

NATIONAL NUCLEAR SECURITY  
ADMINISTRATION (NNSA)  
NEVADA FIELD OFFICE (NFO)

ENVIRONMENTAL PROGRAM SERVICES (EPS)  
WORK BREAKDOWN STRUCTURE (WBS)  
SCOPE STATEMENT

## **1.4 ENVIRONMENTAL MANAGEMENT**

The Nevada National Security Site (NNSS) is located approximately 65 miles northwest of Las Vegas, Nevada and occupies approximately 1,360 square miles. The remote site is one of the largest restricted access areas in the United States and is surrounded by thousands of acres of land withdrawn from the public domain for use as a protected wildlife range and for a military testing and training range.

For more than 40 years, the primary mission of the NNSS was to conduct tests of both nuclear and conventional explosives in connection with the research and development of nuclear weapons. Atmospheric testing of nuclear weapons was initiated in 1951. Nuclear tests conducted at the NNSS after July 1962 were underground. Nuclear testing was suspended in October 1992, although a readiness posture is maintained by Presidential mandate. Environmental restoration activities began to address environmental liabilities associated with nuclear weapons production and testing. Early restoration efforts were focused on cleaning detonation locales to reuse them for subsequent tests, with the generated debris being disposed through an on-site waste management program.

The Environmental Management (EM) program at the NNSS (including the Nevada Test and Training Range) consists of the Waste Management (WM) and Environmental Restoration (ER) activities.

The WM activity supports the closure of Department of Energy (DOE) sites across the United States by maintaining the capability to dispose Low-Level Waste (LLW) and Mixed Low-Level Waste (MLLW) from approved waste generators. The NNSS is designated as a regional disposal site for LLW and a secondary disposal site for MLLW generated as the result of cleanup activities across the DOE Complex. Additionally, the WM activity is responsible for the storage, treatment (as needed), repackaging, and disposition of legacy and newly generated on-site Transuranic (TRU) and Mixed Transuranic (MTRU) waste.

The mission of the ER activities is to assess and perform appropriate corrective actions at former underground test locations, surface or atmospheric test locations, and other industrial-type sites that are the result or by-product of past nuclear testing and support activities. ER activities include the removal and clean closure of surface and near surface contamination where possible; implementation of use restrictions and institutional controls for close-in-place locations to preclude inadvertent contact with contaminants; and establishment of predictive groundwater models and monitoring networks where necessary to ensure contaminated groundwater stays within predicted contaminant boundaries.

### **Assumptions**

- A. Institutional control of the NNSS is assumed in perpetuity at the existing boundaries.
- B. For the foreseeable future, the Lead Primary Secretarial Office/landlord for the NNSS is assumed to be NNSA.

## **1.4.1 ENVIRONMENTAL RESTORATION**

The radiological soil contamination sites are a result of historic nuclear detonations, safety experiments, storage/transportation related tests, nuclear reactor development and experiments, nuclear rocket engine tests, and hydro nuclear experiments. For these sites, contamination will be assessed to determine appropriate closure strategy. This may include contaminant removal and clean closure or close-in-place and establishing appropriate use restrictions.

Historic NNSS underground nuclear test activities resulted in groundwater contamination. To address the underground test locations, environmental management activities include geologic and hydrologic characterization, contaminated groundwater transport modeling, contaminant boundary definition, and establishment of a monitoring system to protect against the inadvertent use of contaminated groundwater.

The industrial-type sites are support facilities and structures that were left after conducting aboveground and underground nuclear tests and surface nuclear engine and reactor experiments. The industrial-type sites restoration addresses various historical infrastructure remediation efforts (e.g., septic systems, mud pits, storage tanks, disposal sites), and conventional weapons cleanup including unexploded ordnance. The industrial-type sites cleanup goal is to reduce access to contamination by removal and clean closure or closure-in-place and establishing appropriate use restrictions.

The long-term end state vision for the NNSS is to restore the environment to a level that will allow the continuation of the national security mission. This vision includes the removal of the contamination that poses an unacceptable risk to workers conducting planned site operations in support of the NFO mission and characterizing and stabilizing the remainder of contamination to ensure contaminants do not spread to the surrounding environment at a level that will pose an unacceptable risk to human health and the environment.

### **Assumptions**

- A. Contaminated soils areas that are located on Nevada Testing and Training Range (NTTR) and Tonopah Test Range (TTR) and are the result of DOE activities will be closed in place with institutional controls negotiated with the U.S. Air Force (USAF) and the Nevada Department of Environmental Protection (NDEP).
- B. Contaminated soils areas that are on the NNSS will be closed in place with institutional controls.
- C. The industrial-type release sites will be closed by a combination of removal and clean closure, close-in-place and cap, and/or construction of engineered controls compatible with planned future uses.
- D. Subsurface contamination in and around cavities created by underground nuclear tests on the NNSS will be closed in place since subsurface radioactive remediation technologies have not yet demonstrated an ability to remove or stabilize this underground radioactive contamination in a cost effective manner.
- E. Newly identified Corrective Action Sites (CAS's) may be added to the ER baseline and evaluated as to when they should be addressed and therefore could be included in the Environmental Program Services (EPS) contract.

### 1.4.1.1 SOILS

The work scope associated with the Soils activity will primarily be conducted by the EPS contractor with support from the NNSS Management and Operations (M&O) contractor and Sandia National Laboratory (SNL) at the TTR.

Nuclear testing activities conducted at the NNSS, TTR, and NTTR produced radionuclide contamination of near surface soil. Work scope for the Soils activity is required by the implementation of the Federal Facility Agreement and Consent Order (FFACO) Technical Strategy and is predicated on establishing site-specific Corrective Action Levels (CALs). This strategy encompasses Corrective Action Unit (CAU) characterization, assessment, corrective action evaluation, and corrective action implementation. For Soil Activity sites where it is cost effective and there is a significant reduction in risk to human health and the environment, corrective actions (e.g. contamination removal) may be performed. For sites where it is not cost effective and/or risk-informed decision making dictates that the benefit from soil removal does not outweigh the risks to workers and the environment, it is anticipated that minimal corrective actions will be limited to establishing land-use restrictions and associated fencing and posting.

For each CAU, a site-specific CAL will be established that allows for release of the CAUs in accordance with agreed upon designated land uses that are in accordance with the NNSS Environmental Impact Statement (EIS) and Resource Management Plan (RMP). The CAL is based on dose criteria of 25 millirem per year (mrem/yr) and concurrence with identified decision makers on future land use scenarios, dose calculation methodology, and dose calculation input parameters as described in the Soils Risk Based Corrective Action (RBCA) document. Fieldwork is performed as authorized by NFO applicable directives, including the Real Estate Operations Permit (REOP) order.

Each CAU will require a Corrective Action Investigation Plan (CAIP) that includes a historical literature review and evaluation, a description of the Data Quality Objectives (DQOs), preliminary risk (dose) assessment (if applicable), and site characterization scope of work. National Environmental Policy Act (NEPA)-mandated Environmental Assessment (EA) documentation is not required because remaining uncharacterized Soils CAUs are included in the Environmental Impact Analysis and Record of Decision (ROD) for the NNSS EIS.

#### Assumptions

- A. Required documents will be consistent with the requirements of the FFACO, DOE, U.S. Environmental Protection Agency (EPA), and U.S. Nuclear Regulatory Commission (NRC) guidance and will be reviewed and approved by the NFO, NDEP, and when appropriate, concurred on by the USAF.
- B. It is assumed the EPS contractor will hold the primary REOP with collaboration with NNSA/NFO and the M&O contractors.
- C. It is assumed that the EPS will develop site-specific corrective action levels based on the strategy described in the *“Soils Risk-Based Corrective Action Evaluation Process, Rev. 0, DOE/NV--1475. Las Vegas, NV”*.
- D. The *“Soils Activity Quality Assurance Plan, Rev. 0, DOE/NV--1478. Las Vegas, NV”* is the primary quality assurance plan used for the Soils activity.

- E. It is assumed that future land use for CAUs on the NTTR will be determined with input from the USAF, and the USAF will provide input on specific use scenarios and the Argonne National Laboratory Residual Radioactive (RESRAD) input parameters.
- F. It is assumed that future land use for CAUs on the NNSS will be either a future testing area, or industrial/commercial in accordance with Alternative 3 of the NNSS EIS and the annual NNSS RMP.
- G. It is assumed that future land use for CAUs where the contaminant plume(s) straddle the NNSS and NTTR boundary will be industrial/commercial and/or military.
- H. Site-specific DQOs will be determined for the appropriate Soils CAUs based on historical data, preliminary site characterization data (if available), and preliminary risk (dose) assessment results.
- I. Classified documents will remain classified requiring all tasks that require access to, and use of, classified information to be completed by personnel with the appropriate security clearance. Certain documents may be declassified by removal of classified information.
- J. Historical data evaluation will be used to determine if sites, portions of sites, or structures at the sites, require historical preservation. Additional cultural survey work may be required which will be performed by the Desert Research Institute (DRI) through October 31, 2016.
- K. A preliminary risk (dose) assessment will be required for the appropriate Soils CAUs based on historical data, and preliminary site characterization data, if available.
- L. It is assumed that Soils CAUs where characterization will be performed require a threatened and endangered species survey. A limited ecological resource survey will be performed at the appropriate Soils CAUs by the M&O contractor.
- M. Aerial based surveys (existing) along with historic data and site characterizations efforts that include soil sampling and Thermoluminescent Dosimeter (TLD) placement will be acceptable to determine the nature and extent of contamination.
- N. Additional aerial based surveys will not be required. If this changes, the M&O contractor will conduct the surveys.
- O. It is assumed that radionuclide inventory left in place will remain the responsibility of the NNSA.
- P. No disposal fees will be imposed by the NNSS Area 5 Waste Disposal Facility for any soil and/or debris removed from the NNSS, NTTR and TTR sites during characterization and closure activities.
- Q. SNL will be an external reviewer for documents associated with Clean Slates 1, 2 & 3 (SNL Use Permit in place for TTR Sites).
- R. Use of USAF contractors will not be required except for housing.

### **1.4.1.1.01 CAU 411 – DOUBLE TRACKS PLUTONIUM DISPERSION (NELLIS)**

Double Tracks Plutonium Dispersion (Nellis) CAU consists of one CAS located on the Nevada Test and Training Range.

CAS ID	Description
CAS NAFR-23-01	Pu Contaminated Soil

#### **Scope**

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO, NDEP, and USAF. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### **Assumptions**

- A. All closure activities have been completed and only preparation of a closure report (Document Preparation) is required to close this CAU.
- B. Assumes a 60-day review by external organizations.
- C. Access to NTTR will require scheduling with the USAF.

### 1.4.1.1.02 CAU 412 – CLEAN SLATE I PLUTONIUM DISPERSION (TTR)

Clean Slate I Plutonium Dispersion (TTR) CAU consists of one CAS located on the TTR.

CAS ID	Description
CAS TA-23-01CS	Pu Contaminated Soil

#### Scope

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO, NDEP, and USAF. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### Assumptions

- A. All closure activities have been completed and only preparation of a closure report (Document Preparation) is required to close this CAU.
- B. Assumes a 60-day review by external organizations.
- C. Access to NTTR and TTR will require scheduling with the USAF and SNL.

### 1.4.1.1.03 CAU 413 – CLEAN SLATE II PLUTONIUM DISPERSION (TTR)

Clean Slate II Plutonium Dispersion (TTR) CAU consists of one CAS located on the TTR.

CAS ID	Description
CAS TA-23-02CS	Pu Contaminated Soil

#### Scope

##### **Corrective Action Investigation Plan (CAIP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAIP as defined in the FFACO. Preparation activities include compilation and review of historical site information and operational history; development of DQOs with participation from NFO, NDEP and USAF; preparation of the CAIP document in accordance with approved standard outline; peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of a final document for NDEP approval; and comment resolution for NDEP, USAF and SNL comments, as necessary.

DQOs are developed through an established process to determine qualitative and quantitative statements which guide activities to ensure that appropriate data are available for decision making and the data are of sufficient quality and quantity to make defensible decisions. NFO, NDEP and USAF are participants in the process. A pre-DQO meeting with NFO is held to finalize the conceptual model and investigative approach and precedes the DQO meeting with external organizations. At the conclusion of the DQO meeting, the DQOs are included as an appendix to the CAIP.

##### **Corrective Action Decision Document (CADD)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD in accordance with the FFACO. Site characterization activities, as described in the CAIP, are performed as part of the CADD task. Ecologic and cultural surveys are performed, as required, prior to characterization activities starting. The CADD document includes site characterization results, the Corrective Action Alternatives (CAA) analysis, and the results from the RBCA analysis to identify the proposed corrective action. The CADD document summarizes the decision-making process followed to arrive at the recommended CAA and the proposed CALs.

##### **Pre-field Planning**

The EPS contractor will develop project plans and instructions used to guide the site's characterization activities. Documentation includes: Site Specific Health and Safety Plan (SSHASP) and establishes the safety basis for the planned field operations; coordination with SNL to establish support requirements; the Site-specific Emergency Response Contingency Action Plan (SSERCAP) if hazardous waste will be managed on site; Field Instructions and Management Plan; a National Environmental Policy Act (NEPA) checklist; a Real Estate Operations Permit / Work Control Package. Complete an As-Low-As-Reasonably-Achievable (ALARA) review of the investigation activities associated radiological hazards, and controls to be implemented.

##### **Field Work**

The EPS contractor will conduct/manage field activities for the soil investigation. Field activities include mobilization, obtaining soil samples for radionuclide analyses, ground based radiological surveys, investigate ground zero and suspect burial areas, decontamination of personnel and equipment, sample preparation, sample shipment and demobilization.

SNL will provide field support necessary for any heavy equipment and craft labor support. This support should be coordinated prior to the start of work. It will be the responsibility of the EPS contractor to coordinate this support.

#### Analytical Work

The EPS contractor will provide analytical services for all site characterization samples collected during the field investigation, including laboratory analysis and data validation. Samples will be submitted to an NDEP approved and DOE Consolidated Audit Program (DOECAP) audited laboratory for chemical and radiological analysis. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the method specifications, contractor's Quality Assurance Plan, Soils activity Quality Assurance Plan and the Analytical Service Request Form(s). Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

#### Waste Management

The EPS contractor will provide waste management services for all investigation-derived waste generated during the field investigation, including periodic (weekly) inspections, Hazardous Waste Accumulation Areas (HWAA) maintenance, waste characterization, manifest preparation, Low-Level Waste (LLW) profile preparation, and coordination of transportation and disposal services as necessary.

#### Prepare CADD Document

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD as defined in the FFACO. The CADD will consist of a corrective measure study evaluation of alternatives and the recommended alternative. The appendices will include the investigation results, data assessment of RBCA analysis, cost estimates for each alternative, risk evaluation, and sample location coordinates. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP, USAF and SNL comments, as necessary.

CAAs are developed and evaluated through an established process to select a preferred closure strategy and includes participation from the NFO, NDEP and the USAF. A CAA meeting is held to present the results of the investigation and recommend a corrective action for the site.

Primary Data Quality Indicators (DQIs) are used to assess the analytical data in comparison to the DQOs. A reconciliation of the data with the conceptual site model is presented as an appendix to the document.

### **Corrective Action Plan (CAP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFACO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP, USAF and SNL comments, as necessary.

