Windy Camp, Nunavut

Diesel Fuel Spill Assessment and Remediation

Submitted to:

Miramar Hope Bay Limited

Prepared by:

EBA Engineering Consultants Ltd.

July, 2004

EBA ENGINEERING
CONSULTANTS LTD.
eba

SPILL ASSESSMENT AND REMEDIATION
WINDY CAMP, NUNAVUT

Submitted to:

MIRAMAR HOPE BAY LIMITED

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1740065.003

July 2004

EXECUTIVE SUMMARY

OVERVIEW

EBA Engineering Consultants Ltd. (EBA) was retained by Miramar Hope Bay Limited (Miramar) to assess and implement remedial measures concerning hydrocarbon impacted soil and groundwater at Miramar's advanced exploration mining camp at Windy Lake, Nunavut (Windy Camp or "the site").

On or about Wednesday June 16, 2004, approximately 19,000 litres of diesel fuel was reported to have been spilled from a 50,000 litre above ground storage tank (AST) located on-site. Miramar personnel reported the spill to the 24-hr NWT Spill Report Line on June 16, 2004 and the incident was assigned **Spill Number 04-388**.

EBA personnel arrived on-site at approximately 6:30 p.m. on Thursday June 17, 2004. Upon arrival, a site walkover was conducted to assess the nature and extent of the spill incident.

The total surface area affected by the spill on both land and water, was estimated to be in the order of 3,500 m^2.

Containment trenches were excavated to redirect natural surface runoff away from the impacted area, or in the case of impacted runoff, into the containment area on the frozen lake surface.

Hydrocarbon-absorbent booms were installed on the surface of the lake ice and around melt-water pools containing diesel at locations where possible containment breaches could occur. Following installation, the entire perimeter of the containment area was surrounded by absorbent booms. The approximate linear distance of the perimeter of the area was 90 m. The impacted area was located along the shoreline directly down-slope of the storage tanks where the spill incident had occurred. This was done due to displacement of fuel partially by industrial waste lay-down area, which in turn delayed a possible direct flow into Windy Lake.

Free diesel fuel was manually recovered using absorbent pads placed on the surface of the melt-water pools. Coffee cans were also used to skim the diesel fuel from the surface of the melt-water pools and the recovered product was placed into 205 litre barrels for future treatment and

re-use. An estimated 6,700 litres of diesel fuel was collected and stored onsite in barrels and tanks. Miramar personnel indicated that this recovered product will be filtered and re-used.

In addition, approximately 1,000 absorbent pads and 25 absorbent booms were incinerated. Some free product was manually removed from the surface of the melt-water on the ice prior to incineration. Approximately 1,550 litres of diesel fuel was recovered in this manner and stored onsite in above ground tanks. Thus, in total, approximately 8,250 litres of free diesel fuel was recovered by physical means.

Given the remote nature of the site and the need to respond quickly and effectively, EBA recommended that for diesel fuel which had moved down-gradient onto the surface of the melting lake ice, that in situ incineration be employed to eliminate the risk of fuel oil spreading further into the lake water and potentially impacting Windy Lake and its associated aquatic habitats.

Authorization for incineration was obtained from the on-site regulatory authorities before the operation was initiated. The selection of an appropriate time to initiate incineration was critical to the success of the operation due to the nature of the activity. In particular, wind velocity and direction were key factors that needed to be considered.

At 12:30 a.m. on June 20, 2004, when environmental conditions were considered to be ideal for the operation, the free diesel fuel present on the surface of melt-pools on the lake ice was ignited. The approximate volume of free diesel fuel burned off by in situ incineration was estimated to be in the range of 2,750 to 5,500 litres.

In the upland area, hydrocarbon impacted soil was stripped from sites where hydrocarbon odours and staining were detected. The soil was stripped using a D5 CAT Dozer to an approximate depth of 10 cm below surface grade where frozen ground was encountered.

