

# Technical Meeting & Pre-Hearing Conference



## Canadian Forces Station (CFS) Alert NWB 8AC-ALT---- - Type "A" Licence Applicant's Presentation



National  
Defence

Défense  
nationale

02-03 October 2018

Canada



National  
Defence

Défense  
nationale

# Applicant



## 8AC-ALT---- - Licensee:

**Colonel Martin Gros-Jean**

Commander, Real Property Operations Group  
Assistant Deputy Minister (Infrastructure & Environment)  
Department of National Defence / Canadian Armed Forces

## CFS Alert Technical Representatives:

**Dr. Andrew Tam**

8 Wing Environmental Management Officer  
8 Wing/Canadian Forces Base Trenton  
Department of National Defence

**Major Tom Gardner**

A/Chief of Staff, Real Property Operations Group  
Assistant Deputy Minister (Infrastructure & Environment)  
Department of National Defence / Canadian Armed Forces

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# CFS Alert History



- HMS Alert, a British ship wintered near in 1875–76.
- Weather station established in 1950.
- Military station established in 1958.
- CFS Alert is a unit of Canadian Forces Base Trenton, Ontario.
- Northeastern tip of Ellesmere Island, shore of the Lincoln Sea.
- 817 km from the North Pole.
- Grise Fiord is 800 km to the southwest.
- Rugged hills and valleys, primarily slate and shale.

## **Today:**

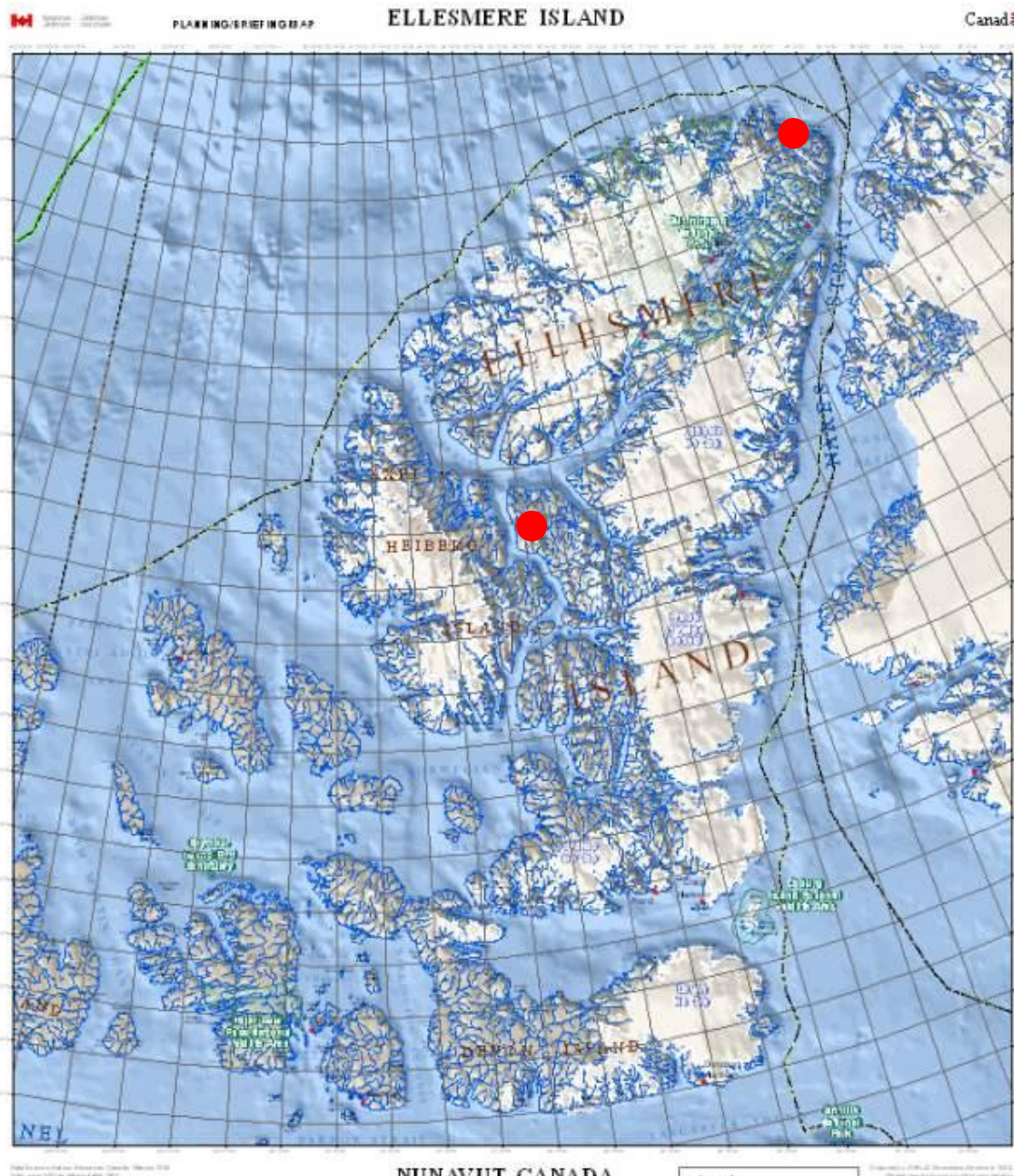
- 50 Civilian Contractors
- 20 Military Personnel
- Summer max pop. 200 (visitors, researchers)