### **Assumptions**

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with the USAF and NDEP during the DQO process.
- B. Assumed closure alternative is closure in-place with use restrictions.
- C. The CAS currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and cultural resources.
- E. Characterization activities at the site will not be impacted by 10CFR830 requirements. (Site will be considered less than hazard category 3 or excluded from the 10CFR830 categorization requirements.)
- F. FFACO document will require 60 day review by the external reviewers.
- G. Personnel supporting field investigations will be housed at the USAF facilities at TTR.
- H. M&O contractor is responsible for the transportation and disposal of LLW generated during field investigations.
- I. Access to NTTR and TTR will require scheduling with the USAF and SNL.
- J. Unexploded ordnance (UXO) surveys may be required for any location where work will occur.

#### 1.4.1.1.04 CAU 414 – CLEAN SLATE III PLUTONIUM DISPERSION (TTR)

Clean Slate III Plutonium Dispersion (TTR) CAU consists of one CAS located on the TTR.

CAS ID	Description
CAS TA-23-03CS	Pu Contaminated Soil

##### Scope

##### **Corrective Action Investigation Plan (CAIP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAIP as defined in the FFACO. Preparation activities include compilation and review of historical site information and operational history; development of DQOs with participation from NFO, NDEP and USAF; preparation of the CAIP document in accordance with approved standard outline; peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of a final document for NDEP approval; and comment resolution for NDEP, USAF and SNL comments, as necessary.

DQOs are developed through an established process to determine qualitative and quantitative statements which guide activities to ensure that appropriate data are available for decision making and the data are of sufficient quality and quantity to make defensible decisions. NFO, NDEP and USAF are participants in the process. A pre-DQO meeting with NFO is held to finalize the conceptual model and investigative approach and precedes the DQO meeting with external organizations. At the conclusion of the DQO meeting, the DQOs are included as an appendix to the CAIP.

##### **Corrective Action Decision Document (CADD)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD in accordance with the FFACO. Site characterization activities, as described in the CAIP, are performed as part of the CADD task. Ecologic and cultural surveys are performed, as required, prior to characterization activities starting. The CADD document includes site characterization results, the CAA analysis, and the results from the RBCA analysis to identify the proposed corrective action. The CADD document summarizes the decision-making process followed to arrive at the recommended CAA and the proposed CALs.

##### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site's characterization activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; coordination with SNL to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the investigation activities associated radiological hazards, and controls to be implemented.

##### Field Work

The EPS contractor will conduct/manage field activities for the soil investigation. Field activities include mobilization, obtaining soil samples for radionuclide analyses, ground based

radiological surveys, investigate ground zero and suspect burial areas, decontamination of personnel and equipment, sample preparation, sample shipment and demobilization.

SNL will provide field support necessary for any heavy equipment and craft labor support. This support should be coordinated prior to the start of work. It will be the responsibility of the EPS contractor to coordinate this support.

#### Analytical Work

The EPS contractor will provide analytical services for all site characterization samples collected during the field investigation, including laboratory analysis and data validation. Samples will be submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the method specifications, contractor's Quality Assurance Plan, Soils Activity Quality Assurance Plan and the Analytical Service Request Form(s). Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

#### Waste Management

The EPS contractor will provide waste management services for all investigation-derived waste generated during the field investigation, including periodic (weekly) inspections, HWAA maintenance, waste characterization, manifest preparation, LLW profile preparation, and coordination of transportation and disposal services as necessary.

#### Prepare CADD Document

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD as defined in the FFAO. The CADD will consist of a corrective measure study evaluation of alternatives and the recommended alternative. The appendices will include the investigation results, data assessment of RBCA analysis, cost estimates for each alternative, risk evaluation, and sample location coordinates. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP, USAF and SNL comments, as necessary.

CAAs are developed and evaluated through an established process to select a preferred closure strategy and includes participation from the NFO, NDEP and the USAF. A CAA meeting is held to present the results of the investigation and recommend a corrective action for the site.

Primary DQIs are used to assess the analytical data in comparison to the DQOs. A reconciliation of the data with the conceptual site model is presented as an appendix to the document.

#### **Corrective Action Plan (CAP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFAO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site

conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP, USAF and SNL comments, as necessary.

### **Assumptions**

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with the USAF and NDEP during the DQO process.
- B. Assumed closure alternative is closure in-place with use restrictions.
- C. The CAS currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and cultural resources.
- E. Characterization activities at the site will not be impacted by 10CFR830 requirements. (Site will be considered less than hazard category 3 or excluded from the 10CFR830 categorization requirements.)
- F. FFACO document will require 60 day review by the external reviewers.
- G. Personnel supporting field investigations will be housed at the USAF facilities at TTR.
- H. M&O contractor is responsible for the transportation and disposal of LLW generated during field investigations.
- I. Access to NTTR and TTR will require scheduling with the USAF and SNL.
- J. UXO surveys may be required for any location where work will occur.

### 1.4.1.1.05 CAU 415 – PROJECT 57

Project 57 No. 1 Plutonium Dispersion (NTTR) CAU consists of one CASs located on the NTTR.

CAS ID	Description
CAS NAFR-23-02	Pu Contaminated Soil

#### Scope

##### Corrective Action Investigation Plan (CAIP)

The EPS contractor will conduct all activities necessary to prepare a site-specific CAIP as defined in the FFACO. Preparation activities include compilation and review of historical site information and operational history; development of DQOs with participation from NFO, NDEP and USAF; preparation of the CAIP document in accordance with approved standard outline; peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of a final document for NDEP approval; and comment resolution for NDEP, and USAF comments, as necessary.

DQOs are developed through an established process to determine qualitative and quantitative statements which guide activities to ensure that appropriate data are available for decision making and the data are of sufficient quality and quantity to make defensible decisions. NFO, NDEP and USAF are participants in the process. A pre-DQO meeting with NFO is held to finalize the conceptual model and investigative approach and precedes the DQO meeting with external organizations. At the conclusion of the DQO meeting, the DQOs are included as an appendix to the CAIP.

#### Assumptions

- A. Assumed closure alternative is closure in-place with use restrictions.
- B. FFACO document will require 60 day review by the external reviews.
- C. Access to NTTR will require scheduling with the USAF.

### 1.4.1.1.20 CAU 541 – SMALL BOY

Small Boy CAU consists of two CASs located in Area 5 of the NNSS. The contaminant plume includes areas of the NTTR beyond the NNSS boundary. The CAU is related to a weapons effects test. Based on aerial radiological survey data and other historical characterization data the site is contaminated with common fission products (Sr-90, Cs-137, and Co-60), common soil activation products (Eu-152, Eu-154) and plutonium and americium. The area of potentially contaminated soils associated with the CASs of CAU 541 has been informally estimated to be 2,700 acres.

CAS ID	Description
CAS 05-23-04	Atmospheric Test Site (6) - BFa Site
CAS 05-45-03	Atmospheric Test Site - Small Boy

#### Scope

##### Corrective Action Decision Document (CADD)

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD in accordance with the FFACO. Site characterization activities, as described in the CAIP, are performed as part of the CADD task. Ecologic and cultural surveys are performed, as required, prior to characterization activities starting. The CADD document includes site characterization results, the CAA analysis, and the results from the RBCA analysis to identify the proposed corrective action. The CADD document summarizes the decision-making process followed to arrive at the recommended CAA and the proposed CALs.

##### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site's characterization activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the investigation activities associated radiological hazards, and controls to be implemented.

##### Field Work

The EPS contractor will conduct/manage field activities for the soil investigation. Field activities include mobilization, obtaining soil samples for radionuclide analyses, ground based radiological surveys, investigate ground zero and suspect burial areas, decontamination of personnel and equipment, sample preparation, sample shipment and demobilization.

The M&O contractor will provide field support as it pertains to sub-surface investigation and/or the need for heavy equipment and craft labor. This support should be coordinated prior to the start of work. It will be the responsibility of the EPS contractor to coordinate this support.

##### Analytical Work

The EPS contractor will provide analytical services for all site characterization samples collected during the field investigation, including laboratory analysis and data validation. Samples will be submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological

analysis. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the method specifications, contractor's Quality Assurance Plan, Soils activity Quality Assurance Plan and the Analytical Service Request Form(s). Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

#### **Waste Management**

The EPS contractor will provide waste management services for all investigation-derived waste generated during the field investigation, including periodic (weekly) inspections, HWAA maintenance, waste characterization, manifest preparation, LLW profile preparation, and coordination of transportation and disposal services as necessary.

#### **Prepare CADD Document**

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD as defined in the FFACO. The CADD will consist of a corrective measure study evaluation of alternatives and the recommended alternative. The appendices will include the investigation results, data assessment of RBCA analysis, cost estimates for each alternative, risk evaluation, and sample location coordinates. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP and USAF comments, as necessary.

CAAs are developed and evaluated through an established process to select a preferred closure strategy and includes participation from the NFO and the USAF. A CAA meeting is held to present the results of the investigation and recommend a corrective action for the site.

Primary DQIs are used to assess the analytical data in comparison to the DQOs. A reconciliation of the data with the conceptual site model is presented as an appendix to the document.

#### **Corrective Action Plan (CAP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFACO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP and USAF comments, as necessary.

#### **Closure Report**

Work will consist of preparing for and completing closure of the CAU in accordance with the approved CAP for developing a Closure Report documenting closure of the CAU.

#### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site closure activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; Radiological Work Permit (RWP), coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the closure activities associated radiological hazards, and controls to be implemented.

The M&O contractor will develop craft work packages required for fencing and posting the sites radiological boundary; identify existing utilities on engineering drawings; do a safety review of the permits as well as a site visit to confirm information provided in permits; and procure materials.

#### Field Work

The EPS contractor will conduct activities necessary for radiological and UXO surveys of areas proposed for fencing and posting the sites radiological boundary. Provide for site coordination during fencing and posting and provide for a post-job debrief with all field personnel to review the job accomplishments and identify lessons learned for future activities. Develop/update site engineering drawings that include survey coordinates identifying location of the use restrictions and submit a use restriction form to the M&O contractor for each site for official record.

The M&O contractor will conduct activities necessary to construct or repair the sites radiological boundary fence and install radiologic and use restriction signage per the requirements in the FFACO. This includes physically identify existing over-head and underground utilities to insure safe installation of the fence.

#### Prepare Closure Report

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO, NDEP, and USAF. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### Assumptions

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with the USAF and NDEP during the DQO process.
- B. The selected closure alternative is close-in-place to an action level of 25millirem.

- C. The CASs currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and culture resources.
- E. Characterization activities at the site will not be impacted by 10CFR830 requirements. (Site will be considered less than hazard category 3 or excluded from the 10CFR830 categorization requirements.)
- F. FFACO document will require 60 day review by the external reviewers.
- G. The M&O contractor is responsible for the transportation and disposal of LLW generated during field investigations.
- H. Closure will consist of access controls (fencing and signs) only. No remediation/removal of soil will be required.
- I. NDEP and USAF will agree with closure in place with access controls and that hot-spot or other radiological cleanup will not be required.
- J. Access to this area of the NNSS will be available so as not to delay any scheduled field activities.
- K. Access to NTTR will require scheduling with the USAF.
- L. UXO surveys may be required for any location where work will occur.
- M. Fencing (T-posts with 2 strands of barbed wire) will be required for the entire radiological contaminated area. This will include new and existing fence.
- N. Radiological signs will need to be posted every 100 ft and UR signs will be posted every 200 ft along the entire length of the radiological controlled area.

### 1.4.1.1.24 CAU 571 – AREA 9 YUCCA FLAT PLUTONIUM DISPERSION SITES

Area 9 Yucca flat Plutonium Dispersion Sites CAU consists of four CASs located in Area 9 of the NNSS.

CAS ID	Description
CAS 09-23-03	Atmospheric Test Site S-9F
CAS 09-23-04	Atmospheric Test Site T9-C
CAS 09-23-12	Atmospheric Test Site S-9E
CAS 09-45-01	Windrows Crater

#### Scope

##### Corrective Action Plan (CAP)

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFACO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP comments, as necessary.

##### Closure Report (CR)

Work will consist of preparing for and completing closure of the CAU in accordance with the approved CAP for developing a Closure Report documenting closure of the CAU.

##### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site closure activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; RWP, coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the closure activities associated radiological hazards, and controls to be implemented.

The M&O contractor will develop craft work packages required for fencing and posting the sites radiological boundary; identify existing utilities on engineering drawings; do a safety review of the permits as well as a site visit to confirm information provided in permits; and procure materials.

##### Field Work

The EPS contractor will conduct activities necessary for radiological surveys of areas proposed for fencing and posting the sites radiological boundary. Provide for site coordination during fencing and posting and provide for a post-job debrief with all field personnel to review the job accomplishments and identify lessons learned for future activities. Develop/update site engineering drawings that include survey coordinates identifying location of the use restrictions and submit a use restriction form to the M&O contractor for each site for official record.

The M&O contractor will conduct activities necessary to construct or repair the sites radiological boundary fence and install radiologic and use restriction signage per the requirements in the FFACO. This includes physically identify existing over-head and underground utilities to insure safe installation of the fence.

#### Prepare Closure Report

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO and NDEP. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### Assumptions

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with NDEP during the DQO process.
- B. The selected closure alternative is close-in-place to an action level of 25millirem.
- C. The CASs currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and archeological sites.
- E. No significant NEPA issues need to be addressed.
- F. FFACO document will require 30 day review and approval by NDEP.
- G. M&O contractor is responsible for the transportation and disposal of all waste types generated during field investigations.
- H. Closure will consist of access controls (fencing and signs) only. No remediation/removal of soil will be required.
- I. NDEP will agree with closure in place with access controls and that hot-spot or other radiological cleanup will not be required.
- J. Fencing (T-posts with 2 strands of barbed wire) will be required for the entire radiological contaminated area. This will include new and existing fence.
- K. Radiological signs will need to be posted every 100 ft and UR signs will be posted every 200 ft along the entire length of the radiological controlled area.

### 1.4.1.1.25 CAU 550 – SMOKY CONTAMINATED AREA

Smoky Contaminated Area CAU consists of nine-teen CASs located in Areas 7, 8 and 10 of the NNSS.

CAS ID	Description
CAS 08-01-01	Storage Tank (T-2c)
CAS 08-22-05	Drum (T-8c)
CAS 08-22-07	Drum (T-8c)
CAS 08-22-08	Drum (3) (T-8B)
CAS 08-22-09	Drum (T-8b)
CAS 08-23-03	Atmospheric Test Site T-8B
CAS 08-23-04	Atmospheric Test Site T-2C
CAS 08-23-06	Atmospheric Test Site T-8A
CAS 08-23-07	Atmospheric Test Site T-8C
CAS 08-24-03	Battery (T-8C)
CAS 08-24-04	Battery (T-8C)
CAS 08-24-07	Battery (3) (T-2C)
CAS 08-24-08	Battery (3) (T-8A)
CAS 08-26-01	Lead Bricks (200)
CAS 10-22-17	Buckets (3)
CAS 10-22-18	Gas Block/Drum
CAS 10-22-19	Drum Stains
CAS 10-22-20	Drum U-10n
CAS 10-24-10	Battery U-10n

#### Scope

##### Corrective Action Plan (CAP)

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFACO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP comments, as necessary.

