

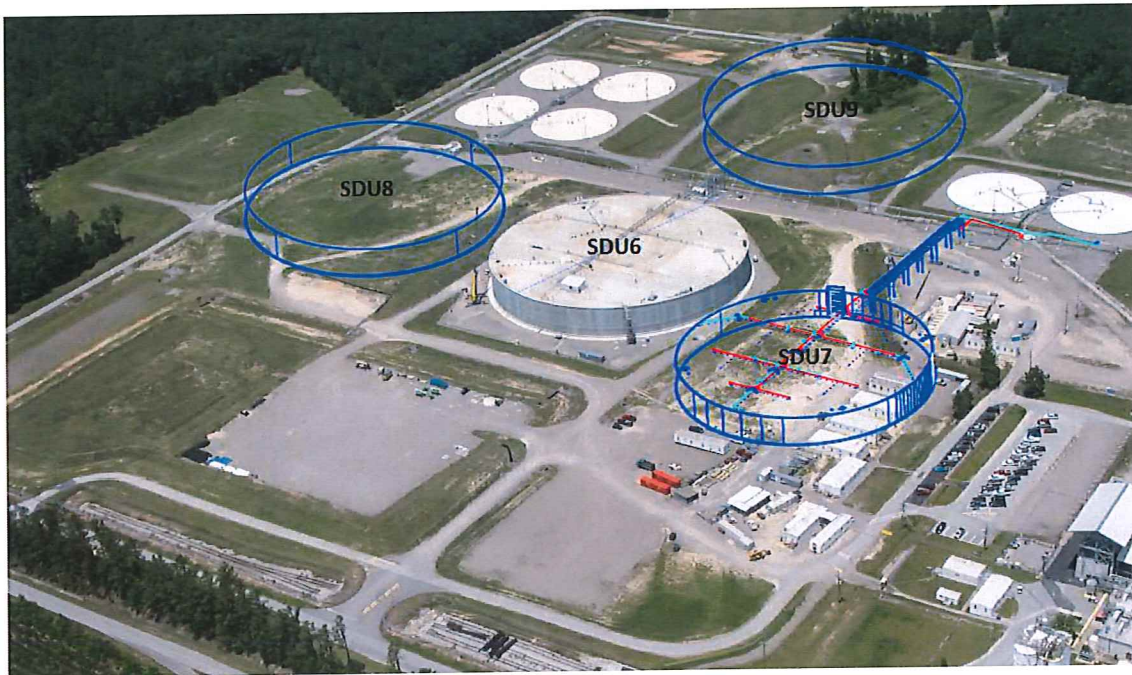


United States Department of Energy
Office of Environmental Management (EM)
Savannah River Operations Office

Project Execution Plan

Saltstone Disposal Unit #7

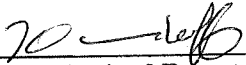
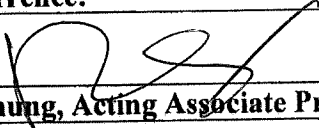

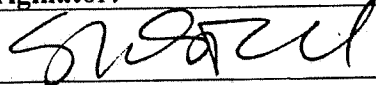
Project 17-D-402



EM Non-Major System Project

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Departmental Approvals for Saltstone Disposal Unit #7
Project Execution Plan

Project Management Executive Approval:	
	3/23/2018
James Owendoff, Principal Deputy Assistant Secretary for Environmental Management	Date
Concurrence:	
	3/23/18
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	3/16/18
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Change Synopsis

Revision	Effective Date	Summary of Change
A	12/16/2016	Initial Issuance
B	2/15/2017	Changes to incorporate feedback from Independent Cost Review, February 6-8, 2017
C	3/7/2017	Changes to incorporate follow-up feedback from Independent Cost Review Report
D	3/8/2017	Changes to incorporate PM comments
0	3/16/2017	Issued for Signature
1	3/2018	Complete CD-2/3 Revision

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List of Acronyms

ACWP	Actual Cost of Work Performed
AEA	Atomic Energy Act
AFA	Approval for Acceptance
AHA	Assisted Hazards Analysis
ALARA	As Low as Reasonably Achievable
ANSI	American National Standards Institute
APM	[DOE Office of] Acquisition and Project Management
AS	Acquisition Strategy
ASME	American Society of Mechanical Engineers
AWWA	American Water Works Association
BCWP	Budgeted Cost for Work Planned
BCWS	Budgeted Cost for Work Scheduled
BOP	Balance of Plant
B&R	Budget and Reporting
BAC	Budget At Completion
BCP	Baseline Change Proposal
BCSW	Budgeted Cost for Work Scheduled
CA	Control Account
CBB	Contract Budget Base
CCB	Change Control Board
CD	Critical Decision
CE	Chief Executive for Project Management
CERCLA	<i>Comprehensive Environmental Response, Compensation and Liability Act of 1980</i>
CFO	Chief Financial Officer
CFR	Code of Federal Regulation
CHAP	Consolidated Hazards Assessment Process
CM	Configuration Management
CO	Contracting Officer
COE	Corps of Engineers
COR	Code of Record / Contracting Officer Representative
CPAF	Cost Plus Award Fee
CPB	Contract Performance Baseline
CPI	Cost Performance Index
CPM	Contractor Project Manager
CR	Continuing Resolution
CR	Change Request
CRD	Contractor Required Documents
CSRA	Central Savannah River Area
CTO	Construction Turnover
D&R	Dismantle and Remove
DCF	Design Change Form
DEAR	Department of Energy Acquisition Regulation

DFFPD	Deputy Federal Project Director
DNFSB	Defense Nuclear Facilities Safety Board
DOD	[U.S.] Department of Defense
DOE	[U.S.] Department of Energy
DSA	Documented Safety Analysis
DSS	Decontaminated Salt Solution
EAC	Estimate at Completion
ECA	Environmental Compliance Authority
EEC	Environmental Evaluation Checklist
EIR	External Independent Review
EM	Office of Environmental Management
EMS	Environmental Management Systems
EPA	[U.S.] Environmental Protection Agency
ERO	Emergency Response Organization
ES&H	Environment, Safety, and Health
EV	Earned Value
EVMS	Earned Value Management System
FR	Facility Representative
FAR	Federal Acquisition Regulation
FEOSH	Federal Employee Occupational Safety and Health
FFA	Federal Facility Agreement
FFPS	Firm Fixed Price Subcontract
FML	Flexible Membrane Liner
FPD	Federal Project Director
GOCO	Government Owned and Contractor Operated
GPP	General Plant Project
HDPE	High Density Polyethylene
HLW	High-level Waste
IPABS	Integrated Planning, Accountability and Budgeting System
IPR	Independent Project Review
IPT	Integrated Project Team
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
ISSM	Integrated Safeguards and Security Management
IWTF	Industrial Wastewater Treatment Facility
KPP	Key Performance Parameter
LCCE	Life Cycle Cost Estimate
LPSO	Lead Program Secretarial Office
LLW	Low-level Waste
LRE	Latest Revised Estimate
LW	Liquid Waste
LWO	Liquid Waste Operations
LWSP	Liquid Waste System Plan
M&O	Management and Operating
Mgal	Million Gallons

MR	Management Reserve
mR/hr	Millirem per Hour
MSA	Management Self-Assessment
MT	Modification Traveler
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NNSA-SRO	National Nuclear Security Administration Savannah River Field Office
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NQA	Nuclear Quality Assurance
NRC	Nuclear Regulatory Commission
NSPS	New Source Performance Standards
NTB	Near-Term Baseline
OAC	Operations Acceptance Checklist
OAPM	Office of Acquisition and Project Management (MA-60)
ODC	Other Direct Cost
OMB	U.S. Office of Management and Budget
OPC	Other Project Cost
OPER	Out-year Planning Estimate Range
OSHA	Occupational Safety and Health Administration
PA	Performance Assessment
PE	Professional Engineer
PAD	Performance Assurance Division
PARS	Project Assessment and Reporting System
PB	Performance Baseline
PBS	Project Baseline Summary
PD	Project Director
PDRI	Project Definition Rating Index
PDSA	Preliminary Documented Safety Analysis
PED	Planning, Engineering, and Design
PD	Preliminary Design
PEM	Project Engineering Manager
PEP	Project Execution Plan
PM	Project Manager
PMB	Project Management Baseline
PME	Project Management Executive
PMP	Project Management Plan
PMRC	Project Management Risk Committee
POC	Point of Contact
PPA	Programs, Projects, and Activities
PPEP	Preliminary Project Execution Plan
PPR	Project Peer Review
PSO	Program Secretarial Office or Officer

PSUP	Power Services Utilization Permits
PTA	Project Technical Authority
QA	Quality Assurance
QAP	Quality Assurance Program
QC	Quality Control
QPR	Quarterly Progress Review
RA	Readiness Assessment
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act of 1976
RMP	Risk Management Plan
ROAF	Risk and Opportunity Analysis Form
ROAR	Risk and Opportunity Analysis Report
RTO	Ready To Operate
S/RID	Standards/Requirements Identification Documents
SAE	Secretarial Acquisition Executive
SARA	Superfund Amendments and Reauthorization Act of 1986
SC	State of South Carolina
SCDHEC	South Carolina Department of Health and Environmental Control
SDF	Saltstone Disposal Facility
SDS	Safety Design Strategy
SDU	Saltstone Disposal Unit
SE	Systems Engineering
SER	Safety Evaluation Report
SFT	Salt Feed Tank
SME	Subject Matter Expert
SMSRP	Storm Water Management and Sediment Reduction Plan
SOW	Statement of Work
SPF	Saltstone Production Facility
SPI	Schedule Performance Index
SR	Savannah River Operations Office
SRIP	Savannah River Implementing Procedure
SRM	Savannah River Manual
SRNS	Savannah River Nuclear Solutions
SRR	Savannah River Remediation
SRS	Savannah River Site
STA	Site Technical Authority
STAR	Site Tracking, Analysis, & Reporting
STR	Site Technical Representative
SWMSRP	Storm Water Management and Sediment Reduction Plan
SWPF	Salt Waste Processing Facility
T&PRA	Technical and Programmatic Risk Assessment
TCPI	To-Complete Performance Index
TEC	Total Estimated Cost
TIPR	Technical Independent Project Review
TPC	Total Project Cost

TR&C	Task Requirements and Criteria
TSR	Technical Safety Requirement
US	United States [of America]
USQ	Unreviewed Safety Question
VAC	Variance At Completion
VE	Value Engineering
VM	Value Management
WBS	Work Breakdown Structure
WP	Work Package
WRSC	Washington Savannah River Company

1.0 PURPOSE AND INTRODUCTION

1.1 Purpose of the SDU 7 Project

The purpose of this Project Execution Plan (PEP) is to describe and formally document the overall management approach and organization for the Saltstone Disposal Unit #7 (SDU 7) project at the Savannah River Site (SRS). The SDU 7 project was initiated to provide landfill capacity for receipt of Low Activity Treated Waste grout. The need for the new disposal unit is driven by the SRS Liquid Waste System Plan (LWSP).

This PEP demonstrates how the Federal and Contractor staff will successfully address the mission need and meet project objectives. It establishes the governing framework including policies, procedures, and expectations, within which the project will be managed, planned, defined, designed, executed, monitored, controlled, reported and completed. This plan identifies the technical, schedule, and cost baselines and how uncertainties and risks will be managed. Where conflicts exist, this PEP supersedes all lower-tier project management documents. As a living document, this PEP will be kept under configuration control and updated periodically through project completion to accurately reflect the execution of the project.

This PEP was prepared by the Federal Project Director (FPD) with support from the Federal and Contractor Integrated Project Team (IPT). It was prepared in accordance with United States (US) Department of Energy (DOE) Order 413.3B *Program and Project Management for the Acquisition of Capital Assets*.

The FPD is authorized to revise the PEP as needed if changes are below Project Management Executive (PME) approval thresholds established herein.

1.2 Defense of Mission Need

The mission need addressed by this project is critical for the final disposition of the Decontaminated Salt Solution (DSS) that is produced by the liquid waste system and without which the commitments made in the Federal Facilities Agreement with the State of South Carolina cannot be achieved. The SDUs are required to provide the primary containment of Saltstone grout with sufficient capacity to support site closure goals and salt waste projections identified in the Liquid Waste System Plan.

2.0 PROJECT BACKGROUND

2.1 Overview of Savannah River Site

The SRS, a 310-square mile site, is located in the southeastern coastal area of the US in the state of South Carolina (SC). It is bordered to the west by the Savannah River, and is close to several major cities, including Augusta and Savannah Georgia and Columbia, Greenville, and Charleston South Carolina (Figure 1). It is in an area residents refer to as

the Central Savannah River Area (CSRA).



Figure 1 – Location of Savannah River Site

The SRS was constructed during the early 1950s to produce the basic materials used in the fabrication of nuclear weapons, primarily tritium and plutonium-239, in support of our nation's defense programs. Production of plutonium-239 has since stopped, but SRS remains a key DOE industrial complex dedicated to the safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and radioactive waste. Also, a major focus is the cleanup of legacy materials, facilities, and waste sites left from the Cold War.

Office of Environmental Management is the Lead Program Secretarial Office (LPSO) and has landlord responsibility for the SRS with specific responsibilities that include site-wide integration and planning, and implementation of projects in the areas of Waste Disposition, Nuclear Materials, and Area Completion. The National Nuclear Security Administration (NNSA) is one of the primary Site tenants, and its missions include support for a national Defense Program and Nuclear Non-Proliferation.

The SRS is Government-owned and Contractor-operated (GOCO). As such, the DOE enters into a Cost-Plus Award Fee (CPAF) type contract for the liquid waste (LW) program at SRS. The LW contractor will be furnishing all personnel, facilities, equipment, material, supplies, and services necessary for the performance of work as described in the Liquid Waste Contract Statement of Work (SOW).

The purpose of the LW contract is to achieve as much progress as possible over the term of the contract towards completion of that portion of the Office of Environmental Management (EM) mission at Savannah River Site to treat, store, and dispose of radioactive liquid waste.

The LW contract stipulates that "Vault construction at the SDF (Saltstone Disposal Facility) conducted in full support of the sustained disposal of low-level waste at the SDF through the basic term and exercised option period of the contract, including all its subparts; and construction activities staged to support the continued and uninterrupted disposal of low-level waste at the SDF."

2.2 Overview of the Regulatory Framework for Cleanup

The DOE derives its authority for the development and the regulation of the uses of nuclear materials and facilities in the United States from the *Atomic Energy Act* (AEA) of 1946 (Public Law 79-585), as amended by the *Atomic Energy Act Amendments* of 1954 (Public Law 83-703), and from the *Energy Reorganization Act* of 1974 (Public Law 93-438).

The DOE's remediation activities are governed by the following:

- *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) of 1980 (Public Law 96-510), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (Public Law 99-499).
- *Regulation 61-107.19, SWM: Solid Waste Landfills and Structural Fill*, as amended by South Carolina Department of Health and Environmental Control (SCDHEC), Effective Date May 23, 2008.
- *DOE Order 435.1*, as approved July 9, 1999.
- Section 3116 of the *Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (NDAA)* (Public Law 108-375).

SCDHEC Regulation R.61-107.19 establishes minimum standards for the site selection, design, operation, and closure of all solid waste landfills and structural fill areas. Disposal of waste under the purview of this regulation is based on the waste's chemical and physical properties and is not dependent upon the source of generation apart from municipal solid waste that shall be disposed in Class 3 landfills.

The objective of DOE Order 435.1 is to ensure that all DOE radioactive waste is managed in a manner that is protective of both worker and public health and safety and the environment.

Waste determinations are based on whether the byproducts in question meet all of the criteria set forth in Section 3116 of the NDAA (Public Law 108-375, 2004) for the Covered States. (Section 3116 currently identifies the Covered States as Idaho and South Carolina) Specifically, Section 3116 establishes the following criteria for determining that waste is not high-level waste (HLW):

- The waste does not require permanent isolation in a deep geologic repository for spent nuclear fuel or HLW.
- The waste has had highly radioactive radionuclides removed to the maximum extent practical.
- The waste meets either of the following conditions:

- The waste does not exceed concentration limits for a Nuclear Regulatory Commission (NRC) Class C low-level waste (LLW) and will be disposed of in compliance with the performance objectives set forth in Subpart C of Title 10, Part 61, of the *Code of Federal Regulations* (10 CFR Part 61), "Licensing Requirements for Land Disposal of Radioactive Waste"; or
- The waste exceeds concentration limits for Class C LLW but will be disposed of in compliance with the performance objectives set forth in Subpart C of 10 CFR Part 61, and pursuant to plans that DOE developed in consultation with the NRC.

As described in paragraphs (c) and (d) of Section 3116 of the NDAA, these criteria apply to certain waste that will be disposed of in South Carolina and Idaho, but not to waste that will be transported out of those states. Moreover, for other states, alternative criteria for waste determinations are specified in DOE Order 435.1, "Radioactive Waste Management," the associated "Radioactive Waste Management Manual," or the West Valley Policy Statement (for West Valley only). Nonetheless, in general, the various sets of criteria share several similarities, including the fact that all the sets of criteria refer to the performance objectives set forth in Subpart C of 10 CFR Part 61.

3.0 PROJECT DESCRIPTION

3.1 History of the Project

The mission of the DOE EM Program is to complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development and government-sponsored nuclear energy research. The SDU 7 project was initiated to provide landfill capacity for receipt of Low Activity Treated Waste grout. The need for new SDUs is driven by the SRS LW System Plan accelerated clean-up objectives. SRS is charged with reducing reliance on long-term liquid storage in the underground storage tanks in the Tank Farms.

Built in the 1980s, the Z-Area Saltstone Facility applies a process that immobilizes low level radioactive salt solution waste in grout. Dry materials are unloaded from dry bulk pneumatic trailers and conveyed to storage silos. The dry solids (fly ash, slag, and cement) are then discharged from the silos, weighed, and blended to produce a premix dry feed. Salt solution is received from H-Area Waste Tank 50 through the Inter-Area Transfer System and is temporarily held in a process feed tank (feed and bleed process). The premix and salt solution are proportionally measured and fed to a mixer in the 210-Z process room to produce a non-hazardous Saltstone grout, which is pumped to the disposal units for permanent disposition. The grout hardens inside the SDUs to form Saltstone which is a leach-resistant, non-hazardous solid waste form as defined by South Carolina Department of Health and Environmental Control (SCDHEC) regulations. The combination of the monolithic non-hazardous solid Saltstone waste form, concrete cell, and closure cap system controls migration of chemical and radioactive constituents to the environment.

The SDU projects have been initiated to provide landfill capacity for receipt of Low Activity Treated Waste (Saltstone) grout. Two rectangular disposal units were built in the 1990s but are nearly full. As of November 2017, six small and one mega circular disposal units have been completed.

