



*not in data base*

**ENVIRONMENTAL CLEAN-UP STUDY  
OF  
21 DEW STATION SITES IN CANADA**

**FINAL REPORT: DRAFT  
March 1991**

**VOLUME 3  
BAR 1  
Komakuk Beach, Yukon Territory**



**UMA Engineering Ltd.**  
**Engineers, Planners & Surveyors**

In association with



**Hardy BBT Limited**  
CONSULTING ENGINEERING & ENVIRONMENTAL SERVICES



**Jacques  
Whitford Group**

## TABLE OF CONTENTS

|                                            | page no. |
|--------------------------------------------|----------|
| 1.0 Introduction                           | 1-1      |
| 1.1 Background and objectives              | 1-1      |
| 1.2 Fieldwork and sampling                 | 1-2      |
| 1.3 Data assessment criteria               | 1-2      |
| 2.0 Site overview                          | 2-1      |
| 3.0 Description of biophysical environment | 3-1      |
| 3.1 Climate                                | 3-1      |
| 3.1.1 Precipitation                        | 3-1      |
| 3.1.2 Temperature                          | 3-1      |
| 3.1.3 Wind and fog                         | 3-1      |
| 3.2 Geology                                | 3-1      |
| 3.2.1 Overview                             | 3-1      |
| 3.2.2 Terrain units                        | 3-3      |
| 3.2.2.1 Terrain unit 1                     | 3-3      |
| 3.2.2.2 Terrain unit 2                     | 3-3      |
| 3.2.2.3 Terrain unit 3                     | 3-3      |
| 3.3 Hydrology                              | 3-3      |
| 3.4 Flora                                  | 3-5      |
| 3.5 Fauna                                  | 3-5      |
| 3.5.1 Large mammals                        | 3-5      |
| 3.5.2 Other terrestrial mammals            | 3-6      |
| 3.5.3 Marine mammals                       | 3-6      |
| 3.5.4 Raptors                              | 3-7      |
| 3.5.5 Waterfowl                            | 3-7      |
| 3.5.6 Other avifauna                       | 3-7      |
| 3.6 Heritage resources                     | 3-7      |
| 3.7 Land use                               | 3-9      |
| 4.0 Site infrastructure                    | 4-1      |
| 4.1 Buildings                              | 4-1      |
| 4.2 Fuel storage and distribution          | 4-1      |

|         |                                                                   |     |
|---------|-------------------------------------------------------------------|-----|
| 4.3     | Waste treatment                                                   | 4-1 |
| 4.4     | Hazardous material status                                         | 4-1 |
| 4.5     | Spill history                                                     | 4-3 |
| 5.0     | Asbestos, paint and pcb results                                   | 5-1 |
| 5.1     | Asbestos                                                          | 5-1 |
| 5.1.1   | Record review                                                     | 5-1 |
| 5.1.2   | Field survey                                                      | 5-1 |
| 5.2     | Paint                                                             | 5-1 |
| 5.2.1   | Field survey                                                      | 5-1 |
| 5.2.2   | Analytical results                                                | 5-3 |
| 5.3     | Pcb                                                               | 5-3 |
| 5.3.1   | Record review                                                     | 5-3 |
| 5.3.2   | Field survey                                                      | 5-3 |
| 5.3.2.1 | Analytical results                                                | 5-5 |
| 6.0     | Site assessment and clean-up options                              | 6-1 |
| 6.1     | Site evaluation of risk assessment and analytical results summary | 6-1 |
| 6.1.1   | Site background conditions                                        | 6-2 |
| 6.1.2   | Visual observations and sample locations                          | 6-2 |
| 6.1.3   | Analytical results                                                | 6-2 |
| 6.2     | Landfills                                                         | 6-2 |
| 6.2.1   | Landfill a                                                        | 6-5 |
| 6.2.1.1 | Visual observations and sample locations                          | 6-5 |
| 6.2.1.2 | Analytical results                                                | 6-5 |
| 6.2.1.3 | Evaluation of risk assessment and analytical results              | 6-7 |
| 6.2.1.4 | Clean-up options                                                  | 6-7 |
| 6.2.2   | Landfill b                                                        | 6-7 |
| 6.2.2.1 | Visual observations and sample locations                          | 6-7 |

|         |                                                      |      |
|---------|------------------------------------------------------|------|
| 6.2.2.2 | Analytical results                                   | 6-7  |
| 6.2.2.3 | Evaluation of risk assessment and analytical results | 6-9  |
| 6.2.2.4 | Clean-up options                                     | 6-9  |
| 6.2.3   | Landfill c                                           | 6-9  |
| 6.2.3.1 | Visual observations and sample locations             | 6-10 |
| 6.2.3.2 | Analytical results                                   | 6-10 |
| 6.2.3.3 | Evaluation of risk assessment and analytical results | 6-10 |
| 6.2.3.4 | Clean-up options                                     | 6-10 |
| 6.3     | Pol areas                                            | 6-10 |
| 6.3.1   | Pol 1                                                | 6-10 |
| 6.3.1.1 | Visual observations and sample locations             | 6-11 |
| 6.3.1.2 | Analytical results                                   | 6-11 |
| 6.3.1.3 | Evaluation of risk assessment and analytical results | 6-11 |
| 6.3.1.4 | Clean-up options                                     | 6-11 |
| 6.3.2   | Pol 2                                                | 6-11 |
| 6.3.2.1 | Visual observations and sample locations             | 6-11 |
| 6.3.2.2 | Analytical results                                   | 6-11 |
| 6.3.2.3 | Evaluation of risk assessment and analytical results | 6-12 |
| 6.3.2.4 | Clean-up options                                     | 6-12 |
| 6.3.3   | Pol 3                                                | 6-14 |
| 6.3.3.1 | Visual observations and sample locations             | 6-14 |
| 6.3.3.2 | Analytical results                                   | 6-14 |
| 6.3.3.3 | Evaluation of risk assessment and analytical results | 6-14 |
| 6.3.3.4 | Clean-up options                                     | 6-14 |
| 6.3.4   | Pol 4                                                | 6-14 |
| 6.3.4.1 | Visual observations and sample locations             | 6-14 |
| 6.3.4.2 | Analytical results                                   | 6-15 |
| 6.3.4.3 | Evaluation of risk assessment and analytical results | 6-15 |

|         |                                                      |      |
|---------|------------------------------------------------------|------|
| 6.3.4.4 | Clean-up options                                     | 6-15 |
| 6.4     | Pallet line areas                                    | 6-15 |
| 6.4.1   | Pallet line 1                                        | 6-15 |
| 6.4.1.1 | Visual observations and sample locations             | 6-15 |
| 6.4.1.2 | Analytical results                                   | 6-16 |
| 6.4.1.3 | Evaluation of risk assessment and analytical results | 6-16 |
| 6.4.1.4 | Clean-up options                                     | 6-16 |
| 6.4.2   | Pallet line 2                                        | 6-16 |
| 6.4.2.1 | Visual observations and sample locations             | 6-16 |
| 6.4.2.2 | Analytical results                                   | 6-16 |
| 6.4.2.3 | Evaluation of risk assessment and analytical results | 6-16 |
| 6.4.2.4 | Clean-up options                                     | 6-17 |
| 6.4.3   | Pallet line 3                                        | 6-17 |
| 6.4.3.1 | Visual observations and sample locations             | 6-17 |
| 6.4.3.2 | Analytical results                                   | 6-17 |
| 6.4.3.3 | Evaluation of risk assessment and analytical results | 6-17 |
| 6.4.3.4 | Clean-up options                                     | 6-18 |
| 6.5     | Outfall areas                                        | 6-18 |
| 6.5.1   | Sewage outfall a                                     | 6-18 |
| 6.5.1.1 | Visual observations and sample location              | 6-18 |
| 6.5.1.2 | Analytical results                                   | 6-18 |
| 6.5.1.3 | Evaluation of risk assessment and analytical results | 6-19 |
| 6.5.1.4 | Clean-up options                                     | 6-19 |
| 6.5.2   | Sewage outfall b                                     | 6-19 |
| 6.5.2.1 | Visual observations and sample locations             | 6-19 |
| 6.5.2.2 | Analytical results                                   | 6-19 |
| 6.5.2.3 | Evaluation of risk assessment and analytical results | 6-19 |
| 6.5.2.4 | Clean-up options                                     | 6-19 |

|         |                                                      |      |
|---------|------------------------------------------------------|------|
| 6.5.3   | Sewage outfall c                                     | 6-21 |
| 6.5.3.1 | Visual observations and sample location              | 6-21 |
| 6.5.3.2 | Analytical results                                   | 6-21 |
| 6.5.3.3 | Evaluation of risk assessment and analytical results | 6-21 |
| 6.5.3.4 | Clean-up options                                     | 6-23 |
| 6.5.4   | Sewage outfall d                                     | 6-21 |
| 6.5.4.1 | Visual observations and sample locations             | 6-21 |
| 6.5.4.2 | Analytical results                                   | 6-22 |
| 6.5.4.3 | Evaluation of risk assessment and analytical results | 6-22 |
| 6.5.4.4 | Clean-up options                                     | 6-22 |
| 6.6     | Building proximities                                 | 6-22 |
| 6.6.1   | Site north of water supply                           | 6-22 |
| 6.6.1.1 | Visual observations and sample locations             | 6-22 |
| 6.6.1.2 | Analytical results                                   | 6-23 |
| 6.6.2   | Site north of warehouse                              | 6-23 |
| 6.6.2.1 | Visual observation and sample location               | 6-23 |
| 6.6.2.2 | Analytical results                                   | 6-23 |
| 6.6.2.3 | Evaluation of risk assessment and analytical results | 6-23 |
| 6.6.2.4 | Clean-up options                                     | 6-23 |
| 6.6.3   | Site west of garage                                  | 6-23 |
| 6.6.3.1 | Visual observation and sample location               | 6-23 |
| 6.6.3.2 | Analytical results                                   | 6-23 |
| 6.6.3.3 | Evaluation of risk assessment and analytical results | 6-23 |
| 6.6.3.4 | Clean-up options                                     | 6-24 |
| 6.6.4   | Site north of sewage outfall b                       | 6-24 |
| 6.6.4.1 | Visual observations and sample location              | 6-24 |
| 6.6.4.2 | Analytical results                                   | 6-24 |

|         |                                                      |       |
|---------|------------------------------------------------------|-------|
| 6.6.5   | Site north of garage                                 | 6-24  |
| 6.6.5.1 | Visual observations and sample location              | 6-24  |
| 6.6.5.2 | Analytical results                                   | 6-24  |
| 6.6.6   | Site northeast corner of garage                      | 6-24  |
| 6.6.6.1 | Visual observations and sample location              | 6-25  |
| 6.6.6.2 | Analytical results                                   | 6-25  |
| 6.6.6.3 | Evaluation of risk assessment and analytical results | 6-25  |
| 6.6.6.4 | Clean-up options                                     | 6-25  |
| 7.0     | Facility decommissioning                             | 7-177 |
| 7.1     | Overview                                             | 7-1   |
| 7.2     | Site clean-up options and monitoring                 | 7-1   |

## LIST OF TABLES

|                                                               | Page No. |
|---------------------------------------------------------------|----------|
| Table 1.1 Number of Samples Taken, Number of Samples Analyzed | 1-3      |
| Table 3.1 Climate Normals                                     | 3-2      |
| Table 4.1 Fuel Storage Facilities                             | 4-1      |
| Table 5.1 Asbestos Survey                                     | 5-1      |
| Table 5.2 Asbestos Analysis                                   | 5-3      |
| Table 5.3 Paint Survey                                        | 5-4      |
| Table 6.1 Relevant Soil Results: Background                   | 6-4      |
| Table 6.2 Relevant Soil Results: Landfill A                   | 6-6      |
| Table 6.3 Relevant Soil Results: Landfill B                   | 6-8      |
| Table 6.4 Relevant Soil Results: POL 2                        | 6-13     |
| Table 6.5 Relevant Soil Results: Sewage Outfall A             | 6-18     |
| Table 6.6 Relevant Soil Results: Sewage Outfall B             | 6-20     |
| Table 6.7 Relevant Soil Results: Sewage Outfall D             | 6-22     |
| Table 7.1 Summary of Clean-up Options                         | 7-2      |

## LIST OF FIGURES

|                                    | Page No. |
|------------------------------------|----------|
| Figure 2.1 Site Location           | 2-2      |
| Figure 3.1 Geological Overview Map | 3-4      |
| Figure 3.2 Heritage Resources      | 3-8      |
| Figure 4.1 Site Plan               | 4-2      |
| Figure 6.1 Sample Site Locatins    | 6-3      |

## **1.0 INTRODUCTION**

---

### **1.1 BACKGROUND AND OBJECTIVES**

UMA Engineering Limited (UMA) in association with Hardy BBT Ltd. (HBT) and Jacques Whitford and Associates Limited (JWA) was commissioned in the spring of 1990 by the Canadian Commercial Corporation (CCC) on behalf of the United States Air Force (USAF) to carry out an environmental clean-up study of 21 DEW Station Sites in Canada.

The overall purpose of this study is to identify and investigate areas of the 21 DEW Station Sites as they have been affected by past waste disposal and spills. In addition, the objective of the study is to determine and evaluate decommissioning alternatives for waste disposal and spill areas, and facility demolition debris (including associated hazardous or toxic materials). Details of the overall study objectives are provided in Volume 2 (Section 1.3).

The study consisted of four phases generally following the National Guidelines for Decommissioning Industrial Sites (DOE 8505, July 1989). These include:

- (1) Phase I - a literature review of baseline environmental conditions and existing data on waste materials, spills and facilities at each site.
- (2) Phase II/III - a combined field reconnaissance, field sample collection, and sample analysis for each site.
- (3) Phase IV - a risk assessment for each station and the development of decommissioning options.

Details of these phases are provided in Volume 2 (Section 1.3). The final report for this study is provided in 24 volumes as follows:

- (1) Volume 1 - Executive Summary.
- (2) Volume 2 - General Information.
- (3) Volumes 3-23 - Specific DEW Station Reports.
- (4) Volume 24 - Quality Assurance and Quality Control.

This Volume (Volume 3) is a specific DEW Station report that presents all four phases pertaining to BAR-1, Komakuk Beach. An overview of the site based on a review of existing literature is presented in Section 2.0. Section 3.0 provides a description of the biophysical environment, including heritage resources and land use. Section 4.0 describes the site infrastructure. Sections 5.0 and 6.0 provide the findings of the field survey. In Section 5.0, the asbestos, paint and PCB findings are presented. In Section 6.0, the results of soil and water sampling are summarized for background conditions, landfills, POL areas, pallet lines, outfall areas, and building proximities.

The facility clean-up and decommissioning recommendations are provided in Section 7.0. References cited are listed in Volume 2.

## **1.2 FIELDWORK AND SAMPLING**

Field work at BAR-1 took place between August 6, 1990 and August 9, 1990. A brief reconnaissance was completed initially. This was followed by sampling in selected areas.

Data showing the number of water, soil, paint, asbestos, and PCB oil samples taken at BAR-1 are provided in Table 1.1. Sample site descriptions are presented in Appendix B.

The general approach to field survey and laboratory analysis is described in Volume 2, Section 3.2. Quality assurance and quality control measures are described in Volume 24.

## **1.3 DATA ASSESSMENT CRITERIA**

Indicator chemicals analyzed were screened using the Quebec Soil/Water Guidelines. If the concentration of metals was above the 50 percent Level A Quebec Soil/Water Guidelines, or organic compounds were detected, the results were defined as relevant and used in the baseline risk assessment. If the concentration exceeded the Quebec Level B or C Guideline, it was also noted. Typical laboratory contaminants, discussed in Volume 2, were not considered in the risk assessment.

---

Table 1.1

Number of Samples Taken  
Number of Samples Analyzed

| SAMPLE TYPE     | SAMPLES<br>TAKEN* | SAMPLES ANALYZED* |              | SAMPLES NOT<br>ANALYZED * |
|-----------------|-------------------|-------------------|--------------|---------------------------|
|                 |                   | FIRST ROUND       | SECOND ROUND |                           |
| Soil            | 49                | 22                | 15           | 12                        |
| Water           | 12                | 12                | 0            | 0                         |
| Paint           | 5                 | 5                 | 0            | 0                         |
| Asbestos        | 5                 | 5                 | 0            | 0                         |
| Transformer Oil | 2                 | 2                 | 0            | 0                         |

\* Does not include duplicates or replicates

---

## 2.0

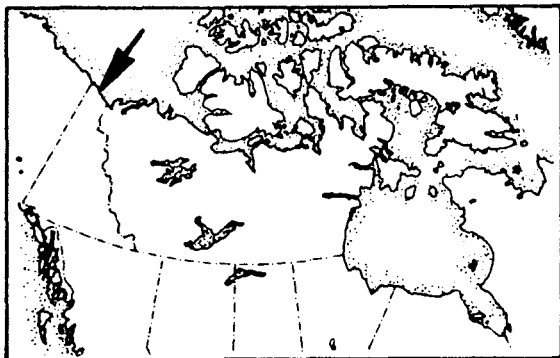
## SITE OVERVIEW

---

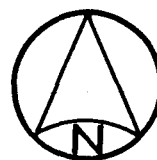
BAR-1 Komakuk Beach is located on the coast of the Beaufort Sea approximately 32 km east of the Alaska border, at 69° 35' 53" north latitude and 140° 11' 00" west longitude. The site is still part of the DEW Station system but is a future NWS Short Range Radar site. The nearest community with an aircraft charter base and a full range of commercial and public services is Inuvik, 280 km to the east. Figure 2.1 shows the general location of the station in the area and provides some climate and access information.

BAR-1 was an auxiliary station within the original DEW Station system. It will be decommissioned, but will have a remotely operated NWS Short Range Radar Station in its vicinity. The location of various buildings and activity areas on the station lands is provided in Section 3.0. Further site specific information about the facilities and the regional environment is provided in the Phase I Report of this study.

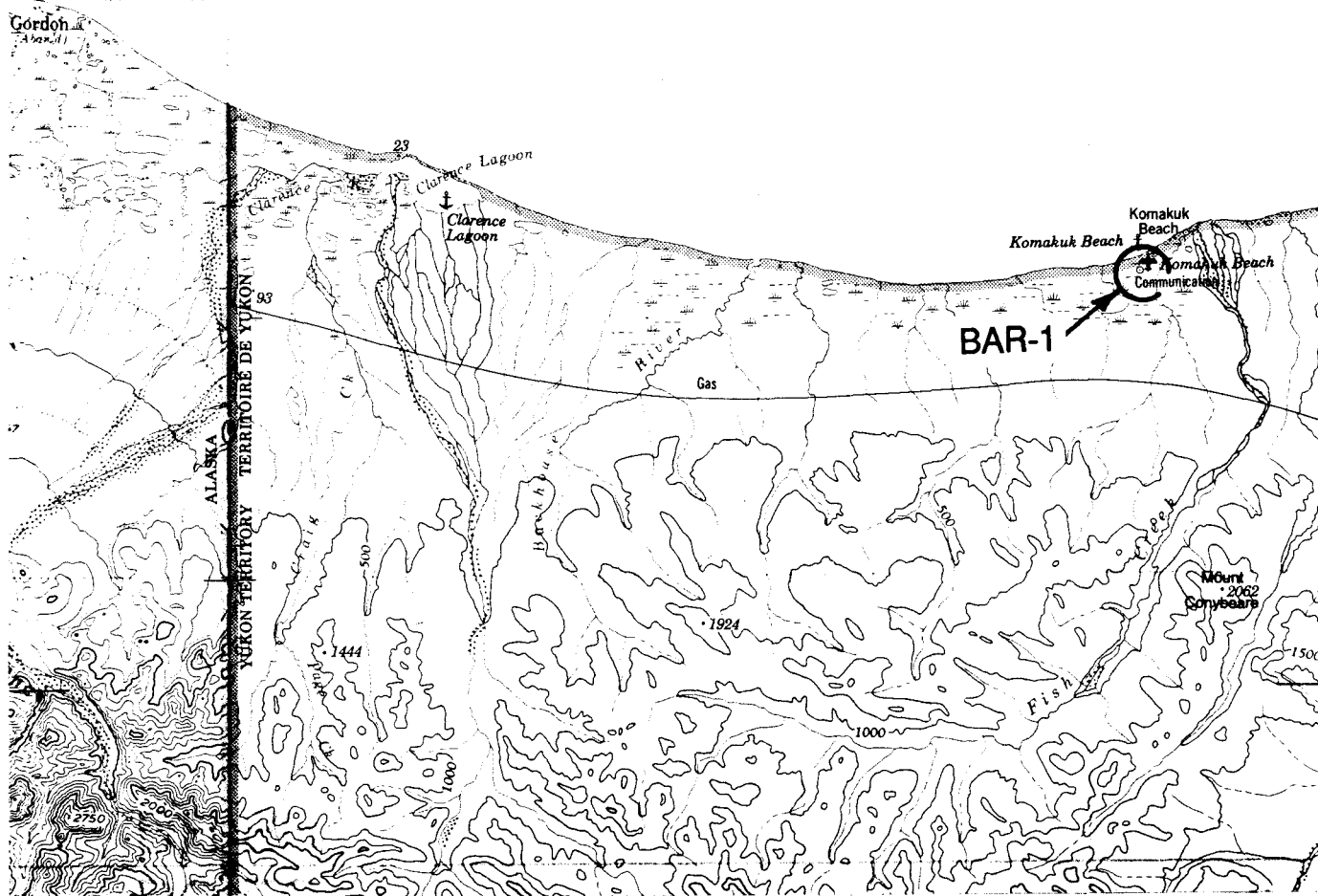
The DEW Station facilities not required for the NWS operation will be treated as abandoned and the area restored under the DND/DIAND 1989 Memorandum of Understanding for the Restoration of Distant Early Warning and North Warning System Sites; as discussed in Volume 2, Section 1.0.



KEY PLAN



BEAUFORT SEA



**STATION DATA**

LATITUDE: 69° 35' 53" N  
 LONGITUDE: 140° 11' 00" W  
 ELEVATION: 14 m  
 MEAN RAINFALL: 76 mm  
 MEAN SNOWFALL: 60 cm  
 ACCESS: AIR - CHARTER  
 WATER - BARGE SEA LIFT

BAR-1 KOMAKUK BEACH

LOCATION PLAN

SCALE: 1:250,000

FIGURE 2.1

## **3.0 DESCRIPTION OF BIOPHYSICAL ENVIRONMENT**

---

### **3.1 CLIMATE**

BAR-1 Komakuk Beach, the most western DEW Station site in Canada, is located in the Low Arctic Ecoclimatic region at approximately 14 m asl. Table 3.1 presents climatic normals for the site.

#### **3.1.1 PRECIPITATION**

Mean total annual precipitation is 135.9 mm; 75.8 mm of which falls as rain and 601 mm as snow. Approximately 46 d/yr have measurable precipitation and most of the moisture falls from June to October. The greatest amount of rain (44.5 mm) and snow (152 mm) received in 24 h occurred during July and August, respectively.

#### **3.1.2 TEMPERATURE**

Mean annual temperature is -11.4 °C, while the mean monthly maximum and minimums are 11.9 °C in July and -30.2 °C in January and March. Extreme temperatures of 30 °C can occur in July and minimums of -50 °C in January and February.

#### **3.1.3 WIND AND FOG**

Annual wind speeds average 20.8 km/h with extremes of 75 km/h. Winds are strongest in winter with high monthly means in November and January of 24 km/h. Prevailing winds tend to blow westward along the coast. Wind speeds exceed 20 km/h 40 percent of the year, 30 km/h 20 percent and 40 km/h 10 percent of the year.

Komakuk Beach receives approximately 1,044 h of fog annually and cloud cover is dependent on onshore/offshore winds. For approximately 10 percent of the year visibility is reduced due to blowing snow.

### **3.2 GEOLOGY**

#### **3.2.1 OVERVIEW**

BAR-1 Komakuk Beach is located approximately 32 km east of the Alaska border immediately south of the Beaufort Sea shoreline (Figure 2.1). Regionally the site is situated on the coastal fringe of the Yukon Coastal Plain. It is bounded to the east by the western edge of a major braided floodplain which contains the deltas of Fish Creek, Malcolm and Firth Rivers. The western edge is a major lacustrine plain which stretches westward to the Clarence River delta (Rampton 1982).

The coastal fringe is underlain by thick unconsolidated deposits generally more than 60 m thick. The surface in this area is relatively flat. The only relief is due to incised stream valleys downcut 3 to 15 m below the surrounding surface.

Table 3.1

## Climate Normals

|                                                     | JAN                          | FEB   | MAR   | APR   | MAY   | JUN  | JUL  | AUG  | SEP   | OCT   | NOV   | DEC   | YEAR  |
|-----------------------------------------------------|------------------------------|-------|-------|-------|-------|------|------|------|-------|-------|-------|-------|-------|
| <u>Precipitation</u>                                |                              |       |       |       |       |      |      |      |       |       |       |       |       |
| Mean Rainfall                                       | 0.1                          | 0.0   | 0.0   | 0.0   | 0.9   | 12.4 | 26.4 | 27.3 | 7.9   | 0.4   | 0.4   | 0.0   | 75.8  |
| Mean Snowfall                                       | 5.5                          | 3.3   | 2.8   | 3.4   | 3.1   | 1.9  | 0.8  | 3.6  | 8.6   | 15.6  | 7.8   | 3.7   | 60.1  |
| Mean Total                                          | 5.6                          | 3.3   | 2.8   | 3.4   | 4.1   | 14.1 | 27.2 | 30.8 | 16.6  | 16.1  | 8.2   | 3.7   | 135.9 |
| 1 No. Days w/meas rain                              | 0                            | 0     | 0     | 0     | 0     | 3    | 6    | 7    | 3     | 0     | 0     | 0     | 19    |
| No. Days w/meas snow                                | 3                            | 2     | 2     | 2     | 2     | 1    | 0    | 1    | 3     | 6     | 3     | 3     | 28    |
| No. Days w/meas precip                              | 3                            | 2     | 2     | 2     | 2     | 3    | 6    | 8    | 6     | 6     | 3     | 3     | 46    |
| Greatest rain in 24 hrs                             | 1.3                          | 0.0   | 0.0   | T     | 3.8   | 28.7 | 44.5 | 44.5 | 10.4  | 4.3   | 6.9   | T     | 44.5  |
| Greatest snow in 24 hrs                             | 10.2                         | 7.0   | 5.0   | 12.4  | 7.6   | 6.9  | 15.2 | 15.2 | 8.5   | 12.0  | 11.5  | 10.2  | 15.2  |
| Greatest precip in 24 hrs                           | 10.2                         | 7.0   | 5.0   | 12.4  | 7.6   | 28.7 | 44.5 | 44.5 | 10.4  | 12.0  | 11.5  | 10.2  | 44.5  |
| <u>Temperature (C)</u>                              |                              |       |       |       |       |      |      |      |       |       |       |       |       |
| Mean Daily Max                                      | -21.0                        | -23.4 | -22.2 | -13.8 | -2.4  | 6.4  | 11.9 | 9.9  | 3.8   | -6.1  | -14.4 | -19.7 | -7.6  |
| Mean Daily Min                                      | -30.2                        | -31.9 | -30.2 | -22.5 | -8.6  | -0.1 | 3.0  | 2.1  | -2.4  | -12.4 | -22.4 | -28.0 | -15.3 |
| Mean Daily                                          | -25.4                        | -27.5 | -26.1 | -18.2 | -5.6  | 3.2  | 7.5  | 6.0  | 0.7   | -9.3  | -18.4 | -23.7 | -11.4 |
| Extreme Max                                         | 8.3                          | 6.5   | 2.8   | 13.3  | 17.2  | 25.6 | 30.0 | 28.5 | 23.3  | 13.3  | 10.0  | 8.9   | 30.0  |
| Extreme Min                                         | -50.0                        | -50.0 | -47.8 | -36.7 | -26.7 | -9.4 | -5.6 | -7.8 | -17.8 | -30.5 | -38.9 | -44.4 | -50.0 |
| <u>Wind</u>                                         | Not applicable for this site |       |       |       |       |      |      |      |       |       |       |       |       |
| Mean Wind Speed (km/hr)<br>and prevailing direction |                              |       |       |       |       |      |      |      |       |       |       |       |       |
| Mean Vector Speed (km/hr)<br>and direction          |                              |       |       |       |       |      |      |      |       |       |       |       |       |

1. measurable rain > 0.2 mm  
 measurable snow > 0.2 cm  
 measurable precipitation > 0.2 mm water equivalent

rainfall in mm  
 snowfall in cm  
 total precip in mm water equivalent

T = trace

M = missing data

\* less than 0.5 greater than 0.0

Surficial sediments consist of organic silts overlying gravels that attain a collective thickness of 4 m.

The underlying bedrock is composed of Jurassic and Lower Cretaceous shale and quartzose sandstone.

### **3.2.2            TERRAIN UNITS**

The terrain units in the vicinity of the facilities are provided in Figure 3.1. The terrain units are described in the following sections.

#### **3.2.2.1            TERRAIN UNIT 1**

Terrain Unit 1 is a lacustrine plain on which all the facilities of the main site, the runway and the water supply are located. These typical lacustrine deposits are composed of thinly bedded silty clays, silts and fine sands. This Unit is covered with a layer of peat to a depth of 150 to 200 mm. The area is relatively flat with very gentle slopes to the north. The area contains small ponds and is characterized by polygonal patterns, especially in low lying areas. The shore line is classified as an ice poor cliff at the western portion of the Unit, changing to low tundra near the western end of the runway.

#### **3.2.2.2            TERRAIN UNIT 2**

Terrain Unit 2 is composed of the broad alluvial fan of the Malcolm River. The western boundary of this alluvial fan is a north flowing stream at the eastern end of the runway. This unit is better drained than Unit 1 and is composed of coarser material. The Unit is also entirely vegetated.

#### **3.2.2.3            TERRAIN UNIT 3**

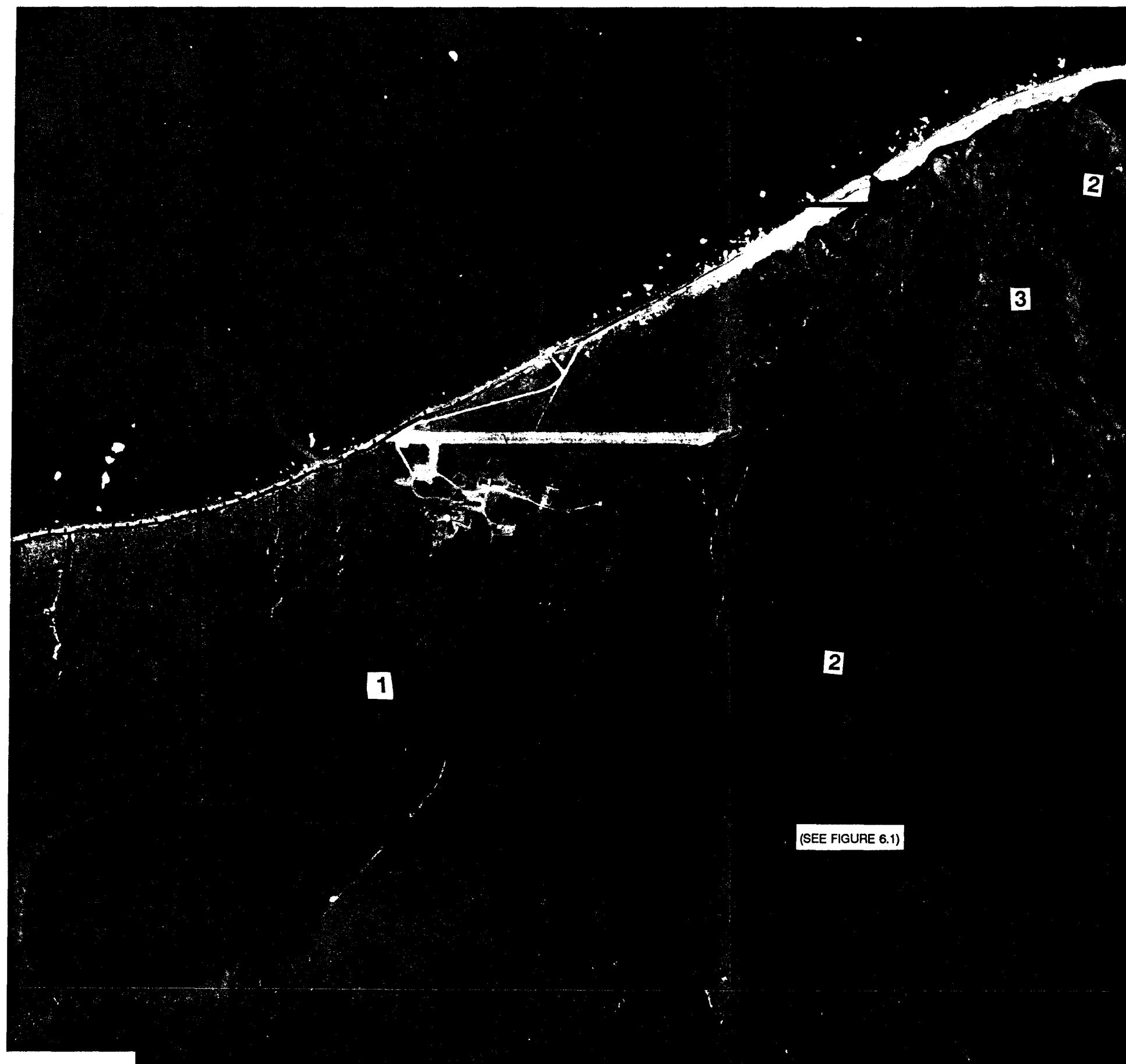
Terrain Unit 3 is the modern delta plain of the Malcolm River. It is bounded on the north, east and west by Terrain Unit 2.

### **3.3                HYDROLOGY**

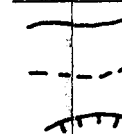
The area surrounding BAR-1 is predominantly low-lying organic terrain with an average slope of less than one percent generally toward the north (Figure 3.1). The site buildings are constructed on a natural ridge which has been augmented with granular fill material. The area on which the buildings are located has a maximum elevation of approximately 10 m asl. From the vicinity of the buildings the ridge extends for 2 km in a southerly direction to the east side of a large lake which once served as the winter water supply for the site. Access to the lake was by a road built along the crest of the ridge.

Regionally, drainage travels to the sea from the British Mountains, located approximately 20 km to the south. The ridge locally forms a watershed divide. The area west of the ridge is primarily organic terrain, and drains to a small stream which flows into the ocean within 200 m of the west end of the runway (Figure 3.1). Water movement through this organic terrain is primarily along the boundaries of the frost polygon features which are common in the area. This stream drains the southern and





LEGEND:



TERRAIN/GEOLOGICAL BOUNDARY

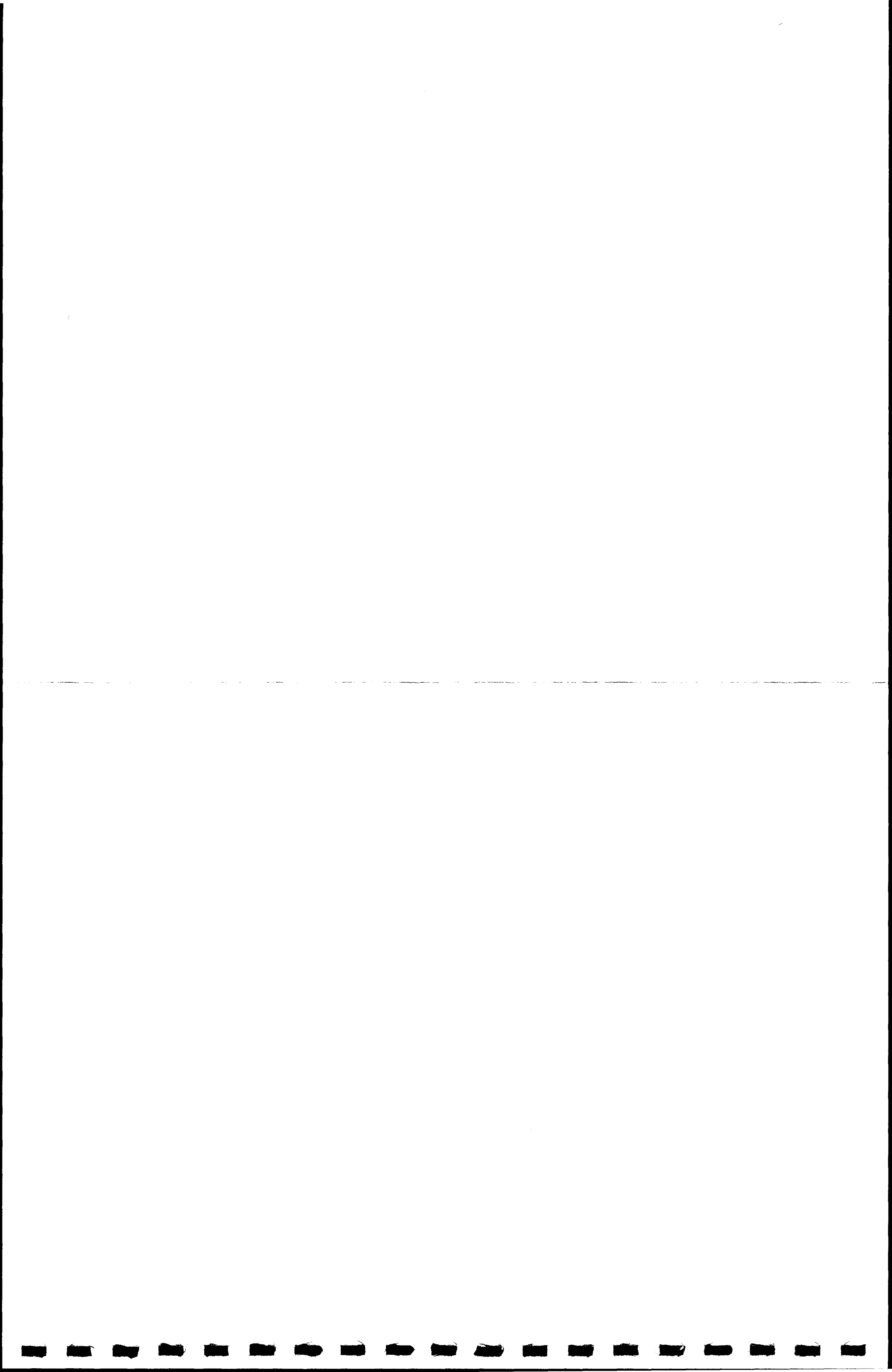
TERRAIN/GEOLOGICAL BOUNDARY (INFERRED)

SCARP (TICKED ON DOWN SLOPE SIDE)

BAR-1 KOMAKUK BEACH

GEOLOGICAL OVERVIEW MAP

FIGURE 3.1



western sections of the compound and also receives water from the sewage outfalls. East of the ridge, drainage moves toward a north-south trending stream which skirts the east end of the runway. A dam across this stream at a location approximately 500 m west of the compound area creates a reservoir for the summer water supply. Part of the western section of the compound, including the area around the POL Tank Facility, drains to this stream.

There are two abandoned landfills and one active landfill at BAR-1. These landfills are located north of the runway and do not exhibit elevations significantly higher than that of the surrounding terrain. Drainage appears to travel northerly toward the shore. There is approximately a 1 percent slope associated with each of the landfill locations. Some slight depressions have been identified in the immediate vicinity of the landfills which contain ponded water.

The northern section of the compound drains toward a low lying area around the west end of the Airstrip (Figure 3.1). Standing water in much of this area appears to be landlocked by the raised shoreline to the north and the slightly higher terrain to the east, on which the road to the Beach Staging Area is built. Beyond the road, drainage is generally eastward across an expanse of organic terrain.

### **3.4 FLORA**

This area is typical of low-arctic tundra and is characterized by a nearly continuous cover of vegetation, except in disturbed areas. The surrounding area is flat with organic terrain extending from the shore to the British Mountains, approximately 20 km inland. Vegetation is dominated by sedges (*Carex* spp.), with lesser amounts of *Sphagnum* spp. and grasses. On drier, more upland sites, such as isolated hummocks, the vegetation is dominated by grasses and willow (*Salix* spp.), with lesser amounts of *Sphagnum* spp., *Rubus chamaemorus*, *Vaccinium vitis-idaea*, *Betula* spp., and *Ledum palustre*.

Disturbed areas in the vicinity of the site were characterized by grasses, *Epilobium latifolium*, and *Salix* spp., with incidental plants of *Gentiana propinqua*, *Papaver radicatum*, *Pedicularis* spp., *Equisetum* spp., and *Aconitum delphinifolium* at some of these locations.

