Response Action Contract IX

THIRD 5-YEAR REVIEW REPORT
FOR
OPERATING INDUSTRIES, INC.
SUPERFUND SITE
MONTEREY PARK,
LOS ANGELES COUNTY, CALIFORNIA

U.S. Environmental Protection Agency
Contract No. 68-W-98-225

CH2M HILL, Inc.
and Team Subcontractors:
URS Group, Inc.
E2 Consulting Engineers, Inc.

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FOR
OPERATING INDUSTRIES, INC.
SUPERFUND SITE
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Prepared for:

Contract No. 68-W-98-225
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

September 2005

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FOR

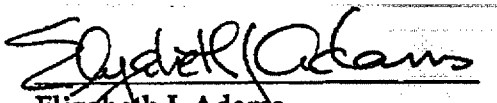
OPERATING INDUSTIRES, INC. LANDFILL SUPERFUND SITE

MONTEREY PARK, LOS ANGELES COUNTY, CALIFORNIA

September 2005

U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

Approved by: **Date:**



September 28, 2005

Elizabeth J. Adams
Chief, Site Cleanup Branch
Superfund Division, U.S. EPA, Region 9

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List of Acronyms

ARARs	applicable or relevant and appropriate requirements
AREs	access and restrictive easements
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDWR	California Department of Water Resources
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COD	chemical oxygen demand
CPS	chemical performance standard
CSDLAC	County Sanitation Districts of Los Angeles County
CTP	Compliance Testing Plan
DCA	dichloroethane
DCE	dichloroethene
DOHS	California Department of Health Services
DRE	destruction and removal efficiency
FWENC	Foster Wheeler Environmental Corporation
GAC	granular-activated carbon
GCL	groundwater compliance line
LARWQCB	Los Angeles Regional Water Quality Control Board
LFG	landfill gas
LFGTS	landfill gas treatment system
LTGMP	long-term groundwater monitoring plan
LTP	leachate treatment plant
MMBTUH	million British thermal units per hour
MPO	Monterey Park Disposal Company
NCI	New Cure, Inc
NPDES	National Pollutant Discharge Elimination System

NPL	National Priorities List
O&M	operation and maintenance
OII	Operating Industries, Inc
OU	operable unit
PCE	tetrachloroethene
PLC	perimeter liquids control
POC	point of compliance
POHC	principal organic hazardous constituent
POTW	publicly-owned treatment works
ppm	parts per million
PRP	Potentially Responsible Party
RDI	remedial design investigation
ROD	Record of Decision
SBR	sequence batch reactor
SCAQMD	South Coast Air Quality Management District
scfm	standard cubic feet per minute
SCE	Southern California Edison
SCM	site control and monitoring
SHERP	safety, health, and emergency response plan
SOP	Standard Operating Procedure
SWEAP	Southwest Early Action Project
TCE	trichloroethene
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
VOST	Volatile Organic Sampling Train

5-Year Review Summary Form

SITE IDENTIFICATION

Site name : Operating Industries, Inc. Landfill Superfund Site

EPA ID: 0958 **CERCLIS ID :** CAT080012024

Region: 9 **State:** CA **City/County:** Monterey Park/Los Angeles

SITE STATUS

NPL status: ■ Final ❑ Deleted ❑ Other (specify) _____

Remediation status (choose all that apply): ■ Operating ❑ Complete

Multiple OUs? ■ YES ❑ NO **Construction completion date:** Leachate Treatment Plant operational September 1995, New Thermal Destruction facility construction complete January 2000, Landfill Cover complete May 2000.

OU-1: Site Control and Monitoring (SCM), OU-2: Leachate Management and Leachate Treatment Plant, OU-3: Landfill Gas Migration Control and Landfill Cover, and Final OU: Perimeter Liquids Control, Water Contamination and Long-term Operation and Maintenance of Environmental Control Facilities

This 5-year review is sitewide covering all OUs.

Has site been put into reuse? ❑ YES ■ NO

REVIEW STATUS

Reviewing agency: ■ EPA ❑ State ❑ Tribe ❑ Other Federal Agency _____

Author name: Shiann-Jang Chern and Lance Richman

Author title: Remedial Project Manager **Author affiliation:** USEPA Region 9

Review period: April – August 2005

Date(s) of site inspection: April 29, 2005

Type of review: ■ Statutory

❑ Policy ■Post-SARA ❑ Pre-SARA ❑ NPL-Removal only

❑ Non-NPL Remedial Action Site ❑ NPL State/Tribe-lead

❑ Regional Discretion)

5-Year Review Summary Form (cont.)

Review number: ❑ 1 (first) ❑ 2 (second) ■ 3 (third) ❑ Other (specify)
Triggering action: ❑ Actual RA Onsite Construction ❑ Actual RA at OU #1 ■ Previous 5-year Review Report ❑ Construction Completion ❑ Other (specify) _____
Triggering action date: February 2000
Due date (five years after triggering action date): February 2005

5-Year Review Summary Form (cont.)

Issues and Recommendations:

Issue

The design and implementation of a final remedial action at the North Parcel has not yet been completed. Under the seventh partial Consent Decree (CD-7), the cleanup action in the 10-acre landfill area was to be integrated with commercial development of the entire 45-acre North Parcel. The work has been considerably delayed due to fact that the original developer, Greenfield, ultimately fell through on its obligation to acquire the property as anticipated under CD-7. In April 2004, USEPA directed the Potentially Responsible Parties (PRPs) to implement the North Parcel remedy as an item of Excluded Work under CD-3.

Recommendation

The 5-year review findings have shown that, despite the issue relating to redevelopment of the North Parcel, progress continues to be made toward fulfilling the remedial action requirements set out in both the Record of Decision (ROD) and Consent Decree. In August 2005, USEPA approved the Predesign report that includes evaluation of various alternatives for systems including a cover, landfill gas (LFG) control, and surface water management. The recommendation is that New Cure, Inc. (NCI) continue to move forward toward development of a final design of the North Parcel remedy and, ultimately, its construction.

Issue

Design and implementation of perimeter liquids control (PLC) actions have not been completed. Although the Southwest Early Action Project (SWEAP) system (installed as part of the landfill gas remedy) is providing some degree of PLC around the western/southwestern perimeter of the South Parcel, PLC actions required along the northwestern boundary of the North Parcel and the northeastern corner of the South Parcel are still in the pre-design stage.

Recommendation

NCI should accelerate design and implementation of the PLC system in the northwestern portion of the North Parcel and, following the completion of necessary groundwater investigative work, in the northeastern corner of the South Parcel. A complete schedule extending through PLC implementation should be developed.

Issue

Although NCI has prepared a Final Access and Institutional Controls Work Plan which was submitted to USEPA in March and approved in May 2003, this work has not been fully implemented. No deed notification with restrictive covenants has been attached to the landfill parcel title.

Recommendation

The USEPA recommends that NCI and the stakeholders execute and record a restrictive covenant for the property that would bind current and future owners and restrict certain uses of the site itself, including residential use, and prohibit use of the groundwater underneath the site. In addition, the plan is to be updated every two years in accordance with the Eighth Partial Consent Decree. Although NCI indicated that the plan is currently undergoing revision, it had not been completed at the time of the 5-year review. NCI should provide a status report on how the Final Access and Institutional Controls Work Plan has been updated and is being implemented and a schedule for placement of restrictive covenants on the landfill property.

Protectiveness Statement

The final remedy at the Operating Industries, Inc., Landfill site is expected to be protective of human health and the environment. Portions of the required remedial actions that are still incomplete include capping and landfill gas control at the North Parcel and full implementation of required PLC systems. In addition, implementation of institutional controls has not yet been completely fulfilled. Completion of these remedial activities, along with continued groundwater monitoring/evaluation, will allow EPA to predict with greater certainty the time required to achieve the groundwater cleanup goals. In the interim, exposure pathways that could result in unacceptable risks are being controlled. Many of the threats at the site have been addressed through capping and capture/treatment of both landfill gas and leachate. Continued operations/maintenance activities and implementation of site security measures will result in further reduction of these threats.

Long-term protectiveness of the implemented remedies will be verified by obtaining additional water samples to fully evaluate potential migration of the contaminant plume downgradient/radially and vertically from the landfill. Current data indicate that the plume remains relatively stable, and areas where a problem may be evolving are undergoing further investigation and remedial actions. Full implementation of institutional controls will also prevent exposure to, or the ingestion of, contaminated water

Executive Summary

A 5-year review of the Operating Industries, Inc. (OII) Landfill Superfund Site (the site) in Monterey Park, California was completed in September 2005. The 5-year review was required by statute and performed because hazardous substances, pollutants, or constituents remain at the site above levels that do not allow for unrestricted use and unlimited exposure. The triggering action for this review was the second 5-year review, conducted and finalized in 2000.

Waste disposal into the former sand and gravel quarry began in 1948 on 14 acres. By 1958, the landfill had expanded to 218 acres. The size was later reduced to 190 acres when the state purchased a 28-acre right-of way to construct the Pomona Freeway, completed in 1964, which divides the site in two.

In 1954, the Los Angeles Regional Water Quality Control Board classified OII as a Class II-I landfill. It was permitted to accept ordinary household refuse, decomposable organic refuse, and selected scrap metal (Group 2 wastes); non-decomposable inert solids (Group 3 wastes); and certain types of liquids (per Resolution 54-15). Cut-and-cover filling methods were conducted during the time when waste was first accepted through the 1970s. By 1975, when the site was already divided into the North and South Parcel, the Monterey Park City Council adopted Resolution 78-76, which eliminated solid waste disposal on the North Parcel and on a 15-acre area in the northwestern section of the South Parcel. A total estimated refuse volume of 38 million cubic yards, weighing 22 to 31 million tons, was disposed at the landfill over its operating life (USEPA 1988).

In 1982, leachate was observed seeping offsite. OII stopped accepting hazardous liquid waste in January 1983 and all liquid waste in April 1983. More than 300 million gallons of liquids are recorded as having been disposed between 1976 and 1983. Liquid wastes were reportedly disposed at the landfill prior to 1976, but records were not kept by the landfill operators. Effective in October 1984, the California Department of Health Services classified leachate generated at the site as hazardous and prohibited redisposal. The site also ceased accepting all solid waste at that time.