The need for new disposal units (SDU 7) is driven by the SRS Liquid Waste System Plan to accelerate cleanup objectives. The circular SDU projects provide the benefit of lower disposal cost for decontaminated salt solutions (DSS). The grout itself provides primary containment of the waste. The walls, floor, and roof of the Disposal Units provide secondary containment. SDUs will be constructed in coordination with salt processing production rates and the liquid waste system plan.

3.2 Project Objectives

3.2.1 Mission Need

The addition of the SDUs is a critical necessity for the treatment, storage, and disposal of radioactive liquid waste at SRS. The mission need addressed by this project (SDU 7) is critical for the final disposition of the grouted low activity waste resulting from the treatment of liquid tank waste. Without the additional disposal capacity provided by SDU 7, SRS will soon run out of space to disposition this low activity waste and thus not able to remove liquid waste from the aging tank farms.

Specific objectives in three categories (technical, cost, and schedule) have been developed for this project. The following is a summary of those objectives.

3.2.2 Technical Objectives

The key technical objectives are:

- Operate all facilities in a safe, efficient, and compliant manner that protects human health and the environment.
- Minimize the generation of waste.
- Identify, monitor, and manage risks early and often to preclude or minimize adverse impacts to the project or its baseline elements.
- Align project outcomes with regulatory commitments.
- Provide adequate storage of low-curie salt to maximize salt disposition efforts.
- Minimize exposure of radioactive and hazardous contaminants to the industrial worker.
- Minimize human and animal intruder exposure to unacceptable risk associated with radiological and hazardous constituents.
- Maintain flammable gas concentration in the cell vapor space within the limits

specified by the Saltstone Production Facility's (SPF) documented safety analysis (DSA).

3.2.3 Cost Objectives

The key cost objectives are:

- Effect responsible stewardship of Federal dollars.
- Apply cost controls that achieve fiscal balance, demonstrate financial value, facilitate accurate budget projections, and allow for full disclosure reporting.
- Identify and manage cost risks early and evaluate the risks often to preclude or minimize adverse impacts to the project or its baseline elements.
- Work is planned and funded at a high confidence level.
- Work is executed within the established and approved funding levels.

3.2.4 Schedule Objectives

The key schedule objectives are:

- Meet all regulatory, programmatic and project milestones.
- Identify and manage schedule risks early and evaluate the risks often to preclude or minimize adverse impacts to the project or its baseline elements.
- To be ready for operations to support salt waste processing.
- Deliver government furnished services and items as scheduled and in a manner that supports Contractor execution against the performance measurement baseline.
- Optimize and integrate the disposal of solid radioactive waste with SRS solid waste disposal operations.
- Work is planned and scheduled at a high confidence level.
- Work is safely executed according to the established and approved project schedule.

3.3 Key Performance Parameters

The key performance parameters for the SDU 7 project are:

- Provide Saltstone grout containment capacity of no less than 30 million gallons (Mgal).
- Provide infrastructure capable of delivering Saltstone grout at 100 gallons per minute minimum.
- Install a single leak detection system in accordance with the Z-Area Industrial Solid Waste Landfill Permit requirements.

These parameters will be validated as follows:

- Final volume calculated from as-built drawings.
- Flow rate verified through as-built drawings and calculations.
- Documentation that SCDHEC approved leak detection system is in the Industrial Solid Waste Landfill construction permit.

3.4 Major Project Assumptions and Uncertainties

3.4.1 Planning Basis

Planning basis elements are requirements, determinations, and declarations that establish the foundation and skeletal structure of the project. These are “must haves,” and typically require external decisions or actions to change. The FPD does not identify or handle planning basis elements as uncertainties or risks because they are accepted facts. There may be a risk or opportunity indirectly associated with a planning basis due to related underlying assumptions.

The key planning basis elements are:

- Public health, worker safety, and the environment are protected at all times.
- Risk reduction is factored into the prioritization of work.
- Critical site infrastructure elements will remain available to support continued operations through the identified program life or suitable replacements will be secured and on-line before existing services are discontinued.
- Real property assets will not be transferred to other Program Secretarial Offices (PSO) before project completion.
- Post-closure activities and monitoring will continue after project completion.
- The SRS property boundary remains unchanged, land use is non-residential and the title remains under the ownership of the Federal government.
- Funded as a line item capital asset project budgeted and funded through EM Project Baseline Summary SR-0014C, “Radioactive Liquid Tank Waste Stabilization and Disposition.”

3.4.2 Assumptions and Uncertainties

Assumptions are statements or declarations of a condition, configuration, situation, or circumstance that help to refine and bound the limits within which the FPD will execute the project. Assumptions are determined by the FPD and approved by the PME in the Acquisition Strategy and/or the PEP.

For the purposes of project planning and risk management, assumptions are synonymous to presumptions because they reflect a professional attitude, belief, or opinion dictated by a probability of occurrence sufficiently high for the FPD to incorporate into the overall project approach. Inherent to assumptions are uncertainties. The FPD must assess these uncertainties and judge their relative impact on the ability to execute the project within established baseline parameters.

Assumptions, in part, serve as the basis for risk events or opportunities. As such, each assumption (with credible probability and impacts) must have an associated risk or opportunity evaluation performed. If credible adverse impacts are determined, these uncertainties must be formally identified and handled as risks to the project. If credible positive impacts are determined, these uncertainties must be formally identified and handled as opportunities for improving project success.

Assumptions must be correlated to the project work breakdown structure. Mapping assumptions to risks/opportunities helps to determine the completeness and adequacy of risk identification.

The key assumptions are:

- SDU 7 project will be turned over to operations in enough time to support salt waste processing in accordance with the LWSP.
- The SRS LW program is subject to and work must be performed in accordance with existing regulatory agreements (for example, Federal Facility Agreement (FFA) and Site Treatment Plan), Section 3116 legislation, and Consent Orders.
- The regulatory environment will remain relatively constant/stable.
- Services and resources required to be obtained from the site's Management and Operations (M&O) Contractor will be available to support planned/scheduled work activities.
- Craft resources will be available from local Union halls in sufficient numbers and skill types to perform craft work consistent with the project schedule and technical approach.
- Need for the SDUs will not change.
- Future changes in regulatory environment will have minimal impact to project.
- SDU 7 general design and safety bases are similar to SDU-6 therefore the SDU 6 Tailoring Strategy can be implemented for SDU 7.

The key uncertainties are:

- Inability of Contractor to secure personnel to perform scope of work.
- Inability to procure equipment/subcontractors in a timely manner.
- Availability of out-year funding.

- Public intervention.

3.5 Major Technical Interfaces

The SDU 7 project will interface with Site Infrastructure for the procurement of concrete from batch plants currently supplying other projects at SRS. The demand is not anticipated to affect or be affected by other SRS projects. Other interfaces include:

- Site Infrastructure for water and electrical power.
- Solid Waste and transportation for waste disposition.
- Environmental Protection for permitting.
- Savannah River National Lab if needed.
- Rigging for Construction.
- Competing demands for construction equipment.

3.6 Required Site Development, Permits and Licensing

This section provides an overview and guidance of expected permits, plans and organizational responsibilities for obtaining necessary permits or other regulatory requirements based upon the current process and equipment descriptions for SDU 7. The Environmental Compliance Authority (ECA) will coordinate activities between the Liquid Waste Operations (LWO) contractor, M&O contractor, and SCDHEC. This section also addresses project's activities concerning compliance with DOE, Federal, and State Health and Safety regulations.

3.6.1 Pollution Prevention and Waste Minimization

The construction contracts will require the contractors to protect the environment. Throughout construction, storm-water management techniques will be used to prevent erosion and contain storm water while the site is disturbed. Dust control measures will be implemented to minimize air pollution during site preparation and construction. The contracts will be required to conform to the requirements of DOE O 436.1 "Departmental Sustainability". The project has considered Executive Order 13693, "Federal Leadership in Environmental, Energy and Economic Performance" and DOE Order 436.1, "Departmental Sustainability". SRS implements these through its Environmental Management System, Site Sustainability Plan and Environmental Compliance Manual, Procedure 6.11, "Pollution Prevention Program".

3.6.2 Industrial Wastewater Treatment / Solid Waste Landfill Permits

Industrial Wastewater Treatment Facility (IWTF) construction and operating permits are generally required for new or modified wastewater treatment facilities. An IWTF permit is not required for SDU 7 construction; however, the Z-Area Industrial Solid Waste Landfill Permit #025500-1603 will be modified to support the revised cell configuration.

3.6.3 Air Quality / NESHAP Permit

The SRS Part 70 (Title V) Air Quality Permit requires all new or modified sources of air emissions be evaluated for compliance with state and federal air pollution control regulations and standards. The existing part to Air Quality Permit and National Emissions Standards for Hazardous Air Pollutants (NESHAP) air emissions evaluation for Low Activity Treated Waste Stream satisfies air emissions permit requirements.

3.6.4 National Environmental Policy Act (NEPA) Evaluation

SDU 7 requires Department of Energy Savannah River Operations Office (DOE-SR) approval of a NEPA evaluation of the potential environmental impacts and regulatory requirements. The process begins with the preparation of an Environmental Evaluation Checklist (EEC) for a proposed action which would initiate a new process, significantly change an existing process outside normal operations, or potentially result in an adverse environmental impact. The evaluation may result in the proposed action being categorically excluded pursuant to 10 CFR 1021 (NEPA implementing procedures), being covered by previously approved NEPA documentation, or requiring further impact analysis, such as an Environmental Assessment or Environmental Impact Statement. The EEC will be approved during the Conceptual Design and is anticipated that no further action is required. No environmental issues have been identified to date that would significantly impact this project. Preliminary NEPA analysis during the conceptual design phase indicates that the project is covered by previous NEPA documentation DOE/EIS-0082-S. NEPA is approved per SRR-ESH-2016-00075. The project will be located in a “greenfield” with no known environmental hazards. SDU 7 will require storm water drainage permits from the South Carolina Department of Health and Environmental Control.

3.6.5 Site Use and Site Clearance Permit

Site Use and Site Clearance Permits are required by the SRS Manual 1D and Site Infrastructure and Services, Procedure 3.02 - Site Real Property Configuration Control. This procedure defines the responsibilities and requirements for configuration control of facilities for which LWO contractor has management and operating responsibilities at SRS. SDU 7 will require a Site Use and Site Clearance Permit.

3.6.6 Power Services Utilization Permit

SRS Manual E7, Procedure 3.80 “Power Services Utilization Permits (PSUP)” requires a PSUP administered by the M&O Contractor Site Services Department, to be completed by the Project Manager whenever a plant modification requires additions or deletions to demand for Site Services, supplied steam, electricity, compressed air, domestic water, process water, or sanitary wastewater treatment.

PSUP Parts A and B document the request for changes to power services. Part C documents verification of protective devices for site electrical systems. Electricity will

be the only service provided to SDU 7 from Site Services. SDU 7 will not receive steam, compressed air, process water or sanitary wastewater treatment from Site Services.

3.6.7 Domestic Water Distribution Construction and Operation Permit

SDU 7 will not be tied into the SRS domestic water system during facility operations. No domestic water permit is required for facility operations.

If existing domestic water lines are to be relocated or extended for construction activities, a domestic water permit will be required. Guidance for applying and obtaining a domestic water permit can be found in the 3Q Manual, Procedure 3.12, Domestic Water Distribution Systems”.

3.6.8 National Pollutant Discharge Elimination System (NPDES) General Storm Water Water Management and Sediment Reduction Plan (SWMSRP) Permit

A NPDES General Storm Water Permit (Construction) will be required. M&O contractor environmental personnel are the permitting agents for SCDHEC for this permit. A Storm Water Management and Sediment Reduction Plan (SWMSRP) permit, a Grading Permit Application, and a Notice of Intent (NOI) are required as part of the permitting process for all new projects involving land disturbances before any construction, expansion, or modification may begin. A SWMSRP permit is required to obtain a Grading Permit prior to the start of site preparation activities.

3.6.9 Diesel Generator

Diesel equipment furnished by any vendor for use on SDU 7 shall comply with applicable federal, state, and local requirements, including but not limited to the requirements contained in SCDHEC Regulation R.61-62. The Project Manager, with support from the ECA, will verify all required permits or exemptions from permits are obtained for vendor furnished diesel equipment before such equipment is brought on the SRS premises for set up and installation.

4.0 MANAGEMENT STRUCTURE AND INTEGRATED PROJECT TEAMS

4.1 Organizational Setting

The SRS is a major DOE industrial complex whose post-Cold War mission has shifted from nuclear weapons production to that of risk reduction through security, stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste. The Office of EM, as the LPSO for SRS, plans and executes this mission. The EM Field Element is DOE-Savannah River Operations Office (DOE-SR) and is responsible for all landlord functions including supporting the DOE's other missions at SRS.

4.1.1 Project Management Executive (PME)

The Assistant Secretary for Environmental Management, EM-1, heads the Program Secretarial Office (PSO) as well as being the Project Management Executive (PME) for CD-2/3 (start of disposal cell construction) and CD-4 (project completion) for the SDU 7 project. As appropriately delegated, the PME will execute his/her duties in accordance with DOE Order 413.3B.

As of January 24, 2018, the Project Management Executive Authority for all Office of Environmental Management Non-Major System projects with total project costs from \$100 million up to \$400 million has been delegated to the Assistant Secretary for Environmental Management.

4.1.2 Federal Project Director (FPD)

The FPD is responsible and accountable to the PME for executing the project. The FPD manages the Project to meet and/or exceed cost, schedule and performance targets unless circumstances beyond the control of the Project directly result in cost overruns and/or delays. The FPD demonstrates initiative in incorporating and managing an appropriate level of risk to ensure best value for the government.

The FPD provides leadership to the Federal IPT and ensures the team's skills, knowledge and abilities are aligned and utilized in a manner that delivers the project safely and of highest quality. The FPD, as a Contracting Officer Representative (COR), ensures Contractors are performing work safely and in accordance with the requirements of the contract.

4.1.3 Deputy Federal Project Director (DFPD)

The Deputy FPD is the secondary point of contact for communication and coordination with entities external to the IPT. The Deputy FPD is responsible, with the assistance of the IPT members, to support the implementation of the Acquisition Strategy (AS) and the PEP. The specific duties of the Deputy FPD are described in the SDUs IPT Charter.

4.1.4 Integrated Project Team

The Federal IPT (Figure 2) was assembled by the FPD to effectively execute the SDU projects. The IPT represents diverse disciplines with the knowledge, skills, and abilities needed to support the successful execution of the project through completion. The IPT will execute its duties in accordance with DOE Order 413.3B.

The IPT is functionally divided into the following groups: FPD and Deputy, Core Group, Matrix Group, and Contractors—based on their role and interaction with the FPD and among IPT members (Figure 3). The IPT charter will describe the roles and responsibilities of the team.

Figure 2 – Federal Integrated Project Team Organization

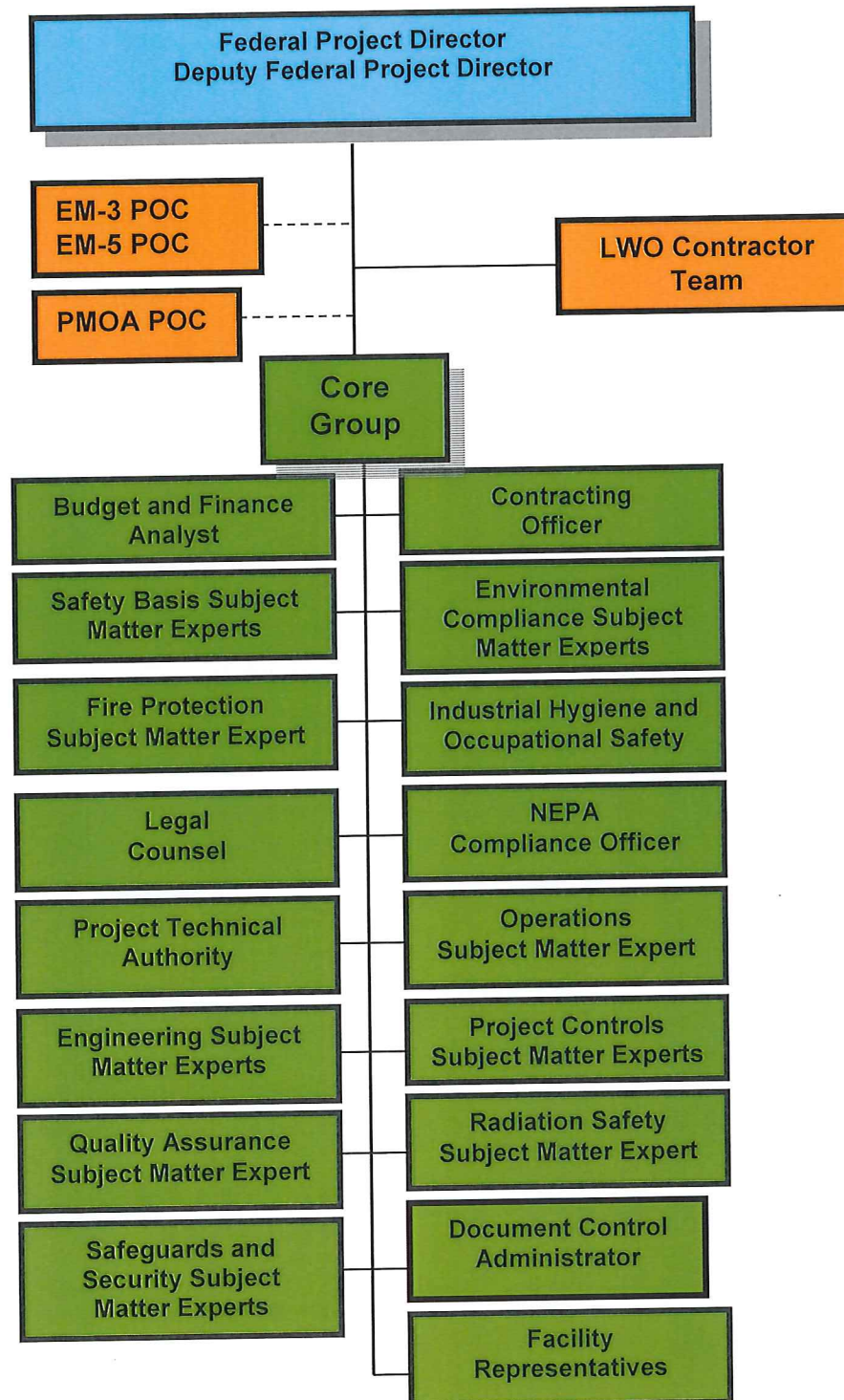
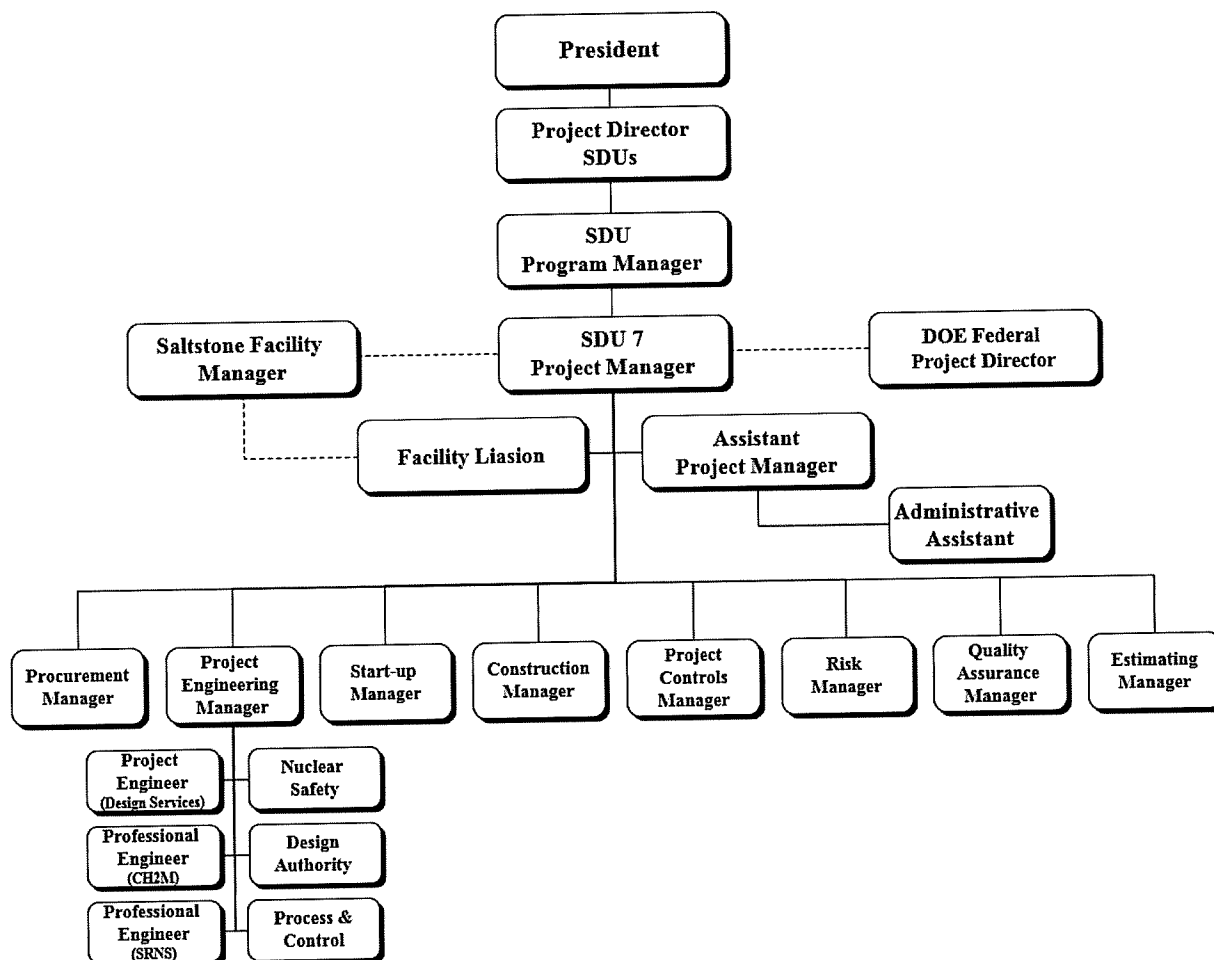


