P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369

ᓄᓇᕗᑦ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑦ
NUNAVUT IMALIRIYIN KATIMAYINGI
NUNAVUT WATER BOARD
OFFICE DES EAUX DU NUNAVUT

NWB: 3BC-ERK----

November 26, 2009

Col. R.C. Baker
Department of National Defence
1 Canadian Air Division
A4 Construction Engineering
P.O. Box 17000 Stn Forces
Winnipeg, MB R3J 3Y5
Email: Raymond.baker@forces.gc.ca

Re: New Application Acknowledgement for the Eureka Project

Dear Col. Baker:

The Nunavut Water Board ("NWB") acknowledges receipt on November 16, 2009 of your new water license application for the Eureka Project, file number 3BC-ERK----.

We undertook a preliminary administrative review of your application and conclude that, in accordance with approved legislation under the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* ("NLCA"), it does not contain sufficient information for the NWB to commence processing the file at this time. Specifically, we are asking you to provide the following:….

- Full co-ordinates of undertaking in degrees, minutes, seconds
- Site map with labeled facilities and contours and proximity to water bodies
- Implementation schedule for the undertakings if the applicant intends to carry out the remediation activities recommended in the Characterization of Contaminated Sites Final Report 2007/08.
- An engineered design drawing and photo of the lagoon
- East airstrip landfill map and photos

We will resume the processing of your application once we receive the requested information.

Please call the undersigned at (867) 360-6338 or email at licensing@nunavutwaterboard.org if you have any questions.

Sincerely,

Original signed by:

