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DECOMMISSIONING
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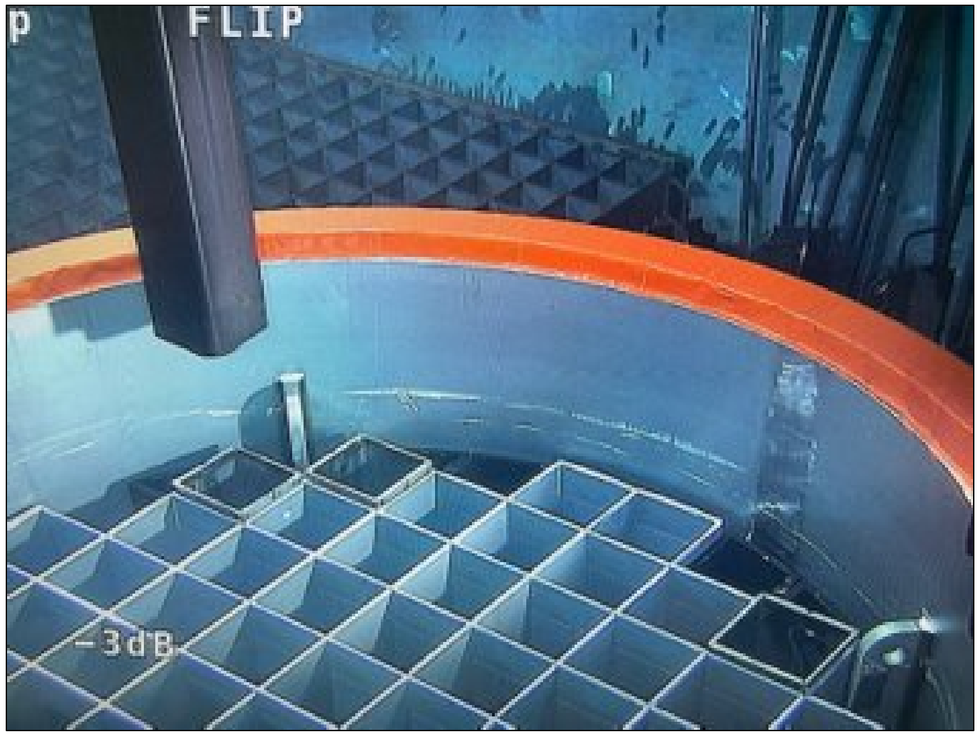
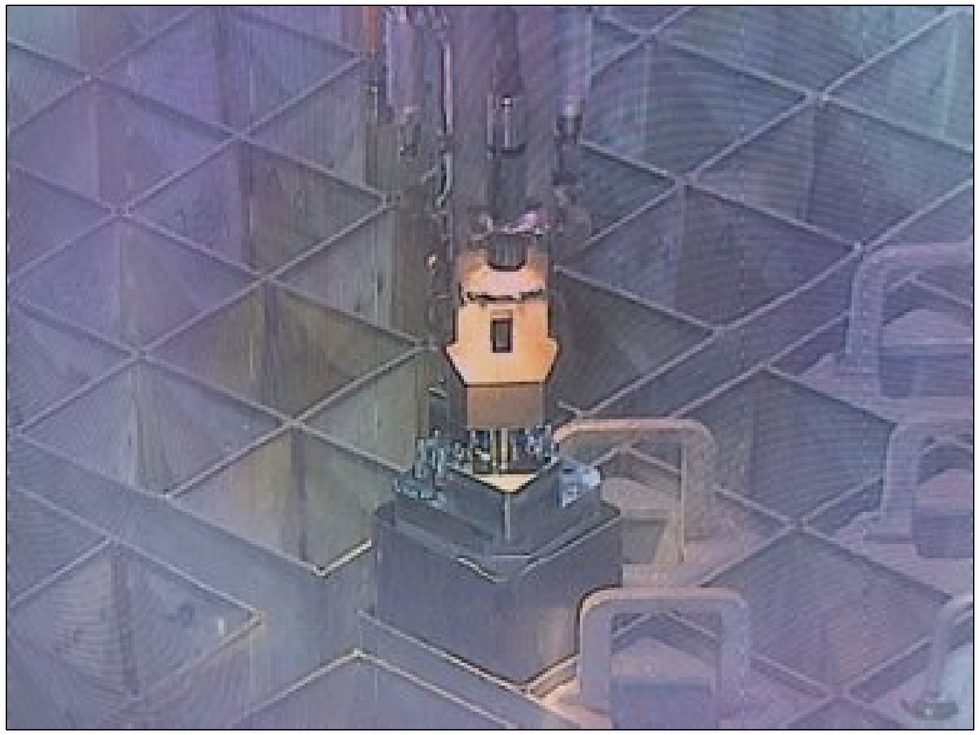
# Pilgrim NDCAP Update

