



# THE HIGH ARCTIC

Difficult Locations – A Unique Approach  
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# Introduction

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(CIRNAC)

## Contaminated Sites Program

- CIRNAC is the custodian for the majority of federal lands in the Nunavut and manages a number of contaminated sites through its Northern Contaminated Sites Program (NCSP).
- Many sites became the responsibility of CIRNAC after the private owners relinquished their properties according to the legislation of the day; when companies went bankrupt; or when they were abandoned.





## Program Goals

- Protect the health and safety of Nunavummiut
- Protect the environment
- Reduce the liability associated with these sites





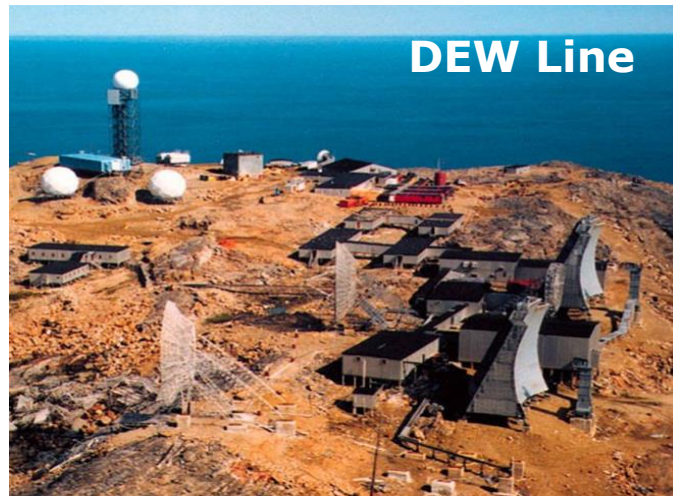
## The Federal Approach to Contaminated Sites

- Contaminated sites are funded and managed through the Federal Contaminated Sites Action Plan (FCSAP).
- FCSAP is a long-term strategy to reduce human health and ecological risks at the highest risk federal sites.
- Custodian departments follow a common federal approach to manage contaminated sites.
- 10 step process where sites are assessed then classified by priority using the Canadian Council of Ministers of the Environment (CCME) National Classification System for Contaminated Sites (NCSCS).
- Once classified, the sites are addressed by priority for those sites posing the highest risk.