The two primary sources of contamination from the OII Landfill are the leachate, which is liquid, and landfill gas, which is vapor. Both of these materials are generated within the landfill. As they migrate out of the landfill, both leachate and landfill gas can contaminate surrounding media, such as ambient air, surface and subsurface soil, surface water, and groundwater. Other initial landfill problems included odors, slope stability issues, and landfill fires.

The United States Environmental Protection Agency (USEPA) began remedial investigation and feasibility study activities at the site in 1984. The site-wide remedial investigation, as a culminating effort of those numerous studies and investigations, was completed in October 1994. The objectives of the remedial investigation were to characterize physical conditions in the vicinity of the OII Landfill; characterize the nature and extent of contamination in the

air, soil, surface water, and groundwater; and evaluate fate and transport of organic and inorganic chemicals present in groundwater associated with the landfill.

To efficiently manage the problems at the landfill and address the most apparent environmental problems at the landfill prior to completion of the remedial investigation and implementation of the final remedy, the initial site work was divided into three discrete interim tasks:

- Site control and monitoring
- Leachate management and treatment
- Landfill gas migration control and landfill cover

The final remedy addresses liquids control and contaminated water, as well as long-term operation and maintenance of all environmental control facilities at the landfill. The final remedy excludes those facilities covered under the task associated with gas migration control and landfill cover. The final remedy at the OII Landfill site is expected to be protective of human health and the environment. Portions of the required remedial actions that are still incomplete include capping and landfill gas control at the North Parcel and full implementation of required perimeter liquids control systems. In addition, implementation of institutional controls has not yet been completely fulfilled. Completion of these remedial activities, along with continued groundwater monitoring/evaluation, will allow EPA to predict with greater certainty the time required to achieve the groundwater cleanup goals. In the interim, exposure pathways that could result in unacceptable risks are being controlled and full implementation of institutional controls will prevent exposure to, or the ingestion of, contaminated water. Many of the threats at the site have been addressed through capping and capture/treatment of both landfill gas and leachate. Continued operations/maintenance activities and implementation of site security measures will result in further reduction of these threats.

Long-term protectiveness of the implemented remedies will be verified by obtaining additional water samples to fully evaluate potential migration of the contaminant plume downgradient/radially and vertically from the landfill. Current data indicate that the plume remains relatively stable, and areas where a problem may be evolving are undergoing further investigation and remedial actions.

1.0 Introduction

The United States Environmental Protection Agency (USEPA) conducted a 5-year review of the remedial actions implemented at the Operating Industries, Inc. (OII) Landfill Superfund Site (the site) in Monterey Park, California (Figure 1-1). This review was conducted from April to September 2005. This report documents the results of the 5-year review. This report has been prepared in accordance with USEPA's guidance document, *Comprehensive 5-year Review Guidance* (USEPA 2001).

The purpose of the 5-year review process is to evaluate whether the remedy at the site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in 5-year review reports. In addition, 5-year review reports identify any issues found during the review and provide recommendations for addressing these issues.

This review is required by federal statute. USEPA must implement 5-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). CERCLA Section 121(c), as amended, states:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

Consequently, this 5-year review report has been completed because hazardous substances, pollutants, or constituents remain at the site above levels that allow for unrestricted use and unlimited exposure.

The current OII Superfund Site consists of 190 acres and is divided by California Highway 60, also known as the Pomona Freeway, which runs east-west through the site. The 45 acres to the north of the freeway are referred to as the North Parcel, and the 145 acres to the south are called the South Parcel. The City of Montebello borders the South Parcel. Figure 1-2 is a site plan map.

The first and second 5-year reviews were completed in 1995 and 2000, respectively. This is the third 5-year review report for OII. The triggering action for this review was the second 5-year review, which was signed by USEPA on February 18, 2000 (CDM 2000). The first 5-year review was conducted and completed on May 30, 1995 (CDM 1995).

This report evaluates the OII remedial objectives, as stated in the four Records of Decision (RODs), including the ROD amendment for the third Operable Unit (OU), Landfill Gas Migration Control and Landfill Cover.

To efficiently manage the problems at the OII site and to address the most apparent environmental problems prior to implementation of a final remedy, USEPA identified three OUs for advanced remedial action activities. The term "operable unit" refers to discrete

action taken at a Superfund site to address specific site problems. The first three OUs at OII pertain to site control and monitoring (OU-1), leachate management (OU-2), and landfill gas control and cover (OU-3). The final OU addresses liquids control and contaminated water, as well as long-term operation and maintenance of all environmental control facilities at the site.

This report covers all four of the OUs. It is organized into sections that describe the history and setting of the site, remedial action decisions and implementation, and an evaluation of remedial actions. These sections are:

- Section 2.0 - Chronology of site events.
- Section 3.0 - Land use, site setting, the history of contamination, and initial response.
- Section 4.0 - The remedial actions implemented at OII, current status of the remedies, treatment systems operation and maintenance (O&M) activities, and cost.
- Section 5.0 – Progress since the last 5-year review.
- Section 6.0 - Activities performed during the 5-year review process.
- Section 7.0 - Technical assessment of the remedial action implemented at the site.
- Section 8.0 – Identified site issues, recommendations, and follow-up actions.
- Section 9.0 - Protectiveness statement.
- Section 10.0 – Next 5-year review
- Section 11.0 - List of works cited during the preparation of this document.

The figures cited in the report can be found following Section 11 and before the Appendices.

2.0 Site Chronology

Table 2-1 provides a chronology of events at the site.

TABLE 2-1
Chronology of Site Events
Third 5-year Review Report for OII Landfill Superfund Site, Monterey Park, California

Event	Date
Area was used as a sand and gravel quarry.	pre - 1948
Landfilling operations begin into the former quarry area.	Oct 1948
OII assumes site ownership.	Jan 1952
LARWQCB classifies OII as a Class II-I landfill.	1954
Pomona Freeway (Highway 60) completed separating North and South Parcels of the landfill.	1964
Residential development moves closer to the landfill.	1968
Considerable residential and commercial development adjacent to landfill boundary.	Mid-1970s
Monterey Park City Council adopts Resolution 78-76, eliminating solid waste disposal on both the North Parcel and a 15-acre area in the northwestern section of the South Parcel.	1975
Leachate observed seeping off the landfill site.	1982
OII operators cease acceptance of liquid hazardous waste.	Jan 1983
OII operators cease to accept all liquid waste.	Apr 1983
State places the site on the California Hazardous Waste Priority list.	Jan 1984
Department of Health Services issues Remedial Action Order.	Aug 1984
The OII site is proposed to the National Priorities List.	Oct 1984
All landfill operations cease.	Oct 1984
USEPA begins remedial investigation/feasibility study.	1984
State files lawsuit against OII to perform remedial actions and enforce Orders.	May 1985
The OII site is finalized on the National Priorities List.	May 1986
Interim ROD for site control and monitoring issued.	Jul 31, 1987
Interim ROD for leachate management issued.	Nov 16, 1987
Landfill Gas Migration Control ROD issued.	Sep 30, 1988
Landfill Gas Migration Control ROD amendment issued.	Sep 28, 1990
The sitewide remedial investigation is completed.	1994
First 5-year review completed.	May 30, 1995
Feasibility study and risk assessment performed.	1996

TABLE 2-1
Chronology of Site Events
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

Event	Date
Final ROD issued.	Sep 30, 1996
Landfill cover work begins.	Summer 1997
LTFGS installed on North Parcel.	Aug – Dec 1999
Second 5-year review completed.	Feb 18, 2000
CD-3 Final Construction As-Built Report including Site Operations Plan	May 2000
Performance test final report for Thermal Oxidizer Unit 101 issued.	Jan 2001
Long-Term Groundwater Monitoring Plan approved by USEPA.	May 8, 2002
USEPA approves PRPs written remedial action report for the landfill gas and cover operable unit.	Sep 24, 2002
Final Access and Institutional Controls Work Plan approved by USEPA.	May 27, 2003
USEPA directed the PRPs to implement the North Parcel remedy as an item of Excluded Work under CD-3.	April 2004
Thermal Oxidizer Unit 151 Performance Test performed.	Jul 2005

3.0 Site Background

The OII Landfill site is located in Monterey Park, Los Angeles County, California. Figure 1-1 presents a map showing the location of the site. This section provides site background, including the land and resource use, the physical setting, the history of contamination, and the initial response to cleanup the contamination.

3.1 Land and Resource Use

Prior to 1946, the site area was a sand and gravel quarry cut into the Montebello Hills. Disposal operations began in October 1948, when the Monterey Park Disposal Company (MPO) leased 14 acres from Henry H. Wheeler and began filling the former quarry pit with waste. In January 1952, OII assumed ownership of the landfill. The site was expanded to 218 acres between 1953 and 1958. The landfill was subsequently reduced to 190 acres when the State of California purchased 28 acres from OII for the construction of Pomona Freeway (completed in 1964), which separated the site into the 45-acre North Parcel and the 145-acre South Parcel. Throughout its operating life (1948 until 1984) the landfill has received residential and commercial refuse, industrial wastes, liquid wastes, and a variety of hazardous wastes.

3.1.1 Former Land Use

The Montebello Hills oilfield, located to the southeast of the landfill, was developed in the early 1900s. The oilfield has provided an abundant source of petroleum and natural gas reserves from petroleum exploration oil wells drilled in the vicinity of the landfill, including some within the current landfill boundary. Throughout its producing history, a significant percentage of the production from the Montebello Hills oilfield has been a sodium-chloride brine. Historic maps of the oilfield show the locations of apparent "brine ponds" associated with oilfield activities in the area south and southeast of the landfill, including along the current southern boundary of the landfill. Later oilfield wastes are reported to have been disposed into the landfill. Older aerial photographs (pre-1960) show little residential or commercial development near the landfill. By 1968, residential development had moved closer to the landfill and, by the mid-1970s, considerable residential and commercial development had occurred adjacent to the landfill boundary (USEPA 1996).

3.1.2 Current Land Use

The area surrounding OII is heavily developed with mixed general commercial/industrial and residential land use, with small pockets of open space. Specific land use at and around the landfill is presented below, beginning north of the North Parcel and progressing clockwise around the landfill.

