CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. R2-2009-0073

TIME SCHEDULE ORDER PRESCRIBING ADMINISTRATIVE CIVIL LIABILITY for:

STANFORD UNIVERSITY
UNITED STATES DEPARTMENT OF ENERGY

for the:

SLAC–NATIONAL ACCELERATOR LABORATORY
2575 SAND HILL ROAD
MENLO PARK, SAN MATEO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Regional Water Board), finds that:

PURPOSE OF ORDER

1. This Order prescribes the maximum civil liability for non-compliance with the tasks and schedule contained in Site Cleanup Requirements Order No. R2-2009-0072, which is a Cleanup and Abatement Order (CAO) adopted by the Regional Water Board pursuant to Section 13304 of the California Water Code. The tasks and schedule in Order No. R2-2009-0072, require plans to address soil and groundwater pollution at the SLAC-National Accelerator Laboratory (formerly know as the Stanford Linear Accelerator Center) for protection of water quality and human and environmental health. Although Stanford University and the United States Department of Energy (collectively, the "Dischargers") have worked cooperatively with Regional Water Board staff to complete required tasks of a 2005 cleanup order (Order No. R2-2005-0022), some deadlines were missed. The Dischargers will be subject to civil liability prescribed in this Order should they fail to complete any task of Order No. R2-2009-0072, which are restated in Table 1 of this Order.

SITE LOCATION, OWNERSHIP, AND DESCRIPTION

2. The SLAC site is a 426-acre, high-energy particle physics and particle astrophysics, synchrotron radiation and photon science research facility. It is located approximately two miles west of the main Stanford University (Stanford) campus adjacent to Menlo Park in an unincorporated portion of San Mateo County, California. It is located within an area consisting of properties that are residentially zoned by the County of San Mateo. Its unusually shaped property boundary is due to the two-mile long, narrow linear accelerator (LINAC), which runs east-west under Highway 280, and the larger rectangular target/research area at the eastern end of the LINAC.
3. SLAC is a federally-funded national research laboratory constructed in 1963 and continuously managed and operated by Stanford under a contract with the United States Department of Energy (DOE). It is located on land owned by Stanford and leased to DOE. The original lease agreement was signed in 1962 between the Atomic Energy Commission (DOE's predecessor) and Stanford for a period of 50 years, expiring in 2012. The SLAC land is part of the original land grant that established Stanford ; the land

cannot be sold and must be held in perpetuity by Stanford's trustees to support its educational mission. Land use at the facility is a combination of industrial, educational, and short-term residential.

4. The SLAC site is bordered to the north by Sand Hill Road, with the commercial and residential development of Sharon Heights across the road. The SLAC site is also bordered by residential development (Stanford Hills) and agricultural/equestrian facilities (Harry Cohn Ranch) to the east, agricultural (Webb Ranch, Harry Cohn Ranch) and equestrian facilities (Portola Valley Training Center) to the south, and by undeveloped areas to the west, including the Jasper Ridge Biological Preserve, which is owned, monitored and protected by Stanford.

5. SLAC has conducted numerous site investigations as part of its overall Environmental Restoration Program that included extensive soil and groundwater sampling and the installation of over 100 groundwater monitoring wells. Results of these investigations indicate that soil and groundwater pollution exists at various locations within the site. Constituents of concern for soil are: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), lead, and tritium. Constituents of concern for groundwater are: VOCs, SVOCs, petroleum hydrocarbons, and tritium. Source areas that contributed to pollutant releases include storage areas and areas where hazardous materials, including VOCs, SVOCs, PCBs, petroleum hydrocarbons, and radionuclides, were used or generated. The VOCs were used as cleaning agents and the PCBs were used in electrical transformers. PCBs are no longer used at the SLAC facility in transformers at concentrations above 500 parts per million (ppm). All transformers with PCB concentrations above 500 ppm have been drained, flushed, and refilled with non-PCB containing oil; however, some residual PCBs remain in the transformers. Generation of radionuclides is the result of operating the LINAC for high-energy particle physics research. Several removal actions have been performed for VOCs, SVOCs, PCBs, TPH, and metals in soil and groundwater. Evaluation of remedial alternatives addressing soil and groundwater pollution is ongoing.

