



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

# Savannah River Site Overview

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## SRS: A history of national service

- Since the early 1950s, the Savannah River Site (SRS) has provided knowledge, technology and integrated solutions for our most pressing national needs.
- SRS pioneered the development of nuclear technologies and deployed those technologies at scales never before imagined.
- SRS accomplishments continue to stand at the core of our nation's nuclear deterrent.



### SRS at a Glance

Established in 1950 to support national defense missions

Produced tritium (only U.S. source) and weapons-grade plutonium

Over 38,000 workers at peak (Current workforce is ~11,000)

SRS covers 198,000 acres (310 square miles)

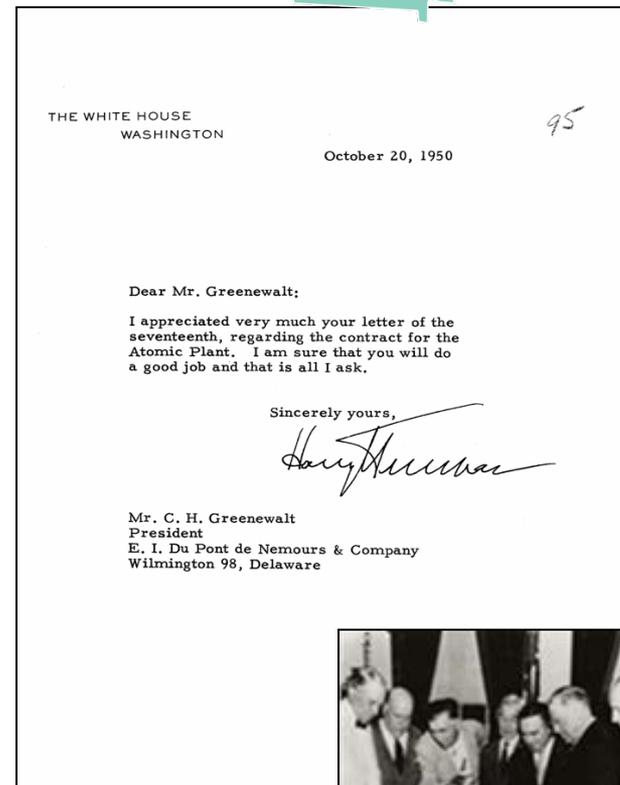


Historic Photos (from left)  
R Reactor in 1951  
H Canyon in 1952

# History of Savannah River Site



- **Sept. 23, 1949**
  - President Truman announced Russia tested its first atomic weapon
- **June 12, 1950**
  - Atomic Energy Commission asked E.I. Du Pont de Nemours & Company to undertake a new atomic project
  - Du Pont built SRS and operated it for nearly 40 years
- **April 1, 1989**
  - Washington Savannah River Company took over as SRS's prime contractor
- **August 1, 2008**
  - Savannah River Nuclear Solutions assumed responsibility for SRS management and operations
- **June 1, 2009**
  - Savannah River Remediation assumed responsibility for SRS Liquid Waste Operations



## Produce and recover nuclear materials

Tritium

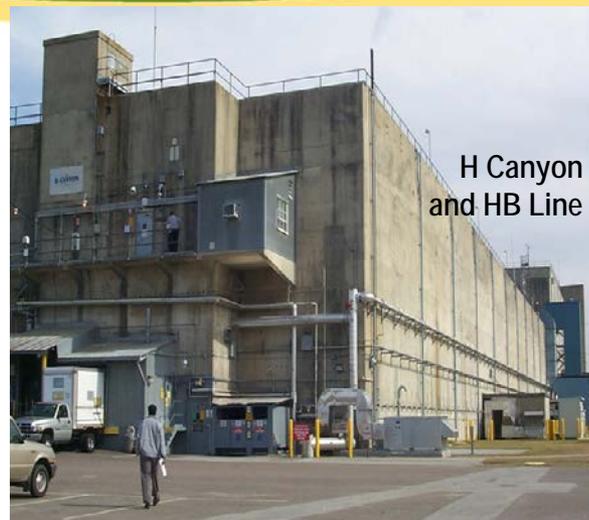
Pu-238

Pu-239

Special  
Isotopes

Uranium  
Recovery

- Early Years
  - Five reactors
  - Two chemical separations plants
  - Heavy water extraction plant
  - Nuclear fuel and target fabrication facility
  - Waste management facilities (liquid & solid)
  - Laboratory/Analytical facilities
- Produced 36 metric tons of Plutonium (Pu) from 1953-1988



Cold War ending meant a completely different philosophy and approach to the nuclear arsenal.

