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Lawrence Livermore National Laboratory participates in numerous activities to comply with federal, state, and local environmental regulations, internal requirements, and applicable U.S. Department of Energy (DOE) orders. This chapter describes the regulations and guidance applicable to LLNL during 2006, the active permits in 2006, and the inspections of the Livermore site and Site 300 by external agencies. References that contain additional information are provided.

2.1 Environmental Restoration and Waste Management

2.1.1 Comprehensive Environmental Response, Compensation and Liability Act

Ongoing groundwater investigations and remedial activities at LLNL fall under the jurisdiction of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Title I of the Superfund Amendments and Reauthorization Act (SARA). CERCLA is commonly referred to as the Superfund law.

CERCLA compliance activities for the Livermore site and Site 300 are summarized below in **Sections 2.1.1.1** and **2.1.1.2**. Community relations activities conducted by DOE/LLNL are also part of these projects. See **Chapter 8** for more information on the activities and findings of the investigations.

2.1.1.1 Livermore Site Ground Water Project

The Livermore site became a CERCLA site in 1987 when it was placed on the National Priorities List. The Livermore Site Ground Water Project (GWP) complies with provisions specified in a federal facility agreement (FFA) entered into by the U.S. Environmental Protection Agency (EPA), DOE, and the California EPA's Department of Toxic Substances Control (DTSC) and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). As required by the FFA, the GWP addresses compliance issues by investigating potential contamination source areas (e.g., suspected old release sites, solvent-handling areas, leaking underground tank systems), monitoring water quality through an extensive network of wells, and remediating contaminated soil and groundwater. The primary soil and groundwater contaminants (constituents of concern) are common volatile organic compounds (VOCs), primarily trichloroethylene (TCE) and perchloroethylene (PCE).

Significant GWP restoration activities in 2006 included installing 7 dual (groundwater and soil vapor) extraction wells, 2 groundwater extraction wells, 2 groundwater monitoring wells, 11 soil vapor wells, and 1 anode well; decommissioning 3 wells; and conducting 2 hydraulic tests, 3 soil vapor extraction tests, and 4 dual extraction tests. LLNL met all regulatory and DOE milestones on schedule by constructing or upgrading treatment facilities and beginning remediation at Treatment Facility D East Traffic Circle North Source Area, Building 419 Source Area, Treatment Facility C Hotspot, Buildings 511/514 Source Area, and Treatment Facility 5475 South.

LLNL completed all 87 of the milestones specified in the Remedial Action Implementation Plan, which defined "build out" according to DOE's Office of Environmental Management. Responsibility for the Livermore Site GWP was subsequently transferred from DOE's Office of Environmental Management to the National Nuclear Security Administration (NNSA).

Treatment Facilities. In 2006, LLNL operated 27 groundwater treatment facilities in the TFA, TFB, TFC, TFD, TFE, TFG, and TFH areas (see **Figure 8-1** in **Chapter 8** for a map of the

Livermore site showing the location of these areas). The 92 groundwater extraction wells and 34 dual extraction wells produced nearly 1.1 billion liters (L) of groundwater and removed approximately 78 kilograms (kg) of VOCs. In comparison, in 2005 the groundwater treatment facilities removed approximately 71 kg of VOCs. The higher VOC mass removal in 2006 was due to adding new extraction wells to existing or upgraded treatment facilities in contaminant source areas. Since remediation began in 1989, more than 11.8 billion L of groundwater has been treated, resulting in the removal of more than 1246 kg of VOCs. See **Chapter 8** for more information.

In 2006, LLNL also operated 9 soil vapor treatment facilities in the TFD, TFE, and TFH areas. The 19 soil vapor extraction wells and 34 dual extraction wells produced nearly 2.4 million cubic meters (m³) of soil vapor, and the treatment facilities removed more than 177 kg of VOCs. In comparison, in 2005 the soil vapor treatment facilities removed approximately 196 kg of VOCs. The lower mass removal in 2006 was due to decreasing VOC concentrations and cleanup of the vadose zone in the TFD and TFE source areas. In contrast, there was a significant increase in VOC mass removed in the TFH source area—from 110.5 kg in 2005 to 151.2 kg in 2006 due to the ongoing operation of soil vapor treatment facility VTF406 Hotspot and startup of a new treatment facility at VTF511. Since initial operation, more than 7.3 million m³ of soil vapor has been extracted and treated, removing over 1052 kg of VOCs from the subsurface. See **Chapter 8** for more information.

Community Relations. Livermore site community relations activities in 2006 included communication and meetings with neighbors and local, regional, and national interest groups and other community organizations; public presentations; production of LLNL's *Environmental Community Letter*; maintenance of information repositories and administrative record; tours of site environmental activities; and responses to public and news media inquiries. In addition, DOE/LLNL met with members of Tri-Valley Communities Against a Radioactive Environment (Tri-Valley CAREs) and the organization's scientific advisor as part of the activities funded by an EPA Technical Assistance Grant (TAG). Community questions were also addressed via electronic mail, and project documents, letters, and public notices were posted on a public website: <http://www-envirinfo.llnl.gov>.

Documentation. In 2006, DOE/LLNL submitted the *LLNL Ground Water Project 2005 Annual Report* (Karachewski et al. 2006) and quarterly self-monitoring reports on schedule. In addition, DOE/LLNL completed all 2006 Remedial Action Implementation Plan (Dresen et al. 1993) milestones on schedule.

2.1.1.2 Site 300 CERCLA Project

Investigations and remedial activities are ongoing at Site 300, which became a CERCLA site in 1990 when it was placed on the National Priorities List. Investigations and remedial activities are conducted under the joint oversight of the EPA, the Central Valley Regional Water Quality Control Board (CVRWQCB), DTSC, and the authority of an FFA for the site. There are

separate FFAs for Site 300 and the Livermore site. The groundwater contaminants (constituents of concern) for Site 300 vary within the different environmental restoration operable units (OUs) at the site. See Webster-Scholten (1994) and Ferry et al. (1999) for background information on LLNL environmental characterization and restoration activities at Site 300. See Ferry et al. (2006c) for the current status of remediation progress at sites that have achieved an Interim Record of Decision as identified in U.S. DOE (2001).

Treatment Facilities and Field Investigations. Common VOCs (primarily TCE) are the main contaminants at Site 300. High explosives, tritium, depleted uranium, organosilicate oil, nitrate, and perchlorate are also found in the groundwater. During 2006, 19 treatment facilities at Site 300 were in operation. At these facilities, 40 groundwater extraction wells and 18 dual phase extraction wells extracted about 116 million L of groundwater during 2006. The 18 dual phase extraction wells and 2 soil vapor extraction wells together removed 2.25 million m³ of soil vapor.

In 2006, the Site 300 treatment facilities removed about 50 kg of VOCs, 0.18 kg of perchlorate, 1000 kg of nitrate, 0.15 kg of the high explosive compound RDX, and 0.029 kg of organosilicate oil. Since remediation efforts began in 1990, more than 1317 million L of groundwater and approximately 7.53 million m³ of soil vapor have been treated to yield about 441 kg of removed VOCs, 0.58 kg of perchlorate, 4400 kg of nitrate, 0.71 kg of RDX, and 9.4 kg of organosilicate oil. See **Chapter 8** for more information.