Figure 3 – Contractor Project Team



4.2 Contractor Organizational Structure

Currently, SRS Liquid Waste Operations (LWO) mission is under contract to Savannah River Remediation (SRR), which is a limited liability corporation consisting of a partnership between AECOM, Bechtel, CH2M Hill, and Babcock & Wilcox Technical Services Group, for the DOE under contract number DE-AC09-09SR22505. This contract includes scope of the SDU projects.

The LWO contract is Cost-Plus Award Fee based. Performance based milestones and fee incentives for the SDU 7 project may be included in the Performance Evaluation and Measurement Plan which is updated every fiscal year.

The services of other specialty Contractors, either as subcontractors to the LWO Contractor or as prime Contractors to DOE, may also be procured. The project may also utilize the services of small businesses, small business to accomplish project objectives.

4.2.1 Contractor Project Manager

The Contractor Project Manager (CPM) is responsible for implementing the Contractor Requirements Document (CRD) in DOE Order 413.3B and as included in the contract. The CPM is responsible for flowing down CRD requirements to its subcontractors.

The CPM, with support from his/her IPT, directly supports the FPD in executing the SDU 7 project within the scope and requirements of the contract.

The LWO contractor utilizes an integrated management approach on all projects, which reflects standard, proven corporate policies, procedures, guidelines and cornerstone applications. The LWO contractor Project Management Plan (PMP) is driven by plans and processes developed through industry best practices and experience. This provides standards and guidelines for developing, maintaining, and executing the PEP.

The senior executives provide general direction and oversight to the SDU 7 project. In addition, they promote the interests of the project within the company. Reviews of project performance with this group are conducted as required for sufficient accessibility, dialogue, and commitment.

Limits of authority of the Contractor Project Manager are defined in LWO contractor manual S23, Conduct of Project Management and Controls.

4.2.2 Contractor Authority Matrix

Table 1 – Contractor Division of Authority Matrix

FUNCTION	RESPONSIBILITY
Project Director (PD)	<ul style="list-style-type: none">• Reports to the LWO contractor President and Project Manager• Leadership and direction to the project team
Project Manager (PM)	<ul style="list-style-type: none">• Project implementation and execution• Manage overall project integration• Project-level interface with DOE Federal Project Director• Responsible for the Task Order/Project scope, schedule and budget including safety, quality and compliance• Ensure change control is processed in accordance with PEP and contractor procedures• Resources allocation and staffing

FUNCTION	RESPONSIBILITY
Project Engineering Manager (PEM)	<ul style="list-style-type: none"> • Coordinate the design activities to meet scope, budget, schedule and quality requirements • Implement the Engineering Execution Plan • Interface with DOE Project Technical Authority during engineering design • Responsibility for the engineering design activities • Coordinate the engineering design activities for the project scope of work, including regulatory compliance • Implement and maintain configuration management • Translate process hazard assessment results into the design • Coordinate process hazards assessments
Construction Manager	<ul style="list-style-type: none"> • Interface with DOE Facility Representatives and construction inspector during construction • Responsibility for the construction management activities • Review design for constructability and provide input based on lessons learned • Coordinate the construction activities for the project scope of work, including regulatory compliance • Implement the Construction Execution Plan
Environmental Safety and Health (ES&H) Manager	<ul style="list-style-type: none"> • Interface with team ES&H representatives • Develop environmental, safety and health documentation • Provide technical support to line management • Verify compliance with ES&H plans and requirements
Start-up/Operations Liaison	<ul style="list-style-type: none"> • Develop start-up design criteria • Develop start-up plan • Conduct design reviews to enhance the ability to complete the required start-up testing • Identify system and test boundaries to support construction and start-up activities
Quality Assurance (QA) /Quality Control (QC)	<ul style="list-style-type: none"> • Interface with DOE quality representatives • Develop project quality assurance plans and procedures • Verify compliance with quality plans and requirements • Qualify suppliers, as appropriate • Evaluate the quality of work performed through audits, surveillances, inspections, tests, and assessments

FUNCTION	RESPONSIBILITY
Procurement Manager	<ul style="list-style-type: none">• Procurement of materials and contracts• Interface with Client contract administrator and contract technical representative• Provide contract administration
Project Integration Manager	<ul style="list-style-type: none">• Life cycle cost estimating• Change proposals and task orders• Cost Estimating
Business Manager	<ul style="list-style-type: none">• Invoicing• Bill payment
Project Controls Manager	<ul style="list-style-type: none">• Maintenance of the baseline and working schedules• Coordinate budget development• Develop cost reports• Coordinate change control activities and maintain change control log• Track earned value (EV) and forecast estimates at completion
Supervising Discipline Engineers	<ul style="list-style-type: none">• Coordinate the discipline design activities to meet scope, budget, schedule and quality requirements• Implement the Engineering Execution Plan
Discipline Engineers and Designers	<ul style="list-style-type: none">• Execute design activities to meet scope, budget, schedule and quality requirements

4.3 Organizational Interfaces

Execution of the SDU 7 project involves numerous interfaces with other organizations, both internal and external to SRS. The Principal Deputy Assistant Secretary (EM-2) and Associate Principal Deputy Assistant Secretary (EM-2.1) are responsible for the corporate interfaces of this project, including, but not limited to, interfaces with the U.S. Congress, the Office of Management and Budget (OMB), the Defense Nuclear Facilities Safety Board (DNFSB), and the media.

4.3.1 Key Programmatic and Departmental Interfaces

Assistant Secretary for Environmental Management EM-1 is the Program Secretarial Officer and the PME for CD-2/3 (start of construction) and CD-4 (project completion) for the SDU 7 project.

4.3.2 Key Interfaces with other DOE Sites

No interfaces with other DOE sites are expected at this time.

4.3.3 Key Interfaces with Regulatory Agencies

The SDU 7 project is subject to NRC oversight for assessing compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations, Public Laws 96-573 94 Stat. 3347 and Public Law 97-425 96 Stat. 2201.

The SDU 7 project is subject to SCDHEC oversight for sampling and reporting responsibilities for site issued permits and SCDHEC approval for permit modifications.

4.3.4 Defense Nuclear Facilities Safety Board

The DNFSB is an independent federal agency established by Congress in 1988. The Board's mandate under the AEA is to provide safety oversight of the nuclear weapons complex operated by the DOE. The Board helps to ensure that DOE's activities are carried out in a manner that provides adequate protection for the public, workers, and the environment. The DNFSB will exercise its authority to conduct independent oversight and assessments of the project throughout the life cycle of design, construction, and operations. Interaction with the DNFSB will be in accordance with DOE Manual 140.1-1B, *Interfacing with the Defense Nuclear Facilities Safety Board*, and Deputy Secretary of Energy in the Memorandum, *Correspondence to the Defense Nuclear Facilities Safety Board*, and the Secretary of Energy in the Memorandum, *Relations with the Defense Nuclear Facilities Safety Board*.

4.4 Communication Management Plan

The SDU 7 construction project management team consists of a strong business relationship between the Department of Energy (DOE), the owner of the project and customer of the LWO contractor and its subcontractors which are responsible for the execution of the project. The purpose of this communication plan (Figure 4) is to establish appropriate lines of communication between these organizations, establish industry accepted field oversight protocol, and document actions to facilitate the successful completion of the project. This plan will also be used to control access to the construction site, populate the Lessons Learned database, and ensure required actions are followed up and resolved. This Plan explains the lines of communication between DOE and the LWO contractor during execution of the construction project. This Plan also explains the role of the oversight personnel to include: DOE-SR S-Area Facility Representatives (FRs), the Defense Nuclear Facility Safety Board (DNFSB), and the DOE-SR Quality Assurance and Safety staff.

The Plan calls for DOE Integrated Project Team (IPT) members to interface with their LWO contractor counterparts on their assigned tasks. The Plan requires that the DOE Federal Project Director (FPD), Deputy Federal Project Director (DFPD), and the LWO Project Director/Manager and Deputy Project Director/Managers to interface as required. The primary duties, assignments, roles, and responsibilities for DOE IPT members for SDU 7 are specified within the IPT Charter for each Saltstone Disposal Unit. Specific communication processes used by the SDU 7 project are described below.

4.5 Federal Field Communication Protocol

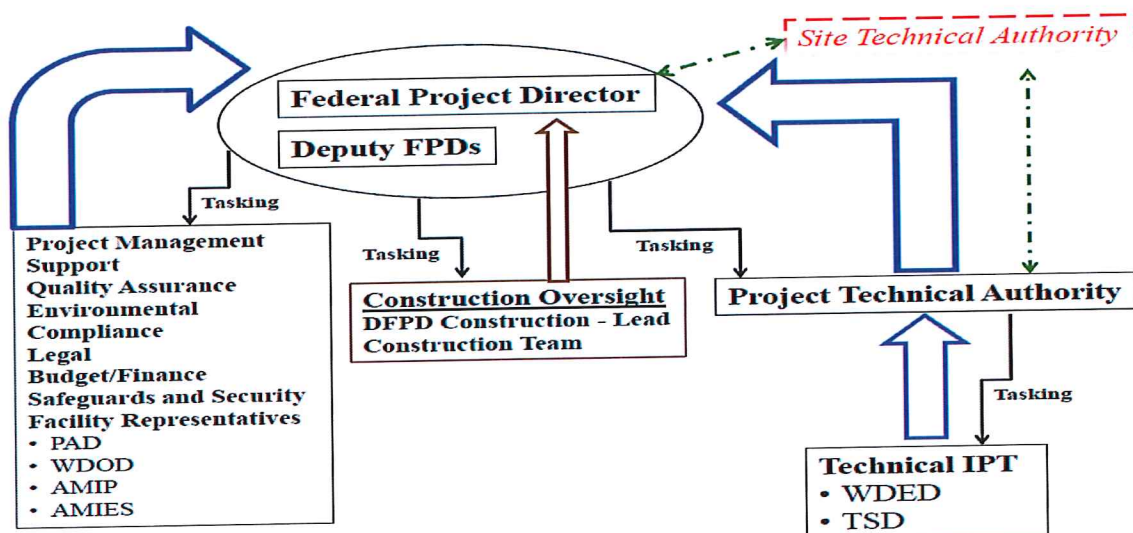
4.5.1 Access and Notification Requirements

All personnel accessing the construction site must complete any required safety and/or access training, or be properly escorted. In order to conduct their official responsibilities, oversight personnel from several organizations including DOE-SR, DOE Headquarters (DOE-HQ), and the DNFSB will require access to the construction site of SDU 7. Personnel performing their official oversight duties are provided with ready and direct access to the project, personnel, and information as necessary to carry out their responsibilities. The FPD, DFPD, or designee should be notified in advance (no written approval required) of the visit to maintain awareness of visitors. Additionally, the FPD, DFPD, or designee should be notified in advance of access by personnel not normally assigned at the construction site or not performing official oversight functions at the construction site for SDU 7. The FPD or DFPD should be notified in advance of any dignitary visits, and formal/informal assessments. Advance notification of independent investigations and assessments should also be made aware to the FPD or DFPD. Other area DOE FRs should coordinate with S-Area FRs prior to entry to the construction site.

4.5.2 Contract Direction and Interaction

Oversight personnel shall interact with the LWO Site Technical Representative (STR) when needed. Direction from LWO contractor to its subcontractors is communicated through the applicable STR. The FPD or DFPD can provide technical direction to the LWO contractor. DOE oversight personnel should inform the FPD or DFPD of their requests for action and their observations by utilizing the Site Tracking, Analysis, & Reporting (STAR) system described in the Reporting Requirements section below.

Figure 4 – Federal IPT Communication Flow



Access to subcontractors should be conducted at an appropriate time. Disruption of normal work activity and distractions to proper work and safety practices should not occur. Oversight personnel are advised that the FPD and Contracting Officer are required by DOE O 413.3B to

be the point of contact between Federal and contractor staff for all contract direction, except as necessary to correct a situation judged to be an imminent hazard. Identification of issues by the Federal IPT shall be managed as follows:

1. Inform FPD / DFPD or Project Technical Authority (PTA) (per Federal IPT communication flow chart)
 - Identify importance (i.e., how quickly resolution needed).
 - Technical standard, DOE Order, site procedure, specification, etc. affected
 - Implication to project success.
2. Decide with FPD / DFPD or PTA if issue requires action
 - Identify responsible Federal IPT Subject Matter Expert (SME) to close issue by a specified date.
 - Identify IPT members that should be involved.
 - If senior management involvement is necessary FPD/DFPD will need to be included.
2. Evaluate issue with LWO contact as needed.
3. Present recommendation to FPD / DFPD or PTA for concurrence of resolution.
4. FPD gives direction to LWO contractor to correct, if required. Decide with FPD/DFPD or PTA if STAR finding is necessary.
 - Decide with FPD/DFPD if Site Technical Authority(STA) involvement is necessary.

All contractors are, to the extent provided in such contract or otherwise with the contractor's consent, expected to fully cooperate with oversight personnel in performing their official duties. To facilitate this cooperation, oversight personnel should be escorted by their LWO contractor counterparts and use them as the primary source of information to the extent appropriate. The S-Area Facility Representatives (FRs) should escort visiting FRs. Other DOE personnel should be escorted by their LWO CONTRACTOR counterpart at all times except FPD, DFPDs, and S-Area FRs. The Corps of Engineers (COE) field engineer does not need an escort. DNFSB representatives should be escorted by any of the following: FPD, DFPD, S-Area FR or other delegated personnel.

4.5.3 Reporting Requirements

Oversight personnel are expected to report any actions which require changes to existing plans, procedures, and required follow up action in a timely manner to the FPD or DFPD and prepare a STAR assessment report. Normal routine observations do not need to be reported. The intent of prompt reporting is to resolve issues in a timely manner and to maintain an excellent safety culture and quality product delivery. STAR reports are expected to be forwarded to the FPD and DFPD for entry determination into the Lessons Learned and or Action Tracking data bases. The S-Area FRs will inform other FRs of the proper communication protocol concerning findings, observations, and issues.

5.0 TAILORING STRATEGY

As discussed in DOE O 413.3B, implementation of the requirements may be tailored to reflect the risk, complexity, visibility, cost, safety, security, and schedule of the project. Tailoring may

involve the consolidation of decisions, the consolidation of documentation, substituting equivalent documents, or implementing concurrent processes. Tailoring does not, however, imply the omission of essential elements in the acquisition process that are necessary for all projects, or other processes that are appropriate to a specific project's requirements or conditions. Regarding matters relating to integrating safety into the early design process, tailoring or modification of the acquisition process is not preferred. Nonetheless, DOE O 413.3B gives flexibility to the FPD to develop an acquisition process that best delivers mission and project objectives.

Based on the repetitive nature of the design and construction of remaining SDUs, the IPT may request and receive exemptions from requirements of DOE Order 413.3B and/or certain local requirements, as applicable.

5.1 Critical Decision Tailoring Strategy

In 2011, a value engineering study identified significant economies of scale could be achieved with a single large disposal cell design. In 2012, a conceptual design of the large disposal cell was developed and the subsequent evaluation concluded that the disposal cost of Decontaminated Salt Solution (DSS) would be reduced by modifying a commercially available design. The SDU 6 Acquisition Strategy was approved by the PME in June 2012 and the SDU 7 Acquisition Strategy was approved March 2017. These formed the basis of the acquisition strategy for the SDU 7 project and remain valid and fully applicable.

