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Liquid Waste System Plan Revision 24 & 24.1

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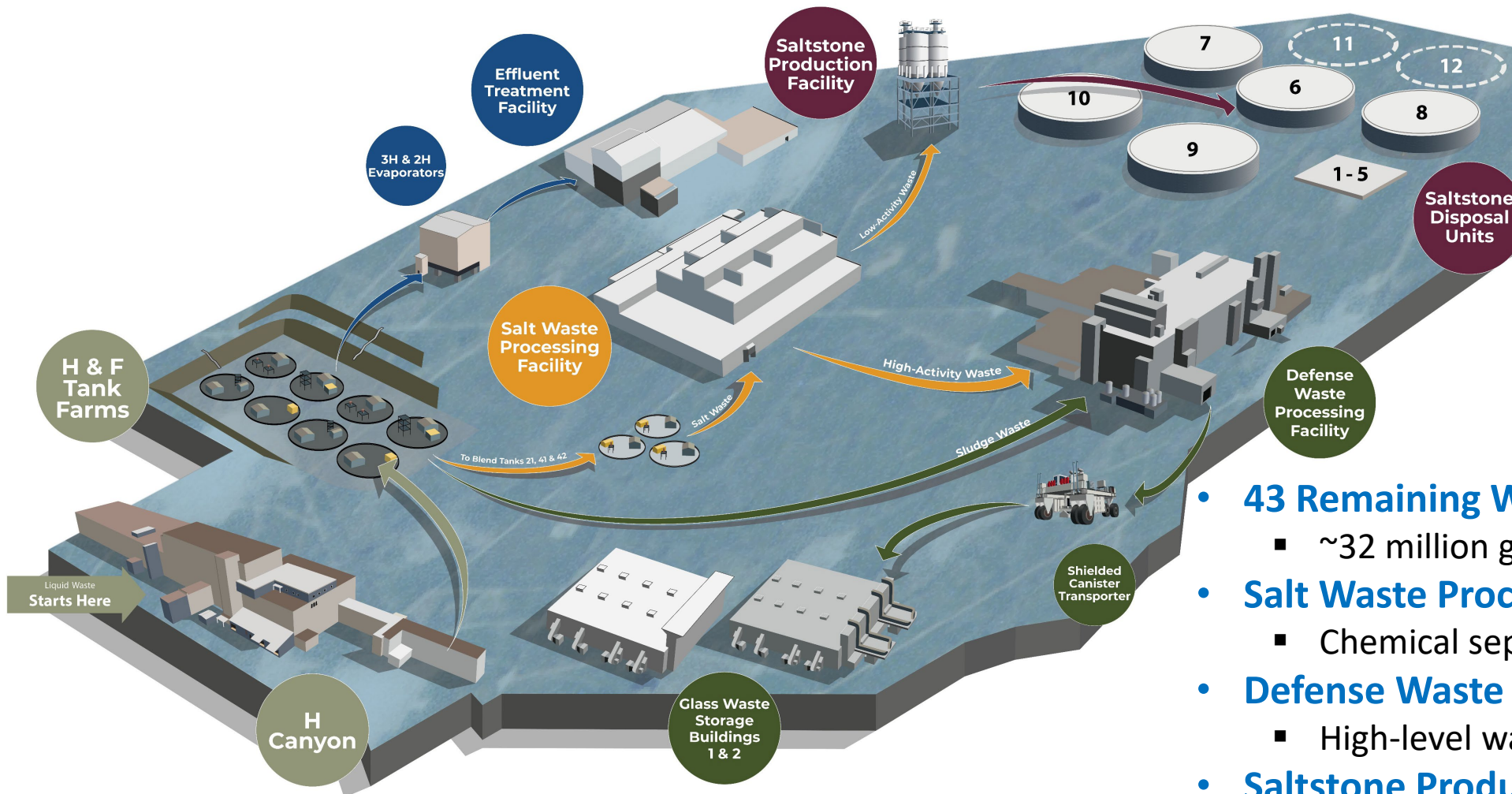
What is a Liquid Waste System Plan?