- A Southern California Edison substation complex occupies a portion of the property to the northwest of the North Parcel. The remainder of the property to the north is occupied by two plant nurseries that share a common border with the North Parcel.

- Resurrection Cemetery is located north/northeast of the North Parcel.
- The North Parcel is currently a vacant lot.
- Both the leachate and landfill gas (LFG) treatment systems are located on the North Parcel. In addition, the micro-turbines equipment used to operate site systems by generating electricity from the captured landfill gasses is also located on the North Parcel. There is an onsite analytical laboratory located next to the treatment systems. A 10-acre portion of this 45-acre parcel contains landfill material that requires remediation. The USEPA has been working with the City of Monterey Park and the Potentially Responsible Parties (PRPs) to integrate proposed redevelopment with final cleanup of this area.
- The Montebello Town Square, a large shopping complex, occupies the land east of the South Parcel. A small strip on the east end of the landfill contains an LFG gas collection system installed as part of the development to reduce migration of LFG gas toward the shopping center.
- The Montebello Hills oilfield, which contains many active oil production wells, is located to the southeast of the South Parcel.
- On the southeast and south side of the landfill, adjacent land use is mostly low-density residential with pockets of medium-density residential and open space. Many homes in this area are located immediately adjacent to the landfill boundary and share a common property line with the landfill.
- A small piece of property adjacent to the southwest corner of the South Parcel is currently vacant.
- The surface facilities for a Southern California Gas Company underground natural gas storage reservoir adjoin the southwest portion of the South Parcel. The reservoir is not currently in use.
- The remainder of the western boundary of the South Parcel is bordered by residential development, similar to the residential areas south of the South Parcel.

3.2 Physical Setting

The OII site is located in central Los Angeles County, California, on the northwestern flank of the Montebello Hills (also known as the La Merced Hills). The Montebello Hills are one of a series of low-lying hills that separate the Los Angeles Coastal Plain from the San Gabriel Valley. The elevation of the crest of the Montebello Hills is approximately 570 feet above mean sea level. The San Gabriel Mountains, located approximately 12 miles to the north of the landfill, form the northern boundary of the San Gabriel Valley.

The Los Angeles Coastal Plain, to the south of the landfill, is a coastal plain sloping toward the Pacific Ocean, approximately 20 miles away. The Montebello Plain lies within the Los Angeles Coastal Plain just south of the Montebello Hills (south of the OII site) between the Los Angeles River and the Rio Hondo, and the California Department of Water Resources

(CDWR) considers this area to be a source of groundwater recharge to the Los Angeles Basin. (CDWR 1961).

The landfill was constructed by filling a former quarry pit that was cut into the side and top of a portion of the Montebello Hills. The landfill was ultimately constructed to a height higher than the adjacent Montebello Hills. Elevations at the landfill range from approximately 380 feet above mean sea level at the North Parcel to 640 feet above mean sea level at the top deck of the South Parcel. The top of the South Parcel is about 150 to 250 feet above the surrounding natural grade, and the maximum depth of the landfill bottom is about 200 feet below the surrounding natural grade. (USEPA 1987)

3.2.1 Geology/Hydrogeology

The Montebello Hills, where the OII Landfill is located, is one of the chain of hills that separate the San Gabriel Groundwater Basin to the north from the Central Groundwater Basin to the south. Groundwater in and around OII is not used for water supplies, and no groundwater supply wells occur within 1 mile of the site. The Whittier Narrows, which refers to the geographically-constricted (narrows) subsurface connection between groundwater in the San Gabriel and the Central Groundwater Basins, lie approximately 2 miles to the east-southeast of the site. Many large municipal wells (mostly 2 to 3 miles from the site) pump from the highly productive alluvial deposits in both basins in the vicinity of the Whittier Narrows.

Shallow geologic units in the Montebello Hills comprise siltstone with sandstone and conglomerate interbeds of the Pliocene Age Pico time unit, poorly-sorted silty sand and gravel with silt interbeds of the Pleistocene Age Lakewood/San Pedro Formation, and recent alluvium. All three units crop out at the surface around the landfill. Detailed geologic maps and cross sections can be found in the 1994 remedial investigation report prepared for USEPA (CH2M HILL 1994).

Folding and faulting of these young deposits have created west-southwest plunging, open anticlines and synclines with a few subparallel, high-angle normal faults. The landfill base lies on an uneven surface left by quarrying materials of the Lakewood/San Pedro Formation, resulting in basal waste primarily in contact with the Pico unit. Lateral contact with the Lakewood/San Pedro Formation exists at the northwestern and eastern portions of the South Parcel and at the North Parcel. The Pico unit is described as marine deposits of alternating sandstone, sandy shale, clayey shale, and siltstone. It has a lower member consisting of massive siltstone and coarse sandstone interbedded with clay and shale. The upper member contains intervals of sandstone and conglomerate interbedded within siltstone and very fine-grained sandstone. The San Pedro Formation is coarse-grained sandstone and conglomerate with interbedded siltstone of shallow marine and fluvial origin. San Pedro formation conglomerates have a medium to coarse silty sandstone matrix. The Lakewood Formation consists of fluvial coarse sand and gravel conglomerates. The San Pedro and Lakewood Formations have been grouped together due to their similar hydrologic properties and the difficulty distinguishing between the two units. Thin alluvial deposits are present but unsaturated.

Hydrogeologic unit designations, based on the 1994 remedial investigation, divide the OII site into shallow and deep systems. The shallow aquifer, also known as the Unconfined Aquifer, comprises saturated portions of the Lakewood/San Pedro Formation and the

shallowest sandstones and siltstones of the upper Pico unit. Pico unit shallow siltstone forms the Shallow Silt Flow System that is in contact beneath much of the South Parcel and along its southwestern and southeastern boundaries. The lower Pico unit siltstone forms the Deep Silt Flow System, within which two deeper Pico unit sandstone aquifer systems have been delineated: South Aquifer and West Aquifer. Both the South Aquifer and West Aquifer are in contact with the landfill base as unconfined units and dip gently towards the southwest to form confined and discontinuous units isolated within the lower-permeability Deep Silt Flow System. The South Aquifer crops out farther to the east and underlies the stratigraphically-higher West Aquifer.

Groundwater flow at OII is generally radial from the South Parcel. The low-to-moderate permeabilities of the OII aquifers result in mounding beneath the landfill, steep hydraulic gradients, and slow rates of flow. Flow within coarse-grained aquifer units is essentially horizontal, although flow within very fine-grained saturated units has been found to be predominantly downward (CH2M HILL 1994).

Depth to water in the landfill vicinity varies greatly, and ranges from about 15 to 20 feet at the southwestern corner of the South Parcel to over 200 feet at the southeastern corner of the landfill. In the western portion of the South Parcel, the groundwater table is near (or potentially in contact with) the waste prism. Based on previous investigations and characterizations, it appears that the groundwater is not in contact with the waste prism at the eastern portion of the site and is in fact about 13 feet below it.

3.3 History of Contamination

Waste disposal into the former sand and gravel quarry began in 1948 on 14 acres. By 1958, the landfill had expanded to 218 acres. The size was later reduced to 190 acres when the state purchased a 28-acre right-of way to construct the Pomona Freeway, completed in 1964, which divides the site in two.

In 1954, the Los Angeles Regional Water Quality Control Board (LARWQCB) classified OII as a Class II-I Landfill. It was permitted to accept ordinary household refuse, decomposable organic refuse, and selected scrap metal (Group 2 wastes); non-decomposable inert solids (Group 3 wastes); and certain types of liquids (per Resolution 54-15). Cut-and-cover filling methods were conducted during the time when waste was first accepted through the 1970s. By 1975, when the site was already divided into the North and South Parcel, the Monterey Park City Council adopted Resolution 78-76, which eliminated solid waste disposal on the North Parcel and on a 15-acre area in the northwestern section of the South Parcel. Thus, after 1975, solid waste disposal was limited to a 130-acre section of the South Parcel. The waste disposal activities expanded to cover the current landfilled area. During this time, the height of the landfill was also increased several times, ultimately reaching the current elevation of approximately 640 feet above mean sea level. The thickness of solid waste in the South Parcel ranges from approximately 200 to 325 feet. The North Parcel contains approximately 10 acres of solid waste, with a maximum thickness of 55 feet.

A total estimated refuse volume of 38 million cubic yards, weighing 22 to 31 million tons was disposed at the landfill over its operating life (CH2M 1988). Records for truck counts and delivered weight were incomplete prior to 1974. Beginning in 1974, records were maintained better. Liquids are excluded from the refuse mass calculations discussed in the

preceding paragraph. Liquid wastes were disposed at the landfill throughout its history. In March 1976, the LARWQCB restricted disposal of liquids to a 32-acre area in the western portion of the South Parcel. OII was allowed to mix liquids with solid refuse at a ratio of 10 gallons per cubic yard; the ratio was increased to 20 gallons per cubic yard in September 1976. At this time, any collected leachate was redisposed into the landfill.

In 1982, leachate was observed seeping offsite. OII stopped accepting hazardous liquid waste in January 1983 and all liquid waste in April 1983. More than 300 million gallons of liquids are recorded as having been disposed between 1976 and 1983. Liquid wastes were reportedly disposed at the landfill prior to 1976, but records were not kept by the landfill operators.

Effective in October 1984, the California Department of Health Services (DOHS) classified leachate generated at the site as hazardous and prohibited redisposal. The site also ceased accepting all solid waste at that time.

The two primary sources of contamination from the OII Landfill are the leachate, which is liquid, and landfill gas, which is vapor. Both of these materials are generated within the landfill. As they migrate out of the landfill, both leachate and LFG can contaminate surrounding media, such as ambient air, surface and subsurface soil, surface water, and groundwater. Other initial landfill problems included odors, slope stability issues, and landfill fires.

3.4 Initial Responses

Government agencies have been monitoring and regulating the OII Landfill for many years. In March 1978, the South Coast Air Quality Management District (SCAQMD) issued an Order for Abatement, requiring OII to follow certain site maintenance and disposal procedures. A second Order of Abatement was issued by SCAQMD in 1983, which included requirements for OII to install an LFG emission control system, install a permanent leachate control system, close the landfill to the receipt of wastes by the end of 1984, and perform specified landfill maintenance.

