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Cost Savings Initiatives (CSI) Process And System Plan Revision 17 Results

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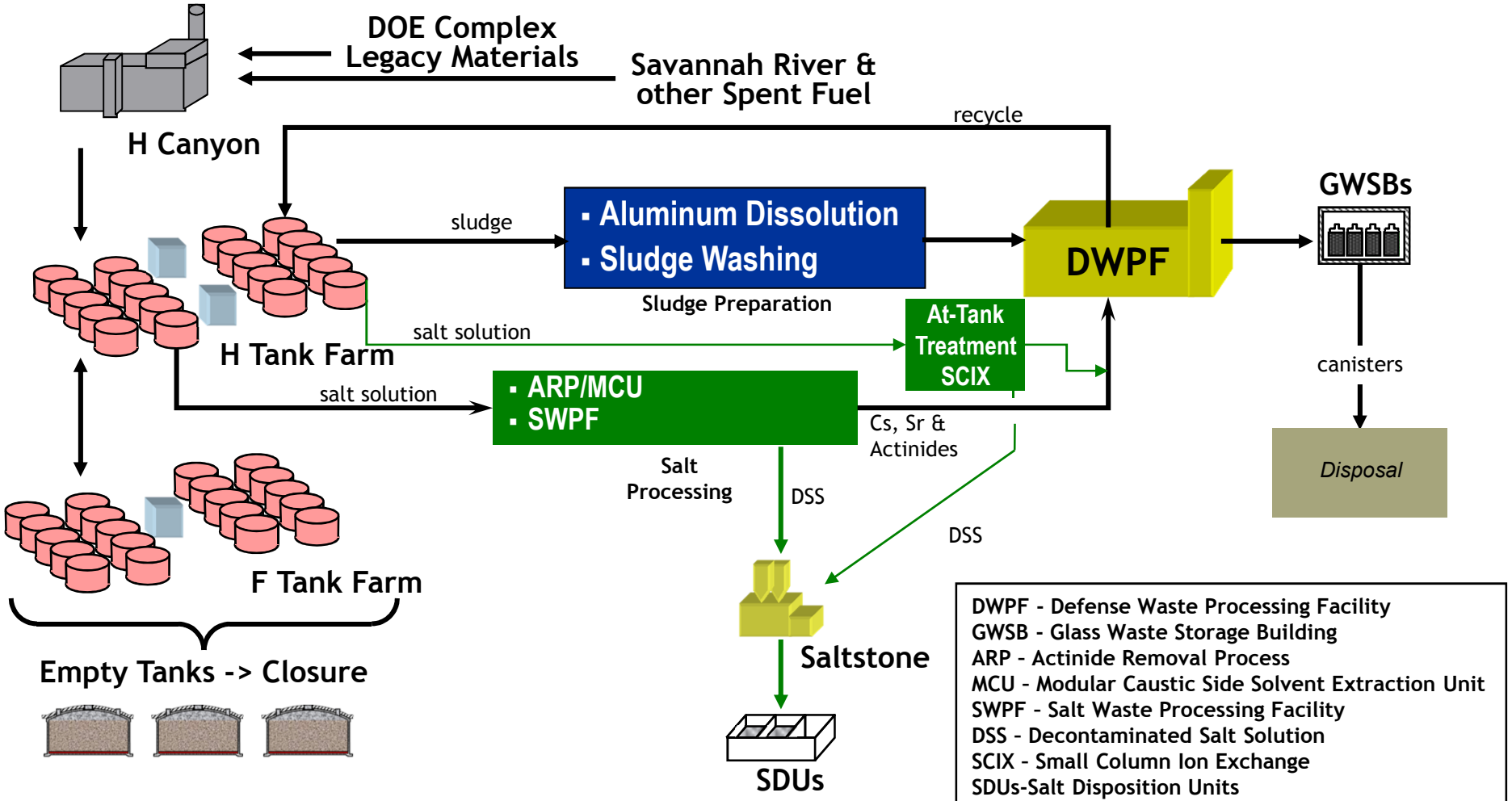
Purpose