- **Liquid Waste System Plan documents the Savannah River Site (SRS) liquid waste processing goals and operational outlook**
 - *Outlines the handling, treatment, processing, and safe disposal of liquid waste*
 - *Incorporates improvements and optimizations within the system that have been realized, as well as continued improvement planning*
 - *Summarizes regulatory drivers and milestones*
 - *Details risks to the system and plans to mitigate those risks*

Liquid Waste System Plans



Liquid Waste System



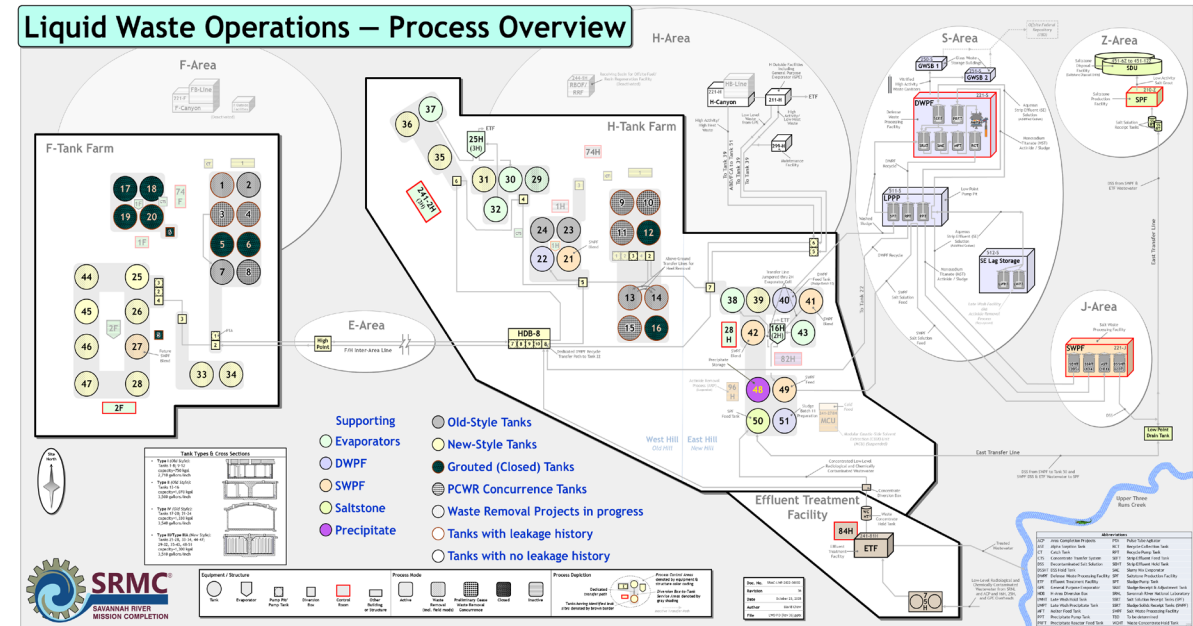
- **43 Remaining Waste Tanks (Tank Farms)**
 - ~32 million gallons waste
- **Salt Waste Processing Facility (SWPF)**
 - Chemical separation
- **Defense Waste Processing Facility (DWPF)**
 - High-level waste → glass vitrification
- **Saltstone Production Facility (SPF)**
 - Low-level waste → grout

