Stanford Linear Accelerator Center (SLAC) EM Project(s)
Baseline Summary
June 2008

BACKGROUND

The Stanford Linear Accelerator Center (SLAC) site occupies 426 acres of Stanford property in San Mateo County outside of Menlo Park, south of San Francisco, California. SLAC is currently leased to DOE and is sited approximately 2 miles west of the main campus.

Since its construction in the 1960s, state-of-the-art electron accelerators and related experimental facilities for use in high-energy physics and synchrotron radiation research have been designed, constructed, and operated at SLAC. The main research facilities currently include the LINAC, the Positron-Electron Project (PEP) storage ring, the Stanford Positron-Electron Asymmetric Ring (SPEAR), the Stanford Linear Collider (SLC; currently inactive), and the Stanford Synchrotron Radiation Laboratory (SSRL). These research activities are planned to continue into the foreseeable future with the planned construction of the Linear Coherent Light Source being the next major research project.

Historically, research and support operations at SLAC included the storage and use of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), metals, petroleum hydrocarbons (e.g., gasoline, diesel fuel, oil, and grease), and other hazardous materials. The generation of radiation has also induced radioactivity (tritium) in local areas of soil and groundwater at the facility. The Office of Science (SC) is responsible for managing the tritium operable unit of the project.

In late 1984, an investigation confirmed that contaminated soil and groundwater were present and could potentially threaten public health and the environment. In July 1985 the California Regional Water Quality Control Board, San Francisco Bay Area Region (RWQCB) placed SLAC under a Waste Discharge Order (No. 85-88) for the former solvent underground storage tank (FSUST) area.

Efforts to define conditions at SLAC and identify soil and groundwater units that may have been impacted by contaminants of potential concern (COPCs) as a result of historical or ongoing activities led to the development of two Preliminary Site Assessments. The first was conducted in 1992 by Converse Environmental West and focused on 22 areas identified by a 1991 DOE Tiger Team Audit. The second was a facility-wide assessment conducted in 1994 by ESA Consultants. Prior to these investigations, there was no facility-wide characterization effort at SLAC; instead, interim removal actions (IRAs) were conducted on an as-needed basis. In May 2005, the RWQCB issued a new Order (RWQCB, 2005) to DOE and Stanford University for the "investigation and remediation of impacted soil and groundwater resulting from historical spills and leaks that have occurred during the course of operations at the SLAC." The RWQCB Order addresses numerous release locations at SLAC and provides the framework for completing investigation and cleanup activities at the facility.

The Project mission is to continue to conduct necessary actions at the Investigation Areas (IAs) and Miscellaneous Soil Sites (MSSs) for which EM is responsible including the remediation of

impacted soil, implementation of necessary long-term groundwater remediation remedies, and transfer of responsibility for long-term operation and maintenance of necessary groundwater treatment systems to the DOE Office of Science (SC). This will allow DOE to meet ongoing obligations as defined in the DOE lease agreement with Stanford University (April 26, 1962), comply with the RWQCB site cleanup requirement Order (RWQCB, 2005) and achieve Project completion.

SCOPE DESCRIPTION

EM's Project objectives are to: 1) satisfy obligations (that are determined to be DOE-EM's responsibility) defined in the DOE – Stanford University lease, the management and operating (M&O) contract with Stanford University to manage and operate SLAC for DOE, and the RWQCB Order; and 2) successfully transfer responsibility for long-term response actions to SC.

The following are the major Project requirements to meet Project objectives:

1. Conduct all operations in accordance with the Integrated Safety and Environmental Management System (ISEMS) guidelines, the SLAC Laboratory Environmental Safety & Health (ES&H) Manual, and M&O Contract Work Smart Standards.
2. Construct groundwater treatment systems at the Plating Shop Area (PSA) and the Test Lab/Central Lab (TL/CL) area as necessary.
3. Start up and operate the groundwater treatment systems.
4. Upgrade treatment system to DPE capability at (The Former Solvent Underground Storage Tank (FSUST) area).
5. Conduct groundwater monitoring at the FSUST, FHWSA, PSA, and Test Lab/Central Lab (TL/CL) areas as part of SLAC's site-wide groundwater monitoring program.
6. Excavate contaminated soil where practicable.
7. Meet all enforceable milestones (i.e., develop required documents and complete remedial actions).
8. Conduct verification sampling to ensure that residential cleanup standards have been met and are acceptable to the regulator.
9. Dispose of all remediation-generated waste as appropriate.
10. Complete required documentation needed in order to obtain RWQCB closure certificates for completed sites.
11. Complete all DOE Critical Decision and Project Closeout/Transition documents/packages in accordance with DOE O 413.3A.

