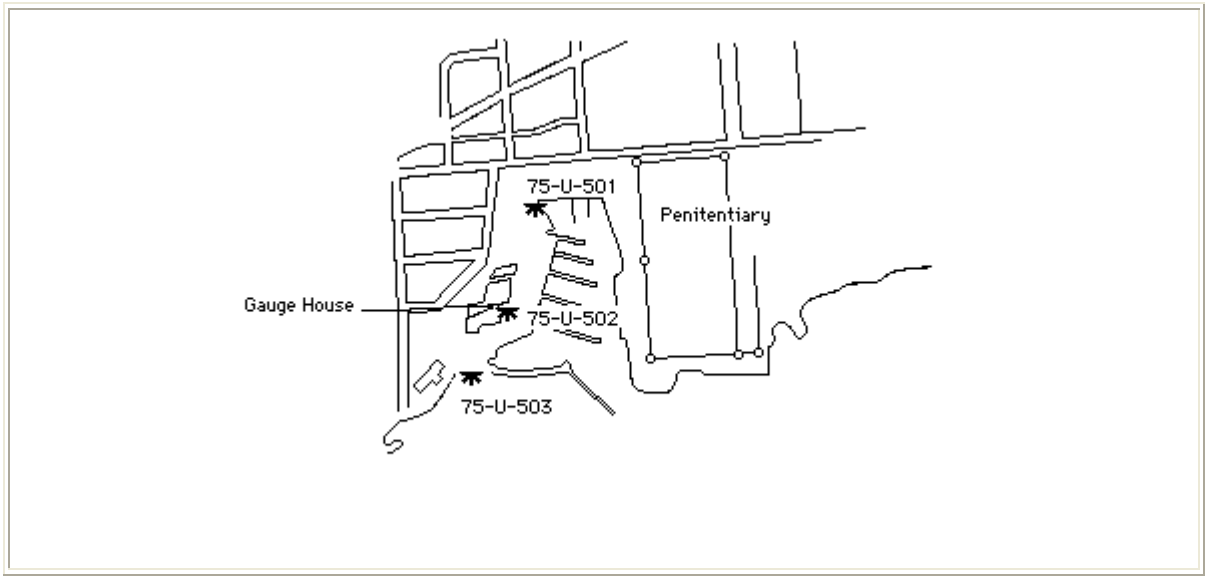
HOLDING BENCHMARK	STATUS	DATUM NAME	ELEVATION	ELEVATION EPOCH	ELEVATION ACC	HYD_CORR	HYD_CORR EPOCH	DN EPOCH
NO	ACTIVE	CDIGLD1985	2.686		9.999	0.004	1992	1992
NO	HISTORICAL	IGLD55	76.707		9.999	9.999	9999	1961
NO	ACTIVE	IGLD85	76.89		9.999	9.999	9999	1992
NO	HISTORICAL	CDIGLD1955	2.702		9.999	9.999	9999	1961

NRCAN Elevations

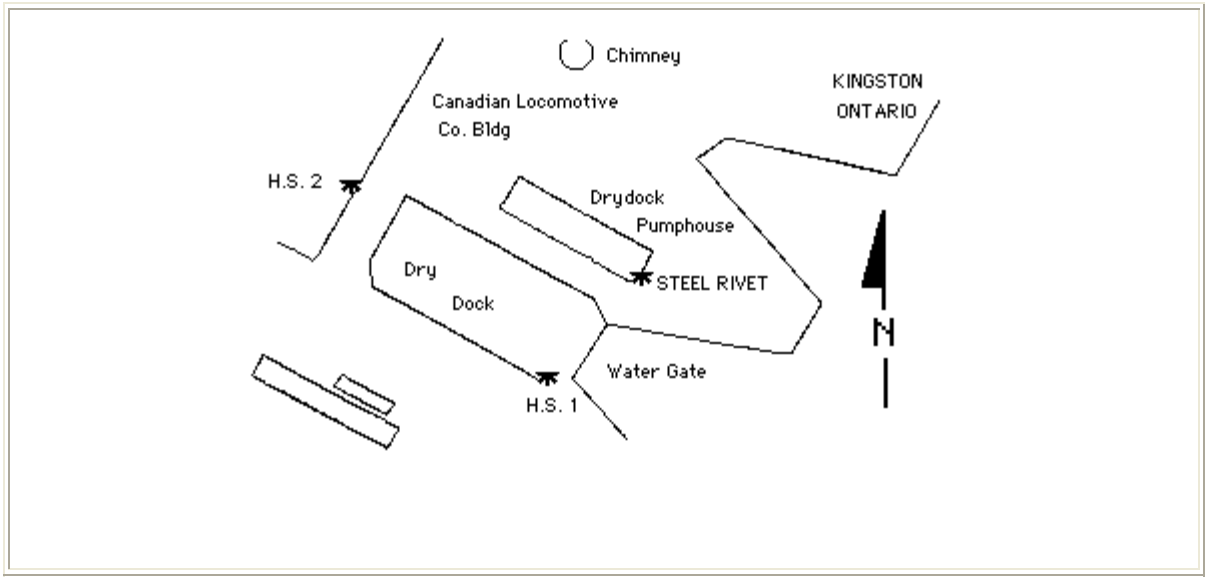
CGVD28 ELEVATION	NAVD88 ELEVATION	XORDER	METHOD	PUBLISHED
76.85				

Station Sketch

Sketch Status: ACTIVE



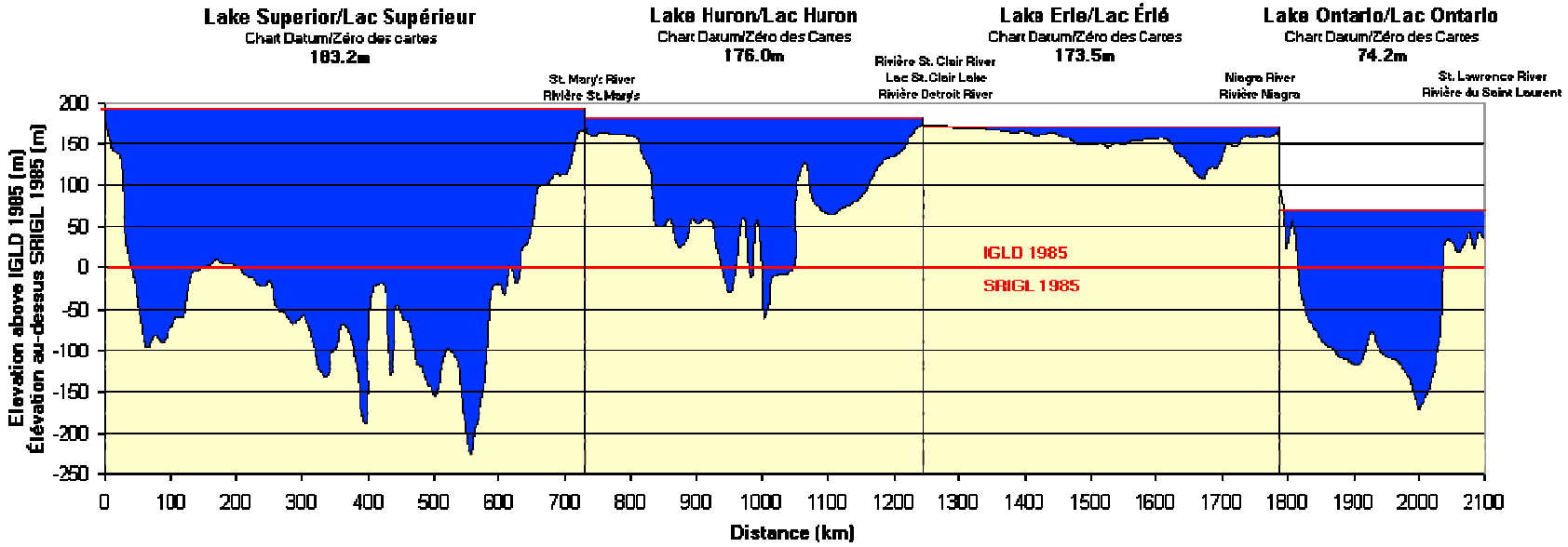
Sketch Status: ACTIVE



Marine Environmental Data Services (MEDS) – Tides and Waterlevels – Datums

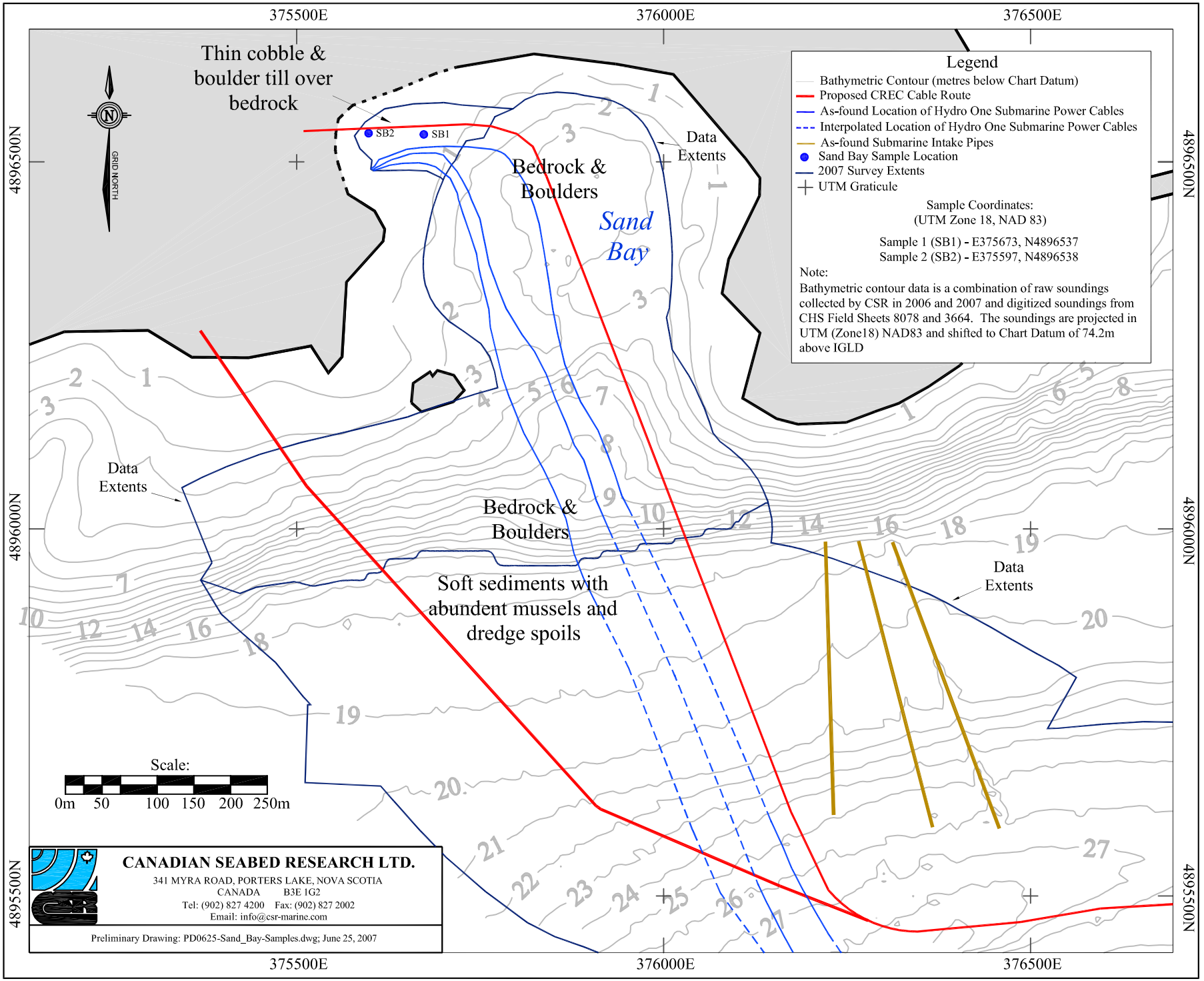
(http://www.meds-sdmm.dfo-mpo.gc.ca/meds/Databases/TWL/Thalweg_b.htm)

IGLD 1985 / SRIGL 1985



Appendix B

Sand Bay Sediment Sample Location and Analysis Results



CANADIAN SEABED RESEARCH LTD.
341 MYRA ROAD, PORTERS LAKE, NOVA SCOTIA
CANADA B3E 1G2
Tel: (902) 827 4200 Fax: (902) 827 2002
Email: info@csr-marine.com

Preliminary Drawing: PD0625-Sand_Bay-Samples.dwg; June 25, 2007

CONFIRMATION-RECEPTION OF SAMPLES FOR ANALYSIS

MAXXAM JOB NUMBER	A747234	NUMBER OF SAMPLES	8	TODAY'S DATE	2007/05/17		
PROJECT NUMBER:	676826	LOCATION:	WOLFE ISLAND	PO #			
SAMPLE RECEIPT DATE	2007/05/15	CLIENT CONFIRMATION	2007/05/15	REPORT DELIVERY	2007/05/23		
THE REPORT WILL BE SENT TO :							
NAME	Andrew Campbell	COMPANY	Canadian Seabed Research				
MAILING ADDRESS	341 Myra Rd	CITY	Porters Lake	PC	B3E1G2		
EMAIL	acampbell@csr-marine.com	PHONE:	(902) 827-4200	FAX:	(902) 827-2002		
INVOICE WILL BE SENT TO :							
NAME	Mark Pomeroy	COMPANY	Stantec Consulting Ltd				
MAILING ADDRESS	361 Southgate Dr	CITY	Guelph	PC	N1G 3M5		
EMAIL	mpomeroy@stantec.com, bryan.chubb@maxxamanalytics.com, heather.black@maxxamanalytics.com	PHONE	(519) 836-6050 224	FAX:			

WE RECEIVED THE FOLLOWING SAMPLES. THE ANALYSES REQUESTED ARE LISTED BELOW. AN ADDITIONAL FEE OF APPROXIMATELY $20 PER SAMPLE SHALL BE CHARGED TO THE CLIENT FOR DISPOSAL OF HAZARDOUS SAMPLES IF NOT STATED ON THE COC TO RETURN THE SAMPLES FOR DISPOSAL BY THE CLIENT. SHOULD YOU REQUIRE FURTHER DETAILS PLEASE CONTACT OUR TECHNICAL SERVICE DEPARTMENT AT (905) 817-5700 OR 1-800-563-6266, REFERENCING THE REPORT #. PLEASE NOTE THAT, UNLESS SPECIAL STORAGE ARRANGEMENTS ARE MADE, ALL SAMPLES WILL BE DISCARDED 30 DAYS AFTER RECEPTION OF SAMPLES. NON-REGULAR SAMPLES ARE FLAGGED AS (C)OMPOSITE BY LAB, (H)OLD, OR (L)EACHATE TO BE PERFORMED.

