Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 20-H4.1B

File / dossier : 6.01.07
Date: 2020-11-18
Edocs: 6426138

Supplementary Information

Presentation from Canadian Nuclear Laboratories Ltd.

In the Matter of the

Canadian Nuclear Laboratories, Douglas Point Waste Facility

Application to amend the waste facility decommissioning licence for the Douglas Point Waste Facility

Commission Public Hearing

November 25-26, 2020

Renseignements supplémentaires

Présentation des Laboratoires Nucléaires Canadiens Ltée

À l'égard de

Les Laboratoires Nucléaires Canadiens, installation de gestion des déchets de Douglas Point

Demande de modification du permis de déclassement de l'installation de gestion des déchets de Douglas Point

Audience publique de la Commission

25 et 26 novembre 2020

Canada

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Douglas Point Licence Amendment Application

Mike Gull | Vice-President, Environmental Remediation Management, CNL

November 25, 2020

Commission Member Document (CMD) 20-H4.1B

22-508760-130-000, Revision 0

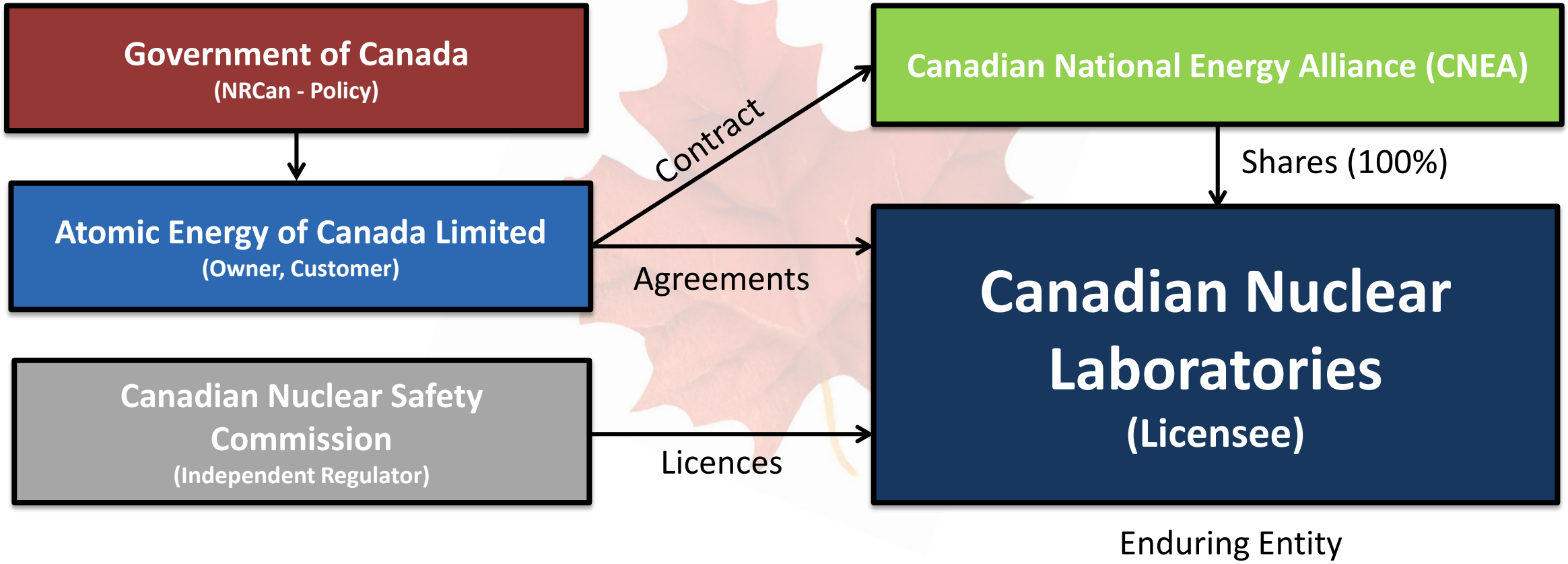
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Agenda

- Introductory remarks
- Storage with surveillance activities
- Proposed plans for proposed amended licence term
- Douglas Point Waste Facility regulatory performance
- Concluding remarks

GoCo Management Model

Operation of Canada's National Nuclear Laboratory



Canadian Nuclear Laboratories

Mandate

- Reduce Government of Canada nuclear legacy and historic waste liabilities

Vision

- To advance nuclear science and technology for a clean and secure world and ***to safely and cost effectively reduce the federal legacy liabilities and associated risks***

Mission

- Restoring and protecting Canada's environment by reducing and effectively managing nuclear liabilities

Canadian Nuclear Laboratories

CNL demonstrates an ***absolute commitment*** to safety and the environment!

CNL has ***operated*** safely during the current licence period and has ***made improvements*** that will continue to enhance safety.

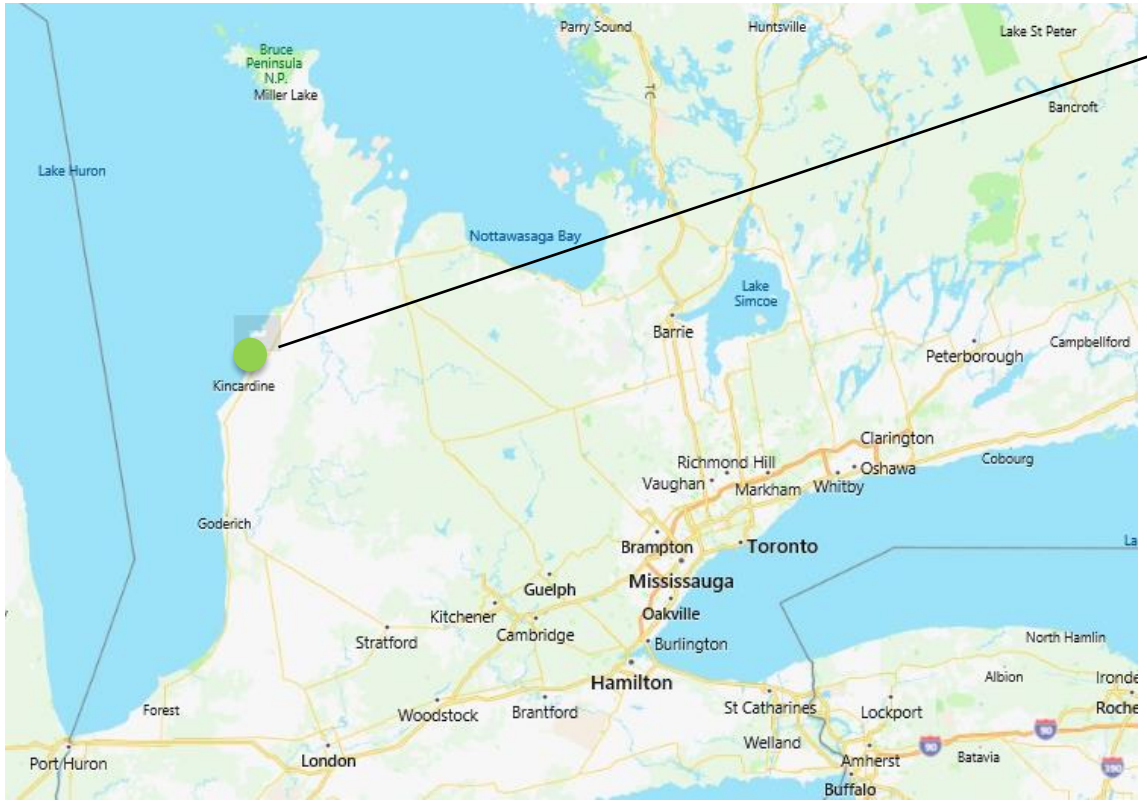
CNL ***will continue*** to meet all regulatory obligations.