In July 1983, the Los Angeles County Department of Health Services issued a Notice and Order to OII, followed by a Supplemental Notice in August 1984, citing OII for violations of the California Administrative Code prohibiting migration of landfill gas in concentrations above the lower explosive limit (5 percent methane by air) beyond the boundaries of the landfill into adjacent properties.

DOHS issued its first Remedial Action Order against OII in August 1984, requiring OII to phase out the onsite redisposal of leachate and to provide plans for implementing a leachate collection and treatment system, a site characterization and groundwater monitoring program, an LFG collection and monitoring system, and slope stability corrective measures. In May 1985, the California Waste Management Board and DOHS filed a joint suit against OII to enforce the Order. On July 22, 1985, pursuant to DOHS' request for a preliminary injunction, the Court ordered OII to:

- Operate and maintain the existing leachate and LFG control systems.
- Truck the collected leachate to an authorized facility.
- Proceed with their proposed groundwater monitoring.
- Submit data in support of permits for a leachate pretreatment plant to the appropriate regulatory agencies.

The Court considered further actions during hearings in late 1985. In addition, the Los Angeles Regional Water Quality Control Board issued a Clean Up and Abatement Order (October 1984) ordering OII to comply with portions of the DOHS Remedial Action Order, including phasing out the redisposal of leachate onsite.

The OII site was placed on the California Hazardous Waste Priority List in January 1984. The OII site was proposed for the federal National Priorities List (NPL) of uncontrolled hazardous waste sites in October 1984 and was finalized on the NPL in May 1986.

As stated previously, the primary sources of contamination at the site are leachate and landfill gas. Some partial control measures were performed by the owner/operator during the years of landfill operation and after the cessation of waste receipt. These included installation of a leachate collection system, development of an air dike air injection system on the west side to control subsurface gas migration, installation of perimeter gas extraction wells with a flaring station, site contouring, slope terracing, vegetation, and covering refuse with added fill material.

As stated in the July 1987 Site Control and Monitoring (SCM) ROD, these partial control measures were found to be insufficient in maintaining site integrity (USEPA 1987). The USEPA, therefore, instituted emergency response actions in order to protect public health, welfare, and the environment. The emergency response actions performed by USEPA were:

- Slope stability and erosion control improvements, including construction of a toe buttress and a reinforced earthen structure designed to stabilize a steep slope located near homes adjacent to the site along Ashiya Avenue.
- Surface runoff and drainage improvements, including installation of concrete storm drains along terrace roads and vertical storm drains on the north slope of the South Parcel.
- Main flare station rehabilitation, including and overhaul and installation of a demister. Note that this flare station is now out of service, and all LFG is treated at the LFG treatment system located on the North Parcel.
- Site security improvements.
- Placement of vented water meter box covers in residential areas closest to the landfill to prevent accumulation of LFG in meter boxes.
- Installation of control systems for LFG in nearby affected residences.

3.5 Basis for Taking Action

USEPA began remedial investigation and feasibility study activities at the site in 1984. The sitewide remedial investigation, as a culminating effort of those numerous studies and investigations, was completed in October 1994. The objectives of the remedial investigation were to characterize physical conditions in the vicinity of the OII Landfill; characterize the nature and extent of contamination in the air, soil, surface water, and groundwater; and evaluate fate and transport of organic and inorganic chemicals present in groundwater associated with the landfill.

To efficiently manage the problems at the landfill and address the most apparent environmental problems at the landfill prior to completion of the remedial investigation and implementation of the final remedy, the initial site work was divided into three discrete interim tasks:

- Site control and monitoring
- Leachate management and treatment.
- Landfill gas migration control and landfill cover

The final remedy addresses liquids control and contaminated water, as well as long-term O&M of all environmental control facilities at the landfill. The final remedy excludes those facilities covered under the task associated with gas migration control and landfill cover.

The first and second tasks identified numerous problems, including:

- Hazardous leachate seepage and release from the landfill.
- High content of methane from LFG in nearby residential areas, as well as high LFG (methane) levels exceeding the lower explosive limit in nearby residential areas.
- Vinyl chloride present in ambient air emissions and in subsurface gas onsite and offsite.
- Slope instability and erosion problems.
- Surface runoff from the elevated fill area.
- Water contamination from leachate and migrating LFG.
- Noxious and offensive odors on- and offsite.

Methane build-up in enclosed spaces posed a potential acute and imminent hazard due to the risk of fire and explosion. Methane is highly flammable gas at concentrations between 5 percent (lower explosive limit) and 15 percent (upper explosive limit). Monitoring probes showed methane migration offsite.

A preliminary risk assessment focusing on the LFG was performed to evaluate potential public health issues. Contaminants detected in at least 10 percent of the ambient air samples include benzene, carbon tetrachloride, perchloroethylene, trichloroethylene, vinyl chloride, 1,1,1-trichloroethane, and toluene. This preliminary risk assessment was based solely on the chronic inhalation effects of LFG components such as benzene and vinyl chloride to humans over a long-term exposure at the site. Vinyl chloride was the only component that has an air quality standard. The risk assessment concluded that there was a need for LFG migration

control and a landfill cover to stabilize the site, to minimize further contaminant migration, and to quickly achieve significant risk reduction. USEPA stated that they felt that the remediation methods assessed for the methane problem might also alleviate other LFG components such as the benzene and vinyl chloride.

As part of the remedial investigation/feasibility study, a baseline ecological risk assessment and a baseline human health risk assessment were performed to evaluate whether there are unacceptable human health or ecological risks from potential exposure to chemicals associated with the site. The results of the ecological risk showed that there were no complete pathways and, therefore, no ecological risk was found. The baseline human health risk assessment focused on media beyond the source area: ambient air, groundwater, and offsite soils/sediment. The constituents of concern within these media included volatiles and semi-volatile organics, pesticides, polyaromatic hydrocarbons, and inorganic constituents. The list differs for the different media and is based upon validated environmental monitoring data. Most of the constituents of concern are found in the groundwater list.

The findings of the human health risk assessment include:

- Ambient air presented an elevated risk at the monitoring stations due to the presence of vinyl chloride.
- The soil/sediment media, under both the most and the least health-protective scenarios, exceeded a cancer risk of 1×10^{-6}.
- In groundwater, 27 wells exceeded a cancer risk of 1×10^{-4}, and many of the site monitoring wells showed the potential for adverse non-cancer health effects by exceeding the hazard index of 1.
- The wells with the highest estimated cancer risks and potential non-cancer effects are generally those wells along the landfill perimeter at the southwest corner of the South Parcel.

Because of the finding that these potential risks existed, USEPA determined that remedial action was necessary.

4.0 Remedial Actions

The following section summarizes the remedial actions selected and implemented at the OII Landfill, as well as the O&M of the remedies. Prior to issuing the Final ROD, the USEPA had identified three OUs at the site: site control and monitoring (SCM); leachate management; and gas migration control and landfill cover (gas control and cover). USEPA identified the first two OUs (SCM and leachate management) to facilitate interim remedial actions at the site. The SCM and leachate management OUs were the subject of two interim RODs, which were later superseded by the Final ROD. The SCM ROD was signed in July 1987, and the leachate management ROD was signed in November 1987.

The USEPA identified the third OU to accelerate the final remedial action for LFG control and the landfill cover. The third ROD was issued in September 1988 and amended in September 1990. It selects a permanent remedy for LFG control and landfill cover. Unlike the previous two interim RODs, this ROD continues in conjunction with the Final ROD.

On September 30, 1996, USEPA issued the Final ROD for OII, which selects a permanent remedy for water contamination, as well as for the matters previously addressed by the interim SCM and leachate management RODs.

4.1 Remedial Action Selection and Implementation

This section will focus on the Gas Control and Cover and the Final Remedy RODs, since these RODs are the current decision documents pertaining to permanent remedies at the site. The gas control and cover OU is designated OU-3, and the Final Remedy is designated as OU-1

To date, eight partial Consent Decrees have been entered. Each Consent Decree is an agreement between the settling parties and the federal government to either perform work and/or provide funding toward implementation of site cleanup. The requirements of each partial Consent Decree are as follows:

- First (May 11, 1989) - Perform work necessary to implement the two interim RODS for SCM and leachate management and commit funds to pay for the work.
- Second (September 17, 1991) - Commit additional funds to pay for work required in the first Consent Decree.
- Third (March 30, 1992) - Perform and fund a major portion of the work required by the Gas Control and Cover ROD; certain elements of the work and aspects of the funding were designated for future agreements or orders.
- Fourth (April 4, 1995) - Resolve alleged liability of certain municipalities, transporter, and the California Department of Transportation for arranging disposal or transport for disposal of municipal solid waste at the site.

- Fifth (July 10, 1996) – Address the same subject matter as the first and third Consent Decrees, incorporating new defendants.
- Sixth (September 23, 1997) – Resolve liability of GSF Energy, Inc., the former methane recovery operator at the site, and certain related parties for certain response actions and response costs for the site.
- Seventh (October 11, 2000) – Resolve the liabilities of the owners and operators of the former landfill at the OII site, provide for institutional controls for the former landfill, and provide for a brownfields developer to construct a landfill cap for the North Parcel of the OII site and to redevelop that portion of the site.
- Eighth (May 28, 2002) – Address the full implementation of the final remedy at the OII site and the long-term O&M of the remedy implemented pursuant to the Gas Control and Cover ROD, which was not addressed in the third Consent Decree.

4.1.1 SCM and Leachate Management OUs

Although these were superseded with the Final Remedy ROD, a brief description of the remedial objectives established in the RODs for these OUs is included for context.

4.1.1.1 SCM OU

There are seven major environmental control systems and activities at the OII site that require operation, maintenance, inspection, and monitoring on a continuous basis: gas extraction and air dike systems, leachate collection system, irrigation system, access road system, stormwater drainage system, site security, and slope repair and erosion control.

The ROD for this OU established the following three objectives, which guided the development of the selected remedial alternatives and remedial actions:

- Site control and monitoring remedial alternatives must be easily and rapidly implementable. The interim alternatives must be consistent with the final remedy.
- Remedial actions that permanently reduce the volume, toxicity, or mobility of the contaminants at the OII site were preferred.
- Remedial actions must be cost-effective for the interim period.