In order to meet the schedule demands outlined in the LW System Plan, SDU 7 will utilize a similar design to SDU 6 while incorporating lessons learned. Since the project is starting with a similar and complete design, the design effort is expected to take less time than SDU 6, dependent on receipt of funding.

Based on previous experience on SDU 6 and the relatively short duration of design the project will have sufficient information to complete design, develop a cost and schedule baseline and request approval for CD-3. In order to meet the project's completion milestone, the project plans to use a combined CD-2 and CD-3 approval strategy. In October 2017, the project requested and received a CD-3A approval for site preparation design and construction (including relocation of trailers currently on the proposed SDU 7 footprint, underground and above ground utility relocation, movement of current drainage lines, and establishment of containment berms) from the PME as this work is on the critical path for SDU 7 construction to meet the need date in support of the Liquid Waste mission.

Since a similar design exists in SDU 6, the project has sufficient information to ensure safety is appropriately addressed in the design. A Safety Design Strategy (SDS) has been approved for SDU 7 (and all remaining SDUs) and complies with DOE-Standard (STD) 1189-2008

Approval of CD-4 (project completion) for the full project will be requested from the PME following construction turnover to operations and successful readiness assessment.

Table 2 – Tailoring Strategy for the SDU 7 Project

Prior to CD-1	
DOE Order 413.3B, Requirements	Tailoring Strategy
Approve an Acquisition Strategy with endorsement from PM for Major System Projects. (Refer to DOE G 413.3-13.)	No deviation planned. Requires PSO approval.
Approve a preliminary Project Execution Plan (PEP). The Tailoring Strategy, if required, can be included in the PEP or placed in a separate document. (Refer to DOE G 413.3-15.)	No deviation planned. Requires PME approval (EM-1).
Approve appointment of the Federal Project Director considering the requirements in DOE O 361.1B.	No deviation planned. Requires PME approval (EM-1).
Establish and charter an Integrated Project Team to include a responsibility assignment matrix. The Charter may be included in the PEP. (Refer to DOE G 413.3-18.)	No deviation planned. Requires FPD approval.
Develop a Risk Management Plan (RMP) and complete an initial risk assessment of a recommended alternative. This may be included in the PEP. For evaluating the Safety-in-Design Strategy, prepare Risk and Opportunity Assessments for input to the RMP. (Refer to DOE G 413.3-7 and DOE-STD-1189-2008.)	No deviation planned.
For projects with a TPC \geq \$100M, PM will develop an Independent Cost Estimate and/or conduct an Independent Cost Review, as they deem appropriate.	Independent Cost Review to be performed by PM.
For projects with a TPC \geq \$100M, the Project Management Risk Committee (PMRC) will review and analyze the CD and make recommendations to the ESAAB, CE, or PME, as applicable, before approval.	No deviation planned.
Comply with the One-for-One Replacement legislation (excess space/offset requirement) as mandated in House Report 109-86. (Refer to DOE O 430.1B.)	N/A, project provides landfill capacity.
For Major System Projects, develop a Design Management Plan that establishes design maturity targets at critical milestones through final design.	N/A. This is not a Major System Project.
Complete a Conceptual Design.	No deviation from this expectation is planned.
Document Guiding Principles for Federal Leadership in High Performance and Sustainable Building provisions per EO 13693, Section 3(h), support for the Site or Strategic Sustainability Plan(s) per DOE O 436.1 and/or other sustainability considerations planned in the Conceptual Design Report, Acquisition Strategy, and/or PEP, as appropriate. (Refer to DOE G 413.3-6A.)	N/A, project provides landfill capacity.
Conduct a Design Review of the conceptual design with reviewers external to the project.	Review will be conducted by SMEs from the DOE-SR Federal IPT as part of overall CD-1 package.
For Hazard Category 1, 2, and 3 nuclear facilities, a	No deviation planned.

Code of Record shall be initiated during the conceptual design.	
Complete a Conceptual Design Report. Refer to Appendix C, Paragraph 8.	No deviation planned.
Conduct an Analysis of Alternatives (AoA) that is independent of the contractor organization responsible for managing the construction or constructing the capital asset project, for projects with an estimated TPC greater than or equal to the minor construction threshold. For projects with an estimated top-end range less than \$50M, the AoA shall be commensurate with the project cost and complexity. Refer to GAO-15-37.	S-3 accepted SDU 6 AoA as sufficient for SDU 7 and approved exemption for separate AoA for all remaining SDUs.
For Major System Projects, or first-of-a-kind engineering endeavors, conduct a Technology Readiness Assessment and develop a Technology Maturation Plan, as appropriate. At this stage, each critical technology item or system shall achieve a Technology Readiness Level-4 (TRL-4). (Refer to DOE G 413.3-4A.)	N/A, project not first-of-a-kind or Major project.
Prepare a Preliminary Hazard Analysis Report (PHAR) for facilities that are below the Hazard Category 3 nuclear facility threshold as defined in 10 CFR Part 830, Subpart B.	N/A, Haz Cat 2.
Develop and implement an Integrated Safety Management Plan into management and work process planning at all levels per DOE G 450.4-1C.	Project will use the ISMS system documented in contractual Standards/Requirements Implementation Document.
Establish a Quality Assurance Program (QAP). (Refer to 10 CFR Part 830, Subpart A, DOE O 414.1D, and DOE G 413.3-2.) For nuclear facilities, the applicable national consensus standard shall be NQA-1-2008 (Edition) and NQA-1a-2009 (Addenda).	Contractor will use the QA Program documented in their contractual Standards/Requirements Implementation Document.
Identify general Safeguards and Security requirements for the recommended alternative. (Refer to DOE O 470.4B, Change 1, and DOE G 413.3-3A.)	Contractor will use the Safeguards and Security Program documented in their contractual Standards/Requirements Implementation Document.
Complete a National Environmental Policy Act (NEPA) Strategy by issuing a determination (e.g., Environmental Assessment), as required by DOE O 451.1B. Prepare an Environmental Compliance Strategy, to include a schedule for timely acquisition of required permits and licenses.	No deviation planned.
Update Project Data Sheet, or other funding documents for MIE and OE projects, and A-11 Business Case, if applicable. This must contain an estimate of the required amount of PED funds to execute the planning and design portion of a project (period from CD-1 to completion of the project's design). (Refer to DOE Chief Financial Officer (CFO) Budget Call for PDS and Business Case Template.)	No deviation planned.

For Hazard Category 1, 2, and 3 nuclear facilities, prepare a Safety Design Strategy (SDS), with the concurrence of the CNS or with written advice of the CDNS, as appropriate, for projects subject to DOE-STD-1189-2008.	CNS Letter approved "blanket" SDS for remaining SDU's based on SDU6. Memorandum Sosson to Folk Dated May 26, 2017.
For Hazard Category 1, 2, and 3 nuclear facilities, conduct an Independent Project Review (IPR) to ensure early integration of safety into the design process. (Refer to DOE G 413.3-9 and DOE-STD-1189-2008.)	Based on replication of SDU 6 and associated safety and design documents, this was verified during the Independent Cost Review.
Prepare a Conceptual Safety Design Report (CSDR) for Hazard Category 1, 2, and 3 nuclear facilities, including preliminary hazard analysis. For a project involving a major modification of an existing facility, the SDS must address the need for a CSDR, as well as the required PDSA. (Refer to DOE-STD-1189-2008.)	Approach is SDS to DSA / SER. SDS defines approach for exempting CSDR.
Prepare a Conceptual Safety Validation Report (CSV), with concurrence from the FPD, on the DOE review of the CSDR for Hazard Category 1, 2, and 3 nuclear facilities. (Refer to DOE-STD-1189-2008.)	Approach is SDS to DSA / SER. SDS defines approach for exempting CSDR.
CD-1 Requirements	
Submit all CD documents to PM.	No deviation planned.
Begin expenditure of PED, MIE, or OE funds for the project design.	No deviation planned.
Develop an Acquisition Plan, if applicable.	Refer to Acquisition Plan for the LWO contractor contract.
Continue monthly Project Assessment and Reporting System (PARS) II reporting (excluding earned value). FPD, Program Manager and PM will provide monthly assessments, as appropriate.	No deviation planned.
Annually conduct project peer reviews of active projects when the top-end range is \$100M or greater.	No deviation planned.
Continue Quarterly Progress Reviews (QPR) with the PME or their designee.	No deviation planned.
Prior to CD-2	
Approve an updated Acquisition Strategy, if there are any major changes to the acquisition approach. Obtain endorsement from Acquisition and Project Management (APM) for Major System Projects. (Refer to DOE G 413.3-13.)	These documents will be updated as appropriate.
Establish a Performance Baseline, reflective of identified and assessed risks and uncertainties, to include TPC, CD-4 date, and minimum KPPs. The key project milestones and completion dates shall be stated no less specific than month and year. The scope will be stated in quantity, size and other parameters that give shape and form to the project. The funding assumptions upon which the Performance Baseline (PB) is predicated will be clearly documented and approved. (Refer to DOE G 413.3-5.)	No deviation planned.

Approve updated Project Execution Plan. (Refer to DOE G 413.3-15.)	No deviation planned.
• Prepare a Funding Profile to support the execution of the PB and reflect in the budget document. The funding profile may be included in the PEP.	No deviation planned.
• Approve Long-Lead Item Procurements, if necessary. Approval may be concurrent with (or prior to) CD-2 approval. (Long-lead item procurement approval will be designated as CD-3A.)	CD-3A approval received for site preparation October 2017.
Develop a Project Management Plan, if applicable.	No deviation planned.
Perform a Performance Baseline External Independent Review (EIR) or an Independent Project Review (IPR). PM will conduct EIRs to validate the PB for projects with a TPC \geq \$100M. PM must issue a Performance Baseline Validation Letter to the PSO that describes the cost, schedule, and scope being validated. PMSO will conduct IPRs to validate the PB for projects with a TPC $<$ \$100M. (Refer to DOE G 413.3-9) For projects with a TPC \geq \$100M, PM will develop an Independent Cost Estimate (ICE). The ICE will support validation of the PB.	No deviation planned.
Complete a Preliminary and/or Final Design. Hazard Category 1, 2, and 3 nuclear facilities shall achieve at least 90% design completion prior to CD-2 approval. Non-nuclear project designs shall be sufficiently mature to prepare a project baseline with 80-90% confidence prior to CD-2 approval.	Based on utilization of SDU-6 cell design, this project is currently at or approaching 90% design. PMRC recommended and S-3 approved a deviation from DOE O 413.3B requiring 90% design prior to CD-2, based on the design maturity exhibited in the completion of SDU 6.
Incorporate the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings per EO 13693, Section 3(h), sustainability requirements per DOE O 436.1, and/or other sustainability considerations into the preliminary design and design review. (Refer to DOE G 413.3-6A.)	N/A, project provides landfill capacity.
Conduct a Design Review of the preliminary and final design.	N/A - Based on utilization of SDU-6 cell design, this project is currently at or approaching 90% design. PMRC recommended and S-3 approved a deviation from DOE O 413.3B requiring 90% design prior to CD-2, based on the design maturity exhibited in the completion of SDU 6.
For Hazard Category 1, 2, and 3 nuclear facilities, design reviews should include a focus on safety and security systems. Additionally, the Code of Record shall be placed under configuration control during preliminary design. It is controlled during final design and construction with a process for reviewing and evaluating new and revised requirements. New or modified requirements are implemented if technical evaluations determine that there is a substantial increase in the overall protection	No deviation planned.

of the worker, public or environment, and that the direct and indirect costs of implementation are justified in view of this increased protection.	
Complete a Preliminary Design Report.	N/A - Based on utilization of SDU-6 cell design, this project is currently at or approaching 90% design. PMRC recommended and S-3 approved a deviation from DOE O 413.3B requiring 90% design prior to CD-2, based on the design maturity exhibited in the completion of SDU 6.
For projects with a TPC \geq \$100M, the PMRC will review and analyze the CD and make recommendations to the ESAAB, CE, or PME, as applicable, before approval.	No deviation planned.
Conduct a Project Definition Rating Index Analysis, as appropriate, for projects with a TPC \geq \$100M. PM will review as part of the EIR. (Refer to DOE G 413.3-12.)	No deviation planned.
For Major System Projects, or first-of-a-kind engineering endeavors, conduct a Technology Readiness Assessment and develop a Technology Maturation Plan, as appropriate. At this stage, each critical technology item or system shall achieve a Technology Readiness Level-7 (TRL-7). (Refer to DOE G 413.3-4A.)	N/A, project not first-of-a-kind.
Employ an Earned Value Management System compliant with EIA-748C, or as required by the contract. This is performed by the contractor. (Refer to DOE G 413.3-10A.)	No deviation planned.
Prepare a Hazard Analysis Report for facilities that are below the Hazard Category 3 nuclear facility threshold as defined in 10 CFR Part 830, Subpart B by updating the PHAR based on new hazards and design information.	N/A
Determine that the Quality Assurance Program is acceptable and continues to apply. (Refer to 10 CFR Part 830, Subpart A, DOE O 414.1D, and DOE G 413.3-2.)	No deviation planned.
Conduct a Preliminary Security Vulnerability Assessment, if necessary. (Refer to DOE O 470.4B, Change 1, and DOE G 413.3-3A.)	N/A, DSS waste is not subject to vulnerability assessment.
Issue the final Environmental Impact Statement or Environmental Assessment and Finding of No Significant Impact, as required by 10 CFR Part 1021. For an Environmental Impact Statement, the appropriate authority shall issue the Record of Decision after CD-2 is granted, but prior to CD-3 approval. (Refer to DOE O 451.1B.)	If applicable.
Update Project Data Sheet, or other funding documents for MIE and OE projects, and A-11 Business Case, if applicable. (Refer to DOE CFO Budget Call for PDS	No deviation planned.

and Business Case Template.)	
For Hazard Category 1, 2, and 3 nuclear facilities, conduct a Technical Independent Project Review (TIPR). The TIPR is required at or near the completion of the preliminary design. The TIPR is not required for non-nuclear facilities. (Refer to DOE G 413.3-9.)	No TIPR required for SDU 7 and future SDUs per Memorandum from EM Chief Engineer dated January 17, 2018.
For Hazard Category 1, 2, and 3 nuclear facilities, update the Safety Design Strategy, with the concurrence of CNS or with written advice from CDNS, as appropriate, for projects subject to DOE-STD-1189-2008.	CNS approved "blanket" SDS letter for remaining SDU's.
Prepare a Preliminary Safety Design Report (PSDR) that updates the CSDR for Hazard Category 1, 2, and 3 nuclear facilities based on updated hazard analysis and design information. For a project involving a major modification of an existing facility, the SDS must address the need for a PSDR, as well as the required PDSA. (Refer to DOE-STD-1189-2008.)	Per DOE-STD-1189, since the SDU 7 project is not introducing new controls, utilizing a new technology, or introducing a new hazard to the facility into the existing safety basis, it is not required to have a PSDR and PSVR. CNS approved "blanket" SDS letter for remaining SDU's.
Prepare a Preliminary Safety Validation Report (PSVR), with concurrence from the FPD, based on a DOE review of the PSDR for Hazard Category 1, 2, and 3 nuclear facilities. (Refer to DOE-STD-1189-2008.)	Per DOE-STD-1189, since the SDU 7 project is not introducing new controls, utilizing a new technology, or introducing a new hazard to the facility into the existing safety basis, it is not required to have a PSDR and PSVR, but we will have to have a PDSA, as clarified in the SDS.
Prepare the Preliminary Documented Safety Analysis (PDSA)4 for newly planned Hazard Category 1, 2, and 3 nuclear facilities based on updated hazard analysis and design information; also for major modifications of existing facilities. (Refer to 10 CFR Part 830, Subpart B, and DOE-STD-1189-2008.)	Approach is SDS to DSA/SER. SDS defines approach for exempting PDSA.
Prepare a Safety Evaluation Report, with concurrence from the FPD, based on review of the PDSA for Hazard Category 1, 2, and 3 nuclear facilities. (Refer to 10 CFR Part 830, Subpart B.)	Approach is SDS to DSA/SER. SDS defines approach for exempting PDSA.
Post CD-2 Approval	
Submit all CD documents, and if there are changes to the PB, submit BCP documents to PM.	No deviation planned.
Submit budget request for the TPC. PME will request full funding for all new projects with an estimated TPC of \$50M or less, within a single budget year request, unless justification for less than full funding is provided to and approved by the ESAAB.	No deviation planned.
For projects with a TPC \$100M, the PMRC will review and analyze the PB deviation disposition request and make recommendations to the ESAAB, CE, or PME, as applicable, before approval. The resulting BCP must also be presented to the PMRC before convening an	No deviation planned.

ESAAB.	
Obtain PME endorsement on any changes to the approved funding profile that negatively impacts the project.	No deviation planned.
Continue monthly PARS II reporting (including earned value data). FPD, Program Manager and PM will provide monthly assessments.	No deviation planned.
Continue QPRs with the PME or their designee.	No deviation planned.
Annually conduct project peer reviews for projects with a TPC > \$100M.	No deviation planned.
Prior to CD-3	
Approve updated CD-2 Project Documentation that reflects major changes from Final Design, the PEP, PB, AS, and PDS/funding documents for MIE and OE funds.	No deviation planned.
Complete and review the Final Design for non-nuclear facilities and less than Hazard Category 3 nuclear facilities.	No deviation planned.
Incorporate the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings per EO 13693, Section 3(h), sustainability requirements per DOE O 436.1, and/or other sustainability considerations into the Final Design and the EIR. (Refer to DOE G 413.3-6A.)	N/A, project provides landfill capacity, it is not a building.
Employ a certified Earned Value Management System compliant with EIA-748C, or as required by the contract. (Refer to DOE G 413.3-10A.)	No deviation planned.
Perform an External Independent Review by PM for Construction or Execution Readiness on all Major System Projects. (Refer to DOE G 413.3-9.) Perform an Independent Project Review by the appropriate PMSO for Non-Major System Projects unless justification is provided and a waiver is granted by the PME. For projects with a TPC \geq \$100M, PM will develop an Independent Cost Estimate.	EIR was conducted in lieu of IPR, which is required for non-major system projects.
For projects with a TPC \geq \$100M, the PMRC will review and analyze the CD and make recommendations to the ESAAB, CE, or PME, as appropriate, before approval.	No deviation planned.
For Major System Projects where a significant critical technology element modification occurs subsequent to CD-2, conduct a Technology Readiness Assessment, as appropriate. (Refer to DOE G 413.3-4A.)	N/A, project is not a Major System project.
Update the Hazard Analysis Report for facilities that are below the Hazard Category 3 nuclear facility threshold as defined in 10 CFR Part 830, Subpart B, based on new hazards and design information.	N/A
Prior to start of construction, prepare a Construction Project Safety and Health Plan ⁴ in accordance with 10	No deviation planned.