Mission: treat/dispose radioactive waste and operationally close tanks

System Plan (SP) Revision 24 Overview

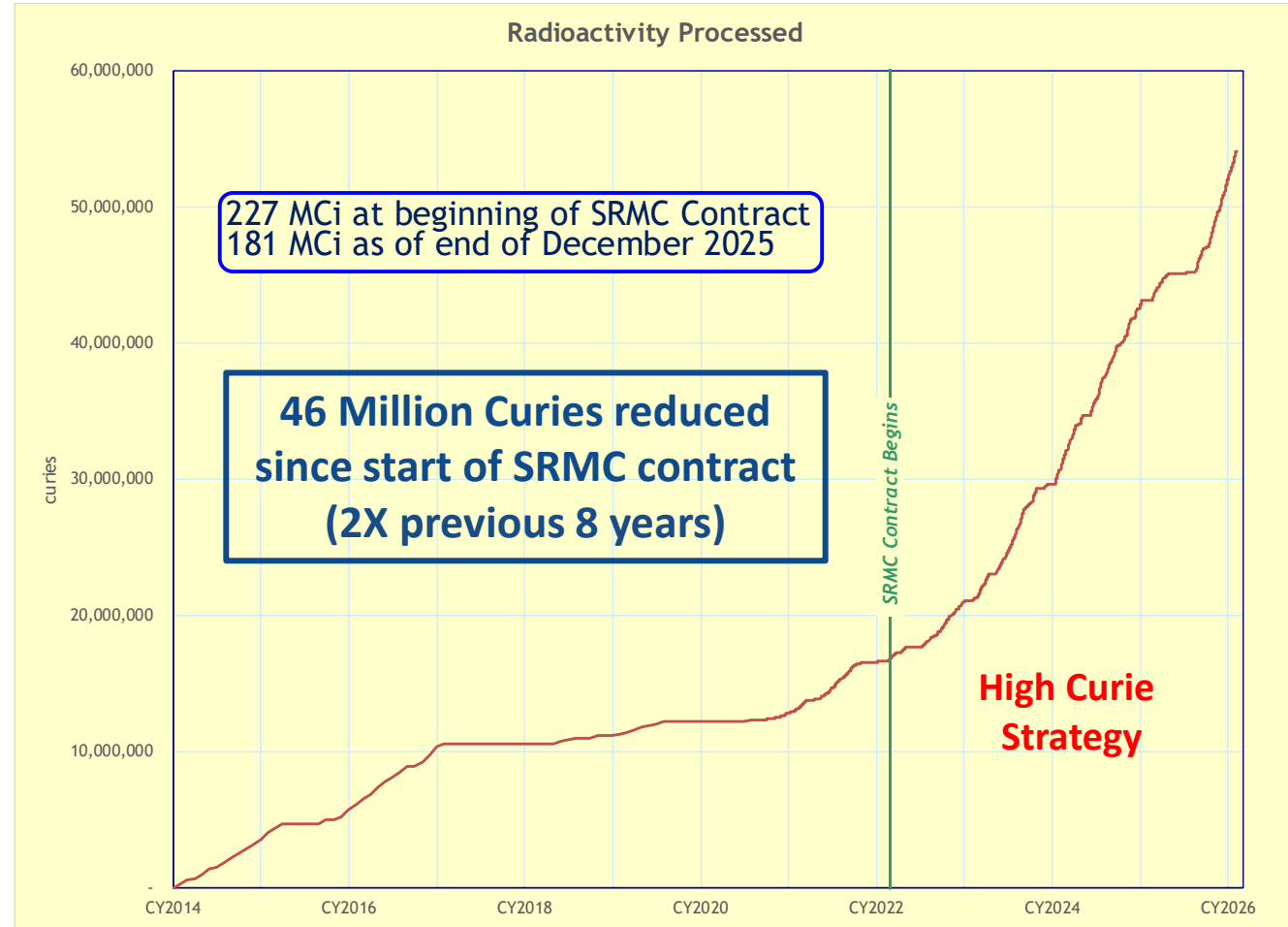
- **Update Revision 23 (March 2023)**

- Builds on risk reduction success of previous revision
- Mission status as of the end of 2025
- Incorporates current technical capabilities
- Focus on increasing system availability to minimize lifecycle
- Updated risks, opportunities, and funding projections



Risk Reduction Success

- **High curie removal strategy**
 - *resulted in 46 million curies removed from the tank farms (~20%)*
- **Prioritizing waste removal from tanks located in the water table**
 - *Only one tank left and on schedule for this year*
- **Optimizing facilities and processes has maximized the time and resources to accelerate the mission**
 - *33% of remaining curies to be dispositioned in next 3 years*



