Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Oakland** Print Date: **3/9/2000**

Site Summary Level: **Lawrence Livermore National Laboratory** HQ ID: **0258**

Project **OK-002 / Lawrence Livermore National Laboratory Site 300 Remedial Action**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Purpose of Project
Lawrence Livermore National Laboratory (LLNL) Site 300 is a DOE experimental test facility operated by the University of California. The facility is primarily a high-explosives (HE) test facility that supports the LLNL weapons program in research, development, and testing associated with weapons components. This work includes explosives processing; preparation of new explosives; and pressing, machining, and assembly of explosives components. Some experiments performed at Site 300 do not involve high explosives. These experiments may require more space or isolation or may have other requirements that cannot be met at the Livermore Site. Access to Site 300 is restricted.

The topography of Site 300 consists of a series of steep hills and canyons generally oriented northwest to southeast. Elevation ranges from about 500 ft. in the southeast corner to about 1,750 ft. in the northwestern area. The climate is semiarid and windy. The average rainfall for the 32 yr. period from 1965 - 1997 was 10.44 inches. The temperature extremes in 1997 ranged from 99 degrees Fahrenheit (F) in July to 27 F in January. The seven major plant habitats occurring at Site 300, four upland habitats and three less extensive wetland habitats, consist of 14 plant communities containing 343 plant taxa. There is an assortment of endangered species on site.

Hazardous material releases were initially identified at LLNL Site 300 in the early 1970s when tritium was found at elevated activities in spring water samples from the northern part of the site. Tritium was released to ground water from one explosives testing firing table and two landfills containing HE testing debris. In 1982, VOC contamination was initially detected in ground water from an onsite water supply well. HE compounds were initially detected in soil and ground water in 1986 during the closure of several wastewater disposal lagoons. Environmental investigations have been conducted at Site 300 since 1982. Prior to August 1990, investigations of chemical contamination were conducted under the oversight of the California Regional Water Quality Control Board (RWQCB) - Central Valley Region. In August 1990, Site 300 was placed on the National Priorities List (NPL). Since then, all investigations have been conducted in accordance with CERCLA under the oversight of the three supervising regulatory agencies: U.S. EPA, RWQCB, and the Ca. Department of Toxic Substances Control (DTSC). In 1992, a CERCLA Federal Facility Agreement was negotiated between DOE, EPA, DTSC, and the RWQCB. A Record of Decision (ROD) was signed for the General Services Area (GSA) Operable Unit (OU) in January 1997 and an Interim ROD for the B834 OU in September 1995. A site-wide Interim ROD is due to be signed in December 2000 with the Final ROD due in April 2007.

Twenty distinct ground water contaminant plumes have been identified. Contaminants including VOCs (primarily TCE), nitrate, perchlorate, and RDX have been released to soil and ground water from drum storage areas; debris piles; burial of contaminated debris in unlined pits, trenches, and landfills; discharging contaminated rinse water to unlined lagoons and retention basins; several disposal dry wells (sumps); pressure and temperature effects testing facilities; and explosives formulation machining facilities. Tritium and depleted uranium are present in ground water in the northern part of Site 300 (maximum activities detected are approximately 2,000,000 pCi/L and 120 pCi/L respectively).

DOE/LLNL established a Community Work Group for the Livermore Site in 1989 to provide an ongoing forum to advance the understanding of technical issues and project decisions, community interest, and the superfund process. Additionally, a public interest group called Tri-Valley CAREs (TVC) was awarded an EPA Technical Assistance Grant (TAG) to monitor the progress of the cleanup for both LLNL sites. DOE/LLNL share on a

Project Description Narratives

yearly basis, the next year's draft work plan task list with TVC. TVC's concerns are considered prior to finalizing this list.

Definition of Scope:
LLNL Site 300 has been divided into eight (8) Operable Units based on programmatic, topographic, and hydrologic considerations:
1. General Services Area (GSA) Operable Unit - administration and maintenance area
2. Building 834 Operable Unit - thermal pressure testing area
3. Pit 6 Operable Unit - mixed-waste landfill and vicinity
4. HE Process Area Operable Unit - HE formulation and testing area; HE Burn Pits
5. Building 850/Pits 3&5 Operable Unit - explosives testing areas
6. Building 854 Operable Unit - former environmental testing of HE
7. Building 832 Canyon Operable Unit - testing similar to Building 834
8. Site 300 Operable Unit - areas not covered in OUs 1 through 7

RCRA activities include the closure of two mixed waste landfills and three high-explosives burn pits and adjacent areas.

Seventy-three (73) release sites have been identified in these OUs at LLNL Site 300.

