PHASE II ENVIRONMENTAL SITE ASSESSMENTS
Sites HJ035, HJ036 & HJ041
Kluane Lake Area, YT

0201-97-12447.1

Submitted to:

Indian and Northern Affairs Canada

March, 1998

eba

EBA Engineering Consultants Ltd.

PHASE II ENVIRONMENTAL SITE ASSESSMENTS
SITES HJ035, HJ036 & HJ041
KLUANE LAKE AREA, YUKON

submitted to:

Department of Indian Affairs and Northern Development

prepared by:

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

0201-97-12447.1

March, 1998

Calcite Business Centre
Unit 6, 151 Industrial Road, Whitehorse, YT Y1A 2V3
•Phone (403) 668-3068 • FAX (403) 668-4349•

EXECUTIVE SUMMARY

EBA Engineering Consultants Ltd. (EBA) conducted environmental assessments at three locations along the Alaska Highway. The sites were identified as Kloo Lake Site HJ035 (Pump Station D of the Canol No 4 Pipeline), Silver City Site HJ036 (Kluane Maintenance Camp) and Duke River Site HJ041 (Duke River Maintenance Camp).

The common objectives of these investigations were to determine if contaminants were present on the sites, and if so the likelihood that the contaminants are migrating off-site.

Phase I Environmental Assessments were completed on each of the sites during the 1996 field season. Phase II Environmental Site Assessments were developed based on the findings of the Phase I report.

The field work was conducted in August 1997. Areas of concern at each of the three sites were identified from the Phase I information and additional information which came to light during the Phase II investigation. Each area of concern was investigated using a staged approach; first a determination was made regarding the potential for contaminants to be in the area; if there appeared to be a potential for contaminants then field testing of the area was used to try and detect the presence of contaminants. If field testing show positive results or if it appears the area had a high potential for contamination then a soil and water sampling program was conducted.

Field testing was used to focus the drilling and sampling programs to areas which had positive field test result, indicating a potential contaminant source(s).

Soil and water samples were forwarded to an accredited laboratory for analysis of petroleum hydrocarbons, polynuclear aromatic hydrocarbons, polychlorinated biphenyls and organo-chlorine pesticides, based on location and background information.

Laboratory results show that elevated levels of Light Extractable Petroleum Hydrocarbons were found in one ground water monitoring well near the Duke River Maintenance Camp, and only trace levels of Heavy Extractable Petroleum Hydrocarbons and Light Extractable Petroleum Hydrocarbons were found in one soil sample from the same site. In the remaining samples all

contaminants were well below accepted guidelines or standards and in most cases were at or below the lower detection limits of the laboratory analytical equipment.

It is recommended that ground water be retested at the Duke River site prior to making any determination for future action.

TABLE OF CONTENTS

eba

1.0 INTRODUCTION

On August 25th, 1997, EBA Engineering Consultants Ltd. (EBA) received approval to proceed with the assessment of three sites along the Alaska Highway. The sites listed as Sites HJ035, HJ036 and HJ041 were located close to the current alignment of the Alaska highway near Kloo Lake, Silver City and Duke River, as indicated in Figure 1. The approval was based on a proposal submitted by EBA, to the Waste Management Program of Indian and Northern Affairs Canada, dated July 18, 1997.

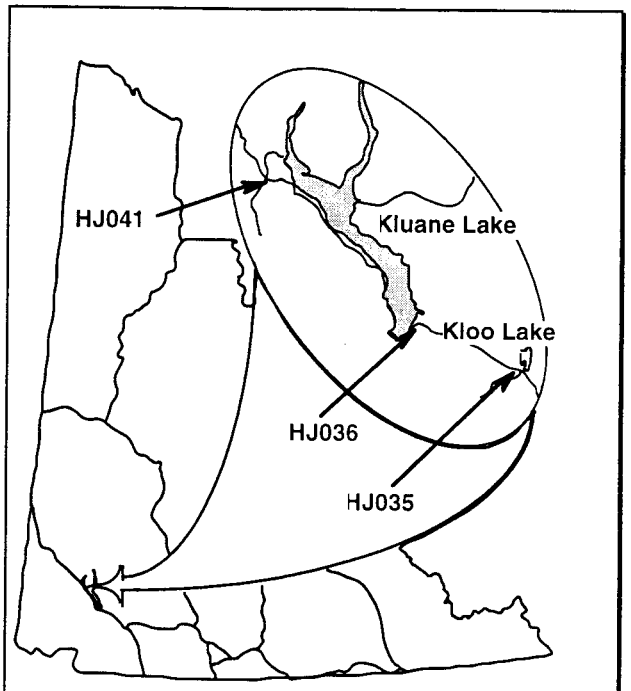


Figure 1: Site Locations

The proposal was for Phase II Environmental Site Assessments of the three sites based on information obtained in the Phase I investigations. Field screening at each of the various locations was used to focus drilling and sampling programs.

The common objectives of these investigations were to determine if contaminants were present on the sites, and if so the likelihood that the contaminants are migrating off-site.

The Arctic Environmental Strategy - Action on Waste program initiated a series of environmental investigations at various sites throughout the Yukon. These sites were generally associated with past mineral exploration, industrial or military operations. Of the three sites covered by this report, HJ036 and HJ041 were associated with the construction and maintenance of the Alaska Highway, and HJ035 was the site of Pump Station D on the Canol No. 4 Pipeline.

The tasks completed for this assessment were as follows:

- information obtained in the Phase I environmental site assessments was reviewed and sampling programs were developed;

- meetings were held with the Kluane First Nation regarding the proposed work and the individual sites;
- sites located within the First Nation's traditional territory were visited with members of the First Nation
- the sampling program was adjusted for each location which had been identified as potentially containing contaminants;
- a soil and groundwater sampling program was completed for locations identified as having potential contaminants;
- following the return of laboratory analytical results and follow-up investigations a draft report was prepared for technical review;
- the final report was be prepared following review of the draft report by Waste Management Staff.

STANDARDS APPLIED

Canadian Council of Ministers of the Environment (CCME) guidelines were used for numerical comparison in the assessment of the level of contaminants found in the samples analyzed. Where CCME guidelines were not established the Yukon's Contaminated Sites Regulations (CSR) have been used for numerical comparison purposes, recognizing that these regulations do not apply to Federal land. The park land use category was selected, for comparison with analytical values, for samples from all sites.

The CCME has no guidelines established for hydrocarbons, therefore CSR standards for Volatile Petroleum Hydrocarbons (VPH), Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) were used.

There are no guideline levels established in either the CCME or CSR for VPH, LEPH or HEPH compounds in water.

EQUIPMENT LIMITATIONS

For all sites field screening was used to discover indicators of contaminants. For each location investigated at the three sites field screening was done according to the methodologies described in the sections titled *Field Work Program*. In general field screening involved testing of soil vapours using a Photovac MircoTIP® photoionization detector (PID) with a 10.6 eV lamp. The PID readings were used as indicators of volatile components within the vapours found in the soil.

This instrument provides a digital readout of the level of ionizable components of the vapour in parts per million (ppm). The PID readings provided a semi-quantitative comparison of the vapour levels which were used as an indication of contamination.

For all sites it should be noted that while the Photoionization Detector does provide a cost effective screening tool, it does not assure that all contamination will be detected. This instrument detects only ionizable components of vapours and does not differentiate between the compounds it is detecting. It was used as a field screening tool to provide a semi-quantitative comparison of volatile constituents of the soil vapours. This was used as an indication of contamination. Higher readings were interpreted as indicating a greater potential for contaminants.

While the primary contaminants of concern at these sites generally have components that are ionizable, and therefore may be detected by the unit, it is recognized that not all contaminants will produce ionizable vapours and that the 10.6 eV lamp is particularly suited to a specific range of ionizable vapours. Non-volatile substances such a as metals are not be detected by the PID and, therefore, other indicators such as visible disturbances and stressed vegetation were also used as indicators of possible contamination.

ORGANIZATION OF INFORMATION

The information for each of the three sites investigate is presented in the following sections. This information is arranged by site and within each site there is generally more than one location where a potential concern was investigated. These individual locations are number according to the sequence they were examined. For example 41-5 was the fifth location investigated at site HJ041 near the Duke River.

The sections dealing with interpretations, risk assessment and recommendations deal with all sites and are presented at the end of the report following the information on the individual sites.

2.0 SITE HJ035

This site is identified as Canol No. 4 Pump Station D near the intersection of the Jarvis River and the Alaska Highway (Figure 2). The geographical co-ordinates are 60° 55′ 39″ N and 137° 55′ 30″ W the corresponding UTM co-ordinates are northing 6 758 000 metres and easting 341 500 meters.

2.1 METHODOLOGY

2.1.1 REVIEW OF EXISTING DATA

A review of the existing data is provided in the Phase I report. This includes a reviews of available information (mainly from the Bisset, 1995 report) as well as airphotos, geological and topographical maps. Numerous interviews were recorded in the aforementioned report, where clarification was required additional interviews were conducted.

From the information obtained it appears that construction on Pump Station D was started but was not completed and the station was not put into service. The Phase I report identified the location of the buildings and an area of possible vegetation stress as being potential contamination sites.

2.1.2 FIELD WORK PROGRAM

The field program was structured to first conduct field testing on-site and then determine if a more extensive sampling and laboratory analytical program was required. The field testing was conducted to determine if there was any evidence of contamination in the vicinity of locations identified in the Phase I work. This consisted of extracting vapour samples and testing using a photoionization detector (PID).

Photographs taken during the Phase I site work showed that the remnants of a building were clearly visible as shown in Photographs 1 & 2 (Appendix C). A previous interview with Mr. Ernie Kelly (EBA, 1997) had suggested that the pump station was under construction but was never used. This information was regarded as being accurate although there was uncertainty as to the use of chemicals and petroleum products on or near the site.

The field program was conducted on August 26, 1997. The PID was used extensively around the remnants of the buildings and to test vapours from any piping structures and containment structures in and around the building foundations as well as the top 300 mm of soil adjacent to the outer edges of the foundations.

2.1.1 LABORATORY PROGRAM

No evidence was found that would indicate that potential contaminants were present at this site. Based on the observations and field testing completed on the site it was decided that a laboratory analytical program would not be conducted at this site. Resources which had been identified for the site investigation were used for additional sample collection and analysis for site HJ041.

2.2 RESULTS OF STUDY

2.2.1 SITE DESCRIPTION

The site is located near the Alaska Highway approximately 3 km west of the Jarvis River. The site is visible from the Alaska Highway, but was difficult to locate because of revegetation on the site.

The entire site is relatively flat, sloping northeast toward the Alaska Highway. The organic layer appears to have been removed when the site was originally established, coarse gravels remain exposed where revegetation has not yet occurred. As shown in Figure 2, Jarvis Creek is located to the south and east of the site

The pipeline is reported (Bisset, 1995) to have operated from November 23, 1943 to the mid 1950's and to have been dismantled in 1962, Pump Station D (which was reportedly never in operation) is located adjacent to the former alignment of the Alaska Highway (Figure 3), the current alignment is approximately 200 m away. The remains of concrete building foundations are still visible as shown in Photographs #1 & 2.

2.2.2 SITE CONDITIONS

The physical boundaries of the site seen in the 1944 airphoto (Figure 3) are still visible due to the slow revegetation process. Revegetation is occurring throughout the site and stressed vegetation was not encountered.

There were no observed areas of staining or anomalies that might indicate the presence of contaminants. There were small amounts of building debris and remnants of wooden structures scattered throughout the site. These were not considered to be posing any environmental hazard.

2.2.3 SUBSURFACE SOIL CONDITIONS

The site appeared to have been stripped of all organic material at the time of the construction of the buildings, the remaining gravel, sand and silt material showed no signs of contamination. The PID was used to test vapour samples throughout the site particularly from piping structures and adjacent to building foundations. PID readings were all at or near the lower detection limits of the unit. This is considered to be indicative of an absence of contaminant vapours.

The site which was identified as having possible vegetation stress in the Phase I portion of the work was an area where the organic layer had been removed. This area is shown in Figure 3, and is in the process of revegetating. No signs of stress were noted during the site investigation and no anomalies were found using the PID.

2.2.4 GROUND WATER CONDITIONS

Surface water was not encountered on the site. Liquid was found in a vertical pipe, 20 cm in diameter, which extended 3 m below the surface of the concrete foundation. There was not enough to sample, however, the liquid remaining on the sampler did not have a noticeable odour, was not flammable and did not produce a change in the PID readings. PID readings taken from within the pipe were 2.7 ppm.

The remaining pipes (6 cm diameter) which extended into the foundation were dry or plugged with debris.

2.2.5 CONTAMINATION CONSIDERATIONS

Field testing and observations made on the site gave no indication of the presence of contaminants or potential contaminant sources.

3.0 SITE HJ036

This site was identified as Kluane Maintenance Camp 180 at Mile 1056.0 on the Alaska Highway (Figure 4). The camp was removed in 1957 and realignment of the Alaska Highway placed the current highway through the center of the former camp site. The geographic co-ordinates are 61° 00′ 47″ N and 138° 25′ 00″ E, the corresponding UTM co-ordinates are northing 6 766 700 m N and easting 639 600 m.

3.1 METHODOLOGY

3.1.1 REVIEW OF EXISTING DATA

The review of the existing data is provided in the Phase I report. In summary this included a review of available information mainly from the Bisset, 1995 and Edey, 1976 reports, available airphotos, geological and topographical maps.

The Phase I work had identified two areas (Locations 36-1 & 36-2, Figure 5) of potential contamination at the former maintenance camp. 36-1 was a site where waste was reportedly burned and 36-2 was a site where drums had been stored (Edey, 1976) A solid waste disposal site (36-3) was later identified, this site had remained active until the spring of 1997.

The location of a second solid waste disposal site (36-4, Figure 5) was identified during the field work conducted in August. This site, identified as Location 36-4 on Figure 5 was investigated on August 26, 1997.

During the field work program on 36-3, information was provided by a local resident regarding a third site that was reported to have been used to bury waste materials at the time the maintenance camp was decommissioned. The investigation of this site is detailed in the EBA, 1998, report Phase II Environmental Site Assessment, Site HJ045

The Kluane Maintenance Camp site is located within the traditional territory of the Kluane First Nation. A meeting was arranged for August 25, 1997, with the Chief and Council prior to conducting the field work on this site. An offer to have members of the community observe the field work was accepted and four people participated in the field work conducted on August 26, 1997, near the former maintenance camp location (36-1 & 2).

3.1.2 FIELD WORK PROGRAM

Location 36-1 & 36-2 were combined for purposes of conducting the field screening to determine if any evidence of contamination could be found. The field program was structured to first conduct field testing on-site and then decide if a more extensive sampling and laboratory analytical program would be implemented.

Scrap metal, drums and parts of heavy equipment are scattered throughout the site. A metal detector was used to assist in locating the extent of the buried material and any large quantities of ferrous material. At least one end had been removed from each of the drums and containers observed at the site.

A sampling pattern was established which targeted areas with concentrations of debris or where the wastes included drums or other containers (Figure 6). Field testing was conducted with the PID to determine if there was any evidence of contamination in the vicinity of the targeted sample points. This consisted of extracting soil vapour samples from the top 150 mm of soil and testing using a photoionization detector (PID).

Location 36-3 was a known waste disposal site. During a site visit in the fall of 1997, when the site was still active, the location of the trench and some of the contents were observed. At that time wastes observed were mainly domestic wastes with some wood debris and auto parts. Information provided by local residents suggested that the sight had been active since the close of the maintenance camp and was used for a variety of solid wastes. A determination was made to investigate this site by drilling three boreholes and installing at least one ground water monitoring well if ground water was encountered.

The drilling program was conducted on August 28, 1997, using a truck mounted CME 75 drill rig. Two boreholes (12447-11 & 12447-12) were advanced with a solid shaft auger, one borehole (12447-13) was advanced with a hollow shaft auger. Soil samples were collected at 1.0 to 1.5 m depth intervals from each borehole.

Samples were collected from the auger flights for 12447-11 & 12447-12. Samples from 12447-13 were collected using a 7.5 cm split spoon sampler. All samples were placed in plastic bags until vapour tests were completed for all samples from an individual borehole. Samples with the highest PID readings were selected and placed in glass jars for laboratory analysis. Soil samples

representative of the different strata encountered were selected for standard soil classification analysis.

12447-13 which was located between the waste disposal trenches and Kluane Lake was anticipated to be downgradient from the location, in relation to the ground water flow. 12447-13 was advanced to 11.5 m without encountering ground water, therefore, a ground water monitoring well was not installed at this location and no ground water samples were collected.

3.1.1 LABORATORY PROGRAM

The soil samples selected for analysis were frozen prior to being shipped in a cooler, to Enviro•Test Laboratories (ETL) in Edmonton which is an accredited lab under the *Canadian Association for Environmental Analytical Laboratories*.

Soil samples selected for laboratory analysis were tested for Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Petroleum Hydrocarbons (VPH), Light Extractable Petroleum Hydrocarbons (LEPH), Heavy Extractable Petroleum Hydrocarbons (HEPH), Polycyclic Aromatic Hydrocarbons (PAHs), Organo-Chlorine Pesticides and Polychlorinated Biphenyls (PCBs). Analytical protocols are detailed following the Enviro•Test Laboratories *Chemical Analysis Report* in Appendix A.

The selection of samples was based on field observations, and field tests of contaminant vapours in the soil.

No ground water samples were collected from this site.

3.2 RESULTS OF STUDY

3.2.1 SITE DESCRIPTION

Test pitting and boreholes in the area revealed that the soil strata is predominantly medium to coarse gravel with some sand and silt. The areas closer to Kluane Lake tended to have more sand and silt, while borehole 12447-13 at Location #3 contained coarse gravel and cobbles down to the end of the borehole at 11.5 m.

The original camp site was covered during realignment of the Alaska Highway, the old highway is still visible to the north and east of the original camp location as shown in Figure 5. The office of Trans North Helicopters and associated buildings are located across the Alaska Highway from Location 36-1 & 2. Local access roads are adjacent to Location 36- 3 and Location 36- 4 with a residence approximately 100 m to the south of 36-4.

Locations 36-1 & 2 were adjacent to the Alaska Highway (Figure 5) west of Topham Creek, near where the camp was originally located. Realignment of the Alaska Highway covered most of the area occupied by the maintenance camp. Location 36-1 & 2 are situated in the drainage ditch along the south side of the Alaska Highway. Alluvial silts have been deposited over most of the location, especially where the silt has been trapped by scrap metal. Topham Creek, which drains into Kluane Lake, runs along the eastern end of this location.

Location 36-3 is about 1 km from the original maintenance camp on the north side of the Alaska Highway, between the highway and a local access road. The area was levelled with gravel and sand fill being placed over the solid waste material in the summer of 1997.

Location 36-4 is next to a local access road approximately three km from the maintenance camp. The area is level, covered with dense willows with some open grassed areas and shows no signs of any recent activity.

Location 36-5 is shown on Figure 5 for reference purposes. As mentioned, the investigation of this site is covered under separate cover in EBA report Phase II Environmental Site Assessment, Site HJ045.

3.2.2 SITE CONDITIONS

Locations 36-1 & 2 are part of the drainage ditch on the south side of the Alaska Highway. Scrap metal, vehicle hulks and wood debris are evident throughout the location. Drums and smaller (20 L) containers were evident throughout the site. These appeared to have been emptied prior to disposal as most have one end removed.

There was no visible evidence of contamination found, although a small amount (200 mL) of what appeared to be lubricating grease, was found under one of the containers. Revegetation has occurred over most of the area.

Location 36-3 was restored in the summer of 1997, it is now level with coarse gravel and sand covering the site. Only traces of solid wastes remain in the treed area surrounding the site. The site itself has not revegetated and is clearly visible from the adjacent local access road.

Location 36-4 showed no evidence of contamination. The waste material found was of domestic origin. No drums or chemical containers were found at this location or the surrounding area.

There was no evidence of stressed vegetation or contaminant staining at any of the locations.

3.2.3 SUBSURFACE SOIL CONDITIONS

The results of PID testing for 36-1 & 2 are presented in Table 1, the sample locations are shown in Figure 6. All PID readings were at or near the lower detection limit for the unit. This indicates a lack of ionizable vapours in the near surface soils, suggesting the absence of volatile contaminants.

The results of field testing at 36-3 are presented in Table 1 and laboratory analysis are presented in Table 2, for the three boreholes drilled. PID readings for all soil samples indicate low levels of ionizable vapours were found in the samples collected. This is indicative of low levels of contaminants in the soils. These results are substantiated by laboratory analytical results which show all parameters to be near or below the lower detection limits.

3.2.4 GROUND WATER CONDITIONS

Ground water was not encountered in any of the boreholes drilled at 36-3. Borehole 12447-13 which was the deepest was terminated at 11.5 m in dry coarse gravel.

3.2.5 CONTAMINATION CONSIDERATIONS

Field testing at 36-1 & 2 did not detect the presence of contaminants in the vicinity of the original camp site. Similar results were obtained during a subsequent investigation on the north side of the Alaska Highway (EBA 1998) identified as 36-5 in Figure 5.

Laboratory analysis of soils samples collected at 36-3 found only a trace of Heavy Extractable Petroleum Hydrocarbons (HEPH) in one sample collected at the 4.0 to 4.5 m level. All other parameters were at or below the detection limit.

4.0 SITE HJ041

This site is identified as the Duke River Maintenance Camp 200 at mile 1098.0 of the Alaska Highway (Figure 4), this site was also known as the Bates and Rogers camp at Duke River.