Site control and monitoring activities were undertaken to stabilize the landfill during the period prior to implementation of the final remedies. During this interim period, the objectives of activities associated with the gas control system were to minimize the uncontrolled release of LFG through gas emissions from the landfill surface and offsite migration through the subsurface soil. The gas control system was also operated to prevent or minimize the occurrence of underground fires and to maximize the flare station LFG destruction efficiency on an interim basis until replacement by a more reliable and protective LFG treatment system could be accomplished under the Gas Control and Cover ROD.

4.1.1.2 Leachate Management OU

The selected interim remedy for management of site-associated leachate was treatment of the leachate at a treatment plant located at the landfill. The plant was constructed at the North Parcel and consisted of influent storage and equalization, biological reactors, chemical precipitation, sand filtration, granular-activated carbon (GAC) adsorption, effluent storage and discharge, foul air system, stormwater holding system, and sludge disposal system. The ROD specified that treated leachate be disposed of in facilities operated by the County Sanitation Districts of Los Angeles County.

The ROD for this OU established the following three objectives, which guided the development of the selected remedial alternative:

- The remedial action must be easily and rapidly implementable and have the potential to be integrated into the final remedy.
- The alternatives must be flexible in order to manage both short- and long-term variations in the leachate collection rate and in the chemical characteristics of the leachate.
- Remedial actions that included treatment to permanently and significantly reduce the volume, toxicity, or mobility of leachate contaminants were preferred.

4.1.2 OU-3 Remedy Selection and Implementation

4.1.2.1 Selection

The original and amended ROD (USEPA 1988, 1990) for this OU define an LFG migration control remedy to collect and destroy landfill gas that would otherwise be released from the landfill. In general, the work specified in the original and amended ROD includes predesign, design, construction, compliance testing, operation, maintenance, and monitoring of an LFG control system; a landfill cover system; and a surface water management system for the OII site. The new LFG system would supplement, partially incorporate, and partially replace former elements of the LFG system that were implemented under the SCM OU. The amendment to the ROD also includes design and construction of a landfill cover to reduce surface emissions of landfill gas, reduce oxygen intrusion into the refuse, reduce surface water infiltration, minimize slope erosion, and improve aesthetics.

The original and amended ROD established the following remedial objectives:

- Limit methane concentration to less than 5 percent at the site boundary.
- Control surface emissions of LFG such that total organic compound concentration is less than 50 parts per million (ppm) on the average, and methane concentration is less than 500 ppm at any point on the surface.
- Minimize odor nuisance. This is directly associated with the reduction of surface emissions.

- Attain applicable or relevant and appropriate standards, requirements, criteria, or limitations under federal and state environmental laws, according to the terms of CERCLA Section 121, 42 USC §9621.
- Expedite implementation by the sequencing and phasing of remedial activities to rapidly mitigate identified gas problems.
- Provide consistency with final remedies, considering potential effects of future remedial activities in developing alternatives to mitigate and minimize identified gas problems.
- Integrate gas operations and optimize migration control by integrating perimeter and interior gas extraction systems.
- Use resource recovery technologies to the maximum extent practicable, if cost effective.

Additional remedial objectives specific to the cover component of the OU include reducing oxygen intrusion to the refuse, reducing surface water infiltration, limiting slope erosion, and improving aesthetics.

4.1.2.2 Implementation

This work was and is being conducted by the PRPs under the third partial Consent Decree. The work is being conducted on the North Parcel in accordance with both the third and seventh partial Consent Decrees and will be discussed separately later in this section.

Cover System. Two major issues related to the construction of a cover over the 145 acres of the South Parcel were: (1) the steep north slope of the South Parcel, much of which extends up from Highway 60 (Pomona Freeway), and (2) the geotextile reinforced wall at the toe of the south slope (toe buttress, which was installed as an emergency response measure due to instability in this area). The toe buttress anchors this south slope and looms over the homes on the north side of Ashiya Avenue in Montebello. The homes on Ashiya Avenue have very small backyards that extend part way up a slope cut by the developer. This slope extends up into the site and the toe buttress.

There was sufficient concern over these two issues that two panels of experts were assembled. New Cure, Inc. (NCI) Seismic Work Group reviewed and provided guidance to NCI's consultants Jacobs Engineering, Advanced Earth Sciences, SCS Engineers, and GeoSyntech Consultants. In addition, USEPA, the United States Army Corps of Engineers (USACE), and their contractor CDM-Federal Programs Corporation assembled their Technical Review Panel. The Seismic Work Group and Technical Review Panel each consisted of five technical experts in soils mechanics, landfill design, and seismology to guide NCI's consultants and provide oversight of the design of the steep north slope for USEPA.

NCI had several consultants working on parts of the predesign of various aspects of the required remediation and, in the spring of 1997, NCI terminated all of its contracts and awarded one engineering, procurement, and construction contract to Foster Wheeler Environmental Corporation (FWENC). Through FWENC, NCI maintained the services of SCS Engineers for gas control and GeoSyntech Consultants for soils and the stability of the north slope. The 10-volume predesign cover report was completed on soil, soil strength, and underlying geology in 1997. In the spring of 1997, FWENC, along with GeoSyntech and

Advanced Engineering Services Consultants, mobilized staff for the design and construction of the cover. These activities commenced in the summer of 1997.

Most of the site was determined to have adequate "landfill daily cover" to be the foundation for the monocover. Over most of the site, 4 feet of monocover was placed over the existing cover. The steep north slope was an exception. To "fit" the geometry of the freeway and refuse mass with flatter slopes, the existing cover was removed, hauled to the top deck, sorted, and stockpiled. The material was then classified and used as foundation or monocover, depending on engineering properties. The design of the monocover for the north slope provided additional strength over that required in the pre-design. Geogrid material was engineered to be placed at 5 feet on center for slopes between 33.7° and 30.4° and at 10 feet on center for slopes between 30.4° and 26.5°. The grid was placed horizontally between soil lifts as the monocover was constructed. The geogrid was keyed into the refuse mass, which has more strength than the soil. The edge of the refuse was carefully identified around the perimeter of the site to ensure that all refuse was contained and covered by the monocover.

Site access roads and drainage structures were constructed as the monocover was constructed. As the monocover was completed, areas were hydroseeded with a seed mix selected to represent the vegetation that might be growing naturally on other hills in the area. Some of the chaparral vegetation maintains color all year, while the grasses become green in the wet season and dry to brown in the summer. There is no permanent irrigation. Five areas were selected for small trees and shrubs. These were planted individually, with a temporary irrigation system to be maintained for 3 years, and dead trees or shrubs were replaced each year for 3 years. The plantings were done in the fall of 1999, 2000, and 2001.

Gas Control System. The well drilling followed the completion of the monocover area by area. Existing piping in an area was removed, and the wells to be saved were capped while any soil removal was done and cover was completed. In some areas, temporary gas collection piping was constructed to allow work in areas blocked by the existing system while keeping significant wells in service. The designed and constructed well field is considerably more robust than what was included in the ROD, including more wells and collection piping for leachate and LFG.

The LFG monitoring system was constructed in coordination with well drilling. The system consisted of a series of 38 probe locations, with five to six probes at each location. These probe nests were constructed by drilling wells and setting the probes at about 30 feet vertically on center with sample ports at the well head. Ten wells were drilled in the first phase, and 13 wells were drilled in the second phase. This seemed to maintain control of methane at the compliance plane, except near the gas storage facility adjacent to the site (west side of South Parcel). Pumps were installed in selected wells to clear the well screens of liquid. Pumping is not performed to dewater the site. All pumps on the site are compressed air-operated and, therefore, use compressed air lines.

Gas collection piping, condensate collection piping and sumps, leachate piping, and industrial compressed air piping were all constructed as the wells were drilled and completed. After the thermal destruction facility had been in operation for about 8 months, a demonstration burn was conducted by an outside laboratory, TRC Environmental Laboratory, to verify compliance with the third Consent Decree requirement of a

99.99 percent destruction and removal efficiency (DRE). Oversight of the burn and a review of TRC's report were provided by Air and Waste Engineering of Dallas, Texas.

Rerouting the LFG from the old flare station 1 (FS-1) to the new thermal destruction facility and keeping both systems operational during startup was challenging. Prior to construction of the gas control system, FS-1 was taking about 3,600 standard cubic feet per minute (scfm) LFG and was burning about 45 million British thermal units per hour (MMBTUH). At the low point during construction, FS-1 was taking about 2,600 scfm and burning about 37 MMBTUH. When the new thermal destruction facility was placed online, it was pulling 6,000 scfm from the refuse mass and burning about 85 MMBTUH. Over the 2-year period, between 2000 and 2002, after the thermal destruction facility went online, the burn rate had declined to about 70 MMBTUH. Between 4,500 and 5,600 scfm can be pulled with the same burn rate. The difference is in clean air being pulled from surrounding areas.

Formerly, an issue existed along Baker Tank Road on the west side of the South Parcel where methane levels continued to exceed the State ARAR of <5% in some of the gas monitoring probes. The Southern California Gas Company has an underground liquefied natural gas storage facility just outside the OII Landfill property. The underground storage facility has not been operated for many years. The Montebello Hill petroleum field is also in the vicinity of OII Landfill. It is unclear whether methane gas in this area along the west side of the South Parcel comes from the underground storage facility, the Montebello Hill petroleum field, or the OII Landfill. In order to bring the methane levels in this area into compliance, NCI began injecting air into wells in close proximity to the monitoring points, thus creating an "air dike" to contain landfill gas on site and to limit infiltration of methane gas from other sources deep in the subsurface. This resulted in bringing the methane levels at the monitoring probes into compliance.

NCI has installed six microturbines that burn about 8 MMBTUH at a flow of about 300 scfm. The electricity generated from landfill gases using the microturbine technology is used to operate site systems at a considerable cost savings. The microturbines exhaust to the combustion air side of the combustion stacks of the thermal destruction facility so the 99.99 percent DRE is achieved.

Surface Water Management System. The top of the landfill was designed with relatively flat slopes to drainage ditches at the edge of access roads. Selected roads follow the crown of a slope and do not have drainage ditches. The roads with ditches create a flow to low points where there are drain pipes down the slope to the first bench road encountered. There is then either a road crossing or a discharge to the drainage ditch at the road edge. All bench roads have V-ditches and slopes designed to carry sheetflow and pick up flow from any down drains that do not intercept a low points. The flows are carried to previously-existing points of discharge from the site. There are minimal changes in surface areas leading to discharge points. Two of the major discharge points have detention basins constructed to level the peak flows. These are constructed so that for small flows, the initial flow of a major storm flows freely, but if there is a continuous heavy flow, the basins restrict the flow and start filling.

