

## 2. Compliance Summary

LLNL activities comply with federal, state, and local environmental regulations, internal requirements, Executive Orders, and DOE orders as specified in Contract DE-AC52-07NA27344. This chapter provides an overview of LLNL's compliance programs and activities during 2008. **Table 2-1** is a summary of active permits in 2008 at the Livermore site and Site 300. **Table 2-2** lists environmental inspections and findings from them at both LLNL sites in 2008.

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### 2.1 Environmental Restoration and Waste Management

#### 2.1.1 Comprehensive Environmental Response, Compensation and Liability Act

Ongoing remedial investigations and cleanup 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 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 came under CERCLA 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, the California EPA's Department of Toxic Substances Control (DTSC), and the 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 trichloroethene (TCE) and perchloroethylene (PCE).

During 2008, the Livermore GWP experienced a significant budget reduction that severely impacted operations. When the final FY 2008 Omnibus Appropriations Bill was passed by Congress, the Livermore GWP received only about 50% of its requested budget. Although funding was ultimately restored in late July 2008, the budget reduction necessitated a dramatic reduction in both staff and cleanup activities at the site. Consequently, enhanced source area remediation pilot tests begun in 2007 were put on hold and existing groundwater and soil vapor treatment operations were significantly curtailed during the year. LLNL continued to operate facilities until equipment or instrumentation failed. See [Valett et al. \(2009\)](#) for the current status of cleanup progress.

## 2. Compliance

**Table 2-1.** Active permits in 2008 at the Livermore site and Site 300.

Type of permit	Livermore site <sup>(a)</sup>	Site 300 <sup>(a)</sup>
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.</p> <p>Registered Hazardous Waste Hauler 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>PT0305819. RCRA large-quantity hazardous waste generation facility—ACDEH.</p>	<p>EPA ID No. CA2890090002. Hazardous Waste Facility Permit—CSA (Building 883) and EWSF.</p> <p>Hazardous Waste Facility Permit —EWTF.</p> <p>Hazardous Waste Facility Post-Closure Permit—Building 829 High Explosives Open Burn Treatment Facility.</p> <p>PT0010318. Hazardous waste generation facility—SJCEHD.</p>
Medical waste	<p>ACDEH issued a permit that covers medical waste generation and treatment activities for the eight BSL 2 facilities, and the BSL 3 facility at Building 368.</p>	NA
Certified Appliance Recycler (CAR)	<p>DTSC issued CAR certificate No. 0329 to recycle appliances.</p>	<p>DTSC issued CAR certificate No. 0330 to recycle appliances.</p>
Air	<p>BAAQMD issued 165 permits for operation of various types of equipment.</p> <p>BAAQMD issued a SMOP to ensure the Livermore site does not exceed federal Clean Air Act Title V emission limits for regulated pollutants.</p> <p>CARB issued 7 permits for the operation of portable diesel air compressors and generators.</p>	<p>SJVAPCD issued 36 permits for operation of various types of equipment.</p> <p>SJVAPCD approved a Prescribed Burn Plan for the burning of 2042.7 acres of grassland.</p> <p>BAAQMD issued 1 permit for the operation of an emergency diesel generator.</p> <p>BAAQMD approved a Prescribed Burn Plan for the burning of 139.1 acres of grassland.</p>
Storage tanks	<p>Seven operating permits covering 10 underground petroleum product and hazardous waste storage tanks.</p>	<p>One operating permit covering three underground petroleum product tanks assigned individual permit numbers.</p>
Sanitary sewer	<p>Discharge Permit 1250<sup>(b)</sup> for discharges of wastewater to the sanitary sewer.</p> <p>Permit 1510G for discharges of groundwater from restoration.</p>	<p>WDR No. 96-248 for operation of sewage evaporation and percolation ponds; superseded by WDR R5-2008-0148 in September 2008.</p>