The former camp was located on the south side of the Alaska Highway east of the Duke River. The geographic co-ordinates of the camp are 61° 22 minutes 13 seconds N. and 139 degrees 8 minutes 27 seconds E, the corresponding UTM co-ordinates are northing 6 805 300 m and easting 599 400 m.

Six separate locations were investigated in relation to this site. They are located throughout the area known as Duke Meadows and the surrounding treed areas as shown in Figure 8.

4.1 METHODOLOGY

4.1.1 REVIEW OF EXISTING DATA

The Phase I investigation (EBA, 1997) reported that, in 1943, there was a sawmill at the Duke River (apparently on the north side of the Alaska Highway) and that there was a Bates & Rogers Co. camp on the south bank of the Duke River. This camp was later used as a maintenance camp for the Alaska Highway. The camp was reported (AES information) to have at one time been comprised of 26 buildings. By 1947, airphotos showed that only 10 buildings remained at the camp.

There were numerous reports of wastes being buried in Duke Meadows (Bisset, 1995), most of the reports mention that this included canned food. No mention of drums or chemical waste was made in the reports reviewed. The information reported was mainly from First Nation members who had lived in the area.

Prior to the start of the field work a meeting was held with the Kluane First Nation Chief and some Council members to discuss the work and identify members who knew the area. On-site meetings were also arranged to identify individual locations and to provide an opportunity for First Nation members to observe the field work.

4.1.2 FIELD WORK PROGRAM

Following the meeting with the Kluane First Nation, an on-site meeting was held with Agnes Johnson and Joe Bruneau to identify various locations where wastes were known to have been found.

The field program was designed to first review all locations identified and then conduct field testing on-site to determine if a more extensive sampling and laboratory analytical program would be implemented. Field testing involved testing soil vapours using a photoionization detector (PID). As work progressed other locations were remembered which were not originally identified. These sites were visited and field testing was conducted where necessary. Locations are numbered in the order that they were visited, all locations are marked on Figure 8.

Location 41-1 was the area where wastes including cans of food had been reportedly buried about the time the camp was closed. There was evidence of wastes on the ground surface, and partially buried (Figure 9). A drilling program was designed for the site to investigate the subsurface soils and if ground water was encountered to install a monitoring well.

The drilling program was conducted on August 27, 1997, using a truck mounted CME 75 drill rig. Two boreholes (12447-5 & 12447-6) were advanced with a solid shaft auger, one borehole (MW12447-7) was advanced with a hollow stem auger. Soil samples were collected every 1.0 to 1.5 m from each borehole.

Samples were collected from the auger flights for 12447-5 & 12447-6. Samples from MW12447-7 were collected using a 7.5 cm split spoon sampler. Samples were placed in plastic bags until vapour tests were completed for all samples from an individual borehole. Samples with the highest PID readings were selected and placed in glass jars for laboratory analysis. Soil samples representative of the different strata encountered were selected for standard soil classification analysis.

Anticipating ground water movement to be in the general direction of the Duke River, approximately 400 m to the northwest, MW12447-7 was located between the waste disposal area and the Duke River. Based on previous boreholes, ground water was anticipated at 4.5 m. MW12447-7 was advanced to 5.5 m to allow the placement of the ground water monitoring well. Details of the well installation are presented with the borehole logs in Appendix B. The well was allowed to stabilize and was then purged of approximately twice the calculated volume of

accumulated water. The well was then allowed to recovered for 12 hours before sampling. A separate bailer was used for each monitoring well, to avoid cross contamination.
Location 41-2 was adjacent to an abandoned wagon trail. The site is in dense brush and has poor access. There was no evidence of ground disturbance and all material was on the surface. therefore, soil vapour sampling was concentrated in the top 1.3 m of soil. A 7.62 cm hollow shaft hand auger power by a Hilti Model 92 rotary hammer drill was used to drill 4 holes to a maximum depth of 1 m. Soil samples were collected with a 2.2 cm sampling tube from undisturbed soil below the auger tip. Soil samples were placed in plastic bags and all samples were tested using the PID to determine levels of ionizable vapours.

Location 41-3 was the waste disposal site identified by in the Edey 1976 report. This site appeared to be of a more recent vintage based on the wastes observed. Wastes were scattered on the surface and no evidence was found to indicate ground disturbance, therefore, a soil vapour investigation was concentrated on the near surface soil. The PID was used to sample soil vapours throughout the site. Based on observations and the field test results no drilling or soil sampling was undertaken.

Location 41-4 is along the east bank of the Duke River as shown in Figure 8. There were drums and containers throughout the site. These had generally been crushed or had one end removed. There were no signs of staining or stressed vegetation. Based on the mature spruce and the lack of evidence of ground disturbance soil vapour testing was used to investigate the near surface soils. No drilling or soil sampling for laboratory analysis was undertaken for this location.

Location 41-5 appeared to be a site similar to 41-1 where waste material had been buried. The site showed evidence of disturbance with heavy equipment and there were a variety of wastes in the area (Figure 11). A drilling program was designed for the site to investigate the subsurface soils and if ground water was encountered to install a monitoring well.

The drilling program was conducted on August 27, 1997, using a truck mounted CME 75 drill rig. Two boreholes (12447-8 & 12447-9) were advanced with a solid shaft auger, one borehole (MW12447-10) was advanced with a hollow shaft auger. Soil samples were collected every 1.0 to 1.5 m from each borehole.

Samples were collected from the auger flights for 12447-8 & 12447-9. Samples from MW12447-10 were collected using a 7.5 cm split spoon sampler. Samples were placed in plastic bags until vapour tests were completed for all samples from an individual borehole. Samples with

the highest PID readings were selected and placed in glass jars for laboratory analysis. Soil samples representative of the different strata encountered were selected for standard soil classification analysis.

Anticipating ground water movement to be in the general direction of the Duke River, approximately 450 m to the west, MW12447-10 was located between the waste disposal area and the Duke River. Based on previous boreholes, ground water was anticipated at 4 m. MW12447-10 was advanced to 4.5 m to allow the placement of the ground water monitoring well. Details of the well installation are presented with the borehole logs in Appendix B. The well was allowed to stabilize and was then purged of approximately twice the calculated volume of accumulated water. The well was then allowed to recovered for 12 hours before sampling. To avoid cross contamination a separate bailer was used for each monitoring well.

Location 41-6 is a small area adjacent to the former camp site. The small amount of waste at this location appeared to be associated with vehicle parts and repairs. There were no signs of staining in the area and no signs of stressed vegetation. No sampling was conducted at this location.

4.1.1 LABORATORY PROGRAM

The soil samples selected for analysis were frozen prior to being shipped in a cooler, to Enviro•Test Laboratories (ETL) in Edmonton which is an accredited lab under the *Canadian Association for Environmental Analytical Laboratories*.

The selection of soil samples was based on field observations, and field tests of contaminant vapours in the soil. Soil samples selected for laboratory analysis from Location 41-1 and 41-5 were tested for Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Petroleum Hydrocarbons (VPH), Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH). Soil samples from Location 41-5 were also tested for Polycyclic Aromatic Hydrocarbons (PAHs). Analytical protocols are detailed following the Enviro•Test Laboratories *Chemical Analysis Report* in Appendix A.

Ground water samples were collected the last day of the field program, they were packed in ice in a cooler and then refrigerated prior to shipping in a cooler to the analytical laboratory. Ground water samples from locations 41-1 and 41-5 were tested for BTEX, VPH, LEPH, HEPH, PAHs and organo-chlorine pesticides.

4.2 RESULTS OF STUDY

4.2.1 SITE DESCRIPTION

The current alignment of the Alaska Highway crossing of the Duke River is approximately 500 m to the north of the former camp site. Numerous trails cross the site on both sides of the Alaska Highway.

Locations 41-1 & 41-5 are adjacent to a local access road from the Alaska Highway, as shown in Figure 8. They are on the opposite side of the highway from the former camp and are located in the area known as Duke Meadows, which is part of the Duke River flood plain. The area is generally flat with grasses and sage, interspersed with small stands of immature aspen. Soils at both locations were sand with fine to coarse gravel and a trace of silt. The grain size distribution curves for selected soil samples from 12447-5 , MW12447-7 and 12447-9 are presented in Appendix A.

Location 41-2 is within the stand of willows and spruce at the edge of the flood plain (Figure 7) as shown in Photographs # 3 & 4. Soils encountered in the top 400 mm were sand with some silt changing to silt at approximately 1 m. There are no roads close to this location and the Duke River is nearly 1 km to the northwest.

Location 41-3 is the area identified in the Edey, 1976 report. This area was indicated as a waste disposal site about 0.4 km from the maintenance camp. It is situated at the toe of a 15 m embankment, the area is flat with willow and immature spruce throughout the site. Standing water appeared at several points along the access trail leading from the original camp to this location.

Location 41-4 is on the eastern bank of the Duke River, west of the former camp site. As shown in Photograph # 5 the river has eroded part of this location and empty drums and other scrap metal are being removed from the site by the erosion process. The area is covered with willow and mature spruce. Soils are coarse gravels and sand with a trace of silt.

Location 41-6 is adjacent to the former camp site and next to a borrow pit located a few metres to the southeast. The area is small with wastes appearing to have been left on the surface as shown in Photograph # 6.

4.2.2 SITE CONDITIONS

Location 41-1 has a small amount of visible waste on the surface and in the adjacent stand of immature aspen. Partially buried waste is also evident in an area that runs parallel to the local access road, as shown in Figure 8. There are no buildings in this area and the Duke River is approximately 400 m to the northwest.

Location 41-2 does not appear to be an area of long term waste disposal. While there are numerous drums, pails and a variety of other containers, it appeared they had been used to manufacture other items such as culverts and wood burning stoves. Most of the containers had been cut apart and partially assembled items were found on the site. Spruce and willows are growing between the material suggesting that surplus materials may simply have been discarded amongst the trees.

Location 41-3 was an area identified by Edey, 1976. The material present was mainly wood debris (Photographs # 7 & 8) with some small cans and other miscellaneous wastes which are scattered on the surface of the ground. Based on the extent of deterioration of the wood it is suspected that this site was not from the same era as the maintenance camp. Trails accessing the site were impassable by vehicle due to standing water. The area is overgrown with willow and immature spruce. The surrounding area has been used for cutting firewood, this does not appear to have disturbed the actual waste disposal site.

Wastes found at Location 41-4 were mainly drums, wire and scrap metal. These were scattered along the eastern bank of the Duke River and approximately 40 m into the wooded area along the bank. The was no evidence of wastes being buried at this location although the Duke River appears to be eroding the western edge of the site and wastes are evident along the bank (Photograph # 5). There was no visible staining and no vegetation stress was observed. The site is accessible by vehicle from the original camp.

Location 41-5 was similar to 41-1, a small amount of visible waste which was mainly cans small containers and china was observed on the surface in a stand of immature aspen next to the disturbed area (Figure 11). Partially buried waste was evident in and around the rectangular shaped disturbed area which was clearly visible by the difference in vegetation from the surrounding undisturbed area. This location was approximately 150 m from the local access road, there were no buildings nearby and the Duke River is approximately 450 m to the west.

Location 41-6 appeared to have been used as an area where vehicle parts were left. The material is scattered on the surface of the ground and there was no evidence of material being buried. A borrow pit is located a few metres to the southeast of this location, wastes had not been deposited in this excavation. The site is accessible by vehicle, although due to its small size is not easily visible from the adjacent trail.

4.2.3 SUBSURFACE SOIL CONDITIONS

The results of the field testing of soil samples collected from 41-1 are presented in Table 3. These results indicate very low levels of ionizable vapours in the samples tested. The laboratory analysis of the soil samples collected from the boreholes drilled at Location 41-1 indicate only traces of LEPHs and HEPHs in the samples collected from the 2.5 to 3.0 m level from Borehole MW12447-7. All other hydrocarbon and PAH parameters analyzed indicate that the levels of these contaminants were at or below the detection limit as shown in Table 4.

The results of field tests conducted for soil samples collected using the hand auger at location 41-2 are presented in Table 3. There was no evidence of contamination found and all PID results were at or near the lower detection limit. This means that there were only low levels of ionizable vapours in the top metre of soil, indicating a absence of contaminants.

The results of field tests conducted on soil vapours using the PID at location 41-3 were all near the lower detection limit of the unit. There was no evidence of contamination found and the PID results did not indicate the presence of contaminants in the surface soil.

The results of field tests conducted on soil vapours using the PID at location 41-4 were all near the lower detection limit of the unit. There was no evidence of contamination found and the PID results did not indicate the presence of contaminants in the surface soil.

The laboratory analysis of the soil samples collected from the boreholes drilled at Location 41-5 indicate all hydrocarbon parameters tested were at or below the detection limit as shown in Table 4.

Field testing was not conducted at location 41-6 and soil samples were not collected. The only concern identified at this site was the presence of asbestos brake pads which were scattered on the ground surface.

4.2.4 GROUND WATER CONDITIONS

The monitoring well installations details and static water levels are presented in the chart on the right. The static water level was measured at 3.77 m below ground surface at MW12447-7, location 41-1 and was at 4.10 m below ground surface at MW12447-10, location 41-5.

Monitoring Well Installations		
	Site 41-1 MW12447-7	Site 41-5 MW12447-10
Height of Casing above Ground level	0.45 m	0.53 m
Depth of Casing below Ground level	5.52 m	4.47 m
Static Water Level below Ground level	4.10 m	3.77 m

Ground water was tested at location 41-1 and 41-5. Analytical results presented in Table 5 show that 410 ppm of LEPH was found in the ground water at 41-1 borehole MW12447-7. All other parameters tested at both sites were below detection limits. An attempt to resample the ground water was made on October 23, 1997. At that time insufficient water was obtained to allow reanalyses of either site.

4.2.5 CONTAMINATION CONSIDERATIONS

Field testing did not detect the presence of contaminants in the vicinity of any of the locations identified as being possible waste disposal sites. Field observations combined with the field testing results indicate that significant quantities of contaminants were not likely disposed of at locations 41-2, 41-3, 41-4 or 41-6. Asbestos lined brake pads are scattered on the ground surface at location 41-6.

Laboratory analysis of soils samples collected at Location 41-1 found only a trace of Heavy Extractable Petroleum Hydrocarbons (HEPH) and Light Extractable Petroleum Hydrocarbons (LEPH) in one sample collected at the 2.5 to 3.0 m level. All other parameters were at or below the detection limit. No contamination was found in soil samples submitted from location 41-5.

The water sample from Borehole MW12447-7 at Location 41-1 shows elevated levels of LEPH. Currently there are not guideline levels for LEPH established in the CCME criteria and the Yukon Contaminated Sites Regulations do not have standards established for this parameter. Guidelines for Canadian Drinking Water Quality, (Health and Welfare Canada, 1996) indicate that hydrocarbons in water cause aesthetic concerns at levels well below levels which cause human health concerns. This means that for drinking water, the presence of hydrocarbons would cause avoidance of the water before health concerns occur.

5.1 INTERPRETATIONS

Site HJ035, Pump Station D on the Canol No. 4 Pipeline

There was no evidence of waste disposal sites and no evidence of potential contamination was found on this site. No samples were submitted for chemical analysis from site HJ035.

Site HJ036, the Kluane Maintenance Camp

Field testing conducted at Location 36-1 & 2 gave no indication of ionizable vapours indicative of certain contaminants such as hydrocarbon compounds. Similar results were obtained in an investigation of the area adjacent to this location, on the north side of the Alaska Highway (EBA, 1998).

Laboratory analysis does not give any indication of the presence of any significant levels of hydrocarbons, organo-chlorine pesticides or PCBs at Location 36-3.

Site HJ041 the Duke River Maintenance Camp

The analysis of water from location 41-1 indicates the presence of Light Extractable Petroleum Hydrocarbons (LEPH) at 410 parts per million in the ground water. While guidelines do not exist for levels of LEPH in water, this level of contamination suggests a contamination source may exist in the area. PID readings did not indicate elevated levels of vapours in the soil, however soil samples at the ground water level are not tested because of the water saturation interfering with the PID.

The chromatography for the water sample from MW12447-7 shows spikes in the C15 to C17 range which indicates a heavier oil product as opposed to a lighter hydrocarbon such as gasoline. Pipelines have been located in the area since the mid 1940s and have been used for the transfer of a variety of fuels. Historically there has been documentation indicating significant losses of product from these pipelines, which would be a possible source of contamination.

The grain size distribution curves for soils from boreholes 12447-5 and MW12447-7 show a high percentage of sand and gravel and less that 10% silt in both samples. This would indicate that the liquids will move relatively freely through the soil. This, combined with the proximity to

the Duke River, suggests that there may be significant ground water movement through the area which would provide a pathway for contaminant migration both into and away from this location. Given that only one set of analyses has been completed on water from this site, the results should be confirmed by resampling and lab analysis. Attempts to resample were unsuccessful in October of 1997, resampling could be attempted in May or June of 1998.

For the remaining samples tested, both the field testing and laboratory analysis indicate a lack of contaminants in the soil samples for all sites tested.

5.2 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

At Site HJ035 there was no evidence of potential contamination found on the site. There were no environmental or human health risks found on the site. Hazards found on the site were of a physical nature and pertain to the presence of debris left at various locations throughout the site.

At Site HJ036, based on the results obtained from laboratory analysis and field testing there were no contaminant sources identified at any of the individual locations investigated around this site.

For Site HJ041 there were two contaminants identified, one was the Light Extractable Petroleum Hydrocarbons in the water sample from 41-1. The shallow ground water and the permeable nature of the soils provide a pathway for contaminant transport in the area and to the Duke River. Given that only one set of analysis has been completed it would be prudent to confirm the results with a second set of water analyses prior to commenting further on the environmental risk.

The second contaminant was the asbestos brake pads found at 41-6. Friable asbestos fibres are a human carcinogen. The brake pads are currently intact and are not creating an environmental risk, however, they should be considered a human health concern as long as they remain accessible.

5.3 RECOMMENDATIONS

Based on the results of field testing and the information obtained, no further environment investigation is recommended for Site HJ035 Pump Station D on the Canol No. 4 Pipeline or Site HJ036, the Kluane Maintenance Camp.

Both sites do have visible wastes on the surface of the ground as identified in this report. This is not an environmental hazard but may be posing a physical hazard, as is the case with material at Pump Station D. Recommendations for site restoration were beyond the scope of this report.

Based on the results of lab analysis of samples from the various locations around site HJ041, the Duke River Maintenance Camp, retesting of the ground water at both monitoring wells should be conducted to confirm the original test results. Consideration should be given to conducting sampling during spring freshet (May - June) and again in August to determine if seasonal variations exist.

Analyses of soil samples did not indicate levels of contamination in excess of any established guidelines. Recommendations regarding further soil sampling, in the vicinity of 41-1, should await the results of water analysis. There was no evidence of contamination found in soil samples from the remaining locations around The Duke River Maintenance Camp, therefor, no further soil sampling is recommended.

Asbestos material found at 41-6 should be double bagged and buried as per protocols for disposal of asbestos.

5.0 CLOSURE

This report has been prepared for the exclusive use of the Department of Indian and Northern Affairs Canada, for the purposes as described in Section 1 of this report. It has been prepared in accordance with generally accepted geo–environmental practices. No other warranty is made, either expressed or implied.

For further limitations regarding the use of this report, reference should be made to the Geo-Environmental Terms and Conditions, attached.

EBA trusts this report meets your requirements at this time. If you have any concerns or comments EBA would be pleased to discuss the report or any questions which you may have.

Respectively submitted,
EBA Engineering Consultants Ltd.

Donald J. Wilson
Senior Environmental Scientist

Paul A. Evans, P. Eng.
Project Director - Environmental

March 30/98

J. Richard Trimble, P.Eng.
Project Director, Yukon Region

TABLES

TABLE 1: PHOTOIONIZATION DETECTOR RESULTS SITE HJ036.