### **3.5 FAUNA**

#### **3.5.1 LARGE MAMMALS**

Komakuk Beach lies outside management zones for muskox (*Ovibos moschatus*) as the species is known to occur only infrequently (Urquhart 1982). Animals in this region are probably from an introduction of muskox along Alaska's north coast in 1969 to 1970 (Wiken *et al.* 1981).

Caribou (*Rangifer tarandus granti*) in this region are part of the Porcupine Caribou herd which ranges in the Yukon and the Northwest Territories. The calving grounds for this herd overlap Komakuk Beach and caribou may occur here throughout the year (LeBlond 1979). These animals tend to concentrate here between May and August and station personnel reported that large groups pass through this area between the mountains and the shore. However, caribou were not observed during the field visit.

Polar bears (*Ursus maritimus*) in this area are within Management Zone H, which includes the Beaufort Sea and Amundsen Gulf (Schweinsburg *et al.* 1981). Demaster *et al.* (1980) estimated the total population of the zone in 1977 to 1978 at approximately 2,100 animals. Bears are known to inhabit the southern Beaufort during freeze-up and move northward with retreating ice floes during summer (Schweinsburg *et al.* 1981). Polar bears from eastern Alaska are known to migrate through the northwest coast in mid-April (Lentfer 1983). Most maternity denning in the Western Arctic occurs along the west and south coasts of Banks Island, and to a lesser degree on the western peninsulas of Victoria Island, with little denning on the mainland coast (Stirling *et al.* 1975). Records of polar bear encounters at this station were not available but personnel reported that they are occasionally sighted. Regardless, it appears that such incidents are rare particularly when compared to the eastern DEW Station sites (Stenhouse *et al.* 1988).

Grizzly bears (*Ursus arctos horribilis*) occur throughout the majority of mainland Northwest Territories (Britton and Graves 1985) and have been observed at this DEW Station. Station personnel reported that a grizzly bear had been frequently seen that summer. Black bears (*U. americanus*) are also known to occur in this region of the Northwest Territories (Banfield 1974) but there were no records of human-black bear interactions at this station.

### 3.5.2 OTHER TERRESTRIAL MAMMALS

There was no sign of arctic fox (*Alopex lagopus*) observed while visiting the site. A wolf (*Canis lupus*) was reported in the area during the site visit. This species occurs throughout the Northwest Territories and is commonly associated with the presence of caribou (Heard 1983). No sign of arctic ground squirrel (*Spermophilus parryi*) was observed at Komakuk Beach, which was felt to be due to the lack of burrowing habitat in the poorly-drained organic terrain. No arctic hare (*Lepus arcticus*) or other small mammals were observed.

### 3.5.3 MARINE MAMMALS

Beaufort Sea beluga whale (*Delphinapterus leucas*) populations are discrete from Eastern Canadian Arctic populations. The majority of sightings of belugas in the vicinity of Komakuk Beach would be expected to be of migrating animals, either eastward in early summer or westward in the fall. In the summer, beluga whales concentrate in the vicinity of the Mackenzie River Delta, primarily in the estuary, and are recognized as a discrete stock (Fraker and Fraker 1979; 1981; 1982). Certain specific coastal areas within the general summering areas are traditionally occupied during mid-summer, generally from late July or early August to late August (Sergeant 1973; Finley 1976; Fraker 1979).

Bowhead whales (*Balaena mysticetus*) winter in the Bering Sea and migrate eastward into the Beaufort Sea between late April and early June (Davis *et al.* 1980). Overall, the distribution of bowhead whales can show great inter-annual variation (McLaren and Davis 1985). In late August 1983, these authors observed a large concentration of bowheads between Shingle Point and Kay Point. The density of animals at the surface in this area (371 km<sup>2</sup>) was extremely high (5.79/1,000 km<sup>2</sup>). Bowheads have also been seen within a few kilometres of the shoreline in September (McLaren and Davis 1985).

The ringed seal (*Phoca hispida*) is the most widespread species of marine mammal in the Canadian Arctic and is usually a permanent resident in most of its range (Davis *et al* 1980). Ringed seals have been observed up to 70 km offshore of the Tuktoyaktuk Peninsula in early September (McLaren and Davis 1980).

#### **3.5.4            RAPTORS**

No raptors were reported or observed at Komakuk Beach although Snowy Owl (*Nyctea scandiaca*), Peregrine Falcon (*Falco peregrinus tundrius*), Gyrfalcon (*Falco rusticolus*), Golden Eagle (*Aquila chrysaetos*), and Rough-legged Hawk (*Buteo lagopus*) are known to occur in this region (Searing *et al.* 1975, Godfrey 1986).

#### **3.5.5            WATERFOWL**

Surface water in the vicinity of the site was restricted to small gullies which were generally unproductive for waterfowl. A lake located approximately 1 km southwest of the station was reported to contain waterfowl. All four species of loons are known to breed in the southeastern portion of the Beaufort Sea but only Pacific (*Gavia arctica*) and Red-throated Loons (*G. stellata*) are regarded as common (Searing *et al.* 1975), although none of these were observed. Fourteen Green-winged Teal (*Anas crecca*) were observed in small gullies, immediately south of the station. Other waterfowl sightings were limited to that of a small group of Common Eider (*Somateria mollissima*) consisting of three adults and 12 young near shore. This species has been observed in large concentrations in this region of the Beaufort Sea during aerial surveys (Searing *et al.* 1975).

#### **3.5.6            OTHER AVIFAUNA**

Thirty species of shorebirds are known to occur regularly along the Beaufort Sea coast (Searing *et al.* 1975), but only Baird's Sandpiper (*Calidris bairdii*) was observed near the facilities. Sign and observations of three Willow Ptarmigan (*Lagopus lagopus*) were recorded east of the site.

Glaucous Gulls (*Larus hyperboreus*) were commonly observed along the shore and near the active landfill. No Thayer's Gull (*Larus thayeri*) were observed during the site visit although they are known to exist in the region (Godfrey 1986). There were infrequent sightings of Parasitic Jaeger (*Stercorarius parasiticus*) but not Long-tailed Jaeger (*S. longicaudus*) or Pomarine Jaeger (*S. pomarinus*), although all three species likely occur in the region (Godfrey 1986).

### **3.6                HERITAGE RESOURCES**

The camp, the beach terrace immediately above the present beach and in front of the station, the area of the runway, and the area of the water supply lake were inspected for archaeological remains (Figure 3.2). Disturbance at this station has been limited and has been restricted to the station. However, the beach terrace, which is the most likely area for archaeological remains, has been used as a landfill area and gravel source. Archaeological remains were not identified during the field reconnaissance. Recent historic remains have been reported in the area but appear to have been removed by natural erosion. There are no further archaeological or historical concerns associated with the decommissioning of this station.

A separate report documenting the heritage resources study on the site has been filed with the Yukon Heritage Branch, with copies to the USAF and DND (UMA 1991).

### **3.7 LAND USE**

BAR-1 Komakuk Beach is located in the Firth River IBP site (Nettleship and Smith 1975), now included within the North Yukon National Park Reserve. Canadian Parks Service has expressed an interest in retaining the site as an interpretive centre. Some trapping by hunters living at the site occurs in the vicinity (Worbets 1979).

## 4.0 SITE INFRASTRUCTURE

---

### 4.1 BUILDINGS

Dwellings and structures on site are described in the Base Civil Engineering (BCE) data in Appendix I. Figure 4.1 shows site layout based on BCE data, as-built site plans and site inspection.

### 4.2 FUEL STORAGE AND DISTRIBUTION

The BAR-1 station had ten diesel tanks and two Mogas tanks. The complete details are described in Table 4.1.

---

Table 4.1  
Fuel Storage Facilities

---

|    |                                         |                      |
|----|-----------------------------------------|----------------------|
| 1. | Diesel Oil                              |                      |
|    | a) Building Site Area                   |                      |
|    | 3 steel tanks (246 m <sup>3</sup> ea):  | 738 m <sup>3</sup>   |
|    | 7 steel tanks (37.9 m <sup>3</sup> ea): | 265.3 m <sup>3</sup> |
| 2. | Mogas                                   |                      |
|    | a) Beach Area                           |                      |
|    | 1 steel tank:                           | 22.7 m <sup>3</sup>  |
|    | b) Site area                            |                      |
|    | 1 steel tank:                           | 22.7 m <sup>3</sup>  |

---

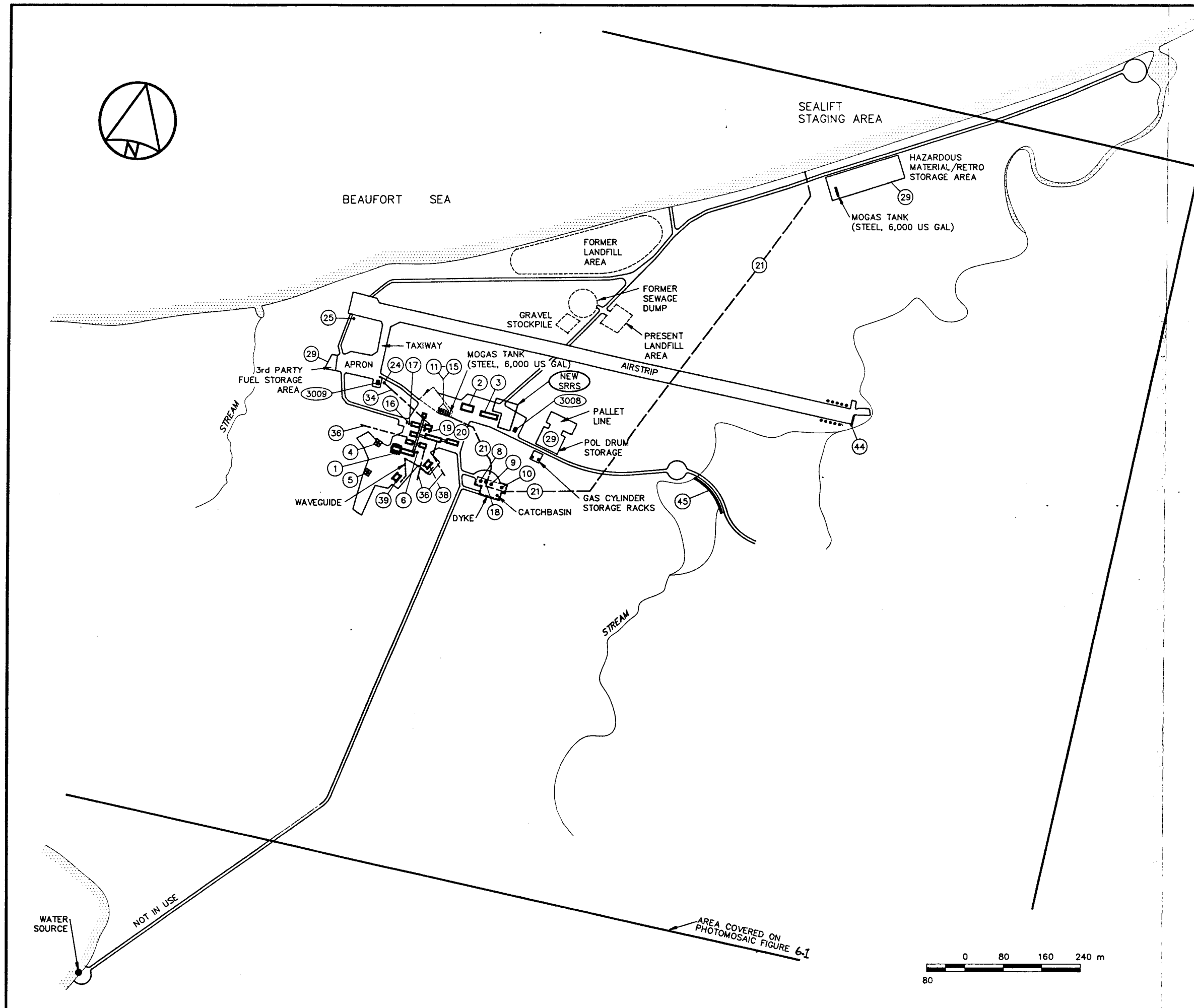
### 4.3 WASTE TREATMENT

Liquid sewage is accumulated in an internal storage tank in the module train building, which is the only one with toilet facilities, and is periodically pumped to the outfall areas.

### 4.4 HAZARDOUS MATERIAL STATUS

The following hazardous materials were included in the initial retrograde reports for sealift.

- Fifteen empty cylinders, which had contained Class 2 compressed gases including acetylene, mapp gas, nitrogen, and oxygen.
- Twenty-eight drums of waste petroleum products and 500 empty drums. Waste petroleum and the residue probably found in the empty drums are Class 3 flammable liquids.
- Two drums of asbestos-containing material.



## FACILITIES INDEX:

- ① MODULE TRAIN
- ② GARAGE
- ③ WAREHOUSE
- ④ COMMUNICATION "DISH"
- ⑤ COMMUNICATION "DISH"
- ⑥ MASTER TV ANTENNA
- ⑧ DIESEL FUEL TANK (STEEL, 65,000 US GAL)
- ⑨ DIESEL FUEL TANK (STEEL, 65,000 US GAL)
- ⑩ DIESEL FUEL TANK (STEEL, 65,000 US GAL)
- ⑪ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑫ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑬ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑭ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑮ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑯ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑰ DIESEL FUEL TANK (STEEL, 10,000 US GAL)
- ⑱ POL PUMPHOUSE
- ⑲ WATER STORAGE TANK (STEEL, 20,000 US GAL)
- ⑳ WATER STORAGE TANK (STEEL, 20,000 US GAL)
- ㉑ POL LINE
- ㉒ BEACON LIGHT
- ㉓ WIND CONE
- ㉔ OPEN STORAGE AREAS
- ㉕ PRIMARY POWER CABLE (UG)
- ㉖ SEWER LINE
- ㉗ COMMUNICATION "BILLBOARD"
- ㉘ COMMUNICATION "BILLBOARD"
- ㉙ SEAWALL
- ㉚ WATER STORAGE DAM
- 3008 HAZARD STORAGE (POL)
- 3009 STORAGE SHED (ATB)

### NOTE:

1. FOR OVERALL SITE PHOTOMOSAIC COVERAGE SEE FIGURE 3.1.
2. THE FACILITIES SHOWN ARE TAKEN FROM THE AVAILABLE AS-BUILT SITE DRAWINGS AND THE CURRENT BCE DATA (1990), AND AS VERIFIED ON SITE.
3. NUMBERED FACILITIES ARE AS GIVEN IN THE FACILITIES INDEX IN THE BCE DATA.

BAR-1 KOMAKUK BEACH  
SITE PLAN

FIGURE 4.1

4.5

## SPILL HISTORY

There were no fuel spills recorded in the DEW and NWS sites for BAR-1 Komakuk Beach.

## **5.0 ASBESTOS, PAINT AND PCB RESULTS**

### **5.1 ASBESTOS**

#### **5.1.1 RECORD REVIEW**

An asbestos survey was carried out on March 31, 1990. The location, type, and quantity of asbestos present at the site from this survey is presented in Table 5.1.

**Table 5.1**  
**Asbestos Survey**

| <b>Location</b> | <b>Type</b>   | <b>Quantity</b>               |
|-----------------|---------------|-------------------------------|
| Module Train    | Pipe<br>Sheet | 66.0 m<br>62.9 m <sup>2</sup> |
| Garage          | Sheet         | 0.34 m <sup>2</sup>           |
| Warehouse       | Sheet         | 98.7 m <sup>2</sup>           |

#### **5.1.2 FIELD SURVEY**

Five samples of insulation from various areas of the station were collected during the August, 1990 site visit to test for the presence of asbestos.

Amosite forms of asbestos were found in seven of ten samples taken (Table 5.2). During decommissioning, asbestos materials will require special handling and disposal.

### **5.2 PAINT**

#### **5.2.1 FIELD SURVEY**

Five paint samples were obtained from various interior surfaces at the BAR-1 facilities.

---

**Table 5.2**

**Asbestos Analysis**

| <b>SAMPLE</b> | <b>PRESENT</b> | <b>ASBESTOS</b> | <b>TYPE</b> | <b>BUILDING</b>         | <b>LOCATION</b>          |
|---------------|----------------|-----------------|-------------|-------------------------|--------------------------|
| B1-302        | Yes            | 50-70%          | Amosite     | Module South            | Furnace Room South       |
| B1-304        | Yes            | 20-40%          | Amosite     | Module South Powerhouse | Overhead Heat Exchangers |
| B1-306        | Yes            | 20-40%          | Amosite     | Module J Room           | Furnace Room             |
| B1-308        | Yes            | 10-30%          | Amosite     | Module North            | Furnace Room             |
| B1-310        | Not Detected   | -               | -           | Warehouse               | Furnace Room             |

### **5.2.2            ANALYTICAL RESULTS**

Results of analysis of paint samples for metals are presented in Table 5.3. The samples contain metal concentrations within typical ranges for industrial, oil-based-paints. The painted materials may require special handling as described in Volume 2.

## **5.3                PCB**

### **5.3.1            RECORD REVIEW**

The most recent PCB inventory is dated January 25, 1990.

The equipment suspected of containing PCB as of January 25, 1990 is summarized in Table 5.4.

**Table 5.4**  
**PCB Inventory**

| <b>Area</b>          | <b>Transformers<br/>Quantity</b> | <b>Capacitors<br/>Quantity</b> | <b>Total<br/>PCB (kg)</b> |
|----------------------|----------------------------------|--------------------------------|---------------------------|
| Module               | 1                                | 1                              | 274.7                     |
| Air Terminal         | 1                                |                                | 274.7                     |
| Receiver Room        | 1,062                            | 38                             | 131.6                     |
| Radar Room           | 418                              | 574                            | 94.1                      |
| Lat Com Room         | 12                               | 24                             | 36.6                      |
| Surveillance Room    | 33                               | 68                             | 12.0                      |
| Emergency Radio Room | 2                                | 1                              | 2.5                       |

### **5.3.2            FIELD SURVEY**

Most of the equipment identified prior to the site visit could not be sampled because the individual units were sealed or were in use at the time. One sample of dielectric fluid suspected of containing PCB was collected from the Runway Light Regulator in the Air Terminal Building (Plate 1). The Runway Light Regulator located in the main office area of the station was also sampled.

Table 5.3

## Paint Survey Data

| INDICATOR<br>CHEMICALS<br>(mg/kg) | MDL  | B1-301                         | B1-303                         | B1-305                     | B1-307                         | B1-309                  |
|-----------------------------------|------|--------------------------------|--------------------------------|----------------------------|--------------------------------|-------------------------|
| Arsenic                           | 0.1  | 25                             | 5.1                            | 8.8                        | 33                             | 2.8                     |
| Selenium                          | 0.5  | 1.9                            | <                              | 0.7                        | 2.9                            | 0.5                     |
| Mercury                           | 0.05 | 19                             | 1                              | 6.8                        | 24                             | 0.22                    |
| Barium                            | 1    | 770                            | 790                            | 500                        | 830                            | 530                     |
| Beryllium                         | 0.5  | <                              | <                              | <                          | <                              | <                       |
| Cadmium                           | 1    | 38                             | 27                             | 59                         | 15                             | 2                       |
| Chromium                          | 1    | 190                            | 580                            | 230                        | 280                            | 49                      |
| Lead                              | 10   | 3800                           | 5900                           | 10000                      | 4100                           | 950                     |
| Nickel                            | 5    | 18                             | 33                             | 26                         | 22                             | <                       |
| Silver                            | 5    | <                              | <                              | <                          | <                              | <                       |
| LOCATION                          |      | Module South<br>Dorm<br>FAC 01 | Module<br>Powerhouse<br>FAC 01 | Module<br>J-Room<br>FAC 01 | Module<br>North Dorm<br>FAC 01 | Warehouse<br><br>FAC 03 |
| AREA                              |      | Furnace Room                   | Diesel<br>Bed 1                | Furnace<br>Room            | Furnace<br>Room                | Loading<br>Dock Floor   |

#### **5.3.2.1 ANALYTICAL RESULTS**

Neither of the samples showed detectable levels of PCB.

## **6.0 SITE ASSESSMENT AND CLEAN-UP OPTIONS**

---

Evaluation of the relevance of indicator chemical concentrations found at specific locations at this station is based on the site assessment strategy outlined in Volume 2. The strategy consisted of:

- (1) Comparison of laboratory data to background soil and water indicator chemical concentrations.
- (2) Comparison of laboratory data to Quebec Sil/Water Guidelines as per Section 1.3.
- (3) Assessment of risk to human health and the environment from specific locations (landfills, sewage outfalls and others).

The following subsections address each location and stain area on the site and present options for clean-up. Results of soil and water analyses for the site are presented in Appendix C. Quality assurance and quality control of the analytical data appears in Appendix D. Risk assessment for the site is presented in detail in Appendix E.

### **6.1 SITE EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS SUMMARY**

Results from the BAR-1 site exposure assessment were integrated in order to characterize the site-specific risk. As described in Volume 2, Section 3.0, the methods for characterizing non-carcinogenic risk are different from those used for carcinogenic risk. The quantification of BAR-1 site risk has therefore been segregated according to these categories.

Results have been summarized in Appendix E and as may be seen the total carcinogenic risk was estimated at  $\leq 6 \times 10^{-6}$ . Based on the U.S. EPA site remediation goal of reducing cancer risks below  $10^{-4}$ , the BAR-1 carcinogenic risk is considered very low. The principal contributor was arsenic intake from the dermal contact of soil pathway as shown in the distribution of risk given in Figure E-2.

The BAR-1 site worker non-carcinogenic hazard index results are summarized in Appendix E, Table E-7. The hazard index totals  $9 \times 10^{-3}$  which is 3 orders of magnitude less than the unity criteria. Non-carcinogenic risk are considered small.

The estimated contaminant intakes for caribou and grasses were compared to estimated safe values to characterize risk in a method similar to that used for human non-carcinogenic risk assessment. The sum of all hazard quotients in caribou was significantly smaller than the unity criterion and therefore caribou risks are considered small. Likewise, the hazard quotients for PCBs, arsenic, and nickel in grasses were less

than unity. The cadmium hazard quotient for grasses was above unity and therefore there may be potential risks to plant health in the locations identified in Subsection E-2.2. The estimated intakes for the remaining contaminants were small, however, toxicity information was not available and therefore risks could not be quantified.

## **6.1.1 SITE BACKGROUND CONDITIONS**

### **6.1.2 VISUAL OBSERVATIONS AND SAMPLE LOCATIONS**

The areal extent of activities and facilities was limited. Beyond the site itself, there were no apparent sources of which could introduce foreign indicator chemicals.

A background water sample (B1-K) was taken from a small pond 1.5 km south of the east end of the Airstrip (Appendix B). Drainage in the vicinity of the pond is toward the shoreline from the mountains to the south.

A background soil sample (B1-1106) was taken at a point 250 m south of the Airstrip and 15 m east of the water supply stream.

Sample site locations are presented in Figure 6.1.

### **6.1.3 ANALYTICAL RESULTS**

Analysis of the background water sample (B1-K) indicated no indicator chemicals were present.

Soil samples in which the concentration of indicator chemical exceeded the study criteria are presented in Table 6.1. Barium concentration (490 mg/kg) exceeded the study criterion. Arsenic, selenium, mercury, chromium and nickel concentrations (6.5, 0.8, 0.11, 38 and 39 mg/kg, respectively) were all in excess of the study criteria.

## **6.2 LANDFILLS**

There are three landfills at the BAR-1 site and they are identified as Landfills A, B and C.



Table 6.1

Relevant Soil Results: Background

| INDICATOR<br>CHEMICALS<br>(mg/kg) | LEVEL A | B1-1106 | TYPICAL RANGES * |
|-----------------------------------|---------|---------|------------------|
| Arsenic                           | 10      | 6.5     | 1.1-28.9         |
| Selenium                          | 1       | 0.8     | 0.1-1.32         |
| Mercury                           | 0.2     | 0.11    | 0.02-0.10        |
| Barium                            | 200     | 490     | 262-867          |
| Beryllium                         | n/a     | 1       | <1-2             |
| Cadmium                           | 1.5     | <1      | 0.10-1.80        |
| Chromium                          | 75      | 38      | 2.6-34           |
| Lead                              | 50      | <10     | 2.3-47.5         |
| Nickel                            | 50      | 39      | 1.3-34           |
| Silver                            | 2       | <5      | 0.2-3.2          |
| TPH                               | 100     | <1      | n/a              |
| PCB                               | 0.1     | <0.01   | n/a              |

n/a = Not Available

TPH = Total Petroleum Hydrocarbon

PCB = Polychlorinated Biphenyls

\* Kabata - Pendias and Pendias (1984)

Table 6.2

## Relevant Soil Results: Landfill A

| INDICATOR<br>CHEMICALS<br>(mg/kg) | LEVEL A | BACKGROUND | B1-1007 | B1-1008<br>B1-1008L* | B1-1009<br>B1-1009R* | B1-1010<br>B1-1011D |
|-----------------------------------|---------|------------|---------|----------------------|----------------------|---------------------|
| Mercury                           | 0.2     | .11        | N.R.    | 0.2                  | 0.16                 | 0.21                |
| Cadmium                           | 1.5     | N.R.       | N.R.    | 2                    | N.R.                 | N.R.                |
| Lead                              | 50      | N.R.       | 31      | 480                  | N.R.                 | 76                  |
| TPH                               | 100     | <1         | N.R.    | N.R.                 | N.R.                 | 3                   |
| PCB                               | 0.1     | <0.01      | 0.25    | 0.29                 | <0.01                | 0.16                |
| Ethyl Benzene                     | 0.1     | N/A        | N/A     | N/A                  | 0.183                | N.R.                |
| Phenathrene                       | 0.1 **  | <0.03      | N.R.    | N.R.                 | N.R.                 | 0.11                |
| Fluoranthene                      | 0.1 **  | <0.02      | N.R.    | N.R.                 | N.R.                 | 0.1                 |
| Pyrene                            | 0.1 **  | <0.03      | N.R.    | N.R.                 | N.R.                 | 0.09                |

| INDICATOR<br>CHEMICALS<br>(mg/kg) | LEVEL A | BACKGROUND | B1-1012 | B1-1013 | B1-1014 |
|-----------------------------------|---------|------------|---------|---------|---------|
| Mercury                           | 0.2     | .11        | 0.06    | 0.15    | 0.15    |
| Cadmium                           | 1.5     | N.R.       | N.R.    | N.R.    | N.R.    |
| Lead                              | 50      | N.R.       | 110     | <10     | 11      |
| TPH                               | 100     | <1         | N.R.    | N.R.    | N.R.    |
| PCB                               | 0.1     | <0.01      | 0.03    | N.R.    | N.R.    |
| Ethyl Benzene                     | 0.1     | N/A        | N.R.    | N.R.    | N.R.    |
| Phenathrene                       | 0.1 **  | <0.03      | N.R.    | N.R.    | N.R.    |
| Fluoranthene                      | 0.1 **  | <0.02      | N.R.    | N.R.    | N.R.    |
| Pyrene                            | 0.1 **  | <0.03      | N.R.    | N.R.    | N.R.    |

N.R. = Not Relevant

N/A = Not Analyzed

TPH = Total Petroleum Hydrocarbons

PCB = Polychlorinated Biphenyls

\* Where replicates were available, the highest value was used.

\*\* Total PAH

---

**Table 6.3**

**Relevant Soil Results: Landfill B**

| INDICATOR<br>CHEMICALS<br>(mg/kg) | LEVEL A | BACKGROUND | B1-1002 |
|-----------------------------------|---------|------------|---------|
| Lead                              | 50      | <10        | 500     |
| TPH                               | 100     | <1         | 9       |
| Naphthalene                       | 0.1     | <0.03      | 0.09    |

TPH = Total Petroleum Hydrocarbons

---

### **6.2.3.2 ANALYTICAL RESULTS**

Study criteria were not exceeded in the samples for the indicator chemicals.

### **6.2.3.3 EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS**

The results of the risk assessment show that carcinogenic and non-carcinogenic risks are below the levels established for this study, and no indicator chemicals were identified above the Quebec B guideline.

### **6.2.3.4 CLEAN-UP OPTIONS**

There were many waste materials and debris scattered about the site. These materials should be removed and the site recontoured, covered with clean fill materials and vegetated, if necessary, to control erosion.

If reduction of risk is deemed desirable, soils can be removed, encapsulated, treated, or covered, as applicable.

## **6.3 POL AREAS**

### **6.3.1 POL 1**

#### **6.3.1.1 VISUAL OBSERVATIONS AND SAMPLE LOCATIONS**

Three 250 m<sup>3</sup> diesel tanks are located 150 m southeast of the module train. The tanks are on a rectangular gravel pad which is bounded by dykes approximately 0.45 m high. A catch basin is excavated outside the west and south sides of the bermed area. A spill was noted near the valve of diesel tank No. 9, and a drum was observed buried in the catch basin wall.

The POL distribution line extends eastward from the facility and is laid in a small pond adjacent to the east side of the bermed area. Vegetation on the east side of the pond was stressed over a 70 m<sup>2</sup> area along the POL distribution line. An odour of fuel was noticeable at this location.

The POL distribution line from the main facilities to the beach is in poor condition. It is not supported along its length and is laid directly on the ground surface. It is underwater at several locations. Visible corrosion was common along the length of the line.

One water sample (B1-J) was taken from the small pond adjacent to the east end of the POL facility (Figure 6.1).

of POL 2 and the latter was collected from standing water in the catch basin on the north side of the facility.

Soil samples were taken at three locations in the vicinity of POL 2 (Figure 6.1). B1-1023 was taken just outside the northwest corner of the berm around the POL and B1-1033 was collected in the approximate centre of the bermed area. B1-1101 was taken 75 m northwest of POL 2 from the bottom of a gulley that would receive surface runoff from the POL. Sample B1-1102 was collected at a point 150 m northwest of the POL. Only B1-1023 and B1-1033 were submitted for analysis.

#### **6.3.2.2 ANALYTICAL RESULTS**

Samples in which the concentration of indicator chemicals exceeded the study criteria are presented in Table 6.4.

In the three water samples (B1-E, B1-F and B1-G), the analyzed indicator parameters were not detected.

Lead was present in B1-1033 (93 mg/kg) at a greater value than the study criterion. B1-1033 contained 3,400 mg/kg of TPH which is in excess of the Level B criterion. B1-1023 showed concentrations of ethyl benzene (0.135 mg/kg) and toluene (0.824 mg/kg) greater than the study criterion.

The presence of indicator parameters in SA 2 and SA 3 was detected by the samples collected. B1-1100 and B1-1103 contained TPH (10,000 and 8 mg/kg, respectively) and PCB (0.09 and 0.05 mg/kg, respectively). B1-1100 exceeds the Level C criterion for TPH of 5000 mg/kg. Water samples B1-H and B1-I taken from SA 5 and SA 6, respectively, did not indicate the presence of any indicator chemicals.

#### **6.3.2.3 EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS**

The results of the risk assessment show that carcinogenic and non-carcinogenic risks are below the levels established for this study, but that TPH was identified at above the Quebec B and Quebec C guidelines. Further sampling should be undertaken to determine the full extent of elevated TPH in soil at this location.

#### **6.3.2.4 CLEAN-UP OPTIONS**

After further sampling has achieved closure appropriate clean-up options, as discussed in Volume 2, can be implemented.

### **6.3.3            POL 3**

#### **6.3.3.1            VISUAL OBSERVATIONS AND SAMPLE LOCATIONS**

This POL facility is located on the west side of the main compound pad, 25 m from the main module, and contains two 38,000 L diesel tanks. The tanks are on a gravel pad which slopes to a catch basin located 15 m to the west. The facility is surrounded by a berm which has been compromised along the northeast corner. Ponded water with a hydrocarbon sheen was noted within the catch basin and rust coloured staining was noted above the water line. A barrel was exposed on the side of the basin.

Two soil samples were taken in the vicinity of POL 3 (Figure 6.1). B1-1030 was taken from the east side of the catch basin. B1-1032 was taken from a location at the bottom of the berm, outside the west end of the facility. Water was observed seeping from the berm at this location. Both samples were submitted for TPH analysis.

#### **6.3.3.2            ANALYTICAL RESULTS**

B1-1030 contained TPH at a concentration of 4,200 mg/kg which is in excess of the Level B criterion of 1000 mg/kg.

#### **6.3.3.3            EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS**

The results of the risk assessment show that carcinogenic and non-carcinogenic risks are below the levels established for this study, but that TPH was identified at above the Quebec B guideline. However, TPH data for the other sample collected at this location indicates the area of elevated TPH is relatively well-defined and does not extend beyond the bermed area.

#### **6.3.3.4            CLEAN-UP OPTIONS**

Tankage at the site should be removed and the site recontoured, covered with clean fill materials and vegetated, if necessary, to control erosion.

If reduction of risk is deemed desirable, soils can be removed, encapsulated, treated, or covered, as applicable.

### **6.3.4            POL 4**

#### **6.3.4.1            VISUAL OBSERVATIONS AND SAMPLE LOCATIONS**

A 23,000 L Mogas tank is located 500 m north of the southeast end of the airstrip, and within 100 m of the beach. Ponded water was noted 5 m west of the catch basin berm and a hydrocarbon sheen was observed on the surface.

off the southeast corner. B1-1022 was sampled from the southwest corner of the pad. Only samples B1-1020 and B1-1022 were submitted for analysis.

#### **6.4.1.2 ANALYTICAL RESULTS**

Study criteria were not exceeded in the samples for the indicator chemicals. Ethyl benzene was detected in B1-1020 (0.004 mg/kg) and Cl4-ethylene was detected in B1-1022 (0.006 mg/kg). The study criterion for ethyl benzene is 0.1 mg/kg.

#### **6.4.1.3 EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS**

The results of the risk assessment show that carcinogenic and non-carcinogenic risks are below the levels established for this study, and no indicator chemicals were identified above the Quebec B guideline.

#### **6.4.1.4 CLEAN-UP OPTIONS**

There were some waste materials and debris scattered about the site. These materials should be removed and the site recontoured, covered with clean fill materials and vegetated, if necessary, to control erosion.

If reduction of risk is deemed desirable, soils can be removed, encapsulated, treated, or covered, as applicable.

#### **6.4.2 PALLET LINE 2**

##### **6.4.2.1 VISUAL OBSERVATIONS AND SAMPLE LOCATIONS**

Pallet Line 2 is located just east of POL 4 within 100 m of the shoreline. The area is bounded by organic terrain to the south and the beach road to the north. Strong fuel odours and soil staining were noted in this area.

Four soil samples were taken in this area (Figure 6.1). B1-1202 was taken in the centre of a fuel-stained area of approximately 400 m<sup>2</sup>, located 20 m east of POL 4, adjacent to the beach road. B1-1203 was located south of B1-1202, on the opposite side of the area near the adjacent organic terrain. B1-1204 was collected at a location 80 m east of POL 4, at the south side of the storage area near a pile of scrap metal. The location for B1-1205 was 35 m further east, 10 m beyond the scrap metal pile. B1-1202 and B1-1204 were submitted for analysis.

##### **6.4.2.2 ANALYTICAL RESULTS**

Study criteria were not exceeded in the samples for the indicator chemicals.

##### **6.4.2.3 EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS**

#### **6.4.3.4 CLEAN-UP OPTIONS**

There were some waste materials and debris scattered about the site. These materials should be removed and the site recontoured, covered with clean fill materials and vegetated, if necessary, to control erosion.

If reduction of risk is deemed desirable, soils can be removed, encapsulated, treated, or covered, as applicable.

### **6.5 OUTFALL AREAS**

#### **6.5.1 SEWAGE OUTFALL A**

##### **6.5.1.1 VISUAL OBSERVATIONS AND SAMPLE LOCATION**

Sewage Outfall A is located approximately 40 m east of the east dormitory (Figure 6.1). Wastewater from the kitchen area of the facility is discharged in this general area. B1-1027 was taken in a poorly drained area near the outfall.

##### **6.5.1.2 ANALYTICAL RESULTS**

Samples in which the concentration of indicator chemicals exceeded the study criteria are presented in Table 6.5.

**Table 6.5**

#### **Relevant Soil Results: Sewage Outfall A**

| Indicator Chemicals (mg/kg) | Level A | Background | B1-1027 |
|-----------------------------|---------|------------|---------|
| Arsenic                     | 10      | 6.5        | 21      |
| Mercury                     | 0.2     | 0.11       | 0.17    |
| TPH                         | 100     | <1         | 8       |

TPH = Total Petroleum Hydrocarbons

Arsenic, lead, cadmium and mercury concentrations in B1-1027 (21, 84, 1 and 0.17 mg/kg, respectively) were in excess of the study criteria. TPH and PCB were detected in B1-1027 at 8 and 0.07 mg/kg, respectively. The PCB concentration was in excess of the study criterion.

Table 6.6

Relevant Soil Results: Sewage Outfall B

| INDICATOR<br>CHEMICALS (mg/kg) | LEVEL A | BACKGROUND | B1-1028 | B1-1029 | B1-1104 |
|--------------------------------|---------|------------|---------|---------|---------|
| Arsenic                        | 10      | 6.5        | 7.5     | N/A     | 5.6     |
| Mercury                        | 0.2     | 0.11       | 0.1     | N/A     | 0.21    |
| Cadmium                        | 1.5     | <1         | N.R.    | 1       | N.R.    |
| Lead                           | 50      | <10        | N.R.    | N.R.    | 36      |

N.R. = Not Relevant

N/A = Not Analyzed

Table 6.7

Relevant Soil Results: Sewage Outfall D

| Indicator Chemicals (mg/kg) | Level A | Background | B1-1004 | B1-1005 |
|-----------------------------|---------|------------|---------|---------|
| Arsenic                     | 10      | 6.5        | 5.5     | N.R.    |
| Mercury                     | 0.2     | 0.11       | 0.13    | 0.12    |
| PCB                         | 0.1     | <0.01      | 0.67    | N.R.    |

N.R. = Not Relevant

B1-1004 contained arsenic at a concentration of 5.5 mg/kg which is in excess of the study criterion. The PCB concentration of 0.67 mg/kg is also in excess of the study criterion. B1-1005 contained mercury at a concentration of 0.12 mg/kg, which exceeds the study criterion. Benzene was detected in B1-1005 at 0.18 mg/kg.

#### 6.5.4.3 EVALUATION OF RISK ASSESSMENT AND ANALYTICAL RESULTS

The results of the risk assessment show that carcinogenic and non-carcinogenic risks are below the levels established for this study, and no indicator chemicals were identified above the Quebec B guideline.

#### 6.5.4.4 CLEAN-UP OPTIONS

No clean-up of this site is required.

If reduction of risk is deemed desirable, soils can be removed, encapsulated, treated, or covered, as applicable.

### 6.6 BUILDING PROXIMITIES

#### 6.6.1 SITE NORTH OF WATER SUPPLY

##### 6.6.1.1 VISUAL OBSERVATIONS AND SAMPLE LOCATIONS

Soil sample B1-1035 was located 30 m north of the summer water supply, near Stain Area 1 (SA 1). Across the road from the water supply, the area appears to have been disturbed. (Figure 6.1)

#### **6.6.3.4 CLEAN-UP OPTIONS**

There were many waste materials and debris scattered about the site. These materials should be removed and the site recontoured, covered with clean fill materials and vegetated, if necessary, to control erosion.

If reduction of risk is deemed desirable, soils can be removed, encapsulated, treated, or covered, as applicable.

#### **6.6.4 SITE NORTH OF SEWAGE OUTFALL B**

##### **6.6.4.1 VISUAL OBSERVATIONS AND SAMPLE LOCATION**

Soil sample B1-1105 of SA 4 was taken 10 m west of the main building, near the west dormitory. The sample was submitted for analysis.

##### **6.6.4.2 ANALYTICAL RESULTS**

The analysis results for B1-1105 were not available.

#### **6.6.5 SITE NORTH OF GARAGE**

##### **6.6.5.1 VISUAL OBSERVATIONS AND SAMPLE LOCATION**

At SA 5, one water sample (B1-H) was collected from a small drainage channel at a point 100 m north of the northeast corner of the garage (Figure 6.1). B1-H was submitted for analysis of pesticides, volatile organic compounds and acid extractable organics.

##### **6.6.5.2 ANALYTICAL RESULTS**

Study criteria were not exceeded in the sample for the indicator chemicals.

B1-H did not contain any pesticides, volatile organic compounds or acid extractable organics.

#### **6.6.6 SITE NORTHEAST CORNER OF GARAGE**

##### **6.6.6.1 VISUAL OBSERVATIONS AND SAMPLE LOCATION**

At SA 6, another water sample (B1-I) was collected from a small drainage channel at a point 150 m north of the northeast corner of the garage. (Figure 6.1) B1-I was submitted for analysis of volatile organic compounds only.

## **7.0 FACILITY DECOMMISSIONING**

---

### **7.1 OVERVIEW**

The MOU provides for a site-specific decommissioning plan, to be updated regularly as additional facilities are abandoned. Volume 2 discusses the general requirements and approach to facility decommissioning as the basis for the site-specific decommissioning plans. These generic approaches can be applied to the BAR-1 site when the final disposition of the station facilities is known.

