



# **QUALITY ASSURANCE PLAN**

**for**

## **WEST VALLEY DEMONSTRATION PROJECT ENVIRONMENTAL CHARACTERIZATION SERVICES WEST VALLEY, NEW YORK**

**SEC-QAP  
Rev. 0**

**March 2012**

***Prepared for:***

**U.S. Department of Energy  
West Valley Demonstration Project (WVDP)  
Environmental Characterization Services (ECS)  
West Valley, New York**

***Prepared by:***

**Safety and Ecology Corporation (SEC)  
2800 Solway Road  
Knoxville, TN 37931**



**QUALITY ASSURANCE PLAN**

**for**

**WEST VALLEY DEMONSTRATION PROJECT  
ENVIRONMENTAL CHARACTERIZATION  
SERVICES  
WEST VALLEY, NEW YORK**

**SEC-QAP  
Rev. 0**

**March 2012**

***Prepared for:***

**U.S. Department of Energy  
West Valley Demonstration Project (WVDP)  
Environmental Characterization Services (ECS)  
West Valley, New York**

***Prepared by:***

**Safety and Ecology Corporation (SEC)  
2800 Solway Road  
Knoxville, TN 37931**



**Quality Assurance Plan (QAP)**  
**U.S. Department of Energy**  
**West Valley Demonstration Project**  
**Environmental Characterization Services**  
**West Valley, New York**  
**Contract No.: DE-EM0001242**

**QAP APPROVALS**

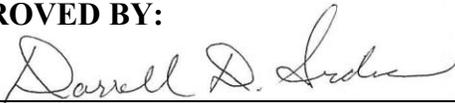
By their specific signature, the undersigned certify that they prepared, reviewed, or provided comments on this Quality Assurance Plan for the DOE West Valley Demonstration Project, Environmental Characterization Services, West Valley, New York.

**PREPARED BY:**

  
\_\_\_\_\_  
Quality Engineer  
Ken Campbell

\_\_\_\_\_  
March 6, 2012  
Date

**APPROVED BY:**

  
\_\_\_\_\_  
Corporate Quality Assurance Manager  
Darrell Srdoc

\_\_\_\_\_  
March 6, 2012  
Date

  
\_\_\_\_\_  
Corporate ESH&Q Manager  
Raymond A. Peters, PE, CSP, CIH

\_\_\_\_\_  
March 5, 2012  
Date

  
\_\_\_\_\_  
Program Manager  
Andrew Lombardo, CHP

\_\_\_\_\_  
March 5, 2012  
Date

  
\_\_\_\_\_  
Project Manager  
Steven Green, CHP, PMP

\_\_\_\_\_  
March 5, 2012  
Date

\_\_\_\_\_  
TBD by PM  
Effective Date



**TABLE OF CONTENTS**

LIST OF APPENDICES ..... vi  
 LIST OF FIGURES ..... vii  
 ABBREVIATIONS, ACRONYMS, AND SYMBOLS ..... ix

1.0 INTRODUCTION ..... 1-1

2.0 QUALITY POLICY ..... 2-1

3.0 QUALITY ASSURANCE SYSTEM ..... 3-1

    3.1 Organization ..... 3-1

        3.1.1 Project Manager (PM) ..... 3-1

        3.1.2 Task Manager <sup>TM</sup> ..... 3-2

        3.1.3 Technical Services Manager (TSM) ..... 3-2

        3.1.4 Environmental Safety and Health (ES&H) Manager ..... 3-2

        3.1.5 Radiological Controls (RADCON) Manager ..... 3-3

        3.1.6 Business Manager ..... 3-3

        3.1.7 Quality Assurance (QA) Manager ..... 3-4

        3.1.8 Workers ..... 3-4

    3.2 Quality Assurance Plan Structure ..... 3-4

        3.2.1 Integration of Safety Management ..... 3-4

        3.2.2 Graded Approach ..... 3-6

    3.3 Training and Qualifications ..... 3-6

    3.4 Design Control ..... 3-7

    3.5 Procurement Control ..... 3-7

    3.6 Instructions, Procedures, and Drawings ..... 3-7

    3.7 Document Control ..... 3-8

    3.8 Control of Purchased Material, Equipment, and Services ..... 3-8

    3.9 Identification and Control of Items ..... 3-9

    3.10 Control of Special Processes ..... 3-9

    3.11 Inspection ..... 3-9

    3.12 Test Control ..... 3-10

    3.13 Control of Measuring and Test Equipment ..... 3-10

    3.14 Handling, Storage, and Shipping ..... 3-10

    3.15 Inspection, Test, and Operating Status ..... 3-10

    3.16 Nonconforming Materials, Parts, or Components ..... 3-11

    3.17 Corrective Action ..... 3-11

    3.18 Quality Assurance Records ..... 3-11

    3.19 Assessments ..... 3-11

        3.19.1 Independent Assessment ..... 3-11

        3.19.2 Management Assessment ..... 3-12

        3.19.3 Quality Improvement ..... 3-12

    3.20 Suspect/Counterfeit Item Prevention ..... 3-13

    3.21 Safety Software Quality Requirements ..... 3-13

**LIST OF APPENDICES**

APPENDIX A: Quality Implementation Plan

**LIST OF FIGURES**

Figure 3-1. SEC Lines of Authority, Responsibility, and Communication..... 3-1  
Figure 3-2. Compliance Matrix ..... 3-5



