

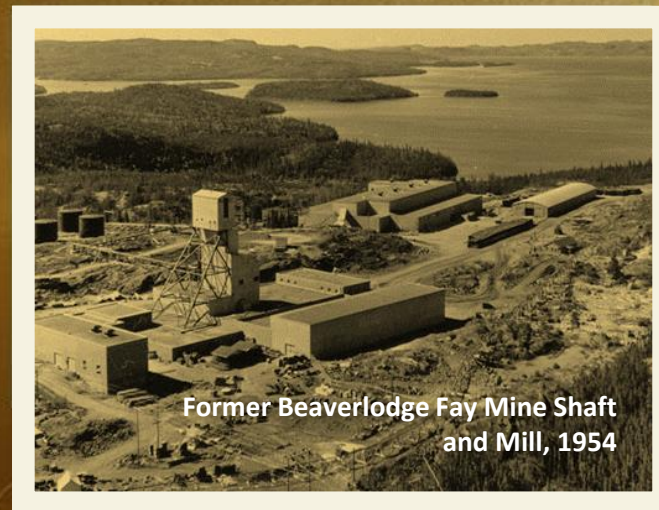


# Request for Release of 18 Beaverlodge Properties from CNSC Licensing



## CNSC Staff Presentation

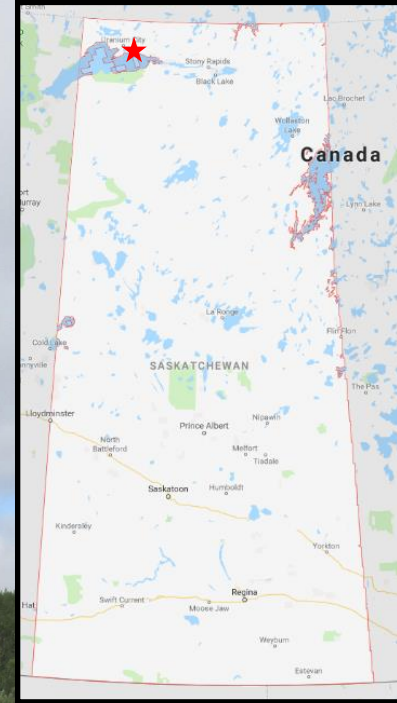
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CMD 22-H5.B



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# Land Acknowledgement



**Beaverlodge site is situated within historic Treaty 8 (1899)  
as well as the Homeland of the Métis**



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## Purpose and Outline

- Consideration of Cameco's amendment request to remove 18 Beaverlodge properties from CNSC licensing
  - To allow the transfer of 18 properties to Saskatchewan's Institutional Control Program (ICP)
- Provide information on: ICP; history; performance objectives; properties; engagement; and conclusions and recommendations
- Provide evidence on meeting CNSC performance objectives and indicators for all properties under consideration



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# INSTITUTIONAL CONTROL PROGRAM IN SASKATCHEWAN



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## Institutional Control Program in Saskatchewan

# What is the ICP?

- Outlines a formal regulatory process for long term property management by the Province of Saskatchewan
- Transfer of properties/facilities into ICP can only occur after:
  - Decommissioning is complete
  - Properties are safe and stable
  - Sufficient funds in place for monitoring and maintenance and unforeseen events
  - No longer regulated by any other level of government
- Detailed information presented in CMD 18-M38 - *Overview of the Institutional Control Program for Decommissioned Mine and/or Mill Sites in Saskatchewan*

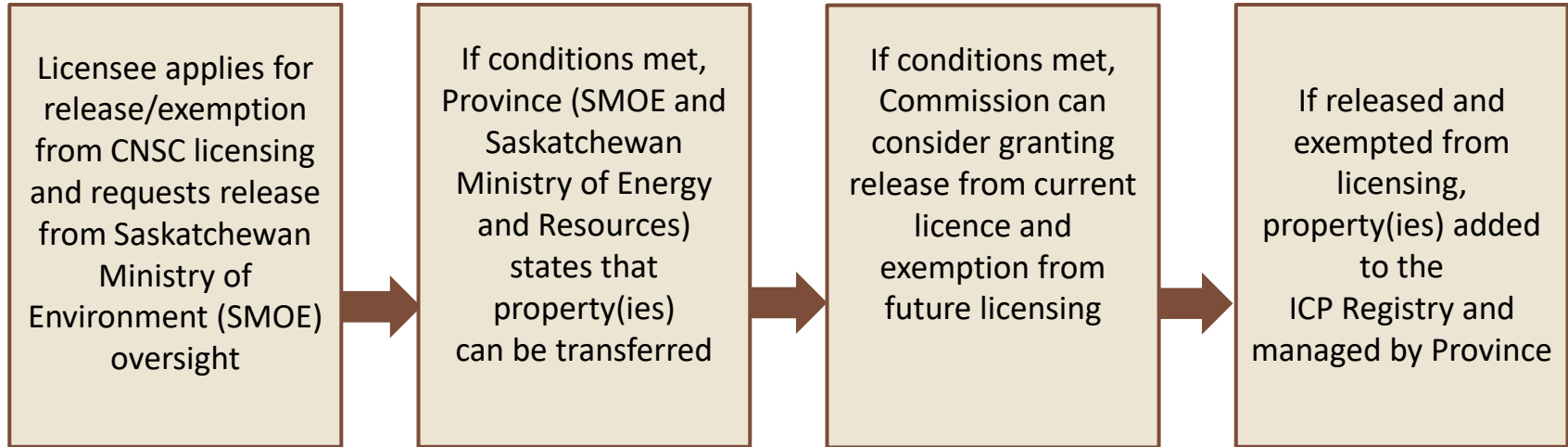
**Only low risk properties are accepted by the Province**



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## Institutional Control Program in Saskatchewan Summary of Process





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## Institutional Control Program in Saskatchewan CNSC's Role

Province accepts into the ICP only post-decommissioned properties that are not licensed or are exempted from CNSC licensing (subsection 3(f) of *The Reclaimed Industrial Sites Regulations*)

### Legislative Authority

- Section 7 of the *Nuclear Safety and Control Act*
- Section 11 of the *General Nuclear Safety and Control Regulations*

**Releases from licensing and exemptions only recommended  
if properties are safe**



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# SITE OVERVIEW AND HISTORY





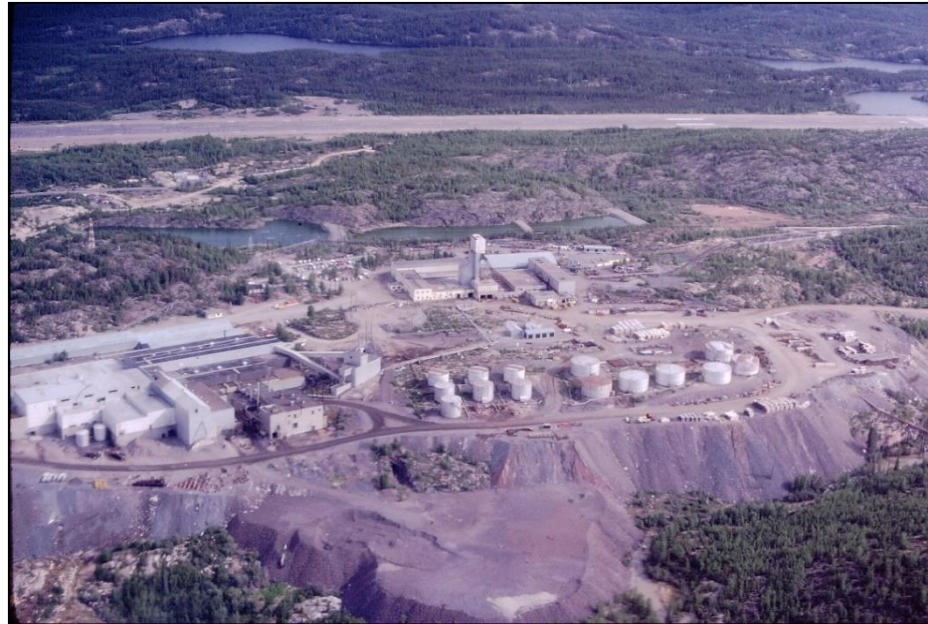
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## Site Overview and History