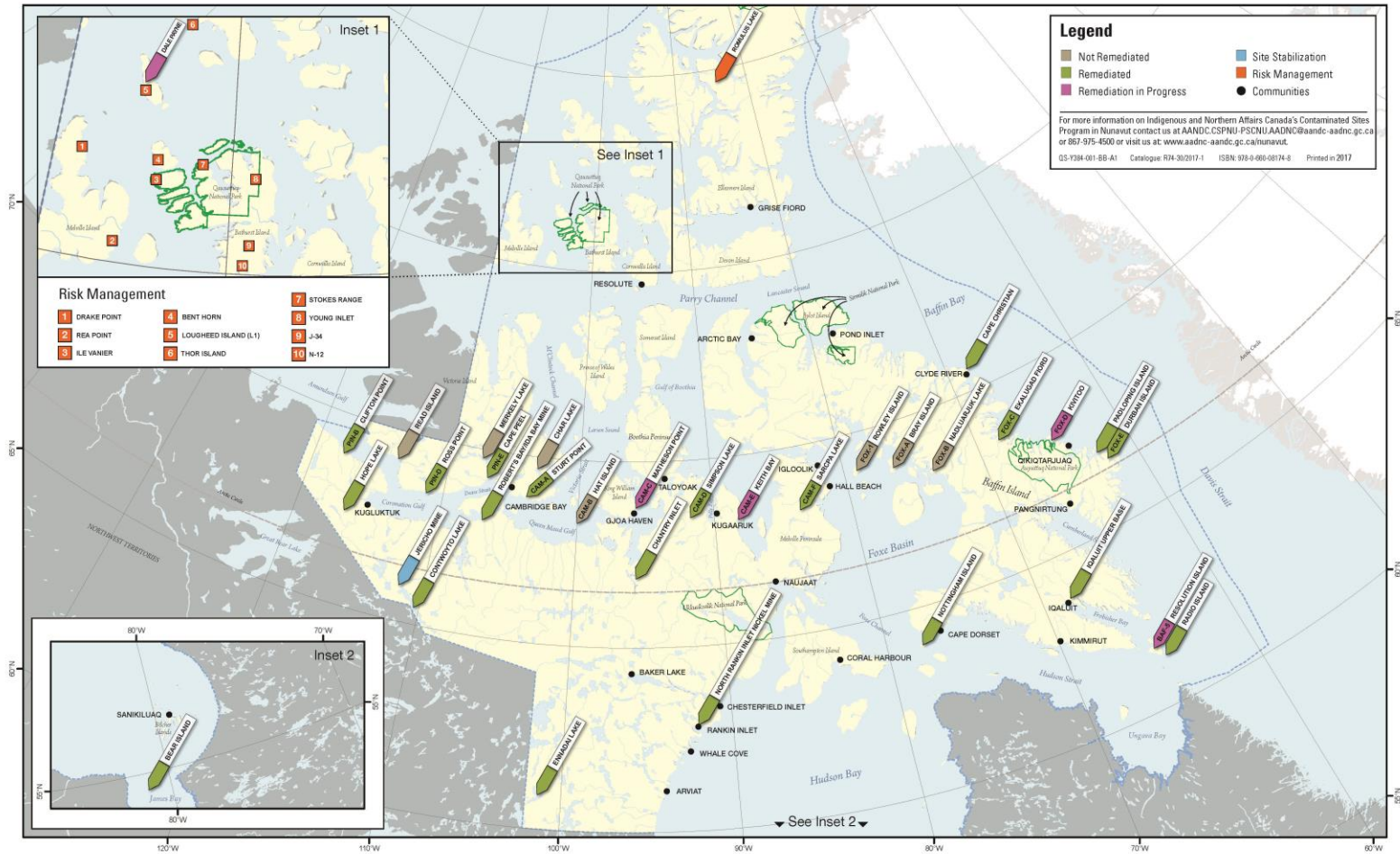
## Contaminated Sites in Nunavut

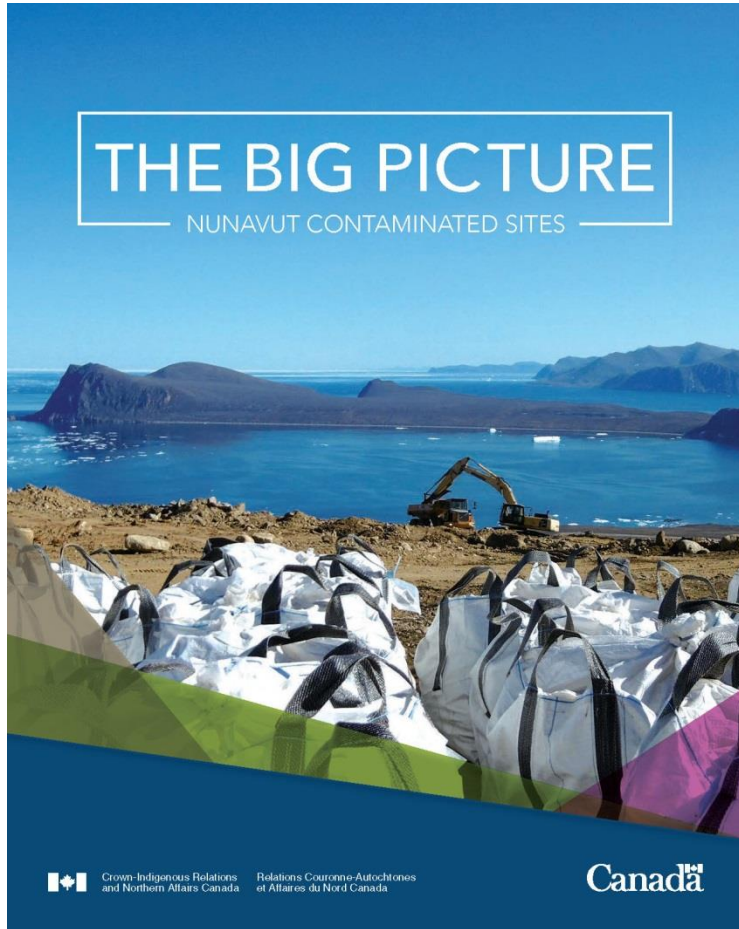
- Approximately 85 contaminated and waste sites under the custodial responsibility of CIRNAC.
- The majority of these sites are the result of historical oil & gas exploration, mining, and military activities that took place periodically between the early 1950s to mid - 1990s.