Sample Number	Sample Location (depth in metres)			
	36-1 & 2		36-3	
		12447-11	12447-12	12447-13
1	1.3	11.8	6.7	----
	(0.1)	(1.0-1.5)	(1.0-1.5)	(1.0-1.5)
2	0.4	11.6	8.3	6.8
	(0.1)	(2.5-3.0)	(2.5-3.0)	(2.5-3.0)
3	0.2	11.3	10.6	8.0
	(0.1)	(4.0-4.5)	(4.0-4.5)	(4.0-4.5)
4	0.0	8.7		7.6
	(0.1)	(5.5-6.0)		(5.5-6.0)
5	0.0			7.6
	(0.1)			(7.0-7.5)
6	0.0			7.1
	(0.1)			(8.5-9.0)
7	0.0			---
	(0.1)			(10.0-10.5)
8	0.1			
	(0.1)			
9	0.3			
	(0.1)			

NOTES:

All results in part per million.
Borehole locations shown in Figure 7
Sample location for 36-1 & 2 shown in Figure 6
--- Inadequate sample obtained

TABLE 2: SOIL ANALYSIS SITE HJ036

PARAMETER	SAMPLE IDENTIFICATION (Results in ppm unless otherwise noted)			CRITERIA*	DETECTION LIMIT
	12447-11-1	12447-12-3	12447-13-2		
% Moisture	7.7	4.3	3.0		
BTEX & Volatile Petroleum Hydrocarbons					
Benzene	< 0.02	< 0.02	< 0.02	0.5	0.02
Toluene	0.02	0.02	0.02	3	0.02
Ethylbenzene	< 0.02	< 0.02	< 0.02	5	0.02
Xylenes	< 0.02	< 0.02	< 0.02	5	0.02
Volatile Petroleum Hydrocarbon	< 0.5	< 0.5	< 0.5	200†	0.5
Heavy Extractables (Soil)	<5	<5	9	1000†	5
Light Extractables (Soil)	<5	<5	<5	1000†	5
PAHs					
Naphthalene	<0.01	<0.01	<0.01	5	0.01
Methyl naphthalenes	<0.01	<0.01	<0.01		0.01
Acenaphthylene	<0.01	<0.01	<0.01		0.01
Acenaphthene	<0.01	<0.01	<0.01		0.01
Fluorene	<0.01	<0.01	<0.01		0.01
Phenanthrene/Anthracene	<0.01	<0.01	<0.01	5	0.01
Fluoranthene	<0.01	<0.01	<0.01		0.01
Pyrene	<0.01	<0.01	<0.01	10	0.01
Benzo(a)anthracene/Chrysene	<0.01	<0.01	<0.01	1	0.01
Benzo(b or k)fluoranthene	<0.01	<0.01	<0.01	1	0.01
Benzo(a)pyrene	<0.01	<0.01	<0.01	1	0.01
Indeno(1,2,3-cd)pyrene	<0.01	<0.01	<0.01		0.01
Dibenzo(a,h)anthracene	<0.01	<0.01	<0.01	1	0.01
Benzo(g,h,i)perylene	<0.01	<0.01	<0.01		0.01
PCBs					
All Aroclors		<0.03	<0.03	5	0.03
Organo-Chlorine Pesticides					
Quintozine	<0.005	<0.005	<0.005		0.005
Gamma-BHC	<0.005	<0.005	<0.005		0.005
Beta-BHC	<0.005	<0.005	<0.005		0.005
Alpha-BHC	<0.005	<0.005	<0.005		0.005
Oxychlordane	<0.005	<0.005	<0.005		0.005
Heptachlor	<0.005	<0.005	<0.005		0.005
Nonachlor	<0.005	<0.005	<0.005		0.005
Endrin	<0.005	<0.005	<0.005		0.005
a-Chlordane	<0.005	<0.005	<0.005		0.005
g-Chlordane	<0.005	<0.005	<0.005		0.005
Endosulfan I	<0.005	<0.005	<0.005		0.005
Endosulfan II	<0.005	<0.005	<0.005		0.005
Aldrin	<0.005	<0.005	<0.005		0.005
pp-DDE	<0.005	<0.005	<0.005		0.005
Dieldrin	<0.005	<0.005	<0.005		0.005
pp-DDD	<0.005	<0.005	<0.005		0.005
pp-DDT	<0.005	<0.005	<0.005		0.005
Methoxychlor	<0.010	<0.010	<0.010		0.010
Mirex	<0.005	<0.005	<0.005		0.005

Notes:

* CCME Remediation Guidelines for Soil (Parkland)

† Contaminated Sites Regulations Park Land Use Soil Standard

TABLE 3: PHOTOIONIZATION DETECTOR RESULTS SITE HJ041.

Sample Number	Sample Location (depth in metres)						
		41-1		41-2		41-5	
	12447-5	12447-6	MW12447-7		12447-8	12447-9	MW12447-10
1	3.6 (0.5-1.0)	1.6 (1.0-1.5)	--- (1.0-1.5)	0.4 (1.0)	3.6 (1.0-1.5)	4.4 (1.0-1.5)	--- (1.0-1.5)
2	2.7 (2.5-3.0)	0.0 (2.5-3.0)	10.1 (2.5-3.0)	2.4 (0.8)	3.8 (2.5-3.0)	5.4 (2.5-3.0)	4.5 (2.5-2.9)
3	2.0 (4.0-4.5)	0.0 (4.0-4.5)	--- (4.0-4.5)	1.3 (1.0)	5.3 (4.0-4.5)	6.1 (4.0-4.5)	--- (4.0-4.5)
4	1.2 (5.5-6.0)			0.3 (1.2)			

NOTES:

All results in part per million.
Borehole locations shown in Figure 9 and 11
Sample location for 41-2 shown in Figure 10
--- Inadequate sample obtained

TABLE 4: WATER ANALYSIS SITE HJ041

PARAMETER	SAMPLE IDENTIFICATION (Results in ppb unless otherwise noted) MW12447-7-1W	MW12447-10-1W	CRITERIA*	DETECTION LIMIT
BTEX & Volatile Petroleum Hydrocarbons				
Benzene	< 0.5	< 0.5	5	0.5
Toluene	< 0.5	< 0.5	2.4	0.5
Ethylbenzene	< 0.5	< 0.5	24	0.5
Xylenes	< 0.5	< 0.5	300	0.5
Volatile Petroleum Hydrocarbon	< 100	< 100		100
Heavy Extractables (Water)	<50	<50		50
Light Extractables (Water)	410	<50		50
PAHs				
Naphthalene	<0.1	<0.1		0.1
Methyl naphthalenes	<0.1	<0.1		0.1
Acenaphthylene	<0.1	<0.1		0.1
Acenaphthene	<0.1	<0.1		0.1
Fluorene	<0.1	<0.1		0.1
Phenanthrene/Anthracene	<0.1	<0.1		0.1
Fluoranthene	<0.1	<0.1		0.1
Pyrene	<0.1	<0.1		0.1
Benzo(a)anthracene/Chrysene	<0.1	<0.1	0.01†	0.1
Benzo(b or k)fluoranthene	<0.1	<0.1		0.1
Benzo(a)pyrene	<0.1	<0.1	0.01	0.1
Indeno(1,2,3-cd)pyrene	<0.1	<0.1		0.1
Dibenzo(a,h)anthracene	<0.1	<0.1		0.1
Benzo(g,h,i)perylene	<0.1	<0.1		0.1
Organo-Chlorine Pesticides				
Quintozine	<0.01	<0.01		0.01
Gamma-BHC	<0.01	<0.01		0.01
Beta-BHC	<0.01	<0.01		0.01
Alpha-BHC	<0.01	<0.01		0.01
Oxychlordane	<0.01	<0.01		0.01
Heptachlor	<0.01	<0.01		0.01
Nonachlor	<0.01	<0.01		0.01
Endrin	<0.01	<0.01		0.01
a-Chlordane	<0.01	<0.01	7	0.01
g-Chlordane	<0.01	<0.01	7	0.01
Endosulfan I	<0.01	<0.01		0.01
Endosulfan II	<0.01	<0.01		0.01
Aldrin	<0.01	<0.01	0.7	0.01
pp-DDE	<0.01	<0.01		0.01
Dieldrin	<0.01	<0.01		0.01
pp-DDD	<0.01	<0.01		0.01
pp-DDT	<0.01	<0.01	30	0.01
Methoxychlor	<0.02	<0.02	900	0.02
Mirex	<0.01	<0.01		0.01

Notes:

* CCME Remediation Guidelines for Drinking Water

† Contaminated Sites Regulations Drinking Water Standard

TABLE 5: SOIL ANALYSIS SITE HJ041

PARAMETER	SAMPLE IDENTIFICATION				CRITERIA*	DETECTION
	(Results in ppm unless otherwise noted)					LIMIT
	12447-5-1	MW12447-7-1	12447-8-3	12447-9-3		
Moisture (%)	3.4	3.8	6.3	6.6		
BTEX & Volatile Petroleum Hydrocarbons						
Benzene	< 0.02	< 0.02	< 0.02	< 0.02	0.5	0.02
Toluene	0.02	0.02	< 0.02	0.02	3	0.02
Ethylbenzene	< 0.02	< 0.02	< 0.02	< 0.02	5	0.02
Xylenes	0.08	< 0.02	< 0.02	< 0.02	5	0.02
Volatile Petroleum Hydrocarbon	< 0.5	< 0.5	< 0.5	< 0.5	200†	0.5
Heavy Extractables (Soil)	<5	8	<5	<5	1000†	5
Light Extractables (Soil)	<5	6	<5	<5	1000†	5
PAHs						
Naphthalene	<0.01	<0.01			5	0.01
Methyl naphthalenes	<0.01	<0.01				0.01
Acenaphthylene	<0.01	<0.01				0.01
Acenaphthene	<0.01	<0.01				0.01
Fluorene	<0.01	<0.01				0.01
Phenanthrene/Anthracene	<0.01	<0.01			5	0.01
Fluoranthene	<0.01	<0.01				0.01
Pyrene	<0.01	<0.01			10	0.01
Benzo(a)anthracene/Chrysene	<0.01	<0.01			1	0.01
Benzo(b or k)fluoranthene	<0.01	<0.01			1	0.01
Benzo(a)pyrene	<0.01	<0.01			1	0.01
Indeno(1,2,3-cd)pyrene	<0.01	<0.01				0.01
Dibenzo(a,h)anthracene	<0.01	<0.01			1	0.01
Benzo(g,h,i)perylene	<0.01	<0.01				0.01

Notes:

* CCME Remediation Guidelines for Soil (Parkland)

† Contaminated Sites Regulations Park Land Use Soil Standard

REFERENCES

Bisset, K. & Associates. 1995 Research of Former Military Sites & Activities in the Yukon, Prepared for the Department of Indian and Northern Affairs Canada. 312 pp.

EBA Engineering Consultants Ltd. 1997, Phase I Environmental Assessment, Prepared for the Department of Indian and Northern Affairs Canada. 14 pp.

EBA Engineering Consultants Ltd. 1998, Phase II Environmental Site Assessment Site HJ045, Prepared for the Department of Indian and Northern Affairs Canada. (in prep.)

Edey C.E. 1976, Alaska Highway-Haines Road Clean-up Assessment Study, Prepared for the Department of Indian and Northern Affairs Canada.

Health and Welfare Canada. 1996. Guidelines for Canadian Drinking Water Quality. 6th edition. Prepared by the Federal-Provincial Committee on Environmental and Occupational Health. 90 pp.

TERMS AND CONDITIONS
GEO-ENVIRONMENTAL SERVICES

This report incorporates and is subject to these "Terms and Conditions"

1. EBA shall provide and exercise the degree of skill, care and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the services contemplated at the time and location in which the services are performed.

2. EBA shall use reasonable efforts to perform the services within prescribed time schedules. EBA shall not, however, be responsible for any delays caused by circumstances beyond its control.

3. EBA may engage as subconsultants any person, firm or corporation with appropriate recognized professional status or with special skills or knowledge to assist in performing the services.

4. EBA can not give any warranties, express or implied, about the existence or absence of any contaminants or hazardous materials on the site. EBA shall provide an opinion respecting the presence of contaminants or environmental impairment based on the evidence available, if so requested within the scope of investigations authorized by the Client.

5. The Client shall obtain all the permits, authorizations or consents and give any required notices necessary to enable EBA to perform the services including, but not limited to, any consents necessary to allow EBA, its agents, employees and equipment the necessary access to, and use of, the site.

6. Any documents provided by the Client to EBA shall be deemed to be the property of the Client and, on the written demand of the Client, EBA shall, as soon as practicable, return all of the Client's documents to him. Any information collected and documents prepared by EBA while performing the services shall be deemed to be the property of EBA.

7. Both EBA and the Client shall take reasonable care to prevent disclosure of any reports or documents prepared by EBA, or information obtained for or contained in any reports or documents, to any person except those persons who require access to such information to discharge their responsibilities in relation to the services performed by EBA.

8. If EBA becomes aware of any contamination or hazardous materials on the site which could damage property or endanger health or lives, EBA shall notify the Client as soon as possible and appropriate authorities as required.

9. The Client shall provide EBA with accurate and complete delineations of the location of all subsurface structures and utilities at, on or near the site, except as otherwise may be agreed.

10. Where the services to be performed require taking samples from the site, the Client shall be responsible for payment of appropriate storage and disposal for any contaminated samples taken from the site. The Client shall be responsible for all costs incurred to decontaminate any equipment (used by EBA or its agents in the performance of the services) which are contaminated by conditions encountered at the site.

11. EBA shall not be responsible for any costs, damages or loss suffered by any person, including the Client, its employees, agents or related companies, as a result of:

    a) any decisions taken by the Client without the advice of EBA, or contrary to the advice of EBA, pertaining to activities during, or subsequent to, the services being performed by EBA;

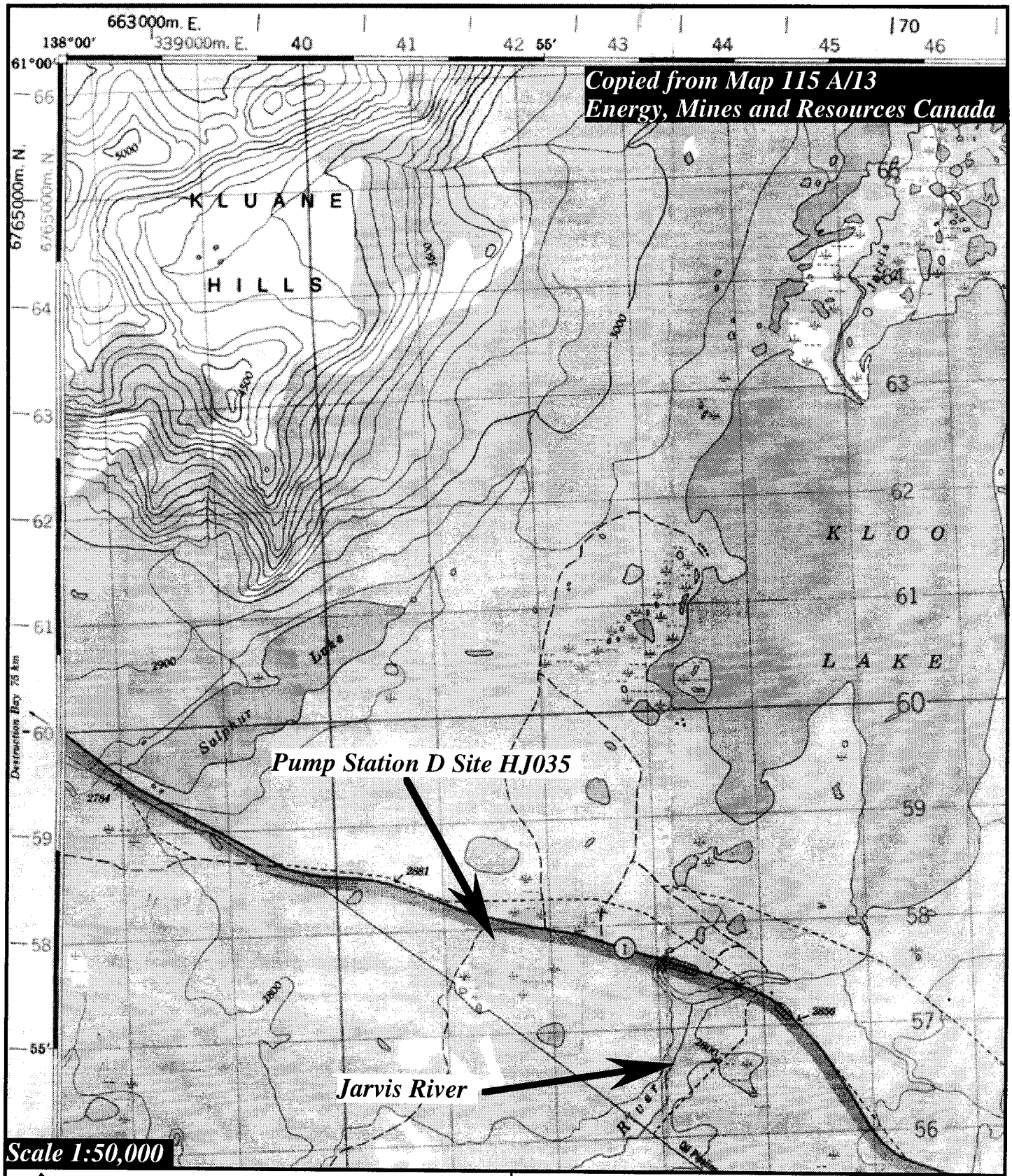
    b) any subsurface exploration or sample-taking on the site by EBA including cross-contamination;

    c) the disclosure, as permitted or required by law of any opinion, information or report prepared by EBA;

    d) the failure of the Client, or other agencies, to accurately identify the location of all subsurface structures or utilities.

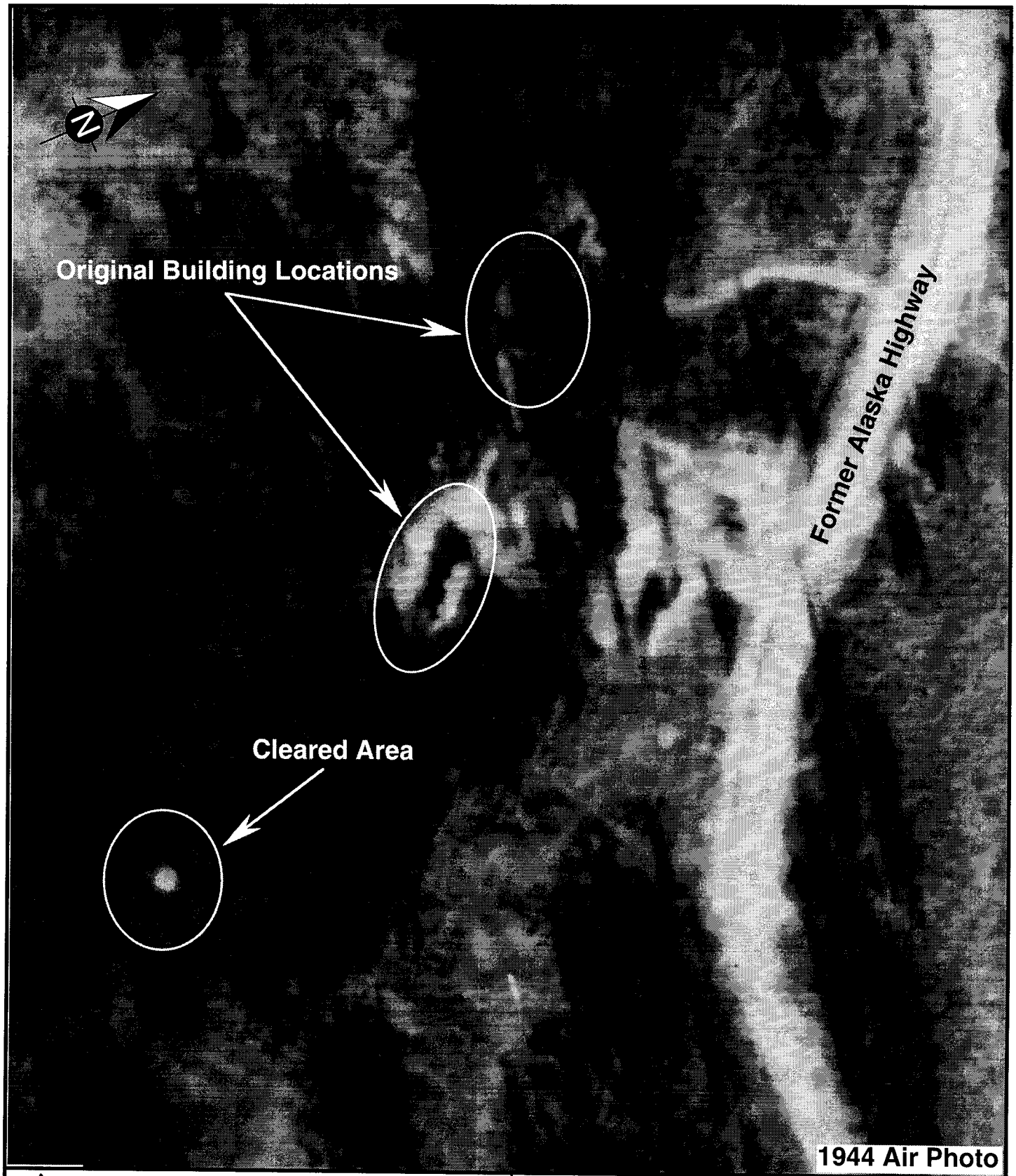
    nor shall EBA be responsible or liable for any indirect or consequential losses, damages, costs or expenses incurred by any person including the Client, relating to or as a result of services provided by EBA.

12. The Client shall assume the defence of, and indemnify and save harmless, EBA, its agents and employees, from all claims or liability by any third parties relating to or arising out of the performance of the services, except where the claim or liability arises out of negligence or wilful misconduct of EBA, and the Client whenever it is bound to indemnify EBA shall reimburse EBA for time spent and expenses incurred by EBA in defence of any such claims.