Phyllis Beaulieu
Manager of Licensing

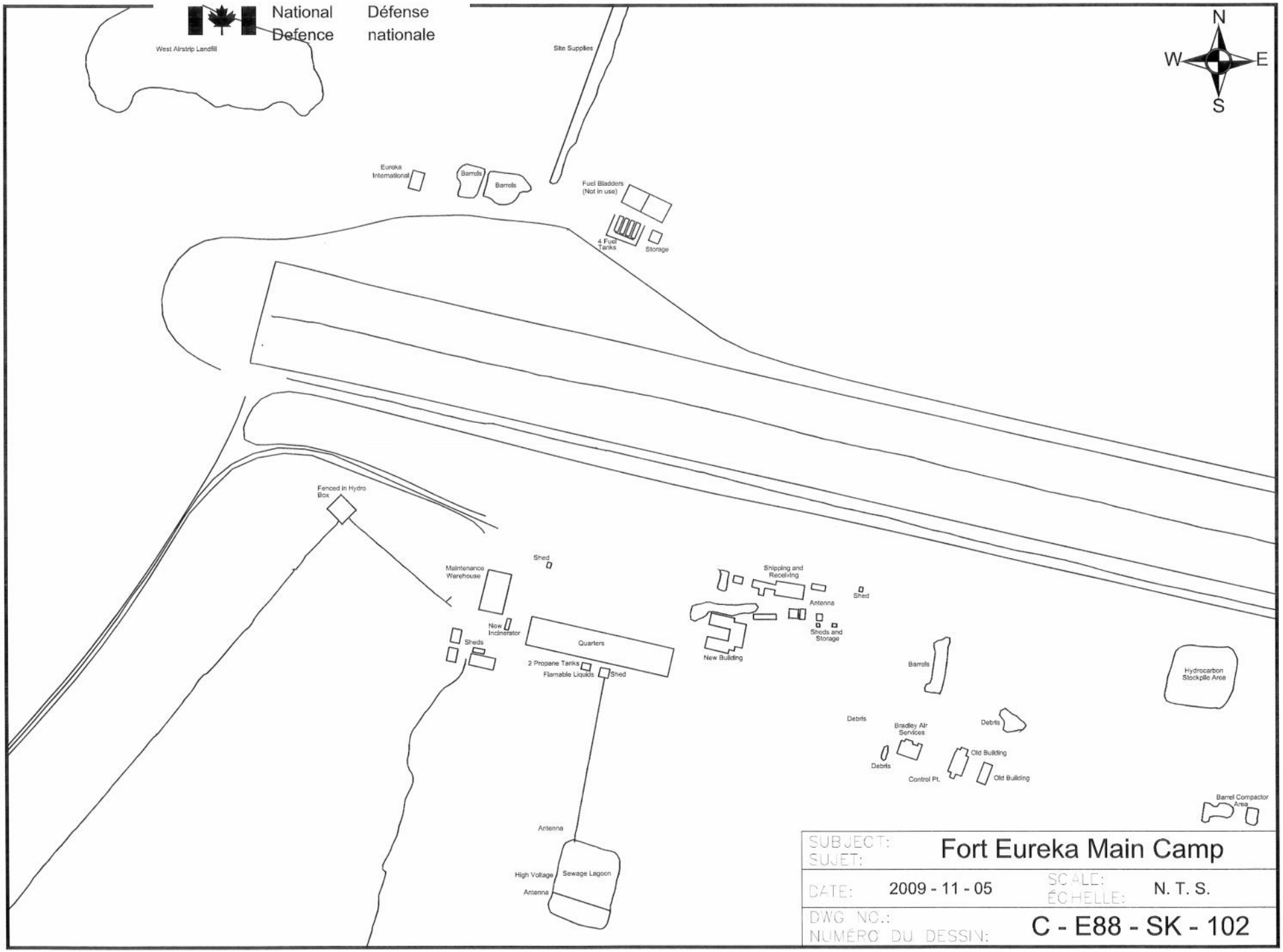
Site Coordinates

As requested, the full co-ordinates for the site are as follows:

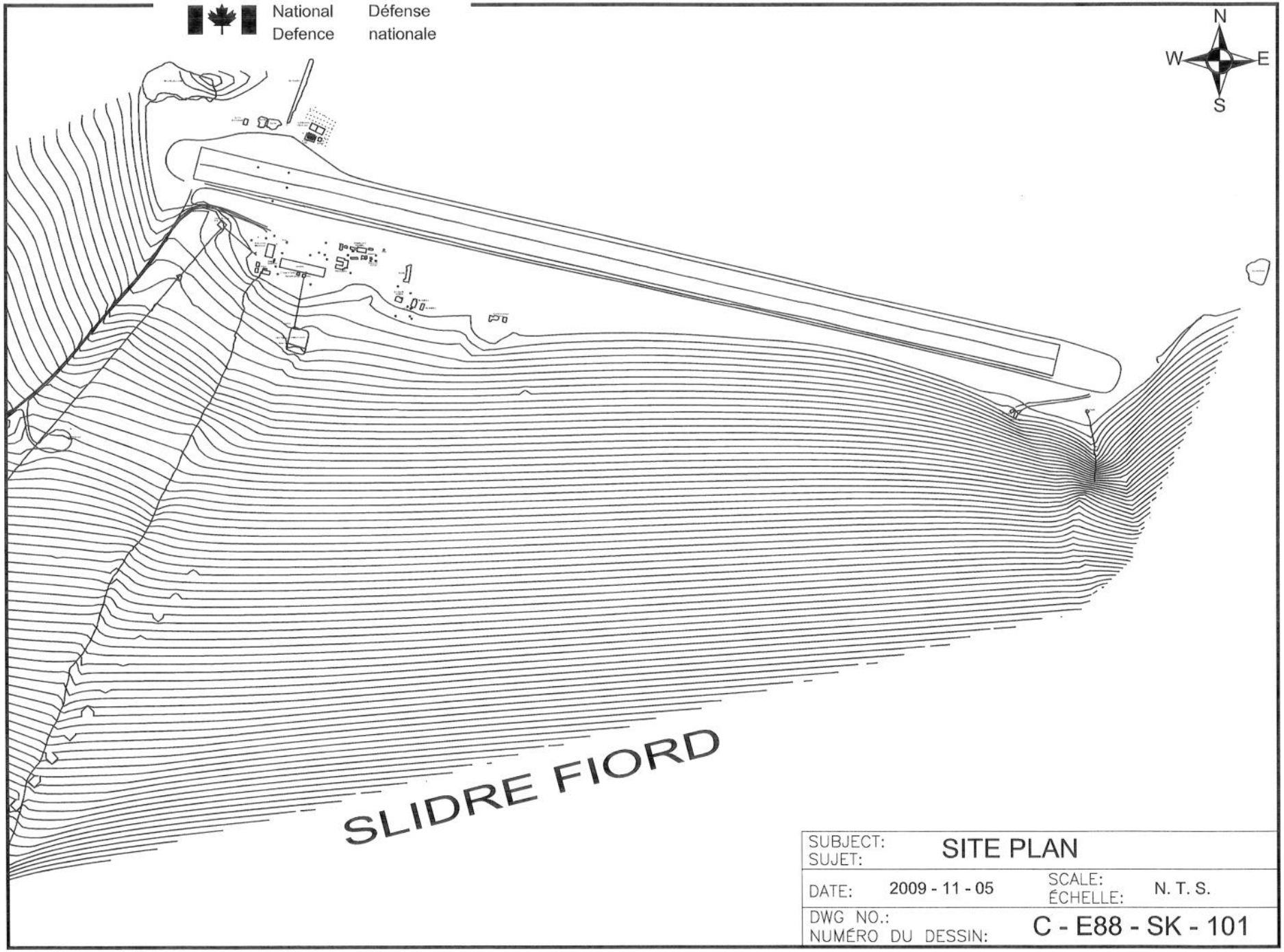
85 degrees, 56 minutes, 30 seconds Longitude
79 degrees, 59 minutes, 20 seconds Latitude

