



**LBL Quality Assurance Project Plan
(QAPjP)
for
Old Town Demolition Project**

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1.0 REFERENCES

1.1 Baseline References

- 10 CFR 830, *Nuclear Safety Management*
- 10 CFR 835, *Occupational Radiation Protection*
- DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*
- DOE O 414.1D, *Quality Assurance*
- ISO 9001:2008, *Quality Management Systems Requirements*
- LBNL/PUB-3111, *Quality Assurance Program Description*

1.2 Referenced Documents

- DE-AC02-05CH11231, *UC-DOE Prime Contract*
- DOE O 458.1
- DOE O 221.1A, *Reporting Fraud, Waste, and Abuse to the Inspector General*
- DOE O 232.1, *Occurrence Reporting*
- DOE O 243.1B, *Records Management Program*
- DOE M 413.3-1, *Project Management for the Acquisition of Capital Assets*
- DOE O 471.3, *Identifying and Protecting Official Use Only Information*
- CBC-LBNL-0040 PARS 000932, *Project Execution Plan for Lawrence Berkeley National Laboratory (LBNL) Old Town Demolition Project*
- *LBNL Project Management Plan for Old Town Demolition Project Phase 1*
- *Risk Management Plan for the Old Town Demolition Project*
- LBNL/PUB-3000, *LBNL Health and Safety Manual*
- LBNL/PUB-3111, *Quality Assurance Program Description*
- LBNL/PUB-5352, *Waste Management Quality Assurance Plan*
- *LBNL Waste Management Plan*
- *LBNL Storm Water Pollution Prevention Plan*
- *Facilities Division Design and Construction Procedures Manual*
- *Procurement Department Standard Practices*
- Procedure 10.01.003.03, *Safety Software Quality Assurance*
- EHS Procedure OHP 18, *Technical Basis for Release of Old Town Buildings Using a Three-Stage Survey Method*
- EHS Procedure OHP 20, *Data Life Cycle for MARSSIM Release Surveys of Old Town Buildings.*
- EHS Procedure 770, *Quality Assurance Plan*
- EHS Procedure 774, *Safety Software Quality Assurance*
- EHS Procedure 817, *Waste Characterization Quality Assurance Plan*
- Procedure 10.06.001.101, *Developing, Reviewing and Approving Non-Policy Institutional Documents*
- Procedure 10.06.001.102, *Developing, Reviewing and Approving Institutional Policies*

2.0 INTRODUCTION

This Quality Assurance Project Plan (QAPjP) describes the project scope and quality management principles to be used by the U.S. Department of Energy (DOE) Environmental Management's (EM) Lawrence Berkeley National Laboratory (LBNL) Old Town Demolition Project (hereafter termed "the Project"). The QAPjP provides an organizational and managerial framework to ensure that quality management principles and requirements are integrated into the Old Town Demolition Project.

This QAPjP has been prepared consistent the requirements outlined in DOE O 414.1D, *Quality Assurance*, and DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. The elements and requirements outlined in this QAPjP are tailored to meet specific project objectives of the LBNL Old Town Demolition Project effort. This QAPjP will be used until project completion is approved via the Critical Decision (CD)-4, Approve Start of Operations or Project Completion. This document and modifications thereto will adhere to a formal document management approach during execution of this project.

The Old Town Demolition Project is a small (\$22.6M—\$48.5M) project with an uncertain funding future. The Project is expected to last between two (2) and five (5) years, depending on how much funding becomes available, the amount of contamination encountered, and the extent of regulatory and public interest. Critical Decision 0 (CD-0, Approve Mission Need), was approved in October 2012 and CD-1 (Approve Alternative Selection and Cost Range) was approved in October 2013 for the entire project scope. CD-2/3 will follow a phased approach by splitting the work into smaller, related, complete and implementable subprojects. These smaller subprojects are also subject to the requirements outlined in this QAPjP.

Quality assurance requirements, identified in the procurement documents, will be applied using a risk-based graded approach with the highest level of rigor applied to the critical attributes of the Project.

3.0 LBNL PROJECT MANAGEMENT

UC manages and operates LBNL under an M&O contract with DOE (DE-AC02-05CH11231). LBNL is responsible for safeguards and security. Additionally, the M&O manages the site RCRA Permit under the oversight of BSO. Their M&O property staff is responsible for relocating all personnel and desirable equipment out of the Old Town buildings before EM demolition activities begin. LBNL/UC will issue and manage the contracts for demolition & shipment services as required for the Old Town Demolition Project.

For information regarding the overarching DOE Old Town Project Integrated Project Team organizational structure, refer to Project Execution Plan for Lawrence Berkeley National Laboratory (LBNL) Old Town Demolition Project CBC-LBNL-0040 PARS 000932.

The *LBNL Project Management Plan for Old Town Demolition Project Phase 1* contains a detailed description of the U.S. Department of Energy organization's Integrated Project Team key positions and associated roles and responsibilities.

The Old Town Demolition Project will be supported by a project team that includes support from the Office of Chief Financial Officer, Facilities, and Environment, Health, and Safety (EHS) Divisions. A Project Administrator will assist the Project Manager in maintaining project records and controls, in providing financial data and monthly reports, and in setting up and maintaining project files. The Construction Manager will assist the Project Manager to coordinate interface of the construction with the activities and projects of LBNL and the University of California Berkeley campus. The Construction Manager will coordinate activities such as road closures, dig permits, and LBNL utility shutdowns. A Facilities Team Lead will provide assistance to the Project Manager in areas where additional support or expertise is needed.

Services provided by the LBNL Facilities Division include National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) coordination, quality assurance during design and construction, providing design reviews, construction inspections, and final inspection. Quality Assurance inspections of all new construction will be provided by the Inspector of Record. Construction contract administration and inspection verification will be accomplished by LBNL's Design and Construction Management Department within the Facilities Division, with the assistance of the selected architect and engineering Architect/ Engineering (A/E) firm and appropriate testing and inspection consultants contracted by LBNL. The A/E firm will assist in reviewing vendor drawings and Subcontractor submittals, and provide construction observation and consultation as requested by the LBNL Project Manager.

