U.S. DEPARTMENT OF ENERGY

SRS™

Liquid Waste System Overview

Presented to the Citizen's Advisory Board

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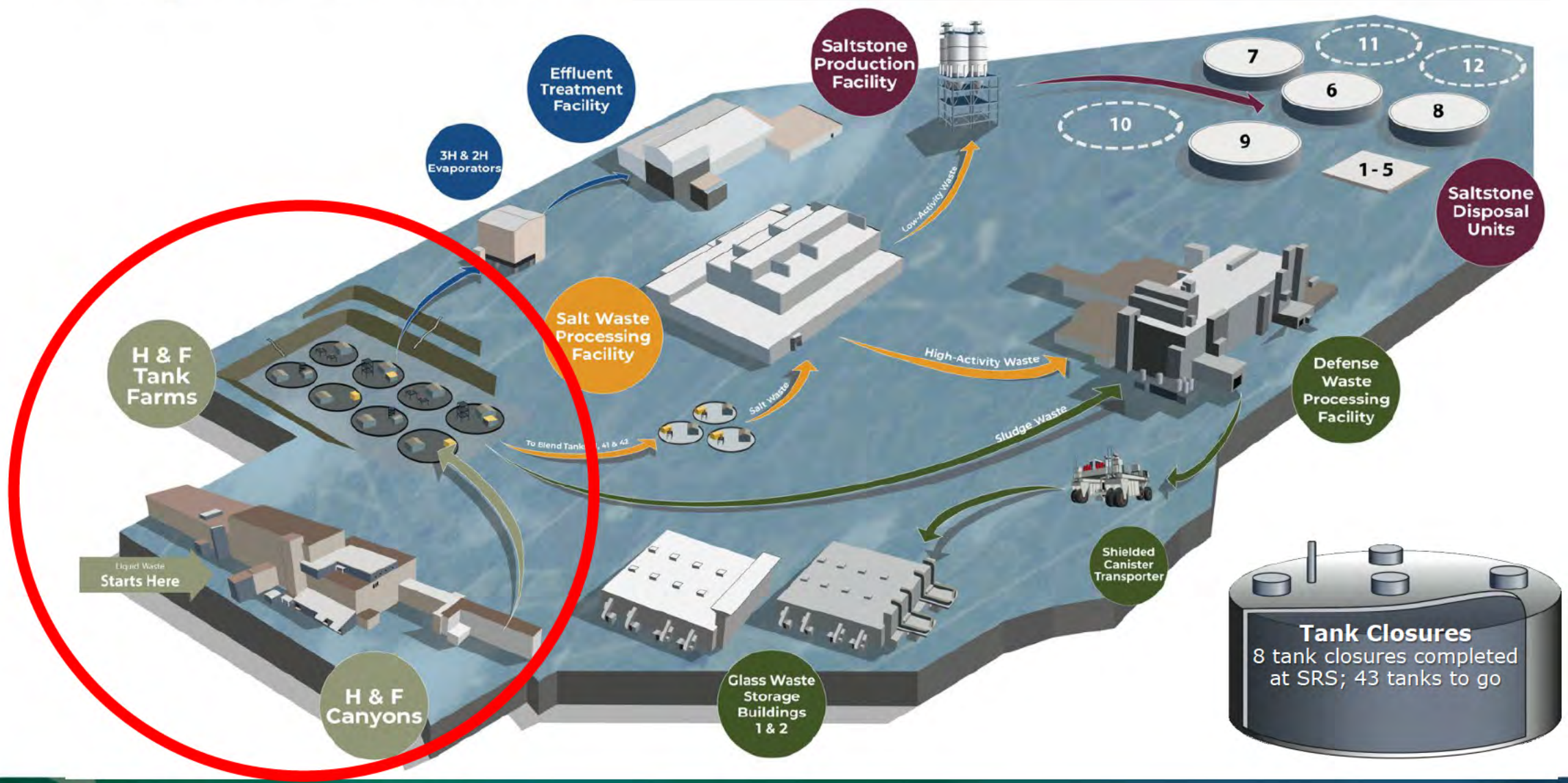
Full Citizen's Advisory Board Meeting
March 13 & 14, 2023

History of SRS Liquid Waste

- During the 1950s, SRS began to produce materials used in nuclear weapons.
- 5 reactors were built to produce these nuclear materials.
- Irradiated materials were moved from the reactors to one of the two chemical separations plants, know as F-Canyon and H-Canyon.
- In the canyons, the irradiated fuel and target assemblies were chemically processed to separate useful products from waste.
- In addition to providing special nuclear materials for the atomic weapons program, SRS also produced isotopes for medical, research, and NASA missions.
- The waste now sits in waste tanks located in two waste tank farms, F-Tank Farm and H-Tank Farm.

Our Mission: treat and dispose of radioactive waste and operationally close both liquid waste tank farms at SRS in a manner that safely, efficiently, and effectively protects workers, the public, and the environment.