A pre-certificate inspection of the remedial action was conducted on November 8, 2000 and, on September 11, 2002, the PRPs provided a written report that the remedial action had been fully performed, and the performance standards of the Consent Decree had been obtained.

North Parcel Cleanup and Redevelopment. The impact of landfill operations on OII's North Parcel was much less than on the rest of the site, making the North Parcel ideal for redevelopment consideration. USEPA had determined that this section of the site could be developed commercially because it would be safe to do so. Any hazardous substances that may be located on the part of the site to be developed would be required to be cleaned up to standards ensuring the safety of all visitors, including cleanup of constituents that may have been left by former North Parcel tenants. In 2000, USEPA, working in cooperation with the City of Monterey Park, engaged in discussions with a developer known as Greenfield International (Greenfield). Greenfield is a group that specializes in helping to make once unusable land profitable again. As part of the seventh partial Consent Decree, it was established that a brownfields developer would construct a landfill cap for the North Parcel and then redevelop. Ultimately, Greenfield was unable to acquire the property as anticipated under the Consent Decree. Therefore, the redevelopment project fell through at that time.

In 2002, to help facilitate the reuse of the area, USEPA was involved in activities to clear the area and make it safe for redevelopment. Dirt from the east side of the North Parcel (former auto wrecking yard) has been excavated. This dirt is supposed to be used for the foundation of a cap that will be placed over approximately 10 acres of the North Parcel, the only location where significant amounts of mostly construction debris was placed. Based upon additional investigations, it has been determined that the 10-acre area will need to be remediated. This work is moving forward under the third partial Consent Decree, which governs an enforceable schedule for remediation of the North Parcel under an item of "Excluded Work." USEPA has been and will continue to work on a new agreement with the City of Monterey Park and the PRPs to integrate the City's redevelopment plans with the North Parcel cleanup work.

4.1.2.3 Reporting Deliverables

Per the 1992 third partial Consent Decree, several categories of deliverables are required for this OU, including predesign, design, construction, compliance testing O&M, as well as work completion. The specific reporting requirements for these categories are provided in the Scope of Work attached as an appendix to the Consent Decree.

4.1.3 Final ROD (OU-1) Selection and Implementation

4.1.3.1 Selection

The Final ROD addresses liquid control and contaminated water, as well as long-term site administration and O&M of all environmental control facilities at the landfill. Liquids will be controlled at the landfill perimeter to prevent migration of constituents to groundwater. Contaminated groundwater currently beyond the landfill perimeter will be allowed to naturally attenuate over time.

The following remedial action objectives and components were established for this final OU:

- Installation of a perimeter liquids control (PLC) system to prevent migration of constituents from the landfill to groundwater at levels exceeding performance standards. Contaminant levels in groundwater beyond the landfill perimeter would be reduced to below cleanup standards through natural attenuation.

- Conveyance of the collected liquids to the onsite treatment plant.
- Onsite treatment of collected liquids using the existing leachate treatment plant, modified as necessary to handle all existing and new site-associated liquids. Treated liquids will be discharged to the County Sanitation Districts of Los Angeles County (CSDLAC) sanitary sewer system.
- Implementation of an environmental/groundwater monitoring and evaluation program to: (1) ensure that natural attenuation of the contaminated groundwater is progressing as anticipated, (2) ensure that perimeter liquids control system performance standards are being met, and (3) detect future releases of constituents from the landfill.
- Establishment of institutional controls to ensure appropriate future use of the OII site and to restrict groundwater use in the immediate vicinity of the OII site. The institutional controls will supplement the engineering controls to prevent or limit exposure to hazardous substances.
- Interim O&M of existing site activities and facilities, except to the extent that they are addressed under the Gas Control and Cover OU.
- Long-term site administration and O&M of all facilities and environmental control components at the OII site.

The remedial objective of the PLC component of the final remedy is to prevent migration of constituents from the landfill to groundwater at levels that impair water quality and/or represent a potential threat to human health and the environment. The remedial objectives for cleanup are to reduce constituent concentrations to below cleanup standards through implementation of institutional controls. The monitoring program component of the remedy is intended to meet several objectives, including:

- Assessing compliance with the chemical performance standards and cleanup standards.
- Monitoring the effectiveness of the PLC system.
- Detecting additional releases of constituents from the landfill.
- Monitoring the progress of natural attenuation in groundwater.
- Monitoring effluent chemical concentrations from the treatment plant.

4.1.3.2 Implementation

All of the work on the final remedy for the OII site is being conducted by the PRPs in accordance with the eighth partial Consent Decree.

Groundwater Monitoring Program. A routine groundwater monitoring program is an essential component of the final remedy. The groundwater monitoring program serves several purposes, including: (1) monitoring for exceedances of performance and cleanup standards at the landfill point of compliance and the groundwater compliance lines; (2) monitoring the effectiveness of PLC systems at controlling liquids migration from the landfill; (3) detecting additional releases of constituents from the landfill, and; (4) monitoring the progress of natural attenuation.

The scope of the monitoring program is described in the Long-term Groundwater Monitoring Plan (LTGMP), which was approved by USEPA on May 8, 2002. To date, three

Annual Groundwater Monitoring and Evaluation Reports have been prepared in accordance with the LTGMP. USEPA has approved the 2002, 2003, and 2004 annual reports.

Perimeter Liquids Control Systems. Initially, the PLC system was implemented as part of the third partial Consent Decree landfill gas perimeter control system. Historically, the LFG perimeter control system was referred to as the Southwest Early Action Project or SWEAP system; however, the system was upgraded during the third partial Consent Decree construction period and is now simply referred to as part of the PLC system. The system is approximately 3,100 feet long and includes approximately 126 closely-spaced, deep and shallow LFG and liquid extraction wells; an LFG header system; a booster blower, and a liquid (leachate, groundwater, and condensate) collection system that follows along the southeast, southwest, and western boundary of the South Parcel. As an early action for this OU remedy, the PRPs installed four additional gas/liquid extraction wells, specifically to enhance the liquids control provided by the LFG system.

The ROD identified several other areas around the landfill where the water quality data indicated that PLC would be required. The PRPs performed technical evaluations in these areas and prepared a Remedial Design Investigation (RDI) Work Plan, dated February 13, 2003, that addressed the northwestern, north-central, and northeastern portions of the landfill perimeter. USEPA approved this work plan, and investigations have proceeded to allow for implementation of the PLC actions.

Natural Attenuation. Monitoring of natural attenuation requires monitoring wells located both within the areas of water contamination and downgradient of the contamination. The wells located within the areas of contamination help track the progress of natural attenuation. The wells located downgradient of the contamination ensure that contamination is not migrating further than expected. The existing monitoring well network, installed primarily by USEPA during the remedial investigation/feasibility study, will provide the bulk of the monitoring points necessary to evaluate performance of the natural attenuation remedy. Two additional downgradient monitoring wells and one sentinel well for organic constituents were installed by the PRPs as early actions for the final remedy operable unit. In 2001, the PRPs installed four additional sentinel monitoring wells. As part of the groundwater cleanup action, USEPA has identified groundwater compliance lines (GCLs), beyond which, constituent concentrations should not exceed cleanup standards (see Figure 4-1). Downgradient monitoring wells installed along the GCL are designated sentinel wells. These sentinel wells are used as compliance points to ensure that the natural attenuation remedy is working as expected. The data evaluation processes that will be used assess progress of the natural attenuation remedy as described in the USEPA-approved LTGMP.

4.1.4 Institutional Controls

4.1.4.1 Final ROD Institutional Control Requirements

The September 1996 Final ROD mandates the use of both on- and off-site institutional controls as part of the final remedy selected for the site. Institutional controls are non-engineering methods used to: prevent or limit exposure to media contaminated in excess of levels permitted for unlimited use and unrestricted exposure; and/or to protect the integrity

of the remedy. Institutional controls work by limiting land or resource use and/or by providing information that helps modify or guide human behavior.

The Final ROD requires that on-site institutional controls "prohibit all activities and uses that USEPA determines would interfere or be incompatible with, or that would in any way reduce or impair the effectiveness or protectiveness of this remedy." Off-site institutional controls are required by the Final ROD to "prevent [the] use of contaminated groundwater as a drinking water supply for the duration of the remedy" in those areas where "contaminant concentrations exceed the chemical performance standards or where they are anticipated to exceed performance standards in the future." The off-site controls must be coordinated with the authorities with jurisdiction over groundwater use in the area, the local Watermasters. The Final ROD does not, however, specify which institutional controls should be used to achieve these objectives. Instead, the specific control mechanisms are specified in the consent decrees entered in relation to the site. Both the Seventh and Eighth Partial Consent Decrees for OII (CD-7 and CD-8, respectively) contain requirements related to the implementation of the Final ROD's requirement for institutional controls.

CD-7 Institutional Control Requirements

CD-7 requires parties to the CD who are current and future owners of, or control, property within the site or other nearby property, determined by USEPA to be necessary to the remediation, to implement or ensure the implementation of a variety of institutional controls in relation to such property. These obligations include use restrictions, and proprietary, information and government controls.

The use restrictions contained in CD-7 prohibit any kind of use that potentially could result in the release of a hazardous substance or existing contamination, require a federal or state hazardous waste permit, interfere with the remedy's integrity or protectiveness, or involve construction or excavation inconsistent with an approved construction management plan. The proprietary controls required by CD-7 are the execution and recording of two access and restrictive easements (AREs): one that both ensures access to the South Parcel for remedial purposes and restricts the uses that may be made of it; and another that accomplishes the same goals with regard to property adjacent to the North Parcel that contains landfill-related waste after completion of the North Parcel remediation. The information control requirement in CD-7 is that the grantor of a property interest notify the grantee of the CD and the AREs. Finally, CD-7 obligates certain of the CD parties to assist USEPA in securing governmental controls if USEPA determines that such are needed to implement the Final Remedy, and to securing an access agreement, enforceable use restrictions and an ARE with regard to property not in their possession or control which USEPA determines is necessary for the North Parcel remediation.

