



Supplementary Information

Presentation from Michael B. Benson

In the Matter of the

Canadian Nuclear Laboratories (CNL)

Application from the CNL to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility

Commission Public Hearing Part 2

May 30 to June 3, 2022

Renseignements supplémentaires

Présentation de Michael B. Benson

À l'égard des

Laboratoires Nucléaires Canadiens (LNC)

Demande des LNC visant à modifier le permis du site des Laboratoires de Chalk River pour autoriser la construction d'une installation de gestion des déchets près de la surface

Audience publique de la Commission Partie 2

30 mai au 3 juin 2022

Michael Benson NSDF Intervention

CMD 22-H7.106

Wednesday, June 1st, 2022



Topics

- My Background / Why this project is important to me

- Chalk River's Historical Waste **Disposals**

- Current waste **Management** practices

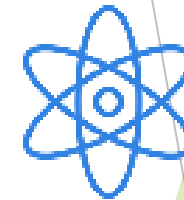
- Why the NSDF will improve environmental safety

- Misinformation and Fear Mongering
Vocal detractors cause undue public alarm



My Background

- Resident of Deep living on Blamer Bay close to CRL on the Ottawa River
- Mechanical Engineering Technologist
Studied at Lakehead University
- Work at CRL in Waste Management Operations
- Nature lover, avid gardener, and caretaker of hiking trails in Deep River's Four Seasons nature conservatory