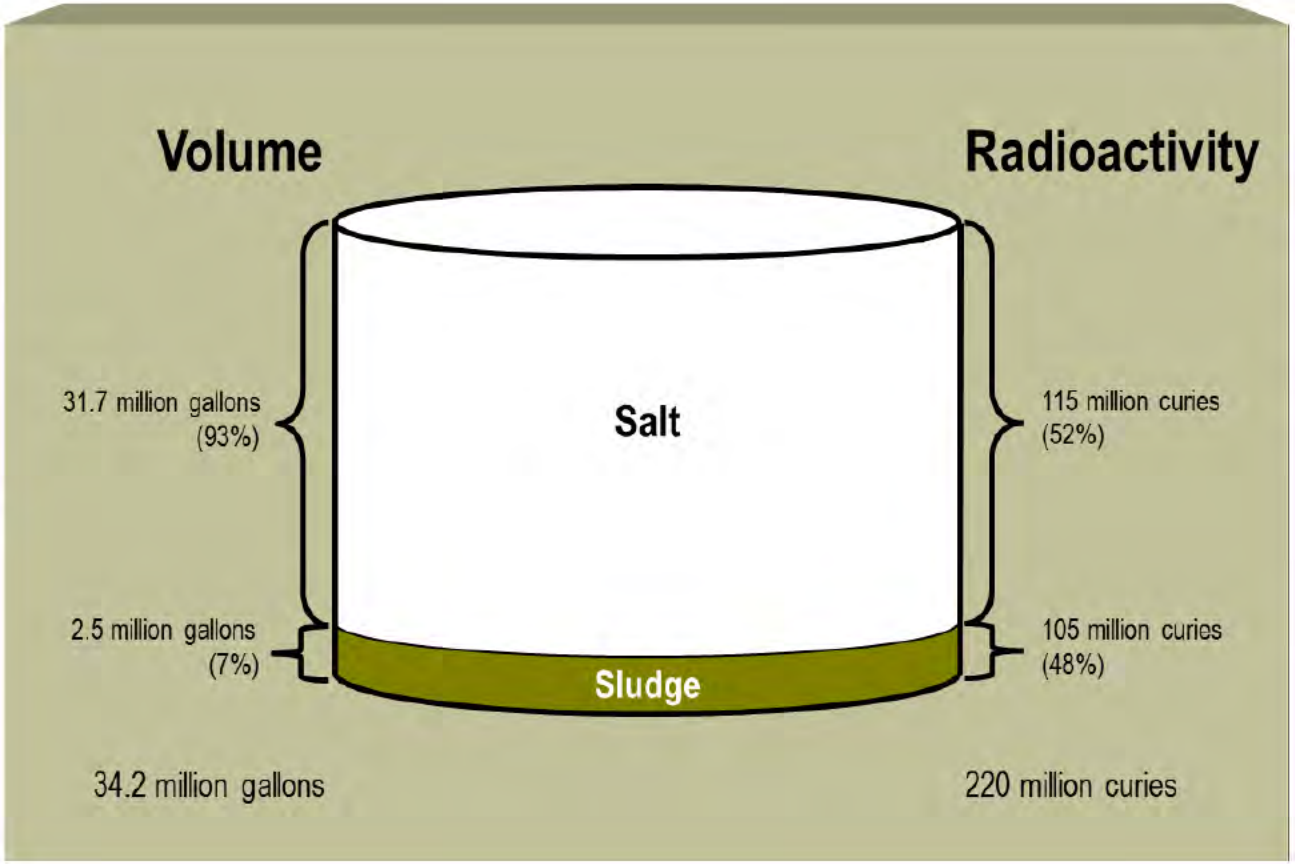
SRS Liquid Waste Facilities



F Tank Farm

H-Area & F-Area Tank Farms

- 51 tanks total; 8 have been closed
- Each tank has a different composition of waste
- 4 different styles of tanks; 3 old-style (non-compliant) and 1 new-style (compliant)
- Priority tanks for waste removal are tanks located in the water table



Waste Retrieval

- Processing 1.0 gallon of settled sludge increases new style tank inventory by 1.3 gallons.
- One tank full of saltcake (1.3 million gallons) dissolves into more than 3 tanks full of dissolved salt.

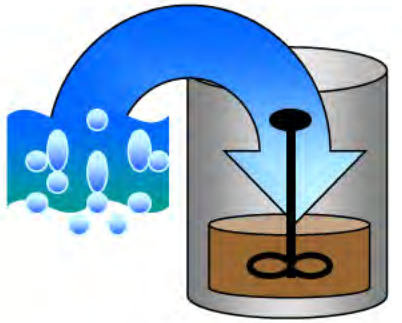
Storing Waste

16 Older Style
27 New Style

8 Closed Tanks (Older Style)

51 Total

Removing Waste from Tanks



Water and Liquid Waste

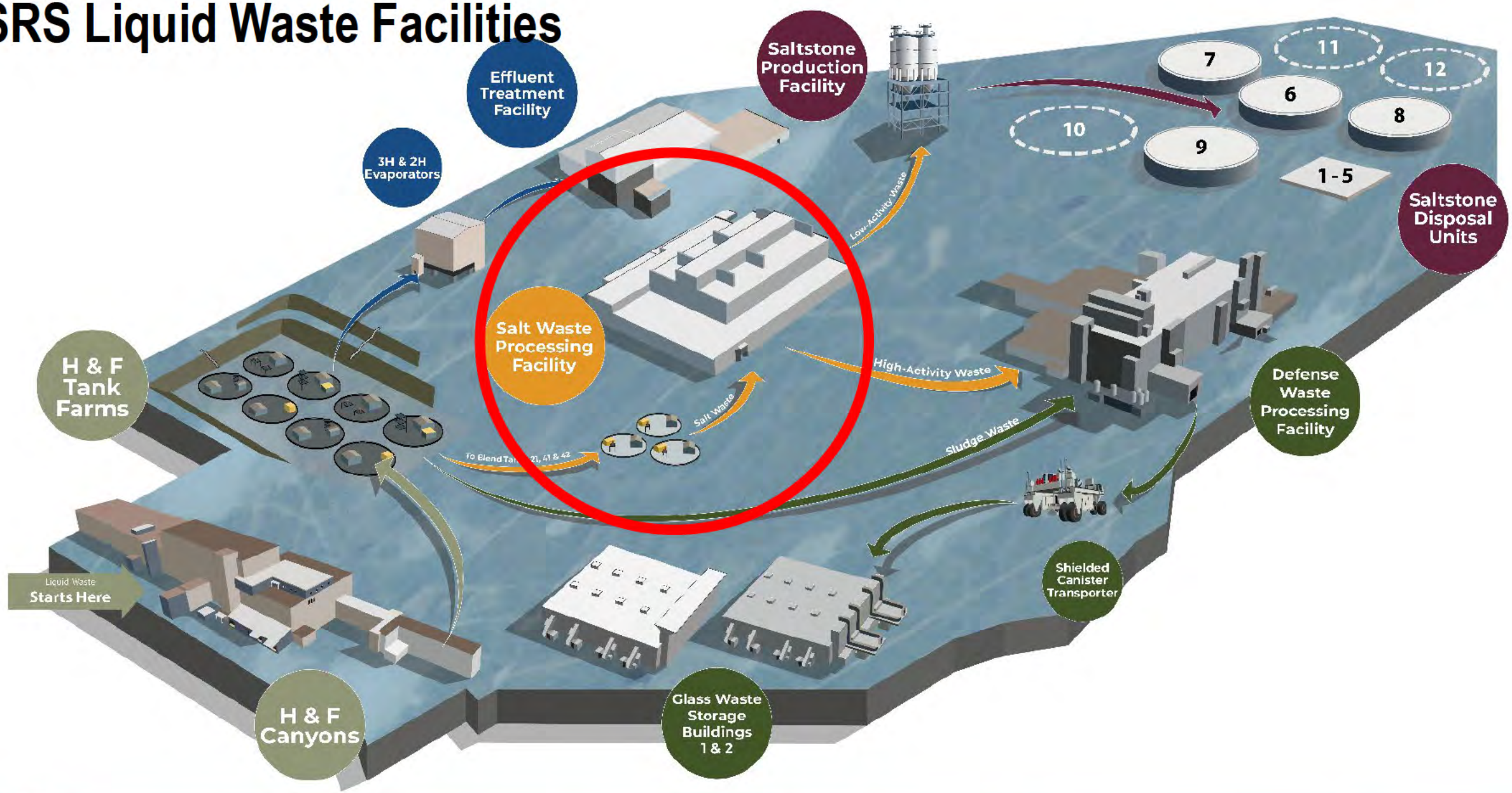
Is focused on the Old Style Tanks first as space in new style tanks allows.