During 2006, the following field activities were completed by agreed-upon regulatory due dates:

- expansion of the B832-SRC groundwater extraction wellfield to the distal portion of the plume in the Building 832 Canyon Operable Unit (OU)
- connection of B830-PRX extraction wells to the B830-SRC groundwater treatment system in the Building 832 Canyon OU
- expansion of B854-SRC groundwater extraction wellfield in the Building 854 OU
- construction of the B854-DIS groundwater extraction and treatment facility in the Building 854 OU

In 2006, 20 boreholes were drilled at Site 300—5 were drilled to collect soil and rock for chemical analysis, 4 were completed as extraction wells for groundwater treatment systems, 3 were completed as guard wells to monitor downgradient of contaminant plumes, and 8 were completed as monitoring wells for tracking of groundwater contaminant plumes.

Community Relations. The Site 300 CERCLA Project maintains continuing communications with the community of Tracy and nearby neighbors. Community relations activities in 2006 included maintenance of information repositories and administrative records; participation in community meetings and workshops; off-site, private, well-sampling activities; mailings to stakeholders; and interviews with the news media. LLNL hosted TAG meetings with Tri-Valley

CAREs. TAG meetings provided a forum for focused discussions on CERCLA activities at the various OUs at Site 300. Tri-Valley CAREs receives the annual TAG grant from EPA to support an environmental consultant to review and comment on Site 300 CERCLA activities. A public meeting in Tracy for the proposed plan for the Pit 7 Complex was held on April 5, 2006, and a public workshop for the *Draft Site-Wide Remediation Evaluation Summary Report for Lawrence Livermore National Laboratory Site 300* (Ferry et al. 2006b) was held in Tracy on May 15, 2006.

Documentation. In 2006, LLNL submitted all required documentation to oversight agencies by agreed-upon regulatory submission dates or by extended dates requested by the regulatory agencies. Submitted documents were:

- *2005 Annual Compliance Monitoring Report Lawrence Livermore National Laboratory Site 300* (Dibley et al. 2006c)
- *Characterization Summary Report for the Building 865 Study Area at Lawrence Livermore National Laboratory Site 300* (Ferry and Holtzapple 2006)
- *Draft Amendment to the Interim Site-Wide Record of Decision for the Lawrence Livermore National Laboratory Site 300 Pit 7 Complex* (U.S. DOE 2006a)
- *Draft, Draft Final, and Final Site-Wide Remediation Evaluation Summary Report for Lawrence Livermore National Laboratory Site 300* (Ferry et al. 2006b, 2006a, 2006c)
- *Draft Final and Final Proposed Plan for Environmental Cleanup at the Pit 7 Complex Lawrence Livermore National Laboratory Site 300* (U.S. DOE 2006d, 2006f)
- *Draft and Final Five-Year Review Report for the Lawrence Livermore National Laboratory Site 300 General Services Area* (Dibley and Valett 2006; Dibley et al. 2006a)
- *Draft Site-Wide Proposed Plan for the Lawrence Livermore National Laboratory Site 300 Final Record of Decision* (U.S. DOE 2006e)
- *First Semester 2006 Compliance Monitoring Report, Lawrence Livermore National Laboratory Site 300* (Dibley et al. 2006b)
- *Interim Remedial Design Document for the Building 832 Operable Unit Lawrence Livermore National Laboratory Site 300* (Madrid et al. 2006)

2.1.1.3 Site Evaluations Prior to Construction

The Livermore site Record of Decision (U.S. DOE 1992) requires that before any construction begins, the project site must be evaluated to determine whether soil or rubble (concrete and asphalt) is contaminated. Soil is sampled and analyzed for potential radioactive and/or hazardous contamination under this requirement and in accordance with LLNL's *Environment, Safety and Health (ES&H) Manual*, Document 33.3, Management of Soil and Debris, for both the Livermore site and Site 300. Depending on the potential for radioactive contamination, rubble may be either surveyed or analyzed for radioactivity. During 2006, soil and/or rubble were

evaluated at 82 construction sites. Based on the evaluations, the soil and/or rubble were either reused on site or disposed of according to established procedures.

2.1.2 Emergency Planning and Community Right-to-Know Act and Toxics Release Inventory Report

Title III of SARA, known as the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), requires owners and operators of facilities who handle certain hazardous chemicals on site to provide information on the release, storage, and use of these chemicals to organizations responsible for emergency response planning. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, directs all federal agencies to comply with the requirements of the EPCRA, including SARA, Section 313, Toxics Release Inventory (TRI) Program.

On June 13, 2006, LLNL submitted to DOE/NNSA the TRI Form R for lead, detailing environmental release estimates for both the Livermore site and Site 300. Form R is used for reporting TRI chemical releases including waste management and waste minimization activities. The data on lead release estimates show a continued decline in lead releases at Site 300. In fact, the continued increase in the use of non-lead ammunition at the Protective Forces Division pistol and rifle ranges at Site 300 has contributed directly to the greater than 22% reduction from the previous reporting year and an 88% reduction in lead releases since reporting year 2001. For TRI reporting year 2005, the TRI data also show zero lead releases at the Livermore site. EPCRA requirements and LLNL compliance are summarized in **Table 2-1**.

2.1.3 Resource Conservation and Recovery Act and Related State Laws

The Resource Conservation and Recovery Act of 1976 (RCRA) provides the framework at the federal level for regulating the generation, storage, treatment, and management of solid wastes, including wastes designated as hazardous. The California Hazardous Waste Control Act (HWCA) and the Title 22 of the *California Code of Regulations* (CCR) set requirements for managing hazardous wastes and implementing RCRA in California. RCRA and HWCA also regulate hazardous waste treatment, storage, and disposal facilities, including permit requirements. Because RCRA program authorization was delegated to the State of California in 1992, LLNL works with DTSC to comply with federal and state issues and obtain hazardous waste permits.

2.1.3.1 Hazardous Waste Permits

Livermore Site. The hazardous waste management facilities at the Livermore site consist of permitted units in Area 612 and Buildings 693, 695 and 696 of the Decontamination and Waste Treatment Facility (DWTF). The units that were operated under interim status, Area 514 Facility and the Building 233 Container Storage Facility, have been relocated to permitted facilities. Area 514 and Building 233 are currently undergoing RCRA closure. Permitted waste

Table 2-1. Compliance with Emergency Planning and Community Right-to-Know Act (EPCRA).