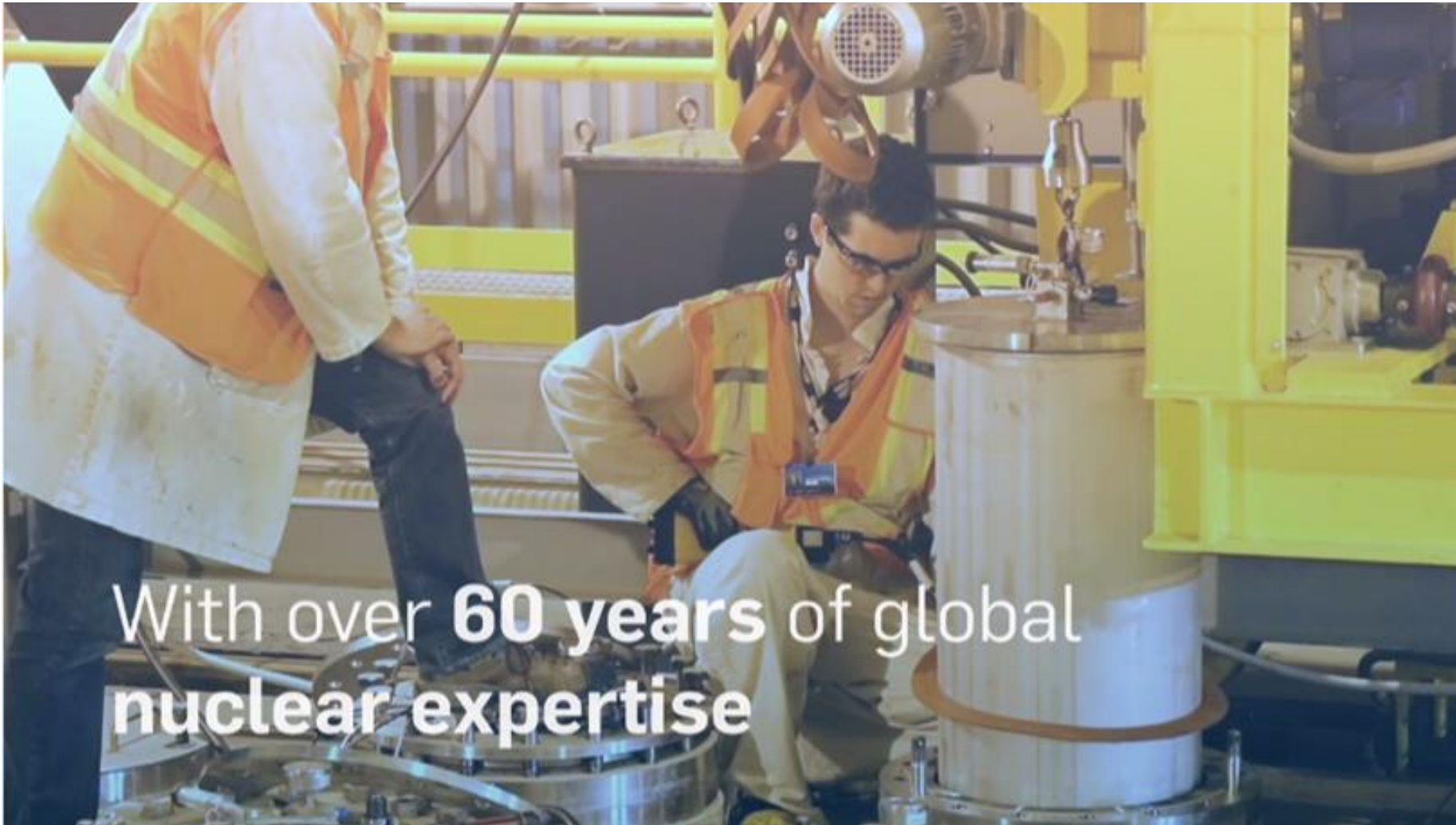




Pointe au Baptême

Work History at AECL and CNL

- Started at AECL-CRL in R&D with Fluid Sealing Technology branch
- Currently Waste Management Technical Officer at WMA-B



With over **60 years** of global
nuclear expertise

Waste Officer at WMA-B

- Receive and Store many type of waste
- Perform waste area inspections at:
 - All historical/closed disposal sites
 - Currently operating waste management areas
- Knowledgeable of waste categories, disposal methods, current practices
- Receipt of commercial waste
- LLW, ILW, HLW emplacements