TREATMENT FACILITIES	NO. OF RELEASE SITES
OU #1 Gen. Svcs Area (GSA)	12 ( ) closed
OU #2 Building 834	11 ( ) closed
OU #3 Pit 6	1 ( ) closed
OU #4 Building 815	1 ( ) closed
OU #5 Building 850/Pits 3&5	8 ( ) closed
OU #6 Building 854	3 ( ) closed
OU #7 Building 832 Canyon	2 ( ) closed
OU #8 Site 300	29 ( ) closed
Site 300 RCRA	6 ( ) closed

Technical Approach:
General Services Area (GSA) Operable Unit: ROD signed January 1997. Contamination has resulted from past solvent disposal, causing VOC contamination of soil, bedrock, and ground water. Remediation at the GSA consists of extraction and treatment of soil vapor and ground water. Current remediation at the Central GSA uses air strippers to purge VOCs from contaminated ground water and granulated activated carbon (GAC) to trap purged VOC`s from the air stream. In addition, soil vapor is extracted and scrubbed of VOCs using GAC. At the Eastern GSA, ground water is stripped of VOCs using liquid phase GAC. Treated water below VOC detection limits is released to the surface after testing.

Building 834 Operable Unit: Past spills of TCE and other VOCs from release sites at the core of the B834 complex have resulted in contamination of the vadose zone and a perched water-bearing unit. The deeper regional aquifer has not been affected. DNAPLs and LNAPLs are present in ground water. (OAK STCG Need OK99-01) Other contaminants of concern in ground water include nitrate and TBOS/TKEPBs. An Interim Record of

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Decision (signed in September 1995) specifies an evaluation of innovative technologies for the remediation of the TCE DNAPL and TBOS LNAPL source. DOE has invited technology developers to test DNAPL technologies at the site. In addition, the interim Record of Decision requires a contingent interim solution which dewaters the contaminated zone, treats surface groundwater using air stripping with GAC as in the GSA, and vapor extraction of the dewatered area with GAC treatment of the extracted vapor. Several innovative technologies (including bioremediation) will be tested at the OU prior to completion of the Final ROD. Surfactants have already been tested at this OU (completed in FY97) and were not found to be successful. Cleanup goals for soil vapor are based on reducing worker health risk. Ground water cleanup goals for the perched water aquifer have not yet been determined and will be decided in the site-wide Final ROD due in April 2007.

Pit 6 Operable Unit: From 1964 to 1973, approximately 1,900 cubic yards of waste was placed in nine unlined debris trenches and animal pits at Landfill Pit 6. The material buried included laboratory and shop debris and biomedical waste. Plumes of VOCs and tritium in ground water originated from the landfill. VOC concentrations in ground water have been declining since 1989. Perchlorate and nitrate have also been detected in the ground water. The landfill was capped as a removal action in 1997 to prevent infiltrating precipitation from further leaching contaminants from the buried waste. The landfill cap is a RCRA cap. Pit 6 ground water VOC and tritium concentrations continue to decline. The final remediation solution will be decided when the Site-wide Interim and Final RODs are written (December 2000 and April 2007 respectively).

HE Process Area OPERABLE UNIT: Surface spills at the drum storage and dispensing area for the former B815 steam plant, where TCE was used to clean pipelines, resulted in the release of TCE and other VOCs to the ground surface and contamination of the ground water and the vadose zone. Ground water extraction will be initiated in 1999 as a removal action to control offsite VOC migration from B815. HE compounds, nitrate, and perchlorate have also been detected in ground water and are likely to be the result of wastewater discharges to the former unlined rinsewater lagoons. HE compounds have also been detected in surface soil and the vadose zone. The lagoons were closed in 1989. Guard wells have been installed to detect VOCs in groundwater at concentrations above the MCL. Surface treatment will be liquid phase GAC or air stripping with gas phase GAC. Nitrates will need to be extracted and treated with ion exchange. Treated water will be reinjected. In addition, VOCs, nitrate, and perchlorate have been detected in ground water in the vicinity of the former HE Burn Pits. The HE Burn Pits were capped under RCRA in 1998. The final remediation solution will be decided when the Site-wide Interim and Final RODs are written (December 2000 and April 2007 respectively). Cleanup levels will also be agreed upon at the time of the Final ROD in 2007.

Building 850/Pits 3&5 Operable Unit: Contamination in this OU emanates from the B850 Firing Table, and from Landfill Pits 3, 5, and 7. Tritium is the primary contaminant in ground water. (OAK STCG Needs OK99-13, OK99-21) TCE and 1,1-DCE have been detected downgradient of Landfill Pit 5. Uranium isotope signatures characteristic of depleted uranium have also been identified downgradient of Pits 5 and 7 and B850. Other ground water contaminants include nitrate and perchlorate. This OU also addresses uranium contamination in ground water from Landfill Pit 7. Landfill Pits 1,4,7, and a portion of Landfill Pit 3 were capped and closed under RCRA in 1992. PCB bearing shrapnel from explosive experiments was identified in the vicinity of the B850 Firing Table and was remove in 1998. PCBs, chlorinated dibenzodioxins and dibenzofurans, high melting explosives (HMX), metals and uranium-238 have been detected in soil in the vicinity of this firing table. Source investigations of Landfill Pits 3 and 5 will be done in 1999 to determine the location of the tritium hot spots. Monitored Natural Attenuation will be investigated as a possible remedial solution for the tritium plume. The final remediation solution will be decided when the Site-wide Interim and Final RODs are written (December 2000 and April 2007 respectively). Cleanup levels will also be agreed upon at the time of the Final ROD in 2007.