# History

- Located in northwestern Saskatchewan, near Uranium City
- Operated (1952-1982)
- Decommissioned (1982-1985)
- Monitoring and Maintenance (1985-Present)



Former Beaverlodge Fay Mine and Mill, 1977  
(Source: Cameco)



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# Site Overview and History

## Recent CNSC Licensing

### Licence Renewal

- Commission decision on the exemption of 5 properties
- Commission issued Cameco a 3-year licence to complete a feasibility investigation of remedial options

### Annual Updates

- 2009-2013: more than 20 studies completed; remedial options were selected
- CNSC staff reviewed and accepted the results of these studies and path forward

### Licence Renewal

- Commission accepted path forward; issued Cameco a 10-year licence to implement and assess the success of remedial options and continue to manage site

### Commission Update

- Defined performance objectives and measurable performance indicators
- Property-by-property timeline estimates for institutional control transfer eligibility

### Commission Decision

- Released 20 properties
- Exempted Province
- 19 properties transferred to ICP
- 45 licensed properties remaining at Beaverlodge

### Today's Hearing

- CNSC staff assess that properties meet criteria
- Request for licence amendment to remove 18 properties
- Recommend exempting properties from CNSC licensing

2009

2010

2011

2012

2013

2014

2019

2022

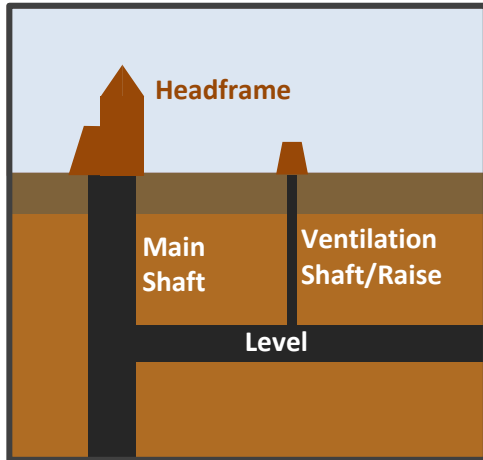


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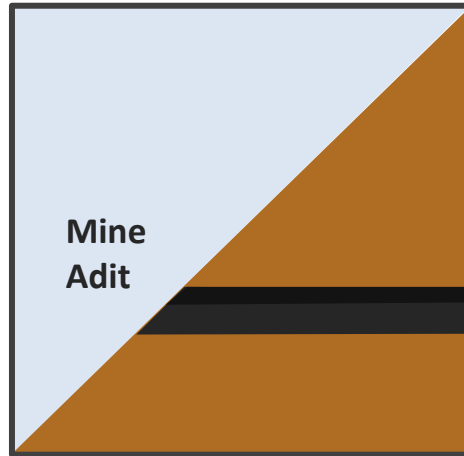
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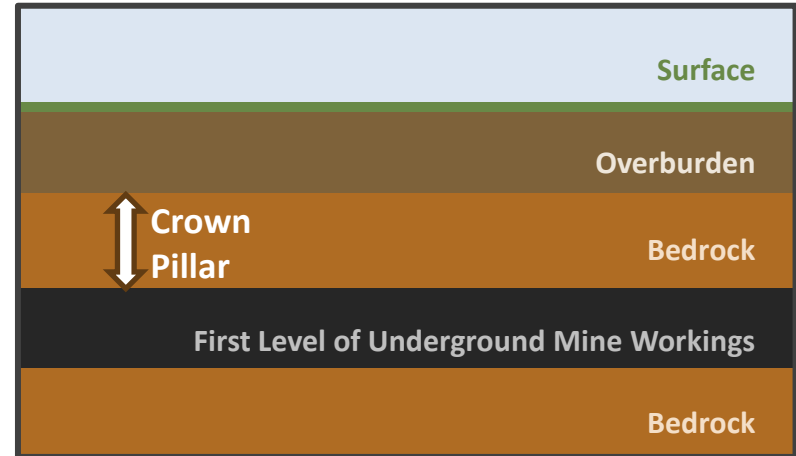
# Terminology



Shaft/Raise



Adit



Crown Pillar



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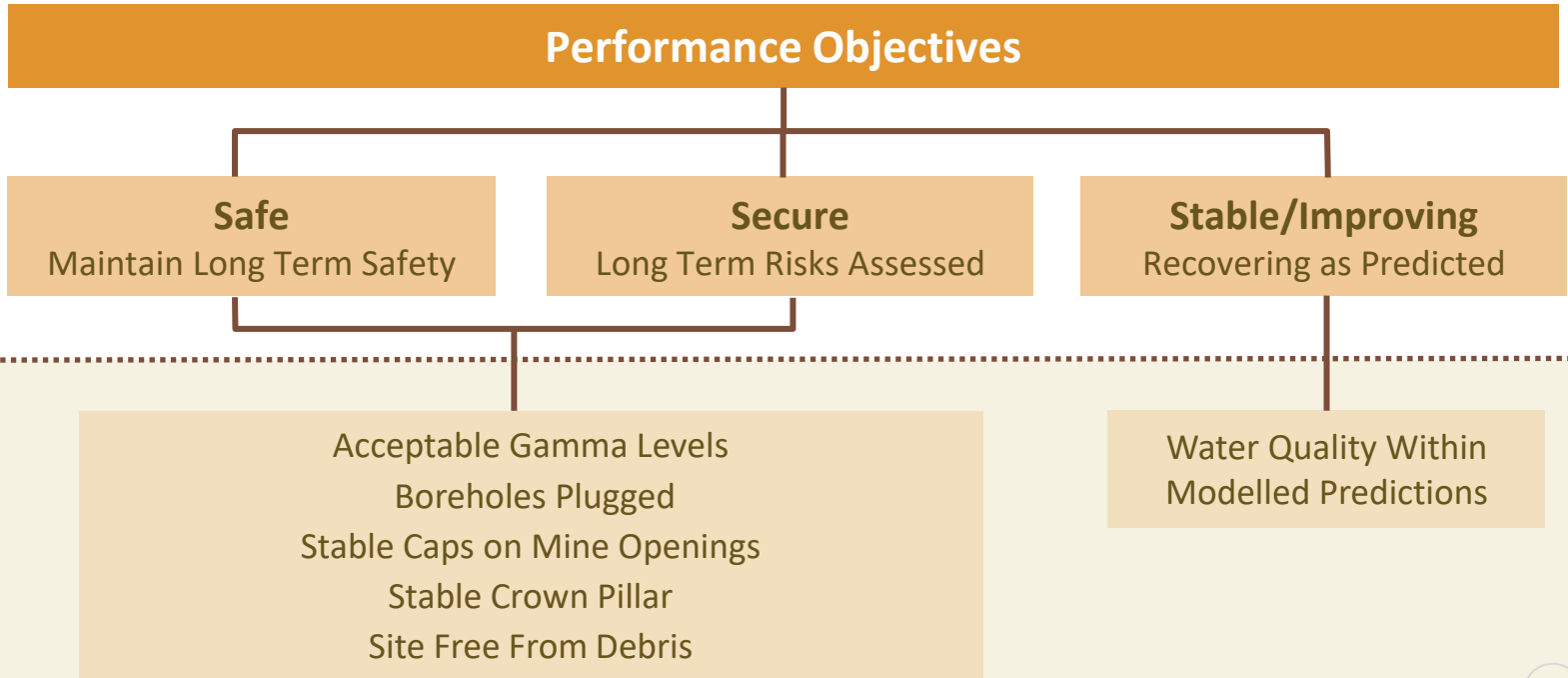
# PERFORMANCE INDICATORS