**Table 2-1 (cont.).** Active permits in 2008 at the Livermore site and Site 300.

Type of permit	Livermore site <sup>(a)</sup>	Site 300 <sup>(a)</sup>
Water	<p>WDR No. 88-075 for discharges of treated groundwater from Treatment Facility A to recharge basin.<sup>(c)</sup></p> <p>NPDES Permit No. CA0030023 for discharges of storm water associated with industrial activities and low-threat nonstorm water discharges to surface waters.</p> <p>NPDES General Permit No. CAS000002, Soil Reuse Project (201C349339), and E-9 Parking Lot (201C349049) 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>WDR No. 93-100 for post-closure monitoring requirements for two Class I landfills.</p> <p>WDR No. 96-248 for discharges to equipment wastewater percolation pits; superseded by WDR R5-2008-0148 in September 2008.</p> <p>NPDES General Permit No. CAS000001 for discharge of storm water associated with industrial activities.</p> <p>NPDES Regional General Permit No. CAG995001 for large volume discharges from the drinking water system.</p> <p>FFA for groundwater investigation/remediation.</p> <p>33 registered Class V injection wells.</p>

**Note:** See the **Acronyms and Glossary** section for acronym definitions.

(a) Numbers of permits are based on actual permitted units or activities maintained and/or renewed by LLNL during 2008.

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

(c) Recharge basin referenced in WDR Order No. 88-075 is located south of East Avenue within Sandia National Laboratories/California boundaries. The discharge no longer occurs; however, the agency has not rescinded the permit.

## 2. Compliance

**Table 2-2.** Inspections of Livermore site and Site 300 by external agencies in 2008.

Site	Medium	Description	Agency	Date	Finding
<b>Livermore site</b>	Waste	Hazardous waste facilities Compliance Evaluation Inspection (CEI)	DTSC	6/30/08 & 7/8/08–7/11/08	Received one Class I violation for failure to characterize the influent into the oil-water separator at Building 611. Received one Class II violation for assigning the on-duty Fire Chief (an Alameda County employee) as the Emergency Coordinator in the Contingency Plans for the permitted facilities. DTSC issued a final report for the 2008 CEI on 9/25/08. The influent water was analyzed and determined to be nonhazardous. The emergency coordinator function was re-assigned to two LEDOs who are LLNL employees. DTSC ultimately decreased the Class I violation to a Class II violation.
	Air	Air emission sources	BAAQMD	2/13/08 4/29/08 5/1/08 5/15/08 7/9/08	No violations
	Sanitary sewer	Annual compliance sampling and categorical sampling/inspection Building 153 and Building 321C.	WRD	9/22/08–9/23/08	No violations
	Storage tanks	Compliance with underground storage tank requirements and operating permits	ACDEH	8/5/08 9/15/08 9/22/08	No violations
	Pesticides	Pest control records inspections	ACCDA	12/11/08	No violations
<b>Site 300</b>	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 (CEI).	DTSC	5/21/08–5/22/08	DTSC issued one minor violation for failing to conduct the November 2007 monthly inspection of Building 829. LLNL corrected the violation by immediately conducting the missed inspection on December 3, 2007. Future Building 829 inspections were scheduled at the beginning of the month in order to allow management more time to review the completed inspection checklist. Extra training was also provided to the technician supervisor and technicians responsible for conducting the inspection to ensure this type of violation does not occur in the future. LLNL submitted the corrective action letter to DTSC on October 15, 2008. In the DTSC Inspection Report, compliance would be verified during the next inspection.
		Hazardous waste generator area inspection (WAAs, SAAs and hazardous waste-related records for hazardous waste generator activities only).	SJCEHD-CUPA	8/18/08	San Joaquin County CUPA issued one violation for failing to determine if a waste is a hazardous waste. The waste was analyzed and determined to be nonhazardous. The analytical data and "Return to Compliance Certification" was submitted to San Joaquin County CUPA on September 15, 2008.
	Air	Air emission sources	SJVAPCD	4/29/08 11/12/08	No violations