Experience and Expertise

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Douglas Point

Location of the Site



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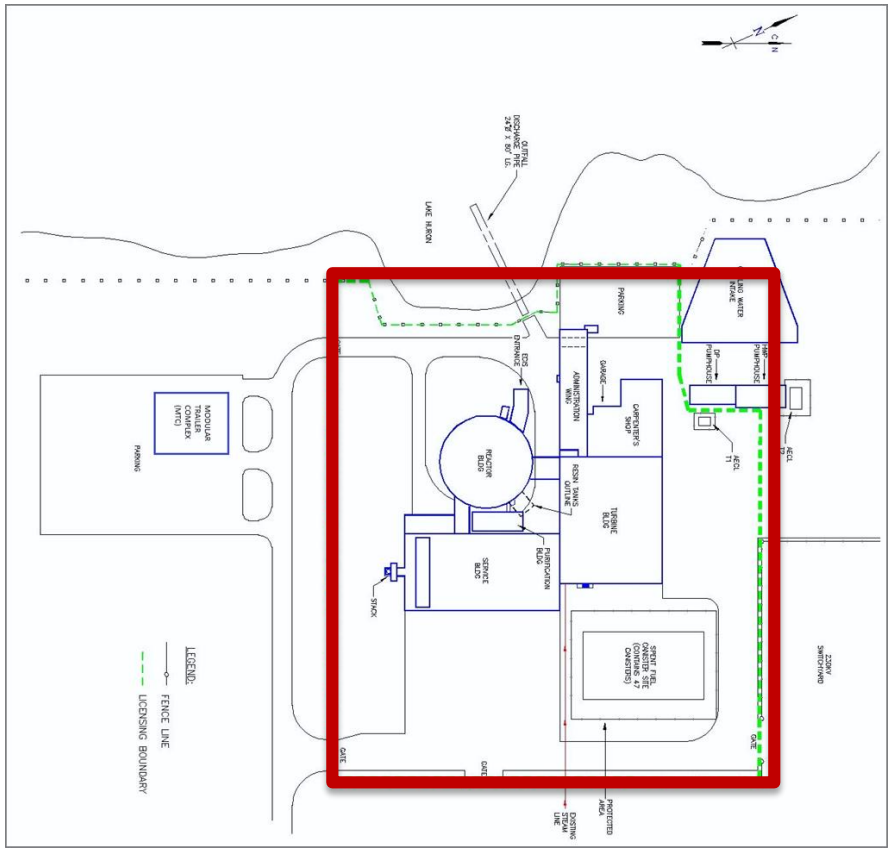
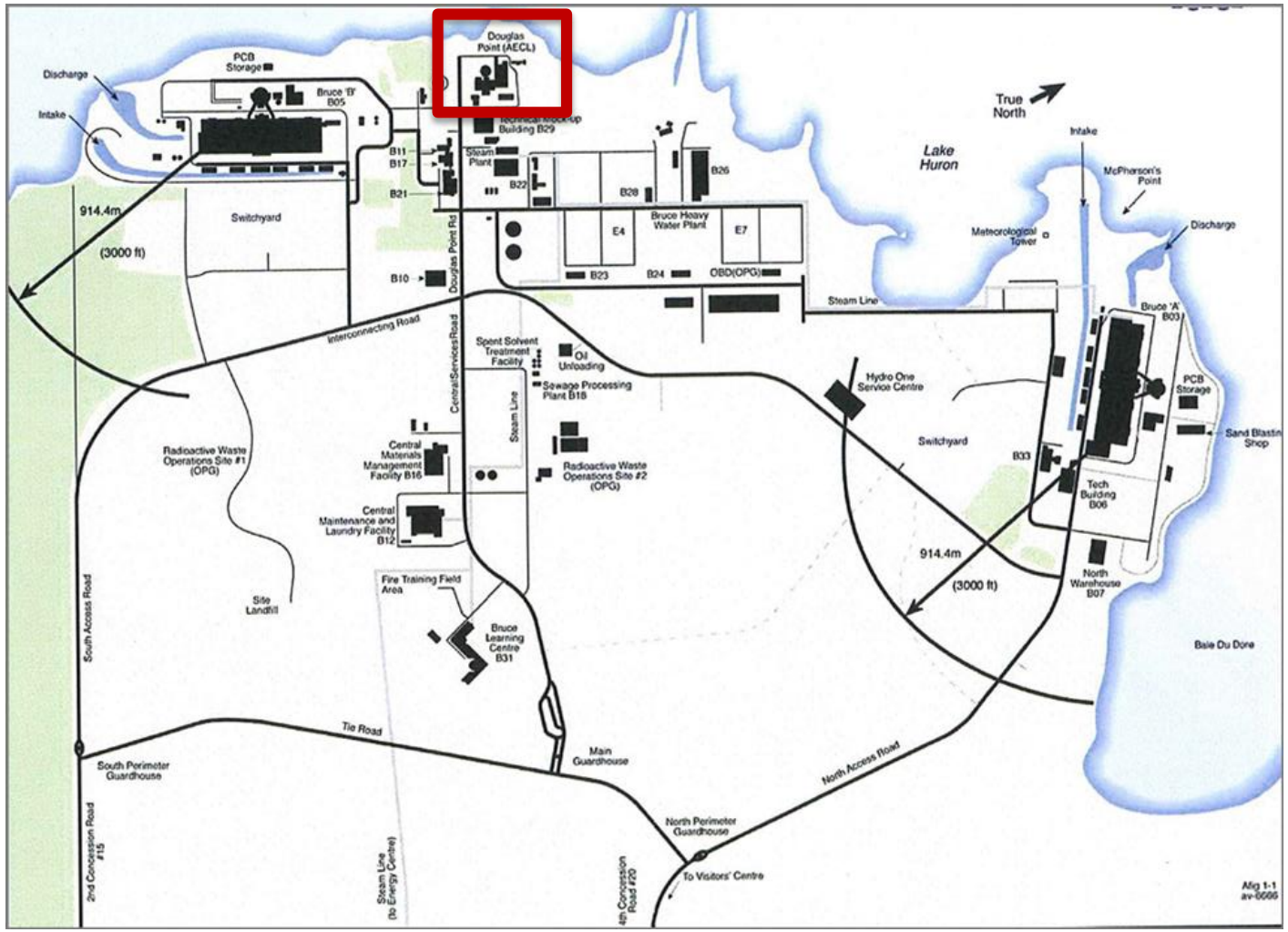
Douglas Point

Site Footprint

Douglas Point site



Bruce site



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History and Path Forward

- Canada's first full-scale nuclear power plant
- 200 MWe prototype CANDU® reactor
- Produced electricity from 1967 – 1984
- **Phase 1:** fuel transferred to dry storage on site by 1987
- **Phase 2:** storage with surveillance (current phase)
- **Phase 3:** pending regulatory decisions, decommissioning is planned to occur from now until 2070

Licence Timeline

2014: CNSC issues one 20-year Waste Facility Decommissioning Licence for three of AECL's prototype reactor facilities

2018: CNL asks to administratively split 2014 licence

2019: CNSC issues Douglas Point licence based on continued storage with surveillance

2019: CNL applies to amend the current Douglas Point licence

Douglas Point

Circa 1970 and 2019

Canadian Nuclear Laboratories

Kristan Schruder | General Manager, Decommissioning & Environmental Remediation
Site Licence Holder

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Storage with Surveillance Activities

Monitoring, Maintenance and Hazard Reduction since 2014

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Storage with Surveillance Activities

Reactor Building roof repair
and access upgrade

Fire Protection upgrades

Storage with Surveillance Activities

Boilers

Spent Fuel Canister Area

Before: Purification Building roof repairs

After: Purification Building roof repairs

Hazard Reduction Campaigns

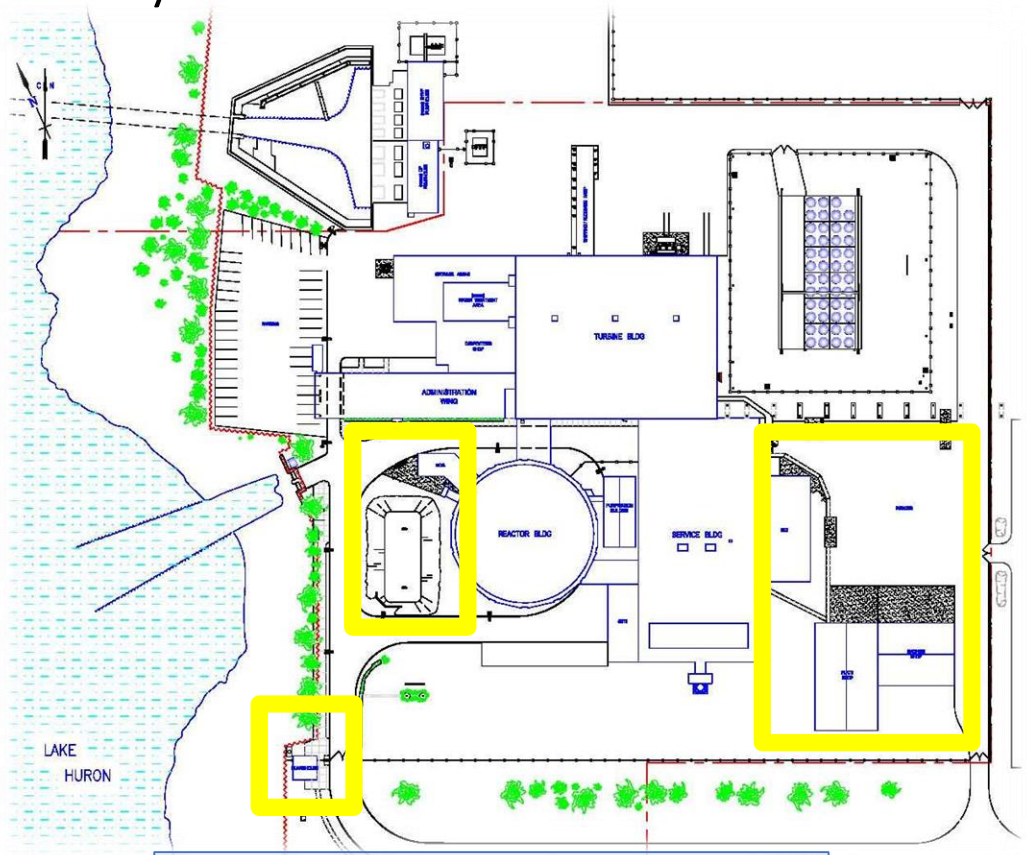
Spent resins removal (ILW)