SAMPLE #	S31537	SAMPLE IDENTIFICATION	SB-1-1	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
AQUA REGIA DIGESTION	SAIL - GOOD CONDITION	2007/05/23
FREE CYANIDE	SAIL - GOOD CONDITION	2007/05/23
DRY, GRIND & SIEVE	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
AMMONIA-N	SAIL - GOOD CONDITION	2007/05/23
SIEVES, VARIOUS SIZES	SAIL - GOOD CONDITION	2007/05/23
SOIL TEXTURE (% SAND, %SILT, %CLAY)	SAIL - GOOD CONDITION	2007/05/23
TOTAL KJELDAHL NITROGEN - SOIL	SAIL - GOOD CONDITION	2007/05/23
TOTAL ORGANIC CARBON IN SOIL	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31538	SAMPLE IDENTIFICATION	SB-1-2	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
AQUA REGIA DIGESTION	SAIL - GOOD CONDITION	2007/05/23
FREE CYANIDE	SAIL - GOOD CONDITION	2007/05/23
DRY, GRIND & SIEVE	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
AMMONIA-N	SAIL - GOOD CONDITION	2007/05/23
SIEVES, VARIOUS SIZES	SAIL - GOOD CONDITION	2007/05/23
SOIL TEXTURE (% SAND, %SILT, %CLAY)	SAIL - GOOD CONDITION	2007/05/23
TOTAL KJELDAHL NITROGEN - SOIL	SAIL - GOOD CONDITION	2007/05/23
TOTAL ORGANIC CARBON IN SOIL	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31539	SAMPLE IDENTIFICATION	SB-1-3	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
AQUA REGIA DIGESTION	SAIL - GOOD CONDITION	2007/05/23

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
FREE CYANIDE	SAIL - GOOD CONDITION	2007/05/23
DRY, GRIND & SIEVE	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
AMMONIA-N	SAIL - GOOD CONDITION	2007/05/23
SIEVES, VARIOUS SIZES	SAIL - GOOD CONDITION	2007/05/23
SOIL TEXTURE (% SAND, %SILT, %CLAY)	SAIL - GOOD CONDITION	2007/05/23
TOTAL KJELDAHL NITROGEN - SOIL	SAIL - GOOD CONDITION	2007/05/23
TOTAL ORGANIC CARBON IN SOIL	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31540	SAMPLE IDENTIFICATION	SB-1-4	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
ABN COMPOUNDS IN SOIL BY GC/MS	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
F4G (CCME HYDROCARBONS GRAVIMETRIC)	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
OC PESTICIDES (SELECTED) & PCB	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31541	SAMPLE IDENTIFICATION	SB-2-1	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
AQUA REGIA DIGESTION	SAIL - GOOD CONDITION	2007/05/23
FREE CYANIDE	SAIL - GOOD CONDITION	2007/05/23
DRY, GRIND & SIEVE	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
AMMONIA-N	SAIL - GOOD CONDITION	2007/05/23
SIEVES, VARIOUS SIZES	SAIL - GOOD CONDITION	2007/05/23
SOIL TEXTURE (% SAND, %SILT, %CLAY)	SAIL - GOOD CONDITION	2007/05/23
TOTAL KJELDAHL NITROGEN - SOIL	SAIL - GOOD CONDITION	2007/05/23
TOTAL ORGANIC CARBON IN SOIL	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31542	SAMPLE IDENTIFICATION	SB-2-2	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
AQUA REGIA DIGESTION	SAIL - GOOD CONDITION	2007/05/23
FREE CYANIDE	SAIL - GOOD CONDITION	2007/05/23
DRY, GRIND & SIEVE	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
AMMONIA-N	SAIL - GOOD CONDITION	2007/05/23
SIEVES, VARIOUS SIZES	SAIL - GOOD CONDITION	2007/05/23
SOIL TEXTURE (% SAND, %SILT, %CLAY)	SAIL - GOOD CONDITION	2007/05/23
TOTAL KJELDAHL NITROGEN - SOIL	SAIL - GOOD CONDITION	2007/05/23
TOTAL ORGANIC CARBON IN SOIL	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31543	SAMPLE IDENTIFICATION	SB-2-3	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
AQUA REGIA DIGESTION	SAIL - GOOD CONDITION	2007/05/23
FREE CYANIDE	SAIL - GOOD CONDITION	2007/05/23
DRY, GRIND & SIEVE	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
AMMONIA-N	SAIL - GOOD CONDITION	2007/05/23

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
SIEVES, VARIOUS SIZES	SAIL - GOOD CONDITION	2007/05/23
SOIL TEXTURE (% SAND, %SILT, %CLAY)	SAIL - GOOD CONDITION	2007/05/23
TOTAL KJELDAHL NITROGEN - SOIL	SAIL - GOOD CONDITION	2007/05/23
TOTAL ORGANIC CARBON IN SOIL	SAIL - GOOD CONDITION	2007/05/23

SAMPLE #	S31544	SAMPLE IDENTIFICATION	SB-2-4	COC #	C#40294
SAMPLED DATE	2007/05/11	SAMPLE CONDITION	SAIL - GOOD CONDITION		
MATRIX:	SOLID				

TEST PROFILE	TEST CONDITION	REPORT DELIVERY
ABN COMPOUNDS IN SOIL BY GC/MS	SAIL - GOOD CONDITION	2007/05/23
SAMPLE DISPOSAL CHARGE	SAIL - GOOD CONDITION	2007/05/23
F4G (CCME HYDROCARBONS GRAVIMETRIC)	SAIL - GOOD CONDITION	2007/05/23
MOISTURE	SAIL - GOOD CONDITION	2007/05/23
OC PESTICIDES (SELECTED) & PCB	SAIL - GOOD CONDITION	2007/05/23

PARAMETERS FOR ANALYSIS REQUESTED

(FOR ALL SAMPLES SUITABLE FOR TESTING)

SAMPLE #	S31537- SOLID - SB-1-1 , S31538- SOLID - SB-1-2 ,
	S31539- SOLID - SB-1-3 , S31541- SOLID - SB-2-1 ,
	S31542- SOLID - SB-2-2 , S31543- SOLID - SB-2-3

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	FREE CYANIDE
Free Cyanide			

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	ACID EXTR. METALS (AQUA REGIA) BY ICPMS	
Aluminum (Al)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	
Iron (Fe)	Lead (Pb)	Magnesium (Mg)	Manganese (Mn)	
Antimony (Sb)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	
Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	
Strontium (Sr)	Arsenic (As)	Thallium (Tl)	Vanadium (V)	
Zinc (Zn)	Barium (Ba)	Beryllium (Be)	Cadmium (Cd)	
Calcium (Ca)				

SAMPLE #	S31537- SOLID - SB-1-1 , S31538- SOLID - SB-1-2 ,
	S31539- SOLID - SB-1-3 , S31540- SOLID - SB-1-4 ,
	S31541- SOLID - SB-2-1 , S31542- SOLID - SB-2-2 ,
	S31543- SOLID - SB-2-3 , S31544- SOLID - SB-2-4

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	MOISTURE
Moisture			

SAMPLE #	S31537- SOLID - SB-1-1 , S31538- SOLID - SB-1-2 ,
	S31539- SOLID - SB-1-3 , S31541- SOLID - SB-2-1 ,
	S31542- SOLID - SB-2-2 , S31543- SOLID - SB-2-3

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	AMMONIA-N
Ammonia-N			

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	TOTAL KJELDAHL NITROGEN - SOIL
Total Kjeldahl Nitrogen			

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	TOTAL ORGANIC CARBON IN SOIL
Organic Carbon			

SAMPLE #	S31540- SOLID - SB-1-4 , S31544- SOLID - SB-2-4

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	ABN COMPOUNDS IN SOIL BY GC/MS	
Bis(2-chloroethyl)ether	2-Chloronaphthalene	Nitrosodiphenylamine/Diphenylamine	Dimethylphthalate	
2,6-Dinitrotoluene	2,4-Dinitrotoluene	4-Chlorophenylphenylether	p-Chloroaniline	
Diethylphthalate	4-Bromophenylphenylether	Di-N-butylphthalate	Bis(2-chloroisopropyl)ether	
Benzylbutylphthalate	Bis(2-ethylhexyl)phthalate	Di-N-octylphthalate	Hexachloroethane	
N-Nitroso-di-n-propylamine	Nitrobenzene	Isophorone	Bis(2-chloroethoxy)methane	
Hexachlorobutadiene	Hexachlorocyclopentadiene	1,2,3,4-Tetrachlorobenzene	Pentachlorobenzene	
Hexachlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	
1,3,5-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	1,2,3,5-Tetrachlorobenzene	
1,2,4,5-Tetrachlorobenzene	2-Chlorophenol	2,3,6-Trichlorophenol	2,3,5-Trichlorophenol	
2,4,5-Trichlorophenol	2,3,4-Trichlorophenol	2,3,5,6-Tetrachlorophenol	2,3,4,6-Tetrachlorophenol	
2,3,4,5-Tetrachlorophenol	Pentachlorophenol	2,6-Dichlorophenol	3,4,5-Trichlorophenol	
Quinoline	2,4-Dichlorophenol	4,6-Dinitro-2-methylphenol	2,5-Dichlorophenol	
2,3-Dichlorophenol	3,4-Dichlorophenol	3,5-Dichlorophenol	2,4,6-Trichlorophenol	
3,3'-Dichlorobenzidine	Naphthalene	Benzo(a)anthracene	Chrysene	
Benzo(k)fluoranthene	Benzo(a)pyrene	Perylene	Acenaphthylene	
Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	2-Methylnaphthalene	
Acenaphthene	Benzo(b/j)fluoranthene	Fluorene	1-Methylnaphthalene	
Phenanthrene	Biphenyl	Anthracene	1-Chloronaphthalene	
Fluoranthene	Pyrene	Phenol	m/p-Cresol	
o-Cresol	2-Nitrophenol	2,4-Dimethylphenol	4-Chloro-3-Methylphenol	
2,4-Dinitrophenol	4-Nitrophenol			

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	F4G (CCME HYDROCARBONS GRAVIMETRIC)
Total Oil and Grease			

LOCATION	Maxxam Analytics Mississauga	TESTPROFILE	OC PESTICIDES (SELECTED) & PCB	
Hexachlorobenzene	Endosulfan I	Endosulfan II	a-BHC	

LOCATION	Maxxam Analytics Mississauga	TEST PROFILE	OC PESTICIDES (SELECTED) & PCB
o,p-DDD	Endrin aldehyde	p,p-DDE	Dieldrin
Endrin	b-BHC	o,p-DDT	p,p-DDD
Endosulfan sulfate	p,p-DDT	Methoxychlor	Mirex
Octachlorostyrene	Toxaphene	Lindane	Endrin ketone
Total Endosulfan	d-BHC	a-Chlordane	g-Chlordane
o,p-DDE	DDT+ Metabolites	Heptachlor	Aldrin
Heptachlor epoxide	Chlordane (Total)	o,p-DDD + p,p-DDD	o,p-DDE + p,p-DDE
o,p-DDT + p,p-DDT			

A747234: Price Confirmation

#	DESCRIPTION	MATRIX	QUOTE #	PRICE	TOTAL	SURCHARGE
	Surcharge Legend: (D/H) - Days/Hours TAT					
6	AQUA REGIA DIGESTION	SOLID	A71284	$ 0.00	$ 0.00	
6	FREE CYANIDE	SOLID	A71284	$ 25.00	$ 150.00	
6	DRY, GRIND & SIEVE	SOLID	A71284	$ 0.00	$ 0.00	
8	SAMPLE DISPOSAL CHARGE	SOLID	A71284	$ 1.75	$ 14.00	
6	ACID EXTR. METALS (AQUA REGIA) BY ICPMS	SOLID	A71284	$ 50.00	$ 300.00	
6	MOISTURE	SOLID	A71284	$ 0.00	$ 0.00	
6	AMMONIA-N	SOLID	A71284	$ 18.00	$ 108.00	
6	SIEVES, VARIOUS SIZES	SOLID	A71284	$ 65.00	$ 390.00	
6	SOIL TEXTURE (% SAND, %SILT, %CLAY)	SOLID	A71284	$ 45.00	$ 270.00	
6	TOTAL KJELDAHL NITROGEN - SOIL	SOLID	A71284	$ 25.00	$ 150.00	
6	TOTAL ORGANIC CARBON IN SOIL	SOLID	A71284	$ 20.00	$ 120.00	
2	ABN COMPOUNDS IN SOIL BY GC/MS	SOLID	A71284	$ 225.00	$ 450.00	
2	F4G (CCME HYDROCARBONS GRAVIMETRIC)	SOLID	A71284	$ 45.00	$ 90.00	
2	OC PESTICIDES (SELECTED) & PCB	SOLID	A71284	$ 120.00	$ 240.00	

RUSH!!!