## ABBREVIATIONS, ACRONYMS, AND SYMBOLS

ACWP	Actual Cost of Work Performed
AHA	Activity Hazard Analysis
ALARA	As Low As Reasonably Achievable
ASL	Approved Supplier List
ASME	American Society Mechanical Engineers
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
CFR	Code of Federal Regulations
CPI	Cost Performance Index
CQM	Corporate Quality Manager
DCC	Document Control Center
DCP	Designated Competent Person
DOE	U.S. Department of Energy
DOP	Diocetylphthalate
EAC	Estimate at Completion
ECS	Environmental Characterization Services
EPP	Environmental Protection Program
ES&H	Environmental Safety and Health
ETC	Estimate to Complete
EVMS	Earned Value Management System
HEPA	High-Efficiency Particulate Air
HVAC	Heating, Ventilation, and Air Conditioning
IS	Instrument Services
ISMS	Integrated Safety Management System
M&TE	Measuring and Test Equipment
NIST	National Institute of Standards and Technology
NQA	Nuclear Quality Assurance
O	Order
OEM	Original Equipment Manufacturer
PAAA	Price-Anderson Amendments Act
PM	Project Manager
PMB	Performance Measurement Baseline
POD	Plan of the Day
QA	Quality Assurance
QAE	Quality Assurance Engineer
QAP	Quality Assurance Plan
RADCON	Radiation/Radiological Control
RFQ	Request for Quotation
RPP	Radiation Protection Program
RWP	Radiation Work Permit
S&H	Safety and Health
S/CI	Suspect/Counterfeit Item
SEC	Safety and Ecology Corporation
SME	Subject Matter Expert
SOP	Standard Operating Procedure
SOW	Scope of Work

SPI	Schedule Performance Index
SV	Schedule Variance
TM	Task Manager
TIM	Training Implementation Matrix
TO	Task Order
WBS	Work Breakdown Structure
WVDP	West Valley Demonstration Project
WSHP	Worker Safety and Health Plan

## 1.0 INTRODUCTION

This document, SEC-QAP, *Quality Assurance Plan* (QAP), describes the Safety and Ecology Corporation (SEC) Quality Assurance (QA) system that will be deployed for task orders (TOs) issued by the U.S. Department of Energy (DOE), West Valley Demonstration Project (WVDP), under the Environmental Characterization Services (ECS) contract.

The WVDP site is complex, involving a large number of radionuclides of concern and a variety of historical processes and events that are known to have or may have released contaminants into the environment. Known affected environmental media include surface soils, subsurface soils, groundwater, surface water, and sediments. Services to be provided under the contract include:

- Environmental Characterization Services,
- Regulatory Services, and
- Records Management.



## **2.0 QUALITY POLICY**

SEC is committed to sustaining a QA system that ensures work is performed safely and complies with DOE ESC contract requirements. This is accomplished through good planning, process ownership by line management, compliant execution of daily tasks, and frequent self assessments to assure continued improvement.

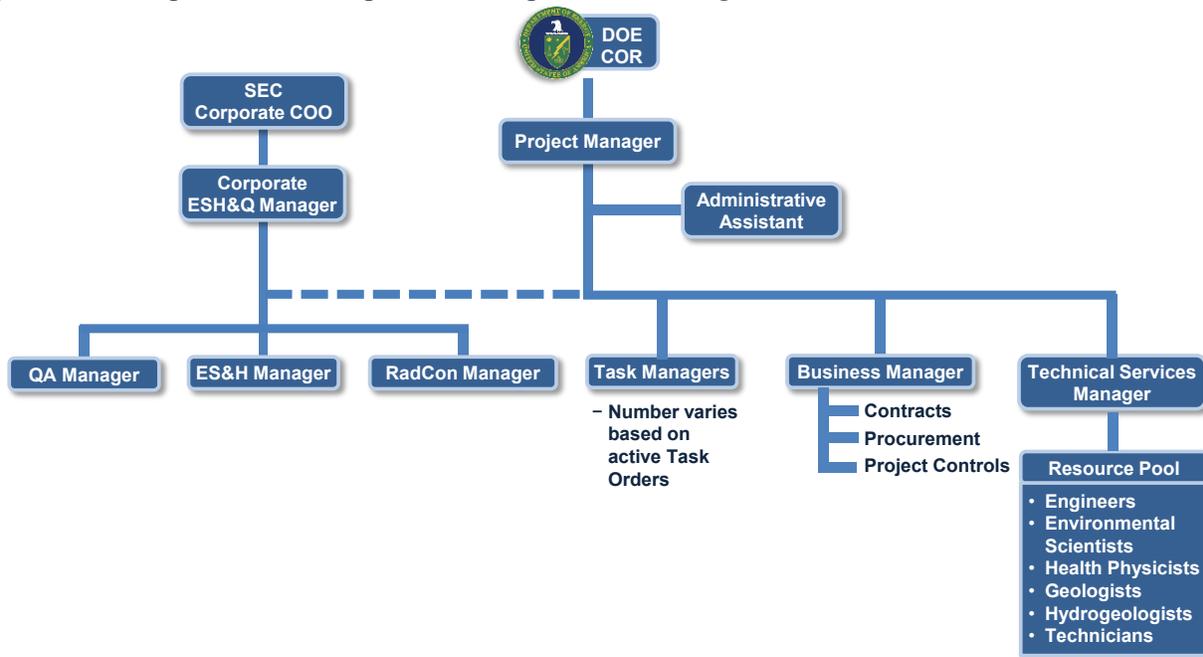
Each individual employed or subcontracted by SEC is empowered to stop work if conditions present imminent danger to themselves, the public, or the environment. In addition, each employee or subcontractor is responsible for identifying and reporting conditions adverse to quality or safety to their immediate supervisor.



### 3.0 QUALITY ASSURANCE SYSTEM

#### 3.1 Organization

The organizational structure, lines of authority, lines of responsibilities, and lines of communication of key personnel are depicted in Figure 3-1, followed by specific roles and responsibilities in the execution of the QAP. The dotted lines from the QA Manager, Environmental Safety and Health (ES&H) Manager, and Radcon Manager to the Project Manager (PM) reflect their support role to implement the day-to-day defined scope of work. The solid lines back to their corporate Functional Managers reflect an independence to implement procedural requirements and plans in compliance with regulations, standards, and DOE Orders.