Services provided by the LBNL Environment, Health and Safety (EHS) Division include hazards identification, analysis, and mitigation; design reviews, review and either approval or acceptance of Subcontractor submittal plans, training and certificates; assurance and oversight in all EHS functional areas, but not limited to construction safety, industrial hygiene, environmental protection, radiation protection, and waste management. The EHS Division provides the quality assurance of the EHS technical documents and provides direction on data quality objectives for measurements taken in support of EHS technical documents.

The *LBNL Project Management Plan for Old Town Demolition Project Phase 1* outlines the LBNL Project Team and support organizations along with the detailed roles and responsibilities.

3.1 Project Description

The Project will complete the demolition of the aging Old Town structures at LBNL that were not constructed to current seismic standards and will clean up contaminated soil and conduct site stabilization. Removal of these structures will support SC mission growth at LBNL.

3.2 Project Objectives

The overall objective of this project is to demolish the seven remaining Old Town buildings (Buildings 4, 5, 7/7C, 14, and 16/16A), remove four slabs from Buildings 40, 41, 52, and 52A that were previously demolished by SC, remove the Old Town electrical pad, remove contaminated soil under and adjacent to

the buildings/slabs as required to meet the Industrial Use standard and restore the area to a clean and stable site. The extent and sequencing of this work will be constrained by available funding and authorized via CD-2/3 phasing as described later in this document.

The Old Town buildings were erected in the 1940s and 1950s; as such, asbestos and lead paint are still present in some locations despite heavy renovation over the years. Most of the buildings have been radiologically and chemically surveyed to support office-use occupancy, but all buildings have some inaccessible areas. Some of the buildings have a history of handling beryllium and/or various radionuclides.

The Project is currently embarked on an extensive characterization campaign to better understand the extent of radiological and hazardous material contamination in the Phase 1 scope (buildings 5, 16, 16A and slab areas of 52, 52A, 40 and 41) of the Old Town buildings and slabs. The quantities of waste that will be generated by the Project will be formulated for each phase to support baseline development. While the exact quantities of waste are not known, assumptions based on currently available data were utilized for the initial rough order of magnitude (ROM) estimates. These post-asbestos removal estimates assumed that all volumes of debris and soil disposal will be 90% non-radioactive and non-hazardous and 10% radioactive and hazardous.

The specific Project objectives are:

1. Conduct all operations in accordance with the Integrated Safety Management System (ISMS) guidelines, the LBNL Laboratory Environmental Safety & Health (ESH) Manual, and management and operating (M&O) Contract requirements.
2. Remove Buildings 5, 16, and 16A to slab on grade.
3. Remove Buildings 4, 14, 7, and 7C to slab on grade.
4. Remove Old Town electrical pad.
5. Remove the slabs and surrounding contaminated soil (amounts to be finalized with the local SC Berkeley Site Office (BSO) before CD-2/3) for all 11 building slabs in the project scope.
6. Conduct all demolition and excavation so as not to severely impact LBNL research operations.
7. Manage all waste generated by the Project in accordance with approved procedures and dispose of all waste at appropriate disposal facilities. The Project will make an attempt to divert as much material to recycle as practical.
8. Conduct verification sampling to ensure that cleanup has met the DTSC Industrial Use Standard (if required).
9. Complete all DOE Critical Decision and Project Closeout/Transition documents/packages in accordance with DOE O 413.3B.
10. Restore the site to a clean and stable state.

The primary product of this project is waste and scrap. The principal activity leading to these products is the characterization of materials to be dispositioned by the project and assurance of proper disposal. Accordingly, formal quality assurance of characterization efforts on this project will be conducted in accordance with the LBNL EHS Procedure 817, Waste Characterization Quality Assurance Plan and quality assurance of the waste disposal activities will be conducted in accordance with the Waste Management Quality Assurance Plan (PUB-5352). These requirements are specified in the Waste Management Plan.

The Demolition Contractor will be required to prepare a Quality Assurance Plan to meet the requirements required by the Waste Management Plan.

Quality Assurance for the new installations of utility reroutes, reinforcement of retaining walls and soil compaction will be conducted in accordance with the Quality Assurance Procedures in the Facilities Division Design and Construction Procedures Manual. Quality requirements for these items are reflected in the project specifications.

4.0 DATA QUALITY OBJECTIVES

This project's goal is to produce survey results that support the DOE's occupational and environmental protection requirements. Routine occupational protection surveys are developed to comply with 10 CFR 835. Environmental surveys and release surveys must comply with DOE Order 458.1, *Radiation Protection of the Public and the Environment*. Such surveys are unique to the project and DOE O 458.1 requires that the survey plans must be designed in a process that includes developing data quality objectives (DQOs). The DQOs must ensure that the type, quantity, and quality of data will be appropriate for the intended application. The DQO Process systematically defines the criteria that the survey designs must satisfy.

The environmental survey designs must follow the protocols that are outlined in EHS Procedure OHP 20, *Data Life Cycle for MARSSIM Release Surveys of Old Town Buildings*. The DQO Process systematically defines the criteria that the survey design must satisfy. The initial steps in the DQO Process are:

- Identify the decision maker and provide a concise decision statement.
- Define the question that the survey will resolve and identify alternative actions that may result.
- Specify the information needed to resolve the decision statement.
- Provide radionuclides of interest plus spatial and temporal boundaries.
- Support recycling and reuse of materials.
- Specify the action levels and the logical basis for making the decision.
- Specify limits on decision errors
- Implement LBNL Procedure OHP 18, *Technical Basis for Release of Old Town Buildings Using a Three-Stage Survey Method*, to control decision errors
- Mitigate the risks of potential decision errors.

Quality assurance audits should verify that the survey plans have been optimized. The primary criteria for optimizing the survey plan are:

- Adjust the number of samples and boundaries of the survey units relative to the action levels.
- Evaluate the types of measurements that are appropriate in each survey unit.
- Develop sample locations based on DQO requirements and professional judgment.
- Develop an efficient survey design that satisfies all of the DQOs
- Document the operational details and theoretical assumptions in a survey plan.
- Specify any alternative actions that may be implemented.

