November 10, 2005

Dear Baffin Distribution List

Re: Your comments on this application.
NIRB#: 05DN122
Project: Site Remediation, CAM-5, Macker Inlet, Baffin
Proponent: Defence Construction Canada Inc., Phillip Warren

Nunavut Impact Review Board has received an application for a land application and quarry application near . Please use NIRB file No. 05DN122 and the contact person listed below, in all future correspondence regarding this application.

The application documents are available through the internet on the NIRB ftp site at www://ftp.nunavut.ca/nirb in the folder "05DN122-Site Remediation, CAM-5, Macker Inlet, Baffin, Defence Construction Canada Ltd. ".

Please assess the project proposal for the potential effects on the ecosystemic and socio-economic environments, from your knowledge of the area or your field of expertise.

Please forward your comments and recommendations to NIRB by December 1, 2005 1:00pm local time.

A comment form has been included with the package.

If you have any questions regarding the application, please do not hesitate to contact our office. Your input is greatly appreciated.

Yours truly,

Sylvia Novoligak
Environmental Screener Trainee
Phone (867) 983-4613
Fax (867) 983-2574 or (867) 983-2594

COMMENT FORM FOR NIRB SCREENINGS

The Nunavut Impact Review Board has a mandate to protect the integrity of the ecosystem for the existing and future residents of Nunavut. In order to assess the environmental and scio-economic impacts of the project proposals, NIRB would like to hear your concerns, comments and suggestions about the following project application:

Project Title: Site Remediation, CAM-5
Proponent: Defence Construction Canada Inc.
Location: Macker Inlet, Baffin
Comments Due By: December 1, 2005 **NIRB #:** 05DN122

Indicate your concerns about the project proposal below:

- ☐ no concerns
- ☐ water quality
- ☐ terrain
- ☐ air quality
- ☐ wildlife and their habitat
- ☐ marine mammals and their habitat
- ☐ birds and their habitat
- ☐ fish and their habitat
- ☐ heritage resources in area
- ☐ traditional uses of land
- ☐ Inuit harvesting activities
- ☐ community involvement and consultation
- ☐ local development in the area
- ☐ tourism in the area
- ☐ human health issues
- ☐ other: _____

Please describe the concerns indicated above:

Do you have any suggestions or recommendations for this application?

Do you support the project proposal? Yes ☐ No ☐ Any additional comments?

Name of person commenting: _____ **of** _____
Position: _____ **Organization:** _____
Signature: _____ **Date:** _____

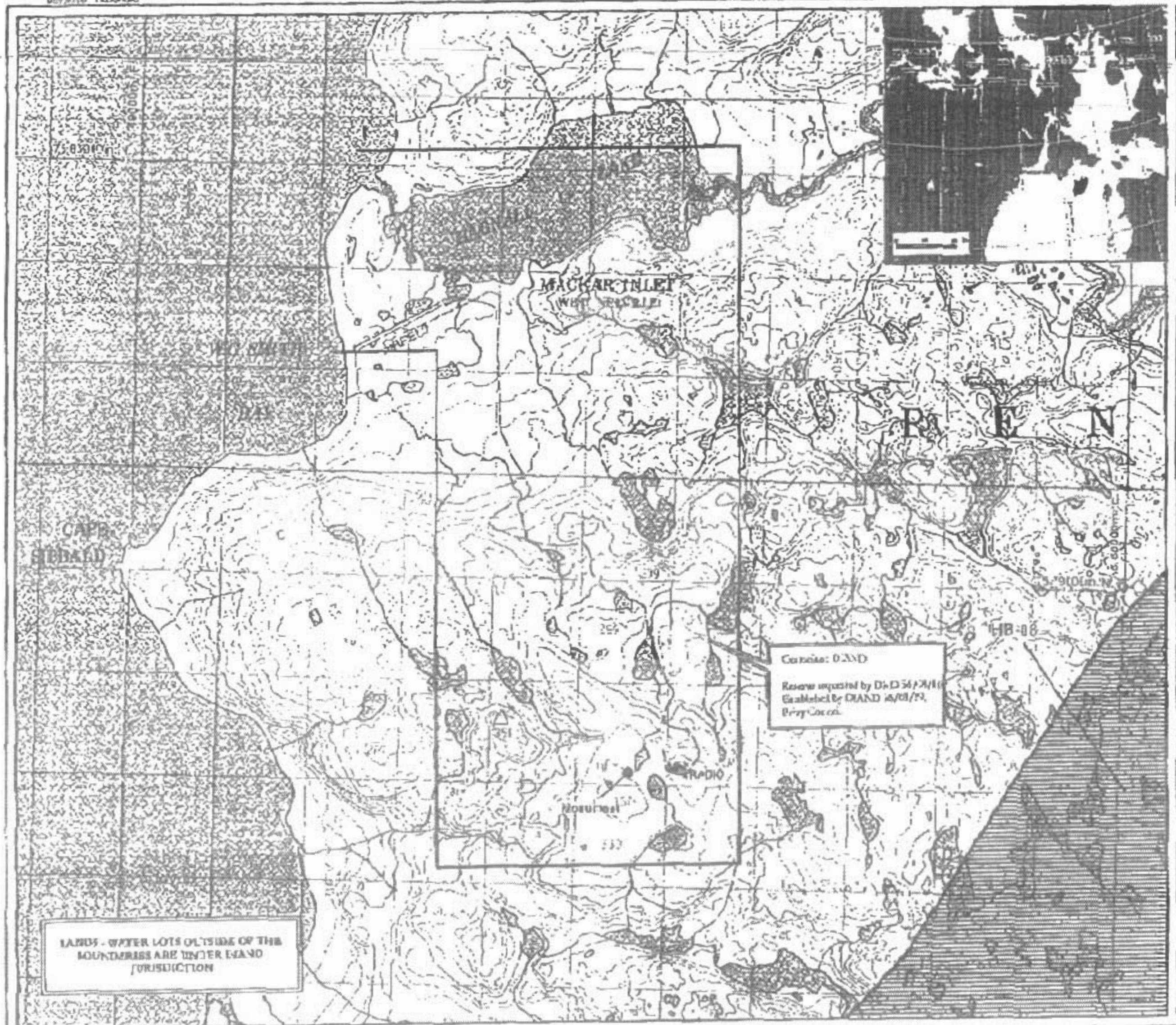
UMA | AECOM

APPENDIX A

Drawings

National Defence / Défense nationale

Canadā



Version 2.0

CAM-5

MACKAR INLET

FINAL

Reserved for DND / Réservé pour le MDN

Inuit Owned Lands/ Terres en propriété Inuit

Scale / Échelle: 1:40 000

0 1 2 km

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

Produced by: Real Property Geomatics Services Real Property Services Branch PWGSC, January, 2000.
Produit par: Services géomatiques immobiliers Service des biens immobiliers, TPSGC Janvier 2000.