##### Closure Report

Work will consist of preparing for and completing closure of the CAU in accordance with the approved CAP for developing a Closure Report documenting closure of the CAU.

##### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site closure activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; RWP, coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the closure activities associated radiological hazards, and controls to be implemented.

The M&O contractor will develop craft work packages required for fencing and posting the sites radiological boundary; identify existing utilities on engineering drawings; do a safety review of the permits as well as a site visit to confirm information provided in permits; and procure materials.

#### Field Work

The EPS contractor will conduct activities necessary for radiological surveys of areas proposed for fencing and posting the sites radiological boundary. Provide for site coordination during fencing and posting and provide for a post-job debrief with all field personnel to review the job accomplishments and identify lessons learned for future activities. Develop/update site engineering drawings that include survey coordinates identifying location of the use restrictions and submit a use restriction form to the M&O contractor for each site for official record.

The M&O contractor will conduct activities necessary to construct or repair the sites radiological boundary fence and install radiologic and use restriction signage per the requirements in the FFACO. This includes physically identify existing over-head and underground utilities to insure safe installation of the fence.

#### Prepare Closure Report

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO and NDEP. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### Assumptions

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with NDEP during the DQO process.
- B. The selected closure alternative is close-in-place to an action level of 25millirem.
- C. The CASs currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and archeological sites.
- E. No significant NEPA issues need to be addressed.

- F. FFACO document will require 30 day review and approval by NDEP.
- G. M&O contractor is responsible for the transportation and disposal of all waste types generated during field investigations.
- H. Closure will consist of access controls (fencing and signs) only. No remediation/removal of soil will be required.
- I. NDEP will agree with closure in place with access controls and that hot-spot or other radiological cleanup will not be required.
- J. Fencing (T-posts with 2 strands of barbed wire) will be required for the entire radiological contaminated area. This will include new and existing fence.
- K. Radiological signs will need to be posted every 100 ft and UR signs will be posted every 200 ft along the entire length of the radiological controlled area.

### **1.4.1.1.28 CAU 568 – AREA 3 YUCCA FLAT PLUTONIUM DISPERSION SITES**

Area 3 Yucca Flat Plutonium Dispersion Sites CAU consists of six CASs located in Area 3 of the NNSS.

CAS ID	Description
CAS 03-23-17	S-3I Contamination Area
CAS 03-23-19	T-3U Contamination Area
CAS 03-23-20	Otero Contamination Area
CAS 03-23-22	Platypus Contamination Area
CAS 03-23-23	San Juan Contamination Area
CAS 03-23-26	Shrew/Wolverine Contamination Area

#### **Scope**

##### **Corrective Action Decision Document (CADD)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD in accordance with the FFACO. Site characterization activities, as described in the CAIP, are performed as part of the CADD task. Ecologic and cultural surveys are performed, as required, prior to characterization activities starting. The CADD document includes site characterization results, the CAA analysis, and the results from the RBCA analysis to identify the proposed corrective action. The CADD document summarizes the decision-making process followed to arrive at the recommended CAA and the proposed CALs.

##### **Pre-field Planning**

The EPS contractor will develop project plans and instructions used to guide the site's characterization activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the investigation activities associated radiological hazards, and controls to be implemented.

##### **Field Work**

The EPS contractor will conduct/manage field activities for the soil investigation. Field activities include mobilization, obtaining soil samples for radionuclide analyses, ground based radiological surveys, investigate ground zero and suspect burial areas, decontamination of personnel and equipment, sample preparation, sample shipment and demobilization.

The M&O contractor will provide field support as it pertains to sub-surface investigation and/or the need for heavy equipment and craft labor. This support should be coordinated prior to the start of work. It will be the responsibility of the EPS contractor to coordinate this support.

##### **Analytical Work**

The EPS contractor will provide analytical services for all site characterization samples collected during the field investigation, including laboratory analysis and data validation. Samples will be submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological

analysis. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the method specifications, contractor's Quality Assurance Plan, Soils activity Quality Assurance Plan and the Analytical Service Request Form(s). Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

#### **Waste Management**

The EPS contractor will provide waste management services for all investigation-derived waste generated during the field investigation, including periodic (weekly) inspections, HWAA maintenance, waste characterization, manifest preparation, LLW profile preparation, and coordination of transportation and disposal services as necessary.

#### **Prepare CADD Document**

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD as defined in the FFACO. The CADD will consist of a corrective measure study evaluation of alternatives and the recommended alternative. The appendices will include the investigation results, data assessment of RBCA analysis, cost estimates for each alternative, risk evaluation, and sample location coordinates. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP comments, as necessary.

CAAs are developed and evaluated through an established process to select a preferred closure strategy and includes participation from the NFO. A CAA meeting is held to present the results of the investigation and recommend a corrective action for the site.

Primary DQIs are used to assess the analytical data in comparison to the DQOs. A reconciliation of the data with the conceptual site model is presented as an appendix to the document.

#### **Corrective Action Plan (CAP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFACO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP comments, as necessary.

#### **Closure Report**

Work will consist of preparing for and completing closure of the CAU in accordance with the approved CAP for developing a Closure Report documenting closure of the CAU.

#### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site closure activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; RWP, coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the closure activities associated radiological hazards, and controls to be implemented.

The M&O contractor will develop craft work packages required for fencing and posting the sites radiological boundary; identify existing utilities on engineering drawings; do a safety review of the permits as well as a site visit to confirm information provided in permits; and procure materials.

#### Field Work

The EPS contractor will conduct activities necessary for radiological surveys of areas proposed for fencing and posting the sites radiological boundary. Provide for site coordination during fencing and posting and provide for a post-job debrief with all field personnel to review the job accomplishments and identify lessons learned for future activities. Develop/update site engineering drawings that include survey coordinates identifying location of the use restrictions and submit a use restriction form to the M&O contractor for each site for official record.

The M&O contractor will conduct activities necessary to construct or repair the sites radiological boundary fence and install radiologic and use restriction signage per the requirements in the FFACO. This includes physically identify existing over-head and underground utilities to insure safe installation of the fence.

#### Prepare Closure Report

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO and NDEP. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### Assumptions

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with NDEP during the DQO process.
- B. The selected closure alternative is close-in-place to an action level of 25millirem.

- C. The CASs currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and archeological sites.
- E. No significant NEPA issues need to be addressed.
- F. FFACO document will require 30 day review and approval by NDEP.
- G. M&O contractor is responsible for the transportation and disposal of all waste types generated during field investigations.
- H. Closure will consist of access controls (fencing and signs) only. No remediation/removal of soil will be required.
- I. NDEP will agree with closure in place with access controls and that hot-spot or other radiological cleanup will not be required.
- J. Fencing (T-posts with 2 strands of barbed wire) will be required for the entire radiological contaminated area. This will include new and existing fence.
- K. Radiological signs will need to be posted every 100 ft and UR signs will be posted every 200 ft along the entire length of the radiological controlled area.

### 1.4.1.1.30 CAU 573 – ALPHA CONTAMINATED SITES

Alpha Contaminated Sites CAU consists of two CASs located in Area 5 of the NNSS.

CAS ID	Description
CAS 05-23-02	GMX Alpha Contaminated Area
CAS 05-45-01	Atmospheric Test Site – Hamilton

#### Scope

##### **Corrective Action Decision Document (CADD)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD in accordance with the FFACO. Site characterization activities, as described in the CAIP, are performed as part of the CADD task. Ecologic and cultural surveys are performed, as required, prior to characterization activities starting. The CADD document includes site characterization results, the CAA analysis, and the results from the RBCA analysis to identify the proposed corrective action. The CADD document summarizes the decision-making process followed to arrive at the recommended CAA and the proposed CALs.

##### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site's characterization activities. Documentation includes: SSHASP establishes the safety basis for the planned field operations; coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the investigation activities associated radiological hazards, and controls to be implemented.

##### Field Work

The EPS contractor will conduct/manage field activities for the soil investigation. Field activities include mobilization, obtaining soil samples for radionuclide analyses, ground based radiological surveys, investigate ground zero and suspect burial areas, decontamination of personnel and equipment, sample preparation, sample shipment and demobilization.

The M&O contractor will provide field support as it pertains to sub-surface investigation and/or the need for heavy equipment and craft labor. This support should be coordinated prior to the start of work. It will be the responsibility of the EPS contractor to coordinate this support.

##### Analytical Work

The EPS contractor will provide analytical services for all site characterization samples collected during the field investigation, including laboratory analysis and data validation. Samples will be submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the method specifications, contractor's Quality Assurance Plan, Soils activity Quality Assurance Plan and the Analytical Service Request Form(s). Data verification and

validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

#### Waste Management

The EPS contractor will provide waste management services for all investigation-derived waste generated during the field investigation, including periodic (weekly) inspections, HWAA maintenance, waste characterization, manifest preparation, LLW profile preparation, and coordination of transportation and disposal services as necessary.

#### Prepare CADD Document

The EPS contractor will conduct all activities necessary to prepare a site-specific CADD as defined in the FFACO. The CADD will consist of a corrective measure study evaluation of alternatives and the recommended alternative. The appendices will include the investigation results, data assessment of RBCA analysis, cost estimates for each alternative, risk evaluation, and sample location coordinates. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP comments, as necessary.

CAAs are developed and evaluated through an established process to select a preferred closure strategy and includes participation from the NFO. A CAA meeting is held to present the results of the investigation and recommend a corrective action for the site.

Primary DQIs are used to assess the analytical data in comparison to the DQOs. A reconciliation of the data with the conceptual site model is presented as an appendix to the document.

#### **Corrective Action Plan (CAP)**

The EPS contractor will conduct all activities necessary to prepare a site-specific CAP as defined in the FFACO. The data from previous investigations will be reviewed to assist in preparation of the CAP. The document will define what actions are included in each CAS, expected site conditions, and safety issues. Each site will be visited to verify location, present condition, and factors important for planning closure of the site. Potential factors include proximity of overhead and underground utilities, structures, activities in the area, accessibility of the site, and access restrictions. Site drawings will be generated that will be used as a site plan for identification of utilities, structures, and for other planning purposes. Document preparation includes: peer reviews; document production services; technical support during external reviews; comment resolution for external review comments and preparation of document review sheets; publication of the final document for NDEP approval; and comment resolution for NDEP comments, as necessary.

#### **Closure Report**

Work will consist of preparing for and completing closure of the CAU in accordance with the approved CAP for developing a Closure Report documenting closure of the CAU.

#### Pre-field Planning

The EPS contractor will develop project plans and instructions used to guide the site closure activities. Documentation includes: SSHASP establishes the safety basis for the planned field

operations; RWP, coordination with the M&O contractor to establish support requirements; the SSERCAP if hazardous waste will be managed on site; Field Instructions and Management Plan; a NEPA checklist; a Real Estate Operations Permit / Work Control Package. Complete an ALARA review of the closure activities associated radiological hazards, and controls to be implemented.

The M&O contractor will develop craft work packages required for fencing and posting the sites radiological boundary; identify existing utilities on engineering drawings; do a safety review of the permits as well as a site visit to confirm information provided in permits; and procure materials.

#### Field Work

The EPS contractor will conduct activities necessary for radiological surveys of areas proposed for fencing and posting the sites radiological boundary. Provide for site coordination during fencing and posting and provide for a post-job debrief with all field personnel to review the job accomplishments and identify lessons learned for future activities. Develop/update site engineering drawings that include survey coordinates identifying location of the use restrictions and submit a use restriction form to the M&O contractor for each site for official record.

The M&O contractor will conduct activities necessary to construct or repair the sites radiological boundary fence and install radiologic and use restriction signage per the requirements in the FFACO. This includes physically identify existing over-head and underground utilities to insure safe installation of the fence.

#### Prepare Closure Report

The EPS contractor will prepare a Closure Report written in the FFACO approved format. Submittal of the draft and final document will be provided for external review to NFO and NDEP. External review comments will be incorporated into the document and the document finalized. This includes preparation of responses on the document review sheets for external comments that were received. Distribution of the final approved Closure Report will be made to receiving organizations and project file closeout activities will be conducted.

Project file closeout consists of pulling all project documentation into the project file, verifying that all project documentation is present in the file, verifying that sensitive project information (e.g., personnel medical monitoring/bioassay data) is managed in accordance with DOE directives.

#### Assumptions

- A. RESRAD computer software will be used to calculate dose based on exposure scenarios agreed to with NDEP during the DQO process.
- B. The selected closure alternative is close-in-place to an action level of 25millirem.
- C. The CASs currently identified in the FFACO will not change.
- D. The CAUs will have surveys completed for threatened and endangered species and archeological sites.
- E. No significant NEPA issues need to be addressed.
- F. FFACO document will require 30 day review and approval by NDEP.

- G. M&O contractor is responsible for the transportation and disposal of all waste types generated during field investigations.
- H. Closure will consist of access controls (fencing and signs) only. No remediation/removal of soil will be required.
- I. NDEP will agree with closure in place with access controls and that hot-spot or other radiological cleanup will not be required.
- J. Fencing (T-posts with 2 strands of barbed wire) will be required for the entire radiological contaminated area. This will include new and existing fence.
- K. Radiological signs will need to be posted every 100 ft and UR signs will be posted every 200 ft along the entire length of the radiological controlled area.

### **1.4.1.1.90 SOILS PROJECT SUPPORT**

#### **Scope**

The EPS contractor will conduct activities necessary for project management, planning, and requirements to implement the Soils investigation, characterization and closure activities. Integration and coordination between the M&O, USAF and SNL is required to ensure scope is planned and executed in a timely and efficient manner.

The EPS contractor will conduct necessary strategic planning as appropriate to aid in the investigation, closure and long-term monitoring plans.

The M&O contractor will conduct activities necessary for project management, planning, and requirements in support of the EPS contractor's field activities. The contractor will manage support facilities associated with the Soils activity.

#### **Assumptions**

- A. The EPS and M&O contractors will provide monthly reporting, schedule updates, and adjustments/revisions to the Soils activity baseline as required.
- B. The EPS contractor will maintain project documentation (i.e., RBCA Document, Quality Assurance Plan, procedures, etc.)
- C. The EPS contractor will load documents into the EM Information System (EMIS).
- D. M&O support for building/facilities costs and maintenance will continue.
- E. Project Support needs associated with Industrial Sites and Industrial Sites DP Surveillance and Maintenance is included under this effort.

### **1.4.1.1.98 SOILS SURVEILLANCE AND MAINTENANCE**

#### **Scope**

The EPS contractor will conduct activities necessary for the development and implementation of a Surveillance and Maintenance database in conjunction with EMIS to house such data like inspection results, maintenance activities, copies of inspection checklists, and photographs.

#### **Soils Post Closure Monitoring Non-RCRA Sites**

The EPS contractor will conduct activities necessary for annual (or as required by the approved Closure Report) site inspections of Soils CASs at the NNSS. Sites are identified in the FFACO Appendix IV Closed Corrective Action Sites. The inspection checklists will be completed during the inspections. Inspections will include a walk-down of the sites to identify any damaged or missing signs, damaged fencing or gates, any evidence of settling or cracking of covers, and/or evidence of intrusion into the use restricted areas, as applicable. Photographs will be taken to document any abnormal site conditions that may require a follow-up action. Documentation that records the abnormal condition is submitted to the M&O for corrective action.