Quality assurance audits should also verify that quality control features have been incorporated into survey plans. The primary quality control features for environmental and release surveys are:

- The number of samples includes an excess samples to mitigate the likelihood that loss of samples or errors in analysis will cause the power of the survey to be inadequate.
- A chain-of-custody process must be implemented to mitigate loss or damage to samples.
- A minimum 10% repetitive measurement of scan and static measurements should be implemented to verify that field measurements are reproducible.
- The percentage difference in each pair of normal and control measurements and the standard deviation of the percentage difference in each dataset should be calculated.
- The 99% confidence interval of the mean percentage difference must include the value zero.
- Instruments must be calibrated and operated in accordance with accepted national standards and audited procedures.
- The survey measurement procedure must include a calculation of suitable scan sensitivity and static measurement sensitivity. The required measurement parameters must be incorporated in the survey instructions.
- Standard procedures must be implemented to provide daily background and source checks of instruments.
- A Health Physicist must oversee the qualification of the surveyors, the performance of the measurements and the documentation of the results.
- If probes and meters are separate items, instruments must be calibrated and used as paired sets.
- Negative values must be recorded and reported as observed, as applicable.

5.0 TRAINING

Prior to performing work, LBNL staff complete a Job Hazards Analysis (JHA) which authorizes specific work that employees may perform. The JHA identifies the specific tasks staff will perform and the associated hazards and controls to mitigate those hazards. Required and suggested training, including refresher training, is identified along with the date the training is to be completed. LBNL staff supervisors review the JHA with their employees and both the supervisor and the employee sign the JHA. In addition to General Employee Radiation Training (GERT), staff who work with radiological or hazardous materials are required to complete Radiological Worker and Hazardous Material Handling training.

Non-LBNL personnel who work at on the main LBNL campus or satellite facilities are required to take GERT. Subcontractors who work with radiological materials are required to take Radiological Worker training. Subcontractors working with hazardous materials or waste will take an OSHA 30- or 40-hour Hazardous Waste Operations (HAZWOPER) training course.

Personnel performing audits will be qualified under a DOE audit program or certified by a nationally- or internationally-recognized audit or certification body (e.g. the American Society of Quality, International Register of Certificated Auditors, etc.).

Personnel performing special work processes such as welding, inspection of welding, non-destructive assay/examination will be qualified in accordance with national consensus standards.

Other training may be required per the requirements outlined in the procurement documents.

Quality Assurance records generated by training activities include, but are not limited to, the following:

- Documented training results (e.g., test results, completed qualification cards, on-the-job training documentation, course completion notifications/emails, etc.)
- Training course sign-in sheets
- Training certificates

6.0 CONTROL OF PURCHASED ITEMS AND SERVICES

Procurement documents will be issued at all tiers of procurement, and will include a detailed scope of work, technical requirements, quality assurance requirements, document submittal requirements and quality clauses including identification and disposition of nonconformances; documentation and requirements; and rights of access by LBNL or its representatives to the supplier and sub-tier supplier facilities, documents and records.

Subcontractors may be subject to a supplier qualification audit to ensure that the supplier has the appropriate processes and capabilities in place to perform work for the Project in a safe and quality manner. Supplier qualification audits will include a review of their Quality Assurance Program and associated implementing documents and records, and may include an onsite audit by LBNL or its designee to conduct interviews, observe processes, etc. Right of access to supplier's and sub-tier supplier's facilities and records for inspection or audit by the purchaser, LBNL, or other designee authorized by the purchaser is established upon issuance of the procurement contract.

Subcontractors are required to flow the appropriate technical, quality and safety requirements to their sub-tier suppliers and must assess the effectiveness of the control of quality by sub-tier suppliers at intervals consistent with the importance, complexity, and quantity of the product or service being provided pursuant the procurement contract.

The Supplier shall assess the effectiveness of the control of quality by sub-tier suppliers at intervals consistent with the importance, complexity, and quantity of the product or service being provided pursuant to this purchase order (PO).

Audits will be performed by an LBNL or external auditor who is qualified under a DOE audit program or certified by a nationally- or internationally-recognized auditor certification body (e.g. the American Society of Quality, International Register of Certificated Auditors, etc.).

Prior to offering an item or service for acceptance, the Supplier shall verify that the item or service being furnished complies with procurement requirements. LBNL will establish a method to ensure that the item or service procured meets the requirements in the procurement documentation. Verification methods include:

- Source Inspection
- Receiving Inspection
- Post Installation Testing

- Supplier Certificate of Conformance.

The Procurement Department's suite of Standard Practices will be used when procuring items and services.

Quality Assurance records generated by procurement activities include, but are not limited to, the following:

- Requests for proposal
- Bid packages
- Requests for information/responses
- Subcontracts and associated/referenced documentation
- Supplier qualification audit plans, notifications and results
- Supplier submittals
- Inspection and test documentation, including inspection and test plans and results (e.g., certificates of conformance/calibration, data verification results, etc.)

7.0 DOCUMENTS AND RECORDS

7.1 Document Control

The Project Team will ensure that documents used to prescribe processes, specify requirements, establish design, or provide results of scientific or technical research and associated activities are developed, reviewed, approved and issued prior to performing work.

The Project Team will also establish a change control process to ensure that the most current version of a document is available and used by personnel who need to perform work in accordance with these documents. Modification of approved procedures requires use of a formal change control process if the changes impact the quality and/or safety of the activity. Change control must include approval signatures, effective date, and revision number for the changed procedure. EHS Technical Documents will rely on existing EHS Document Control processes. Refer to the *LBNL Project Management Plan for Old Town Demolition Project Phase I* for a list of documents that are required to adhere to configuration management requirements.

The Project will follow the document control requirements outlined in Procedure 10.06.001.101, *Developing, Reviewing and Approving Non-Policy Institutional Documents* and Procedure 10.06.001.102, *Developing, Reviewing and Approving Institutional Policies*.

Some documents generated may contain Official Use Only (OUO) information. The Project Team will review these documents, determine if they meet the definition of OUO information and ensure that documents containing such information are marked, handled and stored in accordance with DOE O 471.3, *Identifying and Protecting Official Use Only Information*.

Quality Assurance records generated by document control activities include, but are not limited to, the following:

- Final, approved, issued and controlled documents (e.g., procedures and associated forms, plans, change control documentation, etc.)