Legacy waste removal

Asbestos waste removal

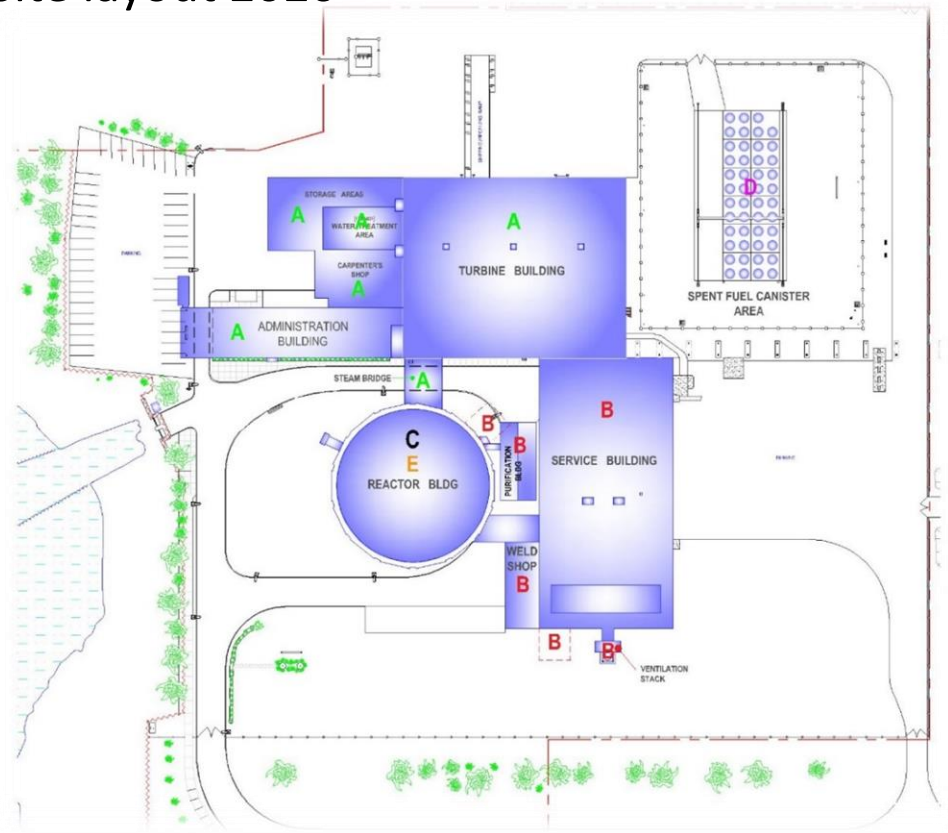
Hazard Reduction Campaigns

Site layout 2014



Represents buildings removed

Site layout 2020



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Regulatory Compliance Inspections

- 8 Canadian Nuclear Safety Commission compliance inspections
- 5 International Atomic Energy Agency inspections
- No significant issues identified

Proposed plans for Amended Licence

Maintaining Storage with Surveillance in Phase 3

Throughout Phase 3 CNL will:

- ensure the facility remains in a safe, sustainable, and secure state
- maintain systematic monitoring and inspection programs
- update life management program as decommissioning progresses

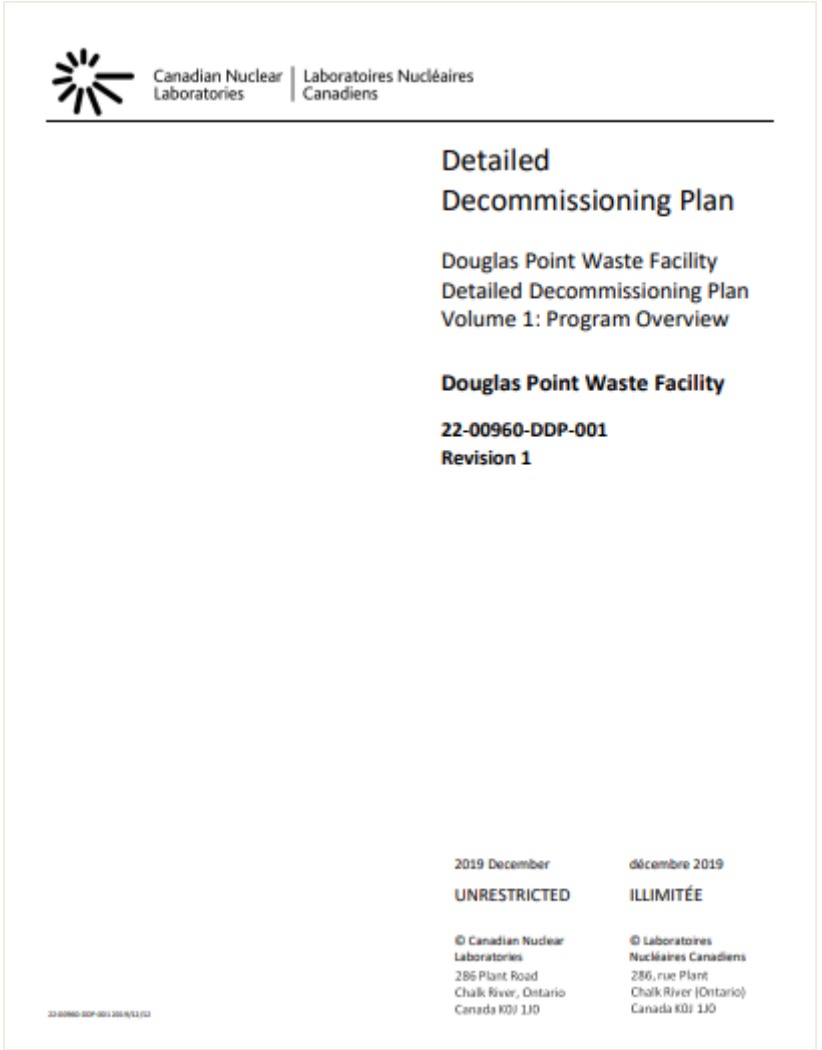
Future Hazard Reduction Campaigns

- Removal of asbestos containing materials and other designated substances
- Removal of operational waste and legacy waste from shutdown facilities/buildings

Detailed Decommissioning Plan

Volume 1: Program Overview

- First of six detailed decommissioning plans
- Provides an overview of each of the five planning envelopes associated with final decommissioning
- Provides an overview of the work in each planning envelope
- The work for each planning envelope will be detailed in subsequent detailed decommissioning plans
- Each detailed decommissioning plan will be required to be submitted to the CNSC for acceptance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Detailed Decommissioning Plan

Douglas Point Waste Facility
Detailed Decommissioning Plan
Volume 1: Program Overview

Douglas Point Waste Facility

22-00960-DDP-001
Revision 1

2019 December
UNRESTRICTED

décembre 2019
ILLIMITÉE

286 Plant Road
Chalk River, Ontario
Canada K0J 1J0

286, rue Plant
Chalk River (Ontario)
Canada K0J 1J0

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Douglas Point Decommissioning

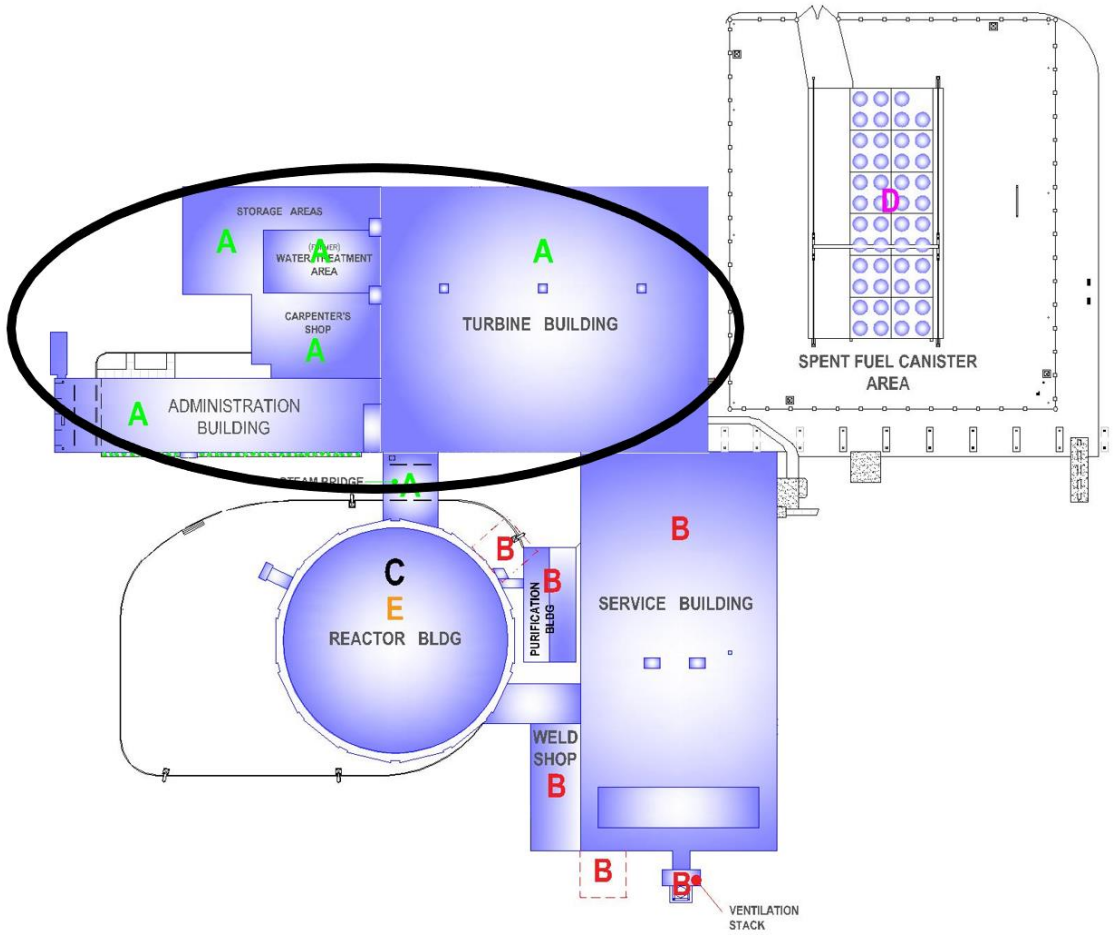
Five Planning Envelopes

Planning Envelope	Facility/Building/System	Nuclear/Non-Nuclear	DDP Volume
Planning Envelope A	Administration Building Turbine Building Ancillary Facilities East Steam Lines and Supporting Structure Steam Bridge	Non-nuclear	Volume 2
Planning Envelope B	Purification Building Service Building Weld Test Shop Resin Storage Tanks and Vault	Nuclear	Volume 3
Planning Envelope C	Reactor Building Clear-Out	Nuclear	Volume 4
Planning Envelope D	Spent Fuel Canister Area	Nuclear	Volume 5
Planning Envelope E	Reactor Building Decommissioning	Nuclear	Volume 6