National Defence / Défense nationale

DEW LINE CLEAN UP PROJECT

DRAWING INDEX

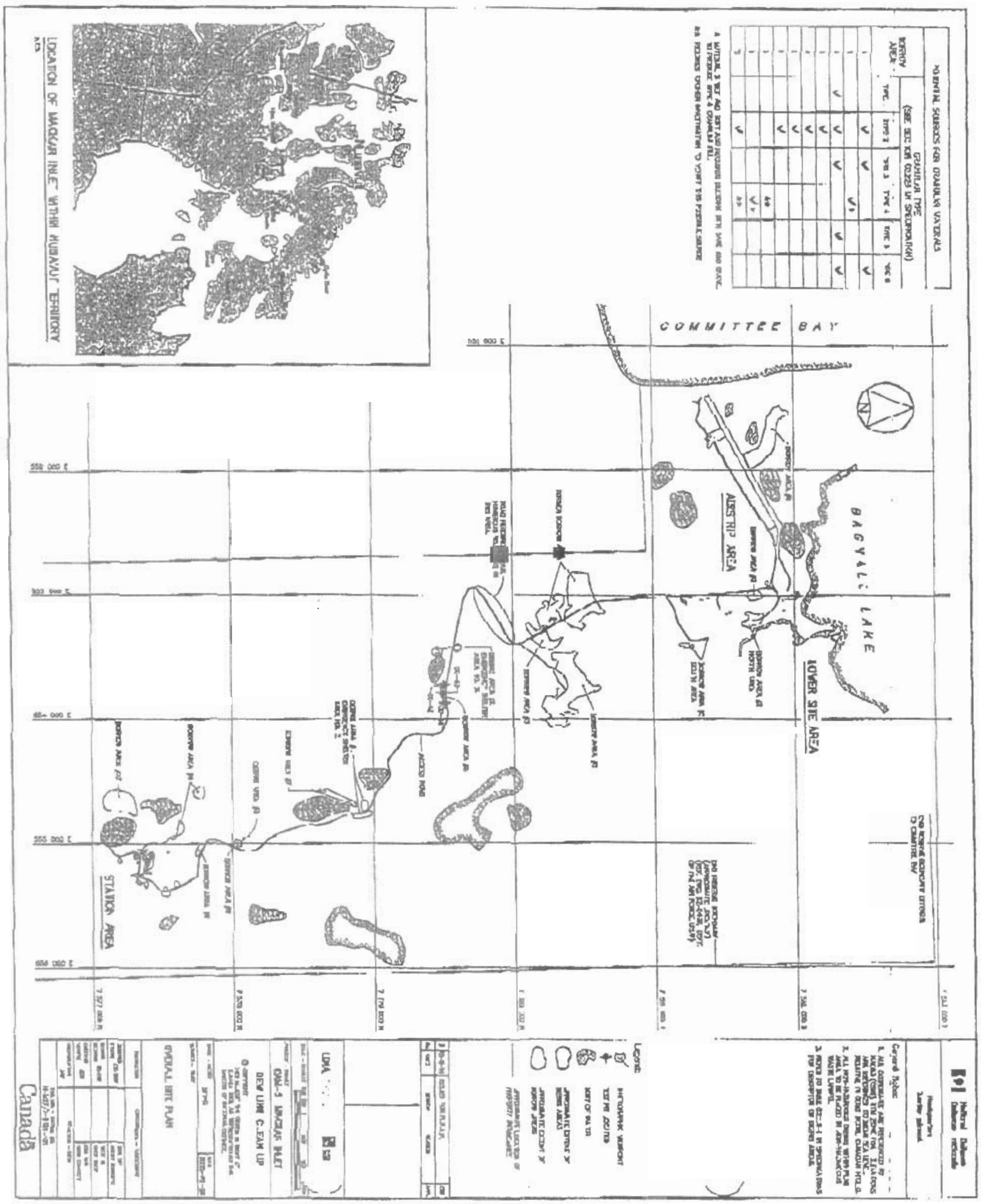
DRAWING No.	TITLE	DRAWING No.	TITLE	DRAWING No.	TITLE
SITING		SITING		STRUCTURAL	
[illegible]	OVERALL SITE PLAN	[illegible]	LANDFARM CROSS SECTION AND DETAILS	[illegible]	MODULE TRAIN UNITS CA-25 PLAN
[illegible]	PROJECT LAYOUT	[illegible]	AIRSTRIP LANDFILL PLAN AND CROSS SECTION	[illegible]	MODULE POWER UNITS [illegible] ELEVATIONS
[illegible]	STATION AREA SITE PLAN	[illegible]	NON-HAZARDOUS WASTE LANDFILL CROSS SECTION	[illegible]	[illegible] STORAGE PLAN AND ELEVATIONS
[illegible]	STATION AREA NORTH AND SOUTH SITE PLANS	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	LOWER SITE AREA SITE PLAN SH. 1	[illegible]	[illegible] CROSS SECTION AND DETAIL	[illegible]	[illegible] PLAN AND SECTION
[illegible]	LOWER SITE AREA SITE PLAN SH. 2	[illegible]	MISCELLANEOUS DETAILS SH. 1	[illegible]	COMMUNICATION [illegible] ELEVATIONS
[illegible]	AIRSTRIP AREA SITE PLANS	[illegible]	MISCELLANEOUS DETAILS SH. 2	[illegible]	[illegible]
[illegible]	WASTE SITE LANDFILL AREA SITE PLAN			[illegible]	FUEL TANKS PLAN AND ELEVATIONS
[illegible]	UPPER SITE LANDFILL [illegible]	STRUCTURAL		[illegible]	AIRSTRIP [illegible] STANDARD DETAILS
[illegible]	UPPER SITE LANDFILL CROSS SECTION	[illegible]	STATION AREA DEMOLITION SITE PLAN		
[illegible]	LOWER SITE LANDFILL – NORTH EXCAVATION PLAN	[illegible]	AIRSTRIP AREA DEMOLITION SITE PLAN		
[illegible]	LOWER SITE LANDFILL – SOUTH PLAN AND CROSS SECTION	[illegible]	WAREHOUSE PLAN, SECTION AND ELEVATION		
[illegible]	LOWER SITE LANDFILL – SOUTH CROSS SECTION	[illegible]	GARAGE PLAN AND SECTION		