7.2 Records Management

Records will be identified, generated, authenticated, maintained and dispositioned in accordance with DOE O 414.1D, *Quality Assurance*, and DOE O 243.1B, *Records Management Program*.

All records generated by LBNL, subcontractors and/or subtier contractors in support of this Project are considered permanent records and may not be damaged or discarded. General correspondence, such as emails, will not be considered a record unless it serves as objective evidence of performance to requirements.

The LBNL Project Team will establish and maintain a records inventory and will manage all records generated in support of the Project and will submit them to the LBNL Archives and Records Office at the end of each Phase of the Project. Additionally, the Project Team will submit copies (electronic or hard copy) of all 10 CFR 835 records to the Environment, Waste and Radiation Protection Department within the EHS Division in accordance with 10 CFR 835 requirements. The Environment, Waste and Radiation Protection Department will submit copies (electronic or hard copy) of original 10 CFR 835 records to the Project Team for inclusion in the records data package that will be submitted to the Archives and Records office at the end of each Phase.

From initiation of this Project to issuance of the subcontracts for the focused demolition and abatement activities, records generated by the Waste Management Group, ESG, and RPG, may be identified and dispositioned in accordance with Environment, Waste and Radiation Protection Department records management requirements. Records generated by the Facilities Division and other groups during this time frame will be identified, maintained and dispositioned by the LBNL Project Team.

Upon issuance of the subcontracts for the focused demolition and abatement activities, all records, with the exception of the original records generated as part of the Procurement Process and 10 CFR 835, will be submitted to the LBNL Project team for maintenance through disposition

All records generated prior to and after subcontract issuance as part of the Procurement process will be maintained and dispositioned in accordance with the Procurement Department records management requirements.

Hard copies of each record will be made and submitted to the LBNL Archives and Records Office. Electronic copies may be submitted in addition to the hard copy format, but may not be submitted in lieu of hard copies.

Appendix B, *Old Town Demolition Project Records Inventory*, identifies a comprehensive listing of the Quality Assurance records that are expected to be generated during the performance of this Project. This list is subject to change in order to reflect the most current, accurate list of Project records.

8.0 DATA GENERATION AND ACQUISITION

Sampling Methods

The contractor must use approved procedures for collecting field samples, as well as the associated field QC samples. The procedures must identify the sampling methods and equipment as well as the process for preparing and decontaminating sampling equipment (including disposing of decontamination fluids). The sample containers (number, type, and size), preservation methods, and maximum holding times for each sample matrix/media and analysis must be identified in the procedures.

Sample Handling and Custody

The contractor's procedures must describe the sample handling and custody procedures in the field, during transport, and through receipt at the laboratory. The procedures must include instructions for packing samples for transfer/shipment, as applicable.

Analytical Methods

The contractor's procedures must identify the analytical methods (including field measurements, field analyses, and laboratory analyses) and equipment required. The procedures must include sample preparation and/or extraction methods and waste disposal requirements, as applicable.

Quality Control Requirements

The contractor's procedures must identify applicable QC checks for both field sampling methods and laboratory measurements, the frequency for each type of QC check, the acceptance criteria for each QC check, and the associated corrective action(s) if the acceptance criteria are not met.

Measurement and Test Equipment (M&TE) Inspection, Testing and Maintenance

Measurement and test equipment (M&TE) includes inspection and test equipment, measuring and data collection equipment, equipment used for data indication and other equipment used for data indication, collection or evaluation.

The contractor's M&TE will be maintained in accordance with approved procedures that include scheduling, documentation of maintenance, and records management.

The contractor's M&TE will be calibrated under a program that complies with ISO-17205, as applicable. The calibrations must be traceable to NIST standards. Calibration records will be retained by the Project.

Quality Assurance records generated by M&TE inspection, test and maintenance activities include, but is not limited to, the following:

- M&TE Listing
- Inspection, Testing and Maintenance Schedule
- Inspection, Testing and Maintenance Procedures

Inspection, Testing and Maintenance Results (e.g., documented results, Certificates of Conformance/Calibration)

Data Management

The contractor's procedures must describe how the data will be managed and the responsible individuals, tracing the path of data generation in the field or laboratory to final use or storage.

Procedures for checking data and correcting errors, as well as for preventing loss of data during reduction, reporting, and entry to forms, reports, and databases must be included, as applicable.

The contractor's procedures must identify and describe all data handling equipment and methods to process, compile, and analyze the data, including any required computer systems and associated configuration controls.

Additional QA records generated by performance of Data Generation and Acquisition are identified in Appendix B.

9.0 DATA REVIEW AND USABILITY

Verification and Validation Methods

The contractor must develop procedures to be used for verifying and validating data, as well as documenting the process. The procedures must identify responsible individuals and describe how accepted, qualified, and rejected data will be identified, including data qualifiers, as applicable. Discuss how issues shall be resolved and identify the authorities for resolving such issues.

10.0 ASSURANCE AND OVERSIGHT

10.1 Risk Management

The Project will formally manage emerging and actual risk throughout the life of the Project in accordance with the Project's Risk Management Plan (RMP), which provides a comprehensive overview of how risk will be managed throughout the life of the project. It serves as a guideline and communication tool for management, team members, and the funding agency. The objective of this plan is to define the strategy to identify and manage project related risks throughout the project's life cycle, such that there is acceptable, minimal impact on the project's cost and schedule.

The scope of the RMP includes establishing the concept and process for risk management and analysis, defining a procedure for building a risk registry, describing the roles and responsibilities of the project personnel in performing the risk management functions, and defining the reporting and tracking requirements for risk-related information for updates to the Project's Risk Registry.

Quality Assurance records generated by risk management activities include, but are not limited to, the following:

- Updated RMPs
- Risk Registry

10.2 Assessment

During this project, internal and external assessments will be performed to assure that the Project's organizations and activities function effectively in making progress toward strategic goals, and satisfying Laboratory mission needs. Assessment mechanisms include:

- Self-assessments conducted by senior managers, line managers, and staff responsible for the assessed areas
- Internal independent assessments performed by LBNL organizations independent of the assessed programs or by external parties independent of LBNL.