Environment & Climate Change Canada Weather Station Alert

Canada



# Ellesmere Island, Nunavut



**CFS Alert**

**CFS Eureka**

**Sovereignty  
Science  
Support**

**Canada**

# CFS Alert Supply Routes (Air Lift)

Thule, Greenland  
(United States Air Force Base Thule)

**Weekly**

**Sustainment Flights**

People & Cargo

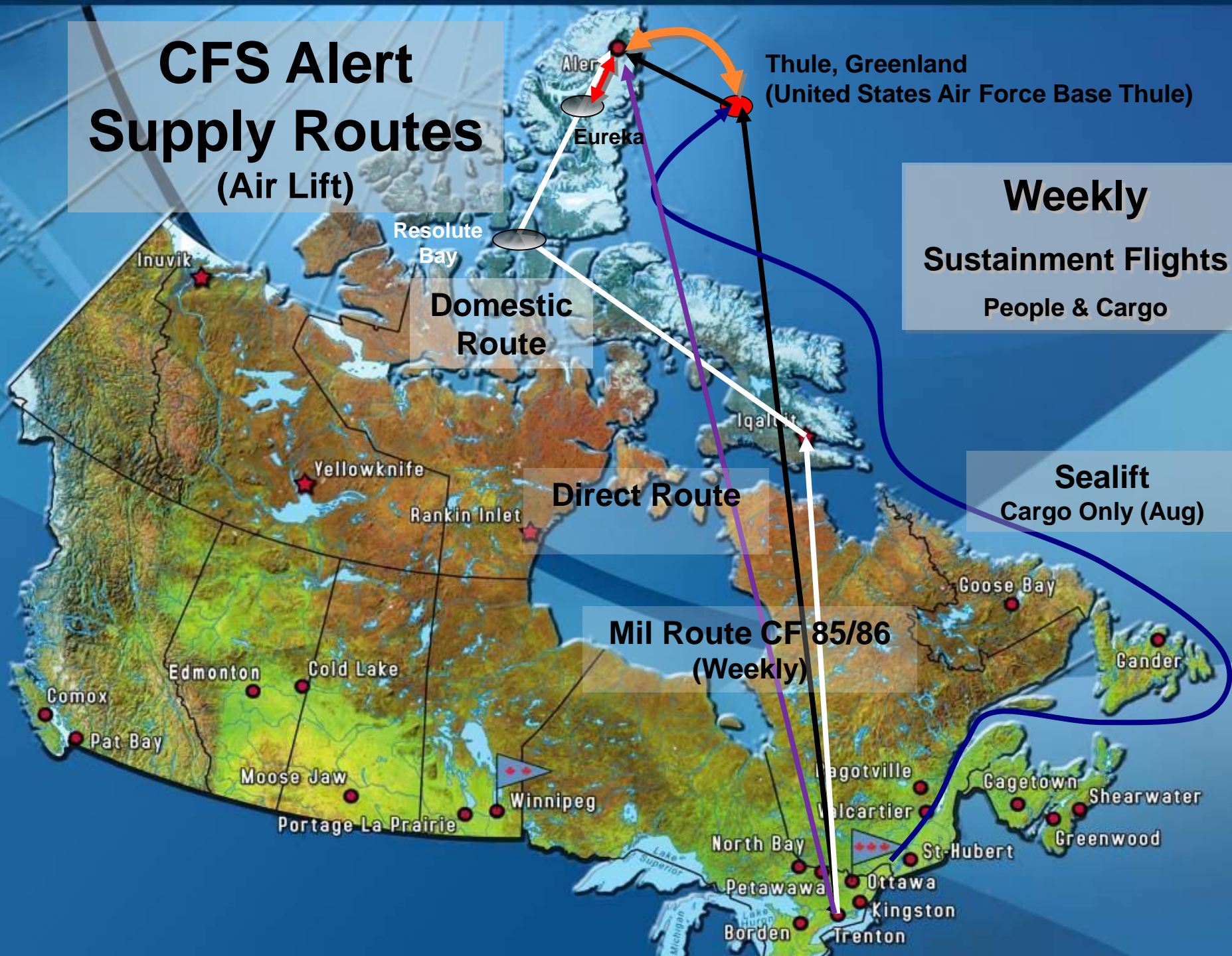
**Sealift**

Cargo Only (Aug)

**Domestic  
Route**

**Direct Route**

**Mil Route CF 85/86  
(Weekly)**





# Logistics & Transportation



- **Travel Times**

Trenton to Alert (direct military flight): **8 to 12 hours**

Trenton to Alert (via Thule, Greenland): **24-28 hours (1 overnight)**

Trenton to Alert (via Resolute & Iqaluit): **24-28 hours (1 overnight)**

*CFS Alert is only accessible by Air Transportation.*

**Factors to consider:**

- Supplies & Cargo Weight (air only)
- Laboratory water sampling holding times
- Temperature sensitivities
- Logistics & Procurement Planning



# Canadian Forces Station (CFS) Alert





# CFS Alert Water Licence Overview



**Water Treatment Plant**

**To Upper Dumbell Lake  
(Water Source)**

**Water Intake & Return Lines**



# 8AC-ALT---- at CFS Alert



## Surveillance Network Programs – 11 Water Licence Sampling Sites

Station No.	Monitoring Stations	Sample Type
ALT-1	Water Supply at Raw Water Intake	Q
ALT-2	Discharge Point at the Sewage Outfall	D
ALT-3	Final Discharge Point of the Sewage Treatment Facility	D
ALT-4	Main Station Landfill	R&L
ALT-5	Battery Dump	R&L
ALT-6	Millionaire's Dump	R&L
ALT-7	Dump #3	R&L
ALT-8	Lower Airfield Fuel Tank Farm	D
ALT-9	Upper Fuel Tank Farm	D
ALT-10	Day Tank Farm & *Day Tank Landfarm*	D
ALT-11	Landfarm	D