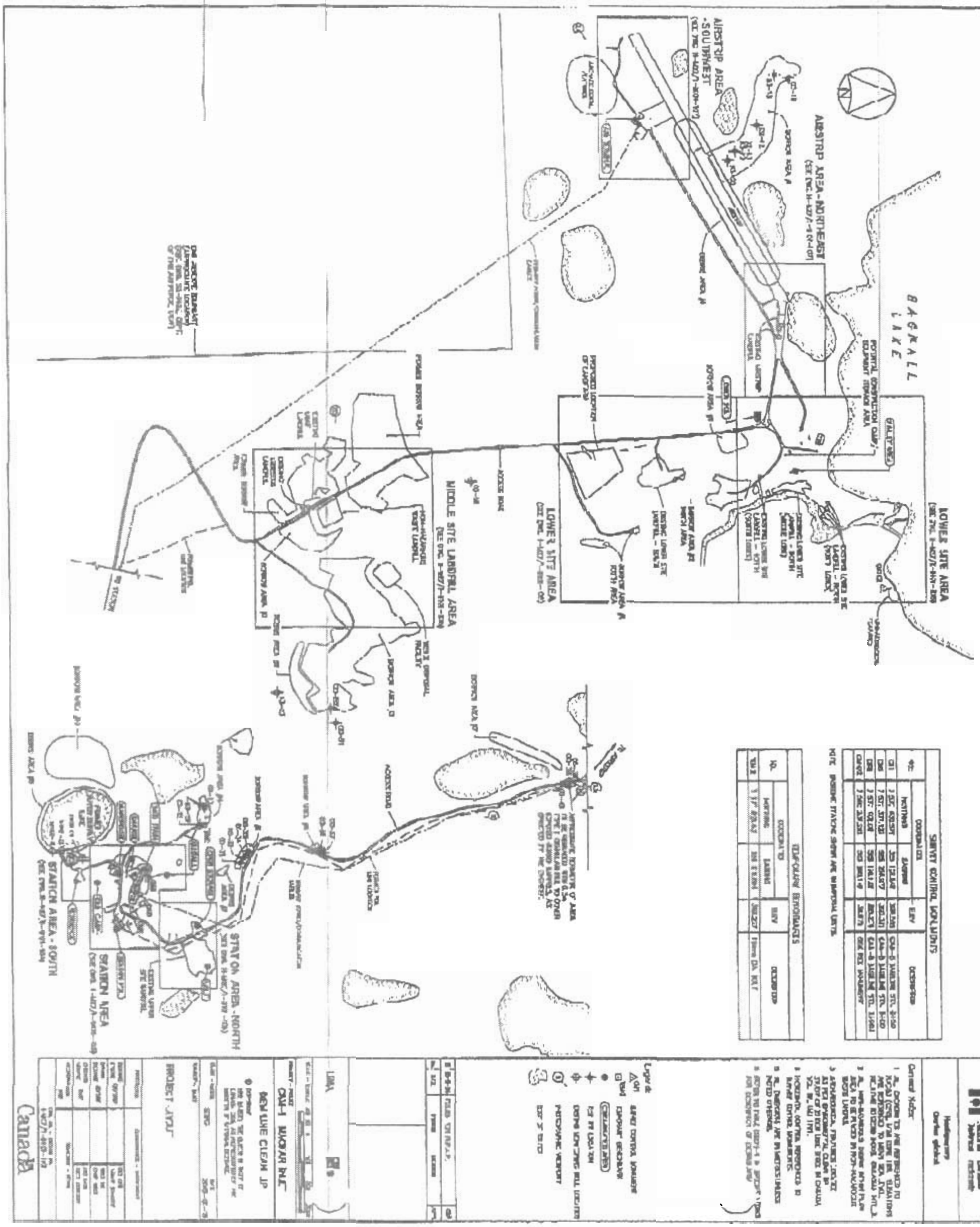
CAM-5 MACKAR INLET TENDER DRAWINGS

UMA

SGE Acres

JUNE, 2005


COMMITTEE BAY
BAGYALI LAKE
AIRSTRIP AREA
LOWER SITE AREA
STATION AREA
ACCESS ROAD
LOCATION OF MACKAR INLET WITHIN NUNAVUT TERRITORY
DEW LINE CLEAN UP
OVERALL SITE PLAN
Canada


AIRSTRIP AREA - NORTHEAST
AIRSTRIP AREA - SOUTHWEST
BAGNALL LAKE
LOWER SITE AREA
MIDDLE SITE LANDFILL AREA
STATION AREA - NORTH
STATION AREA - SOUTH
SURVEY CONTROL MONUMENTS
TEMPORARY BENCHMARKS
Canada

6.0 Description of the Environment

Environmental conditions at CAM-5 were documented by UMA (1991) and ESG (2000, 2002). Those environmental components potentially impacted by, or influencing cleanup operations are summarized below.

6.1 Climate

The mean total precipitation at CAM-5 is 179 mm per year, of which 81.7 falls as rain and 97.0 cm as snow. The mean number of days a year with measurable precipitation is 63, 20 with rain and 43 with snow. The majority of rain and snowfall occurs from May to October.

The mean annual temperature is -14.8°C, with the mean monthly temperatures ranging from 6.0°C in July to -31.7°C in February. The mean annual wind speed is 12.2 km/hr and is fairly steady throughout the year.

6.2 Hydrology

The CAM-5 upper site is located on a topographical high point at an approximate elevation of 400 masl, while the lower site and airstrip are located between Bagnall Lake and Committee Bay near sea level. Surface drainage from the module train area at the upper site to the lower site generally occurs in a northwest direction through two narrow elongated valleys, which run approximately parallel to each other. Several lakes connected by streams flow through the rough bouldery terrain on the valley floor. There is a lake in the more westerly valley downgradient of the upper site which partitions its discharge between the two valleys by way of a brief interconnecting valley. The two valleys join a second time before discharging immediately east of the storage pad area at Bagnall Lake. Significant flow discharges at the mouth of this stream occur as a result of the large drainage area encompassed by the two valleys.

Drainage from the upper site flows primarily to the north and east as determined by local topography. Drainage east of the POL storage area is controlled by natural topographic contours which direct the drainage to the head of the more easterly valley. However, some runoff from the warehouse and garage building area flows to the south toward the water supply lake.

The water supply lake is located approximately 280 m south of the module train in a natural depression in the bedrock surface surrounded by boulder-covered terrain. It is 5.5 m deep and has an approximate area of 0.8 ha. There are no streams or lakes which recharge or drain from the water supply lake.

The sewage outfall area discharged to the steep slope immediately north of the module train. The effluent traveled through the steeply graded, boulder covered slope to a grassy, sediment rich deltaic area leading to a lake. This lake is located adjacent to the roadway approximately 1.1 km from the upper site and discharges to a stream which continues through the more easterly valley described previously.

The Upper Site Landfill drains to the north and east along established gullies. At the Lower Site, the surface drainage south of the airstrip is collected by streams and lakes at higher elevations which eventually discharge to Committee Bay, approximately 80 m south of the northwest end of the airstrip. The Lower Site Landfill South drains into the Lower Site Landfill North, which flows north into Bagnall Lake.

Runoff in the immediate vicinity of the airstrip is channeled through a shallow ditch parallel to the runway on its south side. The ditch slopes to the northeast and eventually discharges to Bagnall Lake. Drainage on the north side of the runway is collected by small catchments which also discharge to Bagnall Lake.

6.3 Geology

The landscape at CAM-5 is comprised of a glacially scoured bedrock terrain characterized by rugged hills separated by narrow elongate valleys. Numerous small lakes, irregular in outline and typically interconnected by poorly defined runways and drainage channels, are scattered throughout the landscape.

Parts of the area are mantled by a gently rolling blanket of till and others by raised marine sequences. The extent of the raised marine sequences suggests relative sea level drop of at least 160 m since deglaciation.

Periglacial and frost processes have modified the landscape and imparted distinct patterned ground features within the unconsolidated sediments. Exposed bedrock is typically frost shattered.

Three general kinds of surface material occur within the landscape. These include bedrock/felsemeer/grass, till and glacio-marine. Fluvial materials are present, but constitute a comparatively small proportion of the surface materials, particularly at higher elevations.

The bedrock within the study area consists mostly of massive or foliated granitoid rocks of Precambrian age. The bedrock is typically jointed and two distinct trends, east-west and north-south, are evident. The jointing is best developed below 180 m elevation. At elevations greater than 180 m, the joints are typically incised and widened by erosion with fluvial and talus material collecting within the bottoms.

Quartz and feldspar are dominant components of the mineral assemblage comprising the bedrock. Weathered surfaces are rusty brown or drab grey and typically lichen-covered.

Till deposits blanket the bedrock within parts of the upland areas. The tills are bouldery with little cobble-, gravel-, and sand-sized material. Frost action and water has crudely sorted the tills and a distinct meshed or netted pattern has developed within the tills throughout the landscape.