- To fulfill Savannah River Site Citizens Advisory Board 2012 Waste Management Committee Work Plan topic

Agenda

- Liquid Waste Process Overview
- Cost Savings Initiative
- System Plan Rev. 17 Status
- System Plan Rev. 17 Inputs & Assumptions
- System Plan Rev. 17 Results
- Summary

Liquid Waste System



DWPF - Defense Waste Processing Facility
GWSB - Glass Waste Storage Building
ARP - Actinide Removal Process
MCU - Modular Caustic Side Solvent Extraction Unit
SWPF - Salt Waste Processing Facility
DSS - Decontaminated Salt Solution
SCIX - Small Column Ion Exchange
SDUs-Salt Disposition Units
NGS - Next-generation Solvent

Overview

Regulatory Drivers

- Federal Facilities Agreement
  - Requires the 22 remaining old-style tanks to be operationally closed by the end of FY2022
- Site Treatment Plan (STP)
  - Requires *"removal of the backlogged and currently generated waste inventory by 2028"*

Projected Life Cycle

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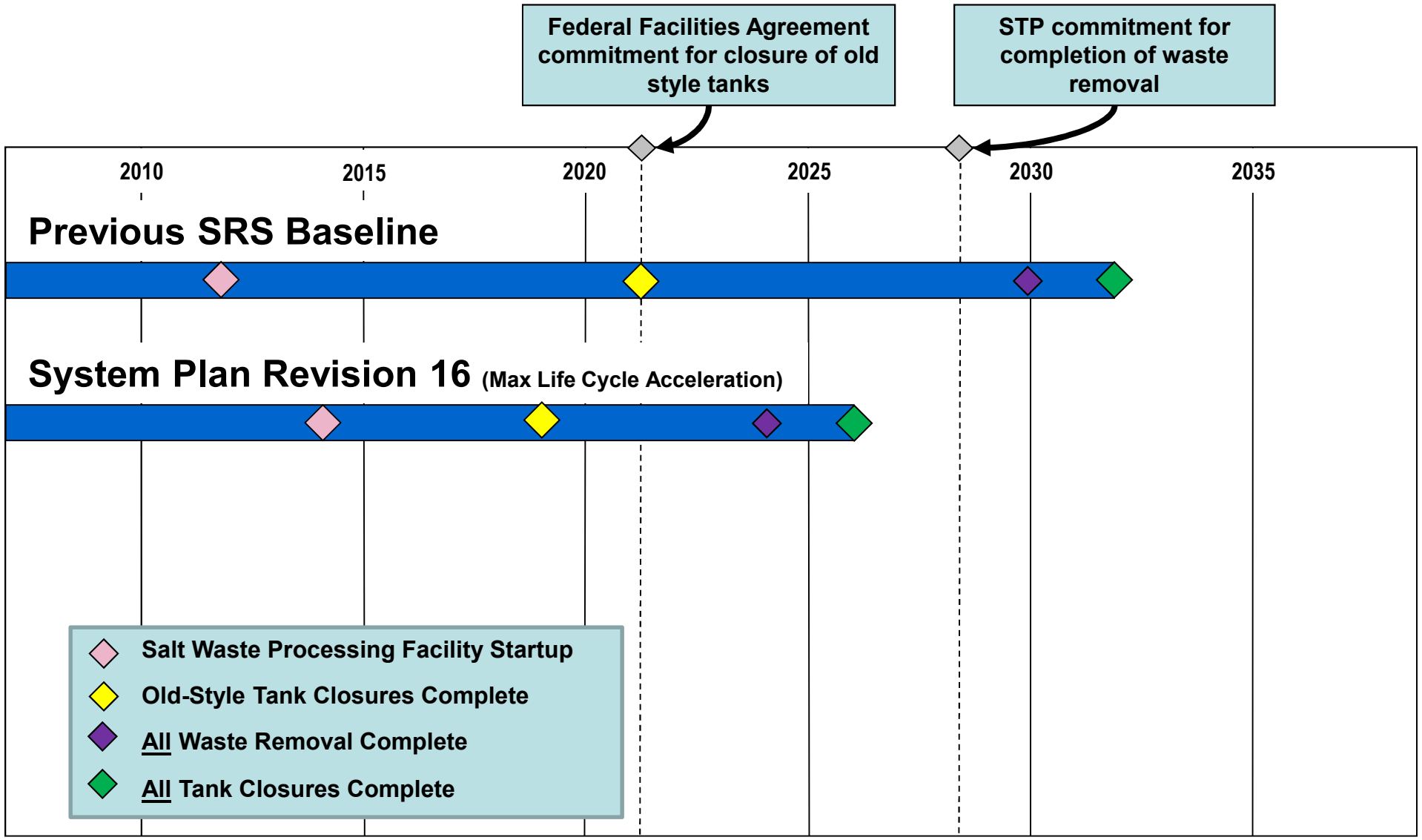