EPCRA requirement	Brief description of requirement	LLNL action
302 Planning Notification	Notify State Emergency Response Commission (SERC) of presence of extremely hazardous substances.	Originally submitted 5/87.
303 Planning Notification	Designate a facility representative to serve as emergency response coordinator.	Update submitted 3/15/06.
304 Release Notification	Report releases of certain hazardous substances to SERC and Local Emergency Planning Committee (LEPC).	No EPCRA-listed extremely hazardous substances were released above reportable quantities in 2006.
311 MSDS/ Chemical Inventory	Submit MSDSs or chemical list to SERC, LEPC, and Fire Department.	Update submitted 3/15/06.
312 MSDS/ Chemical Inventory	Submit hazardous chemical inventory to local administering agency (county).	Business plans and chemical inventory submitted to San Joaquin County on 1/26/06 and to Alameda County on 3/1/06.
313 Toxics Release Inventory	Submit Form R to U.S. EPA and California EPA for toxic chemicals released above threshold levels.	Form R for lead for both Livermore site and Site 300 were submitted to DOE 6/13/06; DOE forwarded it to U.S. EPA and California EPA on 6/29/06.

management units include container storage, tank storage, and various treatment processes (e.g., wastewater filtration, blending, and size reduction). During 2005/2006, LLNL also submitted several Class 1, Class 1* and Class 2 permit modification requests to DTSC (Class 1, Class 1*, and Class 2 are defined in the glossary). The six Class 2 permit modifications have not been approved, but all of the requested Class 1 permit modifications have been approved and are being implemented. The approval dates for the Class 1 modifications were June 30, 2006; February 9, 2007; and February 23, 2007. On December 9, 2005, DTSC updated LLNL's Hazardous Waste Facility Permit (HWFP).

A final closure plan for the Building 419 Interim Status Facility was submitted to DTSC in February 2001. DTSC is continuing its review of this closure plan. LLNL has provided additional information requested by DTSC, including responding to Building 419 Notices of Deficiency (NODs) that DTSC issued in November 2004.

Table 2-2 is a summary of active permits in 2006 at the Livermore site and Site 300. **Table 2-3** lists inspections, tours, and preliminary and final notices of violations at both LLNL sites in 2006.

Site 300. The hazardous waste management facilities at Site 300 consist of three operational RCRA-permitted facilities. The Explosives Waste Storage Facility and Explosives Waste Treatment Facility are permitted respectively to store and treat explosives waste only. The

Table 2-2. Active permits in 2006 at the Livermore site and Site 300.

Type of permit	Livermore site ^(a)	Site 300 ^(a)
Hazardous waste	<p>EPA ID No. CA2890012584. Hazardous Waste Facility Permit Number 99-NC-006 (RCRA Part B permit)—to operate hazardous waste management facilities including Buildings 693, 695, and 696, and Area 612. Activities authorized in these areas include treatment and storage of hazardous and mixed wastes subject to the conditions specified in the Part B permit. LLNL is also a Registered Hazardous Waste Hauler and is authorized to transport wastes from Site 300 to the Livermore site.</p> <p>Conditionally Exempt Specified Wastestream permit to mix resin in Unit CE231-1.</p> <p>Conditional Authorization Permit to operate sludge dewatering unit in Building 322A.</p>	<p>EPA ID No. CA2890090002.</p> <p>Hazardous Waste Facility Permit—Container Storage Area (Building 883) and Explosives Waste Storage Facility.</p> <p>Hazardous Waste Facility Permit —Explosives Waste Treatment Facility.</p> <p>Hazardous Waste Facility Post-Closure Permit—Building 829 High Explosives Open Burn Treatment Facility.</p>
Medical waste	<p>ACDEH issued two permits:</p> <p>(1) for large quantity medical waste generation and treatment covering the Building 360 and Building 150 Complexes, CLMS Biowatch Laboratory, SEP Health Services Department, NHI Forensic Science Center, E&E Tissue Culture Laboratory, and PAT M Division.</p> <p>(2) for medical waste generation and treatment activities planned for the Biosafety Level 3 (BSL-3) Facility.</p>	<p>Limited Quantity Hauling Exemption for small quantity medical waste generator.</p>
Air	<p>BAAQMD issued 182 permits for operation of various types of equipment, including boilers, emergency diesel generators, cold cleaners, degreasers, printing press operations, manual wipe-cleaning operations, metal machining and finishing operations, silk-screening operations, silk-screen washers, paint spray booths, adhesives operations, optic coating operations, drum crusher, semiconductor operations, diesel air-compressor engines, groundwater air strippers, soil vapor extraction units, material-handling equipment, sewer diversion system, oil and water separator, fire-test cells, gasoline-dispensing operation, paper-pulverizer system, and firing tanks.</p>	<p>SJVAPCD issued 43 permits for operation of various types of equipment, including emergency diesel generators, paint spray booth, groundwater air strippers, soil vapor extraction units, woodworking cyclone, gasoline-dispensing operation, explosive waste treatment units, drying ovens, and the Contained Firing Facility.</p>
Storage tanks	<p>Six operating permits covering 9 underground petroleum product and hazardous waste storage tanks: 111-D1U2 Permit No. 6480; 113-D1U2 Permit No. 6482; 152-D1U2 Permit No. 6496; 271-D2U1 Permit No. 6501; 365-D1U2 Permit No. 6492; and 611-D1U1, 611-G1U1, 611-G2U1, and 611-O1U1 Permit No. 6505.</p>	<p>One operating permit covering three underground petroleum product tanks assigned individual permit numbers: 879-D1U1 Permit No. 006785; 879-G3U1 Permit No. 007967; and 882-D1U1 Permit No. 006530.</p>
Sanitary sewer	<p>Discharge Permit 1250^(b) (2005/2006 and 2006/2007^(c)) for discharges of wastewater to the sanitary sewer.</p> <p>Permit 1510G (2004/2006^(d)) for discharges of groundwater from CERCLA restoration activities to the sanitary sewer.</p>	

Table 2-2 (cont). Active permits in 2006 at the Livermore site and Site 300.

Type of permit	Livermore site ^(a)	Site 300 ^(a)
Water	<p>WDR Order No. 88-075 for discharges of treated groundwater from Treatment Facility A to recharge basin.^(e)</p> <p>WDR Order No. 95-174, NPDES Permit No. CA0030023 for discharges of storm water associated with industrial activities and low-threat nonstorm water discharges to surface waters.</p> <p>WDR Order No. 99-08-DWQ, NPDES California General Construction Activity Permit No. CAS000002; Soil Reuse Project, Site ID No. 201C305529; National Ignition Facility, Site ID No. 201C306762; Building 583 Project, Site ID No. 201C332958; Arroyo Seco Water Management Plan, Site ID No. 201C335224; and A-4/Z5S Parking Lots, Site ID No. 201C333137; for discharges of storm water associated with construction activities affecting 0.4 hectares (1 acre) or more.</p> <p>FFA for groundwater investigation/remediation.</p> <p>NWPs 27, 13, and 7 for the implementation of the Arroyo Seco Management Plan.</p>	<p>WDR Order No. 93-100 for post-closure monitoring requirements for two Class I landfills.</p> <p>WDR Order No. 96-248 for operation of a domestic sewage lagoon, and percolation pits.</p> <p>WDR Order No. 97-03-DWQ, NPDES California General Industrial Activity General Permit No. CAS000001 for discharge of storm water associated with industrial activities.</p> <p>WDR Order No. 5-00-175, NPDES Permit No. CAG995001 for large volume discharges from the drinking water system that reach surface waters.</p> <p>NWP 14 and 27 for installation of culverts at Round Valley and Oasis projects and for the construction of a habitat pool at Round Valley.</p> <p>Water Quality Certification for Round Valley and Oasis projects, WDID No. 5B01CR0007.</p> <p>FFA for groundwater investigation/remediation.</p> <p>34 registered Class V injection wells.^(f)</p>

(a) Numbers of permits are based on actual permitted units or activities maintained and/or renewed by LLNL during 2006.