January 31, 2022

# Pilgrim Update-Fuel Campaign

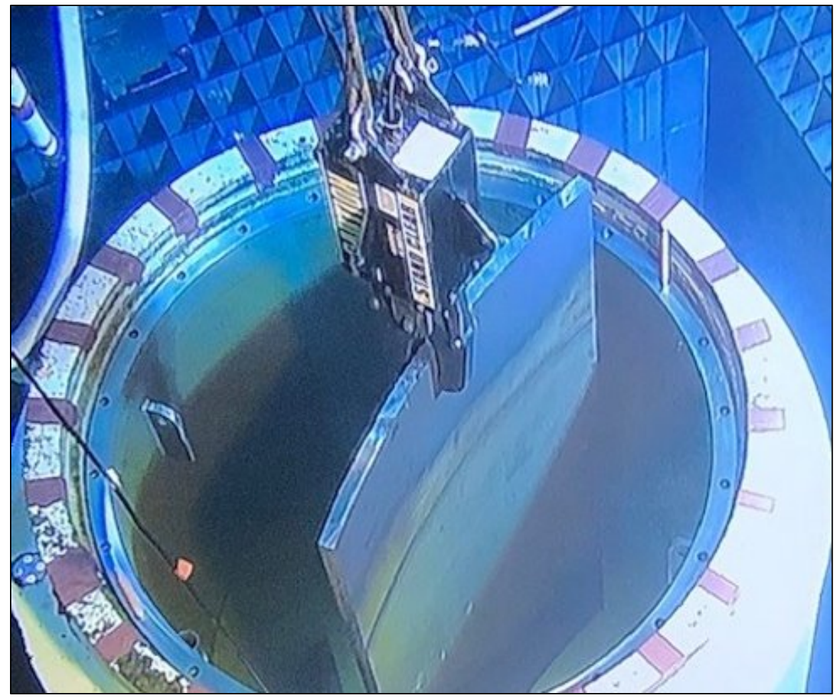
- Completed fuel loading campaign of 45 casks in December, ISFSI-Only
- 62 Casks in total stored



# Pilgrim Update Greater-than-Class C (GTCC) Waste

- Loaded 1 of 3 Greater-than-Class C Non-Fuel Waste Containers (NFWC)
- Core shroud segment loading into NFWC shown upper right
- NFWC being lowered in HI-Trac in lower right picture
- All GTCC to ISFSI pad projected by the end of the 1st quarter 2022



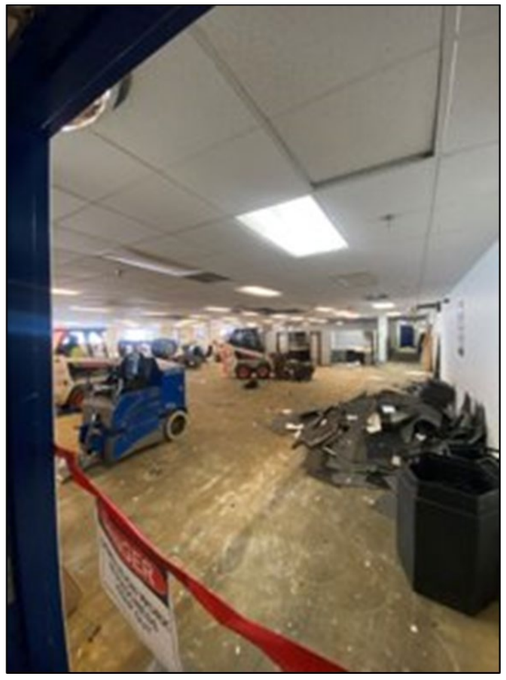
# Pilgrim Update-Demolition

- Operations and Maintenance Bldg.
- Asbestos Abatement – Complete
- DEP Asbestos closeout inspection - Complete
- Demolition began January 24 and is projected to end mid-March

- Fitness for Duty Bldg.
- Abatement  and demolition completed early December

# Demolition cont.

- Admin Executive Bldg.
- Abatement to occur by mid-February
- Demolition to follow by late March