The M&O contractor will conduct activities necessary for maintenance as required due to follow-up actions identified by the EPS contractor. This may include repairs to damaged fencing and signs, CAP repairs and perform minor brush removal.

#### **Continued Monitoring NTTR Sites**

The EPS contractor will conduct activities necessary for annual site inspections of fencing and signage along the perimeters of the Clean Slates I, II, and III, Double Tracks, Project 57, and Small Boy sites. The inspection checklists will be completed during the inspections. Inspections will include a walk-down of the sites to identify any damaged or missing signs, damaged fencing or gates, any evidence of intrusion into the restricted areas, as applicable. Photographs will be taken to document any abnormal site conditions that may require a follow-up action.

Documentation that records the abnormal condition is submitted to the M&O or the TTR M&O for corrective action.

The M&O contractor will conduct activities necessary for maintenance as required due to follow-up actions identified by the EPS contractor for Project 57 and Small Boy sites. The TTR M&O will conduct activities necessary for maintenance as required due to follow-up actions identified by the EPS contractor for Double Tracks and Clean Slate sites. This may include repairs to damaged fencing and signs and perform minor brush removal.

The EPS contractor will conduct activities necessary to provide a post-closure monitoring letter report that is submitted to NFO annually. The letter report will be prepared following the FFACO approved template and include inspection results, maintenance activities, copies of inspection checklists, and photographs, as appropriate.

#### **Assumptions**

- A. Higher elevation sites will not be accessible for inspection during winter months.
- B. Access to USAF control sites requires no additional cost but will require coordination to gain range access.
- C. TTR/NTTR land remains under USAF control and land use is essentially unchanged.

D. NNSS site land remains under NNSA control and land use is essentially unchanged.

### **1.4.1.3 INDUSTRIAL SITES**

#### **1.4.1.3.98 INDUSTRIAL SITES SURVEILLANCE AND MAINTENANCE**

##### **Scope**

##### **NNSS Post Closure Monitoring for RCRA and Non-RCRA Sites**

The EPS contractor will conduct activities necessary for annual (or as required by the approved Closure Report) site inspections of RCRA and non-RCRA CASs at the NNSS. Sites are identified in the FFACO Appendix IV Closed Corrective Action Sites. The inspection checklists will be completed during the inspections. Inspections will include a walk-down of the sites to identify any damaged or missing signs, damaged fencing or gates, any evidence of settling or cracking of covers, and/or evidence of intrusion into the use restricted areas, as applicable. Photographs will be taken to document any abnormal site conditions that may require a follow-up action. Documentation that records the abnormal condition is submitted to the M&O for corrective action.

The M&O contractor will conduct activities necessary for maintenance as required due to follow-up actions identified by the EPS contractor. This may include repairs to damaged fencing and signs, CAP repairs and perform minor brush removal.

##### **NTTR Post Closure Monitoring NTTR Sites**

The EPS contractor will conduct activities necessary for annual site inspections of fencing and signage along the perimeters of the NTTR closed CAS's. Sites are identified in the FFACO Appendix IV Closed Corrective Action Sites. Inspection checklists will be completed during the inspections. Inspections will include a walk-down of the sites to identify any damaged or missing signs, damaged fencing or gates, any evidence of intrusion into the restricted areas, as applicable. Photographs will be taken to document any abnormal site conditions that may require a follow-up action. Documentation that records the abnormal condition is submitted to the M&O for corrective action.

The NTTR M&O contractor will conduct activities necessary for maintenance as required due to follow-up actions identified by the EPS contractor. This may include repairs to damaged fencing and signs, CAP repairs and perform minor brush removal.

The EPS contractor will conduct activities necessary to submit three annual post-closure monitoring letter reports. One for RCRA sites – the second for non-RCRA sites on the NNSS and the third for sites on the NTTR. The letter reports will be prepared following the FFACO approved template and include inspection results, maintenance activities, copies of inspection checklists, and photographs, as appropriate.

##### **D&D Facility Monitoring**

The EPS contractor will conduct activities necessary for annual facility structural inspection of Area 25 EMAD Facility (CAU 114): Structural Engineers will inspect the facility for change in site condition, structural integrity, proper demarcation of facility boundaries, and hazard communication. After performing the annual structural inspections, a summary report will be prepared identifying current site conditions and identify any structures that are in need of immediate repair to remain safe for facility visits and other inspections.

The M&O contractor will conduct activities necessary for annual D&D facility radcon site inspections to verify radiological postings and updating as necessary and perform Hantavirus clean up. Documentation as to the current status of facility's radiological postings and any corrective actions taken will be provided to NFO.

**Assumptions**

- A. RCRA sites will require inspections twice a year.
- B. Non-RCRA sites will be inspected every five years after they have been inspected every year for the first five years.
- C. NTTR sites will require inspections once a year.
- D. One report for RCRA sites inspected will be submitted to NNSA/NFO annually.
- E. One report for Non-RCRA sites inspected will be submitted to NNSA/NFO annually.
- F. One report for NTTR sites inspected will be submitted to NNSA/NFO annually.
- G. Higher elevation sites will not be accessible for inspection during winter months.
- H. Access to USAF control sites requires no additional cost but will require coordination to gain range access.
- I. Project management cost associated with Industrial Sites Surveillance and Maintenance is covered under the Soils Project Support.

### **1.4.1.2 UNDERGROUND TEST AREA (UGTA)**

The work scope associated with the UGTA activity will primarily be conducted by EPS contractor with field support from the NNSS M&O contractor and technical support from the DRI through October 31, 2016.

Define the site-specific hydrologic boundaries encompassing groundwater resources on the NNSS and surrounding areas that may be unsafe for domestic or municipal use. Existing data is used where applicable and new data is collected through drilling, groundwater sampling, aquifer testing, and geophysical surveys. Perform data analysis and modeling activities to allow informed decisions regarding the implementation of administrative controls and monitoring programs that ensure risk to public health and the environment posed by impacted groundwater are, and will remain, within protective levels.

#### **General Assumptions**

- A. Computer modeling forecast and direct data will be the primary basis for determining contaminant boundaries and designing the monitoring network.
- B. Activities within UGTA are assumed to be as defined in the FFACO Corrective Action Strategy, which currently assumes that existing data combined with newly acquired data is sufficient to model all CAUs and to define contaminant boundaries. All CAUs will complete Phase I data acquisition and CAU modeling. Phase II data acquisition and modeling will only be required if uncertainty in the location of the contaminant boundary is unacceptable and can be reduced by additional data collection. The life-cycle schedule assumes Rainier Mesa and Yucca Flat CAUs will not require Phase II activities.
- C. Subsurface contaminants in and around the cavities created by underground nuclear tests will be closed in place since cost-effective groundwater technologies have not yet demonstrated an ability to effectively remove or stabilize radioactive contaminants at the various CAUs.
- D. Topical and pre-emptive review committees will be formed as needed to provide guidance on specific technical issues and provide technical review of documents.
- E. Data analysis will produce datasets or information sufficiently processed to be directly usable for CAU-specific modeling without further analysis.
- F. The CAU-specific modeling will be developed to achieve the required level of confidence in model forecast and will employ existing codes or minimal adaptations of existing codes.
- G. The contaminant boundary defines the area around the CAU in which groundwater may be expected to contain activities of radionuclides that exceed the agreed upon levels. Uncertainty will be incorporated into the determination of the contaminant boundary by employing stochastic methods and determining confidence levels for model forecasts.
- H. Draft data documentation packages and modeling reports will be reviewed and approved by NFO only. NDEP may receive information-only copies.
- I. Annual sampling of monitoring wells will be sampled in accordance with the Proposed UGTA Sampling Plan for FY2015-FY2019. The Proposed UGTA Sampling Plan is the source document that describes the frequency and wells to be sampled.
- J. The EPS contractor may need to coordinate with other agencies (DRI, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, the M&O contractor and the U.S. Geological Survey) which support or have supported deliverables needed to meet requirements of multiple products within the UGTA activity.

- K. The “*Underground Test Area Activity Quality Assurance Plan, Rev. 1, DOE/NV--1450. Las Vegas, NV*” (QAP) is the current quality assurance plan used for the UGTA activity.
- L. The “*Underground Test Area Activity Waste Management Plan, Rev. 3, DOE/NV--343. Las Vegas, NV*” is the current waste management plan (WMP) used for the UGTA activity. The Fluid Management Plan (FMP) is found within WMP, Attachment 1.
- M. The EPS contractor will conduct preemptive reviews of various products to ensure work is technically adequate. These reviews are an identified part of the committee activities in the UGTA QAP.
- N. The EPS contractor will provide for a Guidance Committee that is a panel of subject matter experts (SMEs) for multiple disciplines to act as scientific oversight.
- O. The EPS contractor will provide CAU Leads for Frenchman Flat and Pahute Mesa. The CAU Lead is responsible for identifying and coordinating CAU-specific technical scope and priorities; coordinating with other CAU Leads to maintain consistency between CAUs; coordinating technical reviews; evaluating and prioritizing data needs; providing technical oversight to the CAU team; focusing Pre-Emptive Review Committee reviews; and communicating progress.

### **FFACO Assumptions**

- A. The technical strategy in the FFACO will provide the basis for closure of all CAUs.
- B. NFO is required to identify milestones to NDEP for establishing product deadline dates.
- C. The NFO and NDEP will review and approve the Corrective Action Decision Document / Corrective Action Plan (CADD/CAP), and Closure Report based on implementation of the FFACO Technical Strategy.
- D. The CADD and CAP are combined following an outline mutually agreed-upon between NDEP and NFO.
- E. The CADD/CAP will incorporate the work completed as part of the contaminant boundary forecasts and identify and document the model evaluation activities needed to assess any additional data in relation to CAIP model results.
- F. The Closure Report describes the closure approach for each CAU, establishes long-term monitoring objectives and requirements. This includes the establishment of the use restriction and regulatory boundaries negotiated with NDEP prior to the Closure Report being developed.

#### **1.4.1.2.01 CAU 98 – FRENCHMAN FLAT**

Work scope activities for the Frenchman Flat CAU are driven by the implementation of the FFACO technical strategy. CAU-specific modeling is required to determine the location of the contaminant boundary and design the corrective action monitoring well system. These activities provide the complete basis for a combined CADD/CAP for regulatory approval. Corrective action involves the implementation of the closure activity recommended in the CADD/CAP. Compliance with the CADD/CAP requirements and Closure Report leads to a notice of completion from NDEP.

##### **1.4.1.2.01.04 CLOSURE REPORT**

The Closure Report includes negotiation of regulatory boundaries; establishing long-term monitoring requirements and preparation and approval of the closure document. The long-term monitoring plan will be an appendix in the closure document. The Closure Report shall be prepared per the FFACO agreement. The document will be reviewed through comment resolution by NDEP and NFO. Annual sampling will be conducted during this phase of work per the Proposed UGTA Sampling Plan.

##### **1.4.1.2.01.04.01 MODEL EVALUATION DATA ACQUISITION**

Conduct annual sampling and analysis as identified in the Proposed UGTA Sampling Plan. Note: scope associated with Model Evaluation Data Acquisition (Drilling and Well Development and Testing) have been completed prior to this WBS Dictionary update.

#### **1.4.1.2.01.04.01.04 ANNUAL SAMPLING**

##### **Scope**

The EPS contractor will conduct activities necessary for monitoring well sampling as described in the Proposed UGTA Sampling Plan and provide for analytical services including laboratory analysis and data validation. UGTA wells will be sampled for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

The samples will be collected in a single field campaign and a report will be prepared describing the field activities and presenting the analytical results. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support sampling event (s). This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners to ensure they are able to contain the groundwater produced during the sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

##### **Assumptions**

- A. Monitoring wells will be sampled in accordance with the Proposed UGTA Sampling Plan.
- B. Sample collection is done by the EPS contractor with support from the M&O contractor.
- C. Samples are analyzed by a NDEP approved and DOECAP audited laboratory as per the UGTA QAP.
- D. Near-field samples are analyzed by Lawrence Livermore National Laboratory.
- E. Sampling activities are in compliance with the UGTA FMP and the UGTA QAP.
- F. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.

#### **1.4.1.2.01.04.05 CLOSURE REPORT DOCUMENT**

The Closure Report document is an FFACO document that contains the long-term monitoring, modeling, and institutional control strategy for this CAU. The goal of the Closure Report is to establish a mutually agreed to plan by NFO and NDEP for implementing the long-term monitoring phase and for handling uncertainty during that phase of the project.

The Closure Report includes a summary of the knowledge of contaminant transport, specific strategy for how long-term monitoring, modeling, and institutional controls will be implemented; specifics related to the long-term monitoring plan; analyses and physical processes to be monitored; frequency of monitoring; location and design of wells to be monitored; testing of wells once constructed; action levels; appropriate responses to action levels being exceeded; maintenance and inspection of the monitoring network; requirements for comparison of monitoring results to flow and transport model simulations; reporting requirements; data management; plans for long-term model maintenance and updating; alternative strategies if contaminant boundary and or regulatory boundaries are exceeded; and public relations.

#### **Scope**

The EPS contractor will conduct activities necessary to prepare the Draft Closure Report Document with support from other agencies as needed for specific information needs or specialized technical input. As part of this scope, the EPS contractor will support the completion of the boundary negotiation with NDEP, and support the design and establishment of the long-term monitoring requirements.

The EPS contractor will conduct activities necessary to perform a Pre-emptive Review (PER). The PER is an internal review of the draft Closure Report. The product of this scope is the draft final Rev. 0 Closure Report and a formal review comment/response document.

The EPS contractor will support an NFO review of the draft final Rev. 0 Closure Report. The product of this scope is the Rev. 0 Closure Report and a formal review comment/response document.

The EPS contractor will support an NDEP review of the final Rev. 0 Closure Report. The product of this scope is the final Rev. 1 Closure Report and a formal review comment/response document.

#### **Assumptions**

- A. The Closure Report shall be prepared per the FFACO agreement.
- B. The document will be reviewed through comment resolution by NDEP and NFO.
- C. NDEP will review the draft final version of the document and deliver comments to NFO within 60-calendar days after receiving the document.
- D. DRI will conduct activities necessary for long-term monitoring design and requirements and provide document support and reviews as needed through October 31, 2016.
- E. The EPS contractor may need to coordinate with other agencies which supported deliverables needed to meet requirements for this scope.

#### **1.4.1.2.01.05 POST CLOSURE MONITORING**

Post Closure Monitoring includes activities necessary for long-term well monitoring and sampling as described in the CAU's Closure Report and the Proposed UGTA Sampling Plan. To complete the monitoring network, installation and development/testing of additional monitoring well(s) are required at location(s) to monitor the regulatory boundary.

##### **1.4.1.2.01.05.01 IMPLEMENT LONG-TERM CLOSURE MONITORING**

This scope includes establishing the requirements for long-term monitoring, preparing the long-term monitoring plan, and installing and testing the monitoring network. The plan will include requirements for well location, construction and testing; frequency of sampling, and physical and chemical analyses; corrective action triggers; maintenance and inspection of the network and institutional controls; evaluation and revisions to the model; and reporting, data management, and public relations. Additional monitoring well(s) are installed to complete the CAU's network as specified in the Closure Report.

#### **1.4.1.2.01.05.01.01 DRILLING**

As described in the Closure Report, one well is installed at a location to monitor the Regulatory Boundary and /or a location defined by the NFO and NDEP that is suitable to meet the regulatory requirements. The well(s) will provide geologic, hydrologic, and chemical data that will be used to verify the Regulatory Boundary objectives established in the Closure Report are met.