**Table 2-2 (cont.).** Inspections of Livermore site and Site 300 by external agencies in 2008.

Site	Medium	Description	Agency	Date	Finding
<b>Site 300 (cont.)</b>	Water	Permitted operations	CVRWQCB	3/20/08 11/6/08	No violations
	Storage tanks	Compliance with underground storage tank requirements and operating permits	SJCEHD	9/8/08 9/19/08	During the September 8, 2008, inspection of the underground storage tanks at Building 879, four violations were issued for 1) deficient Monitoring Plan, 2) unavailable maintenance records, 3) spill bucket did not pass leak test, and 4) work done without a permit. All deficiencies were corrected and the corrective action letter was submitted to SJCEHD on October 8, 2008.

**Note:** See the **Acronyms and Glossary** section for acronym definitions.

## 2. Compliance

In 2008, the Livermore GWP met all regulatory and DOE milestones on schedule including restarting the TF406 and TFA East groundwater extraction and treatment facilities.

**Treatment Facilities.** During 2008, the Livermore GWP maintained 29 groundwater and 9 soil vapor treatment facilities as funds allowed. The groundwater extraction wells and dual phase extraction wells extracted about 670 million L of groundwater during 2008. The dual phase extraction wells and soil vapor extraction wells together removed 570 thousand m<sup>3</sup> of soil vapor.

In 2008, the Livermore GWP treatment facilities removed about 91 kg of VOCs. Since remediation efforts began in 1989, more than 13.6 billion L of groundwater and approximately 9.5 million m<sup>3</sup> of soil vapor have been treated, removing about 2709 kg of VOCs.

**Community Relations.** Livermore site community relations activities in 2008 included communication and meetings with neighbors and local, regional, and national interest groups and other community organizations; public presentations; maintenance of information repositories and an 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>.

### 2.1.1.2 Site 300 Environmental Restoration Project

Remedial activities are ongoing at Site 300, which became a CERCLA site in 1990 when it was placed on the National Priorities List. Remedial activities are overseen by the EPA, the Central Valley Regional Water Quality Control Board (CVRWQCB), and DTSC, under the authority of an FFA for the site. Contaminants of concern at Site 300 include VOCs (primarily TCE), high explosive compounds, tritium, depleted uranium, silicone-based oils, nitrate, perchlorate, polychlorinated biphenyls, dioxins, furans, and metals. The contaminants present in environmental media 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 Dibley et al. (2009) for the current status of cleanup progress. In 2008, the Site 300 Environmental Restoration Project (ERP) met all regulatory and DOE milestones on schedule including finalizing the Building 850 PCB-contaminated Soil Engineering Evaluation/Cost Analysis, the Pit 7 Complex Interim Remedial Design report, the Building 850 PCB-contaminated Soil Action Memo, and the Building 854 Final 5-Year Review. In addition, the Site-Wide Record of Decision for Site 300 establishing final cleanup actions and standards was completed in 2008.

**Treatment Facilities.** During 2008, the Site 300 ERP operated 15 groundwater and 5 soil vapor treatment facilities at Site 300. The groundwater extraction wells and dual phase extraction wells extracted about 38 million L of groundwater during 2008. The dual phase extraction wells and soil vapor extraction wells together removed 2.3 million m<sup>3</sup> of soil vapor.

In 2008, the Site 300 treatment facilities removed about 18 kg of VOCs, 0.13 kg of perchlorate, 1300 kg of nitrate, 0.21 kg of the high explosive compound RDX, and 0.0068 kg of silicone-based oil. Since remediation efforts began in 1990, more than 1389 million L of groundwater and approximately 11 million m<sup>3</sup> of soil vapor have been treated, removing about 520 kg of VOCs, 0.79 kg of perchlorate, 6600 kg of nitrate, 1.1 kg of RDX, and 9.5 kg of silicone-based oil.