### **7.2 SITE CLEAN-UP OPTIONS AND MONITORING**

The results of the baseline risk assessment indicate that contaminant levels are such that there is a low risk to human health for the two cases considered, the worker periodically visiting the site and the hunter using country foods in the vicinity and on the site.

However, four locations were identified as exceeding the Quebec Level B criteria and are identified in Table 7.1. For three of the locations, additional sampling is required to determine the full extent of contamination. At one location contamination is sufficiently delineated to proceed to clean-up work.

Site decommissioning procedures in Volume 2 for landfills, sewage outfalls, POL facilities, pallet lines and other site facilities outline procedures for restoring the site to ensure that contaminants are stabilized. During the decommissioning process, other zones of elevated levels may be found, especially when earthwork facilities, such as gravel pads and POL storage dykes are excavated and restored. A set of soil and water samples should be taken to confirm that contaminants have not been redistributed during the process. An environmental protection and contingency plan for these potential releases should be developed as part of the site specific decommissioning plan.

It should be emphasized that this study was limited to a shallow subsurface investigation using hand tools at a specific time. As a result, there is no information about the contents of the waste disposal sites, particularly the landfill areas identified by visual observations. Leachate from the landfills does not appear at this time to be migrating and causing impacts. However, physical and chemical changes in the landfill could cause this to change in the future, and pollution from leachate migration could result.

It is recommended that a monitoring program be developed as part of the site specific decommissioning plan to address this potential. In particular, monitoring wells should be established at strategic locations on the site to take groundwater samples for analyses to determine if contaminants are being mobilized and moving in the groundwater. As well, a comprehensive surface water quality program should be included in the monitoring program to determine if surface water processes are picking up site contamination and redistributing it in the environment.



PLATE 1 - SEMI-AERIAL VIEW FROM NORTHWEST

BAR-1 KOMAKUK BEACH

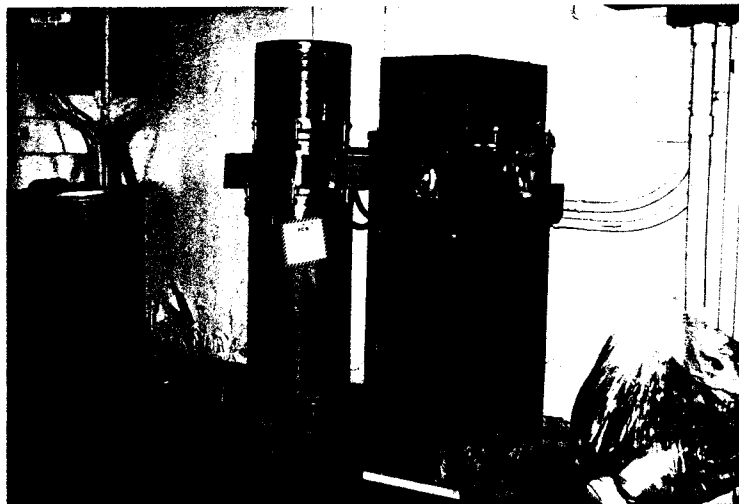


PLATE 2

RUNWAY LIGHT REGULATOR  
ATB STORAGE SHED



PLATE 3

WEST DORM SEWAGE OUTFALL AREA



PLATE 4

ACTIVE LANDFILL WATER SAMPLING

BAR-1 KOMAKUK BEACH

PLATE 5



BUILDING SITE DIESEL TANK  
FACILITIES SOIL STAINING IN  
CATCH BASIN

PLATE 6



ABANDONED LANDFILL  
NORTH SHORE



POL DRUM STORAGE AREA  
SOIL STAINING

PLATE 7

Appendix A      Base Civil Engineering Data

# BAR-1 AUXILIARY RADAR STATION BCE DATA

## LOCATION AND TOPOGRAPHY

Location: Komakuk Beach, Yukon, Canada on shores off the Beaufort Sea about 17 miles east of the Alaska border and approximately 85 miles east of Barter Island. (See arrow above).

Terrain: Low lying tundra (about 40' above SL).

Topography: Site structures and Mt. Coneybear, 2026 feet high south of station, are the most prominent features.

## CLIMATE

Precipitation: Annual (including 24" snowfall). 6"

Temperature: Absolute minimum and maximum (degrees Fahrenheit) -55 & +86°F

GROUNDS Total acres 924A

BUILDINGS Refer to following Table of Particulars for details

1. Total number 6

AIRCRAFT FACILITIES Total Aircraft Facility Surface (gravel) 70,266 SY

Runway:

1. Distance from Main Building Site 1800'
2. Elevation (approximate mean feet above SL) 24'
3. Surface: Gravel on 24" wearing course on non-frost acting base 110' X 3518' 43,000 SY
4. Overruns: 1,110 SY

Shoulder: Gravel 19,544 SY

Taxiway: Gravel 2,877 SY

Apron: Gravel 4,845 SY

Lighting:

Runway:

1. Sides: White lights 10' from edge, 200' interval 33
2. Threshold:
  - a. Green marker lights, 10' interval (10 on East end, 9 on West End) 19
  - b. Strobeacon (2 each end 35' from sides) 4

# BAR-1 AUXILIARY RADAR STATION BCE DATA

## AIRCRAFT FACILITIES (Continued)

|            |                                                                                      |   |
|------------|--------------------------------------------------------------------------------------|---|
| Taxiway:   | Outlining blue lights                                                                | 8 |
| Apron:     | Outlining blue lights                                                                | 6 |
| Wind Cone: | White lights                                                                         | 4 |
| Nav aids:  | NX 4000 Beacon                                                                       | 1 |
| Aerovane:  |                                                                                      | 1 |
| Projector: | (ceiling) Property of Canadian Dept. of Atmospheric and Environmental Services (AES) | 1 |
| Wind Cone: | (lighted)                                                                            | 1 |

## ROADS

|    |                                                                                      |           |
|----|--------------------------------------------------------------------------------------|-----------|
| 1. | Total road surface (gravel)                                                          | 22,943 SY |
| 2. | Paved surface                                                                        | none      |
| 3. | 12-foot wide roadway (length)                                                        | 14,800'   |
| 4. | 16-foot wide roadway (length)                                                        | 1,800'    |
| 5. | Surface: Gravel on 6" wearing course on 3' non-frost acting base on existing ground. |           |

## EXTERNAL SANITARY SEWER

3" sewer lines (3) to outfall areas from recreation and Kitchen Building (130'), from West Dorm (160'), and from East Dorm (150'), (Length) 440'

System: Only the module train is provided with running water, toilet, and drain facilities. Liquid sewage waste is accumulated at internal tanks for temporary storage. The waste from such tanks is periodically drained via sewer lines to outfall areas.

## INTERNAL SEWAGE DISTRIBUTION

System is located in module train and consists of steel holding tanks, a grease trap, sump tanks and pumps, marine toilets, plumbing and latrine fixtures, piping, and valves.

|              |                                                                |           |
|--------------|----------------------------------------------------------------|-----------|
| Steel Tanks: | 1. Holding, (3 each)<br>(U.S. gallons)                         | 1,900 GAL |
|              | a. Recreation and Kitchen Bldg,<br>6' x 3'6" x 6'              | 800 GAL   |
|              | b. East and West Dorms,<br>(1-550 Gal Each), 4' x 3'6"<br>x 6' | 1,100 GAL |

BAR-1 AUXILIARY RADAR STATION BCE DATA

STORM DRAIN  
SYSTEM

Note: There is no pipeline storm drain system.

System:

Surface water is permitted to drain away by following natural run-off pattern of terrain, except where blocked by buildings, gravel pads, roadways, etc., at which point culverts are provided.

Culverts:

1. Approximate number 11'
2. Approximate total length 560'

EXTERNAL  
WATER DIS-  
TRIBUTION

Note: There is no external, primary pipeline system.

System:

External water distribution is accomplished by water haul from a dammed river in summer and from a spring in the river system in winter. Raw water is pumped through the filtering system located in the P.U. Mech Shop and then into the two 20,000 gal heated, raw water storage tanks located outside of the P.U. Mech Shop. Tanks are heated by a circulating hot water system from heat exchangers on three generator units in the powerhouse.

1. Summer haul 1300'
2. Winter haul 2.3 MI
3. Freeze-over emergency: Not required as spring in the river system is flowing and open all during winter season.

INTERNAL  
WATER DIS-  
TRIBUTION  
TREATMENT

System located in buildings serviced by plumbing consists of steel raw water receiving tanks (2), filter plant, hot water circulating pumps and heat exchangers, chlorinator, steel distribution potable water storage tanks (3), electric domestic hot water heaters, assorted pumps, hot and cold water lines, valves, and pneumatic tank and pump units.

# BAR-1 AUXILIARY RADAR STATION BCE DATA

Steel Tanks:

1. Receiving - 2 ea 20,000 gal exterior, heated, raw water storage tanks (steel and insulated) 40,000 GAL
2. Treated Water Distribution Tanks: 1,900 GAL
  - (3) (U.S. gal)
  - a. Recreation & Kitchen Building, 6' x 3'6" x 6' 800 GAL
  - b. East & West dormitories (1-550 gal each), 4' x 3'6" x 6' 1,100 GAL

## ELECTRIC POWER

Power is generated at station (total capacity) 380 KW

## Powerplant:

Diesel-Electric Units:

Primary Units: Six, 60KW, 1200 rpm, 120/208v, 3 ph, 60 Hz at 80% pf, located in Powerhouse Building, GMC Model 6-71.

360 KW

Survival Unit: One Caterpillar Model D-311, 20 KW, 1200 RPM, 120/208v, 3 ph, 60 Hz at 80% pf, located in garage

20 KW

## Distribution:

### Internal:

System consists of switchboard, single bus system (servicing both Technical and Utility loads), and assorted branch circuits throughout the corridor-connected Main Building Complex, with single bus service provided in buildings and areas requiring only Utility service.

### External:

System consists of ground supported cable runs, in general (with short buried runs under man-made obstructions), servicing buildings and areas requiring electric power, and such transformers associated therewith.

1. Number of primary power transformers 2
  - a. Power House (one, 2400/120/208v) 30 KVA
  - b. Airstrip Hut (one, 2400/120/208v) 30 KVA

# BAR-1 AUXILIARY RADAR STATION BCE DATA

## ELECTRIC POWER (Continued)

|                       |                                           |             |
|-----------------------|-------------------------------------------|-------------|
| Demand & Consumption: | 1. Peak Demand                            | 126 KW      |
|                       | 2. Average Power Consumption              |             |
|                       | a. Monthly                                | 69,363 KWH  |
|                       | b. Annual                                 | 832,359 KWH |
|                       | 3. Fuel Oil Consumption, Power Production |             |
|                       | a. Monthly average (U.S. Gallons)         | 5,978 GAL   |

## POL STORAGE, DISTRIBUTION

|                                                       |             |
|-------------------------------------------------------|-------------|
| Total Storage Capacity, external tanks (U.S. Gallons) | 277,000 GAL |
|-------------------------------------------------------|-------------|

|          |                                       |             |
|----------|---------------------------------------|-------------|
| Storage: | 1. Diesel Oil: Total Capacity         | 265,000 GAL |
|          | a. Total number of tanks (steel)      | 10          |
|          | b. Building Site Area (only location) |             |
|          | (1) 3 Steel tanks (65,000 ea)         | 195,000 GAL |
|          | (2) 7 Steel tanks (10,000 ea)         | 70,000 GAL  |
|          | 2. Mogas: Total Capacity              | 12,000 GAL  |
|          | a. Total number of tanks (steel)      | 2           |
|          | b. Beach Area: 1 tank steel           | 6,000 GAL   |
|          | c. Site Area: 1 tank steel            | 6,000 GAL   |

|            |                                                |        |
|------------|------------------------------------------------|--------|
| Pipelines: | Total length (including building feeder lines) | 4,150' |
|            | a. 2" pipe                                     | 1,000' |
|            | b. 6" pipe                                     | 3,150' |

|             |                           |   |
|-------------|---------------------------|---|
| Pumphouses: | Total number              | 1 |
|             | a. Module Train Tank Area | 1 |

System: Product delivered by sealift is pumped via 6" pipeline to 3 each 65M gal storage tanks, at building Site Area, for distribution via pumphouse to secondary tanks and various fill stands and building day tanks. Drum stocks are transferred via portable pump units.

Permanent Buildings:

- All buildings except C&E Operations Building: Fan driven, ducted, oil fired, hot air furnaces (1 each building).
- C&E Operations Building: Heat recovered from Electronic Equipment is distributed and recirculated via fans and ductwork.

## BAR-1 AUXILIARY RADAR STATION BCE DATA

### HEATING

Temporary  
Buildings:

Unheated.

Furnace  
Capacity:

|                                                                                    |                  |
|------------------------------------------------------------------------------------|------------------|
| Total rated output for station                                                     | 1,676,000 BTU/hr |
| a. 1 furnace (4000 cfm) Garage                                                     | 350,000 BTU/hr   |
| b. 1 furnace (3650 cfm) Kitchen                                                    | 184,000 BTU/hr   |
| c. 1 furnace (3800 cfm) Warehouse                                                  | 350,000 BTU/hr   |
| d. 2 furnaces (1540 cfm/141,000<br>BTU/hr each) East & West Dorm                   | 282,000 BTU/hr   |
| e. 2 furnaces (1250 cfm/114,000<br>BTU/hr each) North Dorm & P.U. Mech<br>Shop     | 228,000 BTU/hr   |
| f. 2 furnaces (1540 cmf/141,000<br>BTU/hr each) South Dorm & Receiving<br>Building | 282,000 BTU/hr   |

### FIRE PROTECTION

Fire Alarm:

1. Automatic heat and smoke detectors are installed throughout all building areas, which are divided into Fire Alarm Zones. A zoned circuit alarm system centralizes all calls at the Annunciator Panel, near the Control Console, to facilitate further announcements over the Public Address System. Alarm horns in all enclosed areas and an outdoor siren sounds, strobe lights are energized, and magnetic door holders are de-energized (allowing fire doors to close) whenever the heat and smoke detectors, CO<sub>2</sub> systems, or manually operated pull boxes are actuated.
2. Smoke Detector System in sleeping quarters, East and West Dorms. Both smoke and heat detectors are installed in North and South dorms and all other areas with acoustic drop ceilings.
3. A custom 6500 master alarm panel is located in building R-1, C & E Workshop. 1526 single zone alarm panels are located in the garage and warehouse.

BAR-1 AUXILIARY RADAR STATION BCE DATA

FIRE PROTECTION (Continued)

Fire Fighting  
Systems:

Permanent  
Buildings:

1. Deluge System consisting of fixed CO<sub>2</sub> tanks equipped for manual and automatic discharge.
  - a. System automatically operated in all buildings Mechanical Rooms.
  - b. System manually operated in C&E Operations Building fire barrier module and in Powerhouse Building.
- Note: Actuation of CO<sub>2</sub> system automatically turns in fire alarm, deactivates associated heating and ventilating fans, and releases associated normally open fire doors to confine fire.
2. Fire Extinguishers: Halon, dry chemical, and loaded-stream water hand extinguishers are placed at strategic locations throughout the Train.
3. Fire hose system consisting of a manual start gas engine water pump and four (4) hose racks in corridor of the module train.

Other  
Buildings:

Fire fighting equipment in other buildings is limited to the hand extinguishers listed above plus CO<sub>2</sub> extinguishers, except as follows:

1. Garage: Automatic CO<sub>2</sub> deluge system in furnace room.
2. Warehouse: Same as garage furnace room.

ANTENNAS

(See Plot Plan for location and type)

REFUSE  
DISPOSAL

Collection:

Refuse is collected periodically and hauled to the landfill.

BAR-1 AUXILIARY RADAR STATION BCE DATA

## REFUSE DISPOSAL (Continued)

Disposal: NOTE: Refuse dumped at landbound disposal areas is periodically buried under material (gravel, etc.) stockpiled in the area for this purpose.

1. Refuse haul (distance):

3564'

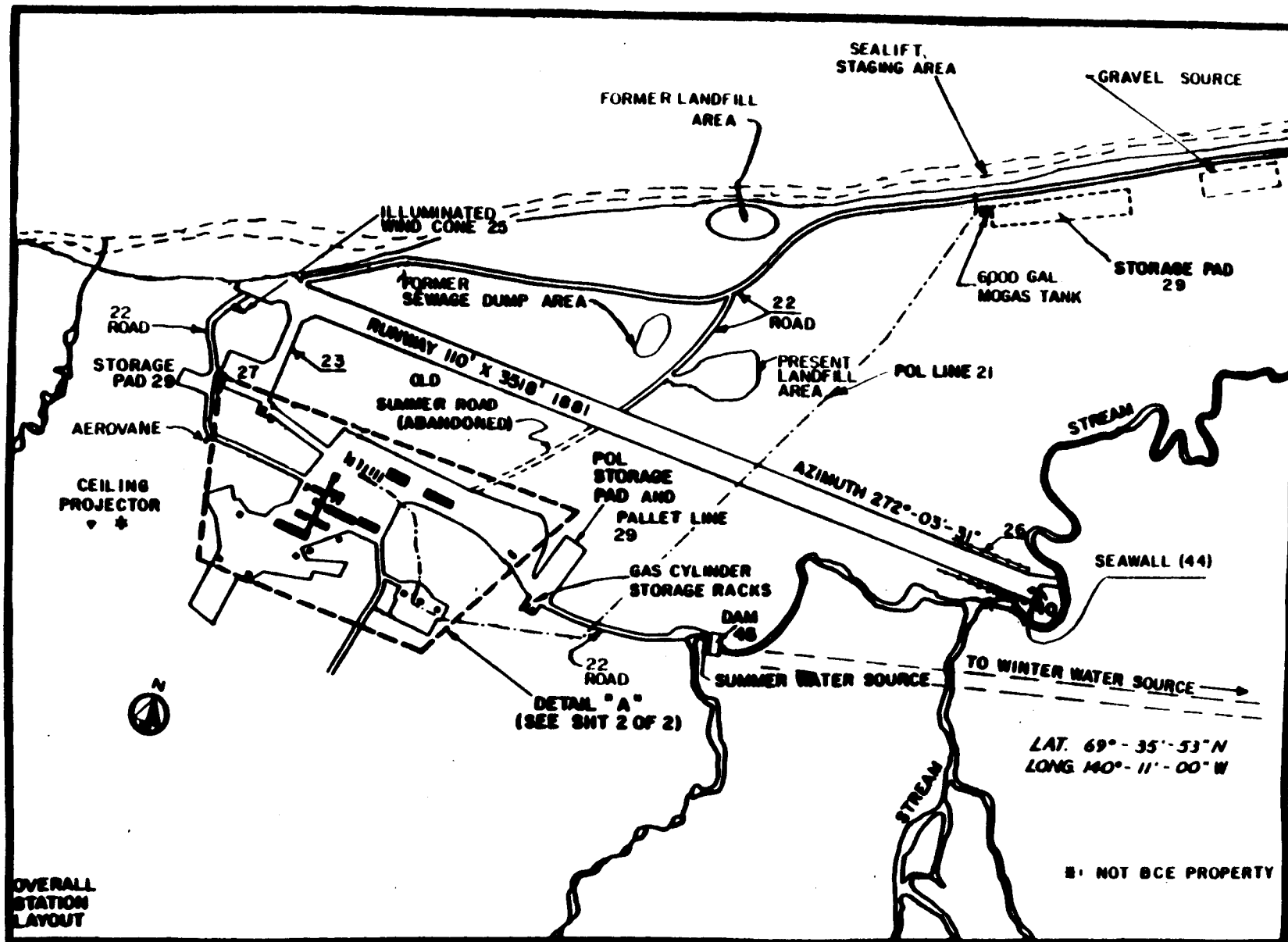
FACILITIES INVENTORY VALUE

|              |                    |
|--------------|--------------------|
| <b>Total</b> | <b>\$7,316,000</b> |
|--------------|--------------------|

As of November 1990

17

1482B



BAR-1 PLOT PLAN (SHEET 1 OF 2)

1  
2  
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  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
84



FACILITIES INDEX BAR-1

- |                              |                               |
|------------------------------|-------------------------------|
| 1. Module Train              | 27. Airstrip Apron            |
| 2. Garage                    | *28. Runway Shoulder          |
| 3. Warehouse                 | 29. Open Storage Areas        |
| 4. Communication "DISH"      | 34. Primary Power Cable (UG)  |
| 5. Communication "DISH"      | 36. Sewer Line                |
| 6. Master TV Antenna         | 38. Communication Billboard   |
| 8. Diesel Fuel Tank (Steel)  | 39. Communication "BILLBOARD" |
| 9. Diesel Fuel Tank (Steel)  | 40. Runway Overrun            |
| 10. Diesel Fuel Tank (Steel) | * 41. Light Strobeacon        |
| 11. Diesel Fuel Tank (Steel) | * 42. Light Approach          |
| 12. Diesel Fuel Tank (Steel) | * 43. Light Taxiway           |
| 13. Diesel Fuel Tank (Steel) | 44. Seawall                   |
| 14. Diesel Fuel Tank (Steel) | 45. Water Storage Dam         |
| 15. Diesel Fuel Tank (Steel) | 1881. Runway                  |
| 16. Diesel Fuel Tank (Steel) | 3008. Hazard Storage (POL)    |
| 17. Diesel Fuel Tank (Steel) | 3009. Storage Shed (ATB)      |
| 18. POL Pumphouse            |                               |
| 19. Water Storage Tank       | * Not Shown on Plot Plan      |
| 20. Water Storage Tank       |                               |
| 21. POL Line                 |                               |
| 22. Road                     |                               |
| 23. Taxiway                  |                               |
| 24. Beacon Light             |                               |
| 25. Wind Cone                |                               |
| 26. Runway Lights            |                               |

NOTE: Ceiling Projector on  
Sheet 1 of Plot Plan is property  
of Canadian Department of AES.

TABLE OF PARTICULARS -- BAR-1 BUILDINGS -- REAL PROPERTY

| BUILDING DESCRIPTION                                            | CONSTRUCTION FOUNDATION | DATA BUILDING                                                                                                                                                                                                                                       | FACILITIES AND/OR PURPOSE                                                       | ELECTRIC                                                                                                                              | HEAT                                                           | UTILITY DATA WATER                                                              | SEWAGE                                                                             | VENTILATION                                                                                                                                              | COMMENTS                                                                                                                                                          |
|-----------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C&E Operations Building (28' x 82')<br>FAC No. 00001            | Timber piles            | Prefab-unit, modular type approx 16' x 28' per unit)<br>a. Occupied Units (4) Wd frame with insulated plywood panels, with exterior metal sheathing on roof<br>b. Unoccupied Fire Barrier Unit (1) Unheated stl box type with heated cross corridor | C&E Mission Equip                                                               | a. Single bus system (1 bus for tech and utility loads)<br>b. Emergency lights (btry powered with auto lighting & charging controls.) | Ducted forced air utilizing C&E equipment heat recovery system | No System                                                                       | No System                                                                          | a. Supply: Ducted forced air system equipped with Modutrol dmptr for auto control of fresh & recirc air mixture<br>b. Exhaust: Ducted, forced air system | Surveillance radar antenna housed in rigid, unheated radome located on independent platform straddling Module Train, interconnected with Electronic Shop Building |
| Electronic Shop & Storage Building (26' x 56')<br>FAC No. 00001 | Post/timber sill        | Prefab-units wd frame with insulated metal panels, with exterior metal sheathing on roof                                                                                                                                                            | a. Station offices<br>b. C&E Repair Shop<br>c. Parts Storage<br>d. S.S. Bedroom | a. Ext supply via station plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls.)             | Ducted forced air system from oil fired furnace                | No System                                                                       | No System                                                                          | No Mechanical System                                                                                                                                     | Serviced by Building Complex Corridor System                                                                                                                      |
| Dormitory Building (2) (26' x 48' EA)<br>FAC No. 00001          | Post/timber sill        | Prefab-units wood frame with insulated metal panels, with exterior metal sheathing on roof                                                                                                                                                          | Bedrooms and bath                                                               | a. Ext supply via stn plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls)                  | Ducted forced air system from oil fired furnace                | Plumbing system supplied with potable water pumped from int steel storage tanks | Int plumbing system terminating at int storage tank serviced by outfall sewer pipe | No Mechanical System                                                                                                                                     | Serviced by Building Complex Corridor System. (East & West dorms)                                                                                                 |
| Dormitory Building (24' x 26')<br>FAC No. 00001                 | Post/timber sill        | Prefab-units wood frame with insulated metal panels, with exterior metal sheathing on roof                                                                                                                                                          | Bedrooms                                                                        | a. Ext supply via stn plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls)                  | Ducted forced air system from oil fired furnace                | No System                                                                       | No System                                                                          | No Mechanical System                                                                                                                                     | Serviced by Building Complex Corridor System. (North dorm)                                                                                                        |

As of November 1990

21

1482B

TABLE OF PARTICULARS -- BAR-1 BUILDINGS -- REAL PROPERTY

| BUILDING DESCRIPTION                                        | CONSTRUCTION DATA<br>FOUNDATION | BUILDING                                                                                               | FACILITIES<br>AND/OR PURPOSE                                                                                                                | ELECTRIC                                                                                                             | HEAT                                            | UTILITY DATA<br>WATER                                                           | SEWAGE                                                                             | VENTILATION          | COMMENTS                                     |
|-------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------|----------------------------------------------|
| Recreation & Kitchen Building (26' x 124')<br>FAC No. 00001 | Post/timber sill                | Prefab-units wood frame with insulated metal panels, with exterior metal sheathing on roof             | a. Dining & Recreation<br>b. Kitchen & dry food storage<br>c. Laundry<br>d. Library<br>e. PX, hobby shop, & dark-room<br>f. Mechanical room | a. Ext supply via stn plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls) | Ducted forced air system from oil fired furnace | Plumbing system supplied with potable water pumped from int steel storage tanks | Int plumbing system terminating at int storage tank serviced by outfall sewer pipe | No Mechanical System | Serviced by Building Complex Corridor System |
| Powerhouse (31' x 61')<br>FAC No. 00001                     | Post/timber sill                | Prefab-units wood frame with insulated plywood panels, with exterior metal sheathing on walls and roof | Site Power-plant                                                                                                                            | a. Ext supply via stn plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls) | Engine heat via exhaust piping                  | No System                                                                       | No System                                                                          | No Mechanical System | Serviced by Building Complex Corridor System |
| Workshop and Storage (26' x 40')<br>FAC No. 00001           | Post/timber sill                | Prefab-units wood frame with insulated metal panels, with exterior metal sheathing on roof             | J-Mech Shop and water treatment plant                                                                                                       | a. Ext supply via stn plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls) | Ducted forced air system from oil fired furnace | No System                                                                       | No System                                                                          | No Mechanical System | Serviced by Building Complex Corridor System |
| Receiving and Storage (26' x 80')<br>FAC No. 00001          | Post/timber sill                | Prefab-units wood frame with insulated metal panels, with exterior metal sheathing on roof             | a. Recreation<br>b. Storage<br>c. Receiving<br>d. Emergency Radio System<br>e. Walk-in refrig storage<br>f. GYM                             | a. Ext supply via stn plant utility bus<br>b. Emergency lights (btry powered with auto lighting & charging controls) | Ducted forced air system from oil fired furnace | No System                                                                       | No System                                                                          | No Mechanical System | Serviced by Building Complex Corridor System |
| Dormitory and Storage (17' x 27')<br>FAC No. 00001          | Post/timber sill                | Timber frame with plywood exterior (insulated with exterior metal sheathing on roof                    | a. General storage<br>b. Transient dormitory                                                                                                | Ext supply via station plant utility bus                                                                             | Oil burning space heater                        | No System                                                                       | No System                                                                          | No Mechanical System | Serviced by Building Complex Corridor System |

TABLE OF PARTICULARS -- BAR-1 BUILDINGS -- REAL PROPERTY

| BUILDING DESCRIPTION                             | CONSTRUCTION DATA<br>FOUNDATION | BUILDING                                                       | FACILITIES<br>AND/OR PURPOSE                                                                             | ELECTRIC                                                                                                                                  | HEAT                                                     | UTILITY DATA<br>WATER | SEWAGE    | VENTILATION             | COMMENTS                 |
|--------------------------------------------------|---------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------|-----------|-------------------------|--------------------------|
| Garage<br>(41'-9" x<br>62'-10")<br>FAC No. 00002 | Concrete foot-<br>ings on fill  | Stl frame with<br>with insulated<br>metal panels               | a. Vehicle<br>MAR<br>b. Survival<br>electric<br>generator unit<br>c. Emerg/Dis-<br>aster Radio<br>System | a. Ext supply<br>via stn plant<br>utility bus<br>b. Emergency<br>lights (btry<br>powered with<br>auto lighting<br>& charging<br>controls) | Ducted forced<br>air system<br>from oil fired<br>furnace | No System             | No System | No Mechanical<br>System |                          |
| Warehouse<br>(28' x 120')<br>FAC No. 00003       | Timber piles                    | Timber frame<br>with metal and<br>wood exterior<br>(insulated) | a. General<br>storage<br>b. Receiving<br>dock<br>c. Office<br>d. Security<br>crib                        | a. Ext supply<br>via stn plant<br>utility bus<br>b. Emergency<br>lights (btry<br>powered with<br>auto lighting<br>& charging<br>controls) | Ducted forced<br>air system<br>from oil fired<br>furnace | No System             | No System | No Mechanical<br>System |                          |
| POL Pumphouse<br>(8' x 8')<br>FAC No. 00018      | Concrete slab<br>on fill        | Steel frame<br>with metal<br>exterior<br>(uninsulated)         | POL Pumps                                                                                                | Ext supply via<br>station plant<br>utility bus                                                                                            | No System                                                | No System             | No System | No Mechanical<br>System |                          |
| Hazard Stor-<br>age (17' x 27')<br>FAC No. 03008 | Timber sills                    | Atwell tent                                                    | a. General<br>storage                                                                                    | No System                                                                                                                                 | No System                                                | No System             | No System | No Mechanical<br>System | POL Hazardous<br>Storage |
| Storage Shed<br>(14' x 28')<br>FAC No. 03009     | Post/timber<br>sill             | Timber frame<br>with plywood<br>exterior<br>(insulated)        | a. General<br>storage<br>(unheated)<br>b. Airstrip<br>lighting<br>controls                               | Ext supply via<br>station plant<br>utility bus                                                                                            | No System                                                | No System             | No System | No Mechanical<br>System | ATB                      |

## Appendix B Sample Location Description

## APPENDIX B

### BAR-1 KOMAKUK BEACH

| Sample No.          | Surface Run-Off | Soil Drainage Class | Soil Permeability Class | Surface Stoniness | Soil Sample Depth | Topography                         | Slope Position | Slope Exposure | Soil Description                       | Soil Colour        | Remarks<br>(Location, Adjacent Areas, Comments)                                                                                                                                                                                                        |
|---------------------|-----------------|---------------------|-------------------------|-------------------|-------------------|------------------------------------|----------------|----------------|----------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1-1002             | N/A             | poor                | N/A                     | N/A               | N/A               | slight gradient < 5% to the N & NW | middle         | north          | saturated, gravelly sand               | grey               | -landfill B 100m N of runway in disturbed area next to landfill<br>-roads on 2 sides, restricting drainage<br>-scrap metal, general domestic refuse in vicinity<br>-vegetation cover sparse (Equisetum spp., sedges)                                   |
| B1-1009             | N/A             | poor                | N/A                     | N/A               | N/A               | slope to NW, slight gradient < 5%  | N/A            | N/A            | organic, high water content            | dark brown         | -landfill A 300m N of runway between road and ocean<br>-80m S of beach in disturbed area with pools of water<br>-contains drums, domestic refuse, possibly electrical equipment<br>-vegetation cover 25% (sedges, Salix spp., Epilobium spp., grasses) |
| B1-1010D & B1-1011D | N/A             | poor                | N/A                     | N/A               | N/A               | slope to NW, slight gradient < 5%  | N/A            | N/A            | organic, gravelly sand                 | dark brown         | -landfill A 300m N of runway between road and ocean<br>-75m S of beach in disturbed area with pools of water<br>-contains drums, domestic refuse, possibly electrical equipment<br>-vegetation cover 25% (sedges, Salix spp., Epilobium spp., grasses) |
| B1-1012             | N/A             | poor                | N/A                     | N/A               | N/A               | slope to NW, slight gradient < 5%  | N/A            | N/A            | granular sand                          | grey               | -landfill A 300m N of runway between road and ocean<br>-25m S of beach in disturbed area<br>-contains drums, domestic refuse, possibly electrical equipment<br>-vegetation cover (clumps of grass)                                                     |
| B1-1013             | N/A             | moderate            | N/A                     | N/A               | N/A               | slope to NW, slight gradient < 5%  | middle         | northwest      | silty sand                             | grey               | -landfill A 300m N of runway between road and ocean<br>-100m S of beach in local drainage channel<br>-contains drums, domestic refuse, possibly electrical equipment<br>-vegetation cover (grasses, sedges, Salix spp.)                                |
| B1-1014             | N/A             | moderate            | N/A                     | N/A               | N/A               | slope to NW, slight gradient < 5%  | middle         | northwest      | silty sand                             | grey               | -landfill A 300m N of runway between road and ocean<br>-130m S of beach in local drainage channel<br>-contains drums, domestic refuse, possibly electrical equipment<br>-vegetation cover (grasses, sedges, Salix spp.)                                |
| B1-1038             | N/A             | good                | N/A                     | N/A               | N/A               | approx. 75% along foundering bank  | middle         | north          | clay                                   | dark grey to brown | -bank of clay 2m high within 100m of runway, opening onto landfill C<br>-sample taken adjacent to discoloured seepage of groundwater<br>-vegetation cover (none)                                                                                       |
| B1-1004             | N/A             | poor                | N/A                     | N/A               | N/A               | slight gradient < 5% to the NW     | N/A            | N/A            | saturated, sandy gravel                | grey to brown      | -275m S of ocean, 100m N of sewage outfall D<br>-30m by 100m in slight depression, roads on SE and N<br>-drainage flow to NW, pools of water<br>-adjacent to road, 5m N of gravel stockpile<br>-vegetation cover (sedges, Senecio sp.)                 |
| B1-1005             | N/A             | fair to poor        | N/A                     | N/A               | N/A               | slight gradient < 5% to the NW     | N/A            | N/A            | peat overlying clay, medium plasticity | dark brown         | -275m S of ocean, 100m N of sewage outfall D<br>-30m by 100m in slight depression, roads on SE and N<br>-drainage flow to NW, pools of water<br>-landfill B area 20m E of outfall area<br>-vegetation cover (Senecio sp., sedges, grasses)             |

## APPENDIX B

### BAR-1 KOMAKUK BEACH

| Sample No.          | Surface Run-Off | Soil Drainage Class | Soil Perviousness Class | Surface Stoniness | Soil Sample Depth | Topography                                 | Slope Position | Slope Exposure | Soil Description                   | Soil Colour         | Remarks<br>(Location, Adjacent Areas, Comments)                                                                                                                                                                                                                                     |
|---------------------|-----------------|---------------------|-------------------------|-------------------|-------------------|--------------------------------------------|----------------|----------------|------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1-1027             | N/A             | poor                | N/A                     | N/A               | N/A               | slight gradient < 5% to the SE             | N/A            | N/A            | silty sand                         | grey                | -sewage outfall A 40m SE of main module train<br>-poorly drained, roads on 3 sides, gravel pads<br>-vegetation cover 100% (Senecio sp., Rumex sp., sedges, grasses)                                                                                                                 |
| B1-1104             | N/A             | poor                | N/A                     | N/A               | N/A               | < 1% to the W                              | N/A            | N/A            | gravelly sand                      | grey                | -sewage outfall B 60m SE of module train<br>-poorly drained, roads on 3 sides, gravel pads<br>-vegetation cover 100% (Senecio sp., Rumex sp., sedges, grasses)                                                                                                                      |
| B1-1016             | N/A             | poor                | N/A                     | N/A               | N/A               | < 1%                                       | N/A            | N/A            | fine gravel                        | grey to brown       | -POL 1 area 150m SE of main module train<br>-3m E of catch basin, 1.5m S of POL line, smell of fuel evident, sheen noted on adjacent pool of water<br>-vegetation cover 100% (grasses, sedges), fen species in surrounding area (sedges, Sphagnum spp., Vaccinium spp., Salix spp.) |
| B1-1020D & B1-1021D | N/A             | moderate to poor    | N/A                     | N/A               | N/A               | slight gradient < 5% to the E              | N/A            | N/A            | sandy gravel                       | grey to brown       | -pallet line 1 area 300m E of main module train<br>-1m E of gravel pad, in undisturbed area<br>-vegetation cover 100% (grasses, sedges, Salix spp., Epilobium spp., Empetrum sp.)                                                                                                   |
| B1-1202             | N/A             | good                | N/A                     | N/A               | N/A               | slight gradient to the N                   | middle         | north          | sandy gravel                       | grey to brown       | -pallet line 2 500m N of SE corner of runway, within 100m of landfill C<br>-20m by 30m contaminated with fuel<br>-vegetation cover (none)                                                                                                                                           |
| B1-1204             | N/A             | good                | N/A                     | N/A               | N/A               | slight gradient to the N                   | middle         | north          | gravelly sand                      | grey to brown       | -pallet line 2 500m N of SE corner of runway, within 100m of landfill C<br>-located S of storage area, stores piping/scrap metal<br>-vegetation cover 30% (sedges)                                                                                                                  |
| B1-1036             | N/A             | good                | N/A                     | N/A               | N/A               | slope is N drainage flows E                | middle         | north          | clay                               | grey                | -pallet line 2 500m N of SE corner of runway, within 20m of landfill C<br>-50m N of Mogas storage tank<br>-vegetation cover (none)                                                                                                                                                  |
| B1-1039             | N/A             | good                | N/A                     | N/A               | N/A               | 45% down eroding bank 1% to 5% along beach | bottom         | north          | sandy clay                         | brown               | -landfill C 400m N of main module, within 25m of shoreline<br>-water in stream slightly discoloured<br>-vegetation cover 30% (Salix spp., Senecio spp., grasses)                                                                                                                    |
| B1-1037             | N/A             | good                | N/A                     | N/A               | N/A               | 45% down eroding bank 1% to 5% along beach | bottom         | north          | sand & clay                        | grey to light brown | -landfill C 400m N of main module, within 25m of shoreline<br>-rust coloured staining noted in area<br>-vegetation cover (isolated grasses)                                                                                                                                         |
| B1-1001             | N/A             | poor                | N/A                     | N/A               | N/A               | slight gradient to the NE                  | middle         | northeast      | saturated, some clay, organic peat | brown               | -landfill B 100m N of runway on NW corner of landfill<br>-adjacent to beach access road, landfill is same grade as surrounding area<br>-drainage impeded by beach access road, landfill<br>-scrap metal, domestic refuse in vicinity                                                |