MAXXAM ANALYTICS INC.
6740 Campobello Road
Mississauga, Ontario, L5N 2L8
Phone:(905) 817-5700

Fax: (905) 817-5777

ANALYTICAL REQUEST FORM

TO: Campo to Calgary Subcontract

Attention: Sample Receiving

Date:2007/05/15

JOB # A747234

Maxxam ID \ Client ID	Matrix	Test(s) Required	Date Sampled	Date Required
S31537-01R \ SB-1-1	SOLID	Sieves, Various Sizes	2007/05/11	2007/05/22
S31537-01R \ SB-1-1	SOLID	Soil Texture (% sand, %silt, %clay)	2007/05/11	2007/05/22
S31538-01R \ SB-1-2	SOLID	Sieves, Various Sizes	2007/05/11	2007/05/22
S31538-01R \ SB-1-2	SOLID	Soil Texture (% sand, %silt, %clay)	2007/05/11	2007/05/22
S31539-01R \ SB-1-3	SOLID	Sieves, Various Sizes	2007/05/11	2007/05/22
S31539-01R \ SB-1-3	SOLID	Soil Texture (% sand, %silt, %clay)	2007/05/11	2007/05/22
S31541-01R \ SB-2-1	SOLID	Sieves, Various Sizes	2007/05/11	2007/05/22
S31541-01R \ SB-2-1	SOLID	Soil Texture (% sand, %silt, %clay)	2007/05/11	2007/05/22
S31542-01R \ SB-2-2	SOLID	Sieves, Various Sizes	2007/05/11	2007/05/22
S31542-01R \ SB-2-2	SOLID	Soil Texture (% sand, %silt, %clay)	2007/05/11	2007/05/22
S31543-01R \ SB-2-3	SOLID	Sieves, Various Sizes	2007/05/11	2007/05/22
S31543-01R \ SB-2-3	SOLID	Soil Texture (% sand, %silt, %clay)	2007/05/11	2007/05/22

Please reference both Maxxam and client sample ID's on your report

Please call us if due date cannot be met
Charge us **Rush**charges: ☑ Yes ☐ No (If rush charges are required to meet due date and YES box is not checked please call us.)
BioHazard, Foreign Soil heat treat, special handling required: ☐ Yes ☑ No
Special Protocol ☐ Yes ☑ No
(If Yes; Name of Protocol _____, Location# _____ Clients Name _____) Only add clients name if sent to Maxxam lab
Ship Immediately (Highlight yellow), Requires 9am, Requires Sat. Delivery, Regular Shipment next available day
Shipping Instructions: Cold , Room Temperature , Frozen (must check one)
Sender Initials _____ Authorization Initials _____
Shipping Dept. Sample bottle Idn checked vs this form: Yes
Special Protocol Yes No
Special Protocol (If Yes; Cooler _____, ice _____, taped _____, taped dated & signed
PLEASE FAX RESULTS AND MAIL ORIGINALS TO: Subcontract Coordinator

MAY 15 2007

Purolator # 8123 949 246

RUSH

740 Campobello Road, Mississauga, Ontario Canada L5N 2L8
el:(905) 817-5700 Toll-free 800-653-6266 Fax:(905) 817-5779 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

XMATION:

Company Name: #709 Stantec Consulting Ltd
Contact Name: Mark Pomeroy
Address: 361 Southgate Dr
Guelph ON N1G 3M5
Phone: (519)836-6050 x224 Fax: (519)836-2493
Email: mpomeroy@stantec.com, bryan.chubb@maxxaman

REPORT INFORMATION (if differs from invoice):

Company Name: Canadian Seabed Research
Contact Name: Andrew Campbell
Address: 341 Myra Rd. Portuis Lake. N.S. B3E-1G2
Phone: 902-827-4200 Fax 902-827-2002
Email: acampbell@csr-marine.com

PROJECT INFORMATION:

Quotation #: A71284
P.O. #:
Project #: 676826
Project Name:
Site Location: Wolfe Island
Sampled By: Andrew Campbell

Laboratory Use Only:

BOTTLE ORDER #: 40294
MAXXAM JOB #:
CHAIN OF CUSTODY #: C#40294-01-01
PROJECT MANAGER: LEENA THOMAS

REGULATORY CRITERIA:

☐ MISA Reg. 153/04 Sewer Use ☐ Sanitary ☐ Storm ☐ Combined
☐ PWQO ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table 6
☐ Reg. 558 Municipality _____
Other (specify) _____

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

RUSH ANALYSIS TAT: 1 day ☐ 2 day ☐ 3 day ☐

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified).
Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: _____
Time Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Regulated Drinking Water ? (Y / N)	Metals Require Lab Filtering ? (Y / N)	Rush Sample (Select samples)	Acid Extr. Metals (aqua regia) by ICPMS	F4G (CCME Hydrocarbons Gravimetric)	ABN Compounds in soil by GC/MS	OC Pesticides (Selected) & PCB	Soil Texture (% sand, %silt, %clay)	Sieves, Various Sizes	Ammonia-N	Total Kjeldahl Nitrogen - Soil	Free Cyanide	Total Organic Carbon in Soil	Matrix (GW, SW Soil, etc.)	# of Bottles	Expected Concentration High	Comments
1		SB-1-1	May 11/07	16:12			☐	X				X	X	X	X	X	X	SED	1	☐	
2		SB-1-2	May 11/07	16:12			☐	X				X	X	X	X	X	X	SED	1	☐	
3		SB-1-3	May 11/07	16:12			☐	X				X	X	X	X	X	X	SED	1	☐	
4		SB-1-4	May 11/07	16:12			☐		X	X	X							Sed	1	☐	
5		SB-2-1	May 11/07	16:37			☐	X				X	X	X	X	X	X	Sed	1	☐ ☐	
6		SB-2-2	May 11/07	16:37			☐	X				X	X	X	X	X	X	Sed	1	☐ ☐	
7		SB-2-3	May 11/07	16:37			☐	X				X	X	X	X	X	X	Sed	1	☐ ☐	7|6|7°C
8		SB-2-4	May 11/07	1637			☐		X	X	X							Sed	1	☐ ☐	MAY 15'07 10:51
9							☐													☐ ☐	
10							☐													☐ ☐	

15-May-07 10:51
LEENA THOMAS
A747234
MAF ENV-631

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:
Andrew Campbell	May 11/07	17:00	HP	07|05|15	10:51
			HIRAL PATEL		

Laboratory Use Only

Temperature (°C) on Receipt	Condition of Sample on Receipt	Custody Seal Intact on Cooler?
	☐ OK ☐ SIF	☐ Yes ☐ No

* MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

Your Project #: 676826
Site: WOLFE ISLAND
Your C.O.C. #: C#40294

Attention: Andrew Campbell
Canadian Seabed Research
341 Myra Rd
Porters Lake, NS
CANADA B3E 1G2

Report Date: 2007/05/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A747234
Received: 2007/05/15, 10:51

Sample Matrix: SOLID
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
ABN Compounds in soil by GC/MS	2	N/A	2007/05/22	CAM SOP-00303	EPA 8270 (modified)
Free Cyanide	6	N/A	2007/05/16		EPA 9012 modified
F4G (CCME Hydrocarbons Gravimetric)	2	2007/05/17	2007/05/18	CAM SOP-00316	CCME CWS
Mercury in Soil by CVAA	6	2007/05/25	2007/05/25	CAM SOP-00453	EPA 7470
Acid Extr. Metals (aqua regia) by ICPMS	6	2007/05/17	2007/05/17	CAM SOP-00447	EPA 6020
MOISTURE	6	N/A	2007/05/16	Ont SOP-0114	MOE HANDBOOK(1983)
MOISTURE	2	N/A	2007/05/17	Ont SOP-0114	MOE HANDBOOK(1983)
Ammonia-N	6	2007/05/16	2007/05/16	CAM SOP-00441	Carter, SS&A
OC Pesticides (Selected) & PCB	2	2007/05/19	2007/05/22	CAM SOP-00307	SW 846
Total Kjeldahl Nitrogen - Soil	6	N/A	2007/05/18	CAM SOP-00454	EPA 351.2 Rev 2
Total Organic Carbon in Soil	6	N/A	2007/05/18	CAM SOP-00468	LECO Combustion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEENA THOMAS, Project Manager
Email: leena.thomas@maxxamanalytics.com
Phone# (905) 817-5700 Ext:5798

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

RESULTS OF ANALYSES OF SOLID

Maxxam ID		S31537	S31537	S31538		
Sampling Date		2007/05/11 16:12	2007/05/11 16:12	2007/05/11 16:12		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-1-1**	**SB-1-1 Lab-Dup**	**SB-1-2**	**RDL**	**QC Batch**
INORGANICS						
Total Kjeldahl Nitrogen	ug/g	191	204	226	3	1239867
INORGANICS						
Total Ammonia-N	ug/g	<25	<25	<25	25	1237224
Free Cyanide	ug/g	<0.01		<0.01	0.01	1237527
Moisture	%	23		27	0.2	1237402
Total Organic Carbon	mg/kg	2700		3000	500	1240554

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

Maxxam ID		S31539	S31539		S31540		
Sampling Date		2007/05/11 16:12	2007/05/11 16:12		2007/05/11 16:12		
COC Number		C#40294	C#40294		C#40294		
	Units	**SB-1-3**	**SB-1-3 Lab-Dup**	**QC Batch**	**SB-1-4**	**RDL**	**QC Batch**
INORGANICS							
Total Kjeldahl Nitrogen	ug/g	215		1239867		3	1239867
INORGANICS							
Total Ammonia-N	ug/g	<25		1237224		25	1237224
Free Cyanide	ug/g	<0.01		1237527		0.01	1237527
Moisture	%	23		1237402	21	0.2	1239857
Total Organic Carbon	mg/kg	2800	3200	1240554		500	

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel: 905-817-5700 Toll free:800-563-6266 Fax: 905-817-5777

Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

RESULTS OF ANALYSES OF SOLID

Maxxam ID		S31541	S31542	S31543		
Sampling Date		2007/05/11 16:37	2007/05/11 16:37	2007/05/11 16:37		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-2-1**	**SB-2-2**	**SB-2-3**	**RDL**	**QC Batch**
INORGANICS						
Total Kjeldahl Nitrogen	ug/g	376	448	395	3	1239867
INORGANICS						
Total Ammonia-N	ug/g	<25	<25	<25	25	1237224
Free Cyanide	ug/g	<0.01	<0.01	<0.01	0.01	1237527
Moisture	%	29	28	24	0.2	1237402
Total Organic Carbon	mg/kg	2800	4700	4700	500	1240554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		S31544		
Sampling Date		2007/05/11 16:37		
COC Number		C#40294		
	Units	**SB-2-4**	**RDL**	**QC Batch**
INORGANICS				
Moisture	%	21	0.2	1239857

