# NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL

May 22, 2024

Governor Maura Healey
Massachusetts State House, Room 280
24 Beacon Street
Boston, MA. 02133
c/o Amanda.Dew@mass.gov

Senator Michael H. Barrett
Massachusetts State House, Room 109-D
24 Beacon Street
Boston, MA. 02133
Mike.Barrett@masenate.gov

Representative Jeffrey N. Roy
Massachusetts State House, Room 43
24 Beacon Street
Boston, MA. 02133
jeffrey.roy@mahouse.gov

Re: NDCAP 2023 Annual Report

Dear Governor Healey, Senator Barrett and Representative Roy:

Attached, in accordance with Chapter 188, "An Act to Promote Energy Diversity", Section 1, Chapter 23M, Commercial Property Assessed Clean Energy", Section 14, (h)(i)(3), is the Nuclear Decommissioning Citizens Advisory Panel (NDCAP) Annual Report for a period of 12 months, from January 2023 to December 2023.

NDCAP appreciates your attention to this Report. Should you have any questions, concerns or special interest we should undertake as we continue, please do not hesitate to contact the NDCAP Chairman James B. Lampert or the Vice Chair, Mary J. Gatslick.

Respectfully,

James B. Lampert

James B. Lampert, Chair
Tel: 781-934-0389
Email: james.lampert@comcast.net

Mary J. Gatslick

Mary J. Gatslick, Vice Chair
Tel: 508-353-2016
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By email
Attachment – 2023 NDCAP Annual Report

2023 NDCAP Annual Report
(182 pages)

# 2023 Annual Report

## Nuclear Decommissioning Citizens Advisory Panel (NDCAP)

Submitted to:

**Governor Maura Healey**

**Joint Committee on Telecommunications,
Utilities and Energy**

**May 2024**

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January  NDCAP Meeting (01/23/23)

**NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")**
**Monday, January 23, 2023**
**Hybrid Meeting (in-person and virtual)**
**Meeting Minutes**

The meeting was called to order at about 6:30 pm by Mr. John Mahoney.

**NDCAP MEMBERS PRESENT**

- John Mahoney, Plymouth Select Board Designee Delegate (in person)
- Pine duBois, Speaker of the House Appointee (in person)
- Mary Lampert, Senate President Appointee (in person)
- James Lampert, Speaker of the House Appointee (in person)
- Mary Jo Gatslick, Minority Leader of the Senate Appointee (in person)
- Michael Fortini, Minority Leader of the Senate Appointee (in person)
- Seth Pickering,[1] Department of Environmental Protection (in person)
- David C. Nichols, Governor Baker Appointee (in person)
- Andrew Gottlieb, Governor Baker Appointee (in person)
- Jack Priest, Department of Public Health, Radiation Control Program (virtual)
- Henrietta Cosentino, Plymouth Select Board Appointee (virtual)
- John Viveiros, Massachusetts Emergency Management Agency (virtual)
- David Noyes,[2] Holtec Decommissioning International (in person)
- John Moylan, Holtec Site Vice President (in person)

**NDCAP MEMBERS NOT PRESENT**

- Mary Waldron, Old Colony Planning Council
- Kelly O'Brien, UWA Representative

**GUESTS IN ATTENDANCE**

- Benjamin Thomas, representing U.S. Senator Edward Markey's office
- Caleb White, representing U.S. Senator Elizabeth Warren's office
- Michael Jackman, representing Congressmen Bill Keating's office
- State Senator Susan L. Moran
- State Representative Mathew J. Muratore
- State Representative Kathleen R. LaNatra
- Gerard Martin, Department of Environmental Protection

**REVIEW OF MINUTES**

Mr. Mahoney asked the panel whether there were any concerns with the November 28, 2022, meeting minutes. Ms. Pine DuBois commented that she made some changes with regard to those in attendance. A motion to approve the prior minutes from November 28, 2022, was made and passed unanimously.

[1] Designee of Secretary Rebecca Tepper (Executive Office of Energy and Environmental Affairs)
[2] In place of Pat O'Brien (Holtec)

**REORGANIZATION OF PANEL CHAIR/VICE CHAIR**

Mr. Mahoney indicated that there is an opportunity to nominate the Chair and Vice Chair of the NDCAP.

Ms. Lampert advised postponing reorganization, as she does not believe that a policy of "hold-overs" without re-appointment (at expiration of a member's term) is correct. After contacting several state agencies and municipalities, including the Attorney General's Office, she has not received a definitive answer on panel selection. Mr. Mahoney asked Ms. Lampert whether she would like to make a motion to table reorganization to a future date.

Mr. Lampert stated that the term limits are set by statute. In July 2022, several panel members had exceeded their term limits without reappointment. He suggested pushing reorganization to avoid conflicts with reappointment procedures.

Mr. Mahoney advised the panel that he met with the Plymouth Town Manager and his advice was that the panel should continue business as usual until the state follows through with its reappointment requirements.

There was a motion to table the issue of panel reorganization which was seconded by Ms. Lampert. The motion passed with 11 in favor, 3 abstentions, and 1 opposed.

**LEGISLATIVE DELEGATION**

State Senator Susan L. Moran advised the panel that she refiled the previously vetoed legislation. The legislation includes:

- Moratorium on discharge of radioactive water in Cape Cod Bay until 2025
- Establishment of a commission to study the impacts resulting from discharge
- 4 public hearings in Dukes, Plymouth, Bristol, and Barnstable on commission's findings

State Representative Mathew J. Muratore explained to the panel that he filed legislation last Friday. He reminded the panel of its primary duties and objectives, based on the original 2016 legislation creating the panel. The proposed legislation includes a reduction of panel members from 21 to 15 with new or amended members.

State Representative Mathew J. Muratore then read provisions from the June 2020 settlement agreement between the Commonwealth and Holtec. He emphasized the need for state agencies to be actively involved in the future steps of the decommissioning process.

Mr. Mahoney asked about the timeline and procedure for the new proposed legislation. State Representative Kathleen R. LaNatra explained the legislative procedure and advised that further action will be taken after March.

Mr. Mahoney asked both State Representatives whether the new administration understood the decommissioning process in Plymouth. State Representative Mathew J. Muratore said Governor Maura Healey was involved with the June 2020 settlement when she was the Attorney General, so she has awareness of the situation.

Mr. Gottlieb indicated that, in his opinion, these new proposals imply that the matter of decommissioning would be in the jurisdiction of state agencies. He expressed his concerns on whether the proposed legislation would constrain the purposes of the panel.

Ms. Lampert's concern was that the new proposals focused only on Plymouth. There is a concern for the entire region. Further, she raised the issue of funding which has impacted expert testimony. Lastly, Ms. Lampert raised the issue of constraints in the ability of the panel to vote on issues.

Ms. duBois reiterated concerns about the constraints in state involvement on the panel. She indicated that the main problem is the spent fuel, and hopes that the legislation will address this issue.

Mr. Michael Jackman mentioned that Congressmen Bill Keating was working with U.S. EPA to gather more updates and direction on oversight. Once that information becomes available, he will report back to the panel.

Mr. Caleb White stated that U.S. Senator Elizabeth Warren was working on the same.

Mr. Mahoney asked whether Congressmen Keating and Senator Warren have ever visited the site. Mr. White was not sure whether Senator Warren has visited the site. Mr. Mahoney asked Mr. White whether she can visit the site if she has not done so yet. According to Mr. Jackman, Congressmen Keating has been to the site.

Mr. Benjamin Thomas from U.S Senator Ed Markey's Office said he had no major updates. The office continues to work with other agencies and focus on independent analysis of the water. Mr. Mahoney asked whether Senator Markey has been down to the site. Ben said he was not sure but could coordinate to have him on site if he has not visited yet.

Ms. Cosentino expressed her concerns about the proposed legislation and lack of citizen representation. She hopes that the new proposed legislation will not exclude citizens.

**HOLTEC UPDATE**

Mr. David Noyes briefly updated the panel regarding the major activities associated with decommissioning, and a power point presentation was shown. In summary:

- Characterization – Holtec is on track for a 2024 submission of a license termination plan.
- Dry cask storage – Holtec continues to be custodians for waste storage pending final disposition.
- Reactor segmentation, waste management, and site restoration will follow the license termination planning.

Mr. Noyes then updated the panel on demolition activities:

- The Trash Compaction Facility was demolished on January 19, 2023.
- The Old Main Gate building will be the next structure to be demolished. Abatement of asbestos (including floor tile) and structural demolition will occur in the first quarter of the 2023.
- Five buildings and structures, two remaining underground storage tanks on site, and four above ground storage tanks will also be demolition during the first half of 2023.

- The administration building will remain during the early phases of demolition.

For reactor segmentation:

- 78/173 Control Rod Blades are scheduled to be removed during the first quarter of 2023.
- 130/145 Fuel Support Castings are scheduled to be removed during the first quarter of 2023.
- 108/147 Control Rod Guide Tubes are scheduled to be removed during the first quarter of 2023.
- The core plate will be removed during the first quarter of 2023.
- The jet pumps will be removed during the second quarter of 2023.

Mr. Noyes provided the panel with a review on the outfalls under the current NPDES permit:

- 11 outfalls exist under the current NPDES permit
- 6/11 are in service (5 stormwater and 1 for salt service water)
- 4/11 have been abandoned
- 1/11 is authorized for use but is not active

To date, of the 9.2 million pounds of non-radiological waste collected, 8.2 million pounds has been recycled or reused including batteries.

Regarding waste management:

- Waste is being sent off site via truck or by truck to rail via a transload facility in Mansfield.
- In 2022: 90,000 cubic feet of Class A of waste was removed from the site.
- In 2022: 62 cubic feet of Class B and C waste were removed from the site.

Holtec plans to seek modifications to the NPDES and State Surface Water Discharge Permits with a goal of permit submittal sometime in the mid to late first quarter of 2023. Mr. Noyes stated that discharge will not occur until permitting is complete.

Mr. Mahoney asked for an update regarding the on-site sampling of water in the three containment areas. Mr. Seth Pickering advised that the sampling has yet to occur, but will have an update from the state.

Ms. DuBois inquired about the capacity of the storage tanks. Mr. Noyes believed that the condensate storage tanks were 250,000 gallons and the fire water storage tank may be around 200,000 gallons. Ms. DuBois asked whether those tanks could be recycled. Mr. Noyes said no.

Mr. Priest asked whether the four abandoned outfalls were mechanically isolated. Mr. Noyes said that the equipment in those outfalls have been isolated. Mr. Priest then asked whether Mr. Noyes could describe the monitoring on the remaining outfalls. Mr. Noyes explained that there are recorders when pumps are operating. They measure differential temperature at five-minute intervals and those reports are submitted to the state. The report includes oil, grease, and pH. Also, there is radiological monitoring near the reactor building.

Mr. Nichols asked whether Holtec has spent more or less than projected on decommissioning. Mr. Noyes mentioned that Holtec may be a little under budget because of the advances made in scheduling and sale of recycled material. There will be an update in March regarding cost.

Mr. Lampert asked what the total ABC low-level radioactive waste shipped to date is. Mr. Noyes said he did not have an answer towards the total amount since the decommissioning process began but could get back to him on that issue. Mr. Priest advised that the year-to-year number is on the DPH website.

Ms. Lampert referred to a letter from EPA regarding the need for a NPDES permit modification. Holtec indicated that they would comply with federal regulations. However, she asked Mr. Noyes to clarify whether Holtec would comply with state laws and regulations, including the Ocean Sanctuary Act, Damage to the Environment Law, Massachusetts Clean Water Act, M.G.L. c. 21E, and the Massachusetts Endangered Species Act. Mr. Noyes explained that the state, through the coastal zone management review, will consider the applicability of these various laws. Any conditions would be in the state's surface water discharge permit.

Mr. Gottlieb asked to confirm that the torus has enough capacity to hold the water currently being used. Mr. Noyes clarified that the torus can hold 1.6 million gallons.

Ms. Cosentino asked Mr. Noyes to explain the salt service water system outfall. Mr. Noyes said the water in that system is being used to cool heat loads with equipment in the turbine building.

**INTERAGENCY WORK GROUP ACTIVITIES UPDATE**

On January 12, 2023, a meeting was held with MassDEP, EEA, AGO, U.S. EPA and Holtec. The purpose of the meeting was to outline the permitting process for any proposal by Holtec to discharge water from the spent fuel pool or any decommissioning related wastewater. State agencies were given the opportunity to provide feedback on the permit procedures which Holtec agreed to consider.

CZM and EEA are considering the implications of the Ocean Sanctuaries Act.

MassDEP and DPH continue to work with Holtec to determine a protocol for sampling water from the reactor building:

- MassDEP and DPH were on site to observe where the samples are proposed to be taken.
- The three locations will be the spent fuel pool, separator dryer pit and torus.
- The split sampling will be provided to the state for independent testing.
- Holtec has provided a draft sampling protocol to MassDEP and DPH.
- The protocol will be finalized before the actual sampling events take place.
- MassDEP has identified a laboratory to analyze samples.

MassDEP, DPH, and AGO continue to review Holtec's environmental assessment work plan and radioactive management plan. Holtec's phase 2 comprehensive site assessment will be due in April of 2025. This assessment is required because Holtec identified hazardous materials on site.

MassDEP's asbestos section continues to be actively engaged in overseeing the demolition activities that is occurring at the site.

Holtec made a request to MassDEP to change the wastewater disposal system to a Title 5 system. Under this proposal, the flows from the plant would discharge to a Title 5 system and the existing treatment facility would be taken offline.

Mr. Gerard Martin explained the anti-degradation provisions of the surface water quality standards.

- A review is conducted whenever Holtec makes a request to modify a permit.
- The purpose of the review is to determine whether the anti-degradation provisions apply.
- Anti-degradation applies when there are new and/or increased point source discharges.

The discharge from the spent fuel pool would be considered a new discharge. The analysis is carried out by MassDEP and determines whether there is a potential for any new or increased discharges of pollutants to degrade the water quality. According to Mr. Martin, radionuclides are not pollutants under the Clean Water Act.

Ms. DuBois asked how MassDEP would review and analyze commingled water since in the past, the water in the spent fuel pool may have been in the separator pit and torus. Mr. Martin said that MassDEP was looking into that.

Mr. Lampert asked Mr. Martin whether he said radionuclides were not listed under the Clean Water Act. Mr. Martin said that radionuclides were not.

Ms. DuBois asked Mr. Pickering who at CZM was at the meeting with EPA. Mr. Pickering said several individuals from the agencies were in attendance and could send Ms. DuBois a list. She then asked which lab was selected for the sampling. Mr. Pickering said it was a lab in Denver called Eurofin.

Ms. DuBois then asked whether the transfer from the wastewater treatment to septic met the new requirements regarding nitrogen. There was discussion between Ms. DuBois and Mr. Martin about watersheds leading into Cape Cod Bay. Thereafter, Mr. Martin confirmed that Plymouth was included in the new regulation.

Ms. Lampert clarified whether spent fuel pool and any water used for decommissioning was considered a new source. Mr. Pickering said he believed so but would have to check the permit to confirm.

Mr. Pickering stated that MEMA continues to work with local partners on public safety planning and it is scheduling the next quarterly work group meeting with former EPZ communities.

Mr. Nichols asked whether Holtec objected to anything proposed by the state during their meeting in January. Mr. Pickering said no.

Ms. Gatslick asked when the review of the site plan would be completed. Mr. Pickering said he cannot confirm a completion date. There were some delays amongst the agencies but hopes to have it soon.

Ms. Lampert asked about the demolition of buildings and how far below ground does Holtec have to go. Mr. Pickering did not have a clear answer and said it depended on elevations. Mr. Priest said it is mentioned in the settlement agreement. Mr. Noyes advised that it also includes that Holtec cannot leave any oil or hazardous material.

Ms. Cosentino asked whether economic impacts are discussed when a new or modified NPDES permit application is submitted to the U.S. EPA. Mr. Martin said it may be if the discharge is significant.

**REVIEW OF ANNUAL REPORT**

Ms. Gatslick proposed that the report contain a section on recommendations from this panel based on the feedback and comments received. She stated to the panel that comments were received within 1-2 hours prior to tonight's meeting and has not had an opportunity to read or address them.

Mr. Lampert indicated that there is a fundamental disagreement about the purpose of the annual report. He suggested that this disagreement should be resolved.

Mr. Noyes referred to the statute and stated that the purpose of the panel is to advise the governor, not make specific recommendations. He believes that including recommendations will delay the report.

Ms. Lampert believes that state agencies, members of the public, and the Governor are not interested in a bare outline report. In her opinion, the same individuals may not be interested in a 'blow-by-blow' of the panel's meetings. She believes that the recipients would be interested in decommissioning, discharge, and other site-related issues. Ms. Lampert expressed that both sides of all issues should be presented, but that the current draft is one-sided. She suggested that more time could be taken to finalize the report.

Mr. Priest suggested that the panel work collaboratively to create a valuable report to the governor. In addition to the four main points already raised, he suggested that there be a fifth point to include legislation. Also, he suggested having a short synopsis of each meeting.

Ms. Cosentino suggested that the synopsis be shorten to four or five pages.

Mr. Mahoney proposed creating a working group amongst the panel to assist in the annual report. He suggested that a second draft be provided 3-4 weeks prior to the next panel meeting.

Ms. Gatslick suggested that the first appendix be removed and a hyperlink be created to the meeting minutes; a legislation section could be added. These changes would shorten the report.

**PUBLIC COMMENTS**

Timothy Bennett Jr. expressed his concerns regarding the potential discharge of decommissioning water. He advised the panel that individuals such as himself, his brother, and his neighbors will deal with the consequences of such action and hopes that Holtec will not be permitted to discharge.

Brian Campbell explained to the panel his support for discharge. He referred to Doctor James Conca's presentation, which indicated that discharge from nuclear facilities was a routine activity with low risks.

Chris Nord suggested including an executive summary for full length reports. He then read a statement regarding the adverse effects of tritium. He concluded by asking the panel to weigh all sides regarding the disposition of the water.

Art Desloges reminded the panel that the statute mandates members of the panel to advise the governor and the general court. He then listed a set of agencies and organizations including the

Wampanoag Tribe who oppose the discharge of water into Cape Cod Bay. He believes that the panel has yet to voice an opinion on the subject matter and advised that an emergency letter be sent ahead of the panel's annual report to the governor.

Diane Turco continues to express her opposition to not discharge the water into Cape Cod Bay. She referred to a letter from the U.S. EPA stating that Holtec was not authorized to discharge the water under the current permit. She also referred to another letter from Holtec stating that it the water would be combined and treated prior to discharge. Mr. Noyes agreed that discharge was not authorized for water (in the spent fuel pool, dryer pit, and torus) and acknowledged that there was a different understanding of the permit and its requirements.

Ms. Turco then asked Mr. Noyes whether Holtec would comply with state regulations including M.G.L. Chapter 21E. Mr. Martin briefly explained the chapter. She proceeded to point out that the June 2020 settlement agreement requires Holtec to comply with Chapter 21E. Mr. Martin stated that Chapter 21E does not cover permanent discharges because it applies to accidental discharges.

Paul Quintal from Plymouth stated that he was concerned about the health of marine life in the Cape Cod Bay. He then asked Mr. Noyes whether Holtec has considered any of the concerns raised during these meetings. Mr. Noyes responded that Holtec is considering them.

Joanne Corrigan compared the ongoing decommissioning at Pilgrim with Vermont. She disagreed with the proposal of getting the state involved due to lack of involvement by the state in the past. She then advised the panel that Doctor James Conca was using data for his presentation from 1975.

Ryan Collins mentioned that he was glad that the plant was being decommissioned. He reminded the panel that individuals who reside in Plymouth and nearby municipalities oppose the discharge into Cape Cod Bay. He stated that their request is a simple one.

**ADJOURNMENT**

A motion to adjourn was made and passed unanimously.

The meeting was adjourned at about 9:30 pm.

Mathew J. Muratore  Legislation

HOUSE DOCKET, NO. 3705 FILED ON: 1/20/2023

# HOUSE.....No.

## The Commonwealth of Massachusetts

PRESENTED BY:

***Mathew J. Muratore***

*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled:*

The undersigned legislators and/or citizens respectfully petition for the adoption of the accompanying bill:

An Act updating the decommissioning oversight of Pilgrim Nuclear Power Plant.

PETITION OF:

| NAME: | DISTRICT/ADDRESS: | DATE ADDED: |
|---|---|---|
| *Mathew J. Muratore* | *1st Plymouth* | *1/13/2023* |

Type text here

HOUSE DOCKET, NO. 3705 FILED ON: 1/20/2023

# HOUSE .....No.

[Pin Slip]

## The Commonwealth of Massachusetts

**In the One Hundred and Ninety-Third General Court**
**(2023-2024)**

An Act updating the decommissioning oversight of Pilgrim Nuclear Power Plant.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

SECTION 1: Chapter 188, section 14 of the General Laws, as appearing in the 2016 Official Edition, is hereby amended by deleting paragraph (a) and replacing paragraph (a) with the following:- SECTION 14. (a) “There shall be created a Pilgrim Decommissioning State Oversight Panel which shall consist of state officials or their staff designee, scientific and technical experts, local officials, a retiree of Pilgrim Station with technical expertise in environmental areas and/or physical security, a representative of a local environmental group, and two at-large appointees as follows: the Governor of the Commonwealth; the Attorney General of the Commonwealth; the Secretary of Energy and Environmental Affairs; the Commissioner of Public Utilities; the Secretary of Health and Human Services; the Director of the Massachusetts Emergency Management Agency; the Secretary of Economic Development; the Director of the Massachusetts Department of Public Health Radiological Control Program; the Chairman of the Plymouth Selectboard or Town of Plymouth staff designee; a retiree representative of Pilgrim Station with technical expertise in environmental areas and/or physical security, appointed by Chairperson of the panel upon majority approval by the panel; a

representative of the Plymouth Regional Economic Development Foundation; a technical expert with knowledge of decommissioning and spent nuclear fuel management issues, appointed by the Chairman of the Panel upon majority approval by the panel; a representative of the local environmental community, selected by the Plymouth Selectboard; and two at-large appointees, one each recommended by the State Senator and State Representative who represent the former Pilgrim Nuclear Power Station location and appointed by the Senate President and Speaker of the House respectively."

SECTION 2. Said section 14, as so appearing, is further amended in subsection (b) by replacing in its entirety a new subsection (b) as follows:- "Each non-designated appointee to the Panel shall serve for a 3-year term unless they resign to the appointing authority in writing."

SECTION 3. Said section 14, as so appearing, is further amended by deleting subsection (f).

SECTION 4. Said section 14, as so appearing, in subsection (i) (2) is further amended by striking after the word "operations;" the words "provided the panel may hold additional meetings:"

SECTION 5. Said section 14, as so appearing, in subsection (i) (5) is further amended by striking subsection (5) and replacing it as follows:- "(5) To convey the compliance and status of the Comprehensive Agreement between the Commonwealth of Massachusetts and Holtec Decommissioning International signed on behalf of the Commonwealth by the Office of the Attorney General on June 16, 2020."

SECTION 6. Said section 14, as so appearing, in subsection (i) (6) is further amended by striking subsection (6) in its entirety and replacing it as follows:- "(6) The panel shall meet

quarterly as set forth in subsection (i) through the Nuclear Regulatory Commission's (NRC) partial site release of the property and annually until the spent fuel is removed from the site and the NRC license is terminated."

## HD 3705, An Act updating the decommissioning oversight of Pilgrim Nuclear Power Plant

**MURATORE COMMENTS PRESENTED TO NDCAP on January 23, 2023 Meeting @GreatHall in Plymouth Town Hall**

**(From the state website on Current NDCAP legislation.)**
Purpose:

The Panel shall serve in an advisory capacity only and shall not have authority to direct decommissioning of the PNPS. The duties of the panel shall be:

(1) to commence public meetings beginning on or about June 1, 2017, at a frequency of quarterly until the shutdown of the Pilgrim Nuclear Power Station (PNPS) for the purpose of discussing issues related to decommissioning planning activities;

(2) to hold a minimum of four public meetings each year for the purpose of discussing issues relating to the progress of decommissioning of the PNPS beginning on or about June 1, 2019, or when the PNPS permanently ceases power operations; provided that the panel may hold additional meetings;

(3) to advise the governor, the general court, the agencies of the commonwealth, and the public on issues related to the decommissioning of the PNPS, with a written report being provided annually to the governor and to the energy committees of the General Court;

(4) to serve as a conduit for public information and education on and to encourage community involvement in matters related to the decommissioning of the PNPS and to receive written reports and presentations on the decommissioning of the Station at its regular meetings;

(5) to periodically receive reports on the Decommissioning Trust Fund and other funds associated with decommissioning of the PNPS, including fund balances, expenditures made, and reimbursements received;

(6) to receive reports regarding the decommissioning plans for the PNPS, including any site assessments and post-shutdown decommissioning assessment reports; provide a forum for receiving public comment on these plans and reports; and to provide comment on these plans and reports as the panel may consider appropriate to state agencies and the owner of the PNPS and in the annual report described in clause (3).

*5 and 6 removed in new bill because they are covered in the MOU. A timeline was added in new legislation stating the panel shall meet quarterly as set forth in subsection (i) through the Nuclear Regulatory Commission's (NRC) partial site release of the property and annually until the spent fuel is removed from the site and the NRC license is terminated."

**Current MOU with AG and Holtec from AG press release:**

- On 6/17/2020 Attorney General Maura Healey and the Baker-Polito Administration announced a comprehensive agreement that ensures critical environmental, public safety, and financial protections for Massachusetts residents during the dismantlement and cleanup of the Pilgrim Nuclear Power Station in Plymouth.
- The settlement agreement reached with Holtec Pilgrim, LLC, and Holtec Decommissioning International LLC (Holtec) resolves a petition the Commonwealth filed with the Nuclear Regulatory Commission (NRC) to challenge

an application to transfer Pilgrim's federal license from Entergy Nuclear Operations, Inc. and Entergy Nuclear Generation Company to Holtec.

- The agreement also resolves two lawsuits (September 2019 and January 2020) the Commonwealth filed to challenge the NRC's approval of the license transfer application, and several administrative challenges Holtec filed to challenge conditions in the January 2020 state water permit for the plant.
- It provides critical protections, includes compliance measures stricter than federal requirements, and secures the funds necessary to safely and properly clean up this site.
- Importantly, the agreement ensures that the cleanup of the site is overseen by state agencies and be held to the Commonwealth's strict radiological and non-radiological hazardous waste cleanup standards, and that the necessary funds will continue to be available to ensure that natural resources are restored and public health protected.

**Financial Assurances**

- The agreement establishes a robust set of financial assurances and related reporting mechanisms to ensure that sufficient funds will be available to dismantle the nuclear power plant, clean up radiological and non-radiological contamination, restore the site, and manage spent nuclear fuel onsite until it is transported out of the state promptly and safely.
- Under the terms of the agreement, Holtec must maintain at least $193 million in funds until it completes most of the cleanup and site restoration work and, after that point, $38.4 million in funds until the spent nuclear fuel is removed from the plant.
- Holtec is also required to obtain $30 million in pollution liability insurance and secure performance bonds for certain contracts. The agreement requires Holtec to provide monthly reports to the state in order to monitor the progress of the work at the plant and to foresee any financial issues.
- Funding provisions for Mass. Department for Public Health, Mass. Emergency Management Agency, and Mass. Department of Environmental Protection

**Cleanup Requirements**

- The agreement requires Holtec to comply with the state's strict cleanup standards when it comes to radiological and non-radiological hazardous materials such as oil and polychlorinated biphenyl (PCBs). (Commitment to meeting Commonwealth's radiological standard of 10 millirem for all pathways, which is 40% of the Federal standard of 25 millirem)
- To advance the cleanup work, the agreement requires Holtec to submit to MassDEP and DPH an initial site assessment of the property to ascertain the types of contamination at the property and where such contamination may be located and establishes clear guidelines for the removal and decontamination of structures, including radiologically contaminated structures, at the site.
- MassDEP and DPH will oversee the cleanup work to ensure that public health and environment are protected. To aid in that effort, the agreement secures future funding for DPH so that it can continue monitoring air and food sources outside of the plant's boundaries for any offsite radiological contamination.
- The agreement will ensure that the property is cleaned up to a level that will allow for its future reuse to benefit of surrounding local communities, including the Town of Plymouth.

**Public Safety**

- The agreement includes specific emergency preparedness requirements to protect the public in the event of a radiological emergency at the site.
- To further those requirements, MEMA will receive continued funding each year to perform its emergency preparedness functions until the risks decrease.

- (Without the agreement, most of the existing emergency preparedness requirements and related funding for MEMA would have been eliminated because the NRC decided earlier that year to exempt the plant from federal emergency planning requirements by removing the requirement to maintain a ten-mile emergency planning zone (EPZ) around the site perimeter.)
- To further enhance public safety, the agreement also requires Holtec to implement cybersecurity measures to limit threats that could compromise plant systems designed to safely secure plant assets such as the spent nuclear fuel that will remain stored onsite. These requirements are not currently required by the NRC.

**New legislation including list of committee members**

The Nuclear Decommissioning Citizens Advisory panel created through state law in 2016 was created during a time of uncertainty around the closure, and eventual decommissioning.
Since that date the panel has acted admirably as a panel of state officials, subject matter experts, plant officials, local and community leaders and appointed members of the public to navigate the closure, sale, announcement of NRC PROMPT decommissioning.

The circumstances today are far different than in 2016 which is why I am moving to update the panel in a manner to make it more effective and in line with the current conditions and expectations of the project, as well as preparing the community for what lies ahead for the site once cleaned up.

Back in 2016 Entergy owned the plant, had projected a 60-year timeline to decommission the facility and there was no agreement between the Commonwealth and any company around the decommissioning of the project. Today, Holtec is the owner, decommissioning in the fourth year of an eight-year plan, and an agreement between Holtec and the Commonwealth signed in 2020 that sets forth the terms and conditions to which the site will be cleaned up and oversight therein of the agreement.

**The state must take a more active role in running the panel to both provide awareness of the compliance of the agreement, ensure the correct technical knowledge is empaneled on the group, as well as prepare the community for the eventual redevelopment of the site for economic development following the closely agreed upon clean-up standards.**

This follows the model of the State of New York Decommissioning Oversight Board for the Indian Point project to ensure both the current, and future needs are addressed in the project while sticking to the agreed upon regulations in June 2020 agreement between Holtec and the Commonwealth.

**As a panel that is advisory, the need to address regulations and agreements is paramount to the success of the project to protect all citizens of the Commonwealth especially the residents of the Town of Plymouth.**

## Comparison of Members between old and new proposal:

| OLD | NEW |
|---|---|
| SECTION 14. (a) There shall be created a **nuclear decommissioning citizens advisory panel** which shall consist of the following members or their designees: | SECTION 14. (a) "There shall be created a **Pilgrim Decommissioning State Oversight Panel (Name change)** which shall consist of state officials or their **staff designee**, scientific and technical experts, local officials, a retiree of Pilgrim Station with technical expertise in environmental areas and/or |

| | |
|---|---|
| • the secretary of health and human services, who shall serve ex officio; same, except or staff designee on all in new<br>• the secretary of energy and environmental affairs, who shall serve ex officio; same<br>• the commissioner public utilities, who shall serve ex officio; same<br><br>• the secretary of housing and economic development, who shall serve ex officio; same<br>• the director of the Massachusetts Emergency Management Agency; same<br>• 1 member from the Plymouth Nuclear Matters Committee as appointed by the Plymouth Board of Selectmen; removed<br>• 1 member from Massachusetts Department of Public Health Radiological Control Program appointed by the Bureau of Environmental Health; same<br>• 1 representative of the Old Colony Planning Council or designee, selected by the Council; removed<br>• 2 representatives of the Town of Plymouth as selected by the Plymouth Board of Selectmen; same, except one Chairman of Board or staff designee and the other from enviro<br>• 2 members appointed by the Governor; removed, but Gov or staff appointee added to new legislation<br>• 2 members appointed by the Speaker of the House; Changed to 1 recommended by State Rep<br>• 1 member appointed by the minority leader of the house of representatives; removed<br>• 2 members appointed by the President of the Senate; Changed to 1 recommended by State Senator<br>• 1 member as appointed by the minority leader or the senate; removed | physical security, a representative of a local environmental group, and two at-large appointees as follows:<br><br>• the Governor of the Commonwealth; New or staff designee<br>• the Attorney General of the Commonwealth; New or staff designee<br><br>• the Secretary of Energy and Environmental Affairs; same<br>• the Commissioner of Public Utilities; sam<br>• the Secretary of Health and Human Services; same<br>• the Director of the Massachusetts Emergency Management Agency; same<br>• the Secretary of Economic Development; same<br>• the Director of the Massachusetts Department of Public Health Radiological Control Program; same<br>• the Chairman of the Plymouth Selectboard or Town of Plymouth staff designee; (the town still has two appointees by one is board chair or staff and the other is from enviro)<br>• a retiree representative of Pilgrim Station with technical expertise in environmental areas and/or physical security, appointed by Chairperson of the panel upon majority approval by the panel; only 1 from Pilgrim<br>• a representative of the Plymouth Economic Development Foundation; NEW replaces OCPC<br>• a technical expert with knowledge of decommissioning and spent nuclear fuel management issues, appointed by the Chairman of the Panel upon majority approval by the panel; NEW<br>• a representative of the local environmental community, selected by the Plymouth Selectboard; specifies enviro |

| | |
|---|---|
| • 2 representatives of the Pilgrim Nuclear Power Station, also known in this section as PNPS or Station, as selected by the owner of the station; Changed to retiree of Pilgrim<br>• and a representative of the Utility Workers Union of America, UWUA, Local 369 selected by the UWUA who a present or former employee at the PNPS shall be. removed | • and two at-large appointees, one each recommended by the State Senator and State Representative who represent the former Pilgrim Nuclear Power Station location and appointed by the Senate President and Speaker of the House respectively. Still appointed by SP and Speaker, but recommended by Rep and Senator of the district and only one, not two. |

**Summary of new bill**:

This legislation updates the 2016 law that created a Nuclear Decommissioning Advisory Panel. Since its creation, Pilgrim Nuclear Power Plant has a new owner and in 2020 the Attorney General and the Governor of the Commonwealth announced a comprehensive agreement with the new owner that ensures critical environmental, public safety, and financial protections for Massachusetts residents during the dismantlement and cleanup of the Pilgrim Nuclear Power Plant. As a result, some language in the 2016 law needed updating.

The new Pilgrim Decommissioning State Oversight Panel will consist of state officials or their staff designee, scientific and technical experts, local officials, a retiree of Pilgrim Station with technical expertise in environmental areas and/or physical security, a representative of a local environmental group, and two at-large appointees. Many of the original 21 members will remain. The panel will be reduced from 21 members to 15. Among others, new members will include the Governor and the Attorney General of the Commonwealth or their staff designee, a member of the Plymouth Regional Economic Foundation, a technical expert with knowledge of decommissioning and spent nuclear fuel management, and a town appointed representative of the local environmental community.

The panel shall meet quarterly through the Nuclear Regulatory Commission's (NRC) partial site release of the property and annually until the spent fuel is removed from the site and the NRC license is terminated.