- Facility Maintenance
- Design of waste packages



Pic from: WM 2005 Conference, Tucson AZ.
Management of Legacy Spent Nuclear Fuel Wastes



Waste Management Area B –
Chalk River Laboratories

Image unrestricted from aecl.ca

Historical Waste

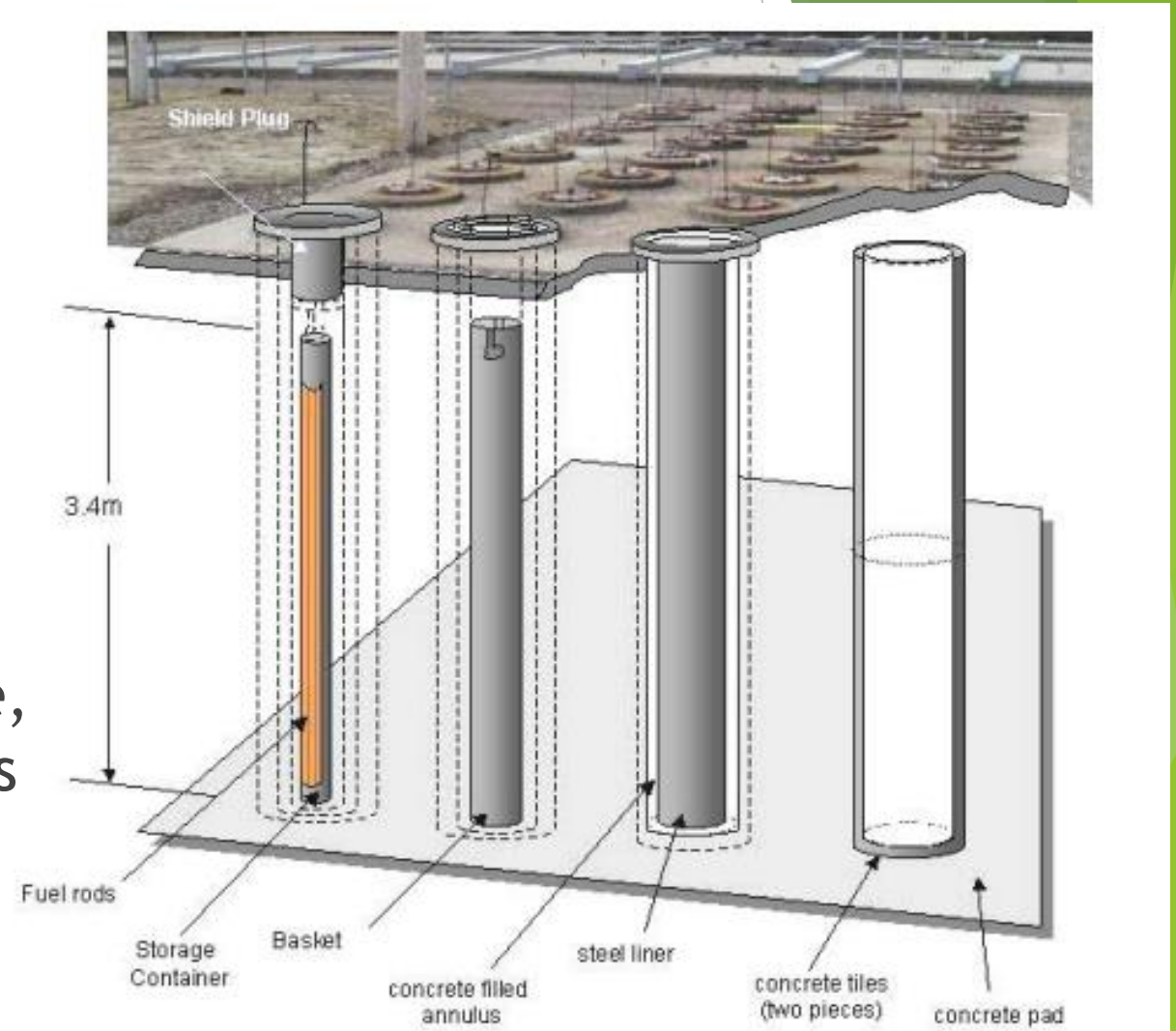
- Sand Trenches
- Water ingress into tile holes
- Liquid Dispersal Pits (NRX Meltdown)
- Direct Burials of reactor parts
- Contaminated Soils and Buildings
- WMA-C 'landfill' with 100,000m³
- Past Disposals leaking into groundwater, with no path forward for remediation