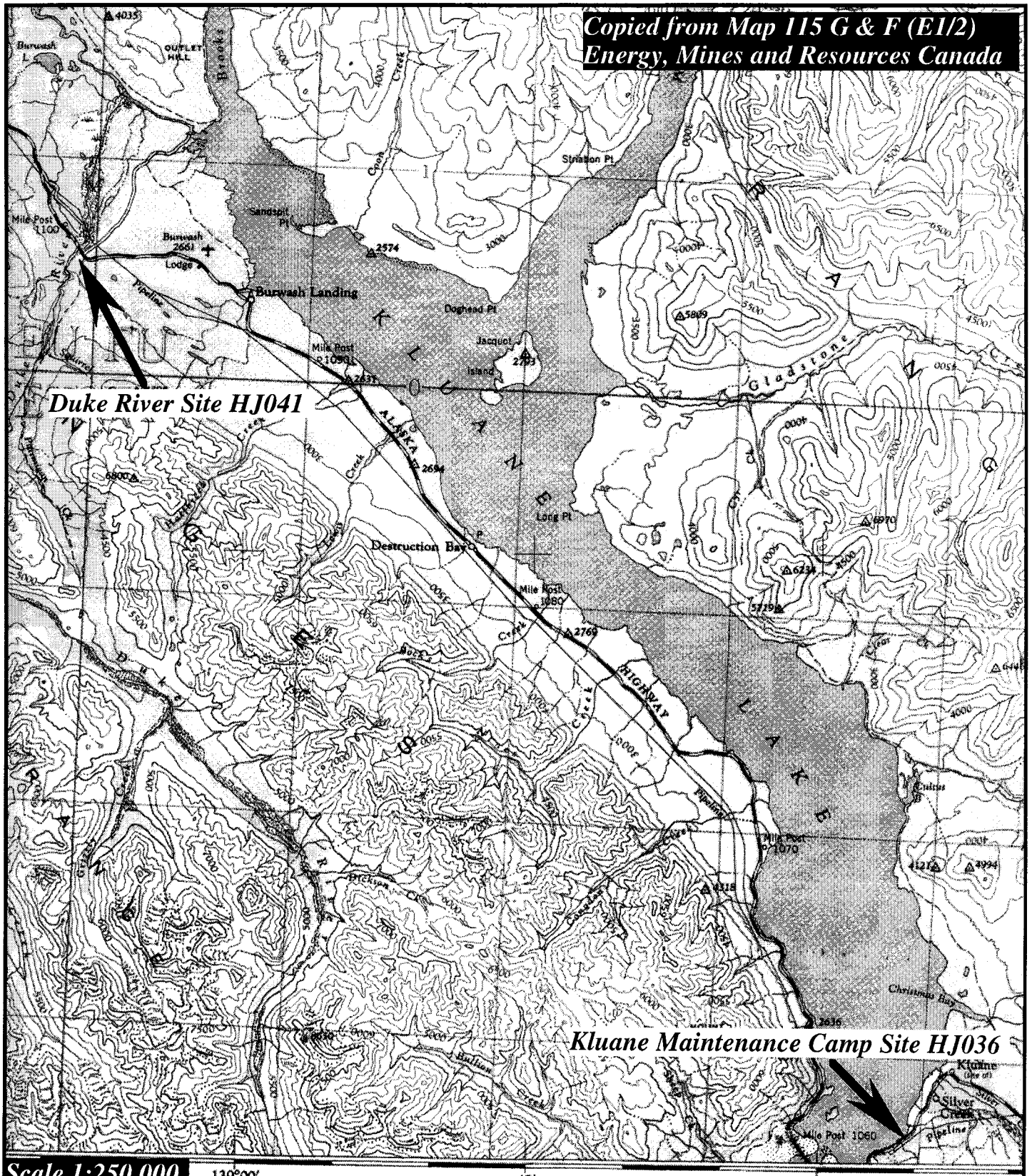


Copied from Map 115 A/13
Energy, Mines and Resources Canada

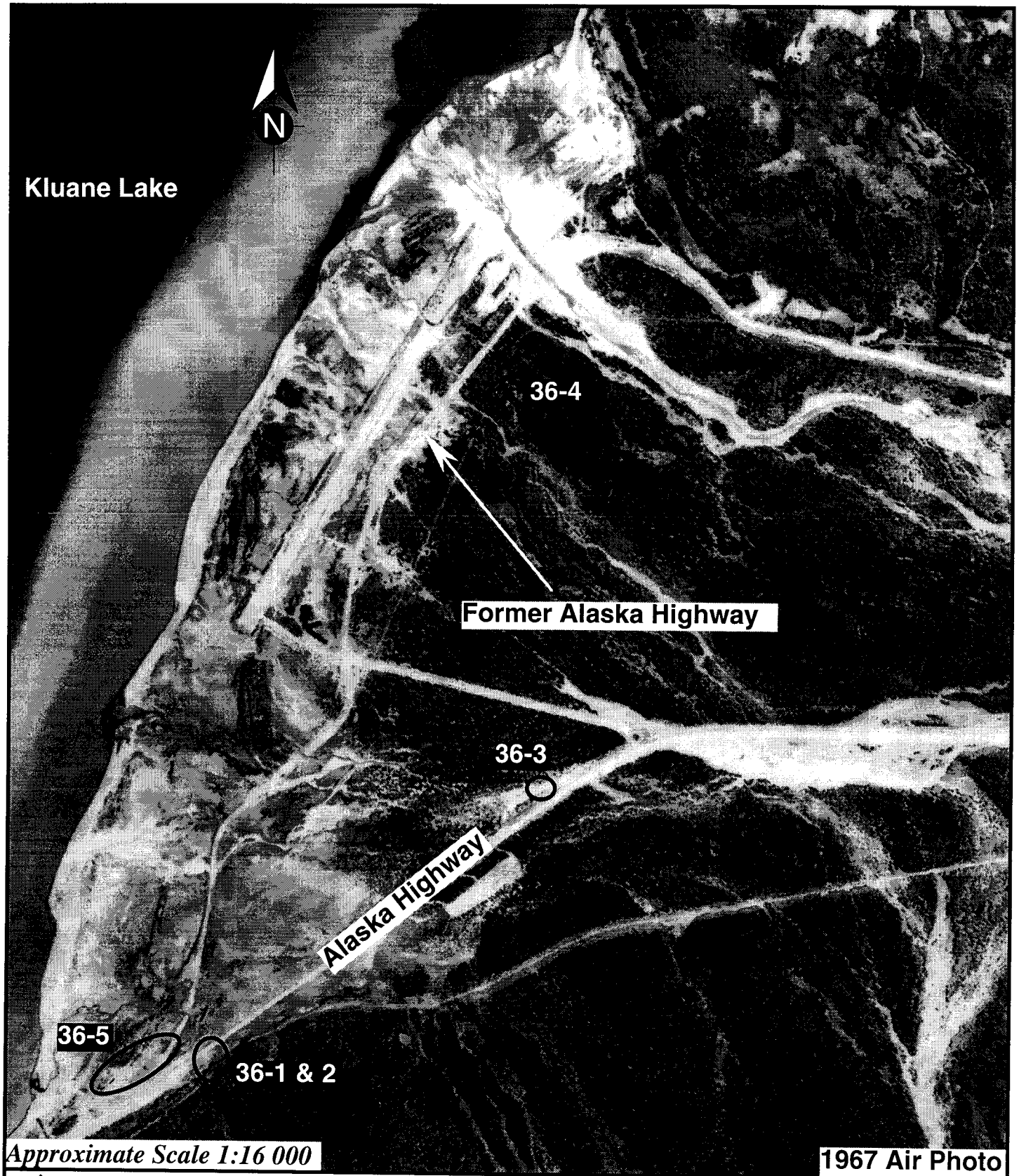
eba **EBA Engineering Consultants Ltd.**				PROJECT	PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON	
CLIENT **DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM**				TITLE	**Figure 2 Site HJ035**	
DATE 97 08 20	DWN. DJW	CHKD.		FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 2	REVISION 0



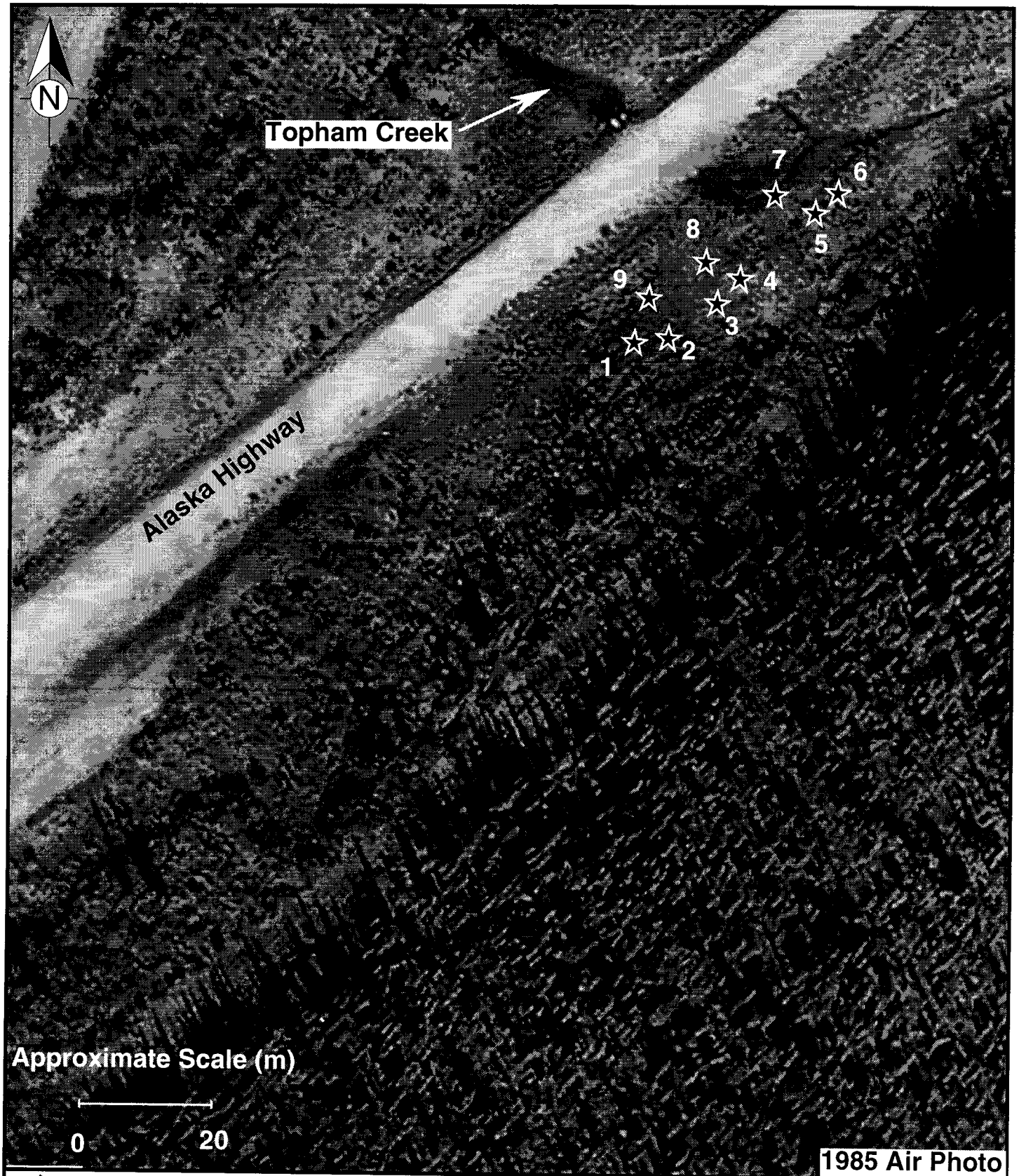
EBA Engineering Consultants Ltd.			PROJECT	PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON		
CLIENT	DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM		TITLE	**Figure 3: Site HJ035 Site Layout**		
DATE 97 12 21	DWN. DJW	CHKD.	FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 3	REVISION 0	



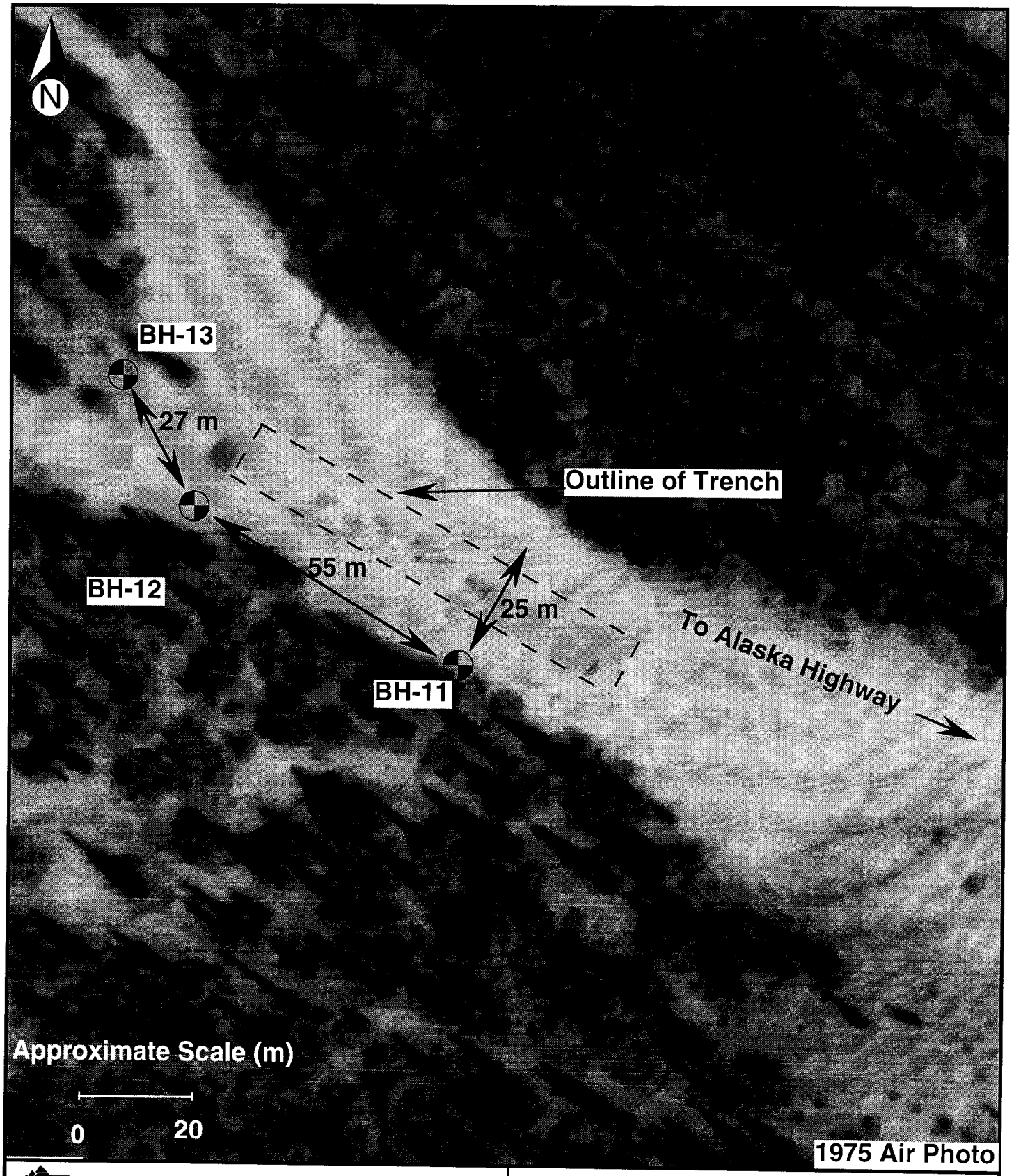
eba EBA Engineering Consultants Ltd.				PROJECT	PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON	
CLIENT	DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM			TITLE	Figure 4 Sites HJ036 & HJ041	
DATE 98 01 14	DWN. DJW	CHKD.		FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 4	REVISION 0



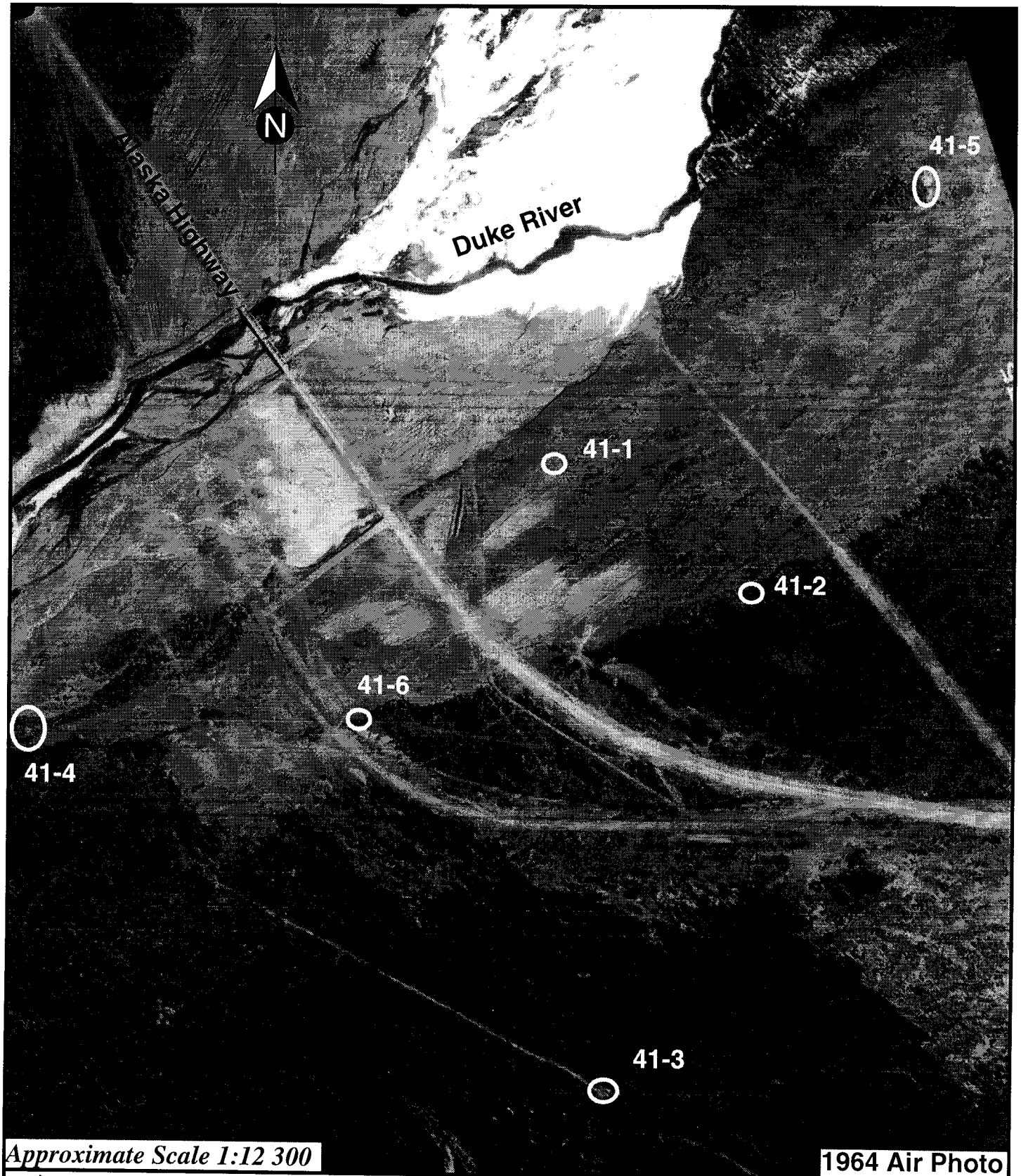
EBA Engineering Consultants Ltd.			PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON		
CLIENT: DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM			TITLE: Figure 5: Site HJ036 Locations Investigated		
DATE: 98 01 14	DWN.: DJW	CHKD.:	FILE NO.: 0201-97-12447.1	DWNG.: 12447.1 Figure 5	REVISION: 0



eba EBA Engineering Consultants Ltd.			PROJECT	PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON	
CLIENT DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM			TITLE Figure 6: Location 36-1 & 2 Sketch of Sample Locations		
DATE 98 01 14	DWN. DJW	CHKD.	FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 6	REVISION 0



eba EBA Engineering Consultants Ltd.			PROJECT PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON		
CLIENT DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM			TITLE Figure 7: Location 36-3 Sketch of Borehole Locations		
DATE 98 01 14	DWN. DJW	CHKD.	FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 7	REVISION 0