(b) Permit 1250 includes wastewater generated at Site 300 and discharged at the Livermore site.

(c) The Discharge Permit 1250 period is through July 15; therefore, two permits were active during the 2006 calendar year.

(d) Permit 1510G is a two-year (January to December) permit.

(e) Recharge basins referenced in WDR Order No. 88-075 are located south of East Avenue within Sandia National Laboratories/California boundaries.

(f) A new injection well was installed in August 2006.

Table 2-3. Inspections and tours of Livermore site and Site 300 by external agencies in 2006.

Site	Medium	Description	Agency	Date	Finding
Livermore site	Waste	Hazardous waste facilities CEI	DTSC	9/27/06, 9/28/06, 10/2/06, 10/6/06, and 10/11/06	Received a Class II violation for treatment of hazardous waste drums in unauthorized location on 10/18/06. LLNL received the final report dated 4/16/07, which identified three minor violations. LLNL responded to DTSC on 5/14/07. LLNL corrected one violation through a permit modification and requested that two violations be rescinded.
		Hazardous waste facilities ESI	DTSC	11/29/06	Received an initial inspection report on 11/29/06 detailing summary of observations (SOOs). LLNL received DTSC's final report on 3/13/07, and there were no violations.
		Medical waste	ACDEH	11/7/06, 11/21/06	No violations
	Air	44 emission sources	BAAQMD	3/27/06, 12/13/06	No violations
		Asbestos	BAAQMD	7/14/06	No violations
	Sanitary sewer	Annual compliance sampling	LWRP	10/3/06–10/4/06	No violations
		Categorical sampling/inspection Buildings 153 and 321C	LWRP	10/3/06	No violations
		Building 327		10/10/06	Tour of operation to confirm process was not regulated
		Quarterly BOD/TSS Monitoring	LWRP	3/1/06 6/13/06 8/8/06 12/6/06	Sampling for billing purposes, not compliance Sampling for billing purposes, not compliance Sampling for billing purposes, not compliance Sampling for billing purposes, not compliance
	Storage tanks	Compliance with underground storage tank requirements and operating permits	ACDEH	9/13/06, 9/19/06	No violations
Pesticides	Pest Control Records Inspections	ACCDA	6/1/06	No violations	
Site 300	Waste	Permitted hazardous waste operational facilities (EWTF, EWSF, Building 883 CSA), RCRA-closed, post-closure permitted facility Building 829 Open Burn Facility, and a review of hazardous waste-related documentation	DTSC	6/16/05 and 6/21/05 (2005 CEI)	Received no violations in initial 2005 Summary of Observation report. In the March 20, 2006, Inspection Report, DTSC issued two violations: (1) failure to use the original manifest to transport a rejected load to another disposal facility, and (2) falsely representing the waste on manifest 234440682 (which is directly related to violation #1). LLNL submitted a corrective action letter to DTSC on April 28, 2006. DTSC accepted the corrective actions and returned the facility to compliance in a letter dated May 15, 2006. This concluded the 2005 CEI.

Table 2-3 (cont.). Inspections and tours of Livermore site and Site 300 by external agencies in 2006.

Site	Medium	Description	Agency	Date	Finding
Site 300 (cont.)	Waste (cont.)	Permitted hazardous waste operational facilities (EWTF, EWSF, Building 883 CSA), RCRA-closed, post-closure permitted facility Building 829 Open Burn Facility, and a review of hazardous waste-related documentation	DTSC	4/12/06 and 4/24/06 (2006 CEI)	<p>During the close-out meeting on 4/24/06, DTSC issued two violations in the Summary of Violations report: (1) failure to record deficiencies and corrective actions on the EWTF inspection log, and (2) failure to conduct the first quarter 2005 and third quarter 2006 inspections of the B829 post-closure facility well monitoring network. The violations were corrected and the corrective action certification was faxed to DTSC on 4/28/06. The original paper copy certification was mailed to DTSC on 6/2/06.</p> <p>DTSC issued two more violations in the Inspection Report dated 6/12/06: (3) failure to record the time of inspection on the B829 post-closure facility inspection log and (4) failure to track 55-gallon drums in EWSF M816 by attaching a barcode to each drum. Individual parcels inside each 55-gallon drum were barcoded; however, the outer 55-gallon containers were not barcoded.</p> <p>LLNL submitted the corrective action response letter to violations #3 and #4 on 8/17/06. The letter also requested DTSC to downgrade both violations from Class II to Minor. DTSC did not respond to the response letter during calendar year 2006. In a letter from DTSC to LLNL dated 1/16/07, the Building 829 violation for not recording the inspection time on the inspection log was downgraded from a Class II to Minor Violation. However, the request to downgrade the Building 816 violation from Class II to Minor was not accepted by DTSC. Based on the LLNL violation response letter, DTSC determined that all violations were appropriately remedied.</p>
		Hazardous waste generator area inspection (WAAs, SAAs and hazardous waste-related records for hazardous waste generator activities only).	SJCEHD - CUPA	4/19/06	<p>During an inspection of the vehicle management operations at Building 879, two violations were issued for (1) failure to make a hazardous waste determination of metallic brake fine waste from rotor/drum machine turning operations and (2) failure to maintain waste analysis of the waste at the facility for three years. The violations were faxed to LLNL in an amended inspect report dated 4/24/06. Corrective actions were implemented, which were described in a violation response letter to SJCEHD dated 5/18/06.</p>
		Air	1 emission source	SJVAPCD	3/9/06
	Water	Permitted operations	CVRWQCB	3/27/06 11/20/06	No violations
	Storage tanks	Compliance with underground storage tank requirements and operating permits	SJCEHD	9/14/06 9/18/06	No violations

Building 883 Container Storage Area is permitted to store routine facility-generated waste such as spent acids, bases, contaminated oil, and spent solvents. See **Tables 2-2** and **2-3** for a summary of active permits and inspections, respectively, at Site 300 in 2006.

2.1.3.2 Hazardous Waste Reports

LLNL completed two annual hazardous waste reports, one for the Livermore site and the other for Site 300, which addressed the 2006 transportation, storage, disposal, and recycling of hazardous wastes at the respective sites. The “2006 Hazardous Waste Report—Main Site” and “2006 Hazardous Waste Report—Site 300” were submitted to the DTSC by April 1, 2007.

2.1.3.3 Hazardous Waste Transport Registration

Transportation of hazardous waste over public roads requires DTSC registration (22 CCR 66263.10). DTSC renewed LLNL’s registration on November 29, 2006, which will be in effect for one year.

2.1.3.4 Waste Accumulation Areas

LLNL programs maintain waste accumulation areas (WAAs) in compliance with waste generator requirements specified in Title 40 of the *Code of Federal Regulations*, Part 262 (40 CFR Part 262), and 22 CCR 66262.34 for the temporary storage (less than 90 days) of hazardous waste prior to transfer to a treatment, storage, or disposal facility. In January 2006, there were 27 WAAs at the Livermore site. During 2006, two temporary WAAs and two permanent WAAs were put into service, while six temporary WAAs and two permanent WAAs were taken out of service. Program representatives conducted inspections at least weekly at all WAAs to ensure that they were operated in compliance with regulatory requirements. At the Livermore site, 1196 prescribed WAA inspections were conducted.

