

● Consulting ● Engineering ● Construction Management Services



January 21, 2002

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VIA FACSIMILE 867-360-6369

Rita Becker
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0

Dear Ms. Becker:

**RE: Site Investigation Results for PIN-3, Lady Franklin Point, as per Water Use License
NWB/FRA0101**

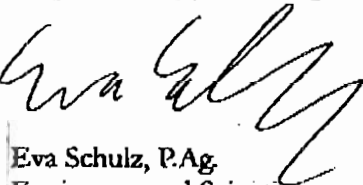
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On behalf of Defence Construction Canada Ltd. (DCC), and the Department of National Defence (DND), we are submitting a summary of the results of the 2000/01 site investigations at the PIN-3, Lady Franklin Point DEW Line Site.

As stated in the summary report submitted to Nunavut Water Board October 10, 2001, the results of the site investigation have been made available and are being forwarded to you for your reference.

Please contact the undersigned if you have any questions or require clarification.

Sincerely,

UMA ENGINEERING LTD.



Eva Schulz, P.Ag.
Environmental Scientist
eschulz@umagroup.com

EMS:elt

Encl. Site Investigation Results - Summary (English and Inuktitut)

cc: Suzanne Fontaine, DCC

***PIN-3, Lady Franklin Point
DEW Line Site
Site Investigation Results***

An environmental investigation was conducted of the former PIN-3, Lady Franklin Point DEW Line site, located on the south-western tip of Victoria Island in Nunavut. The PIN-3 site was scheduled to undergo a site investigation in 2002 and clean up in 2005. However, a fire destroyed the module train in January 2000. Because of the environmental consequences of the fire, the site investigation and clean up schedule were advanced. The investigation, conducted on behalf of the Distant Early Warning (DEW) Line Clean Up Project Management Office, was started in July 2000 and was completed in July 2001. The clean up is to commence in July 2002.

The main objective of the July 2000 site investigation was to define the lateral and vertical extent of previously identified contamination as indicated on the 1994 design submission (UMA 1994) and to investigate areas of suspected contamination (based on the findings of site investigations completed at other DEW Line sites between 1996 and 1999). Other aspects included the investigation of landfills and debris areas, and the identification and delineation of visible stains and hydrocarbon-contaminated areas. Information to be used in the hydrocarbon risk evaluation process and in the selection of the most suitable remedial technology was also obtained. Information on landfills was gathered so that their risk can be assessed on a case-by-case basis. Water (including groundwater and surface water) samples were collected from (1) contaminated areas (to help determine the mobility of soil contaminants) and (2) the water supply lake (to measure drinking water quality). Paint, concrete, and insulation samples collected from the site were analyzed to determine the levels of: lead in paint on various surfaces, polychlorinated biphenyls (PCBs) in the paint and concrete, and asbestos in the insulation.

The DEW Line Cleanup Protocol as it appears in the Cooperation Agreement between the Department of National Defence (DND) and Nunavut Tunngavik Incorporated (NTI) (DGE 1998a) was used as the basis for cleanup recommendations for PIN-3. The protocol includes a set of guidelines for evaluating PCBs and inorganic elements in soil (the DEW Line Cleanup Criteria (DCC)), and it recommends options for dealing with contaminated soil (defined as Tier I or Tier II). Petroleum hydrocarbon contamination was evaluated using the Government of Northwest Territories criterion that commercial and industrial sites should not exceed 2500 parts per million (ppm) total petroleum hydrocarbons (TPH). Hydrocarbon contamination has two classifications: Type A, which consists primarily of lubricating oil and grease, and Type B, which consists mainly of fuel oil. The site investigation involved the following procedures:

- soil sampling from 21 areas of PIN-3 suspected or known to contain PCBs, inorganic elements, and/or petroleum hydrocarbons (measured as TPH);
- additional soil sampling from off-site locations to define background levels for the analytes;
- investigating four landfills and several buried and scattered debris areas;
- collecting surface and/or groundwater samples from the water supply lake, monitoring wells, any water bodies adjacent to suspected contaminated soil, and

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from the sewage lagoon and treatment ponds located to the east and west of the module train.

- collecting paint, concrete and insulation samples from structures likely to be demolished as part of the cleanup program; and
- collecting ash and debris samples from the remains of the module train to provide the information necessary for selecting an appropriate disposal option for this material.

During 2000 and 2001, 3360 soil samples as well as 24 background soil and water samples, 55 water samples, 61 paint samples, 9 concrete samples, and 8 samples of ash and debris were collected at PIN-3.

Soil contamination is most extensive in the vicinity of the station, and remediation is required in seven locations: the garage, diesel refuelling area, station POL pad, module train, sewage outfall and warehouse. The delineated soil contamination is present as one of the following: i) Tier I inorganic elements and/or PCBs, ii) Tier II inorganic elements and/or PCBs, iii) Type A hydrocarbons, iv) Type B hydrocarbons, or v) Tier II inorganic elements with Type A hydrocarbons.

Soil remediation is required in several other areas of the site. In the airstrip area, contamination was delineated at the hangar, and was present as each of the following: i) Tier I and Tier II inorganic elements with PCBs, ii) Tier I PCBs with Type A hydrocarbons, or iii) Type B hydrocarbons. In the south beach area, Tier I lead and Type B hydrocarbons were delineated at the POL pad and Type A hydrocarbons were delineated at the beach pallet line. A Type A hydrocarbon stain at the north beach and a Tier II area at the antenna on the west beach were also detected. North of the station, the pallet line (Tier II PCBs, Type A hydrocarbons) and the former HAZMAT storage area (Tier I inorganic elements, Tier II PCBs, Type A hydrocarbons) were delineated. West of the station, an open storage area and associated building pad were delineated for Tier I and Tier II PCBs.

Contamination requiring remediation is also present in several landfill areas. Tier II inorganic element contamination was found at the northeast debris area and north debris area #2. At the main landfill, contamination detected included Tier I PCBs, Tier II inorganic elements, and Type A hydrocarbons. At the North Warning System (NWS) landfill, the following types of contaminated soil were detected: i) Tier I and Tier II inorganic elements, ii) Tier I PCBs, or iii) Tier I PCBs with Type A hydrocarbons. The debris area north of the open storage area contained soil contaminated with Tier II PCBs and the debris area northeast of the NWS landfill contained soil contaminated with Tier II inorganic elements.

Some areas require remedial action even though contamination was not detected. The south landfill is not considered to be a leaching landfill but does require remedial action because of its proximity to the ocean and the presence of ice push-up. The potential tropo building dump site requires the removal of visible debris. The potential beach landing area dump site,

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although not contaminated, contains visible debris that should be removed. The area should then be regraded.

Drinking water samples contained a high coliform count. The water should be treated to reduce bacteria to acceptable levels before drinking.

Ash and debris samples collected from the module train debris contained Tier II inorganic, and some PCB Tier II contamination. Leachate analysis of this material indicated that it is not leachable, suggesting that it could be disposed of in an on-site Tier II disposal facility. Several physical hazards, including bulging barrels, are located within the western section of the module train. These will be removed and properly disposed of during the DEW Line Cleanup of PIN-3.

Paint and insulation samples were collected from various structures likely to be demolished as part of the cleanup program. Most of the paint samples contained detectable concentrations of lead, and some contained over 50 parts per million (ppm) PCBs. Materials with PCB concentrations exceeding 50 ppm are regulated under the Canadian Environmental Protection Act. These materials will have to be removed and containerized and stored as PCB waste, pending a decision on the final disposal of PCB-painted materials.

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