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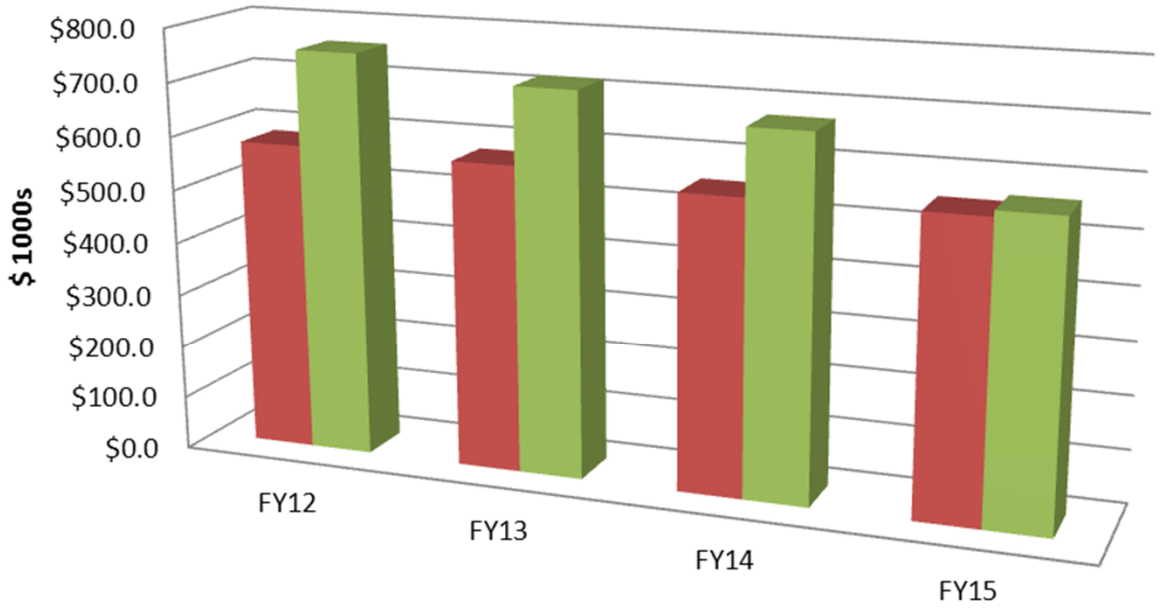
SRR Funding Profile



	FY12	FY13	FY14	FY15
Funding/Planning Case	$581.3	$575.1	$550.4	$551.3
System Plan Revision 16	$759	$718	$674	$563

Note that GWSB# 3 not included in the funding profile

Overview

- All Liquid Waste activities are placed on an Integrated Priority List
- In the past, the funding line would be moved up or down the list to match the funding allocation
  - everything below the line was cut
- This would have impacted:
  - waste removal to provide feed to Defense Waste Processing Facility
  - tank closures
  - preparations for Salt Waste Processing Facility startup
- A new approach was needed
  - that can be executed with high confidence
  - without reliance on new technologies or regulatory relief