At Site 300 during 2006, one WAA was in operation. Program representatives conducted 52 prescribed WAA inspections at Site 300.

2.1.4 California Medical Waste Management Act

All LLNL medical waste management operations comply with the California Medical Waste Management Act, which establishes a comprehensive program for regulating the management, transport, and treatment of medical wastes that contain substances that may potentially infect humans. The program is administered by the California Department of Health Services and is enforced by the Alameda County Department of Environmental Health (ACDEH).

LLNL is registered with the ACDEH as a generator of medical waste and has a treatment permit. No violations were issued as a result of the November 2006 ACDEH inspection of the Chemistry, Materials, and Life Sciences Directorate Building 360 Complex (Building 361) and Building 150 Complex (Buildings 151, 152, and 154), Building 132N of the Forensic Science Center, and the Biowatch Laboratory in Building 241.

2.1.5 Radioactive Waste and Mixed Waste Management

LLNL manages radioactive waste and mixed waste in compliance with applicable sections of DOE Order 435.1, as described in LLNL's *ES&H Manual*, Document 36.1, Hazardous, Radioactive, and Biological Waste Management Requirements. LLNL has also developed and maintains the *Radioactive Waste Management Basis for the Lawrence Livermore National Laboratory* (LLNL 2006b), which summarizes radioactive waste management controls relating to waste generators and treatment and storage facilities.

2.1.6 Federal Facility Compliance Act

LLNL is continuing to work with DOE to maintain compliance with the Federal Facilities Compliance Act Site Treatment Plan (STP) for LLNL, which was signed in February 1997. LLNL completed 13 milestones during 2006, and of those, eight had dates beyond 2006 (ranging from 2007 to 2010).

There was a major emphasis to complete the characterization and disposition of legacy low-level waste. The increased focus on legacy waste and also on safety improvements resulted in LLNL's requesting and being granted extensions for 12 additional milestones due in 2006. The milestones were associated with 20.6 m³ of waste.

LLNL successfully removed approximately 155 m³ of mixed waste from the STP in 2006. An additional 69 m³ of newly generated mixed waste was added to the STP, resulting in an overall reduction of 86 m³ of mixed waste being stored by LLNL.

Reports and certification letters were submitted to DOE as required. LLNL continued to pursue the use of commercial treatment and disposal facilities that are permitted to accept mixed waste. These facilities provide LLNL greater flexibility in pursuing the goals and milestones set forth in the STP.

2.1.7 Toxic Substances Control Act

The Federal Toxic Substances Control Act (TSCA) and implementing regulations found in 40 CFR Parts 700–789 govern the uses of newly developed chemical substances and TSCA-governed waste by establishing the following partial list of requirements: record keeping, reporting, disposal standards, employee protection, compliance and enforcement, and cleanup standards.

All TSCA-regulated waste was disposed of in accordance with TSCA, state, and local disposal requirements except for radioactively contaminated PCB waste. Radioactive PCB waste is currently stored at one of LLNL's hazardous waste storage facilities until an approved facility accepts this waste for final disposal.

2.2 Air Quality and Protection

2.2.1 Clean Air Act

All activities at LLNL are evaluated to determine the need for air permits. Air permits are obtained from the Bay Area Air Quality Management District (BAAQMD) for the Livermore site and from the San Joaquin Valley Air Pollution Control District (SJVAPCD) and/or BAAQMD for Site 300. Both agencies are overseen by the California Air Resources Board (CARB).

In 2006, LLNL operated 182 permitted air emission sources at the Livermore site and 43 permitted air emission sources at Site 300 (see **Table 2-2**). During the year, the BAAQMD performed two Livermore site source inspections of 44 emission sources, and the SJVAPCD performed one Site 300 source inspection of one emission source. Both the BAAQMD and the SJVAPCD found all inspected sources to be in compliance with the applicable air emission regulations and permit conditions. As a result, no violations were issued. The dates and findings of the inspections are listed in **Table 2-3**.

The BAAQMD also performed an asbestos inspection of 13 buildings and trailers at the Livermore site to ensure that asbestos was removed from the facilities and/or demolition of the facilities was performed in accordance with applicable air district and federal National Emissions Standards for Hazardous Air Pollutants (NESHAPs) requirements. The BAAQMD found that the asbestos removal and demolition activities were performed in accordance with applicable local air district and federal regulations. Dates and findings of the inspections are listed in **Table 2-3**.

In addition, the Livermore site continues to maintain a Synthetic Minor Operating Permit (SMOP), which was issued by the BAAQMD in 2002. The Livermore site initially had the potential to emit regulated air pollutants from permitted and permit-exempt sources in quantities exceeding federal Clean Air Act Title V limits. In lieu of obtaining a Title V permit, LLNL opted to obtain and maintain a SMOP for the Livermore site. A SMOP places enforceable limits on a facility's operations to ensure that the emissions from the facility's permitted and permit-exempt sources stay well below the Title V limits for regulated air pollutants. The Livermore site is restricted by the SMOP to 31.8 metric tons (MT) (35 tons) per year for nitrogen oxides (NO_x), 31.8 MT (35 tons) per year of precursor organic compounds, 20.9 MT (23 tons) per year for any combination of hazardous air pollutants (HAP), and 8.2 MT (9 tons) per year for any single HAP.

In 2006, several potentially significant air pollutant emission sources at the Livermore site were eliminated to reduce overall pollutant emissions. In addition, LLNL obtained approvals from the CARB and BAAQMD to construct an alternative fuel dispensing facility at the Livermore site.

LLNL evaluated usage necessity of its older, permitted diesel-powered portable generators and compressors in its fleet of 17 pieces of permitted portable diesel equipment, and

determined that five such generators could be eliminated without replacement. The five portable, diesel-powered generators were manufactured between 1954 and 1990 and were significant contributors to combustion pollutants emitted from the fleet.

LLNL also eliminated two permitted solvent cleaning operations. The two operations had the combined potential of emitting over 1 MT (2200 pounds [lbs]) per year of VOC pollutants.

In addition, LLNL obtained approvals from the CARB and BAAQMD to construct an alternative fuel (i.e., an E85) dispensing facility at the Livermore site. E85 fuel is a blend of 85% ethanol and 15% unleaded gasoline fuel, and meets Executive Order 13149, Greening the Government Through Federal Fleet and Transportation Efficiency, to implement the use of alternative fuels that enhance the nation's economy and energy independence. The new E85 dispensing facility will not increase the fuel throughput at LLNL since it is intended to provide a substitute for gasoline fuel.

2.2.2 National Emission Standards for Hazardous Air Pollutants, Radionuclides

To demonstrate compliance with 40 CFR Part 61, Subpart H (NESHAPs for radiological emissions from DOE facilities), LLNL is required to monitor certain air release points and evaluate the maximum possible dose to the public. These evaluations include modeling dose (using EPA-sanctioned computer codes) based on air effluent (source emission) and air surveillance monitoring and assessing dose from small sources based on air surveillance monitoring. The *LLNL NESHAPs 2006 Annual Report* (Larson et al. 2007), submitted to EPA, reported that the estimated maximum radiological doses that could have been received by a member of the public in 2006 were 0.045 microsievert (μSv) (0.0045 millirem [mrem]) for the Livermore site and 0.16 μSv (0.016 mrem) for Site 300. The reported doses include contributions from both point and diffuse sources. The totals are well below the 100 $\mu\text{Sv}/\text{year}$ ($\mu\text{Sv}/\text{y}$) (10 mrem/year [mrem/y]) dose limits defined by the NESHAPs regulations. See **Chapter 7** for additional information on the data.