Picture from Ottawa Citizen article 'Chalk River's toxic legacy'

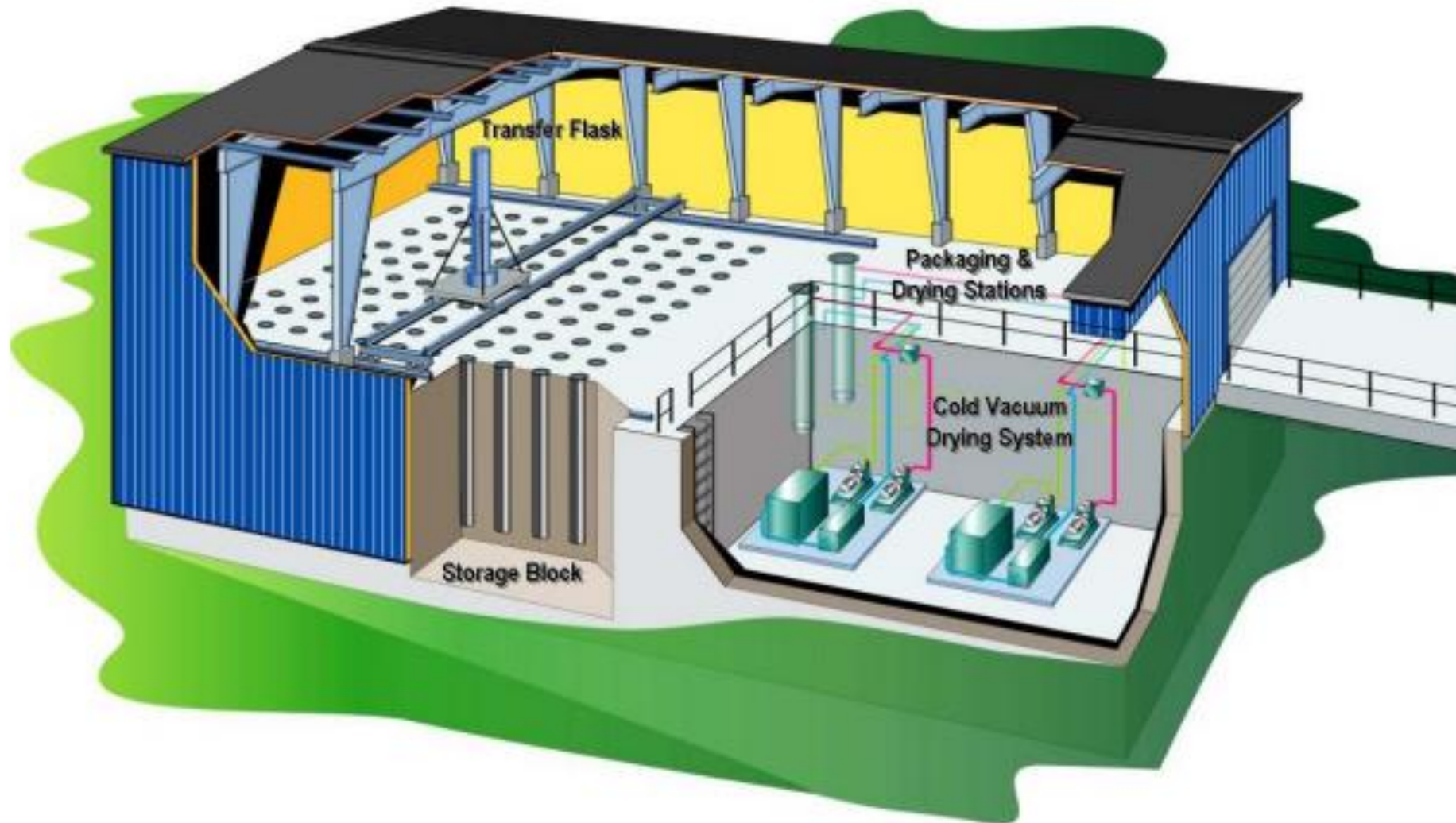
Historical Waste: HLW Fuel and FPS facility