Building 854 Operable Unit: Characterization of the B854 area is in process and the complete extent of groundwater contamination is not yet known.

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Preliminary data indicates an extensive region of soil contaminated with VOCs, PCBs, metals, HMX, and tritium. Nitrate, VOCs, perchlorate, tritium, and uranium-238 have been detected in the ground water. The primary contaminant is TCE. TCE was used at B854 as a heat exchange fluid. TCE contaminated soil was excavated in 1983 in the vicinity of the B854H drain outfall. Surface soil was removed at the northeast corner of B854F. The TCE brine systems were removed in 1989. Groundwater and soil remediation is anticipated and is likely to be similar to extraction and surface treatment of soil and groundwater at GSA and Building 834.

Building 832 Canyon Operable Unit: Characterization is still underway at the Building 832 Canyon area and thus the complete extent of ground water contamination is not known. VOCs above detection limits have been detected in ground water samples taken from wells near the south most boundaries of Site 300 thus suggesting offsite plume migration. The primary contaminants are VOCs, nitrate, and perchlorate in the ground water. Nitrate and HMX have been detected in the subsurface soil. HMX is present in surface soil. Facilities at this OU were used to test the stability of weapons and weapons components under various environmental conditions. Vadose zone and ground water contamination was identified emanating from the G830 and B832 release sites. Soil and groundwater remediation is necessary and will be similar to extraction and surface treatment of soil and groundwater contamination at the GSA and Building 834. An iron fillings treatment system in conjunction with geosiphon wells is being installed in the lower portion of the Canyon. This is part of a TDI project with DOE's Kansas City Plant. This treatment system will be used to treat both VOCs and nitrate contaminated ground water.

Site 300 Operable Unit: This OU covers all other release sites not covered in individual OUs. These release sites are: B801 Firing Table; B801 Dry Well; B802 Firing Table; B833 Disposal Lagoon; B845 Firing Table; B851 Firing Table; and the four potential release sites (B812 Firing Table; B812 Dry Well; B865 Advanced Test Accelerator, Sandia Test Site) that have yet to be characterized. This task also includes development of all the documents required for both the Interim ROD (December 2000) and Final ROD (April 2007).

Project Status in FY 2006:

By FY2007, all Site 300 environmental restoration facilities will be constructed and in operation. Based on the agreed upon FFA schedule:

1. Site-wide Interim ROD will have been in place for 5 years.
2. Final Evaluation Summary (site-wide) will have been completed.
3. Final Proposed Plan for the Final ROD will be completed in June 2006.

Post-2006 Project Scope:

By the AC:PC definition, cleanup will continue to FY2007. After 2007, remedial action activities at the LLNL Site 300 will consist only of treatment facility operation and maintenance, ground water monitoring analysis and reporting:

OU #1 General Services Area 2001
OU #2 Building 834 Area 2004
OU #3 Pit 6 2000
OU #4 Bldg 815 (HE Process Area) 2006
OU #5 Bldg 850/Pits 3 & 5 2006
OU #6 Bldg 854 2006
OU #7 Bldg 832 Canyon 2006
OU #8 Site 300 2006

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RCRA Closures	1998
Site-wide Final ROD	2007

Project End State

By FY07, remediation will be complete in that all ground water treatment facilities will be constructed and in operation, and removal actions (construction of pit caps, drainage / diversion ditches, etc.) and RCRA closures will be completed. Maintenance and operation of treatment facilities will continue beyond FY007 until ground water contaminant concentrations reach regulatory approved levels which is anticipated to be FY2030. In addition, maintenance of all constructed closures (including ground water monitoring) will continue until approximately FY2030. After EM's LTS&M the Site's landlord will continue normal S&M activities to monitor the site. There will be no adverse impact on potential land use in that LLNL is expected to continue to occupy and use the site indefinitely and site contamination does not affect operations of Site 300. The project regulatory drivers are CERCLA, SARA, RCRA and the NCP.

Cost Baseline Comments:

LLNL is in the process of rebaselining its lifecycle cost planning estimates. Where appropriate, Activity-Based Cost estimating is applied. We are in the process of developing a system of ABC estimating that can be applied to more of the Environmental Restoration program. The purpose of this new system is to identify the detailed activities and associated costs which comprise a project/program. ABC estimating will ensure that LLNL has a documented basis for cost estimates for each component of the Environmental Restoration program. During this process, management will review the entire scope/program and each component will be ranked according to its priority in the overall ER program.

Safety & Health Hazards:

The Hazard Evaluation for the Site 300 Restoration Project is documented in the Site Safety Plan (Rev. 1.0 1994, Draft Rev. 2 1997). The hazard evaluation considered all current and future Restoration activities, from characterization to full implementation of remediation. Potential chemical hazards are present in the form of contaminants found in environmental media, as well as chemicals used in sampling and treatment facility operation activities. Specific chemicals include volatile organic compounds (VOCs), nitrate, perchlorate, uranium, tritium, the high-explosive HMX and RDX, beryllium, lead, gasoline, diesel, nitric acid, hydrocholoric acid, and hydrogen peroxide. Potential biological hazards specific to working at Site 300 include snake bite and valley fever. Physical hazards associated with investigation and remediation activities include heavy equipment and the mechanical motions associated with such equipment (primarily associated with drill rigs), noise (associated with heavy equipment, steam cleaning and the use of air compressors), excavations, overhead power lines, underground utilities, confined space entry, fire and explosions, electrical hazards and heat stress.