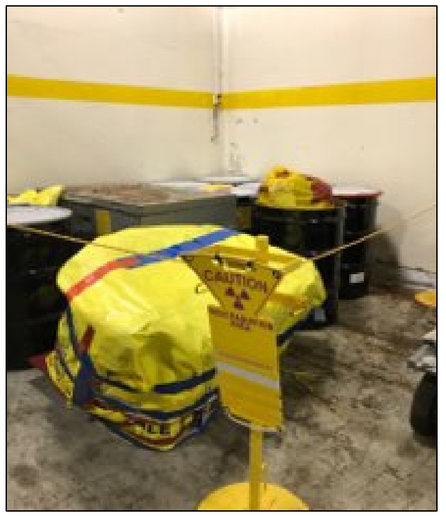
- Two-Story Buter Building
- Abatement to occur mid- March
- Demolition to follow end of March

# Pilgrim Update-Waste Management

- Radioactive Waste Management
  - 5 x Type B Containers (Reactor Vessel internals)

- Radioactive Waste Shipments – Completed in 2021
  - 1 x Type B resin shipment RAM QC
  - 11 x Type A containers (Class A waste)
  - 22 x DAW shipments (42 x 20’ C Vans)
  - 49 x concrete shield blocks
  - 3 x DAW asbestos containing material

- Radioactive Waste Shipments - Planned 2022
  - Dry Active Wastes ( DAW)
  - Reactor Vessel Internals - Type A containers
  - Spent Resins & Filters in Cask Shipments
  - Spent Fuel Racks
  - Building Demolition Debris





# Pilgrim Update – Regulatory Affairs

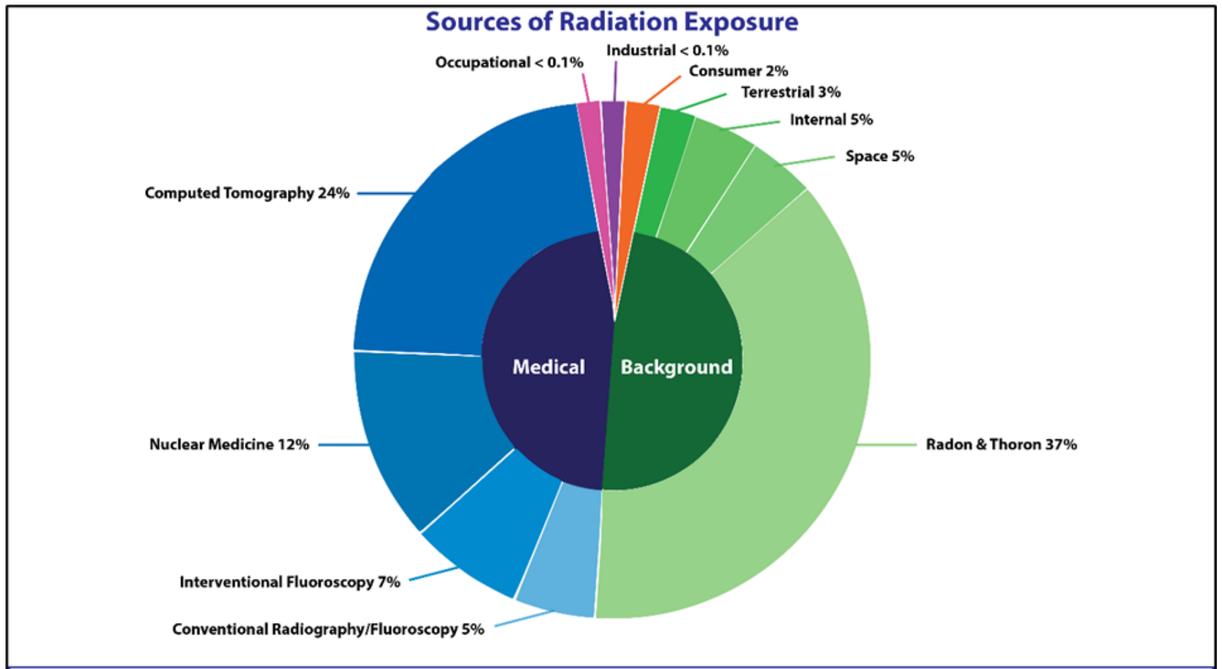
- **November Electrical Vault Discharge** - On November 29, 2021, the results of residual samples of the water from the vault adjacent to the Engineering Support Building outside of the Protected Area were provided to US EPA. The results of these analyses are favorable with respect to drinking water standards and EPA standards for protection of aquatic life.