## Current Missions are Vital to our Nation

- SRS is a multi-program Site with national missions:
  - DOE-Environmental Management (EM) and National Nuclear Security Administration (NNSA)
- SRS continues its heritage of service to the nation through environmental stewardship, nuclear nonproliferation, and national security.
  - **Environmental Stewardship**
    - Safe, effective cleanup of Cold War legacy nuclear materials
    - Treatment & disposition of radioactive liquid waste
    - Construction of Salt Waste Processing Facility
    - Groundwater cleanup
    - Deactivation & Decommissioning
  - **Nuclear Nonproliferation**
    - Construction of Mixed Oxide Fuel Fabrication Facility and Waste Solidification Building
  - **National Security**
    - Nation's only supplier of tritium for the nuclear stockpile



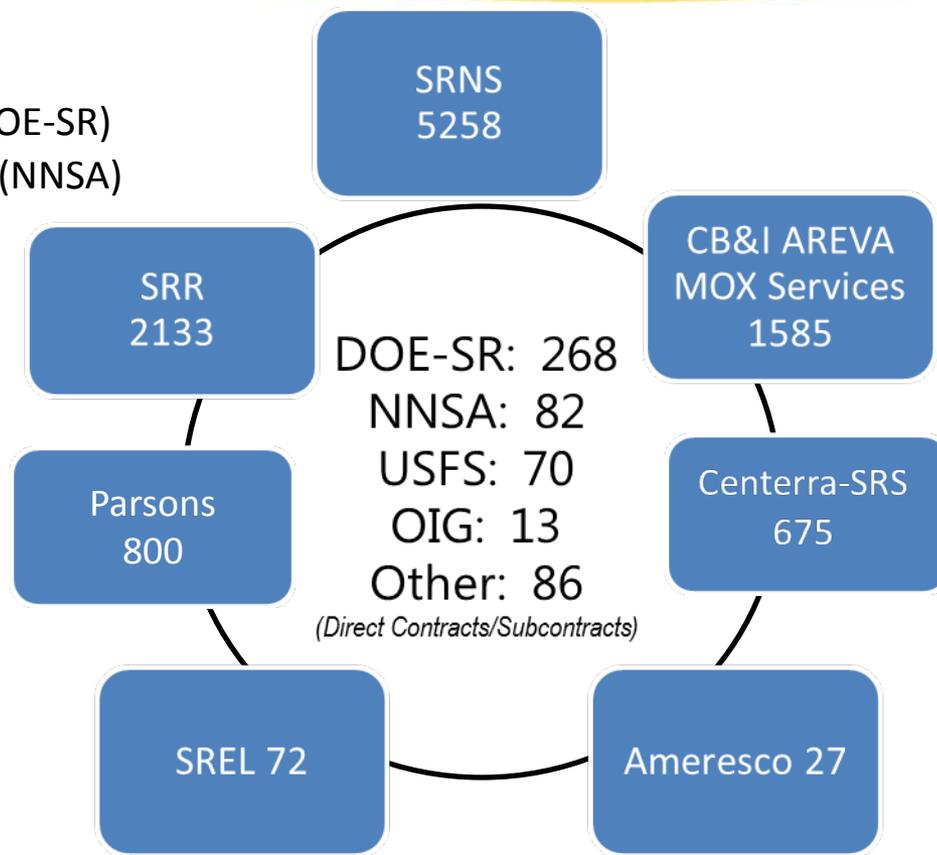
# SRS Team: Partners in Progress

## Federal Agencies

- DOE Savannah River Operations Office (DOE-SR)
- National Nuclear Security Administration (NNSA)
- U.S. Forest Service (USFS)
- Office of Inspector General (OIG)