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# Performance Objectives and Indicators





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## Performance Indicator Acceptable Gamma Levels

### Purpose

- Reduce gamma exposure in accordance with as low as reasonably achievable (ALARA) principle

### Regulatory Acceptance Criteria

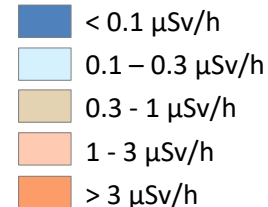
- Reasonable use scenario demonstrating gamma levels at the site are acceptable

### Update

- Site wide gamma scan and radiation risk evaluation completed
- Rescanning of newly disturbed areas completed (as required)
- Gamma doses predicted to be well below public dose limit (< 1 mSv/year) for entire site

### Legend

1 ha Effective Adult  
Dose Rate



Gamma scan results for Ace 9 property  
(Source: Cameco 2021)

**Doses predicted to  
be well below public dose limit**



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## Performance Indicator Boreholes Plugged

### Purpose

- Prevent potential for groundwater outflow to the surface

### Regulatory Acceptance Criteria

- All boreholes have been plugged at the time of transfer to institutional control

### Update

- All boreholes identified have been plugged
- Inspections completed on all 18 properties proposed for release

**All boreholes on the 18 properties are plugged**



Beaverlodge borehole (Source: Cameco, undated)



Plugged borehole (Source: CNSC August 2021)



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# Performance Indicator Stable Mine Openings

## Purpose

- Ensure long term safety of the site

## Regulatory Acceptance Criteria

- Caps have been replaced and signed off by a qualified person

## Update

- Stainless steel caps installed
- 2019 - updated performance indicator now includes all mine openings, not just shafts



Property NW 3 Ext: raise covers installed in 2018  
(Source: CNSC September 2020)

**All mine openings on the 18 properties are secure and safe**





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## Performance Indicator Stable Crown Pillar

### Purpose

- Ensure long term safety of the site

### Regulatory Acceptance Criteria

- Crown pillar (CP) assessed, remediated if required, and signed off by a qualified person

### Update

- CP assessment completed in 2014, report prepared and accepted
- Remediation completed for Ace underground workings
- CP monitoring added to geotechnical inspection program



Ace Crown Pillar Remediation (Source: CNSC August 2021)

**All crown pillars on the 18 properties are stable**



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# Performance Indicator Site Free from Debris

## Purpose

- Ensure removal of debris

## Regulatory Acceptance Criteria

- Site free of former mining debris at the time of transfer to institutional control

## Update

- 2015-2017: site wide inspection program completed by Cameco
- Evidence of inspections included in request for release



Inspection track for HAB 1 property (Source: Cameco 2021)

Legend	
	Surface Lease Boundary
	Inspection Tracks

**Debris on the 18 properties has been removed**



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## Performance Indicator

# Water Quality Within Modelled Predictions

### Purpose

- Verify natural recovery and remedial options result in localized improvements in water quality

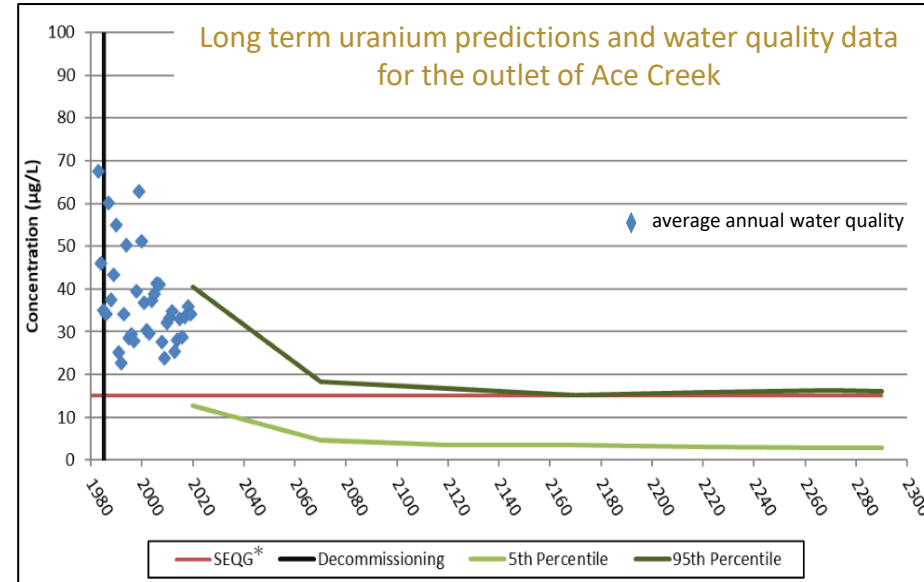
### Regulatory Acceptance Criteria

- Water quality data is stable/improving

### Update

- Sample collection and comparison with predictions is ongoing for licensed properties

**Water quality stable/improving  
for the 6 properties where  
performance indicator applies**



\* Saskatchewan Environmental Quality Guidelines for the Protection of Aquatic Life



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# PROPERTIES PROPOSED FOR RELEASE



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# Location of 18 Properties Proposed for Release