Holtec January 2023 Presentation

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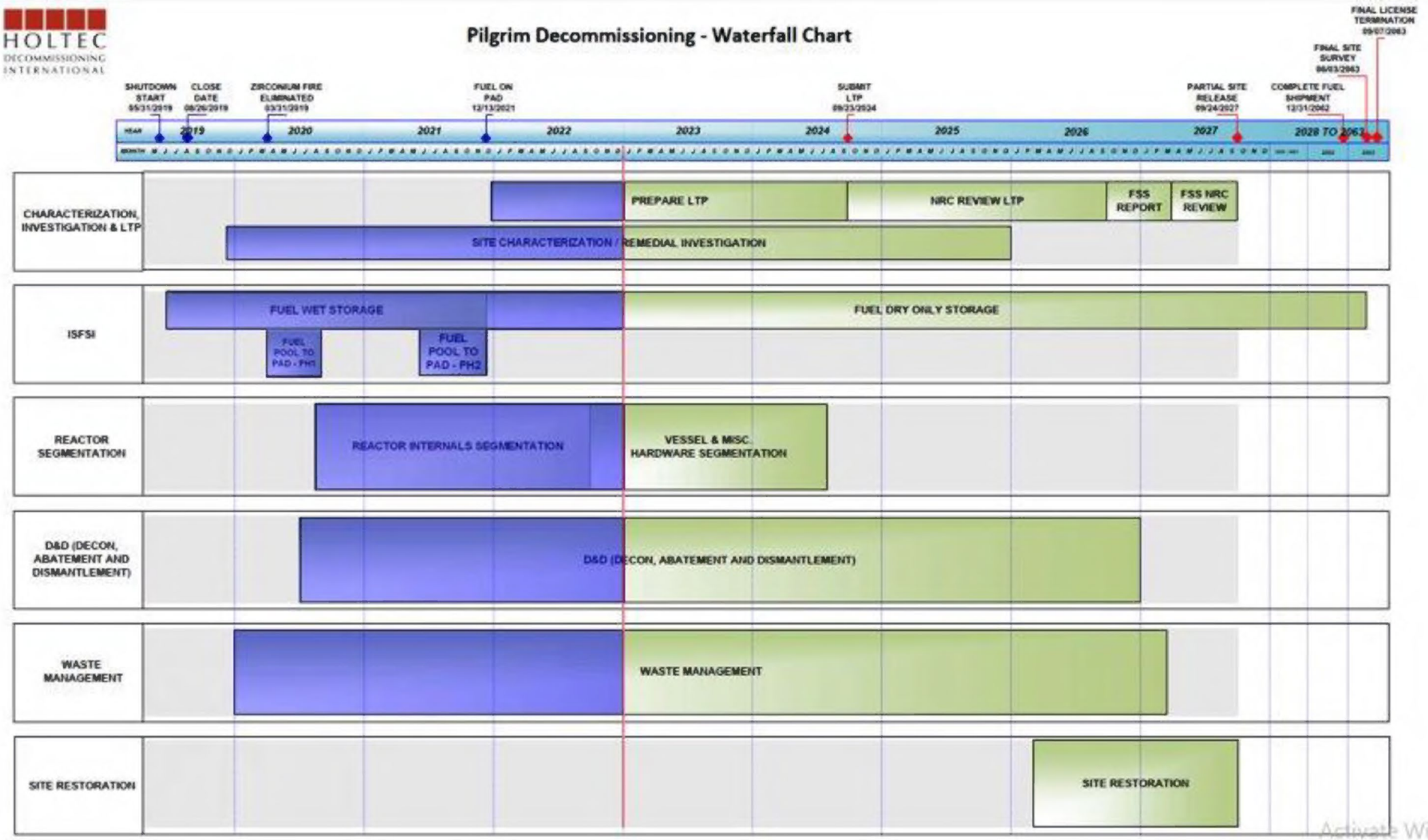
# Pilgrim NDCAP Update

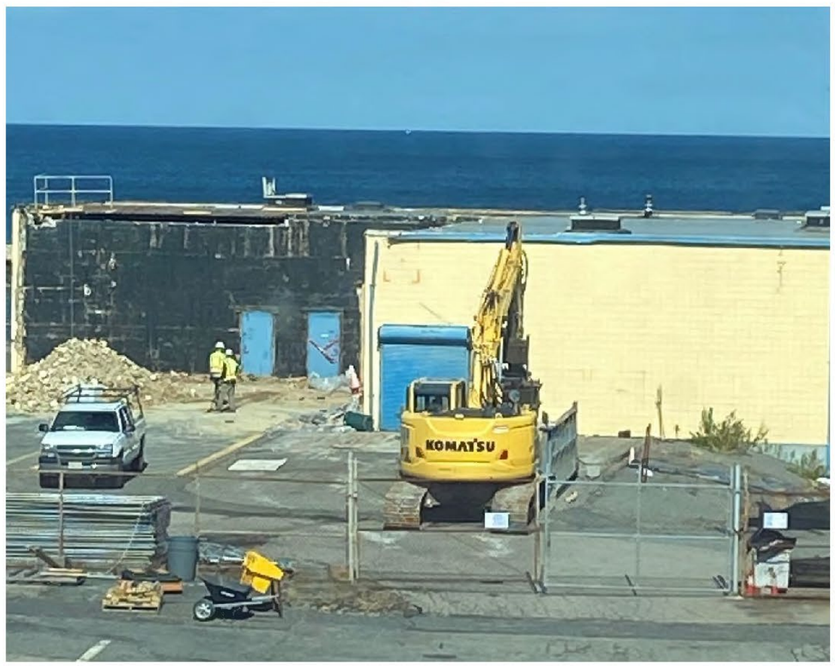
January 23, 2023

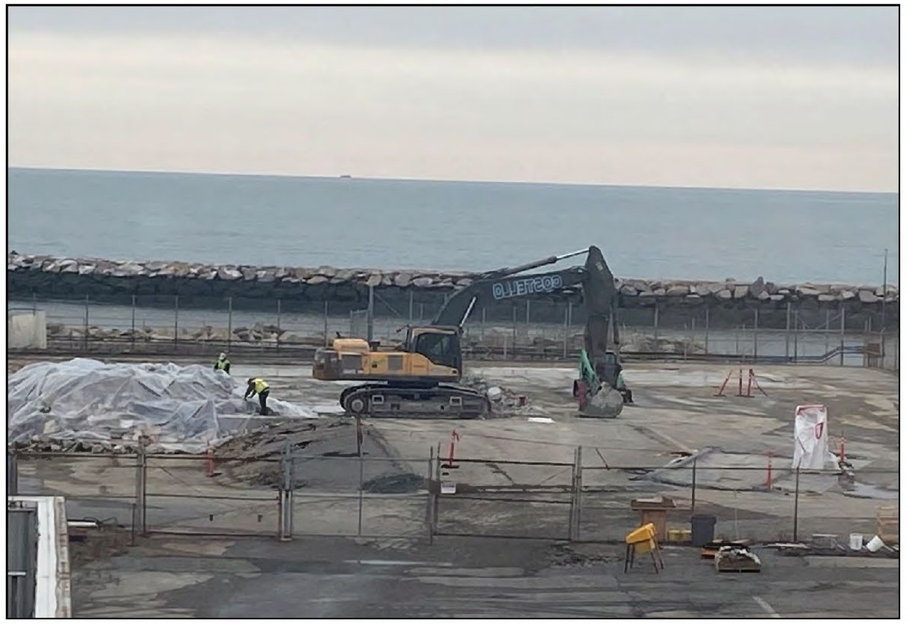
# Draft Waterfall Chart



# Demolition

- Trash Compaction Facility- Demolition Completed 1/19/23 Debris Removal Underway



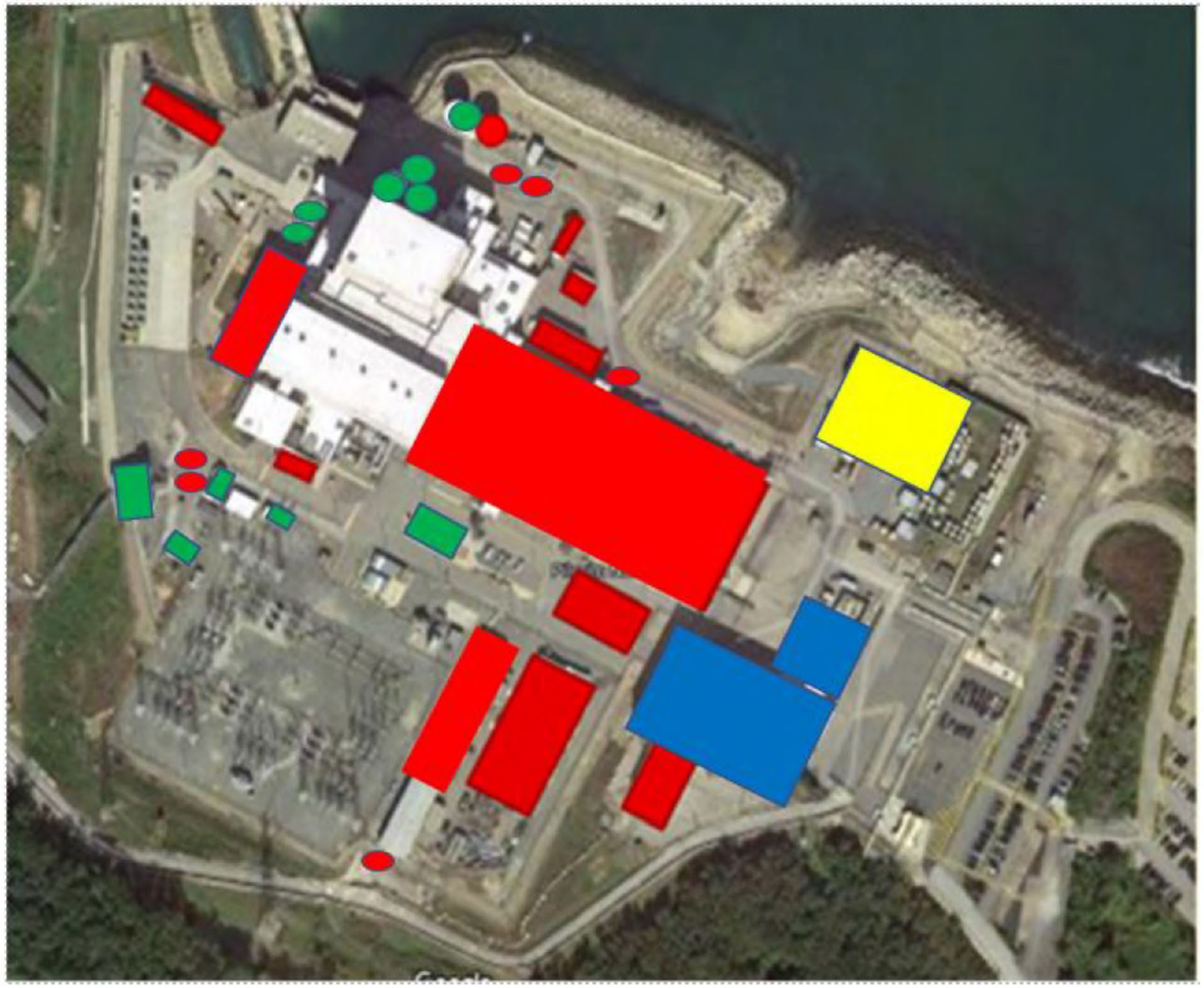



# Demolition

- Old Main Gate
  - Building Clear-out – Complete
  - Gapping – complete
  - Disposition Survey - complete
  - Abatement – Q1 2023
  - Structural Demolition - Q1 2023

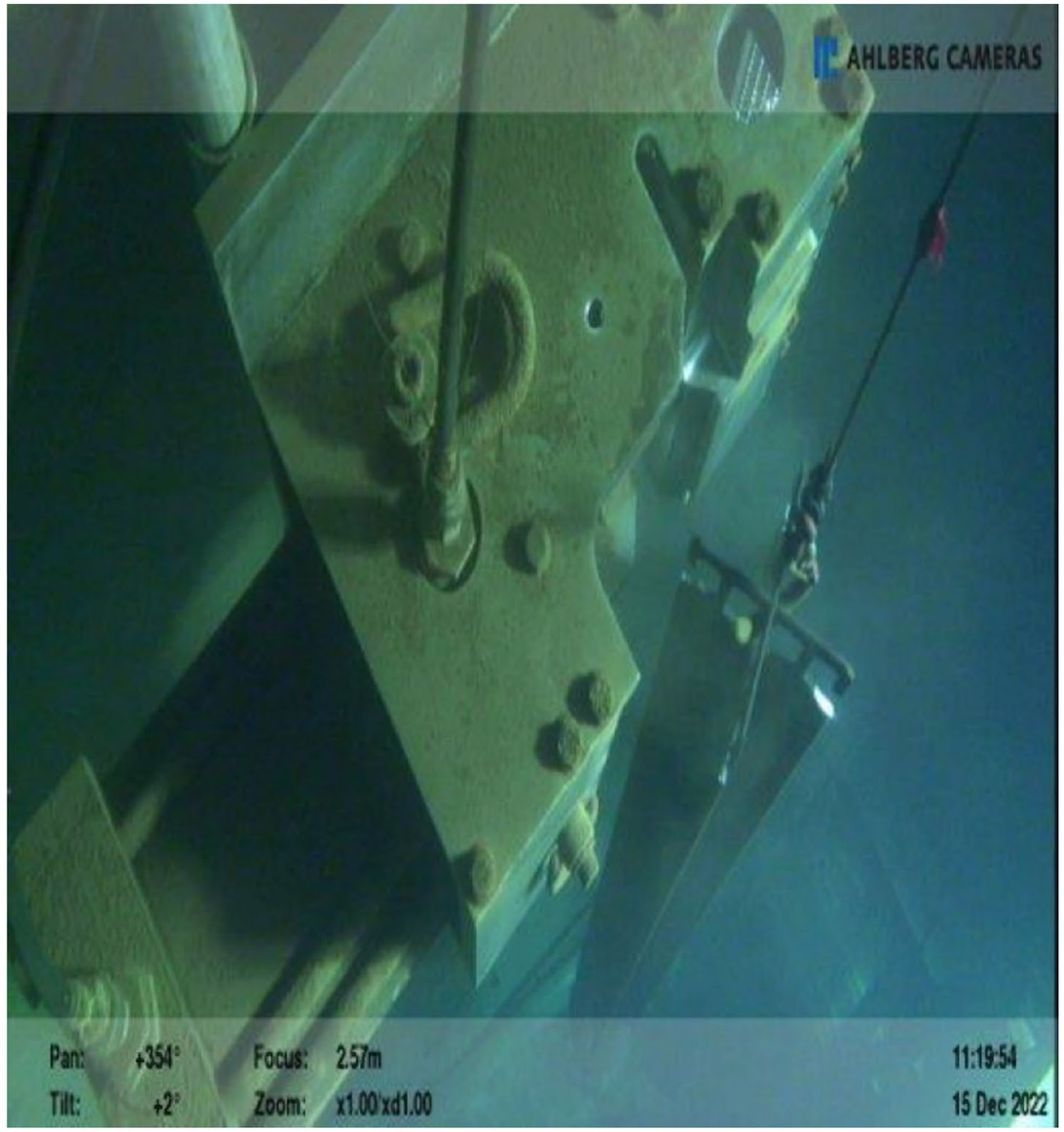
# Demolition cont.

- More than 70% of outbuilding square footage has been demolished (Red)
- Active demolition activity (Yellow)
- 2023 Demo upcoming (Green)



# Reactor Segmentation

- Control Rod Blades – (78 of 173) Mid 1st quarter 2023
- Fuel Support Castings (130 of 145) – Mid 1st quarter 2023
- CRGT (108 of 147) – Mid 1st quarter 2023
- Core Plate – Late first quarter 2023
- Jet Pumps – 2nd quarter 2023

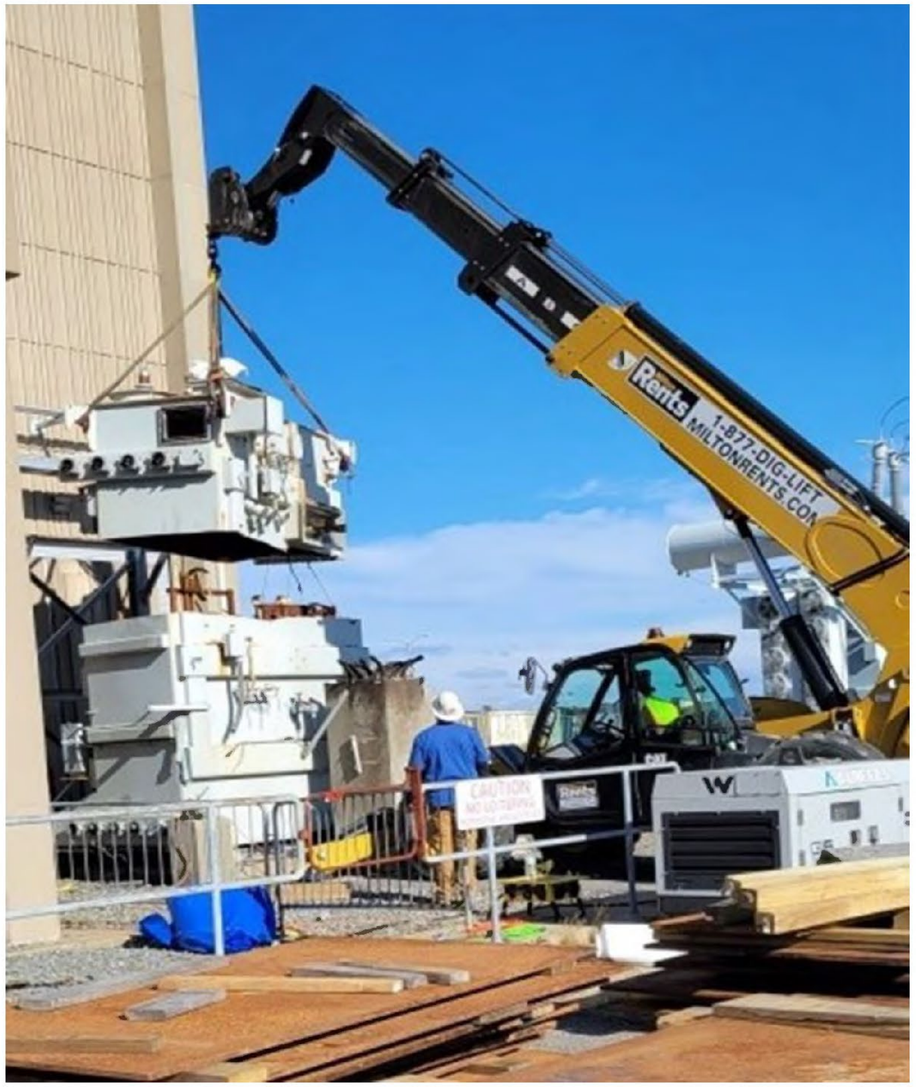



Raising a Control Rod Blade into position to crush for waste volume reduction

# Risk Reduction

Hazard Elimination

- De-energized and removed electrical transformers
- Removed 16,000 gallons of lubricating oil
- Removed Hydrogen storage
- Removed Compressed Gas cylinders from industrial buildings and
- Emptied and demolished Gas Bottle Storage Facility
- Updated fire detection capability




Main Transformer Removal

# Environmental Impact Reduction

Strategic operation of saltwater cooling systems to eliminate chlorination

- Chemicals (sodium hypochlorite) used as a biofouling agent to maintain critical cooling system flow paths functional

- Idling cooling loops prevented water oxygenation and slowed blue mussel growth preventing the need to use chemical treatments

# Environmental Impact Reduction

| Outfall Number | Description | Station Operating Configuration | Current Configuration |
|---|---|---|---|
| 001 | Circulating Water | Two pumps in once through cooling service, 310,000 GPM each, maximum temperature<br>102 °F, maximum differential temperature 32°F<br>Water chlorinated to prevent condenser biofouling | Circulating water pumps secured<br>Chlorination system secured |
| 002 | Main Condenser Thermal and Non-Thermal Backwash | One circulating water pump in service. 310,000 GPM<br>Maximum Temperature 120°F | Circulating water pumps secured |
| 004 | Stormwater | Precipitation runoff | Precipitation runoff |
| 005 | Stormwater | Precipitation runoff | Precipitation runoff |
| 006 | Stormwater | Precipitation runoff | Precipitation runoff |
| 007 | Stormwater | Precipitation runoff | Precipitation runoff |
| 010 | Salt Service Water | 1 thru 4 pumps in service dependent on heat loads<br>Maximum temperature 102 °F,<br>Maximum differential temperature 32°F<br>Water chlorinated to prevent condenser biofouling | A single pump intermittently operated for equipment cooling<br>Maximum temperature 90°F<br>Maximum differential temperature 10°F<br>Chlorination system secured |
| 011 | Heating System Pressure Relief Valve Discharge / Makeup Demineralizer Wash Water Divert | Subject to flow with either plant heating system or makeup demineralizer in service | Heating System relief valve being re-routed away from Outfall #11.<br>Makeup Demineralizer Wash Water Divert eliminated |
| 012 | Screenwash Sluiceway to Discharge Canal | In conjunction with previous outfall #003, used to prevent fouling of screens due to debris loading and fish impingement | Screenwash pumps secured |
| 013 | Stormwater | Precipitation runoff | Precipitation runoff |
| 014 | Waste Neutralizing Sump | Used for draining nitrated water from Reactor and Turbine Building Closed Cooling Water and Standby Liquid Control Systems | Used solely to support system draining for maintenance activities |

# Recycling and Waste Elimination

Radiological Material

- Trash Compactor
- Control Rod Drive Hydraulic Control Unit Accumulators
- Motor Operated Valves
- Noble Metals Injection Skid


Trash Compactor

Control Rod Drive
Hydraulic Control Unit Accumulators

# Recycling and Waste Elimination

Non-radiological Material

Shipped 9.2 Million pounds of non-radiological waste with greater than 8.2 Million pounds to Recycle / Reuse


Removal and sale for reuse of 250V DC and 1 train of 125V DC batteries

# Pilgrim Update-Waste Management

Radioactive Waste Shipments – Completed Thru Dec 30th via Transload facility (Mansfield, MA) and Highway shipments

Total Disposal  Class A /Exempt  89,307 ft3  Class B/C  62ft3

215 A  Cask Shipment  Riser Pipe 02(LSA-II)

# Water Management

- Continue to pursue modifications to NPDES and Surface Water Discharge Permits. Goal for permit submittal mid to late 1st quarter 2023.

March NDCAP Meeting (03/23/23)

**Approved May 22, 2023**

# NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")
## Monday, March 27, 2023
## Hybrid Meeting (in-person and virtual)
## Meeting Minutes

The meeting was called to order at about 6:30 pm by Mr. John Mahoney.

**NDCAP MEMBERS PRESENT**

- John Mahoney, Plymouth Select Board Designee Delegate (in person)
- Pine duBois, Speaker of the House Appointee (Vice Chair) (in person)
- Mary Lampert, Senate President Appointee (in person)
- James Lampert, Speaker of the House Appointee (in person)
- Mary Jo Gatslick, Minority Leader of the Senate Appointee (in person)
- Michael Fortini, Minority Leader of the Senate Appointee (in person)
- Seth Pickering,[1] Department of Environmental Protection (in person)
- Andrew Gottlieb, Governor Baker Appointee (in person)
- Jack Priest, Department of Public Health, Radiation Control Program (in person)
- Henrietta Cosentino, Plymouth Select Board Appointee (in person)
- John Viveiros, Massachusetts Emergency Management Agency (virtual)
- David Noyes,[2] Holtec Decommissioning International (in person)
- John Moylan, Holtec Site Vice President (in person)
- Kelly O'Brien, UWA Representative (in person)
- Robert Hayden, Massachusetts Department of Public Utilities (in person)[3]
- David C. Nichols, Governor Baker Appointee (virtual)

**NDCAP MEMBERS NOT PRESENT**

- Mary Waldron, Old Colony Planning Council

**GUESTS IN ATTENDANCE**

- Jim Cantwell, representing U.S. Senator Edward Markey's office
- Caleb White, representing U.S. Senator Elizabeth Warren's office
- Michael Jackman, representing U.S. Representative Bill Keating's office
- State Senator Susan L. Moran
- State Representative Mathew J. Muratore
- State Representative Kathleen R. LaNatra
- Gerard Martin, Department of Environmental Protection

**REVIEW OF MINUTES**

Mr. Mahoney asked whether there were any concerns regarding the January 2023 minutes. There was no discussion about the prior minutes and a motion to approve passed unanimously.

[1] Designee of Secretary of the Executive Office of Energy and Environmental Affairs
[2] Designee of Pat O'Brien (Holtec)
[3] Jonathan Goldberg, General Counsel for the Massachusetts Department of Public Utilities, was also in attendance, and will be replacing Mr. Hayden on an acting basis until a permanent replacement is designated.

**LEGISLATIVE DELEGATION**

State Senator Moran indicated that she continues to take concrete legislative action to hold Holtec accountable and ensure that discharge does not occur into Cape Cod Bay. She is focused on including more concrete language in recently filed legislation, which was proposed for the FY23 supplemental budget but was not included in the House version of the bill. The goal of the legislation is to ensure transparency throughout the decommissioning process.

Senator Moran also indicated that she along with other individuals from the legislative delegation toured the site, and learned that Holtec intends to complete deconstruction of the site in eight years. She also noted Holtec's intent to submit a National Pollutant Discharge Elimination System (NPDES) permit modification application related to discharge of decommissioning water. She concluded her remarks by emphasizing the importance of the state's duty to be actively involved in the decommissioning process.

State Representative Muratore offered remarks, together with State Representative LaNatra. Representative Muratore reiterated the purpose of the proposed legislation previously discussed during the January 2023 NDCAP meeting. To receive feedback, he met with several individuals and organizations. He clarified that the goal of the legislation is not to reduce the size of the panel but to make the panel more effective.

Mr. Cantwell from U.S. Senator Ed Markey's office read a statement to the panel. Senator Markey remains concerned regarding the various impacts that discharge of decommissioning water will have throughout the Cape Cod region. Mr. Cantwell reminded the panel that Holtec agreed to a third party evaluation of water impacts during the May 2022 public hearing held in Plymouth. Senator Markey has engaged in the following activities:

- Working with universities to understand the economic impacts of discharge
- Working to ensure that MassDEP and DPH are present for sampling of water and to conduct split sample testing
- Cooperating with U.S. EPA to ensure that it is monitoring any potential discharges
- Working to ensure that an independent study is conducted
- Ensuring that a portion of the Decommissioning Trust Fund ("DTF") is allocated to the community, the study, and sampling

Ms. duBois asked Mr. Cantwell a series of questions regarding the funds for the study, including whether use of DTF funds would create an appearance of bias. Mr. Cantwell indicated that the funds are anticipated to be paid to the state to ensure independence.

Ms. Lampert agreed with Mr. Cantwell that a study should be conducted. A failure to hold Holtec to its promises will hinder the public's trust and confidence. She also stated that Holtec would make a generous profit after certain reimbursements are made from the DTF.

Mr. Jackman and Mr. White did not add any comments on behalf of U.S. Representative Keating and U.S. Senator Warren.

**HOLTEC UPDATE**

Mr. Noyes briefly updated the panel regarding the major activities associated with decommissioning, and a power point presentation was shown. Mr. Noyes presented a waterfall chart showing anticipated timelines for future work. In summary:

- Site characterization continues with development of the license termination planning.
- Maintenance of the 62 dry cask canisters and 3 canisters greater than Class C waste is ongoing.
- Final restoration of the site will commence after the characterization of the on-site material.

Regarding demolition:

- 70 percent of the buildings above grade have been removed from the site.
- Demolition of the secondary alarm point (site access building) continues.
- Two underground storage tanks, four above ground storage tanks, and four other structures are scheduled for demolition through the third quarter of this year.
- The intake structure and administration building are to remain on site to support decommissioning process.
- The main process buildings will be removed between 2025 and 2027.
- Trash compaction building has been removed and clean up has been complete.
- Upcoming demolition includes the old man gate and a wall next to the trash compaction facility.

For reactor segmentation:

- Control rod blades, fuel support castings, control rod guide tubes have been removed.
- In 2023, the lower core plate, shroud ring, and jet pumps will be removed.

For waste management:

- Class A Waste is being removed from the site as it is generated.
- Class B and C remain on site pending the approval of a cask design to permit shipment to Texas.

Regarding regulatory affairs:

- Decommissioning funding annual report is due on 03/31/2023.
- Permit modification for the EPA NPDES permit and state surface water discharge will be submitted by the end of the week.

Mr. Noyes provided an update on water management. Split sampling of the dryer separator pit, spent fuel pool, and torus is set to occur in April of 2023 along with MassDEP and DPH. Town of Plymouth officials will be on site as well.

A discussion took place between Mr. Gottlieb and Mr. Noyes about the permit application timeline and characterization of the water samples. Mr. Noyes confirmed that Holtec is committed to having the independent study done referenced at Senator Markey's congressional hearing in May 2022. Mr. Noyes also indicated that split sampling results will be received prior to any action taken on the permit modification application. Mr. Gottlieb asked how the independent study will be considered during the

permit modification application. Mr. Noyes reiterated that Holtec is committed to the independent study.[4]
Ms. Lampert indicated that the study continues to be relevant because Holtec agreed to obey the terms of the settlement agreement, which requires compliance with all state regulations.

Ms. Cosentino asked whether economic impacts would be considered as part of the permit modification application process. Mr. Pickering indicated that he does not have an answer as of now.

Ms. duBois asked whether there can be a discussion at the next meeting about the permit modification application process, and how it may affect Holtec's decommissioning schedule. Mr. Noyes indicated that he would be willing to discuss this.

**INTERAGENCY WORK GROUP (IWG) UPDATE**

EEA, MassDEP, and Mass AGO participated in a meeting held with EPA and Holtec on February 15. Holtec requested the meeting to outline its proposed procedures for sampling and treatment.

Holtec informed MassDEP and EPA (along with the other IWG members) that they anticipate submitting permit applications on or before March 31.

Holtec, CZM, MEPA, Mass AGO, and EPA met for an initial pre-filing discussion regarding permitting on March 21. If a discharge permit application is submitted to EPA and MassDEP, the state will review the application in light of all applicable state laws. Relevant permits/reviews include:

- Federal NDPES Permit
- State surface water discharge permit
- MassDEP Water Quality Certification
- Federal Consistency Review by CZM
- Anti-degradation review conducted by MassDEP
- Potential review under Massachusetts Environment Policy Act (MEPA)

MassDEP and DPH finalized a sampling protocol for a baseline assessment of the decommissioning water:

- The three locations remain the same: the spent fuel pool, separator dryer pit and torus.
- Attendees include Mr. Pickering, Mr. Priest, Mr. Martin, and a representative from Plymouth.
- Split sampling will be provided to the state for independent testing.
- Gel Laboratories will also conduct the independent testing, not Eurofin.

Mr. Mahoney asked a question about the chain of custody once the results are returned. Mr. Pickering stated that MassDEP would get the results first. Then, a comparison of the results would occur. Lastly, the results would be made public.

[4] Refer to minute marker 41:30-48:41 of video. See: NDCAP Meeting: 3/27/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube

Mr. Priest advised the panel that Gel Laboratories is an independent laboratory not affiliated with Holtec. It has a license to analyze both radiological materials and non-radiological pollutants MassDEP has identified.

Mr. Priest and Mr. Pickering emphasized that the results are used for information and consistency purposes, and do not have a regulatory purpose.
A discussion occurred between Mr. Lampert, Mr. Pickering, and Mr. Priest about the laboratories the state has used in the past for testing. Mr. Pickering indicated that MassDEP typically does not conduct radiological testing.[5]

Mr. Pickering explained the steps for sampling:

- Sampling will take place on April 5.
- State contracted radioactive material shipper will deliver the samples to Gel Laboratories.
- DPH samples will be analyzed at the Hinton State Laboratory.
- MassDEP will analyze for non-radiological contaminants.
- The results will be available to the public about a month thereafter.

Mr. Pickering continued the IWG update. The Mass AGO is reviewing the ESA (environmental site assessment) work plan and radioactive waste management plan.

On March 24, MassDEP met with Holtec to discuss response actions under the Massachusetts Contingency Plan (otherwise known as MCP or Chapter 21E) for two release tracking numbers that were issued in 2022. They include:

- For PCBs that have been detected in soil piles including removal.
- Benzopyrene detected above the groundwater category GW1.

Mr. Lampert asked for a timeline of when the review of ESA would be complete. Mr. Pickering said he did not know.

MassDEP continues to oversee demolition activities. MassDEP meets continuously with Holtec to manage the asbestos discovery identification, abatement, and removal process.

Regarding Holtec's desire to change the wastewater disposal system, MassDEP continues to evaluate the request.

Regarding public safety, MEMA continues to work with local partners on public safety planning and to schedule quarterly work group meetings.

Mr. Pickering answered a series of question that were e-mailed to him regarding the proposed water discharge, agencies and their roles in permitting, anti-degradation procedure, and any alternatives to discharge[6].

[5] Refer to minute marker 1:01:07-1:03:19 of video. See: NDCAP Meeting: 3/27/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube
[6] Refer to minute markers 1:09:20- 1:26:13 of video. See: NDCAP Meeting: 3/27/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube

Mr. Mahoney asked if the sampling results would be available to the public prior to the next NDCAP meeting in May. Mr. Pickering said he anticipates results to be ready by early May.

Ms. Gatslick asked whether testing of radionuclides has occurred at wastewater facilities in Plymouth. Mr. Pickering said he could not answer because it is not MassDEP's role. Mr. Priest suggested contacting the town engineer.

Mr. Mahoney asked how many labs throughout the country could do the independent testing. Mr. Pickering said they were only able to find one that could do both pollutants and radionuclides. Mr. Priest further explained the difficulties that arose in searching for a laboratory.

**PUBLIC COMMENTS & QUESTIONS**

Pat Watson asked whether a university research lab could do the same work as the independent lab selected. Mr. Priest said 'no' due to licensing, accreditation, and the types of analytical data needed. Mr. Priest indicated that the state reached out to universities as well.

Art Desloges explained that he filed a citizen's legislation with the Massachusetts Senate. He went on to describe the objectives of the legislation which included appointments, structuring of the meetings, membership, and finances.

Brian Campbell expressed his support for discharge of the treated water from the site. In his opinion, it is the safest option available. He concluded by expressing his opposition to offshore wind projects.

Ryan Collins stated that he created an online petition to prevent Holtec from discharging the water into Cape Cod Bay. The petition has over 200,000 signatures and can be found on change.org. He printed out those signatures and handed them to Mr. Noyes after concluding his statement.

Margaret Raskin asked Mr. Noyes if he knew how much tritium was in the water. Mr. Noyes said he did not have the data with him to properly answer that question. Margaret then stated that 3 grams of tritium takes 40 years to be disseminated into the ocean.

Former Gloucester City Councilor Jay Gustaferro reminded the panel that there is legislation around decommissioning that arose during Seabrook's decommissioning. He hopes that Governor Healey will use her authority during this process.

Joanne Wilson Keenan expressed her concerns about the dangers associated with discharge into Cape Cod Bay. She listed a series of radionuclides that can adversely affect health. It is her hope that downplaying the dangers does not occur during decommissioning and testing of the water.

Diane Turco asked Holtec's prior statement that it would not discharge water without consent of "major stakeholders." Mr. Noyes acknowledged that the U.S. Senators and Representatives are major stakeholders.

Mr. Turco also asked whether the schedule for dismantling the reactor building would be affected by the permitting timeline for the NPDES permit modification application. Mr. Noyes acknowledged that the

schedule may be affected, and reaffirmed Holtec's commitment not to discharge water prior to receiving a modified NPDES permit.

## REVIEW OF 2022 ANNUAL REPORT

Ms. Gatslick stated that Ms. duBois sent the annual report to members of the panel and asked whether there were any questions or concerns.

Mr. Lampert reminded the panel that the purpose of their duties is to advise the Governor and public on the issues involved in Pilgrim's decommissioning. He also mentioned that the statute is silent about the substance of the annual report. In his opinion, the goal of the annual report is to discuss both sides of decommissioning.

A discussion ensued between Ms. Gatslick, Mr. Lampert, Mr. Fortini, Ms. Cosentino, and Ms. duBois regarding the contents of the annual report.[7]

Mr. Priest suggested that the panel find a way to work collaboratively to compile a document that shows what the panel accomplished in 2022. Further, he suggested reserving a conference room on a weekend to finalize the report.

Mr. Nichols mentioned that the panel meeting in a forum such as a conference room may violate the open meeting law. Mr. Priest stated that the purpose would be a subcommittee meeting to work on a draft document, not a public deliberation.

There was a motion for a straw vote proposed by Mr. Priest on whether Ms. duBois's draft of the annual report should be the starting point for the 2022 annual report. Voting was conducted and Ms. duBois's draft was supported by a vote of 10-3-3 (yes-no-abstain).

Mr. Mahoney stated that there will be a vote on the 2022 annual report in May.

## ADJOURNMENT

A motion to adjourn was made and passed unanimously.

The meeting was adjourned at about 9:30 pm.