**Figure 3-1. SEC Lines of Authority, Responsibility, and Communication.**

#### 3.1.1 Project Manager (PM)

The SEC PM has overall responsibility for the planning, execution, compliance, and performance of the project TOs. The PM prepares and approves project deliverables, plans, policies, procedures, technical basis documents, and associated guidance. Responsibilities include providing strategic planning for all levels of the project organization; identifying resources needed; assigning Task Managers (TMs); performing TO cost and schedule review, tracking, and control; managing and reporting the project and TO budget; understanding and analyzing project cost and schedule metrics [Estimate to Complete (ETC), Estimate at Completion (EAC), Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), Actual Cost of Work Performed (ACWP), etc.]; facilitating inter- and intra-team communication; managing subcontractors; providing leadership and overall direction for project staff; and directing overall contract execution.

The PM ensures coordination of management, safety and health, Radiation Control (RADCON), and QA functions; allocates resources to the project to ensure successful execution and completion of milestones; demonstrates commitment and implementation of Integrated Safety

Management System (ISMS) and QAP; coordinates with TMs to ensure work is performed with appropriate level of quality and in accordance with specifications and requirements; and maintains signature authority to commit SEC. The PM is the primary point of contact with DOE. He is also responsible for final approval of all task instructions. The PM is responsible to ensure all work and project activities are executed in accordance with established regulatory requirements and SEC programs, plans, and procedures.

The PM provides monthly reports to DOE. These reports provide information related to safety, quality, work status, and financial status. Specific issues related to quality will be documented in the monthly report.

### **3.1.2 Task Manager (TM)**

Each TO is assigned a TM by the PM. The TM will have technical expertise related to the scope of the TO. The TM is empowered to and fully responsible for performing the scope of the TO according to the TO baseline schedule and budget. The TM will ensure all task work is executed in accordance with the contract, Earned Value Management System (EVMS), SEC programs, plans, procedures, and other regulatory requirements. The TM will prioritize daily work activities and assign resources to determine processes and techniques for work execution; ensure compliance with the ISMS, *Project Integrated Work Control Plan* (SEC-ISMS-002), and have overall management responsibility for task operations, including training, waste management, and characterization activities. The TM will monitor subcontractor performance based on their outlined scope within the team using the work breakdown structure (WBS) and an integrated milestone-based schedule specific for each subcontract, based on the overall approved TO baseline schedule.

### **3.1.3 Technical Services Manager (TSM)**

The Technical Services Manager (TSM) will serve as the PM when delegated by the PM and provide on-site day to day management for the project. The TSM provides senior level technical input and reviews for TO work scope implementation and deliverables.

The TSM is responsible for maintaining a technical resource pool of engineers, scientists, and technicians to support current and future TO needs. The individual personnel resources are assigned to TMs and are balanced across all active tasks in an efficient manner. When a person's skills are no longer needed on the task, they are returned to the resource pool for redeployment on another task or are returned to their home office for off-project assignments.

The TSM is responsible for developing personnel resource capabilities and assuring their qualifications are maintained. The TSM is responsible for maintaining personnel training qualifications and for arranging staff training so that they maintain their qualifications and their competence is commensurate with their responsibilities.

### **3.1.4 Environmental Safety and Health (ES&H) Manager**

The ES&H Manager recognizes, evaluates, recommends, and implements policies and procedures to assure awareness of and compliance with ES&H requirements. The ES&H Manager will be at the site anytime TO work is performed at the site. The ES&H Manager is

responsible for the implementation and maintenance of the ISMS Description, the Environmental Protection Program (EPP), and the Worker Safety and Health Program (WSHP) developed for 10 Code of Federal Regulations (CFR) 851, Worker Safety and Health Program. The ES&H Manager is responsible for monitoring and preventing adverse exposure to chemical, biological, and physical hazards throughout the work sites. The ES&H Manager reviews and incorporates health standards published by regulatory authorities into project documents; directs audits of the ES&H programs to identify and correct program deficiencies; and will keep fully informed on all existing and proposed changes in occupational health and safety regulations. The ES&H Manager helps develop and provide basic ES&H training to employees and promotes communication programs to enhance and encourage employee awareness of accident prevention, industrial hygiene, and environmental compliance. The ES&H Manager develops and directs the personnel within the ES&H function of the organization. The ES&H Manager is responsible to ensure all work and project activities are executed in accordance with established regulatory requirements and SEC programs, plans, and procedures.

### **3.1.5 Radiological Controls (RADCON) Manager**

The Radiological Controls (RADCON) Manager is responsible for the development, implementation, execution, and compliance of the Radiation Protection Program (RPP). The RADCON Manager will be at the site as needed based on the demands of ongoing TO work. The RADCON Manager is responsible for providing the resources required to meet the requirements of the radiological control programs and procedures, establishing as low as reasonably achievable (ALARA) goals for individuals and the project, providing guidance for the safe and efficient approach to completing radiological work, and establishing programs and procedures in accordance with 10 CFR 835, Occupational Radiation Protection. The RADCON Manager will establish programs for assessing radiological controls performance and reporting deficiencies to program and procedural requirements. He is responsible to ensure all work and project activities are executed in accordance with established regulatory requirements and SEC programs, plans, and procedures.

### **3.1.6 Business Manager**

The Business Manager is responsible for contracts, procurement, and project controls. The Business Manager will be located offsite at a SEC corporate office and will travel to the site as needed. The Business Manager will deploy project controls and contracts support to the WVDP site as needed to support TO work. Procurement will be performed at a SEC corporate office.

The Business Manager and supporting staff is responsible for producing the Performance Measurement Baseline (PMB) for individual TOs and managing the cost and performance data for the ECS Project. The Business Manager and the project controls staff is responsible for collecting and reporting cost [Cost Performance Index (CPI)] and schedule performance [Schedule Performance Index (SPI)] for each TO in accordance with the contract, assisting in the development of change proposals, assisting in cost and schedule variance (SV) analysis, and reviewing all procurements and expenditure. The Business Manager will develop and submit Monthly Accruals for estimated monthly expenditures and facilitate compliance with contractual requirements for EVMS reporting.