Where does the waste go?

Salt Waste Processing Facility (SWPF)

Defense Waste Processing Facility (DWPF)

SRS Liquid Waste Facilities



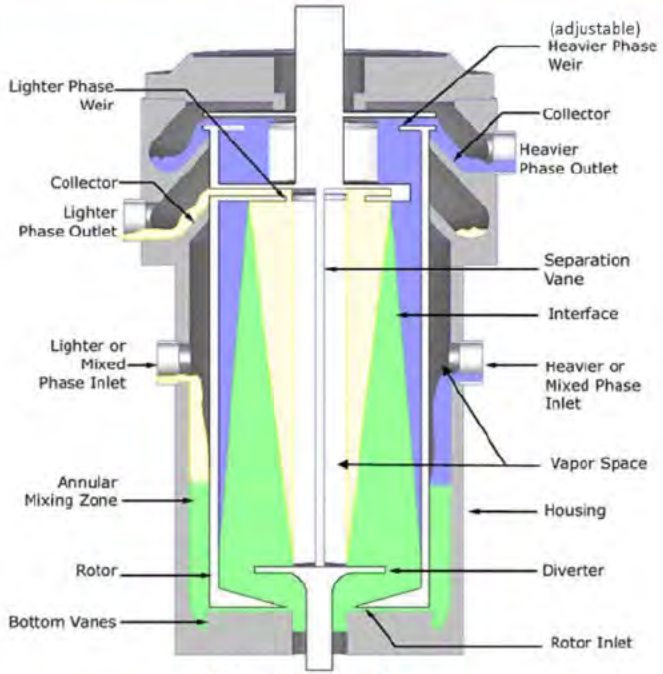

Salt Waste Processing Facility

Salt Waste Processing Facility (SWPF)

- Began “hot” commissioning in October 2020
- Processes the salt waste through two methods

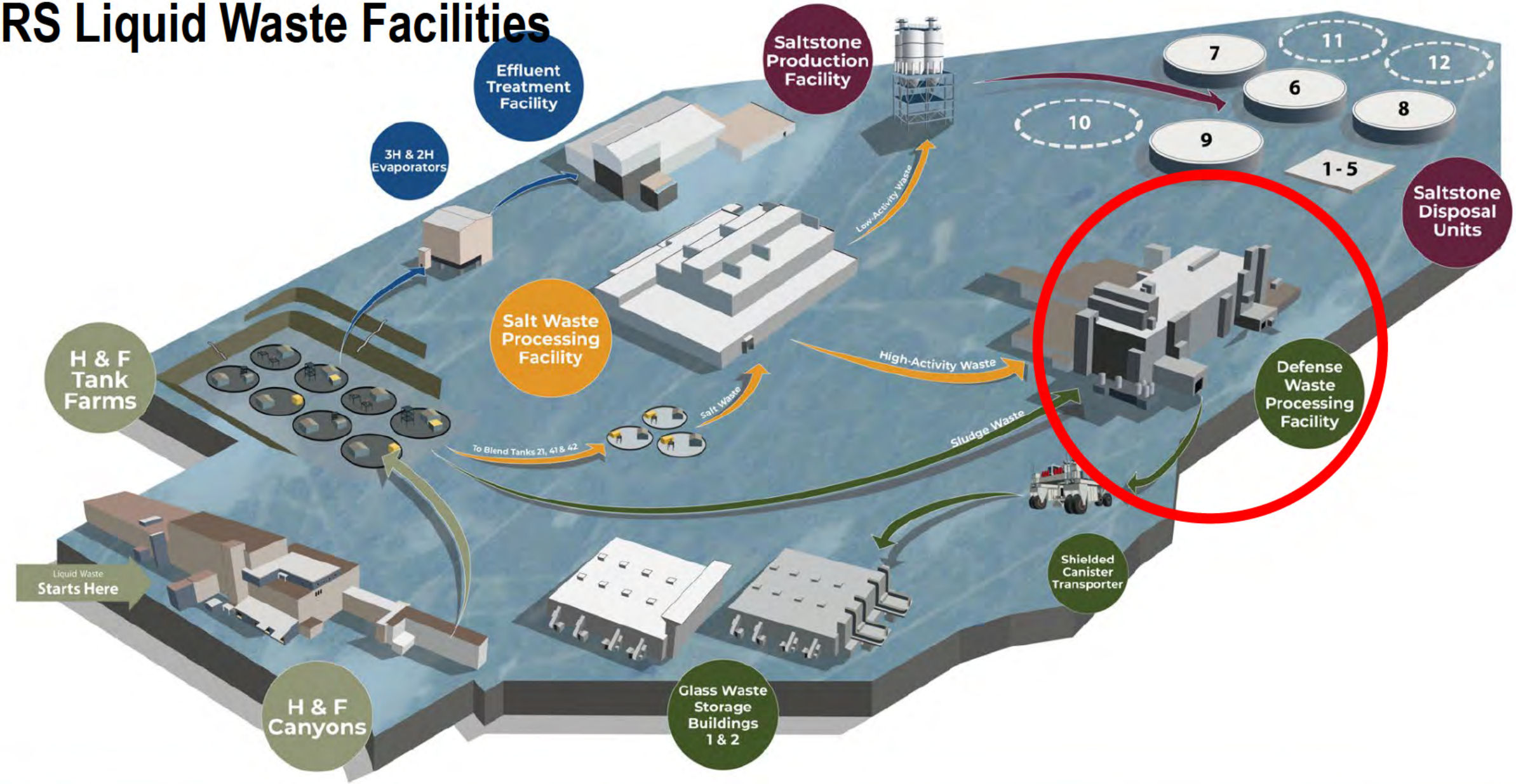
  1st: Filtration: waste is pushed through filters to remove radioactive solids

  2nd: Extraction: waste is spun through centrifugal contactors to separate the cesium-laden material from the aqueous solution
- The concentrated high activity waste is sent to the Defense Waste Processing Facility
- The decontaminated salt solution is sent to the Saltstone Production Facility