CD-7 also imposes obligations for institutional controls on successors to a property interest currently held by a party to CD-7 (i.e., the grantee). These obligations are implemented through the requirement that a transferee certify that it agrees to comply with the CD's use restrictions and government controls. Compliance with the certification and the underlying institutional control obligations is required to preserve the contribution and liability protection passed on by the grantor pursuant to the CD.

4.1.4.3 CD-8 Institutional Control Requirements

Similarly to CD-7, CD-8 contains requirements for use restrictions, proprietary controls, information dissemination and government controls. Parties to CD-8 are subject to use restrictions in relation to site property and other property owned or controlled by any of them where such controls are needed for implementation of the CD. CD-8 also obligates parties to the CD to implement proprietary controls, including: 1) to execute and record a covenant that grants access rights and a right to enforce use restrictions with regard to property in their possession or control if USEPA determines that physical construction related to the remedy is required on such property; and 2) to secure an access agreement, enforceable use restrictions and an ARE in relation to property subject to such construction that is not in their possession or control.

The CD-8 Work Defendants are obligated to implement an informational control in the form of an annual notice to owners and addresses of property which is located above groundwater that currently is, or foreseeably will be, contaminated in excess of the Final ROD's groundwater cleanup standards. The notice must inform recipients of the groundwater remedy (natural attenuation), state and local restrictions and prohibitions on wells, the authority of the local Watermasters with regard to groundwater use, and the prohibition on well installation until USEPA certification that remedial work has been completed. To ensure the effectiveness of this institutional control, the Work Defendants also must determine every two years whether any permits for wells or authorization for water use in the restricted area have been applied for or granted by the authority with jurisdiction, and notify USEPA if there has been such an application and/or grant. Finally the CD- 8 Work Defendants are required to prepare, and update every two years, an "Access and Institutional Controls Work Plan" which documents their efforts to implement and ensure the implementation of the required institutional controls and the status of these controls.

4.1.4.4 Status of Institutional Control Implementation

CD-7 Institutional Controls

Use Restrictions
On-Site use restrictions currently are being adhered to (see the description for CD-8 use restrictions), and no off-site use restrictions have been determined to be necessary yet.

Proprietary Controls
Owner/Operator ARE - Executed, but not recorded due to delay in transfer of property ownership.

SCE ARE - The requirement to prepare and record an ARE has not yet been triggered. Although the Predesign Report calls for the excavation of refuse located on the adjacent SCE property, it is not yet certain whether any waste will be left in place after the remediation is complete.

ARE for property necessary to the North Parcel remediation but not owned or controlled by a CD Party - The requirement to prepare and record an ARE has not yet been

triggered because no on-site property has yet been transferred, and no other property has been identified as necessary to the remediation. As mentioned earlier, it appears that. Once the remedial activities are completed, a determination of the need for an ARE should be assessed.

Information Controls
The requirement to provide notice of the ARE(s) and CD to a grantee of a property interest has not been triggered yet because no subject property interest has been granted yet.

Governmental Controls
USEPA has not determined that any government controls need to be implemented.

CD-8 Institutional Controls

Use Restrictions
Use restrictions on-site are being adhered to, in part through the implementation of procedures found in both the Site Operations Plan (NCI 2000) prepared pursuant to CD-3 and the Prefinal Operations Plan (NCI 2003c) prepared pursuant to CD-8. The procedures include standard operating procedures for controlling any type of work operations and/or maintenance that might compromise the landfill cap integrity and therefore present an exposure risk.

Proprietary Controls
No proprietary controls have been required yet.

Information Controls
A notice to owners and addresses of properties over ground water already, or foreseeably to become, contaminated was mailed in September 2004. A copy of the notice is contained in Appendix E. The information available at the time of this report is that no applications for permits or use authorization have been submitted to, or approved by, the local Watermasters (see Access and Institutional Controls Plan, below), and that another notice to owners and addresses is forthcoming.

Access and Institutional Control Plan
USEPA approved the "Access and Institutional Controls Work Plan (NCI 2003a)" submitted by NCI on behalf of the CD-8 Work Defendants pursuant to CD-8 on May 27th, 2003. The biennially updated plan, which includes a report on the implementation of the required institutional controls, had not been submitted at the time of this five year review, but NCI has orally confirmed that the forthcoming report will not identify any failures of the required institutional controls.

4.1.4.5 Status of Institutional Controls and Impact on Protectiveness

Although the institutional controls required by CD-7 and CD-8 have not been fully implemented yet, the incomplete implementation does not affect the current or short-term protectiveness of the remedy. The role of some of the institutional controls currently is

being fulfilled by non-institutional control mechanisms such as the strict control of access to the entire site through fencing, controlled gates and 24-hour surveillance. In some cases, the institutional control requirements have not been triggered yet. Finally, in other cases the required institutional controls are working as intended.

Over the long term, it is expected that all required institutional controls can and will be fully implemented to the extent necessary, and that those already implemented will continue to be effective. Thus, it is expected that the required institutional controls will contribute to the protectiveness of the remedy as intended over the long term.

4.2 Operation and Maintenance

4.2.1 Third Partial Consent Decree O&M Requirements

Due to the complicated nature of this site, there are multiple aspects relating to both operations and maintenance of this facility. As part of the Final Construction Report, prepared by the PRPs and in compliance with the requirements of the Third Partial Consent Decree, a comprehensive Site Operations Plan was prepared in May 2000.

The major categories outlined in the General Operations are as follows:

- Cover system, including inspection, maintenance, and repair.
- Surface water management system, including stormwater/erosion control and detention basins.
- LFG control system, including LFG extraction, LFG monitoring, surface gas monitoring, and methane monitoring in onsite buildings.
- Leachate management system, including leachate collection and conveyance, leachate treatment plant effluent storage and discharge, data review, and engineering analysis.
- Groundwater monitoring system.
- Support facilities and utilities, including office and laboratory facilities, utilities, health and safety and monitoring equipment, onsite communications, decontamination facilities, and fencing.
- Management of onsite residuals and wastes.
- Response to major earthquakes.

All of these activities require administration and documentation to show that the operations plan is being appropriately implemented. In the Site Operations Plan, Chapter 10, Volume 1, General Operations, the procedures used to track documents, control costs and schedule, and issue reports are identified (NCI 2000).

Both of the treatment systems, for leachate and landfill gas, have extensive operations plans unique to all activities associated with these system. These can be found in the Site Operations Plan, Volume 2, Leachate Treatment Plant Operations Plan, and Volume 3, Landfill Gas Treatment System Operations Plan.

The Leachate Treatment Plant Operations Plan presents information on how the system is to be operated and maintained. According to the plan, the leachate treatment system is used to treat landfill liquid waste. Leachate treatment system activities are managed by the leachate treatment plant (LTP) supervisor. The system consists of:

- LTP - Located on the North Parcel where landfill liquids are treated to meet CSDLAC permit requirements.
- Remote Pumping and Storage Facility - Landfill liquid collection point located on the South Parcel of the landfill.
- Leachate Conveyance System - Conveyance of landfill liquids from the South Parcel to the LTP.
- Conventional sewer line - transports treated effluent to an existing sanitary sewer system, which discharges to a publicly-owned treatment works (POTW) operated by the CSDLAC.
- Foul-air conveyance line - Conveyance of gas between LTP and the landfill gas treatment system (LFGTS).

The LFGTS Operations Plan presents information on how the system is to be operated and maintained. In October 1996, the USEPA made the decision to locate the LFGTS within the North Parcel of the OII Landfill in a location south of the existing LTP. In November 1998, the design and fabrication contract for the LFGTS was awarded to John Zink Company based in Tulsa, Oklahoma. Fabrication of the equipment began in April 1999 and was subsequently completed in August 1999. Installation of the system was performed from August through December 1999, with initial startup and performance evaluation occurring from December 1999 through March 2000. According to the plan, it should be used in conjunction with other O&M manuals as follows:

- *Operational and Maintenance Instruction Manual* (Zink Company 1999a).
- *Manufacturer's Vendor Literature* (Volumes 1, 2 and 3) (Zink Company 1999b)

In addition, the following project procedures and plans shall be followed:

- Standard Operating Procedure (SOP) 156 - LFGTS Monitoring and Maintenance (included in the Site Operations Plan (NCI 2000)
- *Safety, Health, and Emergency Response Plan* (SHERP), *OII Landfill* (FWENC 1997)

Another aspect of the Third Partial Consent Decree involved development of a Compliance Testing Plan (CTP) by the PRPs. The purpose of the CTP is to describe the procedures to demonstrate compliance and guide the compliance testing activities relating to performance standards that must be met for landfill gas, including: (1) emissions through the cover, (2) subsurface gas migration, and (3) methane in onsite structures. Table 4-1 cross-references the elements of the third partial Consent Decree Scope of Work regarding compliance and is a guide to the CTP.

TABLE 4-1
Third Partial Consent Decree Compliance Testing Activity, Documentation Approach
Third 5-year Review Report for OII Landfill Superfund Site, Monterey Park, California

Consent Decree-3 SOW Section	Compliance Testing Requirement	Technical Approach and Relevant Documents
5.5.1	Compliance Testing Plan	CTP by NCI, September 2002
5.5.2	Performance Standards	Section 2.0 of the CTP
	Overall Approach	Section 3.0 of CTP, as well as SOPs 701,702 and 703
	Monitoring Procedures	SOPs 701, 702 and 703
	Monitoring Frequency	As specified in Section 5.0 of CTP
	Sampling Plans	SOPs 701, 702 and 703
	Monitoring Schedule	As specified in Section 5.0 of CTP
5.5.3	Compliance Test Request	To be compiled and submitted after approval of As-Built and Final Compliance Testing Plan
5.5.4	Compliance Testing Period	Two consecutive 90-day periods
5.5.5	Compliance Test Reports	Compile and submit no more that 6 weeks after conclusion of each compliance testing period
5.5.6	USEPA Compliance Notification	Upon receipt, implement Site Operations Plan
5.5.7	Compliance Date	The beginning of the first two consecutive successful completion testing periods
5.5.8	Construction Completion Report	Compile and submit three weeks after successful completion of compliance testing activities

The CTP is limited in scope, as specified above. Performance of the landfill cover, the stormwater management system, and the LFGTS are not subject to the plan because they are either not available for testing (cover and stormwater management system) or have a separate performance test (LFGTS). Explanations for each of these exclusions are detailed below.