### Sampling Duration:

**ALT 1** – Daily – Flow Meters

**ALT 2-3** – Summer (June-August) Weekly

**ALT 4-7** – Summer (June-August) Monthly

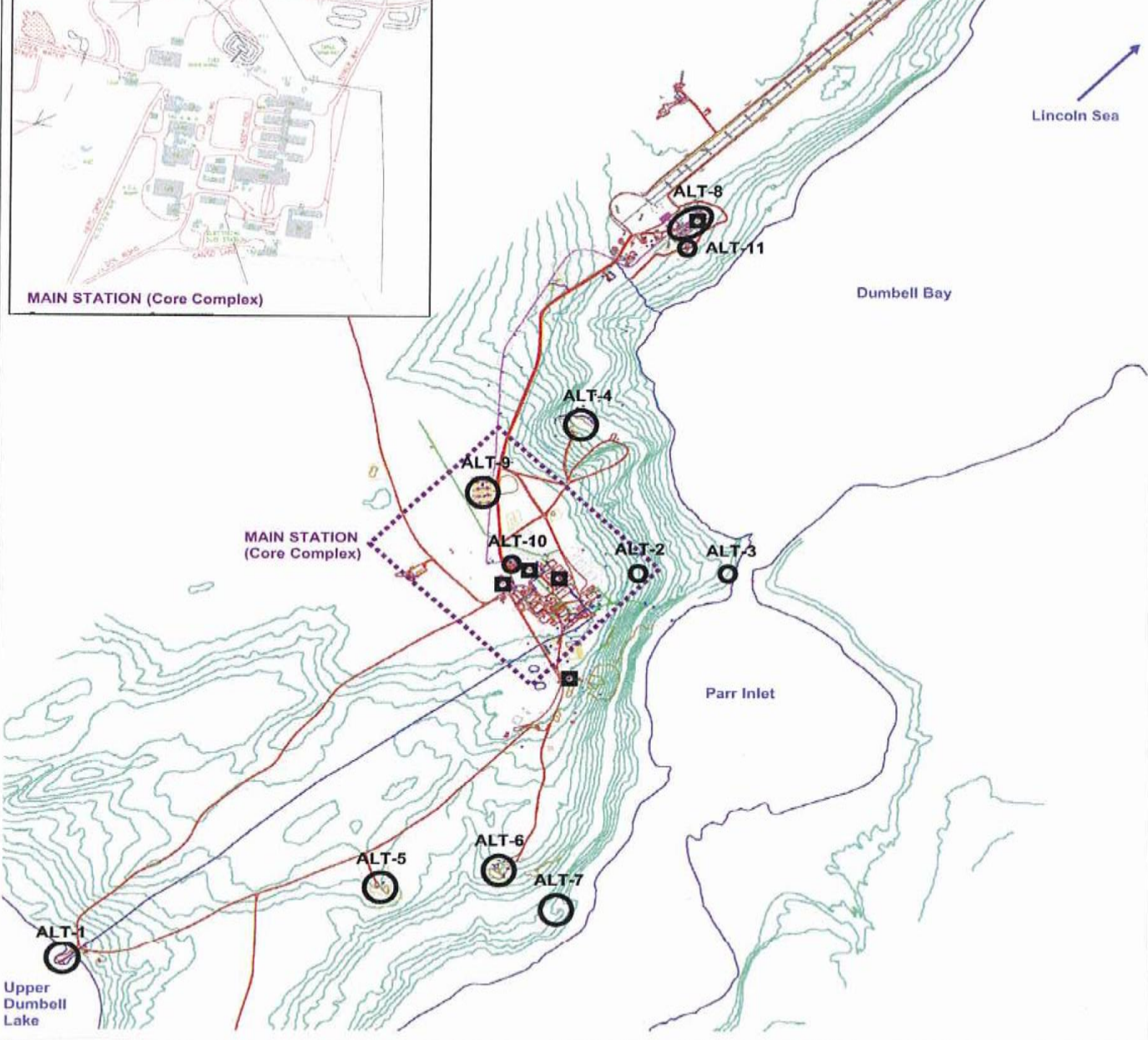
**ALT 8-11** – Spring (June) As required prior to discharge