[7] Refer to minute markers 02:18:56-02:26:42 of video. See: NDCAP Meeting: 3/27/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube

Holtec March 2023 Presentation

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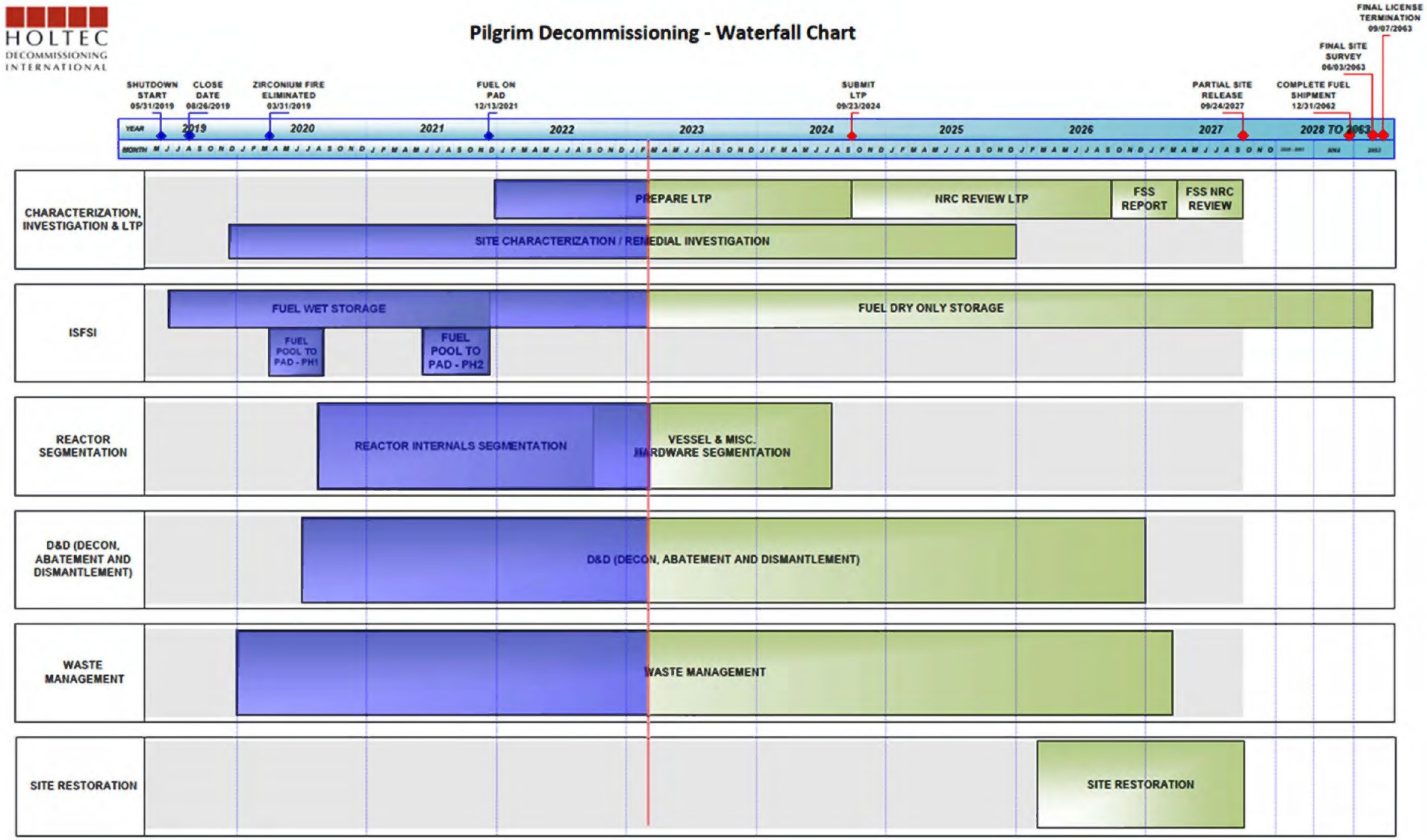
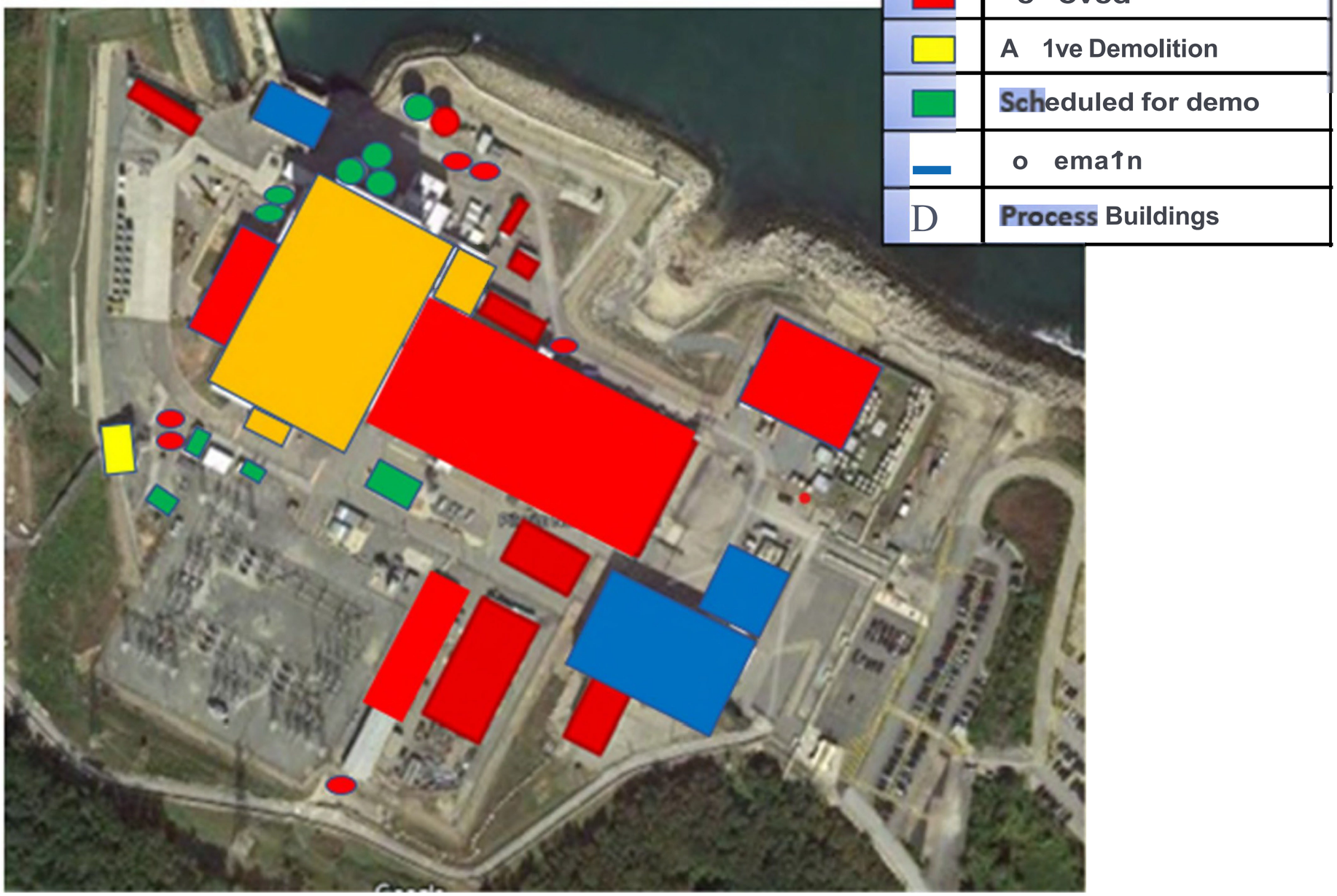
# Pilgrim NDCAP Update

March 27, 2023

# Draft Waterfall Chart



# Demolition


e oved
A 1ve Demolition
Scheduled for demo
o ema1n
D
Process Buildings

# Demolition - Complete

- Trash Compaction Facility- Demolition Clean-up Complete
- ≈ 14,000 ft3 Removed and Disposed
- ≈22,000 ft3 recycled (approx. 54%)
- ≈5,000 ft3 radioactive waste

# Demolition - Upcoming

TCF Adjacent Wall Structure

- Wall removal – Next Week
- OSSC Lid removal – Mid-April

Old Main Gate

- Demolition - Mid-April Completion

SEP Diesel, Station Blackout Diesel Generator, Security Diesel, Central Alarm Station

- Demo to follow Old Main Gate

# Reactor Internal Segmentation

- Control Rod Blades – Complete
- Fuel Support Castings – Complete
- Control Rod Guide Tubes – Complete

Upcoming in 2023

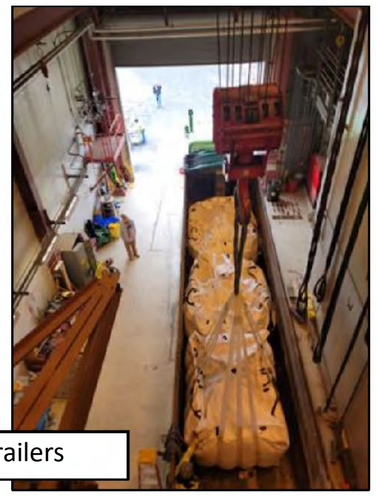
- Lower Core Plate Removal and Segmentation
- Shroud Ring Cut #3
- Segment Shroud Ring
- Jet Pumps

# Waste Management

Radioactive Waste Shipments – Completed in 2023 Thru March 15th via Transload facility (Rail) and Highway shipments approximately 31,190 ft3 total

A "connestoga " conveyance and 20' seavans (2) on trailer

215 A Cask Shipment RVI and Filters



Load frames, lifts of bags from frames to transfer trailers

# Regulatory Affairs

- Decommissioning Funding Annual Report Submittal –March 31
- Submit Permit Modification for EPA NPDES permit and State surface water discharge – March 31

# Water Management

- Split Sampling with MassDEP and MDPH of Cavity / DSP, SFP, and Torus to occur in April, Town has been invited to observe

May NDCAP Meeting (05/22/23)

Approved July 24, 2023

**NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")**
**Monday, May 22, 2023**
**Hybrid Meeting (in-person and virtual)**
**Meeting Minutes**

The meeting was called to order at about 6:30 pm by Mr. John Mahoney.

**NDCAP MEMBERS PRESENT**

- John Mahoney, Plymouth Select Board Designee (in person)
- Pine duBois, Speaker of the House Appointee (Vice Chair) (in person)
- Mary Lampert, Senate President Appointee (in person)
- James Lampert, Speaker of the House Appointee (in person)
- Mary Jo Gatslick, Minority Leader of the Senate Appointee (in person)
- Michael Fortini, Minority Leader of the Senate Appointee (in person)
- Henrietta Cosentino, Plymouth Select Board Appointee (in person)
- David C. Nichols, Governor Baker Appointee (virtual)
- Andrew Gottlieb, Governor Baker Appointee (virtual)
- Seth Pickering,[1] Department of Environmental Protection (in person)
- Jack Priest, Department of Public Health, Radiation Control Program (in person)
- Jennifer Robertson,[2] Department of Public Health (virtual)
- David Noyes,[3] Holtec Decommissioning International (in person)
- John Moylan, Holtec Site Vice President (in person)
- Kelly O'Brien, UWA Representative (in person)
- Mary Waldron, Old Colony Planning Council (virtual)

**NDCAP MEMBERS NOT PRESENT**

- John Viveiros, Massachusetts Emergency Management Agency
- Jonathan Goldberg, Massachusetts Department of Public Utilities

**GUESTS IN ATTENDANCE**

- Benjamin Thomas, representing U.S. Senator Edward Markey's office
- Caleb White, representing U.S. Senator Elizabeth Warren's office
- Michael Jackman, representing U.S. Representative Bill Keating's office
- State Senator Susan L. Moran
- State Representative Mathew J. Muratore
- State Representative Kathleen LaNatra
- Christopher Jean, staff for Rep. LaNatra
- Neil Sheehan, NRC
- John Drobinski, ERM working with Holtec
- Gerard Martin, Department of Environmental Protection
- Matthew Charette, Woods Hole Ocean Institute
- Irina Rypina, Woods Hole Ocean Institute

**LEGISLATIVE DELEGATION**

[1] Designee of Secretary of the Executive Office of Energy and Environmental Affairs
[2] Designee of Secretary of Health and Human Services
[3] Replacing Pat O'Brien (Holtec)

State Senator Moran indicated that she continues to work on an amendment to the legislation that was vetoed by Governor Barker in 2022. The amendment includes:

- A full study on economic and environmental impacts of discharge on the region
- A report from the study would be submitted by November 2025
- Prohibition on MassDEP from issuing a discharge permit to Holtec until after the study

Senator Moran concluded by thanking her colleagues and indicating that she hopes to have this version of the legislation on Governor Healey's desk this summer.

There were no updates from U.S. Congressmen Bill Keatings office.

State Representative Muratore indicated that he was working on a re-draft of the bill introduced to the panel earlier in the year.

**REVIEW OF MINUTES**

Mr. Mahoney asked whether there were any concerns regarding the March 2023 minutes.

Mr. Noyes referred to the Holtec section in the prior minutes and clarified that Holtec would support having the study done but did not commit to conducting the study.

Ms. Cosentino asked to correct the spelling of Margaret Raskin's name (second to last page of minutes).

A motion to approve the March 2023 meeting minutes with the corrections was made by Ms. Dubois and seconded by Mr. Lampert. The motion passed unanimously with 1 abstention.

**ANNUAL REPORT**

A discussion between Mr. Lampert and Ms. Gatslick ensued regarding which version was being voted on.[4] A conversation then took place amongst the panel regarding whether information presented in 2023 should be included in the 2022 annual report.[5]

Ms. Dubois explained to the panel that the purpose of the annual report is to advise the Governor and agencies on issues related to decommissioning. She indicated that the meeting minutes are always posted on the NDCAP website after each meeting.

Mr. Lampert expressed his concerns with the annual report and stated, in his opinion, that Holtec's financial reports should be included. Mr. Priest indicated that the financial report by Holtec has been submitted to the state and is available on the NDCAP's website.

Mr. Mahoney along with Ms. Gatslick agreed that the annual report should be specific to what occurred during meetings within a calendar year. Ms. Lampert disagreed.

[4] Minute markers 12:55- 18:18 of video. See NDCAP Meeting: 5/22/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube.

[5] Refer to minute markers 19:49-22:01 of video.

A motion for the panel to continue doing a calendar year report was made by Mr. Nichols and Ms. Walden seconded the motion. There was no discussion. The motion passed.

A discussion took place among Mr. Lampert, Ms. Lampert, and Ms. Gatslick about certain content and statements within the annual report relating to public participation and a suggestion that the public could hold its own meetings.[6] Thereafter, Ms. Gatslick asked Ms. Lampert whether there should be any statements removed from the annual report. The statement in question could be found on page 20 of the annual report. Ms. Gatslick agreed to remove this statement.

Ms. Lampert made additional recommendations on which words and terms to use in lieu of what was currently in the draft of the annual report. Mr. Mahoney asked Mr. Priest and Mr. Pickering which terminology was correct when referring to the different waters at the station. Then, another discussion took place amongst the panel members about the water and how it should be described in the annual report.[7]

A motion that the annual report use terminology found in accordance with the NPDES permit when describing the water was made by Mr. Priest and Ms. Gatslick seconded the motion. A discussion took place among Mr. Gottlieb, Ms. Lampert, Mr. Lampert, and Mr. Priest on how best to describe processed water and similar terminology. The motion was then withdrawn by Mr. Priest. Mr. Priest said he would confirm with MassDEP on which terms should be used to describe the water.

Mr. Gottlieb made a motion to amend the annual report and include a sentence that says “some members of the public and some members of the panel asserted that a proposed discharge of wastewater would be illegal.” Mr. Lampert seconded the motion. A discussion ensued between Mr. Lampert and Ms. Gatslick on where the statement should be inserted. It was determined that page 12 of the report was where the statement should be included. The motion passed.

A motion to approve the annual report with the additional changes discussed tonight was made by Ms. DuBois and Mr. Nichols seconded the motion. The motion passed.

**WOODS HOLE PRESENTATION**

A PowerPoint presentation was given by Doctor Irina I. Rypina on bay circulation. In summary:

- Mean currents travel South into Cape Cod Bay and curve East towards Race Point/Provincetown.
- Currents typically slow down the further south and east they travel into Cape Cod Bay.
- Currents are influenced by different variables like wind speed and direction and tides.

Doctor Rypina then explained what pathways the discharge could take as well as the models used to make those determinations.[8]

Mr. Lampert asked whether aquaculture sites within Duxbury, Plymouth, and Kingston Bays would be included in their study. Doctor Rypina indicated that the study will try to include those locations.

[6] Minute markers 31:11- 36:20.
[7] Minute markers 38:00-50:12.
[8] Minute markers 1:12:50-1:19:44.

Ms. duBois asked whether the study would have any bearing on the velocity and volume of a discharge. Doctor Rypina advised that the study could try looking at those variables, but the models have limited spatial and control resolution.

Ms. duBois then asked whether the model used in the study was a worldwide model or a regional one. Doctor Rypina said it was a regional model specific to Cape Cod Bay and operated by NOAA. Further, Ms. DuBois asked whether the model considered the tides. Doctor Rypina assured her that the model did take tides into account.

Ms. duBois followed up with another question regarding the Deer Island discharge. Doctor Rypina said that the study has not looked into that.

Ms. Lampert asked whether the study area included Stellwagen Bank. Doctor Rypina confirmed that the study area included that location.

Ms. Gatslick asked if currents in Cape Cod Bay are mostly counterclockwise and if they ever go in the opposite direction. Doctor Rypina agreed that the currents are counterclockwise but can reverse. Ms. Gatslick then asked what happens to the water carried into Cape Cod Bay. Doctor Rypina stated that it stays in the lower (southern) portion of the bay for up to three weeks.

Mr. Noyes asked whether the research takes into consideration what the plant has proposed for discharge flow rates and volumes. A discussion took place between Mr. Noyes and Doctor Rypina about what the current maps show and what additional data would be required to include those considerations.[9]

Mr. Lampert asked whether the model differentiates an incoming or outgoing tide. Doctor Rypina said it does to some degree, but the resolution of the model is six hours. The model would not pick up what happens on a smaller scale.

Ms. duBois asked, and Doctor Rypina confirmed, that the study would commence in July 2023 and results released by end of year. Doctor Rypina agreed to be invited back to present the results.

**HOLTEC UPDATE**

Mr. Noyes briefly updated the panel regarding the major activities associated with decommissioning and a power point presentation was shown. Mr. Noyes presented a waterfall chart showing anticipated timelines for future work.

Partial site release is scheduled for 2031 rather than 2027. Mr. Noyes further described reasons for the delay, what partial site release meant, and future steps.[10]

Structures recently demolished include the old main gate, trash compaction facility, central alarm station building, and safety enhancement program diesel building. Structures scheduled for demolition include the security diesel generator, station blackout diesel generator, and four above ground storage

[9] Minute markers 1:29:25-1:32:35.
[10] Minute markers 1:36:40-1:40:31.

tanks. Mr. Noyes reminded the panel and public that Holtec remains committed to recycling and reusing any non-radiological material generated during demolition.

For reactor segmentation, the lower core plate removal is in progress, shroud ring, and jet pumps are scheduled.

For waste management, Class A Waste is being removed from the site as it is generated while Class B and C remain on site.

Regarding regulatory affairs, the annual radioactive release and radioactive effluent operating reports were submitted. Mr Noyes described some of the contents of the reports.[11]

Split sampling with MassDEP and DPH was performed on April 5.

Mr. Lampert asked for an update regarding the transport cast for the Class B and C waste on site. Mr. Noyes said Holtec is in the process of finalizing the design. Once finalized, it will need to be submitted to the NRC.

A conversation took place between Mr. Nichols and Mr. Noyes about the four-year delay, finances, and lack of growth of the trust fund.[12]

Mr. Fortini asked which structures will remain on site and where the water from the spent fuel pool and separator pit were stored. Mr. Noyes listed the structures that would remain on site and explained that the water would be stored in the torus after segmentation.

Mr. Gottlieb asked whether the four-year delay would have an impact on Holtec's use of the water. Mr. Noyes said the use of water would be unchanged in the reactor cavity and spent fuel pool. Some water in the reactor vessel proper may not be available depending on certain variables.

A discussion among Mr. Gottlieb, Mr. Pickering, Mr. Priest, and Mr. Noyes took place regarding the volume of discharge, scheduling, and segmentation.[13]

Ms. Cosentino expressed her concerns about Holtec's transparency.

Ms. Lampert asked what effect the four-year delay had on workers. Mr. Noyes said he did not know at this time.

**INTERAGENCY WORK GROUP (IWG) UPDATE**

Jonathan Goldberg and Jennifer Robertson were introduced as new members of the interagency work group by Mr. Pickering.

Mr. Pickering began the update by discussing the water discharge permit.

[11] Minute markers 1:47:46- 1:49:30.
[12] Minute markers 1:50:53- 1:52:40.
[13] Minute markers 01:55:53- 01:58:41.

MassDEP and DPH have completed the split sample analysis of the decommissioning water. Results of the analysis are now available to the public. Summaries of the findings were also provided to the panel.

Mr. Pickering explained the events of April 5, 2023:

- Representatives from MassDEP and DPH met with Holtec at the Pilgrim Station to collect samples from the spent fuel pool, the dryer separator pit, and torus.
- The samples were taken by Holtec under the direct observation of individuals from MassDEP, DPH, and the Town of Plymouth.
- The samples were then transferred by personnel from MassDEP and delivered by DPH contracted shipping to Gel Laboratories in South Carolina for non-radiological pollutants.
- DPH samples were delivered to the Mass. Environmental Radiation Lab for radiological pollutants.

Twenty-two of the 239 non-radiological parameters that were analyzed were detected above the method detection limit. Four radiological parameters were detected including tritium. Holtec also submitted their findings which were within expected ranges to the analytical results that were collected.

MassDEP and EPA are now in receipt of the NPDES and surface water discharge permit modification applications submitted by Holtec on March 31, 2023. There will be a review of the applications in light of all applicable state laws and regulations.

Mr. Pickering indicated that the Healey-Driscoll administration has serious concerns about the proposed discharge into Cape Cod Bay.

Mr. Martin stated that the results of the sampling were now available including a short summary, tables, and comparison with Holtec's results. He drew awareness to several errors and corrections.[14]

MassDEP and DPH along with the MassAGO continue to review Holtec's environmental site assessment work plan and radioactive waste management plan. Response action plans under the Massachusetts Contingency Plan are ongoing. The report is to be submitted by April 21, 2024.

MassDEP's asbestos sections continues to be actively engaged in overseeing the demolition activity occurring at the site and meets regularly with the company to manage the asbestos.

MassDEP continues to review Holtec's request to change its wastewater disposal system on site to a Title 5 system.

MEMA continues to work with local partners on public safety planning.

Ms. Lampert asked questions about the sampling procedures. A discussion ensued among Ms. Lampert, Mr. Pickering, and Mr. Noyes on circulation of the water, the location of the sampling, and water volume.[15]

[14] Minute marker 2:14:17-2:15:46.
[15] Minute marker 2:17:16- 2:20:10.

Mr. Mahoney asked Mr. Pickering when the next round of testing would take place knowing that amended permits may happen in the future. Mr. Pickering could not answer Mr. Mahoney's question because the permit is under review and a number of questions remain.

Ms. Lampert asked Mr. Noyes questions about the filtration system. Mr. Noyes asserted that the filtration systems that were in use when the plant was operating are different than the ones currently used. Demineralization remains the same.

Ms. Cosentino asked what a Title 5 septic system was. Mr. Pickering explained that the current wastewater system is a conventional treatment system. Flows are reduced now, so Holtec would like to modify the system to handle only sanitary flows.

**PUBLIC COMMENTS & QUESTIONS**

Nathan Murphy expressed his disapproval on the decision to decommission Pilgrim. He concluded his statement with a series of questions to the panel and public.

Brian Campbell expressed his support for the water discharge into Cape Cod Bay. He advised that it is the safest option available.

Art Desloges indicated his concern on the public's ability to comment and express their opinions during these meetings. In accordance with state law, these meetings are considered public forums. He hopes that the chair will affirm the public's right to comment.

Paul Galvin had two questions regarding outfall temperatures and dilution. Mr. Noyes provided an answer to each question.[16]

Doctor Barry Potvin stated that the Plymouth Board of Health has a duty to protect residents from imminent harm. A discussion and a series of question took place between Doctor Potvin and Mr. Noyes about the dry casks and their storage.[17]

Ben Cronin referred to Article 19 of the Massachusetts Constitution and indicated that members of the public have a right to comment and assemble.

An individual who did not provide a name explained the importance of language and context during these meetings. She does not appreciate manipulating the context of certain words.

Richard Rothstein had questions for Doctor Rypina from Woods Hole about the NOAA modeling. Mr. Mahoney indicated that the Woods Hole representatives were no longer in the meeting, but would return in the future.

**ADJOURNMENT**

There was a motion to adjourn. The motion passed.

[16] Minute marker 2:39:53- 2:42:27.
[17] Minute marker 2:42:27-2:47:21.

Woods Hole Presentation

# Surface Transport in and around Cape Cod Bay, with Application to the Potential Pilgrim Nuclear Power Station Wastewater Release

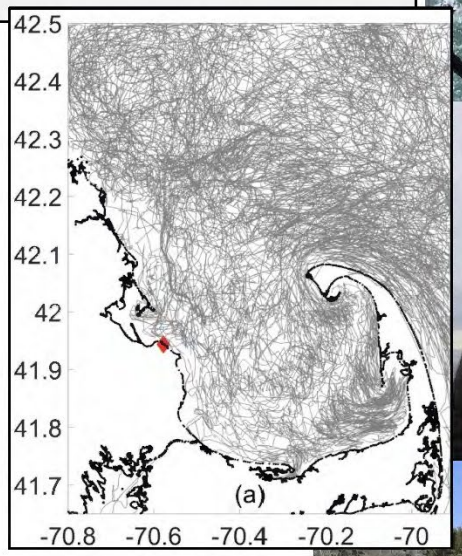

WHOI | Sea Grant

**Irina I. Rypina,** Alison Macdonald, Sachiko Yoshida, and Ken Buesseler

22 May 2023

# Prior work: Drifter-based study

Rypina et al., 2022: Spreading Pathways of Pilgrim Nuclear Power Station Wastewater in and Around Cape Cod Bay: Estimates from Ocean Drifter Observations. *J. Env. Radiactivity*, *255*, p.107039.



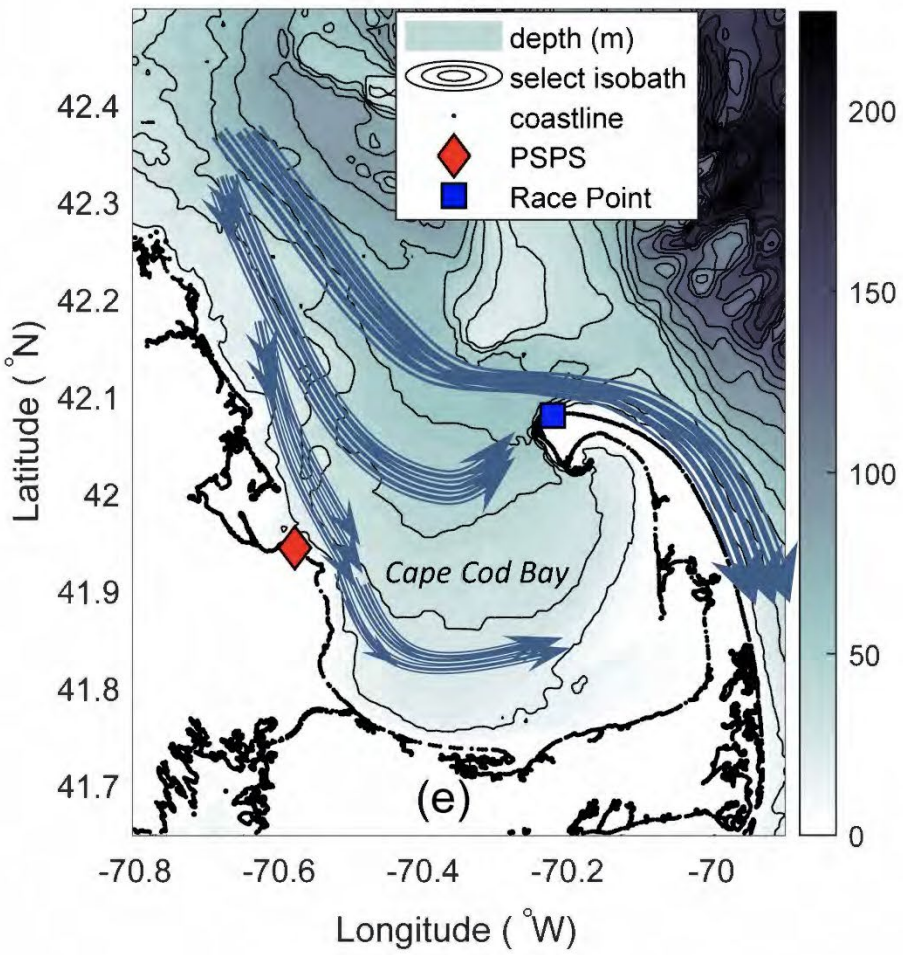


- Data:

400 drifter tracks

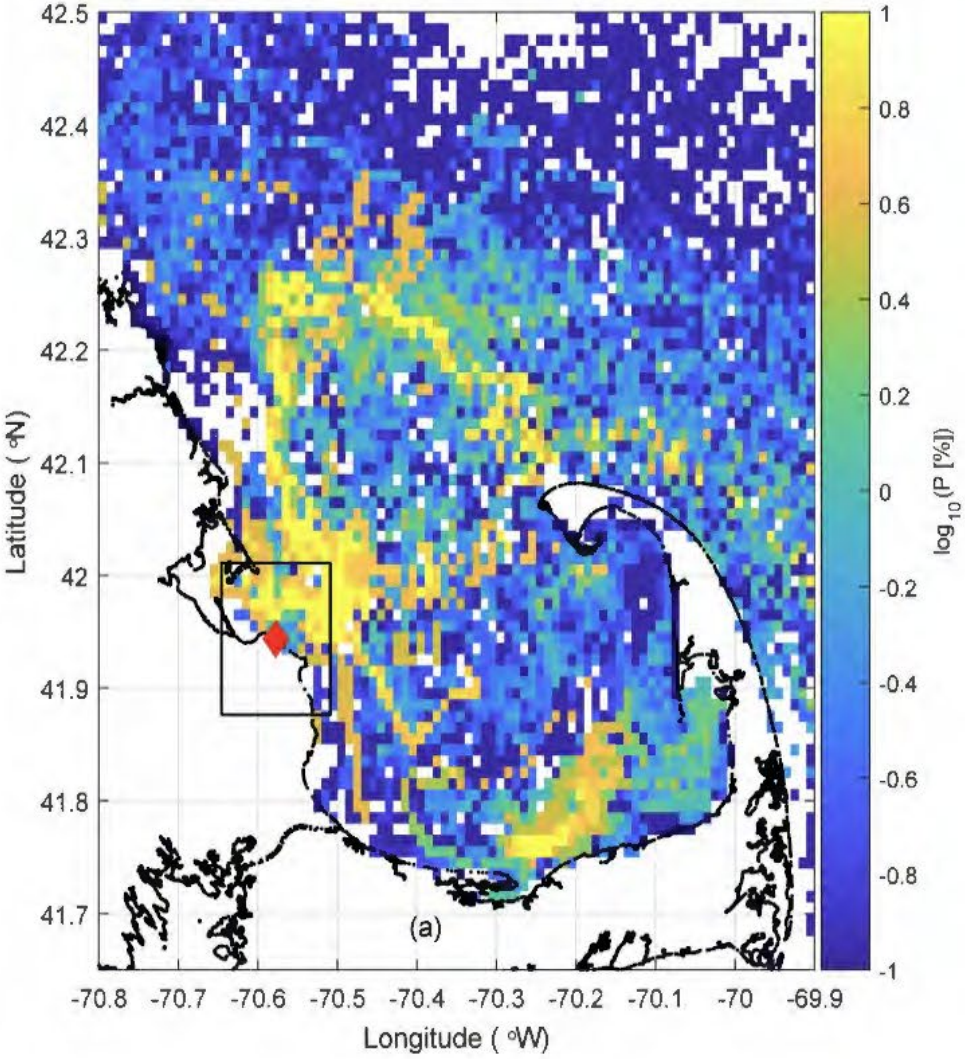
- Approach:
  - 6 different techniques
- Results:
  - Spreading pathways in and around Cape Cod Bay

# Mean currents

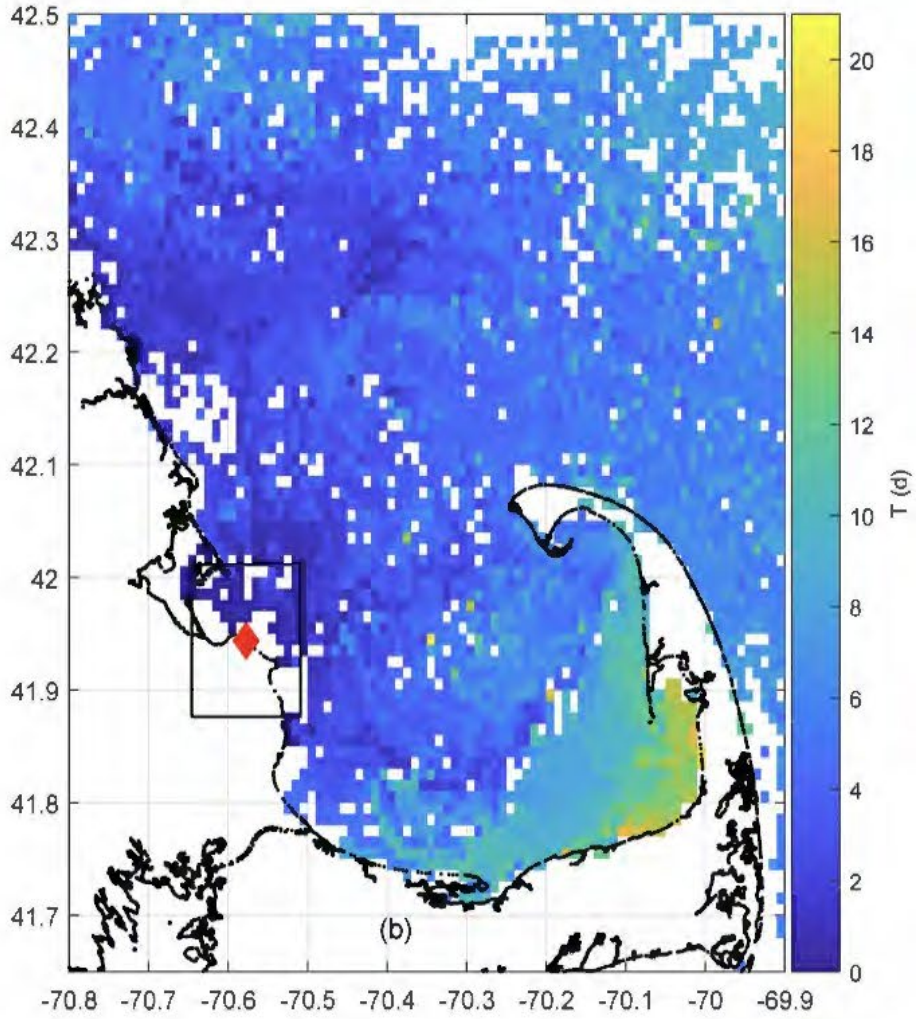



Tides, winds, atmospheric influence (rain, heat etc.), and remote oceanic forcing (eddies) can change (or reverse) the mean flow

## Most likely pathways map



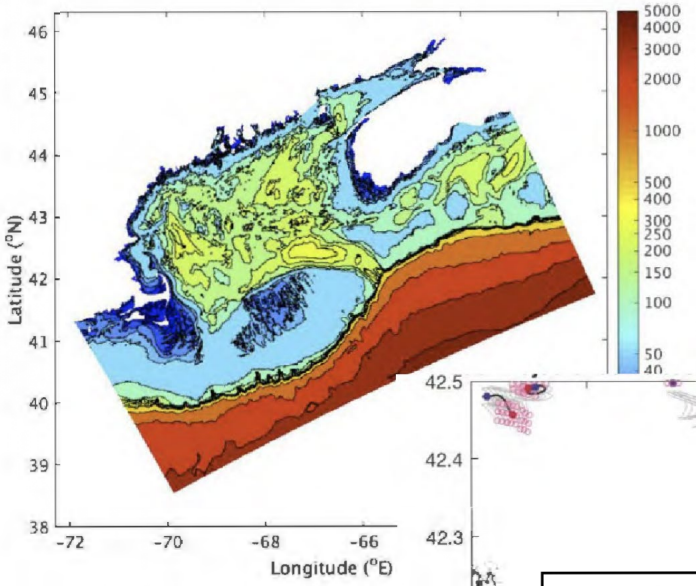

## Travel Time Map



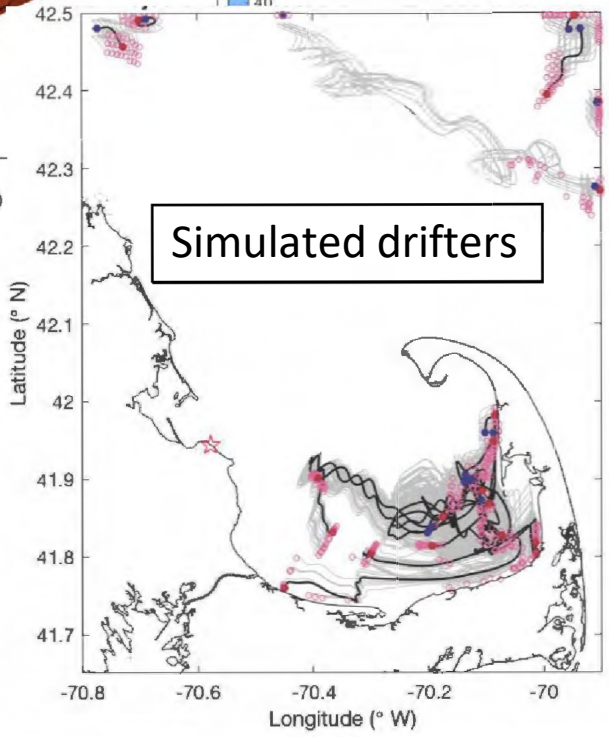
# Open questions and proposed research

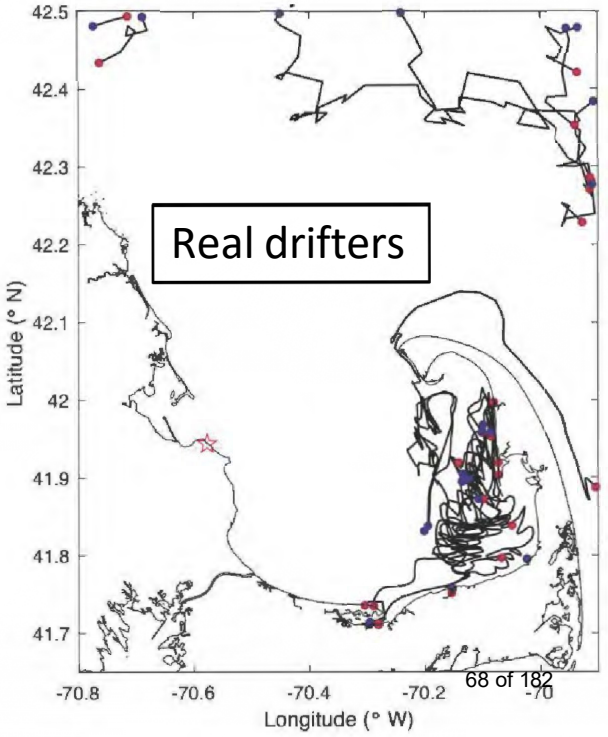
- Temporal variability and its physical causes
  - Seasonal changes
  - Role of wind
- Proposed research
  - Use state-of-the-art ocean circulation model
  - Compute the most likely pathways maps for different seasons
  - Investigate whether wind is the dominant driver
  - Provide info on where and when plume is expected to pass through major aquaculture sites