Safety & Health Work Performance:

Prior to the start of an activity, workers are required to read and understand applicable OSPs, SOPs and O&M manuals. All required training must be current. During the course of the activity, frequent safety meetings are required in which the adequacy of safety controls are reviewed and any unforeseen S&H hazards are identified and mechanisms to manage such hazards are developed. The Restoration Project has on staff a Site Safety Officer, and Training Coordinator, and a Quality Assurance Implementation Coordinator. These specialists monitor safety and health activities. Other S&H resources are available through the institution which is maintained via overhead funds (i.e. industrial hygienists, health physicists, safety team members, fire protection, etc). Details of funding and FTE`s is not required to be submitted by contractor.

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PBS Comments:

Future Facility Use:
It is not anticipated that there will be major changes in the operation of Site 300 in the future. Likewise, off-site land use will continue to be primarily agricultural. However, further growth in the town of Tracy westward toward Site 300 is a concern. There will likely be an increase in the nearby population which could result in impacts to site security and traffic. In addition, there is concern that the testing at Site 300 could disturb neighbors with noise and/or could break windows in houses located near the site. Tracy has included some of the area near the Site 300 in its general plan as potential land for residential housing. Thus, risk assessment modeling Site 300 of contamination was done assuming on-site worker exposures and off site residential exposures. The results of baseline risk assessment indicate, under certain conditions, that off site residents could be exposed to contaminants above regulatory levels. Remediation is already underway to mitigate the potential risks.

Baseline Validation Narrative:

Validation reviews have been performed on the LLNL Site 300 ERD Program, the most recent starting in February 1999. This review was performed by DOE/OAK the LLNL Site 300 baseline for FY1999. The validation review team interviewed members of the project and relevant project documentation. From this information the review team prepared an independent bottoms-up activity based cost estimate. DOE/OAK used this independent estimate to compare with the estimate prepared by LLNL for the Site 300 Project. A report will be prepared that discussed the major differences, point by point and meetings will be held with the site to reconcile the cost differences. The review team will based their cost estimates on costs developed from similar type projects at other government sites and private industry.

General PBS Information

Project Validated? Yes **Date Validated:** 4/4/1996

Has Headquarters reviewed and approved project? No

Date Project was Added: 12/1/1997

Baseline Submission Date: 7/13/1999

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
Y	Y	N	N	N	Y	Y	N

Project Identification Information

DOE Project Manager: Elisabeth Reber-Cox

DOE Project Manager Phone Number: 925-423-6718

DOE Project Manager Fax Number: 925-422-0832

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General PBS Information

DOE Project Manager e-mail address: elisabeth.reber-cox@oak.doe.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	124,355	82,000	206,355	9,597	9,468	9,255	9,789	9,843	11,800	11,500	12,540	13,680	14,940	15,600	15,600
PBS Baseline (constant 1999 dollars)	115,867	56,644	172,511	9,597	9,468	9,255	9,789	9,843	11,490	10,967	11,713	12,515	13,387	13,691	13,409
PBS EM Baseline (current year dollars)	124,355	82,000	206,355	9,597	9,468	9,255	9,789	9,843	11,800	11,500	12,540	13,680	14,940	15,600	15,600
PBS EM Baseline (constant 1999 dollars)	115,867	56,644	172,511	9,597	9,468	9,255	9,789	9,843	11,490	10,967	11,713	12,515	13,387	13,691	13,409

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	13,000	3,000	3,000	3,000	15,000	15,000	15,000	15,000	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	10,944	2,474	2,423	2,373	11,153	10,052	9,059	8,166	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	13,000	3,000	3,000	3,000	15,000	15,000	15,000	15,000	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	10,944	2,474	2,423	2,373	11,153	10,052	9,059	8,166	0	0	0	0	0	0	0	0

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Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 9/30/2006

Current Projected End Date of Project: 9/30/2030

Explanation of Project Completion Date Difference (if applicable):

Previous funding cuts and new scope caused the final ROD to be delayed. The FFA schedule was renegotiated.

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	118,942	**Actual 1997 Cost:**	9,468	**Actual 1998 Cost:**	9,789
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	99,685	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**			2,691
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	102,376				

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):	6,583	Re-engineered CERCLA process
Cost Reductions Due to Efficiencies (-):	7,259	Implement of low volume sampling; re-evaluate engineering design; negotiate treatability study
Cost Associated with New Scope (+):	65,123	Additional contaminates have been found during the assessment phase
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		

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Project Reconciliation

Subtotal:	153,657
Additional Amount to Reconcile (+):	2
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	**153,659**