Q - Quantity

D - Discharge Quality

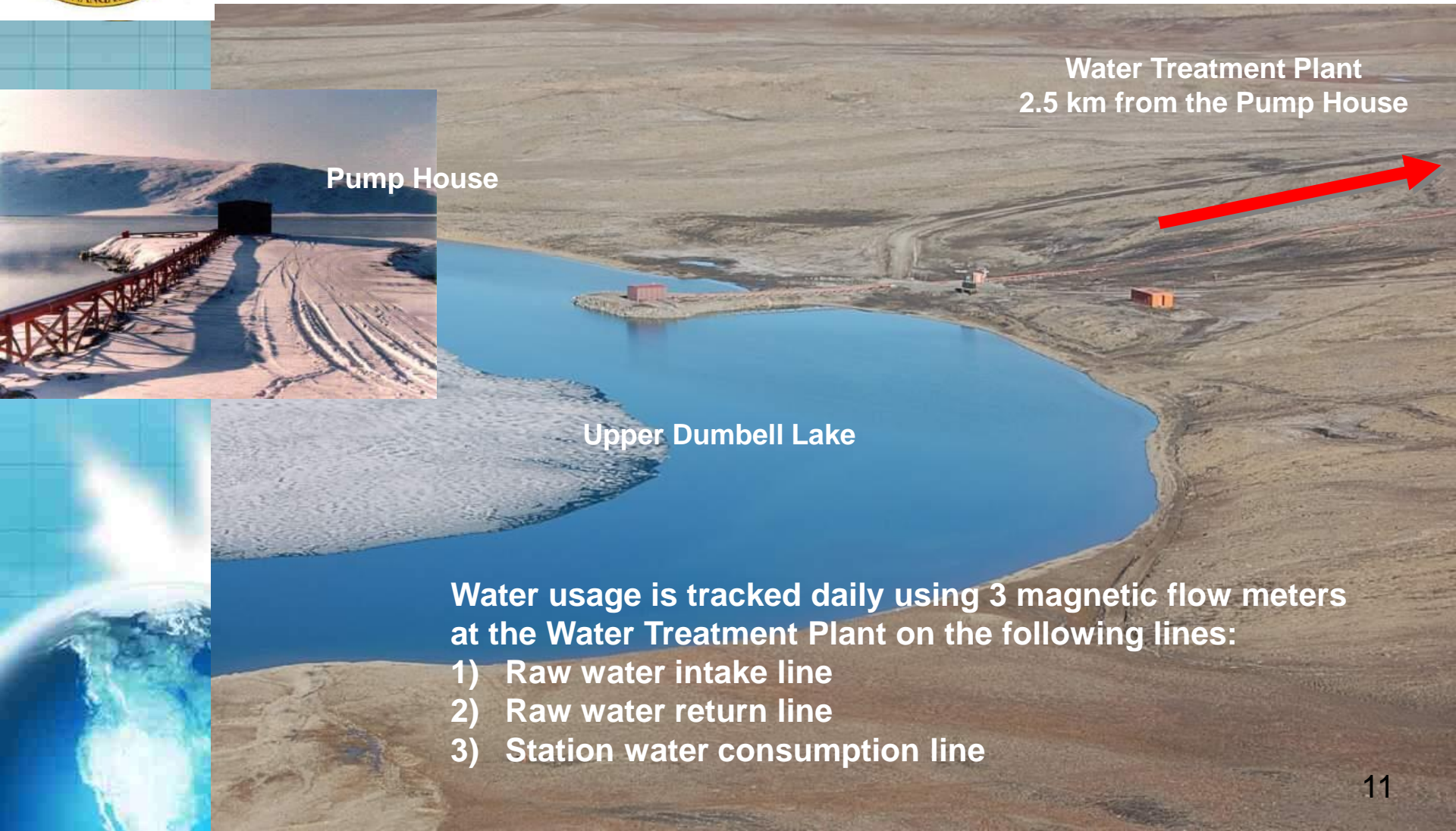
R&L - Runoff & Leachate Quality

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# ALT-1 Pump House



Pump House

Water Treatment Plant  
2.5 km from the Pump House

Upper Dumbell Lake

Water usage is tracked daily using 3 magnetic flow meters at the Water Treatment Plant on the following lines:

- 1) Raw water intake line
- 2) Raw water return line
- 3) Station water consumption line



# ALT-1 Pump House Water Supply



- **Lower Pump house**

- At Upper Dumbell Lake
- 2.5 km from Station
- Max. Daily Intake (2018): **752** m<sup>3</sup>/day



- **Water Treatment Plant**

- 2 x 450,000 litre storage tanks
- Daily Consumption average (2018): **185** m<sup>3</sup>/day