The Project will maintain an assessment schedule, identified in Appendix C that captures all planned self and independent assessments of Operations functions and includes for each assessment: the purpose, when it is scheduled to be performed, and the LBNL organization responsible managing the assessment.

Assessments will be performed by personnel qualified and/or certified to perform assessments.

Quality Assurance records generated by assessment activities include, but are not limited to, the following:

- Project Assessment Schedule
- Assessment Notifications
- Assessment Plans
- Assessment Results
- Assessment Checklists, including objective evidence used to derive a conclusion

10.3 Subcontractor Oversight

The LBNL Project Team will provide general oversight of subcontractor work performed in support of the Project. The subcontractor's procedures must be approved by LBNL prior to mobilization of personnel to the Project work site and prior to use of revised procedures. Field operations are assessed through ongoing oversight activities such as project management meetings, daily site walk-throughs inspections and work observation. . A key activity will be to attend regular Owner, Architect, Contractor meetings to review safety and safe hours worked, communicate LBNL expectations, review status, coordinate upcoming activities, review Contractor's look ahead and schedules, ensure work plans are in place in advance prior to authorizing work packages to proceed, etc. Oversight activities may include, but are not limited to, the following:

- Attendance at planning meetings
- Attendance at plan of the day meetings
- Attendance at pre-task hazard analysis meetings
- Attendance at pre-job briefing meetings
- Observation of personnel performing work
- Performance of field inspections or walk arounds
- Talking with personnel to gauge their level of understanding of a particular process/ requirement.
- Entering observations into LBNL's field ID inspection/ reporting system.

Oversight of radiological protection, environmental protection; worker safety and health; and waste management activities will be provided by the EHS Division, which will periodically observe the subcontractor activities and review the subcontractor's records for compliance with approved subcontractor procedures.

Quality Assurance records generated by oversight activities include, but are not limited to, the

following:

- Meeting Agendas
- Meeting Minutes
- Meeting Sign-in Sheets
- Documented Inspection, Observation, and/or Walk-around Results

10.4 Management Reporting

The Project uses several formal reporting mechanisms to communicate trends, risks, and significant issues to the Federal IPT, BSO, the University of California Office of the President (UCOP) and LBNL Management. LBNL Management uses this information and, as appropriate, feedback from Federal IPT, BSO and UCOP to prioritize risk mitigation and improvement opportunities. Management reporting mechanisms include, but are not limited to, the following:

- Regular interactions among the various DOE offices and members of the LBNL IPT will take place including, but not limited to, the following:
 - Weekly FPD and Field Element Calls
 - Biweekly IPT Core Member Meetings
 - Monthly PARS II Reporting
 - Quarterly Performance Review (QPR)
 - Weekly LBNL Project Team meetings
 - Project Manager Monthly Progress Reports
 - Monthly Sr. Management meetings
 - EVMS Reports

Quality Assurance records generated by management reporting activities include, but are not limited to, the following:

- Meeting Agendas
- Meeting Minutes
- PARS Reports
- EVMS Reports
- Independent Testing Lab Reports
- Inspectors of Record (IOR) reports

10.5 Issues and Nonconformance Management

Personnel are required to promptly identify and manages issues in order to:

- Determine risk and significance
- Identify causes
- Develop and effectively implement corrective actions to ensure successful resolution and prevent the same or similar problems from occurring

Issues are addressed on a risk-based graded approach. Depending on significance, issues may merit

corrective action plan development, causal analysis, extent-of-condition review, and verification and validation. Issues (i.e., findings and noncompliances) and their associated corrective actions will be managed in accordance with the LBNL Issues Management Program (LBNL/PUB-5519(1)) and the LBNL Causal Analysis Program (LBNL/PUB-5519(2)).

Equipment or material nonconformances, including suspect/counterfeit items (S/CIs), will be uniquely identified and/ or segregated to prevent inadvertent use, and their dispositioned accordingly. Examples of conditions that result in nonconformance include:

1. Failure to meet technical or material requirements,
2. Failure to meet a requirement in design documents,
3. A nonconformance cannot be corrected by continuation of the original manufacturing process or by rework, and
4. An item does not conform to the original requirement even though it can be restored to a condition such that its capability to function is unimpaired.

When nonconforming items are identified, the responsible engineer is notified to determine the disposition, which is either “use as is”, “repair”, “scrap”, “replace”. For “use as is” or “repair” dispositions, the responsible engineer reviews and approves the technical engineering justification for the disposition.

When nonconforming items are thought to be suspect or counterfeit, the Office of Contractor Assurance (OCA) will be notified by the Project Team to make the final determination regarding whether the item is suspect or counterfeit. Upon confirmation by the OCA that an item is an S/CI, the Project Team will ensure is reported in the:

1. Occurrence Reporting and Processing System (ORPS) database, in accordance with DOE O 232.1, *Occurrence Reporting*; and
2. Corrective Action Tracking System (CATS) database in accordance with LBNL/PUB-5519 (1), *Issues Management Program*.

S/Cis are reported to the DOE Inspector General in accordance with DOE O 221.1A, *Reporting Fraud, Waste, and Abuse to the Inspector General*, via the ORPS database.

Quality Assurance records generated by issues and nonconformance management activities include, but are not limited to, the following:

- Causal Analysis Reports
- Extent of Condition Review Reports
- Corrective Action Plans
- Corrective Action Tracking System (CATS) Database Entries
- Objective Evidence of Completion of Corrective Actions
- Effectiveness Review Reports
- Price Anderson Amendment Act (PAAA) Noncompliance Tracking System (NTS) Database Entries
- ORPS Database Entries
- Nonconformance Dispositions

11.0 SOFTWARE QUALITY ASSURANCE

While it is not anticipated that new software will be developed during the course of this Project, there may be modifications to existing software and/or use of supplier-developed or supplier-acquired software.

Modifications to existing LBNL software, supplier-developed and/or supplier-acquired software must be modified and/or developed in accordance with the requirements outlined in the LBNL QA program, as described in LBNL/PUB-3111, *Quality Assurance Program Description*. The supplier may submit their Software Quality Assurance (SQA) Plan that governs the development, modification and/or acquisition of software for review and approval by the Project Team prior to using supplier-developed, -modified and/or -acquired software for Project activities.