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		S31537	S31538	S31539		
Sampling Date		2007/05/11 16:12	2007/05/11 16:12	2007/05/11 16:12		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-1-1**	**SB-1-2**	**SB-1-3**	**RDL**	**QC Batch**
METALS						
Acid Extractable Aluminum (Al)	ug/g	630	710	700	50	1238811
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	<0.2	0.2	1238811
Acid Extractable Arsenic (As)	ug/g	<1	<1	<1	1	1238811
Acid Extractable Barium (Ba)	ug/g	4.3	5.2	4.9	0.5	1238811
Acid Extractable Beryllium (Be)	ug/g	<0.2	<0.2	<0.2	0.2	1238811
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	<0.1	0.1	1238811
Acid Extractable Calcium (Ca)	ug/g	10000	12000	11000	50	1238811
Acid Extractable Chromium (Cr)	ug/g	2	3	3	1	1238811
Acid Extractable Cobalt (Co)	ug/g	0.7	0.8	0.8	0.1	1238811
Acid Extractable Copper (Cu)	ug/g	1.2	1.2	1.0	0.5	1238811
Acid Extractable Iron (Fe)	ug/g	2500	2900	2700	50	1238811
Acid Extractable Lead (Pb)	ug/g	<1	<1	<1	1	1238811
Acid Extractable Magnesium (Mg)	ug/g	1700	2000	1800	50	1238811
Acid Extractable Manganese (Mn)	ug/g	44	52	48	1	1238811
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	<0.05	0.05	1246247
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	<0.5	<0.5	0.5	1238811
Acid Extractable Nickel (Ni)	ug/g	1.4	1.4	1.4	0.5	1238811
Acid Extractable Phosphorus (P)	ug/g	320	450	300	50	1238811
Acid Extractable Potassium (K)	ug/g	<200	<200	<200	200	1238811
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	<0.5	0.5	1238811
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	<0.2	0.2	1238811
Acid Extractable Sodium (Na)	ug/g	<100	<100	<100	100	1238811
Acid Extractable Strontium (Sr)	ug/g	17	19	17	1	1238811
Acid Extractable Thallium (Tl)	ug/g	<0.05	<0.05	<0.05	0.05	1238811
Acid Extractable Vanadium (V)	ug/g	6	6	6	5	1238811
Acid Extractable Zinc (Zn)	ug/g	<5	5	5	5	1238811

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		S31541	S31542	S31543		
Sampling Date		2007/05/11 16:37	2007/05/11 16:37	2007/05/11 16:37		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-2-1**	**SB-2-2**	**SB-2-3**	**RDL**	**QC Batch**
METALS						
Acid Extractable Aluminum (Al)	ug/g	1200	1100	980	50	1238811
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	<0.2	0.2	1238811
Acid Extractable Arsenic (As)	ug/g	<1	<1	<1	1	1238811
Acid Extractable Barium (Ba)	ug/g	11	10	8.7	0.5	1238811
Acid Extractable Beryllium (Be)	ug/g	<0.2	<0.2	<0.2	0.2	1238811
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	<0.1	0.1	1238811
Acid Extractable Calcium (Ca)	ug/g	35000	27000	23000	50	1238811
Acid Extractable Chromium (Cr)	ug/g	8	8	8	1	1238811
Acid Extractable Cobalt (Co)	ug/g	1.9	1.5	1.6	0.1	1238811
Acid Extractable Copper (Cu)	ug/g	3.0	3.9	2.1	0.5	1238811
Acid Extractable Iron (Fe)	ug/g	11000	7400	11000	50	1238811
Acid Extractable Lead (Pb)	ug/g	2	1	1	1	1238811
Acid Extractable Magnesium (Mg)	ug/g	4300	3600	3100	50	1238811
Acid Extractable Manganese (Mn)	ug/g	92	74	72	1	1238811
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	<0.05	0.05	1246247
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	<0.5	<0.5	0.5	1238811
Acid Extractable Nickel (Ni)	ug/g	3.1	3.6	2.7	0.5	1238811
Acid Extractable Phosphorus (P)	ug/g	980	780	990	50	1238811
Acid Extractable Potassium (K)	ug/g	210	<200	<200	200	1238811
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	<0.5	0.5	1238811
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	<0.2	0.2	1238811
Acid Extractable Sodium (Na)	ug/g	<100	<100	<100	100	1238811
Acid Extractable Strontium (Sr)	ug/g	52	41	39	1	1238811
Acid Extractable Thallium (Tl)	ug/g	<0.05	0.05	<0.05	0.05	1238811
Acid Extractable Vanadium (V)	ug/g	27	18	26	5	1238811
Acid Extractable Zinc (Zn)	ug/g	13	16	10	5	1238811

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		S31540	S31544		
Sampling Date		2007/05/11 16:12	2007/05/11 16:37		
COC Number		C#40294	C#40294		
	Units	**SB-1-4**	**SB-2-4**	**RDL**	**QC Batch**
SEMIVOLATILES					
Acenaphthene	ug/g	<0.1	<0.1	0.1	1241577
Acenaphthylene	ug/g	<0.1	<0.1	0.1	1241577
Anthracene	ug/g	<0.1	<0.1	0.1	1241577
Benzo(a)anthracene	ug/g	<0.1	<0.1	0.1	1241577
Benzo(a)pyrene	ug/g	<0.1	<0.1	0.1	1241577
Benzo(b/j)fluoranthene	ug/g	<0.1	<0.1	0.1	1241577
Benzo(g,h,i)perylene	ug/g	<0.1	<0.1	0.1	1241577
Benzo(k)fluoranthene	ug/g	<0.1	<0.1	0.1	1241577
1-Chloronaphthalene	ug/g	<1	<1	1	1241577
2-Chloronaphthalene	ug/g	<0.1	<0.1	0.1	1241577
Chrysene	ug/g	<0.1	<0.1	0.1	1241577
Dibenz(a,h)anthracene	ug/g	<0.1	<0.1	0.1	1241577
Fluoranthene	ug/g	<0.1	<0.1	0.1	1241577
Fluorene	ug/g	<0.1	<0.1	0.1	1241577
Indeno(1,2,3-cd)pyrene	ug/g	<0.1	<0.1	0.1	1241577
1-Methylnaphthalene	ug/g	<0.1	<0.1	0.1	1241577
2-Methylnaphthalene	ug/g	<0.1	<0.1	0.1	1241577
Naphthalene	ug/g	<0.1	<0.1	0.1	1241577
Perylene	ug/g	<0.2	<0.2	0.2	1241577
Phenanthrene	ug/g	<0.1	<0.1	0.1	1241577
Pyrene	ug/g	<0.1	<0.1	0.1	1241577
Quinoline	ug/g	<0.2	<0.2	0.2	1241577
1,2-Dichlorobenzene	ug/g	<0.1	<0.1	0.1	1241577
1,3-Dichlorobenzene	ug/g	<0.1	<0.1	0.1	1241577
1,4-Dichlorobenzene	ug/g	<0.1	<0.1	0.1	1241577
Hexachlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
Pentachlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
1,2,3,4-Tetrachlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
1,2,3,5-Tetrachlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
1,2,4,5-Tetrachlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
1,2,3-Trichlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
1,2,4-Trichlorobenzene	ug/g	<0.2	<0.2	0.2	1241577

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		S31540	S31544		
Sampling Date		2007/05/11 16:12	2007/05/11 16:37		
COC Number		C#40294	C#40294		
	Units	**SB-1-4**	**SB-2-4**	**RDL**	**QC Batch**
1,3,5-Trichlorobenzene	ug/g	<0.2	<0.2	0.2	1241577
2-Chlorophenol	ug/g	<0.1	<0.1	0.1	1241577
4-Chloro-3-Methylphenol	ug/g	<0.1	<0.1	0.1	1241577
m/p-Cresol	ug/g	<0.2	<0.2	0.2	1241577
o-Cresol	ug/g	<0.2	<0.2	0.2	1241577
2,3-Dichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,4-Dichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,5-Dichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,6-Dichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
3,4-Dichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
3,5-Dichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,4-Dimethylphenol	ug/g	<0.1	<0.1	0.1	1241577
2,4-Dinitrophenol	ug/g	<0.2	<0.2	0.2	1241577
4,6-Dinitro-2-methylphenol	ug/g	<0.5	<0.5	0.5	1241577
2-Nitrophenol	ug/g	<0.5	<0.5	0.5	1241577
4-Nitrophenol	ug/g	<0.5	<0.5	0.5	1241577
Pentachlorophenol	ug/g	<0.2	<0.2	0.2	1241577
Phenol	ug/g	<0.2	<0.2	0.2	1241577
2,3,4,5-Tetrachlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,3,4,6-Tetrachlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,3,5,6-Tetrachlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,3,4-Trichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,3,5-Trichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,3,6-Trichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,4,5-Trichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
2,4,6-Trichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
3,4,5-Trichlorophenol	ug/g	<0.1	<0.1	0.1	1241577
Benzyl butyl phthalate	ug/g	<0.2	<0.2	0.2	1241577
Biphenyl	ug/g	<0.1	<0.1	0.1	1241577
Bis(2-chloroethoxy)methane	ug/g	<0.1	<0.1	0.1	1241577
Bis(2-chloroethyl)ether	ug/g	<0.2	<0.2	0.2	1241577
Bis(2-chloroisopropyl)ether	ug/g	<0.1	<0.1	0.1	1241577
Bis(2-ethylhexyl)phthalate	ug/g	<0.5	<0.5	0.5	1241577

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel: 905-817-5700 Toll free:800-563-6266 Fax: 905-817-5777

Maxxam Job #: A747234
Report Date: 2007/05/25

Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		S31540	S31544		
Sampling Date		2007/05/11 16:12	2007/05/11 16:37		
COC Number		C#40294	C#40294		
	Units	**SB-1-4**	**SB-2-4**	**RDL**	**QC Batch**
4-Bromophenyl phenyl ether	ug/g	<0.1	<0.1	0.1	1241577
p-Chloroaniline	ug/g	<0.2	<0.2	0.2	1241577
4-Chlorophenyl phenyl ether	ug/g	<0.1	<0.1	0.1	1241577
3,3'-Dichlorobenzidine	ug/g	<0.5	<0.5	0.5	1241577
Diethyl phthalate	ug/g	<0.2	<0.2	0.2	1241577
Di-N-butyl phthalate	ug/g	<0.2	<0.2	0.2	1241577
Di-N-octyl phthalate	ug/g	<0.5	<0.5	0.5	1241577
2,4-Dinitrotoluene	ug/g	<0.1	<0.1	0.1	1241577
2,6-Dinitrotoluene	ug/g	<0.1	<0.1	0.1	1241577
Dimethyl phthalate	ug/g	<0.2	<0.2	0.2	1241577
Hexachlorobutadiene	ug/g	<0.1	<0.1	0.1	1241577
Hexachlorocyclopentadiene	ug/g	<0.5	<0.5	0.5	1241577
Hexachloroethane	ug/g	<0.1	<0.1	0.1	1241577
Isophorone	ug/g	<0.1	<0.1	0.1	1241577
Nitrobenzene	ug/g	<0.1	<0.1	0.1	1241577
Nitrosodiphenylamine/Diphenylamine	ug/g	<0.2	<0.2	0.2	1241577
N-Nitroso-di-n-propylamine	ug/g	<0.1	<0.1	0.1	1241577
Surrogate Recovery (%)					
2,4,6-Tribromophenol	%	76	83		1241577
2-Fluorobiphenyl	%	91	90		1241577
2-Fluorophenol	%	59	52		1241577
D14-Terphenyl	%	86	83		1241577
D5-Nitrobenzene	%	57	55		1241577
D5-Phenol	%	54	54		1241577

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Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		S31540	S31540	S31544		
Sampling Date		2007/05/11 16:12	2007/05/11 16:12	2007/05/11 16:37		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-1-4**	**SB-1-4 Lab-Dup**	**SB-2-4**	**RDL**	**QC Batch**
F2-F4 PHC						
Total Oil and Grease	ug/g	370	410	370	100	1239286

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

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Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOLID)

Maxxam ID		S31540	S31540	S31544		
Sampling Date		2007/05/11 16:12	2007/05/11 16:12	2007/05/11 16:37		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-1-4**	**SB-1-4 Lab-Dup**	**SB-2-4**	**RDL**	**QC Batch**
CHLOROBENZENES						
Hexachlorobenzene	ug/g	<0.002	<0.002	<0.002	0.002	1241620
OC PESTICIDES						
a-BHC	ug/g	<0.002	<0.002	<0.002	0.002	1241620
a-Chlordane	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Aldrin	ug/g	<0.002	<0.002	<0.002	0.002	1241620
b-BHC	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Chlordane (Total)	ug/g	<0.002	<0.002	<0.002	0.002	1241620
d-BHC	ug/g	<0.002	<0.002	<0.002	0.002	1241620
DDT+ Metabolites	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Dieldrin	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Endosulfan I	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Endosulfan II	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Endosulfan sulfate	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Endrin	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Endrin aldehyde	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Endrin ketone	ug/g	<0.002	<0.002	<0.002	0.002	1241620
g-Chlordane	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Heptachlor	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Heptachlor epoxide	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Lindane	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Methoxychlor	ug/g	<0.008	<0.008	<0.008	0.008	1241620
Mirex	ug/g	<0.002	<0.002	<0.002	0.002	1241620
o,p-DDD	ug/g	<0.002	<0.002	<0.002	0.002	1241620
o,p-DDD + p,p-DDD	ug/g	<0.002	<0.002	<0.002	0.002	1241620
o,p-DDE	ug/g	<0.002	<0.002	<0.002	0.002	1241620
o,p-DDE + p,p-DDE	ug/g	<0.002	<0.002	<0.002	0.002	1241620
o,p-DDT	ug/g	<0.002	<0.002	<0.002	0.002	1241620
o,p-DDT + p,p-DDT	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Octachlorostyrene	ug/g	<0.002	<0.002	<0.002	0.002	1241620
p,p-DDD	ug/g	<0.002	<0.002	<0.002	0.002	1241620
p,p-DDE	ug/g	<0.002	<0.002	<0.002	0.002	1241620

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Canadian Seabed Research
Client Project #: 676826
Project name: WOLFE ISLAND
Sampler Initials:

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOLID)

Maxxam ID		S31540	S31540	S31544		
Sampling Date		2007/05/11 16:12	2007/05/11 16:12	2007/05/11 16:37		
COC Number		C#40294	C#40294	C#40294		
	Units	**SB-1-4**	**SB-1-4 Lab-Dup**	**SB-2-4**	**RDL**	**QC Batch**
p,p-DDT	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Total Endosulfan	ug/g	<0.002	<0.002	<0.002	0.002	1241620
Toxaphene	ug/g	<0.08	<0.08	<0.08	0.08	1241620
Surrogate Recovery (%)						
Decachlorobiphenyl	%	101	80	80		1241620
2,4,5,6-Tetrachloro-m-xylene	%	68	68	92		1241620

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Client Project #: 676826
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SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

ABN Compounds in soil by GC/MS: QAQC Batch 1241577: The recoveries of the flagged parameters in the matrix spike and/or spiked blank were outside the control limits. The results obtained for these specific parameters may be biased.