- Water is re-circulated to prevent freezing

- Daily Return average (2018): **505** m<sup>3</sup>/day



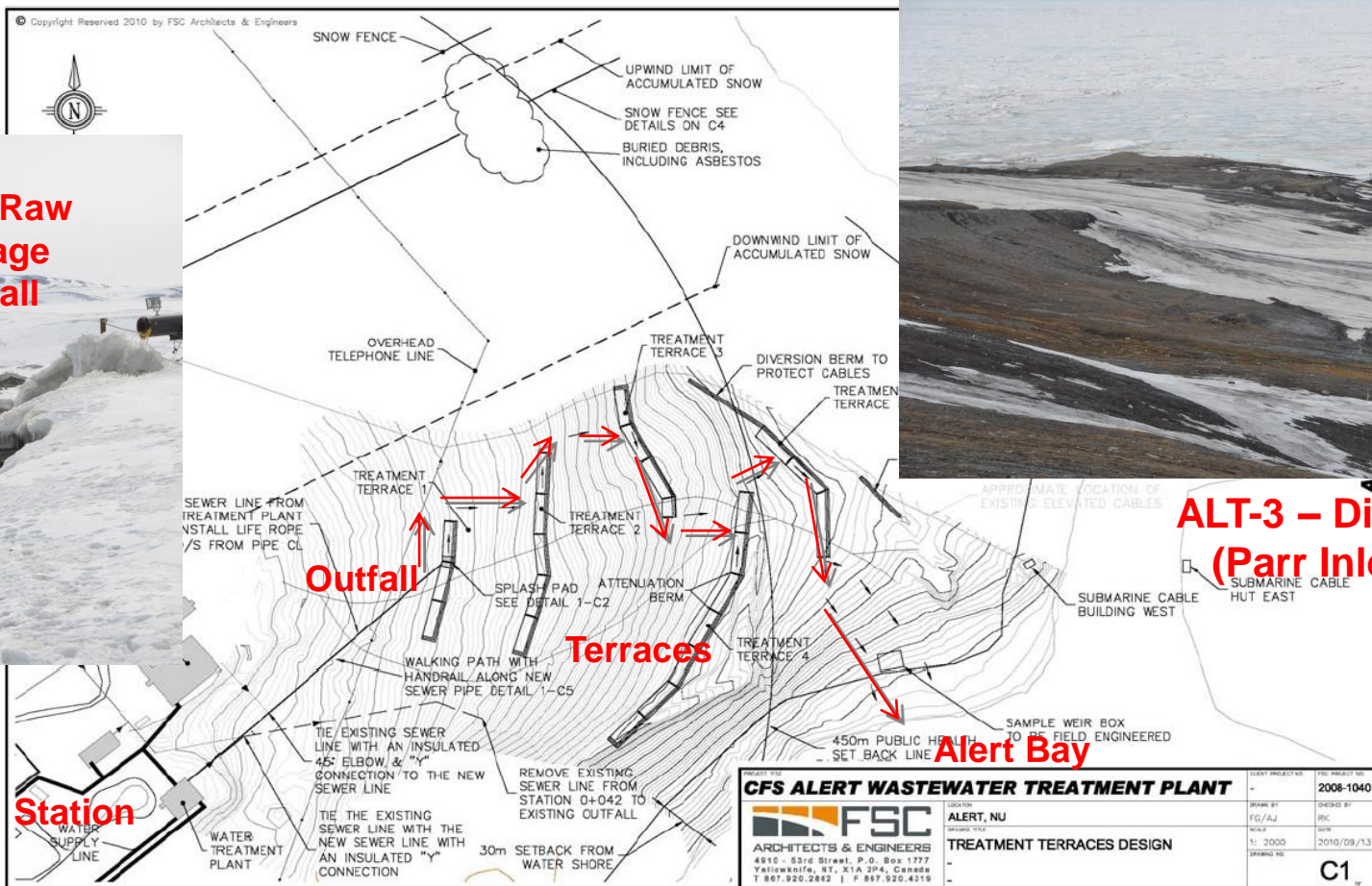


# ALT-2 & 3 Sewage Terrace



Defence Construction Canada  
Construction de Défense Canada

ALT-2 Raw  
Sewage  
Outfall



Title: As-Built Drawing - Sewage Terrace System, CFS Alert

Date: November 2010

Project: Operation and Maintenance Plan, CFS Alert

Figure: Figure 3

Client: Department of National Defence

Source: FSC Architects & Engineers, 2010



# ALT-4 & 5 Landfills



ALT- 4 – Main Station Landfill



## Domestic Landfill:

- Status:** Active
- Non-Hazardous Wastes
- Incinerator Ashes

ALT- 5 – Battery Dump



## Historical Landfill:

- Status:** Inactive
- Waste Batteries Only
- Capped with gravel
- Restricted Access (Signage)
- Registered as a Federal Contaminated Site (under Risk Management)



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# ALT-6 & 7 Landfills



ALT- 6 – Millionaire's Dump



## Industrial Landfill:

- Status:** Active
- Bulky & Metal Wastes
- Waste Building Materials
- Non-Hazardous Wastes

## Recycling Program:

- Recover & recycle scrap metals (Copper, Aluminum, Iron/Steel)