##### **Scope**

The M&O contractor will conduct activities necessary for well installation including design, planning, road & pad construction, well construction, geophysical logging, well completion, and completion report documentation.

The EPS contractor will conduct activities necessary for on-site technical and scientific support for drilling and completion of wells including geologic/hydrogeologic analysis; geologic and structural analysis of the wellbore logs, cuttings, and cores; geophysical interpretation, collection of water/fluid samples for offsite analysis, data management, reporting and planning, and collaboration on well design.

DRI will conduct activities necessary for a cultural resources survey of this well location and access road as required in Section 106 of the National Historic Preservation Act.

##### **Assumption**

- A. One approximately 1,500' monitoring well is installed.
- B. The M&O contractor will lead this effort.
- C. No offsite analysis during drilling is assumed.
- D. Construction and completion of main hole will be done by an M&O drilling subcontractor. Additional M&O subcontractors supporting the construction of the well includes: air compressor services, geophysical logging, down-hole drilling tools, mud materials, stemming monitoring, down-hole camera services, stemming materials, casing services, and gyroscopic surveying.
- E. Compliance with the UGTA FMP and UGTA QAP is required.
- F. NDEP and NFO will decide well location and design with support from the DRI , and the EPS and M&O contractors
- G. The DRI will complete the cultural resources survey of this well location prior to October 31, 2016.

#### **1.4.1.2.01.05.01.02 WELL DEVELOPMENT TESTING & SAMPLING**

Well(s) installed during the Long-Term Monitoring Network phase are developed and tested for hydrologic parameters and sampled for chemical and isotopic parameters. Analyzing hydraulic and geochemical data obtained during well development and testing and sampling are included as part of this effort as is development of the well development and testing report.

##### **Scope**

The EPS contractor will conduct activities necessary for planning, performing hydraulic testing and groundwater and geochemical sampling, and analysis and reporting. This includes providing hydrologic expertise in planning the test; providing geophysical instruments in order to conduct stressed flow logging and chemtool logging within the well; analysis of the data for the purpose of discrete zone geochemical sampling; detailed depth dependent hydraulic conductivity analysis; flowing fracture analysis; and ambient flow logging to support the hydraulic conductivity analysis.

The EPS contractor will conduct activities necessary for sampling UGTA wells for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The EPS contractor will conduct activities necessary for WDT analyses including review and evaluation of the well test responses and geochemical data.

The M&O contractor will conduct activities necessary to support well development, testing and sampling activities. This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners (if required) to ensure they are able to contain the groundwater produced during the hydraulic testing and sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

##### **Assumption**

- A. Well to be tested and developed is assumed not to be radiologically contaminated and site operations will not need to be conducted in accordance with 29 CFR 1910.120.
- B. One single zone well will be tested and sampled.
- C. Sampling activities are in compliance with the UGTA FMP, Proposed UGTA Sampling Plan, CAU Closure Report and the UGTA QAP.
- D. The EPS contractor will be the lead on this scope.
- E. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.



#### **1.4.1.2.02 CAU 101/102 –PAHUTE MESA**

Work scope activities for the Pahute Mesa CAU are driven by the implementation of the FFACO Technical Strategy. CAU-specific modeling is required to determine the location of the contaminant boundary and design the corrective action monitoring well system. These activities provide the complete basis for a combined CADD/CAP for regulatory approval. Corrective action involves the implementation of the closure activity recommended in the CADD/CAP. Compliance with the CADD/CAP requirements and Closure Report leads to a notice of completion from NDEP.

#### **1.4.1.2.02.02 CORRECTIVE ACTION DECISION DOCUMENT (CADD)**

The scope of the CADD includes data acquisition, data analysis, and determination of the regulatory boundary. Hydrologic and geologic data are acquired that provide input into the computer modeling to provide model forecasts for evaluating CAIP model results.

#### **1.4.1.2.02.02.11 DATA ACQUISITION – PHASE II**

Data is acquired through field and laboratory studies to supplement significant data gaps determined as a result of Phase I data analysis and modeling activities.

#### **1.4.1.2.02.02.11.01 FIELD – PHASE II**

Phase II Field studies are performed to fill in data deficiencies determined through the calibration and completion of the Phase I flow and transport model.

## **1.4.1.2.02.02.11.01.02 WELL DEVELOPMENT TESTING & SAMPLING (WDT&S) – PHASE II**

WDT analyses of wells provides for model interpretations and conceptual uncertainty.

### **Scope**

The EPS contractor will conduct activities necessary for WDT analyses of Wells ER-20-11, ER-EC-14 and ER-EC-15 including review and evaluation of the well test responses and geochemical data. These evaluations will form the basis for subsequent numerical simulation of the area and support technical basis for developing conceptual models of the area.

DRI will conduct activities necessary to participate in this process through analysis of trace Al & Fe, stable isotopes, and dissolved organic 14C.

### **Assumption**

- A. WDT&S field operations for all three wells identified above are complete prior to fiscal year 2015 and starting this analysis.
- B. Supporting analysis data from other organizations will be completed prior to fiscal year 2015.

#### **1.4.1.2.02.02.11.01.05 MULTIPLE WELL AQUIFER TEST (MWAT)**

This task includes planning, implementation, analysis, and reporting of two multi-well aquifer and tracer tests. Each test is assumed to include up to three wells in an arrangement of injection/production, multiple tracers, hydraulic monitoring, and water quality sampling under "near field" operational requirements i.e. 29 CFR 1910.120.

##### **Scope**

The EPS contractor will conduct activities necessary for planning, testing and reporting on two MWATs including criteria, specifications and identification of methodologies development, tracer injection, monitoring pumping and drawdown, sampling for tracers and water quality, sample analysis, and reporting. Samples are submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. Samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support MWAT activities. This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners (if required) to ensure they are able to contain the groundwater produced during the hydraulic testing and sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

DRI will conduct activities necessary to provide support in planning of the tracer tests primarily the use of carbon-13 as a reactive tracer.

##### **Assumptions**

- A. Two MWATs are currently required and planned in the baseline.
- B. The planning, testing and reporting will be conducted by the EPS contractor with operational support by the M&O contractor.
- C. The wells required to run the test will be constructed, developed and tested, and otherwise equipped with required down-hole equipment under a different task.
- D. The tracer test will also produce hydraulic response information; however this information will be secondary in priority to the transport parameters.
- E. The EPS contractor will conduct predictive modeling of tracer transport using existing software packages and no application development will be required to model flow and transport behavior.
- F. Pumping, sampling and analysis activities are in compliance with the UGTA FMP and the UGTA QAP.

## **1.4.1.2.02.02.11.01.06 ANNUAL SAMPLING**

### **Scope**

The EPS contractor will conduct activities necessary for monitoring well sampling as described in the Proposed UGTA Sampling Plan and provide for analytical services including laboratory analysis and data validation. UGTA wells will be sampled for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

The samples will be collected in a single field campaign and a report will be prepared describing the field activities and presenting the analytical results. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support sampling event (s). This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners to ensure they are able to contain the groundwater produced during the sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

### **Assumptions**

- A. Monitoring wells will be sampled in accordance with the Proposed UGTA Sampling Plan.
- B. Sample collection is done by the EPS contractor with support from the M&O contractor.
- C. Samples are analyzed by a NDEP approved and DOECAP audited laboratory as per the UGTA QAP.
- D. Near-field samples are analyzed by Lawrence Livermore National Laboratory.
- E. Sampling activities are in compliance with the UGTA FMP and the UGTA QAP.
- F. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.

#### **1.4.1.2.02.02.12 DATA ANALYSIS – PHASE II**

Collect additional data to revise the CAU model as needed, a second phase of data analysis is undertaken to compile and interpret newly collected data.

### **1.4.1.2.02.02.12.01 GEOLOGY – PHASE II**

Newly acquired geologic information is compiled and interpreted. The base and alternate geologic models are revised based upon this new information.

#### **Scope**

The EPS contractor will conduct activities necessary to complete on-going geology analysis and evaluation scope including: petrographic, chemical, and mineralogical analyses of new borehole samples to ensure that geologic characterizations used for the hydrogeologic model are accurate and comprehensive.

The EPS contractor will incorporate new borehole hydrostratigraphic unit (HSU) information into the existing Earth-Vision (EV) model; produce completed model in EV format; incorporate the revised HSU-base model and alternative models into the existing UGTA EV regional HSU model; and produce HSU and fault-specific grids for input to LaGrit for the working CAU model and the six alternative CAU models.

The EPS contractor will prepare addendum to the geology documentation package for UGTA internal review; prepare figures for in-house review; and produce structure, structure contour, and isopach maps, including well locations, fault names, legends, and title blocks. Following completion of the internal review, alternative models are developed to appropriately encompass the range of possible alternative geologic interpretations. A letter report will be prepared detailing the list of alternatives to recommend further modeling to the NFO.

#### **Assumption**

- A. The Phase II geology data documentation package will be reviewed by PER and NFO with approval from NFO.
- B. This task includes coordination with the NFO and PER for review of the draft data documentation package and comment responses.
- C. Only NFO and the PER participants will review the draft and submit comments. The NFO and the PER reviewers will review the draft report concurrently.
- D. NDEP will receive information-only copies; effort to address NDEP comments is not to be included.
- E. NFO and the PER reviewers will complete their review and deliver comments to the EPS contractor within 30 calendar days after delivery of the draft.
- F. Comment responses will be issued as a comment/response document. Each comment will be listed on a comment response form with the appropriate response entered adjacently.
- G. NFO and PER reviewers will review and approve the comment responses prior to revision of the document.
- H. The final comment response document will be issued concurrently with the final document.
- I. The Phase II geology data documentation package and comment/response document will be delivered to NFO within 30 calendar days after approval of the comment responses.
- J. Presentation to NDEP may be required during the execution of this scope.

### **1.4.1.2.02.02.12.02 HYDROLOGY – PHASE II**

Compile and interpret newly acquired Phase II hydrologic data pertinent to the completion of the CAU flow and transport model. Update the draft hydrologic data documentation volume to be used as a primary reference to the CAU modeling task.

#### **Scope**

The EPS contractor will conduct activities necessary to complete on-going Hydrology Analysis and Evaluation scope including: gathering, qualifying, storing, and interpreting new data required for the development of the CAU groundwater flow model. The products of this scope will be data sets or information sufficiently processed to be directly usable for CAU-specific modeling without further analysis.

The EPS contractor will conduct activities necessary to update the documentation of pertinent hydrologic data and interpretations of the data in the hydrologic data documentation package. The documentation package serves as a primary reference to the CAU groundwater flow model. The documentation package will include technical approaches, data tables, and data interpretations and analyses that allow for adequate technical review of the work and document data resulting from Phase II data acquisition activities.

The EPS contractor will support NFO reviews of the updated hydrology data documentation package. Comments are addressed and revisions to the package made.

DRI will conduct activities necessary to compute the fault dilational tendency to identify faults that are likely permeable with the current stress field, and use fault dilation to infer horizontal and vertical permeability and connectivity within large faults.

#### **Assumption**

- A. The Phase II hydrology data documentation package will be reviewed by PER and NFO with approval from NFO.
- B. This task includes coordination with the NFO and PER for review of the draft data documentation package and comment responses.
- C. Only NFO and the PER participants will review the draft and submit comments. The NFO and the PER reviewers will review the draft report concurrently.
- D. NDEP will receive information-only copies; effort to address NDEP comments is not to be included.
- E. NFO and the PER reviewers will complete their review and deliver comments to the EPS contractor within 30 calendar days after delivery of the draft.
- F. Comment responses will be issued as a comment/response document. Each comment will be listed on a comment response form with the appropriate response entered adjacently.
- G. NFO and PER reviewers will review and approve the comment responses prior to revision of the document.
- H. The final comment response document will be issued concurrently with the final document.
- I. The Phase II hydrology data documentation package and comment/response document will be delivered to NFO within 30 calendar days after approval of the comment responses.

J. Presentation to NDEP may be required during the execution of this scope.

### **1.4.1.2.02.02.12.03 TRANSPORT PARAMETERS – PHASE II**

Collect, analyze, qualify, and document existing and newly collected Phase II chemical, geochemical, and hydrologic data pertinent to the transport of radionuclides in groundwater.

#### **Scope**

The EPS contractor will conduct activities necessary to complete on-going Transport Parameters Analysis and Evaluation scope including: gathering, qualifying, managing, and storing new data required to feed subsequent contaminant transport modeling (source term is not included in this subtask). The products of this scope will be data sets or information sufficiently processed to be directly usable for CAU-specific modeling without further analysis. The products will also be groundwater chemistry and aquifer solids geochemistry data sets and information to be used in support of the flow and transport modeling.

The EPS contractor will conduct activities necessary to update the documentation of transport parameter data and interpretations into a Phase II data documentation package. The package serves as a primary reference to the CAU transport model and includes activities associated with technical approaches, data tables, data interpretations and analyses that allow for adequate technical review of the work, updating documentation of groundwater chemistry data and the analysis and interpretation of those data. This package will include documentation of data resulting from Phase II data acquisition activities.

The EPS contractor will support NFO reviews of the updated transport parameter data documentation package and includes internal review and revision of the documentation package and database.

#### **Assumption**

- A. The Phase II transport parameter data documentation package will be reviewed by PER and NFO with approval from NFO.
- B. This task includes coordination with the NFO and the PER reviewers for review of the draft data documentation package and comment responses.
- C. Only NFO and the PER participants will review the draft and submit comments. The NFO and the PER reviewers will review the draft report concurrently.
- D. NDEP will receive information-only copies; effort to address NDEP comments is not to be included.
- E. NFO and the PER reviewers will complete their review and deliver comments to the EPS contractor within 30 calendar days after delivery of the draft.
- F. Comment responses will be issued as a comment/response document. Each comment will be listed on a comment response form with the appropriate response entered adjacently.
- G. NFO and PER reviewers will review and approve the comment responses prior to revision of the document.
- H. The final comment response document will be issued concurrently with the final document.
- I. The Phase II transport parameter data documentation package and comment/response document will be delivered to NFO within 30 calendar days after approval of the comment responses.
- J. Presentation to NDEP may be required during the execution of this scope.

K. Execution of this scope may require support from Lawrence Livermore National Laboratory and Los Alamos National Laboratory.

#### **1.4.1.2.02.02.12.04 SOURCE TERM – PHASE II**

Analyze newly acquired data pertaining to the source term. Work may include work in a classified environment. Classified and unclassified near-field models and reports are submitted.

##### **Scope**

The EPS contractor will conduct activities necessary to complete on-going Source Term Analysis and Evaluation scope including: gather, qualify, and store newly acquired source-term data required to feed subsequent contaminant transport modeling. Work may take place in a classified environment. Activities may include evaluating release of radionuclides from the cavity and chimney regions of a test and their retardation to identify the source term to be used for transport modeling on the CAU scale and updating established thermodynamic, sorption, and ion exchange databases. Classified model runs will require acquiring classified data housed by the national laboratories. Acquisition of this data is required for classified runs.

Documenting source-term data and interpretations and revising the data documentation package. The package serves as a primary reference to the CAU transport model.