Results relate only to the items tested.

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Canadian Seabed Research
Attention: Andrew Campbell
Client Project #: 676826
P.O. #:
Project name: WOLFE ISLAND

Quality Assurance Report

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1237224	ADB	MATRIX SPIKE [S31537-01]	Total Ammonia-N	2007/05/16		108	%	75 - 125
		Spiked Blank	Total Ammonia-N	2007/05/16		101	%	75 - 125
		Method Blank	Total Ammonia-N	2007/05/16	<25		ug/g	
		RPD [S31537-01]	Total Ammonia-N	2007/05/16	NC		%	35
1237402	AC	RPD	Moisture	2007/05/16	0.7		%	50
1237527	CP	MATRIX SPIKE	Free Cyanide	2007/05/16		98	%	75 - 125
		Spiked Blank	Free Cyanide	2007/05/16		105	%	75 - 125
		Method Blank	Free Cyanide	2007/05/16	<0.01		ug/g	
		RPD	Free Cyanide	2007/05/16	NC		%	35
1238811	VIV	MATRIX SPIKE	Acid Extractable Aluminum (Al)	2007/05/17		NC (1)	%	75 - 125
			Acid Extractable Antimony (Sb)	2007/05/17		103	%	75 - 125
			Acid Extractable Arsenic (As)	2007/05/17		101	%	75 - 125
			Acid Extractable Barium (Ba)	2007/05/17		105	%	75 - 125
			Acid Extractable Beryllium (Be)	2007/05/17		102	%	75 - 125
			Acid Extractable Cadmium (Cd)	2007/05/17		105	%	75 - 125
			Acid Extractable Calcium (Ca)	2007/05/17		NC (1)	%	75 - 125
			Acid Extractable Chromium (Cr)	2007/05/17		104	%	75 - 125
			Acid Extractable Cobalt (Co)	2007/05/17		103	%	75 - 125
			Acid Extractable Copper (Cu)	2007/05/17		99	%	75 - 125
			Acid Extractable Iron (Fe)	2007/05/17		NC (1)	%	75 - 125
			Acid Extractable Lead (Pb)	2007/05/17		101	%	75 - 125
			Acid Extractable Magnesium (Mg)	2007/05/17		121	%	75 - 125
			Acid Extractable Manganese (Mn)	2007/05/17		114	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2007/05/17		104	%	75 - 125
			Acid Extractable Nickel (Ni)	2007/05/17		102	%	75 - 125
			Acid Extractable Phosphorus (P)	2007/05/17		NC (1)	%	80 - 120
			Acid Extractable Potassium (K)	2007/05/17		103	%	75 - 125
			Acid Extractable Selenium (Se)	2007/05/17		104	%	75 - 125
			Acid Extractable Silver (Ag)	2007/05/17		100	%	75 - 125
			Acid Extractable Sodium (Na)	2007/05/17		101	%	75 - 125
			Acid Extractable Strontium (Sr)	2007/05/17		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2007/05/17		103	%	75 - 125
			Acid Extractable Vanadium (V)	2007/05/17		105	%	75 - 125
			Acid Extractable Zinc (Zn)	2007/05/17		97	%	75 - 125
		QC STANDARD	Acid Extractable Aluminum (Al)	2007/05/17		100	%	75 - 125
			Acid Extractable Antimony (Sb)	2007/05/17		106	%	75 - 125
			Acid Extractable Arsenic (As)	2007/05/17		104	%	75 - 125
			Acid Extractable Barium (Ba)	2007/05/17		97	%	75 - 125
			Acid Extractable Beryllium (Be)	2007/05/17		90	%	75 - 125
			Acid Extractable Cadmium (Cd)	2007/05/17		100	%	75 - 125
			Acid Extractable Calcium (Ca)	2007/05/17		103	%	75 - 125
			Acid Extractable Chromium (Cr)	2007/05/17		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2007/05/17		100	%	75 - 125
			Acid Extractable Copper (Cu)	2007/05/17		101	%	75 - 125
			Acid Extractable Iron (Fe)	2007/05/17		99	%	75 - 125
			Acid Extractable Lead (Pb)	2007/05/17		98	%	75 - 125
			Acid Extractable Magnesium (Mg)	2007/05/17		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2007/05/17		104	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2007/05/17		95	%	75 - 125
			Acid Extractable Nickel (Ni)	2007/05/17		99	%	75 - 125
			Acid Extractable Phosphorus (P)	2007/05/17		104	%	75 - 125
			Acid Extractable Potassium (K)	2007/05/17		99	%	75 - 125
			Acid Extractable Selenium (Se)	2007/05/17		96	%	50 - 150
			Acid Extractable Silver (Ag)	2007/05/17		127 (2)	%	75 - 125

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Client Project #: 676826
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Project name: WOLFE ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1238811	VIV	QC STANDARD	Acid Extractable Sodium (Na)	2007/05/17		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2007/05/17		101	%	75 - 125
			Acid Extractable Thallium (Tl)	2007/05/17		97	%	75 - 125
			Acid Extractable Vanadium (V)	2007/05/17		105	%	75 - 125
			Acid Extractable Zinc (Zn)	2007/05/17		101	%	75 - 125
		Method Blank	Acid Extractable Aluminum (Al)	2007/05/17	<50		ug/g	
			Acid Extractable Antimony (Sb)	2007/05/17	<0.2		ug/g	
			Acid Extractable Arsenic (As)	2007/05/17	<1		ug/g	
			Acid Extractable Barium (Ba)	2007/05/17	<0.5		ug/g	
			Acid Extractable Beryllium (Be)	2007/05/17	<0.2		ug/g	
			Acid Extractable Cadmium (Cd)	2007/05/17	<0.1		ug/g	
			Acid Extractable Calcium (Ca)	2007/05/17	<50		ug/g	
			Acid Extractable Chromium (Cr)	2007/05/17	<1		ug/g	
			Acid Extractable Cobalt (Co)	2007/05/17	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2007/05/17	<0.5		ug/g	
			Acid Extractable Iron (Fe)	2007/05/17	<50		ug/g	
			Acid Extractable Lead (Pb)	2007/05/17	<1		ug/g	
			Acid Extractable Magnesium (Mg)	2007/05/17	<50		ug/g	
			Acid Extractable Manganese (Mn)	2007/05/17	<1		ug/g	
			Acid Extractable Molybdenum (Mo)	2007/05/17	<0.5		ug/g	
			Acid Extractable Nickel (Ni)	2007/05/17	<0.5		ug/g	
			Acid Extractable Phosphorus (P)	2007/05/17	<50		ug/g	
			Acid Extractable Potassium (K)	2007/05/17	<200		ug/g	
			Acid Extractable Selenium (Se)	2007/05/17	<0.5		ug/g	
			Acid Extractable Silver (Ag)	2007/05/17	<0.2		ug/g	
			Acid Extractable Sodium (Na)	2007/05/17	<100		ug/g	
			Acid Extractable Strontium (Sr)	2007/05/17	<1		ug/g	
			Acid Extractable Thallium (Tl)	2007/05/17	<0.05		ug/g	
			Acid Extractable Vanadium (V)	2007/05/17	<5		ug/g	
			Acid Extractable Zinc (Zn)	2007/05/17	<5		ug/g	
		RPD	Acid Extractable Antimony (Sb)	2007/05/17	NC		%	35
			Acid Extractable Arsenic (As)	2007/05/17	NC		%	35
			Acid Extractable Barium (Ba)	2007/05/17	4.0		%	35
			Acid Extractable Beryllium (Be)	2007/05/17	NC		%	35
			Acid Extractable Cadmium (Cd)	2007/05/17	NC		%	35
			Acid Extractable Chromium (Cr)	2007/05/17	NC		%	35
			Acid Extractable Cobalt (Co)	2007/05/17	3.5		%	35
			Acid Extractable Copper (Cu)	2007/05/17	1.6		%	35
			Acid Extractable Lead (Pb)	2007/05/17	NC		%	35
			Acid Extractable Molybdenum (Mo)	2007/05/17	NC		%	35
			Acid Extractable Nickel (Ni)	2007/05/17	4.3		%	35
			Acid Extractable Selenium (Se)	2007/05/17	NC		%	35
			Acid Extractable Vanadium (V)	2007/05/17	NC		%	35
			Acid Extractable Zinc (Zn)	2007/05/17	NC		%	35
1239286	AZH	MATRIX SPIKE						
		[S31540-01]	Total Oil and Grease	2007/05/18		86	%	N/A
		Spiked Blank	Total Oil and Grease	2007/05/18		86	%	N/A
		Method Blank	Total Oil and Grease	2007/05/18	<100		ug/g	
		RPD [S31540-01]	Total Oil and Grease	2007/05/18	NC		%	50
1239857	AC	RPD	Moisture	2007/05/17	15.6		%	50
1239867	C_N	MATRIX SPIKE						
		[S31537-01]	Total Kjeldahl Nitrogen	2007/05/18		97	%	N/A
		QC STANDARD	Total Kjeldahl Nitrogen	2007/05/18		101	%	N/A
		Spiked Blank	Total Kjeldahl Nitrogen	2007/05/18		94	%	N/A
		Method Blank	Total Kjeldahl Nitrogen	2007/05/18	<3		ug/g	