Planning Envelope A

Non-nuclear Buildings

- Administration Building
- Turbine Building
- Ancillary Facilities
- East Steam Lines and Supporting Structure
- Steam Bridge



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Planning Envelope A

Non-nuclear Buildings - Administration Building

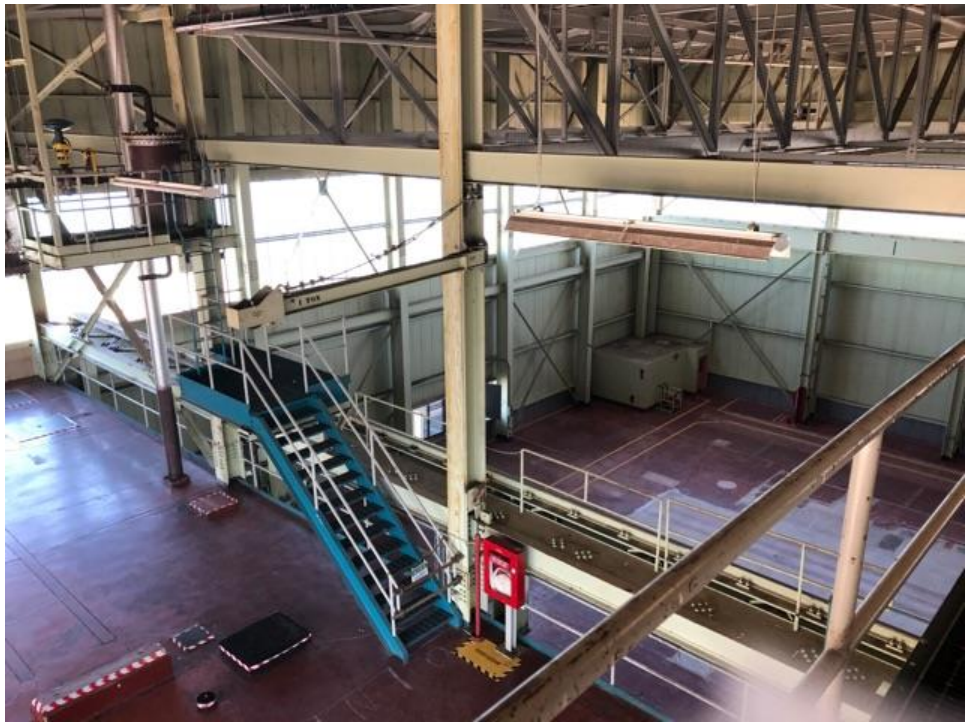
Exterior

Interior

Planning Envelope A

Non-nuclear Buildings – Turbine Building

Exterior

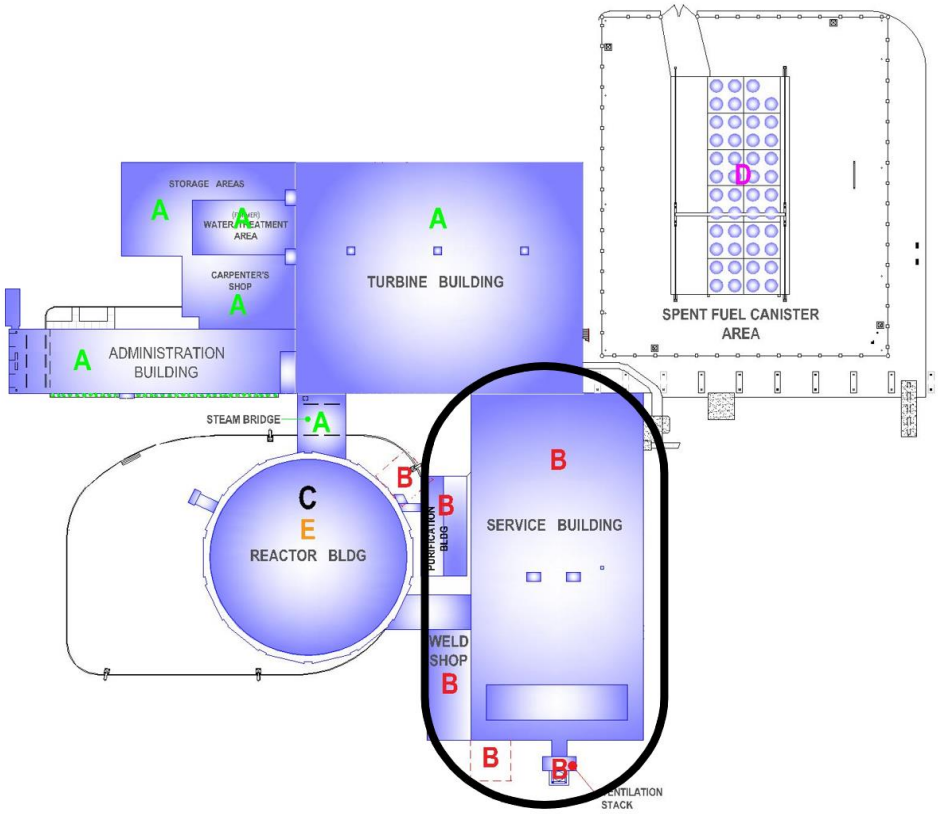


Interior

Planning Envelope B

Nuclear Support Buildings

- Purification Building
- Service Building
- Resin Storage Tanks and Vault
- Weld Test Shop



Planning Envelope B

Nuclear Support Building – Purification Building

Exterior

Interior

Planning Envelope B

Nuclear Support Building – Service Building

Exterior of the Service Building

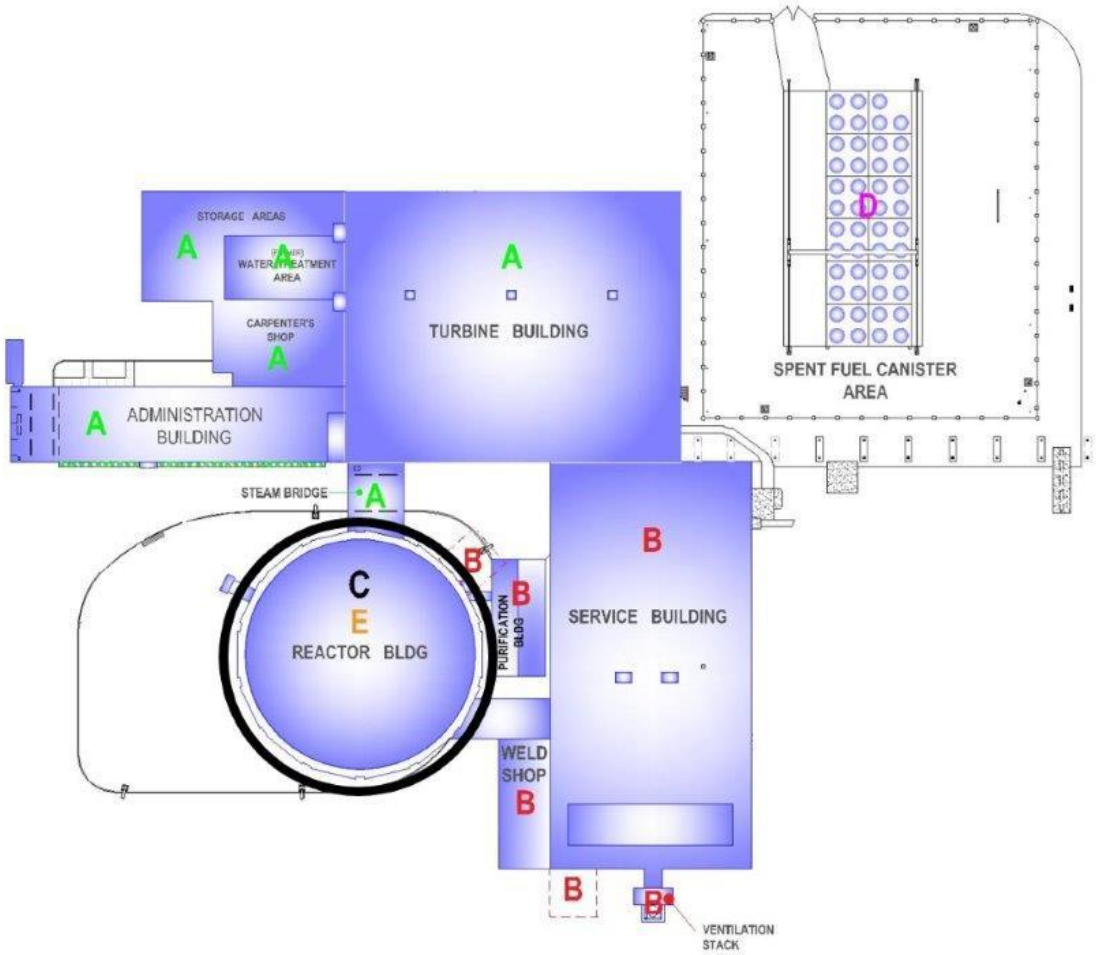
Former fuel rod loading bay

Reactor Building entrance

Planning Envelope C

Reactor Building Clear-Out

- Peripheral equipment and systems located inside the reactor building that supported the reactor operations