### **3.1.7 Quality Assurance (QA) Manager**

The QA Manager is responsible for the development, implementation, execution, and compliance of the QA Program in accordance with American Society Mechanical Engineers (ASME), Nuclear Quality Assurance (NQA) 1-2008 with the NQA-1a-2009 addenda (or a later edition), DOE Order (O) 414.1D, Quality Assurance, and 10 CFR Part 830.122, Quality Assurance Criteria. The QA Manager will establish programs and processes for Management and Independent Assessments, Training and Qualification, Control of Purchased Materials, Equipment and Services, Non Conformance Reporting, Suspect/Counterfeit Item (S/CI) Prevention, and other programs necessary to meet contractual requirements for QA. The QA Manager will establish the Assessment Schedule for the Project, establish a Document Control/Record Center, and assist in the development and completion of corrective actions for project deficiencies. The QA Manager will deploy to the ECS Project site to conduct assessments and as needed to support TO needs.

### **3.1.8 Workers**

All employees are responsible for performing the tasks assigned to them in accordance with the ISMS. The ISMS integrates work control and planning with quality, safety, RADCON, and environmental compliance. Work will be performed in full accord with the ISMS and implementing mechanisms such as activity hazard analyses (AHAs) and radiation work permits (RWPs). All employees are responsible for notifying their immediate supervisor or safety representative of any unsafe practice or adverse to quality. Employees have the right and responsibility to stop any work that is unsafe or adverse to quality.

## **3.2 Quality Assurance Plan Structure**

The QAP is an “umbrella” document under which all project work is conducted and assessed. The QAP provides the framework for identifying and achieving compliance to ASME NQA 1-2008 with the NQA-1a-2009 addenda (or a later edition), *Quality Assurance Program Requirements for Nuclear Facilities Applications* and addenda through 2007. SEC also implements Parts I and Sections 2.7 and 2.21 of Part II of the NQA-1 standard in a graded approach, as applicable to the activity. The QAP is implemented through SEC QA standard operating procedures (SOPs) and project specific procedures (as necessary). The QAP and SOPs are designed to achieve compliance with DOE O 414.1D, *Quality Assurance*, and 10 CFR Part 830.122, *Quality Assurance Criteria*. This is demonstrated in a compliance matrix represented in Figure 3-2 and Appendix A, Quality Implementation Plan. Compliance areas identified as partially compliant are implemented based on a graded approach application of requirements.

Because of unique interface working relationships established in ECS contracts, SEC may be required to use plans or procedures managed by the ECS WVDP. In these circumstances, the PM will secure and maintain these documents in the Document Control Center (DCC). This QAP applies to all project activities unless exempt in writing by DOE and SEC.

### **3.2.1 Integration of Safety Management**

The QAP is applied in a manner consistent with the objectives and core components described in SEC-ISMS, *Integrated Safety Management System*, and SEC-WSHP, *Worker Safety and Health*



### **3.2.2 Graded Approach**

The QAP and SOPs will be implemented using a graded approach and applied primarily to activities, items, or services considered “*important to safety and quality.*” As defined by SEC, “important to safety and quality” means: an activity that, if performed incorrectly, would have an adverse effect on employee and public safety, or the environment. As applied to an item, an item that, if through failure or a non-conforming condition, would have an adverse effect on employee and public safety, the environment, or result in non-compliance to a specification, requirement, or regulation. QAP implementation will consider the risks and complexity of the scope of work (SOW) and any special requirements imposed by ECS contract. The application of a graded approach philosophy does not relieve SEC of its responsibility to maintain compliance with federal, state, or local regulations. An initial set of items and services considered as “important to safety and quality” are identified in SEC-Q-07, *Control of Purchased Items and Services*. The Corporate Quality Manager (CQM) will maintain control of this list with consensus from the PM and ES&H Manager.

### **3.3 Training and Qualifications**

All personnel working on the project will undergo training. Training will consist of a variety of classroom training and required reads on all core project specific plans and procedures. The TSM, QA Manager, RADCON Manager, and ES&H Manager will assess the training needs of employees assigned to the project and schedule training as necessary.

The Training Implementation Matrix (TIM) provides the overall approach for the implementation of contractual, regulatory, and project specific training requirements. The TMs will establish training requirements for each position. The TSM will provide the Project Team a list/matrix of required training by position for scheduling and tracking training for project staff.

Crews performing field work will be extensively trained to the task instructions, procedures, and required training included in the training matrix prior to commencement of field activities. Proof of this training for all project-assigned personnel, including subcontractor personnel, will be assessed during the internal readiness review prior to taking the field. If at any time during project duration, newly recognized work hazards are identified causing existing documents to be revised or red-lined, all crews will be called out of the field to be trained on the changes. The TMs will review the training matrix monthly as well as personnel’s training expiration dates to ensure that all training is kept up to date and current throughout the course of the project. Additional QA requirements for training are delineated in SEC-Q-02, *Training and Qualifications*.

As the project progresses, additional and continuing training may be provided as follows:

- Training during the Plan of the Day (POD),
- Training as a result of Lessons Learned briefings,
- Educational and/or professional training,
- Specialized training when performing tasks under a Work Control Plan,
- Training as a result of procedure changes,
- Training as a result of significant facility system or component changes,
- Training as a result of operating experience, and

- Training provided as a result of a corrective action.

### **3.4 Design Control**

The ESC contract TOs do not include elements of design in the SOW; therefore, a comprehensive design control program is not maintained. However, SEC may procure engineered items or engineering services. Procurement of these services or items is managed in accordance with SEC-Q-04, *Procurement Document Control*. At a minimum, subcontractors providing these types of items or services will be evaluated in accordance with applicable provisions described in Requirement 3, *Design Control*, of ASME NQA-1-2008 with the NQA-1a-2009 addenda (or a later edition) or per specific requirements established by SEC and identified in procurement documents. Design control requirements are delineated in SEC-Q-03, *Design Control*.