**Community Relations.** The Site 300 CERCLA Project maintains continuing communications with the community of Tracy and nearby neighbors. Community relations activities in 2008 included maintenance of information repositories and an administrative record; participation in community meetings and workshops; tours of site environmental activities; offsite, private, well-sampling activities; mailings to stakeholders; and providing responses to public and news media inquiries. LLNL hosted TAG meetings with Tri-Valley CAREs to provide a forum for focused discussions on CERCLA activities at Site 300. A public workshop was held in Tracy for the Building 850 Removal Action for PCB-contaminated soil on March 6, 2008.

### 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 (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, the Toxic Release Inventory (TRI) Program. EPCRA requirements and LLNL compliance are summarized in **Table 2-3**.

**Table 2-3.** Compliance with EPCRA.

<b>EPCRA section</b>	<b>Brief description of requirement</b>	<b>LLNL action</b>
302	Notify SERC of presence of extremely hazardous substances.	Originally submitted 5/87.
303	Designate a facility representative to serve as emergency response coordinator.	Update submitted 1/22/08 to San Joaquin County for Site 300 and 3/1/08 to Alameda County for Livermore site.
304	Report releases of certain hazardous substances to SERC and LEPC.	No EPCRA-listed extremely hazardous substances were released above reportable quantities in 2008.
311	Submit MSDSs or chemical list to SERC, LEPC, and Fire Department.	Update submitted 3/18/08.
312	Submit hazardous chemical inventory to local administering agency (county).	Submitted to San Joaquin and Alameda counties on 1/22/08 and 3/1/08, respectively.
313	Submit Form R to U.S. EPA and California EPA for toxic chemicals released above threshold levels.	Form R for lead for Site 300 and mercury for Livermore site submitted to DOE 6/10/08; DOE forwarded it to U.S. EPA and California EPA 6/26/08.

## 2. Compliance

On June 10, 2008, LLNL submitted to DOE/NNSA the TRI Form R for mercury for the Livermore site detailing environmental release estimates for calendar year (TRI reporting year) 2007. Form R is used for reporting TRI chemical releases and includes information about waste management and waste minimization activities. This is the first year LLNL exceeded reporting thresholds for mercury; therefore, no year-to-year trending information is currently available.

LLNL has reported lead release data for Site 300 since 2002. Over 99 percent of lead releases are associated with activities at the Site 300 Small Firearms Training Facility (SFTF). Data for the 2007 TRI Form R for lead at Site 300 was submitted to DOE/NNSA on June 10, 2008. Site 300 SFTF lead releases were calculated based on information from the ammunition material safety data sheets (MSDSs), which was confirmed by the manufacturer, and subsequently reported based on best available information. Recently LLNL became aware that manufacturer-provided data for a certain caliber ammunition was not just for the bullet, but for the entire round. The lower lead composition of the entire round caused LLNL to underreport lead releases for calendar years 2002–2007 (TRI reporting years 2002–2007). LLNL has since obtained revised composition data from the manufacturer and opted to submit revised TRI reports for reporting years 2002–2007 to DOE/NNSA in May 2009. Although the revised release estimates range from 1 to 8 times higher than originally reported, the revised data still indicate a trend of decreasing lead releases over this time period as a result of pollution prevention efforts, such as increasing the use of frangible bullets. A summary of the original and revised estimates of the total lead releases at Site 300 is shown in **Table 2-4**. Although the release values in **Table 2-4** include both land and air releases, the releases from the SFTF are, by far, the largest contributor to the total values. LLNL subsequently issued a Lessons Learned, “Relying on MSDSs to Estimate Environmental Releases Can Cause Errors,” (LLNL 2009b), so other DOE sites can learn from LLNL’s experience.