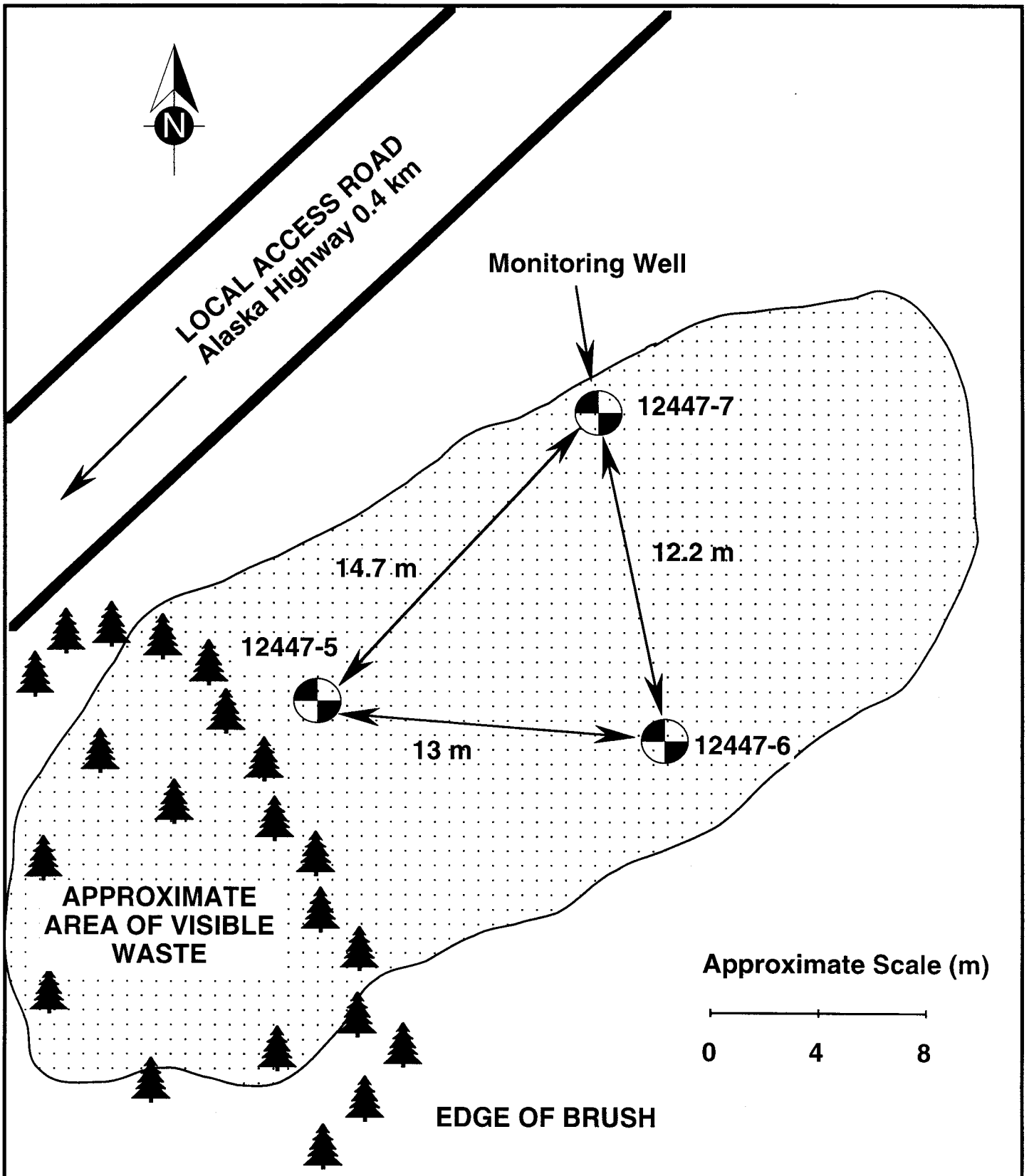


Approximate Scale 1:12 300

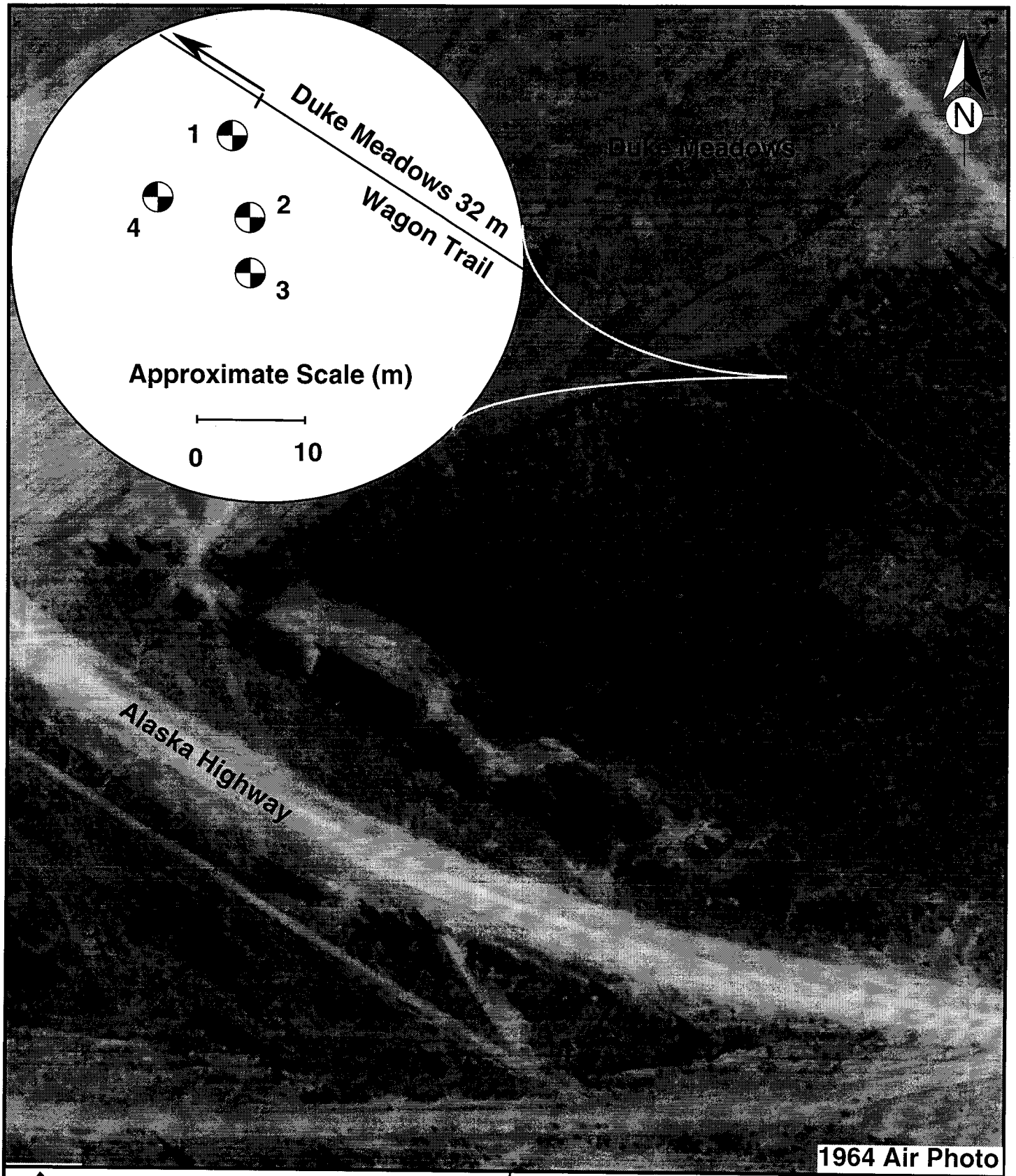
1964 Air Photo

EBA Engineering Consultants Ltd.	PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON
CLIENT: DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM	TITLE: Figure 8: Site HJ041 Locations Investigated

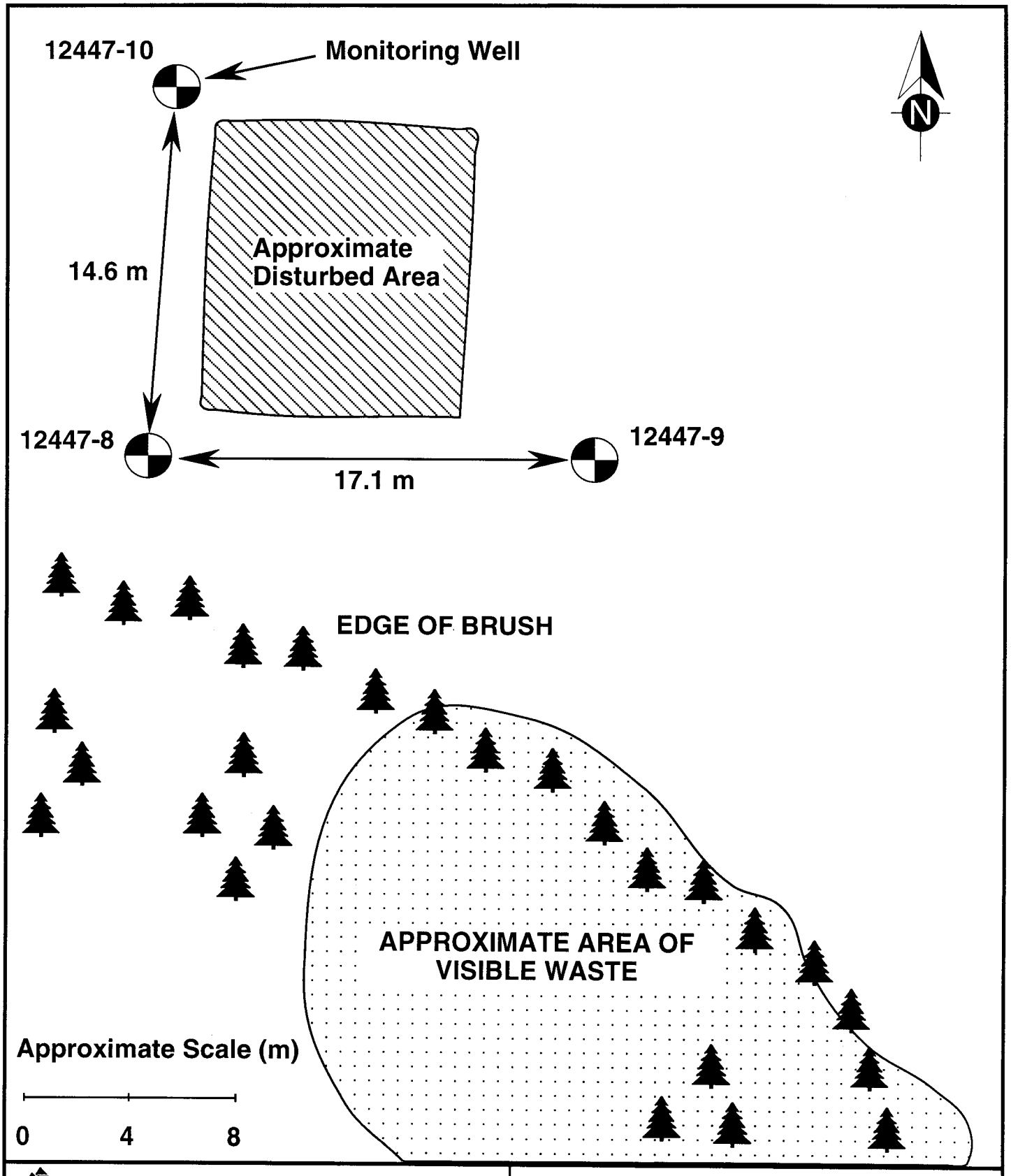
DATE	DWN.	CHKD.	FILE NO.	DWNG.	REVISION
97 12 21	DJW		0201-97-12447.1	12447.1 Figure 8	0



EBA Engineering Consultants Ltd.			PROJECT	PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON	
CLIENT DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM			TITLE	**Figure 9: Location 41-1 Sketch of Borehole Locations**	
DATE 97 12 21	DWN. DJW	CHKD.	FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 9	REVISION 0



eba **EBA Engineering Consultants Ltd.**			PROJECT PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON		
CLIENT **DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM**			TITLE **Figure 10: Location 41-2 Sketch of Sample Locations**		
DATE 98 01 119	DWN. DJW	CHKD.	FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 10	REVISION 0



eba EBA Engineering Consultants Ltd.			PROJECT	PHASE II ENVIRONMENTAL SITE ASSESSMENTS KLUANE LAKE AREA, YUKON	
CLIENT DIAND, RENEWABLE RESOURCES CONTAMINANTS/WASTE PROGRAM			TITLE	**Figure 11: Location 41-5 Sketch of Borehole Locations**	
DATE 97 12 21	DWN. DJW	CHKD.	FILE NO. 0201-97-12447.1	DWNG. 12447.1 Figure 11	REVISION 0

APPENDIX A

Chemical Analysis Report
Enviro•Test Laboratories Ltd.

ETL Enviro-Test
LABORATORIES
A DIVISION OF ETL CHEMSPEC ANALYTICAL LIMITED

[redacted]onton (Main)
9936 - 67 Avenue
Edmonton, AB
[redacted] 0P5
[redacted]ne: (403) 413-5227
Fax: (403) 437-2311

Edmonton (Downtown)
2nd Flr., 10158 - 103 Street
[redacted]monton, AB
[redacted] 0X6
Phone: (403) 413-5265
Fax: (403) 424-4602

Calgary
[redacted] 2, 1313-44th Ave. N.E.
[redacted]gary, AB
T2E 6L5
Phone: (403) 291-9897
[redacted] (403) 291-0298

[redacted]katoon
[redacted] Vet[redacted] Road
Saska[redacted]
S7N 5E[redacted]
[redacted]ne: (306) 668-8370
[redacted] (306) 668-8383
1-800-667-7645

Winnipeg
745 Logan Avenue
[redacted]nipeg, MB
[redacted] 3L5
Phone: (204) 945-3705
Fax: (204) 945-0763

[redacted]under Bay Analytical
[redacted]1 Barton Street
[redacted]nder Bay, ON
P7B 5N3
[redacted]one: (807) 623-6463
[redacted] (807) 623-7598

[redacted]ada Wide Phone:
[redacted]00-668-9878

Western Canada Fax:
1-800-286-7319

CHEMICAL ANALYSIS REPORT

EBA ENG CONSULTANTS LTD
UNIT 6 151 INDUSTRIAL RD
WHITEHORSE YT Y1A 2V3

DATE: September 26, 1997

ATTN: DON WILSON

Lab Work Order #:	E709129	**Sampled By:**	DJW
Project Reference:	0201-97-12447.1	**Date Received:**	09/04/97
Project P.O.#:	NOT SUBMITTED		

Comments:
Oxychlordane cannot be present with out Chlordane and Heptachlor Epoxide also.

APPROVED BY:

Doug Johnson
Project Manager

ACCREDITATIONS: **STANDARDS COUNCIL OF CANADA (SCC)**, IN COOPERATION WITH **THE CANADIAN ASSOCIATION FOR ENVIRONMENTAL ANALYTICAL LABORATORIES (CAEAL)**: FOR SPECIFIC TESTS AS REGISTERED BY THE COUNCIL (EDMONTON, CALGARY)
AMERICAN INDUSTRIAL HYGIENE ASSOCIATION (AIHA): FOR INDUSTRIAL HYGIENE ANALYSIS (EDMONTON)
AGRICULTURE CANADA: UNDER THE CANADIAN FERTILIZER QUALITY ASSURANCE PROGRAM (SASKATOON)

ENVIRO-TEST CHEMICAL ANALYSIS REPORT

LAB ID	SAMPLE ID	TEST DESCRIPTION	RESULT	D.L.	UNITS	EXTRACTED	ANALYZED	BY
E709129-01	12447.1 BH5-1							
Sample Type:SOIL								
Collected:08/27/97								
		PAH in Solid Samples						
		Naphthalene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Methyl naphthalenes	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluorene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Dibenzo(a,h)anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	3.4		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	0.08	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
E709129-02	12447.1 BH7-1							
Sample Type:SOIL								
Collected:08/27/97								
		PAH in Solid Samples						
		Naphthalene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Methyl naphthalenes	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluorene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Dibenzo(a,h)anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	3.8		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	8	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	6	5	ug/g (ppm)	09/04/97	09/05/97	THT
E709129-03	12447.1 BH7-W							
Sample Type:WATER								
Collected:08/27/97								
		OC Screen in Water GC/ECD						
		Quintozine	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Gamma-BHC	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Beta-BHC	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Alpha-BHC	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Oxychlordane	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Heptachlor	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Nonachlor	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Endrin	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		a-Chlordane	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		g-Chlordane	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Endosulfan I	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Endosulfan II	<0.01	0.01	ug/L(ppb)		09/23/97	LC

ENVIRO-TEST CHEMICAL ANALYSIS REPORT

LAB ID	SAMPLE ID	TEST DESCRIPTION	RESULT	D.L.	UNITS	EXTRACTED	ANALYZED	BY
E709129-03	**12447.1 BH7-W**							
Sample Type:WATER								
Collected:08/27/97								
		Aldrin	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		pp-DDE	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Dieldrin	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		pp-DDD	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		pp-DDT	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Methoxychlor	<0.02	0.02	ug/L(ppb)		09/23/97	LC
		Mirex	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		PAH in Water						
		Naphthalene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Methyl naphthalenes	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Acenaphthylene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Acenaphthene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Fluorene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Fluoranthene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Pyrene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Dibenzo(a,h)anthracene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		BTEX/VPH/LEPH/HEPH in H2O						
		BTEX and VPH in Water						
		Benzene	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Toluene	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Ethylbenzene	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Xylenes	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Volatile Petroleum Hydrocarbon	< 100	100	ug/L (ppb)	09/04/97	09/04/97	CAS
		Heavy Extractables (Water)	<50	50	ug/L (ppb)	09/04/97	09/05/97	QVP
		Light Extractables (Water)	410	50	ug/L (ppb)	09/04/97	09/05/97	QVP
E709129-04	**12447.1 BH8-3**							
Sample Type:SOIL								
Collected:08/27/97								
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	6.3		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
E709129-05	**12447.1 BH9-3**							
Sample Type:SOIL								
Collected:08/27/97								
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	6.6		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
E709129-06	**12447.1 BH10-W**							
Sample Type:WATER								
Collected:08/27/97								
		OC Screen in Water GC/ECD						
		Quintozine	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Gamma-BHC	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Beta-BHC	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Alpha-BHC	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Oxychlordane	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Heptachlor	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Nonachlor	<0.01	0.01	ug/L(ppb)		09/23/97	LC

ENVIRO-TEST CHEMICAL ANALYSIS REPORT

LAB ID	SAMPLE ID	TEST DESCRIPTION	RESULT	D.L.	UNITS	EXTRACTED	ANALYZED	BY
E709129-06	12447.1 BH10-W							
Sample Type:WATER								
Collected:08/27/97								
		Endrin	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		a-Chlordane	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		g-Chlordane	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Endosulfan I	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Endosulfan II	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Aldrin	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		pp-DDE	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Dieldrin	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		pp-DDD	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		pp-DDT	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		Methoxychlor	<0.02	0.02	ug/L(ppb)		09/23/97	LC
		Mirex	<0.01	0.01	ug/L(ppb)		09/23/97	LC
		PAH in Water						
		Naphthalene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Methyl naphthalenes	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Acenaphthylene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Acenaphthene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Fluorene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Fluoranthene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Pyrene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Dibenzo(a,h)anthracene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.1	0.1	ug/L (ppb)	09/08/97	09/16/97	SRJ
		BTEX/VPH/LEPH/HEPH in H2O						
		BTEX and VPH in Water						
		Benzene	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Toluene	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Ethylbenzene	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Xylenes	< 0.5	0.5	ug/L (ppb)	09/04/97	09/04/97	CAS
		Volatile Petroleum Hydrocarbon	< 100	100	ug/L (ppb)	09/04/97	09/04/97	CAS
		Heavy Extractables (Water)	<50	50	ug/L (ppb)	09/04/97	09/05/97	QVP
		Light Extractables (Water)	<50	50	ug/L (ppb)	09/04/97	09/05/97	QVP
E709129-07	12447.1 BH11-1							
Sample Type:SOIL								
Collected:08/28/97								
		OC Screen in Soil (GC/ECD)						
		Quintozine	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Gamma-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Beta-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Alpha-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Oxychlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Heptachlor	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Nonachlor	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		a-Chlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		g-Chlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endosulfan I	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endosulfan II	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Aldrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDE	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Dieldrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDD	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDT	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Methoxychlor	<0.010	0.010	ug/g(ppm)		09/23/97	LC
		Mirex	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		PAH in Solid Samples						
		Naphthalene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Methyl naphthalenes	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluorene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ

ENVIRO-TEST CHEMICAL ANALYSIS REPORT

LAB ID	SAMPLE ID	TEST DESCRIPTION	RESULT	D.L.	UNITS	EXTRACTED	ANALYZED	BY
E709129-07	12447.1 BH11-1							
Sample Type:SOIL								
Collected:08/28/97								
		Dibenzo(a,h)anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	7.7		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
E709129-08	12447.1 BH12-3							
Sample Type:SOIL								
Collected:08/28/97								
		OC Screen in Soil (GC/ECD)						
		Quintozine	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Gamma-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Beta-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Alpha-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Oxychlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Heptachlor	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Nonachlor	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		a-Chlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		g-Chlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endosulfan I	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endosulfan II	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Aldrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDE	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Dieldrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDD	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDT	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Methoxychlor	<0.010	0.010	ug/g(ppm)		09/23/97	LC
		Mirex	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		PAH in Solid Samples						
		Naphthalene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Methyl naphthalenes	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluorene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Dibenzo(a,h)anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		PCB'S in Soil						
		All Aroclors	<0.03	0.03	ug/g (ppm)	09/05/97	09/07/97	CSI
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	4.3		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT
E709129-09	12447.1 BH13-2							
Sample Type:SOIL								
Collected:08/28/97								
		OC Screen in Soil (GC/ECD)						
		Quintozine	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Gamma-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Beta-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC

ENVIRO-TEST CHEMICAL ANALYSIS REPORT

LAB ID	SAMPLE ID	TEST DESCRIPTION	RESULT	D.L.	UNITS	EXTRACTED	ANALYZED	BY
E709129-09	**12447.1 BH13-2**							
Sample Type:SOIL								
Collected:08/28/97								
		Alpha-BHC	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Oxychlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Heptachlor	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Nonachlor	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		a-Chlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		g-Chlordane	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endosulfan I	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Endosulfan II	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Aldrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDE	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Dieldrin	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDD	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		pp-DDT	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		Methoxychlor	<0.010	0.010	ug/g(ppm)		09/23/97	LC
		Mirex	<0.005	0.005	ug/g(ppm)		09/23/97	LC
		PAH in Solid Samples						
		Naphthalene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Methyl naphthalenes	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Acenaphthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluorene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Phenanthrene/Anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)anthracene/Chrysene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(b or k)fluoranthene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(a)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Indeno(1,2,3-cd)pyrene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Dibenzo(a,h)anthracene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		Benzo(g,h,i)perylene	<0.01	0.01	ug/g (ppm)	09/10/97	09/16/97	SRJ
		PCB'S in Soil						
		All Aroclors	<0.03	0.03	ug/g (ppm)	09/05/97	09/07/97	CSI
		BTEX/VPH/LEPH/HEPH in Soil						
		% Moisture	3.0		%	09/04/97	09/04/97	JOB
		BTEX and VPH in Soil						
		Benzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Toluene	0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Ethylbenzene	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Xylenes	< 0.02	0.02	ug/g (ppm)	09/04/97	09/05/97	THT
		Volatile Petroleum Hydrocarbon	< 0.5	0.5	ug/g (ppm)	09/04/97	09/05/97	THT
		Heavy Extractables (Soil)	9	5	ug/g (ppm)	09/04/97	09/05/97	THT
		Light Extractables (Soil)	<5	5	ug/g (ppm)	09/04/97	09/05/97	THT

N.D. - NOT DETECTED, LESS THAN THE DETECTION LIMIT

THIS IS THE FINAL PAGE OF THE REPORT
NOT INCLUDING APPENDICES

Appendix A Test Methodologies

BTEX and VPH in Water

PREPARATION METHOD: Purge and trap extraction

INSTRUMENTAL METHOD: GC/PID for BTEX.
GC/FID for VPH - summation of hydrocarbons from C5 to C9 carbon range and is calculated against m+p-Xylenes.

