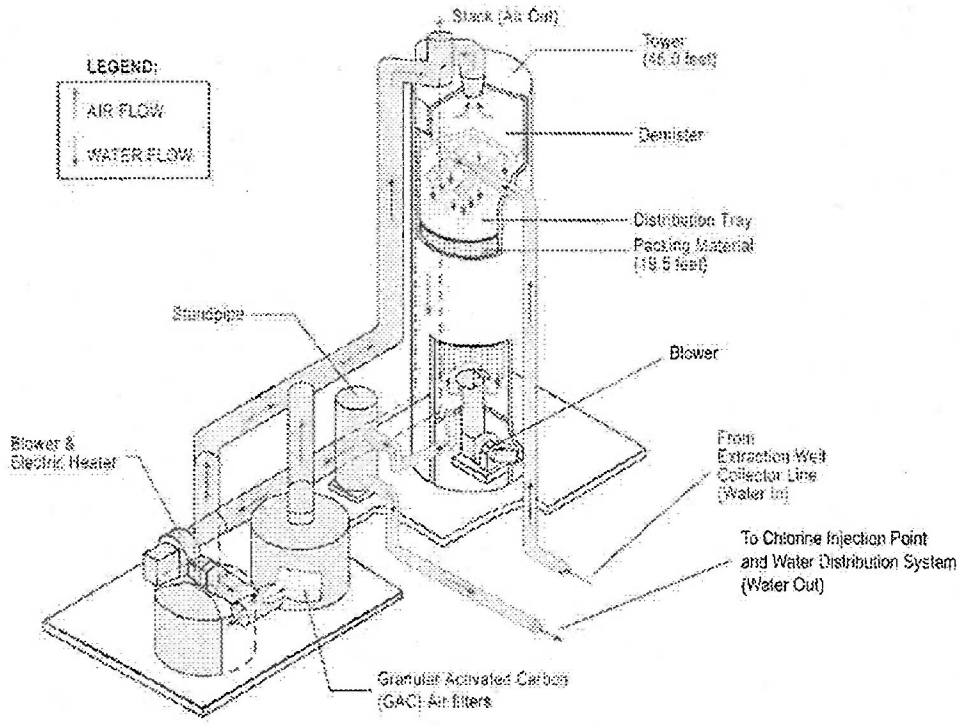
SCHEMATIC DIAGRAM OF NHOU GROUNDWATER TREATMENT FACILITY



SCHEMATIC DIAGRAM OF BOU GROUNDWATER TREATMENT FACILITY

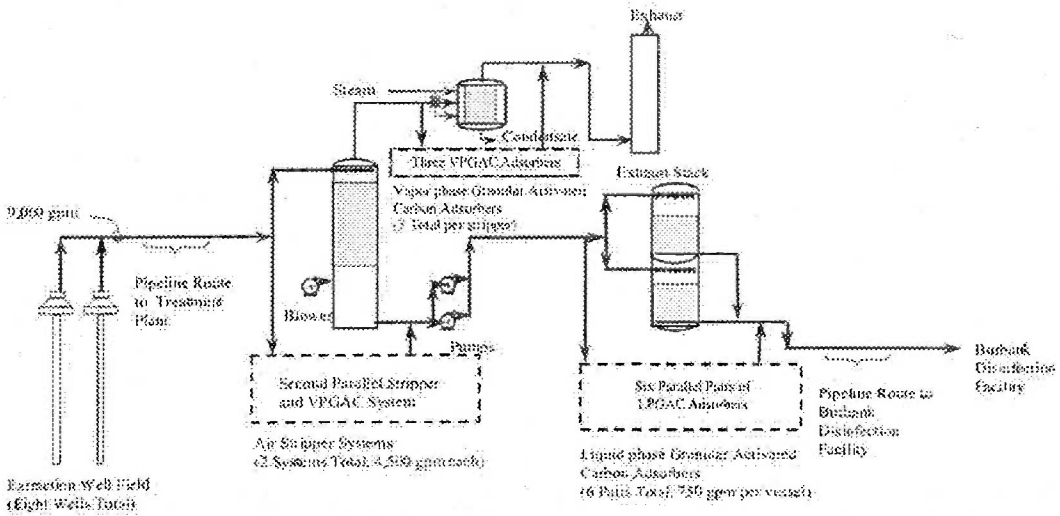
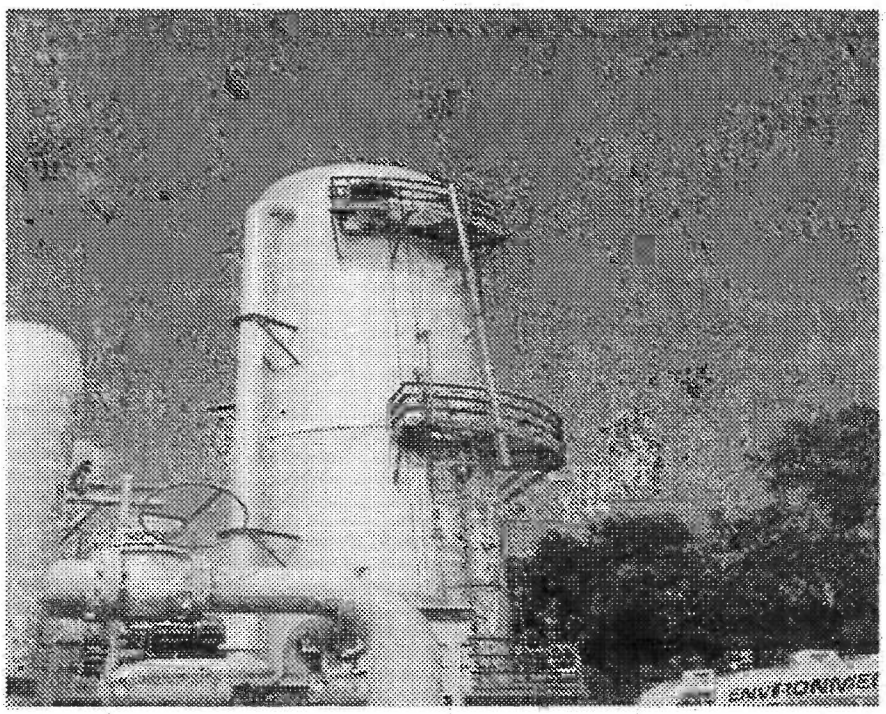
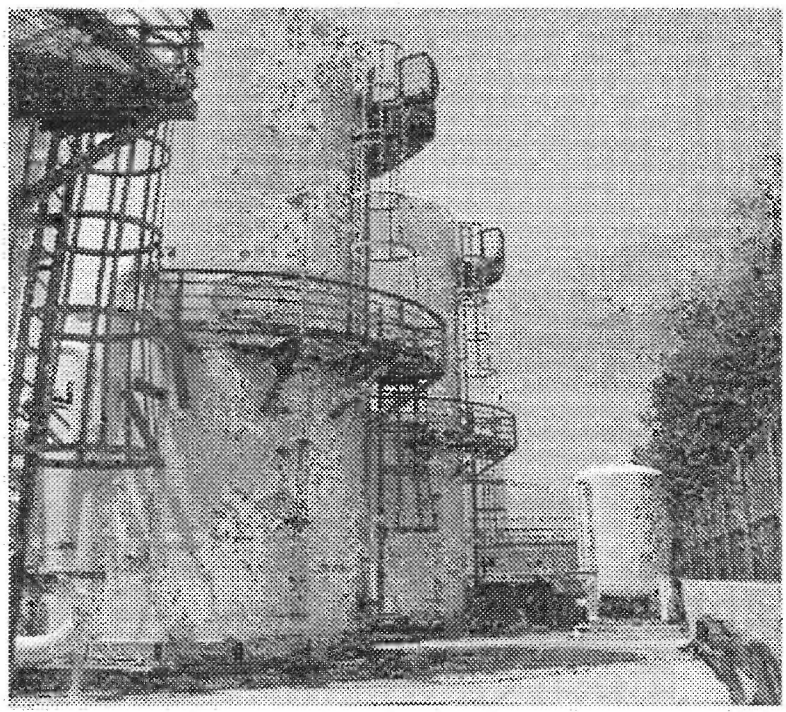


FIGURE 4-1
SCHEMATIC DIAGRAM OF NHOU AND BOU
GROUNDWATER TREATMENT FACILITY
SAN FERNANDO VALLEY (AREA 1) SUPERFUND SITE
LOS ANGELES COUNTY, CALIFORNIA

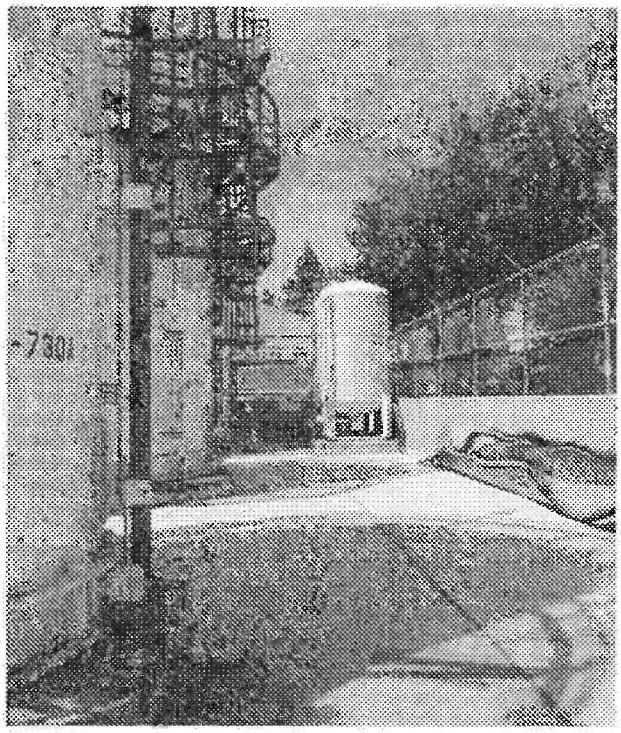
CH2MHILL



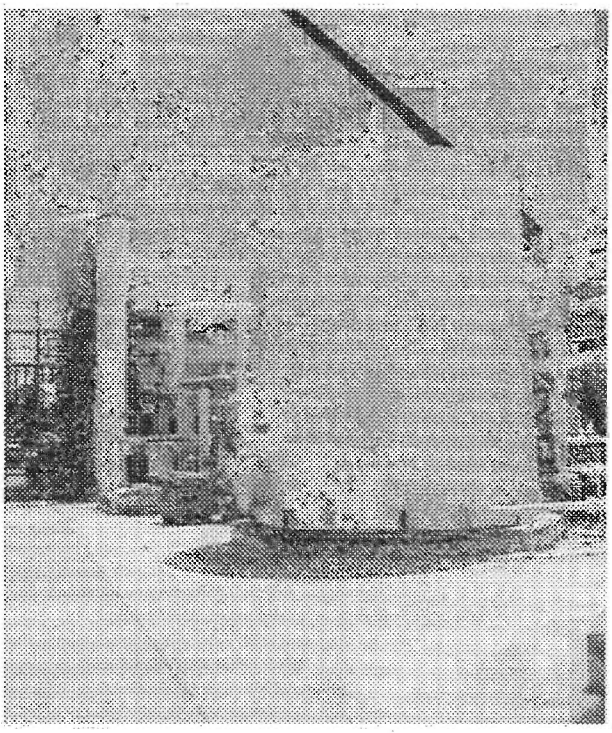
Photograph 1: Burbank Operable Unit (BOU) Aeration tower