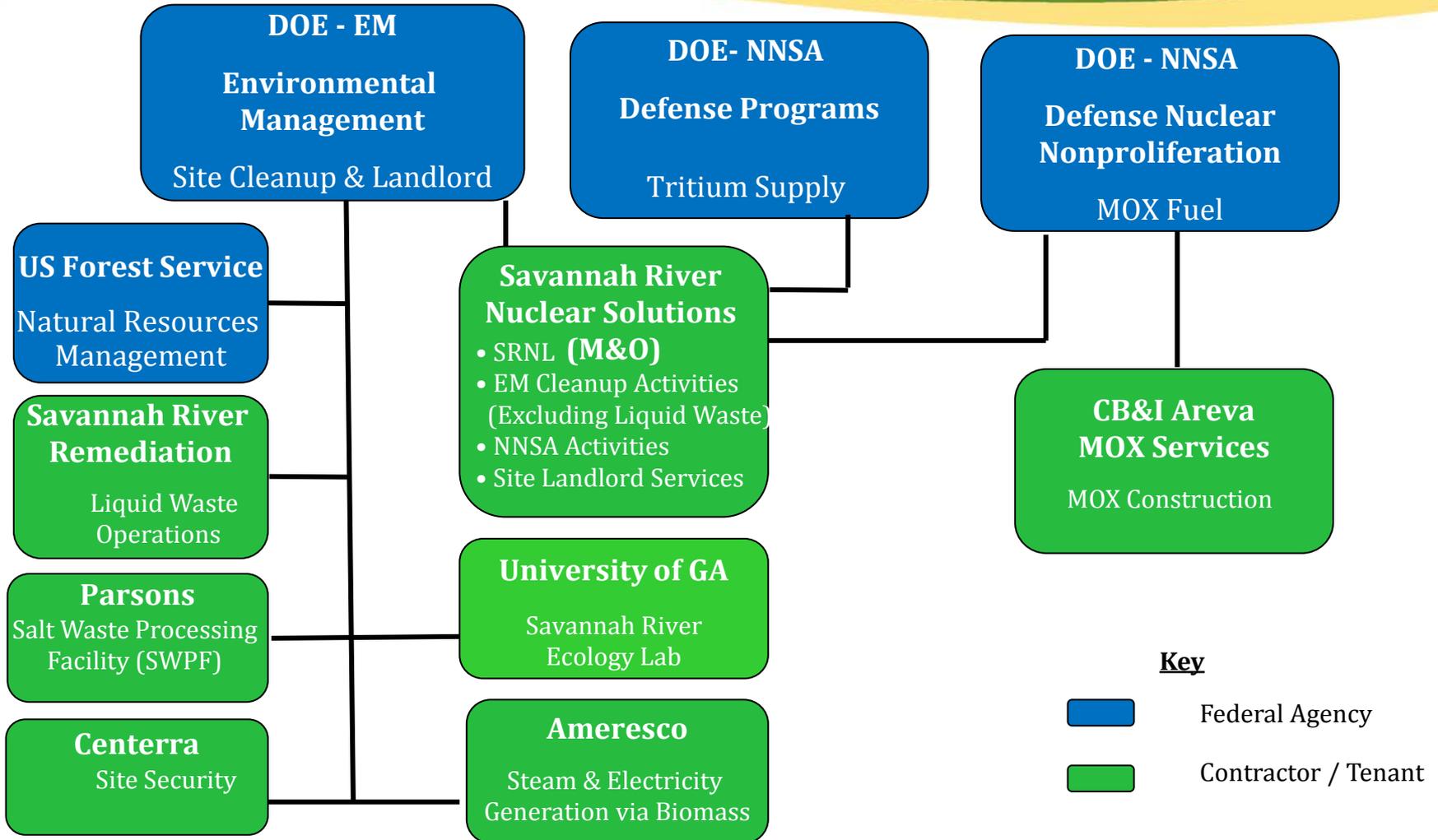
## Contractors

- Savannah River Nuclear Solutions (SRNS)
  - Management & Operations
  - Savannah River National Laboratory (SRNL)
- Savannah River Remediation (SRR)
  - Liquid Waste Operations
- Parsons (Salt Waste Processing Facility)
- Ameresco (Biomass Cogeneration Plant)
- Centerra-SRS (Security)
- CB&I AREVA MOX Services
  - Mixed Oxide Fuel Fabrication Facility (MOX)
- University of Georgia
  - Savannah River Ecology Laboratory (SREL)