Reinvention Process

4 Step Plan

1. Scope and Price the Just in Time (JIT) Compliant Case
   - eliminate everything that is not needed to support regulatory commitments, employee development and safety
   - schedule what remains on a Just in Time basis
2. Add new scope and pricing not in the current contract
3. Compare JIT Compliant Case cost to expected funding
4. Priority Add Backs (PABs)
   - Use unallocated funding to “buy back” program acceleration or to reduce programmatic risk

JIT Compliant Case + PABs = Recommended Case

- New technologies will be pursued, but treated as opportunities

Just In Time Compliance

Scope to meet regulatory requirements JIT

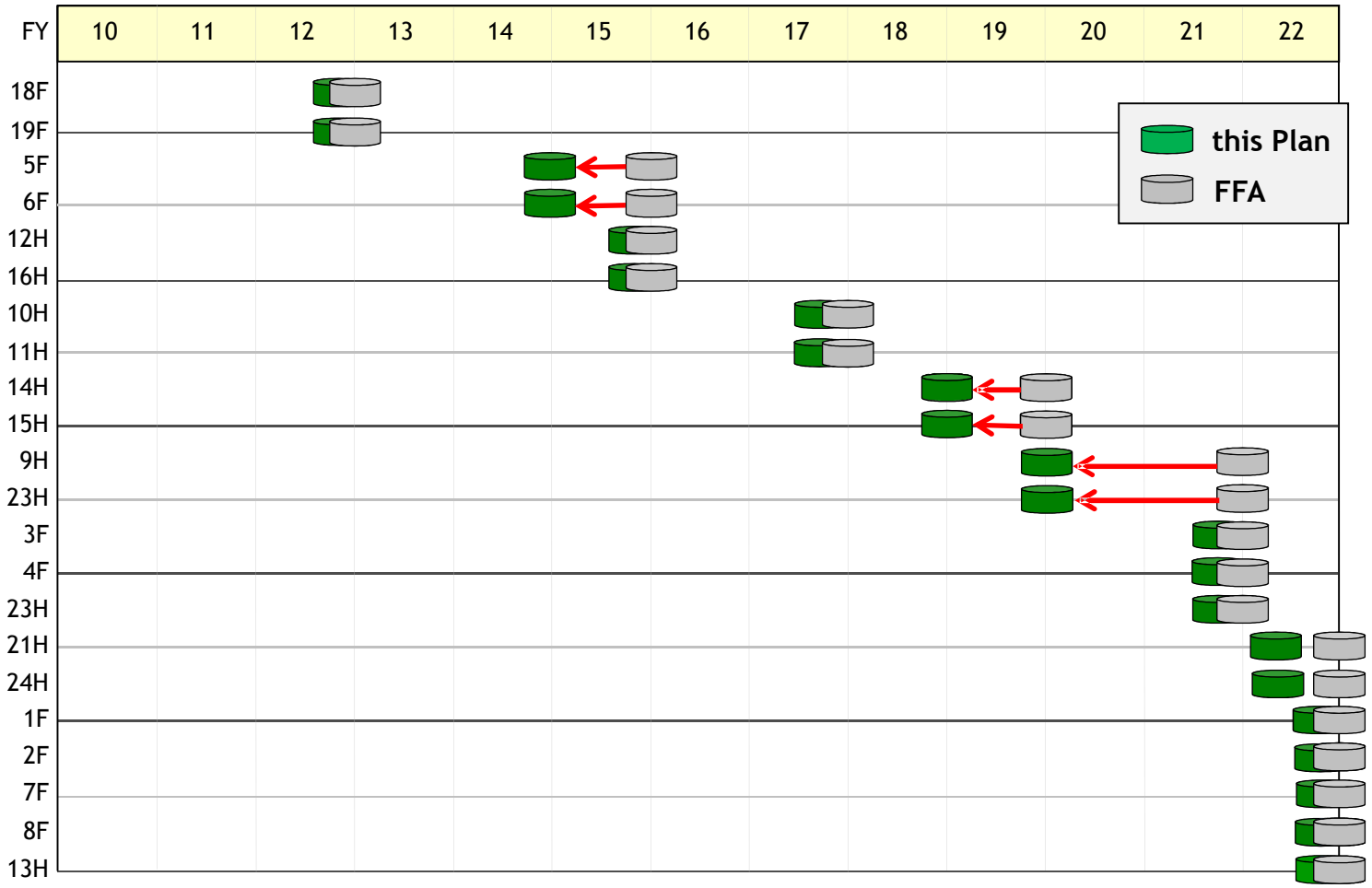
1. Surveillance and Maintenance
2. Immobilize sludge to meet the STP & FFA JIT
   - adjust canister production to finish Sep 2028 which is an average of 275 cans/year with melter outages
   - adjust GWSB #3 schedule to match canister production
3. Immobilize salt to meet the STP & FFA JIT
   - Rely on SWPF (Small Column Ion Exchange not needed for JIT)
4. Close tanks to meet the FFA JIT
   - defer tank closures so that the FFA is met JIT in FY2022
5. Receive waste from other site missions