## HAB

- HAB 1
- EXC 1
- HAB 2

## Verna/Bolger

- ACE 7
- ACE 8
- NW 3 EXT
- NW 3

## Dubyna

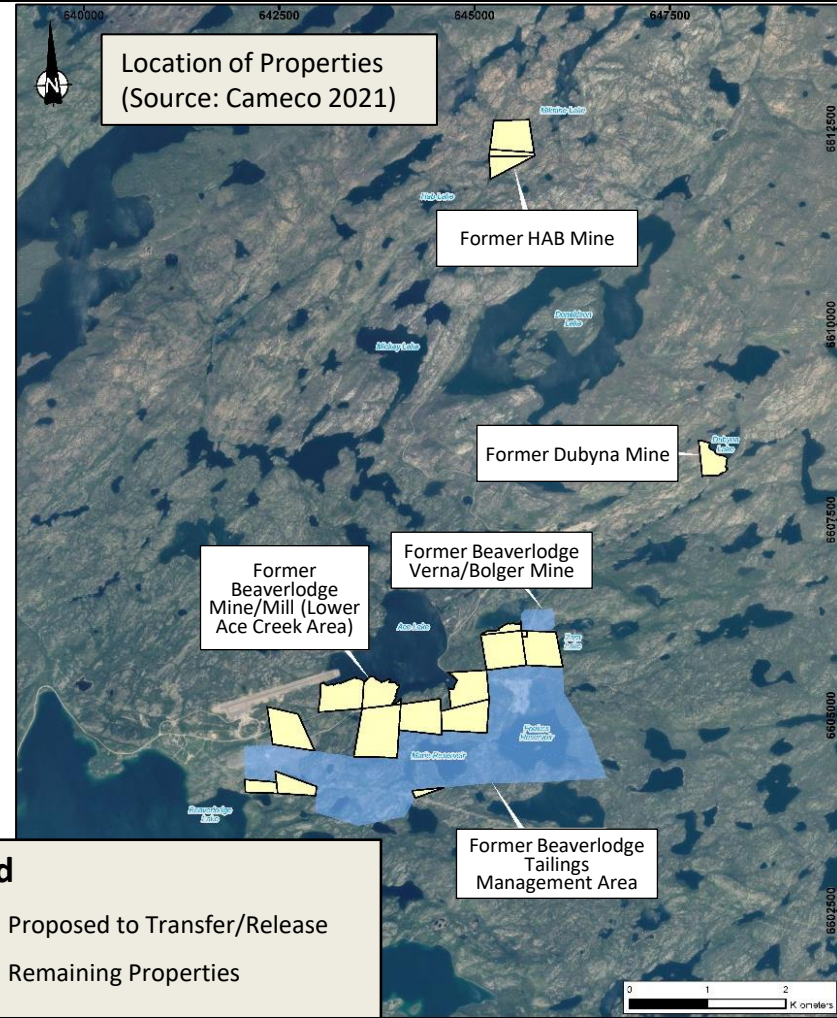
- EMAR 1

## Tailings Management Area

- GC 2
- EXC ACE 15

## Lower Ace Creek

- ACE 3
- ACE 14
- ACE MC
- ACE 9
- ACE 1
- URA 4
- EXC URA 7
- URA FR





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# HAB Properties

## HAB 1

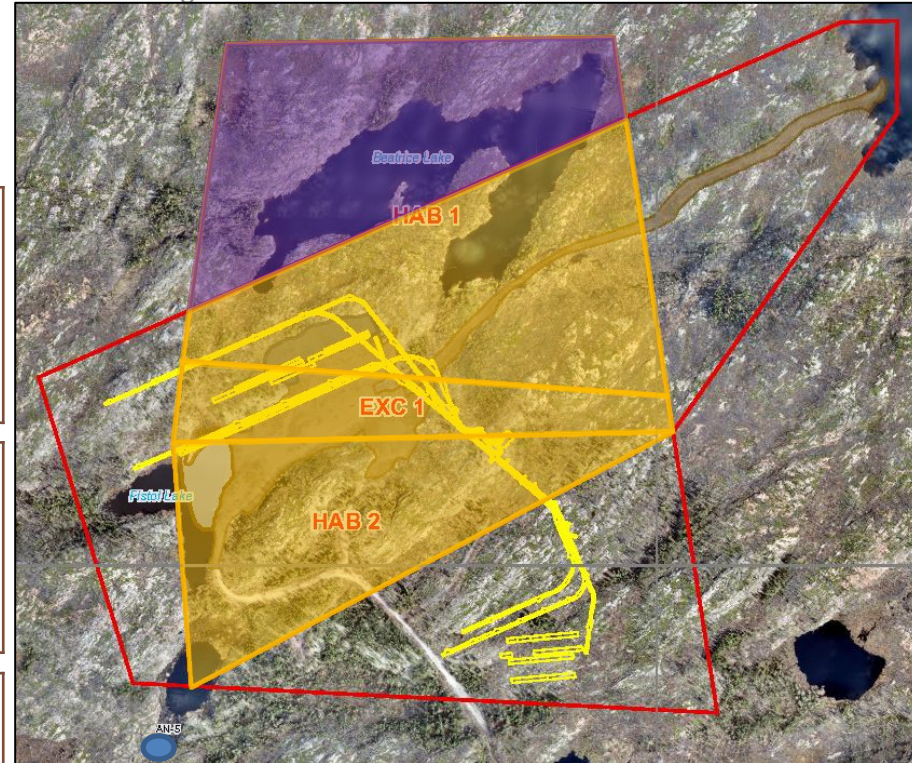
- Backfilled open pit, waste rock, and 1 raise with stainless steel cap (3 raises covered in backfilled pit)
- Water quality performance indicator at outlet of Pistol Lake (Station AN-5)
- Approximately half of the property to ICP (monitoring and maintenance of cap)

## EXC 1

- 3 adits (entrances backfilled) and 3 raises with stainless steel caps
- Waste rock pile
- Water quality performance indicator at outlet of Pistol Lake
- Entire property to ICP (monitoring and maintenance of mine openings)

## HAB 2

- 1 shaft with stainless steel cap
- Waste rock pile
- Water quality performance indicator at outlet of Pistol Lake
- Entire property to ICP (monitoring and maintenance of cap)



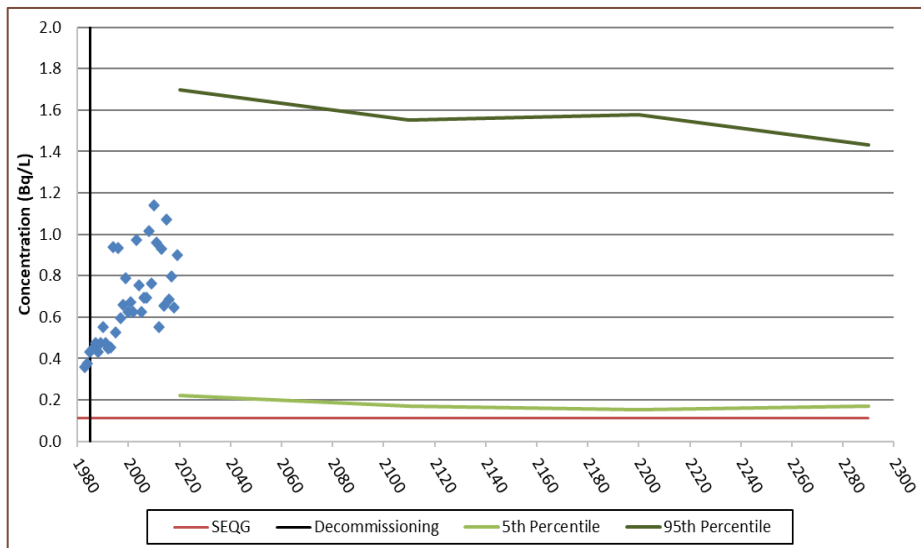
- Red line shows the proposed ICP boundary
  - Orange shaded area shows properties/portions of properties entering ICP
  - Purple shaded area shows properties/portions of properties not entering ICP HAB Properties
- (Source: Cameco 2021)