Contactor

SRS Liquid Waste Facilities



Two Disposition Paths

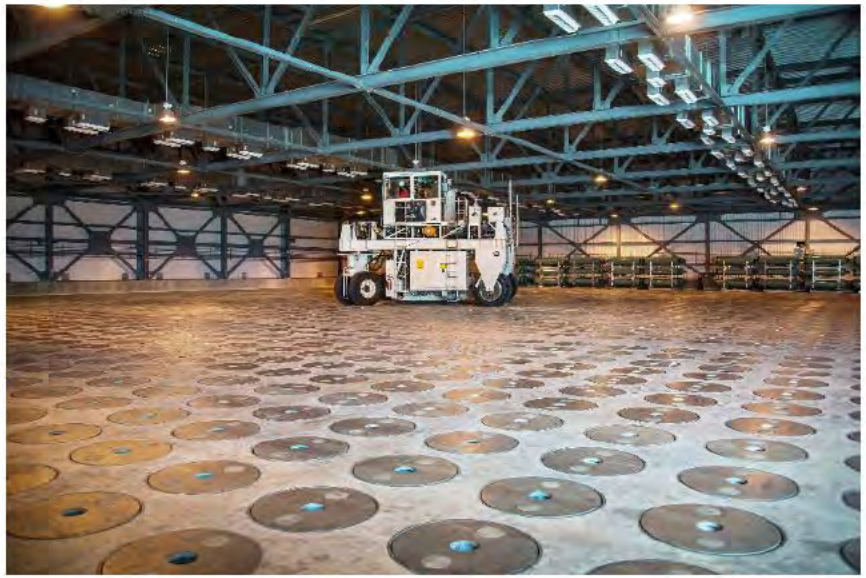
Glass Waste Canisters

Saltstone Disposal Units

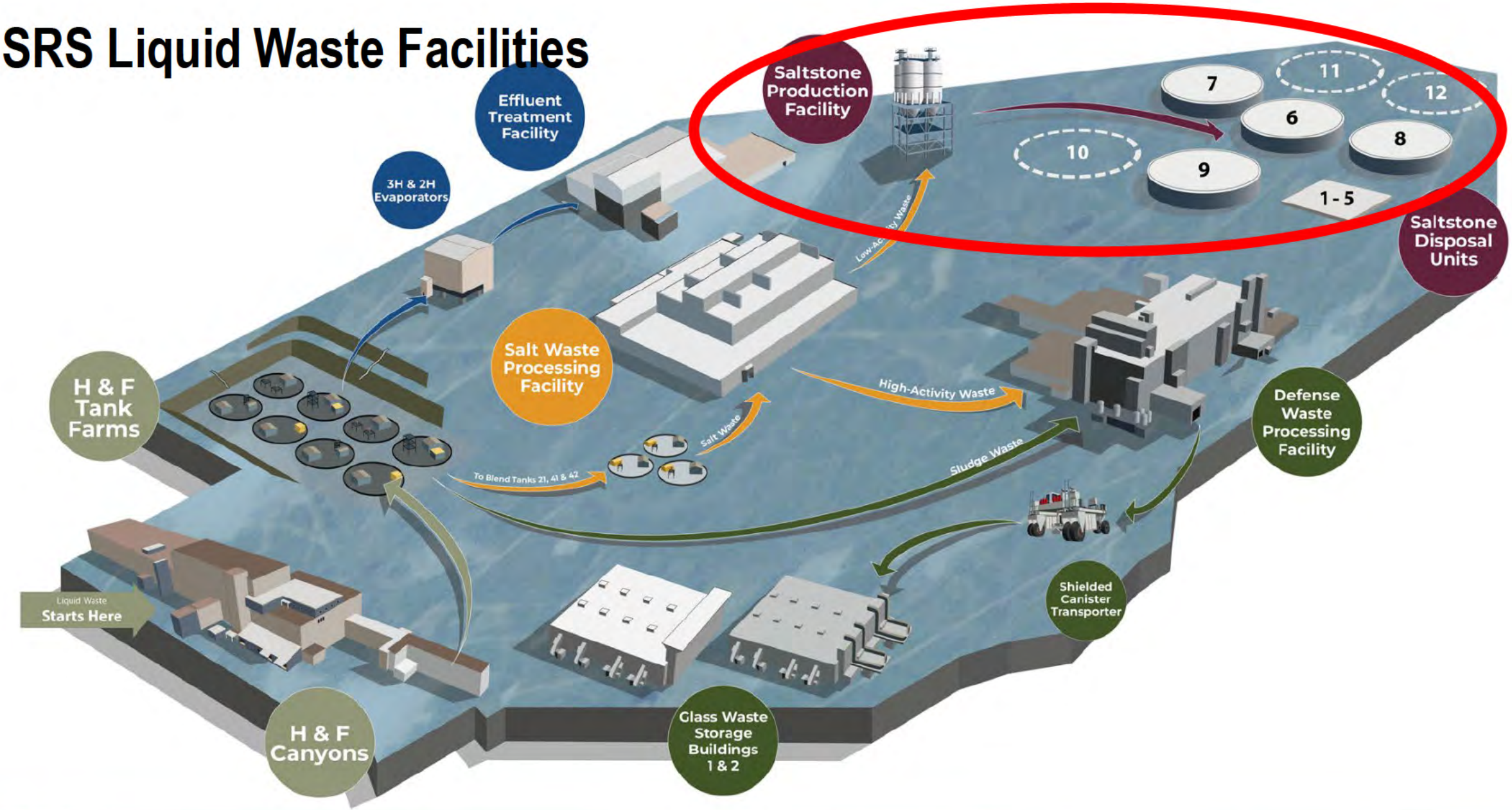
SRS Liquid Waste Facilities

Glass Waste Storage

- Two glass waste storage buildings
- After implementation of double-stacking, the glass waste storage buildings will be able to accommodate over 9,000 canisters until ultimate disposal.