The land treatment area (LTA) was constructed by borrowing material within the footprint of the stripped area. The construction of the berms for the LTA required the removal of an additional 20 cm (approximate) of soil. The LTA was lined using 60 mil high density polyethylene (HDPE) liner underlain by native soil consisting of silty sand. The surficial area of the land treatment area (inside corners used for measurement) is 600 m^2. Approximately 100 m^3 of hydrocarbon-impacted soil was placed into the LTA.

A surface runoff interception trench was also constructed to reduce the risk of hydrocarbon migration from any residual source areas into Windy Lake. Approximately 25,000 litres of water was pumped from the interception trench, firebreak and various pools and puddles throughout the impacted and processed and pumped to the camp's RBC sewage treatment facility located to the northwest of the impacted site.

Water samples were collected from the camp tap, lake inlet and lake outlet for monitoring purposes. All samples returned laboratory analysis results below detection limits and applicable guidelines.

RECOMMENDATIONS

Soil within the LTA should be cleared of all large objects, segregated based on the date the material was placed in the LTA, and periodically aerated to promote remediation.

All water captured in the catch basins installed at the southeast corner of the interception trench should be removed and treated prior to discharge.

Diesel fuel-impacted soil located immediately below the tank was not excavated due to the proximity of the tank and the concern that, by removing the material, the soil stability could be compromised, resulting in damage to the tank. Therefore, it is recommended that this area be dewatered using a series of diversion trenches installed upslope to control surface runoff through the area. The impacted soil in this area should also be covered with waterproof material prior to snowfall to further limit melt water migration through the soil. These methods are recommended until such time as the soil can be safely excavated and placed into the LTA for remediation.

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1.0 INTRODUCTION

1.1 General

EBA Engineering Consultants Ltd. (EBA) was retained by Miramar Hope Bay Limited (Miramar) to assess and implement remedial measures concerning hydrocarbon impacted soil and groundwater present at Miramar's advanced exploration mining camp at Windy Lake, Nunavut (Windy Camp or "the site").

A request from Mr. J. Stard, Manager of Miramar, on June 16, 2004, was made to EBA to dispatch personnel to respond to a diesel fuel spill at Windy Camp. On June 17, 2004, EBA mobilized staff to site to assess the situation and initiate remedial and mitigation activities as required.

The work conducted was conducted consistent with the terms of EBA's Environmental Report – General Conditions, provided in Appendix A.

1.2 Site Location and Description

Windy Camp is situated in western Nunavut, east of Bathurst Inlet within the Hope Bay Greenstone Belt (Figure 1). It is located within the zone of continuous permafrost at approximately 68^{o}03'99.1" north and 106^{o}36'55.6" east.

The site consists of an approximate 100-person camp constructed for support services directed towards exploration activities. The camp is situated on the slope of the eastern bank of Windy Lake. The lakeshore is approximately 50 m distant toward the west and the regional gradient surrounding the camp ranges from approximately 2% to 20% towards the west. The camp is approximately 400 metres (m) in length from north to south and 100 m wide from east to west, covering an area of 40,000 m^2. The camp facilities are located on natural tundra underlain by a 10 cm organic layer overlying silty-sand parent material. In high traffic areas, no organic material was present.

A site plan depicting the layout of the camp is presented in Figure 2. The northern portion of the camp consists of a series of tents and wooden structures that comprise the sleeping and eating quarters. The camp has the capacity to accommodate approximately 100 personnel. Located immediately south of the sleeping quarters are a series of tents

and wooden structures used for offices and a core logging area. Three above-ground storage tanks (AST), containing diesel fuel, are located south of the offices and have a capacity of 50,000 and 70,000 litres. A barrel storage area (approximately 200 drums of Jet-B fuel) is located to the northeast (upslope) of the ASTs. A second area, southeast of the ASTs, is used for storage of approximately 80 barrels of gasoline.

The camp is serviced by a RBC sewage treatment facility which is located northwest of the site. The discharge from this unit is directed to an upland area situated north of the camp.