**Table 2-4.** Original and revised total on-site disposal or other releases of lead at Site 300, 2002–2007.

Reporting Year	Original Total On-site Disposal or Other Releases (pounds)	Revised Total On-site Disposal or Other Releases (pounds)
2002	3898.9	4889.9
2003	1129.8	6198.6
2004	605.3	4882.2
2005	471.9	4065.9
2006	447.5	2910.3
2007	372.2	2679.0

### 2.1.3 California Accidental Release Prevention (CalARP) Program

The California Accidental Release Prevention (CalARP) Program is the combined federal and state program for the prevention of accidental release of regulated toxic and flammable substances. The goal of the combined program is to eliminate the need for two separate and distinct chemical risk management programs.

In June 2000, LLNL Site 300 submitted a risk management plan (RMP) to the San Joaquin County, Office of Emergency Services (SJCOES). The RMP described the systems in place to prevent or mitigate the hazards associated with chlorine used in the LLNL Site 300 water treatment system. In accordance with the Final CalARP Program Regulations in the California Code of Regulations (Title 19, Division 2, Chapter 4.5), the LLNL Site 300 RMP was updated in August 2005. It has been determined that the Site 300 water treatment system falls under CalARP Program Level 2. This plan is updated at least every five years.

In August 2008, LLNL submitted a CalARP Program Level 1 RMP for both lithium hydride and nitric acid present at the Livermore site in quantities above the state thresholds.

### 2.1.4 Resource Conservation and Recovery Act and Related State Laws

The Resource Conservation and Recovery Act (RCRA) provides the framework at the federal level for regulating solid wastes, including wastes designated as hazardous. The California Hazardous Waste Control Law (HWCL) and California Code of Regulations (CCR) Title 22 set requirements for managing hazardous wastes and implementing RCRA in California. LLNL works with DTSC to comply with these regulations and obtain hazardous waste permits.

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). Permitted waste management units include container storage, tank storage, and various treatment processes (e.g., wastewater filtration, blending, and size reduction). Final closure was granted by the DTSC for Area 514, and closure approval for the Building 233 container storage unit (CSU) is expected once LLNL submits the Closure Report to the DTSC. LLNL also expects to receive DTSC's approval of the Building 419 Closure Plan during fiscal year 2009. During 2007/2008, LLNL submitted several permit modification requests to DTSC that have all been approved and implemented.

The hazardous waste management facilities at Site 300 consist of three operational RCRA-permitted facilities. The Explosives Waste Storage Facility (EWSF) and the Explosives Waste Treatment Facility (EWTF) are permitted to store and treat explosives waste, respectively. The Building 883 container storage area (CSA) is permitted to store routine facility-generated waste such as spent acids, bases, contaminated oil, and spent solvents. Site 300 has one post-closure permit for the RCRA-closed Building 829 High Explosives Burn Pits. LLNL is currently in the process of renewing the hazardous waste facility permit for EWSF, EWTF, and Building 883 CSA. The Building 829 permit will not expire until April 2, 2013. Transportation of hazardous or mixed waste over public roads occurs by DTSC-registered transporters. DTSC issued hazardous waste transporter registration #1351 to LLNS on November 24, 2008.

## **2. Compliance**

### **2.1.5 California Medical Waste Management Act**

All LLNL medical waste management operations are conducted in accordance with the California Medical Waste Management Act (CMWMA). The program is administered by the California Department of Health Services (DHS) and is enforced by the Alameda County Department of Environmental Health (ACDEH). LLNL's medical waste permit is renewed on an annual basis and covers medical waste generation and treatment activities for the eight Biosafety Level (BSL) 2 facilities, and the BSL 3 facility at Building 368.

### **2.1.6 Radioactive Waste and Mixed Waste Management**

LLNL manages radioactive waste and mixed waste in compliance with applicable sections of DOE Order 435.1, and the LLNL-developed *Radioactive Waste Management Basis for the Lawrence Livermore National Laboratory* (LLNL 2008), which summarizes radioactive waste management controls relating to waste generators and treatment and storage facilities. LLNL does not release to the public any property with residual radioactivity above the limits specified in DOE Order 5400.5. Excess property of this type is either transferred to other DOE facilities for reuse or transferred to LLNL's Radioactive and Hazardous Waste Management Division for disposal.