In addition, the ESC contract TOs do not include elements of software design; therefore a comprehensive software design control program is not maintained. However, SEC may procure or use software for radiological control activities. This software will be procured in accordance with SEC-Q-04, *Procurement Document Control*, and evaluated and controlled using guidance from DOE G 414.1-4, *Safety Software Guide*. Software QA is delineated in SEC-Q-20, *Safety Software*.

### **3.5 Procurement Control**

SEC has established administrative controls for procuring items and services in SEC-P-001, *Purchasing Policies and Procedures*. In addition, SEC flows down General and Special Conditions that address specific customer and quality provisions. These policies and procedures provide the regulatory and administrative requirements for ensuring compliant procurement documentation.

SEC-Q-04, *Procurement Document Control*, establishes specific requirements for evaluating suppliers of services and items considered “important to safety and quality.” To the extent necessary, the procurement system will require suppliers to employ a quality system consistent with the elements of the SEC QAP and compliant with specific requirements mandated by customers or regulatory agencies. At a minimum, companies that do not maintain a compliant QA Program will be used only when they have been evaluated and approved by the CQM and listed on the SEC Approved Supplier List (ASL). Items and services procured from these companies will undergo specific inspections or assessments at the supplier’s facility or when the items are received or services provided at the project site.

### **3.6 Instructions, Procedures, and Drawings**

SEC will use approved SOPs for conducting work. The SOP may include or reference specific instructions and/or associated forms. Each SOP is reviewed periodically by the assigned subject matter expert (SME) and/or document sponsor to ensure content integrity. The nature of SEC work activities does not typically result in SEC generated drawings. Drawings are usually generated by the client or procured through subcontractors. In these cases, drawings will be managed through the SEC document control system, a SEC satellite document center, or submitted to the client under their formal submittal process.

SEC maintains a library of controlled SOPs in areas of health and safety, environmental management, instrument calibration, radiation protection, human resources, finance, procurement, operations, and QA. Each SOP is developed appropriately for each circumstance and work process area. They include requirements and criteria needed to determine if an activity was satisfactorily accomplished. Work processes for different features of work will be defined in project work plans or specific work control plans developed in accordance with SEC-ISMS-002, *Project Integrated Work Control Plan*. Basic requirements for developing and implementing work process documents are prescribed in SEC-Q-05, *Instructions and Procedures*.

### **3.7 Document Control**

The preparation, issue, and change of a work process document that specifies quality requirements or prescribes activities that affect items or services considered “*important to safety or quality*” will be controlled to ensure the correct revision of the document is used. Controlled documents and their changes will be reviewed for adequacy and approved for release before being issued by the SEC DCC.

Documents formally issued to SEC by DOE or others will be managed by the DCC as a controlled document to SEC. SEC may maintain a satellite DCC at the project site. The satellite DCC will operate independently from the DCC but under the same document control provisions. Documents entered into the document control system at the satellite DCC will be registered in the central system and ultimately transferred to the DCC.

Access to approved documents will be made available to project staff via the SEC Sharepoint site. Documents printed from the Sharepoint site will be current the day it is printed and can continue to be used as long as the user confirms the proper version. The specific requirements for document control are prescribed in SEC-Q-06, *Document Control*.

### **3.8 Control of Purchased Material, Equipment, and Services**

SEC procurement controls include measures to ensure items and services considered “*important to safety and quality*” are procured through suppliers listed on the SEC ASL. Procurement of hazardous packaging materials will undergo additional requirements in accordance with DOE O 460.1C, *Packaging and Transportation Safety*. Suppliers listed on the ASL are selected based on a documented evaluation of their past performance, objective evidence of an acceptable QA program or system, and/or other attributes deemed appropriate and applicable for the items or services being procured. Suppliers of items or services that may affect safety structures, systems, or components may undergo an additional site evaluation by a SEC certified NQA-1 auditor based on the complexity of the items or services provided.

SEC procurement documents include special provisions for receipt inspection, workmanship inspection, and right-of-access to the supplier’s facility or place of business to confirm conformance to subcontract specifications. Supplier conformance to safety metrics requirements, training, certification, licensing, and other regulatory requirements are confirmed through signed confirmation from the supplier and verified by the CQM, Quality Assurance Engineer (QAE), or other authorized designee. Onsite monitoring of subcontractors may include observations of activities, reviewing work products or reports, and formal assessment and surveillance activities.

SEC subcontractors will agree to perform work under the provisions of project work control plans and will be suitably trained to the project's safety and health (S&H) plan and this QAP.

The SOW for the ECS contract does not include procurement of items typically scrutinized for or affected by S/CI. None-the-less, SEC suppliers are required to preclude the introduction of potential S/CI at the worksite and are responsible to positively confirm items provided have been properly examined for potential S/CI. The SEC purchasing agent and subcontract administrator are responsible for ensuring procurement documents clearly and adequately describe the items and services required and that suppliers of items and services considered "*important to safety and quality*" are listed on the SEC ASL. The specific requirements for control of purchased material, items, and services are described in SEC-Q-07, *Control of Purchased Items and Services*, and SEC-P-001, *Purchasing Policies and Procedures*.

### **3.9 Identification and Control of Items**

SEC applies measures for the identification and control of items to ensure their proper usage, and to prevent the use of incorrect or defective items. Identification of an item will be maintained through unique marking, labeling, or tagging. When physical identification is impractical, acceptable items will be segregated from items found to be non-conforming or defective. Identification of items will be traceable to required certification documentation or known standards.

Items received at project worksites will be inspected and/or verified by the QAE or Designated Competent Person (DCP) approved by the PM and QAE. Criteria for acceptance will be identified on checklists, inspection reports, or procurement documents in accordance with SEC-Q-10, *Inspection*. Inspection results will be recorded and inspection status identified as described in SEC-Q-08, *Identification and Control of Items*.