# Nunavut Contaminated Sites





## The Big Picture

- Every 4 to 5 years
- Provides information to the public and communities on Contaminated Sites projects in Nunavut.
- Provides an overview of how CIRNAC is addressing impacts at the sites and the status of the environmental clean-up and site management activities.

**For information on Nunavut Contaminated Sites, contact:**

### **Contaminated Sites Program**

CIRNAC

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Iqaluit, NU X0A 0H0

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ALBERTA

SASKATCHEWAN

MANITOBA

ONTARIO

QUEBEC

Resolute

Banff

Arctic Circle



Data Source: Natural Resources Canada  
Scale: 1 : 18,000,000  
Projection: Canada Lambert Conformal Conic  
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 Crown-Indigenous Relations and Northern Affairs Canada  
Relations Couronne-Autochtones et Affaires du Nord Canada





## High Arctic Remediation and Risk Management Project

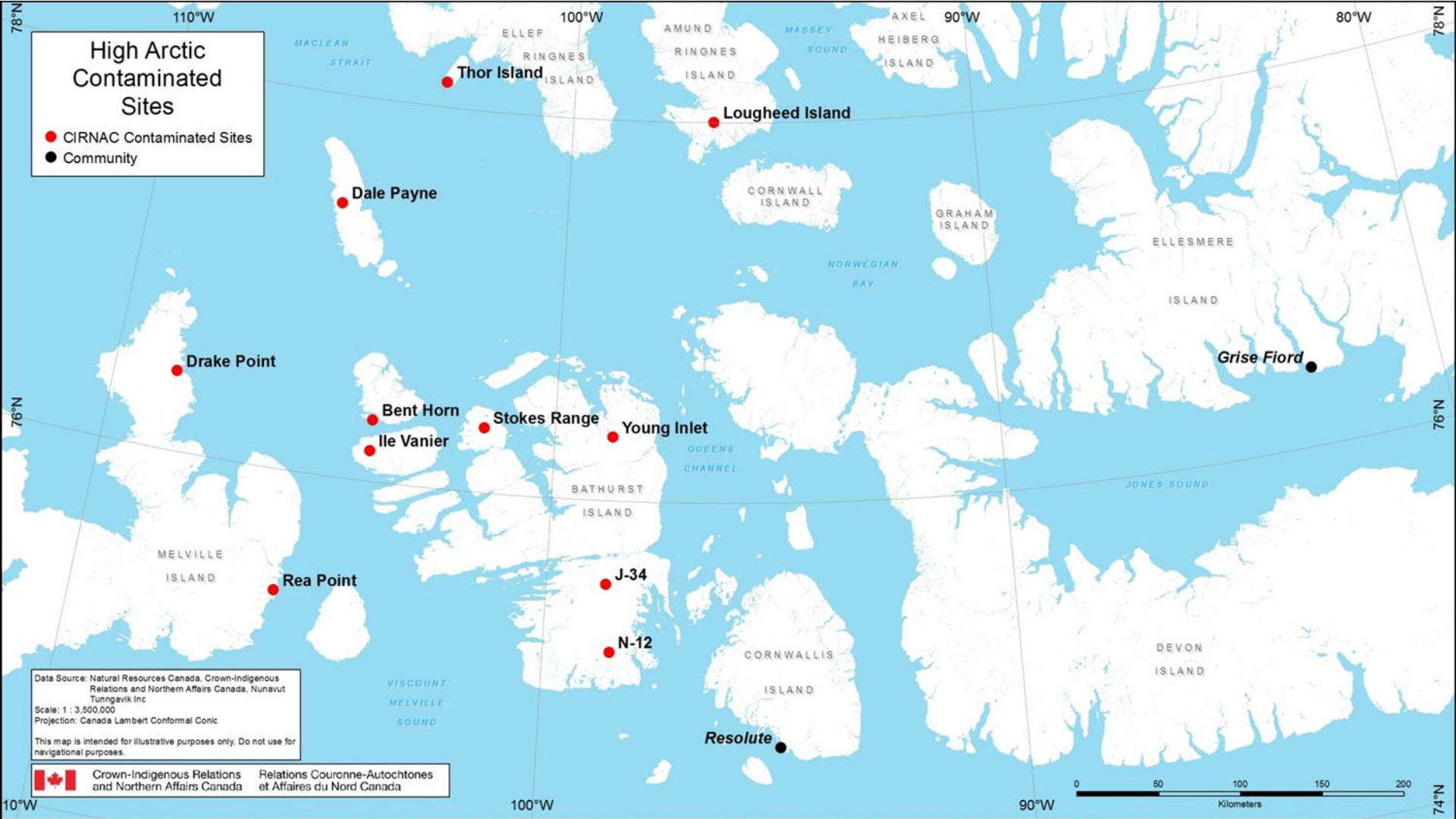
- 12 former oil and gas exploration sites
- 120 km to 630 km north of Resolute Bay