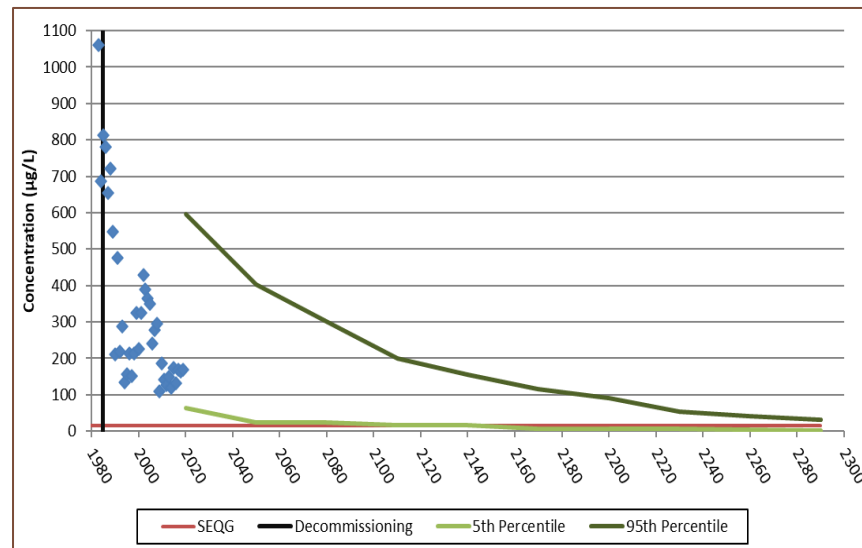
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# HAB Properties – Outlet of Pistol Lake Water Quality Data and Predictions

Radium-226



Uranium



◆ average annual water quality



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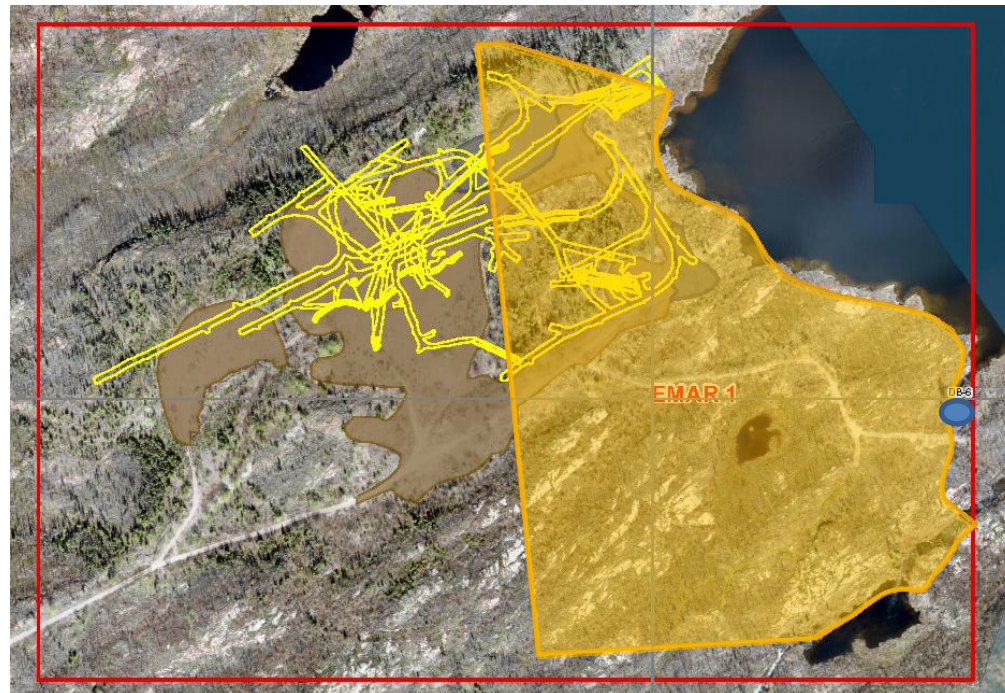
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# Dubyna Property

## EMAR-1

- Backfilled open pits
- Waste rock
- Water quality performance indicator at outlet of Pistol Lake
- Entire property to ICP (monitoring)



- Red line shows the proposed IC boundary
- Orange shaded area shows properties/portions of properties entering ICP  
(Source: Cameco 2021)

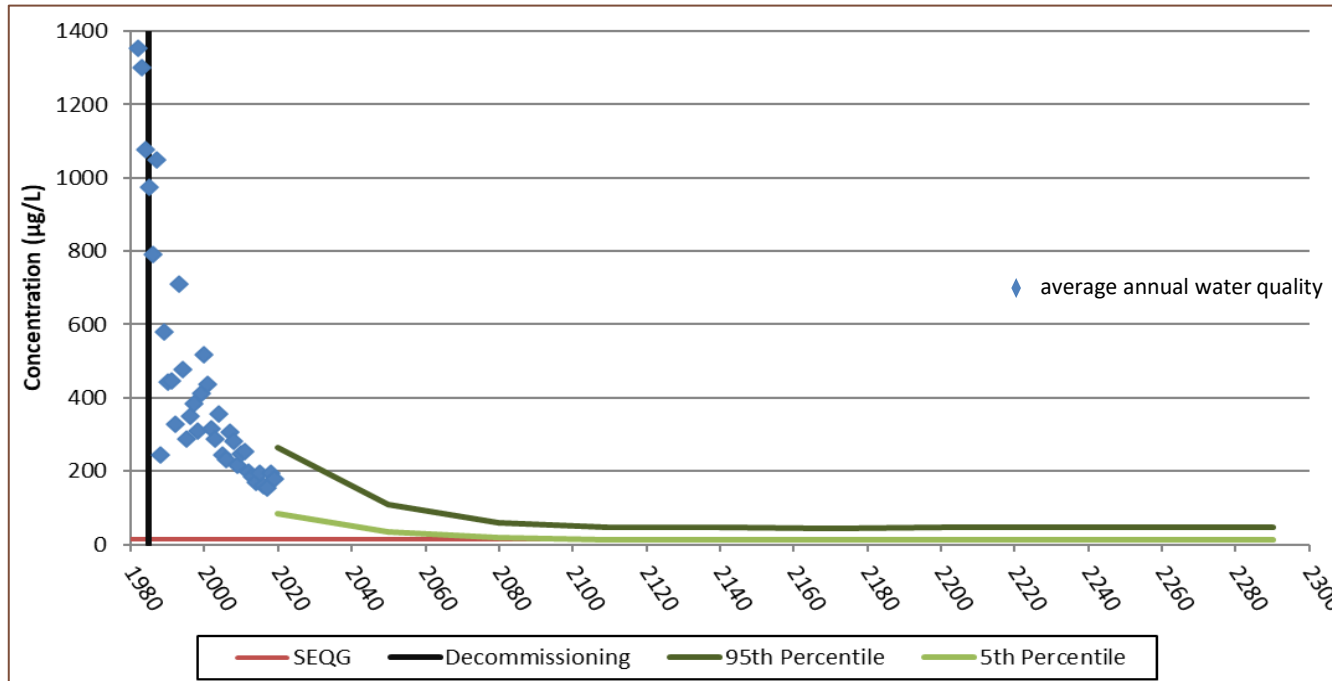




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# Dubyna Property – Outlet of Dubyna Lake Water Quality Data and Predictions - Uranium