# High-resolution NOAA's Gulf of Maine Operational Forecast System (GoMOFS) ocean circulation model



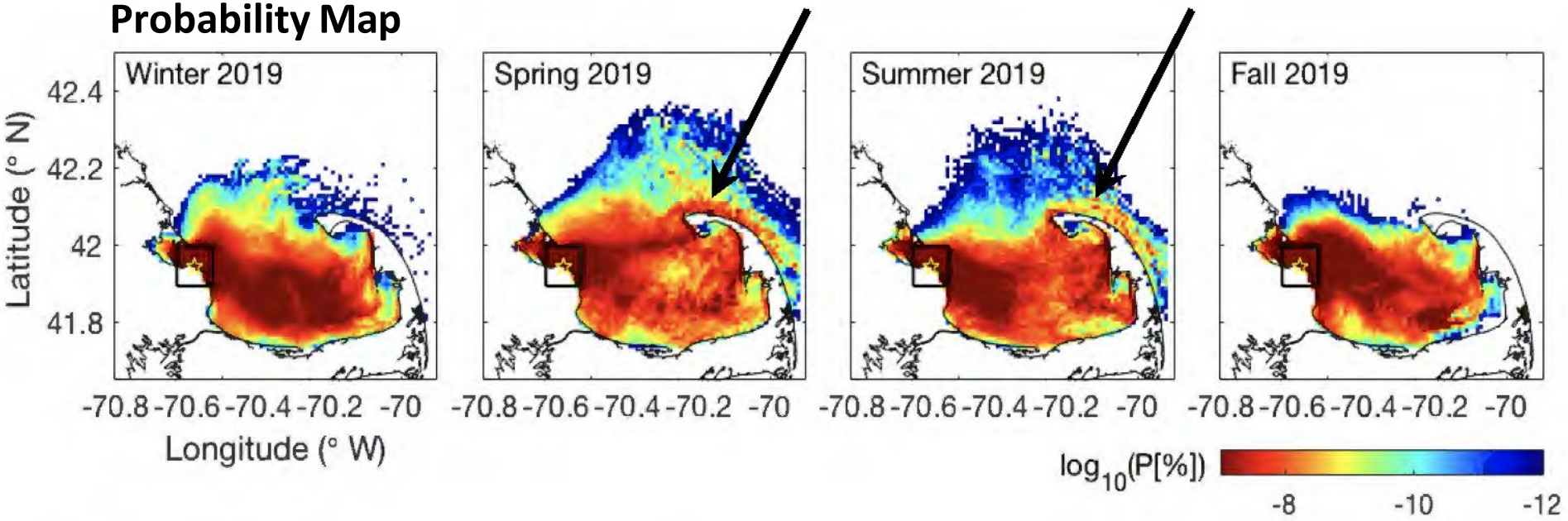

Model validation



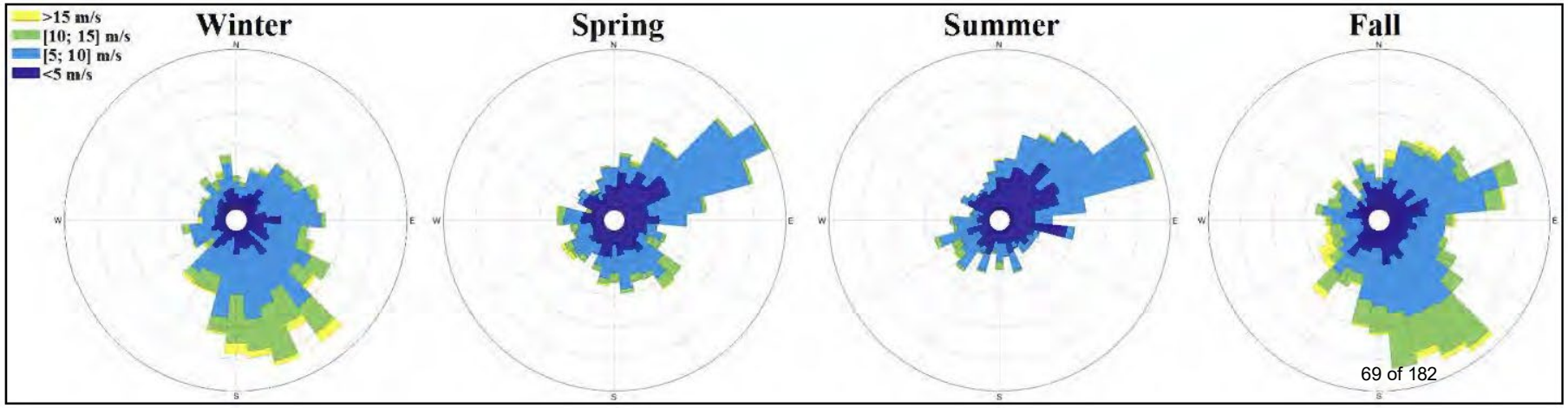



# Preliminary model-based results

## Probability Map




## Wind Rose



Holtec May 2023 Presentation

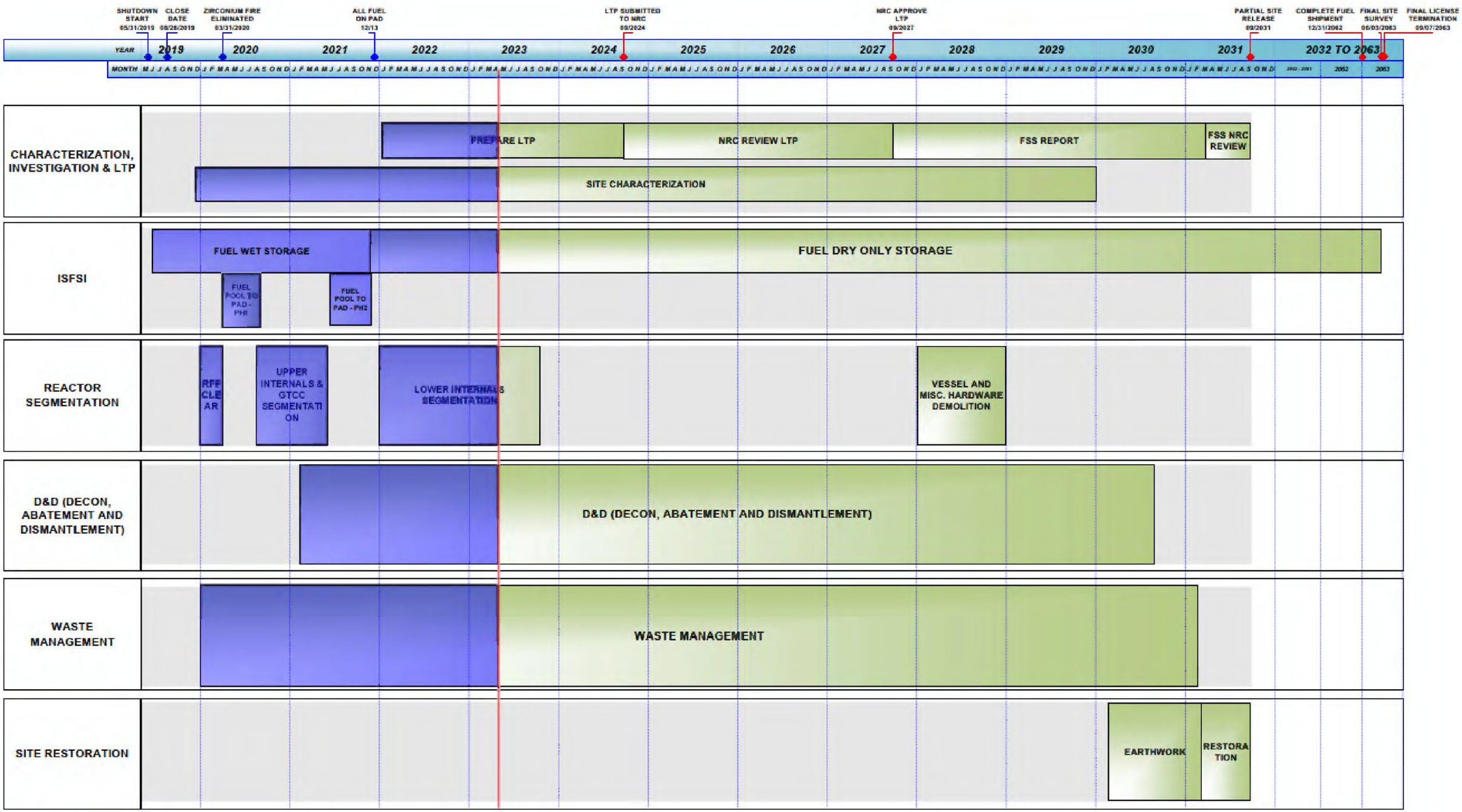
www.holtec.com

HOLTEC
DECOMMISSIONING
INTERNATIONAL

# Pilgrim NDCAP Update

May 22, 2023

# Draft Waterfall Chart



# Schedule Impacts

4-year delay in Partial Site Release (PSR) caused by 4-year delay in reactor vessel segmentation and reactor building demolition

Drivers:

- Preserving Decommissioning Trust Fund Growth by flattening cost curves
- Reactor Pressure Vessel segmentation option evaluation based on industry lessons learned and likely innovations
- Uncertainty associated with the NPDES and Surface Water Discharge Permits modifications

# Demolition - Completed

Old Main Gate

- Demolition - April Completion

Trash Compaction Facility Adjacent Wall Structure / Onsite Storage

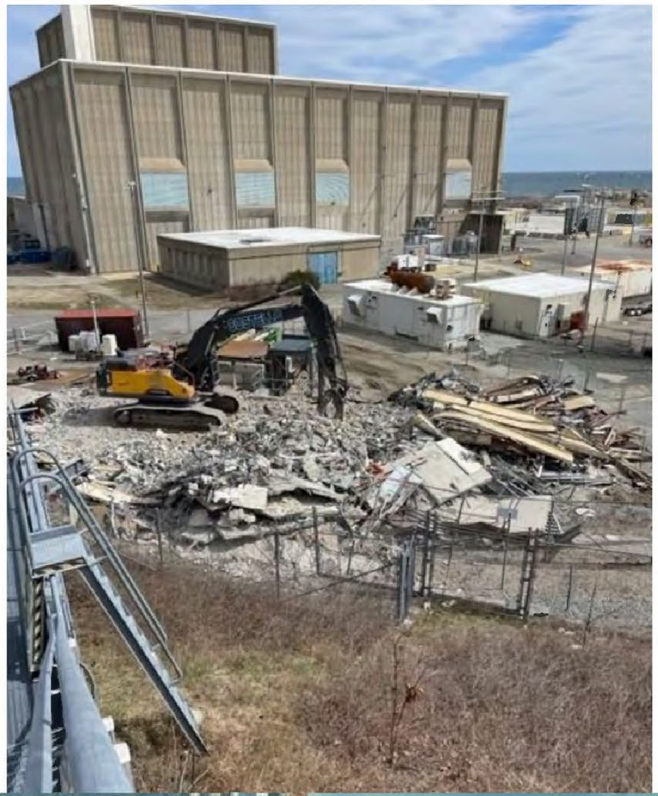
- Wall removal – April Completion
- OSSCs and Lids – May Completion

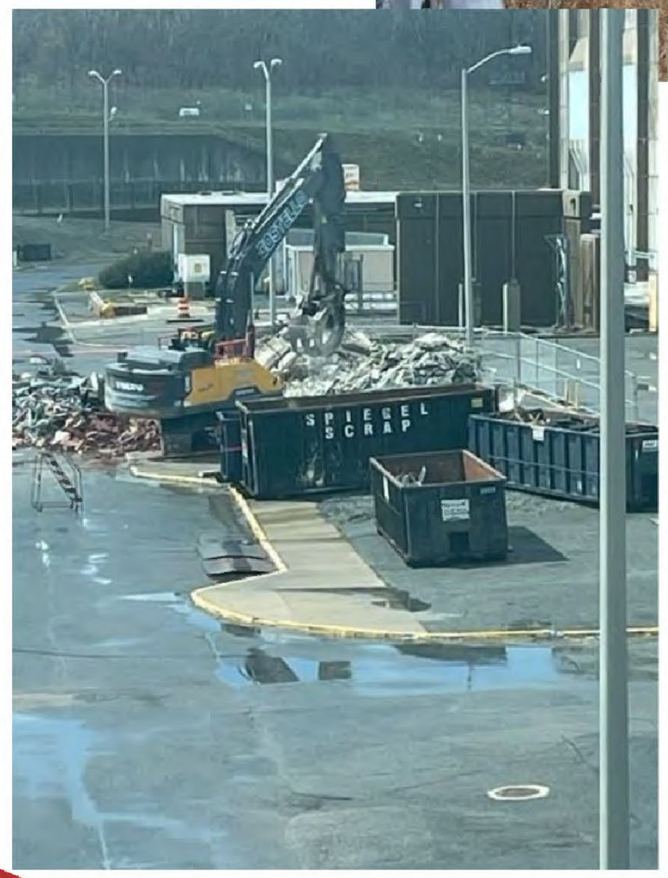
Central Alarm Station Building

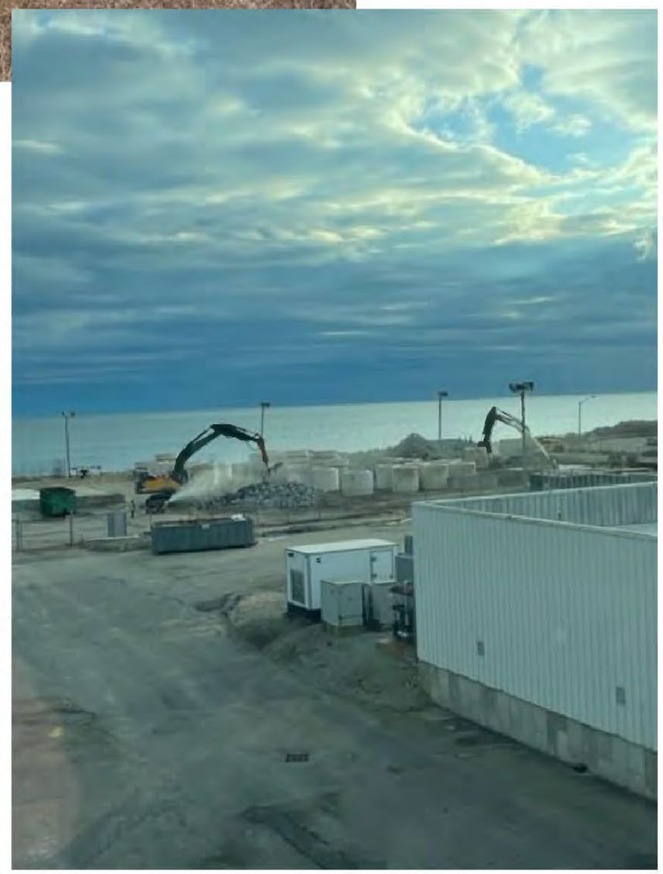
- Demolition – May Completion
- Demo to follow Old Main Gate

Safety Enhancement Program Diesel Building

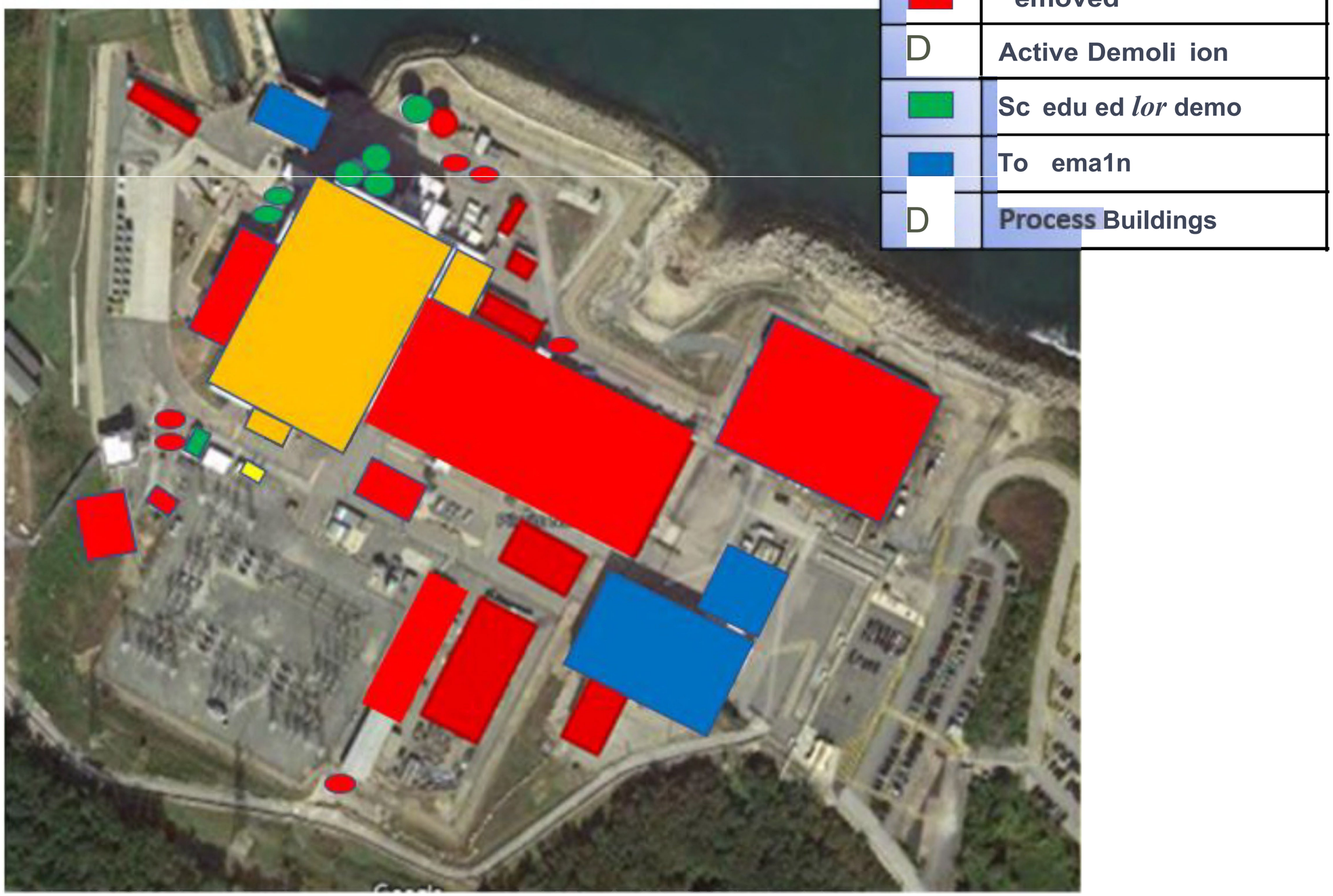
- Demolition – May Completion





# Demolition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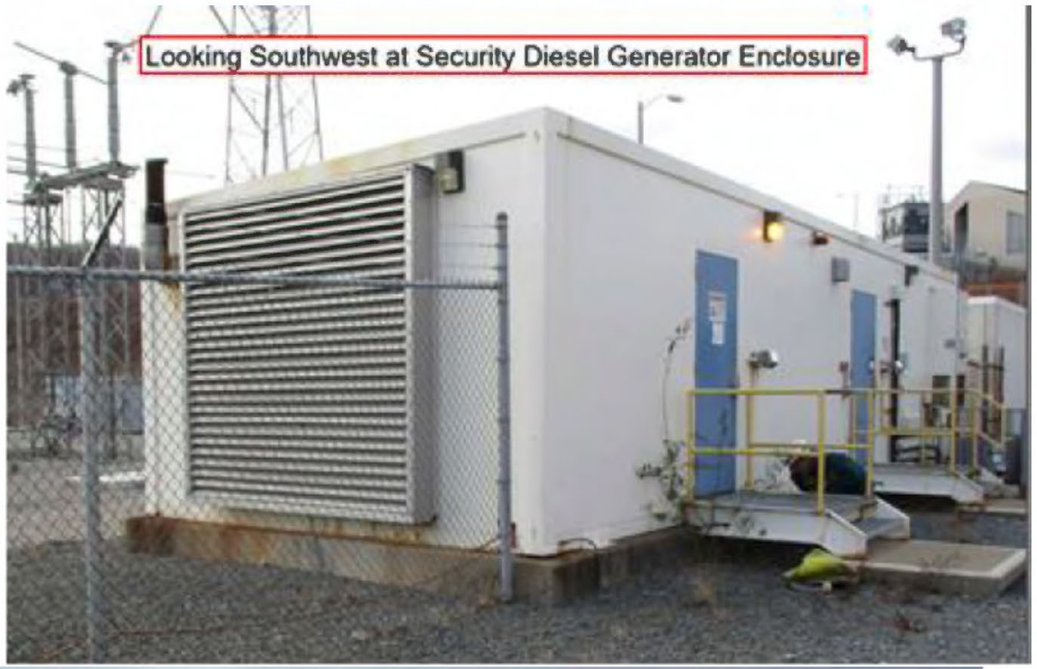
Process Buildings

# Demolition - Upcoming

Security Diesel Generator

- Asbestos abatement to complete 5/25/23
- Demolition to complete 6/6/23



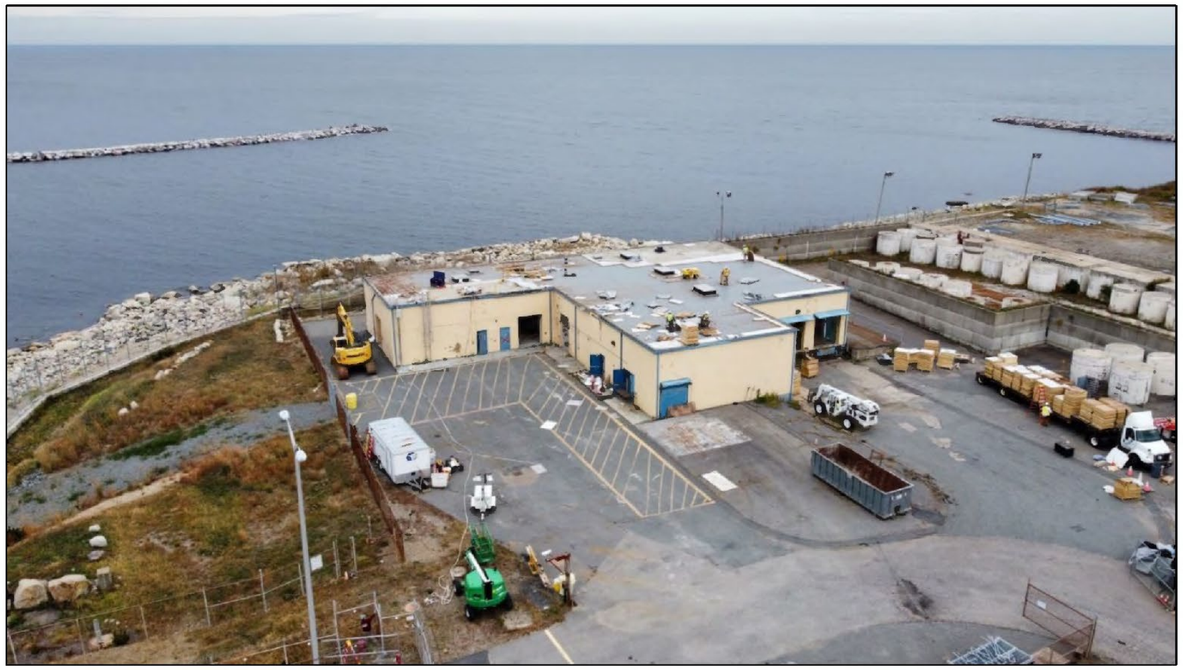

Station Blackout Diesel Generator

- Demolition to complete 6/20/23

Above Ground Storage Tanks
(1 Fire Water Storage Tank, 1 Demineralized Water Storage Tank, and 2 Condensate Storage Tanks)

- Demolition to complete 9/2023

# Demolition – Environmental Focus



Trash Compaction Facility- Demolition

- 14,728 ft3 Non-radiological Removed and Disposed (includes Asbestos Containing Material)
- 22,140 ft3 Recycle / Reuse (Masonry, Scrap Metal, Insulation Board)
- 4,700 ft3 Radioactive waste (Roof Stone, Concrete Scabble, Ductwork)

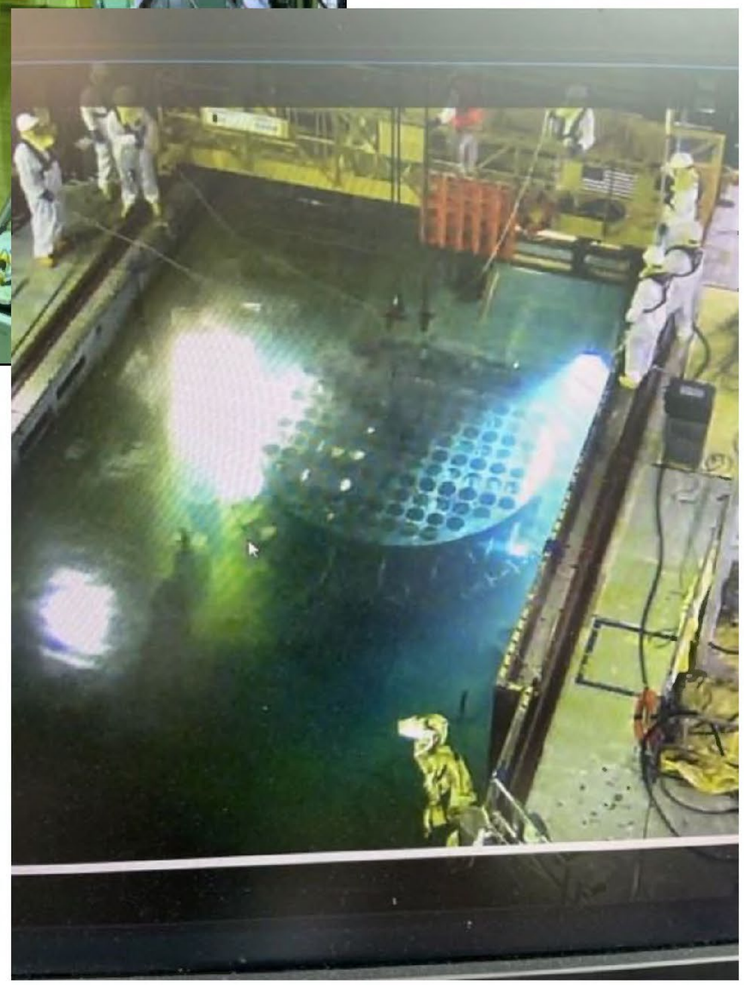
# Reactor Internal Segmentation

In Progress

- Lower Core Plate and Shroud Ring Removal
- B/C Waste packaging and staging

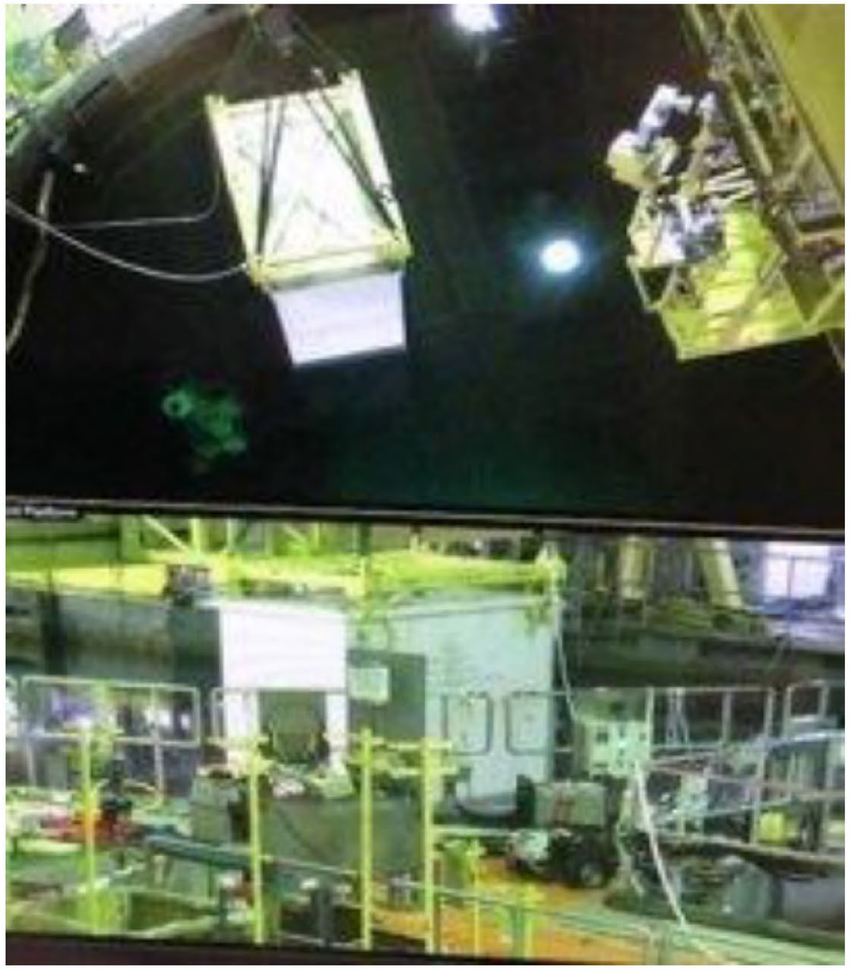
May / June 2023

- Complete B/C Waste packaging and staging
- Segment Shroud Ring
- Jet Pumps removal and packaging



# Waste Management

Radioactive Waste Shipments – Completed through May 18, 2023 Thru May 12th via Transload facility (Rail) and Highway shipments approximately 48,774 ft3 total



# Regulatory Affairs

Submitted Annual Radioactive Release and Radioactive Effluent Operating Reports
The calculated total body dose to the maximally exposed member of the general public from radioactive effluents and ambient radiation resulting from PNPS operations for 2022 was approximately 0.16 mrem for the year. Compared to background dose associated with Natural (310 mrem) and Man-Made (315 mrem) sources.[1]

| Receptor | Gaseous Effluents (mrem/yr) | Liquid Effluents (mrem/yr) | Ambient Radiation (mrem/yr) | Total (mrem/yr) |
|---|---|---|---|---|
| Total Body | 0.000068 | N/A | 0.16 | 0.16 |

[1] National Council on Radiation Protection and Measurement Reports 160 and 94

# Water Management

- Split Sampling with State (MassDEP and MDPH) performed on April 5th, Town of Plymouth Director of Marine and Environmental Affairs observed the evolution.
- HDI's radiological and non-radiological constituents and concentrations were consistent with information previously provided

Massachusetts Department of Public Health Radiation Control Program (RCP)
Untreated Radioactive Wastewater Analysis
Pilgrim Nuclear Power Plant
Results

**Massachusetts Department of Public Health**
**Radiation Control Program (RCP)**
**Untreated Radioactive Wastewater Analysis**
**Pilgrim Nuclear Power Plant**

**Date: May 19, 2023**

## BACKGROUND

In 2022, Holtec, the owner operator of the decommissioning project at Pilgrim Nuclear Plant announced their intention to release 1.1 million gallons of radioactive wastewater into Cape Cod Bay. Subsequently, in March 2023, Holtec, applied for a surface water discharge permit (NPDES) to discharge water from the spent nuclear-fuel pool into Cape Cod Bay. The pending application would modify an existing MassDEP permit.

The Plymouth legislative delegation, including Senator Edward Markey, the MA State Inter-agency Pilgrim Working Group and the Nuclear Decommissioning Citizens Advisory Panel (NDCAP) expressed interest in obtaining baseline information on pollutants including radionuclides in the untreated water. At their request, on April 5, 2023, representatives from DPH and MassDEP collected untreated water samples at the Pilgrim plant. The samples collected were split between Holtec, MassDEP and DPH. MassDEP utilized GEL Labs in South Carolina to analyze their samples for non-radioactive pollutants. DPH utilized our Massachusetts Environmental Radiation Laboratory (MERL) located at the Massachusetts State Public Health Laboratory.

### Standard Analytical Methods and QA/QC

The analysis conducted by the MERL follows analytical methods compatible with and in some cases developed by the United States Environmental Protection Agency (EPA), the United States Food and Drug Administration (FDA), the United States Nuclear Regulatory Commission (NRC). The analytical data reports also contain information of Quality Assurance (QA) and Quality Control (QC) procedures conducted as part of the sample analysis.

For radioanalysis, the MERL utilizes the same computer library of principle gamma emitting radionuclides as the NRC. As part of the MERL quality control program, Proficiency Test (PT) samples are routinely sent to the MERL for analysis of samples containing multiple gamma-emitting radionuclides. The FDA's Winchester Engineering and Analytical Center (WEAC) reviews and reports the MERL's proficiency performance results.

### Split Sampling

Members of the Nuclear Decommissioning Citizens Advisory Panel (NDCAP) and the public raised concerns that reactor wastewater samples lacked regulatory oversight as they are collected, analyzed, and reported by Holtec. To address these concerns, MassDEP and the MDPH agreed to observe the sample collection and split samples of the untreated water with Holtec.

Split samples typically consist of a single field sample that is divided into two separate sub-samples for subsequent independent laboratory analysis. Any discrepancy between the two sub-samples may suggest a lack of precision or repeatability introduced during sample collection or lab analysis.

The analysis of the split samples provides a baseline assessment of both radioactive and non-radioactive pollutants in the untreated wastewater. Holtec will conduct separate sampling and analysis to support its applications submitted to EPA and MassDEP to discharge this wastewater to Cape Cod Bay.

**SAMPLE COLLECTION, SHIPMENT, AND ANALYSIS**

On April 5, 2023, representatives from MassDEP and DPH met at the Pilgrim Station to observe the collection and take possession of the samples of the untreated water. In addition, a representative of the Town of Plymouth Department of Natural Resources, David Gould, was in attendance.

Sampling was conducted at three locations: the spent fuel pool, dryer separator pit, and the torus. The DPH samples collected for radio-analysis were properly labeled and then transported to the MERL by RCP staff. See Figure 1 below:

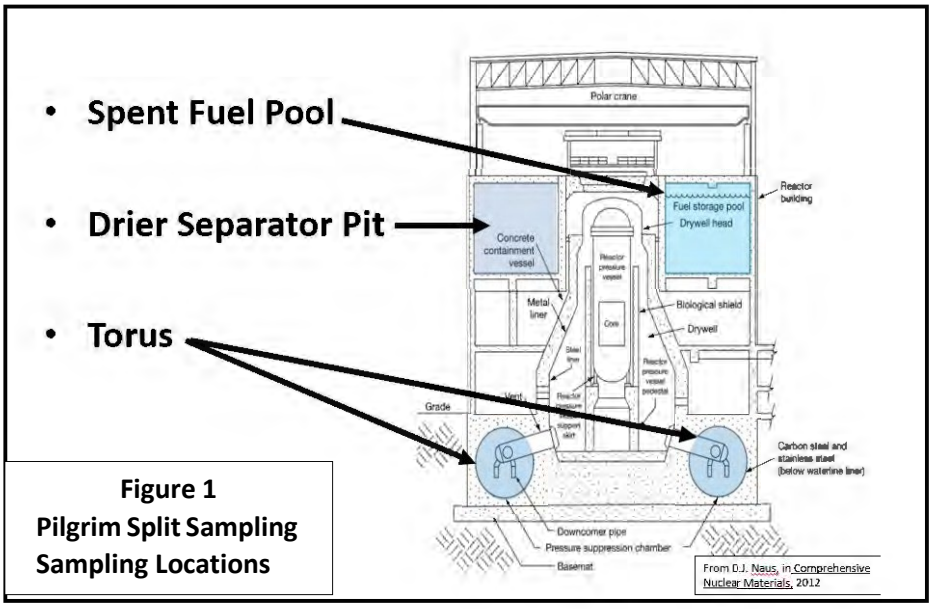



**Figure 1**
**Pilgrim Split Sampling**
**Sampling Locations**

**Analytical Parameters**

As discussed at previous NDCAP meetings, the radioanalytical parameters (MERL library) are from the Nuclear Regulatory Commission list of principle gamma emitters; they also included Tritium. The library is maintained by DPH's Radiation Control Program (RCP) and used for routine environmental sampling for both the Seabrook and Pilgrim Nuclear Power Stations.

**SAMPLE RESULTS**

Split samples collected from the Dryer Separator pit/ Reactor Cavity, Spent Fuel Pool and the Torus were analyzed April 13 and 19th, 2023, at the Massachusetts Environmental Radiation Laboratory. The MERL sample results were as anticipated; there were no unexpected radionuclides. As the plant conditions are dynamic due to decommissioning work in progress and because the samples were from different storage locations, some variation in concentration detected was observed and was expected. There were four principle gamma emitters (Manganese-54, Cobalt-60, Zinc-65 and Cesium-137) and Tritium (H-3 a beta radiation emitter) detected. Table 1 includes the results for the DPH and Holtec radioanalytical samples.