### **3.10 Control of Special Processes**

SEC does not anticipate special processes will be used for the ECS contract. If work scope changes, processes such as welding, heat treating, and non-destructive examination that are highly dependent on the control of the process, the skill of the operator, or both, will be performed by qualified personnel using procedures approved by SEC, a qualified third party, or a DOE approved supplier. These types of processes are procured through an approved supplier who has been evaluated in accordance with SEC-Q-04, *Procurement Document Control*. Qualifications for personnel and procedures will be in accordance with specified requirements prescribed in procurement documents. Specific requirements are described in SEC-Q-09, *Control of Special Processes*.

### **3.11 Inspection**

SEC will ensure items and services conform to specified requirements through planned inspection activities. Inspections may consist of a visual examination, verification, or traditional physical/dimensional inspection. Inspections will be performed by the assigned QAE or DCP. Inspections requiring certified or licensed inspectors will be identified as hold points in the work process to ensure appropriate time and resources are planned and scheduled. Acceptance criteria will be identified in work control plans, associated procurement documents, or on inspection

reports specifically developed for the item or service under review. Items or services found to be non-conforming will be documented in accordance with SEC-Q-15, *Issues Management*. Specific requirements for inspections will be performed in accordance with SEC-Q-10, *Inspection*.

### **3.12 Test Control**

SEC typically procures testing services to verify conformance of materials, components, or systems. These types of testing capabilities are procured through suppliers that have been evaluated and approved in accordance with SEC-Q-04, *Procurement Document Control*. Testing criteria will be delineated in procurement documents as part of the overall procurement of services. Typical tests may include dioctylphthalate (DOP) testing for high-efficiency particulate air (HEPA) filters, compression and slump testing of concrete, soil tests, load tests, testing of non-safety related software, and operational testing of heating, ventilation, and air conditioning (HVAC) or electrical systems. Specific requirements for testing will be performed in accordance with SEC procedure SEC-Q-11, *Test Control*.

### **3.13 Control of Measuring and Test Equipment**

SEC uses Measuring and Test Equipment (M&TE) to confirm environmental, S&H, radiological, and quality compliance. Radiological and industrial hygiene instruments are maintained by the SEC Instrument Services (IS) Group which operates in accordance with SEC-IS-001, *Instrumentation Services Quality Assurance Plan*. Equipment requiring specialized calibration or repair is sent to the original equipment manufacturer (OEM), to an approved supplier qualified under SEC-Q-04, *Procurement Document Control*, or to a supplier certified by the OEM to perform such services. SEC calibration of equipment incorporates the use of standards traceable to the National Institute of Standards and Technology (NIST), technicians qualified under a job performance measure program and the use of a calibration and recall system. Specific M&TE requirements are described in SEC-Q-12, *Measuring and Test Equipment*.

### **3.14 Handling, Storage, and Shipping**

Construction equipment or materials considered critical, sensitive, perishable, or of high value to the customer and/or to SEC will be secured at the approved lay down areas located at the work site. Government furnished material or equipment are identified, documented, and tracked separately from SEC inventory. Items such as calibration gases, radioactive sources, or NIST standards are handled, stored, packaged, and shipped in accordance with codes, standards, regulations, engineering specifications, or customer requirements. General requirements for implementing this provision are provided in SEC-Q-13, *Handling, Storage, and Shipping*.

### **3.15 Inspection, Test, and Operating Status**

The inspection status of SEC and customer supplied equipment or material will be identified using markings, tags, or appropriate segregation. Items will maintain traceability while in storage, in-process, and at final installation or use. Status indicators will be sufficient to prevent inadvertent use or installation of nonconforming or defective material, or operation of equipment determined to be unsafe or awaiting repair. Instrumentation used to monitor environmental, industrial hygiene, and quality compliance will be identified with the instrument model or SEC

unique number and calibration recall date. Status indicator requirements and guidance are provided by SEC-Q-14, *Inspection, Test, and Operating Status*.

### **3.16 Nonconforming Materials, Parts, or Components**

SEC employs a comprehensive Issue Reporting system that allows identification of conditions adverse to quality or safety, documentation of immediate actions, basic causal analysis, assignment of actions, acknowledgement of action closure, and screening of potential Price-Anderson Amendments Act (PAAA) non-compliances. The system includes reporting requirements for nonconforming materials, parts, or components and specifies control provisions for preventing unintentional installation or usage. Requirements and guidance for the reporting non-conforming items are provided within SEC-Q-15, *Issues Management*.

### **3.17 Corrective Action**

Conditions identified on an Issue Report are reviewed for immediate and short term corrective action. Conditions determined to be significant may require further causal analysis and development of preventative actions. Conditions may include non-conformances, non-compliance, safety related incidents, failures, malfunctions, deficiencies, and defective material. Significant conditions adverse to quality or safety may require a root cause analysis performed by a root cause analysis-trained team of diverse disciplines using an authoritative methodology for root cause identification. Requirements and guidance for the corrective action process is established within SEC-Q-15, *Issues Management*.

### **3.18 Quality Assurance Records**

In the conduct of work, SEC generates many types of records. Records that furnish documentary evidence of quality or compliance to customer or regulatory requirements will be identified, prepared, and maintained in accordance with SEC-Q-17, *Records Management*. This procedure addresses the protection, deterioration, distribution, retention, maintenance, and disposition of quality records. SEC will maintain a satellite DCC to acquire, secure, and store records as they are generated until they are no longer required to support ongoing activities or have met legal retention requirements. Hard copy records will be digitized and maintained in a separate storage medium to ensure dual repository management. When hard copy records are no longer required to support ongoing activities, SEC will transfer them to long-term, secured storage as directed by DOE ECS. Requirements and guidance for the records management are established within SEC-Q-17, *Records Management*.

