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Compliance Summary

Introduction

During 1998, Lawrence Livermore National Laboratory (LLNL) participated in numerous activities to comply with federal, state, and local environmental regulations as well as internal requirements and Department of Energy (DOE) orders. Activities related to air, water, waste, waste reduction, community "right to know," protection of sensitive resources, and other environmental issues were carried out at the Livermore site and Site 300. This chapter is organized according to the various laws and regulations that drive LLNL's compliance activities. Many documents concerned with these activities and other environmental issues are available for public viewing at the LLNL Visitors Center and the Livermore and Tracy public libraries. A wide range of compliance activities is summarized in the following sections.

CERCLA

The Livermore Site Ground Water Project (GWP) and the Site 300 CERCLA Project are under the jurisdiction of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)/Superfund Amendment and Reauthorization Act (SARA), Title 1. Soil sampling at Big Trees Park was conducted under CERCLA/SARA. In addition, the CERCLA Record of Decision (ROD) for the Livermore site requires that a preconstruction site evaluation be completed prior to any soil excavation at the Livermore site.

Livermore Site Ground Water Project

The ground water project at the Livermore site 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 agreement, the project addresses compliance issues by investigating potential contamination source areas (such as suspected old release sites, solvent handling areas, and leaking underground tank systems) and continuous monitoring

and remediation of ground water. The ground water contaminants (constituents of concern) are volatile organic compounds (VOCs), primarily trichloroethene (TCE) and tetrachloroethene (PCE). These contaminants are present primarily within the site boundary and to some extent at the site boundary and beyond, mainly to the west and south of the site (see **Figures 8-3** to **8-7**, Chapter 8). In 1998, GWP activities included preparing the required CERCLA documents, operating ground water treatment facilities, and maintaining liaison with community groups.

Documentation

Two major CERCLA documents were published in 1998 to comply with the 1998 amended schedule of the Remedial Action Implementation Plan schedule (RAIP). With submission of the *Draft Final* and *Final Remedial Design Report No. 4* (Berg et al. 1998), LLNL met all the primary CERCLA document milestones due before the second Five-Year Review in August 2002. Twelve additional documents or letter reports were submitted to the regulatory agencies in 1998 and are summarized in Chapter 8.

Treatment Facilities

In 1998, LLNL operated ground water treatment facilities in the TFA, TFB, TFC, TFD, TFE, TFG, TF406, TF518, and TF5475 areas. Sixty extraction wells operated at 16 separate locations treating about 2.7 million liters (ML) of ground water per day. The vapor treatment facility VTF518 treated about 2000 m^3/day of soil vapor. Together, these treatment facilities removed approximately 150 kg of VOCs in 1998. Since remediation efforts began in 1989, 3100 ML of ground water and almost 0.32 million m^3 of vapor have been treated, and more than 483 kg of VOCs have been removed. Remediation activities at the Livermore site are discussed in greater detail in Chapter 8, Ground Water Investigations and Remediation.

Community Relations

The Ground Water Project maintains ties with the surrounding community in various ways. The Community Work Group provides a forum for members of the community to meet with representatives from LLNL, DOE, the regional water quality control board, and state and federal regulators. The Community Work Group met once in 1998 to discuss the DOE budget, progress on the Livermore site cleanup, and the Livermore site Priority List/Consensus Statement. Correspondence and communication with Community Work Group members continued throughout the year. DOE/LLNL also met three times with members of Tri-Valley Communities Against a Radioactive Environment (Tri-Valley CAREs) and their scientific advisor as part of the activities funded by an EPA technical assistance grant. Other Livermore site community relations

activities in 1998 included: communicating and meeting with neighbors, community organizations, and local, regional, and national interest groups; giving public presentations to local realtors and national and Northern California peace leaders; producing and distributing the *Environmental Community Letter*; maintaining the Information Repositories and the Administrative Record; conducting tours of the site environmental activities; and responding to public and news media inquiries.

Site 300 CERCLA Project

Investigations and remedial activities are ongoing at Site 300, which became a CERCLA/Superfund site in 1991, 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), and the California EPA's DTSC and the authority of a FFA for the site. (There are separate FFAs for Site 300 and the Livermore site.) During October 1998, an addendum containing updated scope and milestone due dates was added to the FFA after approval by the regulatory agencies (U.S. Department of Energy 1998a).

During 1998, LLNL submitted all required regulatory documents (see Chapter 8) on or ahead of schedule, performed all actions stipulated in the FFA, and maintained liaison with community groups. Ground water monitoring activities are discussed in detail in Chapter 9. Results and status for Site 300 environmental restoration study areas are discussed in Chapter 8**.** Background information for LLNL environmental characterization and restoration activities at Site 300 can be found in the *Final Site-Wide Remedial Investigation Report, Lawrence Livermore National Laboratory Site 300* (Webster-Scholten 1994).

Documentation

LLNL submitted the required documentation to oversight agencies on time in 1998. Final design documents, quarterly reports, action memoranda, and work plans were among the documents submitted.

Treatment Facilities

VOCs (primarily TCE) are the main contaminants at Site 300. High explosives, tritium, depleted uranium, organosilicate oil, nitrates, and perchlorates are also found in ground water. Four treatment facilities that remove and treat VOCs, primarily TCE, operated throughout 1998. Additionally, a portable treatment unit was used to treat ground

water extracted during a short-term pump test at a landfill (Pit 6). These facilities are discussed in more detail in Chapter 8, Ground Water Investigations and Remediation. Chapter 8 also includes maps of the study areas and details of the distribution of contaminants in ground water at Site 300.

Community Relations

The Site 300 CERCLA project maintains proactive communication with the surrounding communities of Tracy and Livermore. Community relations activities in 1998 included continued dialogue with Tri-Valley CAREs; maintenance of the information repositories and administrative records; Site 300 tours for scientists and students from universities and local public schools; off-site, private well-sampling activities; and preparation of a third Site 300 Environmental Restoration fact sheet (Heffner 1998). Quarterly meetings were held with Tri-Valley CAREs, which receives an annual technical assistance grant from EPA to independently evaluate CERCLA activities at Site 300.

On March 9, 1998, the Remedial Project Managers held a public workshop to present the initial phase of the planned Building 815 ground water cleanup to the community and to solicit verbal and written comments. Nine verbal and five written comments were submitted by the community during the public comment period from February 5 to March 30, 1998. These comments were addressed in the *Action Memorandum for the Building 815 Operable Unit Removal Action* (Jakub 1998).

Big Trees Park Soil Sampling and Analysis

Big Trees Park in the city of Livermore has been the object of public scrutiny since 1993, when a single soil sample was found to contain plutonium at a concentration higher than would have been expected from global fallout alone. In 1998, LLNL resampled soil in the park to determine the vertical and lateral extent of plutonium contamination and the likelihood of possible pathways. Before starting sampling, DOE/LLNL held a public workshop in August 1998 to ensure that the sampling plan included input from the regulatory agencies and the community. Soil from Big Trees Park was sampled for radiochemical analysis in August and September. Results of the sampling and analysis are summarized in Chapter 10, Soils and Sediment Monitoring.