TABLE 1

Sample #1 (Reactor Cavity)

| Analyte | MERL | Holtec |
|---|---|---|
| H3 | 3.17E-03 | 3.05E-03 |
| Mn-54 | 4.56E-05 | 3.26E-05 |
| Co-60 | 8.71E-04 | 6.24E-04 |
| Zn-65 | 1.57E-04 | 1.17E-04 |
| Cs-137 | 1.01E-02 | 7.41E-03 |

Sample #2 (Spent Fuel Pool)

| Analyte | MERL | Holtec |
|---|---|---|
| H3 | 3.19E-03 | 3.24E-03 |
| Mn-54 | 4.27E-05 | 3.25E-05 |
| Co-60 | 8.53E-04 | 6.01E-04 |
| Zn-65 | 1.69E-04 | 1.18E-04 |
| Cs-137 | 1.01E-02 | 7.27E-03 |

Sample #3 (Torus)

| Analyte | MERL | Holtec |
|---|---|---|
| H3 | 3.25E-03 | 3.25E-03 |
| Mn-54 | 9.99E-07 | 9.98E-07 |
| Co-60 | 1.32E-05 | 9.35E-06 |
| Cs-137 | 1.85E-04 | 1.27E-04 |

**MERL – HOLTEC RESULTS COMPARISON**

**All results in uCi/mL**

**All MERL gamma samples were:**

- **analyzed in a 150 mL geometry, 3 cm above the detector to minimize deadtime. All gamma samples were analyzed for 30 minutes.**
- **acidified to pH less than 2 with nitric acid as per procedure. Deadtime ranged from 0.06 to 2.75%.**

**All MERL Tritium samples were:**

- **analyzed for 100 minutes using a 60 mL aliquot and our standard H3 distillation process. Samples were not treated with acid prior to analysis.**

**HOLTEC RESULTS PROVIDED ON MAY 4, 2023**

**COMPARISON WITH HOLTEC RESULTS**

Both the HOLTEC and MERL sample sets detected four principle gamma emitters (Manganese-54, Cobalt-60, Zinc-65 and Cesium-137) and Tritium (H-3 a beta radiation emitter). There were no unexpected radionuclides identified in either set of samples.

The gamma values in HOLTEC and MERL's samples are in close proximity, within the same order of magnitude. There are small differences in the concentrations of gamma emitters for both sample sets, which is to be expected. Differences in the analysis for the count time as well as in the analytical equipment used at both laboratories including detector type, detection geometry, analyte size may account for the variations.

The analysis of the untreated water samples was for informational purposes and for approximating what radionuclides may be in the various plant locations. Additional detailed analysis including "difficult to detect radionuclides" (e.g., Carbon -14, Strontium-89/90, transuranics) would be required post waste clean-up and treatment.

Massachusetts Department of Environmental Protection
Results of Non-Radiological Oil and Hazardous Material Split
Sampling and Analysis Conducted at the
Decommissioned Pilgrim Nuclear Power Plant
Plymouth, Massachusetts
May 19, 2023

**Massachusetts Department of Environmental Protection**
**Results of Non-Radiological Oil and Hazardous Material Split Sampling and Analysis**
**Conducted at the**
**Decommissioned Pilgrim Nuclear Power Plant**
**Plymouth, Massachusetts**
**May 19, 2023**

This summary documents the procedures and results for the non-radiological oil and hazardous material (OHM) sampling and analysis of water samples from the reactor building at the Pilgrim Nuclear Power Plant coordinated by the Massachusetts Department of Environmental Protection (MassDEP). At the same time MassDEP collected their samples, the Massachusetts Department of Public Health (DPH) collected samples for the analysis of radionuclides at the Massachusetts Environmental Radiation Laboratory (MERL). The results of the radionuclide analysis will be prepared separately by DPH.

## BACKGROUND

In Massachusetts, the bulk of environmental samples are collected and analyzed by contractors working for entities that are regulated by MassDEP. MassDEP receives analytical results with thousands of permit applications, monitoring reports and environmental assessment reports every year to support all the programs implemented by MassDEP.

### Environmental Professionals

Because MassDEP does not have the staff resources or the money to conduct the environmental sampling necessary to support submittals made to MassDEP, the environmental sampling is conducted by environmental professionals (such as Professional Engineers (PEs), Licensed Site Professionals (LSPs) and other qualified environmental professionals). The samples collected by these environmental professionals are analyzed by certified laboratories.

### Certified Laboratories

The Massachusetts State Laboratory, the William X. Wall Experiment Station (WES), Division of Environmental Laboratory Sciences certifies commercial and municipal laboratories to perform routine compliance analyses. The MassDEP Laboratory Certification Program is the largest program among the New England states. Over 160 laboratories in Massachusetts and neighboring states are certified by WES for chemical and/or microbiological analyses of potable and/or non-potable water. Through the Laboratory Certification Program, educational outreach, and other activities, WES plays an important role in ensuring that contractors collecting and analyzing environmental samples are producing high-quality monitoring data.

**Standard Analytical Methods and QA/QC**

The analysis conducted by certified laboratories follows analytical methods developed by the United States Environmental Protection Agency (EPA) and, in some cases, the MassDEP. The analytical data reports also contain information of Quality Assurance (QA) and Quality Control (QC) procedures conducted as part of the sample analysis.

**Split Sampling**

Split samples typically consist of a single field sample taken by a single entity that is divided into two separate sub-samples for subsequent laboratory analysis. Typically, split samples are submitted to different laboratories, or analyzed by different analysts to determine the precision of laboratory results. Alternatively, split samples can be analyzed at a single laboratory without knowledge of the sample origin (referred to as a "blind sample"). Any discrepancy between the two sub-samples suggests a lack of precision or repeatability introduced during sample collection or lab analysis.

Split samples can also be samples that are divided between two entities for comparison purposes. Usually each entity (for example, the regulated entity and the regulators) collects the samples for independent shipping and analyses. At times, MassDEP has collected environmental samples at the same time a regulated entity has collected a sample (split sample) to confirm the sampling and analysis conducted by the regulated entity.

**REASON FOR SPLIT SAMPLES AT PILGRIM NUCLEAR POWER PLANT**

Many of the members of the Nuclear Decommissioning Citizens Advisory Panel (NDCAP) and the public requested analytical data for the water in the reactor building and raised concerns about the fact that samples used to make decisions relative to the decommissioning of the plant were collected by Holtec. Specifically, those in the public asked how it can be confirmed that the samples collected by Holtec were from the locations identified by Holtec. To address this, MassDEP and DPH agreed to collect split samples and ship them independently to a laboratory.

The sampling and analysis conducted by MassDEP was for comparison purposes and was not conducted for compliance purposes, for instance, as a regulatory requirement or to support a permit application. The sampling and analysis were conducted solely to determine if the analytical results for the samples collected by Holtec could be duplicated by MassDEP and to share information requested by the public and the NDCAP about the quality of the water in the reactor systems at Pilgrim Nuclear Power Plant. Holtec has conducted, and may conduct, additional separate sampling and analysis to support its federal NPDES and Massachusetts Surface Water Discharge Permit Modification Applications submitted to U.S. EPA and MassDEP requesting to discharge decommissioning-related wastewater to Cape Cod Bay.

As explained at the March 27, 2023 NDCAP meeting, MassDEP has contracted with GEL Laboratories to analyze the non-radiological parameters in the split samples collected by MassDEP. Due to the fact that there are not many laboratories that can handle water containing radioactive material, MassDEP was not able to contract with a different laboratory to conduct these analyses. GEL Laboratories is certified by the Commonwealth of Massachusetts William X. Wall Experiment Station and holds a license issued which authorizes the lab to receive, acquire, possess, and transfer radioactive material. DPH utilized the Massachusetts Environmental Radiation Laboratory (MERL) located at the Massachusetts State Public Health Laboratory to conduct analysis of radiological parameters.

**SAMPLE COLLECTION, SHIPMENT AND ANALYSIS**

On March 22, 2023 two sealed coolers were delivered to MassDEP from GEL Laboratories, LLC, 2040 Savage Road, Charleston, South Carolina. The coolers contained the required sampling bottles and, in some cases, with the required preservatives. The coolers were stored in the lab at MassDEP's 20 Riverside Drive, Lakeville office building. The lab is not accessible to public.

On April 5, 2023, representatives from MassDEP and DPH met at the Pilgrim Nuclear Power Plant to collect the samples. Prior to sample collection the representatives from MassDEP took a 90-minute training program on handling radioactive liquids.

David Gould of the Town of Plymouth Department of Natural Resources attended the sampling event to observe sample collection.

Sampling was conducted at three locations, Spent Fuel Pool, Dryer Separator Pit, and the Torus. See figure below:

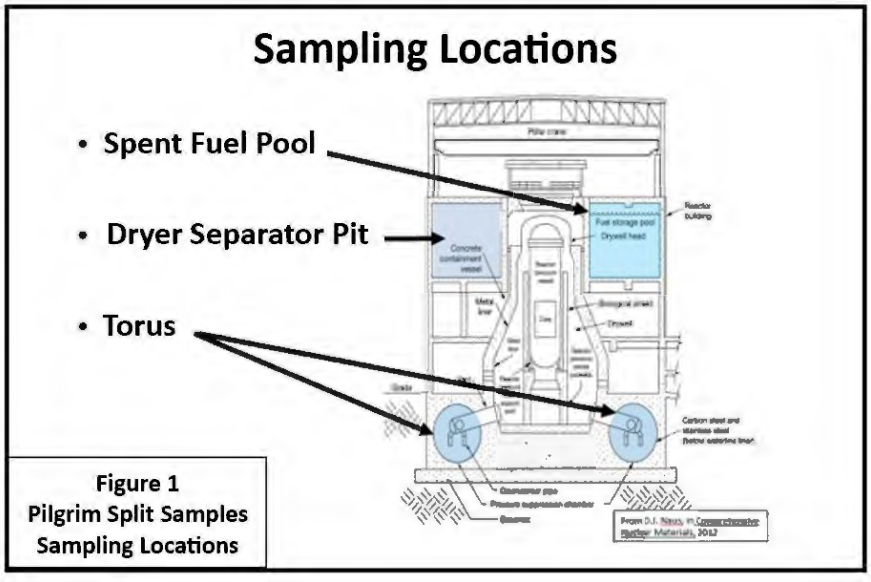



**Figure 1**
**Pilgrim Split Samples**
**Sampling Locations**

**Sampling procedures**

Given that the samples from the Dryer Separator Pit and Spent Fuel Pool were collected from above the respective tanks, and state personnel are not qualified radiation workers authorized to access areas where the samples were collected, the sample collection was conducted by Holtec personnel under direct observation of representatives from the Town of Plymouth, DPH and MassDEP. Samples were collected by lowering a hose connected to a pump approximately 20 feet below the surface of the water and circulating the water through the pump and back into the tank until a sufficient volume was circulated to adequately flush the pump. At this time the water was pumped into 1-gallon plastic jugs labeled #1 for the Dryer Separator Pit and #2 for the Spent Fuel Pool. The samples were collected this way to reduce the amount of time the sampling team had to spend in the vicinity of the Dryer Separator Pit and Spent Fuel Pool. The containers were wiped dry and checked for external radiation before being loaded on a cart for transport to the on-site lab at the Pilgrim Nuclear Power Plant. The samples never left the direct observation of MassDEP personnel.

On the way to the on-site lab the third sample was collected from the Torus. The sample was collected from a valve that was directly connected to the Torus and again the samples were collected in 1-gallon jugs (#3) by Holtec personnel under the direct observation by the Town of Plymouth, DPH and MassDEP.

All the samples were transported to the on-site lab. The samples to be shipped by MassDEP were decanted into the appropriate sample containers by MassDEP personnel and the samples to be shipped by Holtec were decanted into the sample containers by Holtec personnel. The sample containers were labeled, and chain-of-custody forms were completed at this time.

**Shipping procedures**

The samples to be transported by MassDEP were packed in ice and delivered on site and signed over to a representative of Atlantic Nuclear Corporation (a DPH contractor licensed to ship radioactive samples). The samples were transported to Atlantic Nuclear Corporation's office at 100 Weymouth Street Unit E, Rockland, Massachusetts, repacked and iced for shipping to GEL Laboratories and shipped on April 5, 2023.

**Receipt of samples**

As indicated on the analytical data report (attached), the samples were received by GEL Laboratories on April 6, 2023 and it was reported that the samples were "…delivered with the proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage."

**Analytical parameters**

As discussed at the November 28, 2022 NDCAP meeting, the analytical parameter list was generated by selecting parameters that reflect the EPA priority pollutants, parameters in the NPDES Permit and other parameters identified from a literature review by MassDEP. GEL Laboratories was not able to analyze the samples for whole effluent toxicity, tolytriazole and asbestos, so these parameters were removed from the analytical parameter list.

In all, 239 parameters were analyzed and the list included the following:

- pH
- temperature
- oil and grease
- total residual chlorine
- total dissolved solids
- metals (Al, As, Be, B, Cd, total Cr, Co , Fe, Pb, Ni, K, Se, Ag, Th and Zn)
- cyanide
- nitrogen, nitrate/nitrite
- semi-volatile organic compounds/polycyclic aromatic hydrocarbons (129 different compounds)
- volatile organic compounds (56 different compounds)
- per- and polyfluoroalkyl substances (PFAS – 25 different compounds)
- Polychlorinated Biphenyls (PCBs – 7 different compounds)

The full list of all the parameters analyzed is in the analytical data report (attached).

**SAMPLE RESULTS**

The temperatures of the three samples were measured at the time of sampling and were as follows: 93.88° F for the sample from the Dryer Separator Pit, 93.93° F for the sample from the Spent Fuel Pool and 57.03° F for the sample from the Torus.

Twenty-two (22) of the 239 parameters that were analyzed were detected above the method detection limit (including estimated values) in at least one of the three samples. The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. These detections are summarized in Table 1. No other parameters were detected in the samples.

Holtec provided MassDEP with a table of the parameters that were detected above the MDL in the samples Holtec collected. These results were added to Table 1 for comparison.

**COMPARISON WITH HOLTEC RESULTS**

The analytical results for the samples collected by MassDEP compare within expected ranges to the analytical results for the samples collected by Holtec indicating that the two sets of samples are acceptable split samples/duplicates.

**Relative Percent Difference**

The comparison of split samples, or duplicates, is commonly undertaken by expressing the duplicate results as the Relative Percent Difference (RPD) using the following equation:

$$RPD = \frac{|C_1 - C_2|}{\left(\frac{C_1 + C_2}{2}\right)} \times 100$$

Where: RPD is relative percent difference
$C_1$ is the concentration of analyte from sample 1
$C_2$ is the concentration of analyte from sample 2

According to the EPA, an RPD of ≤ 20% is considered an acceptable result for split/duplicate aqueous samples provided the result is five to ten times the detection limit. In those circumstances where the result is close to the detection limit, RPD may exceed 20%. In addition, the acceptable RPD is strongly influenced by the analyte and matrix.

The range of the RPDs for the comparable results is 0 to 20.2%, indicating that the samples collected and transported by Holtec are acceptable duplicates with the samples collected and transported by MassDEP. The one parameter with a RPD of 20.2% was the PFAS perfluorohexane sulfonic acid ($PFH_xS$).

July NDCAP Meeting (07/24/23)

**NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")**
**Monday, July 24, 2023**
**Hybrid Meeting (in-person and virtual)**
**Meeting Minutes**

The meeting was called to order at about 6:30 pm by Mr. John Mahoney.

**NDCAP MEMBERS PRESENT**

- John Mahoney, Plymouth Select Board Designee (in person)
- Pine duBois, Speaker of the House Appointee (Vice Chair) (in person)
- Mary Lampert, Senate President Appointee (in person)
- James Lampert, Speaker of the House Appointee (in person)
- Mary Jo Gatslick, Minority Leader of the Senate Appointee (in person)
- Michael Fortini, Minority Leader of the Senate Appointee (in person)
- Henrietta Cosentino, Plymouth Select Board Appointee (in person)
- Andrew Gottlieb, Governor Baker Appointee (virtual)
- Seth Pickering,[1] Department of Environmental Protection (in person)
- Jack Priest, Department of Public Health, Radiation Control Program (virtual)
- Jennifer Barrelle,[2] Department of Public Health (virtual)
- Jonathan Goldberg, Massachusetts Department of Public Utilities (in person)
- David Bryant, Massachusetts Emergency Management Agency (in person)
- David Noyes,[3] Holtec Decommissioning International (in person)
- John Moylan, Holtec Site Vice President (in person)
- Kelly O'Brien, UWA Representative (in person)
- Mary Waldron, Old Colony Planning Council (virtual)

**NDCAP MEMBERS NOT PRESENT**

- David C. Nichols, Governor Baker Appointee

**GUESTS IN ATTENDANCE**

- Jim Cantwell, representing U.S. Senator Edward Markey's office
- Caleb White, representing U.S. Senator Elizabeth Warren's office
- Michael Jackman, representing U.S. Representative Bill Keating's office
- State Senator Susan L. Moran
- State Representative Mathew J. Muratore
- Gerard Martin, Department of Environmental Protection
- John Drobinski, ERM
- Neil Sheehan, NRC
- Bruce Watson, NRC
- Christopher Jean, MA Rep. Kathleen LaNatra's office
- At least 36 members of the public on-line, with additional people in the room

**PREVIOUS MINUTES REVIEW & APPROVAL**

[1] Designee of Secretary of the Executive Office of Energy and Environmental Affairs
[2] Designee of Secretary of Health and Human Services
[3] Replacing Jennifer Robertson

Ms. duBois indicated that additional individuals were present at the last meeting, including Neil Sheehan from NRC, John Drobinski from ERM, and Representative LaNatra.

Mr. Noyes clarified that, p. 4 of minutes, the lower core plate was in the process of being removed during the last meeting. Also, that the shroud ring and jet pumps were scheduled to be removed in July and August.

Mr. Lampert expressed his concerns regarding the footnotes referencing past recordings of the panel's meetings on YouTube. In his opinion, the videos should be part of the administrative record and archived.

Ms. duBois explained that the resources and funding to create an archive do not exist. Further, she acknowledged that she was not sure whether the videos on YouTube would stay on that platform forever.

A motion to approve the meeting minutes with the appropriate changes was made by Ms. Waldron and seconded by Ms. Cosentino. The motion passed unanimously with 1 abstention.

Ms. Lampert made a motion to change the formatting of the NDCAP website. Ms. Lampert listed several changes to the website, the types of contents that should be included on the resource page, and the reasons for the changes.[4]

Mr. Mahoney proposed that the motion and discussion for formatting of the website be part of the next meeting's agenda. Ms. Lampert agreed to defer the motion to September 2023.

**LEGISLATIVE DELEGATION**

State Senator Susan L. Moran indicated that MassDEP has tentatively determined to deny Holtec's request for permit modification.

This denial prevents Holtec from discharging water from the site into Cape Cod Bay. She indicated that the fight continues until the decision by MassDEP is finalized.

Senator Moran then read a comment on behalf of State Representative Muratore.

The statement indicated that although MassDEP has determined that Holtec cannot discharge water into Cape Cod Bay, MassDPH oversees radiation. Mr. Priest clarified that the agencies that oversee radioactive material discharge are the EPA and NRC.

Mr. Cantwell read a statement from U.S. Senator Ed Markey's Office. The statement was about MassDEP's decision to tentatively deny Holtec's request for permit modification. The statement concluded by thanking individuals involved in protecting Cape Cod Bay from the discharge.

Mr. White read a brief statement from U.S. Senator Elizabeth Warren's Office which thanked the Healey Administration for its efforts in preventing discharge into Cape Cod Bay.

[4] Minute markers 7:40-12:30 of video. See: NDCAP Meeting: 7/24/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube

Mr. Jackman indicated that Congressman Keating was pleased with MassDEP's decision.

Mr. Mahoney asked Mr. Cantwell and Mr. White to send the statements to the panel.

**HOLTEC – HDI PILGRIM DECOMMISSIONING UPDATE**

Mr. Noyes began the update with a PowerPoint presentation. In summary:

- Sampling of radiological and non-radiological characterization continues on site.
- Submission of a license termination plan is scheduled for October 2024.
- Holtec continues to be custodians of the dry fuel storage until a federal repository is established.
- Security and station blackout diesel generators have been demolished since the prior meeting.
- Three above ground storage tanks are scheduled for demolition by the end of September 2023.
- Cutting and segmentation of the shroud ring continues as well as removal of jet pumps.
- B & C waste packaging/staging are to be completed by October 2023. 16 of 25 containers are filled and staged in an onsite shielded storage area. In total (2019-2023), 218,510 cubic feet of waste have been removed from the site.

Mr. Lampert asked whether any other generators remain on the site. Mr. Noyes stated that two generators are electrically isolated but remain on site. Mr. Lampert then asked if electricity to the site was lost, whether any other sources exist. Mr. Noyes indicated that two off-site independent sources of power are available. They include a startup and shutdown transformer.

Mr. Lampert asked if Mr. Noyes knew the total weight of waste removed from the site (referring to the 218,510 cubic feet of waste). Mr. Noyes said he did not know.

**ERM PRESENTATION: MASSACHUSETTS CONTINGENCY PLAN (MCP) ACTIVITIES**

Mr. Drobinski presented on activities under the Massachusetts Contingency Plan (MCP).

In accordance with the MCP, the Phase 1 report was submitted in 2022 and Phase 2 is due in 2025. The Phase 2 report will determine the nature and extent of the contamination, sources of contamination, conduct a risk assessment; the goal is to reach compliance under the MCP.

The site currently has 40 wells which monitor groundwater flow and groundwater chemistry. PFAS has been detected in four of the wells on site. Benzo pyrene, arsenic, and vanadium were also identified in other wells. The concentration levels of each chemical listed above were very low. In Mr. Drobinski's opinion, the site is generally clean compared to other sites in the Commonwealth. MassDEP's next steps in this process is to conduct a risk assessment to determine mitigation.

A discussion ensued between Ms. duBois and Mr. Drobinski about the sources of contamination and groundwater flow.[5]

A discussion occurred between Mr. Priest and Mr. Drobinski about monitoring tritium in groundwater.[6]

[5] Minute Markers 48:26-50:57 of video. See: *Id*.
[6] Minute markers 50:57- 51:52 of video. See: *Id*.

Gail Melix asked who has oversight in monitoring topics and data mentioned in Mr. Drobinski's presentation. Mr. Drobinski indicated that a licensed site professional (LSP), an independent contractor, oversees the data and monitoring.

Amy Truman asked questions about the components listed in the presentation and their levels. Mr. Drobinski clarified that not all groundwater is classified as drinking water in Massachusetts.

Rosemary Shields asked what reportable concentrations means. Mr. Drobinski explained what it meant (concentrations that require reporting to the Commonwealth) and the procedure that occurs whenever the reportable concentration is exceeded.

Ms. Lampert asked whether there was a standard for groundwater and a standard for drinking water. Mr. Drobinski stated that three standards exist in the Commonwealth: drinking water, indoor air, and discharge to surface water.

Doctor Potvin advised the panel that the EPA is reducing the standard for PFAS in drinking water to 4 parts per trillion.

Ms. Gatslick asked Doctor Potvin what the current PFAS limit for the Town of Plymouth is. Doctor Potvin said he did not see the limit in the "confidence report" but knew that it was 6 parts per trillion in the Pine Hills system.

A discussed ensued between Mr. Gottlieb and Mr. Drobinski about the MCP and exposure limits.

**INTERAGENCY WORK GROUP (IWG) UPDATE**

Mr. Pickering provided the panel with an update of Interagency Work Group (IWG) activities.

MassDEP issued a tentative determination to deny Holtec's request for permit modification to discharge decommissioning wastewater into Cape Cod Bay.

Under the Ocean Sanctuaries Act, discharge of industrial waste is prohibited into Cape Cod Bay. Mr. Pickering indicated that the water from the site is considered industrial waste. The final determination will be made after the public comment period concludes on August 28.

Response actions under the MCP are ongoing with respect to prior notifications and detections at the site. The Phase 2 comprehensive site assessment is due to be submitted to MassDEP by April 21, 2024. The results from groundwater sampling conducted by Holtec will be included in the status report.

MassDEP's asbestos section continues to be actively engaged in overseeing demolition activities and meets regularly with the company tasked to manage asbestos discovery identification and other processes.

MassDEP continues to evaluate Holtec's request to change the wastewater disposal system to Title 5.

MEMA continues to work with local partners on public safety.

Mr. Lampert asked Mr. Pickering a series of questions about procedures relating to the tentative decision to deny Holtec's request. Mr. Pickering said he did not have the answers to all his questions but explained that:

- a draft determination is issued by MassDEP
- a public comment period then commences prior to a final determination; the comments are made public and a response is provided by MassDEP.
- at the discretion of MassDEP, the comment period can be extended.
- the applicant or MassDEP can request a public hearing

Mr. Lampert asked whether an individual from the public can request a hearing. Mr. Pickering indicated that he could not answer that question at this time.

Mr. Lampert asked whether MassDEP could create a website where all the public comments and information can be posted and made available to the public. Mr. Pickering said he could ask MassDEP.

Mr. Lampert expressed his concerns about the state's review of the Holtec work plan submitted 18 months ago. Mr. Pickering said he would take this back, but that this review is not holding up any work at the site.

Ms. Gatslick asked Mr. Pickering what constitutes industrial water. Mr. Pickering said it was determined by individuals reviewing the application. At this time, he did not have a clear definition and indicated that he could get an answer for Ms. Gatslick on what is industrial water.

Richard Rothstein asked if tritiated wastewater was included in the permit when the plant was operating. Mr. Noyes stated that tritiated wastewater was included in the NPDES permit prior to 2020. Mr. Rothstein indicated that he was not clear on why discharge was permitted when the plant was operating but not under decommissioning.

Mr. Rothstein then discussed information regarding health risks of tritiated wastewater and asked whether the information was considered when making the draft determination to deny Holtec's permit. Mr. Pickering said he could not answer that question, but that Mr. Rothstein could submit a public comment.

Mr. Priest said that the determination is within MassDEP's purview. MassDEP is reviewing information submitted by Holtec and comparing it to what the regulations require.

Mr. Lampert emphasized the importance of reading the draft decision and the relevant regulations.

Mr. Gottlieb stated that there is a difference between a site that is generating power versus when it is being decommissioned. In his opinion, it no longer matters how much tritium is in the water, what is ongoing elsewhere, and who believes it is permissible.

Mr. Noyes reminded the panel that the MassDEP determination is tentative.

Ms. duBois asked whether MassDEP was treating the site as a 21E site. Mr. Pickering indicated that it is being treated as a 21E site in accordance with the MCP.

**PUBLIC COMMENTS AND QUESTIONS**

Leo Buckloo commented on DPU's role in measuring emitters.

Diane Turco asked whether Holtec has accepted MassDEP's decision to tentatively deny their request for permit modification. Mr. Noyes said that Holtec has acknowledged the recent decision from MassDEP.

Brian Campbell expressed his support to discharge the water from Pilgrim into Cape Cod Bay.

Carolyn McCrary and Susan Tordella expressed their support of Holtec's decision to release water containing residual tritium. In their opinion, they believe Holtec can safely release the water into Cape Cod Bay.

Carolyn McCrary explained the effects of tritium to the panel.

Rosemary Shields asked Mr. Noyes to explain the meaning of license termination. Mr. Noyes explained that it is a submission to the NRC to request termination of the license of the plant. The NRC determines the standard by which Holtec can terminate the operating license, and the only area that will remain is the dry cask storage area. The submission will be made in October 2024, but the date of partial site release has been delayed by 4 years (until 2031).

Doctor Potvin expressed his concerns about genetic damage and mutations caused by radioactive isotopes such as Tritium. He is also concerned about defects and cancers among the population. He concluded by emphasizing the importance of concerns over profits.

Benjamin Cronin indicated agreement with MassDEP's tentative determination. He stated that a public hearing is required in accordance with 314 CMR 2.071. In his opinion, the location of the public hearing on August 28 should be Plymouth.

Leslie Danielson asked for a status update on the annual report and whether copies were available for the public. Ms. duBois indicated that the report was submitted to the Governor and available on the NDCAP website.

Margaret Raskin asked whether her presentation could be an agenda item for the following meeting. Mr. Mahoney stated that there needs to be a consensus among the panel prior to allowing the presentation to take place. A discussion among Ms. duBois, Mr. Mahoney, and Ms. Raskin took place regarding next steps.

Peter Dalton asked a series of questions about sampling of the water take place. A discussion took place among Mr. Dalton, Mr. Pickering, and Mr. Noyes about sampling locations, sampling depth, the casting, and joint structures.[7]

[7] Minute Markers 02:01:00- 02:05:30 of video. See: *Id*.

**DISCUSSION ON REORGANIZATION OF THE PANEL**

After public comments concluded, Mr. Mahoney discussed reorganization of the panel. He indicated that four other members of the Plymouth Select Board are interested in serving on the NDCAP, and that he may be replaced as the Chair. The decision will be made tomorrow. This should be an agenda item for the September 2023 NDCAP meeting.

Ms. Lampert said she appreciated that Mr. Mahoney had been very fair and polite to the panel and to the public and that he has run efficient meetings. 2:08:14

Mr. Lampert seconded what Ms. Lampert said. He also said that the characteristics of a good chair are the ability at a meeting to provide all sides of a question to be heard, that the chair has to be impartial in preparing the agenda and running a meeting; and that we have been very fortunate to have two good chairs. –2:08:35

**ADJOURNMENT**

There was a motion to adjourn. The motion passed unanimously.

Holtec July 2023 Presentation

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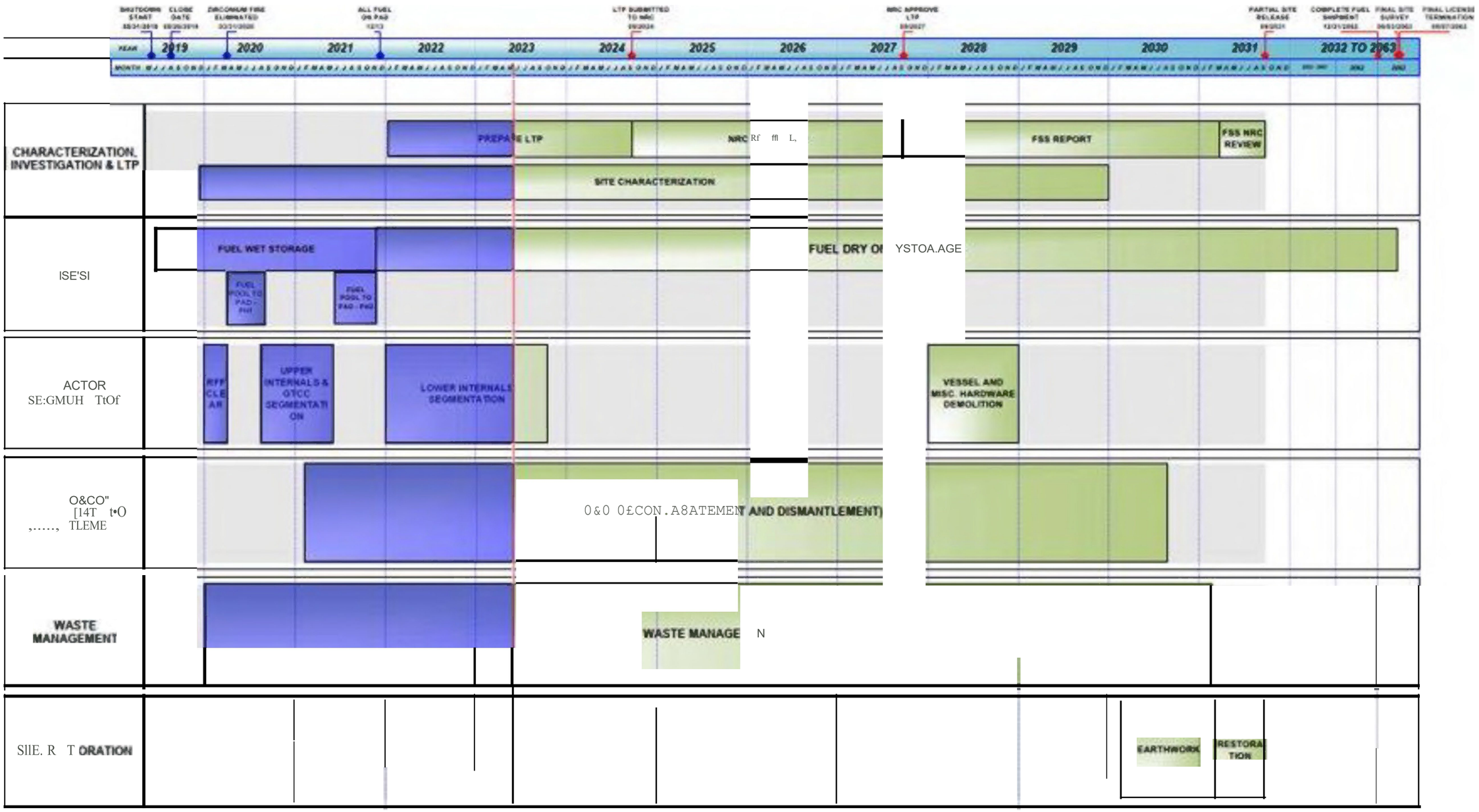
# Pilgrim NDCAP Update

July 24, 2023

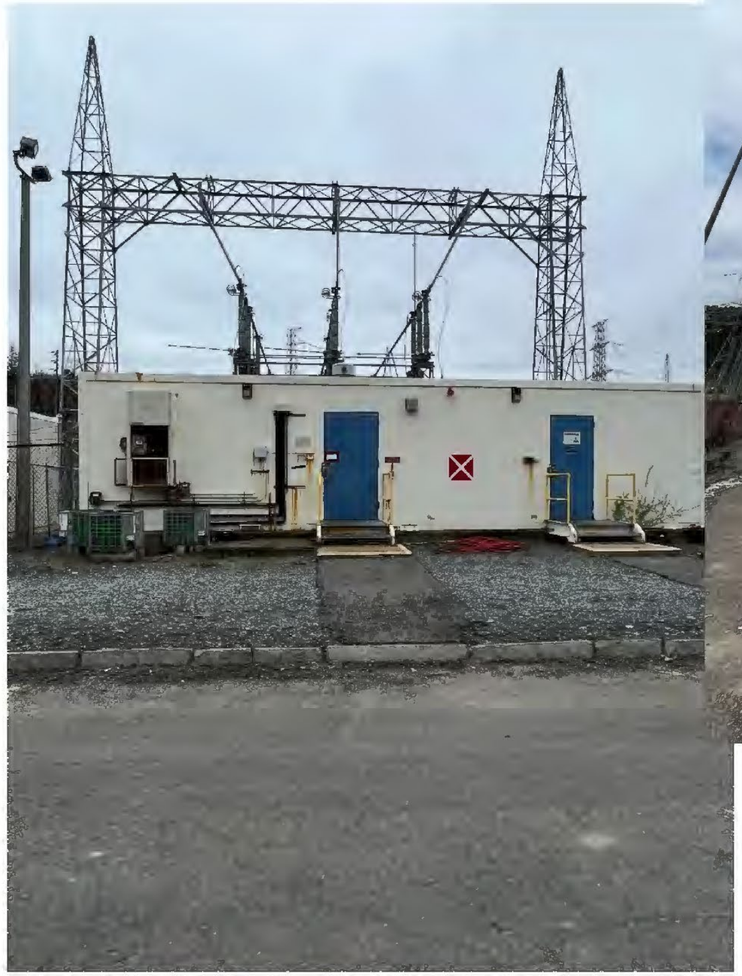
# Waterfall Chart

Pilcr m Decommiss,oninc - Waterfal Ch rt



# Demolition - Completed

- Security Diesel Generator
- Station Blackout Diesel Generator

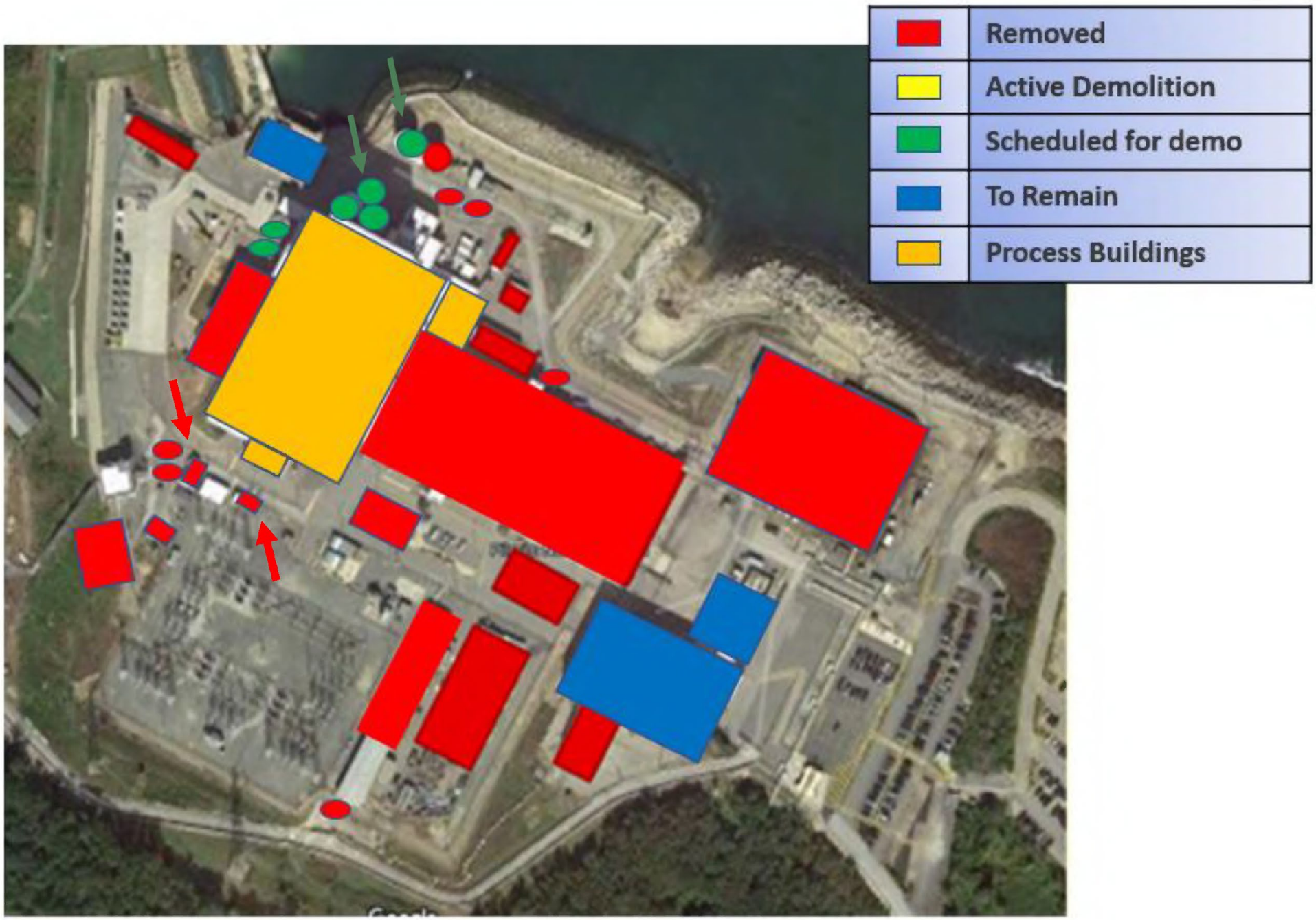


# Demolition - Upcoming

Above Ground Water Storage Tanks

- Fire Water Storage Tank (250,000 gallons capacity)
- Demineralized Water Storage Tank (50,000 gallons capacity)
- Condensate Storage Tanks (2) (275,000 gallons capacity each)
- Above tanks to be removed by end of September 2023