REGULATORY HISTORY

6. In 1985, the Regional Water Board adopted Order No. 85-88, which required investigation and remediation of soil and groundwater pollution from a former chlorinated solvent underground storage tank. Since then, Regional Water Board staff has overseen investigation and cleanup activities funded through a grant with DOE.

7. In 2005, the Regional Water Board adopted Order No. R2-2005-0022, identifying additional locations that required investigation, remediation, and monitoring of soil and groundwater pollution. Order No. R2-2005-0022, as amended on August 23, 2006 by the Executive Officer, required completion of 13 tasks at these locations.

8. The Dischargers have completed the first four tasks of Order No. R2-2005-0022. In compliance with Task 4, the Dischargers submitted a report, dated May 2006, which grouped areas needing investigation into four operable units (OUs).

9. In attempting to comply with Task 5 of Order No. R2-2005-0022, the Dischargers missed report submittal deadlines for three of the four OUs. The missed deadlines are summarized below and in Finding No. 14 of Order No. R2-2009-0072.

Task No.	Description	Original Due Date (per Order No. R2-2005-0022)	Status
5	Final remedial investigation report for the Tritium OU	August 19, 2008	Submitted June 1, 2009
5	Final remedial investigation report for the West SLAC/Campus Area/IR-8 Drainage Channel	September 3, 2008	TBD[1]
5	Final remedial investigation report Research Yard/SSRL/IR-6 Drainage Channel OU	March 19, 2009	Due date revised to June 26, 2010[2]

1) A revised schedule for submittal of the West SLAC OU RI Report must be proposed in a revised compliance schedule which is due by April 15, 2010, per Task 15 of CAO No. R2-2009-0072
2) Per Table 5 of CAO No. R2-2009-0072

10. In December, 2008, the Dischargers submitted a proposed draft revision to the compliance schedule for all task deliverables in Order No. R2-2005-0022. The Dischargers worked in collaboration with Regional Water Board staff to resolve inconsistencies in the compliance schedule, identify attainable timelines for task deliverables, and develop a rolling milestone approach for implementation.
11. The remaining nine tasks contained in Order No. R2-2005-0022, along with the final revised compliance schedule for task deliverables, are now included in Order No. R2-2009-0072. The revised compliance schedule for task deliverables in Order No. R2-2009-0072 is the same as the time schedule in Table 1 of this Order.

JUSTIFICATION OF THE ORDER

12. The Regional Water Board finds that there is a threatened violation of CAO No. R2-2009-0072 in light of the Dischargers' past history of delayed compliance with Order No. R2-2005-0022.
13. Pursuant to Section 13308(a) of the California Water Code: "If the Board determines there is a threatened or continuing violation of any Cleanup and Abatement Order, Cease and Desist Order, or any Order issued under Section 13267 or 13383, the Board may issue an Order establishing a time schedule and prescribing a civil penalty which shall become due if compliance is not achieved with that schedule."
14. In view of threatened violation of CAO No. R2-2009-0072, issuance of a Time Schedule Order under Section 13308(a) of the California Water Code, which establishes tasks, a compliance time schedule, and maximum civil liabilities to be assessed in the event of violation, including delayed compliance, is an appropriate action to ensure timely compliance with CAO No. R2-2009-0072.
15. According to Section 13308(b) of the California Water Code: "The amount of the civil penalty [in a Section 13308 Order] shall be based upon the amount reasonably necessary to achieve compliance, and may not include any amount intended to punish or redress previous violations. The amount of penalty may not exceed ten thousand dollars ($10,000) for each day in which the violation occurs."
16. If the Regional Water Board Assistant Executive Officer determines the Dischargers have failed to comply with the time schedule of this Order, it may issue a complaint pursuant to Water Code Section 13323(a) alleging the violation(s) of the time schedule and setting forth the amount of civil liability due

under this Order. The Dischargers may either pay the civil liability or request a hearing before the Regional Water Board. If the Regional Water Board decides to impose the liability, it may impose a liability that is less than the amount prescribed in this Order if it makes express findings setting forth the reasons for its action based on the specific factors to be considered for administrative civil liabilities in Water Code Section 13327 which states:

> *In determining the amount of civil liability, the regional board, and the state board upon review of any order pursuant to Section 13320, shall take into consideration the nature, circumstance, extent, and gravity of the violation or violations, whether the discharge is susceptible to cleanup or abatement, the degree of toxicity of the discharge, and, with respect to the violator, the ability to pay, the effect on ability to continue in business, any voluntary cleanup efforts undertaken, any prior history of violations, the degree of culpability, economic benefit or savings, if any, resulting from the violation, and other matters as justice may require.*

CALIFORNIA ENVIRONMENTAL QUALITY ACT

17. Adoption of this Order will not have any direct or reasonably foreseeable indirect physical change on the environment since it merely prescribes liabilities that will become due if there is non-compliance with Order No. R2-2009-0072. As such, this Order is not subject to the California Environmental Quality Act ("CEQA") pursuant to Cal. Code Regs., tit. 14, Section 15060(c)(2). Even if it were, adoption of the Order falls within the general exemption that CEQA does not apply to activities that have no potential for causing a significant effect on the environments under Cal. Code of Regs., tit. 14, Section 15061(b)(3).

NOTIFICATION

18. The Regional Water Board has notified the Dischargers and interested agencies and persons of its intent under California Water Code Section 13308 to adopt a Time Schedule Order for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written comments.

PUBLIC HEARING

19. The Regional Water Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEARBY ORDERED, pursuant to Section 13308, of Division 7 of the California Water Code that the Dischargers, their assigned agents, successors and assigns, must complete the tasks described in accordance with the task schedule specified in Table 1 of this Order. In the event of non-compliance with a task or task schedule, civil liability up to the prescribed maximum shall accrue on each day after the due date until the task is completed.

A. TASKS

1. **Environmental Baseline Report**: Completed

2. **Proposed Land Use and Development Plan:** Completed

3. **Public Participation Plan**: Completed

4. **Remedial Investigation/Feasibility Study (RI/FS) Workplan and Implementation Schedule**: Completed

5. **Remedial Investigation (RI) Report**

COMPLIANCE DATE FOR TASK 5:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 5:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

6. **Baseline Human Health and Ecological Risk Assessment**:

COMPLIANCE DATE FOR TASK 6:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 6:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

7. **Feasibility Study (FS) Report**:

COMPLIANCE DATE FOR TASK 7:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 7:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

8. **Remedial Action Plan (RAP)**:

COMPLIANCE DATE FOR TASK 8:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 8:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

9. **Remedial Design (RD) Report**:

COMPLIANCE DATE FOR TASK 9:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 9:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

10. **Operation and Maintenance (O&M) Plan**:

COMPLIANCE DATE FOR TASK 10:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 10:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

11. **RAP Implementation Report**:

COMPLIANCE DATE FOR TASK 11:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 11:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

12. **Risk Management Plan (RMP)**:

COMPLIANCE DATE FOR TASK 12:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 12:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

13. **Five-Year Review Report:**

COMPLIANCE DATE FOR TASK 13:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 13:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

14. **Investigation, Remediation, and Closure Protocol for Newly Discovered Sites, Deferred Areas, and Land Use Changes**:

COMPLIANCE DATE FOR TASK 14:	In accordance with Table 1
MAXIMUM CIVIL LIABILITY FOR TASK 14:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

15. **Compliance Schedule for Submittal of the West SLAC/Campus Area/IR-8 Drainage OU Remedial Investigation Report:**

COMPLIANCE DATE FOR TASK 15:	April 15, 2010
MAXIMUM CIVIL LIABILITY FOR TASK 15:	Up to $10,000 each day the report is late not to exceed the actual cost of compliance

I, Bruce H. Wolfe, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on October 14, 2009.