HIGH ARCTIC FORMER WELL SITES		
Romulus	Rae Point	Stokes Range
Thor Island	Drake Point	Young Inlet
Dale Payne	Bent Horn	N-12 Site
Lougheed Island	Ile Vanier	J-34 Site



# High Arctic Contaminated Sites

- CIRNAC Contaminated Sites
- Community



Data Source: Natural Resources Canada, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Tunngavik Inc  
Scale: 1 : 3,500,000  
Projection: Canada Lambert Conformal Conic  
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# High Arctic Remediation and Risk Management Project

## Hazards and Debris

- Non-hazardous debris
- Uneven ground
- Unmaintained buildings
- Contaminated soil and surface water
- Fuel drums (full and partial)
- Hazardous materials
  - Batteries, compressed gas cylinders
  - PCB, mercury and asbestos containing materials (in buildings)
  - Liquids (fuel and oil)

## Contaminants Common to Sites

- Metals in soil (Lead)
- Petroleum Hydrocarbons (PHC) in soil
- Polychlorinated Biphenyls (PCBs) in soil
- Minor surface water impacts





# High Arctic Remediation and Risk Management Project

## The Approach

- Given the challenges associated with these sites, CIRNAC adopted a risk management approach.
- Based on HHERAs the risks at the sites were considered **low**.
- HHERAs considered impacts to country food and northern conditions.
- RRMPs were developed with community input to address the highest risks.
- Work at each site was similar.
- Based on lessons learned during previous work programs, the sites were bundled together for cost effectiveness.





# High Arctic Remediation and Risk Management Project

## Remediation/Risk Management Activities

- Hazardous waste and liquids to be collected and containerized
- Excavation and disposal of contaminated soil
- Asbestos abatement, containerization and disposal
- Site regrading
- Installation of signage
- Placement of engineered soil cover
- Barrel collection and disposal/containerization
- Shipping of all wastes to southern designated waste disposal facilities





## Physical Location/Climate

- These are the most northerly sites that the Nunavut Contaminated Sites program has attempted to address.
- Sites located between the 75<sup>th</sup> and 80<sup>th</sup> parallels, well north of the Arctic Circle (66<sup>th</sup> parallel).
- Daylight lasts 24 hours in summer.
- Summer temperatures may rise above freezing for only one or two months.
- Area of continuous permafrost, 150 mm to 300 mm active layer
- Polar desert, with less than 150 mm of precipitation a year.
- Approximately 2 month work window.