CFR Part 851, Appendix A, Section 1(d). This plan must be kept current during construction.	
Update the Quality Assurance Program for construction, field design changes, and procurement activities. (Refer to 10 CFR Part 830, Subpart A, DOE O 414.1D, and DOE G 413.3-2.)	No deviation planned.
Finalize the Security Vulnerability Assessment Report, if necessary. (Refer to DOE O 470.4B and DOE G 413.3-3A.)	N/A, Decontaminated Salt Solution (DSS) waste not subject to vulnerability assessment.
Post CD-3 Approval	
Submit all CD documents to PM.	No deviation planned.
Commit all the resources necessary, within the funds provided and within the TPC, to execute the project.	No deviation planned.
For projects with a TPC \geq \$100M, the PMRC will review and analyze the PB deviation disposition request and make recommendations to the ESAAB, CE, or PME, as applicable, before approval. The resulting BCP must also be presented to the PMRC before convening an ESAAB.	No deviation planned.
Within 90 days, submit Lessons Learned regarding up-front project planning and design to PSO and PM.	No deviation planned.
Update PDS, or other funding documents for MIE and OE, and A-11 Business Case, if applicable. (Refer to DOE CFO Budget Call for PDS and Business Case Template.)	No deviation planned.
Conduct EVMS surveillance to ensure compliance with EIA-748C, or as defined in the contract. Contractor must conduct the surveillance annually.	No deviation planned.
Continue monthly PARS II reporting (including earned value data). FPD, Program Manager and PM will provide monthly assessments.	No deviation planned.
Continue QPRs with the PME or their designee.	No deviation planned.
Continue annual project peer reviews for projects with a TPC $>$ \$100M.	No deviation planned.
Prior to CD-4	
Verify that Key Performance Parameters and Project Completion Criteria have been met and that mission requirements have been achieved. The FPD will verify and document the scope accomplished, TPC, KPPs met, and the completion date as it relates to the original CD-2 performance baseline and the latest approved baseline change.	No deviation planned.
Issue a Project Transition to Operations Plan that clearly defines the basis for attaining initial operating capability, full operating capability, or project closeout, as applicable. The plan will include documentation, training, interfaces, and draft schedules. (Refer to DOE G 413.3-16A.)	No deviation planned.
For non-nuclear projects, conduct a formal assessment	N/A, nuclear project.

of the project's Readiness to Operate, as appropriate. Determine the basis for DOE acceptance of the asset and if the facility or area can be occupied from both a regulatory and a work function standpoint. Establish a beneficial occupancy/utilization date for the facility and/or equipment.	
Finalize the Hazard Analysis Report for facilities that are below the Hazard Category 3 threshold as defined in 10 CFR Part 830, Subpart B.	N/A
Revise the Environmental Management System in accordance with DOE O 436.1, as appropriate.	No deviation planned.
If applicable, complete and submit Contractor Evaluation Documents to the PME, the appropriate PSO, Federal procurement office, and PM in accordance with FAR 42.15	No deviation planned.
For projects with a TPC \$100M, the PMRC will review and analyze the CD and make recommendations to the ESAAB, CE, or PME, as applicable, before approval.	No deviation planned.
Conduct an Operational Readiness Review (ORR) or Readiness Assessment (RA) for Hazard Category 1, 2, and 3 nuclear facilities in accordance with DOE O 425.1D and DOE-STD-3006-2010.	An RA is planned.
Prepare the Documented Safety Analysis with Technical Safety Requirements for Hazard Category 1, 2, and 3 nuclear facilities. (Refer to 10 CFR Part 830, Subpart B.)	No deviation planned.
Prepare a Safety Evaluation Report (SER) based on a review of the Documented Safety Analysis and Technical Safety Requirements for Hazard Category 1, 2, and 3 nuclear facilities. (Refer to 10 CFR Part 830, Subpart B.)	No deviation planned.
For nuclear facilities, the Code of Record must be included as part of the turnover documentation from a design and construction phase contractor to the operating phase contractor; from an operating phase contractor to the decommissioning phase contractor; and when a change in contractor occurs during any single life-cycle phase and is maintained under configuration control.	No deviation planned.
Post CD-4 Approval	
Submit all CD documents to PM.	No deviation planned.
Finalize PARS II reporting (including reporting earned value data through completion of the Project Management Baseline (PMB)).	No deviation planned.
Within 90 days, submit Lessons Learned regarding project execution and facility start-up to PSO and PM.	No deviation planned.
Within 90 days, submit an Initial Project Closeout Report.	No deviation planned.
Prior to Project Closeout	

Perform final administrative and financial closeout. Prepare the final Project Closeout Report once all project costs are incurred and invoiced and all contracts are closed. The report includes final cost details as required to include claims and claims settlement strategy where appropriate. (Refer to DOE G 413.3-16A.)	No deviation planned.
Complete and document achievement of Facility Sustainment goals (e.g., LEED Gold, LEED Silver, etc.), as applicable, via an independent third-party entity within one year of facility occupancy in accordance with EO 13693, Section 3(h), EO 13514, Section 3, and DOE O 436.1.	N/A, project provides landfill capacity.
Establish and/or update the property record in the Facilities Information Management System (FIMS) for all construction of or modifications to real property. Adjust the site's Ten-Year Site Plan. (Refer to DOE O 430.1B.)	No deviation planned.

5.2 Safety Basis Tailoring Strategy

The safety basis design strategy and documents have been evaluated for tailoring applicability based on experience and lessons learned from the SDU 6 project. Per DOE-STD-1189, since the SDU 7 project is not introducing new controls, utilizing a new technology, or introducing a new hazard to the facility into the existing safety basis, it is not required to have a PSDR and PSVR. CNS has approved a "blanket" SDS letter for all remaining SDUs which follow the SDU 6 design concept.

6.0 INTEGRATED PERFORMANCE BASELINE

The SDU 7 project will be formally baselined once CD-2/3 is approved by the PME. The baseline is described in the following sections.

6.1 Technical Scope Baseline

The Project performance requirements and design criteria are defined in the Modification Traveler (MT) MT-SS-2016-00003, and in the Task Requirements and Criteria Document (TR&C) M-TC-Z-00009 (Draft).

The Project will accomplish the following key objectives:

- Each SDU shall be capable of receiving a minimum of 30 Million Gallons of Saltstone grout.
- Each SDU shall handle salt solution as described in the proposed Saltstone WAC for Salt Waste Processing Facility (SWPF).

- Each SDU shall be compliant with SCDHEC Class III Landfill requirements per SCDHEC Regulations 61-107, Solid Waste Management, or shall be able to be shown to be functionally equivalent to the SCDHEC specified design.
- Each SDU shall pass a hydrostatic leak test with zero leakage as determined by a black light inspection of the tank exterior.
- Each SDU shall be consistent with Performance Assessment requirements per DOE Order 435.1, Radioactive Waste Management.
- Each SDU shall provide appropriate shielding to keep the dose rate below 0.05 mr/hr in high-occupancy uncontrolled areas.
- Each SDU shall be designed to be capable of accommodating a future closure cap. The closure cap is not part of the Project scope.
- Each SDU shall maintain the flammable gas concentration in the cell vapor space within the limits specified by the SPF's DSA.

6.1.1 Key Regulatory Components of the Technical Baseline

The SDU 7 project shall submit landfill designs with adequate information to demonstrate that the proposed designs meet or exceed environmental and public health protection standards. The SCDHEC standard is SCDHEC Regulation R.61-107.19 and the SDUs meet the following requirements:

- Design must ensure no concentration values for any constituent exceeds groundwater protection standard.
- A flexible membrane liner (FML) may be used.
- Landfill subgrade shall minimize organic material and consist of on-site soils.
- Landfill subgrade shall be graded in accordance with approved plans, reports, and specifications. Material shall be sufficiently dry and can be adequately compacted to design requirements.
- Design considers hydrogeologic characteristics of facility and surrounding land, climatic factors of the area, and volume and physical/chemical characteristics of the leachate.
- One permanent survey benchmark of known elevation from U.S. Geological Survey shall be established.
- A separation of 3ft shall be maintained between the base of constructed liner system and the high-water table.
- Soil compaction shall be performed by properly controlling moisture content, lift thickness, and other details for satisfactory results.
- FML shall demonstrate chemical and physical resistance to waste placement or leachate generated by the landfill. Documentation is to be included in application. FMLs shall be constructed with approved plans, specifications, and manufacturers recommendations.
- All storm water ditches shall meet minimum slope/velocity requirements.
- Department may approve encroachment upon existing landfill slopes.
- Construction certification submitted to Department by South Carolina professional engineer (PE).

- Department may approve other landfill designs provided there is adequate information to demonstrate proposed design meets or exceeds environmental and public health protection standards.
- Landfills shall meet minimum factor of safety against failure.

6.1.2 Key Integrated Safety Management Components of the Technical Baseline

Unreviewed Safety Questions (USQs) will be prepared during design to cover the project scope. Due to the similarities between the design of SDU 6 and SDU 7, the only Safety document submittals required are a SDS and DSA/TSR change. Safety documentation for the SDU 7 Project will be produced in accordance with Manual 11Q Procedure 1.01, "Generation, Review, and Approval of Safety Documents", and supporting procedures. Since SDU 7 is a capital asset modification, appropriate changes to the existing Saltstone safety basis will be made to incorporate the SDU 7 description, analyses, and controls at CD-4. SDU 7 is determined to not be a major modification, a new nuclear facility, and is not anticipated to exceed mitigated offsite dose estimates of 25 rem. Therefore, DOE-STD-3009-2014 is not applicable for the SDU-7 Project in accordance with 11Q, Appendix A. DOE-STD-3009-94 CN3 will be utilized to provide necessary technical guidance and bases for revision of safety basis documents.

A USQ review against the Saltstone facility safety basis will be performed to allow SDU 7 construction activities within a defined "greenfield" inside the facility boundaries. Changes to design within this "greenfield" portion of the project will not receive a USQ review, but will be evaluated against the approved Saltstone DSA and applicable safety basis documents which incorporate SDU type projects. The Saltstone DSA will be configuration managed in the Pending Changes to the Saltstone Facility Safety Basis Manual. This ensures changes in the safety design strategy are properly reviewed and accepted by DOE prior to submittal of the final DSA and TSR to support CD-4. Once the DSA/TSR change package for the project has been approved by LWO contractor, any changes in the design will be subjected to the USQ process per Manual 11Q. A USQ review will be performed for the Design Change Package that performs final tie-in of the SDU. This review will verify that the "as-built" design of the project matches the description in the DSA.

Turnover of the new system and operation will be covered by the implementation of the revised DSA. The SDU 7 project is a modification to the Saltstone Facility; therefore, no independent, stand-alone safety documentation will be developed. A revision to the Saltstone Facility Documented revision will comply with the requirements of 10CFR 830, DOE-STD-3009-94, and SRS Manual 11Q, "Facility Safety Document Manual". A Consolidated Hazard Analysis will be performed in accordance with the SRS Consolidated Hazard Analysis Process Methodology Manual, SCD-11. A Performance Assessment (PA) per DOE Order 435.1 and DOE Manual 435.1 will be performed.

The project safety program will be implemented in accordance with the SRS Integrated Safety Management System (ISMS). The determination of applicable requirements is an important prerequisite for tailoring and incorporating the principles and functions of the ISMS. As SDU

project requirements are identified, methods of compliance will be employed to suit the hazards of specific activities through the project phases.

The Federal IPT will implement this process through Savannah River Manual (SRM) 400.1.1F DOE-SR ISMS Description Manual.

6.1.3 Key Waste Management Components of the Technical Baseline

The SDU 7 project will disposition waste and will satisfy the SRS Waste Acceptance Criteria Manual.

6.1.4 Key Risk Management Components of the Technical Baseline

The contractor developed SDU 7 Risk and Opportunity Analysis Report (ROAR) includes both contractor-owned and DOE-owned risks and opportunities associated with the SDU 7 Project. These documents describe how the six steps of the risk management process (i.e. planning, identification, grading, handling, impact determination and integration) was applied to the SDU 7 project and satisfies the requirements of providing a Risk and Opportunity Management Plan for the Project. They also present the associated levels of risk, the risk handling strategies to be employed, the residual risk, the process for deriving management reserve and contingency and present the results of this process. These documents were developed based on the success of the SDU 6 project.

The key potential risks for this project are identified below.

- Funding challenges.
- Major Construction Flaws Discovered that Impact Critical Path.

The residual risk levels, estimate and schedule uncertainty were analyzed to derive a Management Reserve (MR) and DOE Contingency estimate. The project has selected to use the 80% confidence level for the establishment of MR. DOE Contingency is calculated based upon the 80% confidence level for DOE owned risks as well as feedback from the cost estimating organization at the Consolidated Business Center.

The Risk Register will be updated at a minimum on a yearly basis; therefore, the number and type of risks will change. The PEP will not be revised to reflect these changes; however, the ROAR shall be revised to document these changes.

6.2 Schedule Baseline

The schedule baseline for the SDU 7 project will be established at CD-2/3. The major schedule milestones for the SDU 7 project are listed in Table 3.

Table 3 – Major Schedule Milestones for SDU 7

Actual (A) Planned (P)

Milestone	Date
CD-0 Approval of Mission Need	February 24, 2016 (A)
CD-1 Approval of Selected Alternative	May 4, 2017 (A)
CD-3A Approval of Site Preparation	October 17, 2017 (A)
CD-2/3 Approval Start of Construction	March 31, 2018 (P)
Achieve CD-4 (construction complete with A punch list items complete and a minor number of B-punch list items remaining)	March 31, 2022*(P)

*Assumes CD-2/3 approved no later than June 1, 2018.

Project schedules are developed based on the project scope of work and consistent with the approved WBS to include resource loaded activities integrated with the cost estimate. Activity logic will depict all work scope, Critical Decision points, Hold Points and Major Milestones. Logic will be developed to a level of detail to allow an accurate critical path to be calculated in order to serve as a basis for the forecasting and decision making throughout the lifecycle of the project.

The established baseline will have a clearly defined critical path and major milestones and will be compared with performance to generate the forecast plan. Resource loaded activities are used to develop time phased budgets that are integrated with the schedule. Only approved changes to the schedule baseline will be permitted using the formal baseline change proposal (BCP). All known project and contract requirements, major long lead procurements are identified in the schedule. Monthly schedule updates will be maintained to measure project performance and maintenance against the baseline.

6.3 Cost Baseline

The cost baseline for the SDU 7 project is \$115.4M and is summarized in Table 4 below.

Table 4 – Cost Baseline for SDU 7

WBS #	Type	Description	Total Costs
01.90.24.01	TEC	Site Prep	\$ 9,863,512
01.90.24.02	TEC	Cell	\$ 60,401,412
01.90.24.03	TEC	Balance of Plant (BOP)	\$ 15,175,860
01.90.24.04	TEC	Project Support (PED)	\$ 1,928,364
01.90.24.05	TEC	Project Support (TEC)	\$ 5,564,067
01.90.24.06	TEC	New Facilities	\$ 3,853,015
01.90.24.09	TEC	TEC Program Support and Legacy	\$ 10,356,442
01.90.24.11	OPC	Conceptual Design	\$ 1,735,374
01.90.24.12	OPC	Start-up and Facility Readiness	\$ 1,290,876
01.90.24.14	OPC	OPC Project Support	\$ 4,430,048
01.90.24.19	OPC	OPC Program Support and Legacy	\$ 801,483
Total			\$ 115,400,454

6.3.1 Cost Profile

The cost profile for SDU 7 is summarized in Table 5 below.

Table 5 – Cost Profile for SDU 7

Cost Item		Amount
PMB		\$115,400,454
MR	Schedule Reserve	\$2,793,023
	Cost risk	\$2,269,970
	Estimate uncertainty	\$8,596,946
	Total MR	\$13,659,939
Fee		\$12,000,000
Contract Price: PMB + MR + Fee		\$141,060,393
DoE Other Direct Costs (ODC)		\$5,100,000
Contingency	Cost risk	\$12,284,681
CD-2/3 total project cost (contract price + ODC + contingency)		\$158,445,074

6.3.2 Funding Profile

The revised SDU 7 TPC is \$158.4M and is within the CD-1 cost range of \$110M to \$170M. Two funding profiles have been developed to support the CD-2/3 submission and are shown below in Table 6 and Table 7. Table 6 shows the Senate recommended funding level for FY18 which includes a \$10M reduction in TEC. This reduction is assumed to be offset by a corresponding increase in FY21. Table 7 shows the Presidential Budget funding level for FY18. It is currently unknown which funding profile will be approved in the FY18 budget. The estimates are categorized by appropriate fund type and time phased based on what phase of the project the risk could occur. These tables represent the detailed baseline estimate with fully integrated cost and schedule risk analysis.

Table 6 – Senate Recommended Funding Profile for SDU 7

Cost Category	Fund Type	Prior Actuals	FY2018	FY2019	FY2020	FY2021	TOTALS
SDU-7 Costs	PED	4,500	1,255	-	-	-	5,755
	TEC	1,000	20,360	33,943	33,358	12,727	101,388
	OPC	2,709	1,358	1,222	1,531	1,438	8,258
	TOTAL	8,209	22,973	35,165	34,889	14,165	115,400
DOE ODCs	OPC	110	1,809	1,294	1,094	794	5,100
Contractor MR	PED	-	527	-	-	-	527
	TEC	-	4,358	4,000	2,400	2,374	13,132
	OPC	-	-	-	-	-	-
	TOTAL	-	4,885	4,000	2,400	2,374	13,660
DOE Contingency	PED	-	1,300	-	-	-	1,300
	TEC	-	1,200	1,500	2,477	2,679	7,856
	OPC	-	834	267	840	1,189	3,129
	TOTAL	-	3,334	1,767	3,317	3,869	12,285
FEE	TEC	-	1,000	1,800	1,800	7,400	12,000
TOTAL PED	PED	4,500	3,082	-	-	-	7,582
TOTAL TEC	TEC	1,000	26,918	41,243	40,034	25,181	134,376
TOTAL OPC	OPC	2,819	4,000	2,782	3,465	3,421	16,487
TPC	TPC	8,319	34,000	44,025	43,499	28,602	158,445

Table 7 – Presidential Budget Funding Profile for SDU 7

Cost Category	Fund Type	Prior Actuals	FY2018	FY2019	FY2020	FY2021	TOTALS
SDU-7 Costs	PED	4,500	1,255	-	-	-	5,755
	TEC	1,000	30,360	33,943	33,358	2,727	101,388
	OPC	2,709	1,358	1,222	1,531	1,438	8,258
	TOTAL	8,209	32,973	35,165	34,889	4,165	115,400
DOE ODCs	OPC	110	1,809	1,294	1,094	794	5,100
Contractor MR	PED	-	527	-	-	-	527
	TEC	-	4,358	4,246	4,172	357	13,133
	OPC	-	-	-	-	-	-
	TOTAL	-	4,885	4,246	4,172	357	13,660
DOE Contingency	PED	-	1,300	-	-	-	1,300
	TEC	-	1,200	1,500	2,477	2,679	7,855
	OPC	-	834	267	840	1,189	3,129
	TOTAL	-	3,334	1,767	3,317	3,868	12,285
FEE	TEC	-	1,000	1,800	1,800	7,400	12,000
TOTAL PED	PED	4,500	3,082	-	-	-	7,582
TOTAL TEC	TEC	1,000	36,918	41,489	41,806	13,162	134,376
TOTAL OPC	OPC	2,819	4,000	2,782	3,465	3,421	16,487
TPC	TPC	8,319	44,000	44,271	45,271	16,584	158,445

6.4 Work Breakdown Structure

The Work Breakdown Structure (WBS) for the SDU 7 project is a hierarchical representation of the technical scope. The scope is decomposed and divided to levels that best allow for work to be planned, executed, controlled, and monitored in logical, manageable segments. The WBS is product-oriented to facilitate more accurate cost estimating, work scheduling and resource loading, and earned value measurements and reporting that is representative of project performance. The WBS establishes the common framework for integration of all project tasks. It is a source for the early identification of uncertainties and project risks.