Priority Add Back

Priority Add Back Guide

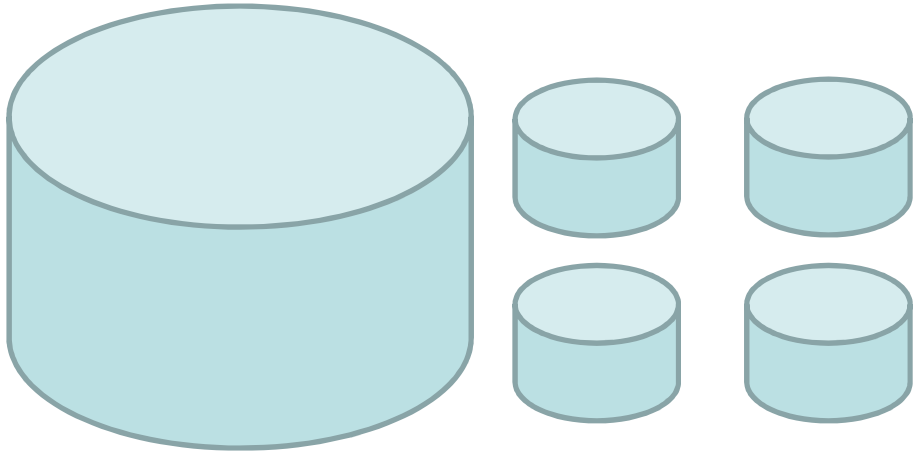
- Mega SDUs and Control Room Consolidation (Investments with Return on Investment of < 3-4 years)
- Mature Tank 48 alternative treatment technology
- Accelerate closure of old-style sludge tanks (unrestrained by SWPF)
- Deploy Small Column Ion Exchange to reduce SWPF risk (late start, low throughput)
- Accelerate DWPF to finish Dec 2026 (275 > 320 cans/yr)
- Additional acceleration of tank closures as increased salt processing allows
- Start Tank 48 chemical destruction field modifications
- Life Cycle acceleration per LWSP rev. 16

Tank Closure Summary



Mega SDUs

- **Replace current Salt Disposal Units (SDUs) design with a Mega-SDU design**
- **Each Mega-SDU will provide disposal capacity equivalent to approximately 10 previously planned SDU cells.**
- **Benefit**
  - Reduces project costs associated with construction installation materials and schedules
- **Cost savings**
  - ~$97M from FY12-FY17
  - ~$487M lifecycle