Solid wastes generate from the camp are segregated with food and paper products being incinerated within the camp incinerator. Wood and metal wastes are stored in the southern-most area of the camp. The wood is periodically burned.

Potable water is obtained from Windy Lake with the freshwater intake being located directly west of the camp buildings.

1.3 Description of Spill Incident

On or about Wednesday June 16, 2004 approximately 19,000 litres of diesel fuel was reported to have been spilled from a 50,000 litre above ground storage tank (AST) located on-site. Miramar personnel reported the spill incident to the 24-hour NWT Spill Report Line on June 16, 2004, and the incident was assigned Spill Number 04-388. A copy of the spill report is presented in Appendix B.

1.4 Site Conditions at Time of Arrival

EBA personnel (Messrs. Brent Murphy and Steven Taylor) arrived on-site at approximately 6:30 p.m. on Thursday June 17, 2004. Upon arrival, a site walkover was conducted to assess the spill incident. The following observations were made:

- Booms, containment barriers and absorbent pads had been installed on the frozen lake surface around melt-water pools.
- Approximately 0.25 cm to 6 cm of free diesel fuel was present on the nearshore ice surface and melt-water pools of Windy Lake, within the area of the containment booms.

- The thickest area of diesel fuel was located on the southwest side of the containment area (approximately 10% of the total area) as a result of wind blowing from the northeast.
- Solid lake ice was present around and below the melt-water pools containing free diesel fuel.
- Containment booms were installed at the edge of the ice, surrounding the diesel fuel.
- Barrels and plastic basins, full of diesel/water saturated absorbent pads, were located on the ice and shoreline surrounding the containment area.
- Several drainage interception trenches, approximately 10 cm deep, were excavated on the bank with absorbent booms installed within.
- Soil with diesel fuel odours was found to be present, extending from the 50,000 litre AST to the shoreline area located down-gradient.
- The spill pathway appeared to pass directly below a collection of stored debris and drums located on-site.
- Water with noticeable hydrocarbon sheen was observed draining (at a rate of less that one litre per minute) into the lake outside of the containment area.
- Surface runoff up-gradient of the spill was migrating though the spill area.

1.5 Scope of Reporting

This report provides a summary of the work completed at the site and a description of remedial and mitigation measures implemented.

Soil quality analytical test results for benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations were compared to Canadian Council of Ministers of the Environment Guidelines for parkland usage (CCME 2001). Concentrations of petroleum hydrocarbon (PHC) fractions F1 to F4 in soil were compared to (CCME Canada-Wide Standards for Petroleum Hydrocarbons in Soil (CWS) for coarse-grained soil in parkland areas (CCME 2001).

Water quality analytical test results for BTEX concentrations were compared to CCME Canadian Environmental Quality Guidelines for the Protection of Freshwater Aquatic Life, (CCME 2001). Although no guidelines currently exist in Nunavut for PHC concentrations in water, for reference purposes, the concentrations of PHC F1 and F2 were analyzed to confirm hydrocarbon removal during water treatment.

2.0 INITIAL RESPONSE

2.1 Spill Area Site Survey

The site was surveyed on June 17, 2004 by EBA and Miramar to determine the surficial area of diesel fuel impacts on both land and water.

2.1.1 Land

The surveyed boundary for the impacted area on the land was based upon EBA's visual identification of diesel fuel within the soil or surface drainage network. The estimated surficial area of hydrocarbon impacts on land was 2,400 m^2 as illustrated in Figure 3.

2.1.2 Water

The boundary of the impacted area of melt-water located on the surface of the Windy Lake ice was delineated by the location of the booms and containment barriers installed by Miramar personnel. The surficial area of melt-water on the ice surface was estimated at 1,100 m^2.

The total area, both on land and water affected by the spill was estimated to be 3,500 m^2.

2.2 Runoff Containment Trench Construction

A runoff containment trench was excavated using a Kubota 320 to redirect surface runoff into the diesel fuel containment area that extended onto the lake ice surface. The location of the trench is shown on Figure 3.