NTS Map Sheet 7940

Scale: 1:300,000


National Defence
Défense nationale
West Airstrip Landfill
Site Supplies
N
W
E
S
Eureka International
Barrels
Barrels
Fuel Bladders (Not in use)
4 Fuel Tanks
Storage
Fenced in Hydro Box
Shed
Maintenance Warehouse
New Incinerator
Sheds
Quarters
2 Propane Tanks
Flamable Liquids
Shed
Shipping and Receiving
Antenna
Shed
Sheds and Storage
New Building
Barrels
Hydrocarbon Stockpile Area
Debris
Bradley Air Services
Debris
Debris
Old Building
Control Pt.
Old Building
Barrel Compactor Area
Antenna
High Voltage
Sewage Lagoon
Antenna
SUBJECT: SUJET: Fort Eureka Main Camp
DATE: 2009 - 11 - 05
SCALE: ÉCHELLE: N. T. S.
DWG NO.: NUMÉRO DU DESSIN: C - E88 - SK - 102

National Defence / Défense nationale



SUBJECT: SUJET:	SITE PLAN
DATE: 2009 - 11 - 05	SCALE: ÉCHELLE: N. T. S.
DWG NO.: NUMÉRO DU DESSIN:	C - E88 - SK - 101

Implementation Schedule for Characterization of Contaminated Sites Final Report 2007/2008

Fort Eureka Sites

1.1 S-150 BATTERY DUMP

1.1.1 Recommendations

No heavy metal contamination above guidelines was detected in the 6 samples collected from around the Battery Dump indicating that no leaching or migration of metals is occurring. However, the Battery Dump site remains a potential source of contamination. Monitoring of the site should be performed once every 3 years to confirm that no leaching and migration of the battery contents is occurring. The site can be closed.

Response: Sampling and analytical testing of the drainage from the Battery Dump will be conducted as recommended (on a bi-annual basis in co-ordination with the requirements for monitoring and sampling of the East Airstrip Landfill).

1.2 S-10186 EAST AIRSTRIP LANDFILL

1.2.1 Recommendations

The landfill is currently active and regularly receives material. All of the samples collected adjacent to, and downgradient from, the landfill were below guidelines for all measured parameters.

The landfill is active and as such cannot be closed. The areas immediately adjacent to and downgradient from the landfill should be regularly sampled (eg. every 2 years) to verify that leachable material is not migrating from the landfill. In particular, the drainage channels originating from the landfill and adjacent areas should be sampled regularly.

Response: Sampling and analytical testing of the drainage from the landfill will be conducted as recommended (on a bi-annual basis). It should be noted that the landfill is co-locted with the landfill used by Environment Canada.

1.3 S-10187 SEWAGE LAGOON

1.3.1 Recommendations

Water from the Sewage Lagoon was found to have concentrations of copper, lead, selenium and zinc above criteria (2180, 9, 5 and 320 mg/kg, respectively). When discharge criteria were

examined, chromium (20mg/L) and copper (2180 mg/L) exceed the guidelines (10 and 200 mg/L, respectively). A total of 9 soil samples were collected from around the lagoon. Three samples were slightly above guideline for arsenic (13.4, 14.8 and 12.5 mg/kg) and 1 sample was above criteria for copper (99 mg/kg). All other samples were below criteria for all measured parameters. Three sediment samples taken from within the lagoon were above guidelines for arsenic (16.2 and 6.1 mg/kg) and copper (121 mg/kg).

Replacement of the sewage lagoon with a permanent treatment system should be considered. Until a permanent sewage treatment system is functioning, regular sampling should be performed to monitor the accumulation of heavy metals. As well, a program of regular sediment removal from the lagoon followed by proper interment into a contained landfill should be developed to mitigate the accumulation of high concentrations of heavy metals within the lagoon sediments.