# Demolition Status



# Reactor Internal Segmentation

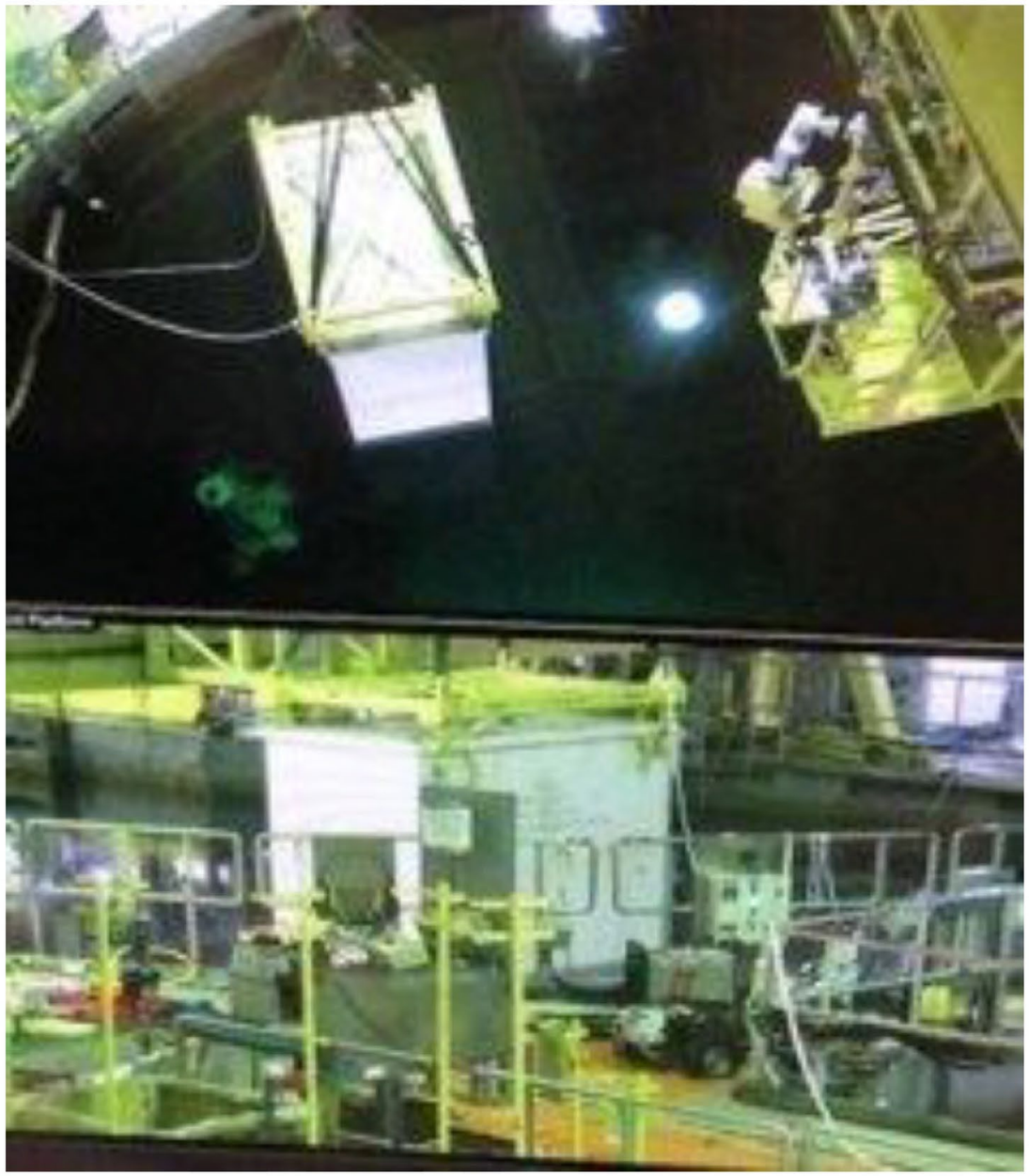
In Progress

- Cut and Segment Shroud Ring
- Jet Pumps removal and packaging
- Complete B/C Waste packaging and staging to complete October 2023

Installation of shroud segmentation tooling

# Waste Management

- 16 of 25 B/C waste containers filled and staged in onsite shielded storage area
- Shipments when Holtec transport cask has its design completed and NRC approval is obtained



# Waste Management

Rounded values for waste shipped for disposal

| Calendar Year | Volume (CF) | Activity (Ci) |
|---|---|---|
| 2019* | 11,300 | 225 |
| 2020 | 8,410 | 7 |
| 2021 | 58,000 | 933 |
| 2022 | 87,100 | 383 |
| Thru 7/21/2023 | 53,700 | 181 |
| | | |
| 2019-2023 Totals | 218,510 | 1,729 |

* Includes a small quantity of waste shipped during the last operating cycle

# ERM PRESENTATION: MASSACHUSETTS CONTINGENCY PLAN (MCP) ACTIVITIES

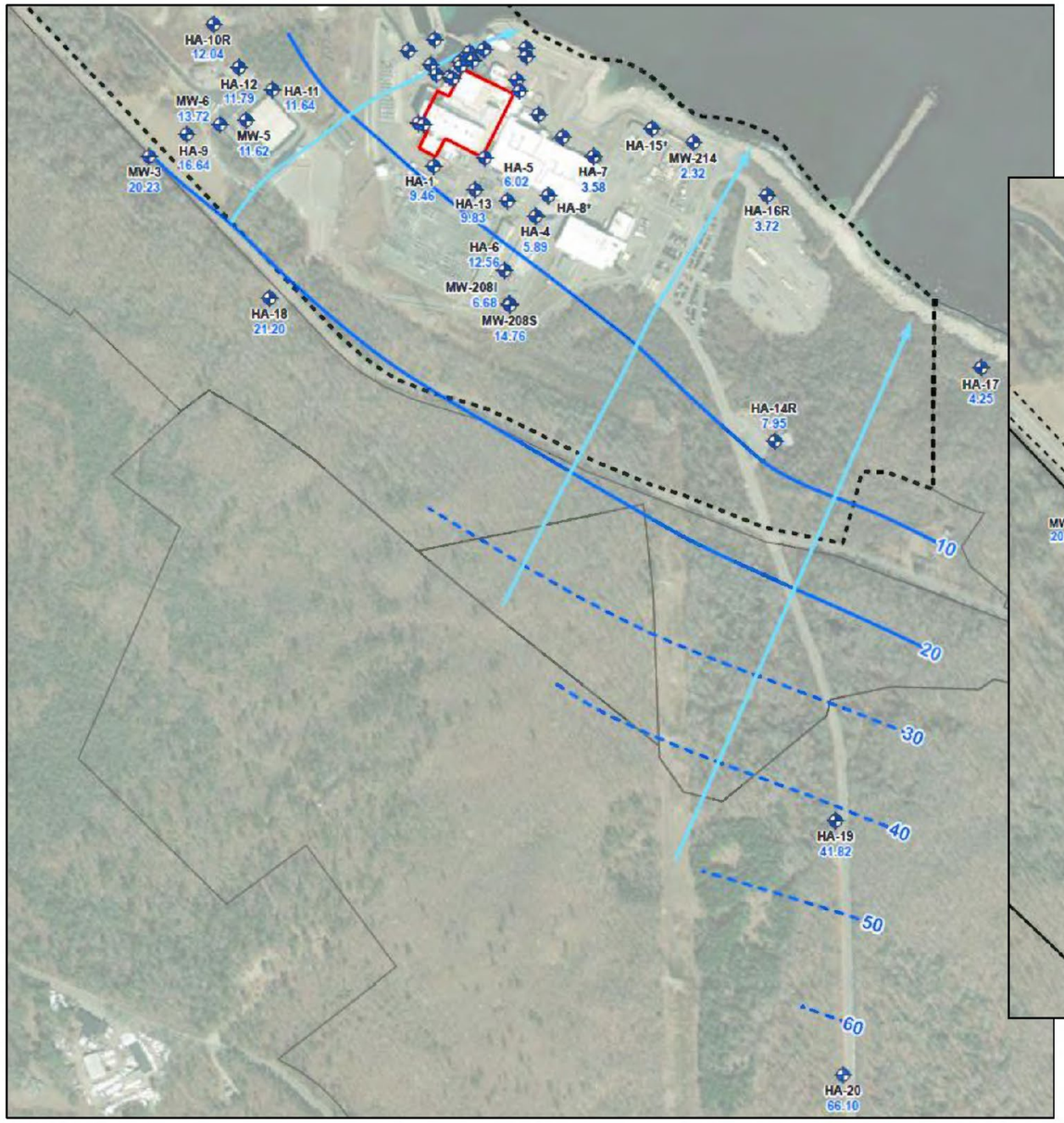
# MCP Groundwater Investigation

*Brief Chronology & Relevant MCP Regulations*

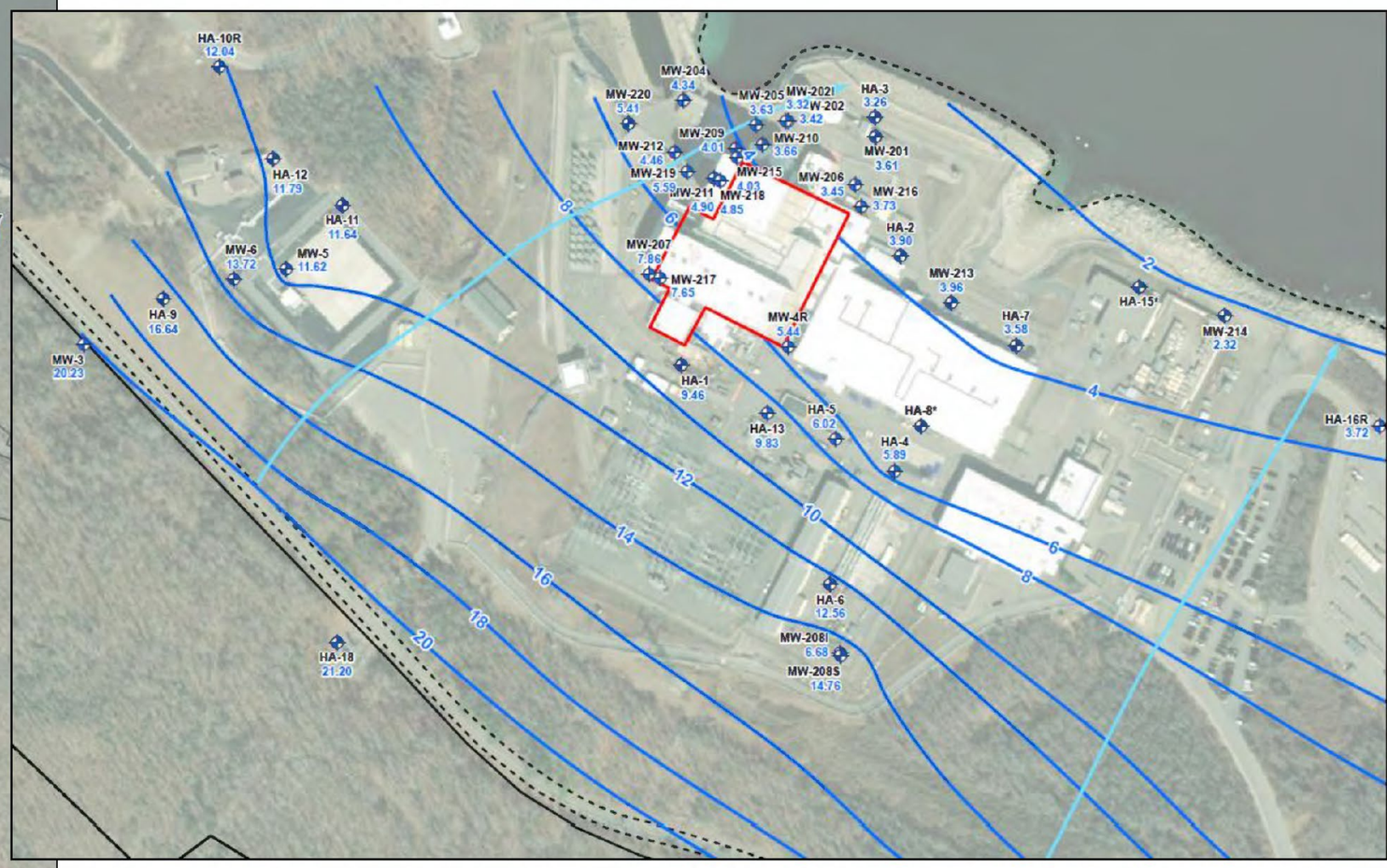
- *310 CMR 40.0315 – Reportable Conditions*
  - *Notifications to MassDEP in 2021 & 2022 for the measurement of compounds above applicable Reportable Concentrations (RCs) resulted in assignment of 5 Release Tracking Numbers (RTNs).*
  - *Supplemental investigations closed 2 RTNs (2022).*
  - *Three open RTNs: 1 primary (4-28765) with 2 linked (4-29313 & 4-29294) [2023].*
- *310 CMR 40.0480 – Phase I Initial Site Investigation (ISI)*
  - *In accordance with MCP timelines, a Phase I ISI was submitted in April 2022, one year after initial notification.*
- *310 CMR 40.0830 – Phase II Comprehensive Site Assessment (CSA)*
  - *Next regulatory submittal is a Phase II CSA, due in April 2025.*
  - *Additional site investigation to identify potential sources and determine extent is needed to meet requirements of a Phase II.*

# MCP Groundwater Investigation

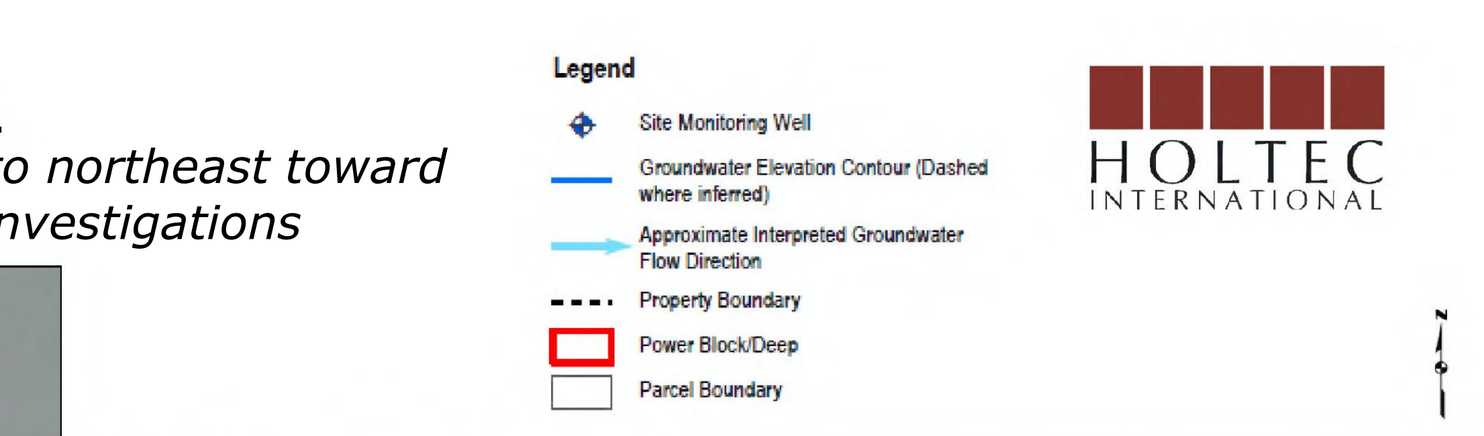
*Groundwater Flow Direction: Southwest to northeast toward Cape Cod Bay, consistent with previous investigations*




**Regional Scale**



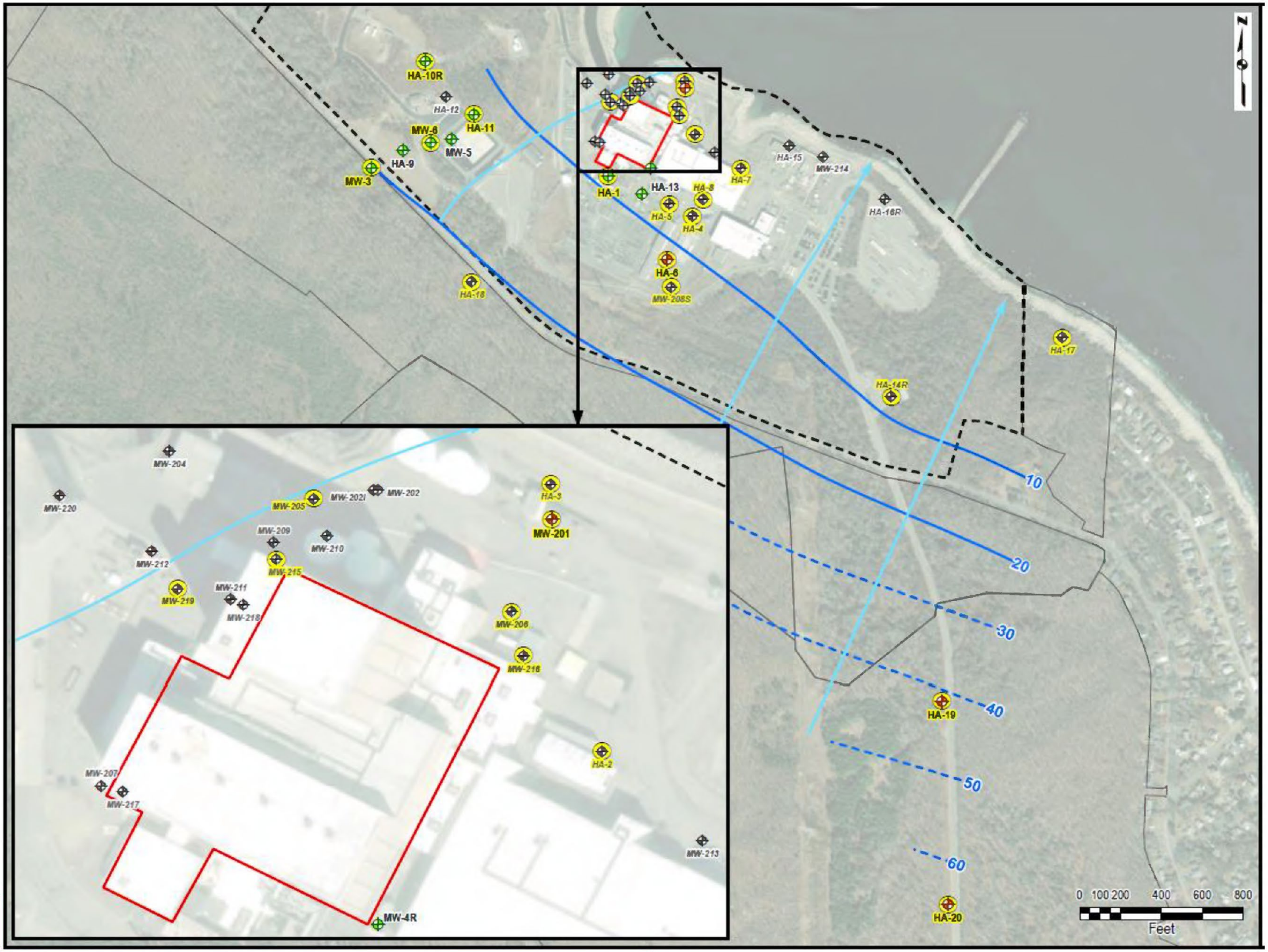

**Local Scale**




- *Scope of additional sampling is based on the results of previous events and groundwater flow direction*
- *Scope has been provided to MassDEP for review and comment.*

# MCP Groundwater Investigation

*PFAS – Previous GW results*




**Legend**

**Monitoring Well Locations**

- Results Below RCGW-1
- Results Above RCGW-1
- Site Monitoring Well
- Proposed Locations for Future Sampling
- Approximate Interpreted Groundwater Flow Direction
- Disposal Site Boundary
- Power Block (Approximated)

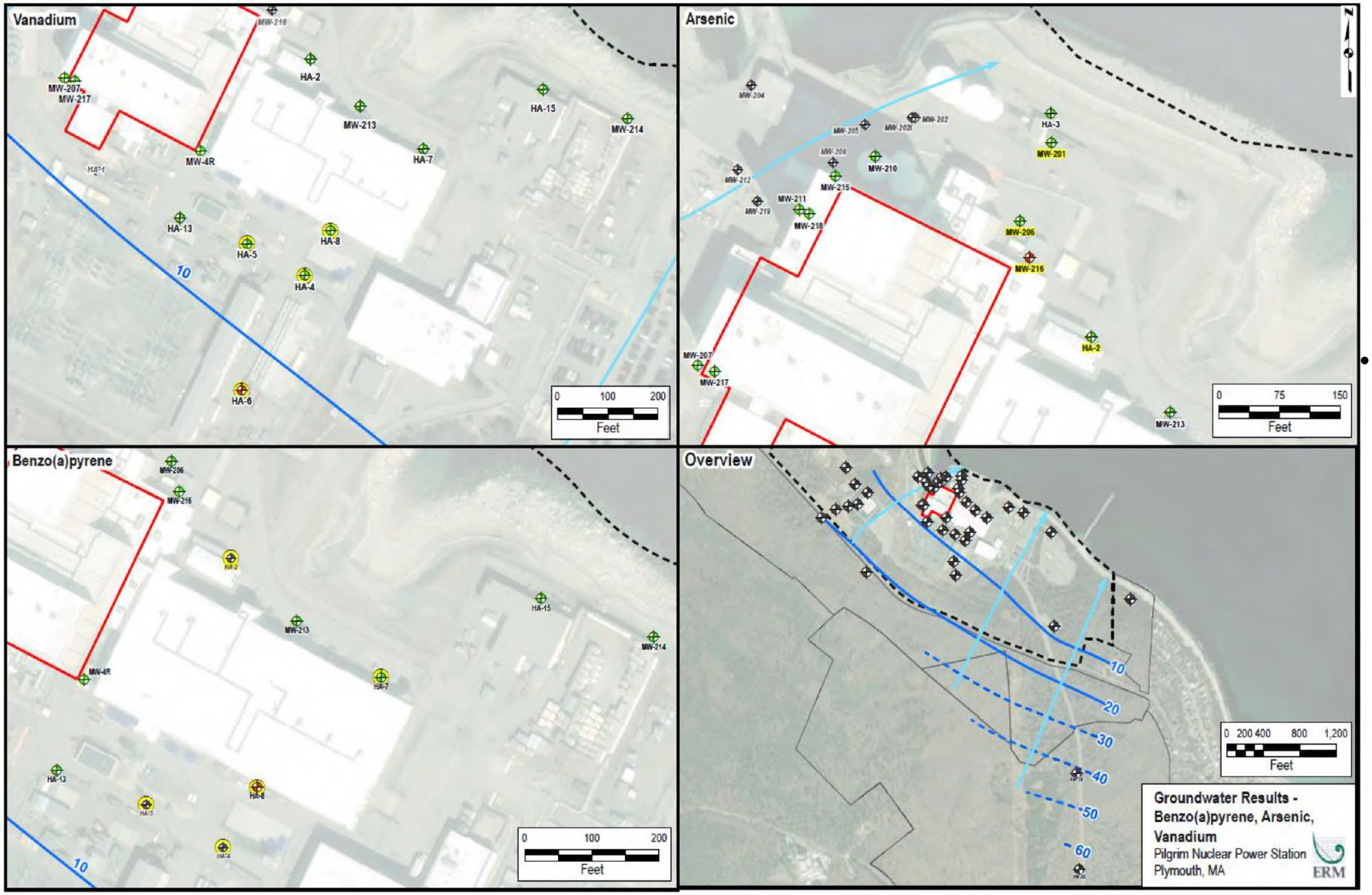
- *Four (4) locations with PFAS(6) exceedances*

| RCGW-1 Std. | Max. Detection |
|---|---|
| 20 ng/L | 72 ng/L |

ng/L = nanogram per liter

# MCP Groundwater Investigation

*Benzo(a)pyrene, Vanadium, & Arsenic – Previous GW results*




**Legend**

**Monitoring Well Locations**

- Results Below RCGW-1
- Results Above RCGW-1
- Site Monitoring Well
- Proposed Locations for Future Sampling
- Approximate Interpreted Groundwater Flow Direction
- Disposal Site Boundary
- Power Block (Approximated)

- *Single well locations with benzo(a)pyrene, arsenic and vanadium exceedances*

| Compound | RCGW-1 Std. (µg/L) | Detection (µg/L) |
|---|---|---|
| Benzo(a)pyrene | 0.2 | 0.25 |
| Vanadium | 0.03 | 0.0366 |
| Arsenic | 0.01 | 0.013 |

# MCP Groundwater Investigation

*Proposed Monitoring Plan*

- *Proposed sampling plan submitted to MassDEP for review and comment*
- *Proposed plan includes:*
  - *Measuring groundwater elevations to confirm groundwater flow direction*
    - *Groundwater flow is towards Cape Cod Bay*
  - *Assess prior exceedances of PFAS(6), benzo(a)pyrene, arsenic and vanadium in groundwater*
    - *Prior exceedances slightly above MCP Reportable Concentration for GW-1 classified groundwater*
      - *GW-1 classification tied to high-yield aquifer*
      - *Groundwater not used as a source of drinking water at Pilgrim*
- *Results of proposed sampling will inform future sampling campaigns (e.g., number and location of wells, analytical suite for testing, etc.)*

September NDCAP Meeting (09/23/23)

**NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")**
**Monday, September 25, 2023**
**Hybrid Meeting (in-person and virtual)**
**Meeting Minutes**

The meeting was called to order at about 6:30 pm by Ms. Pine duBois.

**NDCAP MEMBERS PRESENT**

- Pine duBois, Speaker of the House Appointee (Vice Chair) (in person)
- Mary Lampert, Senate President Appointee (in person)
- James Lampert, Speaker of the House Appointee (in person)
- Mary Jo Gatslick, Minority Leader of the House Appointee (in person)
- Michael Fortini, Minority Leader of the Senate Appointee (in person)
- Henrietta Cosentino, Plymouth Select Board Appointee (in person)
- David C. Nichols, Governor Baker Appointee (in person)
- Seth Pickering,[1] Department of Environmental Protection (in person)
- Jack Priest, Department of Public Health, Radiation Control Program (in person)
- Jennifer Barrelle,[2] Department of Public Health (virtual)
- David Noyes,[3] Holtec Decommissioning International (in person)
- Mark Lawson,[4] Holtec Decommissioning International (in person)
- Mary Waldron, Old Colony Planning Council (virtual)
- David Bryant, Massachusetts Emergency Management Agency (in person)
- Kevin Canty[5], Plymouth Select Board Appointee (in person)

**NDCAP MEMBERS NOT PRESENT**

- Jonathan Goldberg, Massachusetts Department of Public Utilities

**GUESTS IN ATTENDANCE**

- Bruce Watson, NRC
- Paul Krohn, NRC

**PREVIOUS MINUTES REVIEW & APPROVAL**

Mr. Lampert indicated that several of his statements should be included in the prior meeting minutes, in relation to the reorganization of the panel.

Ms. duBois stated that several names and typos were corrected in the prior meeting minutes.

Ms. Lampert noted her prior suggestion to defer discussion of formatting of the NDCAP website to September 2023. She indicated that this discussion can be deferred to the November meeting. However, this is not a correction to the minutes.

[1] Designee of Secretary of the Executive Office of Energy and Environmental Affairs
[2] Designee of Secretary of the Executive Office of Health and Human Services
[3] Replaced Pat O'Brien (Holtec)
[4] For John Moylan (Holtec Site Vice President)
[5] Replaced John Mahoney as Designee for Plymouth Selectboard

Mr. Noyes clarified that B/C waste in the prior meeting minutes should be B and C waste.

A motion was made to approve the meeting minutes as amended and seconded. The motion passed unanimously with 3 abstentions.

**HOLTEC – HDI PILGRIM DECOMMISSIONING UPDATE**

Mr. Noyes provided an update. In summary:

- Submission of the license termination plan is scheduled for Fall of 2024.
- In 2027, the NRC will review the license termination plan to determine if it will be approved.
- The second fire water storage tank has been demolished – a trace of asbestos was detected.
- 1 demineralized water storage tank is scheduled for demolition in the Fall of 2023.
- 2 condensate water storage tanks are also scheduled for demolition in the Fall of 2023.
- 80% of the site has been demolished to grade level.

For reactor internal segmentation:

- Cutting and Segmenting the Shroud Ring is in progress.
- Removal of the 20 jet pumps and packaging is also ongoing.
- B and C waste packaging and staging are scheduled to be completed by December 2023.

There were three violations related to security controls for non-fuel radiological material according to the 2023 First Quarter Inspection. Mr. Noyes indicated that the violations were of low safety significance and have been satisfactorily addressed.

With regard to waste management, a total of 225,652 cubic feet of radiological material and 1,789 curies of activity of radioactive material has been safety removed from the site for disposal.

Mr. Noyes discussed the evaporation process including variables that affect evaporation on the site.[6] Mr. Noyes then explained heating of the reactor cavity and the effects.[7]

Mr. Lampert raised several questions about evaporation. Mr. Noyes explained:

- The water used on the refuel floor was not filtered or treated prior to evaporation.
- Evaporation travels through a vent in the reactor building.
- Because of all the variables, it is hard to calculate how much water will be evaporated.
- Holtec has no plan currently to conduct a large-scale evaporation of the remaining water.

Ms. duBois asked whether the water from the refuel floor gets replaced after it has been evaporated. Mr. Noyes stated that the water from the refuel floor gets replaced with water from the torus. Mr. Noyes mentioned that the water must be replaced on the refuel floor to keep operations ongoing.

[6] Minute Markers 16:25-20:21 of video. See: NDCAP Meeting: 9/25/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth - YouTube

[7] Minute Markers 20:21-24:02 of video. See: *Id.*

Ms. Lampert asked how the vent was monitored. Mr. Noyes explained that samples are taken once a week, then analyzed, and reported in the annual report.

Mr. Nichols asked if other radioactive nuclides (aside from gaseous tritium) were being released during evaporation. Mr. Noyes indicated that no other radioactive nuclides were released during evaporation. There are other particulate radionuclides detected due to other activities occurring on the refuel floor. There is no NRC limit on tritium but there is an allowable dose limit, and evaporation was well below that dose limit.

Mr. Nichols asked the following questions:

- Whether the heaters caused the evaporation of 100,000 gallons of water this year.
- Whether the remaining water would be gone in ten years.
- Whether Holtec intends to remove the heaters in 2024.

Mr. Noyes indicated that the use of the heaters did result in the evaporation of the 100,000 gallons of water in 2023, including the period when heaters were used. Mr. Noyes also indicated that within 10 to 15 years, the water would be completely evaporated. Lastly, Mr. Noyes stated that no decision has been made on whether the heaters would be removed for 2024; there may be an opportunity to redeploy the heaters during the winter months.

Mr. Noyes clarified that the heaters are not used throughout the entire year. The heaters were secured in June 2023 this year.

Ms. Cosentino asked Mr. Noyes to explain in detail how monitoring of the vent takes place. Mr. Noyes explained:

- the filter is changed once a week.
- The removed filter undergoes an analysis for certain radionuclides.
- The results of the analysis are part of the annual report submitted to the NRC.

Mr. Lampert asked if particulates are filtered. Mr. Noyes indicated that the particulates are captured on filter paper for purposes of rating them.

Ms. duBois asked whether dust travels up the vents. Mr. Noyes indicated that some does. A discussion ensued among Ms. duBois, Mr. Noyes, Mr. Pickering, and Mr. Priest about measuring those particulates.[8]

**INTERAGENCY WORK GROUP (IWG) UPDATE**

Mr. Pickering read a statement to the panel and public. In summary:

- A letter was reviewed by MassDPH and DEP about the heaters being used on site.
- The letter alleges that the use of the heaters was to reduce water volume.
- The NRC is reviewing the allegations and inspected the heaters as part of its oversight.

[8] Minute Markers 34:01-38:08 of video. See: *Id*.

- the NRC concluded that use of the heaters was justified in the decommissioning process.
- DPH anticipates that evaporation of wastewater will be a small fraction of NRC limits.
- DPH continues to engage with Holtec if anything deviates from what is standard.
- Emissions from the heaters are not subject to MassDEP air permits thresholds.
- Holtec must contact MassDEP if it intends to conduct a large-scale evaporation.

An anonymous letter was received by MassDEP on August 22, 2023. The letter claimed that Holtec was using heaters in the reactor cavity to reduce water volume. The letter was shared with the NRC to clarify the contents and allegations made by the anonymous individual.

MassDEP and DPH reviewed an NRC inspection report from August 4 which detailed an engineering change related to the use of the heaters. The NRC determined that there was a reasonable justification for adding electric heaters as part of the decommissioning process.

Mr. Pickering also explained DPH's role in emergency response activities and ongoing environmental monitoring in areas surrounding the nuclear power plan.[9]

Mr. Lampert asked Mr. Pickering whether the statement and information presented could be included in the meeting minutes. Mr. Pickering stated that a copy would be sent to the Vice Chair for posting.

MassDEP has prepared a tentative determination denying Holtec's request for a permit modification to discharge decommissioning water. The decision was issued in accordance with the Ocean Sanctuaries Act. A public meeting was held, and the comment period has ended; over 1,000 comment letters were received by MassDEP.

Mr. Pickering indicated that there is no prescribed time for the issuance of the final determination. In accordance with the Massachusetts Administrative Procedure Act, the final determination can be appealed within 30 days of its issuance date.

Ms. Cosentino asked whether it was possible that the EPA and DPH could issue differing decisions. Mr. Pickering stated that he could not answer that question because the EPA has their own process.

Response actions under the MCP are ongoing. A Phase II Comprehensive Site Assessment is due to be submitted by April 21, 2024.

Holtec continues to conduct groundwater sampling and those results will be included in the status report submitted to MassDEP. A conceptual groundwater sampling and analysis plan was presented to MassDEP – sampling is set to take place in the Fall of 2023.

MassDEP asbestos section continues to be actively engaged in overseeing demolition activities.

MassDEP continues to evaluate Holtec's request to change their wastewater disposal system.

Mr. Pickering indicated that there were no changes to the update with MEMA.

[9] Minute Markers 42:17-48:14 of video. See: *Id*.

Ms. duBois asked a question about a draft work plan. Mr. Pickering stated that the work plan was still under review.

Ms. Lampert asked what would occur if the state did not approve the work plan. A discussion took place among Mr. Pickering, Mr. Priest, Mr. Lampert, Ms. Lampert, and Mr. Noyes about the procedure for reviewing the work plan and their concerns.[10]

Mr. Nichols asked if there was a method to differentiate the types of tritium being released. Mr. Priest stated that the tritium being released is not distinguishable.

**NUCLEAR REGULATORY COMMISSION (NRC) PRESENTATION**

Bruce Watson and Paul Krohn introduced themselves to the panel and public. A PowerPoint presentation was given regarding the overview of 10 CFR 50.59 and its application to decommissioning. In summary:

- The NRC does not review every decision the licensee makes related to decommissioning.
- Any changes must be made consistent with the license which governs operations.

Mr. Watson explained conduct of decommissioning activities and procedures in accordance with 10 CFR 50.59.[11] Mr. Watson then explained tritium and tritium air releases based on plant conditions.[12]

A second PowerPoint presentation was given by Paul Krohn. In summary:

- Several liquid effluent disposal paths are allowable – methods of disposal are not regulated.
- The NRC reviews and regulates the effects of disposals.
- Evaporation is routine during plant operations.
- Holtec did not need permission in accordance with 10 CFR 50.59 to use heaters.

The chart titled; Tritium Air Releases Based on Plant Conditions was explained in further detail.[13] In 2018, there was approximately 34.0 Curies("Ci") of Tritium released when the plant was operating, 7.7 Ci in 2020, 8.0 Ci in 2021, and 2.38 Ci in 2022.