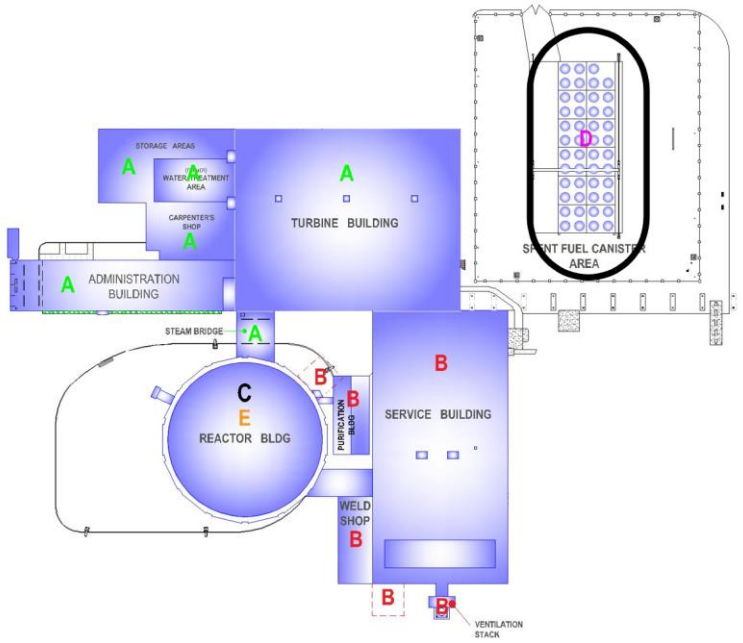
Planning Envelope C

Reactor Building Clear-Out

Images of the interior of the reactor building

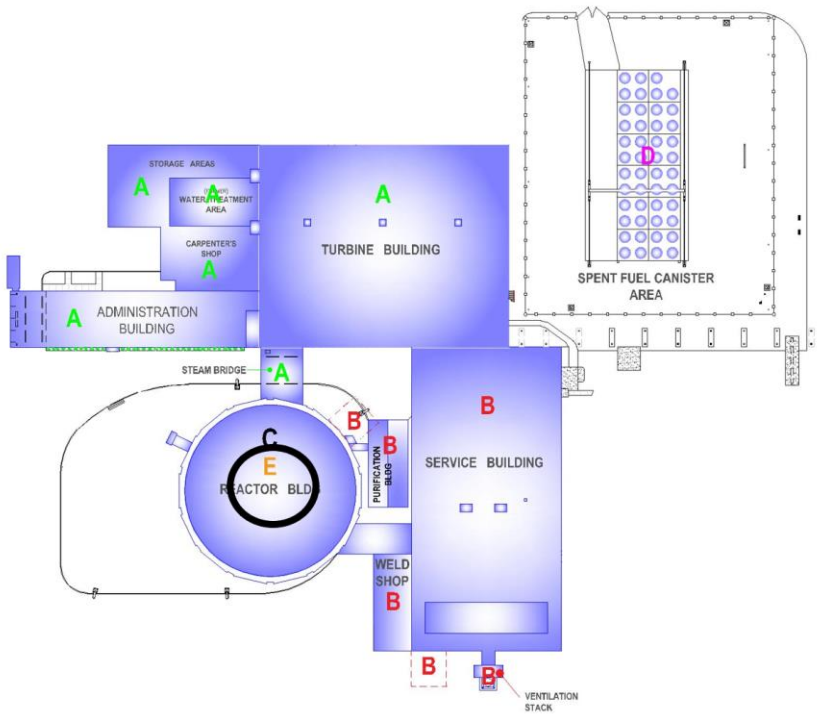
Planning Envelope D

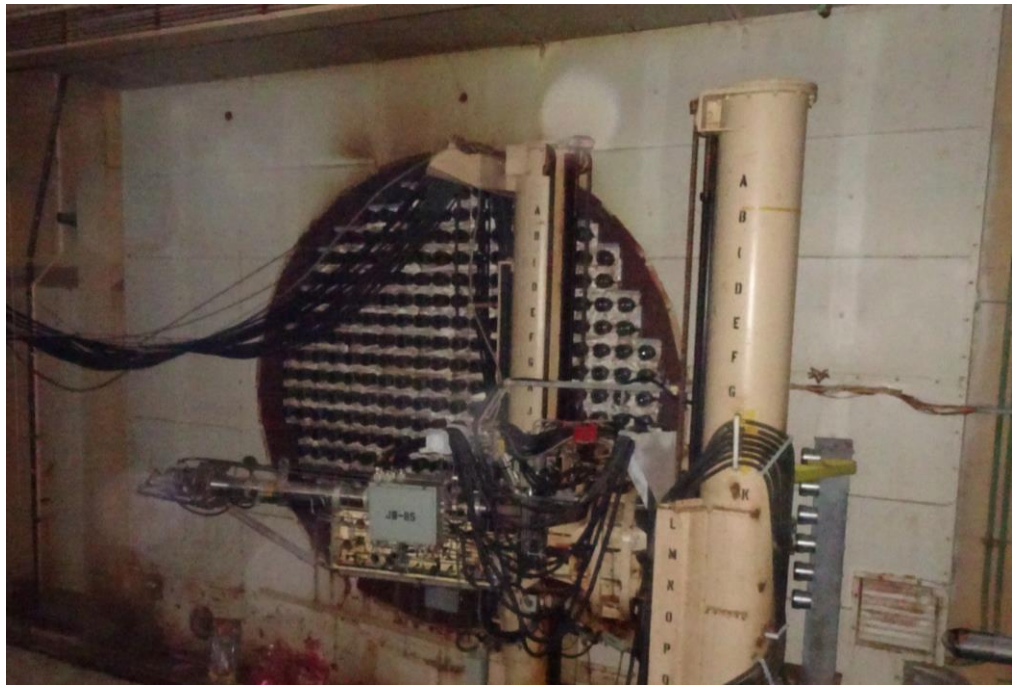
Spent Fuel Canister Area



Planning Envelope E

Reactor Building Decommissioning





Reactor face

Douglas Point Decommissioning

Revised Decommissioning Timeline

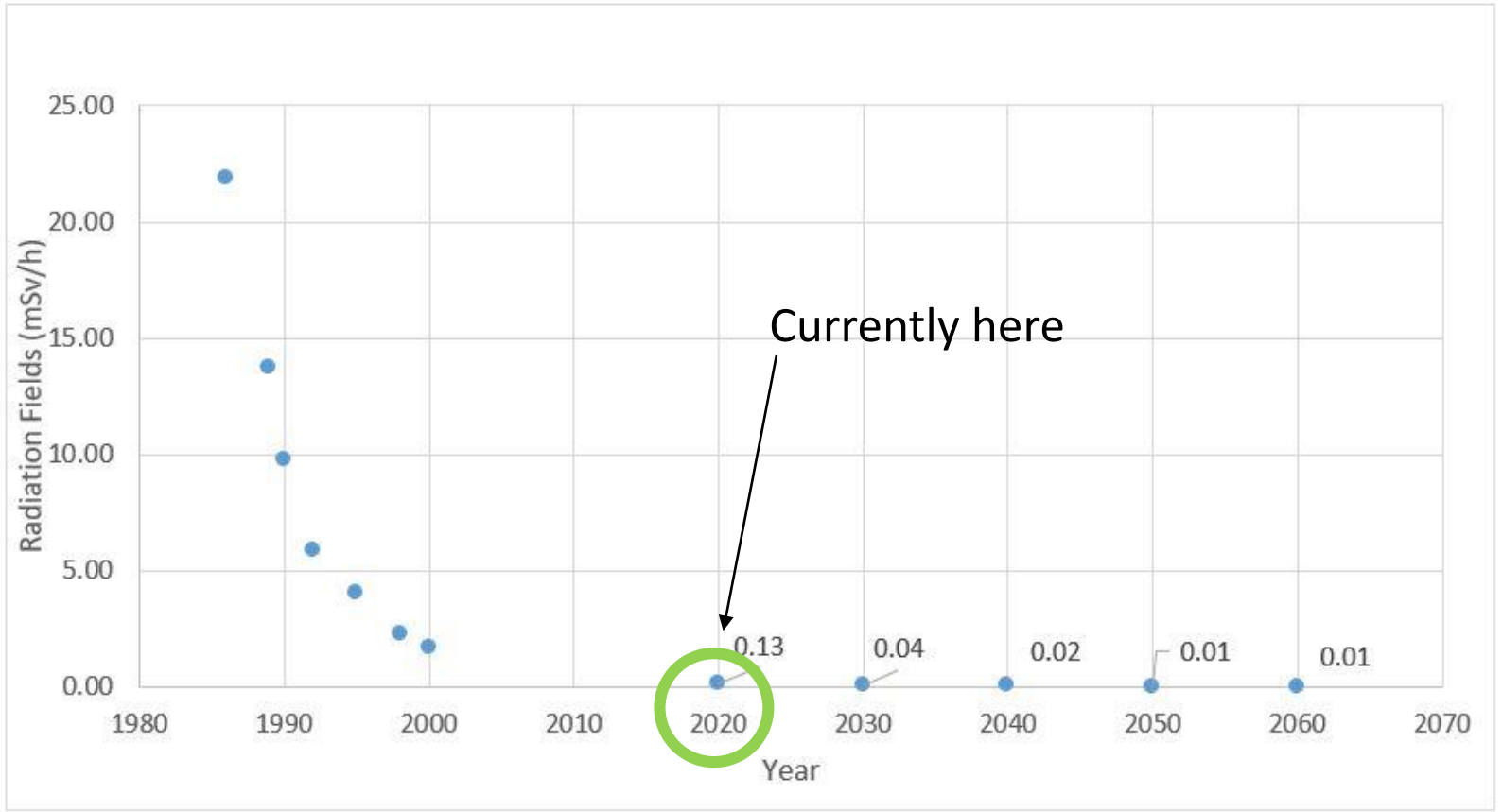
Planning Envelope A	• Initial Plan 2021-2029 • Advanced by ~ 5 years
Planning Envelope B	• Initial Plan 2055-2070 • Advanced by ~45 years
Planning Envelope C	• Initial Plan 2055-2070 • Advanced by ~40 years
Planning Envelope D	• To be determined (future licensing)
Planning Envelope E	• To be determined (future licensing)