Raised marine sediments occur along the northern perimeter of the site. The sediments are wedge-like in outline, broadest nearest sea level gradually tapering to a point several kilometers inland. The surface materials consist mostly of cobble-, gravel-, and sand-sized sediments. Remnant strandlines and broad, shallow, poorly defined drainage courses occur throughout the area.

6.4 Flora

The landscape at the camp is characterized by barren bedrock outcrops and sparsely vegetated knolls. In lowland areas where more soil material is present, plant cover is more abundant. Table 9 presents the common plant types found at CAM-5.

Table 9: Summary of Flora at CAM-5.

Common Name	Scientific Name
Purple saxifrage	*Saxifrage oppositifolia*
Mountain avens	*Dryas spp.*
Willow	*Salix spp.*
Alpine foxtail	*Alopecurus alpinus*
Wood rush	*Luzula spp.*
Other Saxifrages	*Saxifrage spp.*
Sedge	*Carex spp*
Cotton grass	*Eriophorum spp.*

6.5 Fauna

6.5.1 Terrestrial Mammals

Table 10 provides a summary of the terrestrial mammals either noted at the site or known to occur in the region.

Table 10: Summary of Terrestrial Mammals at CAM-5

Common Name	Scientific Name	Comments
Muskox	*Ovibos moschatus*	May have been present previously, however, muskox no longer exist on Melville Peninsula.
Barren-ground caribou	*Rangifer tarandus groenlandicus*	Belong to the Melville Herd in this region. Commonly seen at the site.
Polar bear	*Ursus maritimus*	This region supports one of the largest polar bear populations in the Canadian Arctic. One polar bear was observed during each of the 2000 and 2002 site investigations.
Arctic fox	*Alopex lagopus*	Were not observed at the site, but likely occur in the region.
Wolf	*Canis lupus*	A pack of 3 wolves were seen during the 2000 site investigation.
Short haired weasel	*Mustela erminea*	Known to occur on Melville Peninsula, but were not noted during the site investigations.
Arctic ground squirrel	*Spermophilus parryii*	Noted at the site during the 2000 and 2002 site investigations.
Arctic hare	*Lepus arcticus*	Likely occur at the site, but were not noted during the site investigations.
Collared lemming	*Dicrostonyx torquatus lentus*	
Brown lemming	*Lemmus sibiricus*	
Wolverine	*Gulo gulo*	One noted during the 2000 site investigation.

6.5.2 Marine Mammals

Table 11 provides a summary of the marine mammals which may occur in the region.

Table 11: Summary of Marine Mammals at CAM-5

Common Name	Scientific Name	Comments
Beluga	*Delphinaptorus leucas*	Due to annual ice conditions most marine mammals do not penetrate into or migrate through this area. Few narwhal were noted during the 2000 site investigation.
Narwhal	*Monodon monoceros*	
Bearded seal	*Erignathus barbatus*	
Ringed seal	*Phoca hispida*	

6.5.3 Avifauna

Table 12 provides a summary of the types of birds that were or may be noted at the site or in the region

Table 12: Summary of Avifauna at CAM-5

Common Name	Scientific Name	Comments
Snowy owls	*Nyctea scandiaca*	Known to occur in the region, although none were noted at the site.
Peregrine falcon	*Falco peregrinus*	
Gyrfalcon	*Falco rusticolus*	
Rough-legged hawk	*Buteo lagopus*	

6.5.4 Fish

Arctic char (*Salvelinus alpinus*) were caught recreationally during station operation and during the site investigations.

6.6 Heritage Resources

Three archaeological sites were identified though information supplied by former station personnel during the site investigation in 1990. The first site (Bagnall Lake 1) contained 21 features in four concentrations. The features are represented by a hunting blind, nine caches, two shelters, three tent rings, a possible grave and five unidentified structures which may have been used for multiple functions. The age of the features appear to range from relatively recent (post-dating construction of the station) to perhaps several centuries. Considerable disturbance to the site features occurred prior to the site investigation in 2000, probably through road construction, gravel extraction and natural erosion. This site was not located during the site investigations.

The second previously identified site (Bagnall Lake 2) contained two concentrations of features (Drawing H-M27/1-9101-105). The first consists of a complete tent ring and a partial tent ring which is presently eroding into the river. These features appear to pre-date the construction of the station. The second concentration consists of an Inuksuk, an associated cache and tent ring. This area appears to be prehistoric in age.

To the west of the airstrip is a large Inuit site containing 22 features including tent rings, partial tent rings, caches and hearths (Drawing H-M27/1-9101-102). Although the precise age of the site cannot be determined, it is thought to represent occupation from 100-200 years ago.

6.7 Socio-Economic Setting

The nearest community to CAM-5 with a full range of commercial and public services is Hall Beach, approximately 150 km east of the site. Access to CAM-5 is limited to charter aircraft. It is expected that during the construction period, a significant number of person-years of employment will be generated as a result of this project. Additionally, further enhancement of the areas' economy is expected resulting from increased local purchases and use of local businesses. Optimization of Inuit involvement in the clean up is included in the DND/NTI Cooperation Agreement – Economic Provisions. A copy of the agreement is in Appendix B.

6.8 Native Land Use

The waters adjacent to this site are a significant source of Arctic char. However, due to the difficult topography, relative isolation of the area and difficult accessibility, it was indicated during the

consultations with the Inuit people during the site investigations and community meetings that it is used very little.

6.9 Government Land Use

The DEW Line radar/communications facilities at this site were decommissioned. Short Range Radar (SRR) facilities were constructed at a site approximately 25 km north of the CAM-5 site. There are no future land uses intended at this site.

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

APPLICATION FOR LAND USE PERMIT

FOR OFFICE USE ONLY -- RÉSERVÉ AU BUREAU					
Application fee	Land use fee	General receipt no.	Date	Class	Permit no.

To be completed by applicants: X New application ☐ Amendment

1. Applicant's name and mailing address (Full name, no initials) Philip Warren, P.Eng., PMP Defence Construction Canada Constitution Square, Suite 1720 350 Albert Street Ottawa, ON K1A 0K5	Fax no. 613-998-0468 Telephone no. 613-998-7288
2. Head office address Same as above.	Fax no. Same as above. Telephone no. Same as above.

Field supervisor	Radio telephone	E-mail address	Telephone no.
Field supervisor has not yet been determined. In the interim, please contact Philip Warren.		Philip.Warren@dcc-cdc.gc.ca	

RECEIVED OCT 20 2005

3. Other personnel (subcontractor, contractors, company staff, etc.)
The contract for the work has not yet been awarded, therefore the names of the contractors, subcontractors, etc, are not yet available.

TOTAL - 40-60 people

4. Qualifications

Refer to Section 21 of the Territorial Land Use Regulations
a(i) ☐ a(ii) ☐ a(iii) ☐ b X c ☐

No(s) exploration permit mineral claims (if applicable)

5. a) Summary of operation (Describe purpose, nature and location of all activities.)
Refer to Section 22(2)(b) of the Territorial Land Use Regulations (Use last page of form if necessary.)

The clean up of the CAM-5 site includes demolition of existing facilities, remediation of the existing landfills, construction of two new landfills, excavation of contaminated soils, removal of surface debris around the site and grading and restoration of the site to as natural a state as practical. Please see the drawings in Appendix A for the locations of the construction site activities.

b) Please indicate if a camp is to be set up (Use last page to provide details.)