### **2.1.7 Federal Facility Compliance Act**

LLNL is continuing to work with DOE to maintain compliance with the Federal Facilities Compliance Act (FFCA) Site Treatment Plan (STP) for LLNL, which was signed in February 1997. LLNL completed 20 milestones during 2008, and of those, 13 had due dates beyond 2008 (ranging from 2009 to 2011).

LLNL requested, and was granted, extensions for two additional milestones to allow LLNL time to pursue alternative treatment options for 1.7 m<sup>3</sup> of waste.

LLNL removed approximately 51 m<sup>3</sup> of mixed waste from the STP in 2008. An additional 22 m<sup>3</sup> of newly generated mixed waste was added to the STP, reflecting an overall reduction of 29 m<sup>3</sup> of mixed waste being stored by LLNL.

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

### **2.1.8 Toxic Substances Control Act**

The Federal Toxic Substances Control Act (TSCA) and implementing regulations found in Title 40 of the Code of Federal Regulation, Parts 700–789 (40 CFR 700-789) govern the uses of newly developed chemical substances and TSCA-governed waste. All TSCA-regulated waste was disposed of in accordance with TSCA, state, and local disposal requirements with one exception. Radioactive polychlorinated biphenyl (PCB) waste is currently stored at one of

LLNL's hazardous waste storage facilities until an approved facility accepts this waste for final disposal.

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## 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), which also oversees statewide permitting for portable diesel fuel-driven equipment such as portable generators and portable air compressors.

In 2008, LLNL operated 172 permitted air emission sources at the Livermore site and 37 permitted air emission sources at Site 300. In addition, the Livermore site continues to maintain a Synthetic Minor Operating Permit (SMOP), which was issued by the BAAQMD in 2002, to ensure the Livermore site does not emit regulated air pollutants in excess of federal Clean Air Act (CAA) Title V limits. Therefore, LLNL is able to demonstrate that it does not have any major sources of air pollutant emissions per 40 CFR 70.2.

LLNL eliminated an adhesive application operation as well as a solvent wipe cleaning operation that, together, had the potential of emitting 0.95 MT of volatile organic compounds (VOCs), annually. In addition, LLNL eliminated six diesel-powered generators and installed exhaust filters with a verified 85% particulate capture capability on five diesel-powered generators. The elimination or modification of the eleven generators significantly reduced the combustion pollutants emitted from the Livermore site by the diesel powered generator fleet. LLNL also consolidated semiconductor fabrication research and development operations into one facility, thus reducing the potential to emit 0.2 MT of precursor organic compounds (POCs) annually.

### 2.2.2 National Emission Standards for Hazardous Air Pollutants, Radionuclides

To demonstrate compliance with 40 CFR Part 61, Subpart H (National Emission Standards for Hazardous Air Pollutants [NESHAPs] for radiological emissions from DOE facilities), LLNL monitors certain air release points and evaluates the maximum possible dose to the public. The *LLNL NESHAPs 2008 Annual Report* (Bertoldo et al. 2009), submitted to EPA, reported that the estimated maximum radiological doses that could have been received by a member of the public in 2008 were 0.013  $\mu\text{Sv}$  (0.0013mrem) for the Livermore site and 0.00000044  $\mu\text{Sv}$  (0.00000044 mrem) for Site 300. The totals are well below the 100  $\mu\text{Sv}/\text{y}$  (10 mrem/y) dose limits defined by the NESHAPs regulations.

## 2. Compliance

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### 2.3 Water Quality and Protection

LLNL complies with requirements of the federal Clean Water Act (CWA) and Safe Drinking Water Act (SDWA); the California Aboveground Petroleum Storage Act, Water Code, and Health and Safety Code; and City of Livermore ordinances, by complying with regulations and obtaining permits issued by several agencies whose mission is to protect water quality.