Control Room Consolidation

- **Combines 4 separate control rooms into one Consolidated Control Room**
- **Benefits**
  - Improved safety environment
  - Enhanced conduct of operations and command/control
  - Simplified communications
  - Consolidate and standardize operator interface
  - Integrated computer system
- **Cost savings**
  - ~$21M for FY12-FY17
  - ~$54M lifecycle

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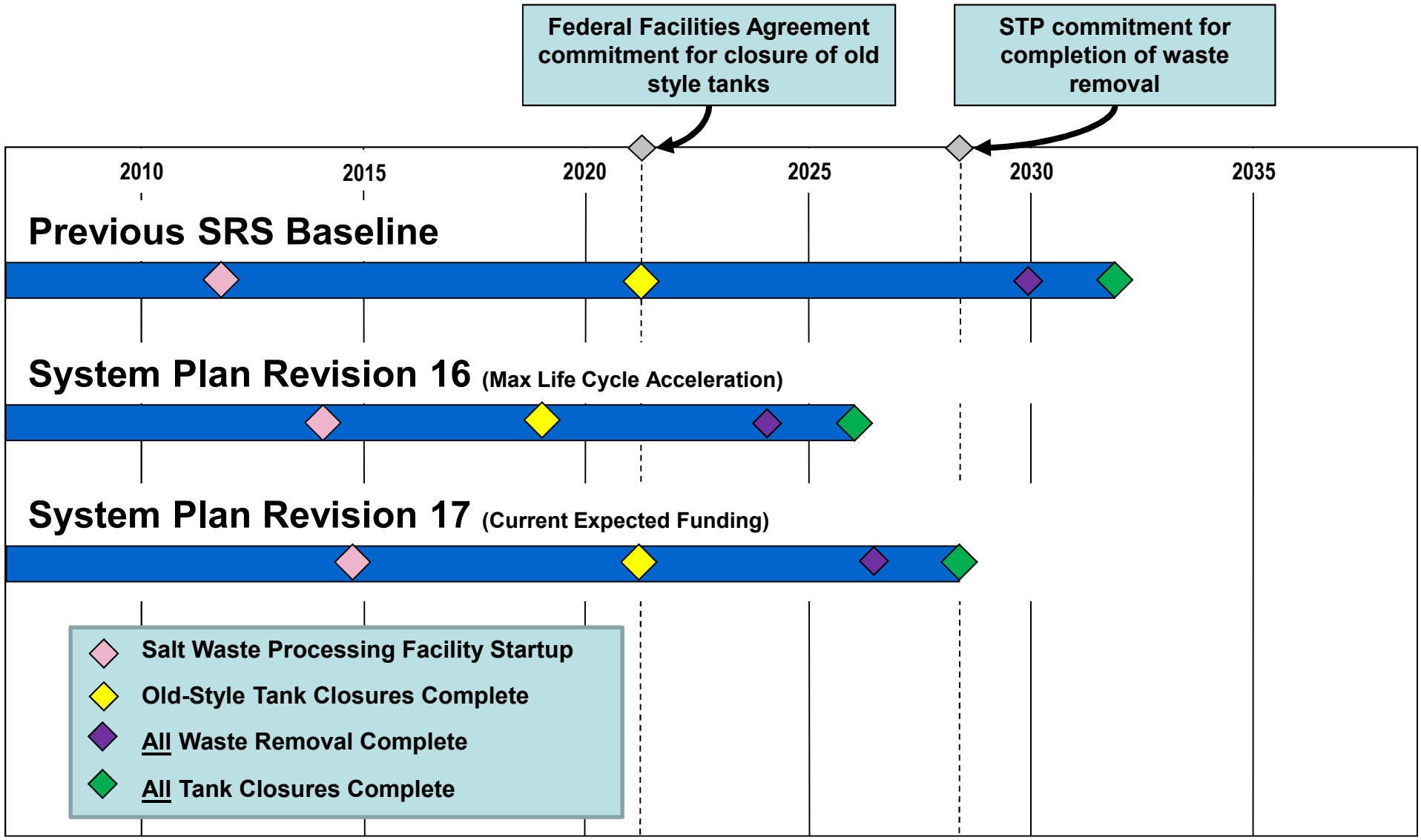
Projected Life Cycle Savings at Expected Funding