Digitally signed by Bruce Wolfe
Date: 2009.10.21 19:11:30 -07'00'

Bruce H. Wolfe
Executive Officer

Attachments:

Table 1 - Compliance Schedule for Task Deliverables

Table 1 - Compliance Schedule for Task Deliverables per Order No. R2-2009-0072

		Due Date for Submittal of Final Report[1,2]			
Task	**Task Title**	**GW VOC OU**	**Tritium OU[5]**	**West SLAC Campus Area IR-8 OU**	**Research Yard/SSRL IR-6 OU**
1-4	Complete				
5	Remedial Investigation (RI) Report	Complete	Complete	TBD[8]	26 June 2010
6	Baseline Human Health & Ecological Risk Assessment	Complete	N/A(P)[5]	194 days from Task 5 approval[3]	208 days from Task 5 approval[3]
7	Feasibility Study (FS) Report	19 November 2009	N/A(P)[5]	260 days from Task 6 approval[3]	306 days from Task 6 approval[3]
8	Remedial Action Plan (RAP)	216 days from Task 7 approval[3]	N/A(P)[5]	216 days from Task 7 approval[3]	296 days from Task 7 approval[3]
9	Remedial Design (RD) Report	216 days from Task 8 approval[4]	N/A(P)[5]	216 days from Task 8 approval[4]	TBD[7]
10	Operation and Maintenance Plan	526 days from Task 9 approval[3]	03 February 2010[6]	466 days from Task 9 approval[3]	TBD[7]
11	RAP Implementation Report	571 days from Task 9 approval[3]	N/A(P)[5]	536 days From Task 9 approval[3]	TBD[7]
12	Risk Management Plan	171 days from Task 11 approval[3]	N/A(P)[5]	216 days from Task 11 approval[3]	TBD[7]
13	5-Year Review Report	5 years from first OU Task 11 approval[3]			
14	Protocol for Newly Discovered Sites, Deferred Areas, and Land Use Changes	01 June 2010			
15	West SLAC OU RI Compliance Schedule	N/A	N/A	15 April 2010	N/A

N/A(P) – Not Applicable at Present; TBD – To Be Determined

1) Due dates apply to submittal of final reports that are acceptable to the Assistant Executive Officer. Due dates account for a 60-day Regional Water Board staff review and comment period for draft documents, and a 46-day comment resolution/document finalization period.
2) Task deliverables may be combined (e.g., the Final RAP and Remedial Design) where the process does not rely on a series approval relationship.
3) The approval date is the date of the Assistant Executive Officer letter approving or conditionally approving the final report and indicating that the task deliverable is deemed complete.
4) The Task 8 (RAP) approval date is the date that the Regional Water Board Assistant Executive Officer approves the RAP after any necessary CEQA review.
5) The Final RI Report for the Tritium OU, approved June 12, 2009, identified remaining low levels of tritium in groundwater below the MCL and concluded that no remedial action is necessary at this time other than continuing long term monitoring to assess any changes to current conditions. Stanford is independently conducting a risk assessment associated with tritium at this OU. Therefore, Tasks 6-9 and 11-12 are not applicable at present for the Tritium OU.
6) Based on the findings of the Tritium OU RI report, the Task 10 submittal will consist of a Monitoring Plan only.
7) The Remedial Action Plan for the Research Yard/SSRL IR-6 OU must include a time schedule for deliverables required for Tasks 9-12.
8) As specified in Task 15, a revised schedule for submittal of the West SLAC OU RI Report is due no later than April 15, 2010.