LLNL complies with the requirements of National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permits, and Water Quality Certifications issued by Regional Water Quality Control Boards (RWQCBs) and the State Water Resources Control Board (SWRCB) for discharges to waters of the U.S. and waters of the State.

Discharges to the City of Livermore's sanitary sewer system are governed by permits issued by the Water Resources Division (WRD). The SDWA requires that LLNL register Class V injection wells with EPA, and LLNL obtains permits from the Army Corps of Engineers (ACOE) for work in wetlands and waters of the U.S.

The CWA and California Aboveground Petroleum Storage Act require LLNL to have and implement Spill Prevention Control and Countermeasure (SPCC) plans for aboveground, oil-containing containers. The ACDEH and the San Joaquin County Environmental Health Department (SJCEHD) also issue permits for operating underground storage tanks containing hazardous materials or hazardous waste (see **Table 2-1**). LLNL's permitted underground storage tanks, for which permits are required, contain diesel fuel, gasoline, and used oil; aboveground storage tanks, for which permits are not required, contain fuel, insulating oil, and process wastewater.

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### 2.4 Other Environmental Statutes

#### 2.4.1 National Environmental Policy Act and Floodplains and Wetland Assessments

The National Environmental Policy Act (NEPA) is the U.S. government's basic environmental charter. When considering a proposed project or action at LLNL, DOE/NNSA must (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. The results of the evaluations and notice requirements are met through publication of "NEPA documents", such as environmental impact statements (EISs) and environmental assessments (EAs) under DOE regulations in 10 CFR 1021. In 2005 DOE completed the *Final Site-Wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement* (U.S. DOE/NNSA 2005). There were no proposed actions at LLNL that required separate DOE floodplain or wetlands assessments under DOE regulations in 10 CFR Part 1022.

### 2.4.2 National Historic Preservation Act

The National Historic Preservation Act (NHPA) 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 with DOE/NNSA as the lead federal agency in this undertaking. LLNL supports the agency's NHPA responsibilities with direction from DOE/NNSA.

In consultation with the State Historic Preservation Officer (SHPO), DOE/NNSA formally determined that five archaeological resources, five buildings, two historic districts, and selected objects in one building at LLNL are eligible for listing in the National Register of Historic Places (NRHP). To assist DOE and SHPO in developing an agreement as to how to manage the NRHP-eligible properties, LLNL prepared a draft Programmatic Agreement (PA), which includes a draft archaeological resources treatment plan and a draft historic buildings treatment plan as appendices. These plans describe specific resource management and treatment strategies that DOE/NNSA, in cooperation with LLNL, could implement to ensure that significant historic properties are managed in a manner that considers their historic value. As of the end of 2008, SHPO was still reviewing the draft PA and treatment plans.

### 2.4.3 Antiquities Act of 1906

Provisions of the Antiquities Act provide for protection of items of antiquities (i.e., paleontological remains). No remains subject to the provisions of the Antiquities Act were identified in 2008.

### 2.4.4 Endangered Species Act and Sensitive Natural Resources

LLNL meets the requirements of the federal and state Endangered Species Act (ESA), the Eagle Protection Act, the Migratory Bird Treaty Act, and other applicable regulations 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. The following list highlights 2008 compliance activities.

- In September 2008, LLNL biologists monitored the removal of boulders from Arroyo Mocho as required by the amendment to the *Biological Opinion for the Arroyo Mocho Road Improvement and Anadromous Fish Passage Project* for the Arroyo Mocho Boulder Removal Project.
- On July 29, 2008, LLNL submitted a Biological Assessment to the U.S. Fish and Wildlife Service (USFWS) for the Arroyo Mocho Erosion Control Maintenance Project. LLNL received an amendment to the *Biological Opinion for the Arroyo Mocho Road Improvement and Anadromous Fish Passage Project* for this project on May 21, 2009.
- LLNL biologists monitored the removal of sediment and vegetation from the drainage channel located immediately east of the A-8W parking lot as required by the amended