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Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1239867	C_N	RPD [S31537-01]	Total Kjeldahl Nitrogen	2007/05/18	6.5		%	40
1240554	LCH	QC STANDARD	Total Organic Carbon	2007/05/18		98	%	20 - 120
		Method Blank	Total Organic Carbon	2007/05/18	<500		mg/kg	
		RPD [S31539-01]	Total Organic Carbon	2007/05/18	13.2		%	50
1241577	YZ	MATRIX SPIKE	2,4,6-Tribromophenol	2007/05/22		80	%	10 - 130
			2-Fluorobiphenyl	2007/05/22		87	%	30 - 130
			2-Fluorophenol	2007/05/22		53	%	10 - 130
			D14-Terphenyl	2007/05/22		84	%	30 - 130
			D5-Nitrobenzene	2007/05/22		54	%	30 - 130
			D5-Phenol	2007/05/22		53	%	10 - 130
			Acenaphthene	2007/05/22		92	%	30 - 130
			Acenaphthylene	2007/05/22		89	%	30 - 130
			Anthracene	2007/05/22		104	%	30 - 130
			Benzo(a)anthracene	2007/05/22		84	%	30 - 130
			Benzo(a)pyrene	2007/05/22		86	%	30 - 130
			Benzo(b/j)fluoranthene	2007/05/22		80	%	30 - 130
			Benzo(g,h,i)perylene	2007/05/22		81	%	30 - 130
			Benzo(k)fluoranthene	2007/05/22		91	%	30 - 130
			1-Chloronaphthalene	2007/05/22		91	%	30 - 130
			2-Chloronaphthalene	2007/05/22		80	%	30 - 130
			Chrysene	2007/05/22		84	%	30 - 130
			Dibenz(a,h)anthracene	2007/05/22		71	%	30 - 130
			Fluoranthene	2007/05/22		130	%	30 - 130
			Fluorene	2007/05/22		76	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2007/05/22		69	%	30 - 130
			1-Methylnaphthalene	2007/05/22		82	%	30 - 130
			2-Methylnaphthalene	2007/05/22		79	%	30 - 130
			Naphthalene	2007/05/22		71	%	30 - 130
			Perylene	2007/05/22		88	%	30 - 130
			Phenanthrene	2007/05/22		99	%	30 - 130
			Pyrene	2007/05/22		85	%	30 - 130
			Quinoline	2007/05/22		74	%	30 - 130
			1,2-Dichlorobenzene	2007/05/22		64	%	30 - 130
			1,3-Dichlorobenzene	2007/05/22		63	%	30 - 130
			1,4-Dichlorobenzene	2007/05/22		60	%	30 - 130
			Hexachlorobenzene	2007/05/22		94	%	30 - 130
			Pentachlorobenzene	2007/05/22		92	%	30 - 130
			1,2,3,4-Tetrachlorobenzene	2007/05/22		81	%	30 - 130
			1,2,3,5-Tetrachlorobenzene	2007/05/22		79	%	30 - 130
			1,2,4,5-Tetrachlorobenzene	2007/05/22		90	%	30 - 130
			1,2,3-Trichlorobenzene	2007/05/22		77	%	30 - 130
			1,2,4-Trichlorobenzene	2007/05/22		75	%	30 - 130
			1,3,5-Trichlorobenzene	2007/05/22		76	%	30 - 130
			2-Chlorophenol	2007/05/22		62	%	10 - 130
			4-Chloro-3-Methylphenol	2007/05/22		84	%	10 - 130
			m/p-Cresol	2007/05/22		65	%	10 - 130
			o-Cresol	2007/05/22		60	%	10 - 130
			2,3-Dichlorophenol	2007/05/22		84	%	10 - 130
			2,4-Dichlorophenol	2007/05/22		63	%	10 - 130
			2,5-Dichlorophenol	2007/05/22		89	%	10 - 130
			2,6-Dichlorophenol	2007/05/22		77	%	10 - 130
			3,4-Dichlorophenol	2007/05/22		103	%	10 - 130
			3,5-Dichlorophenol	2007/05/22		111	%	10 - 130
			2,4-Dimethylphenol	2007/05/22		74	%	10 - 130
			2,4-Dinitrophenol	2007/05/22		23	%	10 - 130

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Client Project #: 676826
P.O. #:
Project name: WOLFE ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1241577	YZ	MATRIX SPIKE	4,6-Dinitro-2-methylphenol	2007/05/22		36	%	10 - 130
			2-Nitrophenol	2007/05/22		70	%	10 - 130
			4-Nitrophenol	2007/05/22		67	%	10 - 130
			Pentachlorophenol	2007/05/22		62	%	10 - 130
			Phenol	2007/05/22		55	%	10 - 130
			2,3,4,5-Tetrachlorophenol	2007/05/22		75	%	10 - 130
			2,3,4,6-Tetrachlorophenol	2007/05/22		96	%	10 - 130
			2,3,5,6-Tetrachlorophenol	2007/05/22		73	%	10 - 130
			2,3,4-Trichlorophenol	2007/05/22		93	%	10 - 130
			2,3,5-Trichlorophenol	2007/05/22		97	%	10 - 130
			2,3,6-Trichlorophenol	2007/05/22		88	%	10 - 130
			2,4,5-Trichlorophenol	2007/05/22		82	%	10 - 130
			2,4,6-Trichlorophenol	2007/05/22		80	%	10 - 130
			3,4,5-Trichlorophenol	2007/05/22		98	%	10 - 130
			Benzyl butyl phthalate	2007/05/22		90	%	30 - 130
			Biphenyl	2007/05/22		78	%	30 - 130
			Bis(2-chloroethoxy)methane	2007/05/22		61	%	30 - 130
			Bis(2-chloroethyl)ether	2007/05/22		52	%	30 - 130
			Bis(2-chloroisopropyl)ether	2007/05/22		53	%	30 - 130
			Bis(2-ethylhexyl)phthalate	2007/05/22		122	%	30 - 130
			4-Bromophenyl phenyl ether	2007/05/22		93	%	30 - 130
			p-Chloroaniline	2007/05/22		66	%	30 - 130
			4-Chlorophenyl phenyl ether	2007/05/22		92	%	30 - 130
			3,3'-Dichlorobenzidine	2007/05/22		89	%	30 - 130
			Diethyl phthalate	2007/05/22		90	%	30 - 130
			Di-N-butyl phthalate	2007/05/22		111	%	30 - 130
			Di-N-octyl phthalate	2007/05/22		106	%	30 - 130
			2,4-Dinitrotoluene	2007/05/22		81	%	30 - 130
			2,6-Dinitrotoluene	2007/05/22		77	%	30 - 130
			Dimethyl phthalate	2007/05/22		88	%	30 - 130
			Hexachlorobutadiene	2007/05/22		85	%	30 - 130
			Hexachlorocyclopentadiene	2007/05/22		6.6 (3)	%	30 - 130
			Hexachloroethane	2007/05/22		37	%	30 - 130
			Isophorone	2007/05/22		64	%	30 - 130
			Nitrobenzene	2007/05/22		58	%	30 - 130
			Nitrosodiphenylamine/Diphenylamine	2007/05/22		93	%	30 - 130
			N-Nitroso-di-n-propylamine	2007/05/22		65	%	30 - 130
		Spiked Blank	2,4,6-Tribromophenol	2007/05/22		65	%	10 - 130
			2-Fluorobiphenyl	2007/05/22		71	%	30 - 130
			2-Fluorophenol	2007/05/22		44	%	10 - 130
			D14-Terphenyl	2007/05/22		64	%	30 - 130
			D5-Nitrobenzene	2007/05/22		49	%	30 - 130
			D5-Phenol	2007/05/22		48	%	10 - 130
			Acenaphthene	2007/05/22		102	%	30 - 130
			Acenaphthylene	2007/05/22		96	%	30 - 130
			Anthracene	2007/05/22		106	%	30 - 130
			Benzo(a)anthracene	2007/05/22		85	%	30 - 130
			Benzo(a)pyrene	2007/05/22		88	%	30 - 130
			Benzo(b/j)fluoranthene	2007/05/22		83	%	30 - 130
			Benzo(g,h,i)perylene	2007/05/22		90	%	30 - 130
			Benzo(k)fluoranthene	2007/05/22		93	%	30 - 130
			1-Chloronaphthalene	2007/05/22		89	%	30 - 130
			2-Chloronaphthalene	2007/05/22		93	%	30 - 130
			Chrysene	2007/05/22		82	%	30 - 130
			Dibenz(a,h)anthracene	2007/05/22		77	%	30 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1241577	YZ	Spiked Blank	Fluoranthene	2007/05/22		135 (3)	%	30 - 130
			Fluorene	2007/05/22		83	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2007/05/22		75	%	30 - 130
			1-Methylnaphthalene	2007/05/22		92	%	30 - 130
			2-Methylnaphthalene	2007/05/22		89	%	30 - 130
			Naphthalene	2007/05/22		82	%	30 - 130
			Perylene	2007/05/22		87	%	30 - 130
			Phenanthrene	2007/05/22		102	%	30 - 130
			Pyrene	2007/05/22		83	%	30 - 130
			Quinoline	2007/05/22		87	%	30 - 130
			1,2-Dichlorobenzene	2007/05/22		78	%	30 - 130
			1,3-Dichlorobenzene	2007/05/22		76	%	30 - 130
			1,4-Dichlorobenzene	2007/05/22		72	%	30 - 130
			Hexachlorobenzene	2007/05/22		98	%	30 - 130
			Pentachlorobenzene	2007/05/22		98	%	30 - 130
			1,2,3,4-Tetrachlorobenzene	2007/05/22		92	%	30 - 130
			1,2,3,5-Tetrachlorobenzene	2007/05/22		88	%	30 - 130
			1,2,4,5-Tetrachlorobenzene	2007/05/22		104	%	30 - 130
			1,2,3-Trichlorobenzene	2007/05/22		93	%	30 - 130
			1,2,4-Trichlorobenzene	2007/05/22		90	%	30 - 130
			1,3,5-Trichlorobenzene	2007/05/22		91	%	30 - 130
			2-Chlorophenol	2007/05/22		72	%	10 - 130
			4-Chloro-3-Methylphenol	2007/05/22		85	%	10 - 130
			m/p-Cresol	2007/05/22		74	%	10 - 130
			o-Cresol	2007/05/22		67	%	10 - 130
			2,3-Dichlorophenol	2007/05/22		97	%	10 - 130
			2,4-Dichlorophenol	2007/05/22		77	%	10 - 130
			2,5-Dichlorophenol	2007/05/22		96	%	10 - 130
			2,6-Dichlorophenol	2007/05/22		91	%	10 - 130
			3,4-Dichlorophenol	2007/05/22		96	%	10 - 130
			3,5-Dichlorophenol	2007/05/22		122	%	10 - 130
			2,4-Dimethylphenol	2007/05/22		86	%	10 - 130
			2,4-Dinitrophenol	2007/05/22		0.00 (3)	%	10 - 130
			4,6-Dinitro-2-methylphenol	2007/05/22		17	%	10 - 130
			2-Nitrophenol	2007/05/22		82	%	10 - 130
			4-Nitrophenol	2007/05/22		61	%	10 - 130
			Pentachlorophenol	2007/05/22		25	%	10 - 130
			Phenol	2007/05/22		64	%	10 - 130
			2,3,4,5-Tetrachlorophenol	2007/05/22		74	%	10 - 130
			2,3,4,6-Tetrachlorophenol	2007/05/22		84	%	10 - 130
			2,3,5,6-Tetrachlorophenol	2007/05/22		54	%	10 - 130
			2,3,4-Trichlorophenol	2007/05/22		88	%	10 - 130
			2,3,5-Trichlorophenol	2007/05/22		91	%	10 - 130
			2,3,6-Trichlorophenol	2007/05/22		97	%	10 - 130
			2,4,5-Trichlorophenol	2007/05/22		84	%	10 - 130
			2,4,6-Trichlorophenol	2007/05/22		87	%	10 - 130
			3,4,5-Trichlorophenol	2007/05/22		90	%	10 - 130
			Benzyl butyl phthalate	2007/05/22		88	%	30 - 130
			Biphenyl	2007/05/22		84	%	30 - 130
			Bis(2-chloroethoxy)methane	2007/05/22		74	%	30 - 130
			Bis(2-chloroethyl)ether	2007/05/22		60	%	30 - 130
			Bis(2-chloroisopropyl)ether	2007/05/22		66	%	30 - 130
			Bis(2-ethylhexyl)phthalate	2007/05/22		82	%	30 - 130
			4-Bromophenyl phenyl ether	2007/05/22		96	%	30 - 130
			p-Chloroaniline	2007/05/22		64	%	30 - 130

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1241577	YZ	Spiked Blank	4-Chlorophenyl phenyl ether	2007/05/22		99	%	30 - 130
			3,3'-Dichlorobenzidine	2007/05/22		75	%	30 - 130
			Diethyl phthalate	2007/05/22		93	%	30 - 130
			Di-N-butyl phthalate	2007/05/22		105	%	30 - 130
			Di-N-octyl phthalate	2007/05/22		96	%	30 - 130
			2,4-Dinitrotoluene	2007/05/22		85	%	30 - 130
			2,6-Dinitrotoluene	2007/05/22		85	%	30 - 130
			Dimethyl phthalate	2007/05/22		93	%	30 - 130
			Hexachlorobutadiene	2007/05/22		97	%	30 - 130
			Hexachlorocyclopentadiene	2007/05/22		59	%	30 - 130
			Hexachloroethane	2007/05/22		60	%	30 - 130
			Isophorone	2007/05/22		75	%	30 - 130
			Nitrobenzene	2007/05/22		65	%	30 - 130
			Nitrosodiphenylamine/Diphenylamine	2007/05/22		95	%	30 - 130
			N-Nitroso-di-n-propylamine	2007/05/22		74	%	30 - 130
		Method Blank	2,4,6-Tribromophenol	2007/05/22		58	%	10 - 130
			2-Fluorobiphenyl	2007/05/22		102	%	30 - 130
			2-Fluorophenol	2007/05/22		63	%	10 - 130
			D14-Terphenyl	2007/05/22		88	%	30 - 130
			D5-Nitrobenzene	2007/05/22		63	%	30 - 130
			D5-Phenol	2007/05/22		64	%	10 - 130
			Acenaphthene	2007/05/22	<0.1		ug/g	
			Acenaphthylene	2007/05/22	<0.1		ug/g	
			Anthracene	2007/05/22	<0.1		ug/g	
			Benzo(a)anthracene	2007/05/22	<0.1		ug/g	
			Benzo(a)pyrene	2007/05/22	<0.1		ug/g	
			Benzo(b/j)fluoranthene	2007/05/22	<0.1		ug/g	
			Benzo(g,h,i)perylene	2007/05/22	<0.1		ug/g	
			Benzo(k)fluoranthene	2007/05/22	<0.1		ug/g	
			1-Chloronaphthalene	2007/05/22	<1		ug/g	
			2-Chloronaphthalene	2007/05/22	<0.1		ug/g	
			Chrysene	2007/05/22	<0.1		ug/g	
			Dibenz(a,h)anthracene	2007/05/22	<0.1		ug/g	
			Fluoranthene	2007/05/22	<0.1		ug/g	
			Fluorene	2007/05/22	<0.1		ug/g	
			Indeno(1,2,3-cd)pyrene	2007/05/22	<0.1		ug/g	
			1-Methylnaphthalene	2007/05/22	<0.1		ug/g	
			2-Methylnaphthalene	2007/05/22	<0.1		ug/g	
			Naphthalene	2007/05/22	<0.1		ug/g	
			Perylene	2007/05/22	<0.2		ug/g	
			Phenanthrene	2007/05/22	<0.1		ug/g	
			Pyrene	2007/05/22	<0.1		ug/g	
			Quinoline	2007/05/22	<0.2		ug/g	
			1,2-Dichlorobenzene	2007/05/22	<0.1		ug/g	
			1,3-Dichlorobenzene	2007/05/22	<0.1		ug/g	
			1,4-Dichlorobenzene	2007/05/22	<0.1		ug/g	
			Hexachlorobenzene	2007/05/22	<0.2		ug/g	
			Pentachlorobenzene	2007/05/22	<0.2		ug/g	
			1,2,3,4-Tetrachlorobenzene	2007/05/22	<0.2		ug/g	
			1,2,3,5-Tetrachlorobenzene	2007/05/22	<0.2		ug/g	
			1,2,4,5-Tetrachlorobenzene	2007/05/22	<0.2		ug/g	
			1,2,3-Trichlorobenzene	2007/05/22	<0.2		ug/g	
			1,2,4-Trichlorobenzene	2007/05/22	<0.2		ug/g	
			1,3,5-Trichlorobenzene	2007/05/22	<0.2		ug/g	
			2-Chlorophenol	2007/05/22	<0.1		ug/g	