Mission Status – Federal Facility Agreement (FFA)

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

- FFA is Regulatory Agreement for sixteen highest risk tanks
- Eight Preliminary Cease Waste Removal (PCWR) milestones achieved to date
 - Two more on schedule for 2026
 - satisfies PCWR milestones through 2029
- Two Operational Closure (OC) milestones tracking for 2027
 - One year ahead of FFA milestone

PCWR = tank emptied (bulk waste removed)

Technical Capabilities Realized

- Installed larger cross flow filters at the Salt Waste Processing Facility (SWPF), doubling the filter area to support improved throughput
 - *no longer a waste throughput bottleneck*
- Increased concentration of salt batches, reducing overall volume of salt required to run through SWPF (103M gallons to 77M gallons)
 - *Results in SWPF not required to run at as high of a volume per year as originally anticipated*



Existing 10'
Filter



Sleeved Filter Upon
Removal



New 16'
Filter

Technical Capabilities Realized

- **Implemented drone program to assist with waste mapping and sampling inside of the waste tanks**

- *Resulted in significant cost savings (up to 4 weeks and \$700k per tank) and improved inspections and samples of the interior of waste tanks*

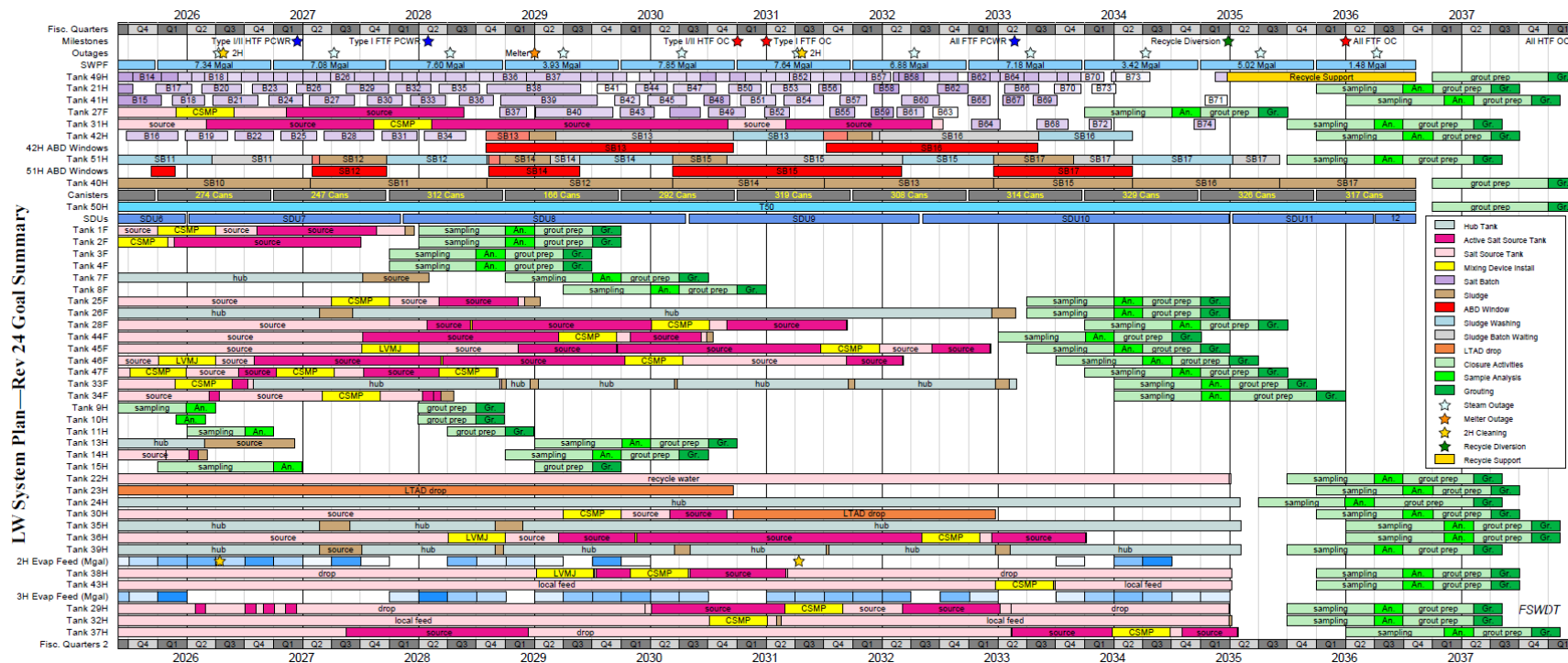
- **Utilized offsite laboratory to perform tank characterization samples for PCWR and tank closure**