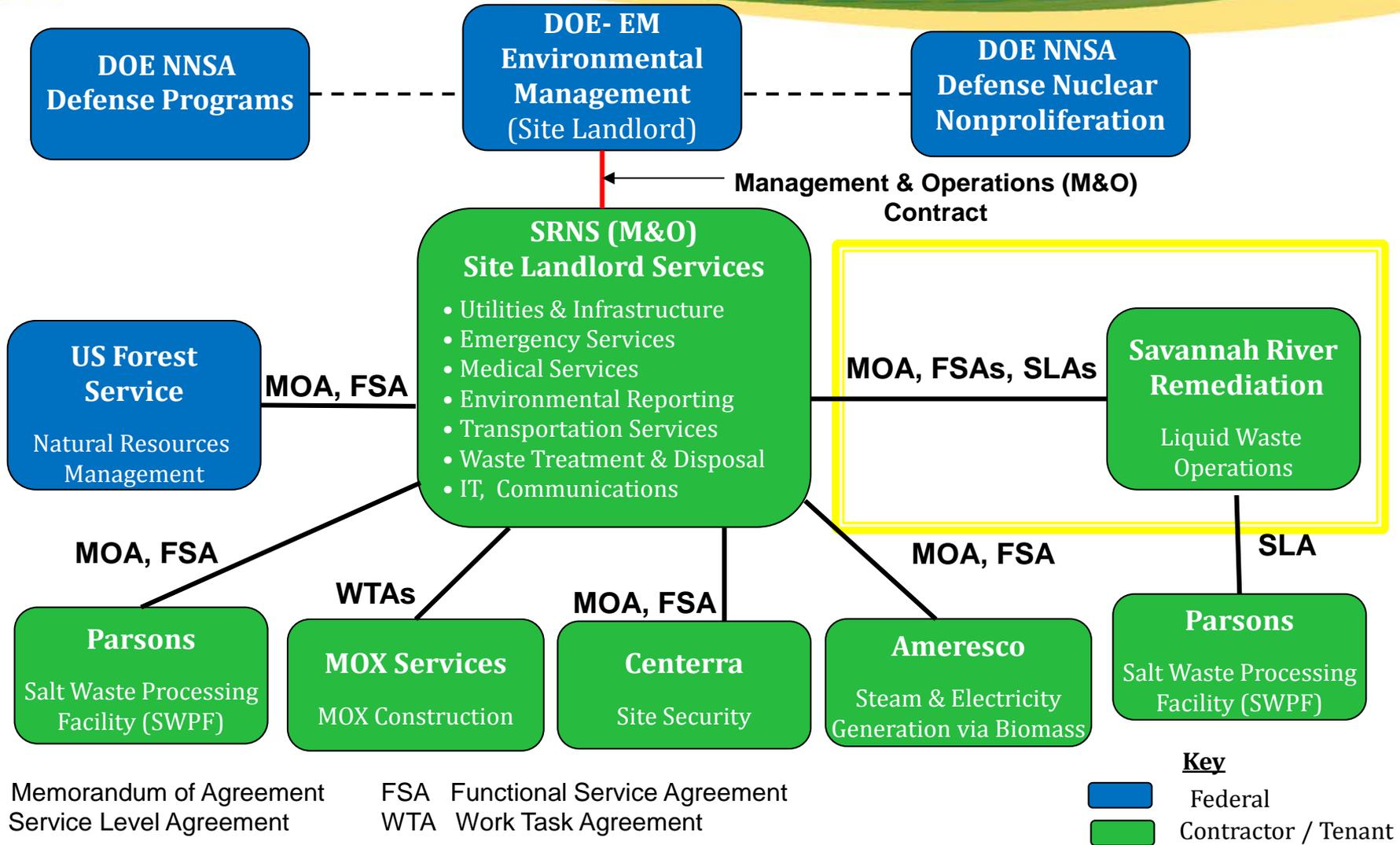


**SRS Workforce = 11,068**  
**4th Quarter FY15**

# SRS Alignment of Federal Agencies with Primary Contractors/Tenants

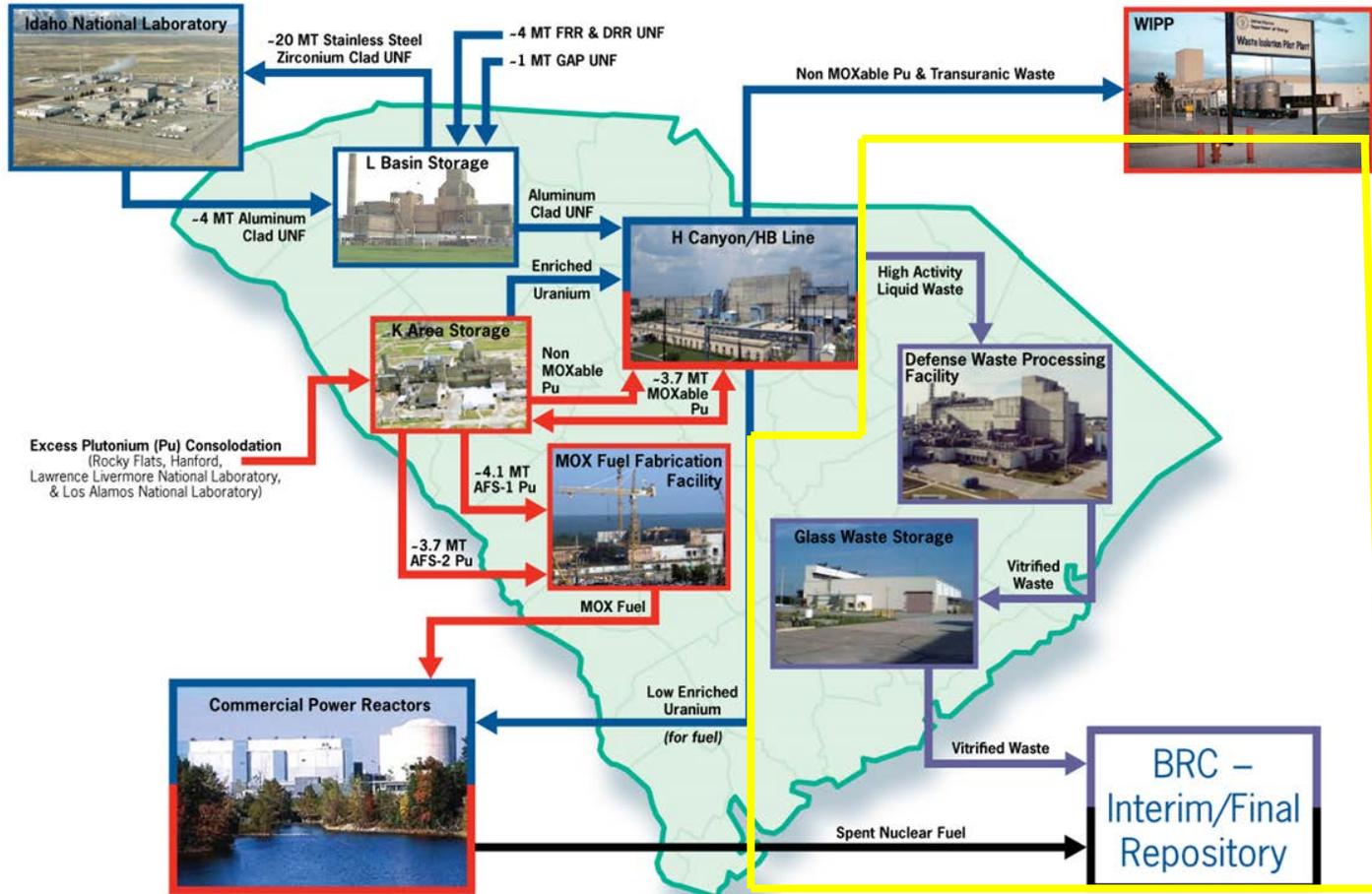


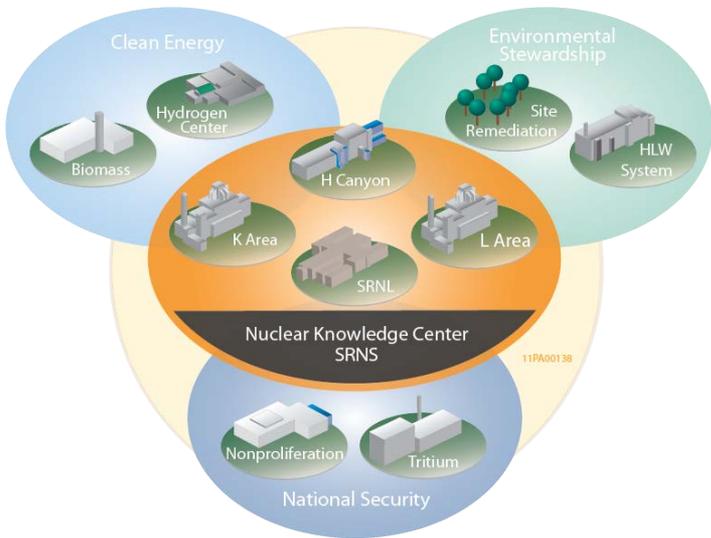
# Established Interface Network between Site Tenants



- **Memorandum of Agreement (MOA)**  
Highest Level agreement between the M&O contractor and an SRS Tenant that creates the initial framework for potential exchange of services
- **Service Level Agreement (SLA)**  
Agreement that authorizes specific, direct services between the M&O contractor and the site tenant per the provisions of the MOA
- **Functional Service Agreement (FSA)**  
Agreement that defines services provided to a service requester that are not charged to the requester's contract. Service Provider (M&O) will receive funding in their Financial Plan (authorized by DOE) to cover the costs
- **Work Task Agreement (WTA)**  