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Bldg. 854 (OU#6) Site Caracterization Study Summary Report	OK002-82		4/1/1998	4/1/1998	4/1/1999		Y				
CERCLA Pathway Letter for BLDG. 854 (OU#6)	OK002-83		6/1/1998	6/1/1998		6/1/1998	Y				
Complete Cap Construction for Pit 6 (OU#3)	OK002-71		12/1/1997	12/1/1997		12/1/1997	Y				
Complete HE Burn Pit Closure (OU#8)	OK002-37		9/30/1998	9/30/1998	9/30/1998	9/30/1998	Y				
Complete Monitoring Plan Bldg 854 (OU#6)	OK002-84		10/1/1998	10/1/1998		10/1/1998	Y				
Complete Title I and II Design Site 300 (OU#8)	OK002-48		10/15/1997	10/15/1997		10/15/1997	Y				
Draft Action Memorandum for B850/PITs 3&5 (OU#5)	OK002-90		6/8/1999	6/8/1999			Y				
Draft Action Memorandum for BLDG 815 (HEPA-OU#4)	OK002-78		9/1/1998	9/1/1998		5/1/1998	Y				
Draft Final EE/CA Report for B850/Pits 3&5 (OU#5)	OK002-88		2/27/1998	2/27/1998	2/26/1999		Y				
Draft Final EE/CA Report for Bldg. 815 (OU#4) to Reg. Agen.	OK002-76		11/3/1997	11/3/1997		11/3/1997	Y				
Draft Final Memorandum for B850/PITS 3&5 (OU#5)	OK002-91		7/16/1999	7/16/1999			Y				
Final Action Memorandum for B850/PITS 3&5 (OU#5)	OK002-92		8/16/1999	8/16/1999			Y				
Final Action Memorandum for Bldg 815 (OU#4)	OK002-79		12/16/1998	12/16/1998		12/16/1998	Y				
Final EE/CA Report for B850/Pits 3&5 (OU#5)	OK002-89		3/27/1998	3/27/1998	3/26/1999		Y				
Final EE/CA Report for Bldg. 815 (OU#4) to Reg. Agencies	OK002-77		12/3/1997	12/3/1997		12/3/1997	Y				

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Initiate GSA (OU#1) Final Remedy	OK002-53		9/1/1999	9/1/1999			Y				
Monthly Ground Water Analytical Data Reports	OK002-27		1/31/1998	1/31/1998		1/31/1998	Y				
Quarterly Reports for PIT 6 (OU#3)	OK002-73		5/1/1998	5/1/1998		5/1/1998	Y				
Remedial Design/Remedial Action	OK002-24		12/15/1997	12/15/1997		12/15/1997	Y				
Removal Action Quarterly Reports GSA (OU#1)	OK002-04		12/30/1997	12/30/1997		12/30/1997	Y				
Revised Draft EE/CA Report for B850/Pits 3 & 5 (OU#5)	OK002-87		10/31/1997	10/31/1997		10/31/1997	Y				
Site Wide (OH#8) Draft Final PP for the Interim ROD	OK002-44		1/31/2000	1/31/2000			Y				
Site 300 (OU#8) Draft Proposed Plan (PP) to Regulatory Agencies	OK002-43		9/15/1999	9/15/1999			Y				
Site-Wide (OU#8) Final PP for the Interim ROD	OK002-45		3/1/2000	3/1/2000			Y				
Submit Draft BLDG 832 Canyon (OU#7) PP to Regulatory Agencies	OK002-31		8/30/2000	8/30/2000			Y				
Submit Draft BLDG 834 (OU#2) PP to Regulatory Agencies	OK002-55		11/16/1999	11/16/1999			Y				
Submit Draft Bldg 832 Canyon (OU#7) FS to Regulatory Agencies	OK002-96		10/1/1999	10/1/1999			Y				
Submit Draft GSA (OU#1) RD Plan to Regulatory Agencies	OK002-51		12/15/1997	12/15/1997		12/8/1997	Y				
Submit Draft Site-Wide (OU#8) Interim ROD	OK002-46		7/3/2000	7/3/2000			Y				
Submit Final BLDG 832 Canyon (OU#7) FS to Regulatory Agencies	OK002-99		3/1/2000	3/1/2000			Y				
Submit Final BLDG 832 Canyon (OU#7) PP to Regulatory Agencies	OK002-30		10/1/2000	10/1/2000			Y				
Submit Final Bldg 832 Canyon (OU#7) ROD to Regulatory Agencies	OK002-33		9/30/2001	9/30/2001			Y				

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Operations/Field Office: **Oakland** Print Date: **3/9/2000**