Strategy Considerations for Advancement of Timeline

- Potential impacts to the environment
- Doses to workers and the public
- Site configuration
- Existing/available waste management facilities
- Efficient management of nuclear legacy liabilities
- End-state objectives

Douglas Point Decommissioning

Example Ambient Dose Rates in the Reactor Building vs. Time



Douglas Point Decommissioning

Conceptual Schedule

		1984 to 1994	1995 to 2019	2020	2021	2022	2023	2024	2025 to 2029	2030 to 2034	2035 to 2070
Phase 1	Safe Shutdown Activities										
Phase 2	Storage with Surveillance										
	Licence Amendment										
PE-A	**Non-Nuclear Buildings**										
PE-B	**Nuclear Support Buildings**										
PE-C	**Reactor Building Clear-Out**										
PE-D	Spent Fuel Canister Area										
PE-E	Reactor and Reactor Building										
Site Closure Activities	Final Survey and Close-Out Documentation										

Regulatory Performance

Douglas Point Waste Facility

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Regulatory Performance

Safety and Control Areas

- Management System
- Conventional Health & Safety
- Radiation Protection
- Environmental Protection
- Waste Management
- Packaging and Transport

Other Matters of Regulatory Interest

- Engagement with Indigenous Communities
- Public Information Program

Management System

Current Performance

- Captures requirements of GoCo management model
- Management System ensures safe, effective and efficient conduct of work
- Applies to all activities across CNL
- Up-to-date, compliant and agile framework
- CNL Management System for decommissioning Douglas Point Waste Facility based on CSA N286-12
- Employee surveys support staff engagement and CNL's safety culture

Conventional Health and Safety

- No lost time injury or illness at Douglas Point Waste Facility
- Robust Integrated Work Control process and permitting system incorporating hazard prevention program

Conventional Health and Safety

CNL response to COVID-19 pandemic

- Daily health screening for workers attending sites
- Mandatory face coverings
- Mandatory COVID hazards and precautions training
- COVID topic in daily pre-job briefs
- Physical distancing between workers
- Enhanced cleaning protocols
- CNL Executive Pandemic Committee

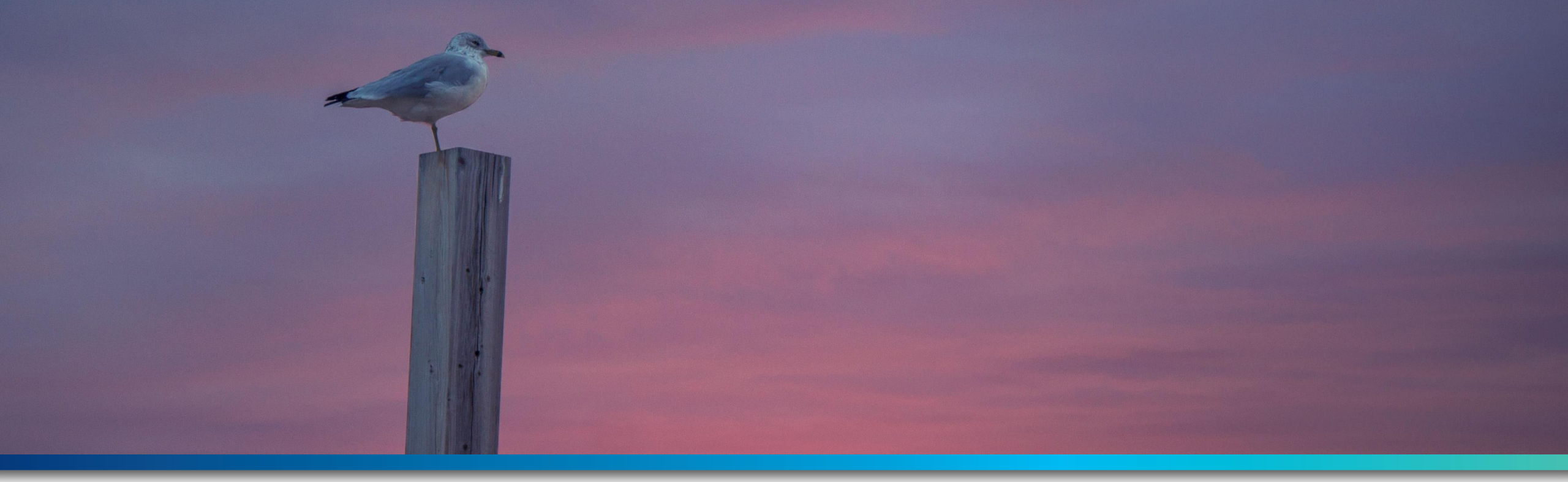
Conventional Health and Safety

Future

- Maintain updated facility-specific procedures
- Identify, assess and manage conventional hazards from routine activities and decommissioning projects
- Evaluate all future works for specific hazards
- Integrate external and internal best practices

Radiation Protection

- Successful implementation of the RP program – no regulatory limits or Action Levels exceeded
- Highest annual individual whole-body dose remained well below limit



Environmental Protection

Commitment to Environmental Sustainability

CNL's Environmental Policy ensures that protection of the environment and sustainability are integral components of CNL's decision-making in all its business activities.

Environmental Protection

Current Practice

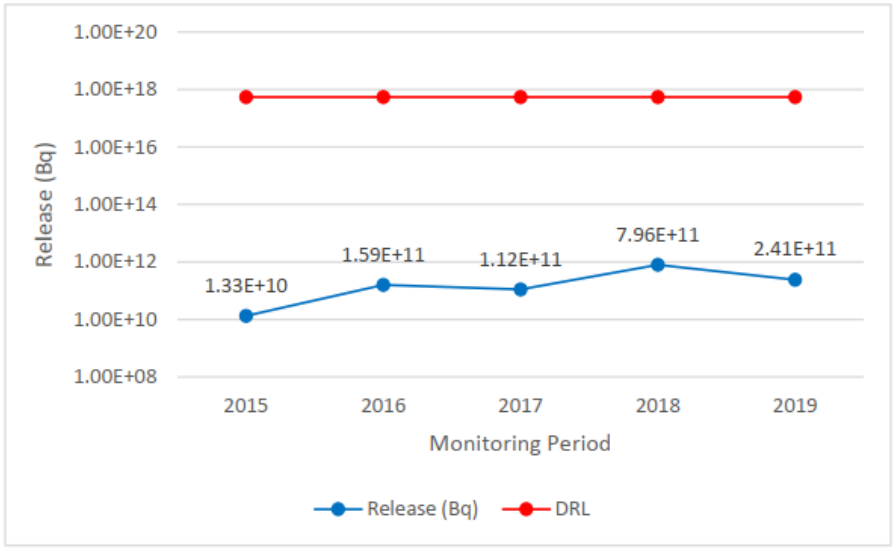
Effluent Monitoring Program in compliance with CSA N288.5 *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*

- Routine monitoring of tritium, gross alpha and gross beta
- Monitoring of carbon-14
- Checks under National Pollutant Release Inventory, Green House Gas and Federal Halocarbon Regulations

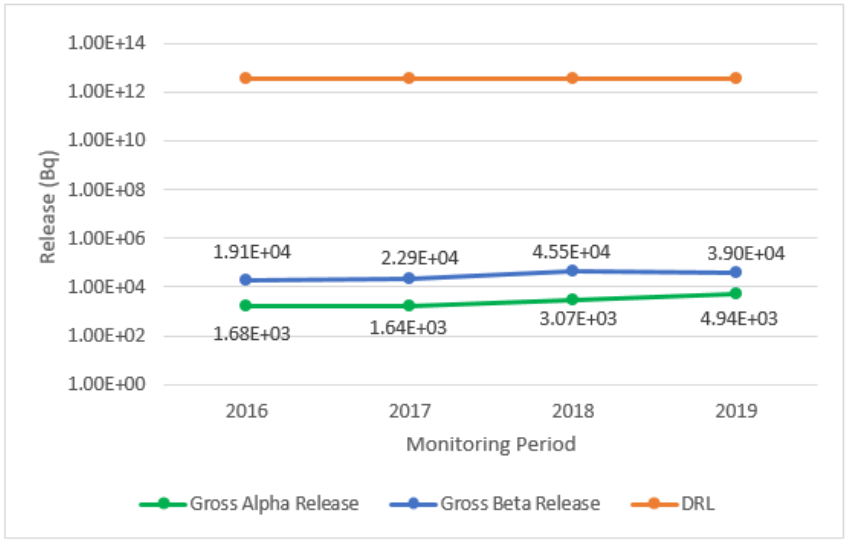
Environmental Protection

Airborne Releases

Douglas Point operated well within the parameters defined in its Effluent Monitoring Plan (<0.01 % DRL).