Non-safety system software will adhere to general quality assurance requirements, at a graded approach commensurate with its application and end use. At a minimum, on-safety system software will be independently validated to ensure that the software performs as intended.

Safety system software will comply with the requirements outlined in Procedure 10.01.003.03, *Safety Software Quality Assurance*, and EHS Procedure 774, *Safety Software Quality Assurance*.

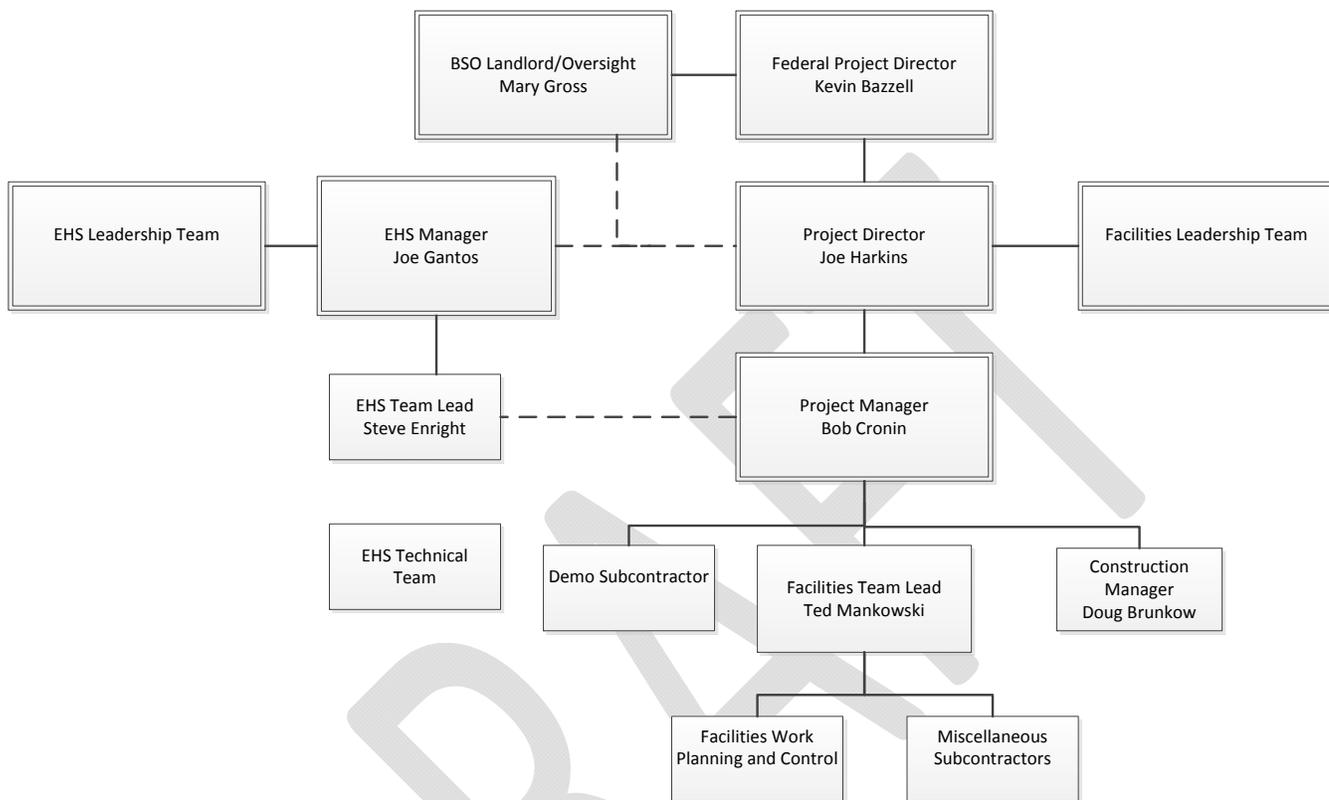
The Project Team will identify the software used in support of the project, determine whether or not it is safety system software, and maintain an inventory of the software. The Software Inventory List will include:

- (a) The software name and version identifier
- (b) Description of functional requirements and system limitations, including hardware
- (c) Explanation of the mathematical models and derivation of the numerical methods used in the software design (physical and mathematical assumptions on which the software is based shall be included, along with an explanation of the capabilities and limitations of the software)
- (d) Instructions that describe user interaction with the software, user messages initiated as a result of improper input and how the user can respond, the identification and description of input and output specifications and formats, and input parameters
- (e) Description of any required training necessary to use the software
- (f) Information for obtaining user and maintenance support.

Quality Assurance records generated by issues and nonconformance management activities include, but are not limited to, the following:

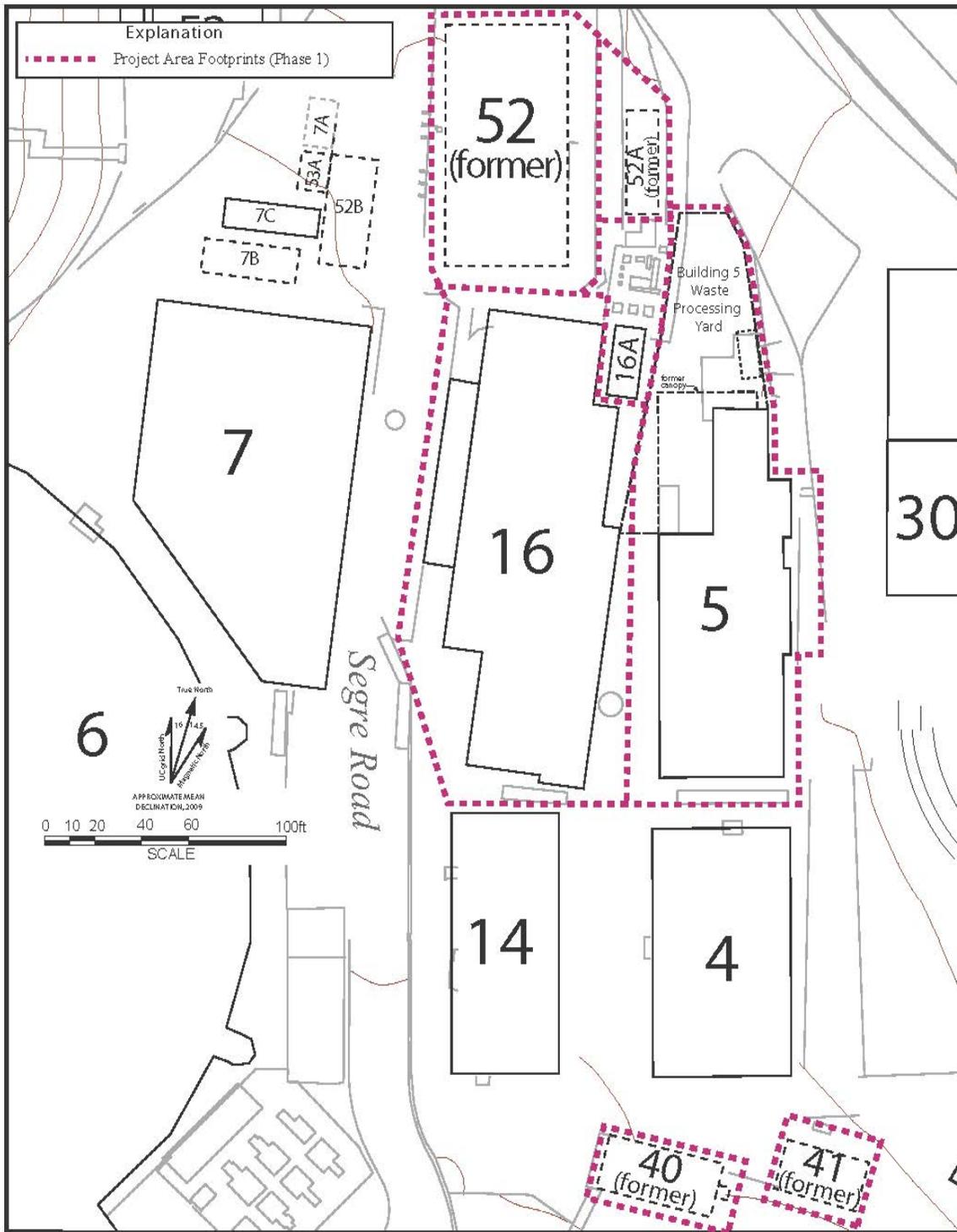
- Updated Software Inventory List
- Software Configuration Management Documentation (i.e., procurement documentation, requirements documentation, design documentation, code, test documentation, etc.)

Figure 1-1. Functional Chart



Solid lines = functional links
Dashed lines = oversight links

Figure 2-1. Site Map with Sampling Locations



Location of Old Town Demolition Project Area (Phase 1)
- Buildings 5, 16, 16A, 40, 41, 52 and 52A.

APPENDIX A – DEFINITIONS

Acceptance	The documented determination by the receiving organization that an item, service or work project is suitable for the intended purpose
Administrative Controls	Provisions relating to organization and management, procedures, recordkeeping, assessment and reporting necessary to ensure safe operation of a facility.
Assessment, Management	Periodic assessment by managers at every level of their organizations and functions to determine how well they meet customer and performance expectations and mission objectives, identify strengths or improvement opportunities, and correct problems. Assessments should address the effective use of resources to achieve the organization's goals and objectives.
Assessment, Self	Periodic assessment by the line of their programs, processes or functions, or elements therein to determine how well they are performing to established requirements, identify strengths or improvement opportunities and correct problems.
Calibration	The set of operations which establish, under specified conditions, the relationship between values indicated by a measuring instrument or system, and the corresponding standard or know values derived from the standard.
Certificate of Conformance	A document signed or otherwise authenticated by an authorized individual certifying the degree to which items or services meet specified requirements.
Certification	The act of determining, verifying and attesting to, in writing the qualifications of personnel, processes, procedures, or items in accordance with specified requirements.
Commercial Grade Item	An item that is 1) not subject to design or specification criteria unique to a LBNL program or facility, 2) used in applications other than the nuclear industry and 3) ordered from the manufacturer or supplier on the basis of specifications set forth in the manufacturer's published product description.
Configuration Management	The process of identifying and defining the configuration items in a system, controlling the release and change of these items throughout the system life cycle, and the recording and reporting of the status of configuration items and change requests.
Corrective Action	An action that eliminates a deficiency and/or a cause of an issue/finding and prevents or significantly reduces the likelihood of the same problem occurring again.
Document	Written, visual, audio-video-recorded information stored in the form of hard copy, film, magnetic tape, electronic data, or in an on-line, web-based format.
Document Control	The process that provides for document adequacy review, approval for release by authorized personnel and distribution for use at the prescribed work locations.
Document, Controlled	A document that is prepared, reviewed, approved and distributed in accordance with established implementation procedures that are subject to controlled distribution and to a defined and controlled change process.
Graded Approach	The process by which the level of analysis, documentation, verification and

	other controls are developed commensurate with the risk of the item, service or work performed.
Item	An all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, subsystem, system, unit, data or software.
Measurement and Test Equipment (M&TE)	All devices used to calibrate, measure, gage, test, inspect or otherwise determine compliance with prescribed technical requirements.
Nonconformance	A deficiency in a characteristic or record that renders the quality of an item or sample unacceptable or indeterminate.
Procurement Document	Purchase requisitions, orders, contracts, specification or other documents used to define technical and quality assurance requirements for the procurement of items and services.
Quality	The condition achieved when an item, service or process meets or exceeds the user's requirements and expectations.
Quality Assurance	Actions taken that provide confidence that quality is achieved.
Quality Assurance Program	The overall program or management system established to assign responsibilities and authorities, define policies and requirements and provide for the performance and assessment of work.
Quality Assurance Record	A completed record or any authenticated portion of a record that provides objective evidence of the quality of items or activities.
Record	All books, papers, maps, photographs, machine-readable materials, or other documentary materials, regardless of physical form or characteristics, made or received that are preserved or appropriate for preservation that serves as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities.
Receipt/Receiving Inspection	A method of accepting an item or related service from a supplier by examination or testing of the item or related service to verify conformance to specified requirements.
Repair	The process of restoring an item to a condition such that the capability of an item to function reliably and safety is unimpaired even though that item still does not conform to the original requirement.
Requirement	A specific obligation to perform an action mandated by LBNL senior management or the federal, state, or local government; or to comply with the Laboratory's contract with the Department of Energy; or to comply with agreements made between the Laboratory and its corporate manager, the University of California.
Rework	The process by which an item is restored to original specifications by completion or correction.
Service	The performance of work, such as design, construction, fabrication, inspection, nondestructive examination, testing, calibration, environmental qualification, equipment qualification, repair, installation or similar activities.
Safety and Hazard Analysis Software and Design Software	Software that is used to classify, design or analyze nuclear/radiological facilities.