In 2006, LLNL continuously monitored radionuclide emissions from the Tritium Facility, the Plutonium Facility, and portions of five other facilities (see **Chapter 4**). Using ambient air monitoring, LLNL also continuously monitored releases of depleted uranium used in explosives testing at Site 300 (see **Chapter 4**). There was one unplanned incident at the Livermore site in 2006 that had the potential to result in a small release of tritium to air. However, because LLNL personnel with the most exposure did not receive any measurable dose attributable to the incident, any potential dose to a member of the public would have been negligible (see **Section 7.5.2** for details). There were no unplanned atmospheric releases at Site 300 in 2006. Monitoring activities and results related to air are described further in **Chapter 4**.

2.3 Water Quality and Protection

2.3.1 Clean Water Act and Related State Programs

Preserving clean water is an objective of local, state, and federal regulations. The National Pollutant Discharge Elimination System (NPDES) under the federal Clean Water Act (CWA) establishes permit requirements for discharges into waters of the United States. In addition, the State of California, under the Porter-Cologne Water Quality Control Act, requires permits, known as Waste Discharge Requirements (WDRs), for any waste discharges affecting the beneficial uses of waters of the state. These permits, as well as water quality certification for discharges authorized under Section 401 of the CWA, are issued by local regional water quality control boards (RWQCBs) and the State Water Resources Control Board. RWQCBs enforce both the regional and state issued permits. Section 401 state water quality certifications are required when the Army Corps of Engineers issues permits under Section 404 of the CWA. Several other agencies issue other water-related permits. The Livermore Water Reclamation Plant (LWRP) requires permits for discharges to the City's sanitary sewer system. The Safe Drinking Water Act requires registration with the EPA and management of injection wells to protect underground sources of drinking water.

Water-related permits and inspections from outside agencies are summarized in **Tables 2-2** and **2-3**, respectively. No enforcement actions were taken against LLNL by water-related regulatory agencies in 2006.

At Site 300, LLNL completed the construction of two culverts at Round Valley and Oasis. A habitat pool built at Round Valley served in part to compensate for the loss of habitat that was a result of the two drainage improvement projects. These projects were authorized under nationwide permits (NWP) 27 and 14 and certified by the Central Valley RWQCB.

To satisfy a concern that the cooling tower blowdown from Building 801 at Site 300 might reach a surface water tributary during winter storms, LLNL constructed a new percolation pit and registered it as a Class V injection well with the U.S. EPA. The new system was put into service on October 9, 2006.

Monitoring activities and results related to water permits are described in **Chapter 5**.

2.3.2 Tank Management

The CWA and California Aboveground Petroleum Storage Act require facilities meeting specific storage requirements to have and implement spill prevention control and countermeasure (SPCC) plans for aboveground, oil-containing containers, including equipment and tanks. The Alameda County Department of Environmental Health (ACDEH) and the San Joaquin County Environmental Health Department (SJCEHD) also issue permits for operating underground storage tanks containing hazardous materials or hazardous waste as required under the California Health and Safety Code.

LLNL manages its underground and aboveground storage tanks through the use of underground tank permits, monitoring programs, operational plans, closure plans and reports,

leak reports and follow-up activities, and inspections. At LLNL, permitted underground storage tanks contain diesel fuel, gasoline, and used oil; aboveground storage tanks contain fuel, insulating oil, and process wastewater. Some nonpermitted wastewater tank systems are a combination of underground and aboveground storage tanks. All permitted underground storage tanks were inspected by regulating agencies in 2006. No violations were noted during the inspections. See **Table 2-3** for a summary of inspections.

In December 2006, LLNL applied for a permit from ACDEH to install a new 45,425-L (12,000-gallon [gal]) underground storage tank (UST) to store E85 motor vehicle fuel. The new UST and all underground piping are double-walled and continuously leak monitored. The new tank system was installed as part of the new E85 alternative fuel dispensing facility that will serve the 281 Flexible Fuel Vehicles (FFVs) that can run on either E85 (85% ethanol and 15% unleaded gasoline) or E10 (10% ethanol and 90% unleaded gasoline).

In 2006, LLNL continued to conduct extensive, site-wide building surveys at both the Livermore site and Site 300 for aboveground oil containers of 208 L (55 gal) or more. These activities were conducted in compliance with SPCC regulation updates promulgated in 2002. Updates to the SPCC plans for both the Livermore site and Site 300 are scheduled to be completed in 2007.

2.4 Other Environmental Statutes

2.4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) is the U.S. government's basic environmental charter. When considering a proposed project or action, the federal government is required by NEPA to (1) consider how the action would affect the environment and (2) make certain that environmental information is available to public officials and citizens before decisions are made and actions are taken. Because LLNL activities are generally funded by the federal government, these activities must comply with NEPA requirement.

A federal agency meets the first NEPA requirement by determining what impact, if any, a project would have on the human environment. The agency studies the components of the human environment that may be affected by the project, which may include air, water, soil, biological resources, socioeconomics, aesthetics, noise, or cultural resources. Results of the studies are recorded in "NEPA documents."

The federal agency meets the second requirement, to inform public officials and citizens, by distributing the NEPA documents by making them available in public reading rooms and on the Internet and sometimes by mailing them directly to interested parties. Federal agencies often involve the public in decisions about proposed projects by holding public meetings and asking for comments on the NEPA documents.

NEPA documents include environmental impact statements (EISs) and environmental assessments (EAs). EISs are prepared for proposed major federal actions that would

significantly affect the quality of the human environment. In contrast, EAs are prepared for federal actions that would not have a significant impact on the environment or when all of the potential impacts of a proposed action could be reduced to insignificant levels. Federal agencies decide which type of document should be prepared after studying the impact to the environment.

Some projects do not require either an EIS or an EA. These projects fit into categories of activities that are well understood and known to have no impact on the human environment. After an agency studies the environmental impacts of a project and determines that the project fits into one of these categories, no further documentation is required. Nonetheless, some federal agencies, including DOE/NNSA at LLNL, choose to write a memorandum that describes the project and explains why it meets the criteria for being categorically excluded. These memoranda are referred to as categorical exclusions, CXs, or Cat Xs. Technically, categorical exclusions are not NEPA documents.

The NEPA documents and categorical exclusions that were prepared for LLNL projects in 2006 are described below.

In March 2005, DOE published the *Final Site-wide Environmental Impact Statement for the Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement* (U.S. DOE 2005) (LLNL SW/SPEIS), and a Record of Decision was filed on November 29, 2005 (U.S. DOE/NNSA 2005). In response to national security needs, DOE prepared a supplemental analysis to the LLNL SW/SPEIS and in February 2006 published *The Proposed Construction and Operation of Evidence Receiving and Temporary Storage Facilities in Support of the Nuclear and Radiological Attribution Program and Forensic Science Center's Analyses Program at the Livermore Site and Site 300, Lawrence Livermore National Laboratory* (U.S. DOE 2006g). This project would allow construction and operation of facilities at Site 300 and expand forensic science activities to additional buildings at the Livermore site.