- *Resulted in savings up to 6 months and \$2M per tank*



Modeling

- **System Plan lifecycle model simulates chemical & material constraints of the Liquid Waste system (developed by DBD Inc.)**
 - *Allows for reliable forecasting of operational timelines to mission completion*
 - *Updated as new information becomes available*



System Plan Revision 24 Scenarios

- Many runs utilizing the DBD lifecycle model
- Key variables
 - **Funding**
 1. Early Finish/Goal – optimal funding
 2. Flat/Constrained Funding
 - **Technical Capacity**
 1. Maximum capacity – with all known possible technical advancements implemented
 2. Current capacity



**Salt Waste
Processing Facility
(SWPF)**

System Plan Revision 24 Model Conclusions

- **Funding has greater impact than Technical Capacity**

- *2037 Operational Closure (OC) remains available with Early Finish/Goal funds and innovation*
- *Flat/Constrained Funding drives OC to 2041 → even with Maximum Technical Capacity*
 - Limited funds to prepare tanks for salt/sludge removal drives schedule
 - DWPF/SWPF throttled to avoid feed breaks
 - Equipment reliability decreased due to limited procurement of spares, upgrades, etc.

- **SWPF design basis maximum rates not required**

- *9M gallons/year salt processing no longer required – due to 25% reduction in salt volume*
- *Next Generation Solvent (NGS) not required to achieve 2037 completion*

System Plan Revision 24 Details

Milestone	Baseline/High Confidence	Early Finish/Goal
SWPF Salt Processing Complete	2035	2034
DWPF Operations Complete	2039	2036
Operational Closure	2041	2037

Key Inputs & Operating Metrics	Baseline/High Confidence	Early Finish/Goal
Funding	Flat \$1.090B FY26 (plus escalation)	Requirements \$1.123B FY26 (plus escalation)
SWPF Avg (Mgal/yr)	6.16	6.94
SWPF Max (Mgal/yr)	7.95 (FY30)	7.85 (FY30)
SWPF FY26 (Mgal/yr)	4.40	7.34
DWPF Avg (cans/yr)	242	291
DWPF Max (cans/yr)	282 (FY37/38)	329 (FY34)
DWPF FY26 (cans/yr)	163	274

<9 Mgal/year

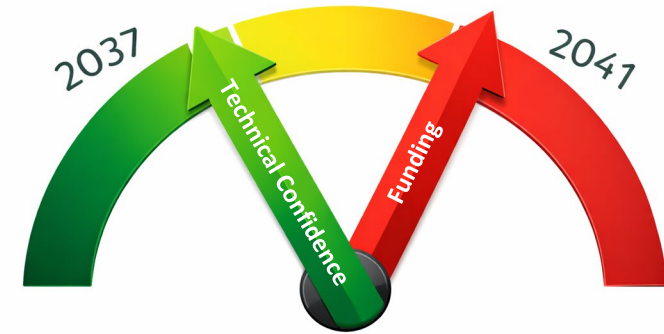
<historical max

As an end-state contract, the contractor is incentivized to achieve the maximum possible in all cases

Comparison of SP23 & SP24

- **Revision 24 vs. Revision 23**

- *SP23 assumed little opportunity for acceleration & significant risk for extension*
- *SP24 utilizes technical and funding assumptions resulting in a high confidence forecast*