Site Evaluations Prior to Construction

Before construction begins, the CERCLA ROD requires that the project site be evaluated to determine if soil or rubble (concrete and asphalt) is contaminated. Soil is sampled and analyzed for potential radioactive and/or hazardous contamination. Depending on the analytical results, soil may be reused on site or disposed of according to established procedures. Depending on the potential for radioactive contamination, rubble may be either surveyed or analyzed for radioactivity. During 1998, soil and rubble were evaluated at 74 construction sites.

SARA, Title III

Title III of the SARA of 1986 is known as the Emergency Planning and Community Right-to-Know Act (EPCRA). It requires owners or operators of facilities that handle certain hazardous chemicals on site to provide information on the release, storage, and use of those chemicals to organizations responsible for emergency response planning. Executive Order 12856 directs all federal agencies to comply with the requirements of EPCRA, including the SARA 313 Toxic Release Inventory Program.

EPCRA requirements and LLNL compliance are summarized in **Table 2-1**. **Tables 2-2** and **2-3** identify those chemicals reported by LLNL for the Livermore site and Site 300, respectively, under Title III, Section 311, during 1998.

Clean Air Act—Air Quality Management Activities

Air permits are obtained from the Bay Area Air Quality Management District (BAAQMD) for the Livermore site and from the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) for Site 300. In 1998, BAAQMD issued or renewed air permits for 138 air emission sources for the Livermore site. In 1998, SJVUAPCD issued or renewed air permits for 47 air emission sources for Site 300 (see **Table 2-4**). During 1998, BAAQMD inspectors found no deficiencies at the Livermore site (see **Table 2-5a** for a summary of inspections in 1998). At Site 300, SJUVAPCD and the California Air Resources Board (CARB) met, toured, and inspected on January 8, 1998, to evaluate open burn and explosive burning operations. Inspectors found no deficiencies at Site 300 (See **Table 2-5b**). On September 17, 1998, SJVUAPCD implemented the revised Rule 2020 (Exemptions) to make the detonation of explosives for research and development activities exempt from air permit requirements.

Table 2-1. Summary of LLNL compliance with EPCRA in 1998.

EPCRA requirement	Brief description	Compliance
302 Planning notification	Operator must notify SERC[a] of presence of extremely hazardous substances.	In California, operator must notify CEPRC[b] of presence of extremely hazardous substances above threshold planning quantities. Originally submitted May 1987.
303 Planning notification	Operator must designate a facility representative to serve as emergency response coordinator.	Update submitted February 10, 1998.
304 Release notification	Releases of certain hazardous substances must be reported to SERC and LEPC.[c]	No EPCRA-listed extremely hazardous substances were released above reportable quantities.
311 MSDS[d]/Chemical inventory	Operator must submit MSDSs or chemical list to SERC, LEPC, and fire department.	**Tables 2-2** and **2-3**. Updated February 16, 1998.
312 MSDS/Chemical inventory	Operator must submit hazardous chemical inventory to appropriate county.	Business Plans and chemical inventory submitted to San Joaquin County (January 15, 1998) and Alameda County (January 15, 1998).
313 Toxic Release Inventory	Operator must submit Form R to U.S. EPA and California EPA for toxic chemicals released.	Form R for Freon 113 submitted June 15, 1998 to DOE; DOE forwarded to U.S. EPA and California EPA on June 30, 1998.

a SERC = State Emergency Response Commission.

b CEPRC = Chemical Emergency Planning and Response Commission.

c LEPC = Local Emergency Planning Committee.

d MSDS = Material Safety Data Sheet.

National Emission Standards for Hazardous Air Pollutants

In order to comply with the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for radionuclide emissions to air (Radionuclide NESHAPs, 40 CFR 61, Subpart H), all potential sources must be evaluated, and the potential radiological dose to the sitewide maximally exposed public individual (SW-MEI) must be determined. Compliance with two dose limits must be evaluated. First, the integrated dose to the

Table 2-2. Livermore site, SARA, Title III, Section 311, Chemical List.[a]

Livermore site chemicals	Physical hazard			Health hazard	
	Fire	Pressure	Reactivity	Acute	Chronic
Acetylene	X	X		X	
Ammonia, anhydrous		X		X	
Ammonium hydroxide				X	
Argon		X		X	
Brayco 889, coolant	X				
Carbon, activated	X				
Chlorine		X	X	X	
Cobalt	X			X	X
Diesel fuel	X				
Ethyl alcohol	X			X	X
Freon 113				X	
Gasoline	X			X	X
Helium		X		X	
Hydrochloric acid				X	X
Hydrofluoric acid		Some containers	X	X	X
Hydrogen	X	X		X	
Hydrogen peroxide (<52%)			X		
Insulating oil, inhibiting	X				
Lead (bricks and ingots)				X	X
Methane	X	X		X	
Nitric acid	X		X	X	X
Nitric oxide		X	X	X	
Nitrogen		X		X	
Oxygen		X	X		
Paint	X				
Sulfuric acid			X	X	X

[a] Physical and health hazard information obtained primarily from Material Safety Data Sheets.

SW-MEI from all sources of radionuclide emissions to air at a site must not exceed 100 microsieverts per year (µSv/y) (10 millirem per year [mrem/y]). Second, each point source (stack) having the potential to emit radionuclides that would result, without accounting for mitigation, in a dose greater than 1 µSv/y (0.1 mrem/y), must be continuously monitored.

Table 2-3. Site 300, SARA, Title III, Section 311, Chemical List.[a]

Site 300 chemicals	Physical hazard			Health hazard	
	Fire	Pressure	Reactivity	Acute	Chronic
Argon		X		X	
Carbon, activated	X				
Chlorine		X		X	
Bis(2,2-dinitro-2-fluoroethyl) formal in methylene chloride	—[b]		—[b]	X	X
Diesel fuel	X				
Gasoline	X			X	X
Helium		X		X	
High explosives			X		
Lead (bricks)				X	X
Nitrogen		X			
Oil, hydraulic	X				
Oil, inhibited insulating	X				
Oil, transformer	X				

[a] Physical and health hazard information obtained primarily from Material Safety Data Sheets.

[b] Dangerous fire or explosion risk in neat form (solvent evaporates).

The *LLNL NESHAPs 1998 Annual Report* (Biermann et al. 1999), submitted to DOE and EPA, reported that the total calculated SW-MEI radiological doses for the Livermore site and Site 300 were 0.49 µSv / y (0.049 mrem / y) and 0.24 µSv / y (0.024 mrem / y), respectively, for 1998. Using the EPA mandated assumption that gaseous tritium be treated as though it were tritiated water, yielded a dose of 0.55 µSv (0.055 mrem) for Livermore site operations. The reported doses include contributions from both point sources and diffuse sources. Modeling was based on a combination of effluent monitoring data and radionuclide usage data. The totals are well below the 100 µSv / y (10 mrem / y) dose limits defined by the NESHAPs regulations. The details of these data are included in this report (see Chapter 13, Radiological Dose Assessment).