## APPENDIX B

### BAR-1 KOMAKUK BEACH

| Sample No.          | Surface Run-Off | Soil Drainage Class | Soil Porviciunness Class | Surface Stoniness | Soil Sample Depth | Topography                        | Slope Position | Slope Exposure | Soil Description       | Soil Colour    | Remarks<br>(Location, Adjacent Areas, Comments)                                                                                                                                                                                                                                                                          |
|---------------------|-----------------|---------------------|--------------------------|-------------------|-------------------|-----------------------------------|----------------|----------------|------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                 |                     |                          |                   |                   |                                   |                |                |                        |                | -vegetation cover (sedges, Salix spp., Equisetum spp.)                                                                                                                                                                                                                                                                   |
| B1-1000             | N/A             | poor                | N/A                      | N/A               | N/A               | slight gradient to the NE         | middle         | northeast      | organic peat           | brown          | -landfill B 100m N of runway on SW corner of landfill<br>-landfill is same grade as surrounding area<br>-drainage impeded by beach access road, landfill<br>-pools of standing water on S and W sides of landfill<br>-scrap metal, domestic refuse in vicinity<br>-vegetation cover (sedges, Salix spp., Equisetum spp.) |
| B1-1006             | N/A             | poor                | N/A                      | N/A               | N/A               | slight gradient to the NW         | middle         | northwest      | peat overlying clay    | grey           | -sewage outfall D 275m S of ocean, 100m N of runway<br>-30m by 100m in slight depression, roads on SE and N<br>-drainage flow to NW, pools of water<br>-35m W of outfall in shallow peatland from clay<br>-vegetation cover 100% (sedges, grasses)                                                                       |
| B1-1003             | N/A             | poor                | N/A                      | N/A               | N/A               | slight gradient to the NW & N     | top            | northwest      | saturated sandy gravel | grey           | -sewage outfall D 275m S of ocean, 100m N of runway<br>-30m by 100m in slight depression, roads on SE and N<br>-drainage flow to NW, pools of water<br>-NE edge of outfall, adjacent to beach access road<br>-vegetation cover (Senecio spp., grasses, sedges)                                                           |
| B1-1008             | N/A             | moderate to poor    | N/A                      | N/A               | N/A               | slope to NW, slight gradient < 5% | middle         | northeast      | sandy organic          | brown          | -landfill A 300m N of runway, between access road and ocean<br>-contains drums, domestic refuse, electrical equipment<br>-drainage impeded, standing pools of water<br>-vegetation cover (no information)                                                                                                                |
| B1-1007             | N/A             | moderate            | N/A                      | N/A               | N/A               | slope to NW, slight gradient < 5% | near bottom    | northwest      | gravelly sand          | N/A            | -landfill A 300m N of runway, between access road and ocean<br>-contains drums, domestic refuse, electrical equipment<br>-drainage impeded, standing pools of water<br>-vegetation cover (no information)                                                                                                                |
| B1-1015             | N/A             | N/A                 | N/A                      | N/A               | N/A               | no significant slope              | N/A            | N/A            | gravel fill            | grey           | -POL 1 area 150m SE of main module train<br>-dyked area, 15m W of Tank 8<br>-vegetation cover (none)                                                                                                                                                                                                                     |
| B1-1030D & B1-1031D | N/A             | moderate to poor    | N/A                      | N/A               | N/A               | gradient approx 5% to the NW      | top            | northwest      | silty gravel           | grey with rust | -POL 3 facility adjacent to W side of main module<br>-catch basin midway down wall of E berm<br>-basin partially filled with water, rust coloured staining noted around perimeter<br>-corner of basin dug away to permit drainage of water<br>-vegetation cover (grasses, Equisetum spp., Artemisia spp.)                |
| B1-1032             | N/A             | moderate to poor    | N/A                      | N/A               | N/A               | gradient approx 5% to the NW      | top            | northwest      | N/A                    | N/A            | -sewage outfall C 50m W of main module at base of catch basin<br>-sewage outflow passes along the S edge of catch basin<br>-vegetation cover 60% (grasses, sedges, Artemisia spp.)                                                                                                                                       |
| B1-1023             | N/A             | good                | N/A                      | N/A               | N/A               | 5% to 10% to the NW               | top            | northwest      | sandy gravel           | grey           | -Pol 2 area 20m N of main module, in dyked area<br>-two 1m x 5m stained areas noted                                                                                                                                                                                                                                      |

## APPENDIX B

### BAR-1 KOMAKUK BEACH

| Sample No. | Surface Run-Off | Soil Drainage Class | Soil Porviousness Class | Surface Stoniness | Soil Sample Depth | Topography                    | Slope Position | Slope Exposure | Soil Description           | Soil Colour    | Remarks<br>(Location, Adjacent Areas, Comments)                                                                                                                                                                                                          |
|------------|-----------------|---------------------|-------------------------|-------------------|-------------------|-------------------------------|----------------|----------------|----------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                 |                     |                         |                   |                   |                               |                |                |                            |                | -fuel percolating through pools of water<br>-vegetation cover (none)                                                                                                                                                                                     |
| B1-1033    | N/A             | moderate to good    | N/A                     | N/A               | N/A               | 5% to 10% to the NW           | top            | northwest      | sandy gravel               | grey           | -pol 2 area 20m N of main module, in dyked area<br>-two 1m x 5m stained areas noted<br>-fuel percolating through pools of water<br>-vegetation cover (none)                                                                                              |
| B1-1024    | N/A             | moderate to poor    | N/A                     | N/A               | N/A               | 1% to the NW                  | top            | northwest      | 10cm peat overlying gravel | brown and grey | -pallet line 1 125m NW of main module, crushed drums protruding<br>-pad poorly compacted, other drums had leaked<br>-fuel noted on pad, around perimeter<br>-sample taken from peatland, 1m from NW corner of pad<br>-vegetation cover (grasses, sedges) |
| B1-1025    | N/A             | moderate to poor    | N/A                     | N/A               | N/A               | 1% to the NW                  | top            | northwest      | silty gravel               | grey           | -pallet line 1 125m NW of main module, crushed drums protruding<br>-pad poorly compacted, other drums had leaked<br>-fuel noted on pad, around perimeter<br>-sample taken from NW corner on surface of pad<br>-vegetation cover (none)                   |
| B1-1026    | N/A             | poor                | N/A                     | N/A               | N/A               | 1% to the NW                  | near top       | northwest      | 20 cm peat overlying clay  | grey           | -pallet line 1 125m NW of main module, crushed drums protruding<br>-pad poorly compacted, other drums had leaked<br>-fuel noted on pad, around perimeter<br>-sample taken 30m NW of corner of storage pad<br>-vegetation cover 100% (sedges)             |
| B1-1029    | N/A             | poor                | N/A                     | N/A               | N/A               | slight gradient < 5% to the W | top            | west           | organic, granular fill     | dark brown     | -sewage outfall B 60m S of main module, borders S edge of main compound<br>-sewage lagoons approx. 10m E of sample location<br>-vegetation cover (no information)                                                                                        |
| B1-1028    | N/A             | moderate to poor    | N/A                     | N/A               | N/A               | slight gradient < 5% to the W | top            | west           | silty gravel, some organic | brown          | -sewage outfall B 60m S of main module, borders S edge of main compound<br>-sewage drains onto peatland, has ponded into "lagoons"<br>-sample taken at edge of sewage lagoon<br>-vegetation cover 30% (Epilobium spp., grasses, Salix spp.)              |
| B1-1100    | N/A             | moderate            | N/A                     | N/A               | N/A               | 5% to the N                   | top            | north          | sand and gravel            | N/A            | -stain area 2, 75m N of garage, near main compound pad<br>-oil soaked gravel noted, small pools of water<br>-stained soil approx. 20m downslope<br>-vegetation cover (none)                                                                              |
| B1-1103    | N/A             | good                | N/A                     | N/A               | N/A               | 2% to the N                   | top            | north          | sand and silty gravel      | grey           | -stain area 3, 10m W of garage on main compound pad<br>-vegetation cover (none)                                                                                                                                                                          |
| B1-1106    | N/A             | moderate to poor    | N/A                     | N/A               | N/A               | 1% to the SW                  | middle         | southwest      | peat overlying clay        | brown and grey | -250m S of E end of airstrip<br>-15m E of water supply in peatland<br>-vegetation cover 100% (sedges, Salix spp., mosses, Vaccinium vitis-idaea, Lupinus sp.)                                                                                            |

## APPENDIX B

### BAR-1 KOMAKUK BEACH

| Sample No.           | Surface Run-Off | Soil Drainage Class | Soil Perviousness Class | Surface Stoniness | Soil Sample Depth | Topography   | Slope Position | Slope Exposure | Soil Description | Soil Colour | Remarks<br>(Location, Adjacent Areas, Comments)                                                                                                                                                                                               |
|----------------------|-----------------|---------------------|-------------------------|-------------------|-------------------|--------------|----------------|----------------|------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1-A                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 5% to the N  | N/A            | N/A            | N/A              | N/A         | -pol 4 area, MOGAS storage tanks 1200m N of E end of runway<br>-within 100m of shoreline, small pond 5m W of MOGAS tank<br>-volatile organic compound only<br>-vegetation cover (none towards beach - 100% S of site)                         |
| B1-B                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 5% to the N  | N/A            | N/A            | N/A              | N/A         | -pol 4 area, MOGAS storage tanks 1200m N of E end of runway<br>-50m E of site, between MOGAS tank and drum storage<br>-volatile organic compound only<br>-vegetation cover (none towards beach - 100% S of site)                              |
| B1-C(D)<br>& B1-D(D) | N/A             | N/A                 | N/A                     | N/A               | N/A               | 1% to the N  | N/A            | N/A            | N/A              | N/A         | -landfill B 100m N of runway<br>-water slightly turbid<br>-metal/mercury samples unfiltered, unpreserved<br>-vegetation cover 40% (sedges)                                                                                                    |
| B1-E                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 5% to the N  | N/A            | N/A            | N/A              | N/A         | -pol 2 area, pond 150m N of main module, between main pad and runway<br>-check possible spill from POL storage upslope<br>-vegetation cover 80% (grasses, sedges)                                                                             |
| B1-F                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 5% to the NW | N/A            | N/A            | N/A              | N/A         | -pol 2 area, 50m downslope of NW corner of POL storage tanks<br>-volatile organic compound only<br>-vegetation cover (clumps of sedge)                                                                                                        |
| B1-G                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 5% to the N  | N/A            | N/A            | N/A              | N/A         | -pol 2 area, catch basin for fuel storage tanks, 50m N of main module<br>-hydrocarbon expelled from bottom of pool, sheen on surface of water, staining throughout catch basin<br>-volatile organic compound only<br>-vegetation cover (none) |
| B1-H                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 2% to the N  | N/A            | N/A            | N/A              | N/A         | -stain area 5, 100m N of garage between main compound and runway<br>-hydrocarbon contamination upslope, along toe of compound<br>-volatile organic compound only<br>-vegetation cover (none along channel - 100% beyond)                      |
| B1-I                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 2% to the N  | N/A            | N/A            | N/A              | N/A         | -stain area 6, 150m downslope of B1-108, between main compound and runway<br>-traces of viscous hydrocarbon on water surface<br>-volatile organic compound only<br>-vegetation cover 100% (sedges, Salix spp.)                                |
| B1-J                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 1% to the W  | N/A            | N/A            | N/A              | N/A         | -150m E of main module, outside POL 1 tank catch basin<br>-drainage impeded by catch basin, forms small pond<br>-stained soil noted along edge of pond, dead vegetation also<br>-vegetation cover 100% (sedges) around pond                   |
| B1-K                 | N/A             | N/A                 | N/A                     | N/A               | N/A               | 1% to the N  | N/A            | N/A            | N/A              | N/A         | -1500m S of E end of airstrip<br>-sample taken from small pond in peatland area<br>-vegetation cover 100% (sedges)                                                                                                                            |

## APPENDIX B

### BAR-1 KOMAKUK BEACH

| Sample No. | Surface Run-Off | Soil Drainage Class | Soil Perviousness Class | Surface Stoniness | Soil Sample Depth | Topography                 | Slope Position | Slope Exposure | Soil Description | Soil Colour | Remarks<br>(Location, Adjacent Areas, Comments)                                                                                                                                                                                                                                       |
|------------|-----------------|---------------------|-------------------------|-------------------|-------------------|----------------------------|----------------|----------------|------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1-L       | N/A             | N/A                 | N/A                     | N/A               | N/A               | 1% to the N                | N/A            | N/A            | N/A              | N/A         | -landfill A 300m N of runway, between access road and ocean<br>-50m S of beach in disturbed area, pools of water<br>-vegetation cover 20% (sedges, grasses)                                                                                                                           |
| B1-M       | N/A             | N/A                 | N/A                     | N/A               | N/A               | towards ocean,<br>to the N | N/A            | N/A            | N/A              | N/A         | -landfill C, 10m N of W end of air strip, on cliff<br>-satellite dish buried in cliff, 30m W of sample site<br>-seepage originating from cliff due to permafrost melt<br>-volatile organic compound only, vegetation cover (none)<br>-sheen, discolouration noted on surface of water |

Appendix C      Soil/Water Data

## Appendix 叁 C

## BAR-1 Komakuk Beach

## Water Sampling Field Information

| Sample No. | Location # | pH Meter Readings |         | Conductivity Meter Readings |         | Comments                                                                                                                                    |
|------------|------------|-------------------|---------|-----------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------|
|            |            | pH                | Temp °C | Conductivity<br>u mhos      | Temp °C |                                                                                                                                             |
| B1-A       | 007        | na                | na      | na                          | na      | VOC sample only; taken from small pond 5 m west of POL 4                                                                                    |
| B1-B       | 003        | na                | na      | na                          | na      | VOC sample only; taken from pond 50 m east of POL 4                                                                                         |
| B1-C(D)    | 018        | 8.07              | 11.7    | 650                         | 12.9    | Taken from pond that partially encircles the Landfill B                                                                                     |
| B1-D(D)    | 018        | 8.07              | 11.7    | 650                         | 12.9    | Field replicate of B1-C                                                                                                                     |
| B1-E       | 026        | 7.90              | 12.2    | 700                         | 13.0    | Taken from small pond 100 m north (downgradient) of POL 2                                                                                   |
| B1-F       | 006        | na                | na      | na                          | na      | VOC sample only; taken from small pond 50 m northwest of POL 2                                                                              |
| B1-G       | 008        | na                | na      | na                          | na      | VOC sample only; taken from standing water at the northeast corner of the POL 2                                                             |
| B1-H       | 104        | na                | na      | na                          | na      | VOC sample only; taken from a small stream draining the area north of the garage; site is 100 m north of the northeast corner of the garage |
| B1-I       | 019        | na                | na      | na                          | na      | VOC sample only; 150 m downstream (north) of B1-H                                                                                           |
| B1-J       | 025        | 7.66              | 13.4    | 290                         | 13.0    | Taken from pond adjacent to the east end of the southeast POL 1                                                                             |
| B1-K       | 319        | 8.34              | 12.7    | 130                         | 13.5    | Background sample taken from pond 1.5 km south of the east end of the airstrip                                                              |
| B1-L       | 318        | 8.42              | 13.9    | 950                         | 14      | Taken from small pond in landfill A area; pond is 50 m south of shoreline and 50 m west of road to POL 4                                    |
| B1-M       | 347        | na                | na      | na                          | na      | VOC sample only                                                                                                                             |

| Sample #   | Location # | Location Description | 1st Round Analysis |   |   |   |   |   |   | 2nd Round Analysis |   |   |   |   |   |   |
|------------|------------|----------------------|--------------------|---|---|---|---|---|---|--------------------|---|---|---|---|---|---|
|            |            |                      | 1                  | 2 | 3 | 4 | 5 | 6 | 7 | 1                  | 2 | 3 | 4 | 5 | 6 | 7 |
| B1-1000    | 382        | Landfill B           |                    |   |   |   |   |   |   | *                  |   |   |   |   |   |   |
| B1-1001    | 383        | Landfill B           |                    |   |   |   |   |   |   | *                  |   |   |   |   |   |   |
| B1-1002    | 384        | Landfill B           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1003    | 389        | Sewage Outfall D     |                    |   |   |   |   |   |   |                    |   | * |   |   |   |   |
| B1-1003(R) | 389        | Sewage Outfall D     |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1004    | 387        | Sewage Outfall D     | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1005    | 386        | Sewage Outfall D     | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1005(R) | 386        | Sewage Outfall D     | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1006    | 390        | Sewage Outfall D     |                    |   | * |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1007    | 312        | Landfill A           |                    |   |   |   |   |   |   | *                  | * | * | * |   | * | * |
| B1-1008    | 313        | Landfill A           |                    |   |   |   |   |   |   | *                  | * | * | * |   | * | * |
| B1-1009    | 385        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1009(R) | 385        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1010(D) | 381        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1011(D) | 381        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1012    | 320        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1013    | 314        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1014    | 388        | Landfill A           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1015    | 311        | POL 1                |                    |   |   |   |   |   |   | *                  |   |   |   |   |   |   |
| B1-1016    | 316        | POL 1                | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1016(R) | 316        | POL 1                | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1017    | 307        | Pallet Line 1        |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1018    | 304        | Pallet Line 1        |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1019    | 309        | Pallet Line 1        |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1020(D) | 306        | Pallet Line 1        | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1021(D) | 306        | Pallet Line 1        |                    | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1022    | 303        | Pallet Line 1        |                    |   |   |   | * |   |   |                    |   |   |   |   |   |   |
| B1-1023    | 302        | POL 2                |                    | * | * |   | * |   |   | *                  | * | * |   |   |   |   |
| B1-1023(R) | 302        | POL 2                |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1024    | 308        | Pallet line 3        |                    |   |   |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1025    | 341        | Pallet line 3        |                    |   | * |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1026    | 346        | Pallet line 3        |                    |   |   |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1027    | 344        | Sewage Outfall A     | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1028    | 345        | Sewage Outfall B     | *                  | * | * |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1028(R) | 345        | Sewage Outfall B     | *                  | * | * |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1029    | 343        | Sewage Outfall B     |                    |   |   |   |   |   |   | *                  | * | * |   |   |   |   |
| B1-1030(D) | 349        | POL 3                |                    |   |   |   |   |   |   | *                  |   |   |   |   |   |   |
| B1-1031(D) | 349        | POL 3                |                    |   |   |   |   |   |   | *                  |   |   |   |   |   |   |
| B1-1032    | 350        | Sewage Outfall C     |                    |   |   |   |   |   |   | *                  |   |   |   |   |   |   |
| B1-1033    | 305        | POL 2                |                    |   |   |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1035    | 357        | Stain Area 1         |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1036    | 360        | POL 4                | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1037    | 358        | Landfill C           |                    |   |   |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1037(R) | 358        | Landfill C           |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1038    | 359        | Landfill C           | *                  | * | * |   | * | * | * |                    |   |   |   |   |   |   |
| B1-1039    | 365        | Landfill C           |                    |   |   |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1100    | 339        | Stain Area 2         |                    |   |   |   |   |   |   | *                  | * | * |   |   |   |   |
| B1-1101    | 331        | POL 2                |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1102    | 301        | POL 2                |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1103    | 310        | Stain Area 3         |                    |   |   |   |   |   |   | *                  | * |   |   |   |   |   |
| B1-1104    | 333        | Sewage Outfall B     | *                  | * | * |   | * | * | * |                    |   |   |   |   |   |   |
| B1-1105    | 335        | Stain Area 4         |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1106    | 332        | Background           | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1106(R) | 332        | Background           |                    |   |   |   |   |   |   | *                  | * | * | * |   | * | * |
| B1-1200    | 351        | POL 4                |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1201    | 352        | POL 4                |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1202    | 353        | Pallet Line 2        |                    |   |   |   | * |   |   |                    |   |   |   |   |   |   |
| B1-1203    | 354        | Pallet Line 2        |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |
| B1-1204    | 356        | Pallet Line 2        | *                  | * | * | * | * | * | * |                    |   |   |   |   |   |   |
| B1-1205    | 355        | Pallet Line 2        |                    |   |   |   |   |   |   |                    |   |   |   |   |   |   |

1-metals

2-TPH

3-PCB

4-Pesticides

5-Volatile Organics (EPA 8240)

6-Acid Extractable Organics (EPA 8270)

7-Base/Neutral Extractable Organics (EPA 8270)

\*-Requested and Reported

 -Reported Results Were Higher Than Assessment Criteria Per Volume 2

 -Incomplete Data Set

# Water Analysis Summary for Bar-1

| Sample # | Location # | Location Description | 1st Round Analysis |   |   |   |   |   |   |   |
|----------|------------|----------------------|--------------------|---|---|---|---|---|---|---|
|          |            |                      | 1                  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| B1-A     | 007        | POL 4                |                    |   |   |   | * |   |   |   |
| B1-B     | 003        | POL 4                |                    |   |   |   | * |   |   |   |
| B1-C(D)  | 018        | Landfill B           | *                  | * |   | * | * | * | * | * |
| B1-D(D)  | 018        | Landfill B           | *                  | * |   | * | * | * | * | * |
| B1-E     | 026        | POL 2                | *                  | * |   | * | * | * | * | * |
| B1-F     | 006        | POL 2                |                    |   |   |   | * |   |   |   |
| B1-G     | 008        | POL 2                |                    |   |   |   | * |   |   |   |
| B1-H     | 104        | Stain Area 5         |                    |   |   | * |   | * | * |   |
| B1-I     | 019        | Stain Area 6         |                    |   |   |   | * |   |   |   |
| B1-J     | 025        | POL 1                | *                  | * |   | * | * | * | * | * |
| B1-K     | 319        | Background           | *                  | * |   | * | * | * | * | * |
| B1-L     | 318        | Landfill A           | *                  | * |   | * | * | * | * | * |
| T.Blank  | -          |                      |                    |   |   | * | * | * | * |   |
| F.Blank  | -          |                      | *                  |   |   |   |   |   |   |   |
| B1-M     | 347        | Landfill C           |                    |   |   |   | * |   |   |   |

1-metals

2-TPH

3-PCB

4-Pesticides

5-Volatile Organics (EPA 8240)

6-Acid Extractable Organics (EPA 8270)

7-Base/Neutral Extractable Organics (EPA 8270)

8-Hg

\*-Requested and Reported

-Significant Values Reported

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1000 | B1-1001 | B1-1002 | B1-1003 | B1-1004 |
|------------------------|----------------|---------|---------|---------|---------|---------|
| <b>METALS</b>          |                |         |         |         |         |         |
| Arsenic                | 0.1            |         |         | 5.5     |         | 5.5     |
| Selenium               | 0.5            |         |         | 1       |         | 0.8     |
| Mercury                | 0.05           |         |         | 0.12    |         | 0.13    |
| Barium                 | 1              |         |         | 330     |         | 130     |
| Beryllium              | 0.5            |         |         | <       |         | <       |
| Cadmium                | 1              |         |         | <       |         | <       |
| Chromium               | 1              |         |         | 42      |         | 24      |
| Lead                   | 10             |         |         | 500     |         | <       |
| Nickel                 | 5              |         |         | <       |         | 24      |
| Silver                 | 5              |         |         |         |         | <       |
| TPH                    | 1              | <       | <       | 9       |         | <       |
| PCB                    | 0.01           |         |         | <       | <       | 0.67    |
| <b>PESTICIDES</b>      |                |         |         |         |         |         |
| Aldrin                 | 1.3            |         |         | <       |         | <       |
| a-BHC                  | 1.3            |         |         | <       |         | <       |
| b-BHC                  | 1.3            |         |         | <       |         | <       |
| g-BHC (Lindane)        | 1.3            |         |         | <       |         | <       |
| d-BHC                  | 1.3            |         |         | <       |         | <       |
| Chlorodane             | 1.3            |         |         |         |         |         |
| p,p'-DDD               | 1.3            |         |         | <       |         | <       |
| p,p'-DDE               | 1.3            |         |         | <       |         | <       |
| p,p'-DDT               | 1.3            |         |         | <       |         | <       |
| Dieldrin               | 1.3            |         |         | <       |         | <       |
| a-Endosulfan           | 1.3            |         |         | <       |         | <       |
| b-Endosulfan           | 1.3            |         |         | <       |         | <       |
| Endosulfan Sulfate     | 1.3            |         |         | <       |         | <       |
| Endrin                 | 1.3            |         |         |         |         |         |
| Endrin Aldehyde        | 1.3            |         |         |         |         |         |
| Heptachlor             | 1.3            |         |         | <       |         | <       |
| Heptachlor Epoxide     | 1.3            |         |         | <       |         | <       |
| Toxaphene              | 1.3            |         |         |         |         |         |
| <b>VOLATILES</b>       |                |         |         |         |         |         |
| Cl-Methane             | 0.011          |         |         | <       |         | <       |
| Vinyl Chloride         | 0.015          |         |         | <       |         | <       |
| Br-Methane             | 0.012          |         |         | <       |         | <       |
| Cl-Ethane              | 0.012          |         |         | <       |         | <       |
| Cl3F3-Methane          | 0.002          |         |         | <       |         | <       |
| 1,1-Cl2-Ethylene       | 0.002          |         |         | <       |         | <       |
| Methylene Chloride     | 0.002          |         |         | 0.15    |         | 0.036   |
| trans 1,2-Cl2-Ethylene | 0.002          |         |         | <       |         | <       |
| 1,1 Cl2-Ethane         | 0.003          |         |         | <       |         | <       |
| Chloroform             | 0.002          |         |         | <       |         | <       |
| 1,1,1-Cl3-Ethane       | 0.003          |         |         | <       |         | <       |
| 1,2 Cl2-Ethane         | 0.002          |         |         | <       |         | <       |
| Carbon Tetrachloride   | 0.002          |         |         | <       |         | <       |
| Benzene                | 0.001          |         |         | <       |         | <       |
| 1,2-Cl2-Propane        | 0.003          |         |         | <       |         | <       |

# Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1000 | B1-1001 | B1-1002 | B1-1003 | B1-1004 |
|-------------------------|----------------|---------|---------|---------|---------|---------|
| Cl3-Ethylene            | 0.002          |         |         | <       |         | <       |
| BrCl2-Methane           | 0.002          |         |         | <       |         | <       |
| 2-Cl-Ethylvinyl ether   | 0.014          |         |         | <       |         | <       |
| cis-1,2-Cl2-Propylene   | 0.003          |         |         | <       |         | <       |
| Toluene                 | 0.002          |         |         | <       |         | <       |
| trans-1,2-Cl2-Propylene | 0.006          |         |         | <       |         | <       |
| 1,1,2-Cl3-Ethane        | 0.003          |         |         | <       |         | <       |
| ClBr2-Methane           | 0.002          |         |         | <       |         | <       |
| C14-Ethylene            | 0.001          |         |         | <       |         | <       |
| Cl-Benzene              | 0.003          |         |         | <       |         | <       |
| Ethyl Benzene           | 0.002          |         |         | <       |         | <       |
| Bromoform               | 0.002          |         |         | <       |         | <       |
| 1,1,2,2-Cl4-ethane      | 0.002          |         |         | <       |         | <       |
| d4-1,2-Dichloroethane   | %              |         |         | 99      |         | 90      |
| d8-Toluene              | %              |         |         | 90      |         | 88      |
| Bromofluorobenzene      | %              |         |         | 98      |         | 94      |

## ACID EXT

|                             |      |  |  |      |  |   |
|-----------------------------|------|--|--|------|--|---|
| *N-Nitrosodimethylamine     |      |  |  | <    |  | < |
| phenol                      | 0.11 |  |  | <    |  | < |
| Bis(2-chloroethyl)ether     | 0.18 |  |  | <    |  | < |
| 2-Chlorophenol              | 0.27 |  |  | <    |  | < |
| 1,3-Dichlorobenzene         | 0.20 |  |  | <    |  | < |
| 1,4-Dichlorobenzene         | 0.20 |  |  | <    |  | < |
| 1,2-Dichlorobenzene         | 0.20 |  |  | <    |  | < |
| Bis(2-chloroisopropyl)ether | 0.15 |  |  | <    |  | < |
| Hexachloroethane            | 0.20 |  |  | <    |  | < |
| N-Nitroso-N-Propylamine     | 0.21 |  |  | <    |  | < |
| Nitrobenzene                | 0.20 |  |  | <    |  | < |
| Isophrone                   | 0.40 |  |  | <    |  | < |
| 2-Nitrophenol               | 0.14 |  |  | <    |  | < |
| 2,4-Dimethylphenol          | 0.17 |  |  | <    |  | < |
| Bis(2-chloroethoxy)methane  | 0.13 |  |  | <    |  | < |
| 2,4-Dichlorophenol          | 0.12 |  |  | <    |  | < |
| 1,2,4-Trichlorobenzene      | 0.20 |  |  | <    |  | < |
| Naphthalene                 | 0.03 |  |  | 0.09 |  | < |
| Hexachlorobutadiene         | 0.20 |  |  | <    |  | < |
| 4-Chloro-3-Methylphenol     | 0.14 |  |  | <    |  | < |
| Hexachlorocyclopentadiene   | 0.20 |  |  | <    |  | < |
| 2,4,6-Trichlorophenol       | 0.12 |  |  | <    |  | < |

## BASE/NEUTRAL

|                     |      |  |  |   |  |   |
|---------------------|------|--|--|---|--|---|
| 2-Chloronaphthalene | 0.09 |  |  | < |  | < |
| Acenaphthylene      | 0.04 |  |  | < |  | < |
| Dimethyl phthalate  | 0.11 |  |  | < |  | < |
| 2,6-Dinitrotoluene  | 0.06 |  |  | < |  | < |
| Acenaphthene        | 0.07 |  |  | < |  | < |
| 2,4-Dinitrophenol   | 0.48 |  |  | < |  | < |
| 2,4-Dinitrotolulene | 0.05 |  |  | < |  | < |
| 4-Nitrophenol       | 0.14 |  |  | < |  | < |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1000 | B1-1001 | B1-1002 | B1-1003 | B1-1004 |
|----------------------------|----------------|---------|---------|---------|---------|---------|
| Fluorene                   | 0.03           |         |         | <       |         | <       |
| 4-Chlorophenylphenylether  | 0.09           |         |         | <       |         | <       |
| Diethyl phthalate          | 0.11           |         |         | <       |         | <       |
| 4,6-Dinitro-2-methylphenol | 0.15           |         |         | <       |         | <       |
| N-Nitrosodiphenylamine     | 0.19           |         |         | <       |         | <       |
| 4-Bromophenylphenylether   | 0.03           |         |         | <       |         | <       |
| Hexachlorobenzene          | 0.20           |         |         | <       |         | <       |
| Pentachlorophenol          | 0.11           |         |         | <       |         | <       |
| Phenanthrene               | 0.03           |         |         | <       |         | <       |
| Anthracene                 | 0.02           |         |         | <       |         | <       |
| Di-n-butyl phthalate       | 0.11           |         |         | 0.59    |         | <       |
| *Benzidine                 | 0.40           |         |         | <       |         | <       |
| Fluoranthene               | 0.02           |         |         | <       |         | <       |
| Pyrene                     | 0.03           |         |         | <       |         | <       |
| Benzyl butyl phthalate     | 0.06           |         |         | 0.07    |         | <       |
| *3,3'-Dichlorobenzidine    | 0.20           |         |         | <       |         | <       |
| Benzo(a)Anthracene         | 0.02           |         |         | <       |         | <       |
| Chrysene                   | 0.03           |         |         | <       |         | <       |
| Bis(2-ethylhexyl)phthalate | 0.14           |         |         | 0.31    |         | <       |
| Di-n-octyl phthalate       | 0.11           |         |         | 0.21    |         | <       |
| Benzo(b)fluoranthene       | 0.04           |         |         | <       |         | <       |
| Benzo(k)fluoranthene       | 0.04           |         |         | <       |         | <       |
| Benzo(a)pyrene             | 0.05           |         |         | <       |         | <       |
| Ideno(1,2,3-cd)pyrene      | 0.06           |         |         | <       |         | <       |
| Dibenzo(a,h)anthracene     | 0.04           |         |         | <       |         | <       |
| Benzo(ghi)perylene         | 0.04           |         |         | <       |         | <       |
| d5-Phenol                  | %              |         |         | 55      |         | 84      |
| d5-Nitrobenzene            | %              |         |         | 45      |         | 77      |
| 2-Fluorobiphenyl           | %              |         |         | 64      |         | 81      |
| 2,4,6-Tribromophenol       | %              |         |         | 42      |         | 87      |
| d-14-p-Terphenyl           | %              |         |         | 110     |         | 89      |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1005 | B1-1006 | B1-1007 | B1-1008 | B1-1008L |
|------------------------|----------------|---------|---------|---------|---------|----------|
| <b>METALS</b>          |                |         |         |         |         |          |
| Arsenic                | 0.1            | 1.8     |         | 7.8     | 8       |          |
| Selenium               | 0.5            | <       |         | 0.6     | 0.3     |          |
| Mercury                | 0.05           | 0.12    |         | <       | 0.2     |          |
| Barium                 | 1              | 230     |         | 170     | 170     |          |
| Beryllium              | 0.5            | <       |         | 0.8     | 0.8     |          |
| Cadmium                | 1              | <       |         | <       | 2       |          |
| Chromium               | 1              | 26      |         | 24      | 31      |          |
| Lead                   | 10             | 22      |         | 31      | 480     |          |
| Nickel                 | 5              | 17      |         | 30      | 32      |          |
| Silver                 | 5              | <       |         | <       | <       |          |
| TPH                    | 1              | <       |         | <       | <       |          |
| PCB                    | 0.01           | <       | <       | 0.25    | 0.29    |          |
| <b>PESTICIDES</b>      |                |         |         |         |         |          |
| Aldrin                 | 1.3            | <       |         | <       | <       | <        |
| a-BHC                  | 1.3            | <       |         | <       | <       | <        |
| b-BHC                  | 1.3            | <       |         | <       | <       | <        |
| g-BHC (Lindane)        | 1.3            | <       |         | <       | <       | <        |
| d-BHC                  | 1.3            | <       |         | <       | <       | <        |
| Chlorodane             | 1.3            |         |         |         |         |          |
| p,p'-DDD               | 1.3            | <       |         | <       | <       | <        |
| p,p'-DDE               | 1.3            | <       |         | <       | <       | <        |
| p,p'-DDT               | 1.3            | <       |         | <       | <       | <        |
| Dieldrin               | 1.3            | <       |         | <       | <       | <        |
| a-Endosulfan           | 1.3            | <       |         | <       | <       | <        |
| b-Endosulfan           | 1.3            | <       |         | <       | <       | <        |
| Endosulfan Sulfate     | 1.3            | <       |         | <       | <       | <        |
| Endrin                 | 1.3            |         |         |         |         |          |
| Endrin Aldehyde        | 1.3            |         |         |         |         |          |
| Heptachlor             | 1.3            | <       |         | <       | <       | <        |
| Heptachlor Epoxide     | 1.3            | <       |         | <       | <       | <        |
| Toxaphene              | 1.3            |         |         |         |         |          |
| <b>VOLATILES</b>       |                |         |         |         |         |          |
| Cl-Methane             | 0.011          | <       |         |         |         |          |
| Vinyl Chloride         | 0.015          | <       |         |         |         |          |
| Br-Methane             | 0.012          | <       |         |         |         |          |
| Cl-Ethane              | 0.012          | <       |         |         |         |          |
| Cl3F3-Methane          | 0.002          | <       |         |         |         |          |
| 1,1-Cl2-Ethylene       | 0.002          | <       |         |         |         |          |
| Methylene Chloride     | 0.002          | <       |         |         |         |          |
| trans 1,2-Cl2-Ethylene | 0.002          | <       |         |         |         |          |
| 1,1 Cl2-Ethane         | 0.003          | <       |         |         |         |          |
| Chloroform             | 0.002          | <       |         |         |         |          |
| 1,1,1-Cl3-Ethane       | 0.003          | <       |         |         |         |          |
| 1,2 Cl2-Ethane         | 0.002          | <       |         |         |         |          |
| Carbon Tetrachloride   | 0.002          | <       |         |         |         |          |
| Benzene                | 0.001          | 0.018   |         |         |         |          |
| 1,2-Cl2-Propane        | 0.003          | <       |         |         |         |          |

## Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1005 | B1-1006 | B1-1007 | B1-1008 | B1-1008L |
|-------------------------|----------------|---------|---------|---------|---------|----------|
| Cl3-Ethylene            | 0.002          | <       |         |         |         |          |
| BrCl2-Methane           | 0.002          | <       |         |         |         |          |
| 2-Cl-Ethylvinyl ether   | 0.014          | <       |         |         |         |          |
| cis-1,2-Cl2-Propylene   | 0.003          | <       |         |         |         |          |
| Toluene                 | 0.002          | <       |         |         |         |          |
| trans-1,2-Cl2-Propylene | 0.006          | <       |         |         |         |          |
| 1,1,2-Cl3-Ethane        | 0.003          | <       |         |         |         |          |
| ClBr2-Methane           | 0.002          | <       |         |         |         |          |
| C14-Ethylene            | 0.001          | <       |         |         |         |          |
| Cl-Benzene              | 0.003          | <       |         |         |         |          |
| Ethyl Benzene           | 0.002          | <       |         |         |         |          |
| Bromoform               | 0.002          | <       |         |         |         |          |
| 1,1,2,2-Cl4-ethane      | 0.002          | <       |         |         |         |          |
| d4-1,2-Dichloroethane   | %              | 107     |         |         |         |          |
| d8-Toluene              | %              | 109     |         |         |         |          |
| Bromofluorobenzene      | %              | 98      |         |         |         |          |

### ACID EXT

|                             |      |   |  |   |   |   |
|-----------------------------|------|---|--|---|---|---|
| *N-Nitrosodimethylamine     |      | < |  | < | < | < |
| phenol                      | 0.11 | < |  | < | < | < |
| Bis(2-chloroethyl)ether     | 0.18 | < |  | < | < | < |
| 2-Chlorophenol              | 0.27 | < |  | < | < | < |
| 1,3-Dichlorobenzene         | 0.20 | < |  | < | < | < |
| 1,4-Dichlorobenzene         | 0.20 | < |  | < | < | < |
| 1,2-Dichlorobenzene         | 0.20 | < |  | < | < | < |
| Bis(2-chloroisopropyl)ether | 0.15 | < |  | < | < | < |
| Hexachloroethane            | 0.20 | < |  | < | < | < |
| N-Nitroso-N-Propylamine     | 0.21 | < |  | < | < | < |
| Nitrobenzene                | 0.20 | < |  | < | < | < |
| Isophrone                   | 0.40 | < |  | < | < | < |
| 2-Nitrophenol               | 0.14 | < |  | < | < | < |
| 2,4-Dimethylphenol          | 0.17 | < |  | < | < | < |
| Bis(2-chloroethoxy)methane  | 0.13 | < |  | < | < | < |
| 2,4-Dichlorophenol          | 0.12 | < |  | < | < | < |
| 1,2,4-Trichlorobenzene      | 0.20 | < |  | < | < | < |
| Naphthalene                 | 0.03 | < |  | < | < | < |
| Hexachlorobutadiene         | 0.20 | < |  | < | < | < |
| 4-Chloro-3-Methylphenol     | 0.14 | < |  | < | < | < |
| Hexachlorocyclopentadiene   | 0.20 | < |  | < | < | < |
| 2,4,6-Trichlorophenol       | 0.12 | < |  | < | < | < |