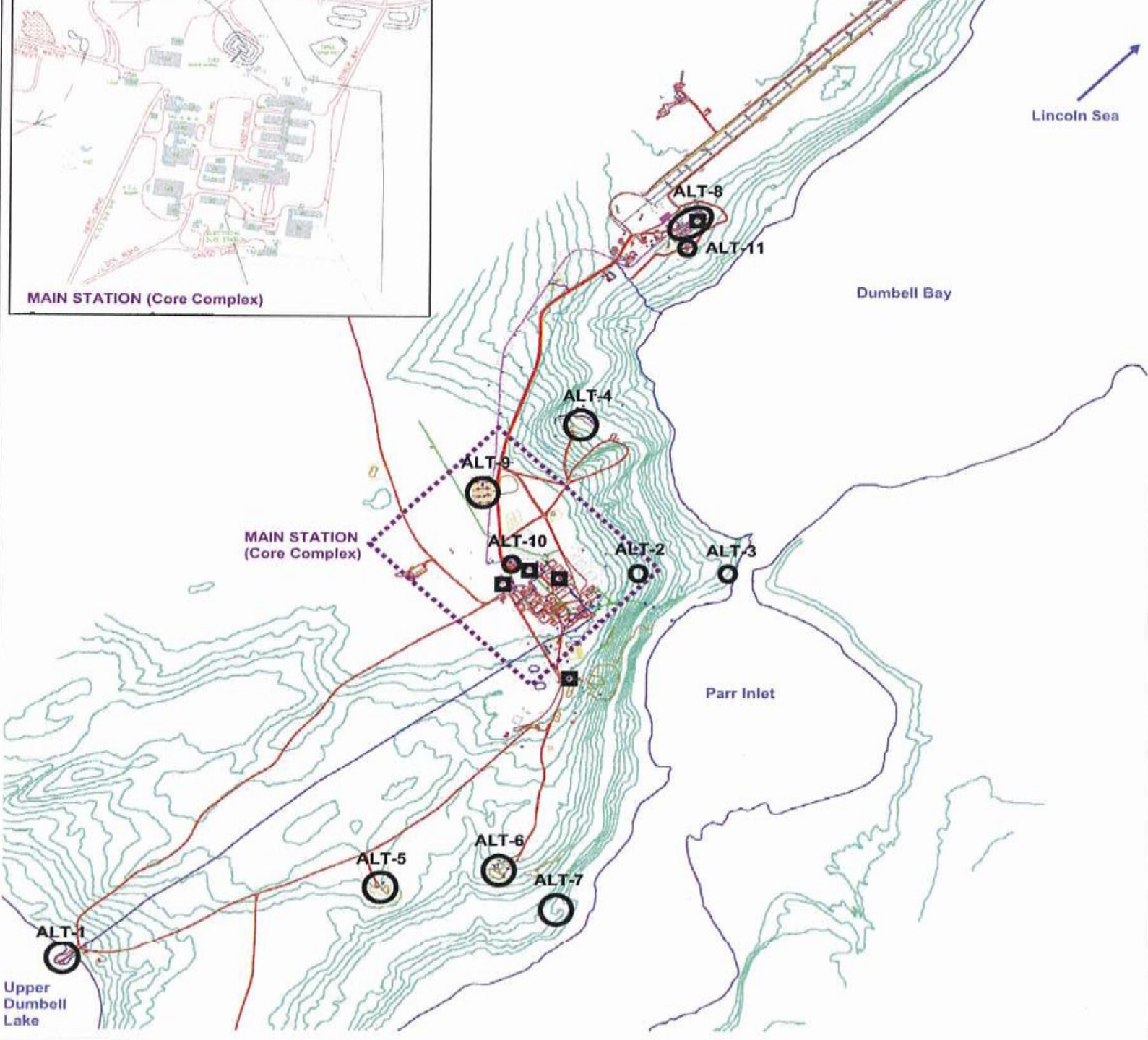
ALT- 7 –Dump #3 (down gradient)



## Historical Industrial Landfill:

- Status:** Inactive
- Bulk Metals & Building Wastes
- Registered as a Federal Contaminated Site (under Risk Management)

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# ALT-8-9 & 10 Fuel Tank Farms



ALT-9 Upper Tank Farm



ALT-8 Airfield Tank Farm



ALT-10 Day Tank Farm



Secondary Containment Waters – Spring Melt (mid-June)



# ALT-10 Day Tank Landfarm



## New Landfarm Facility (2013)

Treatment Capacity: 500 m<sup>3</sup>

## ALT-10 Day Tank Farm



Old Fuel Storage “ALT-10 Day Tank” Farm Contamination  
Under Landfarm Bioremediation

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# ALT-11 Landfarm



## Landfarm Treatment Facility

- Hydrocarbon impacted Soils.
- Bioremediation using indigenous high Arctic microbial populations.
- National Research Council of Canada (Montreal, Quebec).



Secondary containment water is re-used to rehydrate the soils. 19



# TM-PHC Topics



- **Water Usage Limit (Recirculation/Return Water)**

- 2017 Station Consumption: 185 cubic meters/day
- Max Raw water intake (usage): **752** cubic meters/day
- Max Return raw water: 672 cubic meters/day
- **Request Water Usage Limit:** **875** cubic meters/day

Raw water is required for re-circulation in the 2.5 km water pipelines from the Pump House to the Water Plant.

Prevents freezing during winter, maintains pressure for integrity.

Raw water returned to source is untreated and prevents the water pumps from freezing.