A construction camp will be set up at the site; however, the exact location has not yet been determined. The camps are typically set up in areas of previous ground disturbance that are free of contaminated soils. The camp will be able to accommodate up to 60 people, with an average of 50 people on site at a time. Peak time for maximum number of people on site is mid-July to the end of August. Water for the camp will be pumped into a truck equipped with a holding tank from the water supply lake and transferred to a tank at the camp area. All water intake hoses will be equipped with screens with a mesh size of 2.5 millimetres or less to prevent the intake of fish. As a minimum, the camp sewage will be directed to a two-cell lagoon situated a minimum of 100 metres from the camp, any natural drainage course and water bodies that support aquatic life. Greywater from camp operations will also be discharged into the sewage lagoon. Domestic garbage will be incinerated in an enclosed container and the residual waste buried in the Non-Hazardous Waste Landfill. All excess fuels, camp equipment and facilities will be removed from the site after completion of the clean up activities. Any hazardous wastes encountered during the clean up operations will be packaged and stored according to TDG Regulations prior to shipment to a southern disposal facility. Waste oil is included as hazardous waste and will be treated appropriately.

6. Summary of potential environmental and resource impacts
(Describe the effects of the proposed program on land, water, flora and fauna and related socio-economic areas.)

Canada

APPLICATION FOR LAND USE PERMIT

2	bed truck	
1	vacuum truck – wet	
1	scissor neck trailer w/ pin on flip up roll	
1	40' oilfield float trailer	
1	Vibratory drum packer (self-propelled)	Compaction Equipment
1	815 wheeled packer with blade (self-propelled)	
1	Enviro-tank (2800 L) – skidded	Fuel Tanks and Pumps
2	Day fuel tank (500 L) – w/ forklift skid	
2	Non-potable water tank (1900 L) – unlined, forklift skid	
3	Utility pump – 5 HP x 2" gas engine	
1	Camp accommodations	Camp Facilities
1	mechanics shop & parts storage (45' van)	
2	Potable water hauling truck (11,400 L)	
1	Potable water pump – 5 HP x 2" gas engine	
1	Water treatment Plant c/w 3000 gal reservoir & stand-by fire pump	
3	camp power generators	
1	Air Hammer drill	Drills
1	Oxy-acetyline torch set	Miscellaneous Equipment
1	survey equipment	
1	hydraulic shears (jaws of life)	
1	hot water steam washer – gas powered	
1	Herman Nelson – wheeled (front-light)	
1	banding machine c/w tools, clips & banding	
50	9 kg A-B-C Dry Chem Fire extinguishers	
1	110 kg wheeled Dry Chem A-B-C Fire Extinguisher	
1	Fertilizer Spreader	
2	HEPA vacuum cleaner w/ filters	
2	Haz-mat Filter pump (5 & 25 micron filters)	
2	portable toilet facilities	
1	portable 5000W diesel generator	
1	portable 6600W diesel generator	
4	19 cubic metre dumpster bin	
4	4' x 4' stacking garbage bin – skidded for forklift	
2	Haz-may sorting bins 10' x 20'	
2	light plant, trailer mounted	
6	large spill kits (overpack barrels)	
4	small spill kits (quick response man-pack)	
1	150 ft floating boom	
	assorted PPE & CPC	

	assorted PPE & CPC
	assorted sorbent pads, socks, and absorbent materials (floor-dry)

Canada

(Use separate pages if necessary.)

See Sections 6.0 and 7.0 of the Project Description for a description of the environment and the potential environmental and resource impacts.

7. Proposed restoration plans (Please use last page if required.)

The DEW Line Clean Up Project is essentially a restoration project. For final abandonment and decommissioning plans, see Section 10 of the Project Description

8. Other rights, licences or permits related to this permit application (mineral claims, Yukon timber permits, water licences, etc.)

A water use license from the Nunavut Water Board has been applied for. A quarry permit application from Indian and Northern Affairs Canada is also attached.

Roads ☐ Is this to be a pioneered road? Provide details on back page

X Has the route been laid out or ground truthed? - see attached drawings

9. Proposed disposal methods

a) Garbage: Garbage will be incinerated and the residual materials will be buried in the Non-Hazardous Waste Landfill.	b) Sewage (Sanitary and grey water): Sewage and greywater will be discharge into a 2-cell lagoon and the effluent tested prior to discharge. The remaining settle solids will be buried on-site.
c) Brushed & trees: N/A	d) Overburden (Organic soils, waste material, etc.): Overburden will be stockpiled for use in grading and contouring of the site.

10. Equipment (includes drills, pumps, etc.) - NOTE: The equipment list is based on the list provided for a similar DEW Line site and is approximate only. The equipment list will be updated once the contract has been awarded.

Number	Type	Proposed use
5	Crew Cab	Light Trucks and Misc. Transport
1	40 Passenger Bus	
4	ATV	
3	ATV Trailer	
1	Truck c/w Portable Welder	
1	Fuel Truck	
1	Hitachi 300 Excavator w/ shear, chuck blade, wrist& twist digging and clean-up bucket	Excavators
1	Wheeled Backhoe w/sorting rake	
1	Hitachi 300 LC Excavator w/ digging & clean-up bucket	
1	TD25 Cat – c/w ripper and tilling shanks	Crawler Tractors and Dozers
1	D6D Cat – c/w winch	
1	D6M – c/w 8 way, manual steer, winch	
1	D3C Cat – c/w back-hoe attachment	
1	IT38G w/ material handling arms, q.c. bucket, forks	Loaders
1	966D Cat Loader w/ q.c. bucket, forks, ISO forks	
1	IT28 (or equal w/ q.c. bucket, forks	
5	D25E – Articulated rock truck	Rock Trucks and Haul Units

Canada

APPLICATION FOR LAND USE PERMIT

11. Fuels	Quantity
Diesel	502,000 L
Gasoline	25,000 L
Aviation Fuel	n/a
Propane	n/a
Other	n/a

12. Containment fuel spill contingency plans (Please attach separate contingency plan if necessary.)

See Section 9.0 of the Project Description.

13. Methods of fuel transfer (To other tanks, vehicles, etc.)

Fuel will be transferred using pumps from the storage tanks either directly to the vehicle/equipment or via the fuel truck.

14. Period of operation (Includes time to cover all phases of project work applied for including restoration.)

It is anticipated the clean up will require 4 years to complete, with the work being completed in the summer months of June to September only.

15. Period of permit (Up to two years, with maximum of one year extension) Start date 2006/03/01 Completion date 2010/03/31

16. Location of activities by map coordinates (Attached maps and sketches.) See Drawings in Appendix A.

Minimum Latitude Degrees 68	Minutes 17
Maximum Latitude Degrees 85	Minutes 07

Map sheet no: 47B

17. Applicant (Print full name) Eva Schulz	Signature	Date Aug 31/05

18. Fees

☐ Class A - $150 ☐ Class B - $150 $150.00

Land Use Fees:		
	Less than or equal to 2 hectares	$50.00 $50.00
	For each additional hectare over 2 hectares or portion of a hectare	x $50.00 = $
	Total application and land use fees	$

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19. Calculation of area involved (Includes access, staging areas, airstrips, campsites, etc.)

Total area (ha)	Less than or equal to 2 hectares	TOTAL (For fee calculations)

20. Application checklist

Canada

Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

APPLICATION FOR LAND USE PERMIT

a) ☐ Application signed and dated	e) ☐ Screening report
b) ☐ Fees attached	f) ☐ Timber permit applied for – Yukon
c) ☐ Map included	g) ☐ Fees attached
d) ☐ Address and telephone number	h) ☐ Lease applied for

Accepted by:	Date
Remarks (Please use last page if additional space is required.)	