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1241577	YZ	Method Blank	4-Chloro-3-Methylphenol	2007/05/22	<0.1		ug/g	
			m/p-Cresol	2007/05/22	<0.2		ug/g	
			o-Cresol	2007/05/22	<0.2		ug/g	
			2,3-Dichlorophenol	2007/05/22	<0.1		ug/g	
			2,4-Dichlorophenol	2007/05/22	<0.1		ug/g	
			2,5-Dichlorophenol	2007/05/22	<0.1		ug/g	
			2,6-Dichlorophenol	2007/05/22	<0.1		ug/g	
			3,4-Dichlorophenol	2007/05/22	<0.1		ug/g	
			3,5-Dichlorophenol	2007/05/22	<0.1		ug/g	
			2,4-Dimethylphenol	2007/05/22	<0.1		ug/g	
			2,4-Dinitrophenol	2007/05/22	<0.2		ug/g	
			4,6-Dinitro-2-methylphenol	2007/05/22	<0.5		ug/g	
			2-Nitrophenol	2007/05/22	<0.5		ug/g	
			4-Nitrophenol	2007/05/22	<0.5		ug/g	
			Pentachlorophenol	2007/05/22	<0.2		ug/g	
			Phenol	2007/05/22	<0.2		ug/g	
			2,3,4,5-Tetrachlorophenol	2007/05/22	<0.1		ug/g	
			2,3,4,6-Tetrachlorophenol	2007/05/22	<0.1		ug/g	
			2,3,5,6-Tetrachlorophenol	2007/05/22	<0.1		ug/g	
			2,3,4-Trichlorophenol	2007/05/22	<0.1		ug/g	
			2,3,5-Trichlorophenol	2007/05/22	<0.1		ug/g	
			2,3,6-Trichlorophenol	2007/05/22	<0.1		ug/g	
			2,4,5-Trichlorophenol	2007/05/22	<0.1		ug/g	
			2,4,6-Trichlorophenol	2007/05/22	<0.1		ug/g	
			3,4,5-Trichlorophenol	2007/05/22	<0.1		ug/g	
			Benzyl butyl phthalate	2007/05/22	<0.2		ug/g	
			Biphenyl	2007/05/22	<0.1		ug/g	
			Bis(2-chloroethoxy)methane	2007/05/22	<0.1		ug/g	
			Bis(2-chloroethyl)ether	2007/05/22	<0.2		ug/g	
			Bis(2-chloroisopropyl)ether	2007/05/22	<0.1		ug/g	
			Bis(2-ethylhexyl)phthalate	2007/05/22	<0.5		ug/g	
			4-Bromophenyl phenyl ether	2007/05/22	<0.1		ug/g	
			p-Chloroaniline	2007/05/22	<0.2		ug/g	
			4-Chlorophenyl phenyl ether	2007/05/22	<0.1		ug/g	
			3,3'-Dichlorobenzidine	2007/05/22	<0.5		ug/g	
			Diethyl phthalate	2007/05/22	<0.2		ug/g	
			Di-N-butyl phthalate	2007/05/22	<0.2		ug/g	
			Di-N-octyl phthalate	2007/05/22	<0.5		ug/g	
			2,4-Dinitrotoluene	2007/05/22	<0.1		ug/g	
			2,6-Dinitrotoluene	2007/05/22	<0.1		ug/g	
			Dimethyl phthalate	2007/05/22	<0.2		ug/g	
			Hexachlorobutadiene	2007/05/22	<0.1		ug/g	
			Hexachlorocyclopentadiene	2007/05/22	<0.5		ug/g	
			Hexachloroethane	2007/05/22	<0.1		ug/g	
			Isophorone	2007/05/22	<0.1		ug/g	
			Nitrobenzene	2007/05/22	<0.1		ug/g	
			Nitrosodiphenylamine/Diphenylamine	2007/05/22	<0.2		ug/g	
			N-Nitroso-di-n-propylamine	2007/05/22	<0.1		ug/g	
		RPD	Acenaphthene	2007/05/22	NC		%	40
			Acenaphthylene	2007/05/22	NC		%	40
			Anthracene	2007/05/22	NC		%	40
			Benzo(a)anthracene	2007/05/22	NC		%	40
			Benzo(a)pyrene	2007/05/22	NC		%	40
			Benzo(b/j)fluoranthene	2007/05/22	NC		%	40
			Benzo(g,h,i)perylene	2007/05/22	NC		%	40

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1241577	YZ	RPD	Benzo(k)fluoranthene	2007/05/22	NC		%	40
			1-Chloronaphthalene	2007/05/22	NC		%	40
			2-Chloronaphthalene	2007/05/22	NC		%	40
			Chrysene	2007/05/22	NC		%	40
			Dibenz(a,h)anthracene	2007/05/22	NC		%	40
			Fluoranthene	2007/05/22	NC		%	40
			Fluorene	2007/05/22	NC		%	40
			Indeno(1,2,3-cd)pyrene	2007/05/22	NC		%	40
			1-Methylnaphthalene	2007/05/22	NC		%	40
			2-Methylnaphthalene	2007/05/22	NC		%	40
			Naphthalene	2007/05/22	NC		%	40
			Perylene	2007/05/22	NC		%	40
			Phenanthrene	2007/05/22	NC		%	40
			Pyrene	2007/05/22	NC		%	40
			Quinoline	2007/05/22	NC		%	40
			1,2-Dichlorobenzene	2007/05/22	NC		%	40
			1,3-Dichlorobenzene	2007/05/22	NC		%	40
			1,4-Dichlorobenzene	2007/05/22	NC		%	40
			Hexachlorobenzene	2007/05/22	NC		%	40
			Pentachlorobenzene	2007/05/22	NC		%	40
			1,2,3,4-Tetrachlorobenzene	2007/05/22	NC		%	40
			1,2,3,5-Tetrachlorobenzene	2007/05/22	NC		%	40
			1,2,4,5-Tetrachlorobenzene	2007/05/22	NC		%	40
			1,2,3-Trichlorobenzene	2007/05/22	NC		%	40
			1,2,4-Trichlorobenzene	2007/05/22	NC		%	40
			1,3,5-Trichlorobenzene	2007/05/22	NC		%	40
			2-Chlorophenol	2007/05/22	NC		%	40
			4-Chloro-3-Methylphenol	2007/05/22	NC		%	40
			m/p-Cresol	2007/05/22	NC		%	40
			o-Cresol	2007/05/22	NC		%	40
			2,3-Dichlorophenol	2007/05/22	NC		%	40
			2,4-Dichlorophenol	2007/05/22	NC		%	40
			2,5-Dichlorophenol	2007/05/22	NC		%	40
			2,6-Dichlorophenol	2007/05/22	NC		%	40
			3,4-Dichlorophenol	2007/05/22	NC		%	40
			3,5-Dichlorophenol	2007/05/22	NC		%	40
			2,4-Dimethylphenol	2007/05/22	NC		%	40
			2,4-Dinitrophenol	2007/05/22	NC		%	40
			4,6-Dinitro-2-methylphenol	2007/05/22	NC		%	40
			2-Nitrophenol	2007/05/22	NC		%	40
			4-Nitrophenol	2007/05/22	NC		%	40
			Pentachlorophenol	2007/05/22	NC		%	40
			Phenol	2007/05/22	NC		%	40
			2,3,4,5-Tetrachlorophenol	2007/05/22	NC		%	40
			2,3,4,6-Tetrachlorophenol	2007/05/22	NC		%	40
			2,3,5,6-Tetrachlorophenol	2007/05/22	NC		%	40
			2,3,4-Trichlorophenol	2007/05/22	NC		%	40
			2,3,5-Trichlorophenol	2007/05/22	NC		%	40
			2,3,6-Trichlorophenol	2007/05/22	NC		%	40
			2,4,5-Trichlorophenol	2007/05/22	NC		%	40
			2,4,6-Trichlorophenol	2007/05/22	NC		%	40
			3,4,5-Trichlorophenol	2007/05/22	NC		%	40
			Benzyl butyl phthalate	2007/05/22	NC		%	40
			Biphenyl	2007/05/22	NC		%	40
			Bis(2-chloroethoxy)methane	2007/05/22	NC		%	40

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Canadian Seabed Research
Attention: Andrew Campbell
Client Project #: 676826
P.O. #:
Project name: WOLFE ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1241577	YZ	RPD	Bis(2-chloroethyl)ether	2007/05/22	NC		%	40
			Bis(2-chloroisopropyl)ether	2007/05/22	NC		%	40
			Bis(2-ethylhexyl)phthalate	2007/05/22	NC		%	40
			4-Bromophenyl phenyl ether	2007/05/22	NC		%	40
			p-Chloroaniline	2007/05/22	NC		%	40
			4-Chlorophenyl phenyl ether	2007/05/22	NC		%	40
			3,3'-Dichlorobenzidine	2007/05/22	NC		%	40
			Diethyl phthalate	2007/05/22	NC		%	40
			Di-N-butyl phthalate	2007/05/22	NC		%	40
			Di-N-octyl phthalate	2007/05/22	NC		%	40
			2,4-Dinitrotoluene	2007/05/22	NC		%	40
			2,6-Dinitrotoluene	2007/05/22	NC		%	40
			Dimethyl phthalate	2007/05/22	NC		%	40
			Hexachlorobutadiene	2007/05/22	NC		%	40
			Hexachlorocyclopentadiene	2007/05/22	NC		%	40
			Hexachloroethane	2007/05/22	NC		%	40
			Isophorone	2007/05/22	NC		%	40
			Nitrobenzene	2007/05/22	NC		%	40
			Nitrosodiphenylamine/Diphenylamine	2007/05/22	NC		%	50
			N-Nitroso-di-n-propylamine	2007/05/22	NC		%	40
1241620	DH	MATRIX SPIKE [S31540-01]	Hexachlorobenzene	2007/05/22		90	%	20 - 130
			Decachlorobiphenyl	2007/05/22		102	%	40 - 130
			2,4,5,6-Tetrachloro-m-xylene	2007/05/22		97	%	40 - 130
			a-BHC	2007/05/22		93	%	40 - 130
			a-Chlordane	2007/05/22		106	%	40 - 130
			Aldrin	2007/05/22		96	%	40 - 130
			b-BHC	2007/05/22		82	%	40 - 130
			d-BHC	2007/05/22		80	%	40 - 130
			Dieldrin	2007/05/22		102	%	40 - 130
			Endosulfan I	2007/05/22		100	%	40 - 130
			Endosulfan II	2007/05/22		95	%	40 - 130
			Endosulfan sulfate	2007/05/22		126	%	40 - 130
			Endrin	2007/05/22		96	%	40 - 130
			Endrin aldehyde	2007/05/22		70	%	40 - 130
			Endrin ketone	2007/05/22		107	%	40 - 130
			g-Chlordane	2007/05/22		104	%	40 - 130
			Heptachlor	2007/05/22		75	%	40 - 130
			Heptachlor epoxide	2007/05/22		108	%	40 - 130
			Lindane	2007/05/22		111	%	40 - 130
			Methoxychlor	2007/05/22		118	%	40 - 130
			Mirex	2007/05/22		106	%	40 - 130
			o,p-DDD	2007/05/22		106	%	40 - 130
			o,p-DDE	2007/05/22		102	%	40 - 130
			o,p-DDT	2007/05/22		118	%	40 - 130
			Octachlorostyrene	2007/05/22		103	%	N/A
			p,p-DDD	2007/05/22		114	%	40 - 130
			p,p-DDE	2007/05/22		104	%	40 - 130
			p,p-DDT	2007/05/22		97	%	40 - 130
		Spiked Blank	Hexachlorobenzene	2007/05/22		108	%	20 - 130
			Decachlorobiphenyl	2007/05/22		106	%	40 - 130
			2,4,5,6-Tetrachloro-m-xylene	2007/05/22		111	%	40 - 130
			a-BHC	2007/05/22		88	%	40 - 130
			a-Chlordane	2007/05/22		104	%	40 - 130
			Aldrin	2007/05/22		116	%	40 - 130