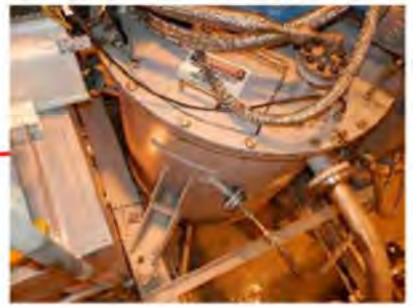


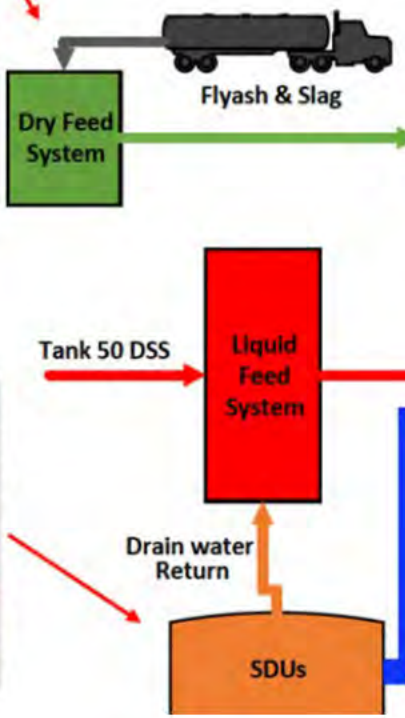
SRS Liquid Waste Facilities



Saltstone Production Facility

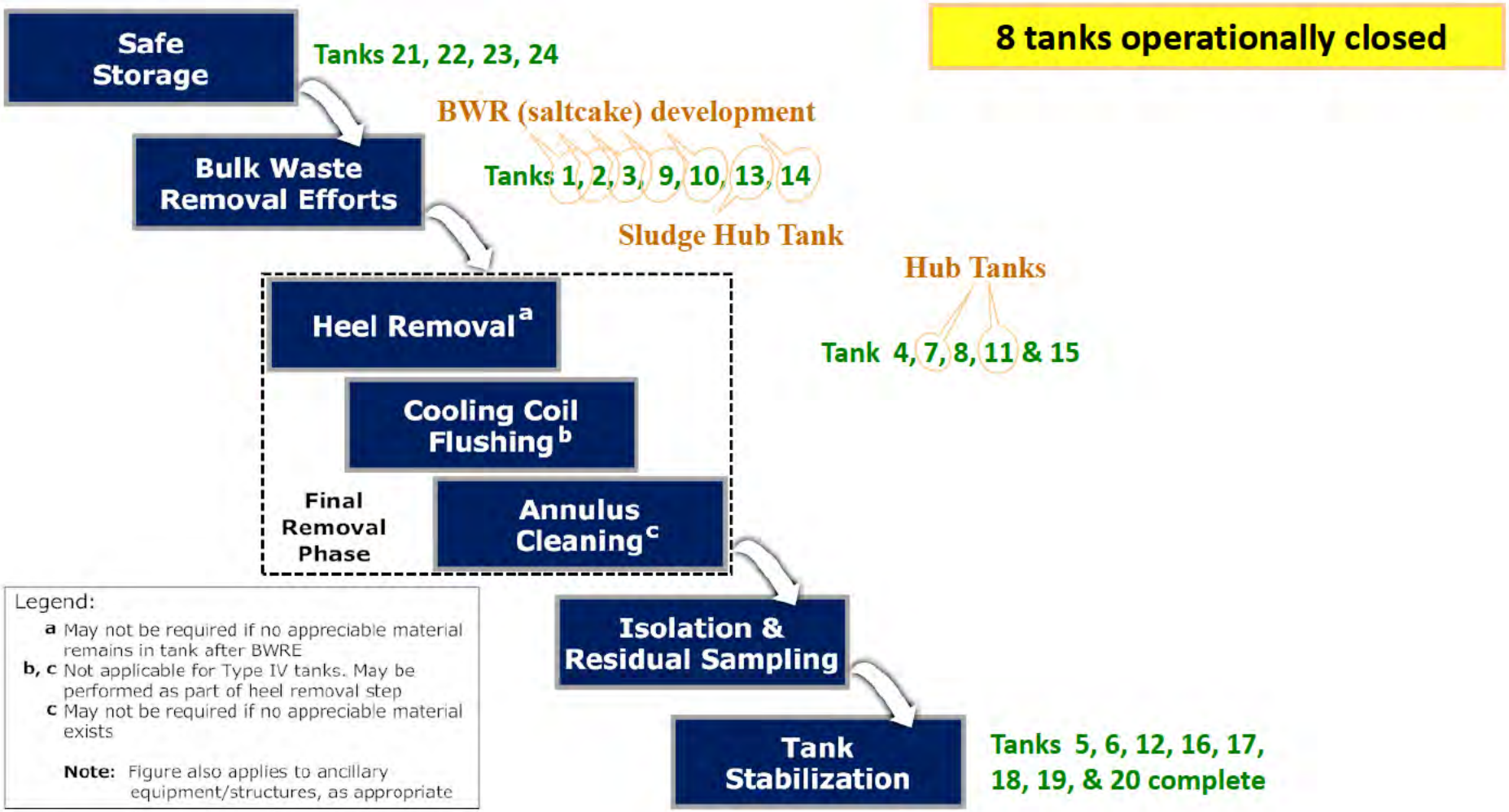
- The Saltstone Production Facility receives the decontaminated salt solution from the Salt Waste Processing Facility and the Effluent Treatment Facility
- Grout is made by mixing this solution with fly ash and slag
- This grout is pumped into the Saltstone Disposal Units, where it solidifies into a monolithic, non-hazardous, solid form.