Tritium releases to air

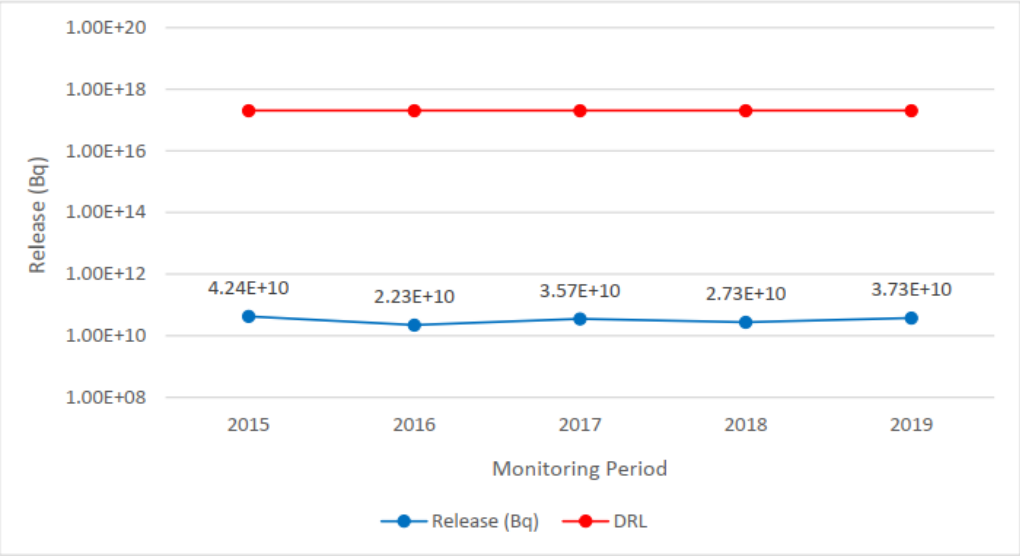


Gross Alpha and Gross Beta releases to air

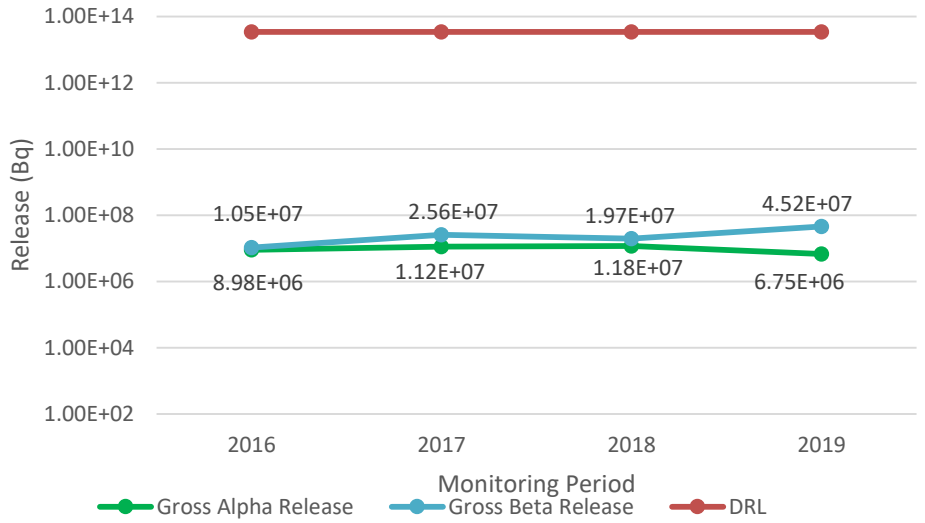
Environmental Protection

Waterborne Releases

Douglas Point operated well within the parameters defined in its Effluent Monitoring Plan (<0.01 % DRL).



Tritium releases to water



Gross Alpha and Gross Beta releases to water

Environmental Protection

Interactions with Bruce Site

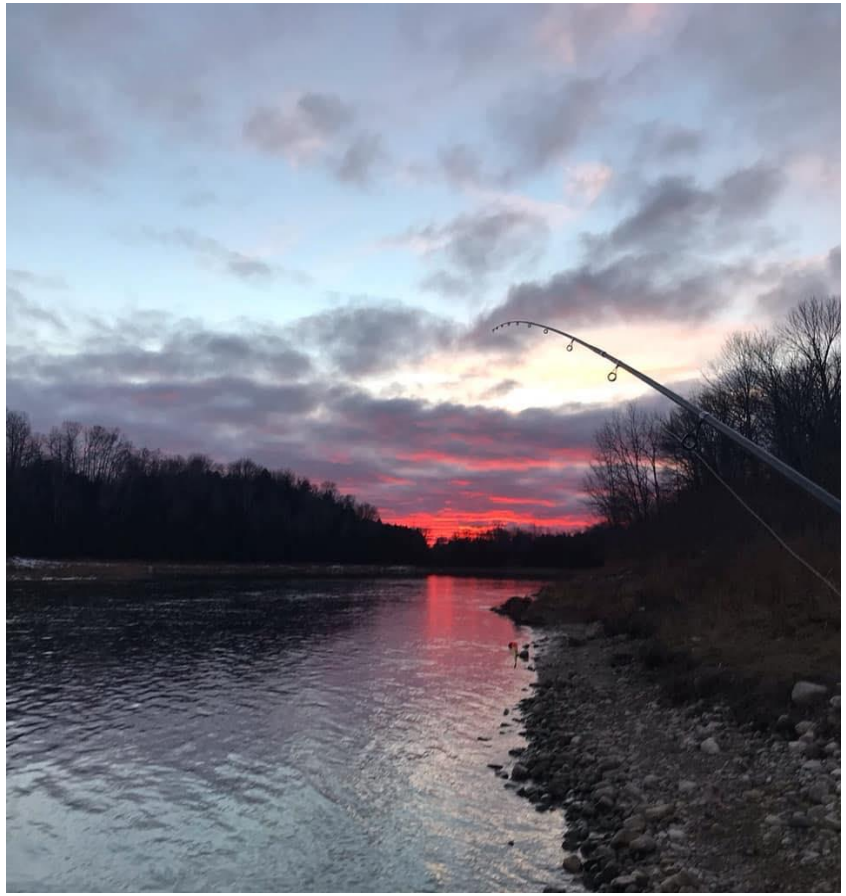
- CNL will continue to provide the information to Bruce Power on waterborne and airborne releases for inclusion in their Environmental Monitoring report.
- Environmental Risk Assessment for Bruce Site includes Douglas Point

Environmental Protection

Future

Improvements to the Environmental Monitoring Program:

- Implementation of CSA N288.7-15, *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*



Waste Management

Integrated Waste Strategy

- Waste lifecycle management across all CNL operated sites, including DPWF
- Baseline strategies for different types of wastes
- Provision of waste solutions to:
  - protect the environment
  - comply with regulations
  - assure health, safety and security
- Wastes will continue to be generated and managed in accordance with the waste hierarchy

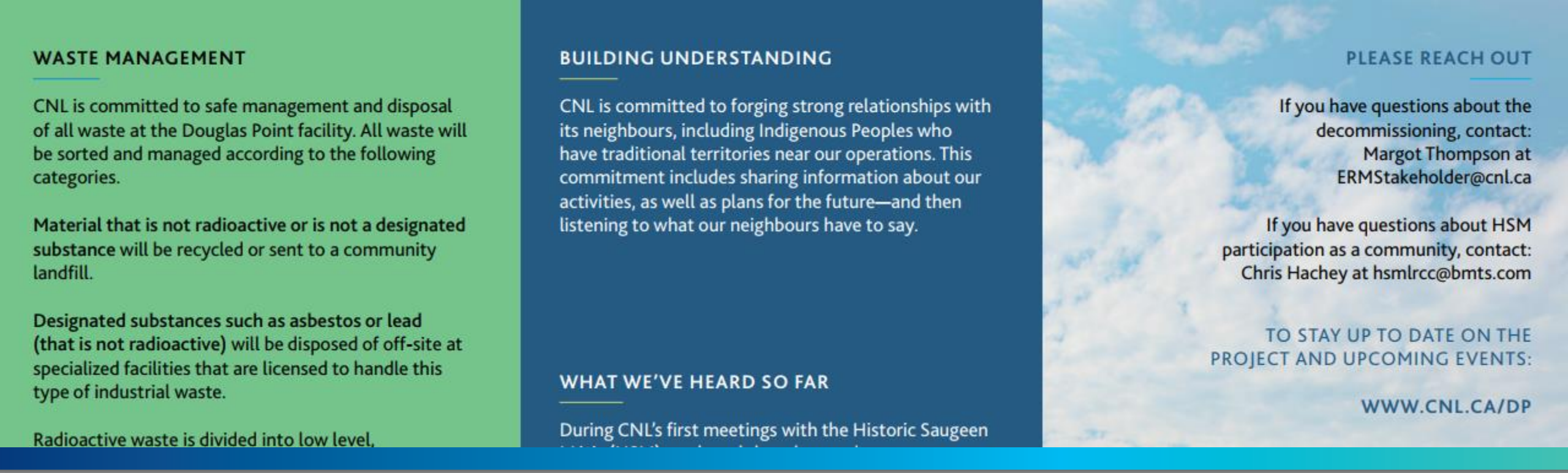
Waste Hierarchy

Packaging and Transport

- More than 1 million packages of radioactive material are safely transported in Canada each year
- CNL has transported radioactive material for more than 60 years with no releases to the public or the environment
- 2014 to present:
  - 13 shipments of intermediate-level waste
  - 22 shipments of low-level waste
- 2020-2030:
  - 1 planned shipment of intermediate-level waste
  - 20 planned shipments of low-level waste