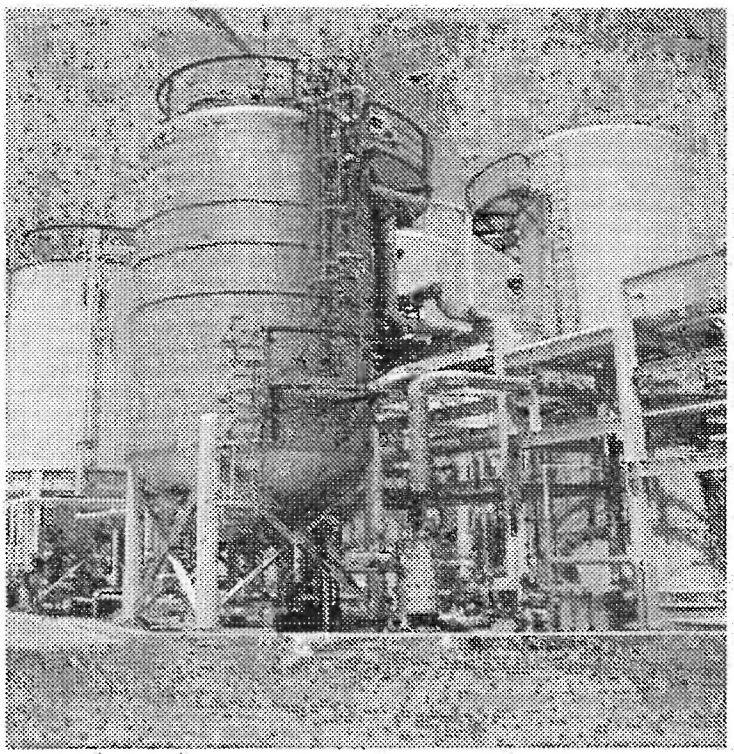
Photograph 2: BOU Aeration Tower-AD 740A and GAC Filter



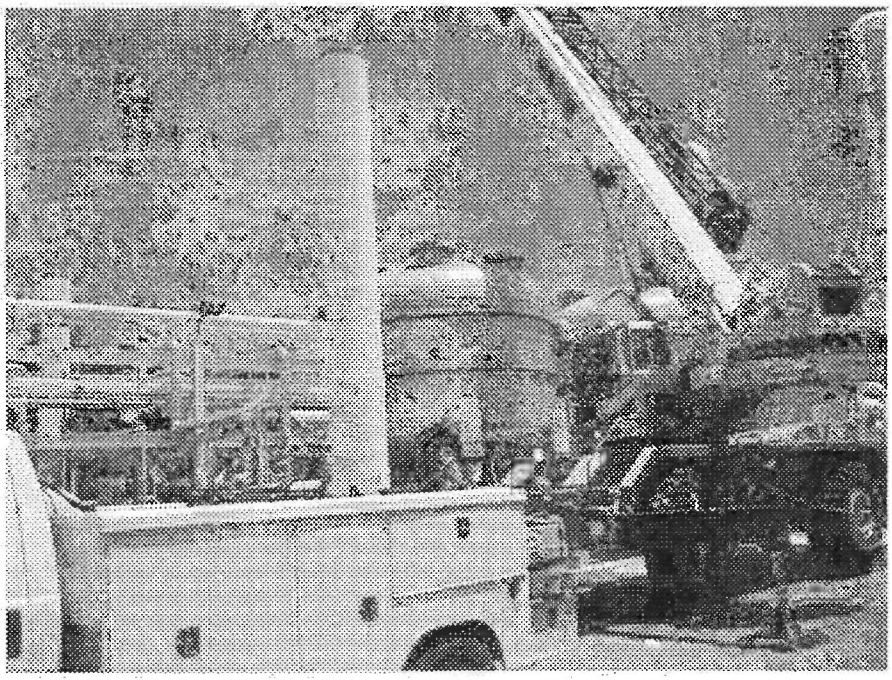
Photograph 3: BOU Tank - 730A



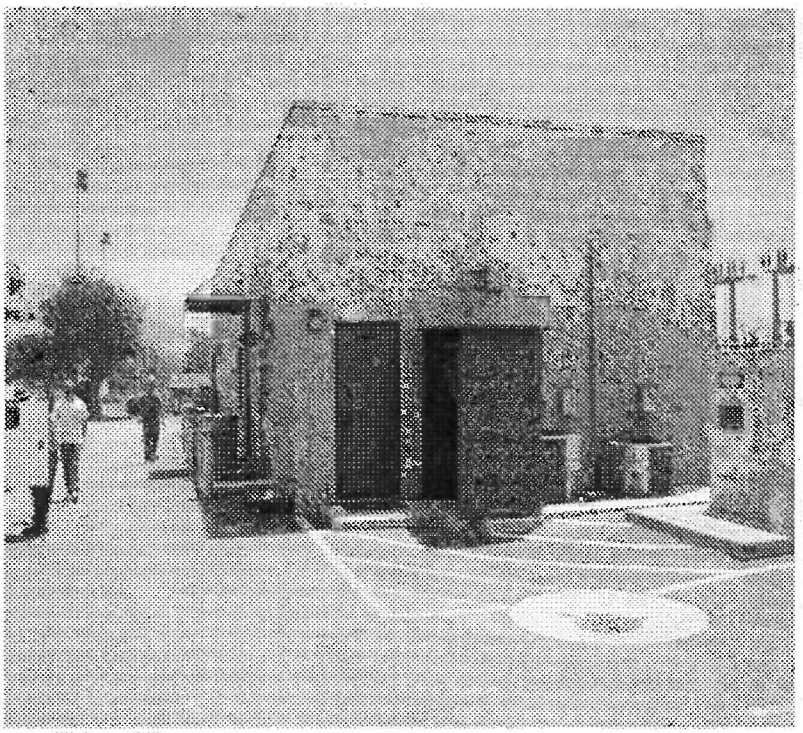
Photograph 4: BOU Tank - 920



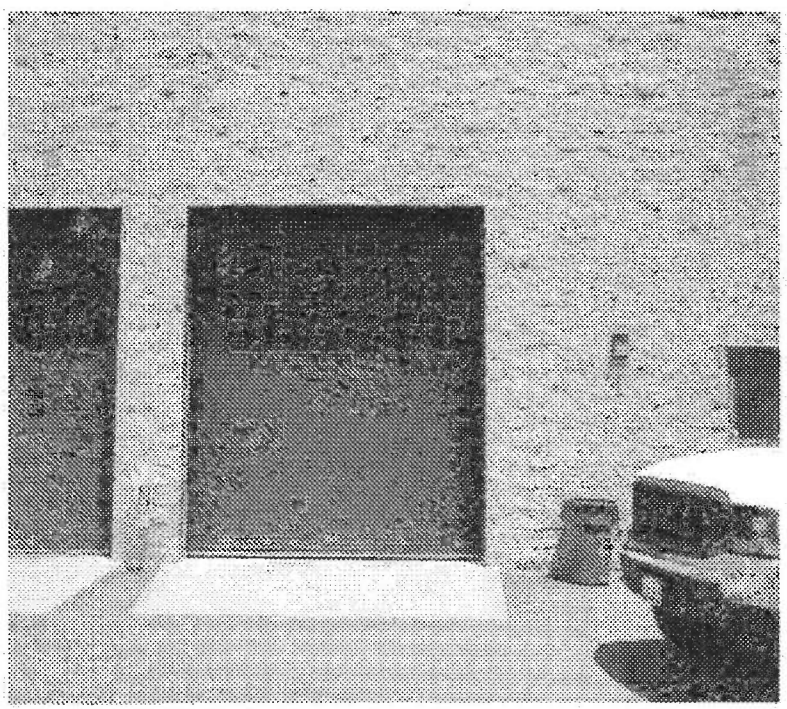
Photograph 5: BOU Vapor-Phase Granular-Activated Carbon (VPGAC)



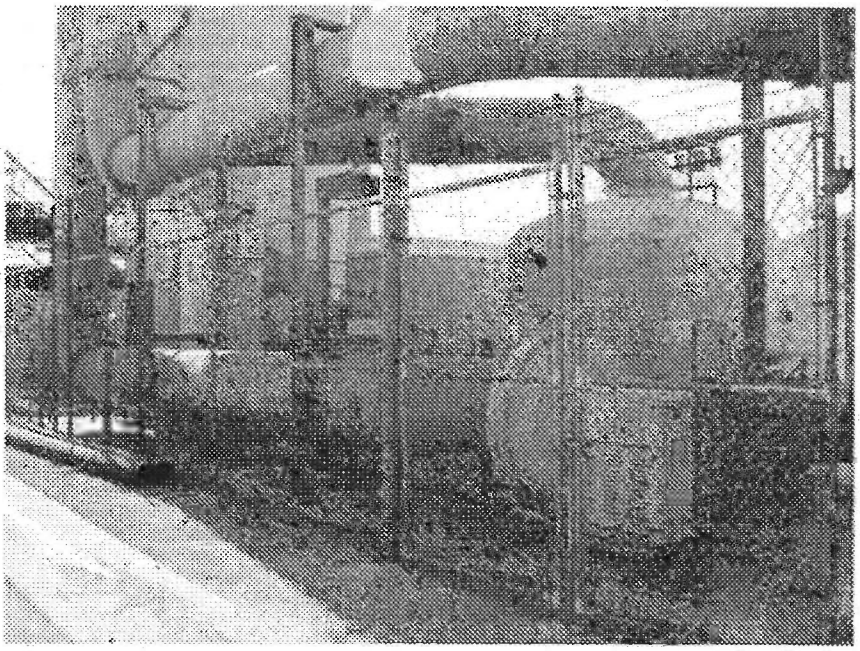
Photograph 6: BOU VPGAC Train (VPGAC AD-3208 shown in photo)