In 1998, LLNL continuously monitored radionuclide emissions from Building 331 (the Tritium Facility), Building 332 (the Plutonium Building), the seismically strengthened portion of Building 251, and five other buildings (see Chapter 4). There were no unplanned atmospheric releases at the Livermore site or at Site 300 in 1998.

Table 2-4. Summary of permits active in 1998.[a]

Type of permit	Livermore site	Site 300
Air	BAAQMD issued 138 permits for operation of various types of equipment, including boilers, emergency generators, cold cleaners, ultrasonic 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, diamond-turning machine cleaning operation, image tube fabrication, optic coating operations, gravity retort, storage tanks containing VOCs in excess of 10%, planetary mixers, plating tanks, drum crusher, semiconductor operations, diesel air-compressor engines, ground water air strippers/dryers, ovens, material-handling equipment, sewer diversion system, wave soldering machine, oil and water separator, fire test cells, oil shale hopper and preheater, oil shale combuster, gasoline-dispensing operation, resin-mixing operation, paper-pulverizer system, and firing tank.	SJVUAPCD issued 47 permits for operation of various types of equipment, including boilers, emergency generators, paint spray booth, ground water air strippers, soil vapor extraction units, woodworking cyclone, gasoline-dispensing operation, and drying ovens.
Water	WDR[b] Order No. 88-075 for discharges of treated ground water from Treatment Facility A to percolation pits and recharge basin. WDR Order No. 95-174, NPDES[c] Permit No. CA0030023 for discharges of storm water associated with industrial activities and low-threat non-storm water discharges to surface waters. WDR Order No. 92-08-DWQ, NPDES[c] General Permit No. CAS000002, Building 132, Site ID No. 201S300881, DWTF[d] Site ID No. 201S305140, Soil Reuse Project ID No. 2015305529 and National Ignition Facility, Site ID No. 201S306762—for discharges of storm water associated with construction activities impacting two hectares or more. Two projects completed under ACOE[e] Nationwide Permits and Clean Water Act Section 401 Waivers of Water Quality Certification. Two projects completed under streambed alteration agreements. Federal facility agreement, ground water investigation/remediation.	WDR Order No. 92-08-DWQ, NPDES[c] General Permit No. CAS000002, Contained Firing Facility/Chemistry Magazine Loop, Site ID No. 5B39S307131 for discharges of storm water associated with construction activities impacting two hectares or more. WDR Order No. 93-100 for post-closure monitoring requirements for two Class I landfills. WDR Order No. 94-131, NPDES Permit No. CA0081396 for discharges of storm water associated with industrial activities and from cooling towers. WDR Order No. 96-248 for operation of two Class II surface impoundments, a domestic sewage lagoon, and percolation pits. WDR Order No. 97-242, NPDES Permit No. CA0082651 for discharges of treated ground water from the eastern General Services Area treatment unit. Two projects completed under ACOE Nationwide Permits and 401 Waivers of Water Quality Certification. Three projects completed under streambed alteration agreements. Federal Facility Agreement for ground water investigation/remediation. 52 registered, Class V injection wells.

Table 2-4. Summary of permits active in 1998 (concluded).

Type of permit	Livermore site	Site 300
Hazardous waste	EPD ID No. CA2890012584. Authorization to mix resin in Units CE231-1 and CE443-1 under Conditional Exemption tiered permitting. Closure under interim status of the Building 513 Shredding Unit, Building 419 size reduction unit, and Building 419 solidification unit. Continued authorization to operate 18 waste storage units and nine waste treatment units under interim status.	EPA ID No. CA2890090002. Part B Permit—Container Storage Area (Building 883) and Explosives Waste Storage Facility (issued May 23, 1996). Part B Permit—Explosives Waste Treatment Facility (issued October 9, 1997). Docket HWCA 92/93-031. Closure and Post–Closure Plans for landfill Pit 6 and the Building 829 Open Burn Facility.
Sewerable waste	Discharge Permit No. 1250 (97/98 and 98/99) for discharges of wastewater to the sanitary sewer. 1510G (98) for discharges of sewerable ground water from CERCLA restoration activities.	
Storage tanks	13 permits for underground petroleum and hazardous waste storage.	One permit covering five underground petroleum product tanks.

[a] Permit numbers are based on actual permitted units maintained and renewed by LLNL during 1998.

[b] WDR = Waste Discharge Requirements.

[c] NPDES = National Pollutant Discharge Elimination System.

[d] DWTF = Decontamination and Waste Treatment Facility.

[e] ACOE = Army Corps of Engineers.

Clean Water Act and Related State Programs

Preserving clean water is one objective of local, state, and federal regulations. The National Pollutant Discharge Elimination System (NPDES) under the Federal Clean Water Act establishes permit requirements for discharges into navigable waterways. In addition, the State of California requires permits, known as Waste Discharge Requirements (WDRs), for any waste discharges affecting the beneficial uses of waters of the state. The regional water quality control boards are responsible for issuing and enforcing both permits. The Livermore Water Reclamation Plant (LWRP) requires permits for discharges of sewerable water to the city sanitary sewer system. The Army Corps of Engineers (ACOE) issues permits for work in navigable waterways below the ordinary high-water mark and for controlling fill operations in waters of the United

Table 2-5a. Inspections and tours of the Livermore site by external agencies in 1998.

Medium	Description	Agency[a]	Date	Finding
Air	Emission sources	BAAQMD	1/21 1/28 2/4 2/18 2/27 3/11 4/1 8/28 9/10 10/1 10/22 11/10 12/3	No violations
Water	Streambed alteration	CDFG	3/3	No violations
		SFBRWQCB/ USFWS/ CDFG	3/31	No violations
	Discharge to Arroyo Mocho from drinking water tanks	SFBRWQCB	5/11	No violations
	Arroyo Maintenance Project	SFBRWQCB	10/13	No violations
Waste	Investigation of a DTSC complaint regarding July 2, 1997, Building 513 shredder incident	DTSC	11/12/97 and 2/5/98	7 alleged violations[b]
	Hazardous waste management facilities	DTSC	5/26–5/27	Inspection not yet closed
	Medical waste	ACDEH	9/15	No violations
	Motor vehicles	CHP	12/8–12/9	Two violations
Sewerable waste	Compliance sampling	LWRP	11/23–11/24	No violations
	Categorical sampling	LWRP	12/11	No violations
Storage tanks	Compliance with underground storage tank upgrade requirements	ACEHS	10/20	No violations

a See Glossary for list of acronyms.

b LLNL disputes these alleged violations. DTSC, DOE, and LLNL are developing an agreement for resolving the issues.

Table 2-5b. Inspections and tours of Site 300 by external agencies in 1998.