Site Summary Level: **Lawrence Livermore National Laboratory** HQ ID: **0258**

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Submit Final BLDG 834 (OU#2) PP to Regulatory Agencies	OK002-56		3/31/2000	3/31/2000			Y				
Submit Final BLDG 834 (OU#2) Rod to Regulatory Agencies	OK002-62		1/15/2001	1/15/2001			Y				
Submit Final GSA (OU#1) RD to Regulatory Agencies	OK002-03		4/15/1998	4/15/1998		2/16/1998	Y				
Submit Draft Final Site-Wide (OU#8) Interim ROD to DOE HQ	OK002-47		11/20/2000	11/20/2000			Y				
Submit Site-Wide (OU# 8) Final ROD to Reg. Agencies	OK002-130		4/19/2007	4/19/2007			Y				
Submit Post Closure Plan for Pit 6 (OU#3) to reg. agencies	OK002-72		12/1/1997	12/1/1997		12/1/1997	Y				
Site-Wide (OU#8) Final Interim Record of Decision	OK002-39		12/20/2000	12/20/2000			Y				
Work Plan for BLDG 815 (OU#4)	OK002-80		2/1/2000	2/1/2000			Y				
Bldg 815 (OU#4) Removal Workplan	OK002-114		11/17/1998	11/17/1998			Y				
Install Bldg 815 (OU#4) Treatment System	OK002-115		6/30/1999	6/30/1999			Y				
Submit Site-Wide (OU#8) Feasibility Study to Reg. Agencies	OK002-122		8/13/1999	8/13/1999			Y				
Complete GSA (OU#1) Treatment Facility Upgrade and Buildout	OK002-109		8/30/1999	8/30/1999			Y				
Bldg 854 (OU#6) Finalize Field Work (Install Monitor Wells)	OK002-118		9/1/1999	9/1/1999			Y				
Bldg 832 (OU#7) Construct Treatment Facility for Treatability Study	OK002-119		9/30/1999	9/30/1999			Y				
Bldg 850/Pits 3&5 (OU#5) Complete Installation of Add'l Monitor Wells	OK002-117		12/30/1999	12/30/1999			Y				
Bldg 832 (OU#7) Install Second PTU for Treatability Study	OK002-120		6/2/2000	6/2/2000			Y				

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Pit 6 (OU#3) Abandon and Replace GW Monitor Wells BC6-11 & 12	OK002-113		8/31/2000	8/31/2000			Y				
GSA (OU#1) Complete Bldg 875 Inhalation Risk Mitigation Evaluation	OK002-110		9/15/2000	9/15/2000			Y				
Bldg 815 (OU#4) Install Second Treatment Facilities	OK002-116		9/29/2000	9/29/2000			Y				
GSA (OU#1) Install Offsite Treatment System in the Eastern GSA	OK002-111		12/29/2000	12/29/2000			Y				
Site-Wide (OU#8) Draft Remedial Design Work Plan	OK002-123		5/1/2001	5/1/2001			Y				
Site 300 (OU#8) Install Add'l Monitor Wells & Conduct Hydraulic Tests	OK002-124		9/3/2001	9/3/2001			Y				
Site-Wide (OU#8) Remedial Design Work Plan	OK002-125		10/12/2001	10/12/2001			Y				
Site 300 (OU#8) Final Five Year Review	OK002-126		11/15/2001	11/15/2001			Y				
Bldg 834 (OU#2) Final Remedial Design	OK002-112		1/28/2002	1/28/2002			Y				
Bldg 832 (OU#7) Final Remedial Design to Reg. Agencies	OK002-121		8/1/2002	8/1/2002			Y				
Site-Wide (OU# 8) Final Compliance Monitoring Plan/Contingency Plan	OK002-127		9/13/2002	9/13/2002			Y				
Site 300 (OU#8) Final Remediation Evaluation Summary	OK002-128		11/30/2005	11/30/2005			Y				
Site 300 (OU#8) Final Proposed Plan for Final ROD	OK002-129		6/14/2006	6/14/2006			Y				
Project Mission Complete	OK002-131		4/19/2007	4/19/2007			Y				
FFA revised Schedule of Deliverables (Appendix A) for LLNL Site 300 Completion			12/1/1998						Y		
Site Wide Feasibility Study signed- LLNL Site 300			9/1/1999						Y		
Project Start Date			9/30/1990	9/30/1990							
Project Start Date			9/30/1990	9/30/1990			Y				

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Project End			9/30/2030								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Bldg. 854 (OU#6) Site Caracterization Study Summary Report	OK002-82										
CERCLA Pathway Letter for BLDG. 854 (OU#6)	OK002-83										
Complete Cap Construction for Pit 6 (OU#3)	OK002-71										
Complete HE Burn Pit Closure (OU#8)	OK002-37										
Complete Monitoring Plan Bldg 854 (OU#6)	OK002-84										
Complete Title I and II Design Site 300 (OU#8)	OK002-48										
Draft Action Memorandum for B850/PITs 3&5 (OU#5)	OK002-90									Y	
Draft Action Memorandum for BLDG 815 (HEPA-OU#4)	OK002-78										
Draft Final EE/CA Report for B850/Pits 3&5 (OU#5)	OK002-88									Y	
Draft Final EE/CA Report for Bldg. 815 (OU#4) to Reg. Agen.	OK002-76										
Draft Final Memorandum for B850/PITS 3&5 (OU#5)	OK002-91									Y	