Photograph 7: BOU Pump Station

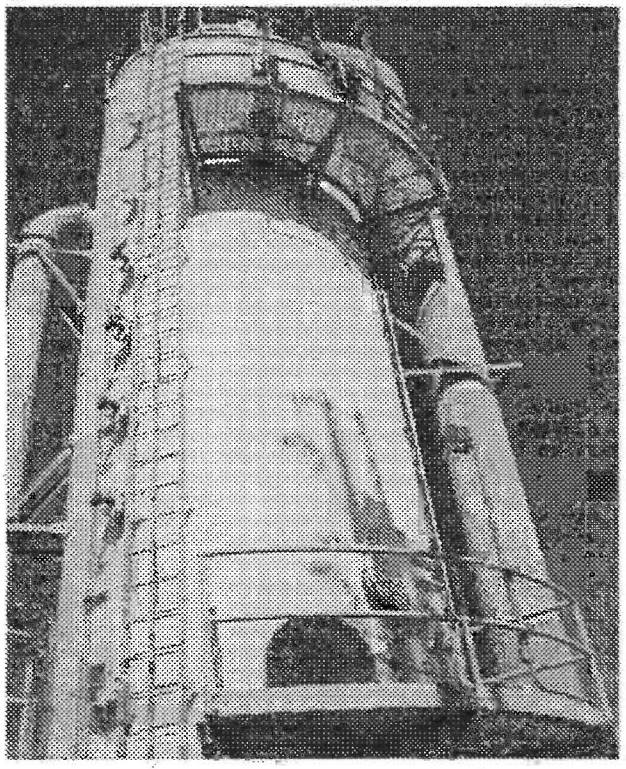


Photograph 8: BOU Boiler Room

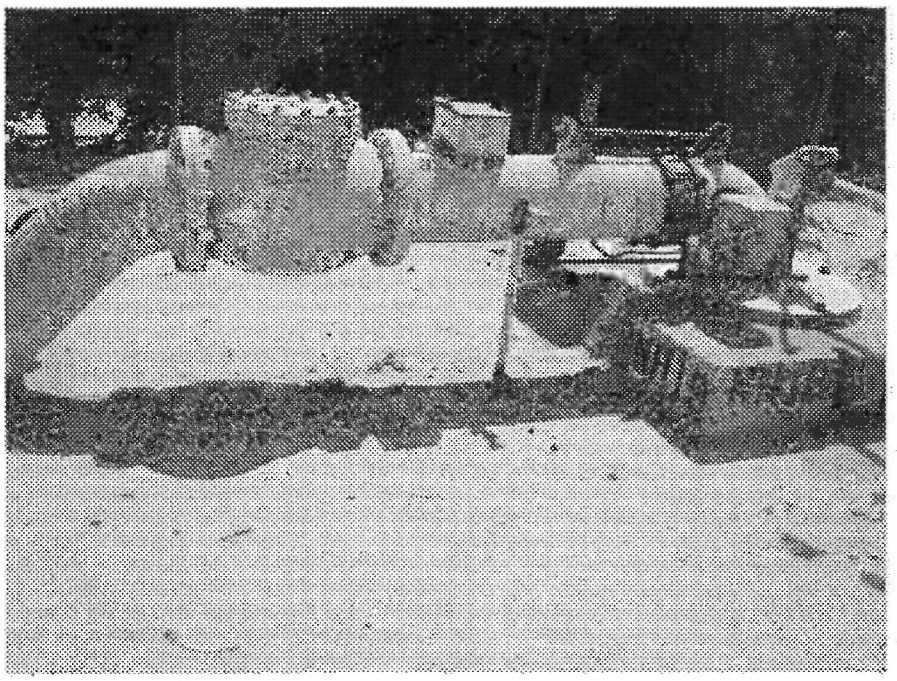


Photograph 9: North Hollywood Operable Unit (NHOU) Granular-Active Carbon Air Filter

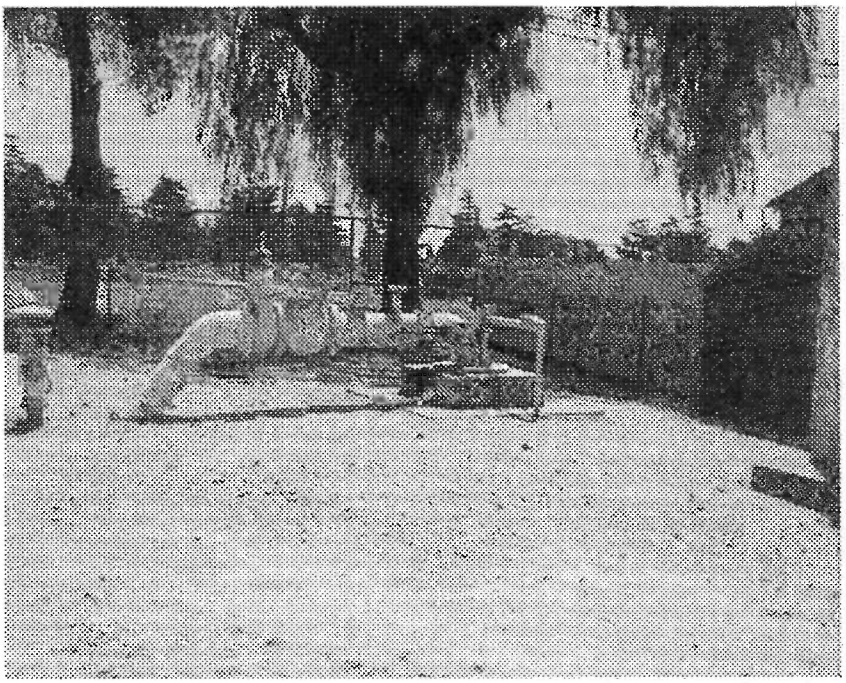
Photograph 10: NHOU Sodium Hexametaphosphate Tank



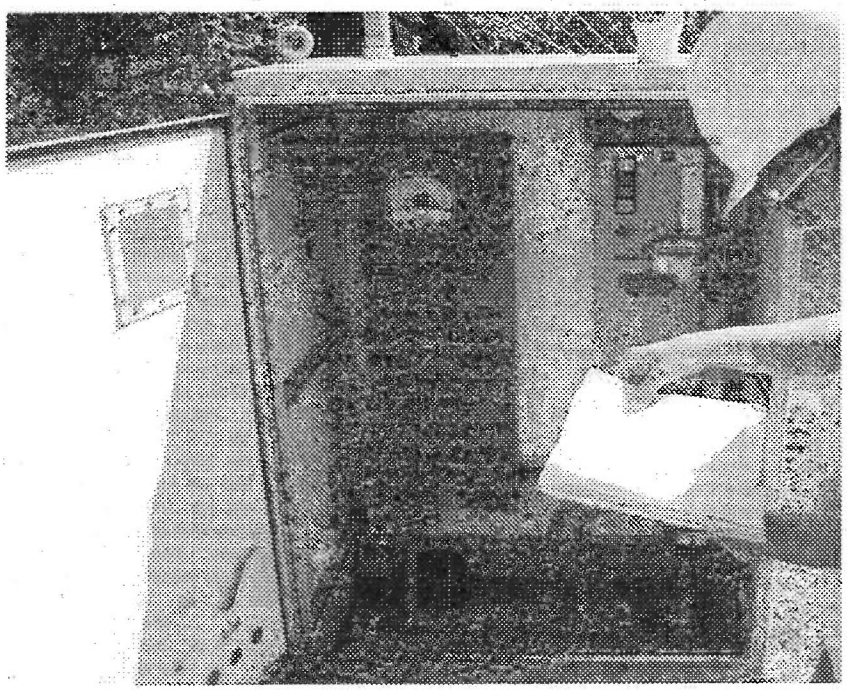
Photograph 11: NHOU Aeration Tower



Photograph 12: NHOU Monitoring Well NH-19



Photograph 13: NHOU Monitoring Well NH-21



Photograph 14: NHOU Extraction Well Control Panel

5.0 Progress Since the Last Review

5.1 Previous Protectiveness Statements

5.1.1 North Hollywood

The protectiveness statement for the NHOU identified in the *Final Third Five-Year Review Report for North Hollywood Operable Unit San Fernando Valley (Area 1) Superfund Site* is as follows (USEPA, 2003):

> *The interim remedy at the NHOU currently protects human health and the environment because the concentration of TCE and PCE in treated groundwater is less than ROD selected clean-up goals and no other potential COCs currently exceed health-based standards. However, in order for the remedy to be protective of human health and the environment in the long-term, VOC plume containment should be addressed to control potential exposure pathways to ensure continued protectiveness. In addition, there should be ongoing reporting of extraction well concentrations of total chromium, hexavalent chromium, and perchlorate, COCs not previously identified in the ROD. Additional sampling and reporting is recommended. In order to provide continued protectiveness in the long-term, periodic review of emergent chemical concentrations and their associated MCLs or risk-based treatment standards should be made.*
>
> *A protectiveness determination for Area 1 as a whole cannot be made at this time until the five-year review report is complete for the Burbank OU. It is expected that this will be completed during 2004. This site-wide review will address the long-term protectiveness issues noted above.*

5.1.2 Burbank Operable Unit

The protectiveness statement for the BOU identified in the *Final First Five-Year Review Report for Burbank Operable Unit San Fernando Valley (Area 1) Superfund Site* is as follows (USEPA, 2004):

> *The assessment of this five-year review found that the interim remedy for the BOU was constructed in accordance with the ROD and ESDs and is currently protective of human health and the environment; the concentrations of TCE and PCE in BOU treatment system effluent are less than regulatory cleanup goals. Additionally, the concentration of nitrate in treated groundwater after the blending point is less than regulatory cleanup goals and no other potential constituents of concern currently exceed health-based standards in water from the blendpoint. While current air emissions may be within USEPA's risk range of 10^{-4} to 10^{-6}, an air emissions evaluation will need to be conducted in order to determine air protectiveness at the BOU. The findings of this review and the NHOU five-year review, which was completed in September 2003, both concluded that VOC plume containment should be evaluated and addressed to ensure continued protectiveness. In addition, the City of Burbank should continue ongoing sampling and reporting of extraction well*

concentrations of emerging contaminants, such as 1,2,3-TCP (weekly), total chromium (monthly), hexavalent chromium, 1,4-dioxane (weekly), and perchlorate (annually)—COCs not previously identified for treatment in USEPA decision documents. In order to provide continued protectiveness in the long term, periodic review of emergent chemical concentrations and their associated maximum contaminant levels or risk-based treatment standards should be performed.