Medium	Description	Agency[a]	Date	Finding
Air	Emission sources	SJVUAPCD/ CARB	1/8	No violations
Water	Streambed alteration	CDFG	9/16	No violations
Waste	Various facilities	DTSC	6/16–6/17, 7/7, and 10/9	Two violations
	Vehicles used for transporting hazardous materials	CHP	12/4	Two violations
Wastewater	Permitted operations	CVRWQCB	4/21	No violations
	Observation of wastewater-generating activities that might discharge wastewater at the Livermore site.	LWRP	6/19	No violations
	Evaluation of sewage evaporation and percolation ponds	SWRCB	6/29	No violations
Storage tanks	Compliance with underground storage tank upgrade requirements	SJCEHD	12/21	No violations

[a] See Glossary for list of acronyms.

States. The State Water Resources Control Board (SWRCB) issues water quality certifications for this work if the regional water quality control boards do not waive the requirement for the water quality certifications or independently issue WDRs. The California Department of Fish and Game (CDFG) under the Fish and Game Code Section 1601 et seq. requires streambed alteration agreements for any work that may disturb or impact rivers, streams, or lakes. The Safe Drinking Water Act requires registration and management of injection wells to protect underground sources of drinking water. Injection well registration is provided to the United States Environmental Protection Agency. Finally, Alameda County Health Services and San Joaquin County Environmental Health Services issue permits for operating underground storage tanks containing hazardous materials as required under the California Health and Safety Code. Water-related permits are summarized in **Table 2-4** and discussed in detail in Chapters 6, 7, and 9.

In 1998, there was no change in the number and distribution of injection wells at Site 300, and no significant changes were made to the technology or practices documented in the *Spill Control and Countermeasures Plan* (Campbell 1995).

Ground Water and Surface Water

Discharges of treated ground water to surface water drainage courses and percolation ponds at LLNL are governed by NPDES permits, WDRs, and CERCLA Records of Decision (see **Table 2-4**). Details of surface water discharges are found in Chapter 7 of this report. Details of ground water monitoring are found in Chapter 9 of this report, the *LLNL Ground Water Project 1998 Annual Report* (Aarons et al. 1998), and the LLNL Remedial Program Manager's quarterly reports (Littlejohn and Lamarre 1997 and Bainer and Littlejohn 1998). LLNL discharges storm water associated with industrial activities, low-threat nonstorm water, various process waters, and domestic wastewater to surface waters, percolation pits, surface impoundments, and a sewage lagoon under four NPDES permits and three WDRs (see Chapters 7 and 9). LLNL received no Notices of Violation (NOVs) in 1998 from the regional water quality control boards that issued the NPDES and WDR permits; however, LLNL identified nonconformance with one of the four permits. NPDES permit nonconformances are summarized in **Table 2-6**. In addition, LLNL was unable to comply with prohibitions in WDR No. 96-248 on February 3, when a retention tank system at Site 300 filled with rainwater and overflowed into the secondary containment and then onto the ground. This discharge was reported by phone and in writing to the CVRWQCB.

LLNL continued construction operations on four projects and completed one project during 1998. These activities are covered by the California General Construction Activity permit (see **Table 2-4**). LLNL submitted a Notice of Termination, concluding permit coverage for the completed Building 132 construction project. Continuing operations included construction of the nonhazardous waste portions of the Decontamination and Waste Treatment Facility (DWTF), the Soil Reuse Project, and the National Ignition Facility at the Livermore site and the Contained Firing Facility/Chemistry Magazine Loop project at Site 300.

The SFBRWQCB visited drinking water tanks at Arroyo Mocho to observe the effects of the tank release on the arroyo, and the CVRWQCB inspected the Site 300 permitted facilities in April 1998. No violations were found at either site (see **Table 2-5**).

Sewerable Water

The Livermore site's sanitary sewer discharges are sampled continuously, daily, weekly, and monthly to satisfy various permit compliance requirements. The monitoring results for the LLNL effluent are reported monthly to the LWRP. In 1998, LLNL achieved 100% compliance with LWRP Permit 1250 covering wastewater discharges to the sanitary

Table 2-6. Summary of nonconformances with NPDES permits.

Permit No.	Outfall	Nonconformance	Date(s) of nonconformance	Description–solution
CAS000002	Arroyo Las Positas (Livermore site)	National Ignition Facility: Failure to follow BMPs[a] for dewatering	8/97[b]	Halted activity, implemented BMP, and issued deficiency notice to subcontractor
		National Ignition Facility: Failure to follow, perform, and document inspections	12/97–3/98	Held internal refresher training and sent key staff for off-site training
		National Ignition Facility: Failure to follow BMP for road cleaning	3/98	Halted activity and required subcontractor to sweep roads
		National Ignition Facility: Failure to document changed construction activities in SWPPP prior to implementation	6/98	Updated SWPPP[c], and issued reminder to construction staff regarding SWPPP updates
	Arroyo Las Positas, Arroyo Seco (Livermore site)	Soil Reuse Project: Failure to implement erosion control BMP	9/97	Implemented sediment control BMP and revised SWPPP
		Soil Reuse Project: Failure to perform inspections prior to predicted storm events		Provided sources of weather service forecasts to the project inspector
	Elk Ravine (Site 300)	Contained Firing Facility/Chemistry Magazine Loop project: Failure to document inspections	12/97–5/98	Briefed construction staff on documentation requirements
CA0030023	Arroyo Las Positas and Arroyo Seco (Livermore site)	None	None	None
CA0081396	Corral Hollow Creek (Site 300)	None	None	None
CA0082651	Corral Hollow Creek (Site 300)	None	None	None

a BMP = Best management practice.

b The construction inspection program is based on the reporting period June 1997 through May 1998.

c SWPPP = Storm Water Pollution Prevention Plan.

sewer. However, the LWRP issued two NOVs for permit violations that occurred in 1997. One was issued in January 1998 for exceeding the lead concentration limit on October 31 and November 1, 1997. The lead exceedances were minor, and no correction was required. The other NOV covered four different pH exceedances in December 1997. These exceedances were considered to be part of the pattern of pH exceedances discussed in a previous NOV issued October 1997. LLNL closed out the pH NOVs by successfully installing the Upstream pH Trigger Monitoring Station in September 1998.

This station monitors the pH of the sanitary sewer and diverts wastewater to the Sewer Diversion Facility tank farm when the wastewater falls outside the allowable pH range (5–10). LWRP permit exceedances and corrective measures are discussed in detail in Chapter 6. Self-monitoring of categorical processes continued during 1998, as required in the permit.

Discharges from ground water treatment facilities to sanitary sewer under Permit 1510G (1998) are monitored as they occur and reported annually to the LWRP. These self-monitoring programs and the associated analytical results documenting compliance with the self-monitoring provisions of the permit are discussed in Chapter 6. In 1998, LLNL achieved 100% compliance with the permit limits of 1510G.