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Canadian Seabed Research
Attention: Andrew Campbell
Client Project #: 676826
P.O. #:
Project name: WOLFE ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1241620	DH	Spiked Blank	b-BHC	2007/05/22		78	%	40 - 130
			d-BHC	2007/05/22		94	%	40 - 130
			Dieldrin	2007/05/22		103	%	40 - 130
			Endosulfan I	2007/05/22		95	%	40 - 130
			Endosulfan II	2007/05/22		96	%	40 - 130
			Endosulfan sulfate	2007/05/22		98	%	40 - 130
			Endrin	2007/05/22		100	%	40 - 130
			Endrin aldehyde	2007/05/22		92	%	40 - 130
			Endrin ketone	2007/05/22		110	%	40 - 130
			g-Chlordane	2007/05/22		110	%	40 - 130
			Heptachlor	2007/05/22		124	%	40 - 130
			Heptachlor epoxide	2007/05/22		106	%	40 - 130
			Lindane	2007/05/22		106	%	40 - 130
			Methoxychlor	2007/05/22		109	%	40 - 130
			Mirex	2007/05/22		111	%	40 - 130
			o,p-DDD	2007/05/22		108	%	40 - 130
			o,p-DDE	2007/05/22		106	%	40 - 130
			o,p-DDT	2007/05/22		103	%	40 - 130
			Octachlorostyrene	2007/05/22		125	%	N/A
			p,p-DDD	2007/05/22		108	%	40 - 130
			p,p-DDE	2007/05/22		118	%	40 - 130
			p,p-DDT	2007/05/22		97	%	40 - 130
		RPD	Toxaphene	2007/05/22	NC		%	50
		Method Blank	Hexachlorobenzene	2007/05/22	<0.002		ug/g	
			Decachlorobiphenyl	2007/05/22		102	%	40 - 130
			2,4,5,6-Tetrachloro-m-xylene	2007/05/22		92	%	40 - 130
			a-BHC	2007/05/22	<0.002		ug/g	
			a-Chlordane	2007/05/22	<0.002		ug/g	
			Aldrin	2007/05/22	<0.002		ug/g	
			b-BHC	2007/05/22	<0.002		ug/g	
			Chlordane (Total)	2007/05/22	<0.002		ug/g	
			d-BHC	2007/05/22	<0.002		ug/g	
			DDT+ Metabolites	2007/05/22	<0.002		ug/g	
			Dieldrin	2007/05/22	<0.002		ug/g	
			Endosulfan I	2007/05/22	<0.002		ug/g	
			Endosulfan II	2007/05/22	<0.002		ug/g	
			Endosulfan sulfate	2007/05/22	<0.002		ug/g	
			Endrin	2007/05/22	<0.002		ug/g	
			Endrin aldehyde	2007/05/22	<0.002		ug/g	
			Endrin ketone	2007/05/22	<0.002		ug/g	
			g-Chlordane	2007/05/22	<0.002		ug/g	
			Heptachlor	2007/05/22	<0.002		ug/g	
			Heptachlor epoxide	2007/05/22	<0.002		ug/g	
			Lindane	2007/05/22	<0.002		ug/g	
			Methoxychlor	2007/05/22	<0.008		ug/g	
			Mirex	2007/05/22	<0.002		ug/g	
			o,p-DDD	2007/05/22	<0.002		ug/g	
			o,p-DDD + p,p-DDD	2007/05/22	<0.002		ug/g	
			o,p-DDE	2007/05/22	<0.002		ug/g	
			o,p-DDE + p,p-DDE	2007/05/22	<0.002		ug/g	
			o,p-DDT	2007/05/22	<0.002		ug/g	
			o,p-DDT + p,p-DDT	2007/05/22	<0.002		ug/g	
			Octachlorostyrene	2007/05/22	<0.002		ug/g	
			p,p-DDD	2007/05/22	<0.002		ug/g	
			p,p-DDE	2007/05/22	<0.002		ug/g	

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Canadian Seabed Research
Attention: Andrew Campbell
Client Project #: 676826
P.O. #:
Project name: WOLFE ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MA747234

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1241620	DH	Method Blank	p,p-DDT	2007/05/22	<0.002		ug/g	
			Total Endosulfan	2007/05/22	<0.002		ug/g	
			Toxaphene	2007/05/22	<0.08		ug/g	
		RPD [S31540-01]	Hexachlorobenzene	2007/05/22	NC		%	50
			a-BHC	2007/05/22	NC		%	50
			a-Chlordane	2007/05/22	NC		%	50
			Aldrin	2007/05/22	NC		%	50
			b-BHC	2007/05/22	NC		%	50
			Chlordane (Total)	2007/05/22	NC		%	50
			d-BHC	2007/05/22	NC		%	50
			DDT+ Metabolites	2007/05/22	NC		%	50
			Dieldrin	2007/05/22	NC		%	50
			Endosulfan I	2007/05/22	NC		%	50
			Endosulfan II	2007/05/22	NC		%	50
			Endosulfan sulfate	2007/05/22	NC		%	50
			Endrin	2007/05/22	NC		%	50
			Endrin aldehyde	2007/05/22	NC		%	50
			Endrin ketone	2007/05/22	NC		%	50
			g-Chlordane	2007/05/22	NC		%	50
			Heptachlor	2007/05/22	NC		%	50
			Heptachlor epoxide	2007/05/22	NC		%	50
			Lindane	2007/05/22	NC		%	50
			Methoxychlor	2007/05/22	NC		%	50
			Mirex	2007/05/22	NC		%	50
			o,p-DDD	2007/05/22	NC		%	50
			o,p-DDD + p,p-DDD	2007/05/22	NC		%	50
			o,p-DDE	2007/05/22	NC		%	50
			o,p-DDE + p,p-DDE	2007/05/22	NC		%	50
			o,p-DDT	2007/05/22	NC		%	50
			o,p-DDT + p,p-DDT	2007/05/22	NC		%	50
			Octachlorostyrene	2007/05/22	NC		%	50
			p,p-DDD	2007/05/22	NC		%	50
			p,p-DDE	2007/05/22	NC		%	50
			p,p-DDT	2007/05/22	NC		%	50
			Total Endosulfan	2007/05/22	NC		%	50
			Toxaphene	2007/05/22	NC		%	50
1246247	MC	MATRIX SPIKE	Acid Extractable Mercury (Hg)	2007/05/25		95	%	75 - 125
		QC STANDARD	Acid Extractable Mercury (Hg)	2007/05/25		111	%	75 - 125
		Method Blank	Acid Extractable Mercury (Hg)	2007/05/25	<0.05		ug/g	
		RPD	Acid Extractable Mercury (Hg)	2007/05/25	NC		%	35

N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample
(1) The recovery in the matrix spiked sample was not calculated. Because of the high concentration of this compound in the parent sample, the relative difference between the spiked and un-spiked concentrations is not sufficiently significant to permit a reliable recovery calculation.
(2) The recovery is above the upper control limit. This may represent a high bias in some results for this specific element.
(3) Please refer to General Comments page for specific clarification.

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Validation Signature Page

Maxxam Job #: A747234

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

CHRISTINA NERVO, Scientific Services

ALINA SEGAL, Manager Main Lab - Organics

TROY CARRIERE, B.Sc., C.Chem, Scientific Specialist

==========

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Your Project #: MA747234
Site:676826

Attention: SUB CONTRACTOR
MAXXAM ANALYTICS INC.
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2007/05/22

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A720306
Received: 2007/05/17, 10:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Particle Size by Sieve (Dry) (1)	6	N/A	2007/05/22	CAL SOP-00025	SSMA #47
Texture by Hydrometer	6	N/A	2007/05/22	CAL SOP-00033	HYDROMETER
Texture Class	6	N/A	2007/05/22	CAL SOP-00033	TRIANGLE

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Result indicates % of sample retained on the sieve.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

STACEY GIRVITZ,
Email: Stacey.Girvitz@MaxxamAnalytics.com
Phone# (403) 291-3077

==========

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For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A720306
Report Date: 2007/05/22

MAXXAM ANALYTICS INC.
Client Project #: MA747234
Site Reference: 676826
Sampler Initials:

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		F26785	F26786	F26787	F26788		
Sampling Date		2007/05/11	2007/05/11	2007/05/11	2007/05/11		
	Units	**SB-1-1 (S31537-01R)**	**SB-1-2 (S31538-01R)**	**SB-1-3 (S31539-01R)**	**SB-2-1 (S31541-01R)**	**RDL**	**QC Batch**
Physical Properties							
% sand by hydrometer	%	98	98	99	97	2	1631926
% silt by hydrometer	%	3	3	<2	4	2	1631926
Clay Content	%	<2	<2	<2	<2	2	1631926
Texture	N/A	SAND	SAND	SAND	SAND	N/A	1627465
Sieve - #4 (>4.75mm)	%	<0.2	<0.2	<0.2	1.1	0.2	1630781
Sieve - #10 (>2.00mm)	%	0.3	<0.2	<0.2	3.2	0.2	1630781
Sieve - #40 (>0.425mm)	%	0.3	<0.2	<0.2	3.8	0.2	1630781
Sieve - #200 (>0.075mm)	%	98.7	99.6	99.7	83.9	0.2	1630781
Sieve - Pan	%	0.7	0.3	0.3	8.0	0.2	1630781

RDL = Reportable Detection Limit

Maxxam ID		F26789	F26790		
Sampling Date		2007/05/11	2007/05/11		
	Units	**SB-2-2 (S31542-01R)**	**SB-2-3 (S31543-01R)**	**RDL**	**QC Batch**
Physical Properties					
% sand by hydrometer	%	97	97	2	1631926
% silt by hydrometer	%	3	2	2	1631926
Clay Content	%	<2	<2	2	1631926
Texture	N/A	SAND	SAND	N/A	1627465
Sieve - #4 (>4.75mm)	%	2.5	20.1	0.2	1630781
Sieve - #10 (>2.00mm)	%	7.2	7.3	0.2	1630781
Sieve - #40 (>0.425mm)	%	10.7	14.8	0.2	1630781
Sieve - #200 (>0.075mm)	%	76.2	55.6	0.2	1630781
Sieve - Pan	%	3.4	2.3	0.2	1630781

RDL = Reportable Detection Limit

Maxxam Job #: A720306
Report Date: 2007/05/22

MAXXAM ANALYTICS INC.
Client Project #: MA747234
Site Reference: 676826
Sampler Initials:

General Comments

Results relate only to the items tested.

MAXXAM ANALYTICS INC.
Attention: SUB CONTRACTOR
Client Project #: MA747234
P.O. #:
Site Reference: 676826

Quality Assurance Report

Maxxam Job Number: CA720306

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1630781	MG3	QC STANDARD	Sieve - #200 (>0.075mm)	2007/05/22		100	%	N/A
			Sieve - Pan	2007/05/22		100	%	N/A
		RPD [F26785-01]	Sieve - #4 (>4.75mm)	2007/05/22	NC		%	35
			Sieve - #10 (>2.00mm)	2007/05/22	NC		%	35
			Sieve - #40 (>0.425mm)	2007/05/22	NC		%	35
			Sieve - #200 (>0.075mm)	2007/05/22	0.6		%	35
			Sieve - Pan	2007/05/22	NC		%	35
1631926	GK	QC STANDARD	% sand by hydrometer	2007/05/22		92	%	75 - 125
			% silt by hydrometer	2007/05/22		113	%	75 - 125
			Clay Content	2007/05/22		91	%	75 - 125
		RPD	% sand by hydrometer	2007/05/22	24.1		%	35
			% silt by hydrometer	2007/05/22	18.0		%	35
			Clay Content	2007/05/22	5.6		%	35

N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference

Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone(403) 291-3077 FAX(403) 291-9468

Validation Signature Page

Maxxam Job #: A720306

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

LESLEY LEM,

==========

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