5.2 Status of Issues and Recommendations

This section provides a summary of the status of recommendations identified in the previous five-year reviews for the NHOU (2003) and the BOU (2004), and results of the implemented actions for each OU. 5.2.1 North Hollywood Operable Unit

Issues identified during the previous five-year review process relate to groundwater containment concerns, management of the treatment system, and health and safety issues for workers at the groundwater pump and treat system.

Issue	Recommendation	Status
The treatment system has never operated at the 2,000 gpm capacity. Complete containment of the TCE groundwater plume is in question.	Evaluate TCE plume capture and implement actions to increase capture, if necessary.	EPA issued a Draft Focused Feasibility Study in February 2008 and plans to complete it in Fall 2008. The ensuing decision document will address containment issues and is scheduled for 2009.
NHOU treatment system operations and maintenance issues are overly complex.	Expand the responsibilities of the current LADWP project manager to include all aspects of the treatment system	Since 2003, coordination has been centralized at LADWP and roles/responsibilities are defined.
The material presented in quarterly reports from LADWP is not comprehensive in terms of remedy performance.	List of specific air quality data, water monitoring data, and maintenance reporting suggested to improve reports.	Since 2003, LADWP is presenting air monitoring and water quality data in the quarterly reports and the reports are more comprehensive.
GAC change-out occurred after air quality exceeded SCAQMD limits during 1998 and 1999 due to frequency of sampling.	Revise air sampling plan.	In 2003, modifications to sampling plan were made. There have been no air emission exceedences of SCAQMD permit requirements since the last five-year review period.
There is no vent low to the ground in the chlorine storage building, which is a health and safety issue.	Install a vent low to the ground.	Site inspections records indicate that an exhaust vent was installed close to the ground in the storage building in 2003.
The site inspection noted that there is excessive white particulate dust in the blower	Investigate what the white particulate dust is and whether it impacts H&S or the	The 2003 investigation indicates that the dust consisted of perlite, a nuisance

Issue	Recommendation	Status
room. This particulate could be a health and safety issue for site workers. Source of particulate is from the adjacent property.	operation of the facility.	dust. Results of monitoring indicated that levels were well below occupational safety and health standards.
During the Site visit, it was noted that the flow meters for wells 4, 6, and 8 were broken.	Repair the flow meters.	LADWP completed all necessary repairs to the three flow meters during September 2003.

5.2.1 Burbank Operable Unit

Issues identified during the previous BOU five-year review process primarily related to the extraction and treatment system's inability to consistently operate at the design flow rate of 9,000 gpm, and increased periodic evaluation of the VOC capture zone. This section summarizes the status of the issues and recommendations for improvement that were identified in the previous five-year review.

Issue	Recommendation	Status
The treatment system has rarely operated at 9,000-gallons per minute (gpm).	1) Complete the Performance Attainment Study; 2) evaluate and modify, where needed, O&M practices that influence system downtime; 3) periodically evaluate well field mechanics.	In May 2006, the Performance Attainment Study was completed. Issues identified in the report are: 1) changed aquifer conditions; 2) reliability or maintenance downtime; 3) limitations on flow caused by cooling shroud; and 4) pipeline obstruction. Further assessment is continuing as part of ongoing optimization activities.
Emergence of new COCs such as chromium and 1,2,3-TCP.	1) Evaluate and address 1,2,3-TCP breakthrough; 2) revise chromium and 1,2,3-TCP blending and pumping plans.	1) In 2005, modifications to backwash procedures were made to address breakthrough which decreased the number of breakthroughs. More O&M modifications are being made; 2) pumping has been modified and the pumping plans are being revised.
Increasing concentrations of VOCs in the B-zone.	1) Evaluate vertical migration; 2) ensure all well packers are operating as intended.	1) Annual groundwater vertical migration is evaluated and the data find no emerging trends; 2) an evaluation of the well packers was completed in Feb 2005 and it found them to be functional.

Issue	Recommendation	Status
Hydraulic influence of pumping of nearby production well fields affects the ability of the BOU well field to capture plume.	1) The Watermaster should provide annual updates to EPA; 2) an institutional control should be put in place to ensure that planned groundwater activities in the vicinity do not decrease the performance of the well field.	1) The Watermaster has provided annual updates of the activities within the SFV, including the BOU hydraulic area of influence; 2) the City of Burbank has no plans to install or operate groundwater extraction wells other than the existing BOU remedy extraction wells.
Recent air emissions data measured at VPGAC units exceed the SCAQMD substantive requirements.	1) Reassess risk; 2) increase air monitoring frequency.	1) New risk assessment indicates that the air emissions meet the SCAQMD substantive requirements; 2) air monitoring was increased to every 8 days.
NPDES sampling is not comprehensive as it does not include handling and disposal of backwash water.	1) Analyze backwash samples; 2) modify and document backwash water handling procedures.	1) There has been one backwash since the last FYR. Samples were collected and analyzed; 2) backwash water handling procedures have been modified.

6.0 Five-year Review Findings

The following sections discuss findings from this five-year review.

6.1 Five-year Review Process

The five-year review consisted of: a review of relevant documents (Appendix B); a regulatory review; a site inspection, and interviews with staff involved in O&M at the treatment systems, staff at CDPH, and the Assistant to the ULARA Watermaster.

6.2 Community Notification and Involvement

A public notice indicating the ongoing five-year review and its anticipated completion date was published in *Los Angeles Daily News* newspaper on September 10, 2008. The five-year review report will be placed in the site information repositories.

6.3 Document Review

As a part of the five-year review process, a brief review of documents related to site activities was conducted. The documents chosen for review primarily focused on site activities since 2004, but ranged in publication date from 1987 to the present. Appendix B provides a list of the documents reviewed as part of this report.

6.4 Data Review

To evaluate whether the interim remedies at the NHOU and BOU are meeting the RAOs and remain protective of human health and the environment, data regarding groundwater quality trends throughout Area 1, focusing on the principal contaminants of concern, plume containment achieved by NHOU and BOU extraction wells, and NHOU and BOU groundwater treatment system performance, were reviewed. A detailed discussion of the data review analysis can be found in Appendix B, Data Review.

6.4.1 Area 1 Groundwater Quality

The contaminants of primary concern in Area 1 are TCE, PCE, and chromium. Nitrate is also present in groundwater in excess of the MCL as a result of past agricultural and sewage disposal practices in the SFV, but is not targeted for treatment as part of the NHOU or BOU interim remedies. When elevated nitrate concentrations are present in groundwater produced by extraction wells or municipal water supply wells in Area 1, they are mitigated by blending with imported water from other sources. Blending, disinfection, and other routine municipal water treatment and delivery operations in Area 1 are performed by the Cities of Los Angeles or Burbank.

The TCE and PCE plumes in Area 1 have fluctuated in extent and concentration during the review period, but most have not exhibited significant increasing or decreasing trends that are likely to impact operation of the NHOU or BOU groundwater extraction and treatment systems. The fluctuations may have resulted from changing groundwater levels, migration of plumes, or changes in geochemical conditions in the aquifer or they may reflect the incorporation of additional (or more recent) water quality data. Other VOCs present in the TCE and PCE plumes appear to be following a similar trend. The exception to the pattern of TCE and PCE concentrations appears at certain LADWP water supply wells located north to northwest of the NHOU remedy. The TCE and PCE concentrations have increased in certain LADWP water supply wells at LADWP's Rinaldi-Toluca and North Hollywood West well fields) during 2007 and 2008, suggesting an increasing trend in this area.

Chromium occurs naturally in groundwater throughout Area 1 at low concentrations, typically less than 5 µg/L. Due to geochemical conditions in Area 1, chromium concentrations in groundwater decrease rapidly with depth and are infrequently detected above the MCL at depths greater than 100 feet below the water table. With one significant exception, the chromium plumes (which are dominated by hexavalent chromium) have fluctuated in extent and concentration during the review period, but have not exhibited consistent increasing or decreasing trends. Some of the apparent changes over time are a result of improved plume delineation, as more wells in the NHOU were sampled for chromium during the FFS.

The data suggest an exception to the general chromium trend in the NHOU occurs at the Honeywell facility. The shallow zone chromium plume emanating from the Honeywell facility in the NHOU substantially increased in size and concentration in late 2006 and early 2007, coincident with a rise in groundwater levels in the NHOU during this period. This plume is smaller than, and surrounded by, the VOC plume emanating from the Honeywell facility, and is currently hydraulically contained by the NHOU extraction wells. Chromium concentrations have stabilized or declined slightly at most wells near the Honeywell facility since early 2007. However, the NHOU treatment system does not include a process for chromium treatment. High chromium concentrations at well NHE-2 resulted in that well being shut down from February 2007 until September 2008, when Honeywell installed temporary VOC wellhead treatment and obtained a permit to discharge the treated groundwater to the Los Angeles sewer system. In response to the high chromium concentrations at well NHE-2, options for adding a chromium treatment process to the NHOU treatment system are included in the NHOU FFS (EPA, 2008).

Of the emerging contaminants, 1,2,3-TCP and 1,4-dioxane are the most frequently detected at concentrations exceeding the CDPH notification levels in Area 1. Although historical data are limited, based on available data, concentrations of these emerging contaminants do not exhibit a general increasing trend throughout Area 1. The concentration in the combined influent from all of the NHOU extraction wells is calculated to be below the notification level. As noted previously, groundwater extracted by well NHE-2, where 1,4-dioxane concentrations have recently exceeded the notification level, is currently discharged to the Los Angeles sewer system. Wellhead treatment for 1,4-dioxane is expected to be implemented at well NHE-2, if necessary, before the well is reconnected to the NHOU treatment system. The VOC treatment systems being considered in the NHOU FFS would treat influent groundwater for 1,2,3-TCP and 1,4-dioxane, eliminating the potential need for

wellhead treatment of these contaminants. In the BOU, 1,2,3-TCP is effectively treated by the existing LPGAC treatment process for VOCs, and is not anticipated to present further operational issues for the treatment plant.

6.4.2 Groundwater Extraction and Treatment Systems

NHOU

The NHOU extraction and treatment system has operated at a long-term average pumping rate of approximately 830 gpm, with average influent TCE and PCE concentrations of 61 µg/L and 9 µg/L, respectively, during the review period. Carbon tetrachloride, another VOC, was also frequently detected in the treatment system influent during the review period at an average concentration of 0.8 µg/L (the MCL for carbon tetrachloride is 0.5 µg/L). Following treatment, the discharged groundwater has consistently been well below the MCLs for these contaminants, ranging from non-detect to 1.7 µg/L for TCE, and typically non-detect for PCE and carbon tetrachloride. The system is currently operating within its design parameters for removal of VOC contamination.