- Water ingress into many tile holes
- Highest risk was antique NRX fuel
- Groundwater Intrusion, Corrosion
- Solution: FPS Project
Fuel Packing and Storage facility
- Remove fuel from ground, move indoors, repackage, remove moisture, then store safely manage for 50 years



Picture from WM 2005 Conference, Tucson AZ.
Management of Legacy Spent Nuclear Fuel Wastes

F.P.S. Facility



Picture from WM 2005 Conference, Tucson AZ.
Management of Legacy Spent Nuclear Fuel Wastes

Photo of FPS
From Globe and Mail article



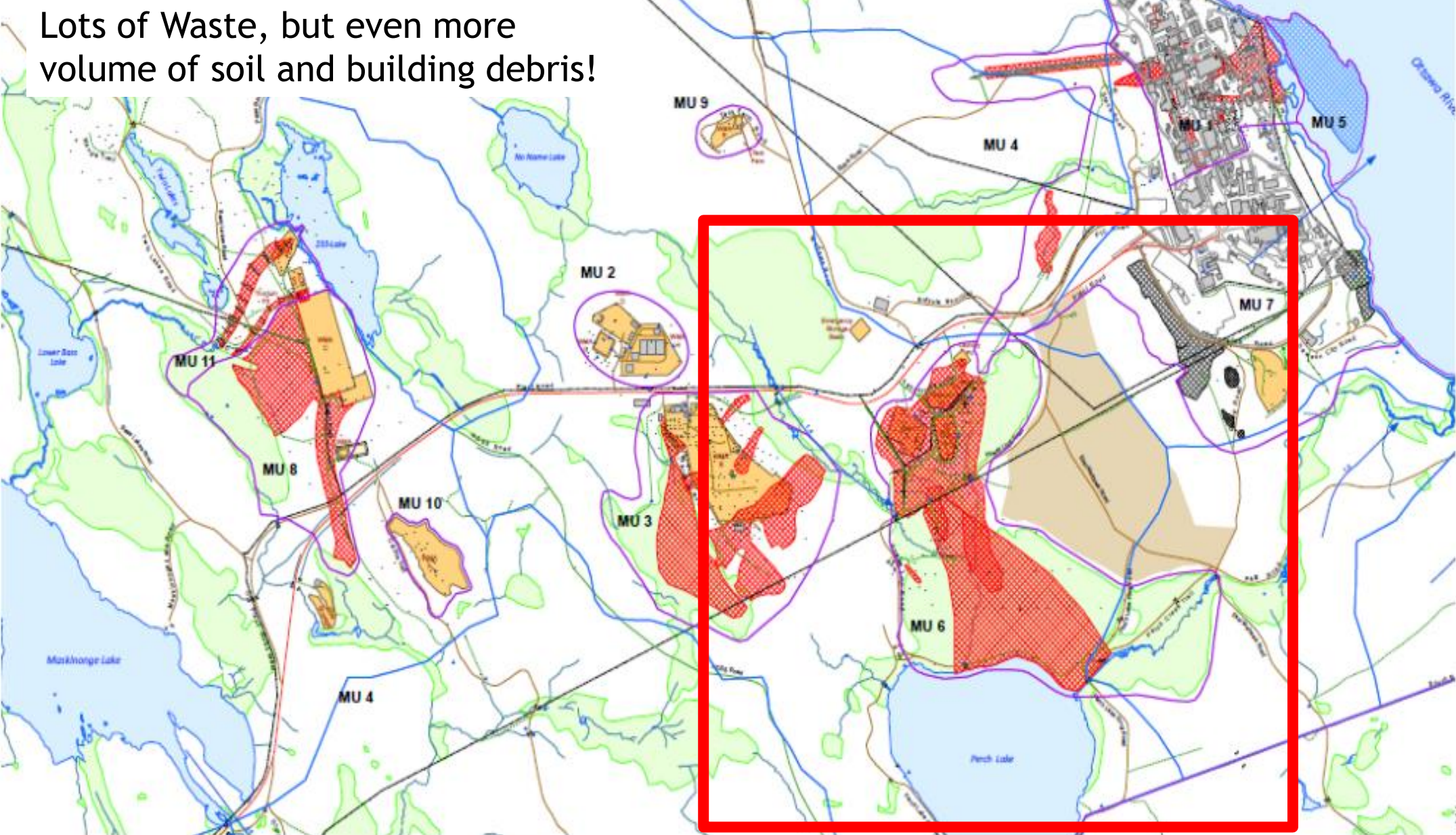
FPS Facility



- I worked there during operations, and now during surveillance
- FPS is only rated for 50 year life, then what?
- Very expensive project - Over budget
- Slow build time and was behind schedule
- Overly engineered, yet still had design flaws and omissions
- ‘Bleeding edge’ technology (\$\$\$) when built, yet already going obsolete
- The folly of perfectionism? How complex is too complex?
- Unreasonable lifetime maintenance costs and staffing requirements

Current Dilemma: Waste and Land contamination

Lots of Waste, but even more volume of soil and building debris!



Chalk River Laboratories – The zones identified in red are contaminated and must be cleaned

Proposed NSDF location is Sensible

CRL is already contaminated!

Area is best studied land in Canada:

- Water flows know
- Sampling stations already in place
- Swamp has worked as a natural filter for decades



Why do I support the NSDF?

I live in a directly affected area, and would like to see site cleanup continue, and accelerate ASAP



I know that many current waste burials are in need of remediation to improve safety



NSDF is a cost effective, long term disposal solution Low Level Waste
Endless management is not realistic



I am confident in the IAEA-approved disposal method for LLW

NSDF will help to restore the environment at CRL



Are we Wrong? People are Upset!

From concernedcitizens.net, March 22nd 2021

“Six reasons to STOP the Ottawa River radioactive waste dump”



**Open letter to Prime Minister Justin Trudeau
and the Federal Cabinet:**

STOP the Chalk River Nuclear Waste Dump

Misinformation: NSDF is Illegal?!

From concernedcitizens.net

“Six reasons to STOP the Ottawa River radioactive waste dump”

“International safety standards do not allow landfills to be used for nuclear waste disposal”

“Canada would be shirking its international obligations as a member state of the IAEA”

Misinformation: NSDF is Illegal?!