Combination of components similar to SLA and FSA agreements unique to only MOX Services interface

# Nuclear Materials Integration: National and International Reach





## Multi-program National Laboratory

### SRNL-provided Services for Liquid Waste Programs

- Performs a variety of analyses, including chemical, radiological, metallurgical, etc.
- Conduct research, studies, and technology development to address the Liquid Waste program needs
- Dosimetry processing capabilities for the on-site processing of routine and special dosimeters
- Processing capabilities for personnel environmental and nuclear accident dosimeters, analysis of biological samples

## Environmental Stewardship



Solvent extraction technology for salt waste processing



Cleanup technology

## Clean Energy



Porous wall hollow glass microspheres



Off-shore wind research

## National Security



FBI forensics



Tracking /locating technology

## Environmental Monitoring

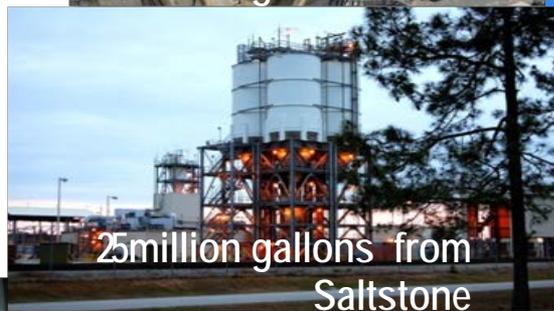
- Characterize and quantify contaminants released from SRS
- Calculate radiation exposure from SRS to the public
- Assess the effects, if any to the public and on the environment
- Demonstrate compliance with applicable standards established by:
  - Environmental Protection Agency
  - South Carolina Department of Health and Environmental Control
  - Georgia Department of Natural Resources
  - Department of Energy

## Environmental Stewardship

- Lead development, validation and assessment of breakthrough technologies to accelerate current DOE national cleanup priorities.
- Capitalize SRS competencies to solve the nation's nuclear materials disposition issues.

## Current LW contractor is Savannah River Remediation LLC (SRR)

- Safely manage ~37 million gallons of radioactive liquid tank waste to be treated and stabilized for final disposition
- Empty, clean, and close radioactive waste tanks
- Operating major nuclear facilities to treat and dispose of waste