METHOD REFERENCE: Modified SW-846 USEPA Method 5030 and 8015/8020.

BTEX QC SUMMARY:

Accuracy	Precision
100%	+/- 10%

NOTE: Accuracy is expressed as the average % recovery and Precision as the relative standard deviation (RSD) of fortifications made using certified standards (BTEX).

VPH QC SUMMARY:

Accuracy	Precision
97%	+/- 17%

NOTE: Accuracy is expressed as the average % recovery and Precision as the relative standard deviation (RSD) of fortifications made using certified standards (BTEX).

BTEX and VPH in Soil

PREPARATION METHOD: Methanol extraction with purge and trap analysis.

INSTRUMENTAL METHOD: GC/PID for BTEX.
GC/FID for VPH - summation of hydrocarbons from C5 to C9 carbon range and is calculated against m+p-Xylenes.
NOTE: Results based upon dry weight.

METHOD REFERENCE: Modified SW-846 USEPA Method 5030 and 8015/8020.

BTEX QC SUMMARY:

Accuracy	Precision
97%	+/- 22%

NOTE: Accuracy is expressed as the average % recovery and Precision as the relative standard deviation (RSD) of fortifications made using certified standards (BTEX).

% Moisture

Preparation Method: Sample is oven dried at 105 degrees C
Instrumental Method: Gravimetric analysis

OC Screen in Soil (GC/ECD)

Method Overview: Samples were extracted into Acetone/Water which was diluted into water, partitioned into Dichloromethane, concentrated, and exchanged into Hexane. Florisil clean-up is done on all extracts should it be required. Samples were analyzed by GC/ECD. Positive results may be confirmed by GC/MSD if requested.

OC Screen in Water GC/ECD

Method Ref.: Samples for Organo-Chlorine Pesticide analysis were partitioned into Dichloromethane, concentrated, exchanged into Hexane and analyzed by Gas Chromatography/Electron Capture Detection.

QA/QC: Representative Historical Spike Recoveries
Alpha BHC 88%

Appendix A Test Methodologies

Gamma BHC (Lindane) 79%
Dieldrin 99%
p,p-DDT 97%
Methoxychlor 93%

PAH in Solid Samples

Preparation Method: Soxhlet extraction with DCM or by accelerated solvent extraction with DCM/Acetone

Instrument Method: GC/MSD analysis

Method Reference: Extraction Method: EPA 3540 (modified) or EPA 3545 (modified)
Analytical Method: EPA 8270 (modified)

PAH in Water

Preparation Method: Liquid/liquid extraction with DCM

Instrument Method: GC/MSD analysis

Method Reference: Extraction Method: EPA 3510 or EPA 3520 (modified)
Analytical Method: EPA 8270 (modified)

PCB'S in Soil

Preparation Method: Extraction with acetone/hexane

Instrument Method: GC/ECD analysis

Method Reference: Extraction Method: EPA 3550 (modified)
Analytical Method: EPA 8080 (modified)

Minimum Detection Limit (MDL) - 0.030 ppm for all Aroclors

QA/QC Statement:

Accuracy is 99% (expressed as the average recovery of PCB in soil at a 5 ppm level).

Precision is +/- 15% (expressed as the relative standard deviation or RSD).

Light Extractables (Soil)

PREPARATION METHOD: Shake and sonication extraction with organic solvent

INSTRUMENTAL METHOD: GC/FID - summation of hydrocarbons from C10 to C18 carbon range (excluding benzene, toluene, ethylbenzene, and xylenes) and calculated against a calibrated n-decane standard. Result is not corrected for PAH concentration. NOTE: Results based upon dry weight.

METHOD REFERENCE: Modified SW-846 USEPA Method 3550/3580 and 8000

Light Extractables (Water)

PREPARATION METHOD: Liquid-liquid extraction with organic solvent

Appendix A Test Methodologies

INSTRUMENTAL METHOD: GC/FID - summation of hydrocarbons from C10 to C18 carbon range (excluding benzene, toluene, ethylbenzene, and xylenes) and calculated against a calibrated n-decane standard. Result is not corrected for PAH concentration.

METHOD REFERENCE: Modified SW-846 USEPA Method 3510/3580 and 8000

Heavy Extractables (Soil)

PREPARATION METHOD: Shake and sonication extraction with organic solvent

INSTRUMENTAL METHOD: GC/FID - summation of hydrocarbons from C19 to C32 carbon range (excluding benzene, toluene, ethylbenzene, and xylenes) and calculated against a calibrated n-eicosane standard. Result is not corrected for PAH concentration. NOTE: Results based upon dry weight.

METHOD REFERENCE: Modified SW-846 USEPA Method 3550/3580 and 8000

Heavy Extractables (Water)

PREPARATION METHOD: Liquid-liquid extraction with organic solvent

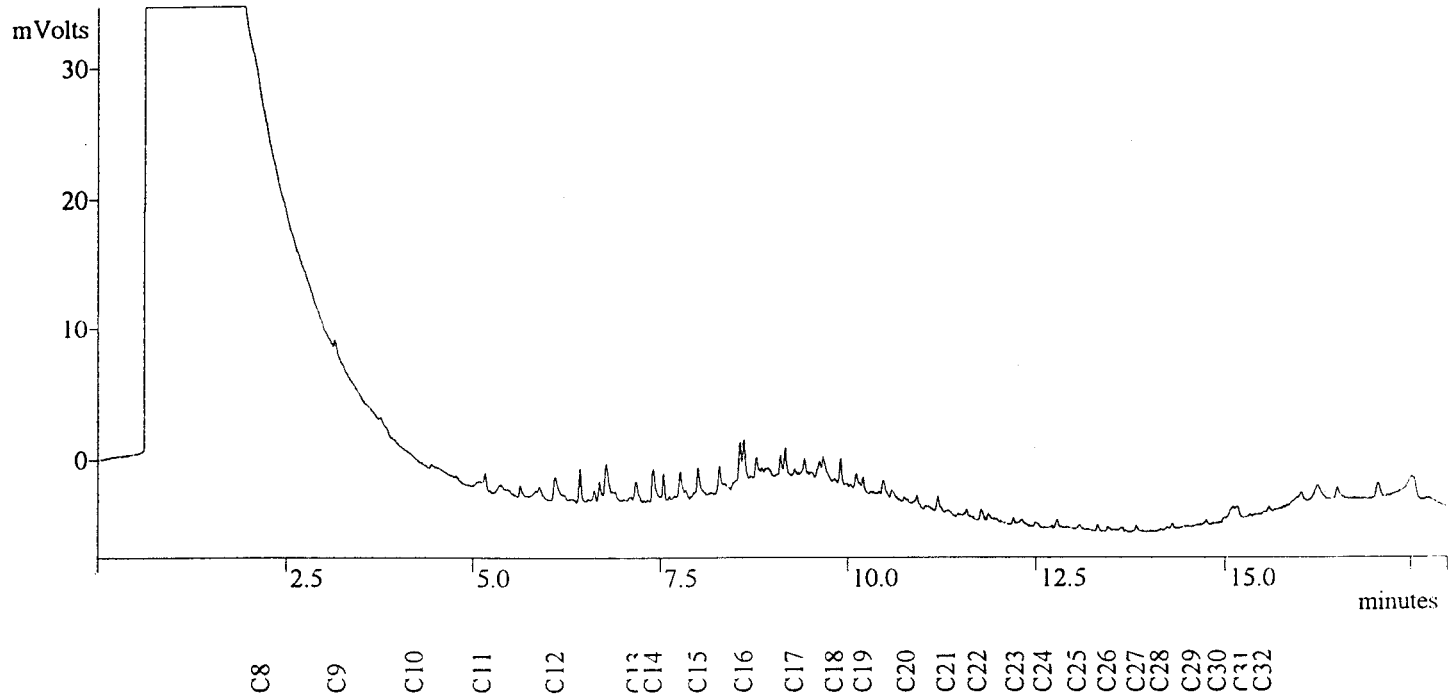
INSTRUMENTAL METHOD: GC/FID - summation of hydrocarbons from C19 to C32 carbon range (excluding benzene, toluene, ethylbenzene, and xylenes) and calculated against a calibrated n-eicosane standard. Result is not corrected for PAH concentration.

METHOD REFERENCE: Modified SW-846 USEPA Method 3510/3580 and 8000

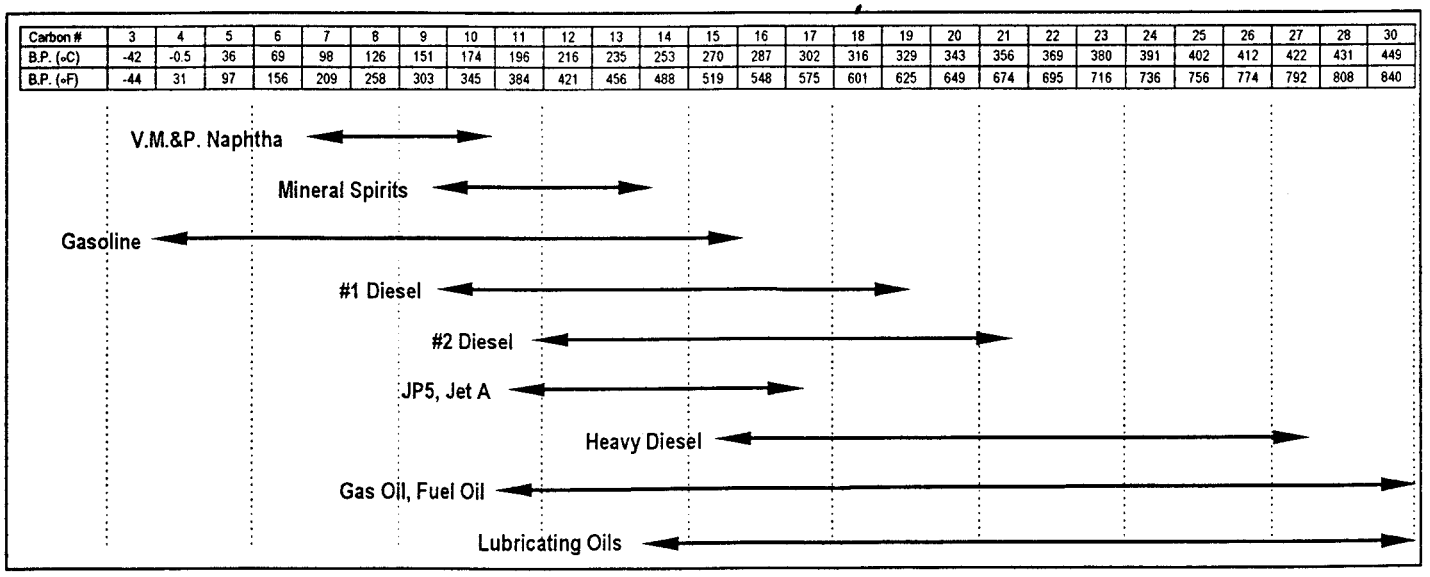
THIS IS THE LAST PAGE OF THE METHODOLOGY APPENDIX.

CLIENT I.D.: **12447.1 BH7-1**

Data File:	c:\star\module18\star1190.run
Sample ID:	E709129-02-10
Injection Date:	09/05/97 06:50:02 PM
Instrument (Inj):	GC 3600 channel B



Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

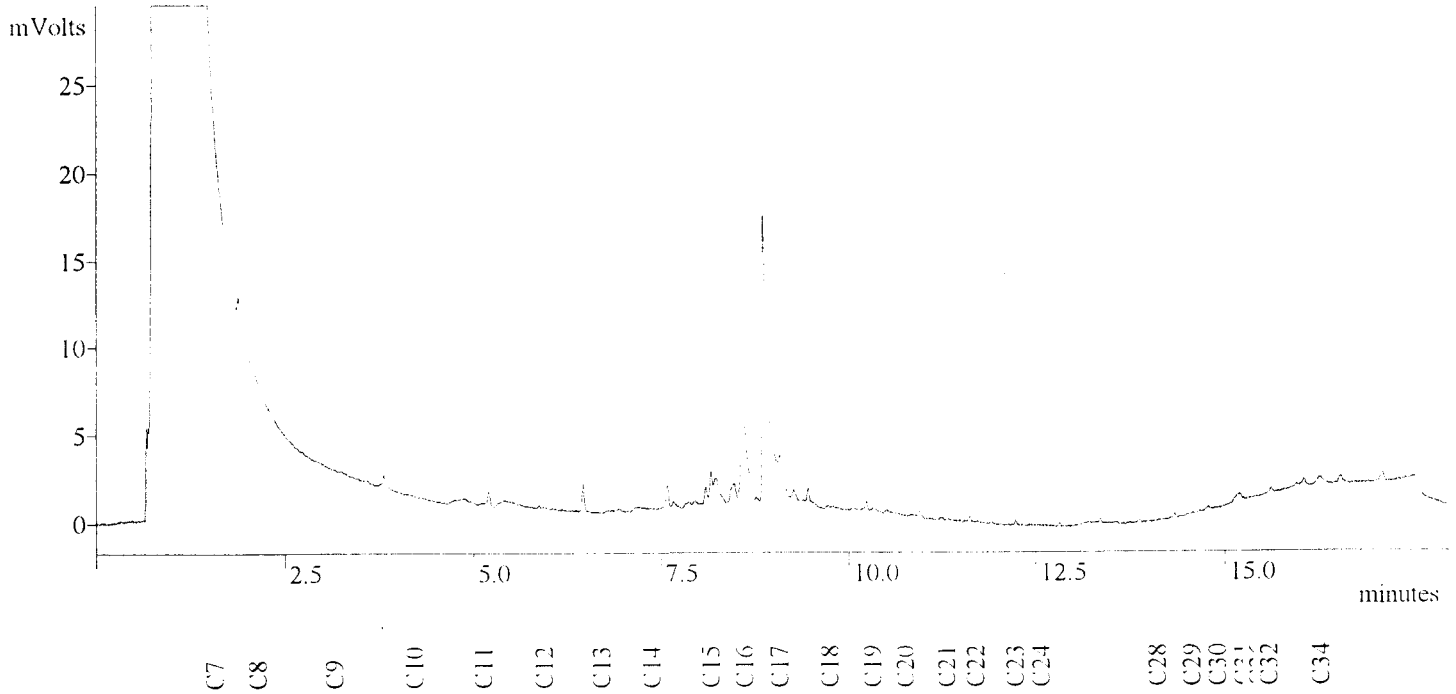


Boiling Point Distribution Range for Petroleum Based Fuel Products

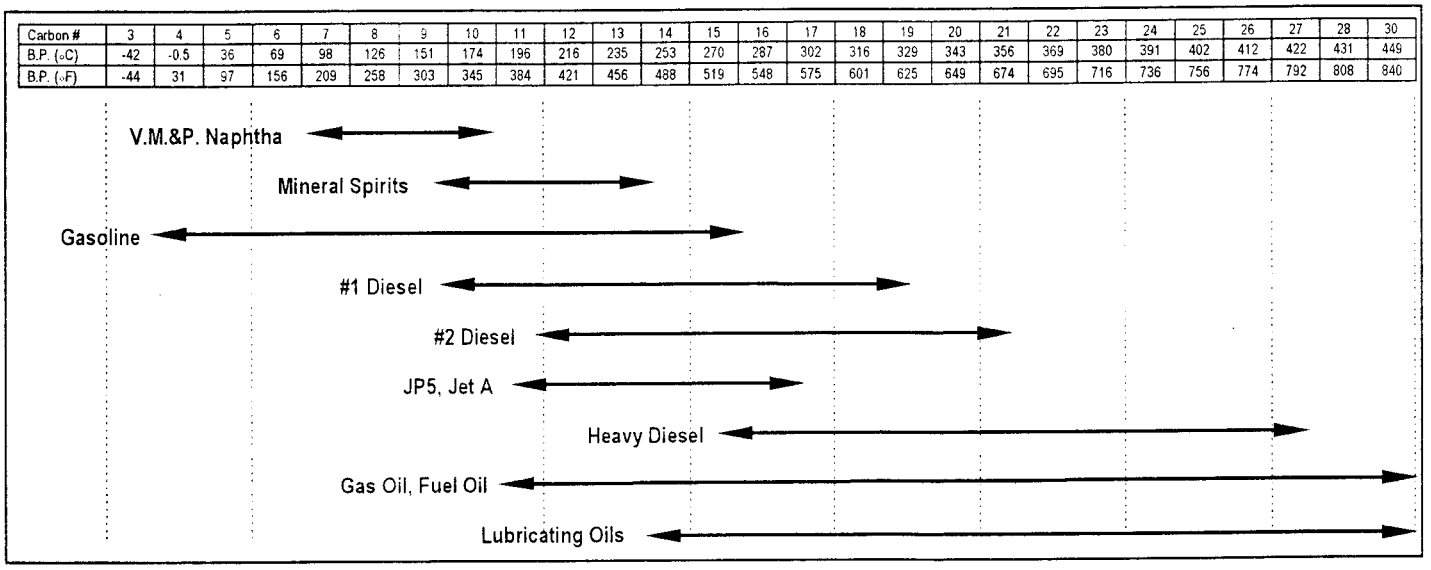
Adapted from: Drews, A.W.., ED; Manual on Hydrocarbon Anaysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA, 1989: p XVIII.