### BASE/NEUTRAL

|                     |      |   |  |   |   |   |
|---------------------|------|---|--|---|---|---|
| 2-Chloronaphthalene | 0.09 | < |  | < | < | < |
| Acenaphthylene      | 0.04 | < |  | < | < | < |
| Dimethyl phthalate  | 0.11 | < |  | < | < | < |
| 2,6-Dinitrotoluene  | 0.06 | < |  | < | < | < |
| Acenaphthene        | 0.07 | < |  | < | < | < |
| 2,4-Dinitrophenol   | 0.48 | < |  | < | < | < |
| 2,4-Dinitrotoluene  | 0.05 | < |  | < | < | < |
| 4-Nitrophenol       | 0.14 | < |  | < | < | < |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1005 | B1-1006 | B1-1007 | B1-1008 | B1-1008L |
|----------------------------|----------------|---------|---------|---------|---------|----------|
| Fluorene                   | 0.03           | <       |         | <       | <       | <        |
| 4-Chlorophenylphenylether  | 0.09           | <       |         | <       | <       | <        |
| Diethyl phthalate          | 0.11           | <       |         | <       | <       | <        |
| 4,6-Dinitro-2-methylphenol | 0.15           | <       |         | <       | <       | <        |
| N-Nitrosodiphenylamine     | 0.19           | <       |         | <       | <       | <        |
| 4-Bromophenylphenylether   | 0.03           | <       |         | <       | <       | <        |
| Hexachlorobenzene          | 0.20           | <       |         | <       | <       | <        |
| Pentachlorophenol          | 0.11           | <       |         | <       | <       | <        |
| Phenanthrene               | 0.03           | <       |         | <       | <       | <        |
| Anthracene                 | 0.02           | <       |         | <       | <       | <        |
| Di-n-butyl phthalate       | 0.11           | 0.44    |         | <       | <       | <        |
| *Benzidine                 | 0.40           | <       |         | <       | <       | <        |
| Fluoranthene               | 0.02           | <       |         | <       | <       | <        |
| Pyrene                     | 0.03           | <       |         | <       | <       | <        |
| Benzyl butyl phthalate     | 0.06           | 0.35    |         | <       | <       | <        |
| *3,3'-Dichlorobenzidine    | 0.20           | <       |         | <       | <       | <        |
| Benzo(a)Anthracene         | 0.02           | <       |         | <       | <       | <        |
| Chrysene                   | 0.03           | <       |         | <       | <       | <        |
| Bis(2-ethylhexyl)phthalate | 0.14           | <       |         | <       | <       | <        |
| Di-n-octyl phthalate       | 0.11           | 0.46    |         | <       | <       | <        |
| Benzo(b)fluoranthene       | 0.04           | <       |         | <       | <       | <        |
| Benzo(k)fluoranthene       | 0.04           | <       |         | <       | <       | <        |
| Benzo(a)pyrene             | 0.05           | <       |         | <       | <       | <        |
| Ideno(1,2,3-cd)pyrene      | 0.06           | <       |         | <       | <       | <        |
| Dibenzo(a,h)anthracene     | 0.04           | <       |         | <       | <       | <        |
| Benzo(ghi)perylene         | 0.04           | <       |         | <       | <       | <        |
| d5-Phenol                  | %              | 87      |         | 28      | 71      | 80       |
| d5-Nitrobenzene            | %              | 72      |         | 17      | 59      | 69       |
| 2-Fluorobiphenyl           | %              | 87      |         | 37      | 85      | 87       |
| 2,4,6-Tribromophenol       | %              | 110     |         | 67      | 110     | 100      |
| d-14-p-Terphenyl           | %              | Interfe |         | 99      | 130     | 110      |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1009 | B1-1009R | B1-1010D | B1-1011D | B1-1011SK |
|------------------------|----------------|---------|----------|----------|----------|-----------|
| <b>METALS</b>          |                |         |          |          |          |           |
| Arsenic                | 0.1            | 8.5     |          | 9.4      | 9.3      |           |
| Selenium               | 0.5            | 0.8     |          | 0.9      | <        |           |
| Mercury                | 0.05           | 0.16    |          | 0.21     | 0.11     |           |
| Barium                 | 1              | 210     |          | 180      | 200      |           |
| Beryllium              | 0.5            | <1      |          | <        | <        |           |
| Cadmium                | 1              | <       |          | <        | <        |           |
| Chromium               | 1              | 14      |          | 27       | 26       |           |
| Lead                   | 10             | <       |          | 76       | 69       |           |
| Nickel                 | 5              | 17      |          | 28       | 31       |           |
| Silver                 | 5              | <       |          | <        | <        |           |
| TPH                    | 1              | <       |          | 3        | <        |           |
| PCB                    | 0.01           | <       |          | 0.16     | 0.04     |           |
| <b>PESTICIDES</b>      |                |         |          |          |          |           |
| Aldrin                 | 1.3            | <       |          | <        | <        | 4         |
| a-BHC                  | 1.3            | <       |          | <        | <        | 4.2       |
| b-BHC                  | 1.3            | <       |          | <        | <        | 3.6       |
| g-BHC (Lindane)        | 1.3            | <       |          | <        | <        | 4.2       |
| d-BHC                  | 1.3            | <       |          | <        | <        | 3.5       |
| Chlorodane             | 1.3            |         |          |          |          |           |
| p,p'-DDD               | 1.3            | <       |          | <        | <        | 5.2       |
| p,p'-DDE               | 1.3            | <       |          | <        | <        | 4.8       |
| p,p'-DDT               | 1.3            | <       |          | <        | <        | <         |
| Dieldrin               | 1.3            | <       |          | <        | <        | 4.4       |
| a-Endosulfan           | 1.3            | <       |          | <        | <        | 4.5       |
| b-Endosulfan           | 1.3            | <       |          | <        | <        | 4.5       |
| Endosulfan Sulfate     | 1.3            | <       |          | <        | <        | 5.1       |
| Endrin                 | 1.3            |         |          |          |          |           |
| Endrin Aldehyde        | 1.3            |         |          |          |          |           |
| Heptachlor             | 1.3            | <       |          | <        | <        | <         |
| Heptachlor Epoxide     | 1.3            | <       |          | <        | <        | 4.3       |
| Toxaphene              | 1.3            |         |          |          |          |           |
| <b>VOLATILES</b>       |                |         |          |          |          |           |
| Cl-Methane             | 0.011          | <       |          | <        | <        |           |
| Vinyl Chloride         | 0.015          | <       |          | <        | <        |           |
| Br-Methane             | 0.012          | <       |          | <        | <        |           |
| Cl-Ethane              | 0.012          | <       |          | <        | <        |           |
| Cl3F3-Methane          | 0.002          | <       |          | <        | <        |           |
| 1,1-Cl2-Ethylene       | 0.002          | <       |          | <        | <        |           |
| Methylene Chloride     | 0.002          | 0.16    |          | 0.041    | 0.12     |           |
| trans 1,2-Cl2-Ethylene | 0.002          | <       |          | <        | <        |           |
| 1,1 Cl2-Ethane         | 0.003          | <       |          | <        | <        |           |
| Chloroform             | 0.002          | <       |          | <        | <        |           |
| 1,1,1-Cl3-Ethane       | 0.003          | <       |          | <        | <        |           |
| 1,2 Cl2-Ethane         | 0.002          | <       |          | <        | <        |           |
| Carbon Tetrachloride   | 0.002          | <       |          | <        | <        |           |
| Benzene                | 0.001          | 0.082   |          | <        | <        |           |
| 1,2-Cl2-Propane        | 0.003          | <       |          | <        | <        |           |

# Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1009 | B1-1009R | B1-1010D | B1-1011D | B1-1011SK |
|-------------------------|----------------|---------|----------|----------|----------|-----------|
| Cl3-Ethylene            | 0.002          | <       |          | <        | <        |           |
| BrCl2-Methane           | 0.002          | <       |          | <        | <        |           |
| 2-Cl-Ethylvinyl ether   | 0.014          | <       |          | <        | <        |           |
| cis-1,2-Cl2-Propylene   | 0.003          | <       |          | <        | <        |           |
| Toluene                 | 0.002          | 0.312   |          | <        | <        |           |
| trans-1,2-Cl2-Propylene | 0.006          | <       |          | <        | <        |           |
| 1,1,2-Cl3-Ethane        | 0.003          | <       |          | <        | <        |           |
| ClBr2-Methane           | 0.002          | <       |          | 0.002    | <        |           |
| C14-Ethylene            | 0.001          | <       |          | <        | <        |           |
| Cl-Benzene              | 0.003          | <       |          | <        | <        |           |
| Ethyl Benzene           | 0.002          | 0.183   |          | <        | <        |           |
| Bromoform               | 0.002          | <       |          | <        | <        |           |
| 1,1,2,2-Cl4-ethane      | 0.002          | 0.011   |          | <        | <        |           |
| d4-1,2-Dichloroethane   | %              | 81      |          | 95       | 100      |           |
| d8-Toluene              | %              | 67      |          | 100      | 110      |           |
| Bromofluorobenzene      | %              | 84      |          | 95       | 95       |           |

## ACID EXT

|                             |      |   |  |   |   |     |
|-----------------------------|------|---|--|---|---|-----|
| *N-Nitrosodimethylamine     |      | < |  | < | < | <   |
| phenol                      | 0.11 | < |  | < | < | 3.2 |
| Bis(2-chloroethyl)ether     | 0.18 | < |  | < | < | 3.1 |
| 2-Chlorophenol              | 0.27 | < |  | < | < | 3.3 |
| 1,3-Dichlorobenzene         | 0.20 | < |  | < | < | 3   |
| 1,4-Dichlorobenzene         | 0.20 | < |  | < | < | 3   |
| 1,2-Dichlorobenzene         | 0.20 | < |  | < | < | 3.2 |
| Bis(2-chloroisopropyl)ether | 0.15 | < |  | < | < | 3.2 |
| Hexachloroethane            | 0.20 | < |  | < | < | 1.7 |
| N-Nitroso-N-Propylamine     | 0.21 | < |  | < | < | 3.3 |
| Nitrobenzene                | 0.20 | < |  | < | < | 3.3 |
| Isophrone                   | 0.40 | < |  | < | < | 3.4 |
| 2-Nitrophenol               | 0.14 | < |  | < | < | 3.3 |
| 2,4-Dimethylphenol          | 0.17 | < |  | < | < | 1.8 |
| Bis(2-chloroethoxy)methane  | 0.13 | < |  | < | < | 3.5 |
| 2,4-Dichlorophenol          | 0.12 | < |  | < | < | 4   |
| 1,2,4-Trichlorobenzene      | 0.20 | < |  | < | < | 3.7 |
| Naphthalene                 | 0.03 | < |  | < | < | 3.9 |
| Hexachlorobutadiene         | 0.20 | < |  | < | < | 3.8 |
| 4-Chloro-3-Methylphenol     | 0.14 | < |  | < | < | 3.8 |
| Hexachlorocyclopentadiene   | 0.20 | < |  | < | < | <   |
| 2,4,6-Trichlorophenol       | 0.12 | < |  | < | < | 5.3 |

## BASE/NEUTRAL

|                     |      |   |  |   |   |      |
|---------------------|------|---|--|---|---|------|
| 2-Chloronaphthalene | 0.09 | < |  | < | < | 4.3  |
| Acenaphthylene      | 0.04 | < |  | < | < | 3.7  |
| Dimethyl phthalate  | 0.11 | < |  | < | < | 4.5  |
| 2,6-Dinitrotoluene  | 0.06 | < |  | < | < | 4.1  |
| Acenaphthene        | 0.07 | < |  | < | < | 3.9  |
| 2,4-Dinitrophenol   | 0.48 | < |  | < | < | 1.4  |
| 2,4-Dinitrotoluene  | 0.05 | < |  | < | < | 0.16 |
| 4-Nitrophenol       | 0.14 | < |  | < | < | <    |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1009 | B1-1009R | B1-1010D | B1-1011D | B1-1011SK |
|----------------------------|----------------|---------|----------|----------|----------|-----------|
| Fluorene                   | 0.03           | <       |          | <        | <        | 3.8       |
| 4-Chlorophenylphenylether  | 0.09           | <       |          | <        | <        | 4.1       |
| Diethyl phthalate          | 0.11           | <       |          | <        | <        | 3.8       |
| 4,6-Dinitro-2-methylphenol | 0.15           | <       |          | <        | <        | 1.7       |
| N-Nitrosodiphenylamine     | 0.19           | <       |          | <        | <        | 4.8       |
| 4-Bromophenylphenylether   | 0.03           | <       |          | <        | <        | 5.1       |
| Hexachlorobenzene          | 0.20           | <       |          | <        | <        | 4.7       |
| Pentachlorophenol          | 0.11           | <       |          | <        | <        | 4.9       |
| Phenanthrene               | 0.03           | <       |          | 0.11     | <        | 5.7       |
| Anthracene                 | 0.02           | <       |          | <        | <        | 4.8       |
| Di-n-butyl phthalate       | 0.11           |         | 0.21     | <        | <        | 4.5       |
| *Benzidine                 | 0.40           |         | <        | <        | <        | <         |
| Fluoranthene               | 0.02           |         | <        | 0.1      | <        | 5.4       |
| Pyrene                     | 0.03           |         | <        | 0.09     | <        | 5.4       |
| Benzyl butyl phthalate     | 0.06           |         | <        | 0.09     | <        | 4.2       |
| *3,3'-Dichlorobenzidine    | 0.20           |         | <        | <        | <        | 1         |
| Benzo(a)Anthracene         | 0.02           |         | <        | <        | <        | 5.1       |
| Chrysene                   | 0.03           |         | <        | <        | <        | 3.9       |
| Bis(2-ethylhexyl)phthalate | 0.14           |         | <        | <        | 0.15     | 6         |
| Di-n-octyl phthalate       | 0.11           |         | <        | <        | <        | 4.1       |
| Benzo(b)fluoranthene       | 0.04           |         | <        | <        | <        | 3.8       |
| Benzo(k)fluoroanthene      | 0.04           |         | <        | <        | <        | 3.9       |
| Benzo(a)pyrene             | 0.05           |         | <        | <        | <        | 3.4       |
| Ideno(1,2,3-cd)pyrene      | 0.06           |         | <        | <        | <        | 3.3       |
| Dibenzo(a,h)anthracene     | 0.04           |         | <        | <        | <        | 4         |
| Benzo(ghi)perylene         | 0.04           |         | <        | <        | <        | 3.5       |
| d5-Phenol                  | %              |         | 85       | 72       | 75       | 78        |
| d5-Nitrobenzene            | %              |         | 80       | 63       | 63       | 65        |
| 2-Fluorobiphenyl           | %              |         | 110      | 70       | 110      | 130       |
| 2,4,6-Tribromophenol       | %              |         | 93       | 89       | 98       | 110       |
| d-14-p-Terphenyl           | %              |         | 110      | 91       | 84       | 82        |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1012 | B1-1013 | B1-1014 | B1-1015 | B1-1016 |
|------------------------|----------------|---------|---------|---------|---------|---------|
| <b>METALS</b>          |                |         |         |         |         |         |
| Arsenic                | 0.1            | 6.5     | 8.7     | 8.7     |         | 3.5     |
| Selenium               | 0.5            | <       | 0.7     | 0.7     |         | <       |
| Mercury                | 0.05           | 0.06    | 0.15    | 0.15    |         | 0.1     |
| Barium                 | 1              | 140     | 460     | 460     |         | 120     |
| Beryllium              | 0.5            | <       | <       | <       |         | <       |
| Cadmium                | 1              | <       | <       | <       |         | <       |
| Chromium               | 1              | 29      | 26      | 26      |         | 24      |
| Lead                   | 10             | 110     | <       | 11      |         | <       |
| Nickel                 | 5              | 30      | 32      | 32      |         | 28      |
| Silver                 | 5              | <       | <       | <       |         | <       |
| TPH                    | 1              | <       | <       | <       | 47      | 3800    |
| PCB                    | 0.01           | 0.03    | <       | <       |         | <       |
| <b>PESTICIDES</b>      |                |         |         |         |         |         |
| Aldrin                 | 1.3            | <       | <       | <       |         | <       |
| a-BHC                  | 1.3            | <       | <       | <       |         | <       |
| b-BHC                  | 1.3            | <       | <       | <       |         | <       |
| g-BHC (Lindane)        | 1.3            | <       | <       | <       |         | <       |
| d-BHC                  | 1.3            | <       | <       | <       |         | <       |
| Chlorodane             | 1.3            |         |         |         |         |         |
| p,p'-DDD               | 1.3            | <       | <       | <       |         | <       |
| p,p'-DDE               | 1.3            | <       | <       | <       |         | <       |
| p,p'-DDT               | 1.3            | <       | <       | <       |         | <       |
| Dieldrin               | 1.3            | <       | <       | <       |         | <       |
| a-Endosulfan           | 1.3            | <       | <       | <       |         | <       |
| b-Endosulfan           | 1.3            | <       | <       | <       |         | <       |
| Endosulfan Sulfate     | 1.3            | <       | <       | <       |         | <       |
| Endrin                 | 1.3            |         |         |         |         |         |
| Endrin Aldehyde        | 1.3            |         |         |         |         |         |
| Heptachlor             | 1.3            | <       | <       | <       |         | <       |
| Heptachlor Epoxide     | 1.3            | <       | <       | <       |         | <       |
| Toxaphene              | 1.3            |         |         |         |         |         |
| <b>VOLATILES</b>       |                |         |         |         |         |         |
| Cl-Methane             | 0.011          | <       | <       | <       |         | <0.220  |
| Vinyl Chloride         | 0.015          | <       | <       | <       |         | <0.290  |
| Br-Methane             | 0.012          | <       | <       | <       |         | <0.240  |
| Cl-Ethane              | 0.012          | <       | <       | <       |         | <0.230  |
| Cl3F3-Methane          | 0.002          | <       | <       | <       |         | <0.030  |
| 1,1-Cl2-Ethylene       | 0.002          | <       | <       | <       |         | <0.036  |
| Methylene Chloride     | 0.002          | <       | 0.034   | <       |         | <0.033  |
| trans 1,2-Cl2-Ethylene | 0.002          | <       | <       | <       |         | <0.042  |
| 1,1 Cl2-Ethane         | 0.003          | <       | <       | <       |         | <0.051  |
| Chloroform             | 0.002          | <       | <       | <       |         | <0.036  |
| 1,1,1-Cl3-Ethane       | 0.003          | <       | <       | <       |         | <0.060  |
| 1,2 Cl2-Ethane         | 0.002          | <       | <       | <       |         | <0.039  |
| Carbon Tetrachloride   | 0.002          | <       | <       | <       |         | <0.030  |
| Benzene                | 0.001          | <       | 0.003   | <       |         | <0.359  |
| 1,2-Cl2-Propane        | 0.003          | <       | <       | <       |         | <0.054  |

## Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1012 | B1-1013 | B1-1014 | B1-1015 | B1-1016 |
|-------------------------|----------------|---------|---------|---------|---------|---------|
| Cl3-Ethylene            | 0.002          | <       | <       | <       |         | <0.030  |
| BrCl2-Methane           | 0.002          | <       | <       | <       |         | <0.040  |
| 2-Cl-Ethylvinyl ether   | 0.014          | <       | <       | <       |         | <0.270  |
| cis-1,2-Cl2-Propylene   | 0.003          | <       | <       | <       |         | <0.069  |
| Toluene                 | 0.002          | <       | <       | <       |         | <0.039  |
| trans-1,2-Cl2-Propylene | 0.006          | <       | <       | <       |         | <0.110  |
| 1,1,2-Cl3-Ethane        | 0.003          | <       | <       | <       |         | <0.057  |
| ClBr2-Methane           | 0.002          | <       | <       | <       |         | <0.042  |
| C14-Ethylene            | 0.001          | <       | <       | <       |         | <0.015  |
| Cl-Benzene              | 0.003          | <       | <       | <       |         | <0.060  |
| Ethyl Benzene           | 0.002          | <       | <       | <       |         | <0.036  |
| Bromoform               | 0.002          | <       | <       | <       |         | <0.033  |
| 1,1,2,2-Cl4-ethane      | 0.002          | <       | <       | <       |         | <0.036  |
| d4-1,2-Dichloroethane   | %              | 82      | 110     | 110     |         | 100     |
| d8-Toluene              | %              | 100     | 130     | 110     |         | 108     |
| Bromofluorobenzene      | %              | 110     | 110     | 90      |         | 93      |

### ACID EXT

|                             |      |   |   |   |  |   |
|-----------------------------|------|---|---|---|--|---|
| *N-Nitrosodimethylamine     |      | < | < | < |  | < |
| phenol                      | 0.11 | < | < | < |  | < |
| Bis(2-chloroethyl)ether     | 0.18 | < | < | < |  | < |
| 2-Chlorophenol              | 0.27 | < | < | < |  | < |
| 1,3-Dichlorobenzene         | 0.20 | < | < | < |  | < |
| 1,4-Dichlorobenzene         | 0.20 | < | < | < |  | < |
| 1,2-Dichlorobenzene         | 0.20 | < | < | < |  | < |
| Bis(2-chloroisopropyl)ether | 0.15 | < | < | < |  | < |
| Hexachloroethane            | 0.20 | < | < | < |  | < |
| N-Nitroso-N-Propylamine     | 0.21 | < | < | < |  | < |
| Nitrobenzene                | 0.20 | < | < | < |  | < |
| Isophrone                   | 0.40 | < | < | < |  | < |
| 2-Nitrophenol               | 0.14 | < | < | < |  | < |
| 2,4-Dimethylphenol          | 0.17 | < | < | < |  | < |
| Bis(2-chloroethoxy)methane  | 0.13 | < | < | < |  | < |
| 2,4-Dichlorophenol          | 0.12 | < | < | < |  | < |
| 1,2,4-Trichlorobenzene      | 0.20 | < | < | < |  | < |
| Naphthalene                 | 0.03 | < | < | < |  | < |
| Hexachlorobutadiene         | 0.20 | < | < | < |  | < |
| 4-Chloro-3-Methylphenol     | 0.14 | < | < | < |  | < |
| Hexachlorocyclopentadiene   | 0.20 | < | < | < |  | < |
| 2,4,6-Trichlorophenol       | 0.12 | < | < | < |  | < |

### BASE/NEUTRAL

|                     |      |   |   |   |  |   |
|---------------------|------|---|---|---|--|---|
| 2-Chloronaphthalene | 0.09 | < | < | < |  | < |
| Acenaphthylene      | 0.04 | < | < | < |  | < |
| Dimethyl phthalate  | 0.11 | < | < | < |  | < |
| 2,6-Dinitrotoluene  | 0.06 | < | < | < |  | < |
| Acenaphthene        | 0.07 | < | < | < |  | < |
| 2,4-Dinitrophenol   | 0.48 | < | < | < |  | < |
| 2,4-Dinitrotolulene | 0.05 | < | < | < |  | < |
| 4-Nitrophenol       | 0.14 | < | < | < |  | < |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1012 | B1-1013 | B1-1014 | B1-1015 | B1-1016 |
|----------------------------|----------------|---------|---------|---------|---------|---------|
| Fluorene                   | 0.03           | <       | <       | <       |         | <       |
| 4-Chlorophenylphenylether  | 0.09           | <       | <       | <       |         | <       |
| Diethyl phthalate          | 0.11           | <       | <       | <       |         | <       |
| 4,6-Dinitro-2-methylphenol | 0.15           | <       | <       | <       |         | <       |
| N-Nitrosodiphenylamine     | 0.19           | <       | <       | <       |         | <       |
| 4-Bromophenylphenylether   | 0.03           | <       | <       | <       |         | <       |
| Hexachlorobenzene          | 0.20           | <       | <       | <       |         | <       |
| Pentachlorophenol          | 0.11           | <       | <       | <       |         | <       |
| Phenanthrene               | 0.03           | <       | <       | <       |         | <       |
| Anthracene                 | 0.02           | <       | <       | <       |         | <       |
| Di-n-butyl phthalate       | 0.11           | 0.13    | <       | <       |         | <       |
| *Benzidine                 | 0.40           | <       | <       | <       |         | <       |
| Fluoranthene               | 0.02           | <       | <       | <       |         | <       |
| Pyrene                     | 0.03           | <       | <       | <       |         | <       |
| Benzyl butyl phthalate     | 0.06           | 0.6     | <       | <       |         | <       |
| *3,3'-Dichlorobenzidine    | 0.20           | <       | <       | <       |         | <       |
| Benzo(a)Anthracene         | 0.02           | <       | <       | <       |         | <       |
| Chrysene                   | 0.03           | <       | <       | <       |         | <       |
| Bis(2-ethylhexyl)phthalate | 0.14           | 4.4     | 0.18    | 0.3     |         | 0.57    |
| Di-n-octyl phthalate       | 0.11           | <       | <       | 0.27    |         | 0.48    |
| Benzo(b)fluoranthene       | 0.04           | <       | <       | <       |         | <       |
| Benzo(k)fluoranthene       | 0.04           | <       | <       | <       |         | <       |
| Benzo(a)pyrene             | 0.05           | <       | <       | <       |         | <       |
| Ideno(1,2,3-cd)pyrene      | 0.06           | <       | <       | <       |         | <       |
| Dibenzo(a,h)anthracene     | 0.04           | <       | <       | <       |         | <       |
| Benzo(ghi)perylene         | 0.04           | <       | <       | <       |         | <       |
| d5-Phenol                  | %              | 84      | 75      | 80      |         | 76      |
| d5-Nitrobenzene            | %              | 77      | 55      | 66      |         | 150     |
| 2-Fluorobiphenyl           | %              | 81      | 99      | 120     |         | 38      |
| 2,4,6-Tribromophenol       | %              | 87      | 120     | 100     |         | 71      |
| d-14-p-Terphenyl           | %              | 89      | 89      | 94      |         | 120     |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1020 | B1-1021D | B1-1022 | B1-1023 | B1-1024 |
|------------------------|----------------|---------|----------|---------|---------|---------|
| <b>METALS</b>          |                |         |          |         |         |         |
| Arsenic                | 0.1            | 6.2     |          |         | 7.1     | 7.8     |
| Selenium               | 0.5            | <       |          |         | <       | <       |
| Mercury                | 0.05           | 0.06    |          |         | 0.16    | 0.06    |
| Barium                 | 1              | 110     |          |         | 120     | 110     |
| Beryllium              | 0.5            | <       |          |         | 1       | 0.6     |
| Cadmium                | 1              | <       | <        |         |         | <       |
| Chromium               | 1              | 29      |          |         | 30      | 28      |
| Lead                   | 10             | 24      | 32       |         |         | 21      |
| Nickel                 | 5              | 31      |          |         | 31      | 36      |
| Silver                 | 5              | <       |          |         | <       | <       |
| TPH                    | 1              | <       | <        |         | <       | 12      |
| PCB                    | 0.01           | <       | <        |         | <       |         |
| <b>PESTICIDES</b>      |                |         |          |         |         |         |
| Aldrin                 | 1.3            | <       | <        |         |         |         |
| a-BHC                  | 1.3            | <       | <        |         |         |         |
| b-BHC                  | 1.3            | <       | <        |         |         |         |
| g-BHC (Lindane)        | 1.3            | <       | <        |         |         |         |
| d-BHC                  | 1.3            | <       | <        |         |         |         |
| Chlorodane             | 1.3            |         |          |         |         |         |
| p,p'-DDD               | 1.3            | <       | <        |         |         |         |
| p,p'-DDE               | 1.3            | <       | <        |         |         |         |
| p,p'-DDT               | 1.3            | <       | <        |         |         |         |
| Dieldrin               | 1.3            | <       | <        |         |         |         |
| a-Endosulfan           | 1.3            | <       | <        |         |         |         |
| b-Endosulfan           | 1.3            | <       | <        |         |         |         |
| Endosulfan Sulfate     | 1.3            | <       | <        |         |         |         |
| Endrin                 | 1.3            |         |          |         |         |         |
| Endrin Aldehyde        | 1.3            |         |          |         |         |         |
| Heptachlor             | 1.3            | <       | <        |         |         |         |
| Heptachlor Epoxide     | 1.3            | <       | <        |         |         |         |
| Toxaphene              | 1.3            |         |          |         |         |         |
| <b>VOLATILES</b>       |                |         |          |         |         |         |
| Cl-Methane             | 0.011          | <       | <        | <       | <       |         |
| Vinyl Chloride         | 0.015          | <       | <        | <       | <       |         |
| Br-Methane             | 0.012          | <       | <        | <       | <       |         |
| Cl-Ethane              | 0.012          | <       | <        | <       | <       |         |
| Cl3F3-Methane          | 0.002          | <       | <        | <       | <       |         |
| 1,1-Cl2-Ethylene       | 0.002          | <       | <        | <       | <       |         |
| Methylene Chloride     | 0.002          | <       | <        | 0.06    | <       |         |
| trans 1,2-Cl2-Ethylene | 0.002          | <       | <        | <       | <       |         |
| 1,1 Cl2-Ethane         | 0.003          | <       | <        | <       | <       |         |
| Chloroform             | 0.002          | <       | <        | <       | <       |         |
| 1,1,1-Cl3-Ethane       | 0.003          | <       | <        | <       | <       |         |
| 1,2 Cl2-Ethane         | 0.002          | <       | <        | <       | <       |         |
| Carbon Tetrachloride   | 0.002          | <       | <        | <       | <       |         |
| Benzene                | 0.001          | <       | <        | <       | 0.026   |         |
| 1,2-Cl2-Propane        | 0.003          | <       | <        | <       | <       |         |

## Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1020 | B1-1021D | B1-1022 | B1-1023 | B1-1024 |
|-------------------------|----------------|---------|----------|---------|---------|---------|
| Cl3-Ethylene            | 0.002          | <       | <        | <       | <       |         |
| BrCl2-Methane           | 0.002          | <       | <        | <       | <       |         |
| 2-Cl-Ethylvinyl ether   | 0.014          | <       | <        | <       | <       |         |
| cis-1,2-Cl2-Propylene   | 0.003          | <       | <        | <       | <       |         |
| Toluene                 | 0.002          | <       | <        | <       | 0.824   |         |
| trans-1,2-Cl2-Propylene | 0.006          | <       | <        | <       | <       |         |
| 1,1,2-Cl3-Ethane        | 0.003          | <       | <        | <       | <       |         |
| ClBr2-Methane           | 0.002          | <       | <        | <       | <       |         |
| C14-Ethylene            | 0.001          | <       | <        | 0.006   | <       |         |
| Cl-Benzene              | 0.003          | <       | <        | <       | <       |         |
| Ethyl Benzene           | 0.002          | 0.004   | <        | <       | 0.135   |         |
| Bromoform               | 0.002          | <       | <        | <       | <       |         |
| 1,1,2,2-Cl4-ethane      | 0.002          | <       | <        | <       | 0.03    |         |
| d4-1,2-Dichloroethane   | %              | 110     | 100      | 83      | 65      |         |
| d8-Toluene              | %              | 110     | 110      | 106     | 36      |         |
| Bromofluorobenzene      | %              | 73      | 100      | 89      | 90      |         |

### ACID EXT

|                             |      |   |   |  |  |  |
|-----------------------------|------|---|---|--|--|--|
| *N-Nitrosodimethylamine     |      | < | < |  |  |  |
| phenol                      | 0.11 | < | < |  |  |  |
| Bis(2-chloroethyl)ether     | 0.18 | < | < |  |  |  |
| 2-Chlorophenol              | 0.27 | < | < |  |  |  |
| 1,3-Dichlorobenzene         | 0.20 | < | < |  |  |  |
| 1,4-Dichlorobenzene         | 0.20 | < | < |  |  |  |
| 1,2-Dichlorobenzene         | 0.20 | < | < |  |  |  |
| Bis(2-chloroisopropyl)ether | 0.15 | < | < |  |  |  |
| Hexachloroethane            | 0.20 | < | < |  |  |  |
| N-Nitroso-N-Propylamine     | 0.21 | < | < |  |  |  |
| Nitrobenzene                | 0.20 | < | < |  |  |  |
| Isophrone                   | 0.40 | < | < |  |  |  |
| 2-Nitrophenol               | 0.14 | < | < |  |  |  |
| 2,4-Dimethylphenol          | 0.17 | < | < |  |  |  |
| Bis(2-chloroethoxy)methane  | 0.13 | < | < |  |  |  |
| 2,4-Dichlorophenol          | 0.12 | < | < |  |  |  |
| 1,2,4-Trichlorobenzene      | 0.20 | < | < |  |  |  |
| Naphthalene                 | 0.03 | < | < |  |  |  |
| Hexachlorobutadiene         | 0.20 | < | < |  |  |  |
| 4-Chloro-3-Methylphenol     | 0.14 | < | < |  |  |  |
| Hexachlorocyclopentadiene   | 0.20 | < | < |  |  |  |
| 2,4,6-Trichlorophenol       | 0.12 | < | < |  |  |  |

### BASE/NEUTRAL

|                     |      |   |   |  |  |  |
|---------------------|------|---|---|--|--|--|
| 2-Chloronaphthalene | 0.09 | < | < |  |  |  |
| Acenaphthylene      | 0.04 | < | < |  |  |  |
| Dimethyl phthalate  | 0.11 | < | < |  |  |  |
| 2,6-Dinitrotoluene  | 0.06 | < | < |  |  |  |
| Acenaphthene        | 0.07 | < | < |  |  |  |
| 2,4-Dinitrophenol   | 0.48 | < | < |  |  |  |
| 2,4-Dinitrotoluene  | 0.05 | < | < |  |  |  |
| 4-Nitrophenol       | 0.14 | < | < |  |  |  |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1020 | B1-1021D | B1-1022 | B1-1023 | B1-1024 |
|----------------------------|----------------|---------|----------|---------|---------|---------|
| Fluorene                   | 0.03           | <       | <        |         |         |         |
| 4-Chlorophenylphenylether  | 0.09           | <       | <        |         |         |         |
| Diethyl phthalate          | 0.11           | <       | <        |         |         |         |
| 4,6-Dinitro-2-methylphenol | 0.15           | <       | <        |         |         |         |
| N-Nitrosodiphenylamine     | 0.19           | <       | <        |         |         |         |
| 4-Bromophenylphenylether   | 0.03           | <       | <        |         |         |         |
| Hexachlorobenzene          | 0.20           | <       | <        |         |         |         |
| Pentachlorophenol          | 0.11           | <       | <        |         |         |         |
| Phenanthrene               | 0.03           | <       | <        |         |         |         |
| Anthracene                 | 0.02           | <       | <        |         |         |         |
| DI-n-butyl phthalate       | 0.11           | <       | <        |         |         |         |
| *Benzidine                 | 0.40           | <       | <        |         |         |         |
| Fluoranthene               | 0.02           | <       | <        |         |         |         |
| Pyrene                     | 0.03           | <       | <        |         |         |         |
| Benzyl butyl phthalate     | 0.06           | <       | <        |         |         |         |
| *3,3'-Dichlorobenzidine    | 0.20           | <       | <        |         |         |         |
| Benzo(a)Anthracene         | 0.02           | <       | <        |         |         |         |
| Chrysene                   | 0.03           | <       | <        |         |         |         |
| Bis(2-ethylhexyl)phthalate | 0.14           | 0.27    | 1.9      |         |         |         |
| Di-n-octyl phthalate       | 0.11           | <       | <        |         |         |         |
| Benzo(b)fluoranthene       | 0.04           | <       | <        |         |         |         |
| Benzo(k)fluoroanthene      | 0.04           | <       | <        |         |         |         |
| Benzo(a)pyrene             | 0.05           | <       | <        |         |         |         |
| Ideno(1,2,3-cd)pyrene      | 0.06           | <       | <        |         |         |         |
| Dibenzo(a,h)anthracene     | 0.04           | <       | <        |         |         |         |
| Benzo(ghi)perylene         | 0.04           | <       | <        |         |         |         |
| d5-Phenol                  | %              | 65      | 55       |         |         |         |
| d5-Nitrobenzene            | %              | 39      | 45       |         |         |         |
| 2-Fluorobiphenyl           | %              | 68      | 64       |         |         |         |
| 2,4,6-Tribromophenol       | %              | 40      | 42       |         |         |         |
| d-14-p-Terphenyl           | %              | 110     | 110      |         |         |         |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1025 | B1-1026 | B1-1027 | B1-1028 | B1-1029 |
|------------------------|----------------|---------|---------|---------|---------|---------|
| <b>METALS</b>          |                |         |         |         |         |         |
| Arsenic                | 0.1            | 5.9     | 2       | 21      | 7.5     |         |
| Selenium               | 0.5            | <       | 0.9     | 0.9     | <       |         |
| Mercury                | 0.05           | 0.07    | 0.07    | 0.17    | 0.1     |         |
| Barium                 | 1              | 160     | 240     | 280     | 140     | 176     |
| Beryllium              | 0.5            | 0.7     | 0.7     | <       | 0.7     | 0.8     |
| Cadmium                | 1              | <       | <       | 1       | <       | 1       |
| Chromium               | 1              | 26      | 26      | 42      | 24      | 25      |
| Lead                   | 10             | 12      | <       | 84      | 19      | <       |
| Nickel                 | 5              | 30      | 28      | 36      | 31      | 31      |
| Silver                 | 5              | <       | <       | <       | <       | <       |
| TPH                    | 1              | <       | <       | 8       | <       | <       |
| PCB                    | 0.01           |         |         | 0.07    | <       | <       |
| <b>PESTICIDES</b>      |                |         |         |         |         |         |
| Aldrin                 | 1.3            |         |         | <       |         |         |
| a-BHC                  | 1.3            |         |         | <       |         |         |
| b-BHC                  | 1.3            |         |         | <       |         |         |
| g-BHC (Lindane)        | 1.3            |         |         | <       |         |         |
| d-BHC                  | 1.3            |         |         | <       |         |         |
| Chlorodane             | 1.3            |         |         |         |         |         |
| p,p'-DDD               | 1.3            |         |         | <       |         |         |
| p,p'-DDE               | 1.3            |         |         | <       |         |         |
| p,p'-DDT               | 1.3            |         |         | <       |         |         |
| Dieldrin               | 1.3            |         |         | <       |         |         |
| a-Endosulfan           | 1.3            |         |         | <       |         |         |
| b-Endosulfan           | 1.3            |         |         | <       |         |         |
| Endosulfan Sulfate     | 1.3            |         |         | <       |         |         |
| Endrin                 | 1.3            |         |         |         |         |         |
| Endrin Aldehyde        | 1.3            |         |         |         |         |         |
| Heptachlor             | 1.3            |         |         | <       |         |         |
| Heptachlor Epoxide     | 1.3            |         |         | <       |         |         |
| Toxaphene              | 1.3            |         |         |         |         |         |
| <b>VOLATILES</b>       |                |         |         |         |         |         |
| Cl-Methane             | 0.011          |         |         | <       |         |         |
| Vinyl Chloride         | 0.015          |         |         | <       |         |         |
| Br-Methane             | 0.012          |         |         | <       |         |         |
| Cl-Ethane              | 0.012          |         |         | <       |         |         |
| Cl3F3-Methane          | 0.002          |         |         | <       |         |         |
| 1,1-Cl2-Ethylene       | 0.002          |         |         | <       |         |         |
| Methylene Chloride     | 0.002          |         |         | <       |         |         |
| trans 1,2-Cl2-Ethylene | 0.002          |         |         | <       |         |         |
| 1,1 Cl2-Ethane         | 0.003          |         |         | <       |         |         |
| Chloroform             | 0.002          |         |         | <       |         |         |
| 1,1,1-Cl3-Ethane       | 0.003          |         |         | <       |         |         |
| 1,2 Cl2-Ethane         | 0.002          |         |         | <       |         |         |
| Carbon Tetrachloride   | 0.002          |         |         | <       |         |         |
| Benzene                | 0.001          |         |         | <       |         |         |
| 1,2-Cl2-Propane        | 0.003          |         |         | <       |         |         |

# Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1025 | B1-1026 | B1-1027 | B1-1028 | B1-1029 |
|-------------------------|----------------|---------|---------|---------|---------|---------|
| Cl3-Ethylene            | 0.002          |         |         | <       |         |         |
| BrCl2-Methane           | 0.002          |         |         | <       |         |         |
| 2-Cl-Ethylvinyl ether   | 0.014          |         |         | <       |         |         |
| cis-1,2-Cl2-Propylene   | 0.003          |         |         | <       |         |         |
| Toluene                 | 0.002          |         |         | 0.048   |         |         |
| trans-1,2-Cl2-Propylene | 0.006          |         |         | <       |         |         |
| 1,1,2-Cl3-Ethane        | 0.003          |         |         | <       |         |         |
| ClBr2-Methane           | 0.002          |         |         | <       |         |         |
| C14-Ethylene            | 0.001          |         |         | <       |         |         |
| Cl-Benzene              | 0.003          |         |         | <       |         |         |
| Ethyl Benzene           | 0.002          |         |         | <       |         |         |
| Bromoform               | 0.002          |         |         | <       |         |         |
| 1,1,2,2-Cl4-ethane      | 0.002          |         |         | <       |         |         |
| d4-1,2-Dichloroethane   | %              |         |         | 110     |         |         |
| d8-Toluene              | %              |         |         | 110     |         |         |
| Bromofluorobenzene      | %              |         |         | 100     |         |         |

## ACID EXT

### \*N-Nitrosodimethylamine

|                             |      |  |  |   |  |  |
|-----------------------------|------|--|--|---|--|--|
| phenol                      | 0.11 |  |  | < |  |  |
| Bis(2-chloroethyl)ether     | 0.18 |  |  | < |  |  |
| 2-Chlorophenol              | 0.27 |  |  | < |  |  |
| 1,3-Dichlorobenzene         | 0.20 |  |  | < |  |  |
| 1,4-Dichlorobenzene         | 0.20 |  |  | < |  |  |
| 1,2-Dichlorobenzene         | 0.20 |  |  | < |  |  |
| Bis(2-chloroisopropyl)ether | 0.15 |  |  | < |  |  |
| Hexachloroethane            | 0.20 |  |  | < |  |  |
| N-Nitroso-N-Propylamine     | 0.21 |  |  | < |  |  |
| Nitrobenzene                | 0.20 |  |  | < |  |  |
| Isophrone                   | 0.40 |  |  | < |  |  |
| 2-Nitrophenol               | 0.14 |  |  | < |  |  |
| 2,4-Dimethylphenol          | 0.17 |  |  | < |  |  |
| Bis(2-chloroethoxy)methane  | 0.13 |  |  | < |  |  |
| 2,4-Dichlorophenol          | 0.12 |  |  | < |  |  |
| 1,2,4-Trichlorobenzene      | 0.20 |  |  | < |  |  |
| Naphthalene                 | 0.03 |  |  | < |  |  |
| Hexachlorobutadiene         | 0.20 |  |  | < |  |  |
| 4-Chloro-3-Methylphenol     | 0.14 |  |  | < |  |  |
| Hexachlorocyclopentadiene   | 0.20 |  |  | < |  |  |
| 2,4,6-Trichlorophenol       | 0.12 |  |  | < |  |  |