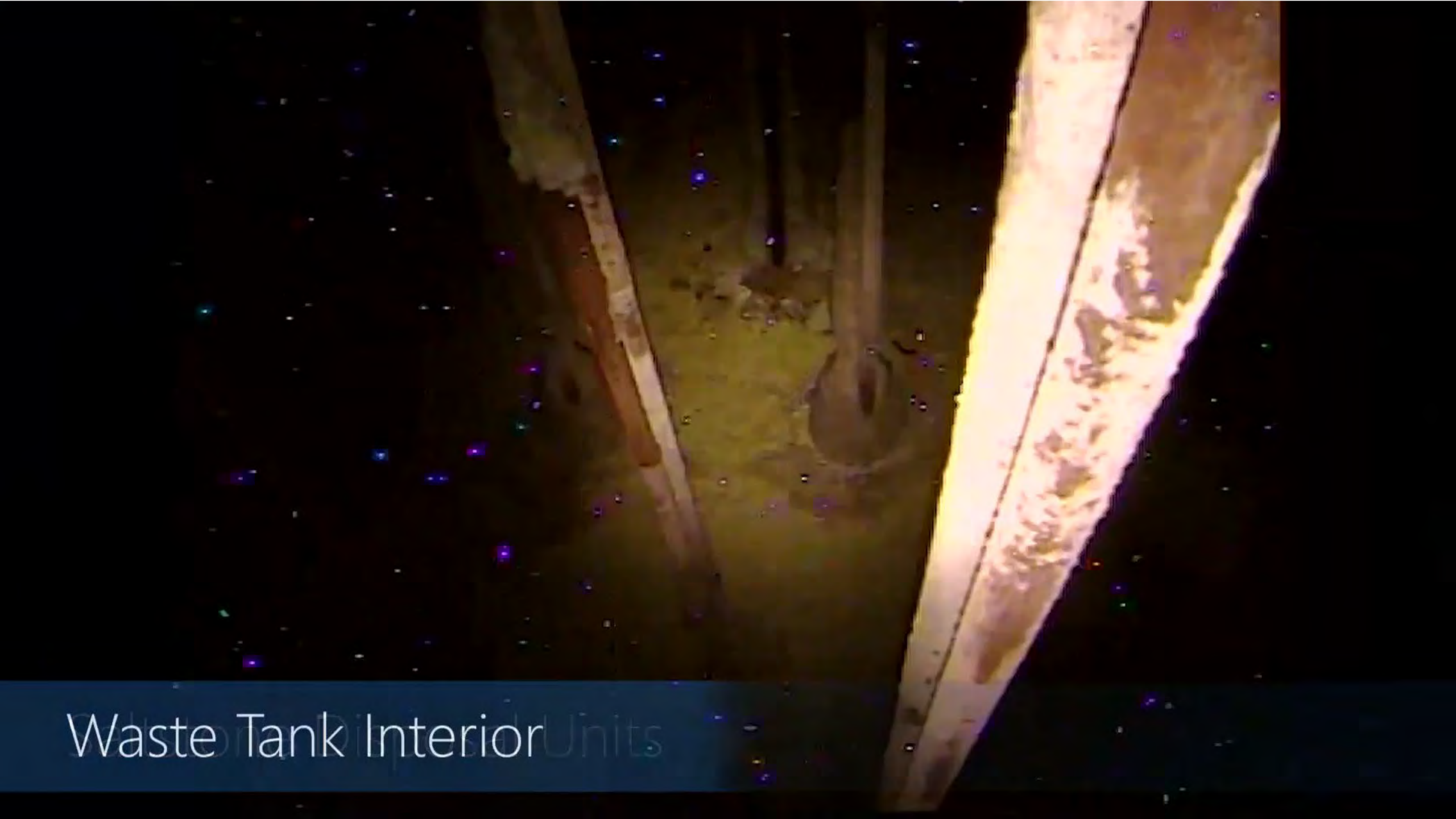


Saltstone

Tank Closure Progression



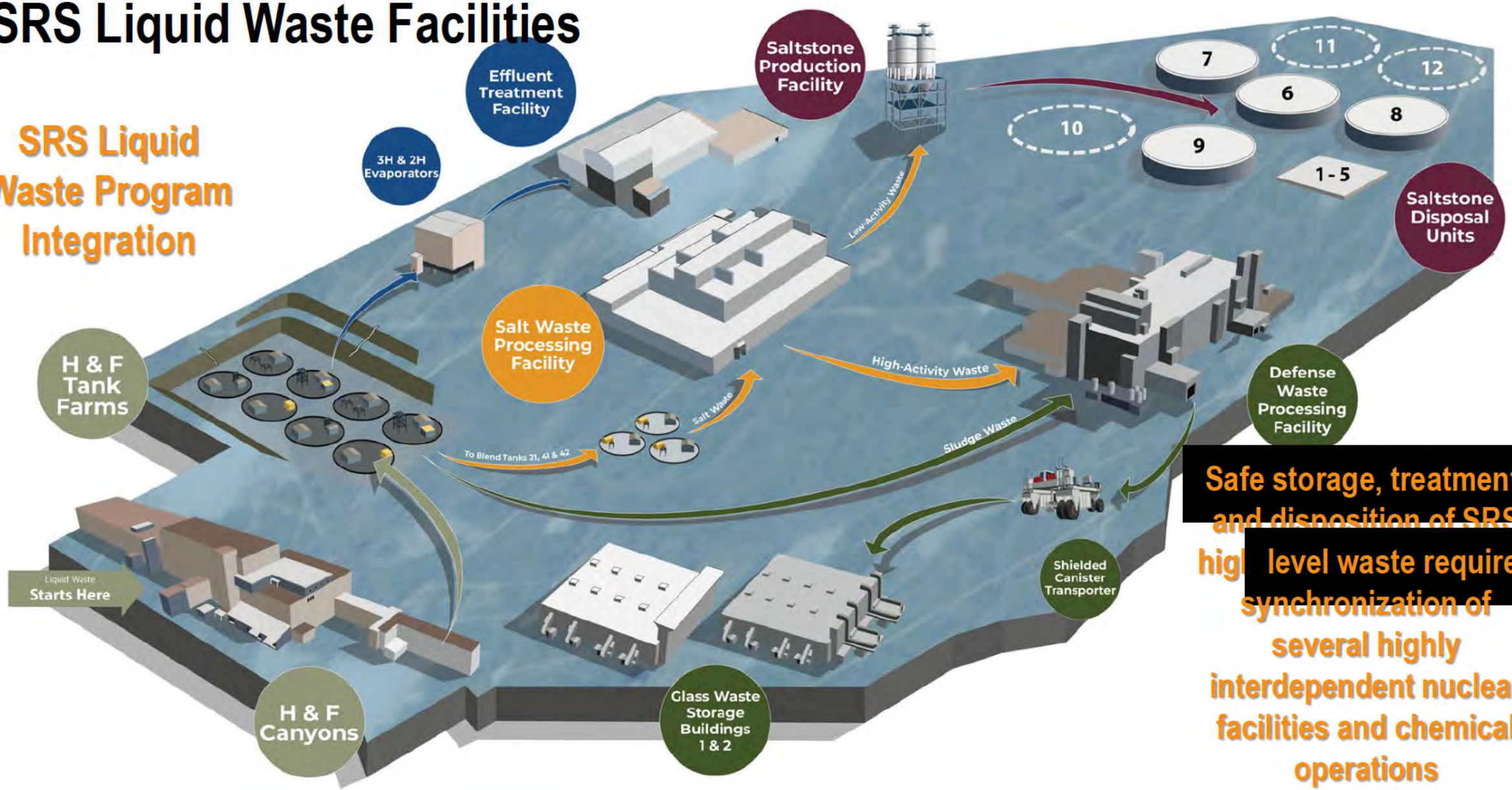
8 tanks operationally closed



Waste Tank Interior

SRS Liquid Waste Facilities

SRS Liquid Waste Program Integration



Safe storage, treatment, and disposition of SRS high level waste requires synchronization of several highly interdependent nuclear facilities and chemical operations

SRS Liquid Waste Contract in Perspective

SRS Liquid Waste Contractor → SRMC — SAVANNAH RIVER MISSION COMPLETION

SRMC Parent Companies → BWXT (BWX Technologies, Inc.); amentum (Experience | Passion | Purpose); FLUOR

SRMC Significant Subcontractors → DBD; WesWorks, LLC

- Savannah River Mission Completion is responsible for eliminating radioactive liquid waste produced from Cold War era nuclear weapons production
- Contract awarded October 2021; Assumed operations February 27, 2022
- Current workforce of ~3,700 employees (including subcontractors)

Start by Partnering for Success

With the contractor

- On April 13, 2022, the Department of Energy – Savannah River (DOE-SR) and the SRMC leadership teams established the SRS Liquid Waste Program Partnering Agreement.
- DOE-SR and SRMC formally agreed upon the vision, mission, objectives, values, behaviors, issue resolution process, logistics, and counterpart relationships that form the basis for the agreement.