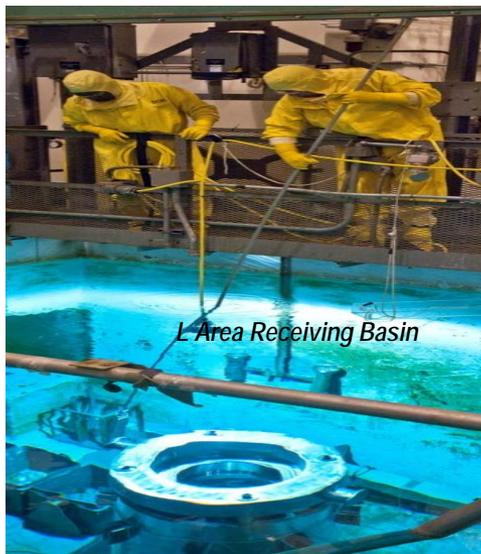
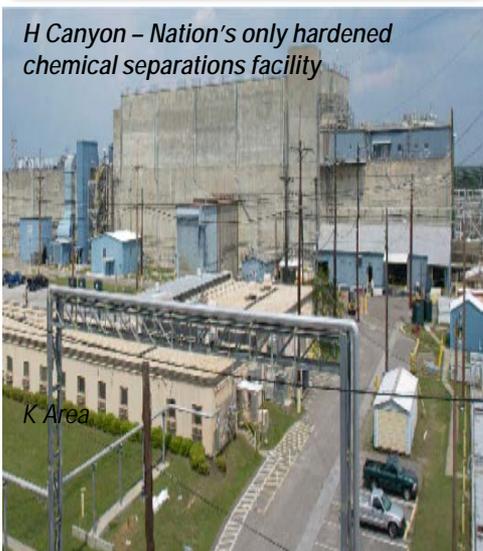
*Constructed by Parsons*

- ✓ Expected CD-4 Finish Date: December 2018
- ✓ Construction Completion: 90%
- ✓ Commissioning Completion: 18%
- ✓ Forecast Turnover to LW Operations 3<sup>rd</sup> Qtr FY2020

This facility will:

- Process approximately 90 million gallons of salt waste
- Separate low volume/high activity waste from high volume/low activity waste
- Transfer high activity waste to the Defense Waste Processing Facility
- Transfer low activity waste to the Saltstone Production Facility
- 90% of Tank Farm liquid radioactive waste, (97 Mgal. after dissolution)
- SWPF nominal capacity of 6 Mgal/year

## Nuclear Materials Interface with Liquid Waste Program



- The LW contractor receives liquid radioactive waste from H-Canyon resulting from the processing of spent nuclear fuel and plutonium materials.
- Quantities currently range up to 300,000 gallons per year depending on tank farm capacity.
- Spent nuclear fuel and plutonium material processing may continued through the early 2020's.
- The LW contractor also receives, treats and disposes of SRNL generated liquid waste from sample processing in H-Canyon.