## BASE/NEUTRAL

|                     |      |  |  |   |  |  |
|---------------------|------|--|--|---|--|--|
| 2-Chloronaphthalene | 0.09 |  |  | < |  |  |
| Acenaphthylene      | 0.04 |  |  | < |  |  |
| Dimethyl phthalate  | 0.11 |  |  | < |  |  |
| 2,6-Dinitrotoluene  | 0.06 |  |  | < |  |  |
| Acenaphthene        | 0.07 |  |  | < |  |  |
| 2,4-Dinitrophenol   | 0.48 |  |  | < |  |  |
| 2,4-Dinitrotolulene | 0.05 |  |  | < |  |  |
| 4-Nitrophenol       | 0.14 |  |  | < |  |  |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1025 | B1-1026 | B1-1027 | B1-1028 | B1-1029 |
|----------------------------|----------------|---------|---------|---------|---------|---------|
| Fluorene                   | 0.03           |         |         | <       |         |         |
| 4-Chlorophenylphenylether  | 0.09           |         |         | <       |         |         |
| Diethyl phthalate          | 0.11           |         |         | <       |         |         |
| 4,6-Dinitro-2-methylphenol | 0.15           |         |         | <       |         |         |
| N-Nitrosodiphenylamine     | 0.19           |         |         | <       |         |         |
| 4-Bromophenylphenylether   | 0.03           |         |         | <       |         |         |
| Hexachlorobenzene          | 0.20           |         |         | <       |         |         |
| Pentachlorophenol          | 0.11           |         |         | <       |         |         |
| Phenanthrene               | 0.03           |         |         | <       |         |         |
| Anthracene                 | 0.02           |         |         | <       |         |         |
| Di-n-butyl phthalate       | 0.11           |         |         | <       |         |         |
| *Benzidine                 | 0.40           |         |         | <       |         |         |
| Fluoranthene               | 0.02           |         |         | <       |         |         |
| Pyrene                     | 0.03           |         |         | <       |         |         |
| Benzyl butyl phthalate     | 0.06           |         |         | <       |         |         |
| *3,3'-Dichlorobenzidine    | 0.20           |         |         | <       |         |         |
| Benzo(a)Anthracene         | 0.02           |         |         | <       |         |         |
| Chrysene                   | 0.03           |         |         | <       |         |         |
| Bis(2-ethylhexyl)phthalate | 0.14           |         |         | 0.6     |         |         |
| Di-n-octyl phthalate       | 0.11           |         |         | <       |         |         |
| Benzo(b)fluoranthene       | 0.04           |         |         | <       |         |         |
| Benzo(k)fluoroanthene      | 0.04           |         |         | <       |         |         |
| Benzo(a)pyrene             | 0.05           |         |         | <       |         |         |
| Ideno(1,2,3-cd)pyrene      | 0.06           |         |         | <       |         |         |
| Dibenzo(a,h)anthracene     | 0.04           |         |         | <       |         |         |
| Benzo(ghi)perylene         | 0.04           |         |         | <       |         |         |
| d5-Phenol                  | %              |         |         | 16      |         |         |
| d5-Nitrobenzene            | %              |         |         | 11      |         |         |
| 2-Fluorobiphenyl           | %              |         |         | 36      |         |         |
| 2,4,6-Tribromophenol       | %              |         |         | 50      |         |         |
| d-14-p-Terphenyl           | %              |         |         | 42      |         |         |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1030D | B1-1031D | B1-1032 | B1-1033 | B1-1036 |
|------------------------|----------------|----------|----------|---------|---------|---------|
| <b>METALS</b>          |                |          |          |         |         |         |
| Arsenic                | 0.1            |          |          |         | 4.3     | 5.8     |
| Selenium               | 0.5            |          |          |         | <       | <       |
| Mercury                | 0.05           |          |          |         | 0.06    | <       |
| Barium                 | 1              |          |          |         | 110     | 200     |
| Beryllium              | 0.5            |          |          |         | 0.7     | <       |
| Cadmium                | 1              |          |          |         | <       | <       |
| Chromium               | 1              |          |          |         | 29      | 26      |
| Lead                   | 10             |          |          |         | 93      | <       |
| Nickel                 | 5              |          |          |         | 32      | 31      |
| Silver                 | 5              |          |          |         | <       | <       |
| TPH                    | 1              | 4200     | 2900     | <       | 3400    | <       |
| PCB                    | 0.01           |          |          |         |         | <       |
| <b>PESTICIDES</b>      |                |          |          |         |         |         |
| Aldrin                 | 1.3            |          |          |         |         | <       |
| a-BHC                  | 1.3            |          |          |         |         | <       |
| b-BHC                  | 1.3            |          |          |         |         | <       |
| g-BHC (Lindane)        | 1.3            |          |          |         |         | <       |
| d-BHC                  | 1.3            |          |          |         |         | <       |
| Chlorodane             | 1.3            |          |          |         |         |         |
| p,p'-DDD               | 1.3            |          |          |         |         | <       |
| p,p'-DDE               | 1.3            |          |          |         |         | <       |
| p,p'-DDT               | 1.3            |          |          |         |         | <       |
| Dieldrin               | 1.3            |          |          |         |         | <       |
| a-Endosulfan           | 1.3            |          |          |         |         | <       |
| b-Endosulfan           | 1.3            |          |          |         |         | <       |
| Endosulfan Sulfate     | 1.3            |          |          |         |         | <       |
| Endrin                 | 1.3            |          |          |         |         |         |
| Endrin Aldehyde        | 1.3            |          |          |         |         |         |
| Heptachlor             | 1.3            |          |          |         |         | <       |
| Heptachlor Epoxide     | 1.3            |          |          |         |         | <       |
| Toxaphene              | 1.3            |          |          |         |         |         |
| <b>VOLATILES</b>       |                |          |          |         |         |         |
| Cl-Methane             | 0.011          |          |          |         |         | <       |
| Vinyl Chloride         | 0.015          |          |          |         |         | <       |
| Br-Methane             | 0.012          |          |          |         |         | <       |
| Cl-Ethane              | 0.012          |          |          |         |         | <       |
| Cl3F3-Methane          | 0.002          |          |          |         |         | <       |
| 1,1-C12-Ethylene       | 0.002          |          |          |         |         | <       |
| Methylene Chloride     | 0.002          |          |          |         |         | <       |
| trans 1,2-C12-Ethylene | 0.002          |          |          |         |         | <       |
| 1,1 C12-Ethane         | 0.003          |          |          |         |         | <       |
| Chloroform             | 0.002          |          |          |         |         | <       |
| 1,1,1-C13-Ethane       | 0.003          |          |          |         |         | <       |
| 1,2 C12-Ethane         | 0.002          |          |          |         |         | <       |
| Carbon Tetrachloride   | 0.002          |          |          |         |         | <       |
| Benzene                | 0.001          |          |          |         |         | <       |
| 1,2-C12-Propane        | 0.003          |          |          |         |         | <       |

# Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1030D | B1-1031D | B1-1032 | B1-1033 | B1-1036 |
|-------------------------|----------------|----------|----------|---------|---------|---------|
| Cl3-Ethylene            | 0.002          |          |          |         |         | <       |
| BrCl2-Methane           | 0.002          |          |          |         |         | <       |
| 2-Cl-Ethylvinyl ether   | 0.014          |          |          |         |         | <       |
| cis-1,2-Cl2-Propylene   | 0.003          |          |          |         |         | <       |
| Toluene                 | 0.002          |          |          |         |         | <       |
| trans-1,2-Cl2-Propylene | 0.006          |          |          |         |         | <       |
| 1,1,2-Cl3-Ethane        | 0.003          |          |          |         |         | <       |
| ClBr2-Methane           | 0.002          |          |          |         |         | <       |
| C14-Ethylene            | 0.001          |          |          |         |         | <       |
| Cl-Benzene              | 0.003          |          |          |         |         | <       |
| Ethyl Benzene           | 0.002          |          |          |         |         | <       |
| Bromoform               | 0.002          |          |          |         |         | <       |
| 1,1,2,2-Cl4-ethane      | 0.002          |          |          |         |         | <       |
| d4-1,2-Dichloroethane   | %              |          |          |         |         | 89      |
| d8-Toluene              | %              |          |          |         |         | 100     |
| Bromofluorobenzene      | %              |          |          |         |         | 120     |

## ACID EXT

|                             |      |  |  |  |  |   |
|-----------------------------|------|--|--|--|--|---|
| *N-Nitrosodimethylamine     |      |  |  |  |  | < |
| phenol                      | 0.11 |  |  |  |  | < |
| Bis(2-chloroethyl)ether     | 0.18 |  |  |  |  | < |
| 2-Chlorophenol              | 0.27 |  |  |  |  | < |
| 1,3-Dichlorobenzene         | 0.20 |  |  |  |  | < |
| 1,4-Dichlorobenzene         | 0.20 |  |  |  |  | < |
| 1,2-Dichlorobenzene         | 0.20 |  |  |  |  | < |
| Bis(2-chloroisopropyl)ether | 0.15 |  |  |  |  | < |
| Hexachloroethane            | 0.20 |  |  |  |  | < |
| N-Nitroso-N-Propylamine     | 0.21 |  |  |  |  | < |
| Nitrobenzene                | 0.20 |  |  |  |  | < |
| Isophrone                   | 0.40 |  |  |  |  | < |
| 2-Nitrophenol               | 0.14 |  |  |  |  | < |
| 2,4-Dimethylphenol          | 0.17 |  |  |  |  | < |
| Bis(2-chloroethoxy)methane  | 0.13 |  |  |  |  | < |
| 2,4-Dichlorophenol          | 0.12 |  |  |  |  | < |
| 1,2,4-Trichlorobenzene      | 0.20 |  |  |  |  | < |
| Naphthalene                 | 0.03 |  |  |  |  | < |
| Hexachlorobutadiene         | 0.20 |  |  |  |  | < |
| 4-Chloro-3-Methylphenol     | 0.14 |  |  |  |  | < |
| Hexachlorocyclopentadiene   | 0.20 |  |  |  |  | < |
| 2,4,6-Trichlorophenol       | 0.12 |  |  |  |  | < |

## BASE/NEUTRAL

|                     |      |  |  |  |  |   |
|---------------------|------|--|--|--|--|---|
| 2-Chloronaphthalene | 0.09 |  |  |  |  | < |
| Acenaphthylene      | 0.04 |  |  |  |  | < |
| Dimethyl phthalate  | 0.11 |  |  |  |  | < |
| 2,6-Dinitrotoluene  | 0.06 |  |  |  |  | < |
| Acenaphthene        | 0.07 |  |  |  |  | < |
| 2,4-Dinitrophenol   | 0.48 |  |  |  |  | < |
| 2,4-Dinitrotoluene  | 0.05 |  |  |  |  | < |
| 4-Nitrophenol       | 0.14 |  |  |  |  | < |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1030D | B1-1031D | B1-1032 | B1-1033 | B1-1036 |
|----------------------------|----------------|----------|----------|---------|---------|---------|
| Fluorene                   | 0.03           |          |          |         |         | <       |
| 4-Chlorophenylphenylether  | 0.09           |          |          |         |         | <       |
| Diethyl phthalate          | 0.11           |          |          |         |         | <       |
| 4,6-Dinitro-2-methylphenol | 0.15           |          |          |         |         | <       |
| N-Nitrosodiphenylamine     | 0.19           |          |          |         |         | <       |
| 4-Bromophenylphenylether   | 0.03           |          |          |         |         | <       |
| Hexachlorobenzene          | 0.20           |          |          |         |         | <       |
| Pentachlorophenol          | 0.11           |          |          |         |         | <       |
| Phenanthrene               | 0.03           |          |          |         |         | <       |
| Anthracene                 | 0.02           |          |          |         |         | <       |
| Di-n-butyl phthalate       | 0.11           |          |          |         |         | <       |
| *Benzidine                 | 0.40           |          |          |         |         | <       |
| Fluoranthene               | 0.02           |          |          |         |         | <       |
| Pyrene                     | 0.03           |          |          |         |         | <       |
| Benzyl butyl phthalate     | 0.06           |          |          |         |         | <       |
| *3,3'-Dichlorobenzidine    | 0.20           |          |          |         |         | <       |
| Benzo(a)Anthracene         | 0.02           |          |          |         |         | <       |
| Chrysene                   | 0.03           |          |          |         |         | <       |
| Bis(2-ethylhexyl)phthalate | 0.14           |          |          |         |         | 0.4     |
| Di-n-octyl phthalate       | 0.11           |          |          |         |         | <       |
| Benzo(b)fluoranthene       | 0.04           |          |          |         |         | <       |
| Benzo(k)fluoroanthene      | 0.04           |          |          |         |         | <       |
| Benzo(a)pyrene             | 0.05           |          |          |         |         | <       |
| Ideno(1,2,3-cd)pyrene      | 0.06           |          |          |         |         | <       |
| Dibenzo(a,h)anthracene     | 0.04           |          |          |         |         | <       |
| Benzo(ghi)perylene         | 0.04           |          |          |         |         | <       |
| d5-Phenol                  | %              |          |          |         |         | 67      |
| d5-Nitrobenzene            | %              |          |          |         |         | 56      |
| 2-Fluorobiphenyl           | %              |          |          |         |         | 94      |
| 2,4,6-Tribromophenol       | %              |          |          |         |         | 120     |
| d-14-p-Terphenyl           | %              |          |          |         |         | 80      |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1037 | B1-1038 | B1-1038L | B1-1038SK | B1-1039 |
|------------------------|----------------|---------|---------|----------|-----------|---------|
| <b>METALS</b>          |                |         |         |          |           |         |
| Arsenic                | 0.1            |         | 5.5     |          |           |         |
| Selenium               | 0.5            |         | <       |          |           |         |
| Mercury                | 0.05           |         | 0.07    |          |           |         |
| Barium                 | 1              |         | 220     |          |           |         |
| Beryllium              | 0.5            |         | <       |          |           |         |
| Cadmium                | 1              |         | <       |          |           |         |
| Chromium               | 1              |         | 27      |          |           |         |
| Lead                   | 10             |         | <       |          |           |         |
| Nickel                 | 5              |         | 28      |          |           |         |
| Silver                 | 5              |         | <       |          |           |         |
| TPH                    | 1              | <       | <       |          |           | <       |
| PCB                    | 0.01           | <       | <       |          |           | <       |
| <b>PESTICIDES</b>      |                |         |         |          |           |         |
| Aldrin                 | 1.3            |         |         |          |           |         |
| a-BHC                  | 1.3            |         |         |          |           |         |
| b-BHC                  | 1.3            |         |         |          |           |         |
| g-BHC (Lindane)        | 1.3            |         |         |          |           |         |
| d-BHC                  | 1.3            |         |         |          |           |         |
| Chlorodane             | 1.3            |         |         |          |           |         |
| p,p'-DDD               | 1.3            |         |         |          |           |         |
| p,p'-DDE               | 1.3            |         |         |          |           |         |
| p,p'-DDT               | 1.3            |         |         |          |           |         |
| Dieldrin               | 1.3            |         |         |          |           |         |
| a-Endosulfan           | 1.3            |         |         |          |           |         |
| b-Endosulfan           | 1.3            |         |         |          |           |         |
| Endosulfan Sulfate     | 1.3            |         |         |          |           |         |
| Endrin                 | 1.3            |         |         |          |           |         |
| Endrin Aldehyde        | 1.3            |         |         |          |           |         |
| Heptachlor             | 1.3            |         |         |          |           |         |
| Heptachlor Epoxide     | 1.3            |         |         |          |           |         |
| Toxaphene              | 1.3            |         |         |          |           |         |
| <b>VOLATILES</b>       |                |         |         |          |           |         |
| Cl-Methane             | 0.011          |         | <       | <        | 0.024     |         |
| Vinyl Chloride         | 0.015          |         | <       | <        | 0.023     |         |
| Br-Methane             | 0.012          |         | <       | <        | 0.023     |         |
| Cl-Ethane              | 0.012          |         | <       | <        | 0.027     |         |
| Cl3F3-Methane          | 0.002          |         | <       | <        | 0.021     |         |
| 1,1-C12-Ethylene       | 0.002          |         | <       | <        | 0.022     |         |
| Methylene Chloride     | 0.002          |         | <       | <        | 0.023     |         |
| trans 1,2-C12-Ethylene | 0.002          |         | <       | <        | 0.029     |         |
| 1,1 C12-Ethane         | 0.003          |         | <       | <        | 0.03      |         |
| Chloroform             | 0.002          |         | <       | <        | 0.032     |         |
| 1,1,1-C13-Ethane       | 0.003          |         | <       | <        | 0.036     |         |
| 1,2 C12-Ethane         | 0.002          |         | <       | <        | 0.035     |         |
| Carbon Tetrachloride   | 0.002          |         | <       | <        | 0.027     |         |
| Benzene                | 0.001          |         | <       | <        | 0.036     |         |
| 1,2-C12-Propane        | 0.003          |         | <       | <        | 0.043     |         |

## Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1037 | B1-1038 | B1-1038L | B1-1038SK | B1-1039 |
|-------------------------|----------------|---------|---------|----------|-----------|---------|
| Cl3-Ethylene            | 0.002          |         | <       | <        | 0.036     |         |
| BrCl2-Methane           | 0.002          |         | <       | <        | 0.038     |         |
| 2-Cl-Ethylvinyl ether   | 0.014          |         | <       | <        | <         |         |
| cis-1,2-Cl2-Propylene   | 0.003          |         | <       | <        | 0.049     |         |
| Toluene                 | 0.002          |         | <       | <        | 0.033     |         |
| trans-1,2-Cl2-Propylene | 0.006          |         | <       | <        | 0.028     |         |
| 1,1,2-Cl3-Ethane        | 0.003          |         | <       | <        | 0.041     |         |
| ClBr2-Methane           | 0.002          |         | <       | <        | 0.038     |         |
| C14-Ethylene            | 0.001          |         | <       | <        | 0.031     |         |
| Cl-Benzene              | 0.003          |         | <       | <        | 0.036     |         |
| Ethyl Benzene           | 0.002          |         | <       | <        | 0.035     |         |
| Bromoform               | 0.002          |         | <       | <        | 0.034     |         |
| 1,1,2,2-Cl4-ethane      | 0.002          |         | <       | <        | 0.036     |         |
| d4-1,2-Dichloroethane   | %              |         | 110     | 110      | 110       |         |
| d8-Toluene              | %              |         | 110     | 120      | 100       |         |
| Bromofluorobenzene      | %              |         | 100     | 96       | 72        |         |

### ACID EXT

|                             |      |  |   |  |  |  |
|-----------------------------|------|--|---|--|--|--|
| *N-Nitrosodimethylamine     |      |  | < |  |  |  |
| phenol                      | 0.11 |  | < |  |  |  |
| Bis(2-chloroethyl)ether     | 0.18 |  | < |  |  |  |
| 2-Chlorophenol              | 0.27 |  | < |  |  |  |
| 1,3-Dichlorobenzene         | 0.20 |  | < |  |  |  |
| 1,4-Dichlorobenzene         | 0.20 |  | < |  |  |  |
| 1,2-Dichlorobenzene         | 0.20 |  | < |  |  |  |
| Bis(2-chloroisopropyl)ether | 0.15 |  | < |  |  |  |
| Hexachloroethane            | 0.20 |  | < |  |  |  |
| N-Nitroso-N-Propylamine     | 0.21 |  | < |  |  |  |
| Nitrobenzene                | 0.20 |  | < |  |  |  |
| Isophrone                   | 0.40 |  | < |  |  |  |
| 2-Nitrophenol               | 0.14 |  | < |  |  |  |
| 2,4-Dimethylphenol          | 0.17 |  | < |  |  |  |
| Bis(2-chloroethoxy)methane  | 0.13 |  | < |  |  |  |
| 2,4-Dichlorophenol          | 0.12 |  | < |  |  |  |
| 1,2,4-Trichlorobenzene      | 0.20 |  | < |  |  |  |
| Naphthalene                 | 0.03 |  | < |  |  |  |
| Hexachlorobutadiene         | 0.20 |  | < |  |  |  |
| 4-Chloro-3-Methylphenol     | 0.14 |  | < |  |  |  |
| Hexachlorocyclopentadiene   | 0.20 |  | < |  |  |  |
| 2,4,6-Trichlorophenol       | 0.12 |  | < |  |  |  |

### BASE/NEUTRAL

|                     |      |  |   |  |  |  |
|---------------------|------|--|---|--|--|--|
| 2-Chloronaphthalene | 0.09 |  | < |  |  |  |
| Acenaphthylene      | 0.04 |  | < |  |  |  |
| Dimethyl phthalate  | 0.11 |  | < |  |  |  |
| 2,6-Dinitrotoluene  | 0.06 |  | < |  |  |  |
| Acenaphthene        | 0.07 |  | < |  |  |  |
| 2,4-Dinitrophenol   | 0.48 |  | < |  |  |  |
| 2,4-Dinitrotolulene | 0.05 |  | < |  |  |  |
| 4-Nitrophenol       | 0.14 |  | < |  |  |  |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1037 | B1-1038 | B1-1038L | B1-1038SK | B1-1039 |
|----------------------------|----------------|---------|---------|----------|-----------|---------|
| Fluorene                   | 0.03           |         | <       |          |           |         |
| 4-Chlorophenylphenylether  | 0.09           |         | <       |          |           |         |
| Diethyl phthalate          | 0.11           |         | <       |          |           |         |
| 4,6-Dinitro-2-methylphenol | 0.15           |         | <       |          |           |         |
| N-Nitrosodiphenylamine     | 0.19           |         | <       |          |           |         |
| 4-Bromophenylphenylether   | 0.03           |         | <       |          |           |         |
| Hexachlorobenzene          | 0.20           |         | <       |          |           |         |
| Pentachlorophenol          | 0.11           |         | <       |          |           |         |
| Phenanthrene               | 0.03           |         | <       |          |           |         |
| Anthracene                 | 0.02           |         | <       |          |           |         |
| Di-n-butyl phthalate       | 0.11           |         | <       |          |           |         |
| *Benzidine                 | 0.40           |         | <       |          |           |         |
| Fluoranthene               | 0.02           |         | <       |          |           |         |
| Pyrene                     | 0.03           |         | <       |          |           |         |
| Benzyl butyl phthalate     | 0.06           |         | <       |          |           |         |
| *3,3'-Dichlorobenzidine    | 0.20           |         | <       |          |           |         |
| Benzo(a)Anthracene         | 0.02           |         | <       |          |           |         |
| Chrysene                   | 0.03           |         | <       |          |           |         |
| Bis(2-ethylhexyl)phthalate | 0.14           |         | <       |          |           |         |
| Di-n-octyl phthalate       | 0.11           |         | <       |          |           |         |
| Benzo(b)fluoranthene       | 0.04           |         | <       |          |           |         |
| Benzo(k)fluoroanthene      | 0.04           |         | <       |          |           |         |
| Benzo(a)pyrene             | 0.05           |         | <       |          |           |         |
| Ideno(1,2,3-cd)pyrene      | 0.06           |         | <       |          |           |         |
| Dibenzo(a,h)anthracene     | 0.04           |         | <       |          |           |         |
| Benzo(ghi)perylene         | 0.04           |         | <       |          |           |         |
| d5-Phenol                  | %              |         | 19      |          |           |         |
| d5-Nitrobenzene            | %              |         | 17      |          |           |         |
| 2-Fluorobiphenyl           | %              |         | 35      |          |           |         |
| 2,4,6-Tribromophenol       | %              |         | 52      |          |           |         |
| d-14-p-Terphenyl           | %              |         | 41      |          |           |         |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1100 | B1-1103 | B1-1104 | B1-1106 | B1-1006R |
|------------------------|----------------|---------|---------|---------|---------|----------|
| <b>METALS</b>          |                |         |         |         |         |          |
| Arsenic                | 0.1            |         |         | 5.6     | 6.5     | 6.5      |
| Selenium               | 0.5            |         |         | <       | 0.8     | 0.8      |
| Mercury                | 0.05           |         |         | 0.21    | 0.11    |          |
| Barium                 | 1              |         |         | 160     | 490     |          |
| Beryllium              | 0.5            |         |         | <       | 1       |          |
| Cadmium                | 1              |         |         | <       | <       |          |
| Chromium               | 1              |         |         | 27      | 38      |          |
| Lead                   | 10             |         |         | 36      | <       |          |
| Nickel                 | 5              |         |         | 30      | 39      |          |
| Silver                 | 5              |         |         | <       | <       |          |
| TPH                    | 1              | 10000   | 8       | <       | <       |          |
| PCB                    | 0.01           | 0.09    | 0.05    | <       | <       |          |
| <b>PESTICIDES</b>      |                |         |         |         |         |          |
| Aldrin                 | 1.3            |         |         |         | <       | <        |
| a-BHC                  | 1.3            |         |         |         | <       | <        |
| b-BHC                  | 1.3            |         |         |         | <       | <        |
| g-BHC (Lindane)        | 1.3            |         |         |         | <       | <        |
| d-BHC                  | 1.3            |         |         |         | <       | <        |
| Chlorodane             | 1.3            |         |         |         |         |          |
| p,p'-DDD               | 1.3            |         |         |         | <       | <        |
| p,p'-DDE               | 1.3            |         |         |         | <       | <        |
| p,p'-DDT               | 1.3            |         |         |         | <       | <        |
| Dieldrin               | 1.3            |         |         |         | <       | <        |
| a-Endosulfan           | 1.3            |         |         |         | <       | <        |
| b-Endosulfan           | 1.3            |         |         |         | <       | <        |
| Endosulfan Sulfate     | 1.3            |         |         |         | <       | <        |
| Endrin                 | 1.3            |         |         |         |         |          |
| Endrin Aldehyde        | 1.3            |         |         |         |         |          |
| Heptachlor             | 1.3            |         |         |         | <       | <        |
| Heptachlor Epoxide     | 1.3            |         |         |         | <       | <        |
| Toxaphene              | 1.3            |         |         |         |         |          |
| <b>VOLATILES</b>       |                |         |         |         |         |          |
| Cl-Methane             | 0.011          |         |         | <       |         |          |
| Vinyl Chloride         | 0.015          |         |         | <       |         |          |
| Br-Methane             | 0.012          |         |         | <       |         |          |
| Cl-Ethane              | 0.012          |         |         | <       |         |          |
| Cl3F3-Methane          | 0.002          |         |         | <       |         |          |
| 1,1-Cl2-Ethylene       | 0.002          |         |         | <       |         |          |
| Methylene Chloride     | 0.002          |         |         | 0.028   |         |          |
| trans 1,2-Cl2-Ethylene | 0.002          |         |         | <       |         |          |
| 1,1 Cl2-Ethane         | 0.003          |         |         | <       |         |          |
| Chloroform             | 0.002          |         |         | <       |         |          |
| 1,1,1-Cl3-Ethane       | 0.003          |         |         | <       |         |          |
| 1,2 Cl2-Ethane         | 0.002          |         |         | <       |         |          |
| Carbon Tetrachloride   | 0.002          |         |         | <       |         |          |
| Benzene                | 0.001          |         |         | <       |         |          |
| 1,2-Cl2-Propane        | 0.003          |         |         | <       |         |          |

## Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1100 | B1-1103 | B1-1104 | B1-1106 | B1-1006R |
|-------------------------|----------------|---------|---------|---------|---------|----------|
| Cl3-Ethylene            | 0.002          |         |         | <       |         |          |
| BrCl2-Methane           | 0.002          |         |         | <       |         |          |
| 2-Cl-Ethylvinyl ether   | 0.014          |         |         | <       |         |          |
| cis-1,2-Cl2-Propylene   | 0.003          |         |         | <       |         |          |
| Toluene                 | 0.002          |         |         | <       |         |          |
| trans-1,2-Cl2-Propylene | 0.006          |         |         | <       |         |          |
| 1,1,2-Cl3-Ethane        | 0.003          |         |         | <       |         |          |
| ClBr2-Methane           | 0.002          |         |         | <       |         |          |
| C14-Ethylene            | 0.001          |         |         | <       |         |          |
| Cl-Benzene              | 0.003          |         |         | <       |         |          |
| Ethyl Benzene           | 0.002          |         |         | <       |         |          |
| Bromoform               | 0.002          |         |         | <       |         |          |
| 1,1,2,2-Cl4-ethane      | 0.002          |         |         | <       |         |          |
| d4-1,2-Dichloroethane   | %              |         |         | 91      |         |          |
| d8-Toluene              | %              |         |         | 120     |         |          |
| Bromofluorobenzene      | %              |         |         | 110     |         |          |

### ACID EXT

|                             |      |  |  |   |   |   |
|-----------------------------|------|--|--|---|---|---|
| *N-Nitrosodimethylamine     |      |  |  | < | < | < |
| phenol                      | 0.11 |  |  | < | < | < |
| Bis(2-chloroethyl)ether     | 0.18 |  |  | < | < | < |
| 2-Chlorophenol              | 0.27 |  |  | < | < | < |
| 1,3-Dichlorobenzene         | 0.20 |  |  | < | < | < |
| 1,4-Dichlorobenzene         | 0.20 |  |  | < | < | < |
| 1,2-Dichlorobenzene         | 0.20 |  |  | < | < | < |
| Bis(2-chloroisopropyl)ether | 0.15 |  |  | < | < | < |
| Hexachloroethane            | 0.20 |  |  | < | < | < |
| N-Nitroso-N-Propylamine     | 0.21 |  |  | < | < | < |
| Nitrobenzene                | 0.20 |  |  | < | < | < |
| Isophrone                   | 0.40 |  |  | < | < | < |
| 2-Nitrophenol               | 0.14 |  |  | < | < | < |
| 2,4-Dimethylphenol          | 0.17 |  |  | < | < | < |
| Bis(2-chloroethoxy)methane  | 0.13 |  |  | < | < | < |
| 2,4-Dichlorophenol          | 0.12 |  |  | < | < | < |
| 1,2,4-Trichlorobenzene      | 0.20 |  |  | < | < | < |
| Naphthalene                 | 0.03 |  |  | < | < | < |
| Hexachlorobutadiene         | 0.20 |  |  | < | < | < |
| 4-Chloro-3-Methylphenol     | 0.14 |  |  | < | < | < |
| Hexachlorocyclopentadiene   | 0.20 |  |  | < | < | < |
| 2,4,6-Trichlorophenol       | 0.12 |  |  | < | < | < |

### BASE/NEUTRAL

|                     |      |  |  |   |   |   |
|---------------------|------|--|--|---|---|---|
| 2-Chloronaphthalene | 0.09 |  |  | < | < | < |
| Acenaphthylene      | 0.04 |  |  | < | < | < |
| Dimethyl phthalate  | 0.11 |  |  | < | < | < |
| 2,6-Dinitrotoluene  | 0.06 |  |  | < | < | < |
| Acenaphthene        | 0.07 |  |  | < | < | < |
| 2,4-Dinitrophenol   | 0.48 |  |  | < | < | < |
| 2,4-Dinitrotolulene | 0.05 |  |  | < | < | < |
| 4-Nitrophenol       | 0.14 |  |  | < | < | < |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL     | B1-1100 | B1-1103 | B1-1104 | B1-1106 | B1-1006R |
|----------------------------|---------|---------|---------|---------|---------|----------|
|                            | (mg/kg) |         |         |         |         |          |
| Fluorene                   | 0.03    |         |         | <       | <       | <        |
| 4-Chlorophenylphenylether  | 0.09    |         |         | <       | <       | <        |
| Diethyl phthalate          | 0.11    |         |         | <       | <       | <        |
| 4,6-Dinitro-2-methylphenol | 0.15    |         |         | <       | <       | <        |
| N-Nitrosodiphenylamine     | 0.19    |         |         | <       | <       | <        |
| 4-Bromophenylphenylether   | 0.03    |         |         | <       | <       | <        |
| Hexachlorobenzene          | 0.20    |         |         | <       | <       | <        |
| Pentachlorophenol          | 0.11    |         |         | <       | <       | <        |
| Phenanthrene               | 0.03    |         |         | <       | <       | <        |
| Anthracene                 | 0.02    |         |         | <       | <       | <        |
| Di-n-butyl phthalate       | 0.11    |         |         | <       | <       | <        |
| *Benzidine                 | 0.40    |         |         | <       | <       | <        |
| Fluoranthene               | 0.02    |         |         | <       | <       | <        |
| Pyrene                     | 0.03    |         |         | <       | <       | <        |
| Benzyl butyl phthalate     | 0.06    |         |         | <       | <       | <        |
| *3,3'-Dichlorobenzidine    | 0.20    |         |         | <       | <       | <        |
| Benzo(a)Anthracene         | 0.02    |         |         | <       | <       | <        |
| Chrysene                   | 0.03    |         |         | <       | <       | <        |
| Bis(2-ethylhexyl)phthalate | 0.14    |         |         | 0.16    | 1.6     | 0.96     |
| Di-n-octyl phthalate       | 0.11    |         |         | <       | <       | <        |
| Benzo(b)fluoranthene       | 0.04    |         |         | <       | <       | <        |
| Benzo(k)fluoranthene       | 0.04    |         |         | <       | <       | <        |
| Benzo(a)pyrene             | 0.05    |         |         | <       | <       | <        |
| Ideno(1,2,3-cd)pyrene      | 0.06    |         |         | <       | <       | <        |
| Dibenzo(a,h)anthracene     | 0.04    |         |         | <       | <       | <        |
| Benzo(ghi)perylene         | 0.04    |         |         | <       | <       | <        |
| d5-Phenol                  | %       |         |         | 17      | 92      | 79       |
| d5-Nitrobenzene            | %       |         |         | 14      | 78      | 73       |
| 2-Fluorobiphenyl           | %       |         |         | 40      | 87      | 83       |
| 2,4,6-Tribromophenol       | %       |         |         | 42      | 89      | 93       |
| d-14-p-Terphenyl           | %       |         |         | 38      | 92      | 100      |

# Dewline B1 Sites (Soils)

| Parameter              | MDL<br>(mg/kg) | B1-1202 | B1-1204 |
|------------------------|----------------|---------|---------|
| <b>METALS</b>          |                |         |         |
| Arsenic                | 0.1            |         | 8.8     |
| Selenium               | 0.5            |         | <       |
| Mercury                | 0.05           |         | 0.19    |
| Barium                 | 1              |         | 110     |
| Beryllium              | 0.5            |         | <       |
| Cadmium                | 1              |         | <       |
| Chromium               | 1              |         | 31      |
| Lead                   | 10             |         | 22      |
| Nickel                 | 5              |         | 32      |
| Silver                 | 5              |         | <       |
| TPH                    | 1              | -       | <       |
| PCB                    | 0.01           | -       | <       |
| <b>PESTICIDES</b>      |                |         |         |
| Aldrin                 | 1.3            |         | <       |
| a-BHC                  | 1.3            |         | <       |
| b-BHC                  | 1.3            |         | <       |
| g-BHC (Lindane)        | 1.3            |         | <       |
| d-BHC                  | 1.3            |         | <       |
| Chlorodane             | 1.3            |         |         |
| p,p'-DDD               | 1.3            |         | <       |
| p,p'-DDE               | 1.3            |         | <       |
| p,p'-DDT               | 1.3            |         | <       |
| Dieldrin               | 1.3            |         | <       |
| a-Endosulfan           | 1.3            |         | <       |
| b-Endosulfan           | 1.3            |         | <       |
| Endosulfan Sulfate     | 1.3            |         | <       |
| Endrin                 | 1.3            |         |         |
| Endrin Aldehyde        | 1.3            |         |         |
| Heptachlor             | 1.3            |         | <       |
| Heptachlor Epoxide     | 1.3            |         | <       |
| Toxaphene              | 1.3            |         |         |
| <b>VOLATILES</b>       |                |         |         |
| Cl-Methane             | 0.011          | <       | <       |
| Vinyl Chloride         | 0.015          | <       | <       |
| Br-Methane             | 0.012          | <       | <       |
| Cl-Ethane              | 0.012          | <       | <       |
| Cl3F3-Methane          | 0.002          | <       | <       |
| 1,1-Cl2-Ethylene       | 0.002          | <       | <       |
| Methylene Chloride     | 0.002          | 0.12    | <       |
| trans 1,2-Cl2-Ethylene | 0.002          | <       | <       |
| 1,1 Cl2-Ethane         | 0.003          | <       | <       |
| Chloroform             | 0.002          | <       | <       |
| 1,1,1-Cl3-Ethane       | 0.003          | <       | <       |
| 1,2 Cl2-Ethane         | 0.002          | <       | <       |
| Carbon Tetrachloride   | 0.002          | <       | <       |
| Benzene                | 0.001          | 0.017   | <       |
| 1,2-Cl2-Propane        | 0.003          | <       | <       |

# Dewline B1 Sites (Soils)

| Parameter               | MDL<br>(mg/kg) | B1-1202 | B1-1204 |
|-------------------------|----------------|---------|---------|
| Cl3-Ethylene            | 0.002          | <       | <       |
| BrCl2-Methane           | 0.002          | <       | <       |
| 2-Cl-Ethylvinyl ether   | 0.014          | <       | <       |
| cis-1,2-Cl2-Propylene   | 0.003          | <       | <       |
| Toluene                 | 0.002          | 0.051   | <       |
| trans-1,2-Cl2-Propylene | 0.006          | <       | <       |
| 1,1,2-Cl3-Ethane        | 0.003          | <       | <       |
| ClBr2-Methane           | 0.002          | <       | <       |
| C14-Ethylene            | 0.001          | <       | <       |
| Cl-Benzene              | 0.003          | <       | <       |
| Ethyl Benzene           | 0.002          | <       | <       |
| Bromoform               | 0.002          | <       | <       |
| 1,1,2,2-Cl4-ethane      | 0.002          | <       | <       |
| d4-1,2-Dichloroethane   | %              | 84      | 96      |
| d8-Toluene              | %              | 100     | 110     |
| Bromofluorobenzene      | %              | 84      | 100     |

## ACID EXT

|                             |      |   |
|-----------------------------|------|---|
| *N-Nitrosodimethylamine     |      | < |
| phenol                      | 0.11 | < |
| Bis(2-chloroethyl)ether     | 0.18 | < |
| 2-Chlorophenol              | 0.27 | < |
| 1,3-Dichlorobenzene         | 0.20 | < |
| 1,4-Dichlorobenzene         | 0.20 | < |
| 1,2-Dichlorobenzene         | 0.20 | < |
| Bis(2-chloroisopropyl)ether | 0.15 | < |
| Hexachloroethane            | 0.20 | < |
| N-Nitroso-N-Propylamine     | 0.21 | < |
| Nitrobenzene                | 0.20 | < |
| Isophrone                   | 0.40 | < |
| 2-Nitrophenol               | 0.14 | < |
| 2,4-Dimethylphenol          | 0.17 | < |
| Bis(2-chloroethoxy)methane  | 0.13 | < |
| 2,4-Dichlorophenol          | 0.12 | < |
| 1,2,4-Trichlorobenzene      | 0.20 | < |
| Naphthalene                 | 0.03 | < |
| Hexachlorobutadiene         | 0.20 | < |
| 4-Chloro-3-Methylphenol     | 0.14 | < |
| Hexachlorocyclopentadiene   | 0.20 | < |
| 2,4,6-Trichlorophenol       | 0.12 | < |

## BASE/NEUTRAL

|                     |      |   |
|---------------------|------|---|
| 2-Chloronaphthalene | 0.09 | < |
| Acenaphthylene      | 0.04 | < |
| Dimethyl phthalate  | 0.11 | < |
| 2,6-Dinitrotoluene  | 0.06 | < |
| Acenaphthene        | 0.07 | < |
| 2,4-Dinitrophenol   | 0.48 | < |
| 2,4-Dinitrotoluene  | 0.05 | < |
| 4-Nitrophenol       | 0.14 | < |

# Dewline B1 Sites (Soils)

| Parameter                  | MDL<br>(mg/kg) | B1-1202 | B1-1204 |
|----------------------------|----------------|---------|---------|
| Fluorene                   | 0.03           |         | <       |
| 4-Chlorophenylphenylether  | 0.09           |         | <       |
| Diethyl phthalate          | 0.11           |         | <       |
| 4,6-Dinitro-2-methylphenol | 0.15           |         | <       |
| N-Nitrosodiphenylamine     | 0.19           |         | <       |
| 4-Bromophenylphenylether   | 0.03           |         | <       |
| Hexachlorobenzene          | 0.20           |         | <       |
| Pentachlorophenol          | 0.11           |         | <       |
| Phenanthrene               | 0.03           |         | <       |
| Anthracene                 | 0.02           |         | <       |
| Di-n-butyl phthalate       | 0.11           |         | 0.12    |
| *Benzidine                 | 0.40           |         | <       |
| Fluoranthene               | 0.02           |         | <       |
| Pyrene                     | 0.03           |         | <       |
| Benzyl butyl phthalate     | 0.06           |         | <       |
| *3,3'-Dichlorobenzidine    | 0.20           |         | <       |
| Benzo(a)Anthracene         | 0.02           |         | <       |
| Chrysene                   | 0.03           |         | <       |
| Bis(2-ethylhexyl)phthalate | 0.14           |         | <       |
| Di-n-octyl phthalate       | 0.11           |         | <       |
| Benzo(b)fluoranthene       | 0.04           |         | <       |
| Benzo(k)fluoranthene       | 0.04           |         | <       |
| Benzo(a)pyrene             | 0.05           |         | <       |
| Ideno(1,2,3-cd)pyrene      | 0.06           |         | <       |
| Dibenzo(a,h)anthracene     | 0.04           |         | <       |
| Benzo(ghi)perylene         | 0.04           |         | <       |
| d5-Phenol                  | %              |         | 75      |
| d5-Nitrobenzene            | %              |         | 46      |
| 2-Fluorobiphenyl           | %              |         | 71      |
| 2,4,6-Tribromophenol       | %              |         | 61      |
| d-14-p-Terphenyl           | %              |         | 110     |