Chromium is not removed by the VOC treatment process currently in place at the NHOU; total and hexavalent chromium concentrations have been detected in the treatment plant effluent ranging from non-detect to a maximum of 35 µg/L. Extraction well NHE-2 was producing the highest concentrations of chromium in the influent to the treatment plant. As noted previously in this report, extraction well NHE-2 was shut down from February 2007 to September 2008 due to chromium concentrations in excess of 200 µg/L, and water from this well is currently being discharged to the Los Angeles sewer system instead of the NHOU treatment system.

Of the emerging contaminants of concern, 1,2,3-TCP has occasionally been detected at NHOU extraction wells NHE-2 and NHE-5 at concentrations above the notification level, but it has not been detected in the treatment plant influent or effluent. 1,4-Dioxane has consistently been detected at concentrations above the notification level (3 µg/L) at extraction well NHE-2. However, 1,2,3-TCP and 1,4-dioxane concentrations at the extraction wells have not shown a discernible increasing trend during the review period, and the concentrations in the combined influent from all of the NHOU extraction wells are calculated to be below the notification levels. Wellhead treatment for 1,4-dioxane will be implemented at well NHE-2, if necessary, before the well is reconnected to the NHOU treatment system. Furthermore, the VOC treatment systems being considered in the NHOU FFS would remove 1,2,3-TCP and 1,4-dioxane.

Approximately 1,755 million gallons of groundwater have been treated at NHOU since the previous five-year review, resulting in the removal from the aquifer of approximately 1,244 pounds of VOCs.

BOU

The average combined pumping rate for the BOU extraction wells during the review period has been approximately 5,700 gpm, with average BOU extraction well TCE and PCE concentrations of 114 µg/L and 203 µg/L, respectively. The treated groundwater has consistently been well below the MCLs for these contaminants. The treatment system is operating within its design parameters for VOC removal.

Total and hexavalent chromium concentrations at the BOU extraction wells do not currently indicate significant increasing or decreasing trends that would be expected to further impact treatment system operations in the future. However, similar to the NHOU, the BOU treatment system does not include a process for chromium removal. If the CDPH promulgates an MCL for hexavalent chromium that is much lower than the current MCL for total chromium, mitigation measures may be required. Chromium concentrations and trends at the BOU extraction wells will continue to be monitored.

Of the emerging contaminants, 1,2,3-TCP has frequently been detected at the BOU extraction wells at concentrations above the notification level. However, 1,2,3-TCP is effectively removed by the LPGAC polishing treatment process for VOCs at the BOU treatment plant. Therefore, 1,2,3-TCP is not anticipated to present significant operational issues for the treatment plant or affect the protectiveness of the interim remedy in the future. Periodic sampling does not indicate that elevated 1,4-dioxane concentrations are present in the combined influent to the BOU treatment plant. However, 1,4-dioxane is not removed by the BOU treatment processes and is commonly detected in groundwater in Area 1 at concentrations that exceed the notification level.. Monitoring will continue for these constituents.

The BOU extraction and treatment system was either partially or completely shut down for 5 months in early 2008 (February through July) for planned maintenance and unplanned repairs. The BOU treatment system has subsequently been repaired and maintenance issues addressed to prevent a similar shutdown in the future.

Approximately 11,931 million gallons of groundwater have been treated at the BOU since the previous five-year review, resulting in the removal from the aquifer of approximately 32,480 pounds of VOCs.

6.4.3 Containment of Contaminated Groundwater

The primary objective for the NHOU groundwater extraction and treatment system is to inhibit the migration of contamination in the North Hollywood area. Similarly, the primary objective for the BOU groundwater extraction and treatment system is to partially control the movement and spread of ground water contaminants in the BOU area, while contributing to aquifer restoration at the SFV Area 1 Site.

The contaminants of concern at the time the interim remedies were designed were primarily VOCs, particularly TCE and PCE. Neither the NHOU nor BOU system was designed to treat chromium-contaminated groundwater. The locations for NHOU and BOU extraction well fields were selected to intercept and treat the known high-concentration cores of TCE and PCE plumes detected in Area 1. Although the extraction wells withdraw water from both the Shallow and the Deeper Zones, most groundwater is extracted from the Shallow Zone, where contaminant concentrations are highest. Groundwater flow modeling of the NHOU and BOU conducted in 2007 and 2008, respectively, evaluated the potential impacts temporary shutdowns of extraction wells have had on groundwater plume containment.

NHOU

Groundwater flow modeling for the NHOU FFS indicates that when LADWP's production well fields near North Hollywood are operating at average pumping rates, the seven active

NHOU extraction wells (NHE-2 through NHE-8) hydraulically contain most of the high-concentration core (greater than 50 µg/L) of the Shallow Zone VOC plumes emanating from the Honeywell facility and from the westernmost part of the Burbank Airport. These two plumes, where VOC concentrations in excess of 1,000 µg/L were detected as recently as 2007, were the targets for hydraulic containment when the NHOU extraction and treatment system was designed in the 1980s (only one of the NHOU extraction wells, NHE-6 is screened through a significant portion of the deeper aquifer zone underlying the NHOU). Therefore, the system is considered to be meeting the objective of inhibiting migration of contamination in the North Hollywood area, although it has not completely contained all contaminant migration, particularly in the Deeper Zone.

Several factors have prevented the NHOU extraction and treatment system from completely inhibiting contaminant migration, as follows:

1. As noted previously, the NHOU extraction well field was designed primarily to contain the high concentration core of two Shallow Zone VOC plumes. By the time the extraction wells began operation in late 1989, some VOC contamination in NHOU groundwater had already migrated laterally or vertically beyond the zone of hydraulic control that the extraction wells were designed to achieve.

2. During and soon after construction of the NHOU extraction wells and treatment system, LADWP completed construction of the Rinaldi-Toluca water-supply well field in North Hollywood and the Tujunga well field immediately to the north, in Pacoima. The production wells in these well fields withdraw groundwater primarily from deeper aquifer zones (below the Shallow Zone). Operation of these two new water-supply well fields contributes to regional groundwater level drawdown that extends to the NHOU extraction wells.

3. The system has experienced operation and maintenance issues that have limited its performance, further diminishing the long-term average pumping rate and the extent of hydraulic containment achieved by the NHOU extraction wells.

4. Detection of high concentrations of chromium at extraction well NHE-2 caused this well to be shut down through much of 2007 and 2008. Well NHE-2 is the closest extraction well to the high concentration VOC and chromium plume emanating from the Honeywell facility and, therefore, its operation is important for limiting contaminant migration in the NHOU.

The NHOU extraction and treatment system was designed to treat 2,000 gallons per minute (gpm) of groundwater but, for the reasons noted above, has averaged approximately 830 gpm during the review period (the long-term average pumping rate from 1989 to the present is approximately 820 gpm). Although the NHOU extraction wells typically achieve containment of most of the high-concentration VOC and chromium contamination in the Shallow Zone of the NHOU, and inhibit the migration of contamination, they do not achieve complete hydraulic containment of contaminated groundwater, particularly in the Deeper Zone. Therefore, some migration of groundwater has occurred in the NHOU from areas with high levels of TCE, PCE, and chromium contamination (50 µg/L or greater) to areas of lower levels or no contamination.

Prior to implementation of the NHOU interim remedy, migration of contaminated groundwater in the North Hollywood area resulted in contamination of numerous LADWP production wells. LADWP has voluntarily reduced its use of and has shut down water supply wells in areas where high concentrations of contaminants have migrated away from the NHOU system as an interim measure to ensure protection of human health. However, the aquifer underlying the NHOU is an important source of water supply for LADWP, and shutdowns or use limitations at water supply wells can not continue indefinitely without seriously impacting water supply options for the LADWP and other groundwater users in the SFV. Furthermore, FFS modeling results indicate that if LADWP's North-Hollywood-area production well fields are pumped at maximum rates for an extended period, the NHOU extraction wells will not be able to contain the high-concentration contaminant plumes. In response to these issues, EPA conducted the NHOU FFS and plans a new remedy decision for remedy improvements in 2009 to enhance plume capture and add chromium treatment.

BOU

The BOU extraction system has achieved partial control of the movement and spread of groundwater contaminants in the BOU area, while contributing to aquifer restoration in Area 1. The average combined pumping rate for the BOU extraction wells is approximately 5,700 gpm. Similar to the NHOU extraction wells, the BOU extraction wells withdraw groundwater primarily from the Shallow Zone. Modeling results indicate that the area of hydraulic containment achieved by the BOU extraction wells in the Shallow Zone extends southward to the boundary between Area 1 and Area 2 of the SFV Superfund Site, and includes much of the Burbank Airport area. The capture zone for the BOU extraction wells also extends vertically into the Deeper Zone, although the model-forecast aerial extent of hydraulic containment in this zone is not as large as in the Shallow Zone. Groundwater contamination escaping capture by the BOU extraction wells migrates southeastward and is captured by the Glendale North and South Operable Unit extraction wells.

The BOU extraction and treatment system was either partially or completely shut down for 6 months in 2008 (February through August) for planned maintenance and unplanned repairs. Groundwater modeling indicated that hydraulic containment of the VOC plume in BOU was diminished by approximately 3% during this period of intermittent operation. The BOU treatment system has subsequently been repaired and system changes have been made to address the VPGAC O&M issues that resulted in shut downs during this five-year review period.

6.5 Site Inspection

Site inspections at the NHOU and the BOU treatment facilities were conducted on April 24, 2008 and April 25, 2008.

Don Stone, Site Manager for the NHOU, guided the inspection team on its tour of the treatment system and the accessible extraction wells. The fence gate to the pump station was locked at the time of inspection. Signs are displayed and an alarm system is maintained in the pump station to prevent unauthorized entry to the station. The onsite treatment system, including the air stripper, VPGAC units, and filters, appeared to be in good

condition. In general, the treatment system and extraction wells appeared to be in good condition, and there were no indications of damage or disturbance to the wells. The Site Manager indicated that, since groundwater levels in the valley have declined, it has been difficult for pumps to extract water from the wells and that the wells should be installed at greater depths. Mr. Stone added that there are also occasional problems with flow meters and the wells are not operating at full capacity.