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Final Action Memorandum for B850/PITS 3&5 (OU#5)	OK002-92									Y	
Final Action Memorandum for Bldg 815 (OU#4)	OK002-79										
Final EE/CA Report for B850/Pits 3&5 (OU#5)	OK002-89									Y	
Final EE/CA Report for Bldg. 815 (OU#4) to Reg. Agencies	OK002-77										
Initiate GSA (OU#1) Final Remedy	OK002-53									Y	
Monthly Ground Water Analytical Data Reports	OK002-27										
Quarterly Reports for PIT 6 (OU#3)	OK002-73										
Remedial Design/Remedial Action	OK002-24										
Removal Action Quarterly Reports GSA (OU#1)	OK002-04										
Revised Draft EE/CA Report for B850/Pits 3 & 5 (OU#5)	OK002-87										
Site Wide (OH#8) Draft Final PP for the Interim ROD	OK002-44										
Site 300 (OU#8) Draft Proposed Plan (PP) to Regulatory Agencies	OK002-43										
Site-Wide (OU#8) Final PP for the Interim ROD	OK002-45										
Submit Draft BLDG 832 Canyon (OU#7) PP to Regulatory Agencies	OK002-31									Y	
Submit Draft BLDG 834 (OU#2) PP to Regulatory Agencies	OK002-55									Y	

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Submit Draft Bldg 832 Canyon (OU#7) FS to Regulatory Agencies	OK002-96									Y	
Submit Draft GSA (OU#1) RD Plan to Regulatory Agencies	OK002-51										
Submit Draft Site-Wide (OU#8) Interim ROD	OK002-46										
Submit Final BLDG 832 Canyon (OU#7) FS to Regulatory Agencies	OK002-99									Y	
Submit Final BLDG 832 Canyon (OU#7) PP to Regulatory Agencies	OK002-30									Y	
Submit Final Bldg 832 Canyon (OU#7) ROD to Regulatory Agencies	OK002-33										
Submit Final BLDG 834 (OU#2) PP to Regulatory Agencies	OK002-56									Y	
Submit Final BLDG 834 (OU#2) Rod to Regulatory Agencies	OK002-62									Y	
Submit Final GSA (OU#1) RD to Regulatory Agencies	OK002-03										
Submit Draft Final Site-Wide (OU#8) Interim ROD to DOE HQ	OK002-47										
Submit Site-Wide (OU# 8) Final ROD to Reg. Agencies	OK002-130										
Submit Post Closure Plan for Pit 6 (OU#3) to reg. agencies	OK002-72										
Site-Wide (OU#8) Final Interim Record of Decision	OK002-39										
Work Plan for BLDG 815 (OU#4)	OK002-80									Y	

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Bldg 815 (OU#4) Removal Workplan	OK002-114										
Install Bldg 815 (OU#4) Treatment System	OK002-115										
Submit Site-Wide (OU#8) Feasibility Study to Reg. Agencies	OK002-122										
Complete GSA (OU#1) Treatment Facility Upgrade and Buildout	OK002-109										
Bldg 854 (OU#6) Finalize Field Work (Install Monitor Wells)	OK002-118										
Bldg 832 (OU#7) Construct Treatment Facility for Treatability Study	OK002-119										
Bldg 850/Pits 3&5 (OU#5) Complete Installation of Add'l Monitor Wells	OK002-117										
Bldg 832 (OU#7) Install Second PTU for Treatability Study	OK002-120										
Pit 6 (OU#3) Abandon and Replace GW Monitor Wells BC6-11 & 12	OK002-113										
GSA (OU#1) Complete Bldg 875 Inhalation Risk Mitigation Evaluation	OK002-110										
Bldg 815 (OU#4) Install Second Treatment Facilities	OK002-116										
GSA (OU#1) Install Offsite Treatment System in the Eastern GSA	OK002-111										

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Site-Wide (OU#8) Draft Remedial Design Work Plan	OK002-123										
Site 300 (OU#8) Install Add'l Monitor Wells & Conduct Hydraulic Tests	OK002-124										
Site-Wide (OU#8) Remedial Design Work Plan	OK002-125										
Site 300 (OU#8) Final Five Year Review	OK002-126										
Bldg 834 (OU#2) Final Remedial Design	OK002-112										
Bldg 832 (OU#7) Final Remedial Design to Reg. Agencies	OK002-121										
Site-Wide (OU# 8) Final Compliance Monitoring Plan/Contingency Plan	OK002-127										
Site 300 (OU#8) Final Remediation Evaluation Summary	OK002-128										
Site 300 (OU#8) Final Proposed Plan for Final ROD	OK002-129										
Project Mission Complete	OK002-131					Y					
FFA revised Schedule of Deliverables (Appendix A) for LLNL Site 300 Completion			Y								
Site Wide Feasibility Study signed-LLNL Site 300			Y								
Project Start Date				Y							
Project Start Date				Y						Y	

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Project End					Y						EM funding for Long Term Surveillance and Maintenance ends. I

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 200
RS														
Assess.	NR	9.00	0.00	9.00					4.00	5.00				
RS														
Cleanup	NR	21.00	0.00	21.00		5.00	5.00	7.00	4.00	5.00				
Rem. Waste														
Disposed	M3	80.00	190.00	270.00	0.00		0.00	16.00	8.00	8.00	8.00	8.00	8.00	8.(
Tech.														
Deployed	Ntd	2.00	0.00	2.00						2.00				

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
RS													
Assess.	NR												
RS													
Cleanup	NR												
Rem. Waste													
Disposed	M3	8.00	8.00	8.00	8.00	8.00	8.00	8.00	40.00	40.00	40.00	38.00	0.00
Tech.													
Deployed	Ntd												