Summary

The Recommended Strategy supports:

- **FFA compliance**
- **STP compliance**
  - **All salt and sludge processed by 2026**
- **Major portion of Life Cycle Cost savings preserved**
  - **4 years at $2B**
- **Maintains the option for further Life Cycle acceleration with additional investment**

Recommended Strategy Identified the Inputs and Assumptions for Revision 17 of the System Plan

System Plan Rev 17 Status

Approved by SRR and DOE

System Plan Targeted Results

System Plan Rev. 17 assumptions are aligned to meet the Federal Facility Agreements for waste removal and tank closure commitments and the Site Treatment Plan commitment for completion of waste processing

- **Process salt waste**
  - Operate Interim Salt Processing (ARP/MCU) to provide needed tank space and support Salt Waste Processing Facility (SWPF) Operations
  - Provide feed to SWPF & Small Colum Ion Exchange (SCIX)
  - Start up and operate SWPF & SCIX
- **Reduce lifecycle cost and schedule for sludge processing**
  - Optimize Defense Waste Processing Facility (DWPF) processing efficiency (waste loading, process improvement, etc.)
  - Deploy technology for reducing sludge mass – aluminum removal
- **Close tanks**
  - Deploy technologies for tank cleaning – chemical, mechanical and annulus
  - Gain regulatory approval – Section 3116 and State
- **Support H-Canyon nuclear materials disposition operations**

Inputs and Assumptions

- Changes are driven by:
  - Advances in Technology
  - Change in Sequencing
  - Acceleration Opportunities
  - Cost Savings Opportunities
  - Funding Adjustments

System Plan Rev 17 Inputs and Assumptions

- ARP/MCU
  - The ARP and MCU facilities will shutdown prior to the startup of SWPF allowing for SWPF tie-ins
- Small Column Ion Exchange (SCIX)
  - Rescheduled based on funding to September 2018
- Salt Waste Processing Facility (SWPF)
  - Start-up October 2014
  - Processing rates increased through implementation of next generation solvent

System Plan Rev 17 Inputs and Assumptions

- Saltstone Processing Facility
  - Processing supports ARP/MCU operations and is increased with SWPF startup
- DWPF will implement productivity enhancements during the SWPF tie-in outage
  - Modifications support increased influents from SWPF acceleration
- DWPF melter replacement occurs during the SWPF tie-in outage and then every 6 years

Results

Key Milestone	Revision 16	Rev. 17	FFA/STP Commitment
Date when all Type I, II, and IV tanks are closed	2018	2022	2022
DWPF processing complete	2024	2026	2028
Salt Processing Complete	2024	2025	2028
Total number of canisters produced	7,557	7,580	N/A
–Salt only canisters produced	*0*	*0*	N/A
Additional Canister Storage Need	December 2015	December 2016	N/A
Initiate SWPF Processing	July 2014	October 2014	N/A
–Salt Solution Processed via DDA only	*2.8 Mgal*	*2.8 Mgal*	N/A
–Salt Solution Processed via ARP/MCU	*6 Mgal*	*5.2 Mgal*	N/A
–Salt Solution Processed via SCIX	*27Mgal*	*16 Mgal*	N/A
–Salt Solution Processed via SWPF	*61Mgal*	*78 Mgal*	N/A
–Total Salt Solution Processed	*97 Mgal*	*102 Mgal*	N/A
Total number of Saltstone Disposal Units	42	12*	N/A