- **Barge/Waste Management Update response to AG** - The Waste Management Plan has been submitted to Commonwealth of Massachusetts parties required by the agreement. No comments have been received. On the Barge study our assessment of the use of low-level waste shipments via barge determined that these are currently not feasible due to uncertainty and work necessary to restore the facility barge berth.

- **ESA Workplan Comments** - On Wednesday, January 26 we received Mass. AG notification identifying that the ESA Work Plan failed to comply with the Settlement Agreement. We are working with the our LSP to review the feedback and close any gaps within 30 days as required by the Agreement.

# Pilgrim Update – Historical Effluent Discharges

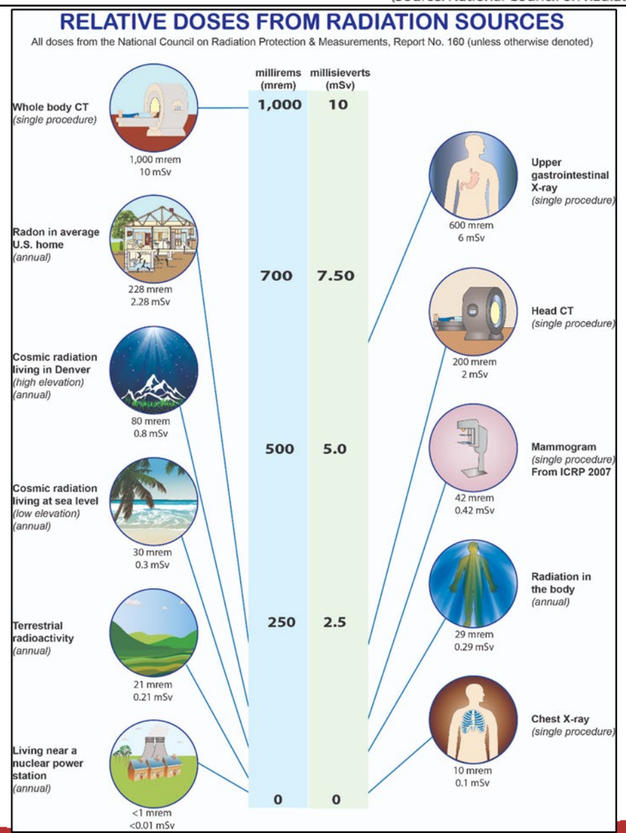
- According to the Environmental Protection Agency the average American receives 620 millirem of radiation annually from both natural (radon, natural minerals, cosmic, terrestrial) and man-made (x-rays, CT scans, nuclear medicine) sources.
- The safe limits that the NRC sets regarding dose to a member of the public from a nuclear power plant is 100 millirem, while the EPA standard is 25 millirem. These safe limits are based on science and were set using a public comment period.
- Releases from nuclear power plants typically do not total more than 1 millirem annually.




**Average Annual Radiation Dose**

| Sources | Radon & Thoron | Computed Tomography | Nuclear Medicine | Interventional Fluoroscopy | Space | Conventional Radiography/ Fluoroscopy | Internal | Terrestrial | Consumer | Occupational | Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Units** | | | | | | | | | | | |
| mrem (United States) | 228 mrem | 147 mrem | 77 mrem | 43 mrem | 33 mrem | 33 mrem | 29 mrem | 21 mrem | 13 mrem | 0.5 mrem | 0.3 mrem |
| mSv (International) | 2.28 mSv | 1.47 mSv | 0.77 mSv | 0.43 mSv | 0.33 mSv | 0.33mSv | 0.29 mSv | 0.21 mSv | 0.13 mSv | 0.005 mSv | 0.003 mSv |

(Source: National Council on Radiation Protection & Measurements, Report No. 160)



# Pilgrim Update – Historical Effluent Discharges

- **Q: What is the water in question?**

*A*: The remaining water is the volume of water leftover from plant operations.

During operations and decommissioning, nuclear power plants periodically release treated water. These releases are regulated by U.S. Nuclear Regulatory Commission (NRC) and U.S. Environmental Protection Agency (EPA) and are typically indistinguishable from the natural radioactivity present in the environment. We also comply with EPA/Massachusetts State issued National Pollutant Discharge Elimination System (NPDES) permit requirements for constituents that may be released.

These release levels referenced above have been establish via scientific means and are considered safe and protective of the environment and people.