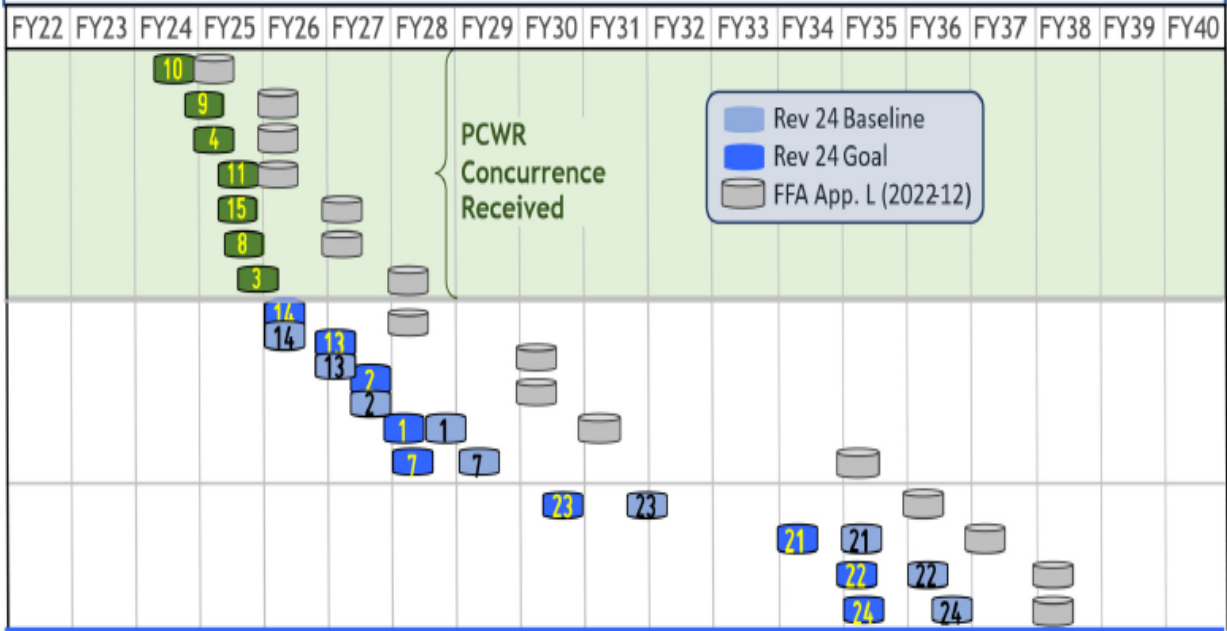
- **SP24 derived two cases from scenario modeling - Typical Project Management Approach**

- *Baseline/High Confidence: baseline with opportunities to accelerate (2041)*
- *Early Finish/Goal: recognizes opportunities to accelerate mission completion (2037 or better)*
- *Federal Facility Agreement (FFA) milestones met in both cases*