Ms. Lampert expressed her concerns about organically bound tritium and its impact on aquatic life in Cape Cod Bay.

A discussion among Ms. duBois, Mr. Noyes, and individuals at the NRC took place about the next steps ('cutting the reactor') and those impacts.

Mr. Lampert asked what could be done to reduce evaporation as much as possible. Harry indicated that he could not answer that question but stated that the NRC focuses on objectives. Mr. Krohn stated that evaporation could be reduced by cooling water, but the process of evaporation cannot be stopped.

[10] Minute Markers 57:36-1:00:44 of video. See: *Id*.
[11] Minute markers 1:09:43-1:16:28 of video. See: *Id*.
[12] Minute markers 1:16:28-1:21:40 of video. See: *Id*.
[13] Minute Markers 1:34:01-1:39:54 of video. See: *Id.*

Mr. Lampert indicated that NRC guidelines mention As Low as Reasonably Achievable ("ALARA").

Ms. duBois asked when did the half-life of Tritium begin. Mr. Krohn mentioned that decay is ongoing. Mr. Nichols asked when would all the tritium would be gone. A discussion took place about how to calculate half-lives and when the tritium may be gone.

**PUBLIC COMMENTS & QUESTIONS**

Art Desloges expressed his concerns about forced evaporation of the radioactive water into clean air. He then stated that the public and stakeholders should have a voice in any public process and policy that impact their health.

Doctor Barry Potvin indicated that any dose of radioactive exposure increases cancer and mutation risks. He believes that other safer alternatives exist in lieu of discharge and evaporation. Doctor Barry Potvin mentioned that the Plymouth Board of Health was holding a public forum on September 27 to discuss impacts of discharge.

Ms. Diane Turco asked Mr. Watson whether there was a safe dose of radionuclide exposure for children. Mr. Watson indicated that there was a safe and low dose for all populations according to NRC regulations and other scientific communities.

Ms. Turco read a letter from an anonymous individual about the ongoing evaporation at the site.[14] Ms. Turco expressed her concerns about the evaporation and asked whether an independent investigation could take place.

Ms. Cosentino expressed her dissatisfaction with the functioning of the panel. She indicated that having an open discussion about several topics and additional agenda items would make the panel more effective.

Eric Muschino indicated that he would like the radioactive water to be shipped rather than discharged.

At this point, discussion took place with Ms. duBois and members of the public regarding the functioning of the panel. Mr. Priest made a motion to adjourn seconded by Mr. Pickering as a result of the discussion. Mr. Canty suggested that the meeting should not be adjourned. Ms. Lampert suggested that the remaining public commenters be given 3-4 minutes. Mr. Priest amended his motion to allow an opportunity for the remaining commenters.

An individual who did not identify himself stated that it was embarrassing to be a town of Plymouth resident based on the behavior of the public at this meeting. He asked the public to act like adults since that was what they were. He also shared that he received more dose than what was discussed in his previous job with the military than any of them would receive in their lifetime. He commented that if it turned out that it was cheaper to send the water off site to be disposed that was acceptable, however the behavior he observed during this meeting was a waste of his tax dollars.

[14] Minute Markers 2:00:01- 2:02:58 of video. See: *Id.*

Doctor Ben Cronin read several provisions from the settlement agreement and case law from *Pacific Gas and Electric Co. v. State Energy Resources and Development Commission (1983)* and *Virigina Uranium Inc. v. Warren (2019)*. He emphasized that the state does have a role in decommissioning.

Joanne Wilson Kennan expressed her concerns about transparency and forced evaporation.

Pat Watson indicated that there should be an investigation about the forced evaporation.

After public comments, Mr. Priest indicated that panel members should send their suggestions of topics or other related materials ahead of meetings to put on the agenda. Ms. Lampert stated that this process would require circulating the draft agenda earlier to panel members. Ms. Turco suggested that materials should be provided in advance to the public. Mr. Priest stated that certain materials could be attached to the prior meeting's minutes.

**ADJOURNMENT**

Adjournment took place after public comments at around 9:10 p.m.

Holtec September 2023 Presentation

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# Pilgrim NDCAP Update

September 25, 2023

# Waterfall Chart

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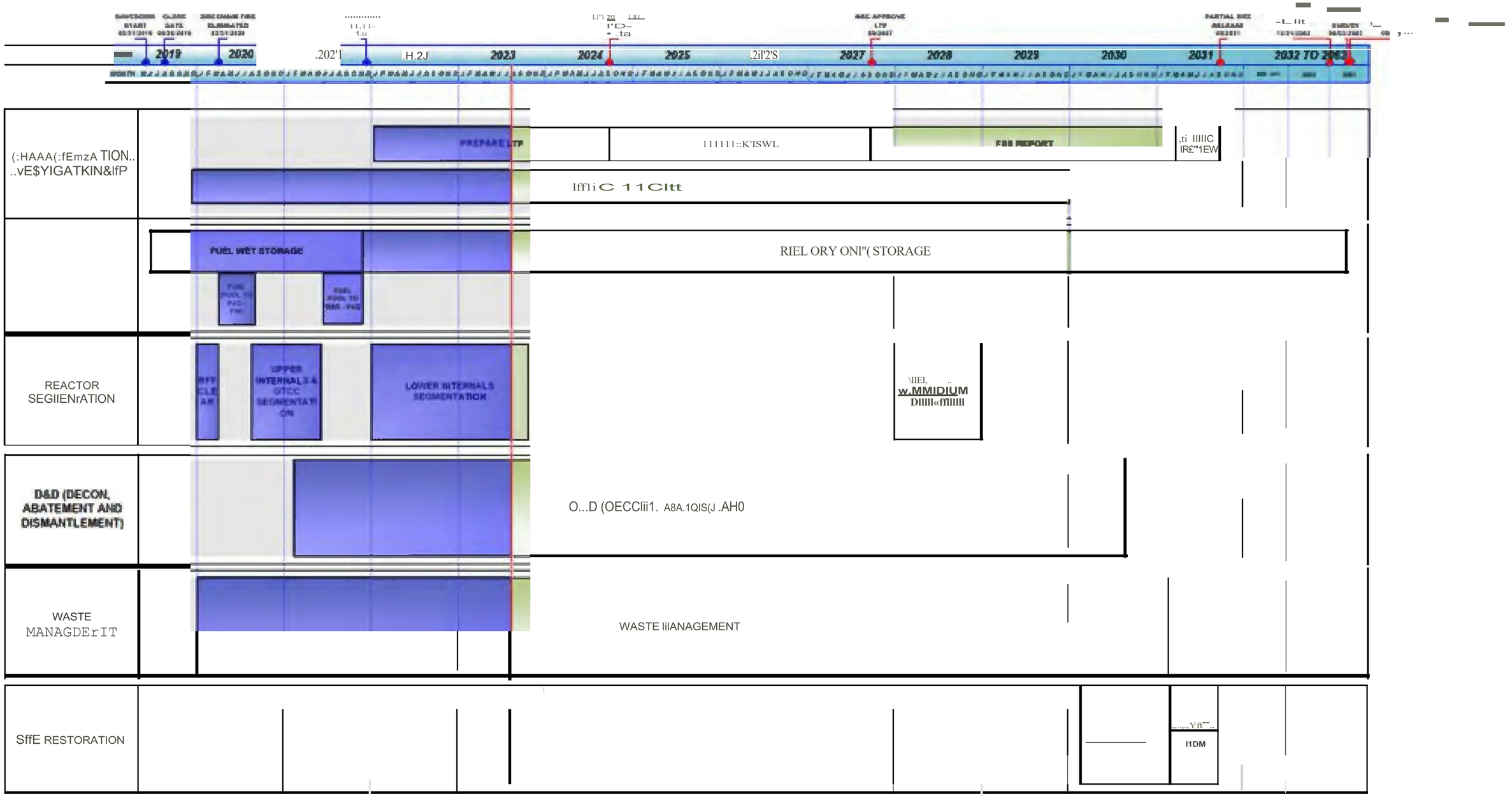


# Demolition - Completed

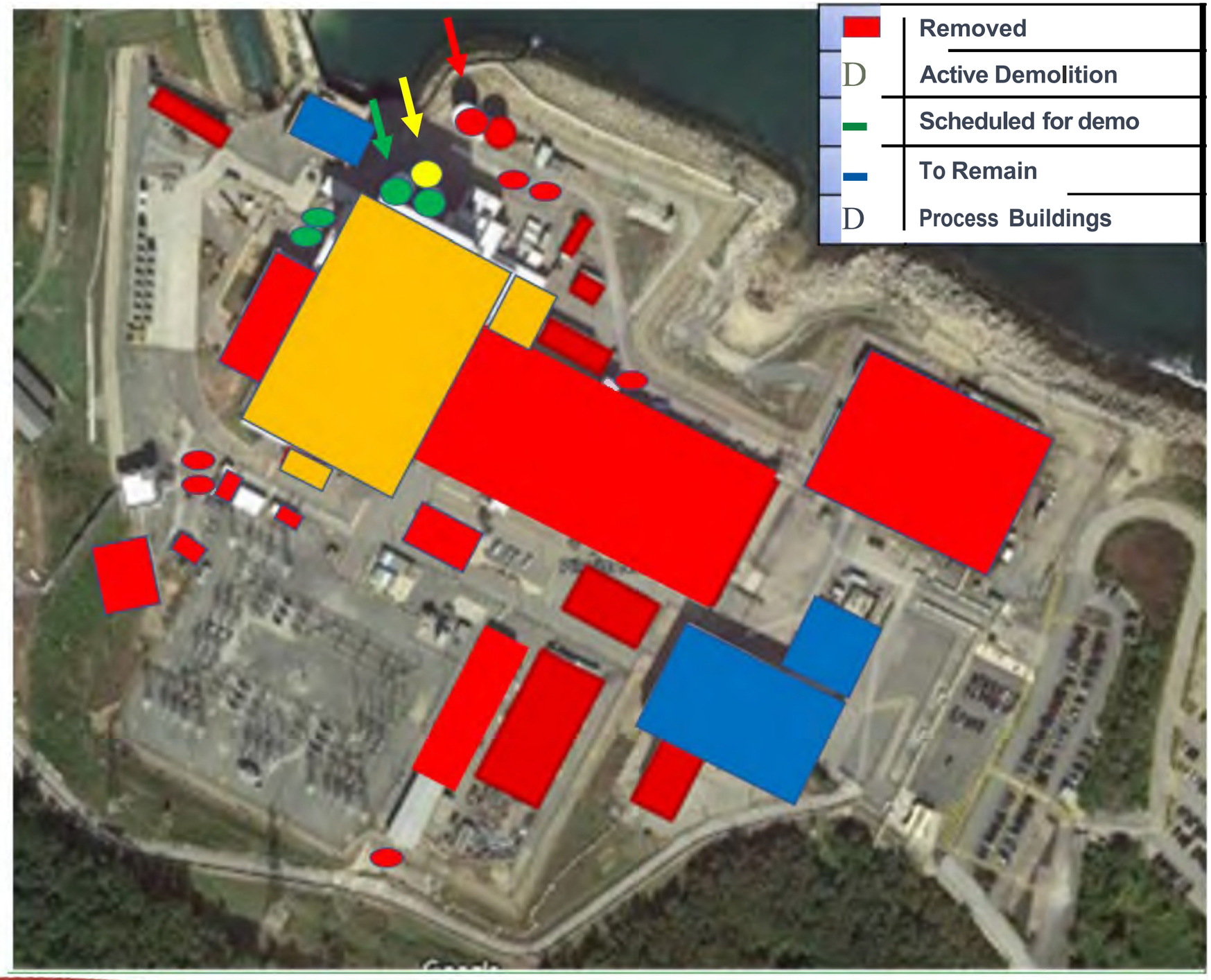
- Fire Water Storage Tank

# Demolition - Upcoming

Above Ground Water Storage Tanks

- Demineralized Water Storage Tank(50,000 gallons capacity)
- Condensate Storage Tanks (2) (275,000 gallons capacity each)

# Demolition Status



# Reactor Internal Segmentation

In Progress

- Cut and Segment Shroud Ring
- Jet Pumps (20) removal and packaging
- B/C Waste packaging and staging scheduled to complete December 2023

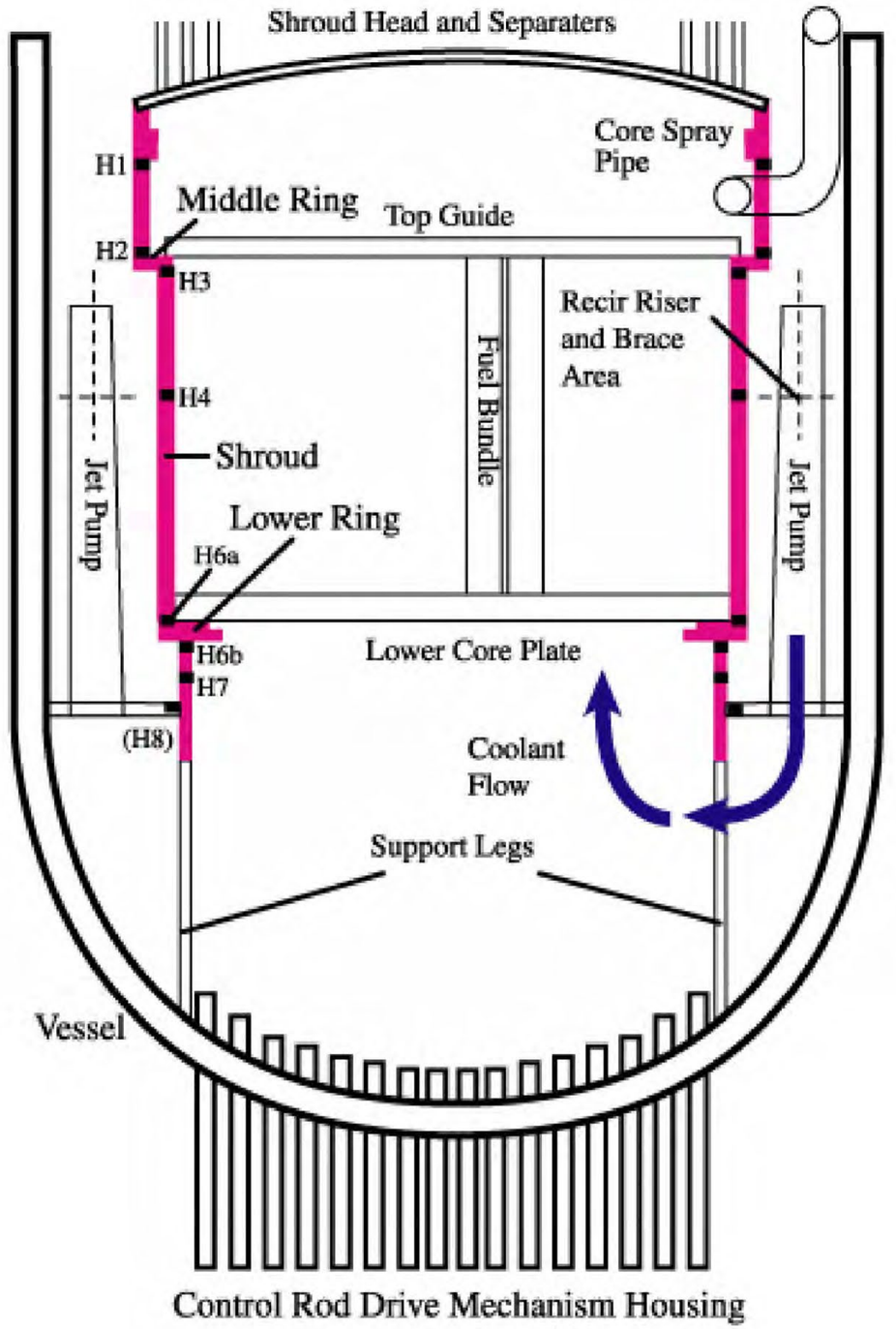



Figure is illustrative and not Pilgrim specific

# Regulatory and Licensing

- Three violations of low safety significance regarding security controls for non-fuel radiological material under 10 CFR Part 37 identified in the recently completed NRC 2023 First Quarter Inspection.

- None of the issues involved a loss of control of any material. All have been satisfactorily addressed.

- Causal analysis is in process to identify any concerns for extent of the causes or conditions noted.

# Waste Management

Rounded values for waste shipped for disposal

| Calendar Year | Volume (CF) | Activity (Ci) |
|---|---|---|
| 2019* | 11,300 | 225 |
| 2020 | 8,410 | 7 |
| 2021 | 58,000 | 933 |
| 2022 | 87,100 | 383 |
| Thru 9/20/2023 | 60,842 | 241 |
| | | |
| 2019-2023 Totals | 225,652 | 1,789 |

* Includes a small quantity of waste shipped during the last operating cycle

# Evaporation

Fuel Pool, Cavity, and Dryer Separator Pit and to a certain extent the torus are open pools of water that evaporate. The amount of evaporation is determined by a number of factors including:

- Temperature of the water
- Temperature of the surrounding air
- Air flow across the water surface
- Ambient relative humidity of the air
- Agitation of the water's surface

# Evaporation

Water that evaporates includes Tritium in proportion to the concentration of tritium in the water.  The total remaining tritium in the water volumes at Pilgrim is less than 12 Curies

| Calendar Year | Offsite Dose (mr)* | Gaseous Tritium Released (Ci) | Equivalent Dose Released due to Tritium (mr) |
|---|---|---|---|
| 2022 | 0.16 | 2.38 | 0.000070** |
| 2021 FOP | 0.30 | 8.00 | 0.000235** |
| 2020 | 0.14 | 7.70 | 0.000265** |
| 2019 SD | 0.47 | 30.6 | 0.0009** |
| 2018 | 0.71 | 34.0 | 0.001** |
| 2017 | 0.76 | 48.0 | 0.0014** |
| 2016 | 0.77 | 64 | 0.00188** |

*Total offsite dose to a postulated most affected individual includes: direct radiation dose + airborne radioactivity (including food chain deposition and bioaccumulation) + liquid discharge associated dose (including food chain deposition and bioaccumulation)

** This value derived from 2022 data where 0.000070 mrem was attributed to 2.38 Ci of tritium and 0.000042 Ci of particulate radionuclides.  The particulate radionuclides were discounted in this table and the entire gaseous effluent dose was (conservatively) attributed to tritium.

# Heating of Reactor Cavity

Heaters were installed at the beginning of 2023 to:

- Reduce drying time of containerized waste removed from the pool
- Improve localized working conditions for individuals on the refueling floor
- The facility's design review process was followed and found comprehensive by NRC's inspection

The net impact of operation of the heaters was to raise average water temperature in the reactor cavity to approximately 100°F

- 25°F below the maximum temperatures in the Spent Fuel Pool and Reactor Cavity during plant operation and defueling
- An approximate tritium release of 1.2 Curies and an offsite dose of .00003 millirem

| Calendar Year | Gaseous Tritium Released (Ci) | Equivalent Dose Released due to Tritium (mr) |
|---|---|---|
| **2023 (heating period / prorated)** | **1.2 / 4.8** | **0.00003 / 0.00012** |
| 2022 | 2.38 | 0.000070** |
| 2021 FOP | 8.00 | 0.000235** |
| 2020 | 7.70 | 0.000265** |
| 2019 SD | 30.6 | 0.0009** |
| 2018 | 34.0 | 0.001** |
| 2017 | 48.0 | 0.0014** |
| 2016 | 64 | 0.00188** |

INTERAGENCY WORK GROUP (IWG)
DOCUMENTATION

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

# Department of Environmental Protection

Southeast Regional Office• 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

September 25, 2023

John Moylan
Site Vice President
Holtec Decommissioning International, LLC
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 202360

**RE:** Plymouth-310 CMR 7.02
Air Quality Permitting

Dear Mr. Moylan;

I am writing regarding potential alternatives for disposing of wastewater at Pilgrim Station. Specifically, MassDEP writes to confirm that, if new equipment or if a change in a method of operation is proposed to facilitate evaporation of the reactor system process water at the facility that could emit regulated air pollutants, that equipment, or that change in a method of operation, may be subject to MassDEP Air Quality Permitting pursuant to 310 CMR 7.02.

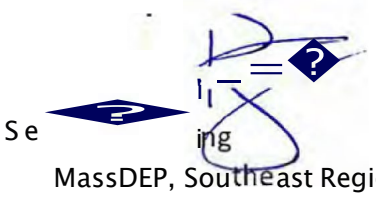
The federal Clean Air Act (CAA) and U.S. Environmental Protection Agency (EPA) regulations (40 CFR 51.160), require each state to develop procedures for determining whether construction or modification of facilities will violate applicable portions of its air pollution control strategy (including its State Implementation Plan or SIP) or will interfere with attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) established by the CAA. The types of facilities and equipment that are required to obtain Plan Approvals from MassDEP, based on capacity ranges and emissions, can be found at 310 CMR 7.02(4)(a) for Limited Plan Applications (LPAs) and 310 CMR 7.02(5)(a) for Comprehensive Plan Applications (CPAs). If an emission unit or facility is subject to MassDEP Plan Approval requirements, the facility will need to submit a completed Limited Plan Application (LPA) for Process Emissions, or Comprehensive Plan Application (CPA) for Process Emissions.

The Department recommends that Holtec contact the MassDEP Southeast Regional Office well in advance of making any physical or operational changes, if it chooses evaporation to dispose

of the Pilgrim Station reactor system process water, for the purpose of discussing Air Quality Permitting applicability and requirements pursuant to 310 CMR 7.02.

If you have any questions, please contact Seth Pickering at seth.pickering@mass.gov or (857) 202-0116. Thank you.

Sincerely,



Seth Pickering
MassDEP, Southeast Region
Deputy Regional Director
Bureau of Air and Waste

Ecc:

David Noyes, Holtec
Patrick O'Brien, Holtec

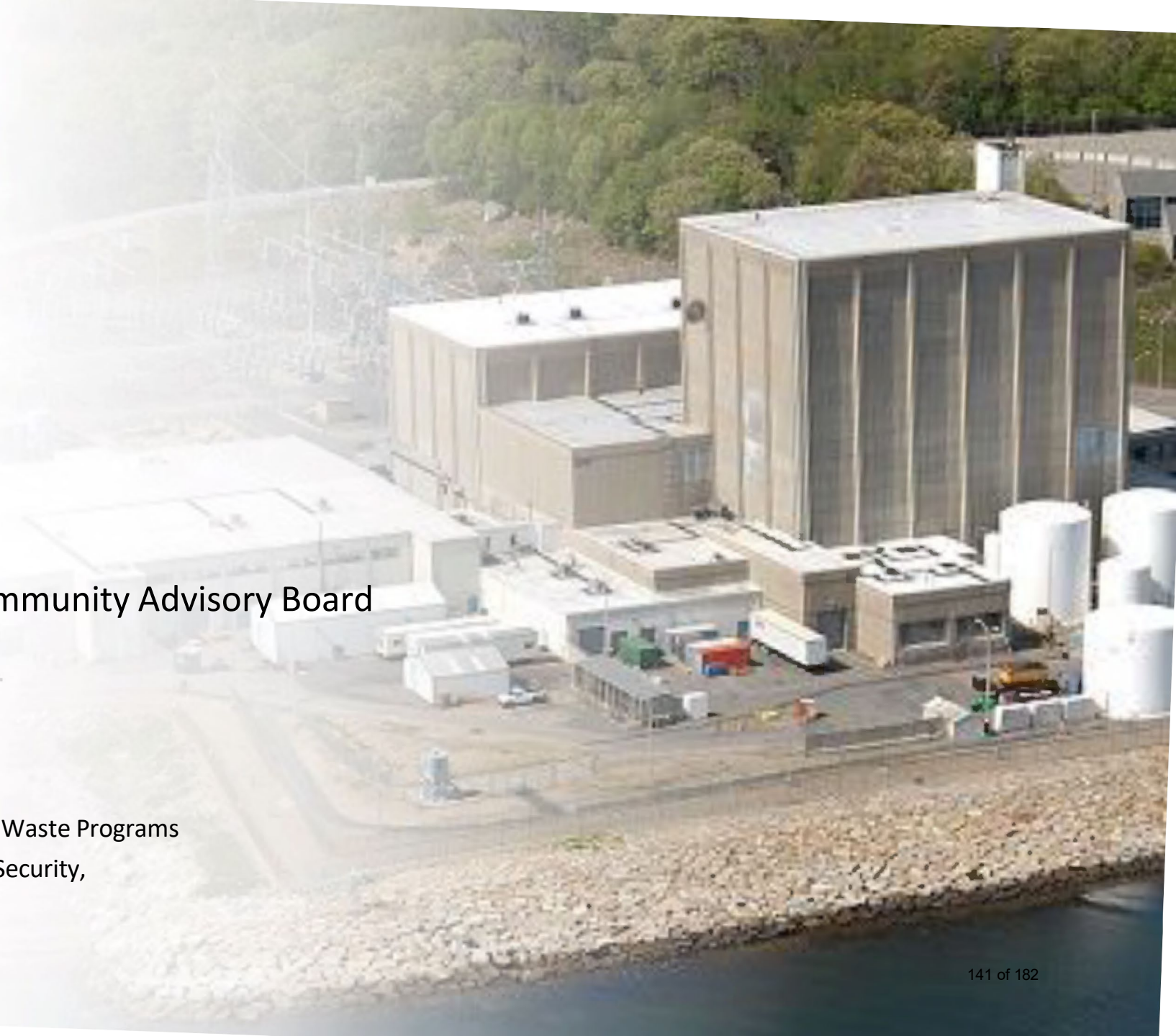
Jack Priest, Mass Department of Public Health

MassDEP

Gary Moran - Deputy Commissioner
Millie Garcia-Serrano - Regional Director, Southeast Region
Christine Kirby-Assistant Commissioner, Bureau of Air and Waste
Gerard Martin-Deputy Regional Director, Southeast Region, Bureau of Water Resources
Mark Poudrier - Chief, New Source Review (NSR)-Air Permit Section, BAW, SERO

NUCLEAR REGULATORY COMMISSION (NRC)
PRESENTATION -10 CFR 50.59 OVERVIEW
APPLICABLE TO REACTORS IN DECOMMISSIONING

# 10 CFR 50.59 - Overview Applicable to Reactors in Decommissioning: The Review Process Followed by Licensees to Ensure Activities are Performed in Compliance with License Requirements.



## Pilgrim Nuclear Decommissioning Community Advisory Board Meeting on September 25, 2023

Bruce A. Watson, CHP
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Decommissioning, Uranium Recovery and Waste Programs

Paul G. Krohn, Division Director Radiation Safety and Security,
U. S. Nuclear Regulatory Commission
Region 1 Office

# Does the NRC have to review and either approve or disapprove every decision the licensee makes related to decommissioning a facility?

- **No,** the NRC does not review every decision the licensee makes related to decommissioning the facility.
- The licensee may make any of the following types of changes without prior NRC approval provided that are consistent with the license, license requirements and the safety analysis report.

# Conduct of Decommissioning Activities

As in operations, the licensee may make changes to the facility in accordance with 10 CFR 50.59. “Changes, tests and experiments,” to determine the activities are compliant with the license and licensing basis.

- Ninety (90) days after the Post Shutdown Decommissioning Activities Report (PSDAR) has been received by the NRC, a licensee may perform major decommissioning activities.
- A licensee may take actions permitted by 10 CFR 50.59 but must notify the NRC before performing any decommissioning activity inconsistent with the actions and schedule described in the PSDAR.

# 10 CFR 50.59 Overview

- 10 CFR 50.59 is the regulation *that allows licensees* to determine whether prior NRC review and approval is needed if the proposed activity is within the NRC license, may conduct the decommissioning activities.

- **A 10 CFR 50.59 evaluation is *not* a safety evaluation,** and the focus is whether NRC approval is required prior to implementing the change.

- Technical justification is an input to the 50.59 process, not the conclusion. A change that appears to make sense or engineering judgement may not necessarily be allowed without prior NRC review.

- Review of the licensee's 50.59 evaluations are reviewed at least annually during decommissioning, Inspection Procedure 37801, *"Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (PSRs),"*

## Plant Licensing Basis Requirements Examples:

- The site's NRC License and amendments, including the License Termination Plan
- Technical Specifications (TS) and the Defueled Safety Analysis Report
- Environmental TS and implementing requirements including the Offsite Dose Calculation Manual
- Radiological Environmental Monitoring Program
- NRC Safety Evaluations (including Technical Evaluation Reports) in support of the Operating License and submittals required pursuant to 10 CFR 50.54(f)
- Quality Assurance Program Plan
- Physical Security Plan
- Emergency Plan

# Summary

- The 50.59 Review Process is implemented by licenses to determine that proposed decommissioning activities are compliant with the licensing basis. For effluents, this includes the Environmental Tech Specs and Offsite Dose Calculation Manual.
- The licensee determines that the decommissioning activity can be performed safely and is compliant with NRC requirements. These include the method for releasing effluents from the plant provided they are compliant with NRC and other requirements.
- The NRC Inspectors and Project Manager hold periodic meetings with the licensee to review planned activities at the site. The information from the licensee is used to assess the safety risks and determine inspection plans for those activities and potential licensing needs.
- Inspection Procedure 37801, "Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (PSRs)" is conducted at least annually.


# Tritium Facts in Perspective


- Tritium is a radioactive isotope of Hydrogen (one proton, two neutrons). The radioactive hydrogen rapidly incorporates into water molecules and cannot be removed once it becomes tritiated water or more commonly known as “Tritium.” Tritium emits a Beta particles of very low energy (cannot penetrate the skin surface) and has a radioactive half-life of 12.3 years.
- Tritium is produced naturally in the upper atmosphere when cosmic rays interact with Nitrogen atoms (along with C-14 and Be-7). Tritium may be found at very low concentrations in lakes and streams (about 4 pCi/L).
- **Tritium is used very large quantities in medicine, industry, and research at universities and other research institutions. In these applications, the tritium is released to the atmosphere or by the Sanitary Sewer System. The Defense Complex uses tremendous amount of Tritium.**
- **Inorganic Tritium** is produced by reactors and (effluent) “releases are at fractions of the natural background production rate” [EPA fact sheet].
- **Inorganic Tritium does not bioaccumulate, because water turns over rapidly in the biological systems. Tritium in the human body is rapidly cleared from tissues [EPA fact sheet] having a *10-day biological half-life.*** *For more information, see the Health Physics Society Tritium Fact Sheet and NRC Public Website www.nrc.gov/reading-rm/basic-ref/glossary/tritium.html.*

# Tritium Air Releases Based on Plant Conditions

(Source: NUREG/CR-2907 Radioactive Effluents from Nuclear Power Plants)

| Year | Plant Condition | Tritium Released | Yearly Dose (tritium and particulates) | Percent of 10CFR50 Dose Objective |
|---|---|---|---|---|
| 2022 | Pilgrim Decom - no fuel | 2.38 Ci | 0.000070 mrem | 0.00047% |
| 2021 | Pilgrim Decom - moving fuel | 8.0 Ci | 0.00024 mrem | 0.0016% |
| 2020 | Pilgrim Decom - fuel in pool | 7.7 Ci | 0.00022 mrem | 0.0014% |
| 2018 | Pilgrim Operating Boiling Water Reactor* | 34.0 Ci | 0.014 mrem | 0.43% |

*Average Operating BWR is 41.6 Ci per year

# Questions?

NUCLEAR REGULATORY COMMISSION (NRC)
PRESENTATION REGARDING THE USE OF IMMERSION HEATERS

# U.S. Nuclear Regulatory Commission

## Overview of the Use of Submersion Heaters at the Pilgrim Nuclear Power Station

Paul Krohn, Director
Division of Radiological Safety and Security
USNRC Region I

Harry Anagnostopoulos, Senior Health Physics (HP) Inspector
Decommissioning, ISFSI, and Reactor HP Branch
USNRC Region I

September 25, 2023

# Outline

- Allowable Liquid Effluent Disposal Paths
- Evaporation Considerations During Operation
- Evaporation as a Waste Disposal Method
- Use of Submersion Heaters at Pilgrim
- NRC Oversight Activities

# Allowable Liquid Effluent Disposal Paths for Nuclear Power Reactors

- Treated liquid discharge
- Monitored evaporation
- Shipment to an offsite disposal facility
- Discharge to the sanitary sewer
- Onsite storage for decay

- Under NRC regulations and the Pilgrim license, all options are available, and no prior NRC authorization is needed.

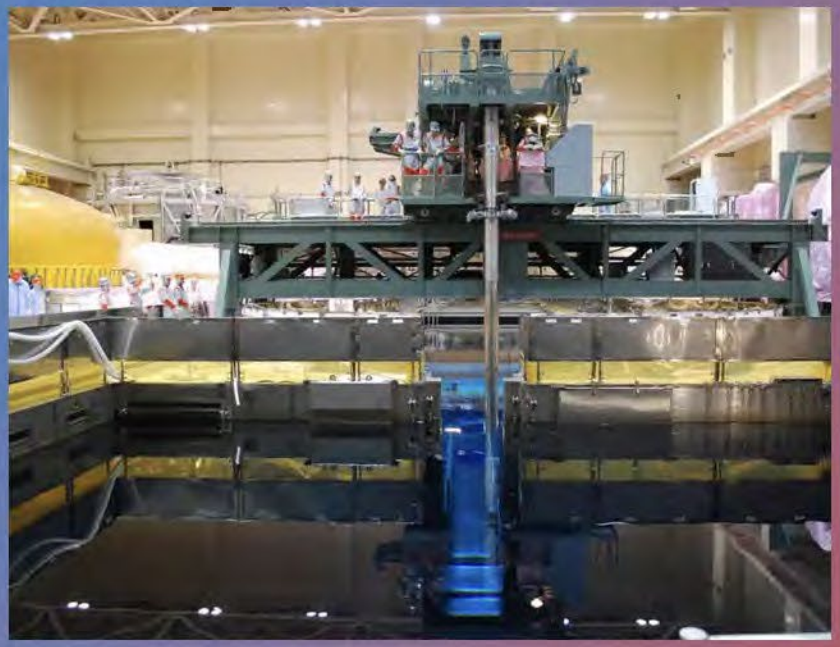
- Any of these options is subject to inspection by the NRC, including enforcement actions where warranted.

## Evaporation Considerations During Operation

- Evaporation and the discharge of tritiated water vapor occurred routinely during plant operations.
- This evaporation rate would be greater during refueling outages when there was fresh spent fuel in the pool.

## Evaporation as a Waste Disposal Option

- Evaporation of liquid wastes is an option available to all nuclear power plants and is being used at several.
- Most nuclear power plants were designed with liquid evaporators in their radwaste processing systems.



# Use of Submersion Heaters at Pilgrim

- In accordance with its license, Holtec made the decision to pursue use of submersion heaters in support of decommissioning activities at Pilgrim.
- Holtec conducted an evaluation and determined that the heaters could be installed without prior NRC approval (10 CFR 50.59).
- This evaluation and the related engineering change were reviewed by the NRC staff during routine inspection activities.

**No violations were identified by the NRC**

# NRC Oversight Activities

- The NRC was aware of the use of submersion heaters in the Pilgrim reactor cavity and initiated an onsite inspection of their use within weeks of their being energized.
- NRC inspectors confirmed that releases through the reactor building ventilation pathway were appropriately monitored, described and bounded by the site's Offsite Dose Calculation Manual (ODCM), and that the related data will be captured in the Annual Radioactive Effluent Release Report (ARERR).

# Tritium Air Releases Based on Plant Conditions

(Source: NUREG/1307 Radioactive Effluents from Nuclear Power Plants)

| Year | Plant Condition | Tritium Released | Yearly Dose (tritium and particulates) | Percent of I0CFRS0 Dose Objective |
|---|---|---|---|---|
| 2022 | | | | |
| 2021 | Pilgrim Decom - moving fuel | 8.0 Ci | 0.00024 mrem | 0.0016% |
| 2020 | Pilgrim Decom - fuel in pool | 7.7 Ci | 0.00022 mrem | 0.0014% |
| 2018 | Pilgrim Operating Boiling Water Reactor* | 34.0 Ci | 0.014mrem | 0.43% |

*Average Operating BWR is 41.6 Ci per year

# Questions?

November NDCAP Meeting (11/27/23)

**NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")**
**Monday, November 27, 2023**
**Hybrid Meeting (in-person and virtual)**
**Meeting Minutes**

The meeting was called to order at about 6:30 pm by Ms. Pine duBois.

**NDCAP MEMBERS PRESENT**

- Pine duBois, Speaker of the House Appointee (Vice Chair) (in person)
- Mary Lampert, Senate President Appointee (in person)
- James Lampert, Speaker of the House Appointee (in person)
- Mary Jo Gatslick, Minority Leader of the Senate Appointee (in person)
- Michael Fortini, Minority Leader of the Senate Appointee (in person)
- Henrietta Cosentino, Plymouth Select Board Appointee (in person)
- Kevin Canty, Plymouth Select Board Appointee (in person)
- David C. Nichols, Governor Baker Appointee (in person)
- Andrew Gottlieb, Governor Baker Appointee (in person)
- Seth Pickering,[1] Department of Environmental Protection (in person)
- Jack Priest, Department of Public Health, Radiation Control Program (in person)
- David Bryant, Massachusetts Emergency Management Agency (in person)
- John Slocum, Massachusetts Department of Public Utilities (virtual)
- David Noyes,[2] Holtec Decommissioning International (in person)
- John Moylan, Holtec Site Vice President (in person)
- Kelly O'Brien, UWA Representative (in person)
- Mary Waldron, Old Colony Planning Council (virtual)

**NDCAP MEMBERS NOT PRESENT**

- Jennifer Barrelle, Department of Public Health (virtual)

**GUESTS IN ATTENDANCE**

- Gerard Martin, Department of Environmental Protection

**REORGANIZATION OF THE PANEL**

Ms. duBois indicated that, under Chapter 188 of the Acts of 2016, reorganization of the Nuclear Decommissioning Citizens Advisory Panel ("Panel") should take place annually.[3] Ms. duBois noted that the last time reorganization took place was approximately a year and a half ago.