On November 23 and 24, LWRP collected split samples of site effluent at Building 196 as part of the annual compliance sampling. On December 11, LWRP collected categorical process samples from abrasive (water) jet machines and semiconductor processes in Buildings 321C and 153, respectively. LWRP staff toured Site 300 wastewater generating activities on June 19, 1998. No violations were found at either site (**Table 2-5**).

Streambed Alteration Agreements and Nationwide Permits

The California Department of Fish and Game (CDFG), SFBRWQCB, and ACOE all issue permits for work in streambeds. At the Livermore site, CDFG issued three streambed alteration agreements for maintenance projects within arroyos during 1998 (see **Table 2-7**). The Fish and Game Warden made a site visit to Arroyos Las Positas in connection with the Arroyo Las Positas Maintenance Project.

LLNL applied for three nationwide permits from the ACOE for LLNL projects at the Livermore site and vicinity. The ACOE declined jurisdiction for the request associated with the Arroyo Las Positas Maintenance Project because of the recent court ruling on the Tulloch Rule, which rescinded the ACOE's authority for projects that involve only dredging, with no filling, except for incidental fallback. ACOE staff did not inspect any Livermore site projects in 1998.

Table 2-7. Summary of streambed alteration agreements, 404 Nationwide Permits, and 401 Waivers.

Project	Location	Agency/ type of permit	Date submitted
Emergency bank stabilization	Arroyo Seco	CDFG/SAA[a]	2/20/98
Culvert replacement	Tributary to Corral Hollow Creek (unnamed)	CDFG/SAA ACOE/Nationwide Permit 3 CVRWQCB/ 401 Waiver	3/11/98 3/11/98 3/11/98
Bank stabilization	Arroyo Seco	CDFG/ SAA SFBRWQCB/ 401 Waiver ACOE/404 Nationwide Permit 6	2/20/98[b] 5/29/98 5/29/98
Sampling activities	Arroyo Seco	SFBRWQCB/ 401 Waiver ACOE/404 Nationwide Permit 6	7/31/98 9/8/98
Vegetation cutting	Arroyo Las Positas	CDFG/SAA	8/3/98
Bank stabilization	Elk Ravine	CDFG/SAA CVRWQCB/ 401 Waiver ACOE/404 Nationwide Permit 13	8/10/98 8/6/98 8/6/98
Arroyo Las Positas Maintenance Project	Arroyo Las Positas	CDFG/SAA SFBRWQCB/ WDR[c]	8/20/98
Well drilling	Tributary to Corral Hollow Creek (832 Canyon)	CDFG/SAA	10/23/98
Maintenance (five-year agreement)	Site 300 drainage culverts	CDFG, SAA	1995

[a] SAA = Streambed Alteration Agreement.

[b] CDFG included this work as part of the SAA issued for the emergency bank stabilization.

[c] WDR = Waste discharge requirements.

The SFBRWQCB issued waivers from 401 Water Quality Certification for Arroyo Seco bank stabilization and sampling at the direction of the SFBRWQCB. LLNL submitted a Report of Waste Discharge for the Arroyo Las Positas Maintenance Project. The SFBRWQCB is expected to issue waste discharge requirements (WDRs) for this project in 1999. The SFBRWQCB chose to issue WDRs instead of a Water Quality Certification because the project does not require a nationwide permit and it is phased over a five-year period. The SFBRWQCB visited LLNL in connection with the permit requested for the Arroyo Las Positas Maintenance Project, and no violations were found. See **Table 2-5a** for a summary of the inspections.

At Site 300, LLNL continued to operate under a five-year CDFG streambed alteration agreement issued in 1995 for maintenance of drainage channels. LLNL also obtained three streambed alteration agreements for projects completed in 1998. Two of these projects were also subject to Clean Water Act, Section 404, permitting requirements and were covered by ACOE nationwide permits. The CVRWQCB issued waivers from 401 Water Quality Certification for the projects covered by nationwide permits.

Tank Management

LLNL manages its underground storage tanks and aboveground storage tanks through the use of underground tank permits, monitoring programs, operational plans, closure and leak documentation, and inspections. At LLNL, underground storage tanks contain diesel fuel, gasoline, waste oil, and process wastewater; aboveground storage tanks contain diesel fuel, insulating oil, and process wastewater. Some wastewater systems are a combination of underground storage tanks and aboveground storage tanks. **Table 2-8** shows the status of tanks at the Livermore site and Site 300 as of December 31, 1998.

Table 2-8. Status of in-service tanks, December 31, 1998.

Tank type	Livermore site			Site 300		
	Permitted	Permits not required	Total	Permitted	Permits not required	Total
Underground storage tanks						
Diesel fuel	7	0	7	4	0	4
Gasoline	2	0	2	1	0	1
Waste oil	1	0	1	0	0	0
Process wastewater	3	31	34	0	7	7
Subtotal	**13**	**31**	**44**	**5**	**7**	**12**
Aboveground storage tanks						
Diesel fuel	0	26	26	0	7	7
Insulating oil	0	1	1	0	1	1
Process wastewater	10 [(a)]	56	66	0	12	12
Subtotal	**10**	**83**	**93**	**0**	**20**	**20**
TOTAL	**23**	**114**	**137**	**5**	**27**	**32**

[a] These 10 tanks are located at the LLNL Treatment and Storage Facility and are operated under interim status.

Upon completion of closure activities, closure reports for underground hazardous product, hazardous waste, and mixed-waste underground storage tanks must be submitted to the regulatory agencies for review and approval. Three closure reports for hazardous waste underground storage tanks were submitted to the Alameda County Environmental Health Services agency for review in 1998. All three have been approved and were closed by removing the tanks. In 1998, two closure plans were prepared for aboveground hazardous-waste tank systems.

In 1992, LLNL began to upgrade or close wastewater retention tanks (for nonhazardous, hazardous, mixed, and radioactive waste) and product retention tanks (for petroleum products) in accordance with existing local, state, and federal tank regulations. This action was taken to decrease the potential for environmental contamination resulting from a release from a tank or its appurtenances. Work to bring LLNL into compliance with California and federal requirements for underground storage tanks was completed before the December 1998 deadline. The underground storage tanks were inspected, and no violations were found (see **Table 2-5**).

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) provides the framework at the federal level for regulating the generation and management of solid wastes, including wastes designated as hazardous. Similarly, the California Hazardous Waste Control Act (HWCA) sets requirements for managing hazardous wastes 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 now works with DTSC on compliance issues and in obtaining hazardous waste permits.

Hazardous Waste Permits

Livermore Site

Hazardous waste storage and treatment management units at the Livermore site continued to operate under interim status provisions (ISD CA2890012584) while DTSC reviewed the latest modification to the Livermore site Part B permit application. Waste management units include container storage, tank storage, and various treatment processes (e.g., wastewater filtration, blending, and size reduction).