## 2. Compliance

*Biological Opinion for the Arroyo Maintenance Project on Arroyo Las Positas at Lawrence Livermore National Laboratory.*

- On November 17, 2008, LLNL submitted a Biological Assessment to the USFWS for the Building 850 Polychlorinated Biphenyls-Bearing Soil Removal Project. An amendment to the 2002 Biological Opinion for the *Formal Consultation on the Routine Maintenance and Operations Project at LLNL, Site 300 Experimental Test Site* for this project was received on April 9, 2009.

### 2.4.5 Federal Insecticide, Fungicide, and Rodenticide Act

LLNL complies with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which provides federal control of the distribution, sale, and use of pesticides, and requires that commercial users of pesticides are certified pesticide applicators. The California Department of Pesticide Regulation (DPR) has 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, Alameda County, and San Joaquin County regulations governing the use of pesticides. The staff of the Landscape and Pest Management Shop at the Livermore site and the Laborer/Gardener Shop at Site 300 includes certified pesticide applicators. These shops 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.

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## 2.5 Environmental Occurrences

Notification of environmental occurrences is required under a number of environmental laws and regulations as well as DOE Order 231.1A and DOE Manual 231.1-2. In 2008, eight environmental incidents, summarized in **Table 2-5**, were reportable under DOE Order 232.1A.

### Contributing Authors

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**Table 2-5.** Environmental Occurrences reported under the Occurrence Reporting System in 2008.

<b>Date<sup>(a)</sup></b>	<b>Occurrence category/group</b>	<b>Description</b>
4/17/08	Significance Category SC2 Occurrence under Group 5A(1) OR 2008-0014	Legacy mercury contamination was discovered in soil at Building 212 during facility decontamination and demolition activities.
6/3/08	Significance Category SC3 Occurrence under Group 10(2) OR 2008-0018	An LLNL contractor sent metal with detectable levels of tritium below DOE release limits to a landfill for disposal as instructed by LLNL. The landfill subsequently released the metal to a third party for recycling.
8/19/08	Significance Category SC4 Occurrence under Group 9(2) OR 2008-0033	LLNL received a Notice to Comply from the SJCEHD during the CUPA inspection of Site 300 for failure to properly characterize a waste container.
9/8/08	Significance Category SC4 Occurrence under Group 9(2) OR 2008-0037	LLNL received a notice of violation (NOV) from the SJCEHD during the annual inspection of the Site 300 Building 879 fuel station. The NOV identified violations in the monitoring program, records maintenance, spill containment, and repair permits for underground storage tanks.
9/23/08	Significance Category SC4 Occurrence under Group 9(2) OR 2008-0041	LLNL received a report for the DTSC for the Site 300 CEI performed on May 21–22, 2008. The report noted that LLNL failed to conduct the November 2007 monthly inspection for the Post-Closure Unit Building 829.
10/3/08	Significance Category SC4 Occurrence under Group 9(2) OR 2008-0044	LLNL received a final audit report from the DTSC for the 2008 CEI performed between June 30 and July 11, 2008. The report identified two violations: 1) failure to determine if water entering the oil/water separator at Building 611 is hazardous and 2) having an Emergency Coordinator (on-duty Fire Chief) who is not an LLNL employee.
10/9/08	Significance Category SC4 Occurrence under Group 9(2) OR 2008-0045	LLNL received an NOV from the State of Utah, Department of Environmental Quality, following an audit of LLNL waste shipped to EnergySolutions of Utah. The violation pertained to inadequate bracing of the containers within the trailer.
12/23/08	Significance Category SC2 Occurrence under Group 2B(2) OR 2008-0069	During small-scale treatment activities involving radioactive waste inside a glove box, a rapid pressure pulse event occurred resulting in the loss of less than 4 mCi of material. The material was contained in the facility and no release to the environment occurred.

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