Albert Lopez, Plant Superintendent for the BOU, guided the inspection of the treatment system and the accessible extraction wells. The fence and gate to the pump station was locked at the time of inspection. An operator is onsite 24 hours per day and cameras have been installed to prevent unauthorized entry to the station. The onsite treatment system, including filters used for discharge water and carbon absorption units, appeared to be in good condition. One of the air strippers was affected by fire and was not in use at the time of the inspection. Sampling ports were properly marked and functional, equipment was properly labeled, and a current maintenance log was on display. The treatment building and the control room are in good condition. Chemicals and spare equipment were properly stored. Monitoring wells were properly secured and functioning. Mr. Lopez indicated that there is inadequacy during wellhead testing (efficiency test) and needs clarification on how to test efficiency on one well. Mr. Lopez also mentioned that VPGAC screen failure was one of the O&M issues because carbon was traveling to other unit processes. The VPGAC retrofit which addresses these issues, was completed in August 2008.

The site inspection checklist is incorporated in Appendix C of this five-year review report. Select site photographs are located in Appendix D.

6.6 Interviews

As part of the five-year review process, technical interviews were conducted with personnel having knowledge of and/or concerns with the NHOU and BOU.

6.6.1 Technical Interviews

NHOU

The treatment system is currently operated by LADWP, which conducts daily site activities including treatment system operations, groundwater monitoring, site inspections, routine maintenance, etc. Robert McKinney is the LADWP groundwater group manager. According to Mr. McKinney, the overall impression of the remedial action work being conducted at the site is that the treatment facility is not sufficient to capture the plume and prevent migration of the contaminants. He indicated that the remedy is not functioning as expected, and the system is undersized for what needs to be accomplished. He recommends expanding the remedial action work to increase treatment capacity and increase the number of extraction wells to contain and capture contamination. In addition, he stated that this treatment should also address the emerging chemical contamination problems. LADWP is not aware of any community concerns at the site.

Mark Mackowski, the ULARA Watermaster, also indicated that the NHOU treatment facility is not functioning as expected due to insufficient plume containment. Mr.

Mackowski suggested a re-evaluation of the treatment system to address plume containment and also indicated that the wells are not placed in optimal locations.

Please refer to the completed interview forms provided in Appendix C for detailed interview discussions.

Jeff O'Keefe with CDPH indicated that his interest in the remedial action work is concerned only with treated water being used for potable use and, hence, his impression of the remedial work conducted at the site is good, except for high concentrations of hexavalent chromium and VOCs in the aquifer and at extraction well NHE2.

Copies of the completed interview forms are provided in Appendix C.

BOU

Gene Matsushita and Linda Gertler of Lockheed Martin represent a responsible party for the remedial activities being conducted at the BOU in the SFV. The treatment system is currently operated by the City of Burbank and its contractor Southwest Water Company. Albert Lopez (Operations Superintendent from City of Burbank) and Eric Mills (plant operator with Southwest Water) are responsible for conducting daily site activities, including treatment system operations, groundwater monitoring, site inspections, routine maintenance, etc.

According to Lockheed Martin's representatives and the plant operator, the overall impression of the remedial action work being conducted at the site is that the treatment system has performed satisfactorily for the project. Lockheed Martin recommends developing a long-term capital improvement plan and a preventive maintenance plan for the facility so that projects can be designed and implemented in a reasonable time frame prior to the onset of any critical operational problems. Lockheed Martin and Southwest Water Company are not aware of any community concerns at the site.

Mark Mackowski indicated that the overall impression of the remedial action work at BOU is moderate to good, with the exception that the plant has never produced to its full design capacity of 9,000 gpm for a sustained period of time. Mr. Mackowski suggested implementation of the packer removal test work plan.

Please refer to the completed interview forms provided in Appendix C for detailed interview discussions.

David Lozano with CDPH indicated that the remedial action work conducted at the site and the remedy is performing as expected. Mr. Lozano receives monthly operation reports and is satisfied with the reports. CDPH is not aware of any ongoing community concerns or issues regarding the site.

Copies of the completed interview forms are provided in Appendix C.

7.0 Technical Assessment

This section evaluates the implementation of the remedy at each OU, whether each remedy is performing as intended, and whether the remedies are protective of human health and the environment.

7.1 Question A: Is the remedy functioning as intended by the decision documents?

7.1.2 North Hollywood Operable Unit

Remedial Action Performance and Operations and Maintenance

All remedial actions pertaining to groundwater, as mandated in the 1987 ROD, have been implemented. The NHOU groundwater treatment facility has treated groundwater to concentrations below MCLs for all COCs. The NHOU groundwater treatment facility has met the substantive requirements of the CDPH and SCAQMD permits.

Although the NHOU extraction wells typically achieve containment of most of the high-concentration VOC and chromium contamination in the Shallow Zone of the NHOU, and by doing so inhibit the migration of contamination, they do not achieve complete hydraulic containment of contaminated groundwater, particularly in the Deeper Zone. Therefore, some migration of groundwater has occurred in the NHOU from areas with high levels of TCE, PCE, and chromium contamination (50 µg/L or greater) to areas of lower levels or no contamination. Furthermore, FFS modeling results indicate that if LADWP's North-Hollywood-area production well fields are pumped at maximum rates for an extended period, the NHOU extraction wells will not be able to contain the high-concentration contaminant plumes. In response to these issues, EPA conducted the NHOU FFS and plans to issue a new remedy decision in 2009 to enhance plume capture and add treatment for chromium.

Opportunities for Optimization

USEPA has been identifying opportunities for optimization by initiating a FFS for evaluating remedial alternatives and by conducting a chromium evaluation study.

Selection and implementation of the second interim remedy is intended to address the continued presence of significant VOC contamination in groundwater, as well as the need for treatment of chromium and other emerging contaminants.

7.1.3 Burbank Operable Unit

Remedial Action Performance

All remedial actions pertaining to groundwater, as mandated in the 1989 ROD, 1991 ESD#1, and 1997 ESD#2, have been implemented. The BOU groundwater treatment facility has provided water at the point of delivery that was below MCLs for all COCs and has achieved

the treated water quality requirements specified in ESD #1 since startup in 1996. Generally, the BOU groundwater treatment facility has met the substantive requirements of the DHS, NPDES, and SCAQMD permits.

The BOU system effectively limited contaminant migration and treated groundwater contamination to acceptable levels during the review period except (1) during a six-week period of entire plant shut-down following a fire at the treatment plant, (2) during a five-month period in 2008 (February through August) when it operated at half capacity during planned maintenance modifications. The system has been repaired and maintenance issues are being addressed to prevent similar shutdowns in the future.

Operations and Maintenance

Although operational loss in efficiency has been reported during this review period as a result of O&M problems, including LPGAC bed change outs (1,2,3-TCP breakthrough), VPGAC screen replacement, and modified extraction well pumping (due to high concentrations of chromium), the objectives of the interim remedy, which include partial VOC plume containment, VOC mass removal, and treatment of extracted groundwater to concentrations less than the respective MCLs, have been achieved.

Opportunities for Optimization

The VPGAC modification project has recently been completed, so the City is reinitiating an optimization project that will evaluate ways to optimize the O&M of the BOU treatment facility. Other than this planned optimization, there are no other identified opportunities for optimization.

7.1.4 Institutional Controls for BHOU and NHOU

There are no specifically tailored institutional control (IC) instruments in place within Area 1. However, the governmental controls in place at the site are effective in preventing exposure to contaminated groundwater. EPA is working with the City of Los Angeles to augment the existing governmental controls with a groundwater resources management plan to ensure that groundwater extraction from municipal well fields does not interfere with the plume containment achieved by the NHOU remedy. The primary governmental control is the 1979 Final Judgment in *Los Angeles v. San Fernando* , (Superior Court Case No. 650079) in the case titled *Los Angeles v. San Fernando (LA v. San Fernando)*. The 1979 final judgment in *LA v. San Fernando* upheld the Pueblo Right of the City of Los Angeles, to all groundwater in the ULARA Basin from precipitation within the ULARA and all surface and groundwater flows from the Sylmar and Verdugo Basins. 14 Cal. 3d 199 (1975). *LA v. San Fernando* also established the water rights of the cities of Los Angeles, Glendale and Burbank to all water imported from outside the Basin and either spread or delivered within the Basin. The Final Judgment created the entity known as "Watermaster" with full authority to administer the adjudication, under the auspices of the Superior Court.

Under the final judgment in *LA v. San Fernando*, with the exception of certain minor historical water rights holders, only the cities of Los Angeles, Burbank and Glendale are permitted to extract groundwater from the Basin. Each of these municipalities administers a public water system, which is regulated by the California Department of Public Health.

Governmental controls on the use of groundwater as drinking water include EPA- and State of California-promulgated maximum contaminant levels ("MCLs") and California State Action Levels that require drinking water standards to be met before delivery of the treated water to the potable water supply. These drinking water controls and the Watermaster's authority to regulate and allocate water resources eliminate unregulated use of area groundwater; therefore, the interim remedy is currently protective of human health.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy selection still valid?

A review of the existing ARARs indicates that there have been no significant changes or updates that would impact the protectiveness of the remedy.

There were two exposure assumptions used in the Baseline Risk Assessment completed in 1989 for the Burbank OU ROD:

- Potential ingestion exposure of untreated groundwater if used for drinking water, and
- Potential inhalation exposure to air emissions from the proposed air stripper at the treatment facility.

There has been no change to the exposure assumptions.

There have been a number of changes to the toxicity values for specific constituents of concern in groundwater since the Baseline Risk Assessment was completed. Since then, EPA initiated a re-assessment of PCE and TCE toxicity; these assessments are currently under review. In the interim, EPA is using toxicity values developed by Cal/EPA because they meet the criteria outlined in Superfund's policy on provisional peer-reviewed toxicity values. The Cal/EPA toxicity value is reflected in EPA's 2008 Regional Screening Level (RSL) table. The RSL table was developed using the latest toxicity values, default exposure assumptions and physical and chemical properties and is consistent with the OSWER chemical toxicity hierarchy. For PCE, the RSL table has a tap water screening level of 0.11 µg/L. This corresponds to an increased cancer risk of one in one million. The PCE concentration equivalent to the upper end of EPA's risk range (one in ten thousand excess lifetime cancers) would be 11 µg/L. The Federal MCL for PCE remains 5 µg/L, which is within EPA's risk range. The same is true for TCE, for which the ROD selected the State Action Level of 4 µg/L and the concentrations at either end of EPA's risk range using the Cal/EPA toxicity values are 1.7 µg/L to 170 µg/L.