2.3 Watershed Diversion

Hand-excavated trenches were installed up-gradient of the spill location to re-direct surface runoff away from the diesel-impacted area therefore preventing further transport of diesel fuel onto the still frozen lake ice..

3.0 PRIMARY REMEDIATION

3.1 Installation of Containment Booms in Melt-water pools

Hydrocarbon-absorbent booms were installed around diesel fuel-impacted melt-water pools located on the surface of the nearshore lake ice in areas where possible containment breaches could occur. Following installation, the entire perimeter of the containment area was surrounded by absorbent booms. The approximate linear distance of the perimeter of the area was 90 m. The impacted area was located along the shoreline directly down-slope of the storage tanks where the spill incident had occurred.

3.2 Skimming of Free Diesel Fuel

Free diesel fuel was manually recovered using absorbent pads that were placed on the surface of the melt-water pools. Once the pads became saturated, they were wrung out to remove excess fluids and then re-used. Coffee cans were also used to skim free product from the surface of the melt-water pools and the recovered product was placed into 205 litre barrels for future treatment and re-use. The volumes of the contents of the barrels were measured and the data are presented in Table 1.

Approximately 6,700 litres of free diesel fuel was collected and stored on-site in barrels and tanks. Miramar personnel had indicated that the recovered fuel will be filtered and re-used.

3.3 In Situ Incineration of Diesel Fuel in Melt-Water Pools

Given the remote nature of the site and the need to respond quickly and effectively, EBA recommended that in situ incineration be employed on the lake ice surface to eliminate the risk of diesel fuel spreading further into the lake water and potentially impacting the lake and its associated aquatic habitats.

Prior to implementing in situ incineration, a firebreak was excavated along the adjacent shoreline to a depth of 10 cm, where frozen ground was encountered, to prevent potential flame migration up the slope. Two soil samples were collect and stored in laboratory-

provided Teflon-lined jars, placed in coolers and maintained at 4^{o}C until shipment to Enviro-Test Laboratories (ETL) in Edmonton, Alberta, for hydrocarbon analysis to determine if hydrocarbon migration had occurred into the frozen ground. The requested analytical suite included benzene, toluene, ethylbenzene, xylenes (BTEX) and petroleum hydrocarbon fractions F1 to F4 (PHC F1 to F4). Shipment was completed via Air North using accepted Chain of Custody protocols. The locations of the firebreak and sample points are shown in Figure 3.

Table 1 summarizes the soil analytical results. Laboratory analytical results for soil samples A1 and A2 recorded BTEX and PHC F1 to F4 concentrations below detection limits and applicable guidelines. Complete laboratory analytical reports and results are presented in Appendix C.

At 12:30 a.m. on June 20, 2004, after obtaining authorization from the on-site regulatory authorities, and when the environmental conditions were observed to be ideal, the free diesel fuel present in the contained melt-water pool area located on the frozen lake surface was ignited. The initial point of ignition was located along the northwest perimeter of the contained area. Following ignition, the flames swept over the entire containment area at a rate of approximately 125 cm per minute and terminated at the western corner, by the shoreline, at 1:30 a.m. on June 20, 2004. Based on the estimated surveyed area (1,100 m^2) and the observed heating oil thickness (0.25 to 0.5 cm average) in the melt-water on the lake ice surface, the approximate volume of free diesel fuel product that was consumed during incineration was estimated at between 2,750 to 5,500 litres.

4.0 SECONDARY REMEDIATION

4.1 Incineration of Used Hydrocarbon-Absorbent Material

All used absorbent materials were hand squeezed to remove diesel fuel and water and incinerated in barrels. Approximately 1,000 absorbent pads and 25 absorbent booms were incinerated. All free diesel fuel was physically removed prior to incineration. Approximately 1,550 litres of diesel fuel was recovered and stored onsite in above ground tanks. Thus, in total, approximately 8,250 litres of free diesel fuel was recovered by physical means.