In 2006, one LLNL project required a DOE EA. The project would provide environmental remediation of a historical landfill area in the northwest corner of Site 300 that periodically releases contaminants to shallow groundwater during heavy rainfall events. A *Draft Environmental Assessment for the Proposed Environmental Remediation at Lawrence Livermore National Laboratory Site 300 Pit 7 Complex* was published in August 2006 (U.S. DOE 2006b). Public comments were received on the draft until September 21, 2006. In January 2007, DOE issued the final version of the EA (U.S. DOE 2007), which included responses to the public comments. In February 2007, DOE issued a Finding of No Significant Impact (FONSI) as a result of the analysis contained in the final EA. No further NEPA documentation is required on this project.

Ten categorical exclusion recommendations were approved by DOE. There were no proposed actions at LLNL that required separate DOE floodplain or wetlands assessments under DOE regulations in 10 CFR Part 1022.

Since November 1992, the University of California (UC) and LLNL have implemented mitigation measures identified in the *Environmental Impact Statement and Environmental Impact*

Report (U.S. DOE and UC 1992), or 1992 EIS/EIR. A California Environmental Quality Act addendum to the 1992 EIS/EIR was prepared in 1997 for the UC Regents (UC 1997). The measures are being implemented in accordance with the approved 1992 Mitigation Monitoring and Reporting Program associated with the 1992 EIS/EIR. The last mitigation monitoring report was published in 2003.

2.4.2 National Historic Preservation Act

The National Historic Preservation Act (NHPA) (as amended) provides for the protection and preservation of historic properties that are significant in the nation's history. LLNL resources subject to NHPA consideration range from prehistoric archeological sites to remnants of LLNL's own history of scientific and technological endeavors. The responsibility to comply with the provisions of NHPA rests solely with federal agencies. DOE/NNSA is the lead federal agency in this undertaking. LLNL and UC, as LLNL's contract operator, support DOE/NNSA's NHPA responsibilities. LLNL does so with direction from DOE/NNSA. At the end of 2006, the two draft treatment plans were under consideration by DOE and SHPO.

The two primary NHPA sections that apply to LLNL are Sections 106 and 110. Section 106 requires federal agencies to take into account the effects their undertakings may have on historic properties. The federal agencies must allow and consider comments of the federal Advisory Council on Historic Preservation (ACHP). Section 106 regulations outline a five-step review process that is conducted for individual federal actions. Section 110 sets forth broad affirmative responsibilities to balance agency missions with cultural values. Its purpose is to ensure full integration of historic preservation into federal agency programs.

LLNL has taken two approaches to streamlining historic preservation efforts and focusing on important historic properties under its management. First, DOE/NNSA, UC, and the State Historic Preservation Officer (SHPO) reached an agreement in July 2003 that governed historic preservation program activities until resource inventory and assessment activities specified in the agreement were complete. The goal of the agreement was to reduce the amount of paperwork necessary to ensure protection of important historic properties by reaching a consensus on where and how to effectively focus LLNL's efforts.

The second goal, as specified in the agreement, was to complete within a reasonable time frame an inventory of places (prehistoric, historic, archeological, and architectural) meeting a statutory threshold of historic importance. The inventory of historic architectural resources was completed in 2004. In 2005, LLNL prepared an inventory of prehistoric and historic archaeological resources. Recommendations were provided in both documents for resources that appeared to meet the statutory threshold of historic importance for listing in the National Register of Historic Places (NRHP). In consultation with the SHPO, DOE/NNSA used the information in the document to formally determine that five of LLNL's archaeological resources qualified for listing in the NRHP. Also in consultation with the SHPO, DOE/NNSA formally determined that five buildings, two historic districts, and selected objects in one

building at LLNL were eligible for listing in the NRHP. In August 2006, the SHPO staff toured two buildings at the Livermore site.

With the inventory and assessment complete, DOE, UC, the SHPO, and the ACHP initiated discussions toward the development of a new agreement that would govern how DOE/NNSA would manage the NRHP-eligible properties. To assist in these discussions, LLNL prepared a draft archaeological resources treatment plan in July 2005 and a draft historic buildings treatment plan in September 2005. These plans describe specific resource management and treatment strategies that could be implemented by DOE/NNSA, in cooperation with LLNL, to ensure that important historic properties are managed in a manner that considers their historic value.

2.4.3 Antiquities Act

Provisions of the Antiquities Act provide for recovery of paleontological remains. After the discovery of mammoth remains in conjunction with the National Ignition Facility construction in 1997, LLNL has remained vigilant for other fossil finds. No remains subject to the provisions of the Antiquities Act were identified in 2006.

2.4.4 Endangered Species Act and Sensitive Natural Resources

Requirements of the U.S. Endangered Species Act, the California Endangered Species Act, the Eagle Protection Act, the Migratory Bird Treaty Act, and the California Native Plant Protection Act are met as they pertain to endangered species, threatened species, and other special-status species (including their habitats) and designated critical habitats that exist at the LLNL sites. For example, DOE consults with the U.S. Fish and Wildlife Service (USFWS) when activities have the potential to result in impacts to federally endangered or threatened species. The following list describes the highlights of recent consultations and analyses conducted in reference to the federal Endangered Species Act.

- The USFWS issued a biological opinion for the Arroyo Seco Management Plan on June 10, 2005. Work was completed under this biological opinion during the summer of 2005. Monitoring of the restoration at the Arroyo Seco site is required by this biological opinion for five years after the completion of this project. The first year of the five-year monitoring plan was completed in 2006.
- A site-wide biological assessment for the LLNL SW/SPEIS was prepared and submitted to the USFWS on April 9, 2004. A revised site-wide biological assessment was prepared in 2006 and submitted to the USFWS on February 26, 2007.
- On June 6, 2005, the USFWS concurred with DOE that the creation of the Mid-Elk Ravine Wetland Enhancement Project (Site 300 Mid-Elk Ravine Mitigation Ponds) and the Upper Round Valley Culvert Replacement Project are not likely to adversely affect the California tiger salamander. These projects are both included in the May 17, 2002, Biological Opinion for Routine Maintenance and Operations of Site 300,

which was completed before the California tiger salamander was proposed for listing as threatened by the USFWS.