The 1989 Baseline Risk Assessment analyzed risk for various volatile organic compounds. Since then, several new contaminants have been detected at North Hollywood and Burbank groundwater. Most notably is the hexavalent chromium found at the Honeywell site and at NHOU remedy extraction well, NHE-2. The current Federal MCL for total chromium is 100 ppb and the current State MCL is 50 ppb. The 2008 Regional Screening Level (RSL) table relies on EPA's IRIS toxicity information to set a screening level for tap water at 110 ppb based on a non cancer risk from ingestion. However, since there is no exposure to untreated

water, these changes do not affect the protectiveness of the remedy. At the BOU and NHOU treatment facilities, the chromium concentrations at the combined plant effluent are 5 ppb (BOU) and 30 ppb (NHOU) or lower, which are well below EPA's hazard risk.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

7.3.1 North Hollywood Operable Unit

Groundwater elevations have declined significantly in response to LADWP's use of large capacity water-supply well fields that were installed in the vicinity of the NHOU after the NHOU remedy began operating. This has resulted in plume migration in the NHOU.

Chromium concentrations in samples collected from the Honeywell facility monitoring wells suggest that there is a significant source of chromium at the Honeywell site. During the current five-year review period, total and hexavalent chromium concentrations greater than 10,000 µg/L were detected at several of Honeywell's onsite monitoring wells upgradient from NHOU extraction well NHE-2. Under an order issued by the RWQCB, Honeywell is constructing an in-situ chromium treatment system, which is expected to begin operating in fall 2008.

Emerging contaminants (specifically 1,2,3-TCP and 1,4-dioxane) appear to be limited in lateral extent and concentrations in the NHOU; however, they are mobile and persistent. Concentrations of some of these emerging contaminants have exceeded CDPH notification levels at a limited number of monitoring locations and at NHOU extraction well NHE-2.

7.3.2 Burbank Operable Unit

The BOU has achieved partial control of the movement and spread of groundwater contaminants in the BOU area, while contributing to aquifer restoration in Area 1.

Emerging contaminants are present in BOU extraction wells at concentrations greater than MCLs or notification levels including total chromium and 1,2,3-TCP. Hexavalent chromium is also present in the BOU groundwater. The BOU treatment system is currently meeting the City of Burbank's voluntary limit for hexavalent chromium in drinking water that is served to the public of 5 parts per billion, and the notification level for 1,2,3-TCP.

7.4 Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy for the NHOU is not functioning as intended by the 1987 ROD. Although the existing extraction and treatment system is decreasing TCE and PCE concentrations in water to below MCLs and has removed significant VOC mass from the NHOU, migration of VOCs has demonstrated that the VOC plume is not being adequately contained. In addition, elevated concentrations of chromium resulted in an extended shutdown of extraction well NHE-2 that serves an important plume containment function. EPA is conducting a focused feasibility study and plans a decision on a new remedy in 2009 to enhance plume capture and add chromium treatment.

According to the data reviewed, the site inspection, and the interviews, the remedy for the BOU is functioning as intended by the ROD. The lower than expected extracted volumes at the BOU are currently being evaluated and addressed by the City of Burbank and EPA. There have been no significant changes in the toxicity factors of the COCs that were used in the baseline risk assessment. The presence of emerging contaminants, including total chromium, hexavalent chromium, 1,2,3-TCP, and 1,4-dioxane, are not currently affecting the protectiveness of the remedy.

8.0 Issues and Recommendations

Issues identified during the five-year review process for the NHOU and the BOU are presented in Table 8-1. The table provides recommendations for improvement at each OU and identifies the lead entity and milestone dates for implementation of the recommendations.

TABLE 8-1
ISSUES AND RECOMMENDATIONS FOR AREA 1
San Fernando Valley (Area 1) Superfund Site, Los Angeles County, California

Operable Unit	Issue	Recommendations and Follow-up Actions	Lead	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
NHOU	Some groundwater migration from areas with high levels of COCs to areas of lower levels or no contamination has occurred.	Complete FFS and select remedy improvements that will achieve more effective plume containment.	EPA	2009	N	Y
NHOU	The treatment facility at NHOU cannot treat chromium, which has affected operation of at least one NHOU remedy extraction well	Complete FFS and select remedy improvements that include chromium treatment as needed to assure treated water meets drinking water requirements.	EPA	2009	N	Y

9.0 Protectiveness Statement

The remedy for the NHOU is protective of human health and the environment in the short-term because there is no exposure to untreated groundwater. The treatment system effluent contaminant concentrations are less than their regulatory cleanup goals. There are governmental controls in place that prevent exposure to untreated groundwater. However, to be protective in the long term, the treatment facility needs to be modified to treat chromium and the extraction system needs modifications to improve plume containment. EPA is completing a focused feasibility study to evaluate options for expanding and improving the performance of the NHOU remedy and expects to propose and later select a second interim remedy in 2009 that will enhance plume capture and add chromium treatment.

The remedy at BOU is protective of human health and the environment because there is no exposure to untreated groundwater. The treatment system effluent contaminant concentrations are less than their regulatory cleanup goals. There are governmental controls in place that prevent exposure to untreated groundwater. The current extraction system is achieving the remedial action objective of partial containment.

10.0 Next Review

The next comprehensive five-year review for Area 1 (BOU and NHOU) will be completed on or before September 2013.

Exhibit 13

Los Angeles Regional Water Quality Control Board Order No. R4-2013-0063

April 18, 2013

Ms. Carolyn Monteith
Project Lead
Lockheed Martin Corporation
2950 North Hollywood Way, Suite 125
Burbank, California 91505-1072

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7012 1640 0000 6294 5137

SUBJECT: **REQUIREMENT FOR TECHNICAL REPORT PURSUANT TO CALIFORNIA WATER CODE SECTION 13267 ORDER NO. R4-2013-0063**

SITE: **FORMER LOCKHEED MARTIN CORPORATION PLANTS A-1 NORTH LOCATED AT 2555 NORTH HOLLYWOOD WAY, BURBANK, CALIFORNIA (FILE NO. 104.5152); B-1 LOCATED AT 1705 VICTORY PLACE, BURBANK CALIFORNIA (FILE NO. 104.0676); B-6 LOCATED AT 2801 NORTH HOLLYWOOD WAY, BURBANK, CALIFORNIA (FILE NO. 104.0674); AND C-1 LOCATED AT 10720 SHERMAN WAY, BURBANK, CALIFORNIA (FILE NO. 104.1343)**

Dear Ms. Monteith:

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is the state regulatory agency responsible for protecting water quality in the Los Angeles and Ventura Counties, pursuant to the Porter-Cologne Water Quality Control Act. To accomplish this, the Regional Board issues investigative and cleanup orders to parties responsible for discharges of waste at sites within the Lo Angeles Region.

The Regional Board is investigating potential sources for groundwater pollution within the United States Environmental Protection Agency (USEPA) San Fernando Valley Superfund Site (Superfund Site). It is known that groundwater within the Superfund Site, including the vicinity of the various former Lockheed Martin Corporation (Lockheed) facilities, is polluted with volatile organic compounds (VOCs) and heavy metals, particularly chromium.

Based on our review of recent report submittals and historical documents, Regional Board staff has concluded that several areas of concern remain at the various former Lockheed facilities.

Enclosed is a Regional Board Order for technical report requirements pursuant to California Water Code (CWC) Section 13267 Order No. R4-2013-0063 (Order). As the responsible party, you are required to comply with the Order to prepare and submit an Additional Site Investigation Workplan in order to evaluate the potential for soil and groundwater contamination at the various former Lockheed facilities.

Should you have any questions related to this project, please contact Mr. Larry Moore via telephone at (213) 576-6730 or via email at lmoore@waterboards.ca.gov.

Sincerely,

for Paula Rasmussen

Samuel Unger, P.E.
Executive Officer

Enclosure: California Water Code Section 13267 Order No. R4-2013-0063

cc: Ms. Lisa Hanusiak, USEPA Region IX
Mr. Leo Chan, City of Glendale
Mr. Bill Mace, City of Burbank Water Supply Department
Mr. Vahe Dabbaghian, Los Angeles Department of Water & Power
Mr. Milad Taghavi, Los Angeles Department of Water & Power
Mr. Richard Slade, ULARA Watermaster
Mr. Gene Matsushita, Lockheed Martin Corporation

Los Angeles Regional Water Quality Control Board

**ORDER TO PROVIDE A TECHNICAL REPORT FOR
ADDITIONAL SITE INVESTIGATION
CALIFORNIA WATER CODE SECTION 13267 ORDER NO. R4-2013-0063**

DIRECTED TO LOCKHEED MARTIN CORPORATION

FORMER LOCKHEED MARTIN CORPORATION PLANTS A-1 NORTH LOCATED AT 2555 NORTH HOLLYWOOD WAY, BURBANK, CALIFORNIA (FILE NO. 104.5152); B-1 LOCATED AT 1705 VICTORY PLACE, BURBANK CALIFORNIA (FILE NO. 104.0676); B-6 LOCATED AT 2801 NORTH HOLLYWOOD WAY, BURBANK, CALIFORNIA (FILE NO. 104.0674); AND C-1 LOCATED AT 10720 SHERMAN WAY, BURBANK, CALIFORNIA (FILE NO. 104.1343)

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) makes the following findings and issues this Order pursuant to California Water Code (CWC) section 13267.

1. The groundwater within the San Fernando Valley Groundwater Basin has been polluted by volatile organic compounds (VOCs) and heavy metals, specifically chromium. As a result of the groundwater pollution, the Regional Board is investigating potential sources of the pollution. The current investigation, led by the United States Environmental Protection Agency (USEPA) and the Regional Board, is focused on identifying individuals and companies responsible for the discharges of chromium in the region and holding them responsible for the investigation and remediation of the affected Site. The above referenced facilities are located in the investigative area.

2. Pursuant to CWC section 13304, the Regional Board issued Cleanup and Abatement Order (CAO) No. 1987-161, on December 17, 1987, to Lockheed Aeronautical Systems Company, a division of Lockheed Corporation (now Lockheed Martin Corporation, hereinafter referred to as Lockheed). The CAO directed Lockheed to clean up waste and abate the effects of discharges of waste to soil and groundwater contamination at various former Lockheed facilities in the city of Burbank and to determine the source and extent of the discharges. Lockheed conducted several phases of subsurface soil and groundwater investigations under the Regional Boards' order. Regional Board staff has reviewed the documents contained in the case file and determined that the previous investigations performed at the various former Lockheed facilities did not fully delineate the extent of the waste discharges in the subsurface.