With the regulating agencies

- DOE-SR, SC Department of Health and Environmental Control, and the Environmental Protection Agency reviewed, negotiated, and agreed upon revisions to the SRS Federal Facility Agreement.
- The revised agreement outlined a set of shared SRS Liquid Waste Program values and goals, including but not limited to maintaining transparency amongst one another, reducing risk to the environment by removing waste and closing tanks, and completing waste removal and subsequent grouting of all waste tanks and ancillary structures with a risk-based priority order.
- These revisions ensure regulatory requirements align to allow the liquid waste facilities to operate as efficiently and effectively as possible, with an emphasis on risk-reduction.

Schedule for Remaining Non-Compliant Tanks

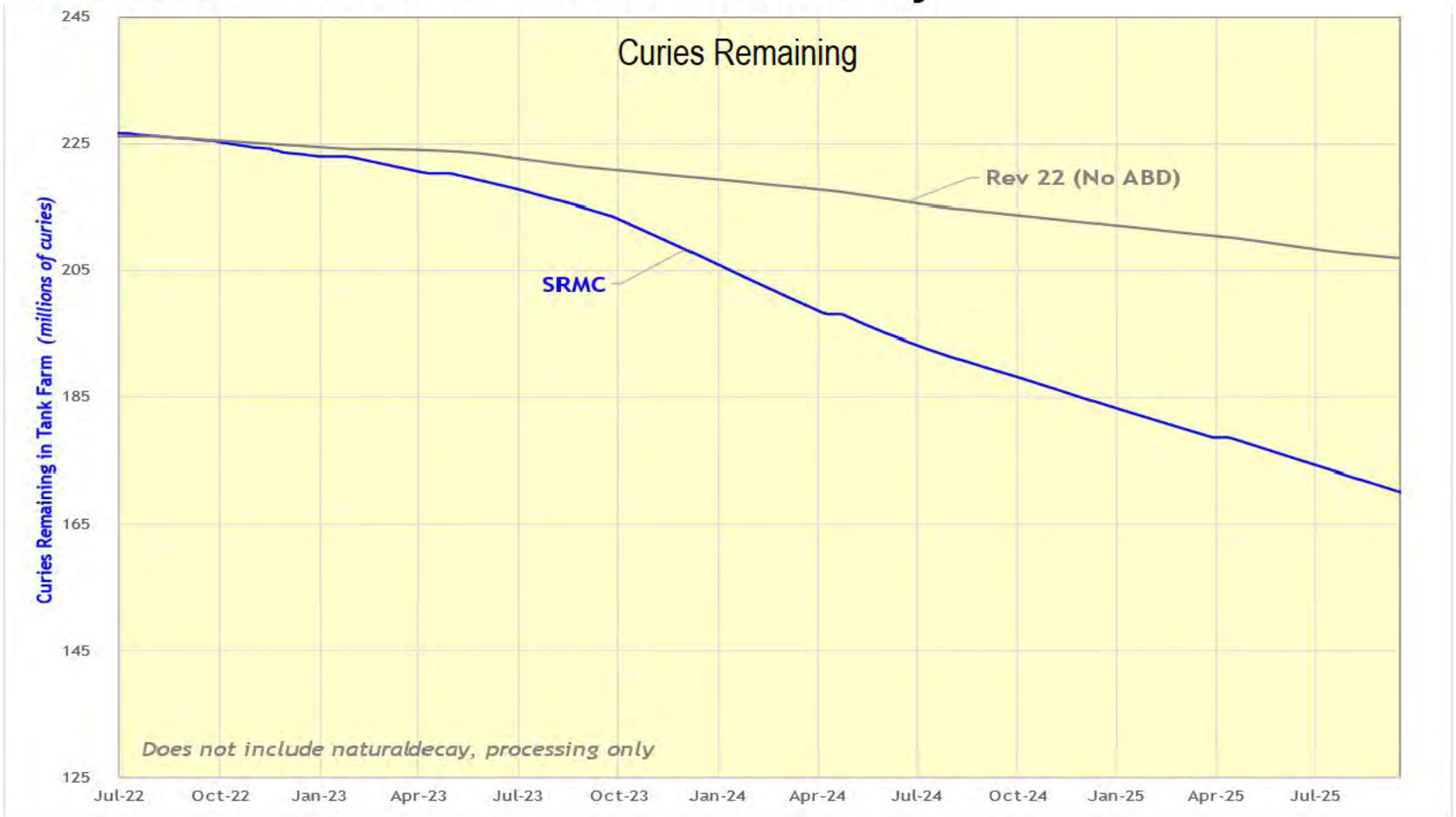
Milestone Date	Preliminary Cease Waste Removal (# of Tanks)	Operational Closure (# of Tanks)
12/31/2023	0	0
12/31/2024	1	0
12/31/2025	3	0
12/31/2026	2	0
12/31/2027	2	0
12/31/2028	0	3
12/31/2029	2	0
12/31/2030	1	2
12/31/2031	0	3
12/31/2032	0	1
12/31/2033	0	2
12/31/2034	1	0
12/31/2035	1	0
12/31/2036	1	1
12/31/2037	2	4
Total	16	16