The SDU 7 project WBS is structured according to the hierarchical classification listed in Table 8. This structure is standard for the Radioactive Liquid Waste Stabilization and Disposition. The lowest WBS element, the terminal element, is supported by cost activity codes. These cost activity codes are utilized in the collection of actual costs and are unique to a given terminal WBS element. The WBS is accompanied by a Dictionary to provide a description of the key components of the WBS elements. It provides critical information such that lower-tier WBS elements can be further developed by federal and contractor organizations.

Table 8 – WBS for the SDU 7 Project

WBS	Description
01.90.24	Salt Disposal Unit 7 - Capital Asset
01.90.24.01	Site Prep
01.90.24.01.01	Site Prep Design (CD-3A)
01.90.24.01.05	Site Prep Construction (CD-3A)
01.90.24.01.08	Site Prep Construction Support (CD-3A)
01.90.24.02	Cell
01.90.24.02.01	Cell Design
01.90.24.02.05	Cell Construction
01.90.24.02.08	Cell Construction Support
01.90.24.03	Balance of Plant (BOP) (CD-2/3)
01.90.24.03.01	Balance of Plant Design
01.90.24.03.02	BOP Control Systems
01.90.24.03.04	BOP Procurement
01.90.24.03.05	BOP Construction
01.90.24.03.08	BOP Construction Support
01.90.24.04	Project Support (PED)
01.90.24.04.07	Safety Basis and Fire Hazards Analysis
01.90.24.04.08	PED Project Support
01.90.24.05	Project Support (TEC)
01.90.24.05.07	DSA Update
01.90.24.05.08	TEC Project Support
01.90.24.06	New Facilities (CD-3A)
01.90.24.06.01	New Facilities Design
01.90.24.06.06	New Facilities Construction
01.90.24.06.08	New Facilities Construction Support
01.90.24.09	TEC Program Support & Legacy
01.90.24.09.98	TEC Program Support & Legacy Allocations
01.90.24.09.99	PED Program Support & Legacy Allocations
01.90.24.11	Conceptual Design
01.90.24.11.08	Conceptual Design

01.90.24.12	Start-up and Facility Readiness
01.90.24.12.06	Start-up and Facility Readiness
01.90.24.14	OPC Project Support
01.90.24.14.03	Technical Requirements Management
01.90.24.14.08	OPC Project Support
01.90.24.19	OPC Program Support & Legacy
01.90.24.19.99	OPC Program Support & Legacy Allocations

6.5 Life Cycle Cost Estimate (LCCE) for SDU 7

The SDU 7 LCCE (Table 9) was prepared to comply with DOE O 413.3B to identify anticipated costs associated with a capital construction project 17-D-402 and includes costs beyond completion of the Line Item Project. The Life Cycle Costs account for all costs to design, build, operate and maintain the facility until completion of its operating life, and dismantle and removal (D&R) of the Balance of Plant (BOP) structures, components and equipment.

The Savannah River Site SDU program is expected to continue beyond SDU 7, requiring up-to five additional 32 Mgal SDUs to be constructed and filled with saltstone grout. Saltstone grout is the selected alternative to immobilize and store in place decontaminated radioactive salt solution (DSS). The Saltstone Disposal Facility end state is defined in the governing SCDHEC Industrial Land Fill permit, which requires Class 3 Landfill disposal requirements, as defined by SCDHEC regulation R.61-107.19.258.1. Ultimately, a controlled area is required. This controlled area currently requires SDUs to extend a High-Density Polyethylene (HDPE) liner from the foundation to the roof line along the exterior SDU walls and requires placement of a soil cover over the Saltstone Disposal Facility (SDF). Costs associated with the HDPE membrane liner and soil cover are not included in this estimate.

The estimate includes the TPC estimate range¹ at CD-2/3, operating and maintenance costs of the Saltstone Production Facility (SPF)², including long term surveillance and maintenance during the operating period. D&R costs were determined as a ratio of the installation costs. Salvage value for removed components is not included. Costs excluded are assumed to be captured by other Savannah River Site programs.

Table 9 – The Total Estimated Life Cycle Cost for SDU 7

Element	CD-2/3 Estimate
Design ¹	\$8.2M
Construction ¹	\$133.4M
OPC, including Startup Testing-Commissioning ¹	\$16.2M
Operations, at 23 months ²	\$72M
Operations, Cold Cap ³	\$3.6M
Shutdown, Dismantling, Decommissioning ⁴	\$8.8M
Total Life Cycle Cost ⁵	\$242.2M

Life Cycle Cost Estimate Notes:

1. Design, Construction, and OPC costs were determined based on the CD-2/3 estimate.
2. Operations costs were determined by averaging the FY11 to FY13 Saltstone Production Facility Costs and escalating them to FY17 dollars using a rate of 2.5%. This estimate includes a 1.25 multiplier to account for increased facility throughput.
3. Once SDU 7 is filled with saltstone grout, approximately two feet of cement (or a cold cap) will be placed between the top of the contaminated saltstone grout and roof. This cold cap is approximately 8,200 cubic yards, based on the 375' diameter of the SDU. The cost of the installed cold cap is assumed to be \$350 /cubic yard and captures all direct and indirect costs. A multiplier of 1.25 was added for high end estimate.
4. Dismantle and remove (D&R) of the grout distribution lines, drainwater return system, and all tank exterior equipment is assumed at 75% of the SDU 6 installation cost (to account for radiation area and contaminated material and equipment) and a 40% multiplier to account for craft supervision, engineering, and project support. D&R items will be exposed to radioactive liquids, dusts and/or fumes and will have to be treated as contaminated during removal and disposal. Disposal is expected to be within the boundaries of SRS at no cost to the life cycle beyond handling and transportation. A factor of 1.5 was added for high end estimate.
5. Excludes costs to extend HDPE liner from the base of the tank to the roof line; back fill excavation to grade, and extend landfill soil cover over Saltstone Disposal Facility (SDF). The HDPE liner will be installed when final back fill and over-arching clay cap is placed. The back fill to grade can't be accomplished until the final SDU is constructed and filled.

6.6 Baseline Change Control

Baseline changes include changes to any component of the Performance Baseline (PB) as well as the Performance Measurement Baseline (PMB). The original PB is established and documented at CD-2 approval and represents a commitment to deliver the SDU 7 project by a particular date (CD-4) at a specific cost. The contractor PMB is a subset of the PB and is used to manage project cost and schedule using the Earned Value Management System (EVMS). For SDU 7, baseline change control on the PMB will be implemented prior to CD-2/3 and baseline change control on the PB will occur once CD-2/3 approval is obtained.

The Performance Baseline, once validated and approved, establishes the framework within which the project will be executed and against which performance will be monitored and assessed. Because it serves as the "measuring stick," deviations must be closely monitored and tightly controlled.

Overall project configuration is established and maintained by the FPD. The Contractor executes work within the framework of that configuration. As such, the FPD defines project parameters and executes an acquisition strategy that delivers the objectives of the EM mission. Configuration management is used to identify and document the configuration of the project and its outcomes. Configuration management is also used to identify, evaluate, and document changes to the configuration of the project as it progresses through its lifecycle phases.

The Contractor has developed its own baseline change control procedure which is applicable to PMB change control. The process identifies the Contractor's Change Control Board (CCB) that includes Contractor management personnel as voting members for all BCPs. All changes to

approved design are documented via Contractor Design Control procedures where form and fit changes do not require BCPs, but are approved via Design Change Forms (DCFs). Other changes are managed according to this section. Current change logs will be included in the Monthly Report issued by the Contractor Project Manager. Technical scope development and completion verification are performed in accordance with approved procedures.

Any BCPs requiring a higher level of approval authority than originally assigned will be elevated to the appropriate approval authority for review and approval prior to implementation by the project. Any BCPs requiring contract action prior to approval and implementation will be submitted to the LWO Contracting Officer to be submitted to the DOE-SR Contracting Officer with the appropriate proposal or other documentation required for DOE-SR Contracting Officer consideration. BCPs requiring a contract modification to the LWO contract or other SRS contracts will not be approved and implemented until the DOE-SR CO either issues a unilateral contract modification or completes contract negotiations for a bilateral change.

Management of the SDU 7 PB will be consistent with DOE G 413.3-20 Change Control. Level 3 BCPs require contractor approval via Contractor CCB and are reported to DOE-SR.

Level 2 BCP require DOE-SR approval. Level 2 BCPs that do not affect any other LWO scope beyond the SDU 7 project will be approved by the FPD. Level 2 BCPs that affect the LWO contractor contract, or may potentially affect other SRS mission scope or contracts, will be submitted to the DOE-SR Change Control Board (CCB). This board consists of the DOE contracting officer, Senior DOE Managers, the FPD, and the DOE-SR Manager. The FPD will present the BCP to the CCB, who will make a recommendation to the Site Manager to accept or reject the requested change. The Site Manager and DOE-SR Contracting Officer will make the final decision and, if approved, will concur on the BCP under the FPD's approval signature.

Level 0-1 BCPs will also be presented to the DOE-SR CCB to request concurrence before being submitted to EM Headquarters. The same aforementioned process will be followed with the exception that DOE-SR Contracting Officer concurrence will only be requested if a contract change is requested.

If approved, the FPD will submit the BCP to the appropriate DOE Headquarters (HQ) approving official [currently through the EM-3 and EM-5 IPT Point of Contact (POC)] with a copy sent to the APM POC. The appropriate HQ POC will then manage the approval process through the Chief Executive for Project Management (CE) or the Program Secretarial Officer (PSO) as required. If approved, the HQ POC will transmit the approved BCP to the FPD for execution.

The FPD will prepare BCPs that reflect changes directed by DOE. The FPD will approve changes directed by DOE if they meet the level 2 threshold with the exception of changes that require contract modifications. Changes directed by DOE that are level 0-1 will also be processed through the DOE-SR CCB process.

If the FPD is not available to process a BCP, the Deputy FPD has the authority to process and make approval/disapproval decisions in the FPD's absence within the conditions set in the PEP.

Any changes to project baselines and baseline elements will be compliant with change control thresholds and processes described in DOE O 413.3B as follows:

	Level 0 CE	Level 1 PSO	Level 2 FPD Level*	Level 3 Contractor
Scope	<ul style="list-style-type: none"> A change in scope that affects the ability to satisfy the mission need. 	<ul style="list-style-type: none"> Changes to scope that affect mission need requirements. Inability to meet a Key Performance Parameter. Non-conformance with the current approved PEP. 	<ul style="list-style-type: none"> Any change to the project description, justification, scope, and acquisition strategy. Any changes to Saltstone Disposal Facility (SDF) operations. Deviations from the project's Code of Record. 	<ul style="list-style-type: none"> Any changes not affecting defined Level 2, or higher scope baseline changes, including conversion of Planning Packages to Work Packages. Administrative changes. Corrections of errors that do not require Level 2 or greater approval. Correction of Charge code and/or WBS changes. Improve process(s) without changing overall configuration.
Schedule	<ul style="list-style-type: none"> CD-4 schedule delay of 12 months or more from original CD-2 baseline date. 	<ul style="list-style-type: none"> Any slippage of Performance Baseline CD-4 date 	<ul style="list-style-type: none"> Single or cumulative baseline schedule changes to major milestones defined in the PEP Any change requiring use of schedule contingency 	<ul style="list-style-type: none"> Any change to activities in the project schedule that do not result in changes to major milestones. Any baseline change that uses contractor schedule margin.
Cost	<ul style="list-style-type: none"> An increase in excess of the lesser of \$100M or 50% (cumulative) of the original CD-2 cost baseline. 	<ul style="list-style-type: none"> An increase greater than the TPC but less than \$100M or 50% (cumulative) to the approved Performance Baseline. 	<ul style="list-style-type: none"> Any request for distribution of project contingency. Any change to cost allocations or out-year estimates. 	<ul style="list-style-type: none"> Any distribution of contractor MR to the Performance Measurement Baseline.
*Any changes that affects the LWO Contract must be concurred by the DOE-SR Change Control Board.				

Additionally, BCPs meeting the following conditions shall require FPD or DOE-SR CCB approval, per the thresholds described above:

- Any change that would include adjustment of Budgeted Cost for Work Scheduled (BCWS) within the current month that is not a result of DOE-SR direction, MR risk/opportunity impact or routine rate changes. In general, the expectation is that BCPs should be planned to change BCWS no earlier than the current month +1 month in relation to the month the BCP is approved.
- Any change to open activities. Changes to open activities must be performed by closing the open activity, setting BCWS equal to the Budgeted Cost for Work Planned (BCWP), preserve Actual Cost of Work Performed (ACWP), then opening a new work package to plan remaining BCWS and any additional BCWS authorized through change control.
- Single point adjustments that would change historical cost and / or schedule variances.
- Conversion of Planning Package(s) to Work Package(s) in which the conversion would yield WP(s) with a different cumulative budget than the original PP which cannot be covered by MR (NOTE: Use of or return to DOE Contingency may be justified, but this must be a two-step process).

- Change in make or buy decision after approval of the DOE O 413.3B CD-2 Acquisition Strategy, or current version as updated by the FPD through appropriate change control.
- Significant acceleration, delay or resequencing of authorized work scope within the PMB that changes the month to month BCWS at the CA up to the Project level (NOTE: A BCP should only be considered if continued work execution and reporting based on acceleration, delay or resequencing of work in the forecast schedule against the baseline would result in the loss of accuracy or credibility of the project's performance and reporting data such that DOE could no longer rely on the current project baseline and performance data to make informed management decisions).
- Any use of DOE Contingency.
- Use of MR if the ratio of MR spent to date versus the risk based MR spend profile associated with the CD-2/3 approved Performance Baseline and Performance Measurement Baseline is 25% or greater out of alignment.

6.7 Variance Analysis/Reporting

Variance analyses and reporting will be performed for all control accounts (at the terminal WBS level) wherein the variance is:

- Cost or schedule is plus or minus 15% of the current period budget and \$50,000, whichever is greater for the current period.
- Cost or schedule is plus or minus 15% of the cumulative to date budget and \$100,000, whichever is greater for the cumulative to date.
- Variance at Completion (VAC) is plus or minus 15% of the Budget at Completion (BAC) value and \$500,000 whichever is greater.
- VAC when the Latest Revised Estimate (LRE) TPC exceeds the BAC TPC.
- If the cumulative to date To Complete Performance Index (TCPI) Estimate at Completion (EAC) vs Cost Performance Index (CPI) is plus or minus 0.05.
- For Control Accounts (CA) where all scope is being executed by Firm Fixed Price contracts: in addition to cost and schedule variance, variance at completion and TCPI EAC thresholds above, a variance explanation is required if the CA level schedule remaining duration or end date increases in any month, and for each month thereafter until the schedule can be reclaimed or the contract is completed.

NOTE: The threshold specific to Firm Fixed Price Subcontract (FFPS) CAs should provide more effective communication of the impact due to schedule slippage caused by the FFPS where the schedule slippage does not result in an increase to FFPS total value / cost (BAC and CPI), but the required contractor oversight of the FFPS execution must extend beyond that originally baselined at CD-2/3.

Variance reports will include the cause of the variance, its impact on the cost and/or schedule, and any necessary corrective actions as described in S-14 Procedure 1.9 and the LWO contractor EVMS System Description Section 10.0. Schedule variance explanation shall include

a description of day's impact to critical path, key milestones and the CD-4 PMB, Contract Budget Baseline (CBB) and / or PB date, as appropriate.

7.0 PROJECT MANAGEMENT AND OVERSIGHT

7.1 Project Management Approach

This section describes the key components of the project management framework through which the project is planned, executed, and completed. It identifies how the project technical scope, cost, and schedule baselines will be managed and addresses how project performance is measured and reported. It discusses systems and processes related to baseline change control, project reviews, and funds management. The project baseline will be established at a level necessary and sufficient for cost account managers to effectively monitor, control, report, and manage their scope.

To ensure successful management and control of the project, the FPD will retain project responsibility throughout the life cycle of design, construction/modifications and mechanical completion, startup testing, readiness, and CD-4. In carrying out these responsibilities, the Federal IPT will manage and control project performance at the Control Account level of the WBS. This will require the team to review all baseline change proposals prior to submittal for approval.

The Federal IPT implements DOE Orders, Policies, and Directives through the DOE-SR Directive System. This system, available through the DOE-SR intranet, includes implementation procedures, notices, and manuals that describe how the Federal staff should execute DOE requirements.

7.2 Project Reporting

The credibility of the SDU 7 project rests heavily on accurately representing and managing/controlling baseline variances through project reporting. Tight controls have been implemented for change control of the scope, cost, and schedule baselines. Early identification, close monitoring, and timely resolution of variances makes the need for quality reporting imperative throughout the execution phase of the project.

Project reports will include variance/trend analysis, the status of corrective actions (including EM program reviews, independent project reviews (IPR), and external independent reviews (EIR) updates) on recent BCP activity, and the need for allocation of contingency funds, along with a section on potential problems and critical issues. The FPD will be responsible for submission of the monthly project reports through the line management chain. This data is also reported to EM through Integrated Planning, Accountability, and Budgeting System (IPABS) and then forwarded to APM.