3. CWC section 13267(b)(1) states, in part: In conducting an investigation the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharged or, discharging, or who proposes to discharge waste within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

4. Regional Board staff has reviewed the "Technical Report, Soils Data for Former Lockheed Martin Plants in Burbank," dated April 2012, as well as historical documents contained in our case files for the various former Lockheed facilities. Despite the amount of work already performed at the various former Lockheed facilities, Regional Board staff has concluded that several areas of concern still remain. Previously investigated areas of the former plants A-1 North, B-1, B-6, and C-1, as well as areas affected by historical industrial waste water discharge produced from the various former Lockheed facilities have not been fully delineated with respect to VOCs or hexavalent chromium. Therefore, Regional Board staff has determined that an additional subsurface investigation is required, as described in the enclosed Table – Areas of Concern and Requirements for Additional Investigation, in order to fully delineate the VOCs and the hexavalent chromium in the subsurface soil and groundwater.

5. This Order identifies Lockheed as the entity responsible for the suspected discharge of waste identified in paragraph two (2) and four (4) because Lockheed owned and operated the activities that resulted in the suspected discharges of waste.

6. This Order requires Lockheed to prepare and submit an Additional Site Investigation Workplan (Workplan) in order to fully delineate the extent of the wastes discharged beneath the various former Lockheed facilities and determine if the wastes pose a threat to groundwater. You are expected to submit a complete Workplan, as required by this Order, to the Regional Board. The Regional Board may reject the Workplan if it is deemed not to be complete and/or require revisions to the Workplan under this Order.

7. The Regional Board needs this information in order to determine the subsurface soil conditions at the various former Lockheed facilities as part of the efforts to identify sources of pollution in the San Fernando Valley.

8. The burdens, including costs, of these reports bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The information is necessary to assure adequate cleanup of the various former Lockheed facilities, which as described above may have discharged waste detected in the subsurface soil and groundwater and potentially poses significant threats to public health and the environment.

9. The issuance of this Order is an enforcement action by a regulatory agency and is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to section 15321(a)(2), Chapter 3, Title 14 of the California Code of Regulations. This Order requires submittal of technical and/or monitoring reports and workplans. The proposed activities under the Workplan are not yet known. It is unlikely that implementation of the Workplan associated with this Order could result in anything more than minor physical changes to the environment. If the implementation may result in significant impacts on the environment, the appropriate lead agency will address the CEQA requirements prior to implementing any Workplan.

10. Any person aggrieved by this action of the Regional Board may petition the State Water Resources Control Board (State Board) to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except

that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at the following link:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

THEREFORE, IT IS HEREBY ORDERED that Lockheed, pursuant to section 13267(b) of the CWC, is required to comply with the following:

1. Submit an Additional Site Investigation Workplan (Workplan) by **June 5, 2013.** Guidance documents to assist you with this task can be found on the Internet at the following links:

   "General Work Plan Requirements for a Heavy Metal Soil Investigation"
   http://www.waterboards.ca.gov/losangeles/water_issues/programs/remediation/General Workplan Requirements for a Heavy Metals Soil Investigation.pdf

   "*Interim Site Assessment & Cleanup Guidebook (May1996),*"
   http://www.waterboards.ca.gov/losangeles/water_issues/programs/remediation/may1996_voc_guidance.shtml

   "Quality Assurance Project Plan"
   http://www.waterboards.ca.gov/losangeles/water_issues/programs/remediation/Board_SGV-SFVCleanupProgram_Sept2008_QAPP.pdf

2. The Workplan must completely delineate the extent of waste constituents, specifically VOCs and hexavalent chromium, in the subsurface soil and groundwater originated from the various former Lockheed facilities. Subsequent workplans may be required, if additional work is necessary, in order to fully delineate the extent of the wastes.

3. The Workplan shall address all areas of concern as specified in the enclosed Table – Areas of Concern and Requirements for Additional Investigation.

4. The Workplan must contain a health and safety plan (HASP), as per the guidelines.

The above item shall be submitted to:

Mr. Larry Moore
Staff Environmental Scientist
Remediation Section
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, California 90013
Phone: (213) 576-6730
Email: lmoore@waterboards.ca.gov

Pursuant to section 13267(a) of the CWC, any person who fails to submit reports in accordance with the Order is guilty of a misdemeanor. Pursuant to section 13268(b)(1) of the CWC, failure to submit the required Workplan described above by the specified due date(s) may result in the imposition of administrative civil liability by the Regional Board in an amount up to one thousand dollars ($1,000) per day for each day the Workplan is not received after the above due date. These civil liabilities may be assessed by the Regional Board for failure to comply, beginning with the date that the violations first occurred, and without further warning.

The Regional Board, under the authority given by the CWC section 13267, subdivision (b)(1), requires you to include a perjury statement in all reports submitted under the 13267 Order. The perjury statement shall be signed by a senior authorized Lockheed representative (not by a consultant). The perjury statement shall be in the following format:

> "I, [NAME], certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision, in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

The State Board adopted regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, California Code of Regulation) requiring the electronic submittal of information (ESI) for all site cleanup programs, starting January 1, 2005. Currently, all of the information on electronic submittals and GeoTracker contacts can be found on the Internet at the following link:

http://www.waterboards.ca.gov/ust/electronic_submittal.

To comply with the above referenced regulation, you are required to upload all technical reports, documents, and well data to GeoTracker by the due dates specified in the Regional Board letters and orders issued to you or for the Site. However, the Regional Board may request that you submit hard copies of selected documents and data in addition to electronic submittal of information to GeoTracker.

SO ORDERED.

for Paula Rasmussen

Samuel Unger, P.E.
Executive Officer

April 18, 2013
Date

Enclosure: Table – Areas of Concern and Requirements for Additional Investigation

Table – Areas of Concern and Requirements for Additional Investigation

Area of Concern	Minimum Number of Borings and Target Depth	Analytical Requirements - Soil Matrix or Soil Gas for VOCs	Groundwater Investigation Requirements	Rationale for Investigation Requirement
B-1 Historic Injection well - Dry well 1 (DW-1)	Two soil borings through the vadose zone to the fine-grained unit, between 115 feet and 150 feet below ground surface	Chromium (total and hexavalent)	TBD (well CW-29 may suffice)	Industrial waste water containing Cr6 may have been discharged via this feature
B-1 - DW-2	Two soil borings through the vadose zone to the fine-grained unit, between 115 feet and 150 feet below ground surface	Chromium (total and hexavalent)	Three new groundwater monitoring wells between CW-29 and CW-12	Industrial waste water containing Cr6 may have been discharged via this feature
B-1 - DW-3	One soil boring through the vadose zone to the fine-grained unit, between 115 feet and 150 feet below ground surface	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via this feature
B-1 - DW-4	One soil boring through the vadose zone to the fine-grained unit, between 115 feet and 150 feet below ground surface; Install soil vapor probes at depth to be determined for VOCs	Chromium (total and hexavalent); PCE and TCE, and other VOCs, as needed, in soil vapor	TBD	Industrial waste water containing Cr6 and VOCs may have been discharged via this feature
B-1 - DW-5	One soil boring through the vadose zone to the fine-grained unit, between 115 feet and 150 feet below ground surface; Install soil vapor probes at depth to be determined for VOCs	Chromium (total and hexavalent); PCE and TCE, and other VOCs, as needed, in soil vapor	TBD	Industrial waste water containing Cr6 and VOCs may have been discharged via this feature

Table – Areas of Concern and Requirements for Additional Investigation

Area of Concern	Minimum Number of Borings and Target Depth	Analytical Requirements - Soil Matrix or Soil Gas for VOCs	Groundwater Investigation Requirements	Rationale for Investigation Requirement
B-1 - DW-6	One soil boring through the vadose zone to the fine-grained unit, between 115 feet and 150 feet below ground surface; Install soil vapor probes at depth to be determined for VOCs	Chromium (total and hexavalent); PCE and TCE, and other VOCs, as needed, in soil vapor	TBD	Industrial waste water containing Cr6 and VOCs may have been discharged via this feature
B-1 Building 175 Vapor Degreaser and Clarifier	Two soil borings through the vadose zone to the fine-grained unit between 115 feet and 150 feet below ground surface; Install soil vapor probes at depths to be determined for VOCs	PCE in soil vapor	TBD	Area of historic PCE release does not appear to be adequately delineated or mitigated
B-1 Building 194/195	Two soil borings through the vadose zone to the fine-grained unit greater than 40 feet below ground surface; Install soil vapor probes at depth to be determined for VOCs	Chromium (total and hexavalent); PCE and TCE, and other VOCs, as needed, in soil vapor	TBD	Area of previous soil investigations is not delineated for Cr6
B-1 Former Buried Waste Area	Two soil borings through the vadose zone to the fine-grained unit greater than 40 feet below ground surface; Install soil vapor probes at depth to be determined for VOCs	Chromium (total and hexavalent); PCE and TCE, and other VOCs, as needed, in soil vapor	TBD	Area of historic and undocumented waste disposal has not been adequately delineated
A-1 North Former Cr6 Passivation Area	Two soil borings through the vadose zone to the fine-grained unit between approximately 80 feet and 100 feet below ground surface	Chromium (total and hexavalent)	Two - three new groundwater monitoring wells	Area of historic Cr6 release has not been adequately delineated

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Area of Concern	Minimum Number of Borings and Target Depth	Analytical Requirements - Soil Matrix or Soil Gas for VOCs	Groundwater Investigation Requirements	Rationale for Investigation Requirement
B-6 Building 371 Former Cr6 Passivation Area	Two soil borings through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface; Install soil vapor probes at depth to be determined for VOCs.	Chromium (total and hexavalent)	TBD	Area of historic Cr6 and VOC release has not been adequately delineated
B-6 Building 357 - Dry Wells	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified.	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via these features
B-6 Building 353 Dry Wells and Clarifier B-6-F	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified.	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via these features; Area of previous soil investigation was not delineated for Cr6.
B-6 Building 340 Dry Wells	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via these features
B-6 Building 332-333 Dry Well locations	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via these features

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Area of Concern	Minimum Number of Borings and Target Depth	Analytical Requirements - Soil Matrix or Soil Gas for VOCs	Groundwater Investigation Requirements	Rationale for Investigation Requirement
B-6 Building 310 Dry Well, Metal Finishing Line, Sump and Sand Traps	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via these features
B-6 Building 88 Dry Well locations	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged via these features
B-6 Building 83 Cr6 Use (former clarifier, sumps, sand traps and pits)	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged at this location
B-6 Building 82 Metal Finishing Process Line Area (sumps and pits)	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged at this location
C-1 Building 43 Metal Finishing Area (former sump)	One soil boring through the vadose zone to the fine-grained unit between 80 feet and 100 feet below ground surface, per feature identified	Chromium (total and hexavalent)	TBD	Industrial waste water containing Cr6 may have been discharged at this location