A public hearing was held in October 1997, regarding the draft hazardous waste facility permit, including the proposed finding of the Initial Study conducted under the California Environmental Quality Act (CEQA). This Initial Study analyzed the potential environmental impacts of the proposed hazardous waste facility on the surrounding environment. The Initial Study found that the proposed facility does not significantly affect the environment, and a Negative Declaration was issued.

A number of comments were received at the public hearing and during the subsequent public comment period. During 1998, DTSC drafted responses to public comments and reviewed permit issues in consultation with LLNL. As a result, the permit application was revised in October, 1998.

As reported in the *Environmental Report 1997* (Harrach et al. 1998), the Building 513 shredder incident on July 2, 1997, resulted in DOE and DTSC investigations. The DOE/OAK Type B Accident Investigation Committee issued their report on October 31, 1997, which included several Judgments of Need (JONs). LLNL, in turn, submitted an action plan in response to the JONs, and on March 11, 1999, DOE validated the completion of corrective actions derived from the JONs. DTSC representatives visited LLNL on November 12, 1997, and February 5, 1998. Their investigation of the shredder incident resulted in a Summary of Violations (SOV) dated February 9, 1998, which is still being disputed by LLNL. The shredder unit involved in the incident has undergone RCRA closure and the shredder equipment has been removed from service.

On May 26 and 27, 1998, DTSC conducted a Compliance Evaluation Inspection (CEI) of hazardous waste storage and treatment facilities at the Livermore site. DTSC reviewed inspection logs, training records, and treatment logs. Characterization documentation was requested for 10 containers, which included mixed, combined, and hazardous wastes. There was an extensive discussion of Hazardous Waste Management's waste acceptance process, including waste disposal requisitions, waste profiling, and the hold and verification process. A request for additional information was received on September 21, 1998. LLNL provided this information on October 15, 1998. To date, LLNL has not received an inspection report (see **Table 2-5a**).

Site 300

The Explosives Waste Storage Facility (EWSF), which augments the storage capability at Site 300 by providing a separate dedicated facility to store explosives waste, became operational in March 1998. Also, the Explosives Waste Treatment Facility (EWTF), which replaced the closed Building 829 Open Burn Facility, became operational in March 1999. Upon receiving DTSC approval, closure operations for the Building 829

Open Burn Facility began in October 1997. The facility was closed in accordance with the *Closure Plan for the High-Explosives Open Burn Facility at Lawrence Livermore National Laboratory Experimental Test Site 300* (Mathews and Taffet 1997). The closure report, *Construction Quality Assurance for the RCRA Closure of Building 829 High Explosives Open Burn Treatment Facility*, was submitted to DTSC in February 1999.

From June 16–17, 1998, DTSC conducted a Compliance Evaluation Inspection of Site 300 hazardous waste generator areas, the Building 883 Container Storage Area, and the EWSF. Because operations at the EWTF had not begun, the EWTF was not inspected. Two violations were issued as a result of the inspection (see **Table 2-5b**). The first was issued for failing to provide specific training records in a timely manner. In the violation response letter to DTSC, LLNL agreed to provide training records related to the hazardous waste management program upon request by the inspector. The second violation was issued because training plans contained in facility permits were modified without obtaining permit modifications from DTSC. In response, LLNL agreed to update the training plans, including training course descriptions and numbers as well as job titles and descriptions, since the permits were issued in 1996 and 1997. The corrective action for the violation required LLNL to submit a permit modification request to DTSC pursuant to 22 CCR 66270.42. LLNL submitted the permit modification request to DTSC on January 19, 1999.

Hazardous Waste Reports

The biennial reports, *Hazardous Waste Report—Mainsite* and *Hazardous Waste Report—Site 300*, are required under 40 CFR 262.41, 264.75, and 265.75. These reports which address 1997 waste handling information, were completed and delivered to DTSC by the March 1, 1998, deadline. Two annual facilities reports, one for the Livermore site and the other for Site 300, which address 1998 waste handling information, were completed and submitted to meet DTSC's March 31, 1999, deadline. The annual reports are required under 22 CCR 66264.75 and are on file at LLNL.

Hazardous Waste Transport Registration

Transportation of hazardous waste over public roads (e.g., from one LLNL site to another) requires DTSC registration (22 CCR 66263.10). Conditions for registration may include annual inspections of transport vehicles and trailers by the California Highway Patrol (CHP), biennial terminal inspections, and special training and annual physical

examinations for drivers. The registration was renewed by DTSC in November 1998. In 1998, the CHP in Alameda County opted to conduct vehicle safety compliance checks of vehicles assigned to the Livermore site and Site 300. The inspection of the Livermore site on December 9 resulted in two violations (see **Table 2-5a**). The inspection of Site 300 vehicles took place on December 4 and resulted in two violations (see **Table 2-5b**). However, since the violations were vehicle-specific and LLNL received a satisfactory "current terminal rating," they were considered to be minor.

Waste Accumulation Areas

In January 1998, there were 26 Waste Accumulation Areas (WAAs) at the Livermore site. Consolidation efforts resulted in the closure of 8 WAAs; additionally, two temporary WAAs were put into service, resulting in a total of 20 WAAs at the Livermore site. Program representatives conducted formal inspections at least weekly at all WAAs to ensure that they were operated in compliance with regulatory requirements. Approximately 1183 formal WAA inspections were conducted at the Livermore site. In addition, personnel from LLNL's Environmental Protection Department (EPD) conducted informal biweekly walkthroughs at all WAAs to help programs manage their WAAs and wastes in compliance with state and federal regulatory requirements. EPD personnel performed 491 biweekly WAA walkthroughs at the Livermore site.

During 1998, program representatives conducted 104 formal inspections of two WAAs at Site 300. EPD personnel performed 40 biweekly WAA walkthroughs at Site 300 during 1998.

California Medical Waste Management Act

LLNL is registered with the Alameda County Department of Environmental Health (ACDEH) as a generator of medical waste and has a treatment permit. A September 15, 1998, ACDEH inspection of buildings at Health Services, the Biology and Biotechnology Research Program, and the Medical Photonics Laboratory found neither compliance issues or violations (see **Table 2-5a**). All LLNL medical waste management operations comply with the California Medical Waste Management Act, Health and Safety Code Sections 117600–118360.

Federal Facility Compliance Act

LLNL is continuing to work with DOE to maintain compliance with the Site Treatment Plan (STP) that was signed in February 1997. In 1998, LLNL reached 13 of its STP milestones, the majority by using commercial disposal facilities. The use of commercial facilities has and will allow earlier disposal of some waste streams than the dates listed in the STP.

Toxic Substances Control Act

LLNL began studying methods for treating and disposing of polychlorinated biphenyls (PCBs) after obtaining approval to conduct destruction studies from the EPA in August 1998. Authorizations were granted pursuant to section 6(e)(1) of the Toxic Substances Control Act, Public Law No. 94-469, and the Federal PCB Regulations, 40 CFR 761.60(I)(2), 761.60(e), and 761.65(d)(2). In 1998, LLNL chemists investigated the destruction of PCBs by molten salt oxidation and direct chemical oxidation. The processes are described in more detail in Chapter 3.