# Dewline B1 Sites (Water)

| Parameter              | MDL   | Units | B1-A | B1-B | B1-C(D) | B1-D(D) | B1-E  |
|------------------------|-------|-------|------|------|---------|---------|-------|
| <b>METALS</b>          |       |       |      |      |         |         |       |
| Arsenic                | 0.001 | mg/L  |      |      | <       | <       | <     |
| Selenium               | 0.005 | mg/L  |      |      | <       | <       | <     |
| Mercury                | 0.05  | ug/L  |      |      | <       | <       | <     |
| Barium                 | 0.01  | mg/L  |      |      | 0.15    | 0.15    | 0.17  |
| Beryllium              | 0.005 | mg/L  |      |      | <0.01   | <0.01   | <0.01 |
| Cadmium                | 0.01  | mg/L  |      |      | <       | <       | <     |
| Chromium               | 0.01  | mg/L  |      |      | <       | <       | <     |
| Lead                   | 0.1   | mg/L  |      |      | <       | <       | <     |
| Nickel                 | 0.05  | mg/L  |      |      | <       | <       | <     |
| Silver                 | 0.05  | mg/L  |      |      | <       | <       | <     |
| TPH                    | 5     | ug/L  |      |      | 120     | <       | <     |
| PCB                    | 0.05  | ug/L  |      |      | <       | <       | <     |
| <b>PESTICIDES</b>      |       |       |      |      |         |         |       |
| Aldrin                 | 10    | ug/L  |      |      | <       | <       | <     |
| a-BHC                  | 10    | ug/L  |      |      | <       | <       | <     |
| b-BHC                  | 10    | ug/L  |      |      | <       | <       | <     |
| g-BHC (Lindane)        | 10    | ug/L  |      |      | <       | <       | <     |
| d-BHC                  | 10    | ug/L  |      |      | <       | <       | <     |
| Chlorodane             | 100   | ug/L  |      |      | <       | <       | <     |
| p,p'-DDD               | 10    | ug/L  |      |      | <       | <       | <     |
| p,p'-DDE               | 10    | ug/L  |      |      | <       | <       | <     |
| p,p'-DDT               | 10    | ug/L  |      |      | <       | <       | <     |
| Dieldrin               | 10    | ug/L  |      |      | <       | <       | <     |
| a-Endosulfan           | 10    | ug/L  |      |      | <       | <       | <     |
| b-Endosulfan           | 10    | ug/L  |      |      | <       | <       | <     |
| Endosulfan Sulfate     | 10    | ug/L  |      |      | <       | <       | <     |
| Endrin                 | 10    | ug/L  |      |      | <       | <       | <     |
| Endrin Aldehyde        | 10    | ug/L  |      |      | <       | <       | <     |
| Heptachlor             | 10    | ug/L  |      |      | <       | <       | <     |
| Heptachlor Epoxide     | 10    | ug/L  |      |      | <       | <       | <     |
| Toxaphene              | 300   | ug/L  |      |      | <       | <       | <     |
| <b>VOLATILES</b>       |       |       |      |      |         |         |       |
| Cl-Methane             | 2.2   | ug/L  | <    | <    | <       | <       | <     |
| Vinyl Chloride         | 2.9   | ug/L  | <    | <    | <       | <       | <     |
| Br-Methane             | 2.4   | ug/L  | <    | <    | <       | <       | <     |
| Cl-Ethane              | 2.5   | ug/L  | <    | <    | <       | <       | <     |
| Cl3F3-Methane          | 0.3   | ug/L  | <    | <    | <       | <       | <     |
| 1,1-Cl2-Ethylene       | 0.36  | ug/L  | <    | <    | <       | <       | <     |
| Methylene Chloride     | 0.33  | ug/L  | <    | <    | <       | <       | <     |
| trans 1,2-Cl2-Ethylene | 0.42  | ug/L  | <    | <    | <       | <       | <     |
| 1,1 Cl2-Ethane         | 0.51  | ug/L  | <    | <    | <       | <       | <     |
| Chloroform             | 0.36  | ug/L  | <    | <    | <       | <       | <     |
| 1,1,1-Cl3-Ethane       | 0.75  | ug/L  | <    | <    | <       | <       | <     |
| 1,2 Cl2-Ethane         | 0.39  | ug/L  | <    | 0.93 | <       | <       | <     |
| Carbon Tetrachloride   | 0.3   | ug/L  | <    | <    | <       | <       | <     |
| Benzene                | 0.2   | ug/L  | <    | <    | <       | <       | <     |
| 1,2-Cl2-Propane        | 0.54  | ug/L  | <    | <    | <       | <       | <     |

# Dewline B1 Sites (Water)

| Parameter                   | MDL  | Units | B1-A | B1-B | B1-C(D) | B1-D(D) | B1-E |
|-----------------------------|------|-------|------|------|---------|---------|------|
| Cl3-Ethylene                | 0.3  | ug/L  | <    | <    | <       | <       | <    |
| BrCl2-Methane               | 0.4  | ug/L  | <    | <    | <       | <       | <    |
| 2-Cl-Ethylvinyl ether       | 2.0  | ug/L  | <    | <    | <       | <       | <    |
| cis-1,2-Cl2-Propylene       | 0.69 | ug/L  | <    | <    | <       | <       | <    |
| Toluene                     | 0.4  | ug/L  | <    | <    | <       | <       | <    |
| trans-1,2-Cl2-Propylene     | 1.1  | ug/L  | <    | <    | <       | <       | <    |
| 1,1,2-Cl3-Ethane            | 0.57 | ug/L  | <    | <    | <       | <       | <    |
| ClBr2-Methane               | 0.42 | ug/L  | <    | <    | <       | <       | <    |
| C14-Ethylene                | 0.15 | ug/L  | <    | <    | <       | <       | <    |
| Cl-Benzene                  | 0.6  | ug/L  | <    | <    | <       | <       | <    |
| Ethyl Benzene               | 0.4  | ug/L  | <    | <    | <       | <       | <    |
| Bromoform                   | 0.33 | ug/L  | <    | <    | <       | <       | <    |
| 1,1,2,2-Cl4-ethane          | 0.36 | ug/L  | <    | <    | <       | <       | <    |
| d4-1,2-Dichloroethane       |      | %     | 100  | 100  | 99      | 110     | 110  |
| d8-Toluene                  |      | %     | 110  | 110  | 110     | 120     | 97   |
| Bromofluorobenzene          |      | %     | 110  | 110  | 110     | 110     | 94   |
| <b>ACID EXT</b>             |      |       |      |      |         |         |      |
| *N-Nitrosodimethylamine     |      |       |      |      |         |         |      |
| phenol                      | 0.1  | ug/L  |      |      | <       | <       | <    |
| Bis(2-chloroethyl)ether     | 0.8  | ug/L  |      |      | <       | <       | <    |
| 2-Chlorophenol              | 0.7  | ug/L  |      |      | <       | <       | <    |
| 1,3-Dichlorobenzene         | 2    | ug/L  |      |      | <       | <       | <    |
| 1,4-Dichlorobenzene         | 2    | ug/L  |      |      | <       | <       | <    |
| 1,2-Dichlorobenzene         | 2    | ug/L  |      |      | <       | <       | <    |
| Bis(2-chloroisopropyl)ether | 0.5  | ug/L  |      |      | <       | <       | <    |
| Hexachloroethane            | 2    | ug/L  |      |      | <       | <       | <    |
| N-Nitroso-N-Propylamine     | 0.1  | ug/L  |      |      | <       | <       | <    |
| Nitrobenzene                | 2    | ug/L  |      |      | <       | <       | <    |
| Isophrone                   | 4    | ug/L  |      |      | <       | <       | <    |
| 2-Nitrophenol               | 0.4  | ug/L  |      |      | <       | <       | <    |
| 2,4-Dimethylphenol          | 0.7  | ug/L  |      |      | <       | <       | <    |
| Bis(2-chloroethoxy)methane  | 0.3  | ug/L  |      |      | <       | <       | <    |
| 2,4-Dichlorophenol          | 0.2  | ug/L  |      |      | <       | <       | <    |
| 1,2,4-Trichlorobenzene      | 2    | ug/L  |      |      | <       | <       | <    |
| Naphthalene                 | 0.3  | ug/L  |      |      | <       | <       | <    |
| Hexachlorobutadiene         | 2    | ug/L  |      |      | <       | <       | <    |
| 4-Chloro-3-Methylphenol     | 0.4  | ug/L  |      |      | <       | <       | <    |
| Hexachlorocyclopentadiene   | 2    | ug/L  |      |      | <       | <       | <    |
| 2,4,6-Trichlorophenol       | 0.2  | ug/L  |      |      | <       | <       | <    |
| <b>BASE/NEUTRAL</b>         |      |       |      |      |         |         |      |
| 2-Chloronaphthalene         | 0.9  | ug/L  |      |      | <       | <       | <    |
| Acenaphthylene              | 0.4  | ug/L  |      |      | <       | <       | <    |
| Dimethyl phthalate          | 0.1  | ug/L  |      |      | <       | <       | <    |
| 2,6-Dinitrotoluene          | 0.6  | ug/L  |      |      | <       | <       | <    |
| Acenaphthene                | 0.7  | ug/L  |      |      | <       | <       | <    |
| 2,4-Dinitrophenol           | 0.8  | ug/L  |      |      | <       | <       | <    |
| 2,4-Dinitrotoluene          | 0.5  | ug/L  |      |      | <       | <       | <    |
| 4-Nitrophenol               | 0.4  | ug/L  |      |      | <       | <       | <    |
| Fluorene                    | 0.3  | ug/L  |      |      | <       | <       | <    |

# Dewline B1 Sites (Water)

| Parameter                  | MDL | Units | B1-A | B1-B | B1-C(D) | B1-D(D) | B1-E |
|----------------------------|-----|-------|------|------|---------|---------|------|
| 4-Chlorophenylphenylether  | 0.9 | ug/L  |      |      | <       | <       | <    |
| Diethyl phthalate          | 0.1 | ug/L  |      |      | <       | <       | <    |
| 4,6-Dinitro-2-methylphenol | 0.5 | ug/L  |      |      | <       | <       | <    |
| N-Nitrosodiphenylamine     | 0.9 | ug/L  |      |      | <       | <       | <    |
| 4-Bromophenylphenylether   | 0.3 | ug/L  |      |      | <       | <       | <    |
| Hexachlorobenzene          | 0   | ug/L  |      |      | <       | <       | <    |
| Pentachlorophenol          | 0.1 | ug/L  |      |      | <       | <       | <    |
| Phenanthrene               | 0.3 | ug/L  |      |      | <       | <       | <    |
| Anthracene                 | 0.2 | ug/L  |      |      | <       | <       | <    |
| Di-n-butyl phthalate       | 0.1 | ug/L  |      |      | <       | <       | <    |
| *Benzidine                 |     |       |      |      |         |         |      |
| Fluoranthene               | 0.2 | ug/L  |      |      | <       | <       | <    |
| Pyrene                     | 0.3 | ug/L  |      |      | <       | <       | <    |
| Benzyl butyl phthalate     | 0.6 | ug/L  |      |      | <       | <       | <    |
| *3,3'-Dichlorobenzidine    |     |       |      |      |         |         |      |
| Benzo(a)Anthracene         | 0.2 | ug/L  |      |      | <       | <       | <    |
| Chrysene                   | 0.3 | ug/L  |      |      | <       | <       | <    |
| Bis(2-ethylhexyl)phthalate | 0.4 | ug/L  |      |      | 0.6     | 2.8     | 2.7  |
| Di-n-octyl phthalate       | 0.1 | ug/L  |      |      | 1.7     | 7.4     | 12   |
| Benzo(b)fluoranthene       | 0.4 | ug/L  |      |      | <       | <       | <    |
| Benzo(k)fluoranthene       | 0.4 | ug/L  |      |      | <       | <       | <    |
| Benzo(a)pyrene             | 0.5 | ug/L  |      |      | <       | <       | <    |
| Ideno(1,2,3-cd)pyrene      | 0.6 | ug/L  |      |      | <       | <       | <    |
| Dibenzo(a,h)anthracene     | 0.4 | ug/L  |      |      | <       | <       | <    |
| Benzo(ghi)perylene         | 0.4 | ug/L  |      |      | <       | <       | <    |
| d5-Phenol                  |     | %     |      |      | 24      | 47      | 34   |
| d5-Nitrobenzene            |     | %     |      |      | 13      | 75      | 24   |
| 2-Fluorobiphenyl           |     | %     |      |      | 59      | 71      | 61   |
| 2,4,6-Tribromophenol       |     | %     |      |      | 110     | 110     | 110  |
| d-14-p-Terphenyl           |     | %     |      |      | 100     | 120     | 130  |

# Dewline B1 Sites (Water)

| Parameter              | MDL   | Units | B1-F | B1-G | B1-H | B1-H(L) | B1-I |
|------------------------|-------|-------|------|------|------|---------|------|
| <b>METALS</b>          |       |       |      |      |      |         |      |
| Arsenic                | 0.001 | mg/L  |      |      |      |         |      |
| Selenium               | 0.005 | mg/L  |      |      |      |         |      |
| Mercury                | 0.05  | ug/L  |      |      |      |         |      |
| Barium                 | 0.01  | mg/L  |      |      |      |         |      |
| Beryllium              | 0.005 | mg/L  |      |      |      |         |      |
| Cadmium                | 0.01  | mg/L  |      |      |      |         |      |
| Chromium               | 0.01  | mg/L  |      |      |      |         |      |
| Lead                   | 0.1   | mg/L  |      |      |      |         |      |
| Nickel                 | 0.05  | mg/L  |      |      |      |         |      |
| Silver                 | 0.05  | mg/L  |      |      |      |         |      |
| TPH                    | 5     | ug/L  |      |      |      |         |      |
| PCB                    | 0.05  | ug/L  |      |      |      |         |      |
| <b>PESTICIDES</b>      |       |       |      |      |      |         |      |
| Aldrin                 | 10    | ug/L  |      |      | <    | <       |      |
| a-BHC                  | 10    | ug/L  |      |      | <    | <       |      |
| b-BHC                  | 10    | ug/L  |      |      | <    | <       |      |
| g-BHC (Lindane)        | 10    | ug/L  |      |      | <    | <       |      |
| d-BHC                  | 10    | ug/L  |      |      | <    | <       |      |
| Chlorodane             | 100   | ug/L  |      |      |      |         |      |
| p,p'-DDD               | 10    | ug/L  |      |      | <    | <       |      |
| p,p'-DDE               | 10    | ug/L  |      |      | <    | <       |      |
| p,p'-DDT               | 10    | ug/L  |      |      | <    | <       |      |
| Dieldrin               | 10    | ug/L  |      |      | <    | <       |      |
| a-Endosulfan           | 10    | ug/L  |      |      | <    | <       |      |
| b-Endosulfan           | 10    | ug/L  |      |      | <    | <       |      |
| Endosulfan Sulfate     | 10    | ug/L  |      |      | <    | <       |      |
| Endrin                 | 10    | ug/L  |      |      |      |         |      |
| Endrin Aldehyde        | 10    | ug/L  |      |      |      |         |      |
| Heptachlor             | 10    | ug/L  |      |      | <    | <       |      |
| Heptachlor Epoxide     | 10    | ug/L  |      |      | <    | <       |      |
| Toxaphene              | 300   | ug/L  |      |      |      |         |      |
| <b>VOLATILES</b>       |       |       |      |      |      |         |      |
| Cl-Methane             | 2.2   | ug/L  | <    | <    |      |         | <    |
| Vinyl Chloride         | 2.9   | ug/L  | <    | <    |      |         | <    |
| Br-Methane             | 2.4   | ug/L  | <    | <    |      |         | <    |
| Cl-Ethane              | 2.5   | ug/L  | <    | <    |      |         | <    |
| Cl3F3-Methane          | 0.3   | ug/L  | <    | <    |      |         | <    |
| 1,1-Cl2-Ethylene       | 0.36  | ug/L  | <    | <    |      |         | <    |
| Methylene Chloride     | 0.33  | ug/L  | <    | <    |      |         | <    |
| trans 1,2-Cl2-Ethylene | 0.42  | ug/L  | <    | <    |      |         | <    |
| 1,1 Cl2-Ethane         | 0.51  | ug/L  | <    | <    |      |         | <    |
| Chloroform             | 0.36  | ug/L  | <    | <    |      |         | <    |
| 1,1,1-Cl3-Ethane       | 0.75  | ug/L  | <    | <    |      |         | <    |
| 1,2 Cl2-Ethane         | 0.39  | ug/L  | <    | <    |      |         | <    |
| Carbon Tetrachloride   | 0.3   | ug/L  | <    | <    |      |         | <    |
| Benzene                | 0.2   | ug/L  | <    | <    |      |         | <    |
| 1,2-Cl2-Propane        | 0.54  | ug/L  | <    | <    |      |         | <    |

# Dewline B1 Sites (Water)

| Parameter                      | MDL  | Units | B1-F | B1-G | B1-H | B1-H(L) | B1-I |
|--------------------------------|------|-------|------|------|------|---------|------|
| Cl3-Ethylene                   | 0.3  | ug/L  | <    | <    |      |         | <    |
| BrCl2-Methane                  | 0.4  | ug/L  | <    | <    |      |         | <    |
| 2-Cl-Ethylvinyl ether          | 2.0  | ug/L  | <    | <    |      |         | <    |
| cis-1,2-Cl2-Propylene          | 0.69 | ug/L  | <    | <    |      |         | <    |
| Toluene                        | 0.4  | ug/L  | <    | <    |      |         | <    |
| trans-1,2-Cl2-Propylene        | 1.1  | ug/L  | <    | <    |      |         | <    |
| 1,1,2-Cl3-Ethane               | 0.57 | ug/L  | <    | <    |      |         | <    |
| ClBr2-Methane                  | 0.42 | ug/L  | <    | <    |      |         | <    |
| C14-Ethylene                   | 0.15 | ug/L  | <    | <    |      |         | <    |
| Cl-Benzene                     | 0.6  | ug/L  | <    | <    |      |         | <    |
| Ethyl Benzene                  | 0.4  | ug/L  | <    | <    |      |         | <    |
| Bromoform                      | 0.33 | ug/L  | <    | <    |      |         | <    |
| 1,1,2,2-Cl4-ethane             | 0.36 | ug/L  | <    | <    |      |         | <    |
| d4-1,2-Dichloroethane          |      | %     | 110  | 120  |      |         | 89   |
| d8-Toluene                     |      | %     | 100  | 110  |      |         | 85   |
| Bromofluorobenzene             |      | %     | 96   | 110  |      |         | 107  |
| <b>ACID EXT</b>                |      |       |      |      |      |         |      |
| <b>*N-Nitrosodimethylamine</b> |      |       |      |      |      |         |      |
| phenol                         | 0.1  | ug/L  |      |      | <    | <       |      |
| Bis(2-chloroethyl)ether        | 0.8  | ug/L  |      |      | <    | <       |      |
| 2-Chlorophenol                 | 0.7  | ug/L  |      |      | <    | <       |      |
| 1,3-Dichlorobenzene            | 2    | ug/L  |      |      | <    | <       |      |
| 1,4-Dichlorobenzene            | 2    | ug/L  |      |      | <    | <       |      |
| 1,2-Dichlorobenzene            | 2    | ug/L  |      |      | <    | <       |      |
| Bis(2-chloroisopropyl)ether    | 0.5  | ug/L  |      |      | <    | <       |      |
| Hexachloroethane               | 2    | ug/L  |      |      | <    | <       |      |
| N-Nitroso-N-Propylamine        | 0.1  | ug/L  |      |      | <    | <       |      |
| Nitrobenzene                   | 2    | ug/L  |      |      | <    | <       |      |
| Isophrone                      | 4    | ug/L  |      |      | <    | <       |      |
| 2-Nitrophenol                  | 0.4  | ug/L  |      |      | <    | <       |      |
| 2,4-Dimethylphenol             | 0.7  | ug/L  |      |      | <    | <       |      |
| Bis(2-chloroethoxy)methane     | 0.3  | ug/L  |      |      | <    | <       |      |
| 2,4-Dichlorophenol             | 0.2  | ug/L  |      |      | <    | <       |      |
| 1,2,4-Trichlorobenzene         | 2    | ug/L  |      |      | <    | <       |      |
| Naphthalene                    | 0.3  | ug/L  |      |      | <    | <       |      |
| Hexachlorobutadiene            | 2    | ug/L  |      |      | <    | <       |      |
| 4-Chloro-3-Methylphenol        | 0.4  | ug/L  |      |      | <    | <       |      |
| Hexachlorocyclopentadiene      | 2    | ug/L  |      |      | <    | <       |      |
| 2,4,6-Trichlorophenol          | 0.2  | ug/L  |      |      | <    | <       |      |
| <b>BASE/NEUTRAL</b>            |      |       |      |      |      |         |      |
| 2-Chloronaphthalene            | 0.9  | ug/L  |      |      | <    | <       |      |
| Acenaphthylene                 | 0.4  | ug/L  |      |      | <    | <       |      |
| Dimethyl phthalate             | 0.1  | ug/L  |      |      | <    | <       |      |
| 2,6-Dinitrotoluene             | 0.6  | ug/L  |      |      | <    | <       |      |
| Acenaphthene                   | 0.7  | ug/L  |      |      | <    | <       |      |
| 2,4-Dinitrophenol              | 0.8  | ug/L  |      |      | <    | <       |      |
| 2,4-Dinitrotoluene             | 0.5  | ug/L  |      |      | <    | <       |      |
| 4-Nitrophenol                  | 0.4  | ug/L  |      |      | <    | <       |      |
| Fluorene                       | 0.3  | ug/L  |      |      | <    | <       |      |

# Dewline B1 Sites (Water)

| Parameter                  | MDL | Units | B1-F | B1-G | B1-H | B1-H(L) | B1-I |
|----------------------------|-----|-------|------|------|------|---------|------|
| 4-Chlorophenylphenylether  | 0.9 | ug/L  |      |      | <    | <       |      |
| Diethyl phthalate          | 0.1 | ug/L  |      |      | <    | <       |      |
| 4,6-Dinitro-2-methylphenol | 0.5 | ug/L  |      |      | <    | <       |      |
| N-Nitrosodiphenylamine     | 0.9 | ug/L  |      |      | <    | <       |      |
| 4-Bromophenylphenylether   | 0.3 | ug/L  |      |      | <    | <       |      |
| Hexachlorobenzene          | 0   | ug/L  |      |      | <    | <       |      |
| Pentachlorophenol          | 0.1 | ug/L  |      |      | <    | <       |      |
| Phenanthrene               | 0.3 | ug/L  |      |      | <    | <       |      |
| Anthracene                 | 0.2 | ug/L  |      |      | <    | <       |      |
| Di-n-butyl phthalate       | 0.1 | ug/L  |      |      |      |         |      |
| *Benzidine                 |     |       |      |      |      |         |      |
| Fluoranthene               | 0.2 | ug/L  |      |      |      |         |      |
| Pyrene                     | 0.3 | ug/L  |      |      |      |         |      |
| Benzyl butyl phthalate     | 0.6 | ug/L  |      |      |      |         |      |
| *3,3'-Dichlorobenzidine    |     |       |      |      |      |         |      |
| Benzo(a)Anthracene         | 0.2 | ug/L  |      |      |      |         |      |
| Chrysene                   | 0.3 | ug/L  |      |      |      |         |      |
| Bis(2-ethylhexyl)phthalate | 0.4 | ug/L  |      |      |      |         |      |
| Di-n-octyl phthalate       | 0.1 | ug/L  |      |      |      |         |      |
| Benzo(b)fluoranthene       | 0.4 | ug/L  |      |      |      |         |      |
| Benzo(k)fluoranthene       | 0.4 | ug/L  |      |      |      |         |      |
| Benzo(a)pyrene             | 0.5 | ug/L  |      |      |      |         |      |
| Ideno(1,2,3-cd)pyrene      | 0.6 | ug/L  |      |      |      |         |      |
| Dibenzo(a,h)anthracene     | 0.4 | ug/L  |      |      |      |         |      |
| Benzo(ghi)perylene         | 0.4 | ug/L  |      |      |      |         |      |
| d5-Phenol                  |     | %     |      |      |      |         |      |
| d5-Nitrobenzene            |     | %     |      |      |      |         |      |
| 2-Fluorobiphenyl           |     | %     |      |      |      |         |      |
| 2,4,6-Tribromophenol       |     | %     |      |      |      |         |      |
| d-14-p-Terphenyl           |     | %     |      |      |      |         |      |

# Dewline B1 Sites (Water)

| Parameter              | MDL   | Units | B1-J  | B1-K  | B1-L  | T-BLANK | F-BLANK |
|------------------------|-------|-------|-------|-------|-------|---------|---------|
| <b>METALS</b>          |       |       |       |       |       |         |         |
| Arsenic                | 0.001 | mg/L  | <     | <     | <     |         | <       |
| Selenium               | 0.005 | mg/L  | <     | <     | <     |         | <       |
| Mercury                | 0.05  | ug/L  | <     | <     | <     |         | <       |
| Barium                 | 0.01  | mg/L  | 0.05  | 0.04  | 0.11  |         | <       |
| Beryllium              | 0.005 | mg/L  | <0.01 | <0.01 | <0.01 |         | <       |
| Cadmium                | 0.01  | mg/L  | <     | <     | <     |         | <       |
| Chromium               | 0.01  | mg/L  | <     | <     | <     |         | <       |
| Lead                   | 0.1   | mg/L  | <     | <     | <     |         | <       |
| Nickel                 | 0.05  | mg/L  | 0.11  | 0.14  | 0.55  |         | <       |
| Silver                 | 0.05  | mg/L  | <     | <     | <     |         | <       |
| TPH                    | 5     | ug/L  | 2200  | <     | <     |         |         |
| PCB                    | 0.05  | ug/L  | <     | <     | <     |         |         |
| <b>PESTICIDES</b>      |       |       |       |       |       |         |         |
| Aldrin                 | 10    | ug/L  | <     | <     | <     | <       |         |
| a-BHC                  | 10    | ug/L  | <     | <     | <     | <       |         |
| b-BHC                  | 10    | ug/L  | <     | <     | <     | <       |         |
| g-BHC (Lindane)        | 10    | ug/L  | <     | <     | <     | <       |         |
| d-BHC                  | 10    | ug/L  | <     | <     | <     | <       |         |
| Chlorodane             | 100   | ug/L  | <     | <     | <     | <       |         |
| p,p'-DDD               | 10    | ug/L  | <     | <     | <     | <       |         |
| p,p'-DDE               | 10    | ug/L  | <     | <     | <     | <       |         |
| p,p'-DDT               | 10    | ug/L  | <     | <     | <     | <       |         |
| Dieldrin               | 10    | ug/L  | <     | <     | <     | <       |         |
| a-Endosulfan           | 10    | ug/L  | <     | <     | <     | <       |         |
| b-Endosulfan           | 10    | ug/L  | <     | <     | <     | <       |         |
| Endosulfan Sulfate     | 10    | ug/L  | <     | <     | <     | <       |         |
| Endrin                 | 10    | ug/L  | <     | <     | <     | <       |         |
| Endrin Aldehyde        | 10    | ug/L  | <     | <     | <     | <       |         |
| Heptachlor             | 10    | ug/L  | <     | <     | <     | <       |         |
| Heptachlor Epoxide     | 10    | ug/L  | <     | <     | <     | <       |         |
| Toxaphene              | 300   | ug/L  | <     | <     | <     | <       |         |
| <b>VOLATILES</b>       |       |       |       |       |       |         |         |
| Cl-Methane             | 2.2   | ug/L  | <     | <     | <     | <       |         |
| Vinyl Chloride         | 2.9   | ug/L  | <     | <     | <     | <       |         |
| Br-Methane             | 2.4   | ug/L  | <     | <     | <     | <       |         |
| Cl-Ethane              | 2.5   | ug/L  | <     | <     | <     | <       |         |
| Cl3F3-Methane          | 0.3   | ug/L  | <     | <     | <     | <       |         |
| 1,1-C12-Ethylene       | 0.36  | ug/L  | <     | <     | <     | <       |         |
| Methylene Chloride     | 0.33  | ug/L  | <     | <     | 96    | <       |         |
| trans 1,2-C12-Ethylene | 0.42  | ug/L  | <     | <     | <     | <       |         |
| 1,1 C12-Ethane         | 0.51  | ug/L  | <     | <     | <     | <       |         |
| Chloroform             | 0.36  | ug/L  | 1.4   | <     | <     | <       |         |
| 1,1,1-C13-Ethane       | 0.75  | ug/L  | <     | <     | <     | <       |         |
| 1,2 C12-Ethane         | 0.39  | ug/L  | <     | <     | <     | <       |         |
| Carbon Tetrachloride   | 0.3   | ug/L  | <     | <     | <     | <       |         |
| Benzene                | 0.2   | ug/L  | <     | <     | 12    | <       |         |
| 1,2-C12-Propane        | 0.54  | ug/L  | <     | <     | <     | <       |         |

# Dewline B1 Sites (Water)

| Parameter                   | MDL  | Units | B1-J | B1-K | B1-L | T-BLANK | F-BLANK |
|-----------------------------|------|-------|------|------|------|---------|---------|
| Cl3-Ethylene                | 0.3  | ug/L  | <    | <    | <    | <       |         |
| BrCl2-Methane               | 0.4  | ug/L  | <    | <    | <    | <       |         |
| 2-Cl-Ethylvinyl ether       | 2.0  | ug/L  | <    | <    | <    | <       |         |
| cis-1,2-Cl2-Propylene       | 0.69 | ug/L  | <    | <    | <    | <       |         |
| Toluene                     | 0.4  | ug/L  | <    | <    | <    | <       |         |
| trans-1,2-Cl2-Propylene     | 1.1  | ug/L  | <    | <    | <    | <       |         |
| 1,1,2-Cl3-Ethane            | 0.57 | ug/L  | <    | <    | <    | <       |         |
| ClBr2-Methane               | 0.42 | ug/L  | <    | <    | <    | <       |         |
| C14-Ethylene                | 0.15 | ug/L  | <    | <    | <    | <       |         |
| Cl-Benzene                  | 0.6  | ug/L  | <    | <    | <    | <       |         |
| Ethyl Benzene               | 0.4  | ug/L  | <    | <    | <    | <       |         |
| Bromoform                   | 0.33 | ug/L  | <    | <    | <    | <       |         |
| 1,1,2,2-Cl4-ethane          | 0.36 | ug/L  | <    | <    | <    | <       |         |
| d4-1,2-Dichloroethane       |      | %     | 110  | 110  | 87   | 98      |         |
| d8-Toluene                  |      | %     | 120  | 120  | 87   | 110     |         |
| Bromofluorobenzene          |      | %     | 110  | 110  | 109  | 110     |         |
| <b>ACID EXT</b>             |      |       |      |      |      |         |         |
| *N-Nitrosodimethylamine     |      |       |      |      |      |         |         |
| phenol                      | 0.1  | ug/L  | <    | <    | <    | <       |         |
| Bis(2-chloroethyl)ether     | 0.8  | ug/L  | <    | <    | <    | <       |         |
| 2-Chlorophenol              | 0.7  | ug/L  | <    | <    | <    | <       |         |
| 1,3-Dichlorobenzene         | 2    | ug/L  | <    | <    | <    | <       |         |
| 1,4-Dichlorobenzene         | 2    | ug/L  | <    | <    | <    | <       |         |
| 1,2-Dichlorobenzene         | 2    | ug/L  | <    | <    | <    | <       |         |
| Bis(2-chloroisopropyl)ether | 0.5  | ug/L  | <    | <    | <    | <       |         |
| Hexachloroethane            | 2    | ug/L  | <    | <    | <    | <       |         |
| N-Nitroso-N-Propylamine     | 0.1  | ug/L  | <    | <    | <    | <       |         |
| Nitrobenzene                | 2    | ug/L  | <    | <    | <    | <       |         |
| Isophrone                   | 4    | ug/L  | <    | <    | <    | <       |         |
| 2-Nitrophenol               | 0.4  | ug/L  | <    | <    | <    | <       |         |
| 2,4-Dimethylphenol          | 0.7  | ug/L  | <    | <    | <    | <       |         |
| Bis(2-chloroethoxy)methane  | 0.3  | ug/L  | <    | <    | <    | <       |         |
| 2,4-Dichlorophenol          | 0.2  | ug/L  | <    | <    | <    | <       |         |
| 1,2,4-Trichlorobenzene      | 2    | ug/L  | <    | <    | <    | <       |         |
| Naphthalene                 | 0.3  | ug/L  | <    | <    | <    | <       |         |
| Hexachlorobutadiene         | 2    | ug/L  | <    | <    | <    | <       |         |
| 4-Chloro-3-Methylphenol     | 0.4  | ug/L  | <    | <    | <    | <       |         |
| Hexachlorocyclopentadiene   | 2    | ug/L  | <    | <    | <    | <       |         |
| 2,4,6-Trichlorophenol       | 0.2  | ug/L  | <    | <    | <    | <       |         |
| <b>BASE/NEUTRAL</b>         |      |       |      |      |      |         |         |
| 2-Chloronaphthalene         | 0.9  | ug/L  | <    | <    | <    | <       |         |
| Acenaphthylene              | 0.4  | ug/L  | <    | <    | <    | <       |         |
| Dimethyl phthalate          | 0.1  | ug/L  | <    | <    | <    | <       |         |
| 2,6-Dinitrotoluene          | 0.6  | ug/L  | <    | <    | <    | <       |         |
| Acenaphthene                | 0.7  | ug/L  | <    | <    | <    | <       |         |
| 2,4-Dinitrophenol           | 0.8  | ug/L  | <    | <    | <    | <       |         |
| 2,4-Dinitrotoluene          | 0.5  | ug/L  | <    | <    | <    | <       |         |
| 4-Nitrophenol               | 0.4  | ug/L  | <    | <    | <    | <       |         |
| Fluorene                    | 0.3  | ug/L  | <    | <    | <    | <       |         |

# Dewline B1 Sites (Water)

| Parameter                  | MDL | Units | B1-J | B1-K | B1-L | T-BLANK | F-BLANK |
|----------------------------|-----|-------|------|------|------|---------|---------|
| 4-Chlorophenylphenylether  | 0.9 | ug/L  | <    | <    | <    | <       |         |
| Diethyl phthalate          | 0.1 | ug/L  | <    | <    | <    | <       |         |
| 4,6-Dinitro-2-methylphenol | 0.5 | ug/L  | <    | <    | <    | <       |         |
| N-Nitrosodiphenylamine     | 0.9 | ug/L  | <    | <    | <    | <       |         |
| 4-Bromophenylphenylether   | 0.3 | ug/L  | <    | <    | <    | <       |         |
| Hexachlorobenzene          | 0   | ug/L  | <    | <    | <    | <       |         |
| Pentachlorophenol          | 0.1 | ug/L  | <    | <    | <    | <       |         |
| Phenanthrene               | 0.3 | ug/L  | <    | <    | <    | <       |         |
| Anthracene                 | 0.2 | ug/L  | <    | <    | <    | <       |         |
| Di-n-butyl phthalate       | 0.1 | ug/L  | <    | <    | <    | <       |         |
| *Benzidine                 |     |       |      |      |      |         |         |
| Fluoranthene               | 0.2 | ug/L  | <    | <    | <    | <       |         |
| Pyrene                     | 0.3 | ug/L  | <    | <    | <    | <       |         |
| Benzyl butyl phthalate     | 0.6 | ug/L  | <    | <    | <    | <       |         |
| *3,3'-Dichlorobenzidine    |     |       |      |      |      |         |         |
| Benzo(a)Anthracene         | 0.2 | ug/L  | <    | <    | <    | <       |         |
| Chrysene                   | 0.3 | ug/L  | <    | <    | <    | <       |         |
| Bis(2-ethylhexyl)phthalate | 0.4 | ug/L  | <    | 1    | 0.6  | 0.5     |         |
| Di-n-octyl phthalate       | 0.1 | ug/L  | 1    | 1.9  | 1.3  | 0.5     |         |
| Benzo(b)fluoranthene       | 0.4 | ug/L  | <    | <    | <    | <       |         |
| Benzo(k)fluoranthene       | 0.4 | ug/L  | <    | <    | <    | <       |         |
| Benzo(a)pyrene             | 0.5 | ug/L  | <    | <    | <    | <       |         |
| Ideno(1,2,3-cd)pyrene      | 0.6 | ug/L  | <    | <    | <    | <       |         |
| Dibenzo(a,h)anthracene     | 0.4 | ug/L  | <    | <    | <    | <       |         |
| Benzo(ghi)perylene         | 0.4 | ug/L  | <    | <    | <    | <       |         |
| d5-Phenol                  |     | %     | 45   | 35   | 63   | 34      |         |
| d5-Nitrobenzene            |     | %     | 74   | 76   | 76   | 67      |         |
| 2-Fluorobiphenyl           |     | %     | 80   | 74   | 81   | 70      |         |
| 2,4,6-Tribromophenol       |     | %     | 100  | 95   | 110  | 91      |         |
| d-14-p-Terphenyl           |     | %     | 100  | 94   | 95   | 100     |         |

## **APPENDIX D    QUALITY    ASSURANCE/QUALITY    CONTROL RESULTS**

### **D-1                    QA/QC WATER**

Water samples were collected at 12 locations throughout the site (Figure 6.1). Samples from six of these locations were submitted for the full suite of analysis. Five of the remaining six were analyzed for volatile organic compounds only, and two were not submitted for analysis.

For BAR-1 the QA/QC program for water consisted of:

- (1) 1 trip blank analyzed.
- (2) 1 field blank analyzed.
- (3) 1 field replicate sample analyzed.
- (4) surrogate recoveries for all samples analyzed for organics.

The single field replicate sample fulfils the QA/QC requirements for field replication of water samples as defined for this project.

Results for the field replicate water sample, B1-C, show close correlation with the original sample, B1-D(D), except in the cases of two phthalate compounds. As established in earlier sections, however, phthalates are present due their unintended introduction from contact with plastics during sampling and/or analysis. The concentrations of these compounds would not be expected to be consistent between replicates, and therefore the replicate results are considered acceptable.

Metals were analyzed in the field blank and no detectable indicator chemicals were found.

The trip blank results indicate that phthalates were introduced during shipping and handling of samples.

Surrogate recoveries are acceptable according to guidelines set out in the relevant analytical procedures (EPA Procedure 6240 and EPA Procedure 6270).

### **D-2                    QA/QC SOIL**

Soil samples were collected at 49 locations throughout the site. Samples from 37 of these locations were submitted for full and partial analysis. A summary of soil QA/QC indicator chemicals is as follows:

- (1) 3 field duplicates collected.
- (2) 3 field duplicates analyzed.
- (3) 8 field replicates collected.
- (4) 4 field replicates analyzed.
- (5) 2 laboratory replicate analyzed.
- (6) 1 matrix spike analyzed.
- (7) surrogate recoveries for all samples analyzed for organics.

The quantity of field replicates and duplicates analyzed does not meet the QA/QC requirement for field replication and duplication of one in ten soil samples, as set for this project.

Data for duplicate and replicate samples indicate that the sampled soils are relatively homogeneous, and that sampling and analytical methods have not resulted in variability of concern.

Surrogate recoveries were generally acceptable according to guidelines set out in the relevant analytical procedures (EPA Procedure 6240 and EPA Procedure 6270).

## **APPENDIX E RISK ASSESSMENT**

### **E-1 OVERVIEW**

#### **E-1.1 ASSESSMENT METHODS**

The methodology used to assess the potential risks of contaminants found at the BAR-1 site was described in Volume 2, Section 3.3.1 entitled, Risk Assessment Study Approach. This methodology was categorized according to data evaluation, exposure assessment, toxicity assessment, and risk characterization and results from the BAR-1 risk assessment are similarly organized in the following subsections.

#### **E-1.2 GENERAL ASSESSMENT DATA**

Risk assessment data which were common to all 21 DEW Station Sites were not repeated in each site report but rather they were documented in Volume 2, Section 6.0 entitled, General Risk Assessment Data. General pathway equation variables used in the BAR-1 exposure assessment were described in Volume 2, subsection 6.1 and detailed in Volume 2, Appendix B. References to toxicity information used in the BAR-1 toxicity assessment were also described in Volume 2 but in a separate subsection, 6.2. This general data documented in Volume 2 has been repeated in the present volume only where necessary to clarify results.

### **E-2 DATA EVALUATION**

#### **E-2.1 CONTAMINANT MAP**

The areal extent of each contaminant was estimated qualitatively based on the field observations and the geological and hydrological data presented in Section 3.0. Only at Landfill A location were contaminants identified in a sufficient number of samples to permit contouring of concentration maps as described in Volume 2. Areas covered by contaminant sites such as landfills, outfalls, POLs, pallet lines and stain areas are shown in Figure E-1. For each of these sites, the areal extent of all elevated levels was estimated along with the associated average concentration to provide the required inputs for the exposure assessment.