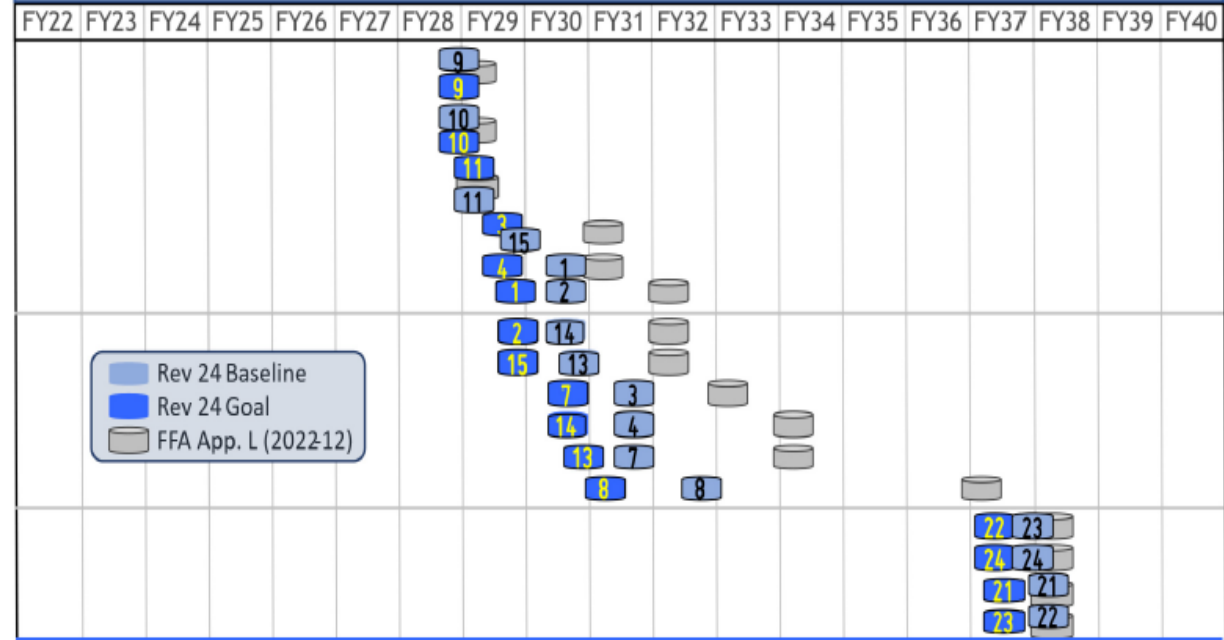
- **Goal of completing the Liquid Waste Mission in 2037 remains the same**

- *SRMC contract is incentivized by DOE to deliver 2037 completion*

Regulatory Milestones



Operational Closure



Both the Baseline (2041) and Goal (2037) cases meet the regulatory milestones for both Preliminary Cease Waste Removal and Operational Closure

Driving System Availability



- Availability is the percentage of time facilities are operating
- DBD Model determined minimum availability of ~65%
- “Drive to 65” is a two-year campaign to increase availability
- Recapitalization of facilities through increased maintenance and critical spares

Risks

- **Aging Infrastructure**

- *While this plan addresses expected normal failures of various equipment, completing the mission will place significant stress on increasingly aging infrastructure and equipment*

- **Funding**

- *If funding is less than the Goal case requirement (\$1.123B in FY26 and escalated in subsequent years), it will jeopardize mission completion by 2037*

Liquid Waste System Plan Revision 24.1

- **Liquid Waste System Plan Revision 24** noted two opportunities:
 - *Discontinuation of Accelerated Basin Deinventory*
 - *Decoupling SWPF High Activity Waste Stream from DWPF*
- **Both of these activities have now been realized and are noted in Rev 24.1 with updated modeled cases, and an estimated lifecycle canister reduction of 300 (~150 for each of the realized opportunities)**

Table 1 1 — *Results of Modeled Cases* of Rev 24 is updated to:

Parameter	Goal	Baseline
Date last LW facility turned over to Dismantlement and Decommissioning (D&D)	2037	2041
Final Type I and II tanks complete operational closure	2031	2032
Complete SWPF salt processing	2034	2035
Complete DWPF operations	2036	2039
Last tank closed	2037	2041
Salt Solution Processed via SWPF	77 Mgal	85 Mgal
Total number of canisters produced	7,376	7,440
Total number of SDUs	12	12

Summary

- **Technical barriers to mission completion have been substantially reduced since System Plan Revision 23**
- **Liquid Waste System Plan Revision 24 provides two cases:**
 - *Baseline (High Confidence) Case for 2041 Mission Completion*
 - *Goal (Early-Finish) Case for 2037 Mission Completion*
- **These cases and end-dates are primarily driven by resources available to the Liquid Waste mission**
- **Both cases meet the Federal Facility Agreement regulatory milestones**
- **SRMC is incentivized by DOE to accelerate mission completion and has demonstrated cost-saving methods to reinvest into the mission**