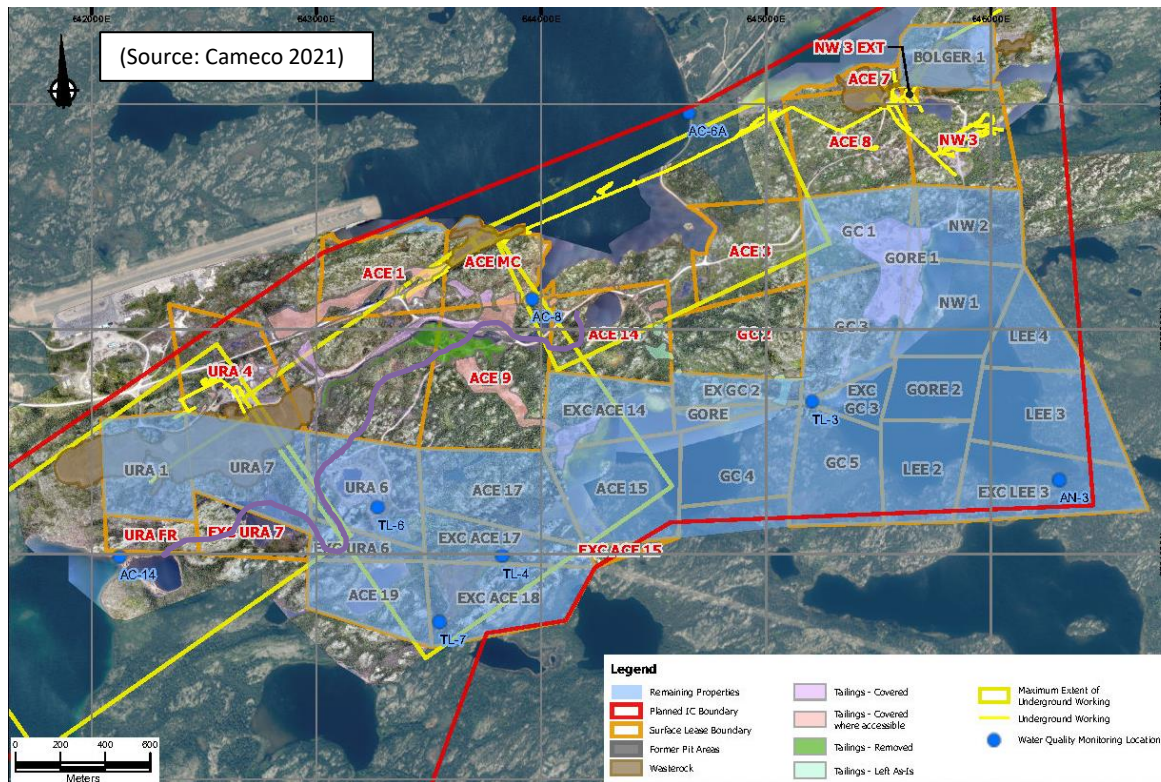




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# Verna/Bolger, Lower Ace Creek & TMA Properties





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# Verna/Bolger Properties (1/2)

## ACE 7

- Adit entrance covered by waste rock
- Waste rock pile
- Entire property to ICP (monitoring)

## ACE 8

- Shaft with stainless steel cover
- Waste rock pile
- Entire property to ICP (monitoring)



Red line shows the proposed IC boundary  
 Orange shaded area shows properties/portions of properties entering ICP  
(Source: Cameco 2021)



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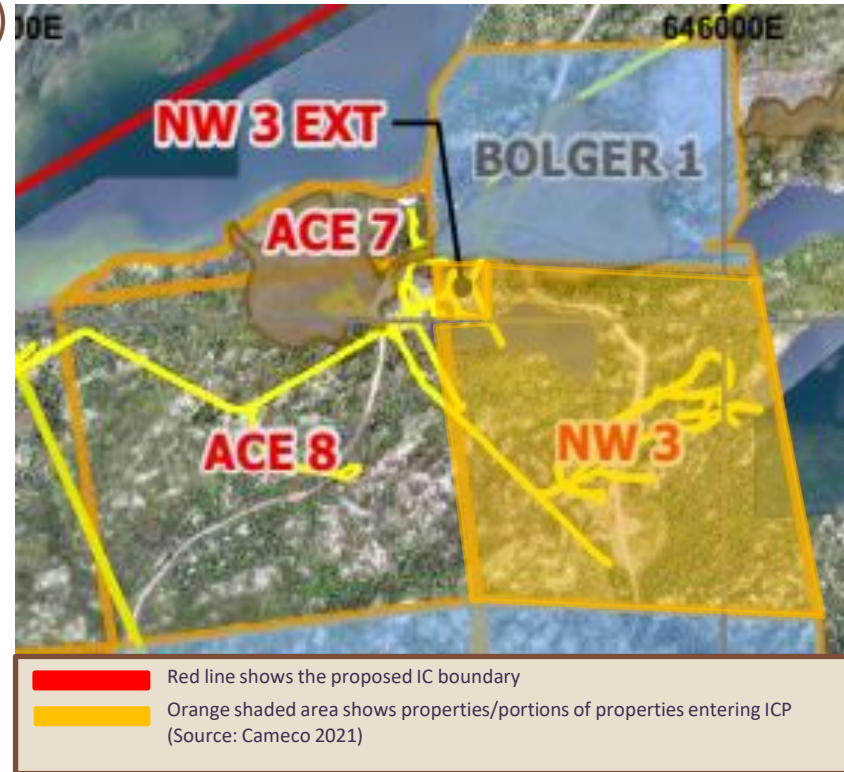
# Verna/Bolger Properties (2/2)

## NW 3 Ext

- 3 raises with stainless steel caps
- Entire property to ICP (monitoring and maintenance)

## NW 3

- Adit with backfilled entrance
- Portion of waste rock pile
- Up Lake located on property
- Entire property to ICP (monitoring)



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# Lower Ace Creek and TMA Properties