For perspective, Pilgrim's historical releases both via liquid and gaseous sources in the last 15 years have averaged a total of **0.12** millirem annually, or **833 times lower** than the NRC limit and **208 times lower** than the EPA limit, or **33 times lower** than the dose you personally would receive if you were to take a plane from New York to Los Angeles in the summer, which is 4 millirem.

# Pilgrim Update – Historical Effluent Discharges

- **Q: Who regulates the process?**

A: All nuclear power plants are required to have NRC-approved procedures that require treatment, such as filtration of the water to reduce the radioactivity to levels as low as reasonably achievable. The water can then be released through radiation monitors in batches that are sampled prior to release to ensure the water released is well below regulatory requirements.  The facility routinely calibrates and maintains the equipment associated with the processing system and radiation monitors to ensure that they are operating properly.

The NRC routinely inspects the work performed by the facility to ensure that it is performed properly and meets regulatory standards. The NRC last inspected the systems at Pilgrim in 2021 and found them to be compliant with regulatory requirements.  The NRC will continue to inspect Pilgrim until the plant is completely decommissioned and ensure all activities are conducted in a manner protective of public health and safety.

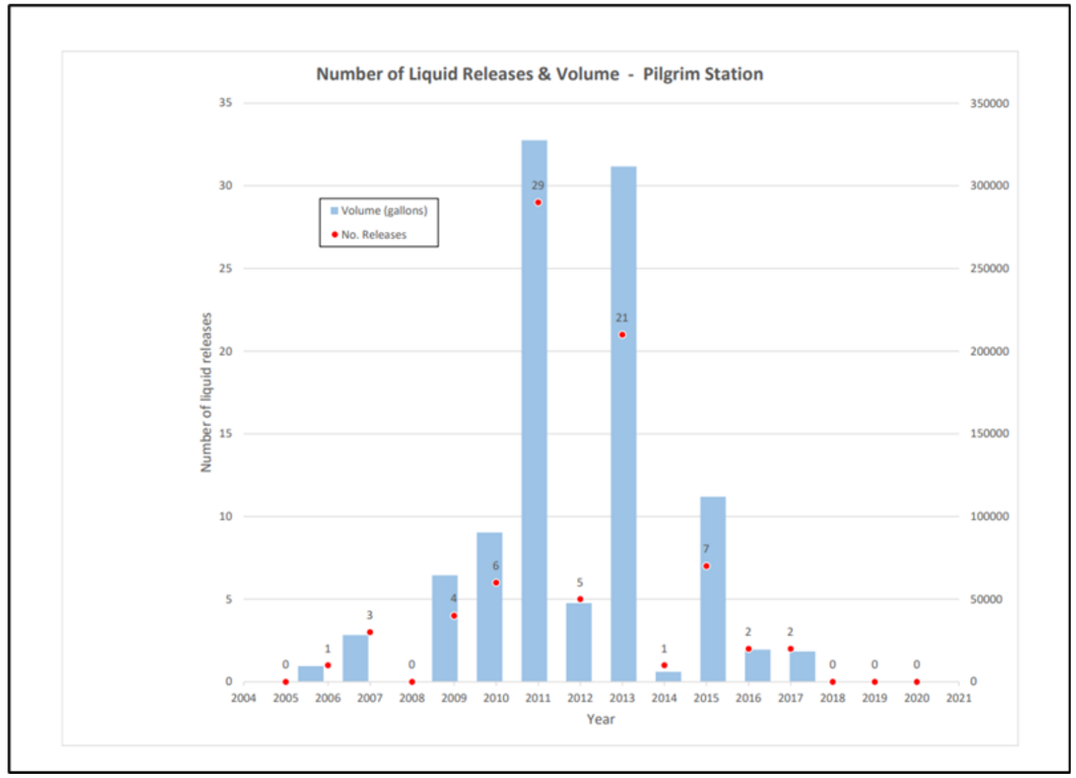
As part of the Holtec and Commonwealth of Massachusetts agreement, Holtec is required to submit the Annual Radioactive Effluent Release Report to the State at the same time as the NRC and comply with the National Pollutant Discharge Elimination System permit issued by the State Dept. of Environmental Protection and Federal Environmental Protection Agency.