21. Additional information (Attach additional pages if necessary.)

Canada

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

APPLICATION FOR QUARRYING PERMIT
DEMANDE DE PERMIS POUR L'EXPLOITATION D'UNE CARRIÈRE

NAME - NOM : Phil Warren, P.Eng., PMP
OCCUPATION - PROFESSION : Environmental Officer
EMPLOYER - EMPLOYEUR : Defence Construction Canada Ltd.

I hereby apply for a Quarrying Permit for the purpose of taking:
Je demande un permis pour l'exploitation d'une carrière afin d'extraire :

142,000 cubic metres of - metres cubes de gravel
_____ cubic metres of - metres cubes de _____
_____ cubic metres of - metres cubes de _____

FROM - DE : (Location of Pit - Emplacement de la carrière) : A summary table is provided at the end of the document. Locations are shown on the drawings in Appendix A.

NTS MAP SHEET # - N° de la carte SNRC 47B

Co-ordinates - Coordonnées : 68° 17' N, 85° 07' W

1. Is any part of the land occupied? And if so, by whom and for what purpose?
   Est-ce qu'une partie des terres est occupée? Si oui, par qui et à quelles fins?

   The land is not occupied.

2. The only buildings or other improvements on the said lands are as follows:
   Bâtiments construits sur le site ou aux autres améliorations prévues:

   (A) Nature of improvements - Nature de améliorations: N/A
   (B) Value of improvements - Valeur des améliorations: N/A
   (C) Owner of improvements - Propriétaire des améliorations: N/A

3. The land is/is not wooded. (If wooded, describe species of trees and approximate size.)
   Les terres sont/ne sont pas boisées (Si elles sont boisées, décrire les espèces d'arbres et leur taille approximative.)

   The land is not wooded.

4. The attached plan is a sketch plan of the said land as required by the Territorial Quarrying Regulations.
   Un plan des terres susmentionnées est joint à la présente demande conformément au *Règlement sur l'exploitation de carrière s territoriales*.

Canada

Indian and Northern Affairs Canada

Affaires indiennes et du Nord Canada

I enclose the required fees as indicated below:
J'inclus les droits de permis indiqués ci-dessous:

QUARRY PERMIT FEE
DROITS DU PERMIS D'EXPLOITATION.....$150.00 TOTAL $ N/A

ROYALTIES ON SAND, GRAVEL LOAM
REDEVANCES SUR LE SABLE, LE GRAVIER
ET LA TERRE BLANCHE
Per cubic metre - Par mètre cube : ..... $1.50 TOTAL $ N/A

ROYALTIES ON OTHER BUILDING MATERIALS
REDEVANCES SUR LES AUTRES MATÉRIAUX DE CONSTRUCTION
Per cubic metre - Par mètre cube : ..... $1.25 TOTAL $ N/A

TOTAL FEES - COÛTS TOTAUX: $ N/A

DATE: Aug. 31/05
SIGNATURE OF APPLICANT - SIGNATURE DU DEMANDEUR:

Summary of Required Borrow Materials at CAM-5

Borrow Area	Required Granular Materials (cubic metres)
#1	40,000
#2	10,000
#3	50,000
#4	7,000
#5	1,600
#6	600
#7	6,000
#8	2,600
#9	2,000
#10	22,000
TOTAL	**142,000**

Canada

7.0 Identification of Environmental Impacts

An environmental assessment of the clean up of CAM-5 was completed in 1998. As part of this assessment, potential interactions between the project components and the environment were identified. The focus of the assessment was on the location, sensitivity, seasonal presence and abundance of these components. Through this assessment, Valued Ecosystem Components (VECs) were identified, which can include physical, biological, socio-economic, historical or cultural components. An update to the assessment is provided in the following sections.

7.1 Valued Ecosystem Components

Valued Ecosystem Components (VECs) are selected as components of the environment that are valued by society and are used as the basis of the environmental assessment. Potential environmental concerns associated with the project were identified through consultations with interested and expert parties, community meetings and previous project experience. The following VECs were identified.

Physical: Protection of permafrost soils, and surface water, especially related to the drinking water supply.

Biological: Tundra habitat including feeding and nesting areas for birds, feeding and calving areas for local wildlife, and local vegetation.

Socio-economic: Regional employment opportunities, regional business opportunities, regional training opportunities, and hunting and fishing in local areas.

Archaeological, Historical and Cultural: Archaeological sites identified around the station.

7.2 Impact of the Environment on the Project

The implementation of a clean up project in an Arctic environment such as CAM-5 brings unique logistical issues. The potential exists for delays in the clean up associated with bad weather, which may include work stoppage on-site or delays in the transportation to and from the site of personnel and supplies. Conditions related to the Arctic climate, such as ice and frozen ground may also delay clean up activities. Clean up activities which are best completed at maximum thaw may be delayed depending on seasonal climate changes.

The Department of National Defence (DND) and Nunavut Tunngavik Incorporated (NTI) signed the DND/NTI Agreement for the Clean Up and Restoration of the DEW Line sites within the Nunavut Settlement Area outlining the economic provisions. The agreement includes a Minimum Inuit Content (MIC) for the clean up contract and requirements for training, specifically related to the clean up activities. Generally, the contracts for the clean up of the DEW Line sites include clauses requiring the contractor to maximize Inuit involvement. Inuit involvement in the clean up will include both employment and business (contracting) opportunities.

Typically, labour required for the clean up includes heavy equipment operators, general labourers, as well as environmental and engineering specialists. Other opportunities include cleaning and cooking staff and transportation. The main beneficiaries of the economic input from the clean up will primarily affect the communities of Hall Beach, Igloolik and Kugaaruk. As the contract for the clean up of CAM-5 has not yet been tendered or awarded, the requirements of the communities are not confirmed. A temporary, self-sufficient construction camp will be established at the site to accommodate the contractor and other personnel.

Identification of Cumulative Environmental Effects

Cumulative effects have been defined as changes to the biophysical, social, cultural or economic environments caused by a project component in combination with any on-going, past or future activities. Cumulative effects can occur as interactions between project components (either from the same or more than one site) and/or between environmental components. Effects can occur in one of four ways:

- Physical or chemical transport mechanisms.
- "Nibbling loss" (i.e., gradual disturbance).
- Spatial or temporal crowding.
- Growth induction initiated by the project.

7.3.1 Analysis of Cumulative Environmental Effects

Four steps in the analysis of the cumulative environmental effects of this project include scoping, analysis of effects, mitigation measures, and significance.

Scoping: Scoping includes the identification of issues of potential concern, VECs that could be affected, and boundary setting. The activities considered include the operation of the CAM-5A North Warning System Short Range Radar site approximately 25 km north of the site.

The spatial boundaries include impacts over a larger (regional) area including the crossing of jurisdictional boundaries. As the landfills will remain on site, temporal boundaries extend beyond the time frame required to complete the clean up work

Analysis of Effects: The analysis includes an evaluation of baseline data and possible effects on VECs. The combined interactions between the clean up activities and future land use and those VECs which are similar, are identified.

Mitigation Measures: Mitigation measures are identified for project-environment interactions.

Significance: The interactions are defined as having a low (L), moderate (M), or high (H) probability of occurring. The next step is to determine the likelihood of significant adverse effects, taking into account appropriate mitigation measures.