IAEA Safety Standards

for protecting people and the environment

- IAEA **does allow for landfill disposal of Very Low Level Waste** “such as soil and decommissioning rubble”
- From SSR-5 1.14 (a) **Specific landfill disposal**: Disposal in a facility similar to a conventional landfill facility for industrial refuse but which may incorporate measures to cover the waste. For VLLW only with low concentrations of quantities of radioactive content. Typical waste disposed of in a facility of this type may include soil and rubble arising from **decommissioning activities**.

Misinformation: NSDF is Illegal?!

From concernedcitizens.net/chalk-river-mound/

“The proposed giant mound flouts international guidance”

IAEA Safety Standards

for protecting people and the environment

...but the IAEA reference does NOT support this statement. It reads:

1.14. (b) **Near surface disposal**: Disposal in a facility consisting of engineered trenches or vaults constructed on the ground surface or up to a few tens of metres below ground level. **Such a facility may be designated as a disposal facility for low level radioactive waste (LLW)**

Misinformation: NSDF is Illegal?!

- Example of “International Guidance” from IAEA webpage
- Totally Legal NSDF at Vaalputs, South Africa shown here



Misinformation / Fear Mongering

Dr. Ole Hendrickson, from concernedcitizens.net : nuclear liabilities discussion paper 4

“Although the revised inventory [of NSDF] should not include intermediate-level waste, cobalt-60 emits intense gamma radiation and its wastes **require lead shielding, making them intermediate-level, and posing serious risks to workers handling”**

I'm one of those workers who handles Co-60 shielded packages
There is no 'serious risk' to me, safety is always #1
Worker doses in waste management have never been lower!
Co-60 has a short half life, therefore it is often LLW

Misinformation / Fear Mongering

Dr. Ole Hendrickson, from concernedcitizens.net : nuclear liabilities discussion paper 4

“Low-level waste is a **misnomer** that causes a lot of **confusion**.

Low-level waste is so named because it can be handled without using robots or special shielding, unlike used nuclear fuel rods which can provide a **fatal dose of radiation within seconds** to a person standing a few feet away.”

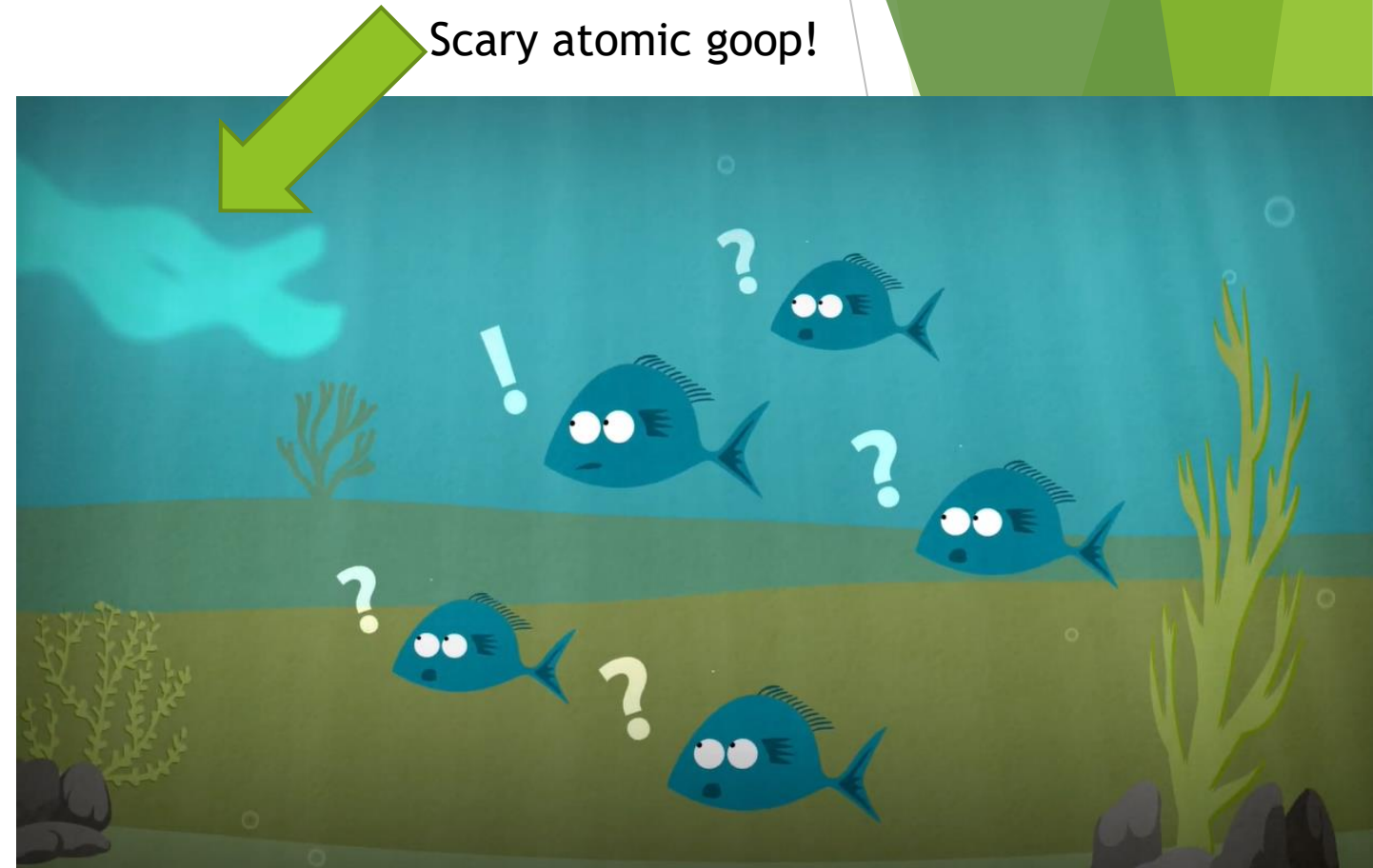
Notions of **confusion** and ideas of **instant-death** chosen to incite fear