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
RS										
Assess.	NR								16.00	21.00
RS										
Cleanup	NR									21.00
Rem. Waste										
Disposed	M3	0.00	0.00	0.00						270.00
Tech.										
Deployed	Ntd									2.00

Release Sites

Site Code	RSF ID	Change Flag	Description	Class/Subclass Name	Planned Assess. Year	Forecast Assess. Year	Actual Assess. Date	Planned Comp. Year	Forecast Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
LLLS	0001		Bldg 829 Burn Pit 1 (SWMU 131)	Waste/Burn Pits	1999	2002		1999	1999	11/6/1998		N		N
LLLS	0002		Bldg 829 Burn Pit 2 (SWMU 133)	Waste/Burn Pits	1999			1999	1999	11/6/1998		N		N
LLLS	0003		Bldg 829 Burn Pit 3 (SWMU 136)	Waste/Burn Pits	1998			1998	1998	8/15/1998		N		N
LLLS	0005		Bldg 879 Steam Cleaning/Sink Facility	Spills and Leaks/Surface Spills	1998			1998	1998	3/1/1998		N		N
LLLS	0006		Debris Burial Trench #1	Waste/Trenches / Outfalls	1998			1998	1998	3/1/1998		N		N
LLLS	0008		Decommissioned Solvent Drum Rack and Tank	Tanks/Above Ground Storage Tanks	1997			1997		1/15/1997		N		N
LLLS	0009		Dry Well 872-S	Liquid Surface Impoundments/Sumps	2000	2000		2000	2000			N		N
LLLS	0010		Dry Well 873-S	Liquid Surface Impoundments/Sumps	2000	2000		2000	2000			N		N
LLLS	0011		Dry Well 875-S1	Liquid Surface Impoundments/Sumps	1997			1997		1/15/1997		N		N

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Release Sites

Site Code	RSF ID	Change Flag	Description	Class/Subclass Name	Planned Assess. Year	Forecast Assess. Year	Actual Assess. Date	Planned Comp. Year	Forecast Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
LLLS	0012		Dry Well 875-S2	Liquid Surface Impoundments/Sumps	1997			1997		1/15/1997		N		N
LLLS	0013		GSA Ground Water Project	Surface and Groundwater/Groundwater Plumes	1998			1998	1998	3/1/1998		N		N
LLLS	0014		Dry Well 874-N	Liquid Surface Impoundments/Sumps	2000	2000		2000	2000			N		N
LLLS	0019		Test Cell 834E	Spills and Leaks/Surface Spills	1997			1997		9/30/1997		N		N
LLLS	0022		Test Cell 834E	Spills and Leaks/Surface Spills	2000	2000		2000	2000			N		N
LLLS	0023		Test Cell 834F	Spills and Leaks/Surface Spills	2000	2000		2000	2000			N		N
LLLS	0024		Test Cell 834G	Spills and Leaks/Surface Spills	1998			1998	1998	3/1/1998		N		N
LLLS	0025		Test Cell 834H	Spills and Leaks/Surface Spills	1998			1998	1998	3/1/1998		N		N
LLLS	0026		Test Cell 834J	Spills and Leaks/Surface Spills	1997			1997		9/30/1997		N		N
LLLS	0028		PIT 6	Waste/Landfills	1998			1998	1998	3/1/1998		N		N
LLLS	0029		Bldg 829 Drying Area (AOC 5)	Spills and Leaks/Surface Spills	1999			1999	1999	11/6/1998		N		N
LLLS	0052		Pit 4	Waste/Pits	1999			1999	1999	3/1/1999		N		Y

Technology Needs

Technology Needs

Site Need Code: OK99-01

Site Need Name: Characterization and Removal of DNAPLs and LNAPLs from Soil and Groundwater

Focus Area Work Package ID: SS-01 **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis

Focus Area: SCFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Electrical Resistance Tomography for Subsurface Imaging	0	Unknown
Hydrous Pyrolysis/Oxidation	0	Unknown
Hydrous Pyrolysis/Oxidation	0	Unknown

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01802: ABA - [TCE Collected on GAC]	Y	N

Site Need Code: OK99-13

Site Need Name: Remove Tritium from Groundwater

Focus Area Work Package ID: SS-08 **Focus Area Work Package:** Saturated Zone Treatment Systems

Focus Area: SCFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01805: AE - LLW-Contaminated GW-B850/Pits 3 & 5 (HTO)	Y	N

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Technology Needs

Site Need Code: OK99-21

Site Need Name: Monitor Tritium In-situ in Groundwater

Focus Area Work Package ID: SS-01

Focus Area Work Package: Characterization, Monitoring, Modeling and Analysis

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01805: AE - LLW-Contaminated GW-B850/Pits 3 & 5 (HTO)	Y	N

Technology Deployments

	Deployment Year		
Deployment Status	**Planned**	**Forecast**	**Actual Date**
Technology Name: Geosyphon/Geoflow			
Deployment Commitment	2000		
Technology Name: Iron Treatment Wall			
Deployment Commitment	2000		