National Environmental Policy Act

The National Environmental Policy Act (NEPA—42 U.S.C. 4321 et seq.) established federal policy for protecting environmental quality. The major method for achieving established NEPA goals is the requirement for preparing an Environmental Impact Statement (EIS) for any major federal or federally funded project that may have significant impact on the quality of the human environment. If the need for an EIS is not clear, or if the project does not meet DOE's criteria for requiring an EIS, an Environmental Assessment (EA) is prepared. A Finding Of No Significant Impact (FONSI) is issued when an EIS is determined to be unnecessary.

Certain groups of actions that do not have a significant effect on the environment either individually or cumulatively can be categorically excluded from a more in-depth NEPA review (i.e., preparation of either an EA or EIS). DOE NEPA implementing procedures (61 FR 36222) identify those categorical exclusions and the eligibility criteria for their application. If a proposed project does not clearly fit one of the exclusion categories, DOE determines which type of assessment document may be needed.

In 1998, one FONSI for the Environmental Assessment of the Arroyo Las Positas Maintenance Project was issued by DOE. Another EA for the construction and operation of the proposed Terascale Simulation Facility is being prepared. Eighteen categorical exclusion applications were approved by DOE, and there were no proposed actions at LLNL that required separate DOE floodplain or wetlands assessments under 10 CFR 1022.

California Environmental Quality Act

In November 1992, UC and LLNL made a commitment to implement 67 mitigation measures identified by the *1992 Final Environmental Impact Statement and Environmental Impact Report for Continued Operation of Lawrence Livermore National Laboratory and Sandia National Laboratories, Livermore* (1992 Sitewide EIS/EIR U.S. Department of Energy and University of California 1992a and b) and to provide annual reports on their implementation. The measures are being implemented in accordance with the approved 1992 Mitigation Monitoring and Reporting Program associated with that joint DOE/UC EIS/EIR. The fiscal year 1996 annual report was published in 1998; the next annual report will cover fiscal year 1997 activities.

National Historic Preservation Act

The National Historic Preservation Act of 1966 (NHPA), as amended through 1992, requires federally operated and funded installations such as LLNL to balance agency missions with cultural values by integrating historic preservation into federal agency programs. Federal agencies must take into account the effects their projects may have on "historic properties" (cultural resources), and they must allow a reasonable time period for the Advisory Council on Historic Preservation (the Council) to comment. LLNL has three significant types of cultural resources: (1) prehistoric; (2) historic (turn-of-the-century homesteading, ranching, and industrial); and (3) historic (World War II and Cold War science and technology).

A draft Programmatic Agreement (PA) was developed by LLNL in 1997 in consultation with the DOE/Oakland Operations Office (DOE/OAK), the Council, and the California State Historic Preservation Office (SHPO) to help LLNL implement applicable federal and state cultural resource laws and regulations. These activities include cultural overviews, development of theme and context for significance evaluation, research designs, archaeological site identification and evaluation methods, and records and collection

management. The activities will also generate needed data and methods in order to develop a Cultural Resource Management Plan (CRMP), the final objective of the PA.

As a result of consultation with the Council and the SHPO during a joint meeting with DOE in December 1998, the 1997 Draft PA is being modified and finalized. Also as a result of these consultations, LLNL will be able to relocate sections of an existing fire trail that cross through a known archaeological site. Grading of these sections has been suspended since 1994 and over the last few years, the trail has been cleared of vegetation by hand. However, it has become increasingly difficult to balance protection of the archaeological site with the labor, safety, and security needs of Site 300 personnel. To solve the dilemma, with the Council and SHPO concurrence, LLNL proposes to cut a new section of fire trail away from the archaeological site and discontinue use of the sections that now cross through the site. Final documentation of this proposed project has been submitted to DOE/OAK for review and submittal to the oversight agencies.

Endangered Species Acts and Sensitive Natural Resources

LLNL must meet the requirements of the U.S. Endangered Species Act, the California Endangered Species Act, and the California Native Plant Protection Act as they pertain to endangered or threatened species and other species of special concern that may exist or are known to exist at the LLNL sites. For example, in implementing the 1992 Mitigation Monitoring and Reporting Program in 1998, biological assessment surveys were performed for special-status species at 51 LLNL project construction (ground disturbance) areas. Presence data for the San Joaquin kit fox (*Vulpes macrotis mutica*), American badger (*Taxidea taxus*), and Western burrowing owl (*Speotyto cunicularia*) were collected at each project location, and other applicable mitigation measures were implemented where appropriate.

During 1998, no active San Joaquin kit fox dens were discovered, but five potential dens were found. Four occupied American badger dens were discovered, and 24 unoccupied dens were identified. Twelve active burrowing owl dens were discovered, and two potential dens were identified. A new population of the federally threatened red-legged frog (*Rana aurora draytonii*) was identified in the northwestern portion of Arroyo Las Positas on the Livermore site. Measures to mitigate the potential for future impacts to the frogs were developed through formal consultation with the U.S. Fish and Wildlife Service, which issued a “No Jeopardy” biological opinion in August 1998. In addition, a new population of the federal candidate species California tiger salamander (*Ambystoma tigrinum*) was found at a wetlands location at Site 300.

Also, at the Livermore site, four pairs of white-tailed kites (*Elanus lecurus*), a state fully-protected raptor, successfully nested and fledged 14 young from these nests.

Two of the three known natural populations of the large-flowered fiddleneck (*Amsinckia grandiflora*), a federally listed endangered plant species, occur at Site 300. A portion of Site 300 has been designated as federal critical habitat for the plant. In addition, LLNL has established an experimental population within the designated critical habitat. LLNL is currently working with the U.S. Fish and Wildlife Service on continued monitoring of native and experimental *Amsinckia* populations, and to further develop habitat restoration and maintenance techniques. Investigations into the use of herbicides, controlled burns, and native bunch grass transplantation to reduce the amount of exotic grass cover are currently under way. A progress report was prepared and submitted to the U.S. Fish and Wildlife Service in September 1998 (Carlsen et al. 1998).

It appears that the smaller of the two native populations of fiddleneck was extirpated in 1997 when the bank containing the population was washed away. No plants were observed at this site in 1998. In January 1998, the remaining native population and the experimental population were treated with herbicide to reduce the amount of exotic grass cover at the site. Such grass cover has been shown to negatively impact *Amsinckia* size and reproductive output. However, even with this treatment, the number of fiddleneck plants remained low in the native population (218 plants), dropping an additional 42% compared to the number of plants observed in 1997. The number of fiddleneck plants observed in the experimental population also declined by 90% (down to 64 plants) compared to 1997.