### **3.19 Assessments**

#### **3.19.1 Independent Assessment**

SEC conducts compliance monitoring of project QAP implementation and operational processes through independent assessments. Periodic assessments of project activities ensure achievement of customer requirements and provide project staff an opportunity to gauge the effectiveness of project work plans and procedures. Independent assessments are generally performed by the CQM or Corporate ES&H Manager, but from time to time are done by an approved subcontractor.

Independent assessments are considered business sensitive documents and may require signed non-disclosure statements from non SEC personnel requesting copies. Assessment planning will consider guidance provided in DOE G 414.1-1B *Management Assessment and Independent Assessment Guide*. Specific requirements for conducting independent assessments are listed in SEC-Q-18, *Assessments*.

### **3.19.2 Management Assessment**

Management assessments are conducted by project line management and by senior management. Line management, which includes the PM, are responsible for conducting walk down assessments of project activities and reporting conditions adverse to quality, safety, and operational effectiveness. Senior management assessments include project walk downs but may focus on core management systems that support project operations, such as procurement, human resources, contracts, project controls, QA, and S&H. Upon request, the CQM may conduct management assessments on behalf of the senior managements. In these situations, the requestor retains overall responsibility for planning and scheduling the assessment and ensuring adequate support is allocated to the CQM to conduct an efficient, effective assessment.

Management assessments, excluding those performed by line management, are considered business sensitive documents and may require non-disclosure statements from non SEC personnel requesting copies. Line management assessment reports will be accessible to ECS through the SEC Sharepoint. Assessment planning will consider guidance provided in DOE G 414.1-1B, *Management Assessment and Independent Assessment Guide*. Specific requirements for conducting management assessments are listed in SEC-Q-18, *Assessments*.

### **3.19.3 Quality Improvement**

SEC provides several avenues for quality improvements. In addition to Section 3.16, *Nonconforming Materials, Parts, or Components*, Section 3.17, *Corrective Action*, and Section 3.19, *Assessments*, SEC employs project review meetings to discuss issues, concerns, adverse trends, process, improvements, performance objectives, and positive aspects observed during independent and management assessments. The PM and CQM conduct these meetings to discuss immediate, short-term and long-term resolution to potential or identified adverse conditions.

SEC will establish specific performance objectives during planning and pre-mobilization activities. At a minimum, performance objectives will be established in the following areas:

- Timely completion of scheduled training,
- Timely completion of corrective actions,
- Document control/records compliance,
- Timely completion of scheduled assessments/surveillance activities,
- Timely Lessons Learned/Operating Experience communication,
- ALARA implementation,
- Contamination control, and
- Packaging and transportation compliance.

### **3.20 Suspect/Counterfeit Item Prevention**

SEC prevents introduction of S/CIs through procurement controls, inspection, and training. SEC suppliers are required to certify items provided to SEC are screened or inspected for S/CI. Subcontractors are required to report any S/CI discovered before, during, or after the performance of their service. Procurement controls for subcontractors are implemented in accordance with SEC-Q-04, *Procurement Document Control*.

SEC inspects materials and equipment for S/CI as they arrive at the project site. Personnel performing inspections will be suitably trained. Inspections will be conducted on a graded approach and consistent with the specific requirements for inspection of potential S/CI is provided in SEC-Q-10, *Inspection*, and SEC-Q-19, *Suspect/Counterfeit Items*.

### **3.21 Safety Software Quality Requirements**

SEC software will be evaluated and graded in accordance with Section 2 of DOE G 414.1-4, *Safety Software Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements*, and DOE O 414.1D, *Quality Assurance* as implemented through SEC-Q-20, *Safety Software*. Training requirements for personnel using safety software are specified in accordance with SEC-Q-02, *Training and Qualification*, and SEC-Q-20, *Safety Software*.

SEC does not currently design custom developed software as defined in Section 2.1 of DOE G 414.1-4. If such software is required as part of a project deliverable, SEC would procure this design service from an approved supplier who maintains a design control program consistent with ASME NQA-1-2008 with the NQA-1a-2009 addenda (or a later edition), *QA Requirements for Nuclear Facility Applications*. These requirements will be specified in procurement documents in accordance with SEC-Q-04, *Procurement Document Control*.



**APPENDIX A**  
**QUALITY IMPLEMENTATION PLAN**



DOE O 414.1D Criteria	Processes	ISMS Link	Implementing Documents
<b>Management/Criterion 1—Program</b>			
1. Establish an organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing work.	<ul style="list-style-type: none"> <li>• Planning</li> <li>• Resource Allocation</li> <li>• Graded Approach</li> <li>• NQA-1 Application</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 1, 2, 3, and 4</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-QAP, Quality Assurance Plan</li> <li>• SEC-ISMS, Integrated Safety Management System</li> <li>• SEC-WSHP, Worker Safety and Health Program</li> <li>• SEC-RPP, Radiation Protection Program</li> <li>• SEC-Q-07, Control of Purchased Items and Services (considered important to safety/quality)</li> </ul>
2. Establish management processes, including planning, scheduling, and providing resources for work.			
<b>Management/Criterion 2—Personnel Training and Qualification</b>			
1. Train and qualify personnel to be capable of performing assigned work.	<ul style="list-style-type: none"> <li>• Training</li> <li>• Technical Qualification</li> <li>• Professional Qualification</li> </ul>	<ul style="list-style-type: none"> <li>• Principle 3</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-02, Training and Qualifications</li> <li>• SEC-TIM, Training Implementation Matrix</li> </ul>
2. Provide continuing training to personnel to maintain job proficiency.			
<b>Management/Criterion 3—Quality Improvement</b>			
1. Establish and implement processes to detect and prevent quality problems.	<ul style="list-style-type: none"> <li>• Management Oversight</li> <li>• Independent Oversight</li> <li>• Walkthroughs</li> <li>• Work Observation</li> <li>• Document Reviews</li> <li>• Meeting Attendance and Participation</li> <li>• Ongoing Interaction w/Subcontractor w/Workers w/Staff</li> <li>• Worker Feedback</li> <li>• Customer Feedback</li> <li>• Cause Analysis</li> <li>• Corrective Actions</li> <li>• Trending Analysis</li> <li>• Self-Assessments</li> </ul>	<ul style="list-style-type: none"> <li>• Principle 5</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-02, Training and Qualifications</li> <li>• SEC-Q-15, Issues Management</li> <li>• SEC-Q-17, Assessments</li> </ul>
2. Identify, control, and correct items, services, and processes that do not meet established requirements.			
3. Identify the causes of problems, and include prevention of recurrence as a part of corrective action planning.			
4. Review item characteristics, process implementation, and other quality-related information to identify items, services, and processes needing improvement.			
<b>Management/Criterion 4—Documents and Records</b>			
1. Prepare, review, approve, issue, use, and revise documents to prescribe processes, specify requirements, or establish design.	<ul style="list-style-type: none"> <li>• Document Control</li> <li>• Records Management</li> </ul>	<ul style="list-style-type: none"> <li>• Principle 1, 2, 3, 4, 5, 6, and 7</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-05, Instructions and Procedures</li> <li>• SEC-Q-06, Document Control</li> <li>• SEC-Q-16, Records Management</li> </ul>
2. Specify, prepare, review, approve, and maintain records.			