4.2 Use of Skimmer Unit for Residual Diesel Fuel Removal

A skimmer unit was transported to site and an attempt was made to recover residual diesel fuel following the in situ incineration operation. However, as a result of the successful incineration activity, only hydrocarbon sheens remained on the surface of the melt-water pools. These residual sheens appeared to originate from the shoreline and, the skimmer unit was ineffective at removing these very thin (<1μ) sheens. Hydrocarbon-absorbent booms were installed in the melt-water pools, along the shoreline to contain the migration of sheens.

4.3 Removal of Impacted Soil and Landfarm Construction

The area topographically down-gradient of the storage tank was the primary location of diesel-related hydrocarbon impacts to the soil.

The hydrocarbon-impacted soil was stripped from the area where hydrocarbon odours and staining were detected. The soil was stripped using a D5 CAT Dozer to an approximate depth of 10 cm below surface grade where frozen ground was encountered.

Soil with noticeable hydrocarbon impacts surrounding the tanks was not excavated due to the proximity of the tanks and the concern that, by removing the material, the soil stability would be compromised and result in damage to the tank. A composite soil sample from the tank farm area was collected from four sub-sample locations, randomly chosen, to determine the amount of residual hydrocarbons in the vicinity of the tanks. A soil sample was also collected from a location where the diesel fuel on the soil appeared to be most concentrated (worst case2). The samples were submitted, as described in Section 3.3, for laboratory analysis of BTEX and PHC F1 to F4 concentrations.

Table 2 summarizes the soil analytical results. As expected, soil sample worst case2 recorded hydrocarbon concentrations significantly higher than applicable guidelines. However, the composite soil sample for the tank area recorded hydrocarbon concentrations lower than applicable guidelines.

Following removal of the hydrocarbon-impacted soil, soil samples (B1 to B6) were collected at six locations, shown on Figure 3, throughout the area and submitted for laboratory analysis of BTEX and PHC F1 to F4, as described in Section 3.3.

Table 2 summarizes the soil analytical results. Laboratory analytical results for soil sample B2 recorded a PHC F3 concentration higher than the applicable guideline. Soil samples B1 and B3 to B6 recorded BTEX and PHC F1 to F4 concentrations lower than applicable guidelines. Complete laboratory analytical reports and results are provided as Appendix C.

After the collection of samples B1 to B6, the berms for the land treatment area (LTA) were constructed by borrowing material within the footprint of the previously stripped area. The construction of the berms required the removal of an additional 20 cm (approximate) of soil. Once the berms were constructed, six soil point samples (C1 to C6) were collected and submitted to ETL, as described in Section 3.3, for analysis of BTEX and PHC F1 to PHC F4 concentrations. One composite soil sample was collected from the six sub samples location (C1 to C6) and submitted to ETL, as above, for grain size analysis.

Table 2 summarizes the soil analytical results. Laboratory analytical results for soil sample C4 recorded PHC F2 concentration higher than the applicable guideline (150 mg/kg). Soil samples C1 to C3, C5 and C6 recorded BTEX and PHC F1 to F4 concentrations below applicable guidelines. Grain size analysis of the composite soil sample indicate that the material is coarse-grained. Complete laboratory analytical reports and results are provided as Appendix C.

The LTA was constructed using a 60 mil high density polyethylene (HDPE) liner underlain by native soil consisting of silty sand. The LTA was surveyed on June 27, 2004 and is illustrated Figure 3. An as-built diagram is provided as Figure 4. The surficial area of the land treatment area (inside corners used for measurement) is 600 m^2.

The estimated volume of soil placed into the LTA was 100 m^3.

4.4 Completion of Surface Runoff Interception Trench

A surface runoff interception trench was constructed to reduce the risk of hydrocarbon migration from any residual source areas into Windy Lake. The trench was excavated to a depth of approximately 1 m, lined on the down-gradient wall and base with hydrocarbon resistant high-density polyethylene (HDPE) liner and backfilled with the excavated material. A catch basin was installed at the southeast corner. The basin, consisting of a 205 litre drum with holes drilled along the sides, will allow for water to be pumped out, deterring further migration of hydrocarbons by creating a flow gradient towards the basin and the removal of potentially impacted water. An as-built diagram of trench construction is provided as Figure 5.