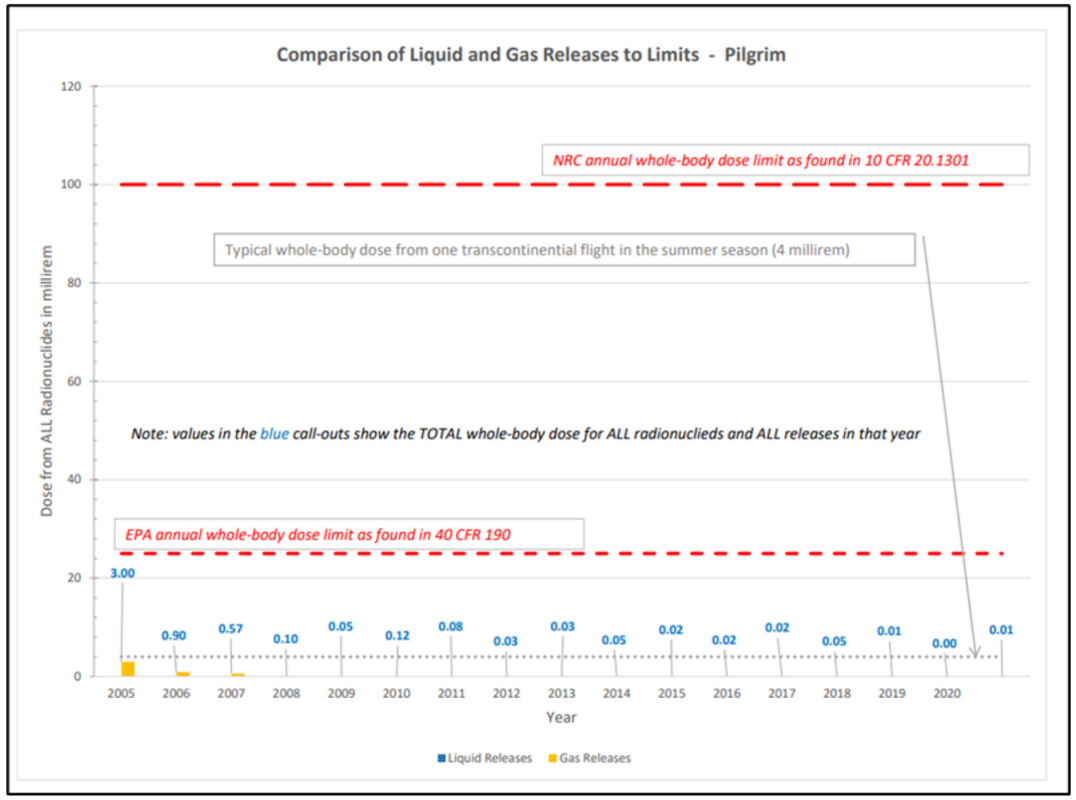
# Pilgrim Update – Historical Effluent Discharges

- **Q: In recent times, what are the largest releases in a calendar year?**

A: In the last 15 years the two largest liquid releases have been 2011 with 29 releases totaling approximately 325,000 gallons, and 2013 with 21 releases totaling approximately 310,000 gallons. Each of the releases were safely batched in smaller volumes over the year (not a single continuous discharge).

The total dose released for both the liquid release above, as well as the gaseous (evaporative) release, **was 0.08 millirem in 2011, 1,250 times lower than the NRC limit & 312 times lower than EPA, and 2013 was 0.03 millirem, 3,333 times lower than the NRC limit and 833 times lower than the EPA limit.**



# Pilgrim Update – Historical Effluent Discharges

- **Q: What are the options for disposal?**

A: There are three options for disposal, evaporation of the water, treating and discharging under an approved permit, or transporting the water to be evaporated or treated and released in a similar processing method to how the site treats water.

- **Q: Is Pilgrim looking at those options?**

A: Yes, we have committed to evaluating all options, and a combination of options, for disposition. As previously stated, **Pilgrim has evaporated over 680,000 gallons of water over the past two years** using the residual heat to aid the evaporation process. This gaseous release through the building air handling system is filtered and monitored.

With residual heat not available, evaporation would require an alternate heat source, and the use of carbon creating fossil fuels, like oil or natural gas, to evaporate that large a quantity of water.

Transporting to a facility that would process and release the water in the same manners and under a similar type of permit would require hundreds of truck trips, which creates the potential for accidents and still requires a release to the environment after a similar process to how Pilgrim treats water on site.

In all likelihood, discharge, evaporation, and some limited transportation will be a part of the final disposition of liquid once we complete our evaluation of the risks and benefits associated with all the options.