7.4 Identification of Mitigation Measures and Residual Impacts

Mitigation measures were identified that would result in a reduction or elimination of likely environmental effects, including potential adverse effects, associated with the clean up. Mitigation measures are outlined in the EPP for CAM-5 (see Section 8.0). The EPP forms part of the contract documents and requires all on-site personnel to adhere to the mitigation measures outlined in the EPP.

Table 13 provides a summary of the VECs, potential impacts, mitigation measures and overall significance.

3.0 Project Planning

3.1 Rationale for the Project and Primary Goals

The process of biomagnification is defined as positively sloped variation in concentrations through increasingly higher trophic levels of the food chain. The process of biomagnification is particularly important in Arctic organisms, where, as a result of their dependency on a high fat content in their diets, are extremely sensitive to contamination inputs, especially chlorinated contaminants such as PCBs. Given the nature of the Arctic ecosystems, it is important that past anthropogenic activities, such as the operation of the DEW Line, no continue to cause any significant adverse effects on any one level of the Arctic food chain. Specifically:

- The limited availability of species at any given trophic level leaves little opportunity for another species to offset the effects of a loss of another.
- Negative biological effects (i.e., plant loss) may lead to physical disturbances, such as damage to permafrost.
- These unmanned sites pose a risk to human and animal health and safety through the presence of physical hazards.

The aim of the DLCU Project is to decommission those facilities used by the former DEW Line which have been declared surplus to the requirements of the North Warning System and to restore the sites to an environmentally safe condition. Environmental restoration includes setting remediation objectives that are designed to preclude migration of contamination (and hence biomagnification) into the Arctic ecosystem/food chain. To accomplish this, remediation will include:

- The excavation of soils in cases where parameters exceed those that have been set for the project (i.e., believed to cause significant input into the lower levels of the food chain, for example, plants and detritus); and
- The remediation of landfills, which may serve as a source of water contamination and may enter the lower levels of the marine food chain (i.e., algae).

3.2 Evaluation of Alternatives to the Project

As a project strictly dedicated to the clean up of these military establishments, the range of alternatives to this project is limited. Three alternatives to the clean up of these sites can be identified. The three alternatives are as follows:

Commercial or other Government use of the facilities: This alternative involves the sale of those facilities no longer required by the Department of National Defence to commercial interests. Two possibilities are present, namely on-site commercial development or sale of the capital assets themselves and movement off-site.

No clean up action (Null alternative): The second alternative involved examining the environmental impact of maintaining the status quo at the sites. It was quickly realized that failure to address the environmental problems identified during the site investigations could lead to the following:

- Placing the Arctic environment/food chain at risk;
- Possible future legal liabilities for the federal government; and
- Greater clean up costs in the future.

DEW Line Clean Up: This alternative involves cleaning up the sites to the criteria in the DEW Line Clean Up Protocol as agreed to in the DND-NTI Cooperation Agreement, Environmental Provisions. The clean up includes removal of contaminated soil, remediation of landfills, removal of debris, demolition of surplus

buildings and facilities and grading of the site to as natural a state as practical. The clean up objectives in the agreement are considered to be protective of human health and the environment. As such, this is the chosen clean up alternative.

3.3 DEW Line Clean Up Protocol

The purpose of the DEW Line Clean Up Project is to:

- Demolish and remove existing facilities that are not required for the operation of the North Warning System;
- Remove contaminated soils from contact with the Arctic food chain;
- Stabilize existing landfills;
- Clean up surface debris; and
- Physically restore the site to as natural a state as practical.

3.3.1 Protocol Development

In cooperation with several federal departments and the Government of the Northwest Territories, DND initially drafted the General Protocol for DEW Line Clean Up in 1991. This protocol served as the basis for the DND/NTI Agreement on environmental provisions for the clean up of these sites (see Appendix B). At the time of implementation, there were no established environmental standards for the Arctic. As a result, existing federal guidelines, such as the Interim Canadian Environmental Quality Criteria for Contaminated Sites (1991) were modified to reflect both the sensitivity of the Arctic food chain to ecological processes such as biomagnification and the close dependence of the Inuit on the land for food. In addition, a barrel specific protocol was prepared that outlines the process for dealing with barrels and barrel contents found on the DEW Line sites.

3.3.2 Criteria

The protocol outlined in the DND/NTI Agreement was developed from the results of the biophysical, socio-economic, and engineering site assessments, mediated through the DND/NTI Environmental Working Group – EWG. The DLCU Protocol documents contaminant clean up criteria and specific physical actions that are to be undertaken, which are specific to the DEW Line sites. These criteria were developed based on existing federal and territorial criteria in conjunction with studies that show the functional relationships and/or pathways for biological uptakes from soil. The resulting protocol defines two concentration tiers of soil contamination. Soil substrates containing Tier I concentrations may be placed in an appropriate on-site landfill while those soils in excess of the Tier II standard are to be disposed of in a manner that provides additional measures to permanently segregate these contaminants from the Arctic ecosystem. Soils exceeding federal legislative limits (i.e., Canadian Environmental Protection Act and Chlorobiphenyl Regulations) will be disposed of off-site at a licensed disposal facility.

3.3.3 Environmental Working Group

In 1997, the Department of National Defence and Nunavut Tunngavik Incorporated (NTI) agreed to form an Environmental Working Group (EWG). The EWG is comprised of scientific and technical experts representing both the Inuit (NTI) and DND. The purpose of the EWG is to examine environmental issues related to the DLCU project and to provide recommendations to a joint DND/NTI core group consisting of senior management from both organizations. Specific tasks that have been assigned to the EWG include:

- Development of a landfill risk evaluation matrix;
- Evaluation of, and recommendations for, a post-construction/remediation landfill monitoring program;
- Identification of hydrocarbon clean up requirements;

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- Establishment of confirmatory testing protocols; and
- Preparation of a list of items suitable for landfilling at the DEW Line sites.

3.4 Final Investigation and Delineation

Prior to the clean up of each site, the Department of National Defence undertakes a final site assessment. The aim of the site visit is several-fold, including:

- To fully delineate the extent of contaminated areas in order to prepare accurate construction documents;
- To confirm the structural and environmental status of buildings and other facilities that are to be demolished;
- To confirm the baseline environmental conditions at the site prior to implementation;
- To examine existing landfills and identify new landfills to confirm details pertaining to the required remediation strategy; and
- To identify areas suitable for the construction of an NHW Landfill and a Tier II Soil Disposal Facility.

4.0 Public Consultation Process

As part of the DLCU project, public consultations have been carried out in communities across the north since 1992. In 1992 and 1993, teams from the Department of National Defence and other federal departments conducted a broad range of public consultation sessions to confer with the local residents about the project and to obtain input regarding specific concerns about the work.

4.1 Inclusion of Traditional Knowledge

One of the guiding principles of the DLCU project is to ensure the meaningful participation of local residents in both the planning and execution phases. One way of ensuring this is to incorporate traditional knowledge into the site clean up plans. An Inuit representative who is familiar with both the DEW Line site and traditional use of the area is chosen by the Regional Inuit Association to be on-site during the site investigation phase prior to the clean up. The Inuit representative works closely with the EWG to identify Inuit use of the area, wildlife patterns, past activities, and any information relating to dumping, hazardous waste storage, and natural occurrences. This traditional and local knowledge is used to refine clean up activities by including unknown issues or adjusting environmental protection plans.