Response: DND has been only a minor contributor to the Sewage lagoon which is owned and operated by Environment Canada, therefore, replacement of the lagoon is not being considered at this time.

1.4 S-10190 MAIN CAMP "THE FORT"

1.4.1 Recommendations

The fuel spills around the Old Camp were delineated during the 2007/08 sampling campaign. The location of the contaminated soil directly in front of the new camp, in a heavily trafficked area, requires that the contaminated soils be treated quickly with minimal disruption to camp activities. The most appropriate approach to treating this site would be the excavation of the contaminated soil followed by immediate backfilling to minimize thawing of the permafrost. The excavated soil should then be treated *ex situ* using a biopile system combined with nutrient amendments.

Response: Excavation of soils in the vicinity of the Main Camp "The Fort" have been conducted. A total of approximately 200 cubic metres of soil have been excavated and are stockpiled in the Hydrocarbon Stockpile Area noted on Drawing SK-102. The soil stockpile has the addition of nutrients and soil test results indicate that the levels of hydrocarbons in the soils are diminishing. It is expected that the hydrocarbon concentration in the soil piles will continue to diminish through volatilization (both through freeze-drying and through the short summer heat) and the soil be available for reuse either next year or in 2011. Testing of the soils will be conducted in 2010.

1.5 S-10525 BARREL DUMP

A series of 5 samples were taken immediately adjacent to the downgradient side of the Barrel Dump. None of the samples possessed TPH contamination above background concentrations indicating that no migration of TPH is occurring from the interred barrels.

The site appears to be stable and no migration of contamination is occurring. As there are no plans to relocate the buried barrels, this site can be closed. A monitoring program consisting of regular sampling (eg. every 3 years) could be considered to address any potential long term concerns.

Response: Sampling and analytical testing of the drainage from the landfill will be conducted as recommended (on a bi-annual basis in co-ordination with the requirements for monitoring and sampling of the East Airstrip Landfill).

1.6 S-10527 NORTH AIRSTRIP APRON

1.6.1 Recommendations

The area surrounding the existing fuel storage tanks and bladders was sampled and TPH contamination was detected in the area between the fuel tanks and the airstrip. The contamination appears to be divided into 2 to 3 areas. The majority of the contamination was TPH Fractions 1 and 2, with several sites having some or all components of BTEX above the CCME guidelines. TPH Fraction 3 and PAH (naphthalene) contamination was detected in 1 sample for each contaminant (2 samples total).

The current location of the fuel storage tanks may change, in which case treatment should be delayed until all modifications at the site are completed. This would enable a single treatment program vs. multiple smaller programs.

Addressing the contamination at this site will require careful coordination as this area is in frequent use by both light (eg. Twin Otter) and heavy (C-130 Hercules) aircraft for refueling. The most appropriate approach is the excavation of the contaminated soil followed by immediate back-filling to minimize thawing of the permafrost. The excavated soil would then be treated in an *ex situ* biopile with nutrient amendments.

Response: As indicated in the recommendation, the current location of the fuel storage tanks is in the planning stage of being moved. Upon completion of the relocation of the fuel storage tanks the above recommendation for the remediation of the site will be followed.

For the immediate future, monitoring and groundwater sampling will be conducted on a bi-annual basis in co-ordination with the requirements for monitoring and sampling of the East Airstrip Landfill.