- In the summer and fall of 2005, the Mid-Elk Ravine Wetland Enhancement Project was completed. This project is included in the May 17, 2002, *Biological Opinion for Routine Maintenance and Operations of Site 300* as mitigation for the termination of water discharge to artificial wetlands created initially from cooling tower blowdown near Buildings 865, 801, 827, and 851 because these artificial wetlands provided suitable habitat for California red-legged frogs. Water discharge to the artificial wetland near Building 865 was terminated in 2006.
- California red-legged frog dispersal and breeding were monitored in 2006 as a requirement of the biological opinion for the Mid-Elk Ravine Wetland Enhancement Project. California red-legged frogs were relocated from the Building 865 artificial wetland to the Mid-Elk Ravine wetlands in March 2006.
- The Oasis Culvert Replacement Project was completed in the fall of 2006. This project is included in the May 17, 2002, *Biological Opinion for Routine Maintenance and Operations of Site 300*. Fifteen California red-legged frogs were relocated during the construction of this project.
- The Round Valley Culvert Replacement Project was also completed in the fall of 2006. A large pool designed as breeding habitat for the California tiger salamander and California red-legged frog was constructed upstream of the Round Valley culvert as part of the project. This pool served in part as mitigation for impacts to wetlands during the Oasis Culvert Replacement Project.
- In October 2006, application of rotenone, a piscicide, to Lake Haussmann was carried out to eradicate invasive, nonnative species of fish (i.e., largemouth bass and channel catfish) to protect California red-legged frogs. This project is included in the August 8, 2002, *Biological Opinion for Bullfrog Management Plan Amendment for LLNL* and the October 2, 2006, *Amendment to Biological Opinion for the Arroyo Maintenance Project at LLNL*. This collaborative project between the California Department of Fish and Game and LLNL's Environmental Protection Department successfully eradicated these species without any unforeseen issues arising.

In 2006, the USFWS published two critical habitat designations that are pertinent to LLNL. On April 13, 2006, the USFWS published a final rule designating critical habitat for the California red-legged frog (USFWS 2006a). The new critical habitat designation does not include any portion of the Livermore site or Site 300. A critical habitat designation was also issued for the Alameda whipsnake on October 2, 2006 (USFWS 2006b). This designation includes the southwestern portion of Site 300 (see **Figure 6-7** in **Chapter 6**). No portion of the Livermore site is included in the Alameda whipsnake critical habitat proposal.

Biological surveys for special-status species and monitoring results are described in **Chapter 6**.

2.4.5 Federal Insecticide, Rodenticide, and Fungicide Act

LLNL complies with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which provides federal control of the distribution, sale, and use of pesticides. The EPA has given the California Department of Pesticide Regulations (DPR) enforcement responsibility for FIFRA in California; DPR has in turn given enforcement responsibility to county departments of agriculture. All pesticides at LLNL are applied, stored, and used in compliance with FIFRA and other California and Alameda County regulations governing the use of pesticides.

FIFRA also requires that commercial users of pesticides maintain certification as pesticide applicators. The staff of the LLNL Landscape and Pest Management Shop includes eight individuals who are certified pesticide applicators. The certification is issued by the State of California and is maintained through an annual training and inspection program. The Alameda County Community Development Agency (ACCD) conducts an annual inspection of the Livermore site Landscape and Pest Management Shop to ensure that all storage and use of pesticides at LLNL is in accordance with applicable regulations.

LLNL also reviews pesticide applications to ensure they do not result in impacts to water quality or special status species.

2.5 Environmental Occurrences

In 2006, notification of environmental occurrences was required under a number of environmental laws and regulations as well as DOE Order 231.1A and DOE Manual 231.1-2. The orders and manual categorize occurrences and provide guidelines to contractor facilities regarding categorization of and reporting environmental occurrences to DOE.

LLNL's response to environmental occurrences is part of the larger on-site emergency response organization that includes representatives from LLNL's Hazards Control Department (including the LLNL Fire Department), Health Services Department, Plant Engineering, Public Affairs Office, Safeguards and Security Organization, and Environmental Protection Department. In 2006, seven environmental incidents, summarized in **Table 2-4**, were reportable under DOE Order 232.1A. One incident was categorized under Significance Category 1, Group 1, Operational Emergency, while one incident was categorized as a Significance Category 4 reportable occurrence under Group 5, Environmental. Five occurrences were categorized under Significance Category 4, Group 9, Noncompliance Notifications. DOE was notified of the incidents.

Contributing Authors

Lily Baldwin, Shari Brigdon, Richard Brown, Karl Brunckhorst, Joseph G. Byrne, Steven Cerruti, Patrick Epperson, Allen Grayson, Rod Hollister, John Karachewski, Sandra Mathews, Paul McGuff, Jennifer Nelson-Childs, Lisa Paterson, Ring Peterson, Vicki Salvo, William Schwartz, Michael Taffet, Stan Terusaki, Jim Woollett, Joseph Woods, Peter Yimbo

Table 2-4. Environmental Occurrence reported under the Occurrence Reporting System in 2006.

Date ^(a)	Occurrence category/group	Description
4/5/06	Significance Category SC4 Occurrence under Group 5A(4)	An LLNL vehicle was accessing a security post when the pop-up barrier was activated, causing a rupture to the vehicle gasoline tank. Approximately 20 gallons of gasoline was released to the asphalt and the barrier sump. Although the spill response was quickly activated, an undetermined amount of gasoline entered the adjacent storm drain and flowed to the Arroyo Las Positas. OR 2006-0013
4/5/06	Significance Category SC4 Occurrence under Group 9(2)	On 4/5/06, the DTSC issued LLNL an SOV for findings from a 6/16/05 inspection at Site 300. The SOV identified two findings pertaining to the documentation associated with a single shipment of hazardous waste from Site 300 to an off-site TSDF. OR 2006-0014
4/24/06	Significance Category SC4 Occurrence under Group 9(2)	LLNL received an NOV from the San Joaquin County Environmental Health Department for findings noted during the 4/19/06 scheduled inspection of the vehicle management operations at Site 300, Building 879. The two findings pertained to the management of metal grindings from brake rotors and drums. OR 2006-0015
4/24/06	Significance Category SC4 Occurrence under Group 9(2)	LLNL received an SOV from the DTSC for two violations discovered during the Annual Compliance Evaluation Inspection of permitted facilities at Site 300. One finding identified information that was lacking from a weekly inspection log. The second finding described a failure to follow a facilities operation plan and conduct the quarterly inspection for wells. OR 2006-0016
6/14/06	Significance Category SC1 Occurrence Under Group 1(1)	On 6/14/06, LLNL declared an Operational Emergency when Mutual Aid was requested for a grass fire that burned approximately 20 acres of Site 300 land. The fire started off site on the westbound shoulder of Corral Hollow Road and burned onto Site 300 property. OR 2006-0029
9/11/06	Significance Category SC4 Occurrence under Group 9(2)	On 9/11/06, LLNL received an NOV from the DTSC for findings noted during the April 2005 Compliance Evaluation Inspection conducted at RHWM-permitted facilities. The report detailed five Class 2 violations, including; (1) Exceeding the 90-day storage time limit in a WAA (2) Failure of two individuals to complete annual RCRA training (3) Date discrepancy between a label and the RHWM database (4) Failure to fix cracks in the bermed area of Building 695 (5) Failure to provide complete transaction information for legacy chlorosolvent waste. OR 2006-0044
10/18/06	Significance Category SC4 Occurrence under Group 9(2)	LLNL received an SOV from the DTSC for findings derived from the 9/06 Compliance Evaluation Inspection conducted at RHWM-permitted facilities. The SOV identified one Class 2 violation for crushing hazardous waste drums at a non-permitted location. On 4/18/07, LLNL received the final inspection report, which included three additional minor violations: one for training and two for incomplete administrative records. OR 2006-0053

(a) Date the occurrence was categorized, not discovered.