##### **Assumption**

- L. The Phase II source term data documentation package will be reviewed by PER and NFO with approval from NFO.
- A. The list of reviewers and the review schedule for a classified source term package will differ from the above.
- B. Classified presentation to NDEP may be required during the execution of this scope.
- C. Execution of this scope will require support from Lawrence Livermore National Laboratory and Los Alamos National Laboratory.

#### **1.4.1.2.02.02.13 CONTAMINANT BOUNDARY – PHASE II**

If the Phase I model does not provide sufficient confidence in the location of the contaminant boundary, a Phase II effort is required. The Phase II effort provides a CAU specific risk-based contaminant boundary based upon the revision and verification of the Phase II flow and transport model. A final composite report will be developed that combines the results of all the work to date into one consistent, well-documented report suitable for external peer review. An external peer review team will review the final report. Human risk will be assessed to provide additional insights for NFO's understanding of the implications of the contaminated groundwater from the CAU.

## **1.4.1.2.02.02.13 FLOW AND TRANSPORT MODEL – PHASE II**

### **Scope**

The EPS contractor will conduct activities necessary to revise the Phase I Flow and Transport Model using information acquired during the Phase II Data Acquisition and Data Analysis activities, suggestions by peer reviewers, and improvements identified by the program.

The CAU flow model in Phase II involves revisions to a series of steps that lead to the final Phase II flow model. These steps are:

1. Revision of boundary conditions.
2. Revision of recharge and its uncertainty.
3. Revision of the range of boundary fluxes.
4. Revision of the model grid.
5. Revision of the flow parameters distributions in the model.
6. Revision of the transferability of data from other CAUs.
7. Revision of the process model to assess the role of thermal processes on groundwater flow.
8. Revision of the CAU flow model incorporating the process and sub-CAU models.
9. Revision of the calibration of the CAU model.
10. Revision of the sensitivity and uncertainty analyses including multiple alternative hydrologic, hydrostratigraphic, and conceptual models.

The final CAU transport model is constructed from a number of smaller models and studies that come together to produce the final product. The analyses that contribute to the transport modeling include:

1. Up-scaling of transport properties.
2. Development of the simplified source term model (both unclassified and classified versions) which will include categorizing the sources, thermal effects, glass zone heterogeneity, estimation of reactive surface area, and calculation of a hydrologic source term.
3. The transport parameters and providing ranges of acceptable values.
4. Sub-CAU models of transport may be created to simulate transport processes at smaller scales to better understand the migration of radionuclides.
5. The CAU transport model will yield a full 3D transport analysis which will include sensitivity and uncertainty analysis.
6. After the CAU model an abstraction of CAU transport will be developed in order to assess a wide range of uncertainty from parameters, conceptual models, hydrostratigraphic unit models, and other factors.
7. The transport predictions will be compared with current contaminant and environmental concentrations to increase confidence in the models.
8. The classified source data will be used to determine contaminant concentrations.

### **Assumptions**

- A. These assumptions are predicated on periodic peer reviews in Phase I to ensure they produce an acceptable product and the expectation that new data collected after the Phase I model will lead to only minor adjustments in conceptual models.
- B. It is assumed that work required to calibrate the models is less because the models are nearly calibrated from Phase I.

- C. It is assumed that only analysis and evaluation will be done during the EPS contract period and reporting and final document submittals will be completed under a follow on contract.
- D. DRI will conduct activities necessary for integrating the results of DRI's analysis of regional groundwater flow into Pahute Mesa CAU flow and transport models prior to October 31, 2016.
- E. The EPS contractor may need to coordinate with other agencies which supported deliverables needed to meet requirements for this scope.

### **1.4.1.2.03 – CAU 97 YUCCA FLAT/CLIMAX MINE**

Work scope activities for the Yucca Flat/Climax Mine CAU are driven by the implementation of the FFACO Technical Strategy. CAU-specific modeling is required to determine the location of the contaminant boundary and design the corrective action monitoring well system. These activities provide the complete basis for a combined CADD/CAP for regulatory approval. Corrective action involves the implementation of the closure activity recommended in the CADD/CAP. Compliance with the CADD/CAP requirements and Closure Report leads to a notice of completion from NDEP.

#### **1.4.1.2.03.03 CORRECTIVE ACTION DECISION DOCUMENT/CORRECTIVE ACTION PLAN (CADD/CAP)**

The CADD/CAP is an FFACO document that includes preparation of the CADD/CAP and continued annual sampling. The CADD and CAP were previously separate documents but have been combined under a model evaluation stage.

### **1.4.1.2.03.03.01 CADD/CAP DOCUMENT PREPARATION**

The purpose of this task is to prepare the CADD/CAP document for review and approval by NFO and NDEP necessary to close this stage of the strategy. The CADD/CAP summarizes the findings of the CAI stage; identifies the regulatory and uses restriction boundaries; describes the selected alternative and institutional controls; and describes the model evaluation process and plan. The document summarizes the CAI stage; identifies the regulatory and uses restriction boundaries; describes the selected alternative and institutional controls; and describes the model evaluation process and plan. The CADD portion describes the results of data-collection and modeling activities completed during the CAI stage and describes the corrective action objectives, and recommends an alternative. The CAP portion contains the plan for implementing the corrective action, including the model evaluation plan and a description of additional data collection activities. The CADD/CAP is a NFO document that will be made available to the public.

#### **Scope**

The EPS contractor will conduct activities necessary to prepare the draft CADD/CAP with support from other participating agencies as needed for specific information needs or specialized technical input.

The EPS contractor will conduct activities necessary to perform a PER. The PER is an internal review of the draft CADD/CAP. The product of this scope is the draft final Rev. 0 Closure Report and a formal review comment/response document.

The EPS contractor will support an NFO review of the draft final Rev. 0 CADD/CAP. The product of this scope is the Rev. 0 CADD/CAP and a formal review comment/response document.

The EPS contractor will support an NDEP review of the Rev. 0 CADD/CAP. The product of this scope is the Rev. 1 CADD/CAP and a formal review comment/response document.

DRI will conduct activities necessary to perform model evaluation planning in association with the draft CADD/CAP.

#### **Assumptions**

- A. The final CADD/CAP outline will be negotiated between NFO and NDEP prior to the initiation of this task. The negotiated CADD/CAP outline is needed before the preparation of the draft CADD/CAP to minimize disagreements between the NFO and NDEP during the CADD/CAP review process. The outline will spell out the contents and organization of the CADD/CAP. The outline will be similar to the Frenchman Flat outline.
- B. The EPS contractor will need to coordinate with other agencies which supported deliverables needed to meet requirements for this scope.
- C. NFO review comments may require moderate revisions and additional text for clarification purposes.
- D. NFO review comments will not require reorganization of the document.
- E. Report revisions will not necessitate major reorganization or rewriting.
- F. NDEP comments may require text revisions for clarification purposes only.

G. NDEP will review the draft final version of the document and deliver comments to NFO within 60-calendar days after receiving the document.

### **1.4.1.2.03.03.02 ANNUAL SAMPLING**

#### **Scope**

The EPS contractor will conduct activities necessary for monitoring well sampling as described in the Proposed UGTA Sampling Plan and provide for analytical services including laboratory analysis and data validation. UGTA wells will be sampled for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

The samples will be collected in a single field campaign and a report will be prepared describing the field activities and presenting the analytical results. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support sampling event (s). This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners to ensure they are able to contain the groundwater produced during the sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

#### **Assumptions**

- A. Monitoring wells will be sampled in accordance with the Proposed UGTA Sampling Plan.
- B. Sample collection is done by the EPS contractor with support from the M&O contractor.
- C. Samples are analyzed by a NDEP approved and DOECAP audited laboratory as per the UGTA QAP.
- D. Near-field samples are analyzed by Lawrence Livermore National Laboratory.
- E. Sampling activities are in compliance with the UGTA FMP and the UGTA QAP.
- F. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.

#### **1.4.1.2.03.04 CLOSURE REPORT (CR)**

During the closure phase, scope includes model evaluation and the preparation and approval of the CAU's Closure Report. During model evaluation, data collection, analysis and evaluation, and reporting will be conducted to support model forecasts. Annual sampling will be conducted during this phase of work per the Proposed UGTA Sampling Plan.

##### **1.4.1.2.03.04.01 MODEL EVALUATION DATA ACQUISITION**

Perform the data collection through drilling and well development activities identified in the CADD/CAP. The scope includes preparing field activities work package, fluid management letters, drilling criteria documents, well completion reports, and well development and testing reports; conducting archeological, ecological, geophysical, land surveys; constructing roads, pads, sumps, and drilling wells; and conducting well development, testing, sampling, and analysis. Annual sampling will be conducted on wells identified in the Proposed UGTA Sampling Plan.

### **1.4.1.2.03.04.01.01 DRILLING**

As described in the CADD/CAP, wells are installed at locations to provide geologic, hydrologic, and chemical data that will be used to build confidence in the site conceptual model and transport model forecasts for the purpose of model evaluation. Sufficient confidence must be developed in the forecasts so that the NDEP will accept use of the model in guiding the development of the long-term monitoring network and institutional controls for site closure.

#### **Scope**

The M&O contractor will conduct activities necessary for well installation including design, planning, road & pad construction, well construction, geophysical logging, well completion, and completion report documentation.

The EPS contractor will conduct activities necessary for on-site technical and scientific support for drilling and completion of wells including geologic/hydrogeologic analysis; geologic and structural analysis of the wellbore logs, cuttings, and cores; geophysical interpretation, collection of water/fluid samples for offsite analysis, data management, reporting and planning, and collaboration on well design.

DRI will conduct activities necessary for a cultural resources survey of the well locations and access roads as required in Section 106 of the National Historic Preservation Act.

#### **Assumption**

- A. Three approximately 3,200' model evaluation wells are installed with two wells being completed with multiple zones.
- B. The M&O contractor will lead this effort.
- C. No offsite analysis during drilling is assumed.
- D. Construction and completion of main hole will be done by an M&O drilling subcontractor. Additional M&O subcontractors supporting the construction of the well includes: air compressor services, geophysical logging, down-hole drilling tools, mud materials, stemming monitoring, down-hole camera services, stemming materials, casing services, and gyroscopic surveying
- E. Compliance with the UGTA FMP and UGTA QAP is required.
- F. NDEP and NFO will decide well location and design with support from DRI, and the EPS and M&O contractors.
- G. The DRI will complete the cultural resources survey of this well location prior to October 31, 2016.
- H. Groundwater encountered in all three wells will be below the 200,000 pCi/l threshold (Far-Field Wells).

### **1.4.1.2.03.04.01.02 WELL DEVELOPMENT TESTING & SAMPLING**

The wells installed during the model evaluation phase are developed and tested for hydrologic parameters and sampled for chemical and isotopic parameters. Other wells within the CAU may also be sampled if necessary to further reduce uncertainty in the location of the contaminant boundary. Aquifer tests are performed that may incorporate new and existing wells. Analyzing hydraulic and geochemical data obtained during well development, testing and sampling are included as part of this effort as is development of the well development and testing report.

#### **Scope**

The EPS contractor will conduct activities necessary for planning, performing hydraulic testing and groundwater and geochemical sampling, and analysis and reporting. This includes providing hydrologic expertise in planning the test; providing geophysical instruments in order to conduct stressed flow logging, chemtool logging within the well, analysis of the data for the purpose of discrete zone geochemical sampling; detailed depth dependent hydraulic conductivity analysis; flowing fracture analysis; and ambient flow logging to support the hydraulic conductivity analysis.

The EPS contractor will conduct activities necessary for sampling UGTA wells for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The EPS contractor will conduct activities necessary for WDT analyses including review and evaluation of the well test responses and geochemical data. WDT analyses of this well provides for model interpretations and conceptual uncertainty.

The M&O contractor will conduct activities necessary to support well development, testing and sampling activities. This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners (if required) to ensure they are able to contain the groundwater produced during the hydraulic testing and sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

#### **Assumption**

- A. Well to be tested and developed is assumed not to be radiologically contaminated and site operations will not need to be conducted in accordance with 29 CFR 1910.120.
- B. One single zone and two multiple zone wells will be tested and sampled.
- C. Sampling activities are in compliance with the UGTA FMP, Proposed UGTA Sampling Plan, CAU Closure Report and the UGTA QAP.

- D. The EPS contractor may sample, an estimated one to three, other wells within the CAU if necessary to further reduce uncertainty in the location of the contaminant boundary.
- E. The EPS contractor will be the lead on this scope.
- F. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.

### **1.4.1.2.03.04.01.04 ANNUAL SAMPLING**

#### **Scope**

The EPS contractor will conduct activities necessary for monitoring well sampling as described in the Proposed UGTA Sampling Plan and provide for analytical services including laboratory analysis and data validation. UGTA wells will be sampled for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

The samples will be collected in a single field campaign and a report will be prepared describing the field activities and presenting the analytical results. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support sampling event (s). This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners to ensure they are able to contain the groundwater produced during the sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

#### **Assumptions**

- A. Monitoring wells will be sampled in accordance with the Proposed UGTA Sampling Plan.
- B. Sample collection is done by the EPS contractor with support from the M&O contractor.
- C. Samples are analyzed by a NDEP approved and DOECAP audited laboratory as per the UGTA QAP.
- D. Near-field samples are analyzed by Lawrence Livermore National Laboratory.
- E. Sampling activities are in compliance with the UGTA FMP and the UGTA QAP.
- F. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.

### **1.4.1.2.03.04.01.05 MULTIPLE WELL PUMP TEST**

This task includes planning, implementation, analysis, and reporting of one multi-well pump test. The test is assumed to include up to three wells in an arrangement of injection/production, multiple tracers, hydraulic monitoring, and water quality sampling under "near field" operational requirements i.e. 29 CFR 1910.120.

#### **Scope**

The EPS contractor will conduct activities necessary for planning, testing and reporting of one multiple well pump test including criteria, specifications and identification of methodologies development, tracer injection, monitoring pumping and drawdown, sampling for tracers and water quality, sample analysis, and reporting. Samples are submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. Samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support pump test activities. This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners (if required) to ensure they are able to contain the groundwater produced during the hydraulic testing and sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

#### **Assumptions**

- A. One multiple well pump test is currently planned in the baseline.
- B. The planning, testing and reporting will be conducted by the EPS contractor with operational support by the M&O contractor.
- C. Pumping, sampling and analysis activities are in compliance with the UGTA FMP and the UGTA QAP.
- D. The wells required to run the test will be constructed, developed and tested, and otherwise equipped with required down-hole equipment under a different task.
- E. The tracer test will also produce hydraulic response information; however this information will be secondary in priority to the transport parameters.
- F. The EPS contractor will conduct predictive modeling of tracer transport using existing software packages and no application development will be required to model flow and transport behavior.

#### **1.4.1.2.03.04.04 MODEL EVALUATION DATA ANALYSIS**

Field data collected during the model evaluation phase will need to be analyzed, scaled, and compared to model conceptualizations and simulation results in order to build confidence in the site conceptual model and transport model forecasts. Sufficient confidence must be developed in the forecasts so that the NDEP will accept use of the model in guiding the development of the long-term monitoring network and institutional controls for site closure. This scope includes compilation, analysis, and scaling of field observations; the comparison of field data to model conceptualization, parameterization, and simulations; repeating some simulations to gauge the impact of field observations on contaminant boundary calculations or weighting of previously run simulations to assess the potential impact of field observations on contaminant boundary calculations.