ACE 3

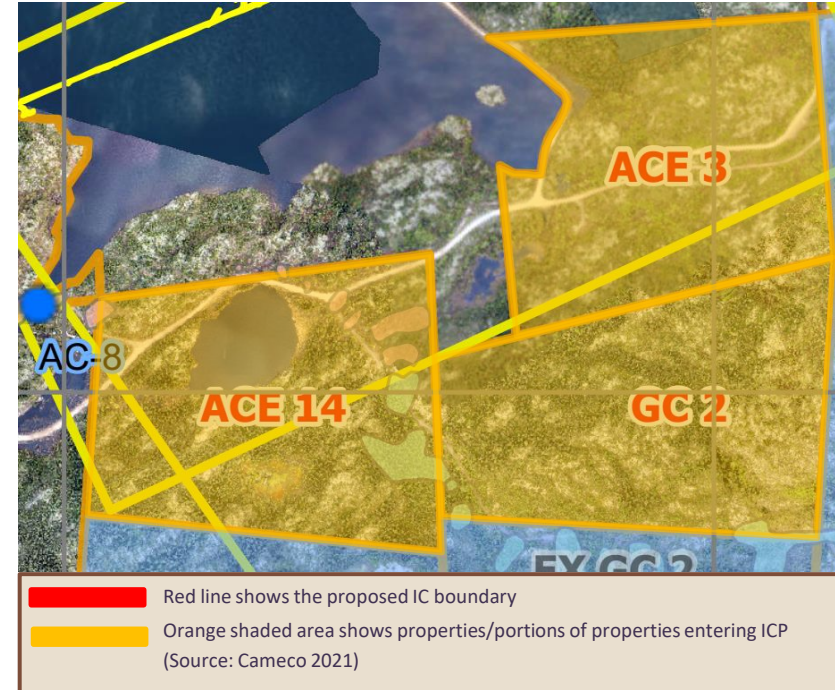
- Raise with stainless steel cap
- Entire property to ICP (monitoring and maintenance)

GC 2

- No mining disturbance
- Historic spilled tailings on portion of property
- Entire property to ICP (monitoring)

ACE  
14

- Remediated spilled tailings
- Gamma radiation risk evaluation conducted
- Watson Lake located on property
- Entire property to ICP (monitoring)





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## Lower Ace Creek Properties (1/2)

### ACE MC

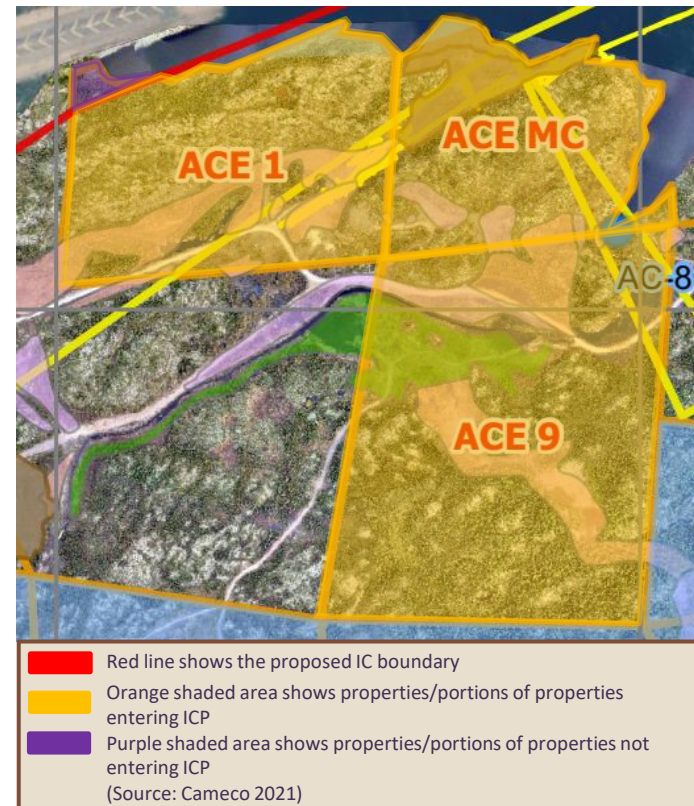
- Shaft and raise (covered with stainless steel cap), 1 raise backfilled and areas covered with waste rock
- Waste rock pile, and remediated spilled tailings on portion of property
- Gamma radiation risk evaluation conducted
- Entire property to ICP (monitoring and maintenance)

### ACE 9

- Remediated spilled tailings
- Gamma radiation risk evaluation conducted
- Entire property to ICP (monitoring)

### ACE 1

- 5 raises to underground mine (2 covered with stainless steel caps, 1 engineered rock cover, 2 raises filled and area covered with rock)
- Remediated spilled tailings
- Entire property to ICP (monitoring and maintenance)





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# Lower Ace Creek Properties (2/2)

## URA 4

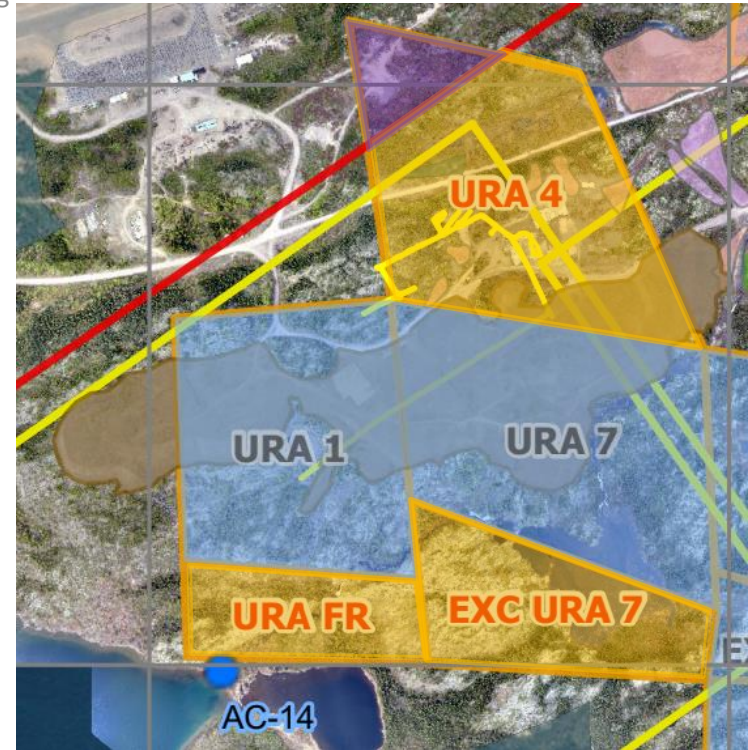
- Shaft, 3 raises covered with stainless steel caps, 2 raises covered with engineered rock and 1 backfilled and covered with rock
- Waste rock pile, remediated spilled tailings
- Majority to ICP (monitoring and maintenance)

## EXC URA 7

- No mining disturbance
- Downslope of Fay waste rock pile
- Water quality performance indicator at outlet of Ace Creek
- Entire property to ICP (monitoring at downstream station)

## URA FR

- No mining disturbance
- Downslope of Fay waste rock pile, 2 waste rock seeps on property
- Entire property to ICP (monitoring at downstream station)