Task Order Strategy

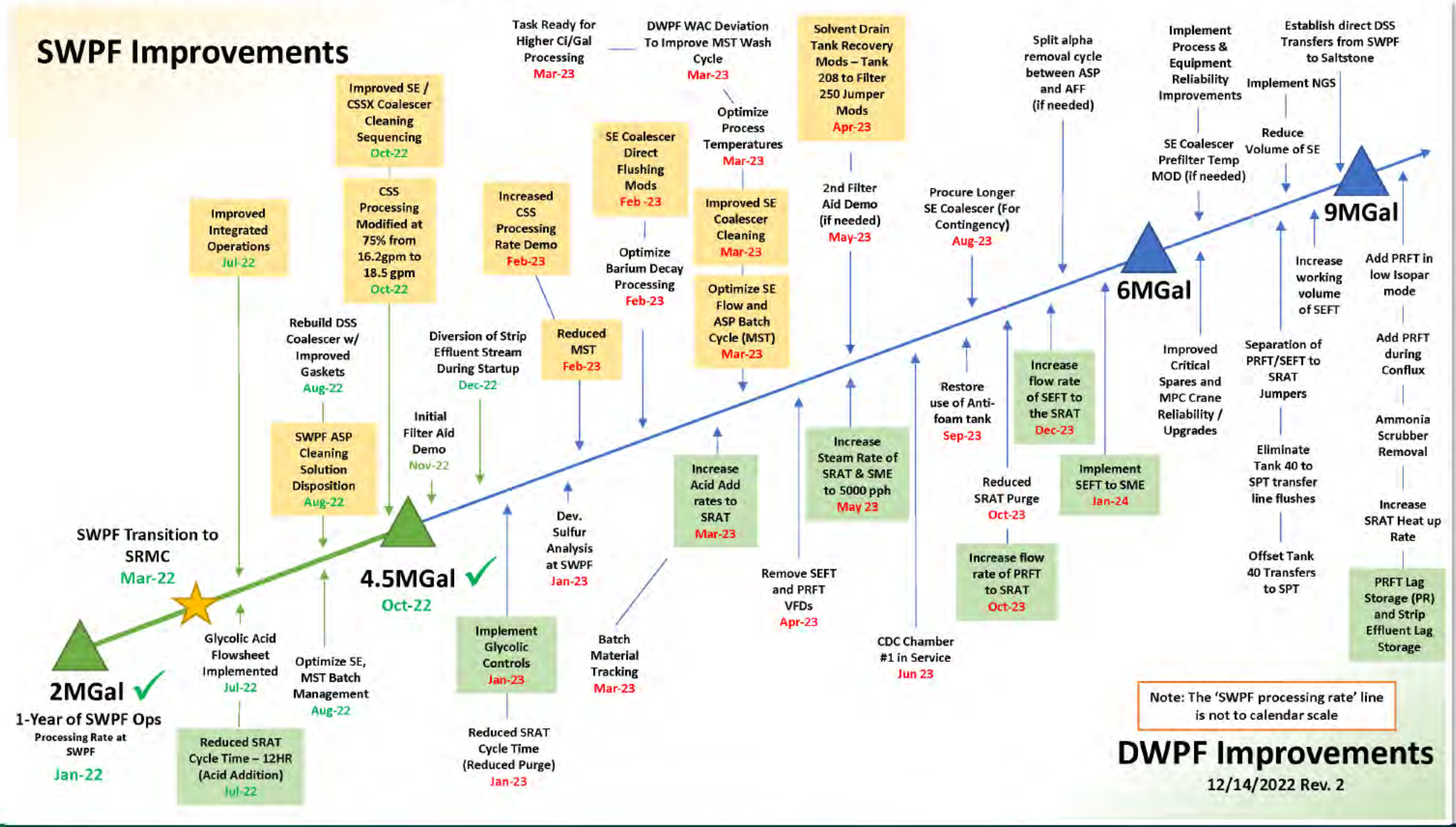
- The End-State Contracting Model focuses on accelerating cleanup, while reducing financial risks and environmental liability to the government, and fairly sharing risk between the government and contractor to achieve desired end states.

The Path Forward – Curie Reduction

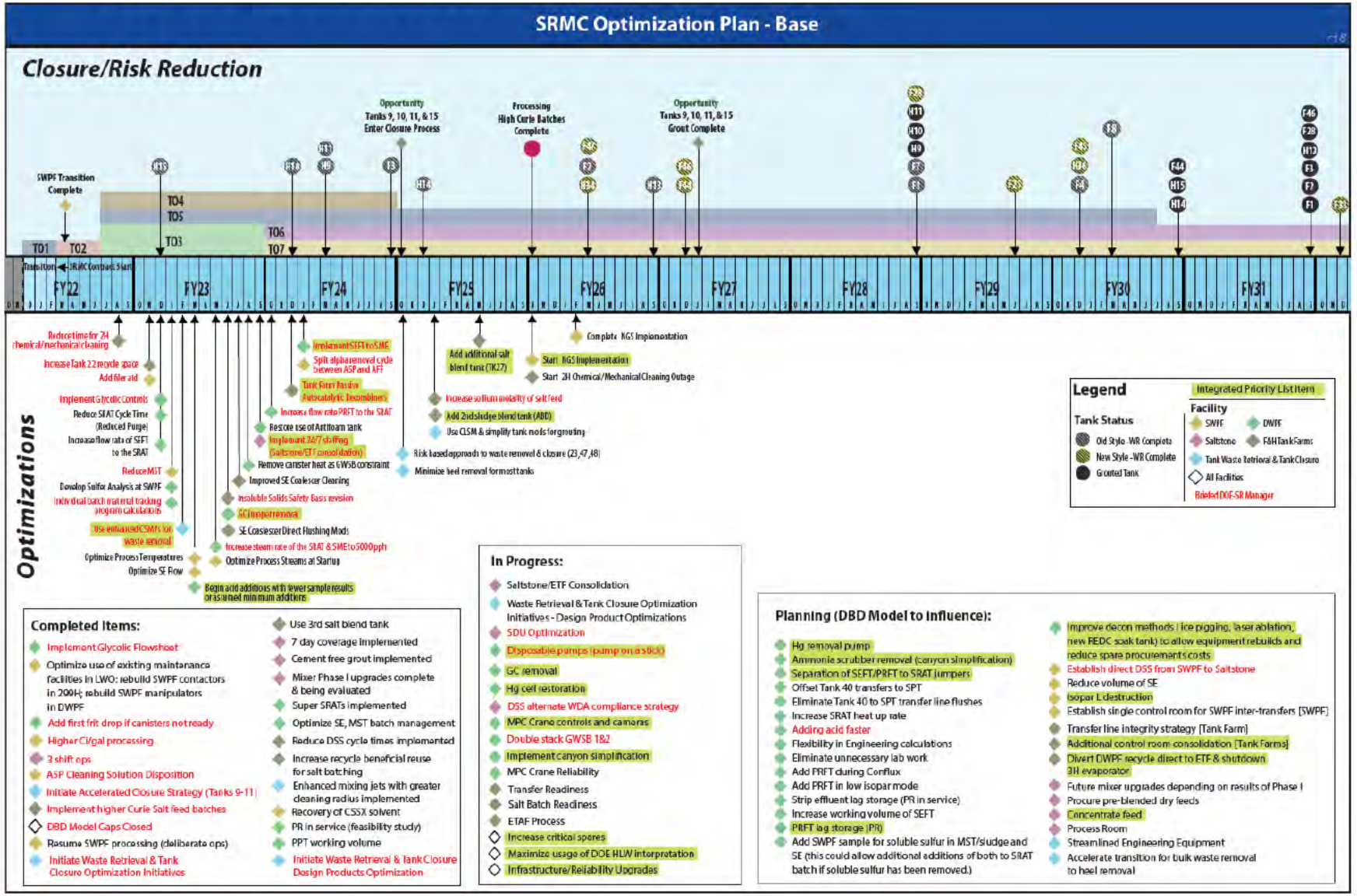
- **Focus on the goal of risk-reduction by removing curies at an accelerated pace.**
  - **What is a curie? A curie is a unit of radioactivity.**



The Path Forward - Improvements



The Path Forward - Optimizations



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