##### **Scope**

The EPS contractor will conduct activities necessary for evaluating and interpreting new data; revising the contaminant transport models with the new data if necessary and identifying any significant changes in the contaminant-boundary forecasts from those in the existing models.

##### **Assumptions**

- A. One round of model evaluation data collection and analysis will be sufficient for acceptance of the model for use in guiding the development of the long-term monitoring network and institutional controls for site closure.
- B. Data collected during model evaluation will primarily fall within the expected range of parametric and conceptual uncertainty. It is expected that some data will not. Evaluation of that data may require some adjustment to the model parameterizations and conceptual models and rerunning of the models or, alternatively, appropriate weighting of previously run simulations that do not honor the field observations.
- C. It is assumed that model reruns or simulation weighting will have no impact on the negotiated contaminant and regulatory boundaries.

#### **1.4.1.2.06 – CAU 99 RAINIER MESA/SHOSHONE MOUNTAIN**

Work scope activities for the Rainier Mesa/Shoshone Mountain CAU are driven by the implementation of the FFACO Technical Strategy and subsequent NDEP approved modeling strategy and FFACO decision process. CAU-specific modeling is required to determine particle pathways and design the corrective action monitoring well system. These activities provide the complete basis for external peer review and closure report that leads to a notice of completion from NDEP.

##### **1.4.1.2.06.02 CORRECTIVE ACTION DECISION DOCUMENT (CADD)**

The scope of the CADD includes data acquisition, data analysis, and determination of the regulatory boundary. Hydrologic and geologic data are acquired that provide input into the computer modeling to provide model forecasts for evaluating CAIP model results.

##### **1.4.1.2.06.02.02. CONTAMINANT BOUNDARY PHASE I**

For the Rainier Mesa/Shoshone Mountain CAU, an alternative FFACO decision process outlines requirements necessary to achieve closure. Contaminant boundaries are not required under this process. Provide for an external peer review team to review and assess the final report. Assess human risk to provide additional insights for NFO's understanding of the implications of the contaminated groundwater from the CAU.

#### **1.4.1.2.06.02.02.05 PEER REVIEW**

##### **Scope**

The EPS contractor will conduct activities necessary for procurement of qualified peer review panel to review the final flow and transport model document for Rainier Mesa/Shoshone Mountain CAU, provide comments and prepare a report. This includes identifying candidates for the review, a selection process to ensure specific scientific disciplines are represented and no conflicts of interest compete with the independence of the review. Candidates can be chosen by the contractors, staff or regulators as needed or defined.

##### **Assumptions**

- A. Six experts from academia, industry, and government institutions are required to review the model document.
- B. Presentation of model data and outputs will be presented. An External Peer Review (EPR) site tour of the CAU is required.
- C. Regulatory representation will be discussed with the State of Nevada Regulators.
- D. Once modeling information is reviewed and analyzed, meetings will be held with the EPR to answer additional questions as needed.
- E. An EPR out-brief will be required, followed by an official report documenting the review outcomes, findings, suggestions and conclusions.
- F. The EPS contractor may need to coordinate with other agencies which supported deliverables needed to meet requirements for this scope.
- G. DRI will support this scope as the Rainier Mesa/Shoshone Mountain CAU Lead.

#### **1.4.1.2.06.04 CLOSURE REPORT**

The Closure Report includes negotiation of regulatory boundaries, establishing long-term monitoring requirements and preparation and approval of the closure document. The long-term monitoring plan (LTMP) will be an appendix in the closure document. The closure report shall be prepared per the FFACO agreement. The document will be reviewed through comment resolution by NDEP and NFO. Annual sampling will be conducted during this phase of work per the Proposed UGTA Sampling Plan.

##### **1.4.1.2.06.04.01 MODEL EVALUATION DATA ACQUISITION**

Annual sampling and analysis will be conducted as identified in the Proposed UGTA Sampling Plan. Note: scope associated with Model Evaluation Data Acquisition (Drilling and Well Development and Testing) has been deemed not necessary for this CAU based on negotiations between NFO and NDEP.

#### **1.4.1.2.06.04.01.04 ANNUAL SAMPLING**

##### **Scope**

The EPS contractor will conduct activities necessary for monitoring well sampling as described in the Proposed UGTA Sampling Plan and provide for analytical services including laboratory analysis and data validation. UGTA wells will be sampled for a standard suite of analytes and submitted to an NDEP approved and DOECAP audited laboratory for chemical and radiological analysis. A select set of radio-isotopes will be submitted to and analyzed by Lawrence Livermore National Laboratory. All samples shall be analyzed in accordance with EPA approved analytical methods, nationally recognized analytical guidance standards, and/or laboratory standard operating procedures approved by the EPS contractor and DOECAP. The analysis shall meet the technical requirements of the Proposed UGTA Sampling Plan and the UGTA QAP. Data verification and validation shall be performed for all the analytical results submitted by off-site laboratories as a result of these analyses.

The samples will be collected in a single field campaign and a report will be prepared describing the field activities and presenting the analytical results. Databases are updated and results of the sample analysis will be reviewed by guidance committee to serve as scientific oversight.

The M&O contractor will conduct activities necessary to support sampling event (s). This will consist of mobilizing and de-mobilizing appropriate equipment; installation of down-hole equipment; providing surface power connection and variable speed drive for submersible pumps; inspecting sumps and sump liners to ensure they are able to contain the groundwater produced during the sampling; and ensuring the systems are in good working condition and the pumps are providing flow rates required.

##### **Assumptions**

- A. Monitoring wells will be sampled in accordance with the Proposed UGTA Sampling Plan.
- B. Sample collection is done by the EPS contractor with support from the M&O contractor.
- C. Samples are analyzed by a NDEP approved and DOECAP audited laboratory as per the UGTA QAP.
- D. Near-field samples are analyzed by Lawrence Livermore National Laboratory.
- E. Sampling activities are in compliance with the UGTA FMP and the UGTA QAP.
- F. Well locations will be under the M&O contractor's primary REOP. A secondary REOP will be required by the EPS contractor.

#### **1.4.1.2.06.04.05 CLOSURE REPORT DOCUMENT**

The Closure Report document is an FFACO document that contains the long-term monitoring, modeling, and institutional control strategy for this CAU. The goal of the Closure Report is to establish a mutually agreed to plan by NFO and NDEP for implementing the long-term monitoring phase and for handling uncertainty during that phase of the project.

The Closure Report includes a summary of the knowledge of contaminant transport, specific strategy for how long-term monitoring, modeling, and institutional controls will be implemented, specifics related to the long-term monitoring plan, analyses and physical processes to be monitored, frequency of monitoring, location and design of wells to be monitored, testing of wells once constructed, action levels, appropriate responses to action levels being exceeded, maintenance and inspection of the monitoring network, requirements for comparison of monitoring results to flow and transport model simulations, reporting requirements, data management, plans for long-term model maintenance and updating, alternative strategies if contaminant boundary and or regulatory boundaries are exceeded, and public relations.

#### **Scope**

The EPS contractor will conduct activities necessary to prepare the Draft Closure Report Document with support from other agencies as needed for specific information needs or specialized technical input. As part of this scope, the EPS contractor will support the completion of the boundary negotiation with NDEP, and support the design and establishment of the long-term monitoring requirements.

The EPS contractor will conduct activities necessary to perform a PER. The PER is an internal review of the draft Closure Report. The product of this scope is the draft final Rev. 0 Closure Report and a formal review comment/response document.

The EPS contractor will support an NFO review of the draft final Rev. 0 Closure Report. The product of this scope is the Rev. 0 Closure Report and a formal review comment/response document.

The EPS contractor will support an NDEP review of the final Rev. 0 Closure Report. The product of this scope is the final Rev. 1 Closure Report and a formal review comment/response document.

#### **Assumptions**

- A. The closure report shall be prepared per the FFACO agreement.
- B. The document will be reviewed through comment resolution by NDEP and NFO.
- C. NDEP will review the draft final version of the document and deliver comments to NFO within 60-calendar days after receiving the document.
- D. DRI will conduct activities necessary for long-term monitoring design and requirements and provide document support and reviews as needed through October 31, 2016.
- E. DRI will support this scope through October 31, 2016 as the Rainier Mesa/Shoshone Mountain CAU Lead.
- F. The EPS contractor may need to coordinate with other agencies which supported deliverables needed to meet requirements for this scope.

### **1.4.1.2.90 PROJECT SUPPORT**

The scope of project support encompasses all activities associated with project management and maintenance of site facilities through closure of the final CAU.

#### **Scope**

The EPS contractor will conduct activities necessary to provide project management, training, and data management needs to support the UGTA activity including performance measurement; scope, schedules, and budgets; integration with other agencies as needed; preparation and maintenance of documents, assessments and surveillances; SME to act as UGTA science advisor; maintenance of the databases; and hardware/software procurement.

The M&O contractor will conduct activities necessary to provide project management support associated with the M&O's UGTA drilling campaigns and other field support activities. In addition, the contractor will provide for the maintenance of UGTA activity facility needs.

#### **Assumptions**

- A. The EPS contractor will maintain and update as needed, procedures including, but not limited to the UGTA QAP, FMP, and WMP.
- B. The EPS contractor will maintain the UGTA SharePoint site.
- C. The EPS contractor will provide for the UGTA science advisor with expertise in geochemistry, hydrology, geology, radiochemistry, source term, and groundwater modeling.
- D. M&O contractor support for building/facilities costs and maintenance will continue.
- E. Assumes the M&O contractor will continue to have cost associated with Field Coordination and Planning.
- F. The EPS contractor will load documents into the EM Information System (EMIS).
- G. The USGS will provide technical support to the Core Library. The Core Library will continue to be an available resource to the UGTA activity.

## **1.4.2 PROGRAM INTEGRATION**

Program Integration provides crosscutting support for the U.S. Department of Energy (DOE), Nevada Field Office (NFO) Environmental Management (EM) mission.

### **1.4.2.1 PROGRAM INTEGRATION SUPPORT**

EM mission support includes program management; progress tracking and control; Quality Assurance (QA); Integrated Safety Management (ISM) implementation; Health and Safety (H&S) services; technical and regulatory support; public involvement; management initiatives; baseline updates; performance measurement, tracking, and reporting; DOE/EM and NNSA Headquarters (HQ) and NFO data calls; and stewardship initiatives.

#### **Assumptions**

- A. The majority of programmatic support initiatives that benefit all activities within the NFO EM Program will continue to be managed under Program Integration.
- B. The EPS and M&O contracts will utilize earned value management systems.

### **1.4.2.1.01 ADMINISTRATIVE SUPPORT**

Administrative support provides management, integration, and oversight of administrative activities. Activities include infrastructure, communications, facilities, vehicles, security management, Nevada Site Specific Advisory Board (NSSAB) miscellaneous expenses/travel, procurement, contract administration, document production, records management, information systems, lessons learned, and strategic planning. The drivers for these activities are the contracts, applicable DOE orders, directives, policies, and project support requirements.

#### **Scope**

The EPS contractor will conduct activities necessary to provide management, integration, and oversight of administrative activities required for the successful execution of the contract. This includes security, requirements management, NSSAB support, facilities, procurement, contract administration, document production, records management, information systems, lessons learned and strategic planning.

The M&O contractor will conduct activities necessary to provide management, integration, and facility support for the Public Reading Room and EM Program Integration sponsored facilities at the NNS, and infrastructure support to the EPS contractor for equipment calibration, vehicles (maintenance and fuel), phone services, radio equipment, pagers, and medical services.

#### **Assumption**

- A. Management principles in NSO O 413.XC Project Management Principles and Practices and Good Practice Guides as applicable will be used to support the EM baseline.
- B. Software and hardware warranties and maintenance renewals will be updated to ensure continuity of work.
- C. The security program will continue as defined by both DOE and NNSA as a requirement to have a Q-cleared Security Administrator, Integrated Safeguards and Security Management, and Information System Security Officer for each entity.
- D. The contractor system/network must follow the approved certification and accreditation process in order to keep the System Security Plan current.

## **1.4.2.1.02 PROJECT PLANNING AND CONTROL**

### **Scope**

The EPS and M&O contractors will utilize a Project Control System that is compliant with NNSA/NSO Order 413.XC, "Project Management Principles and Practices" where appropriate. The contractor's Project Control System will be Earned Value Management compliant by providing the structure for ensuring applicable conformance to the 32 guidelines found in ANSI/EIA748-A.

The EPS and M&O contractors will develop annual work authorization/task plans, maintain contractor's baseline, and report performance measures within NFO and DOE databases that integrate the NFO life-cycle baseline. These databases include, but are not limited to: EM Information System (EMIS), Primavera P6 Professional scheduling software, STARS cost reporting system, and the FFACO database.

### **Assumption**

- A. The EPS and M&O contractors' baselines will be configuration controlled and maintained within the EMIS and the NFO integrated schedule.
- B. The EPS and M&O contractors will remain compliant with NNSA/NSO Order 413.XC and the 32 guidelines found in ANSI/EIA748-A.
- C. The EPS and M&O contractors will support NFO with NFO life-cycle baseline updates as needed.
- D. The Primavera P6 Professional R8.3 or later version (P6 EPPM) is required for the EPS contractor to maintain the NFO integrated schedule.
- E. The renewal of the EPS contractor's maintenance agreements will be required to maintain NFO's databases associated with Primavera P6 Professional and Primavera Pertmaster Risk Expert.

### **1.4.2.1.03 HEALTH & SAFETY SUPPORT**

#### **Scope**

The EPS contractor will conduct activities necessary to ensure that processes and appropriate resources are in place to implement DOE contract requirements in the areas of worker safety and health, industrial hygiene, hazard communication, and emergency management. These disciplines ensure that federal and state laws and regulations; DOE orders, standards, and recommendations; and industry standards and best practices are incorporated into the work scope.

#### **Assumption**

- A. The EPS contractor will ensure implementation, continued development, and maintenance of the following elements: Programmatic Health and Safety Plan, Hazards Identification and Analysis, Chronic Beryllium Disease Prevention, Respiratory Protection, Industrial Hygiene, Hazard Communication, Occupational Medical Monitoring, Emergency Management, Accident Investigation and Reporting, and OSHA Compliance.

#### **1.4.2.1.04 QUALITY ASSURANCE SUPPORT**

##### **Scope**

The EPS contractor will conduct activities necessary to ensure that processes and appropriate resources are in place to implement DOE contract requirements in the areas of assessments, suspect/counterfeit items, software quality, vendors/suppliers quality, and training. These disciplines ensure that federal and state laws and regulations; DOE orders, standards, and recommendations; and industry standards and best practices are incorporated into the work scope.

##### **Assumption**

- A. The EPS contractor will ensure implementation, continued development, and maintenance of the following elements: Independent and Management Assessments, Software Quality, Programmatic Quality Assurance Plan, Suspect/Counterfeit Items Identification and Tracking, Evaluation of Vendors/Suppliers, Nonconforming Items/Services, Personnel Qualification and Training Program, Operating Experience/Lessons Learned Program, Trending and Tracking Program, and Event/Issue Management.