* Higher capacity “Mega” SDUs

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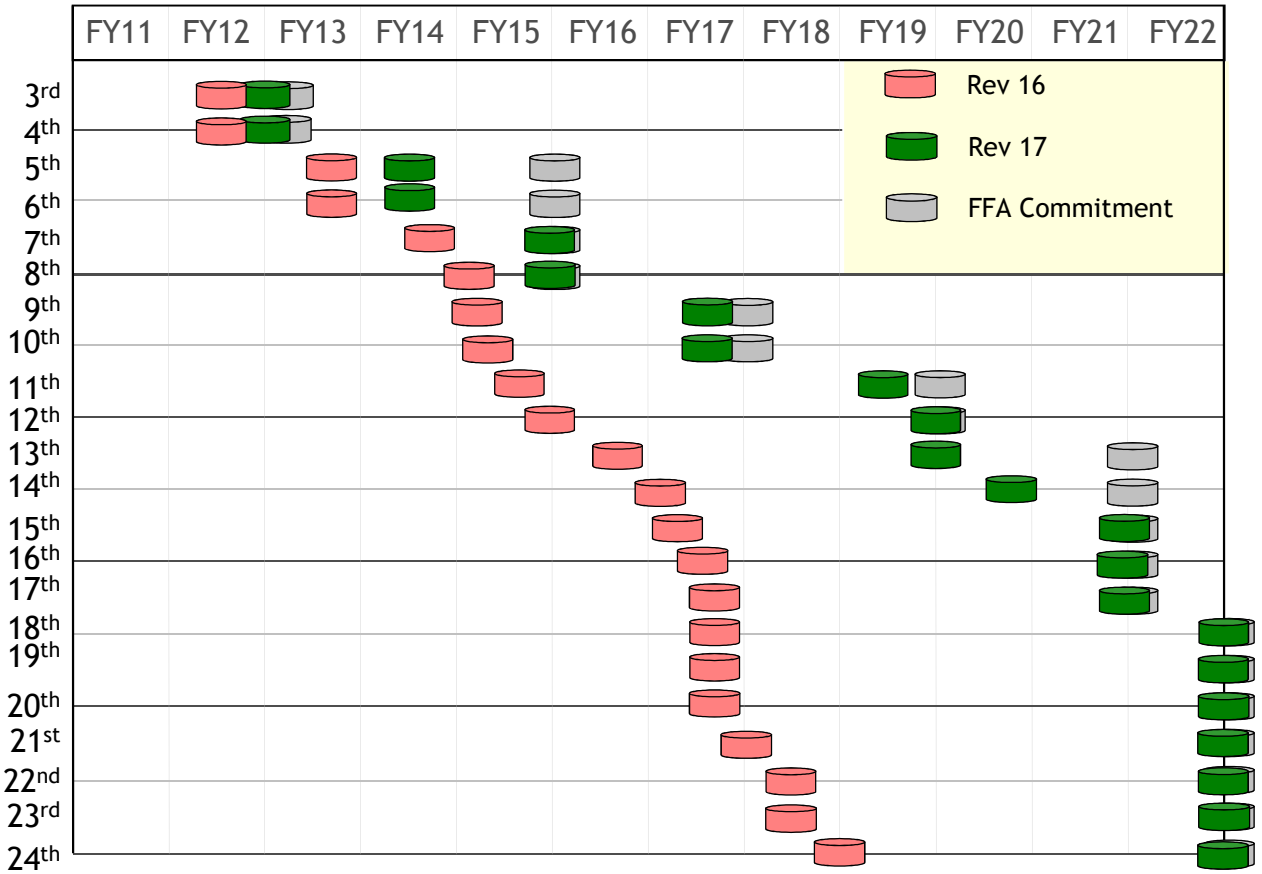
Closure Summary



Summary

- The System Plan documents current operating strategy of the SRS Liquid Waste System
- System Plan Rev. 17 assumptions are aligned to meet the Federal Facility Agreements (FFA) for waste removal and tank closure commitments and the Site Treatment Plan (STP) commitment for completion of waste processing
- System Plan Revision 17 forecasts compliance with FFA and STP commitments