7.2.1 FPD Reporting

DOE Project Assessment and Reporting System (PARS) II: PARS II is the DOE project reporting system used for monitoring its projects greater than \$50 million and provides the basis for reporting by APM to the Deputy Secretary, other senior DOE managers, and key program stakeholders. PARS II reporting begins upon achieving CD-0. The project assessment system is based on EVMS standards. All EVMS calculations conform to ANSI/EIA-748-B-2009, supplemented with additional acquisition metrics required by the DOE. After a project receives CD-2, cost and EV data in PARS II is provided directly from the contractors' cost processors and project narrative information is entered by the FPD. The FPD is responsible for reviewing and validating the data that is submitted into PARS II monthly.

EM Quarterly Progress Reviews (QPR): The FPD presents project status to the Acquisition Executive based on information entered into the IPABS and other relevant project data. The QPR provides a vehicle for discussing project issues, risks, and other project needs with the PME and other senior EM management on a routine basis.

7.2.2 Contractor Reporting

The FPD will provide reporting requirements, including form, format, medium, and frequency. Reports must include specific status and performance progress as required by OMB, DOE-CFO, and/or EM.

The Contractor Project Manager is responsible for collecting, maintaining, and correlating sufficient information to accomplish monthly reporting to the FPD. The reports will include, but not be limited to, the following:

- Narrative highlights and status assessments, including critical activities planned for the next reporting period.
- Progress against performance measures/metrics.
- Evaluation of risks, including status of the risk registry.
- Implementation of contingency plans in response to realized risk events.
- Cost and schedule performance reporting with variance analysis using earned value measurement techniques.
- Funding status, including actual and forecasted spending against the spend plan established to support the cost baseline.
- Utilization of management reserve, regardless of the amount.
- Schedule status, including progress and performance against the schedule baseline and critical path.
- Status of critical milestones and government furnished services and items with a 6-month forecast.

- Worker safety metrics, incidents, accidents, occurrences, violations, and other leading/lagging indicators.
- Status of safety-related corrective actions.
- Worker exposures exceeding established levels and limits.
- Status of safety authorization basis documents, including unreviewed safety questions.
- Issues related to the conduct of operations.
- Issues related to facility/environmental operations that may/have adversely affected worker safety, environmental protection, or project performance.
- Issues related to quality assurance and quality control.
- Status of environmental and/or regulatory milestones.
- Environmental releases above approved/permitted levels.
- Status and progress against approved Performance Measurement and Evaluation Plan.

7.2.3 Reporting Earned Value

The Contractor will submit a monthly report to the FPD reflecting measures of project cost and schedule performance against the established project baseline using an earned value management system that is compliant (required for CD-2 approval) and then certified (required for CD-3 approval) with ANSI/EIA-748-B-2009 and which is reported in the PARSII system starting at CD-2. Cost and schedule variances, milestones, and financial status will also be reported monthly against approved WBS activities and task plans. Variances or deviations in performance from the approved scope, cost, and schedule baselines will be tracked by the Contractor and highlighted separately in each of the project reports.

Earned value reporting will be performed in the Contract Performance Report Formats as required by the contract.

The DOE-SR project controls IPT member will review the monthly EVMS data submitted by the contractor and provide an evaluation report to the FPD. The FPD will review this report and provide feedback to the contractor to address identified issues. Minor issues will be transmitted to the contractor PM to address and placed into their action tracking system. Major issues will be recorded into the DOE Order 226.1 compliant Site Tracking, Analysis, and Reporting system (STAR) for formal tracking and resolution.

Before LWO contractor performs the following EVMS actions, a rationale will be given to the FPD that explains its necessity:

- Resetting CPI and/or Schedule Performance Index (SPI) to 1.0 (particularly if performance has been below 1.0).
- Changes to Open Activities.
- Current Period Changes and Single Point Adjustments.

- a) Current period changes (Freeze Period Waiver required if the change is not a result of DOE-SR direction, MR risk/opportunity impact or routine rate changes).
- b) Single Point BCWS or BCWP adjustments when applicable.
- Planning Package conversion which results in an increase in dollars (beyond normal escalation) and/or schedule changes.
- Authorization to begin work prior to change control approval (at the direction of the FPD for appropriate reasons).
- Contractor Management (MR) Reserve.
 - a) Contractor Management Reserve is being utilized for non-scope changes (e.g., subcontractor prices increase/decrease, material cost increase/decrease, direct/indirect rate changes, etc.).
 - b) Management Reserve utilization curves are to be provided to FPD monthly (although approval requires Contractor PM - the FPD should be informed of the MR utilization).
- Conversion of UB into control account after the timeframe indicated by the LWO contractor change control procedure (>90 days).
- Incorporation of near-term AUW takes more than 1 accounting period.
- Major change to Work Breakdown Structure (due to addition and deletion of work scope).
- Any Contracting Officer directed change to Contractor (contractual change).
- Over Target Baseline/Schedule condition.

Variance reports will include the cause of the variance, its impact on the cost and/or schedule, and any necessary corrective actions as described in S14 Procedure 1.9 Analysis & Reporting and the LWO contractor EVMS Description (EVMSD) Section 10.0 Analysis & Reporting. Schedule variance explanation shall include a description of day's impact to critical path, key milestones and the CD-4 PMB, CBB and / or PB date, as appropriate.

7.3 Configuration Management

For the SDU 7 project to be completed successfully all participants must be provided with accurate, up to date information throughout the project. To achieve this, a configuration management program has been established as part of the Contractor's project management system. Elements of that program will include program management, design requirements, document control, change control, and assessments. The configuration management program will use a system by which technical information is documented and changes to the documents and software are controlled. This integrated management process will provide the means to identify and control the documents and software that define the configuration baseline for the plant; provide a systematic method for managing approved changes to the technical baseline and ensuring that the changes are correctly documented; and provide verification that the final configuration in both hardware and software conforms to the technical baseline.

LWO contractor implements configuration management during the development, design, construction, start-up, maintenance, operation, and dispositioning of all nuclear facilities, and for other facilities that will implement configuration management to help achieve full accountability and traceability in the areas of safety, environment, and health protection. The LWO contractor Configuration Management implements the requirements of DOE Order 420.1A, Facility Safety, and the recommendations in Defense Nuclear Facility Safety Board (DNFSB) Recommendation 2000-2, Configuration Management of Vital Safety Systems, via Configuration Management. The SDU 7 project will use site procedures to implement the Configuration Management (CM) process. The Saltstone DSA will be Configuration Managed in the Pending Changes to the Saltstone Facility Safety Basis Manual. This ensures changes in the safety design strategy are properly reviewed and accepted by DOE prior to submittal of the final DSA and TSR to support CD-4. Once the DSA/TSR change package for the project has been approved by LWO contractor, any changes in the design will be subjected to the USQ process per Manual 11Q. A USQ review will be performed for the Design Change Package that performs final tie-in of the SDU. This review will verify that the “as-built” design of the project matches the description in the DSA.

7.4 Earned Value Management

To support the SDU 7 project, the FPD will ensure Contractor organizations implement an EVMS that is compliant (required for CD-2 approval) and then certified (required for CD-3 approval) with Government Electronics and Information Technology Association (GEIA) Standard: *Earned Value Management Systems, American National Standards Institute/Electronic Industries Alliance (ANSI/EIA)-748-B-2007*.

Contracting Officers will use *Federal Acquisition Regulation* (FAR) Subpart 34.2, “Earned Value Management System,” and clauses 52.234-2, 3, and 4 to ensure the EVMS requirements are clearly stated in task orders. DOE-SR uses DOE O 413.3B.

As required by DOE O 413.3B, LWO contractor utilizes an EVMS that is certified as compliant with American National Standards Institute/Electronic Institute of America-748 to monitor and control the project. Performance against the approved baseline is measured and variances are analyzed. The purpose of variance analysis is to provide DOE and LWO contractor Project Management with early identification and warning of potential changes to scope, schedule, or cost, with the objective of mitigating negative impacts and maximizing the benefit of positive changes. LWO contractor has adopted the existing approved EVMS and obtained certification by APM.

The LWO contractor EVMS is comprised of an integrated set of policies, procedures, guidelines, reports, and information systems that provide for disciplined and effective planning and control of scope, schedule and cost. It meets the internal LWO contractor management and control needs, and DOE reporting requirements.

The LWO contractor policy statement for EVMS outlines an integrated management control system with principles and policies that require projects do the following:

- Plan all project scope through project completion and EM operations through the end of the contract.
- Breakdown the project scope into manageable pieces that can be assigned to a responsible organization and person for control of scope, schedule and cost objectives.
- Integrate project scope, schedule, and cost objectives into a baseline plan against which accomplishments may be measured.
- Collect and record actual costs in the same manner as planned, and compare those costs to the performance baseline in the same manner as planned.
- Objectively measure project performance.
- Analyze significant variances and implement management actions to mitigate risks and manage cost and schedule performance.
- Incorporate authorized changes to the baseline in a controlled and timely manner.

7.5 Records Management and Document (Non-Record Material) Control

Once Departmental approvals are obtained, this document meets the definition of a record as established in *United States Code*, Title 44, "Public Printing and Documents", Chapter 33, "Disposal of Records," Section 3301, "Definition of Records," and must be managed as accordingly. Until such time, this document and its subsequent revisions are considered to be pre-decisional working drafts and are handled as a non-record material.

The IPT will implement a management system for planning, controlling, directing, organizing, training, promoting, and the execution of other managerial activities involved with records creation, records maintenance and use, and records disposition to achieve adequate and proper documentation of the policies and transactions related to the project.

This management system will include a recordkeeping system in which records are collected, organized, and categorized to facilitate their preservation, retrieval, use, and disposition.

The Federal IPT will implement this process through Savannah River Implementing Procedure (SRIP) 243.1, Rev. 0 "Records Management Program".

7.6 Contractor Records Management/Document Control

All project documentation shall be reviewed to ensure compliance with SRS Manual 7Q, *Security Manual*, before issuance. The LWO Contractor Project Manager must ensure records and correspondences are managed in accordance with SRS Manual 1B; MRP 3.31, *Records Management*, and MRP 3.32, *Document Control*. *Information copies* of records and documents can be retained as desired. All Quality Assurance records are maintained in accordance with SRS Manual 1Q, QAP 17-1 and the *Records Retention Schedule Matrix*.

Project Design input and output documents will be maintained in accordance with SRS Manual E7, Procedure 1.20, *Engineering Document Numbering System*. Record Indexing Forms will be

prepared per E7, 1.20 and will include Document Category (Essential, Support, General) in accordance with SRS Manual E7, Procedure 1.05, *Technical Baseline Identification* and various Facilities implementation of SRS Manual E7, 1.05 as defined in Area Specific Facility Configuration Management Implementation Plans.

7.7 Project Reviews

Project reviews are integral to the project scope, cost, and schedule tracking and reporting process. Such reviews are essential in communicating ongoing progress, identifying important issues or concerns, and actively involving the appropriate management levels throughout the design and construction phases of the project.

In addition, the SDU 7 project will participate in all required reviews required by DOE O 413.3B including, IPRs, CPRs, ICEs, EIR, TIPR, and bi-annual PPRs unless an exemption or deviation is granted by the PME. The project will also provide status updates during EM QPRs.

7.7.1 Project Definition Rating Index

Reviews will be performed in accordance with *Office of Environmental Management-Project Definition Rating Index (EM PDRI) Manual*, Revision 1, February 2001 as required by DOE Memorandum (Huntoon (Acting EM-1) to Distribution), *Environmental Management-Project Definition Rating Index*, February 12, 2001. These progress reviews are structured and standardized “go/no-go” reviews to enhance the up-front project planning process.

7.7.2 Reviews Supporting CD-4

As appropriate, a Readiness Assessment will be conducted prior to approving CD-4. An Independent Closeout Review will be performed to support closeout of the SDU 7 project.

7.7.3 Progress Reviews

Quarterly Performance Reviews (QPRs) are conducted with the Acquisition Executive. QPRs provide a formal communication forum among the project FPD, the PME, PM, key leadership, and Headquarters support organizations.

Other programmatic reviews will be conducted throughout the lifecycle of the project. Reviews communicate information on a project’s current status, progress, completeness, correctness, or work completion. As such, these reviews serve as important tools for the FPD in assessing the health of the project and in identifying potential risks and opportunities. Other types of project reviews may be performed such as reviews in areas of special concern, event-driven reviews, unscheduled reviews, status reviews, and design reviews.

8.0 RISK AND OPPORTUNITY MANAGEMENT

An essential part of project planning is to ensure that the risks and opportunities associated with the project have been identified, analyzed, and determined to be either eliminated, mitigated, or manageable. Risk identification and analyses should be continuous throughout the life of a

project. Risk management techniques applied throughout the SDU 7 project will aid management in the decision-making process as well as accomplishing work during the execution phase. Risk management will be based on a graded approach of high, moderate, and low risk, and risks managed commensurate with its potential impact to the project.

The project will utilize an integrated risk team composed of DOE and Contractor personnel to maintain a disciplined and formalized risk and opportunity management process. The FPD is responsible for directing risk and opportunity assessments, developing risk handling strategies, preparing risk management documents, and implementing risk management throughout the life of the project. Risk and opportunity assessments will be conducted by formal meetings and documented in the SDU 7 Risk and Opportunities Analysis Report (ROAR). The ROAR will include the project's application of risk planning, identification, grading, handling, impact determination and integration.

The project has identified risks and opportunities, assessed and quantified the cost and/or schedule impacts with an associated likelihood of occurrence, and developed handling strategies for each event. This risk assessment included a comprehensive review of the SDU-6 lessons learned and SDU-6 risks identified, realized and/or mitigated. The results of this assessment include risk levels, handling strategies and management reserve (MR) or contingency estimates are documented in the *SDU 7 Project Risks and Opportunities Analysis Report* (Y-RAR-Z-00015). The ROAR is contractor developed and contains both contractor-owned and DOE-owned risks and opportunities. A complete list of SDU 7 risks and opportunities is maintained electronically within the ROAR Risk Register.

8.1 Risk Management

Risks that have been identified and accepted by the project will be tracked and dispositioned using the ROAR risk register and Risk and Opportunity Assessment Forms (ROAFs). These forms will include risk identification, handling strategies, likelihood and event basis. As the project progresses, emerging risks will be identified, evaluated, and added (as needed). Risks will be reviewed and updated monthly. Changes will be updated in the risk register and associated ROAF.

The ROAR will include active and closed risks and the Technical and Programmatic Risk Assessment (T&PRA) Contingency Analysis. The T&PRA Analysis Report will be updated at each subsequent designated schedule milestone or as directed by the Project Manager.

8.2 Opportunity Management

Opportunities for cost reduction and/or schedule accelerations are identified as the project progresses through design and execution. Identified opportunities are documented on project trends and work on identified opportunities will not be initiated (beyond preparation of the trend) until the appropriate approval is obtained.

Opportunities for cost reduction and/or schedule acceleration will also be tracked and dispositioned using the ROAR risk register and Risk and Opportunity Assessment Forms

(ROAFs). Similar to risks, opportunities will be reviewed and updated monthly. Changes will be updated in the risk register and associated ROAF.

Opportunities will also be reflected in T&PRA Contingency Analysis Reporting. The T&PRA Analysis Report will be updated at each subsequent designated schedule milestone or as directed by the Project Manager.

9.0 Engineering and Quality Management

9.1 Engineering and Technology Readiness

The SDU 7 project requires no technical development. The SDU cell design was specified to be in accordance with American Water Works Association (AWWA) Standard D110 “Wire and Strand Wound, Circular, Pre-stressed Concrete Water Tanks”.

9.2 Alternatives Analysis and Selection

The SDU 7 alternatives analysis credits the alternative selection documented and used in SDU 6. The alternative chosen for SDU 7 is consistent with the SDU 6 Mega Tank alternative selection. The Liquid Waste RFP specifies the design and acquisition strategy for SDU 7. The Project Management Risk Committee (PMRC) recommended and S-3 approved an exemption allowing the SDU-6 Alternatives Analysis to stand for all remaining SDUs, including SDU 7.

9.3 Value Management and Value Engineering

Value management (VM) is an organized method for analyzing the functions of systems, equipment, facilities, services and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required performance, quality, reliability and safety. It is required by Public Law 104-106, Section 4306 (Value Engineering for Federal Agencies), DOE Policy 413.2, *Value Engineering*, and Office of Management and Budget Circular A-131, *Value Engineering*.

Value engineering (VE) is integrated into the engineering process by which improvements to the design and construction of the facility are proposed, evaluated, and accepted. For purposes of the SDU 7 project, value analysis and evaluation, VM, and value control are considered synonymous with VE and are used interchangeably.

The objective of performing VM/VE is to optimize the project’s economic value by reviewing the project concept and the design of its components/elements to ensure the following:

- Achieve the essential functions of the project.
- Reduce total life-cycle cost.
- Attain the required performance, safety, reliability, and quality.
- Sustain the development of an approved schedule.

- Identify improved ways of doing the same job.

At SRS, the LWO Contractor implements VM/VE using a tailored approach for applying value engineering and other studies or alternative analysis as needed, to achieve the lowest life-cycle cost consistent with required performance, reliability, availability, quality, and safety for essential functions as allowed by SRS Manual E7, *Conduct of Engineering and Technical Support*, and SRS Manual E11, *Conduct of Project Management and Control*.

When planning for SDU 6, it was decided to conduct a value engineering (VE) study, as recommended in the revised DOE Order 413.3B, to determine whether any design options could reduce project lifecycle cost and or reduce the design/build duration to less than the current three years. The VE study (reference document # G-ADS-Z-00004) was performed by a team of subject matter experts chartered to assure that any new design options would be within the currently approved Performance Assessment and State regulatory requirements.

The VE study determined the highest potential cost savings for the next SDUs (i.e. 6-12) are achieved by taking advantage of economies of scale in the SDU cell design. A parametric evaluation of varying the number of cells and cell sizes demonstrated a significant cost savings potential in using a single large cell instead of the four-cell arrangement used by SDUs 3&5.

Toward the end of FY 2011, the SRS LWO Contractor was directed to propose a list of cost savings initiatives to address reduced site funding in FY12. Based upon future Saltstone production rates and information gathered from the VE study, the Contractor concluded that a containment capacity of ~30 million gallons would be sufficient to replace ten disposal units of the 'old' SDU design and could be completed in the necessary time frame to meet projected Saltstone production rates identified in the LW System Plan.

9.4 Systems Engineering

The Systems Engineering (SE) Process is a disciplined approach that supports project management in clearly defining the project mission, managing system functions and requirements, identifying and managing project and technical risk, establishing bases for informed decision making, and verifying that products and services meet project needs. The SE process focuses on defining project needs and required functionality early in the pre-conceptual development cycle, documenting and validating requirements, and then proceeding with solution syntheses and verification while considering all aspects of the solution through operation and decommissioning.