## **1.4.2.1.05 TECHNICAL AND REGULATORY SUPPORT**

### **Scope**

The EPS contractor will conduct activities necessary to ensure that processes and appropriate resources are in place to implement DOE contract requirements in the areas of environmental compliance, waste operations, radiological support, analytical sample management, analytical data validation, DOE regulatory compliance, and integrated safety management. These disciplines ensure that federal and state laws and regulations; DOE orders, standards, and recommendations; and industry standards and best practices are incorporated into the work scope.

Environmental compliance includes overseeing the implementation, continued development, and maintenance of the following elements: Waste Certification Program Plan, Pollution Prevention Program, Compliance Oversight of Waste Operations, NEPA, Environmental Baseline Surveys, and Hazardous Materials Transportation.

Waste operations include overseeing the implementation, continued development, and maintenance of the following elements: Radioactive Waste Management, Hazardous Waste Management, Sanitary Waste Management, and Biological Waste Management.

Radiological support includes overseeing the implementation, continued development, and maintenance of the following elements: Radiological Protection Program, ALARA Program, and NNS Radiological Control Manager's Council.

Analytical services includes overseeing the implementation, continued development, and maintenance of the following elements: providing analytical data requests for NFO; coordinating laboratory procurements, and providing technical specifications; providing analytical program support and maintaining program requirements; and participating in the DOECAP.

The DOE regulatory compliance program will ensure the implementation, continued development, and maintenance of the following elements: Regulatory Compliance Program; Issue Review, Screening, and Tracking Program; and Causal Analysis and Investigations.

Integrated Safety Management (ISM) Program will ensure the implementation, continued development, and maintenance of the following elements: supporting NFO ISM Council, establishing annual ISM metrics, performing ISM Effectiveness Evaluation, and ISM Program Planning.

## **1.4.2.1.07 ENVIRONMENTAL MANAGEMENT INTEGRATION**

### **Scope**

The EPS contractor will conduct activities necessary to provide direct support for the integration of NNSA/NFO initiatives involving the EMIS/FFACO support, public involvement, classification, strategic planning, emergency preparedness/response support, and response to DOE and NNSA Headquarters (HQ), NNSA/NFO, Department of Defense (DoD), State of Nevada, and other stakeholder information needs.

EMIS and FFACO support includes activities that provide for the day-to-day operations and maintenance of the EMIS, and FFACO databases and user interfaces/web applications. These tasks require interface between personnel with program specific knowledge and computer specialists to ensure the comprehensive integrity of the data sources and capabilities existing within the database.

Public involvement support includes communication tools to disseminate information for all NFO EM outreach activities to include Soils, UGTA, Industrial Sites, LLW, and Environmental Protection. Products developed and support provided will focus on programmatic efforts for reporting to the NSSAB; general public; media; intergovernmental agencies; national, state, local, and tribal government entities; various oversight and public interest groups; NNSA and DOE Headquarters; regulatory agencies; and the Nevada business community. Participation in and on-call support for NFO Emergency Response Organization (via the Emergency Operations Center and Joint Information Center) activation and emergency preparedness activities will be provided along with crisis communications support as needed.

Classification support includes integration between the NNSA/NFO Safeguards and Security and NFO EM; classification review and public release approval of NNSA/NFO EM documents and other media (with an emphasis on those generated by the EPS contractor) as authorized by the Classification Officer; coordination of safeguards and security related reviews, to ensure adequate documentation related to DOE/NNSA safeguards and security topics are filed and maintained in an orderly fashion; and to provide direct support to the NNSA/NFO Classification Officer.

### **Assumption**

- A. EMIS will continue to be the EM/NFO management's integrated information system.
- B. The renewal of maintenance agreements will be required to maintain NFO's databases associated with EMIS/FFACO, Public Involvement Request System (PIRSy), and Public Involvement Resource Database (PIRDy).

### **1.4.3 WASTE MANAGEMENT**

Waste Management supports the closure of DOE sites across the United States by maintaining the capability to dispose LLW, MLLW and classified waste from approved waste generators. The NNSS is designated as a regional disposal site for LLW and a secondary disposal site for MLLW generated as the result of cleanup activities across the DOE Complex. The scope involves management support and operational development and/or maintenance activities for both storage and disposal facility operations. Specifically, this includes technical and regulatory evaluations of currently approved and new LLW/MLLW generators through the Radioactive Waste Acceptance Program; maintenance of an on-site waste certification program; documentation reviews and development; safety basis reviews; internal and external inspections; and audits/assessments.

#### **1.4.3.3 LOW-LEVEL WASTE**

Maintain a Nevada National Security Site Waste Acceptance Criteria (NNSS WAC) compliant waste certification program for waste generated at the NNSS and NTTR. Provide programmatic support to onsite waste generators. Provide generator coordination and task supervision. Perform inspections of LLW in storage at Area 5. Radioactive Waste Acceptance Program (RWAP) performs facility evaluations, MLLW treatment verifications, and reviews waste profiles and other certification documents prepared by generators that are required by the NNSSWAC. Perform program improvement activities and NNSS WAC interpretation for generators. Provide technical expertise to the Waste Acceptance Review Panel (WARP).

Maintain operational requirements needed to dispose approximately 1.2 million cubic feet of LLW and MLLW per year. Revise the Performance Assessment/Composite Analysis PA/CA Maintenance Plan. Perform Area 3 and Area 5 RWMS PA/CA maintenance activities. Continue development of the PA/CA models and support the RWAP program. Perform Area 3 and Area 5 environmental monitoring using various monitoring strategies, data collection methods, and maintaining equipment. Perform closure planning characterization, develop a conceptual closure cover design and complete Area 3 and Area 5 characterization reports.

##### **1.4.3.3.05 WASTE ACCEPTANCE PROGRAM**

Waste Acceptance Program ensures that generators shipping waste to the NNSS conduct characterization, packing and shipping in accordance with the NNSS WAC.

#### **1.4.3.3.05.01 RADIOACTIVE WASTE ACCEPTANCE PROGRAM (RWAP)**

The RWAP facilitates the management of radioactive waste in a safe and compliant manner by ensuring the compliance of generator sites with the NNSS WAC and maintaining the protection of the public, workers and the environment. Approval to ship waste to the NNSS is granted only after the waste generator demonstrates compliance with the NNSS WAC.

##### **Scope**

The EPS contractor will conduct activities necessary to coordinate waste acceptance activities between the generators, M&O contractor and NNSA/NFO. This may include coordinating LLW monthly conference calls with generators and coordinating with new generators.

The EPS contractor will conduct activities necessary to maintain the NNSS WAC and RWAP Procedures. This includes ensuring the NNSS WAC is aligned with the Area 3/5 Documented Safety Analysis, Safety Evaluation Report, the NNSS RCRA Part B Permit, and the Area 5 Disposal Authorization Statement.

The EPS contractor will conduct activities necessary to perform and document the results of an estimated 20 Facility Evaluations (FEs) per year of LLW and MLLW generator programs to support compliance with the NNSS WAC requirements. FEs include audits and surveillances which are conducted to evaluate waste generator programs and compliance with the NNSS WAC. FEs support the program by providing for an independent oversight tool to ensure that waste being shipped to the NNSS is in compliance with the NNSS WAC. Upon discovery of non-compliant conditions, the EPS contractor will issue corrective action requests and perform subsequent corrective action verifications and/or impromptu surveillances. Corrective action verification activities shall include: tracking of open issues; review root cause analysis corrective action plans, and supporting documents. In addition, The EPS contractor will conduct activities necessary to perform and document the results of an estimated 10 MLLW treatment verifications to ensure compliance with the RCRA Part B Permit. The verification is performed at the generators facility.

The EPS contractor will conduct activities necessary to provide technical support to the NNSA/NFO RWAP by administering the activities of the WARP. The WARP is chartered as a technical resource panel of selected subject matter experts (SMEs) who are primarily responsible for reviewing generator waste profiles and supporting documents. WARP members include federal, state and contractor employees. The WARP is designated to review and recommend approval of waste profiles; initiate development of position papers; review generator documents; and provide recommendations on related technical issues to NNSA/NFO. The WARP is also a technical resource to the RWAP that provides guidance to NNSA/NFO and the waste generator complex on waste disposal issues: provides a technical resource to NNSA/NFO and the waste generator complex for review of Technical Basis Documents/Position Papers for acceptability and recommendations concerning waste acceptance with regard to compliant waste disposal. Waste profile/document support includes: technical review of profiles submitted by generators; track LLW and MLLW profiles through the approval process; research, review, and resolve issues resulting from the profile review; provide recommendations for the verification of MLLW profiles; and draft approval letters, memorandum for records, and enclosures for NFO signature.

The EPS contractor will conduct activities necessary to perform an informal, non-documented gap analysis (assistance) for compliance with the NNSS WAC at the generators request. This is generally completed via phone and or electronic communication, however, it is estimated that one time per year, assistance will require travel to a generator's site. Note: the EPS contractor will not provide physical support/assistance to the generators by packing or shipping the generators waste.

### **Assumptions**

- A. FE's are based on NNSS WAC requirements regardless of waste volumes.
- B. Approximately 20 FEs and 10 MLLW verifications will be conducted per year.
- C. The EPS contractor will coordinate the NNSS RWAP activities with the generators.
- D. The EPS contractor will review and update the NNSS WAC.
- E. The EPS contractor will develop and maintain the RWAP procedures.
- F. The EPS contractor will track Corrective Action Requests (CARs) issued under the NNSS WAC and review root cause analysis, corrective action plans and supporting documents supplied by generators in response to CARs through closure.
- G. The EPS contractor will coordinate and lead weekly meetings of the WARP.
- H. The EPS contractor will coordinate and participate in the annual waste generators conference.
- I. The EPS contractor will maintain waste profile records in the EM Integration System (EMIS)

## **1.4.9 WORK FOR OTHERS**

Work for others projects consist of Defense Program Industrial Sites, and Yucca Mountain Permits and Reclamation Project. The industrial-type sites mainly supported facilities and structures that were left after conducting aboveground and underground nuclear tests and surface nuclear engine and reactor experiments. The industrial-type sites restoration addresses various historical infrastructure remediation efforts (e.g., septic systems, mud pits, storage tanks, disposal sites), and conventional weapons cleanup including unexploded ordnance. The industrial-type sites cleanup goal is to eliminate access to contamination by removal and clean closure or closure-in-place, capping, and establishing appropriate use restrictions.

### **1.4.9.3 INDUSTRIAL SITES DEFENSE PROGRAM (DP)**

#### **1.4.9.3.98 INDUSTRIAL SITES DP SURVEILLANCE AND MAINTENANCE**

##### **Scope**

###### Post Closure Monitoring Non-RCRA Sites

The EPS contractor will conduct activities necessary for annual (or as required by the approved Closure Report) site inspections of non-RCRA Corrective Action Sites (CASs) at the NNSS. Sites are identified in the FFACO Appendix IV Closed Corrective Action Sites. The inspection checklists will be completed during the inspections. Inspections will include a walk-down of the sites to identify any damaged or missing signs, damaged fencing or gates, any evidence of settling or cracking of covers, and/or evidence of intrusion into the use restricted areas, as applicable. Photographs will be taken to document any abnormal site conditions that may require a follow-up action. Documentation that records the abnormal condition is submitted to the M&O contractor for corrective action.

The EPS contractor will conduct activities necessary to submit an annual post-closure monitoring letter report for non-RCRA sites at the NNSS. The letter reports will be prepared following the FFACO approved template and include inspection results, maintenance activities, copies of inspection checklists, and photographs, as appropriate.

The M&O contractor will conduct activities necessary for maintenance as required due to follow-up actions identified by the EPS contractor. This may include repairs to damaged fencing and signs, CAP repairs and perform minor brush removal.

###### E-Tunnel Monitoring

The EPS contractor will conduct activities necessary for maintaining compliance with Permit NEV 96021, E-Tunnel Waste Water Disposal System. The permit requires the water discharging from E-Tunnel in Area 12 be monitored monthly and sampled annually. The monthly monitoring includes flow rate, specific conductance, and pH, along with inspecting the perimeter and condition of the E-Tunnel Disposal System, which includes the piping and pond areas. The annual sampling includes tritium along with other parameters such as lead. A quarterly report is submitted to NFO, along with an annual summary report. Every other year, the well at ER-12-1 (also included in NEV 96021) is sampled.

##### **Assumptions**

- A. Non-RCRA sites will be inspected every five years after they have been inspected every year for the first five years.
- B. One report for non-RCRA sites inspected will be submitted to NFO annually.
- C. E-Tunnel monitoring report is submitted to NFO quarterly.
- D. E-Tunnel summary report is submitted to NFO yearly.
- E. Higher elevation sites will not be accessible for inspection during winter months.
- F. Project management cost associated with the Industrial Sites DP Surveillance and Maintenance is covered under the Soils Project Support.

## 1.4.9.Y YUCCA MOUNTAIN PERMITS AND RECLAMATION

### Scope

The EPS contractor will conduct activities necessary to support on-going permit/regulation/directive maintenance and reclamation planning including site inspections in accordance with permit requirements, borehole surveillance, and preparation of permit renewal applications and pay for environmental permit renewal fees as authorized by NFO.

Current Permits Include:

1. Yucca Mountain Project Air Quality Operating Permit AP9199-0573.02 (FIN A0023) (Nevada Administrative Code 445B) Annual fee associated with this permit is approximately \$500.
2. Yucca Mountain Project Underground Injection Control Permit UNEV89031 (Nevada Administrative Code 445A) Annual fee associated with this permit is approximately \$1,500.
3. Storm Water General Permit NVR100000 Site ID: CSW-2839 (Nevada Administrative Code 445A) Annual fee associated with this permit is approximately \$200.
4. General Permit to Operate and Discharge: Onsite Sewage Disposal System (Septic System) GNEVOSDS09 (ID 40037) (Nevada Administrative Code 445A) Annual fee associated with this permit is approximately \$300.
5. Joint Stipulation Agreement between DOE and the State of Nevada and Water Appropriations Permit 57375 (VH-1)
6. Endangered Species Act and Biological Opinion 1-5-96-F-307R and 1-5-00-F-518 Endangered Species Act of 1973
7. Annual Department of the Interior Federal Archaeology Questionnaire Request from DOE/HQ (EH-41): Report to Congress.

Land Agreements Include:

1. Federal Land Policy & Management Act of 1976
  - a. Renewal of Right-of –Way N-47748
  - b. Renewal of Right-of –Way N-48602
  - c. Renewal of Right-of –Way Reservation CACA-43679
  - d. Renewal of Right-of –Way Reservation N-60075
  - e. Renewal of Right-of –Way Reservation N-77586
  - f. Annual Use Report (Due October 15<sup>th</sup>)for Communication Use Lease N-82646
2. Yucca Mountain Project Free Use Permit
  - a. Renewal of Permits N-84150 and N-82254 (Materials Act of 1947)

Borehole Plugging Waiver Includes:

1. Nevada Administrative Code 534.4371 (1) Waiver R-1387B Annual fee associated with this waiver is approximately \$100. Under Nevada Administrative Code 534.4371(1), a borehole must be plugged within 60 days after drilled. By issuing this waiver, the State of Nevada, Division of Water Resources, waives this requirement for plugging of 14 boreholes located in Midway Valley.

### Assumption

- A. Personnel will be provided access to the site without the need for additional training or additional security considerations other than those necessary on the NNSS.
- B. No work will be performed within the tunnel complex or if this work is required additional training will be required to access underground facilities.

C. Permits will be submitted to NFO for transmittal to the regulating agency.