# SRS Lifecycle Milestones

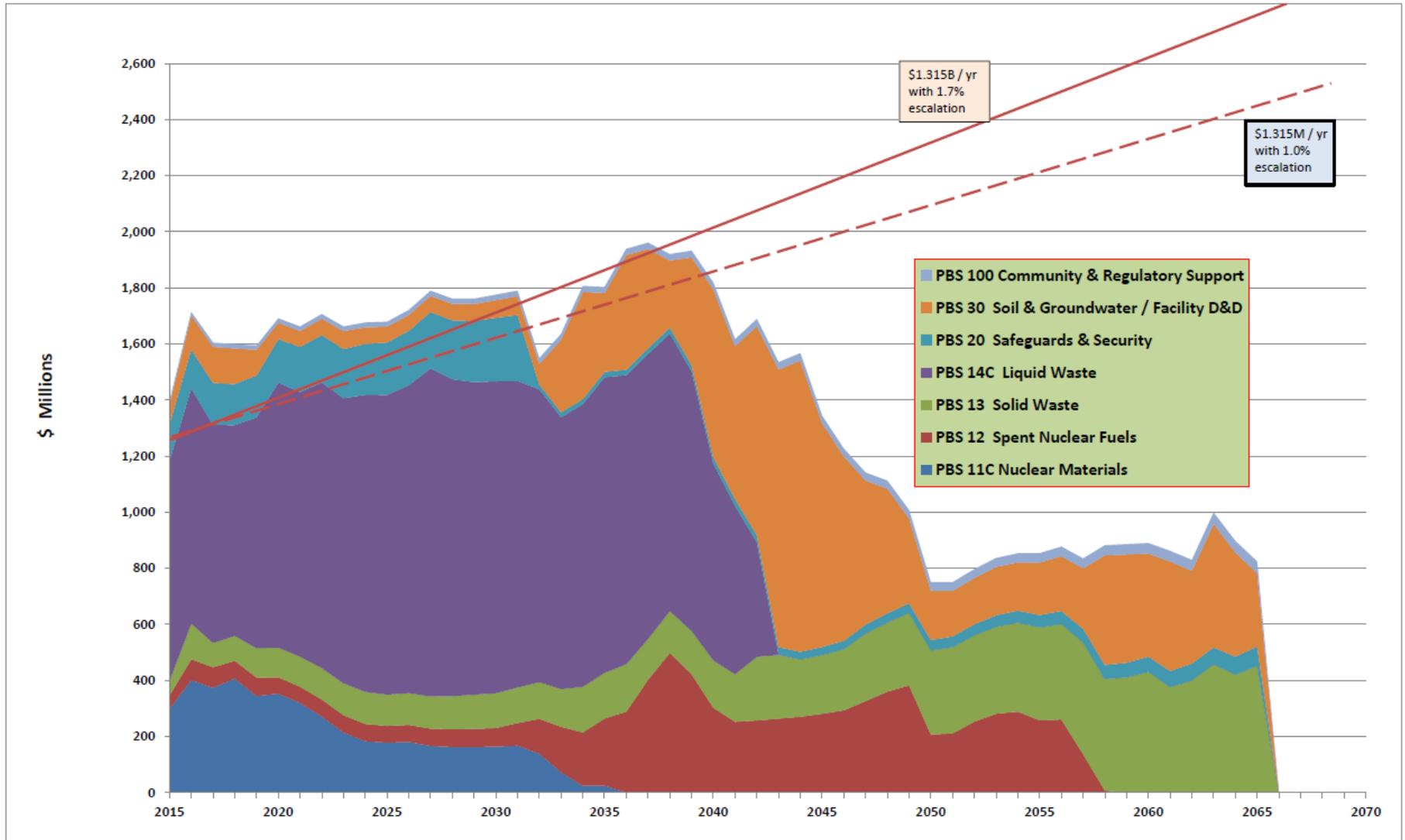
- Nuclear Materials, PBS-11C
  - Complete processing of SNF & Plutonium FY2023
  - Mission Complete FY2033
- Spent Nuclear Fuel, PBS-12
  - Complete receipts of SNF FY2035
  - Begin dry storage of remaining SNF FY2049
  - Mission Complete FY2058
- Solid Waste & Infrastructure, PBS-13
  - Complete Legacy TRU waste shipments FY2022
  - Complete shipment of HLW and SNF offsite FY2060
  - Mission Complete FY2065

# SRS Lifecycle Milestones

- Liquid Waste, PBS-14C
  - Begin SWPF Operations FY2020
  - STP – Remove noncompliant tanks from service FY2028
  - Close all Type I/II/IV Tanks FY2032
  - Complete DWPF Ops FY2040
  - Complete Saltstone Ops FY2041
  - Close all remaining waste tanks FY2042
  - Mission Complete FY2043
- Safeguards & Security, PBS-20
  - Mission Complete FY2065
- Soil & Water Remediation and D&D, PBS-30
  - Close & Cap F-Tank Farm FY2044
  - Close & Cap H-Tank Farm FY2048
  - Close & Cap Z-Area (SDU's) FY2050
  - D&D S-Area (DWPF) FY2061

# SRS EM Program Lifecycle Cost Projection

FY15 Remaining Lifecycle Total Cost by PBS



# Sustaining Missions Vital to our Nation and our Future

- Continuing to leverage strategic investments to successfully fulfill and grow missions of national importance
  - Leading **Environmental Management** priorities to safely and efficiently clean up the environmental legacy, reduce risk and protect our people, neighbors and environment
  - Teaming with **National Nuclear Security Administration** to enable national defense capabilities (MOX, H Canyon, Tritium)
  - Partnering with **Office of Nuclear Energy** goals to provide clean, reliable energy sources, reduce greenhouse gases, and enhance national security
  - Applying **SRNL science and technology** expertise for business and mission growth



# Community and Collaborations



## The Liquid Waste Program is Integral to Achieving the Site's Missions

- The Savannah River Site has a long history of safely supporting the nation's security while protecting our workers and the environment.
- The activities of the Liquid Waste contractor directly lead to reducing the highest radioactive risk to the citizens of South Carolina.
- Partnerships with the site M&O Contractor and the Savannah River National Laboratory for services and direct support is vital.