CLIENT I.D.: **12447.1 BH7-W**

Data File:	c:\star\module16\star1171.run
Sample ID:	E709129-03-2
Injection Date:	09/05/97 03:10:51 AM
Instrument (Inj):	GC 3600 channel A



Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

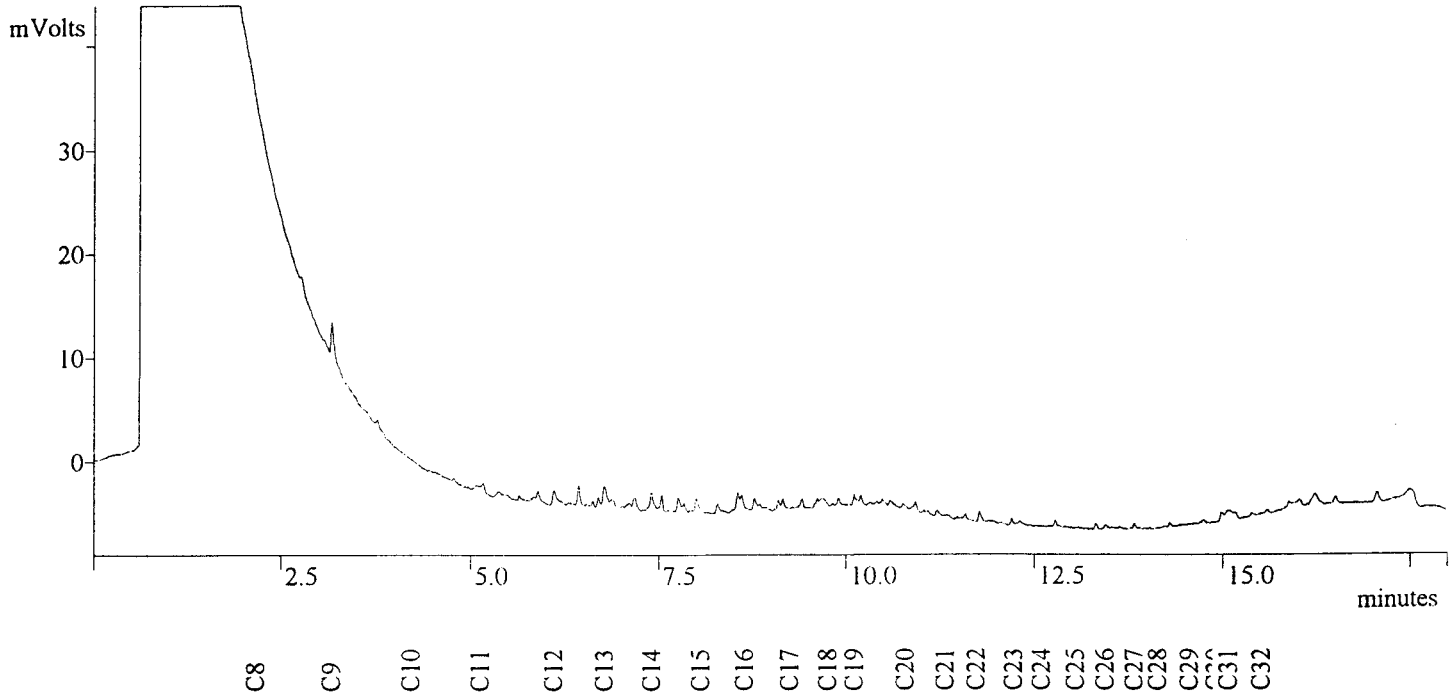


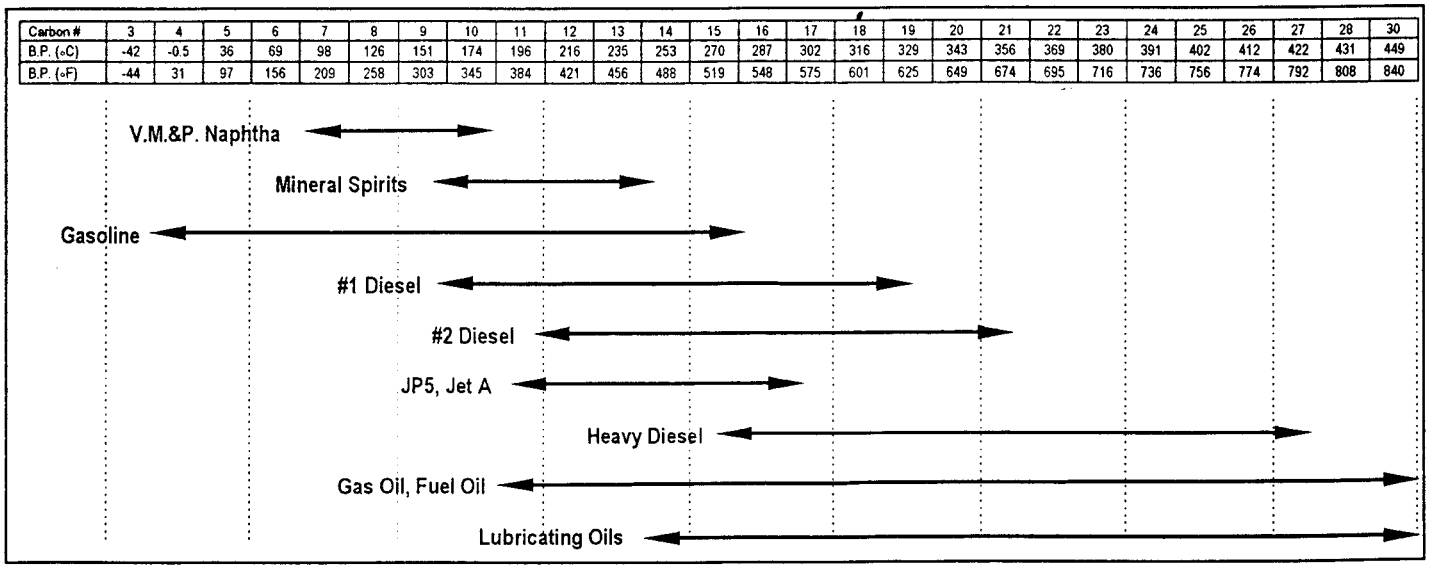
Boiling Point Distribution Range for Petroleum Based Fuel Products

Adapted from: Drews, A.W., ED; Manual on Hydrocarbon Anaysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA, 1989: p XVIII.

CLIENT I.D.: 12447.1 BH13-2

Data File:	c:\star\module18\star1196.run
Sample ID:	E709129-09-10 (-)
Injection Date:	09/05/97 10:11:23 PM
Instrument (Inj):	GC 3600 channel B





Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

Boiling Point Distribution Range for Petroleum Based Fuel Products

Adapted from: Drews, A.W.., ED; Manual on Hydrocarbon Anaysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA, 1989: p XVIII.

ETL Enviro·Test

A DIVISION OF ETL CHEMSPEC ANALYTICAL LIMITED

9936 - 67th Avenue, Edmonton, Alberta T6E 0P5 — Telephone: (403) 434-9509 — Fax: (403) 437-2311
Edmonton Toll Free Line — Telephone: 1-800-668-9878 — Fax: 1-800-286-7319
1313 - 44 Avenue N.E., Calgary, Alberta T2E 6L5 — Telephone: (403) 291-9897 — Fax: (403) 291-0298
107 - 111 Research Drive, Saskatoon, Sask. S7N 3R2 — Telephone: (306) 668-8370 — Fax: (306) 668-8383

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

DATE SUBMITTED: 970902 DATE REQUIRED: ______

SERVICE REQUESTED: ☑ REGULAR
☐ PRIORITY (50% SURCHARGE)
☐ EMERGENCY (100% SURCHARGE)

ANALYSIS REQUESTED:

SAMPLE ID	SAMPLED BY	DATE / TIME SAMPLED	SAMPLE TYPE	BTEX	TOTAL PURGEABLES	TOTAL EXTRACTABLES	LEAD	PHENOLS	Yukon Reg BTEX VPH LEPH HEPH	PAH 1S / PAH 1W	OCS 1W / OCS 1S	PCB 1S					SAMPLE RECEIVED (Y OR N)	SAMPLE BROKEN (Y OR N)	LAB SAMPLE NO.
12447.1 BH5-1	PJW	970827	Soil						/	/									-01
12447.1 BH7-1	↓	970827	Soil						/	/									-02
12447.1 BH7-W	↓	970827	Water						/	/	/								-03
12447.1 BH8-3	↓	970827	Soil						/										-04
12447.1 BH9-3	↓	970827	Soil						/										-05
12447.1 BH10-W	↓	970827	Water						/	/	/								-06
12447.1 BH11-1	↓	970828	Soil						/	/	/								-07
12447.1 BH12-3	↓	970828	Soil						/	/	/	/							-08
12447.1 BH13-2	↓	970828	Soil						/	/	/	/							-09
			PRESERVED / FILTERED																

NOTES & CONDITIONS:

1. Quote number must be provided to ensure proper pricing.
2. Turnaround times will vary dependant on complexity of analysis & lab workload at time of submission. Please contact the lab to confirm turnaround times.
3. All hazardous samples submitted must be labelled to comply with WHMIS regulations. This must include the nature of the hazard, as well as a contact name and phone number that the lab can contact for further information.

NOTE: Failure to properly complete all portions of this form may delay analysis.

CLIENT: EBA Whitehorse
NO. SAMPLES SUBMITTED: 24
CONTACT: D Wilson
NO. COOLERS / BOXES: 1
REPORT ADDRESS: Unit 6
151 Industrial Rd
PHONE: 403 668-3068
FAX: 403 668-4349
BILLING ADDRESS: Whitehorse, YT
P.O. #:
[redacted] Y [redacted] 3 [redacted]
JOB NO.: [redacted] 12[redacted].1 [redacted]

RELINQUISHED BY:	DATE / TIME	RECEIVED BY:	DATE / TIME
	DATE: TIME:	G Houle	DATE: 09/04/97 TIME: 10:03
RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:

SAMPLE CONDITION UPON RECEIPT:

FROZEN: ____ COLD: ____ AMBIENT: ____

OTHER (BREAKAGE, LEAKAGE, ETC.): ____

[redacted]

WHITE - Report Copy
[redacted] File C[redacted]
YELLOW - Customer Copy

APPENDIX B

Borehole Logs

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-05
SITE HJ041-01	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6805750 E599800	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯▯ CRREL BARREL ▮▯ DISTURBED

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						ORGANIC – med. brown
1.0	■	1				SAND & GRAVEL – some silt, 60 mm, dry, grey, no odour
2.0						GRAVEL – sandy, trace of silt, dry, grey, no odour
3.0	■	2		GP		
4.0	■	3				GRAVEL & SAND (30 mm) – dry, grey, no odour Note: Slough filled hole unable to redrill moved west 1 m
5.0						GRAVEL & SAND – trace of silt, moist to damp, water at 5 m grey, no odour
6.0	■	4				END OF BOREHOLE @ 6.0 m
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID
24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80
● PERCENT SAND ● 20 40 60 80
▲ PERCENT SILT OR FINES ▲ 20 40 60 80
◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0

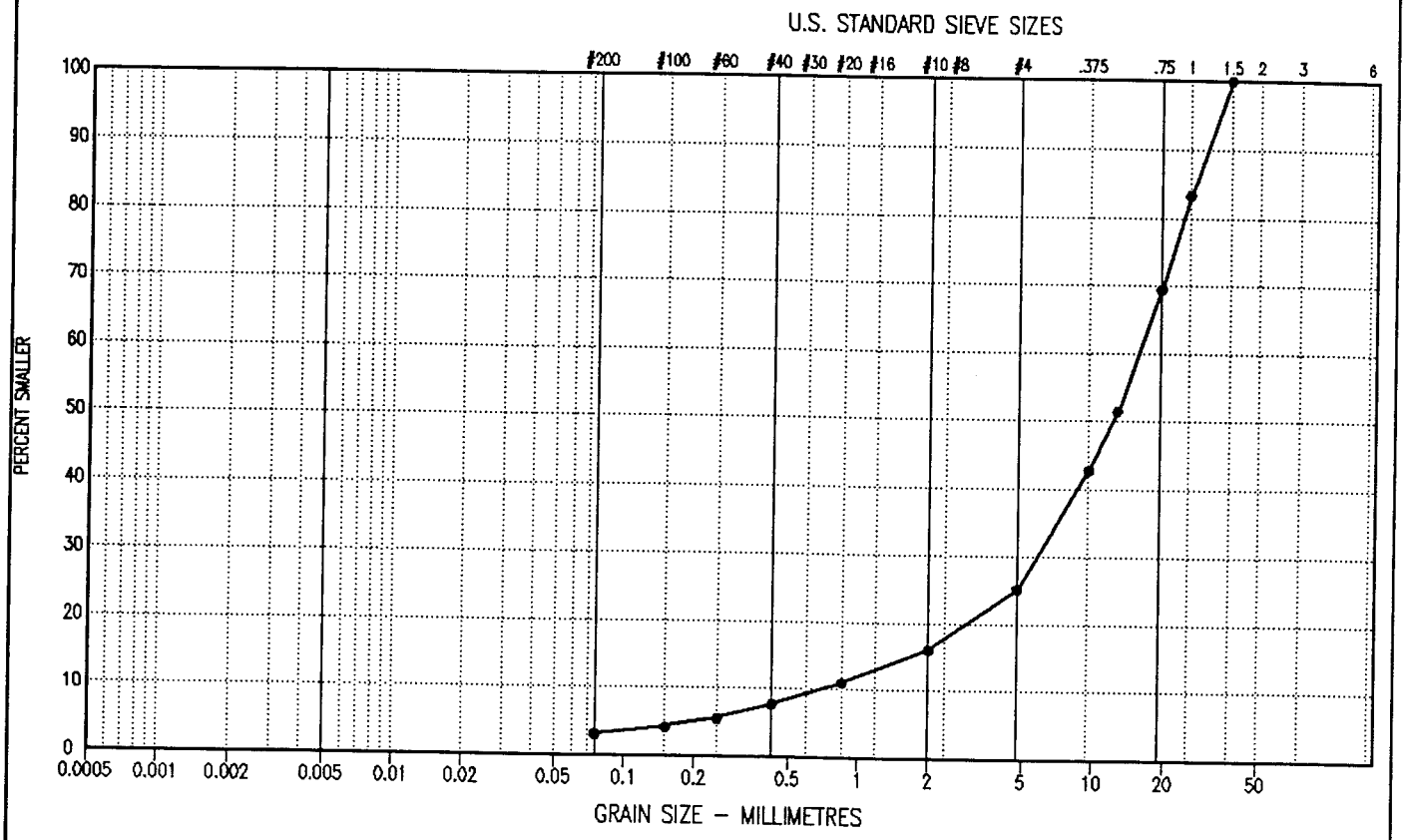
EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: DJW REVIEWED BY: JRT Fig. No:	COMPLETION DEPTH: 6 m COMPLETE: 97/08/27 Page 1 of 1

98/04/01 11:25AM (YUKON12)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●	12447-05	2.50 – 3.00	3.1	22.1	74.8	21.7	3.3	GP

Project: 0201-12447.1

Date Tested: 97/10/14 BY: JSB

Tested in accordance with ASTM D422 unless otherwise noted.

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-06
SITE HJ041-01	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6805750 E599800	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯▯ CRREL BARREL ▮▯ DISTURBED

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						ORGANICS – med. brown
1.0	■	5				GRAVEL – sandy, 50 mm gravel, dry, grey, no odour
2.0						
3.0	■	6				GRAVEL & SAND – dry, grey, no odour
4.0	■	7				GRAVEL & SAND – some silt, moist to damp, water at 4.5 m, grey brown
5.0						END OF BOREHOLE @ 4.5 M
6.0						
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID 24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80

● PERCENT SAND ● 20 40 60 80

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

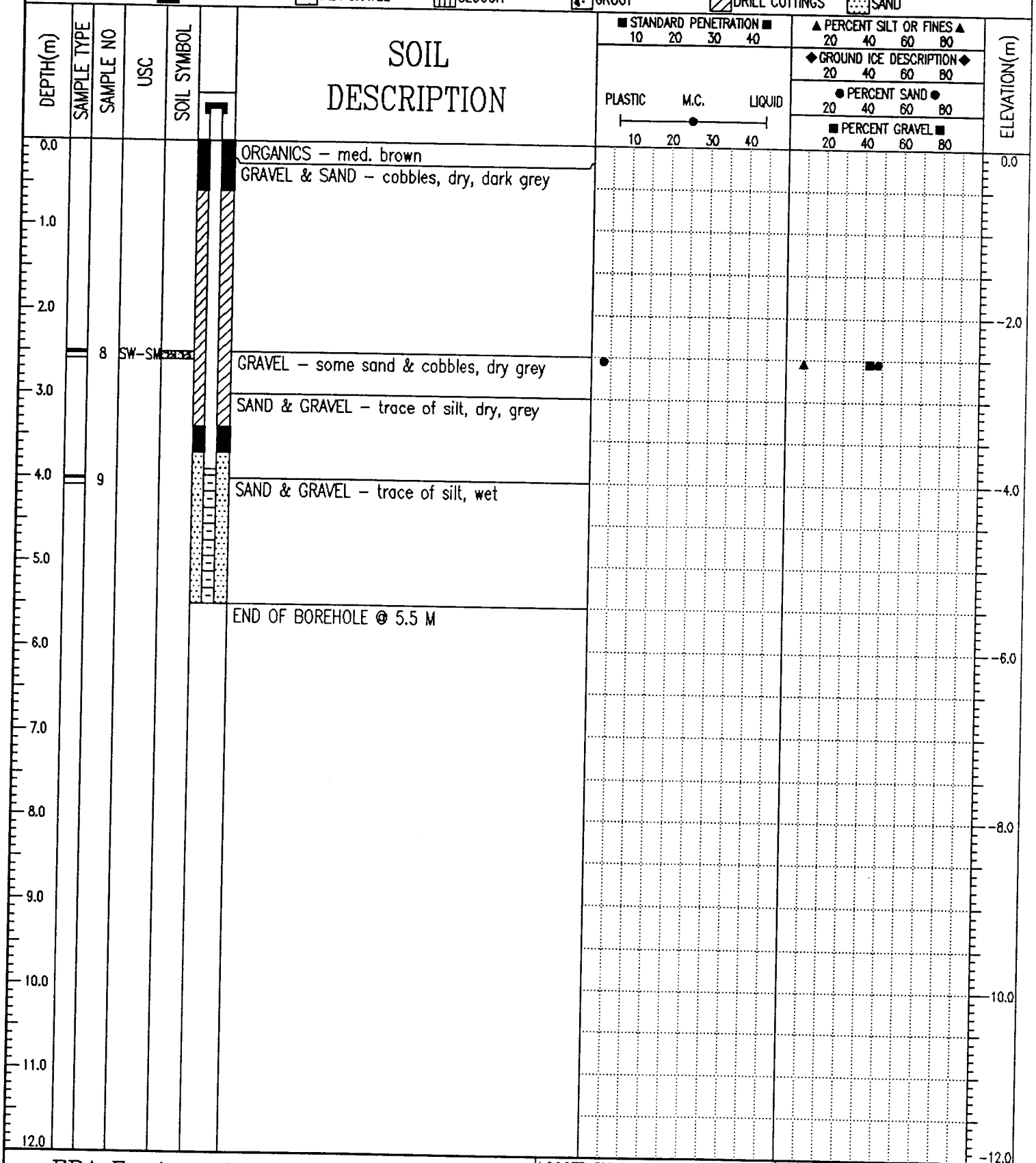
LOGGED BY: DJW	COMPLETION DEPTH: 4.5 m
REVIEWED BY: JRT	COMPLETE: 97/08/27
Fig. No:	Page 1 of 1

98/03/31 11:36AM (YUKON12)

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: MW12447-07
SITE HJ041-01	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6805750 E599800	ELEVATION:

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPLIT SP. | CRREL BARREL | NW CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



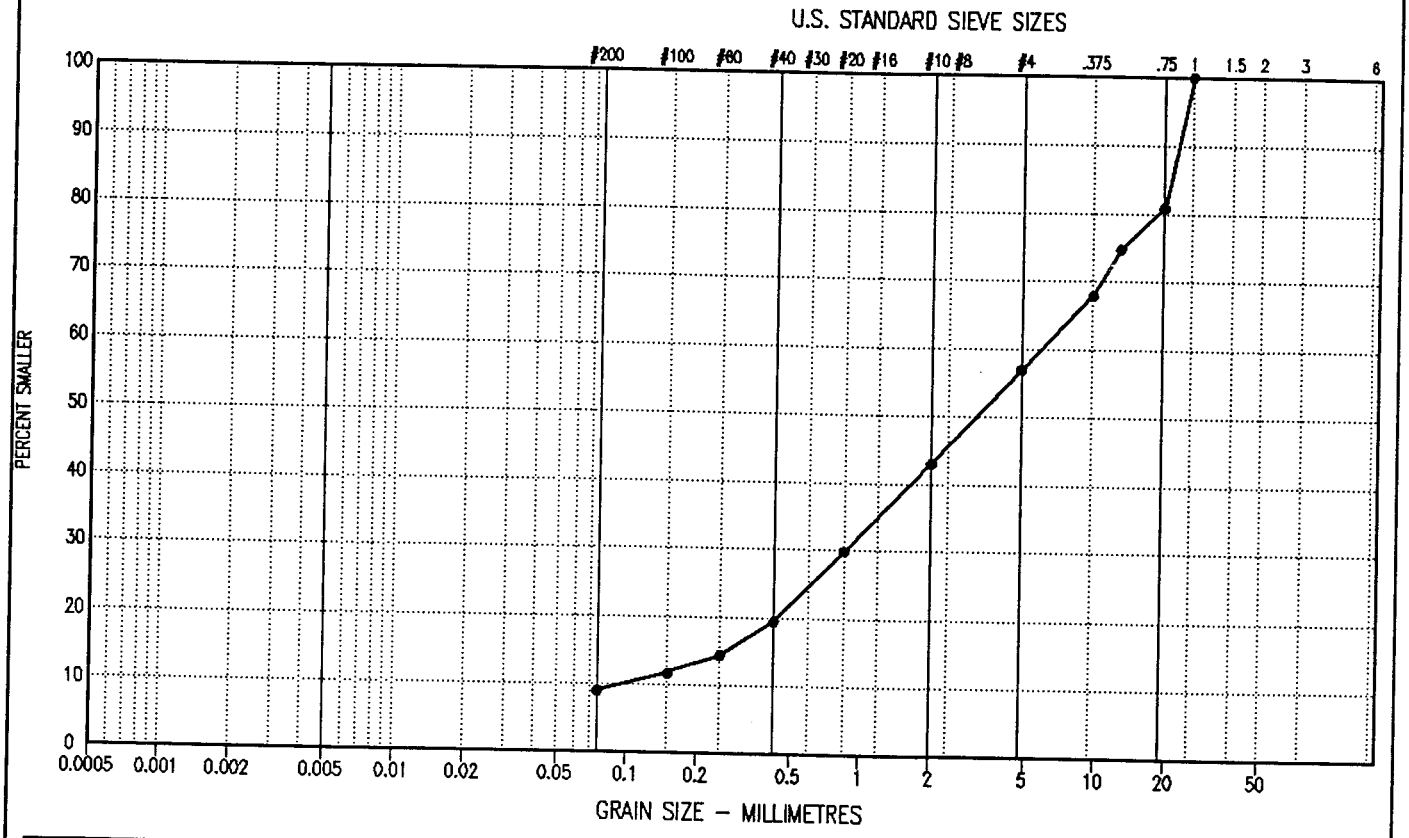
EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: DJW	COMPLETION DEPTH: 5.5 m
	REVIEWED BY: JRT	COMPLETE: 97/08/27
	Fig. No:	Page 1 of 1

98/04/01 11:33AM (WELL12)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●——●	12447-07	2.50 – 3.00	9.0	47.9	43.1	59.4	1.2	SW-SM

Project: 0201-12447.1

Date Tested: 97/10/09 BY: JSB

Tested in accordance with ASTM D422 unless otherwise noted.