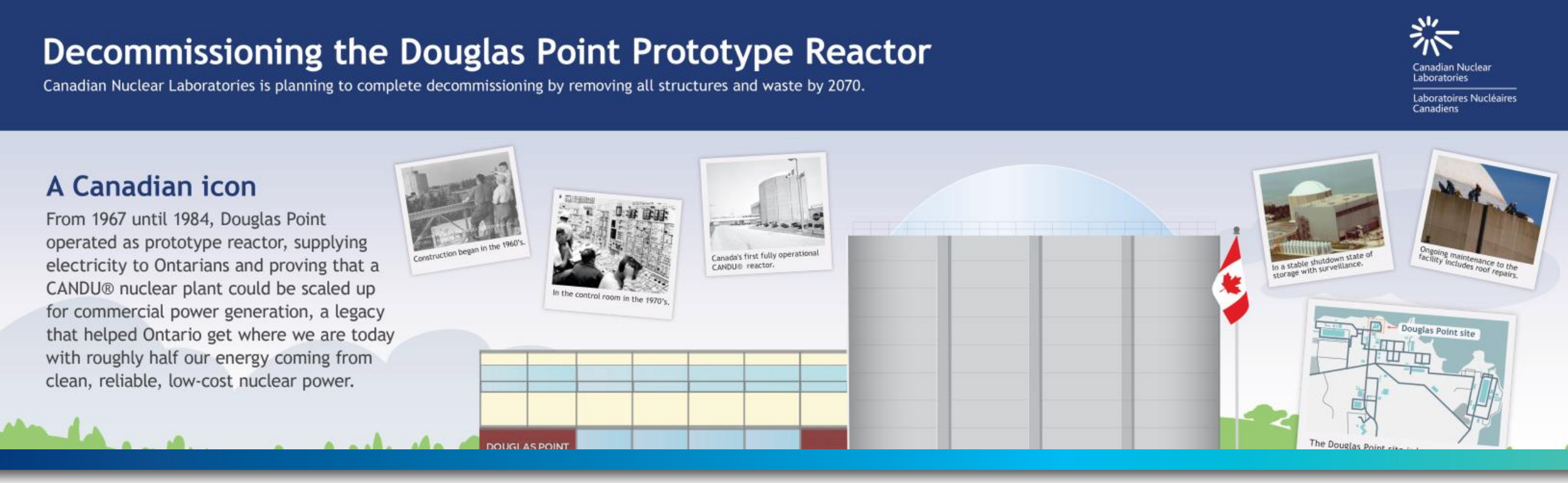
Indigenous Engagement

- Saugeen Ojibway Nation representing the Chippewas of Saugeen First Nation and the Chippewas of Nawash Unceded First Nation
- Two distinct Métis communities: Historic Saugeen Métis (HSM) and the the Métis Nation of Ontario (MNO) Georgian Bay Traditional Territory Consultation Committee



Indigenous Engagement

- Facility and site tours
- Meetings with representatives and technical staff/consultants
- Community specific webinar and mail out
- Funding, formalized participation and short-term contribution agreements signed

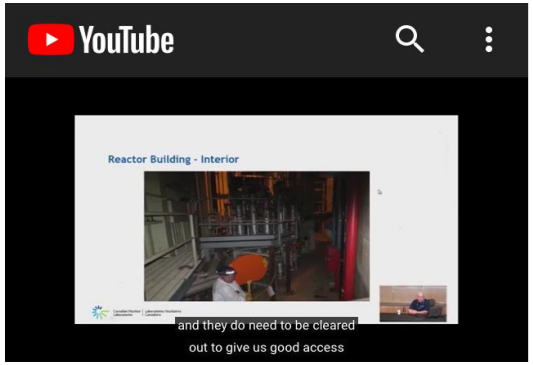


Public Information Program

- Engagement with local government, public and media
- Special events
- Social media
- Virtual Open House
- Online webinars
- Advertising

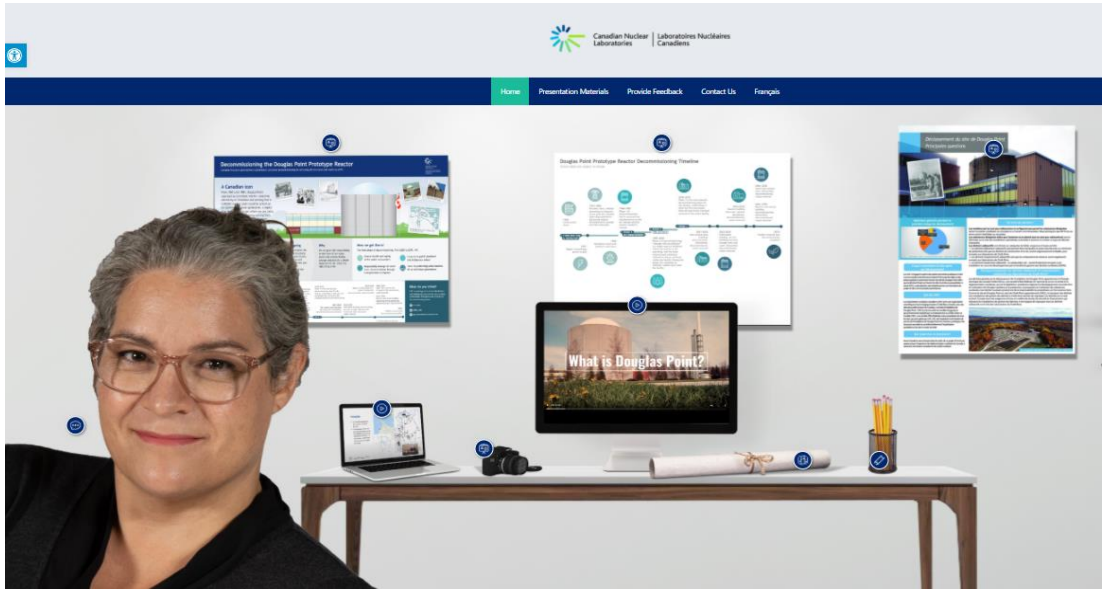
Community Engagement

Since October 2019



Webinar: Douglas Point Decommissioning - June 25, 2020

111 views



Get in touch

cnl.ca/DP
@CanadianNuclearLaboratories
@CNL_LNC
ERMStakeholder@cnl.ca

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Canadian Nuclear Laboratories

CNL demonstrates an ***absolute commitment*** to safety and the environment!

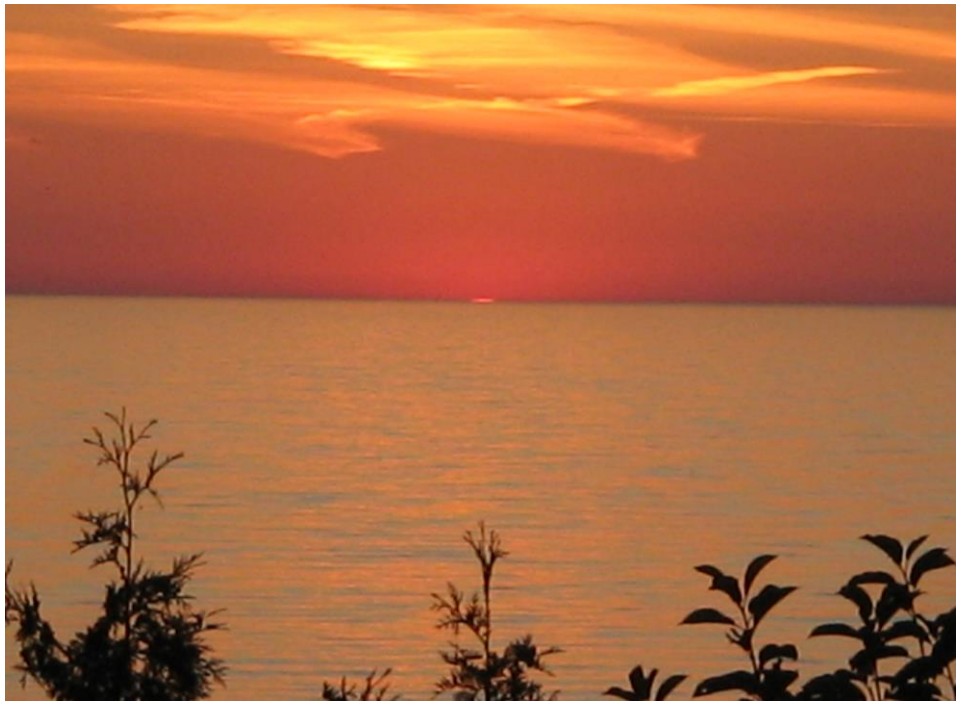
CNL has ***operated*** safely during the current licence period and has ***made improvements*** that will continue to enhance safety.

CNL ***will continue*** to meet all regulatory obligations.

Achievement of Environmental Remediation

Douglas Point

- Enhanced relationships with the local public and Indigenous communities
- Reduced potential environmental impacts through achievement of remediation activities
- Improved site configuration to permit future decommissioning planning and execution
- Safe, secure and compliant management of nuclear legacy liabilities



Thank You. Questions?

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