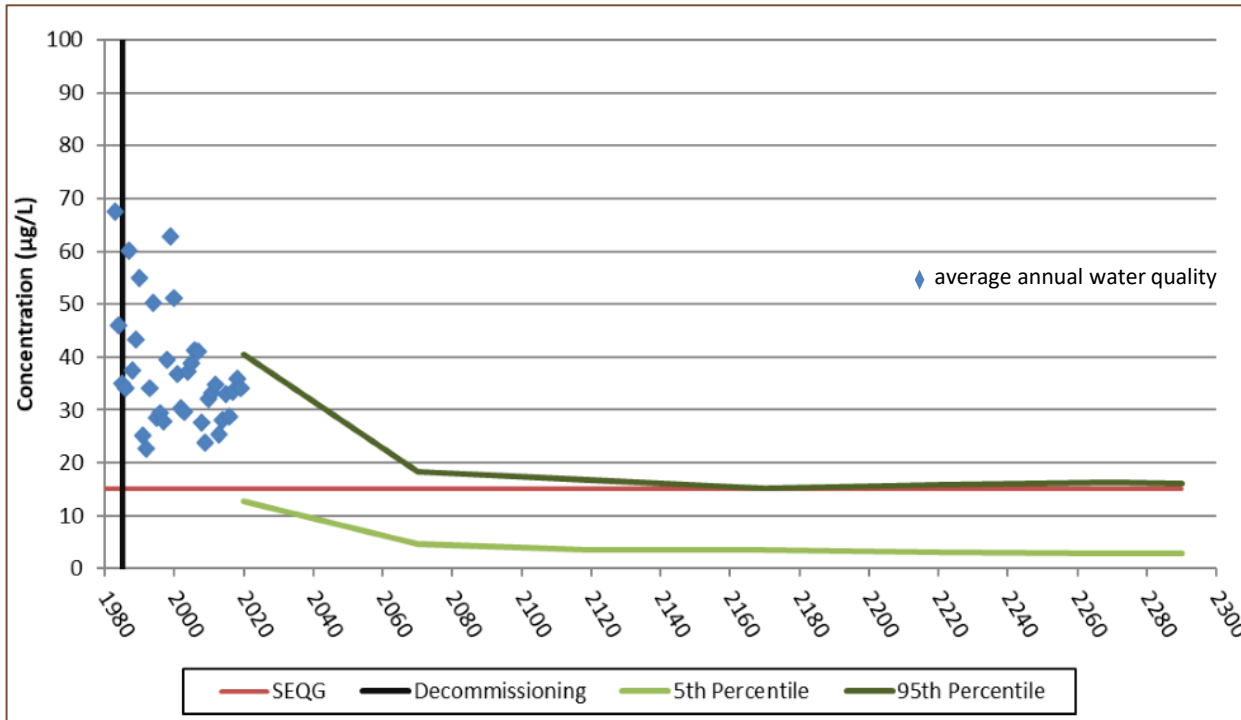
- Red line shows the proposed IC boundary
- Orange shaded area shows properties/portions of properties entering ICP
- Purple shaded area shows properties/portions of properties not entering ICP  
(Source: Cameco 2021)



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# Lower Ace Creek Properties – Outlet of Ace Creek Water Quality Data and Predictions - Uranium







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# TMA Property

EXC  
ACE 15

- No mining and/or milling related disturbance
- Approximately half of property to ICP (no monitoring or maintenance)



- Red line shows the proposed IC boundary
  - Orange shaded area shows properties/portions of properties entering ICP
  - Purple shaded area shows properties/portions of properties not entering ICP
- (Source: Cameco 2021)



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# Environmental Protection Review, SCAs and Regulatory Focus Areas

- CNSC staff performed an Environmental Protection Review under the *Nuclear Safety and Control Act*
  - Properties proposed for release are performing as expected
- General assessment of safety and control areas completed
  - All relevant safety and control areas rated as ‘satisfactory’

**CNSC staff conclude there will be adequate provision for the protection of the environment as a result of the release of these properties**



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## Saskatchewan ICP

# Long Term Monitoring, Maintenance and Reporting

- Monitoring and maintenance activities outlined and costed
  - Monitoring (waste rock, caps, vegetation, crown pillar, etc.) and maintenance of physical structures (mine caps, etc.)
  - Water quality monitoring and comparison to long term predictions
- Monitoring costs of C\$230,092 (2021 net present value) and unforeseen event amount financial assurance
- Federal Crown commitment for obligations and liabilities (failure event)
- Saskatchewan Ministry of Energy and Resources monitors and manages sites
  - Inspection reports and financial status of ICP available to the public
  - Inspection reports initially produced every 5 years



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# ENGAGEMENT AND CONSULTATION



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# Indigenous Engagement (1/2)

- CNSC staff identified Indigenous Nations and communities which may have an interest
  - August 2021: letters of notification sent
  - October 2021: follow-up emails and virtual meetings with offer to meet
  - November 2021: funding awarded through CNSC's Participant Funding Program
  - December 2021: CMD sent to all interested Nations
- Athabasca Chipewyan First Nation (ACFN-Treaty 8 Territory)
  - Black Lake Denesuline First Nation (Treaty 8 Territory)
  - Fond-du-Lac Denesuline First Nation (Treaty 8 Territory)
  - Hatchet Lake Denesuline First Nation (Treaty 10 Territory)
  - Métis Nation-Saskatchewan (MN-S) and Northern Region 1
  - Prince Albert Grand Council
  - Ya'thi Néné Land and Resource Office (YNLRO)



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## Indigenous Engagement (2/2)

- CNSC staff engaged with Indigenous Nations and communities through community meetings, workshops, tours, and science fairs
- September 2019: in-person meetings in Prince Albert, Saskatchewan
- Fall 2020 and 2021: virtual meetings
- January 2022: outreach sessions held with YNLRO and MN-S
- March 2022: outreach session with ACFN



CNSC staff presenting at meetings in Prince Albert, Saskatchewan (Source: CNSC)

**CNSC staff are committed to building long term relationships with interested Indigenous Nations and communities**



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# Public Engagement

- Community meetings/site tours
- June 2019: in-person meeting and tour
- November 2020 and 2021: virtual meetings
- Presentations by CNSC, Cameco, Saskatchewan Ministry of Energy and Resources and Saskatchewan Ministry of Environment
- Recordings and virtual tour available on <http://www.beaverlodgesites.com/>



CNSC presenting in Uranium City, June 4, 2019  
(Source: CNSC)



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# Participant Funding Program

- CNSC allocated C\$78,150 in funding
- Made available to assist members of the public and Indigenous Nations and communities in providing valuable information directly to the Commission

## **Funding awarded to:**

- *Métis Nation-Saskatchewan*
- *Saskatchewan Environmental Society*
- *Ya'thi Néné Land and Resource Office*





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## Interventions (1/2)

CNSC received 15 interventions, main themes included:

- Supportive comments from some companies, associations, residents
- Indigenous engagement and consultation



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## Interventions (2/2)

Other key themes included:

- Participation in monitoring and studies
- Safety of properties and consumption of traditional foods
- Incorporation of local/Indigenous knowledge
- Cumulative effects and Duty to Consult



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# CONCLUSIONS AND RECOMMENDATIONS



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# Conclusions

## **CNSC staff conclude that:**

- All 18 properties proposed for removal from the Beaverlodge licence and exemption from future CNSC licensing meet the applicable performance indicators and regulatory acceptance criteria
- No unreasonable risk to environment or health and safety of persons
- The ICP will provide ongoing regulatory oversight by a competent authority for those properties that require long term monitoring and control
- Monitoring and management of any remaining licensed properties will continue to be the responsibility of the licensee



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# Recommendations

## **CNSC staff recommend that the Commission:**

- Amend Waste Facility Operating Licence WFOL-W5-2120.1/2023 to remove the proposed 18 properties
- Exempt the Government of Saskatchewan from CNSC licensing under the *Nuclear Safety and Control Act* for the proposed 18 properties, to allow the transfer to the Saskatchewan Institutional Control Program



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

Canada

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