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-08
SITE HJ041-05	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6806600 E600400	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯▯ CRREL BARREL ▮▯ DISTURBED

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						ORGANICS – med. brown
1.0	■	10				GRAVEL & SAND – cobbles, dry, grey brown
2.0						
3.0	■	11				
4.0	■	12				– damp & water at end of hole
5.0						END OF BOREHOLE @ 4.5 M
6.0						
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID
24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80

● PERCENT SAND ● 20 40 60 80

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: DJW	COMPLETION DEPTH: *.*
REVIEWED BY: JRT	COMPLETE: 97/08/27
Fig. No:	Page 1 of 1

98/03/31 10:37AM (YUKON12)

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-09
SITE HJ041-05	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6806600 E600400	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯▯ CRREL BARREL ◧ DISTURBED

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						ORGANICS – med. brown
1.0	■	13				GRAVEL & SAND – cobbles, dry, grey brown
2.0						
3.0	■	14				
4.0						SAND & GRAVEL – some silt, wet, brown
	■	15		SW-SM		
						WATER
5.0						END OF BOREHOLE @ 4.5 m
6.0						
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID

24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80

● PERCENT SAND ● 20 40 60 80

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0

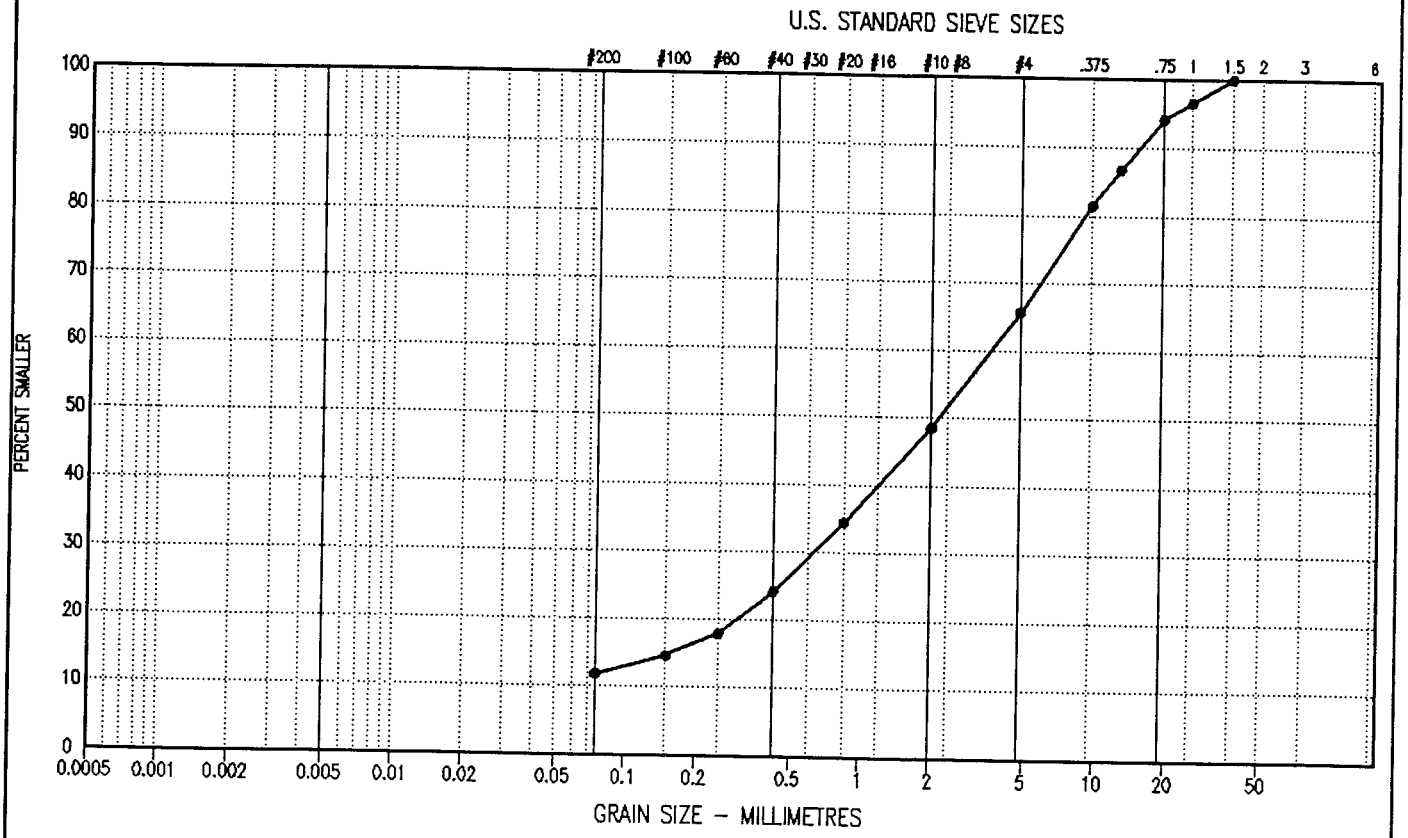
EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: DJW	COMPLETION DEPTH: 4.5 m
	REVIEWED BY: JRT	COMPLETE: 97/08/27
	Fig. No:	Page 1 of 1

98/04/01 11:26AM (YUKON12)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●——●	12447-09	4.00 – 4.50	11.8	53.9	34.3	60.4	1.8	SW-SM

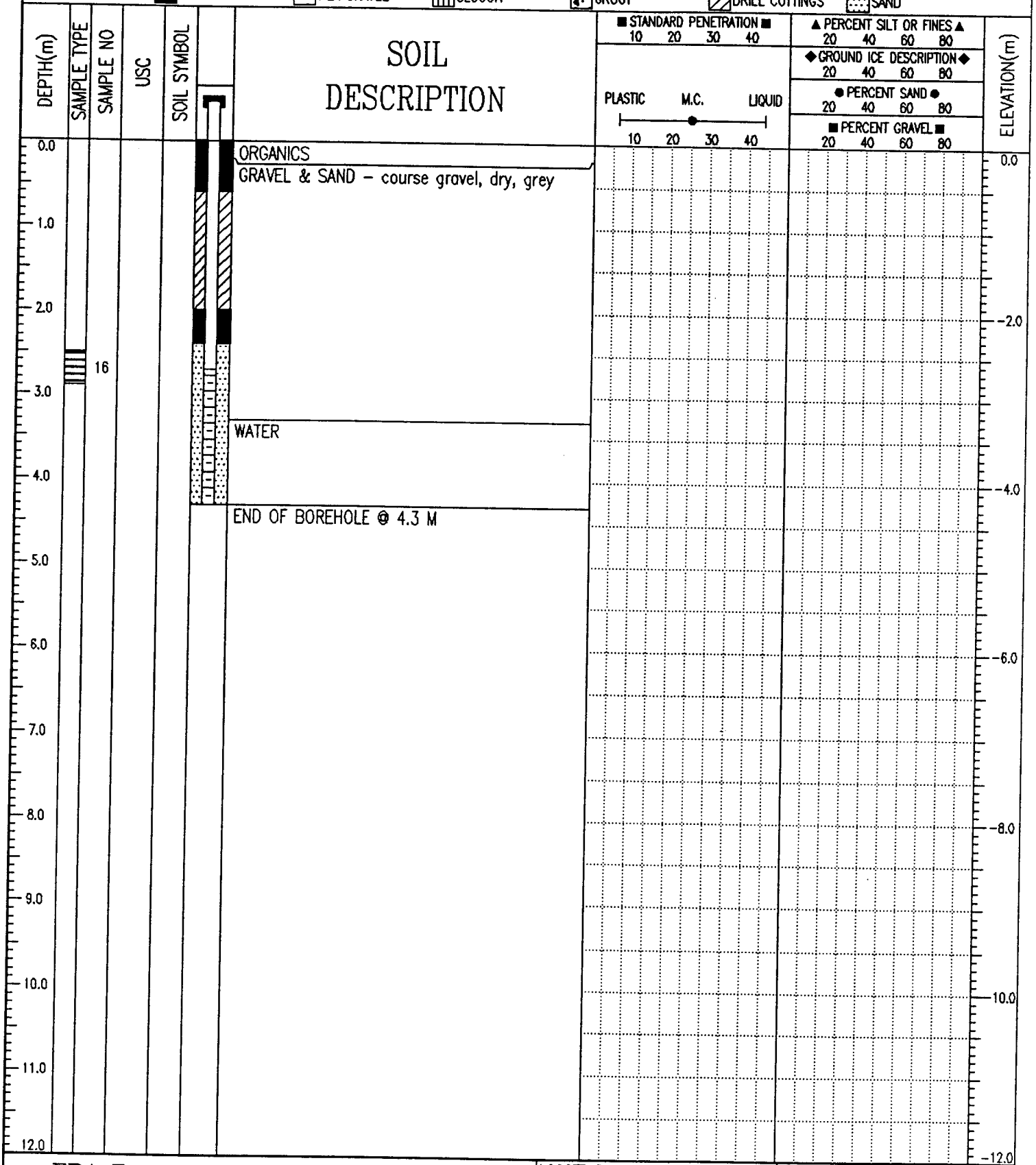
Project: 0201-12447.1 Date Tested: 97/10/09 BY: JSB

Tested in accordance with ASTM D422 unless otherwise noted.

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: MW12447-10
SITE HJ041-05	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6806600 E600400	ELEVATION:

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPLIT SP. | CRREL BARREL | NW CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: DJW	COMPLETION DEPTH: 4.3 m
	REVIEWED BY: JRT	COMPLETE: 97/08/27
	Fig. No:	Page 1 of 1

98/03/31 10:32AM (WELL12)

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-11
SITE HJ036-03	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6767800 E641050	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯▯ CRREL BARREL ▮▮ DISTURBED

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						GRAVEL – sandy, silty, some cobble, medium to course gravel, moist, grey
1.0	■	17				
						– dry
2.0						
	■	18				
3.0						
4.0	■	19				
5.0						SAND & GRAVEL – some silt & cobbles, fine to med. gravel, dry, light grey
	■	20				
6.0						END OF BOREHOLE @ 6.0 m
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID
24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80

● PERCENT SAND ● 20 40 60 80

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: DJW	COMPLETION DEPTH: 6 m
REVIEWED BY: JRT	COMPLETE: 97/08/27
Fig. No:	Page 1 of 1

98/03/31 10:30AM (YUKON12)

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-12
SITE HJ036-03	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6767800 E641050	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯ CRREL BARREL ▮ DISTURBED

SOIL DESCRIPTION

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID 24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80

● PERCENT SAND ● 20 40 60 80

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	DEPTH(ft)
0.0						0.0
						2.0
1.0	■	21				4.0
						6.0
2.0	■	22				8.0
3.0						10.0
						12.0
4.0	■	23				14.0
5.0						16.0
						18.0
6.0						20.0
						22.0
7.0						24.0
						26.0
8.0						28.0
9.0						30.0
						32.0
10.0						34.0
						36.0
11.0						38.0
12.0						

GRAVEL & SAND – some silt & cobbles, 50 mm gravel, moist, grey brown

– pieces of garbage – metal, glass

END OF BOREHOLE @ 6.0 m
NOTE: Auger jammed and last sample was not considered to be representative

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: DJW	COMPLETION DEPTH: 6 m
REVIEWED BY: JRT	COMPLETE: 97/08/27
Fig. No:	Page 1 of 1

98/03/31 10:40AM (YUKON12)

PHASE 11 ENVIRONMENTAL ASSESSMENT	CLIENT: DIAND	BOREHOLE NO: 12447-13
SITE HJ041-03	DRILL: CME 75	PROJECT NO: 0201-97-12447.1
KLUANE LAKE, YT	UTM ZONE: 7 N6767800 E641050	ELEVATION:

SAMPLE TYPE ■ GRAB ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯ CRREL BARREL ▮ DISTURBED

DEPTH(m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						GRAVEL & SAND – silty, some cobble, med. to course gravel, moist, dark grey
3.0		24				– fine to med. gravel
4.0		25				– med. to course gravel
6.0		26		GW-GM		– fine to med. gravel
7.0		27				– easier to drill
8.0						– more cobbles
9.0		28				– very easy drilling
11.5						END OF BOREHOLE @ 11.5 M

■ STANDARD PENETRATION ■ 20 40 60 80

PLASTIC M.C. LIQUID 24 48 72 96

■ PERCENT GRAVEL ■ 20 40 60 80

● PERCENT SAND ● 20 40 60 80

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

◆ PERCENT CLAY ◆ 20 40 60 80

DEPTH(ft) 0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0 22.0 24.0 26.0 28.0 30.0 32.0 34.0 36.0 38.0

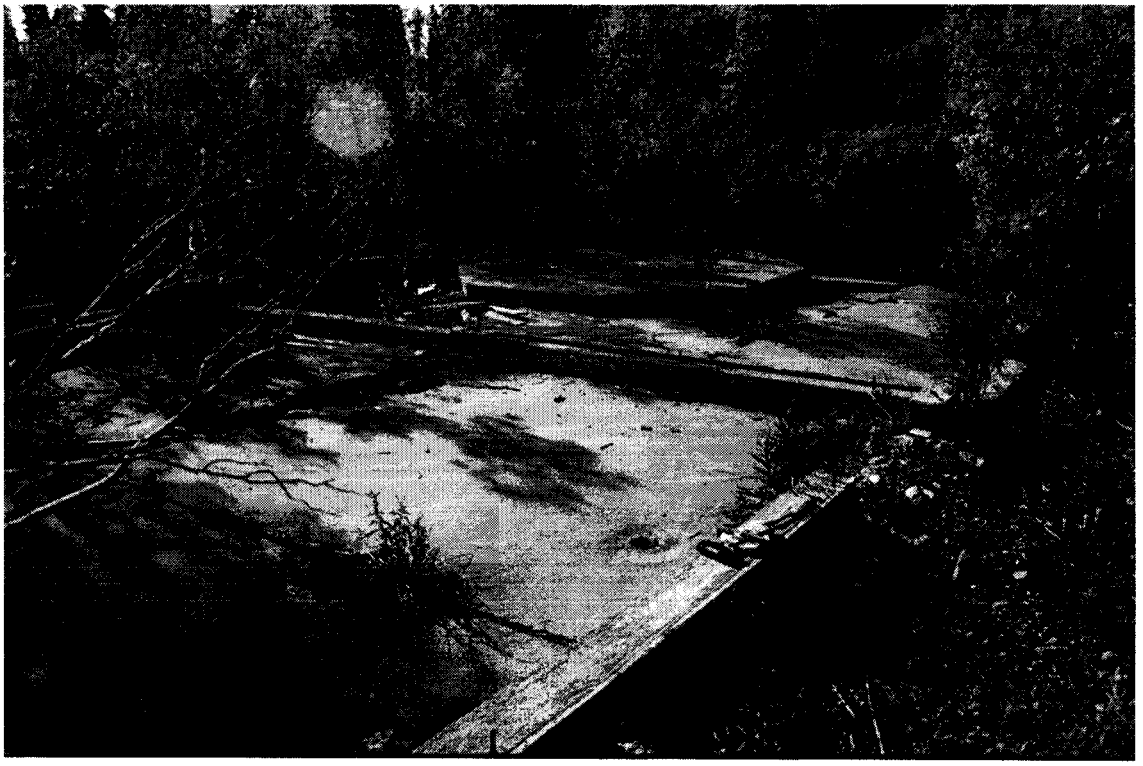
EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: DJW	COMPLETION DEPTH: 11.5 m
REVIEWED BY: JRT	COMPLETE: 97/08/27
Fig. No:	Page 1 of 1

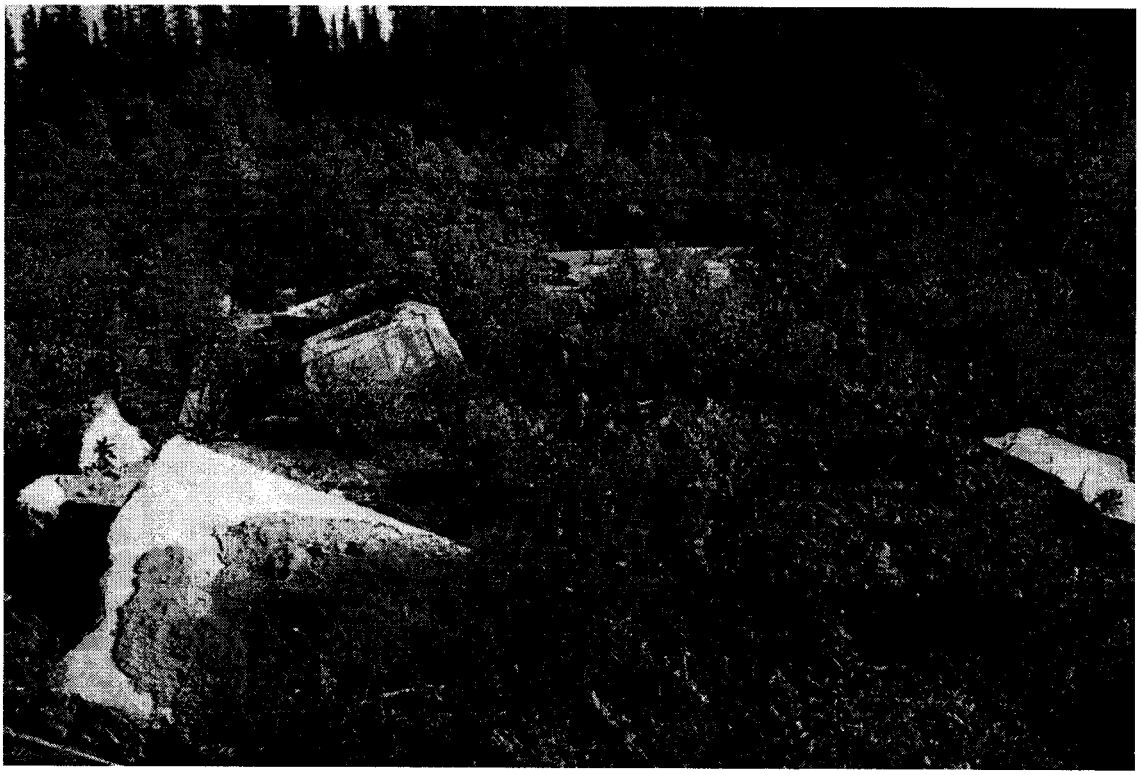
98/04/01 11:27AM (YUKON12)

APPENDIX C

Site Photographs

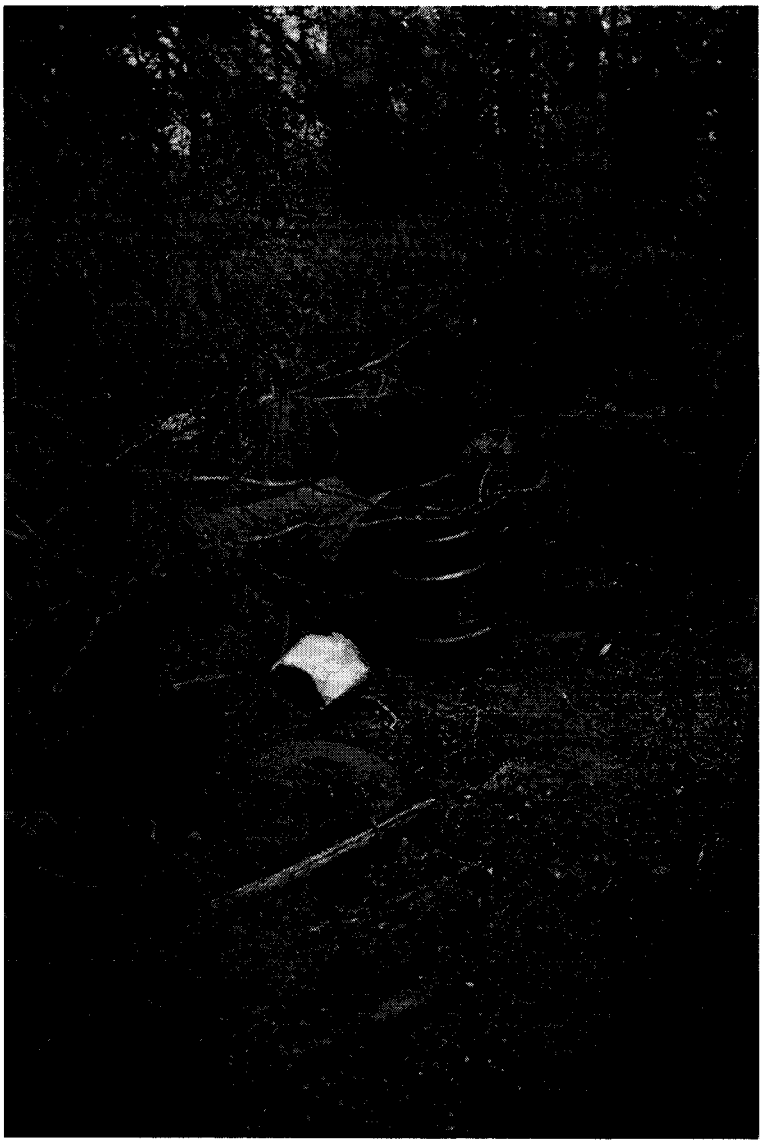


Photograph 1: Site HJ035 showing concrete foundation remains at west end of site.



Photograph 2: Site HJ035 showing concrete foundation remains in center of site.

Photograph 3: Site HJ041-2 showing drums and waste metal scattered amongst trees.



Photograph 4: Site HJ041-2 showing drums and waste metal scattered amongst trees.

Photograph 5: Site HJ041-4 showing drums and waste metal scattered along bank of Duke R.

Photograph 6: Site HJ041-6 showing asbestos brake pads and scrap metal.

Photograph 7: Site HJ041-3 showing waste disposal site with wood and metal wastes.

Photograph 8: Site HJ041-3 showing waste disposal site.