4.5 Water Treatment and Discharge

Approximately 25,000 litres of water was pumped from the interception trench, firebreak and various pools and puddles throughout the impacted area and processed using an FII Oil Absorption System supplied by Terry Ruddy Sales of Edmonton, Alberta. The water was first pumped into 1,400 litre capacity basins for coarse sediment removal then processed though the system. Following treatment, the water was pumped to the camp's RBC sewage treatment facility located to the northwest of the site. The discharge from this unit was directed to an area situated north of the camp.

To verify the effective removal of hydrocarbons from system operation, water samples were collected daily during. Water samples were collected prior to and following treatment. All water collected samples were in laboratory-provided containers, stored in coolers at 4^{o}C and transported by courier to ETL, for analysis. The requested analytical suite included BTEX, PHC F1 and PHC F2 concentrations.

Table 3 summarizes the process water analytical results. The results indicate that BTEX, PHC F1 and F2 concentrations, already below the applicable guidelines prior to treatment, had been further reduced by processing through the treatment unit. Complete laboratory analytical reports and results are provided in Appendix C.

All spent media from the water treatment unit was placed within the LTA as recommended by the supplier.

4.6 Lake Inlet and Outlet Sampling

Water samples were collected and stored, as described in Section 4.5, from the lake inlet and outlet for monitoring purposes. The samples were analyzed for BTEX, PHC F1 and F2 concentrations. Both samples returned laboratory analysis below detection limits and applicable guidelines. Complete laboratory analytical reports and results are provided in Appendix C.

4.7 Camp Tap Water Sampling

Water samples were collected and stored, as described in Section 4.5, from the kitchen tap and analyzed for BTEX, PHC F1 and F2 concentrations to determine if hydrocarbons are present in the camp water supply. All tap water samples returned laboratory analytical result below detection limits and applicable guidelines. Complete laboratory analytical reports and results are provided in Appendix C.

5.0 CONCLUSIONS AND DISCUSSION

As indicated in the spill report submitted by Miramar (spill # 04-388) approximately 19,000 litres of hydrocarbons were released on or about June 16, 2004-07-13.

Approximately 8,250 litres of free diesel fuel was recovered using mechanical means. Between 2,750 and 5,500 litres of diesel fuel was successfully burned off by *in situ* incineration.

A land treatment area (LTA) was constructed for the treatment of approximately 100 m^3 of hydrocarbon-impacted soil.

Approximately 25,000 litres of water was collected from various locations, treated using an activated carbon system and discharged to the camp grey water discharge.

6.0 RECOMMENDED ON-GOING REMEDIATION AND MONITORING

A remediation action plan should be developed to address the following issues:

6.1 Mechanical Aeration of Soil Within Landfarm

Soil within the LTA should be cleared of all large objects, segregated based on the date the material was placed in the LTA, and periodically aerated to promote remediation.

6.2 Continued Treatment of Contained Water

All water captured in the catch basins installed at the southeast corner of the interception trench should be removed and treated prior to discharge.

6.3 Containment of Remaining Impacted Soil Surrounding the ASTs

Diesel fuel-impacted soil located immediately below the tank was not excavated due to the proximity of the tank and the concern that, by removing the material, the soil stability could be compromised, resulting in damage to the tank. Therefore, it is recommended that this area be dewatered using a series of diversion trenches installed upslope to control surface runoff through the area. The impacted soil in this area should also be covered with waterproof material prior to snowfall to further limit melt water migration through the soil. These methods are recommended until such time as the soil can be safely excavated and placed into the LTA for remediation.

7.0 CLOSURE

We trust this report meets your present requirements. Should you have any questions or comments, please do not hesitate to contact the undersigned directly.