PROJECT MANAGEMENT

Based on the direction from EM Headquarters, the Oakland Projects Office as part of the Small Sites Program developed the near-term baseline for this project. The SLAC project baseline has undergone an independent review to verify the reasonableness of the scope, cost, and schedule for the project, however it has yet to receive IPR Certification. The near-term baseline reflects the identified scope that can reasonably be accomplished for the identified cost in the identified time period if the near-term baseline is funded as required and contingency funds are provided as required during project execution. It also establishes the baseline as an acceptable point from which to track and control future change. The review and approval process accommodates the likely changes in the EM complex, site priorities and funding plans. These changes could affect both near-term (within the next five years) and life-cycle cost, schedule and scope. Such future changes may be necessary to comply with applicable environmental legal obligations while maintaining essential functions necessary to protect human health, the environment and national security; reflect funding different from the baseline assumptions; incorporate technological advances; implement specific programmatic risks; or implement programmatic business cases. Long Term Stewardship (LTS) will be transferred to SC in FY2012. This out-year planning estimate includes the first year of the required budget.

LIST OF PROJECTS

The SLAC EM program consists of one project as shown below: The CD-1 approved Near-Term Baseline (NTB) range for this project is from FY 2008 – FY 2011 and the Out Year Planning Estimate Range (OPER) for budget transfer to SC is FY2012.

Project	Date Approved	
	Near Term Baseline (NTB)	Out Year Planning Estimate Range (OPER)
CBC-SLAC-0030 – Soil and Water Remediation – Stanford Linear Accelerator Center	CD-2/3 not yet approved	CD-2/3 not yet approved

Note: Current Baseline is Pre CD-2/3.

PROJECT SCOPE

CBC-SLAC-0030 – Soil and Water Remediation – Stanford Linear Accelerator Center
EM will follow a CERCLA-like process and deliverables. Accordingly, the project is managed like a CERCLA project with the RWQCB operating as the State appointed "Administrative Agency". The work scope has been grouped into four Operable Units (OUs) and EM is responsible for the GW VOC and West Campus OUs through the Risk Management Plan deliverables and the Research Yard OU through the Risk Assessment deliverable; SC is responsible for preparing subsequent Research Yard OU documents because storm water management is the perceived problem that will require action. Similarly, SC is responsible for the Tritium OU because the tritium generation is a result of accelerator operations.

Using an early decision making process facilitated by the development of data packages all sites of interest are surveyed according to their nature. Sites with minimal contamination have data packages prepared to collect the evidence that no remediation will be required. Sites with more contamination have data packages that may require additional sampling and modeling, resulting

in no action, or potential removal actions. Regulatory approval is required for each site to certify that all required actions (if any) are complete.

EM is responsible for installing groundwater (GW) treatment systems as needed to correct the Groundwater OU. Systems at the FSUST Area and the Former Hazardous Waste Storage Area (FHWSA) have been previously installed and systems may be installed at the Plating Shop Area (PSA), and Test Lab/ Central Lab (TL/CL).

The scope of EM's project at SLAC covers 49 activities: 22 Action sites (19 RAs + 3 GW treatment systems) and 27 No Further Action sites. This remaining scope for the investigation and cleanup strategy envisions two overlapping phases of work to close the SLAC site with respect to the Cleanup Order, with work responsibility shared between SC and EM.

- EM Responsibilities (until transfer to SC)
  a. Conduct removal actions at practicable soils-only sites (e.g., investigation, cleanup by soil removal and obtain regulatory approval via Certificates of Completion) and complete the CERCLA process for soils-only sites
  b. Implement the CERCLA process at the GW VOC, West Campus, and IR-6 Operable Unit sites, not including the Tritium OU (e.g., investigation, design/ installation of treatment systems, prepare O&M plans, conduct treatment systems O&M until project completion)
  c. Conduct site-wide groundwater and soil vapor monitoring until the EM transfer to SC
  d. Evaluate the 15 sites identified as requiring no further action (in EBR Table 4-1) and obtain regulatory approval for No Further Action. Investigate when practicable or perform a removal action.
  e. Prepare required technical documentation reports for all EM activities
  f. Implement the *SLAC Public Participation Plan*
  g. Assist SC in the transfer of responsibility from EM to SC
  h. Develop Long-Term Response Action (LTRA) plan and costs for ongoing operation and maintenance of treatment systems, monitoring and site closure documentation before completion of the project.
  i. Complete all DOE Critical Decision and Project Closeout/ Transition documents/packages in accordance with DOE O 413.3A.

PROJECT COST

(dollars in millions)

Cost Element	Project Number			
	CBC-SLAC-0030			
1. Prior Year Costs (1997-2007)	$22.4			
2. Total Near-Term Baseline (50% Confidence Level)	$23.4			

3. Unfunded Contingency	$15.8			
4. Performance Baseline (80% Confidence Level)	$39.2			
5. Out Year Planning Estimate (FY2012)	$2.4			
6. **Total Life Cycle Cost**	$64.0			

Note: Costs shown represent Pre CD-2/3 proposed funding. EMAAB approval of CD-2/3 baseline has not yet received.

SUMMARY LIFECYCLE BASELINE SCHEDULE

See Attachment 1 for the Draft Pre CD-2/3 SLAC Summary Near Term Baseline Schedule.