Incorrect statements about LLW classification are confusing the public

Dose rate does not define waste category

Misinformation: Is NSDF Unsafe?!

- RiverKeepers video on NSDF →
- Letter from Elizabeth Logue says NSDF is ‘on the banks of the Ottawa River’ and ‘Canada has no laws in place for active Waste’
- ???
- Environmental Assessment Act is the law



Picture from Ottawa Valley Riverkeepers

Misinformation: Is NSDF Unsafe?!

Edibility of Sport Fishes in the Ottawa River near Chalk River Laboratories, AECL nuclear review vol 2, #2, Dec. 2013

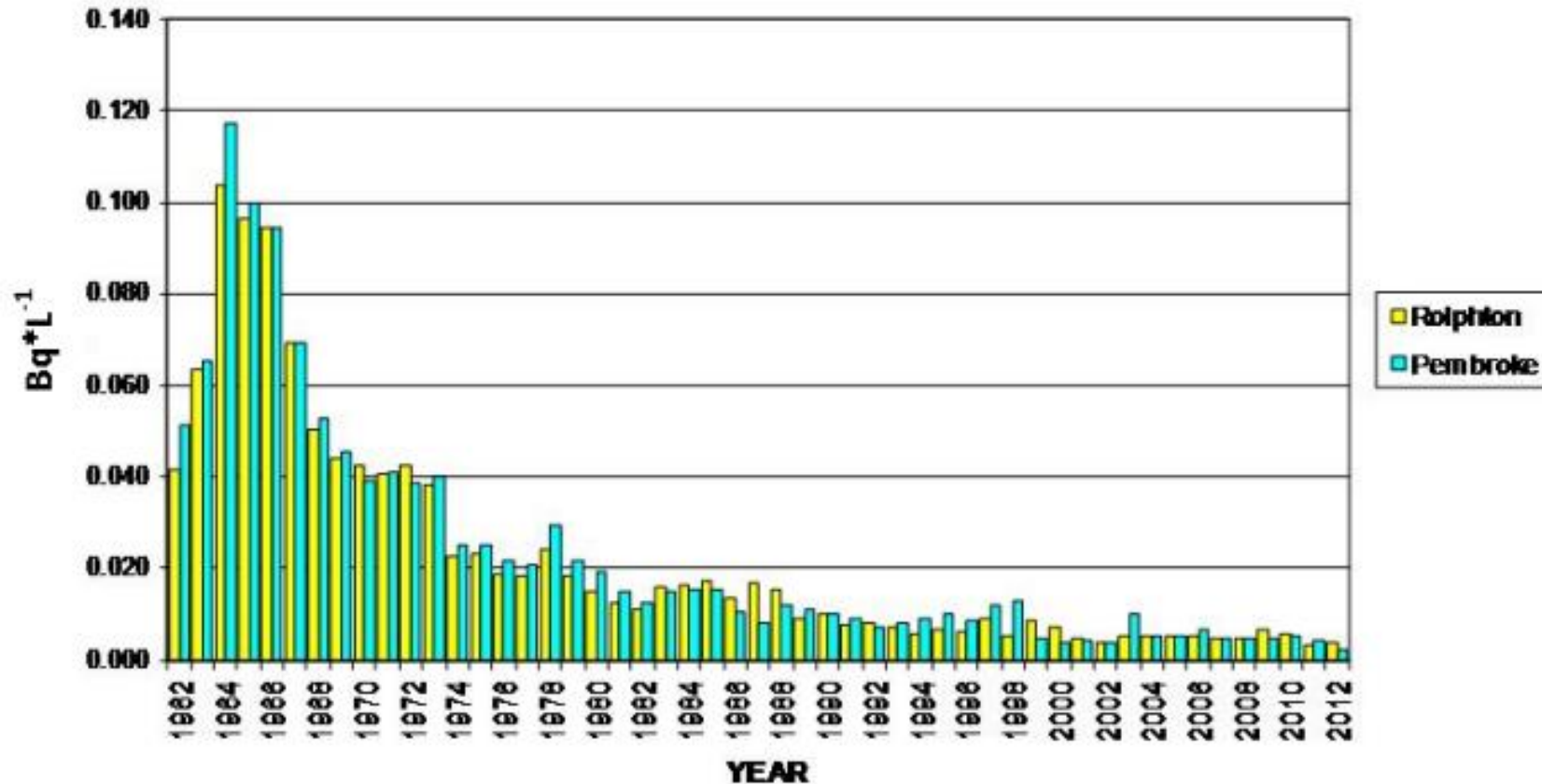
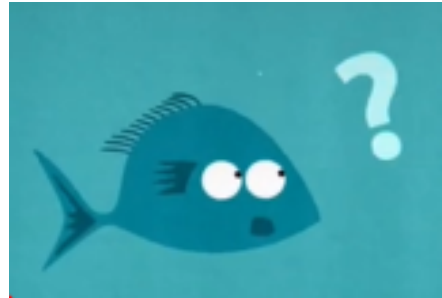


FIGURE 12: Annual average concentration of ^{90}Sr in the water of the Ottawa River upstream (Rolphton) and downstream (Pembroke) of CRL from 1962 – 2012.

Misinformation: RiverKeepers Narrative

From RiverKeepers website, Article “An update on nuclear waste at Chalk River”, Feb 2022
ottawariverkeeper.ca/an-update-on-nuclear-waste-at-chalk-river

False claims from E. Logue’s letter repeated elsewhere on website:

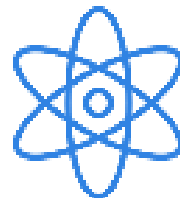
- Article falsely states : NSDF is “*a few hundred meters from river*”
- “*issues are exacerbated by weak regulation of nuclear waste at the national level in Canada*”
- **Canada has strong regulation with CNSC, IAEA acting as legal authority**

Misinformation: Why it Matters

- Riverkeeper's and 'Concerned Citizens' are very active and vocal detractors of the NSDF, and espouse incorrect information, intentionally misleading ideas, and scary anti-nuclear rhetoric
- Public may look to them as a moral authority, without fact-checking
- Anti-NSDF sentiment/letters/editorials often quotes these source
- **Therefore, some % public opposition is rooted in misinformation**

Conclusions

- **We need to act now to clean-up the CRL site**
Delays will cause further leaks!
- NSDF will never be a major source of “leaks” like historical disposals
- Cannot do small projects that take decades, one at a time (eg: FPS)
- Over-engineered waste management structures are not a solution
- **NSDF is a chance to start CRL site remediation in a meaningful way**



Thank you