Additionally, DND and the NTI establish a community DEW Line Clean Up committee to facilitate the flow of local knowledge to the EWG prior to and during each site visit. To accomplish this goal, the EWG visit local communities most affected by each DEW Line site and conduct one on one interviews with a number of residents, the Hamlet Administrative Officer and/or Mayor, the local Hunters and Trappers Association and other relevant community organizations.

4.2 Initial Public Consultation

DND tried to integrate the views of all interested stakeholders, including individuals or groups, into the decision-making process for the DLCU Project. The approach to public involvement in environmental assessments for this project included two major elements: adequate public notification and appropriate public consultation.

Public consultation has been used to involve the public in the environmental assessment process through dialogue between northern residents and the project representatives. This dialogue has proved useful in identifying public concerns, needs and values before final decisions on courses of action were made.

The purpose of public notification is to provide information regarding community meetings, environmental assessment results, site activities and upcoming decisions. Public notification has been used mainly for notifying the public of the results of previous environmental assessments and cleanup plans.

Public consultation meetings were held in those communities in the vicinity of the DEW Line sites. Briefings to government officials were also held in Iqaluit, Cambridge Bay and Yellowknife. Advertisements and information packages were provided in English as well as Inuktitut. Minutes were recorded at each of the meetings and action items passed on to the responsible agencies.

Various communities were visited in 1992, 1993 and 1994 as part of the public consultation program. The primary objectives of the initial meetings were to:

- Provide general information to the community regarding the status and schedule for the project;
- Provide information regarding the process for closure and clean up of the DEW Line;
- Present environmental information regarding the demolition/disposal of facilities;

- Obtain information regarding public concerns through discussions at the meetings and through questionnaires; and
- Obtain information regarding local labour and contracting capabilities to assist in developing implementation strategies.

4.2.1 2000 Site Investigation

In the summer of 2000 during the delineation investigations for CAM-5, further consultation was conducted to ensure local knowledge was collected and incorporated into the final delineation investigations. Local knowledge is important for uncovering location(s) of contamination that had not been previously assessed, as well as information required for completing the Landfill Risk Evaluation Matrix for each landfill site. Involvement of the local community and Inuit representation (NTI) included discussions with long time residents and community officials, including Hamlet Assistant Senior Administrative Officer and Chairman of Hunters and Trappers Association; and a site visit by an NTI technical representative with a local community representative.

The NTI technical representative and the local representative were on site during portions of the site investigation. During this time, the NTI representative was able to observe the site and note any technical concerns that may have been overlooked by the site investigation team. The local community was able to provide much information on past disposal practices. Concerns and comments were gathered and incorporated into the delineation investigation plans and the clean up plans. Sections of a report pertaining to the detailed observations of the NTI while on-site at CAM-5 are provided in Appendix C.

4.2.2 2005 Pre-Construction Consultation

Public consultation meetings regarding the clean up program were held in the communities of Hall Beach and Kugaaruk in April 2005. Another meeting was scheduled for Igloolik at the same time; however, due to weather conditions, the meeting was cancelled. There are plans to complete the meeting in Igloolik in December 2005.

The April meetings included a presentation of the proposed clean up plans and design, as well as a question and answer period in which the community's issues and concerns were addressed. Copies of the presentation and question and answers are in Appendix C.

4.3 DND/NTI Project Review Committee

As part of the Agreement between the Department of National Defence and Nunavut Tunngavik Incorporated (Appendix B), there are regularly scheduled meetings between these two organizations. These meetings, which involve senior management from both organizations, are designed to provide a regular forum to discuss the clean up program within the Nunavut Settlement Area and to resolve concerns relating to environmental and/or socio-economic issues.

1.0 Site Description

1.1 Location

CAM-5 is one of the 21 Department of National Defence (DND) DEW Line sites to be cleaned up as part of the DEW Line Clean Up (DLCU) Project. An NTS map segment is included in Appendix A showing the location of the CAM 5 site, as well as the property boundaries and land ownership.

CAM-5 (68° 17' N, 85° 07' W) is located on the western shore of Melville Peninsula in the Committee Bay area of the Nunavut Territory. The station is approximately 7 km inland from the west side of the peninsula. The upper site includes the module train, warehouse, garage, storage areas and POL storage facilities. The lower site area includes the airstrip facilities, an air terminal building, storage areas, and POL storage facilities.

1.2 History

The CAM-5 site was constructed in the 1950's as part of the Distant Early Warning (DEW) Line, which provided radar surveillance of the northern approaches to North America. In March 1985, Canada and the United States agreed to modernize the North American Air Defence System by closing the remaining 21 DND DEW Line sites by the early 1990's, and build the North Warning System (NWS).

In 1992, the DEW Line Clean Up Protocol was developed by the Environmental Sciences Group (ESG) of the Royal Military College of Canada and was reviewed and approved by federal and territorial environmental officials. The protocol includes procedures for dealing with contaminated soil, waste oil, landfills, wastewater, debris and hazardous materials. In 1998, the Environmental Provisions of the Cooperation Agreement between DND and Nunavut Tunngavik Incorporated (NTI) were implemented to provide the approach necessary to restore the sites to an environmentally safe condition and prevent the migration of contaminants into the Arctic food chain.

1.3 Project Activities

The purpose of the proposed project is to provide remedy for previous activities that occurred as a result of the operation of the former DEW Line site. Specifically, the clean up is to prevent the release of physical debris and/or contaminants into the environment.

In general, during the construction phase of the clean up, existing facilities no longer required for the operation of the NWS will be demolished. The demolition wastes will be segregated into hazardous and non-hazardous materials and disposed of appropriately. Contaminated soils identified during the previous field investigations will be excavated and properly disposed of in on-site engineered landfills or at off-site facilities if characterized as hazardous. Scattered surface debris and partially buried debris on-site will also be collected and disposed of. New landfills will be constructed to contain the non-hazardous contaminated soil and demolition waste generated during the clean up. Existing landfills at the site will be remediated, as required. Disturbed areas will be physically restored to a stable condition shaped to match the existing terrain. A detailed work program is provided in Section 5.

1.4 Schedule

CAM-5 underwent detailed site investigations in 2000 and 2002, and is scheduled for clean up beginning in 2006 as part of the DLCU project, with completion expected in 2010. The contractor will mobilize to the site in August 2006, by cat-train or airlift and set up a temporary construction camp. Clean up activities are expected to continue through to 2010, depending on the contractors' approach and weather

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conditions. The expected duration of annual clean up activities on site will generally be from July to October. During the winter months, work will cease and equipment and facilities on site will be winterized. It is expected the contractors' workforce and accessory pereonnel will mobilize to and from the site from nearby northern communities. Completion of the clean up and demobilization of the contractors' facilities and equipment is anticipated for October 2010. Long-term monitoring of the landfills will begin upon completion of the clean up (2010) and will continue for a 25-year period. After 25 years, the monitoring requirements will be re-evaluated.

NWB Manager of Licensing

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Sent: Thursday, November 10, 2005 4:08 PM

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Cc: 'Steve Lines'; 'Gladys Joudrey'; 'Karlette Tunaley'; 'Carolanne Inglis'; 'Jorgen Komak'; 'Stephanie Briscoe'

Subject: NIRB#: 05DN122-CAM-5

Please review and respond by: December 1, 2005

Thank you

Sylvia Novoligak
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