Safety Management and Administrative Controls Software	Software that performs a hazard control function in support of nuclear facility or radiological safety management programs or Technical Safety Requirements or other software that performs a control function necessary to provide adequate protection from nuclear facility or radiological hazards.
Software	Computer programs, procedures, rules and associated documentation and data pertaining to the operation of a computer system.
Software Validation	The process of test and evaluation of the completed software to ensure compliance with software requirements.
Software Verification	The process of determining whether or not the product of a given phase of the software development cycle fulfills the requirements imposed by the previous phase.
Software Verification and Validation	The process of determining whether the requirements for a system or component are complete and correct, the products of each development phase fulfill the requirements or conditions imposed by the previous phase and the final system or component complies with specified requirements.
Source Inspection	A method of accepting an item or service from a supply by monitoring, auditing, surveilling, witnessing, or observing activities performed by the supplier.
Supplier	An all-inclusive term to mean any internal or external individual or organization who furnishes items or services in accordance with a contract and used in place of vendor, seller, source, participant, contractor or subcontractor.
Testing	An element of verification to determine the capability of an item to meet specified requirements or processes that facilitate the collection of data in conducting scientific investigations by subjecting the item or environment to a set of physical, chemical, environmental or operating conditions.
Traceability	The ability to trace the history, application and location of an item, data or sample using recorded documentation. As related to metrology, traceability means the ability to relate individual measurement results through an unbroken chain of calibrations to one or more of the following: <ul style="list-style-type: none"> • U.S. national standards maintained by the National Institution of Standards Technology (NIST) or the U.S. Naval Observatory; • Fundamental or natural physical constants with values assigned or accepted by NIST. • National standards of other country which are correlated with NIST.
Validation	An activity that demonstrates or confirms that a process, item, data set or service satisfies the requirements defined by the user.

APPENDIX B – OLD TOWN DEMOLITION PROJECT RECORDS INVENTORY

- General Project Records
 - Project Execution Plan
 - Project Management Plan
 - Quality Assurance Project Plan
 - Waste Management Plan
 - Storm Water Pollution Prevention Plan
 - EVMS entries
 - Cost Account Plans
 - Project Cost Reports
 - Variance Analysis
 - Recovery Plans
 - Completed NEPA planning documents
 - Completed CEQA planning documents
- Procurement Records
 - Request for Proposal
 - Request for Information/Responses
 - Bid Documentation
 - Supplier Submittals
 - Supplier Qualification Audit Plans
 - Supplier Qualification Audit Results
 - Supplier Nonconformance Data and Disposition Results
 - Purchase Orders
 - Invoices
 - Accounts Payment Transactions
- Training Records
 - Completed training documentation
 - Training Course Sign-in Sheets
 - Training Certificates
- Subcontractor Safety Records
 - Subcontractor Job Hazards Analysis
 - Subcontractor Work Plans
 - Hazard Analysis Report
- Construction Records
 - Inspection Records
 - Test Records
- Engineering Records
 - Design Drawings
 - Design Specifications
 - Structural Demolition Plans
 - Facility Record Drawings
- Data Sampling Records
 - Data Sampling Procedures
 - Data Sampling Equipment/Instrument Calibration Schedule
 - Data Sampling Equipment/Instrument Calibration Results (Certificates of Calibration)

- Nonconformance Data and Disposition Results
- Data Collection Documentation
- Chain of Custody for Samples
- Completed Sampling Forms
- Data Analysis & Validation Records
 - Data Analysis & Validation Procedures
 - Data Analysis Equipment/Instrument Calibration Schedule
 - Data Analysis Equipment/Instrument Calibration Results (Certificates of Calibration)
 - Nonconformance Data and Disposition Results
 - Analysis Results
 - Validation Results
- Fire Protection Records
 - Hot Work Permits
 - Hot Work Inspection Results
- Radiological Records
 - Radiological Work Authorizations
 - Radiation Detection Results
 - Radioactive and Nuclear Material Inventories
 - Radiological Safety System Software List and Associated Configuration Management Documentation
- Hazardous/Radiological Waste Records
 - Disposal Documentation
- Shipping/Transportation Records
 - Shipping Manifests
 - Chain of Custody
- Assurance Records
 - Causal Analysis Reports
 - Extent of Condition Review Reports
 - Corrective Action Plans
 - Corrective Action Tracking System (CATS) Database Entries
 - Objective Evidence of Completion of Corrective Actions
 - Effectiveness Review Reports
 - Price Anderson Amendment Act (PAAA) Noncompliance Tracking System (NTS) Database Entries and supporting documentation
 - ORPS Database Entries
 - Nonconformance Dispositions
 - Updated Software Inventory List
 - Software Configuration Management Documentation
- Assessment and Oversight Records
 - Assessment Schedule
 - Assessment Notifications
 - Assessment Plans
 - Assessment Reports/Results
 - Corrective Actions
 - Site/Field Inspections/Walkarounds
 - Site/Field Findings/Observations
 - Safety Deficiencies

- Progress Reports

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APPENDIX C – OLD TOWN DEMOLITION PROJECT ASSESSMENT SCHEDULE

Managed by (Org)	Title	Date Scheduled	Primary Driver	Type	Periodicity	Status
DOE-EM	Integrated Project Review (IPR)	May 2014	DOE O 413.3B	External	As needed	Complete
DOE- OPA/ EM	EVMS Surveillance	Aug 2014	DOE O 413.3B	External	Biennial	
LBNL	EVMS Self-Assessment	Aug 2015	DOE O 413.3B	Internal	Biennial	

* This assessment schedule is a living document and is subject to change, without revision to the QAPJP, to ensure that the assessments identified are current and accurate.