DOE O 414.1D Criteria	Processes	ISMS Link	Implementing Documents
<b>Management/Criterion 5—Work Processes</b>			
1. Perform work consistent with technical standards, administrative controls, and hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, etc.	<ul style="list-style-type: none"> <li>• Quality Assurance</li> <li>• Work Control Plan</li> <li>• ISMS</li> <li>• Emergency Management</li> <li>• Operations</li> </ul>	<ul style="list-style-type: none"> <li>• Principle 5 and 6</li> <li>• Core Function 4</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-05, Instructions and Procedures</li> <li>• SEC-Q-08, Identification and Control of Items</li> <li>• SEC-Q-09, Control of Special Processes</li> <li>• SEC-Q-13, Handling, Storage, and Shipping</li> <li>• SEC-Q-14, Inspection, Test, and Operating Status</li> </ul>
2. Identify and control items to ensure their proper use.			
3. Maintain items to prevent their damage, loss, or deterioration.			
4. Calibrate and maintain equipment used for process monitoring or data collection.			
<b>Management/Criterion 6—Design</b>			
Not Applicable			
<b>Management/Criterion 7—Procurement</b>			
1. Procure items and services that meet established requirements and perform as specified.	<ul style="list-style-type: none"> <li>• Vendor Surveys</li> <li>• Request for Quotation (RFQ) Evaluations</li> <li>• Subcontractor Oversight</li> <li>• Contract Administration</li> <li>• Source Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 3, 5, and 7</li> <li>• Core Function 1</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-04, Procurement Document Control</li> <li>• SEC-Q-07, Control of Purchased Items and Services</li> <li>• SEC-P-001, Purchasing Policies and Procedures</li> </ul>
2. Evaluate and select prospective suppliers on the basis of specified criteria.			
3. Establish and implement processes to ensure that approved suppliers continue to provide acceptable items and services.			
<b>Management/Criterion 8—Inspection and Testing</b>			
1. Inspect and test specified items, services, and processes using established acceptance and performance criteria.	<ul style="list-style-type: none"> <li>• Vendor Evaluation</li> <li>• On-site Inspections</li> <li>• Receipt Inspection</li> <li>• IH Monitoring</li> <li>• Rad Monitoring</li> <li>• NCRs</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 1 and 2</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-08, Identification and Control of Items</li> <li>• SEC-Q-10, Inspection</li> <li>• SEC-Q-11, Test Control</li> <li>• SEC-Q-12, Measuring and Test Equipment</li> <li>• SEC-Q-15, Issues Management</li> <li>• SEC-Q-19, Suspect/Counterfeit Items</li> </ul>
2. Calibrate and maintain equipment used for inspections and tests.			

DOE O 414.1D Criteria	Processes	ISMS Link	Implementing Documents
<b>Management/Criterion 9—Management Assessment</b>			
1. Ensure that managers assess their management processes and identify and correct problems that hinder the organization from achieving its objectives.	<ul style="list-style-type: none"> <li>• Management Oversight</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 1, 2, 3, and 4</li> <li>• Core Function 5</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-18, Assessments</li> <li>• SEC-Q-15, Issues Management</li> </ul>
<b>Management/Criterion 10—Independent Assessment</b>			
1. Plan and conduct independent assessments to measure item and service quality and the adequacy of work performance and to promote improvement.	<ul style="list-style-type: none"> <li>• Independent Oversight</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 1, 2, 3, and 4</li> <li>• Core Function 5</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-18, Assessments</li> <li>• SEC-Q-15, Issues Management</li> </ul>
2. Establish sufficient authority and freedom from line management for independent assessment teams.			
3. Ensure that persons conducting independent assessments are technically qualified and knowledgeable in the areas to be assessed.			
<b>Suspect/Counterfeit Items Prevention</b>			
1. Detect and prevent the introduction of suspect/counterfeit items.	<ul style="list-style-type: none"> <li>• Inspection</li> <li>• Supplier Oversight</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 1 and 2</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-Q-10, Inspection</li> <li>• SEC-Q-19, Suspect/Counterfeit Items</li> </ul>
<b>Safety Software Quality Requirements</b>			
1. Evaluate, classify, and grade software.	<ul style="list-style-type: none"> <li>• Instrumentation Calibration</li> </ul>	<ul style="list-style-type: none"> <li>• Principles 1 and 2</li> </ul>	<ul style="list-style-type: none"> <li>• SEC-IS-002, IS Software Quality Plan</li> </ul>