Mr. Lampert was nominated for the Chair position by Ms. Lampert. She indicated that his advocacy, experience, and knowledge of issues pertaining to decommissioning makes him qualified for the position.

[1] Designee of Secretary of the Executive Office of Energy and Environmental Affairs
[2] Replacing Pat O'Brien (Holtec)
[3] Session Law - Acts of 2016 Chapter 188 (malegislature.gov)

Mr. Priest was nominated for the Chair position by Ms. duBois. Ms. duBois believes Mr. Priest can effectively lead the Panel and understands the issues involved with decommissioning. Mr. Priest respectfully declined the nomination.

Ms. Gatslick volunteered for the Co-Chair position. She is well-versed in licensing, emergency planning, security, and hazardous waste management. Also, she has spent 31 years at the station, has familiarity of the site's layout and past practices.

Mr. Canty was nominated for the Vice Chair position by Mr. Lampert. Mr. Lampert stated that Mr. Canty possesses the skills to be an effective leader including the ability to be impartial. Also, Mr. Canty understands the industry side of nuclear power which would be of value to the Panel.

The following took place:

- Ms. Cosentino seconded Ms. Lampert's nomination of Mr. Lampert for Chair.
- Ms. Cosentino seconded Mr. Lampert's nomination of Mr. Canty for Vice Chair.
- Mr. Fortini seconded Ms. Gatslick's volunteered nomination for Vice Chair.

Discussion ensued about how many members would be needed for a vote to pass. Ms. duBois read from the legislation, and stated that a majority of the entire Panel is needed (here, 10 votes).

The first vote failed. No one received the required 10 votes.

Mr. Gottlieb asked for a revote for Chair. Upon receiving 10 votes from members of the Panel, Mr. Lampert became the Chair.

Mr. Lampert asked for a vote for Mary Gatslick for Vice Chair. Upon receiving 10 votes from the members of the Panel, Ms. Gatslick became the Vice Chair.

**PREVIOUS MINUTES REVIEW & APPROVAL**

One correction was made by Mr. Noyes.

Ms. Gatslick indicated that, on page 6, the statements made by an unnamed individual during public comments should be amended. She agreed to send the corrected text to Mr. Lampert.

The motion to approve the minutes as amended was seconded, then approved.

Discussion ensued about the requirements of the Open Meeting Law. A suggestion was made to invite the Attorney General's Office (AGO) to make a presentation.

**HOLTEC – HDI PILGRIM DECOMMISSIONING UPDATE**

Mr. Noyes provided an update.[4] In summary:

Due to uncertainties with disposition of the water, segmentation of the reactive pressure vessel has been delayed to December 2028 and partial site release has been delayed to September 2035.

[4] Corporate PowerPoint Presentation (mass.gov)

Demolition of the demineralized water storage tank has been completed. Two condensate storage tanks are scheduled for demolition by December 15, 2023. The remaining underground storage tanks are scheduled to be removed by the Spring of 2024.

For reactor internal segmentation:

- Control rod mechanism housing has been removed.
- Core shroud and reactive vessel internals have been removed to the lower portion of the shroud.
- Removal of the 20 jet pumps and packaging is ongoing – 5 cuts have been completed.
- B and C waste packaging and staging are scheduled to be completed by January 2024.

Once reactor internal segmentation activities are complete, water in the reactor cavity can be drained into the Torus.

For Site Characterization:

- Oil and hazardous detections were identified on the site during groundwater sampling.
- 24 wells were sampled in accordance with the Massachusetts Contingency Plan (MCP).
- Results from the samples are expected in December 2023.

For Regulatory and Licensing:

- On October 24, the NRC was notified of 5 low activity sources which were unaccounted for.
- The 5 sources include: 3 of Nick 63, 1 of Barium 133, and 1 of Tritium.
- The sources may have been disposed of as radioactive waste during cleanout activities.
- Causal analysis is in process to identify any concerns.
- No impact to health and safety of plant works or public due to low activity.

The total amount of waste shipped from the site to date is now 231,156 Cubic Feet.

Mr. Noyes indicated that several factors such as water and air temperature, air flow, and humidity play a role in evaporation.

The total remaining tritium in the water volumes at Pilgrim is less than 12 Curies.

According to Mr. Noyes, heaters in the reactor cavity and spent fuel pool were energized on November 22, 2023.

Ms. Gatslick asked whether Mr. Noyes could explain what is equivalent to 12 Curies. Mr. Noyes stated that it would be equivalent to one vintage exit sign from the 1950s.

Ms. Gatslick asked Mr. Noyes where the waste from the demolished tanks was sent. Mr Noyes indicated that one of the tanks that had no contamination was recycled and the condensate tank's waste will be sent to Andrews, Texas to be disposed of as radioactive waste.

Mr. Nichols asked if the slides presented in the update could be printed and shared with individuals of the Panel ahead of meeting sessions. Mr. Noyes said he could provide a copy of the presentation to the Panel.

Mr. Nichols also asked:

- Whether the October 24 notification to the NRC was separate from the annual report.
- Whether the October 24 notification had an impact on finances.

Mr. Noyes explained that the notification was separate from the annual report and there were no impacts on finances. Mr. Noyes confirmed that notification to the state regarding finances was not required because certain thresholds were not triggered under the Massachusetts settlement agreement.

A discussion ensued among Mr. Priest, Mr. Pickering, and Mr. Noyes about financial impacts, the future of the workforce, demolition schedule, and water on the site.[5] Mr. Noyes confirmed that this is the second extension of the decommissioning schedule for a total of 8 years. He indicated that Holtec will continue to move forward with internal structures (e.g., asbestos containing material); however, the large-scale demolition of the turbine building does not make sense without demolishing the reactor building at the same time.

A discussion took place among Mr. Gottlieb, Mr. Noyes, Mr. Priest, and Ms. Lampert regarding what Holtec would do if MassDEP decides to deny the request for permit modification. Mr. Noyes indicated that Holtec is entitled to due process and will likely appeal the decision.[6]

Mr. Lampert suggested that a discussion take place in the future about alternatives for disposition.

Ms. Lampert asked Mr. Noyes whether evaporation can take place in the torus. Mr. Noyes stated that evaporation could take place in the torus and release would take place through a monitored vent.

Mr. Gottlieb and Mr. Priest raised their concerns about evaporation and the delays.

Mr. Priest agreed with Mr. Lampert's earlier suggestion about having a discussion of alternatives.

A discussion took place among Mr. Gottlieb, Mr. Noyes, and Mr. Priest about evaporation and financial projections. Mr. Noyes indicated that several uncertainties exist to make determinations on the total amount of evaporation. Mr. Priest expressed his concerns about the delay and its impact of the decommissioning trust fund.[7]

Ms. Cosentino asked:

- How much water remains on the site
- How long did it take for the water to get to that amount

[5] Minute markers 1:04:15-1:07:05 of video. See: NDCAP Meeting: 11/27/23: Nuclear Decommissioning Citizens Advisory Panel #Plymouth (youtube.com)
[6] Minute markers 1:08:00- 1:11:58 of video. See: *Id*.
[7] Minute markers 1:17:30-1:21:49 of video. See: *Id*.

Mr. Noyes indicated that it took about nine months for the water to go from 1.1 million gallons down to 950,000 gallons. He estimated that about 950,000 gallons remain on the site.

Ms. Cosentino also expressed her concerns about finances.

Mr. Lampert asked whether it was possible for Holtec to run models to determine the rates of evaporation. Mr. Noyes stated he would take back the request.

Ms. Cosentino raised several concerns about the vent and suggested that data from the vent should be shared on a more frequent basis rather than once a year. Mr. Lampert suggested that Ms. Cosentino ask Mr. Pickering whether MassDEP intends to exercise its authority in accordance with M.G.L. Chapter 21E to enforce monitoring of the vents.

**INTERAGENCY WORK GROUP (IWG) UPDATE**

Mr. Pickering provided an update. In summary:

Holtec must contact MassDEP if it intends to dispose of decommissioning-related wastewater by evaporation to determine applicability of air permitting requirements.

MassDEP has issued a tentative determination denying Holtec's request for a permit modification to discharge decommissioning-related wastewater. Also:

- A public meeting was held to discuss the permit modification.
- During the comment period, over 1000 comments were submitted to MassDEP.
- The comments have been posted on the MassDEP website and review is still ongoing.
- After review of the comments, MassDEP will finalize its determination.
- There is no prescribed time for the issuance of the final determination.
- The final determination can be appealed within 30 days of its issuance date.

Response actions under the MCP are ongoing. Phase Two Comprehensive Site Assessment is due to be submitted by April 21, 2024.

Holtec continues to conduct groundwater sampling and those results will be included in the status report submitted to MassDEP.

MassDEP, MassDPH, and the MassAGO met to discuss Holtec's site assessment work plan. Comments from the state will be provided to Holtec soon.

The MassDEP asbestos section continues to be actively engaged in overseeing demolition activities.

MassDEP continues to evaluate Holtec's request to change its wastewater disposal system to a Title 5 system.

Mr. Pickering indicated that there were no changes to the update with MEMA.

Mr. Lampert asked Mr. Pickering whether MassDEP would exercise its authority to require monitoring of the vent where evaporation is taking place. Mr. Gerard Martin stated that, under M.G.L. c. 21E, MassDEP cannot require sample collection unless the site is under the c. 21E program. If there is a permitted action, it is exempt from c. 21E since the permit will adequately regulate the action.

Mr. Nichols asked whether Holtec has indicated to MassDEP that Holtec intends to evaporate the water. Mr. Pickering stated that Holtec has not indicated an intent to evaporate the water as the ultimate disposal method.

Ms. duBois indicated that the air permitting guidance document sent to Holtec would be available on the NDCAP website in the next few days.

Mr. Nichols asked whether the state could prevent Holtec from evaporating the water. Mr. Pickering stated that he was not sure which regulatory authority would allow this.

Ms. Gatslick asked Mr. Pickering whether the Environmental Site Assessment ("ESA") was going to be available. Mr. Pickering said the ESA would be available soon.

Ms. Gatslick asked the Panel whether there were any objections to sending a letter to the AGO asking for a timeline of when the ESA would be available. Ms. Lampert indicated that there should be a discussion on why there has been a delay on obtaining the ESA from the AGO.

A motion was made by Ms. Gatslick to draft a letter to the AGO and seconded by Mr. Canty. The contents of the letter will include asking when the ESA will be made available to the Panel and why delays have arisen.

A vote was taken and the motion passed with 10 votes, 2 opposed.

Mr. Lampert asked whether the report about the monitoring wells (slide 7) during the Holtec update could be made available to the Panel. Mr. Noyes advised that he could make the report available once results from the samples are received.

Ms. Lampert asked to clarify what is meant by ultimate disposal. Mr. Pickering stated he meant disposal of the reactor system water informally known as the remaining 950,000 gallons of water.

Ms. Lampert asked whether more heaters were added. Mr. Noyes said no.

Mr. Canty raised concerns about evaporation and asked whether the state can act preemptively to avoid evaporation. A discussion took place between Mr. Pickering and Mr. Canty about evaporation and MassDEP's role.[8] It would depend on permit requirements.

Mr. Gottlieb reminded the Panel and public that pollutants other than Tritium exist in the water.

Ms. Lampert stated that the sampling that took place earlier in the year did not capture the pollutants at the bottom of the pool. She also reminded the Panel and public that certain pollutants are heavier than others and likely sank to the bottom.

[8] Minute Markers 1:49:00-1:52:00 of video. See: *Id*.

**PUBLIC COMMENTS & QUESTIONS**

Art Desloges provided an update on the citizens legislation he filed earlier in 2023.

Diane Turco expressed concerns about the evaporation taking place at the site. She then asked the Panel whether an independent investigation about the allegations listed in the anonymous letter could be conducted. Mr. Lampert indicated that her request requires a discussion prior to asking the Governor whether an investigation can occur.

Ms. Turco asked Mr. Noyes whether a copy of the design review feedback document could be made available. Mr. Noyes stated that the document is internal.

Paul Quintel asked Mr. Noyes how many trucks trips have been involved in transporting waste from the site since 2019. Mr. Noyes indicated that there have been at least 100 truck trips involved in transporting the waste.

Mr. Quintel then asked Mr. Pickering what more was MassDEP doing to ensure safety and transparency with regard to evaporation. Mr. Pickering indicated that Holtec was given guidance by MassDEP in accordance with state regulations.

Brian Campbell expressed his support for discharge and his dissatisfaction with offshore wind.

Jamile Graham thanked the Panel for its work.

Eileen Krakowski asked the following questions:

- Where was the waste material from the site being sent.
- Whether Mr. Noyes knows anything about the location receiving the waste.

Mr. Noyes indicated that the material was sent to a facility in Andrews, Texas and did not know much about that community.

Ms. Lampert mentioned that more indigenous individuals are located in Plymouth, Massachusetts than Andrews, Texas. The same is true for individuals who live below the poverty line. Ms. Lampert advised Ms. Krakowski to review the recent census data.

Ms. duBois clarified that the water containing tritium will not be sent to Andrews, Texas.

**ADJOURNMENT**

Prior to adjournment, Mr. Lampert indicated that there was not enough time to discuss issues for 2024. He advised that the next meeting session in January should include the discussion.

The meeting was adjourned around 9:00 p.m.

Holtec November  2023 Presentation

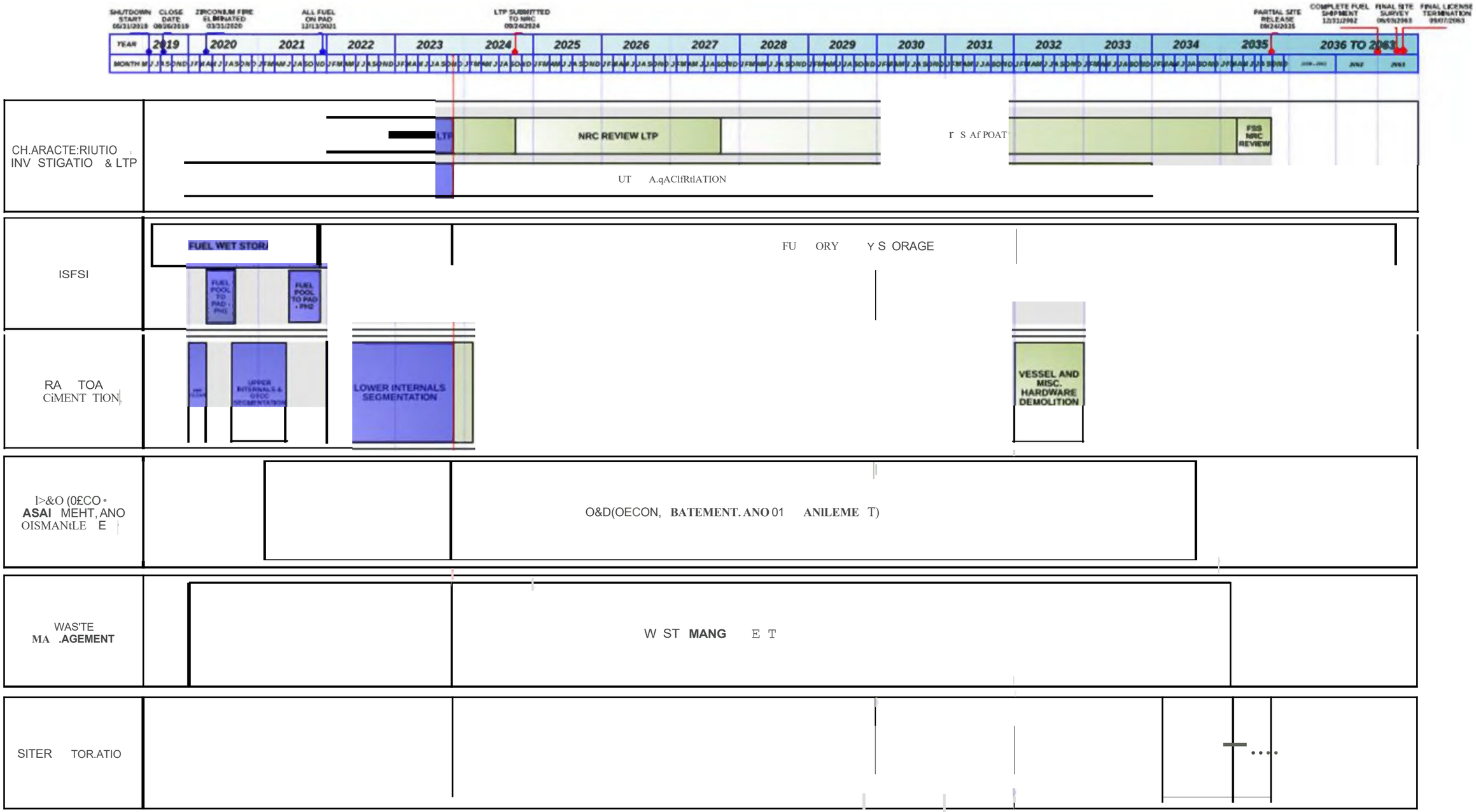
www.holtec.com

HOLTEC
DECOMMISSIONING
INTERNATIONAL

# Pilgrim NDCAP Update

November 27, 2023

# Waterfall Chart



# Demolition - Completed

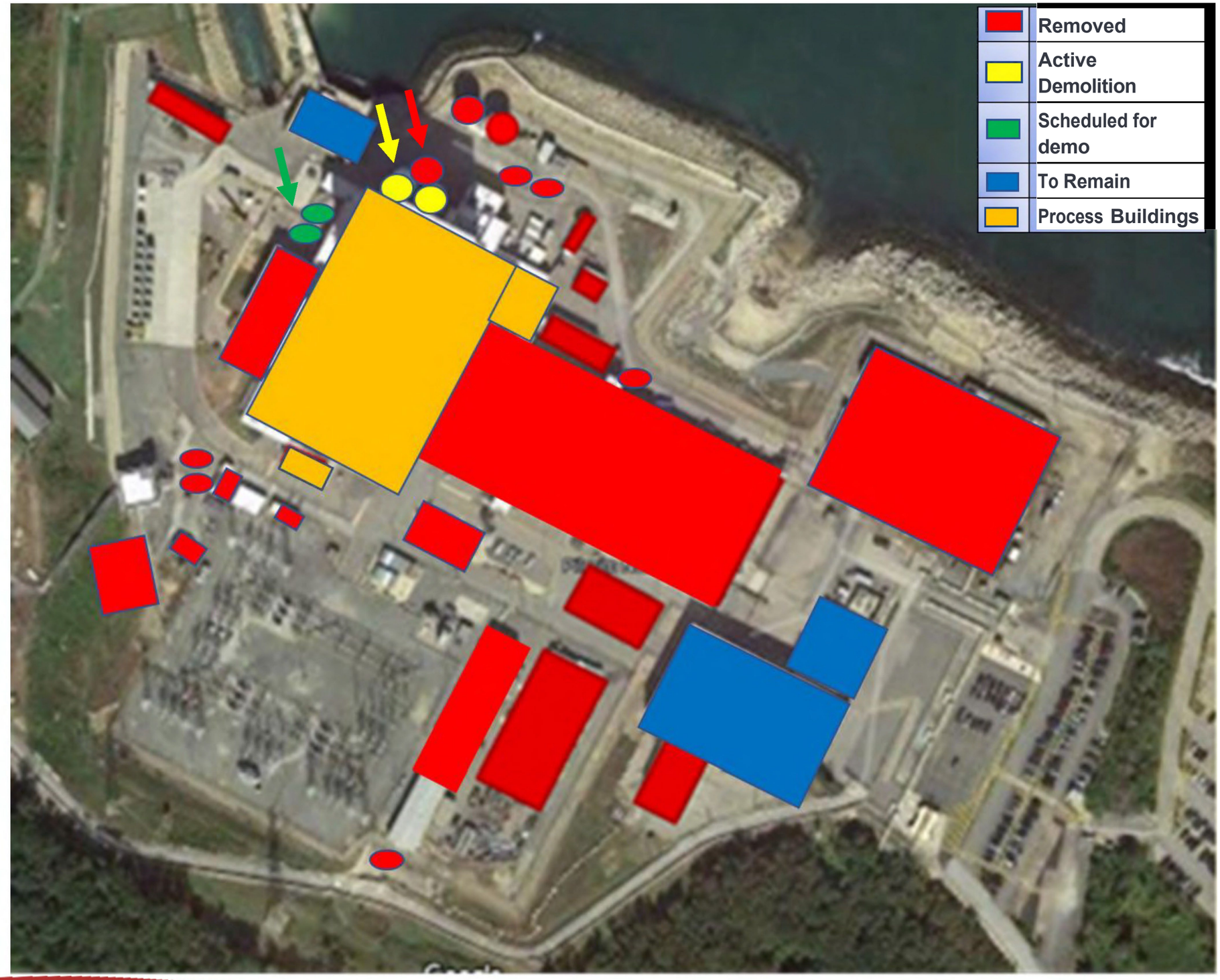
- Demineralized Water Storage Tank

# Demolition - Upcoming

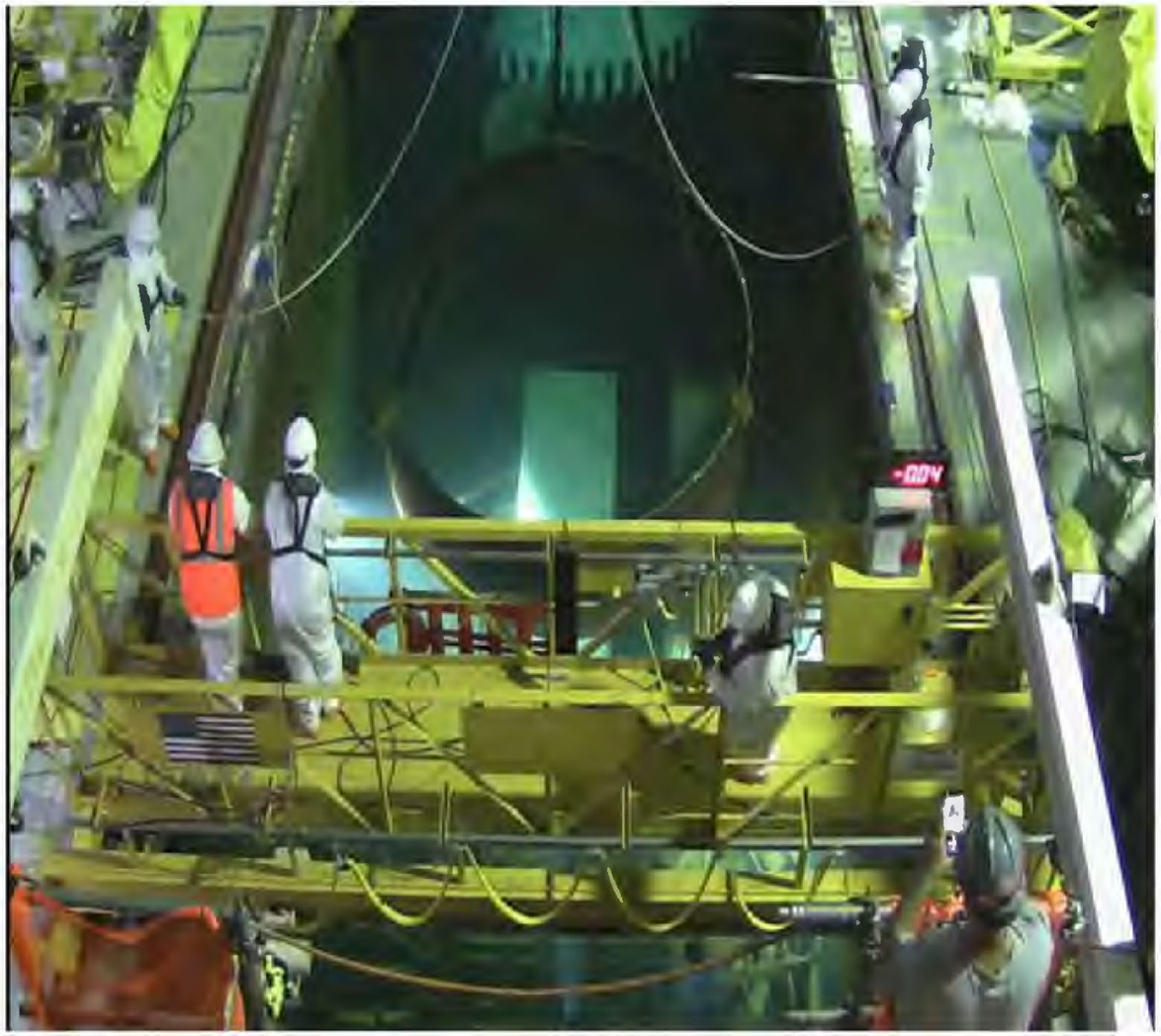
Above Ground Water Storage Tanks

- Condensate Storage Tanks (2) (275,000 gallons capacity each) to be completed by 12/15/23

# Demolition Status



# Reactor Internal Segmentation



In Progress

- Cut and Segment Shroud Ring
- Jet Pumps (20) removal and packaging
- B/C Waste packaging and staging scheduled to complete January 2024

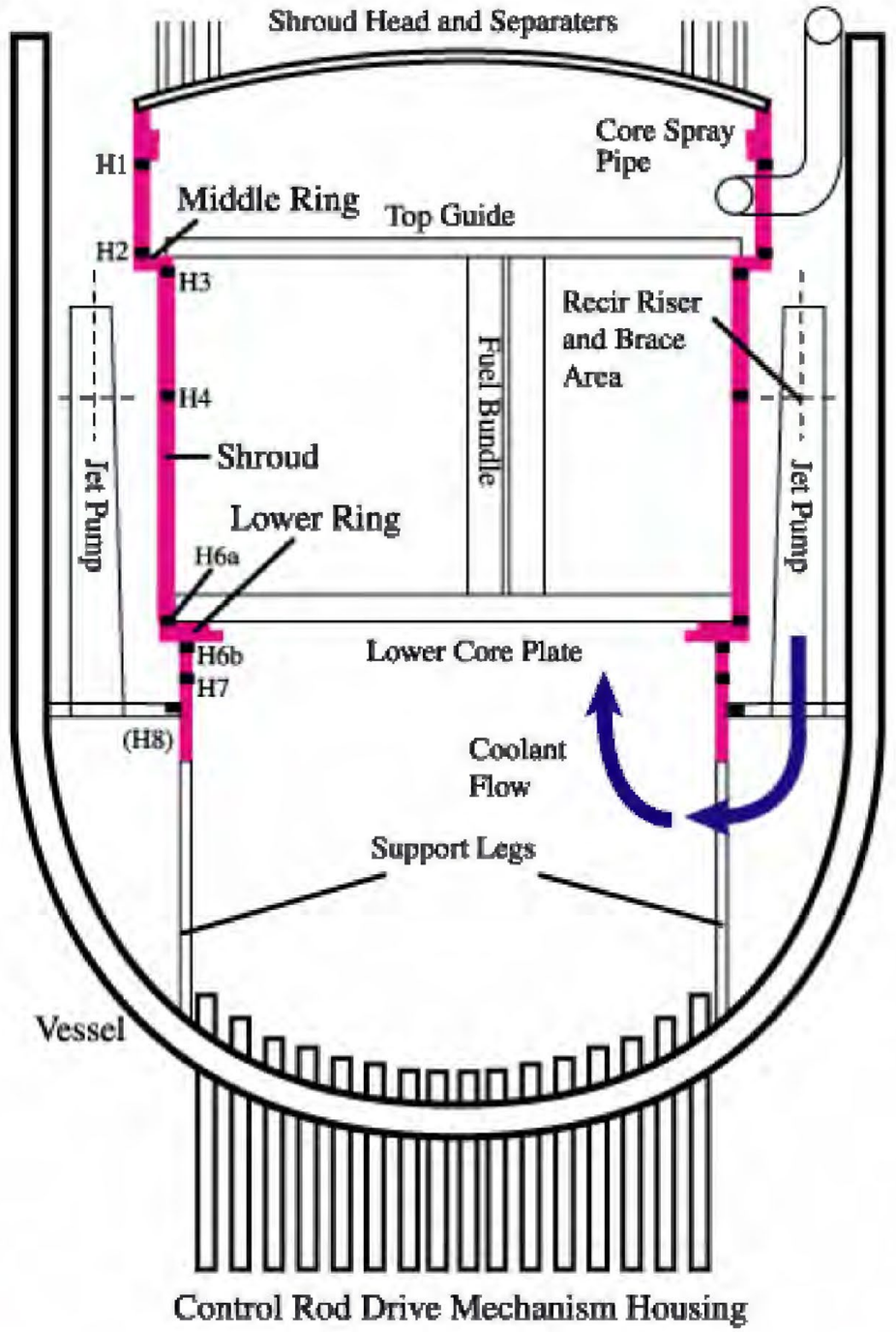



Figure is illustrative and not Pilgrim specific

# Site Characterization

- Confirmatory Groundwater Flow Gaging and Sampling were conducted 10/30/23 – 11/2/23
- 24 wells were sampled according to MassDEP approved sampling plan including target, upgradient, and downgradient wells for MCP reportable conditions
- Results expected in mid-December

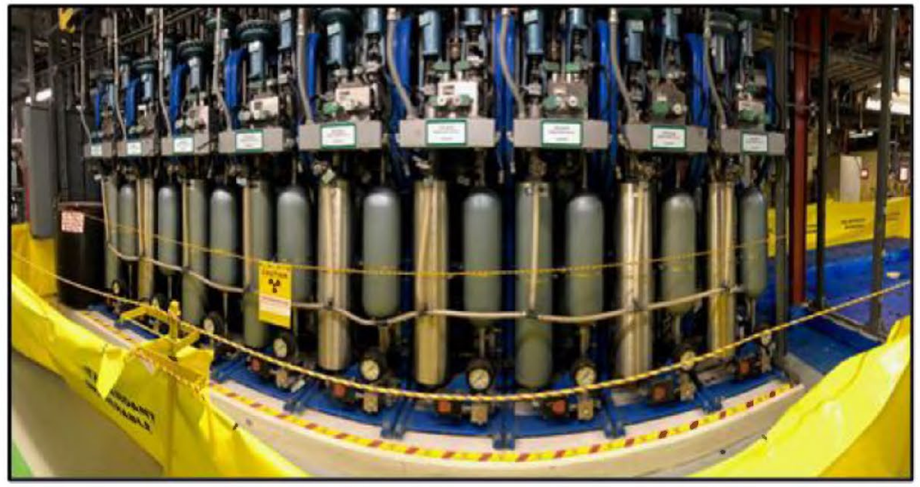
# Regulatory and Licensing

- 5 low activity sources unaccounted for during periodic inventory
- Sources are three Nickel 63 sources ranging in activity from 7.1 to 7.6 mCi, 1 Barium 133 source 0.0458 µCi, and 1 Tritium source 1.81 µCi
- Sources likely disposed of as radioactive waste during process building cleanout activities
- Causal analysis is in process to identify any concerns for extent of the causes or conditions noted.
- Due to the low activity associated with these sources, there was no impact to the health and safety of plant workers or the public

# Waste Management

Rounded values for waste shipped for disposal

| Calendar Year | Volume (CF) |
|---|---|
| 2019* | 11,300 |
| 2020 | 8,410 |
| 2021 | 58,000 |
| 2022 | 87,100 |
| Thru 11/13/2023 | 66,346 |
| | |
| 2019-2023 Totals | 231,156 |



* Includes a small quantity of waste shipped during the last operating cycle

# Evaporation

Fuel Pool, Cavity, and Dryer Separator Pit and to a certain extent the torus are open pools of water that evaporate. The amount of evaporation is determined by a number of factors including:

- Temperature of the water
- Temperature of the surrounding air
- Air flow across the water surface
- Ambient relative humidity of the air
- Agitation of the water's surface

# Evaporation

Water that evaporates includes Tritium in proportion to the concentration of tritium in the water. The total remaining tritium in the water volumes at Pilgrim is less than **12 Curies**

| Calendar Year | Offsite Dose (mr)* | Gaseous Tritium Released (Ci) | Equivalent Dose Released due to Tritium (mr) |
|---|---|---|---|
| 2022 | 0.16 | 2.38 | 0.000070** |
| 2021 FOP | 0.30 | 8.00 | 0.000235** |
| 2020 | 0.14 | 7.70 | 0.000265** |
| 2019 SD | 0.47 | 30.6 | 0.0009** |
| 2018 | 0.71 | 34.0 | 0.001** |
| 2017 | 0.76 | 48.0 | 0.0014** |
| 2016 | 0.77 | 64 | 0.00188** |

*Total offsite dose to a postulated most affected individual includes: direct radiation dose + airborne radioactivity (including food chain deposition and bioaccumulation) + liquid discharge associated dose (including food chain deposition and bioaccumulation)

** This value derived from 2022 data where 0.000070 mrem was attributed to 2.38 Ci of tritium and 0.000042 Ci of particulate radionuclides. The particulate radionuclides were discounted in this table and the entire gaseous effluent dose was (conservatively) attributed to tritium.

# Heating of Reactor Cavity

Heaters were installed at the beginning of 2023 to:

- Reduce drying time of containerized waste removed from the pool
- Improve localized working conditions for individuals on the refueling floor
- The facility's design review process was followed and found comprehensive by NRC's inspection

The net impact of operation of the heaters was to raise average water temperature in the reactor cavity to approximately 100°F

- 25°F below the maximum temperatures in the Spent Fuel Pool and Reactor Cavity during plant operation and defueling
- An approximate tritium release of 1.2 Curies and an offsite dose of .00003 millirem

| Calendar Year | Gaseous Tritium Released (Ci) | Equivalent Dose Released due to Tritium (mr) |
|---|---|---|
| **1st and 2nd Qtr 2023 (91 days) heating period / prorated for year** | **1.2 / 4.8** | **0.00003 / 0.00012** |
| 2022 | 2.38 | 0.000070** |
| 2021 FOP | 8.00 | 0.000235** |
| 2020 | 7.70 | 0.000265** |
| 2019 SD | 30.6 | 0.0009** |
| 2018 | 34.0 | 0.001** |
| 2017 | 48.0 | 0.0014** |
| 2016 | 64 | 0.00188** |

# Heating of Reactor Cavity and Spent Fuel Pool

Heaters in the reactor cavity and spent fuel pool were energized 11/22/23:

- Improve localized working conditions for individuals on the refueling floor
- Support heat transfer to reactor building to prevent fire and other system freezing
- The net impact of operation of the heaters is to raise average water temperature in the reactor cavity and spent fuel pool
- maintain below the maximum temperatures in the Spent Fuel Pool and Reactor Cavity during plant operation and defueling

# 2023 NDCAP Membership

- Chair - John T. Mahoney
  Appointed by the Plymouth Select Board, 2017, 2022

- Vice Chair - Pine duBois,
  Appointed by the Speaker of the House, 2017, 2023

- Representative William Crocker, Southeast Regional Director of Massachusetts Office of Business Development appointed 2022; resigned 2023
  Designee of Executive Office of Housing and Economic Development (EOHED)

- Jonathan Goldberg, appointed May 22, 2023, resigned November 2023
  Designee of the Secretary of Health and Human Services (HHS)

- Robert Hayden, ex officio. Commissioner DPU, resigned April 7, 2023
  Designee of the Commissioner Public Utilities

- Seth Pickering ex officio. June 2021
  Designee of the Secretary of Energy and Environmental Affairs
  Deputy Regional Director MA DEP-SERO

- Jack Priest, Director, MA DPH Radiation Control Program
  Appointed by the Department of Public Health, 2017, 2022

- Jennifer R. Roberson, (May 22, 2023)
  Commonwealth of Massachusetts, Department of Public Utilities (DPU) designee

- John Slocum, appointed November 2023
  Designee of the Commissioner Public Utilities

- John L. Viveiros, Technical Hazards Unit Supervisor, appointed December 2021
  Designee of Massachusetts Emergency Management Agency

- Henrietta Consentino
  Appointed by the Plymouth Select Board, November 2021

- Michael Fortini
  Appointed by Senate Minority Leader, 2023

- Mary J. Gatslick, Elected Vice-Chair November 2023
  Appointed by the Minority Leader of the Senate, 2022

- Andrew Gottlieb
  Appointed by the Governor, November 2022

- James B Lampert, Elected Chair November 2023
  Appointed by the Speaker of the House, October 2022

- Mary E. Lampert
  Appointed by the Senate President, 2021

- John Moylan, Site Vice-President, Holtec-Pilgrim, 2019
  Appointed by Owner of PNPS

- Amy Naples, Exec. Director, Plymouth Area Chamber of Commerce
  Appointed by the Senate President, resigned (2023)

- David C. Nichols
  Appointed by the Governor, 2017

- David Noyes, HDI Senior Manager, Compliance
  Appointed by Owner of PNPS

- Kelly O'Brien
  Representative of the Utility Workers Union of America, UWUA, Local 369, 2022 Vacancies

- Mary Waldron, Exec. Director Old Colony Planning Council (OCPC)
  Appointed by the OCPC, 2020

- Kevin Canty, Vice Chair of the Plymouth Select Board
  Appointed by the Plymouth Select Board