EBA Engineering Consultants Ltd.

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/dlm

PERMIT TO PRACTICE
EBA ENGINEERING CONSULTANTS LTD.

Signature _____

Date _____

PERMIT NUMBER: P245
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

TABLES

FIGURES

PHOTOGRAPHS

APPENDIX A

EBA TERMS AND CONDITIONS

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

1.0 USE OF REPORT

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report, and the assessments and recommendations contained in it, are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

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

2.0 LIMITATIONS OF REPORT

This report is based solely on the conditions that existed on-site at the time of EBA's investigation. The client, and any other parties using this report with the express written consent of the client and EBA, acknowledge that conditions affecting the environmental assessment of the site can vary with time and that the conclusions and recommendations set out in this report are time sensitive.

The client, and any other party using this report with the express written consent of the client and EBA, also acknowledge that the conclusions and recommendations set out in this report are based on limited observations and testing on the subject site, and that conditions may vary across the site which, in turn, could affect the conclusions and recommendations made.

The client acknowledges that EBA is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the client.

2.1 Information Provided to EBA by Others

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

3.0 LIMITATION OF LIABILITY

The client recognizes that property containing contaminants and hazardous wastes creates a high risk of claims brought by third parties arising out of the presence of those materials. In consideration of these risks, and in consideration of EBA providing the services requested, the client agrees that EBA's liability to the client, with respect to any issues relating to contaminants or other hazardous wastes located on the subject site shall be limited as follows:

(1) With respect to any claims brought against EBA by the client arising out of the provision or failure to provide services hereunder shall be limited to the amount of fees paid by the client to EBA under this Agreement, whether the action is based on breach of contract or tort;

(2) With respect to claims brought by third parties arising out of the presence of contaminants or hazardous wastes on the subject site, the client agrees to indemnify, defend and hold harmless EBA from and against any and all claim or claims, action or actions, demands, damages, penalties, fines, losses, costs and expenses of every nature and kind whatsoever, including solicitor-client costs, arising or alleged to arise either in whole or part out of services provided by EBA, whether the claim be brought against EBA for breach of contract or tort.

4.0 JOB SITE SAFETY

EBA is only responsible for the activities of its employees on the job site and is not responsible for the supervision of any other persons whatsoever. The presence of EBA personnel on-site shall not be construed in any way to relieve the client or any other persons on-site from their responsibility for job site safety.

5.0 DISCLOSURE OF INFORMATION BY CLIENT

The client agrees to fully cooperate with EBA with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The client acknowledges that in order for EBA to properly provide the service, EBA is relying upon the full disclosure and accuracy of any such information.

6.0 STANDARD OF CARE

Services performed by EBA for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Engineering judgment has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

7.0 EMERGENCY PROCEDURES

The client undertakes to inform EBA of all hazardous conditions, or possible hazardous conditions which are known to it. The client recognizes that the activities of EBA may uncover previously unknown hazardous materials or conditions and that such discovery may result in the necessity to undertake emergency procedures to protect EBA employees, other persons and the environment. These procedures may involve additional costs outside of any budgets previously agreed upon. The client agrees to pay EBA for any expenses incurred as a result of such discoveries and to compensate EBA through payment of additional fees and expenses for time spent by EBA to deal with the consequences of such discoveries.

8.0 NOTIFICATION OF AUTHORITIES

The client acknowledges that in certain instances the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by EBA in its reasonably exercised discretion.

9.0 OWNERSHIP OF INSTRUMENTS OF SERVICE

The client acknowledges that all reports, plans, and data generated by EBA during the performance of the work and other documents prepared by EBA are considered its professional work product and shall remain the copyright property of EBA.

10.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by EBA shall be the original documents for record and working purposes and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by EBA shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

The Client recognizes and agrees that electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

APPENDIX B

NWT SPILL REPORT

APPENDIX C

LABORATORY ANALYTICAL REPORTS
(ENVIRO-TEST LABORATORIES)