Sewage Lagoon

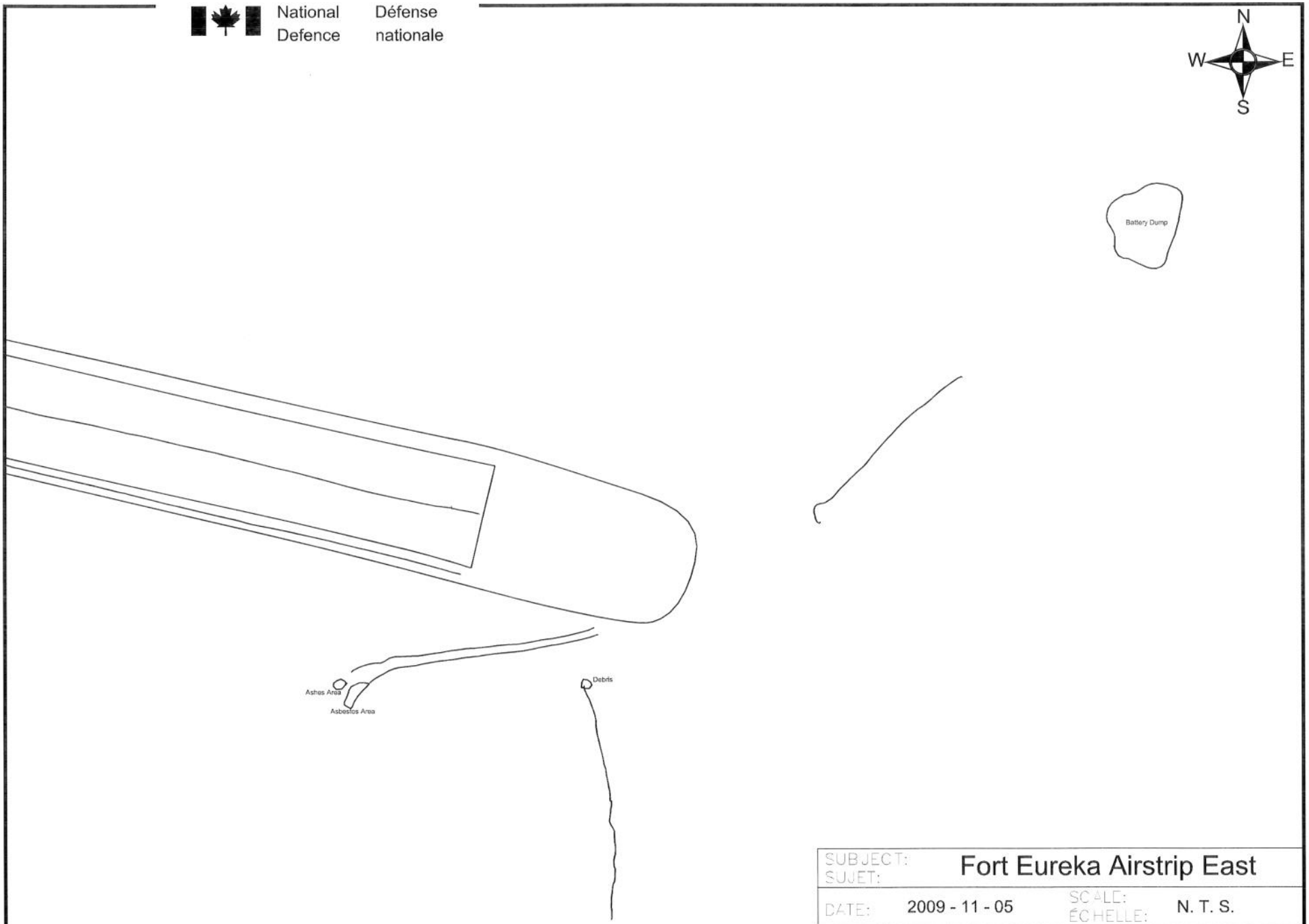
Please find following, photos of the sewage lagoon located to the south of the main quarters at Fort Eureka. DND does not have any "design drawings" on hand for said lagoon. However, following is the description of the work conducted forwarded by the military construction supervisor:

The outside perimeter walls of the lagoon were raised, widened, and reinforced using the clay and soil around the perimeter. The middle wall between the two lagoons was rebuilt and we installed an "L shape" 4" pvc pipe between the two lagoons so that when it reaches a certain level in the main lagoon, it will flow down to the secondary i.e. smaller lagoon. We also installed an overflow pipe should the secondary lagoon becomes full.

Our WFE tech indicated that it would take several years of usage with the camp being used only three months of the year to reach level where the main lagoon will flow into the secondary one.

The improvements indicated above were made to facilitate improved settling within the lagoon and to allow transfer of liquids from the first cell to the second cell of the lagoon. Once the lagoon fills, removal of liquid from the second cell will be conducted via pump and any effluent will be allowed to flow overland toward Slidre Fiord.

National Defence / Défense nationale



SUBJECT: SUJET:	Fort Eureka Airstrip East
DATE: 2009 - 11 - 05	SCALE: ÉCHELLE: N. T. S.
DWG NO.: NUMÉRO DU DESSIN:	C - E88 - SK - 103

Photograph 3. (East Airstrip Landfill, S-10186). Refuse in the active landfill.

Photograph 4. (East Airstrip Landfill, S-10186) View of the drainage channel leading from the landfill to Slidre Fiord.