Beginning with the definition of a need, systems engineering is a process that progresses through the establishment of functions and requirements, performance of functional analyses, the identification and evaluation of alternatives, the solution of a preferred alternative, and validation of the preferred alternative. The process ends with verification that the need is met, including interfaces, fit, and completeness. The application of systems engineering to a project is tailored to the project's needs.

The SE process is a methodology that the SDU 7 project employs to focus on the fundamentals of using logical disciplined processes beginning at the pre-conceptual stage with emphasis on defining customer needs; essential functions, activities, and requirements, and identifying and proactively managing risk. This continues through a logical sequence of activities and decisions designed to achieve a quality end product that meets the mission need within the scope, cost and schedule baselines. These processes rely on team building and clear definition and delineation of member's roles and responsibilities to maximize communication among the functional organizations and minimize schedule duration while assuring that all stakeholders are involved and committed. This assures that solutions meet the requirements, that interfaces are controlled, and that all-technical work is effectively integrated. The contractor's system engineering process is documented in the Site Standards/Requirements Identification Documents (S/RID).

9.5 Quality Management

The LWO contractor provides products and services which meet the requirements and expectations of the DOE's customers. The LWO contractor Quality Assurance Program (QAP) is to be implemented in a manner supporting implementation of: safety, disciplined operations, cost effectiveness, continuous improvement, and teamwork. The LWO contractor QAP is responsive to the applicable legal, regulatory, contractual and corporate quality-related requirements. In particular, the QAP is responsive to, 10 *CFR* 830, Subpart A, "Quality Assurance Requirements," DOE Order 414.1D, as defined in *LWO contractor Quality Assurance Manual* (Manual 1Q procedure 2-1A). The LWO contractor includes appropriate policies, plans, manuals, and implementing procedures for defining a quality program in accordance with American Society of Mechanical Engineers (ASME), Nuclear Quality Assurance (NQA) ASME NQA-1, *Quality Assurance Requirements for Nuclear Facility Applications*, as implemented by Contract No. DE-AC09-09SR22505.

DOE-SR has an established Contractor oversight system which is implemented through site procedures and manuals.

The Federal IPT shall implement the specific requirements of DOE O 414.1D and DOE O 226.1B

- Quality Assurance Program Manual (SRM 414.1.1D)
 - Implements DOE O 414.1
 - Applies to all DOE-SR elements
 - Defines
 - Management system
 - Responsibilities and authorities
 - Policies/Requirements
 - Performance/Assessment of work
- SRM 226.1.1D "Integrated Performance Assurance Manual"
 - Implements DOE O 226.1
 - Applies to all DOE-SR elements
 - Defines DOE-SR Contractor oversight system

The FPD directly access the QA support from the DOE-SR Performance Assurance Division (PAD).

10.0 SAFETY AND ENVIRONMENTAL MANAGEMENT

10.1 Integrated Safety Management

The strategy for implementing the ISMS is through the use of approved site-wide programs. These site-wide programs meet the DOE's and the Contractor's shared objectives, principles, and functions for tailoring requirements to accomplish specific work at specific facilities. The current Contractor's ISMS is the primary mechanism for implementing the objectives, principles, and functions of the ISMS. This system and process establishes Company-level, Division-level, and Program-specific procedures consistent with organizational roles, and ensures a consistent, disciplined site approach to safety while performing work. The Environment, Safety and Health programs are incorporated into the work through the same site-wide process as contained in the ISMS. The current Contractor's Standards/Requirements Identification Documents (S/RID) program captures the ES&H requirements to which work is performed. Appropriate application (tailoring/graded approach) of these controls is determined through the process of hazard analysis followed by management decisions using site wide program guidance as specified in the S/RIDs.

The LWO contractor ISMS is the overall management system for conducting work under Contract No. DE- DE-AC09-09SR22505, including subcontracted work. The site-wide ISMS satisfies all requirements of the DOE Policy 450.4, *Safety Management System Policy*, and the DOE's Acquisition Regulations (DEAR) clauses 970.5223-1, *Integration of Environment, Safety, and Health into Work Planning and Execution*, and 970.5204-2, *Laws, Regulations, and DOE Directives*. The DEAR clauses appear in the Contract, whereas DOE Policy 450.4 appears in the *Standards/Requirements Identification Document*. The S/RID satisfies the requirements of DEAR 970.5204-2.

The contractor Safety Program utilizes several integrated elements to institutionalize the company's core value for safety. The program elements include:

- Integrated Safety Management, which serves as the framework for performing work safely by analyzing and mitigating hazards based on the defined scope of work and collecting and applying feedback for subsequent evolutions.
- Regulatory compliance with U.S. Occupational Safety and Health Administration (OSHA) standards and the DOE's Orders. The majority of these standards are implemented in the Employee Safety Manual (Manual 8Q).

10.2 Construction and Worker Safety

The DOE's ES&H requirements and site procedures form the basis for all worker safety considerations. The LWO contractor Occupational Safety Program is based on DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, other

related DOE directives, and Federal codes, standards, and regulations. Implementation of this program is through LWO contractor management policies, management requirements and procedures, and Industrial Safety Section procedures.

The Contractor utilizes an occupational safety program in accordance with *Code of Federal Regulations*, Title 10, “Energy,” Part 851, “Worker Safety and Health Program.” Worker safety is the primary driver in the Contractor’s integrated safety management program. The Worker Safety and Health Program are implemented through the development of the LWO contractor *Worker Safety and Health Plan*. The content of the plan is established to match the obligations found in 10 *CFR* 851. Work-related injuries and illnesses of its workers and subcontractor workers are recorded and reported accurately and consistent with DOE Manual 231.1-1A, *Environment, Safety and Health Reporting Manual*.

The SDU 7 project fully adopts these site-wide worker safety programs into its management approach. All construction subcontractors will be required to submit a safety and health plan which meets these requirements prior to initiating construction.

The Federal IPT will implement this process through Savannah SRIP 440.3, Rev. 3 “DOE-SR Federal Employee Occupational Safety and Health (FEOSH) Program” and SRIP 231.1, Rev. 5 “Environment, Safety, and Health Reporting Requirements”.

10.3 Radiation Protection

LWO contractor provides for the radiological protection of its employees, other site Contractor and subcontractor personnel, visitors, and members of the general public from radiation exposure originating from operations of SRS. Radiation exposure of the work force and public shall be controlled such that radiation exposures are well below regulatory limits, that there is no radiation exposure without commensurate benefit, and that it is maintained as low as reasonably achievable (ALARA) at all times. Radiological activities shall be conducted in compliance with the documented Radiation Protection Program as approved by the DOE. Occupational radiation requirements of 10 *CFR* 835, “Occupational Radiation Protection,” and DOE Order 5480.4, *Environmental Protection, Safety, and Health Protection*, are described in and implemented by compliance with Washington Savannah River Company (WRSC) *Radiological Control Manual* (Manual 5Q), *SRS Radiation Protection Program*, and Savannah River Nuclear Solutions (SRNS) *ALARA Manual* (SCD-6).

The Federal IPT will implement this process through Savannah SRIP 441.1, Rev. 7 “Radiation Protection”.

10.4 Nuclear Safety

LWO contractor manages and operates SRS in a manner that ensures there is no undue risk of nuclear and process accidents that could adversely affect the health or safety of employees, visitors, and members of the general public or the environment in accordance with 10 *CFR* 830, “Nuclear Safety Management.” For all activities, the continued assurance of the capability and capacity for safe operations will remain paramount to protect facilities and the environment

from unacceptable risks. Nuclear facility safety applies to all personnel engaged in nuclear and process related activities for LWO contractor, and shall be in effect during design, construction, normal and abnormal operations, maintenance, modifications, surveillance, transition, deactivation, decontamination, and decommissioning. The intent is not only to prevent accidents, but to make provisions to limit consequences should accidents occur. Activities related to nuclear and process facilities are accomplished in accordance with the applicable requirements agreed upon with the DOE as identified in the Contract and included in the *S/RID*, federal and state requirements, appropriate consensus codes and standards and SRNS policies and procedures. These activities also address appropriate commercial industry nuclear and process safety practices, if determined to be appropriate and practical for SRS.

The Federal IPT will implement this process through Savannah SRIP 421.1, Rev. 6 “Nuclear Safety Oversight”.

10.5 Conduct of Operations

LWO contractor establishes and maintains a Conduct of Operations Program to enhance the safe operation of its facilities. The Conduct of Operations Program applies to all programs and functions of its facility operations which may have an impact on the safety of the public, environment, and LWO contractor personnel. All levels of management within LWO contractor are responsible for implementing the LWO contractor Conduct of Operations program as an integral part of formality of business within their facilities. DOE Order 5480.19, *Conduct of Operations Requirements of DOE Facilities*, as implemented by, *Conduct of Operations* (Procedure Manual 2S) is used as the basis for the LWO contractor Conduct of Operations Program.

The Federal IPT will implement this process through Savannah SRIP 150.5, Rev. 1 “Continuity of Operations”.

10.6 Emergency Management

The LWO contractor Emergency Management Program complies with DOE Order 151.1, *Comprehensive Emergency Management System*, DOE-SR directives, and related guidance documents. Emergency preparedness requirements applicable to SRNS are documented in WSRC *S/RID* for Functional Area 5.0, “Emergency Management.”

An overall description of the emergency management program and detailed guidance for developing and maintaining emergency response capabilities shall be provided through an emergency plan and emergency management program procedures. The *Savannah River Site Emergency Plan* is a joint DOE-SR, National Security Administration Savannah River Field Office (NNSA-SRFO), M&O contractor, and SRS security services contractor document published for manual control and accountability purposes as Procedure Manual SCD-7. The *Savannah River Site Emergency Plan/Emergency Management Program Procedures Manual* (Procedure Manual 6Q, Volume II) addresses specific elements of the emergency management program and provides site-wide guidance for implementation. Personnel assigned as facility, area or site-level Emergency Response Organization (ERO) members receive training

appropriate to their emergency response positions, as defined in the *Savannah River Site Emergency Plan*.

The Federal IPT will implement this process through Savannah SRIP 150.3, Rev. 5 “DOE-SR Emergency Management Program”.

10.7 Integrated Safeguards and Security Management

The LWO contractor has established an Integrated Safeguards and Security Management (ISSM) framework that provides a formal, organized process for planning, performing, assessing, and improving the secure conduct of work in accordance with risk-based protection strategies. The ISSM framework encompasses all levels of activities and documentation related to Safeguards and Security management throughout the DOE complex. The ISSM framework is used to systematically integrate safeguards and security into management and work practices at all levels so that missions are accomplished securely. The LWO contractor ISSM implements the requirements of DOE Policy 470.1, *Integrated Safeguards and Security Management (ISSM) Policy*, DOE Order 470.4A, *Safeguards and Security Program*, DEAR 970.5204-2, *Laws, Regulations, and DOE Directives*, and DEAR 970.5223-1, *Integration of Environment, Safety, and Health into Work Planning and Execution* through SRNS *Security Manual* (Procedure Manual 7Q), SRNS *Security Services Manual* (Procedure Manual 7Q8), SRNS *Computer Security Manual* (Procedure Manual 10Q), SRNS *Material Control and Accountability Manual* (Procedure Manual 14Q), LWO contractor *S/RIDs* (WSRC-RR-94-1268), and *Assessment Performance Objectives and Criteria, Functional Area Requirements*, (WSRC-SCD-4) Functional Area 18, “Safeguards and Security.”

10.8 Environmental Management

Environmental, safety, and health program activities and deliverables will be integrated with all technical and regulatory aspects of the SDU 7 project. Regulatory activities will be incorporated into the integrated engineering design and construction schedule and individual activity work plans.

10.8.1 Environmental Management System

The SRS conforms to DOE-directed performance metrics that demonstrate the successful implementation of an Environmental Management System (EMS) at SRS. The DOE's objective is to implement sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by its operations at SRS. As such, all activities on SRS are conducted in compliance with applicable laws and regulations providing for the protection of public health and the environment, to reduce the use of procedures and processes that produce hazardous wastes, and to seek ways to continually improve the performance of activities protective of the environment. The SRS EMS establishes a consistent site-wide approach to environmental protection through the implementation of an EMS as part of the overall Integrated Safety Management System (ISMS). The EMS provides for the systematic planning, integrated execution, and evaluation of site activities for (1) public health and environmental protection, (2) pollution prevention (P2), (3) compliance with applicable

environmental protection requirements, and (4) continuous improvement of the EMS.

Additionally, SRS conforms to the applicable requirements of: International Organization for Standardization (ISO) Standard 14001, *Environmental Management System*; Executive Order 13693, *Greening of Government through Leadership in Environmental Management*; and DOE Order 450.1, *Environmental Protection Program*. The site successfully sought and received third-party certification of its EMS to the requirements of ISO 14001 in 1997 and again in 2000.

The SDU 7 project activities are integrated with the SRS EMS as part of the project structure.

10.8.2 Environmental Monitoring

The SRS environmental monitoring program is designed to meet state and federal regulatory requirements for radiological and non-radiological programs. These requirements are stated in DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, in the *Clean Air Act* [Standards of Performance for New Stationary Sources, also referred to as New Source Performance Standards (NSPS), and the National Emission Standards for Hazardous Air Pollutants (NESHAP)]; in the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), in the *Resource Conservation and Recovery Act* (RCRA), in the *Clean Water Act* (i.e., National Pollutant Discharge Elimination System—NPDES); and in the *National Environmental Policy Act* (NEPA).

Detailed information about the site's environmental monitoring program is documented in Section 1100 (SRS EM Program) of *the SRS Environmental Monitoring Section Plans and Procedures* (SRNS-3Q1-2, Volume 1). This document is reviewed annually and updated every 3 years.

The SDU 7 project activities are integrated with the SRS environmental monitoring program as part of the project structure.

10.8.3 Environmental Compliance

It is the DOE's policy that all activities at SRS are carried out in full compliance with applicable federal, state, and local environmental laws and regulations, and with the mandatory requirements in the DOE's Policies, Notices, Orders, Manuals, and other directives. Compliance with environmental regulations and with the DOE's orders related to environmental protection is a critical part of the operations at SRS. Compliance with environmental requirements is assessed by DOE-SR, SCDHEC, and U.S. Environmental Protection Agency (EPA). Detailed information about the site's environmental compliance program is documented in SRS Environmental Compliance Manual (LWO contractor Procedure Manual 3Q). This document is reviewed annually and updated every 3 years.

10.8.4 Evaluating Environmental Impacts

The *National Environmental Policy Act of 1969* (NEPA) establishes policies and goals for the protection, maintenance, and enhancement of the human environment in the United States.

NEPA provides a means to evaluate the potential environmental impacts of major Federal actions that could significantly affect the quality of the human environment and to examine alternatives to those actions. DOE has established a NEPA compliance program with DOE Order 451.1B and National Environmental Policy Act Compliance Program. In paragraph 5.a. (13), DOE states that it will "incorporate NEPA values, such as analysis of cumulative impacts, to the extent practicable, in DOE documents prepared under the Comprehensive Environmental Response, Compensation, and Liability Act. Further, DOE policy stated in a memo from the Assistant Secretary for Environment, Safety, and Health in 2002 that CERCLA actions generally do not require a separate NEPA analysis. DOE relies on the CERCLA process for environmental review of CERCLA actions.

11.0 TRANSITION TO OPERATIONS AND PROJECT CLOSEOUT

As with SDU6, prior to project transition to operations a water tightness acceptance test of the disposal cell will be conducted. The following criteria must be met to validate water tightness of the disposal cell:

- a. No measurable loss of water demonstrated by no traces of fluorescent dye at any location exterior to the cell based upon a black-light test.

11.1 Transition to Operations

After validation of functionality and completion of startup and commissioning activities, LWO contractor Operations will assume responsibility for all components and supporting structures that will be used as part of the Salt Disposal Facility.

Operator training will be developed by LWO contractor Training Department and it will be considered supplementary to the training currently used for the operations of the Saltstone Disposal Facility. As needed, vendors will be used for the training of SDU 7 personnel.

Maintenance of the equipment will be provided by a combination of service agreements with contractors and utilization of LWO contractor maintenance personnel. Engineering Design Authority will identify the equipment preventive maintenance frequencies.

Surveillance activities will be performed at SDU 7 to prevent the accumulation of combustibles, and minimize the effects created by the interaction with the surrounding wildlife and fauna.

11.2 Testing and Evaluation

Start-up testing of equipment/systems will be completed using Start-up Test Procedure(s) after Construction Turnover (CTO) is achieved.

The SDU 7 start-up test strategy consists of testing the equipment and systems by the Startup Test Engineering Organization in accordance with SRS-S4, LWO Administrative Procedure Manual and Procedures TST-08 through 13. The Design Authority Groups and the Startup Test Engineering Organization will identify the equipment which will require testing.

The Startup Test Manager will ensure proper integration of the startup test program across all the SDU 7 scope. The Startup Test Manager will coordinate the deployment of startup test personnel to assist in scope definition and review of design during each phase of the project beginning with Conceptual Design. Startup Test Engineering will be cognizant of engineered equipment vendor testing and any mockup testing.

Following the completion of Commissioning, a Management Self-Assessment (MSA) will be performed, followed by a LWO contractor Level 3 Readiness Assessment (RA) and a DOE-SR Level 3 Readiness Assessment (RA). Upon completion of the RAs, Operations Acceptance Checklist (OAC)/Ready-to-Operate (RTO) items will be completed, the project accepted by Saltstone Disposal Facility Operations, and CD-4 Approve Start of Operations approved by DOE-SR.

11.3 Project Close-Out Activities

In support of the SDU 7 project Close-Out, the project will be physically closed out in accordance with contractor procedures. The closeout of the project will be accomplished when all related project scope(s) are physically completed. Following the close-out activities, completion of capital assets will be accomplished by documenting the final Approval for Acceptance (AFA) in accordance with contractor procedures for Project Close-Out, the Final Notice of Authorization, documented closure of all activity codes and retired assets, and the documented completion of all asset accounting and de-obligation of any remaining funds. With these precedents complete, a Closing Statement will be issued by financial accounting to the Contractor's Project Manager and the project will be listed as closed on the monthly Contractor's project-closing schedule, confirming closeout.

The closeout of the project will be accomplished when:

- Related project scope(s) are completed and turned over to near term Post-Closure care/operations;
- Project specific post-turnover (Category "B") punch list items have been completed;
- Purchase orders are complete;
- Essential design, construction, and subcontract cost codes are closed to further charges;
- Project financial accounts are closed;
- Issuance of Project Approval for Acceptance (AFA);
- Issuance of Project Completion Report; and
- Project financial accounts are closed.

Project transition to operations begins during design and continues until the SDUs are completely operational and commissioned. Project closeout is initiated once the work has been completed and the project facilities are fully operational and commissioned.