Although both populations were treated to reduce grass cover, the decline in the number of plants may still be due to the presence of exotic grass cover. It has been previously observed that increases in fiddleneck numbers in response to herbicide treatment can be delayed until the following growing season. A controlled burn was also conducted in part of the experimental site that no longer contains fiddleneck plants. The areas that underwent the controlled burn and were treated with herbicide will be monitored for the presence of fiddleneck plants in future years. In addition, investigations indicated a high level of seed predation at both sites. Thus, it is also possible that several years of heavy grass cover resulted in increased numbers of seed predators.

Monitoring of the big tarplant (*Blepharazonia plumosa plumosa)*, a California Native Plant Society “rare” plant), and the diamond-petaled poppy (*Eschscholzia rhombipetala*, a plant thought to be extinct) continued in 1998. The big tarplant remained widespread throughout Site 300. A total of 26 diamond-petaled poppy plants were located. Of these, 18 plants produced seed-bearing pods.

Antiquities Act (of 1906): Paleontological Resources

During soil excavation for the National Ignition Facility (NIF) at the Livermore site in 1997, a molar from a 14,000-year-old mammoth was found at a depth of about 10 m below the surface. After this discovery, LLNL obtained an excavation permit from the Department of Interior under the provisions of the Antiquities Act of 1906 and removed bones from the construction area in late 1997 and early 1998. The bones (including 11 ribs, three vertebrae, one humerus, one complete and one partial tusk, and a partial skull with palate, jawbone, and molars) are being accessioned into the U.C. Berkeley Museum of Paleontology collection and are being prepared for possible later presentation at LLNL.

Environmental Occurrences

Notification of environmental occurrences is required under a number of environmental laws and regulations, DOE Order 232.1, *Occurrence Reporting and Processing of Operations Information*, and DOE Order 5484.1, *Environmental Protection, Safety, and Health Protection Information Reporting Requirements*. DOE Order 232.1 provides guidelines to contractor facilities regarding categorization and reporting of environmental occurrences to DOE and divides occurrences into three categories: emergency occurrences, unusual occurrences, and off-normal occurrences

The EPD response to environmental occurrences is part of the larger LLNL on-site emergency response organization that also includes representatives from Hazards Control (including the LLNL Fire Department), Health Services, Plant Engineering, Public Affairs, Safeguards and Security, and Site 300. In 1998, six environmental incidents were categorized as Off-Normal Occurrences and one incident was categorized as an Unusual Occurrence according to the DOE Order 232.1 *Implementing Procedures*. On June 17, 1998, LLNL's revised Implementing Procedures for DOE Order 232.1 were approved by the DOE Oakland Operations Office. Reporting requirements for environmental and transportation incidents in the new Implementing Procedures were changed to correlate better with regulatory reporting criteria. These changes reduced the number of reportable occurrences by eliminating less significant occurrences from the DOE 232.1 reporting requirement.

None of the environmental occurrences, summarized in **Table 2-9**, caused any adverse impact to the public or the environment. Agencies notified of these incidents included EPA, DOE, Alameda County Health Care Services Agency, SFRWQCB, Office of Emergency Services, LWRP, and DTSC.

Table 2-9. Tabulation of Environmental Occurrences reported under the Occurrence Reporting System, 1998.

Date[a]	Occurrence category	Description
Jan 12	Off-Normal	A container of waste shipped to a TSDF contained three aerosol cans that were not listed on the manifest. The hazardous contents of the cans were identified; however, the manifest failed to note the materials were contained in aerosol cans. An error on a waste manifest meets the requirements of an Off-Normal Occurrence under the Transportation Section. OR 1998-0001.
Feb 2	Off-Normal	LLNL was notified on 2-2-98 by a commercial TSDF[b] that waste shipped to the facility by LLNL had the incorrect pH identified on the Uniform Hazardous Waste Manifest. The shipping papers listed the waste as having a pH of 3, while the TSDF verification sampling found a pH of 13. A violation of Department of Transportation regulations meets the requirements of an Off-Normal Occurrence. OR 1998–0006.
Feb 2	Off-Normal	Under the terms stipulated in our Wastewater Discharge Permit, LLNL reported findings of low pH-and lead-bearing materials in 1997. Lead was detected in daily composite samples of the effluent to the LWTP[c] on 10/31 (28 mg/L) and 11/1 (25 mg/L). On December 5, 15, 19, and 24, 1997, on-line monitoring equipment detected a period during which the pH was below the permit limit of 5. On February 2, 1998, LLNL received an NOV[d] from the LWTP for a violation of the Sanitary Sewer Permit discharge limit for lead and pH. Receiving an NOV meets the requirements of an Off-Normal Occurrence. OR 1998–0008.
Mar 18	Off-Normal	On March 17, 1998, a Building 611 motor pool employee observed that the suction pump in the gasoline dispenser housing was leaking and notified his supervisor of the leak on that day. The pump was immediately locked and repairs were ordered. On March 18, the contaminated gravel was excavated and the pump repaired. It is estimated that approximately one gallon of gasoline was released, and that 100% of the released material was recovered. On March 19, the Alameda County Health Care Services Agency was notified of the release by voice mail. A written report was provided to the agency on March 25, 1998. Written notification to a regulatory agency meets the requirements of an Off-Normal Occurrence. OR 1998–0018.
Oct 21	Off-Normal	LLNL received an NOV from the California DTSC during the 1998 Compliance Evaluation Inspection of Hazardous Waste Management (HWM) operations. On October 21, 1998, the DTSC[e] issued two violations to LLNL/Site 300. One violation was received for failure to provide specific employee training records promptly upon request, and a second violation was received for failing to follow 22 CCR 66270. 42, Permit Modifications at the Request of the Permittee, prior to modifying training plans for the employees working in the Explosive Waste Storage Facility (EWSF) and Building 883. Receiving an NOV meets the requirements of an Off-Normal Occurrence. OR 1998–0059.
Nov 25	Off-Normal	LLNL was notified by a TSDF that waste received from LLNL exceeded the facilities radioactivity acceptance criteria of <20 μR. The finding was based on a survey of the waste container indicating an activity level of 26 μR. The container was returned to LLNL for verification and found to contain thorium. Exceeding an offsite facility acceptance criteria meets the requirements of an Off-Normal Occurrence. OR 1998-0063.

Table 2-9. Tabulation of Environmental Occurrences reported under the Occurrence Reporting System, 1998 (concluded).

Date[a]	Occurrence category	Description
Dec 18	Unusual	In October 1998, excavated soil from LLNL's East Traffic Circle was staged on and covered with plastic in the Maintenance and Operations Soil Staging Area. Samples obtained from the soil piles were analyzed for metals, volatiles, PCBs, and radioactivity. Results received from the analytical laboratory indicated PCB contamination in excess of EPA Reportable Quantity. Exceeding the EPA's Reportable Quantity meets the requirement of an Unusual Occurrence. OR 1998–0064.

[a] The date indicated is the date the occurrence was categorized, not the date of its discovery.

[b] TSDF = Treatment, storage, and disposal facility.

[c] LWTP = Livermore Water Treatment Plant.

[d] NOV = Notice of Violation.

[e] DTSC = Department of Toxic Substance Control.

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