Bleed water is used to prevent waste water pipes and the sewage outfall from freezing.

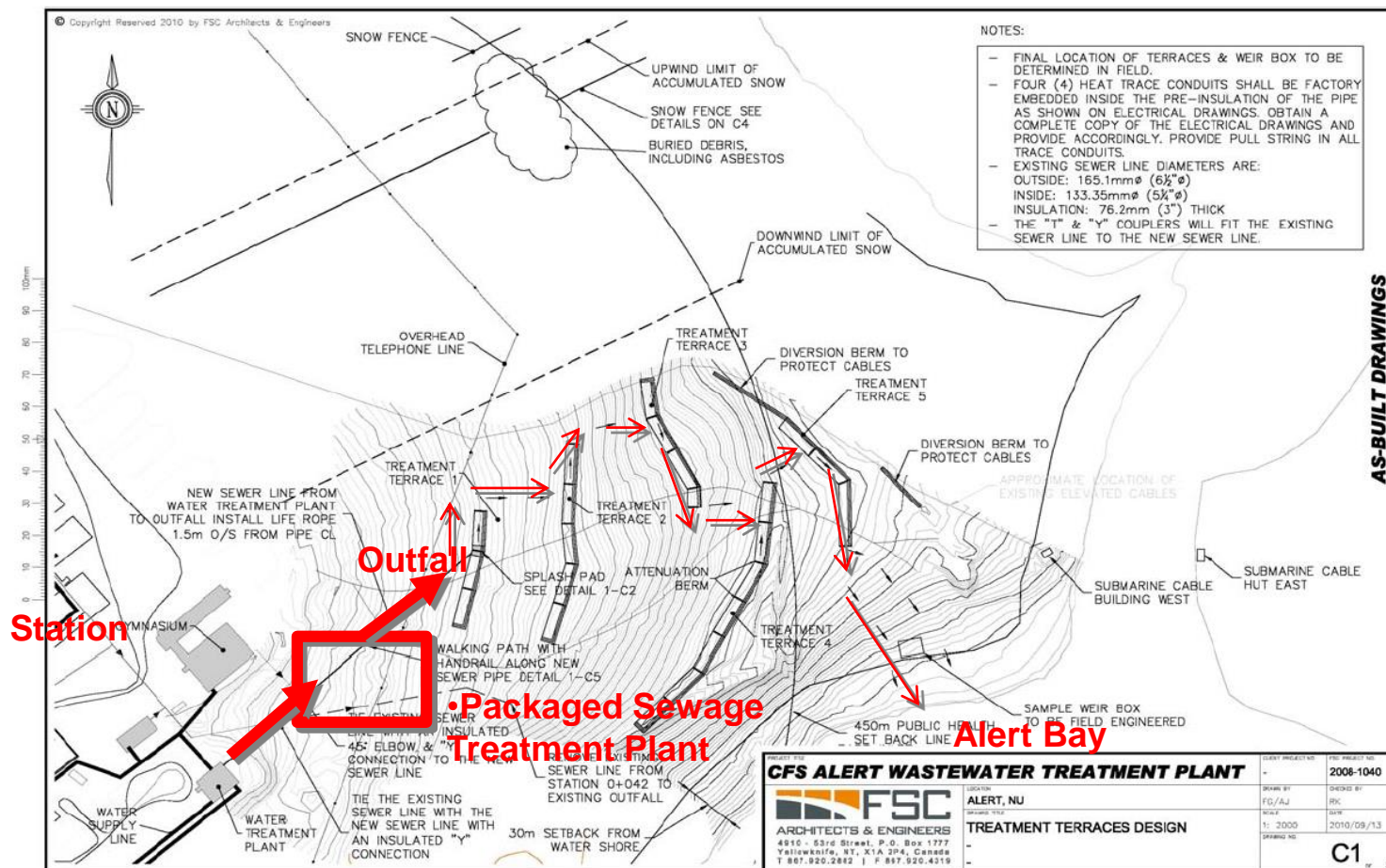


# TM-PHC Topics



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Construction de Défense Canada

- Sewage Terrace System
- Packaged Sewage Plant
- Sludge & Waste Management Plans



Title: As-Built Drawing - Sewage Terrace System, CFS Alert

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Figure: Figure 3

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Source: FSC Architects & Engineers, 2010



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# Questions?



**Andrew Tam, Ph.D.**  
**8 Wing Environmental Management Officer**

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