## Logistics

- Logistics had a major influence on the project
- Wildlife Protected Areas
- Site infrastructure
  - Airstrips at many sites but condition unknown
  - Some sites helicopter access only
  - Limited availability of additional air resources (Resolute busy)
  - Used dedicated aircraft – Twin Otter (high demand)
    - Many Airstrips deemed unsuitable after initial reconnaissance flight
    - plan was to base in Resolute Bay




# Bathurst Island Contaminated Sites

- CIRNAC Contaminated Sites
- Community



Data Source: Natural Resources Canada, Crown-Indigenous Relations and Northern Affairs Canada, Parks Canada, Canadian Wildlife Service  
Scale: 1 : 1,600,000  
Projection: Canada Lambert Conformal Conic  
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## Weather

- Major impact on the field activities season
  - Fog and cloud cover prevented or delayed flights
  - Extremely unstable weather
- Snow and wind storm at Ile Vanier mid-July
- Total: 45 day field season
  - Very few full available flying days.
  - No more than 4 good flying days in a row.
  - Approximately 50% lost time





## Weather (continued)





## Site Conditions



Ile Vanier  
AEC1  
&  
AEC4



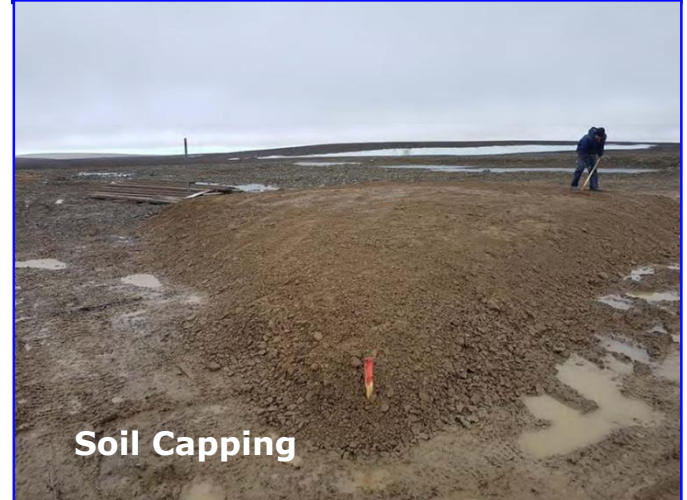
Full Drums



Signage



Non-Haz Waste



Soil Capping





## Wrap up

- Most of program was completed despite the challenges
- Not able to access all sites as season advanced
- Work program carried into next year
- Evaluating results, next steps
- Significant cost savings and efficiencies adopting Risk Management Strategy.





# Project Team

**CIRNAC - Project Owner, Custodian Department**



Crown-Indigenous Relations  
and Northern Affairs Canada

Relations Couronne-Autochtones  
et Affaires du Nord Canada

**Public Services and Procurement Canada (PSPC)  
Contracting Authority and Project Management**



Public Services and  
Procurement Canada

Services publics et  
Approvisionnement Canada

**DXB Projects – PSPC Departmental Representative**



**Englobe Corp – Remediation Contractor**



**Englobe**

**Sila Remediation – Inuit Workforce Supplier**



A wide-angle landscape photograph of a tundra. In the foreground, a stream flows through a grassy area. A large animal skull with a prominent, reddish-brown horn or tusk lies on the grass near the stream. Another smaller skull is visible further back on the left. The background shows a vast, flat expanse of tundra under a cloudy sky.

**QUJANNAMIK  
THANK YOU  
MERCI**

**Romulus, NU**