#### **E-2.2 SUMMARY OF SIGNIFICANT CONTAMINANTS**

Laboratory results and implications of these results for all contaminants found at BAR-1 were described in subsection 6.0. The examined sites were assessed and contaminant concentrations in both soil and water were compared with Canadian Federal and Provincial clean-up criteria. Laboratory data were reviewed in terms of concentrations calculated, error estimates, and minimum equipment detection limits and then compared with background values and government regulations and guidelines. The assessment criteria and rationale were previously described in Volume 2.

A summary of the significant soil contaminants found at BAR-1 is given in Table E-1. Each location shown in Figure E-1 is listed in this table if a significant soil contaminant concentration was found from the lab analysis. No significant contaminants were found at Sewage Outfall C, POL 4 or Stain Area 1, 3, or 4 locations. As may be seen, ten contaminants were found in one or more locations and the number of contaminant

TABLE E-1 SOIL DATA EVALUATION FOR EXPOSURE ASSESSMENT: BAR-1

| Contaminant   | Contaminant Conc. Ranges (mg/kg) |                  |             |             | Pathway Analysis              |                           |                            |                         | Remarks                            |
|---------------|----------------------------------|------------------|-------------|-------------|-------------------------------|---------------------------|----------------------------|-------------------------|------------------------------------|
|               | Lab Data                         | Comparitive Data |             |             | Total Contaminat ed Area (m²) | Worker Exposu re Fraction | Caribou Exposu re Fraction | % Area with Vegetati on |                                    |
|               |                                  | MDL              | Back-ground | Guidelin es |                               |                           |                            |                         |                                    |
| Lead          | 11-500                           | 10               | <10         | 50-600      | 16,000                        | -                         | 0.006                      | 20                      | 2 Samples > 100 mg/kg              |
| Arsenic       | 2-21                             | 0.1              | 6.5         | 10-50       | 22,000                        | 0.13                      | 0.01                       | 25                      | Hot spot in Sewage Outfall A       |
| Mercury       | 0.06-0.21                        | 0.05             | 0.11        | 0.2-10      | 14,000                        | 0.12                      | 0.01                       | -                       | Concentrations < Lower Guideline   |
| Cadmium       | 1-2                              | 1                | <1          | 1.5-20      | 9,000                         | 0.06                      | 0.001                      | 30                      | Concentrations < Lower Guideline   |
| Selenium      | 0.9-1                            | 0.5              | 0.8         | 1-10        | 3,000                         | 0.02                      | -                          | -                       | Concentrations < Lower Guideline   |
| TPH           | 47-10,000                        | 1                | <1          | 100-5,000   | 2,000                         | 0.09                      | 0.004                      | -                       | Isolated hot spots SA 2            |
| PCB           | 0.03-0.67                        | 0.01             | <0.01       | 0.1-10      | 5000                          | 0.06                      | 0.001                      | 30                      | Isolated low concentrations        |
| PAH           | 0.09-0.11                        | 0.02             | -           | 1-200       | 3,000                         | 0.005                     | -                          | -                       | Isolated low concentrations        |
| Toluene       | 0.3 - 0.8                        | 0.002            | -           | 0.1-30      | 5,000                         | 0.06                      | 0.001                      | -                       | Found only in Landfill A and POL 1 |
| Ethyl Benzene | 0.1-0.2                          | 0.002            | -           | 0.1-50      | 5,000                         | 0.01                      | -                          | -                       | Found only in Landfill A and POL 1 |



# **LEGEND**

SA 1  
PL 1

CONTAMINANT BOUNDARY  
SPILL AREA  
PALLET AREA

BAR-1 KOMAKUK BEACH

CONTAMINANT MAP

FIGURE E.1

concentrations found to be greater than the method detection limit in any one location varied from 1 to 8. No contaminants were found generally throughout the site. PAHs included four different polynuclear aromatic hydrocarbons which were evaluated as a group.

Twelve water samples from the POLs, landfills and site ponds were analyzed and contaminants were found above MDL concentrations in seven samples. A low concentration < 17 percent of the criterion for barium was found in six contaminated samples. Three samples contained nickel and the background sample concentration was near the criterion. TPHs were found in 2 samples, one of which was near the criterion concentration. One volatile, 1, 1 C12 Ethane, was found in one sample.

### **E-2.3                    EVALUATION FOR EXPOSURE ASSESSMENT**

Contaminant data identified in Subsections E-2.1 and E-2.2 were evaluated in order to determine the requirements for each pathway analysis. A summary of soil data required for the exposure assessment is presented in Table E-2. For each contaminant, the concentration ranges from lab data and comparative data are listed. Comparative data includes the minimum lab equipment detection limit (MDL), background concentrations and cleanup guidelines, all previously described in Subsection 6.0.

The indicator chemicals used in the pathway analysis include contaminant concentration and its areal extent, and an estimated exposure for each receptor being analyzed. The total contaminated area shown in Table E-2 is the sum of individual areas from the different locations previously identified. These areas define the contaminant concentration above background levels though for the purposes of risk assessment all contaminated areas were included and the results were then interpreted for background impacts. All contaminants were only identified over relatively small areas covering a total of less than 22000 m<sup>2</sup>.

The exposure fraction given in Table E-2 is the fraction of time a receptor may be exposed to the contaminated area based on criteria defined in Volume 2. For example, 75 percent of the workers' time is spent in the main camp area. Exposure fractions are not additive, because some contaminant areas overlap. Caribou are assumed to graze on site for 10 days a year, and in the contaminated area for a percentage of time equal to the ratio of contaminated to complete site area. The final receptor pathway analyzed was for vegetation, specifically grasses, and the percent of contaminated area covered with vegetation was estimated from field notes.

Water contaminants were identified in POL 1, Landfill C, and the background pond. Potential water pathways may affect Caribou drinking but would not affect human water supplies.

### **E-2.4                    UNCERTAINTY ASSESSMENT**

Uncertainties associated with the data evaluation were described in Volume 2 including strategies to identify all contaminant locations, the laboratory errors, and the limited background sampling. Such uncertainties specifically associated with the BAR-1 data were described in Volume 2. For those contaminants identified at concentrations above background, the areal extent of contamination was conservatively estimated to

TABLE E-2 - SUMMARY OF SOIL CONTAMINANT LOCATIONS: BAR-1

| LOCATION         | SIGNIFICANT SOIL CONTAMINANT (No. of sample results > MDL) |          |      |     |         |         |     |         |               |     |
|------------------|------------------------------------------------------------|----------|------|-----|---------|---------|-----|---------|---------------|-----|
|                  | Arsenic                                                    | Selenium | Lead | PAH | Mercury | Cadmium | PCB | Toluene | Ethyl Benzene | TPH |
| Landfill B       | 1                                                          | 1        | 1    | 1   | -       | -       | -   | -       | -             | -   |
| Sewage Outfall D | 2                                                          | -        | -    | -   | 2       | -       | 1   | -       | -             | -   |
| Landfill A       | 8                                                          | 6        | 6    | 3   | 7       | 2       | 5   | 1       | 1             | -   |
| POL 1            | -                                                          | -        | -    | -   | -       | -       | -   | -       | -             | 1   |
| Pallet Line 1    | 1                                                          | -        | -    | -   | -       | -       | -   | -       | -             | -   |
| POL 2            | -                                                          | -        | -    | -   | -       | -       | -   | -       | -             | -   |
| Pallet Line 3    | 3                                                          | 1        | -    | -   | -       | -       | -   | -       | -             | -   |
| Sewage Outfall A | 1                                                          | 1        | 1    | -   | 1       | 1       | 1   | -       | -             | -   |
| Sewage Outfall B | 1                                                          | -        | -    | -   | -       | 1       | -   | -       | -             | -   |
| POL 3            | 1                                                          | -        | 1    | -   | 1       | -       | -   | -       | -             | 1   |
| POL 4            | 1                                                          | -        | -    | -   | -       | -       | -   | -       | -             | -   |
| Landfill C       | 1                                                          | -        | -    | -   | -       | -       | -   | -       | -             | -   |
| Stain Area 2     | -                                                          | -        | -    | -   | -       | -       | 1   | -       | -             | 1   |
| POL 2            | 2                                                          | -        | 1    | -   | 2       | -       | -   | 1       | 1             | 1   |
| Pallet Line 2    | 1                                                          | -        | -    | -   | 1       | -       | -   | -       | -             | -   |

ensure an over-prediction of risk, rather than an under-prediction. Barium, nickel and benzene were found only at concentrations below background. Five significant metal contaminants were found at concentrations above those noted in the background sample, however, only lead and mercury concentrations were also above the typical range of background concentrations in the region as identified in Section 3.0.

Finally, although the water sampling was limited, some contamination was found in surface ponds. Water quality may change depending on environmental changes and therefore there may be large uncertainties in assuming the samples analyzed were representative. Sediments which may affect aquatic life were not analyzed and the potential for mercury to migrate into such sediments was evaluated qualitatively as mercury is known to biotransform in sediments. Though only low concentrations of mercury were found, samples located in Landfill A are near the Beaufort Seashore.

## **E-3 EXPOSURE ASSESSMENT**

### **E-3.1 EXPOSURE PATHWAYS**

Exposure pathways were analyzed for each of the significant contaminants described in Subsection E-2.3. All potential pathways by which contaminants are transported from the source to the receptor were described in Volume 2 for humans, fauna, and flora. Those relevant pathways through which BAR-1 contaminants can affect people included soil and air mediums leading to dermal, ingestion, and inhalation forms of intake. The contaminant concentrations used for the air inhalation pathway were derived from soil contaminant concentrations assuming uptake of soil dust through such mechanisms as wind action. Fauna pathways were similar with the addition of water and flora ingestion. Caribou, from the Porcupine Caribou herd, as described in subsection 3.2.4, were used as surrogates for estimating fauna risks. Finally, contaminant uptakes through soil were evaluated in order to estimate flora risks. The vegetation cover in the BAR-1 site was previously described in Subsection 3.2.3 and grasses were used as surrogates for estimating flora risks.

Locations without vegetation were generally noted during the field survey and documented in the sample site descriptions given in Appendix A. It was noted for example that the area was characterized by a nearly continuous cover of vegetation except in disturbed areas. Where vegetation cover was evident the potential flora risks from contaminant uptakes through soil were estimated.

### **E-3.2 EXPOSURE INTAKES**

Results from the pathway analysis of BAR-1 site contaminants for worker exposure are presented in Table E-3. For each relevant pathway, the contaminants are identified along with the chronic daily intakes calculated for both carcinogenic and non-carcinogenic effects. A range of values was calculated for the chronic daily intakes to correspond with a potential range of exposure input indicator chemical values previously described in Volume 2.

Chronic daily intakes were calculated for contaminants transported by the three principal pathways previously defined; namely, ingestion in soil, dermal contact with soil, and inhalation. As shown in Table E-3, intakes were estimated for each

**TABLE E-3 BAR-1 SITE: WORKER EXPOSURE INTAKE RESULTS**

| Pathway                                    | Contaminant   | Chronic Daily Intake Range<br>(10 <sup>-6</sup> mg/kg day) |                                 |
|--------------------------------------------|---------------|------------------------------------------------------------|---------------------------------|
|                                            |               | Carcinogenic<br>Effects                                    | Non-<br>carcinogenic<br>Effects |
| Ingestion of Contaminant in Soil           | Mercury       | -                                                          | 0.0005-0.002                    |
|                                            | Lead          | toxic                                                      | toxic                           |
|                                            | TPH           | -                                                          | 2-9                             |
|                                            | PCB           | 0.00001-0.00006                                            | -                               |
|                                            | Arsenic       | 0.007-0.03                                                 | 0.05-0.2                        |
|                                            | Selenium      | -                                                          | 0.00006-0.0003                  |
|                                            | Cadmium       | -                                                          | 0.0009-0.004                    |
|                                            | Ethyl Benzene | -                                                          | 10 <sup>-12</sup>               |
|                                            | Toluene       | -                                                          | 0.00001-                        |
|                                            | PAH           |                                                            | 0.00006<br>10 <sup>-12</sup>    |
| Dermal Contact with Contaminant<br>in Soil | Mercury       | -                                                          | 0.01-0.02                       |
|                                            | Lead          | toxic                                                      | toxic                           |
|                                            | TPH           | -                                                          | 39-85                           |
|                                            | PCB           | 0.0003-0.0006                                              | -                               |
|                                            | Arsenic       | 0.1-0.3                                                    | 1-2                             |
|                                            | Selenium      | -                                                          | 0.001-0.003                     |
|                                            | Cadmium       | -                                                          | 0.02-0.04                       |
|                                            | Ethyl Benzene | -                                                          | 0.00005-0.0001                  |
|                                            | Toluene       | -                                                          | 0.002-0.004                     |
|                                            | PAH           | -                                                          | 0.0001-0.0002                   |
| Inhalation of Airborne Contaminant         | Mercury       | -                                                          | 0.003-0.007                     |
|                                            | Lead          | toxic                                                      | toxic                           |
|                                            | TPH           | -                                                          | 16-38                           |
|                                            | PCB           | 0.0001-0.003                                               | -                               |
|                                            | Arsenic       | 0.03-0.06                                                  | 0.2-0.4                         |
|                                            | Selenium      | -                                                          | 0.004-0.01                      |
|                                            | Cadmium       | 0.0005-0.001                                               | 0.003-0.008                     |
|                                            | Ethyl Benzene | -                                                          | 0.00006-0.008                   |
|                                            | Toluene       | -                                                          | 0.00006-0.0001                  |
|                                            | PAH           | -                                                          | 0.002-0.005<br>0.0004-0.0009    |

significant contaminant found on site except for lead. Risk estimates for lead were based on cleanup rather than toxicity criteria as further described in Subsection E-4.

One primary TPH hot spot of 10,000 mg/kg in Stain Area 2 was identified. The TPH concentration is less than the criterion for potential acute exposures and therefore the hot spot was only evaluated for chronic exposures.

The exposure intake results from the fauna pathway analysis are given in Table E-4 in a similar format to that used for human exposure intake results. Additional pathways, for ingestion of water and grasses, were evaluated for caribou. As discussed in Volume 2, only non-carcinogenic intakes were evaluated due to lack of environmental toxicity data.

Toxicity criteria for plants were available for arsenic, nickel, cadmium, lead and PCBs and the corresponding concentrations in grasses covering the contaminant areas were estimated at 0.2, 1.8, 0.6, 5, and 0.02 mg/kg, respectively.

### **E-3.3                      UNCERTAINTY ASSESSMENT**

Data evaluation uncertainties included the strategies for sampling, identification of contaminant location, laboratory errors, and the limited background sampling as described previously in subsection E-2.4. Further uncertainties in the exposure assessment were generally described in Volume 2. For example the range of values used to estimate exposure for each pathway were presented. These data ranges were used as input for a sensitivity analysis of the exposure assessment in order to determine the corresponding impacts on chronic daily intakes.

Exposure of workers to the different contaminant areas was based on a conservative distribution of a worker's time at each area as described in Volume 2. Native exposures were considered as a sensitivity analysis based on additional pathways such as caribou and fish intake. Fauna and flora exposures on site were also evaluated. For each potential receptor the reasonable maximum exposure to a contaminant transported over all principal pathways was estimated. Results could therefore be used directly in the risk assessment where risks associated with a particular contaminant are summed over all pathways through which the contaminant may be exposed to the receptor.

The higher values for the sensitivity results given previously in Table E-3 were subsequently used for the risk assessment in order to represent a maximum exposure level. Such levels were then evaluated to determine the reasonable maximum exposure for one particular receptor given each of the potential pathways for a particular contaminant.

The extent of contaminant migration was based on analysis of limited data from the field survey. In some locations the data was used to find closure on the areal extent of a contaminant however closure was often qualitatively estimated through assessment of the geology and hydrology data. The resulting estimate of contaminant areal extent was conservative in order to over predict the contamination area and therefore over estimate the potential risk. Nickel, barium and benzene were found at concentrations less than that found in the background sample and therefore were not included in the risk assessment. Other contaminants were found at concentrations above and below

background. Due to the uncertainty associated with one background sample, all exposures for these contaminants were included in the risk assessment. Results were then interpreted to account for the portion of the total risk which is associated with background concentrations. In general all contaminant concentrations were near the lower level guidelines except for isolated lead and TPH samples.

## **E-4 TOXICITY ASSESSMENT**

### **E-4.1 SITE CONTAMINANT TOXICITIES**

The ten site contaminants identified from the exposure assessment as potential risk concerns were evaluated for both carcinogenic and non-carcinogenic human toxicity. Reference toxicity data including the associated uncertainties were collated for all contaminants identified in all 21 DEW Station Sites and presented in Volume 2, Subsection 6.2. The carcinogen slope factors and non-carcinogen reference dose toxicity measures from this reference are presented in Table E-5 for each of the contaminants. A carcinogenic risk slope factor is unverified at present for lead. The U.S. EPA considers the contaminants for which no slope factors are given as less likely carcinogens. Chronic reference doses were available for all contaminants except PCB and lead. PCBs are considered carcinogens and due to the present lack of knowledge about lead, its reference dose was based on cleanup guidelines as recommended by the U.S. EPA.

The environmental risk assessment was based on a review of the limited toxicity data to determine safe levels of contaminant intake or ambient concentrations for caribou, and grasses. Safe intake values were available for seven contaminants based on exposure to dairy cows, and plants and these values were assumed representative for caribou, and grasses as given in Table E-5.

### **E-4.1 UNCERTAINTY ASSESSMENT**

Uncertainties associated with the carcinogenic and non-carcinogenic human toxicity data and the environmental toxicity data were generally described in Volume 2. Specific impacts for the BAR-1 contaminants are summarized in this subsection.

Arsenic is classified by the U.S. EPA as a known human carcinogen. PCBs, lead and nickel are classified as probable carcinogens based on animal data while cadmium is a probable carcinogen based on limited human data. The chronic reference doses were based on varying uncertainty factors depending on the contaminant as described in Volume 2. The largest uncertainty factor of 3000 was associated with Pyrene, a PAH. Pyrene was used as a surrogate for all PAHs found on site because it is associated with a conservative reference dose. The TPH chronic reference dose was based on an acceptable daily intake value for petroleum distillates. TPH is a mixture of many components whereas toxicity values are estimated for specific components and therefore an acceptable daily intake for a mixture of petroleum distillates was used as a generic reference.

TABLE E-4 BAR-1 SITE: CARIBOU EXPOSURE INTAKE RESULTS

| Pathway                                    | Contaminant | Chronic Daily Intake<br>(10 <sup>-6</sup> mg/kg day) |
|--------------------------------------------|-------------|------------------------------------------------------|
|                                            |             | Non-carcinogenic<br>Effects                          |
| Ingestion of Contaminant in Soil           | Mercury     | 0.0004                                               |
|                                            | Nickel      | 0.1                                                  |
|                                            | Lead        | 0.2                                                  |
|                                            | TPH         | 2                                                    |
|                                            | PCB         | 0.0001                                               |
|                                            | Arsenic     | 0.02                                                 |
|                                            | Cadmium     | 0.0004                                               |
|                                            | Toluene     | 0.0003                                               |
|                                            | PAH         | 0.00005                                              |
| Inhalation of Airborne Contaminant         | Mercury     | 0.0005                                               |
|                                            | Nickel      | 0.1                                                  |
|                                            | Lead        | 0.3                                                  |
|                                            | TPH         | 2                                                    |
|                                            | PCB         | 0.0002                                               |
|                                            | Arsenic     | 0.03                                                 |
|                                            | Cadmium     | 0.0005                                               |
|                                            | Toluene     | 0.0004                                               |
|                                            | PAH         | 0.00006                                              |
| Dermal Contact with Contaminant<br>in Soil | Mercury     | 0.02                                                 |
|                                            | Nickel      | 6                                                    |
|                                            | Lead        | 13                                                   |
|                                            | TPH         | 120                                                  |
|                                            | PCB         | 0.007                                                |
|                                            | Arsenic     | 1                                                    |
|                                            | Cadmium     | 0.02                                                 |
|                                            | Toluene     | 0.02                                                 |
|                                            | PAH         | 0.003                                                |
| Ingestion of Contaminated Grasses          | Mercury     | 0.2                                                  |
|                                            | Nickel      | 3                                                    |
|                                            | Lead        | 4.5                                                  |
|                                            | TPH         | 7600                                                 |
|                                            | PCB         | 0.004                                                |
|                                            | Arsenic     | 0.4                                                  |
|                                            | Cadmium     | 0.1                                                  |
|                                            | Toluene     | 0.02                                                 |
|                                            | PAH         | 0.05                                                 |
| Ingestion of Contaminant in Water          | Nickel      | 0.2                                                  |
|                                            | TPH         | 48                                                   |
|                                            | PAH         | 0.02                                                 |

TABLE E-5 BAR-1 SITE: CONTAMINANT TOXICITIES

| Site Contaminant | Slope Factor Risk Per Unit Dose (mg/kg/day) <sup>-1</sup> | Chronic Reference Dose (mg/kg/day) | Caribou Safe Dose (mg/kg day) | Grass Safe Concentration (mg/kg) |
|------------------|-----------------------------------------------------------|------------------------------------|-------------------------------|----------------------------------|
| Mercury          | -                                                         | $8 \times 10^{-5}$                 | $1 \times 10^{-3}$            | -                                |
| Lead             | toxic                                                     | toxic                              | $1 \times 10^{-2}$            | 7                                |
| TPH              | -                                                         | $1 \times 10^{-1}$                 | 70                            | -                                |
| PCB              | 7.7                                                       | -                                  | $2 \times 10^{-2}$            | 3                                |
| Arsenic          | 15                                                        | $4 \times 10^{-4}$                 | $5 \times 10^{-1}$            | $7 \times 10^{-1}$               |
| Cadmium          | 6.1                                                       | $5 \times 10^{-4}$                 | $7 \times 10^{-2}$            | $8 \times 10^{-2}$               |
| Selenium         | -                                                         | $3 \times 10^{-3}$                 | -                             | -                                |
| Ethyl Benzene    | -                                                         | $1 \times 10^{-1}$                 | -                             | -                                |
| PAH (Pyrene)     | -                                                         | $3 \times 10^{-2}$                 | -                             | -                                |
| Toluene          | -                                                         | $2 \times 10^{-1}$                 | $3 \times 10^{-3}$            | -                                |

TABLE E-6 BAR-1 SITE: CARCINOGENIC RISK ESTIMATES

| Pathway                             | Contaminant               | Chronic Daily Intake<br>(10 <sup>-6</sup> mg/kg day) | Slope Factor<br>Risk per Unit Dose<br>(mg/kg day) <sup>-1</sup> | Risk                                                                   |
|-------------------------------------|---------------------------|------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------|
| Ingestion of Soil                   | PCB<br>Arsenic            | 0.00006<br>0.03                                      | 7.7<br>15                                                       | 5 x 10 <sup>-10</sup><br>5 x 10 <sup>-7</sup>                          |
| TOTAL                               |                           |                                                      |                                                                 | 5 x 10 <sup>-7</sup>                                                   |
| Dermal Contact of Soil              | PCB<br>Arsenic            | 0.0006<br>0.03                                       | 7.7<br>15                                                       | 5 x 10 <sup>-9</sup><br>5 x 10 <sup>-6</sup>                           |
| TOTAL                               |                           |                                                      |                                                                 | 5 x 10 <sup>-6</sup>                                                   |
| Inhalation of Airborne Contaminants | PCB<br>Arsenic<br>Cadmium | 0.003<br>0.06<br>0.001                               | 7.7<br>15<br>6.1                                                | 2 x 10 <sup>-8</sup><br>9 x 10 <sup>-7/2</sup><br>6 x 10 <sup>-9</sup> |
| TOTAL                               |                           |                                                      |                                                                 | 9 x 10 <sup>-7</sup>                                                   |
| BAR-1 Site Total Carcinogen Risk    |                           |                                                      |                                                                 | 6 x 10 <sup>-6</sup>                                                   |

## **E-5 RISK CHARACTERIZATION**

Results from the BAR-1 site exposure assessment presented in Subsection E-3 and toxicity assessment presented in Subsection E-4 were integrated in order to characterize the site-specific risk. As described in Volume 2, Section 3.0, the methods for characterizing non-carcinogenic risk are different from those used for carcinogenic risk. The quantification of BAR-1 site risk has therefore been segregated according to these categories as presented in the following subsections.

### **E-5.1 CARCINOGENIC RISK**

Worker carcinogenic risks were estimated for contaminant intakes from each of the relevant pathways identified in the exposure assessment. The chronic daily intake estimated from the exposure assessment was multiplied by the slope factor identified in the toxicity assessment in order to quantify the carcinogenic risk. This risk is defined as the incremental cancer risk over the lifetime of a worker who is exposed at the BAR-1 site.

Lead is considered a potential carcinogen by the U.S. EPA however a slope factor has not yet been determined and therefore the Quebec Soil Contamination Guidelines for cleanup of lead were used as recommended to characterize the risk. Lead concentrations in soils varied from 11-500 mg/kg for different locations and these values were compared to the guideline of 600 mg/kg for implementing corrective measures or restricting land use. Based on these guidelines, the risks from lead were generally considered small, however, the hot spot in Landfill B was near the criterion.

Results have been summarized in Table E-6. and as may be seen the total carcinogenic risk was estimated at  $\leq 6 \times 10^{-6}$ . Based on the U.S. EPA site remediation goal of reducing cancer risks below  $10^{-4}$ , the BAR-1 carcinogenic risk is less than criteria. The principal contributor was arsenic intake from the dermal contact of soil pathway as shown in the distribution of risk given in Figure E-2. As previously shown, arsenic concentrations were less than typical background values in the region and therefore the incremental arsenic risk above background would be much less than that used in this assessment.

### **E-5.2 NON-CARCINOGENIC RISK**

The worker non-carcinogenic risk of the BAR-1 site was quantified based on a hazard index previously described in Volume 2, Subsection 3.0. For each contaminant in each pathway identified from the exposure assessment, the chronic daily intake was divided by the comparative reference dose determined from the toxicity assessment. This hazard quotient calculated for each contaminant was summed in order to calculate a pathway total and each pathway total was summed in order to calculate the total exposure hazard index. Should the hazard index exceed unity (1.0) then the contaminant exposure level exceeds the reference and there may be concern for potential non-cancer effects.

The BAR-1 site worker non-carcinogenic hazard index results are summarized in Table E-7. As may be seen dermal contact of soil contributed the largest amount to the risk index. Arsenic was the most significant contaminant as shown in the distribution of hazard quotients given in Figure E-3. The hazard index totals  $9 \times 10^{-3}$

TABLE E-7 BAR-1 SITE: NON-CARCINOGENIC HAZARD INDEX

| Pathway                                | Contaminant   | Chronic Daily Intake<br>(10 <sup>-6</sup> mg/kg day) | Chronic Reference Dose<br>(10 <sup>-6</sup> mg/kg day) | Hazard Quotient      |
|----------------------------------------|---------------|------------------------------------------------------|--------------------------------------------------------|----------------------|
| Ingestion of Soil                      | Mercury       | 0.002                                                | 80                                                     | 3 x 10 <sup>-5</sup> |
|                                        | TPH           | 9                                                    | 100,000                                                | 9 x 10 <sup>-5</sup> |
|                                        | Arsenic       | 0.2                                                  | 400                                                    | 5 x 10 <sup>-4</sup> |
|                                        | Selenium      | 0.0003                                               | 3,000                                                  | 1 x 10 <sup>-7</sup> |
|                                        | Cadmium       | 0.004                                                | 500                                                    | 8 x 10 <sup>-6</sup> |
|                                        | Ethyl Benzene | -                                                    | 100,000                                                | -                    |
|                                        | Toluene       | 0.00006                                              | 200,000                                                | -                    |
|                                        | PAH           | -                                                    | 3,000                                                  | -                    |
| TOTAL                                  |               |                                                      |                                                        | 6 x 10 <sup>-4</sup> |
| Dermal Contact of Soil                 | Mercury       | 0.02                                                 | 80                                                     | 3 x 10 <sup>-4</sup> |
|                                        | TPH           | 85                                                   | 100,000                                                | 9 x 10 <sup>-4</sup> |
|                                        | Arsenic       | 2                                                    | 400                                                    | 5 x 10 <sup>-3</sup> |
|                                        | Selenium      | 0.003                                                | 3,000                                                  | 1 x 10 <sup>-6</sup> |
|                                        | Cadmium       | 0.04                                                 | 500                                                    | 8 x 10 <sup>-5</sup> |
|                                        | Ethyl Benzene | 0.0001                                               | 100,000                                                | 1 x 10 <sup>-6</sup> |
|                                        | Toluene       | 0.004                                                | 200,000                                                | 2 x 10 <sup>-6</sup> |
|                                        | PAH           | 0.0002                                               | 3,000                                                  | 7 x 10 <sup>-8</sup> |
| TOTAL                                  |               |                                                      |                                                        | 6 x 10 <sup>-3</sup> |
| Inhalation                             | Mercury       | 0.007                                                | 80                                                     | 9 x 10 <sup>-5</sup> |
|                                        | TPH           | 38                                                   | 100,000                                                | 4 x 10 <sup>-4</sup> |
|                                        | Arsenic       | 0.4                                                  | 400                                                    | 1 x 10 <sup>-3</sup> |
|                                        | Selenium      | 0.01                                                 | 3,000                                                  | 3 x 10 <sup>-6</sup> |
|                                        | Cadmium       | 0.008                                                | 500                                                    | 2 x 10 <sup>-6</sup> |
|                                        | Ethyl Benzene | 0.0001                                               | 100,000                                                | 1 x 10 <sup>-6</sup> |
|                                        | Toluene       | 0.05                                                 | 200,000                                                | 3 x 10 <sup>-7</sup> |
|                                        | PAH           | 0.0009                                               | 3,000                                                  | 3 x 10 <sup>-7</sup> |
| TOTAL                                  |               |                                                      |                                                        | 2 x 10 <sup>-3</sup> |
| BAR-1 Site Total Exposure Hazard Index |               |                                                      |                                                        | 9 x 10 <sup>-3</sup> |

# BAR-1 Site Carcinogenic Risk (Total=6 x10-6)

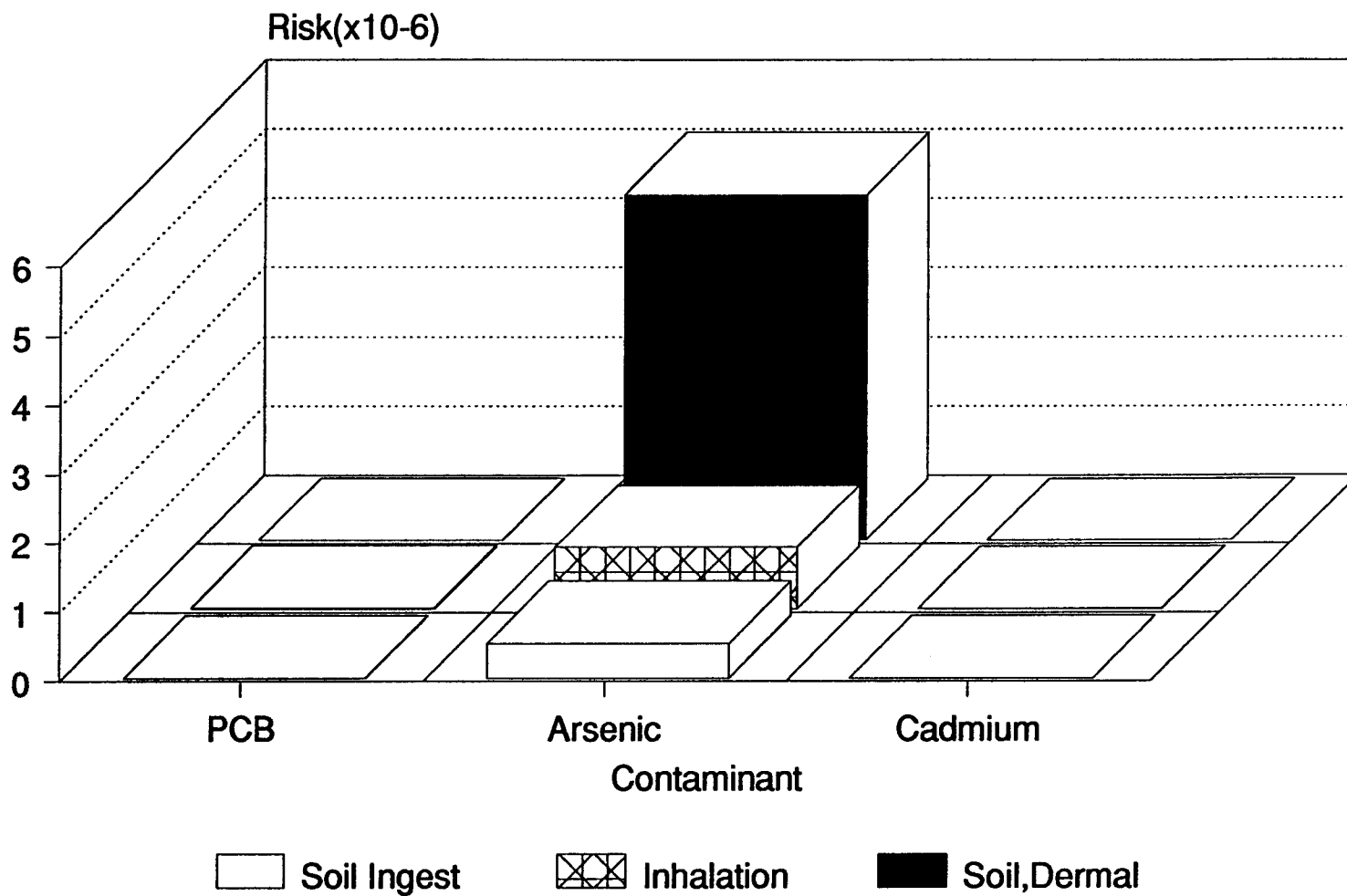


FIGURE E2

# BAR-1 Site Non-Carcinogenic Hazard Index (Total=9 x10<sup>-3</sup>)

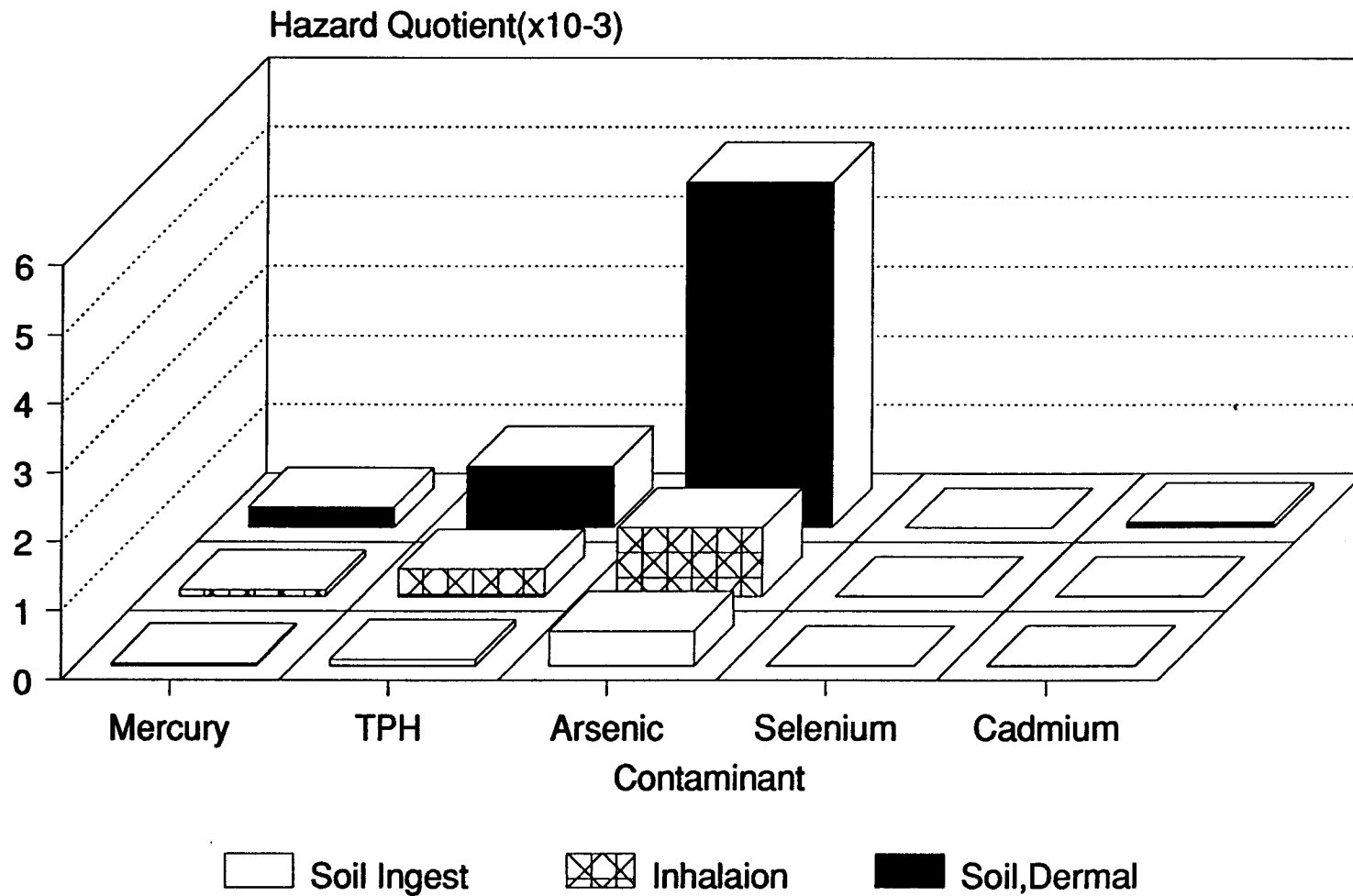


FIGURE E3

which is much less than the unity criteria and therefore non-carcinogenic risk is considered small.

Acute exposure estimates for the one TPH hot spot were compared to acute safe levels in a method analogous to that for chronic exposures. The TPH acute hazard quotient was less than the unity criterion, however the implications are addressed in the cleanup recommendations.

The estimated contaminant intakes for caribou and grasses were compared to estimated safe values to characterize risk in a method similar to that used for human non-carcinogenic risk assessment. The sum of all hazard quotients in caribou was significantly smaller than the unity criterion and therefore caribou risks are considered small. Likewise, the hazard quotients for PCBs, arsenic, and nickel in grasses were less than unity. The cadmium hazard quotient for grasses was above unity and therefore there may be potential risks to plant health in the locations identified in Subsection E-2.2. The estimated intakes for the remaining contaminants were small, however, toxicity information was not available and therefore risks could not be quantified.

### **E-5.3                      UNCERTAINTY ASSESSMENT**

The uncertainties inherent in the risk assessment were documented in each of the data evaluation, exposure assessment, and toxicity assessment sub-tasks. Conservative assumptions were used to deal with the combination of uncertainties in order to ensure the final results were represented an over estimation of the risks. Quantitative risk estimates have been presented for both carcinogenic and non-carcinogenic hazards however the qualitative assessments and evaluations of uncertainties form an integral part of the results.

The carcinogenic risks were quantified for three contaminants and qualitatively assessed for lead. Results were based on conservative assumptions and therefore actual risks are considered to be lower than those presented in this report. The carcinogenic risk is defined as a probability of developing cancer, not of dying from cancer and the U.S. EPA weight-of-evidence classification for each contaminant varied as previously described. The weight of carcinogenic evidence for lead is uncertain at this time.

The total site non-carcinogenic hazard index was developed by summing the hazard quotients from each contaminant in each pathway. As previously discussed the uncertainties associated with both the exposure assessment and toxicity assessment vary for each contaminant and the uncertainties associated with summing hazard quotients also depend on the contaminant mixture among other factors. As a first order approximation the hazard quotient was based on conservative assumptions and therefore presents an over estimation of the potential site risk. The BAR-1 hazard index of  $9 \times 10^{-3}$  is much less than the unity criterion and represents a risk for which even sensitive populations are unlikely to experience adverse health effects.

Although there were uncertainties due to the limited number of water analyses carried out, the results were used to estimate incremental risk to caribou through water pathways.

Risks to a native camping on site and living from the land as described in Volume 2 were not significantly different from those estimated for the worker. Conclusions for cleanup recommendations presented in Section E-6 were therefore applicable to either exposure scenario.

The uncertainty associated with the background sampling was discussed previously, and exposures to arsenic below background concentrations were the greatest contributors to risk. As the estimated risk levels were small, the assessment of incremental risk above background was not important in developing cleanup recommendations.