Cover performance consists of the ability to keep rainwater from passing through the cover and the ability to remain stable or sustain minor damage during an earthquake. Because earthquakes cannot be scheduled, and the performance of the monocover as a rainwater barrier is monitored continuously by the time domain reflectometry (TDR) system, these systems are also not a part of the CTP. However, the Compliance Testing Report will include narrative indicating whether or not the performance of the cover remained compliant during the compliance testing period.

Because a 24-hour probable maximum precipitation event cannot be simulated over the 24-hour duration, acceptance of the design and acceptable performance of the system during routine operations was substituted for compliance testing of this component. However, the Compliance Testing Report will include narrative indicating whether or not the

performance of the stormwater management system remained compliant during the Compliance Testing Period.

Performance testing of the LFGTS is conducted separately every 5 years for one unit. The northernmost stack (TO-101) was tested and reported on in the Performance Test Final Report January 2001. The south unit (TO-151) stack was tested in July/August 2005. NCI had submitted both a thermal oxidizer performance test proposal and plan addendum to USEPA in early 2005. USEPA approved the final thermal testing package, and NCI started the stack performance test on July 18, 2005. The tests were similar to the north unit (TO-101) stack performance tests conducted in 2000, except the principal organic hazardous constituent (POHC) was changed. Benzene was used as the POHC in 2000, but due to hazardous issues and safety concerns, NCI proposed to use toluene as the POHC in 2005. The tests (using toluene as the POHC) were completed on August 6, 2005. NCI will prepare a report to document the performance test results for the south unit (TO-151) stack and submit this report to USEPA for review and comment.

Also associated with O&M and incorporated into the Operations Plan are multiple SOP documents that are used to guide implementation of the required O&M activities. Table 4-2 lists the existing SOPs and their associated latest revision dates.

TABLE 4-2
List of Standard Operating Procedures
Third 5-year Review Report for OII Landfill Superfund Site, Monterey Park, California

Series and Category	SOP Number/Title	Latest Revision Date
Series 100 General SOPs	SOP 102 Leachate Sampling Plan	09/15/2003
	SOP 103 Chain-of-Custody Procedures	09/15/2003
	SOP 104 Monocover Inspection	09/15/2003
	SOP 105 Landfill Surface Gas Emission Survey	05/23/2000
	SOP 108 Vehicle Inspection and Maintenance	05/23/2000
	SOP 110 Gas Extraction Well Monitoring	05/23/2000
	SOP 111 Gas Header Tap Monitoring	05/23/2000
	SOP 112 Gas Probe Monitoring	09/15/2003
	SOP 117 Seep Mitigation Operation, Maintenance and Monitoring	05/23/2000
	SOP 118 Extraction Well and Sump Pump Monitoring and Maintenance	05/23/2000
	SOP 120 Conveyance Line Inspection and Maintenance	05/23/2000
	SOP 121 Greenwood Avenue/Potrero Grande Sewer Line Inspection and Maintenance	05/23/2000
	SOP 123 Liquid Level Soundings	05/23/2000
Series 100 General SOPs	SOP 134 Management, Decontamination, and Disposal of PPE	05/23/2000
	SOP 135 Segregation, Decontamination, and Disposal of Debris	05/23/2000

TABLE 4-2
List of Standard Operating Procedures
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

	SOP 136 Management and Disposal of Used Containers	09/15/2003
	SOP 137 Filter Press Cake Sampling	09/15/2003
	SOP 138 Hazardous Waste Generation, Disposal, and Documentation Tracking Procedure	09/15/2003
	SOP 139 Monocover Soil Moisture Monitoring	09/15/2003
	SOP 140 Toe Buttress Deformation Monitoring and Data Evaluation	09/15/2003
	SOP 141 Heavy Equipment Operations on Steep Slopes	09/15/2003
	SOP 142 Groundwater Monitoring Well Sampling Procedures	05/23/2000
	SOP 143 Access and Bench Road Inspection	05/23/2000
	SOP 144 Surface Water Management System Inspection and Maintenance Activities	09/15/2003
	SOP 145 Compressed Air Station Inspection, Operation and Maintenance	05/23/2000
	SOP 146 Temporary Irrigation System Operation, Maintenance and Repair	09/15/2003
	SOP 147 Vegetative Cover System Inspection and Maintenance	09/15/2003
	SOP 149 Access and Bench Road Maintenance and Repair	09/15/2003
	SOP 150 Monocover Maintenance and Repair	09/15/2003
	SOP 154 Fugitive Dust Control and Monitoring	05/23/2000
	SOP 155 Booster Blower Monitoring and Maintenance	09/15/2003
	SOP 156 Landfill Gas Treatment System Monitoring and Maintenance	09/15/2003
	SOP 157 Caltrans Slope Inspection and Maintenance	05/23/2000
	SOP 159 Facility Fencing Inspection and Maintenance	05/23/2000
	SOP 160 Decontamination Facility Inspection, Maintenance, and Repair	05/23/2000
	SOP 161 Facilities and Utilities Inspection and Maintenance Activities	05/23/2000
	SOP 162 Gas Cylinder Inspection and Maintenance	05/23/2000
	SOP 163 GCL Cover Inspection	05/23/2000
Series 100 General SOPs	SOP 164 GCL Cover Maintenance and Repair	09/15/2003
	SOP 165 Reconsolidation of Wastes	09/15/2003
	SOP 166 Monitoring Equipment	05/23/2000

TABLE 4-2
List of Standard Operating Procedures
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

	SOP 167 Methane Monitoring in On-Site Structures	05/23/2000
	SOP 168 Air Dike System	09/15/2003
Series 300 Laboratory and Analytical SOPs	SOP 307 Total Dissolved Solids Analysis	09/15/2003
	SOP 308 Total Suspended Solids Analysis	09/15/2003
	SOP 309 Total Solids Analysis	09/15/2003
	SOP 312 pH Measurements	05/23/2000
	SOP 316 Sulfide Concentration Analysis	09/15/2003
	SOP 320 Chemical Oxygen Demand Test	05/23/2000
	SOP 321 Total Recoverable Oil and Grease Concentration Analysis	09/15/2003
Series 400 Health and Safety SOPs	SOP 401 Liquids Sampling	05/23/2000
	SOP 402 Excavation and Trenching	09/15/2003
	SOP 404 Soil Cover Maintenance	05/23/2000
	SOP 405 Steam Cleaning	05/23/2000
	SOP 406 Working with Drill Rigs	09/15/2003
	SOP 407 Landscaping	05/23/2000
	SOP 408 Confined Space Entry	09/15/2003
	SOP 409 Site Reconnaissance Activities	09/15/2003
	SOP 410 Lock Out/Tag Out Procedure	05/23/2000
	SOP 418 Gas Control Well Monitoring	05/23/2000
	SOP 421 Gas Probe Monitoring	05/23/2000
	SOP 423 Liquid Transfer Operations	05/23/2000
	SOP 424 Liquid Transport Operations	05/23/2000
	SOP 426 Hot/Cold Work	05/23/2000
	SOP 427 Liquid/Sludge Waste Truck and Fuel Delivery Inspections	05/23/2000
	SOP 428 Chemical Drum and Cylinder Handling	09/15/2003
	SOP 436 Storage and Handling of Drill Cuttings and Fluids	05/23/2000
	SOP 439 Headers, Laterals, Tie-In Headers, and Well Head Completion Construction	05/23/2000
Series 400 Health and Safety SOPs	SOP 440 Off-site Traffic Control	05/23/2000
	SOP 443 Heat Stress Precautionary Measures and Monitoring	05/23/2000

TABLE 4-2
List of Standard Operating Procedures
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

	SOP 444 Fall and Retrieval Systems (Fall Protection Plan)	09/15/2003
	SOP 445 Handling Red Bag Debris	05/23/2000
	SOP 446 Line Breaking	05/23/2000
	SOP 447 Respiratory Protection	05/23/2000
Series 600 Admin and Documentation SOPs	SOP 603 Management of Record Drawings	05/23/2000
Series 700 Compliance Testing SOPs	SOP 701 Landfill Surface Gas Emissions Survey for Compliance Testing	05/23/2000
	SOP 702 Gas Probe Monitoring for Compliance Testing	05/23/2000
	SOP 703 Methane Monitoring in On-site Structures for Compliance Testing	05/23/2000
Series 800 Consent Decree-8 Specific SOPs	SOP 801 Chain of Custody Procedures	09/15/2003
	SOP 802 Liquid Level Measurement	09/15/2003
	SOP 803 Groundwater Monitoring, Well Sampling Procedures	09/15/2003
	SOP 804 Monitoring Equipment	09/15/2003
	SOP 805 Drilling and Monitoring Well Construction	09/15/2003
	SOP 806 Coring Sample Collection	09/15/2003
	SOP 807 Geophysical Logging	09/15/2003
	SOP 808 Aquifer Testing	09/15/2003
	SOP 809 Microturbine Power Generation Station Operation	09/15/2003

4.2.2 Eighth Partial Consent Decree O&M Requirements

There are four major components that require O&M. They are perimeter liquids control, liquids treatment, off-landfill groundwater, and environmental monitoring. The PRPs carry out all operations, maintenance, and monitoring at the site, as approved by USEPA.

4.2.2.1 Perimeter Liquids Control Component

The PLC component is to prevent migration of constituents from the landfill to groundwater at levels that impair water quality and/or represent a potential threat to human health and the environment.

4.2.2.2 Liquids Treatment Component

The existing leachate treatment plant is used to treat the liquids collected as part of the selected remedy. The treated liquids are discharged to CSDLAC sanitary sewer system. Off-

gas or air emissions from the treatment plant are conveyed through the existing or a modified foul-air system to the thermal destruction facility for treatment.

4.2.2.3 Off-landfill Groundwater Component

The remedial action objectives for cleanup under the selected groundwater remedy are to reduce contaminant concentrations in groundwater to below cleanup standards through PLC and natural attenuation and to prevent exposure to contaminated water through implementation of institutional controls. The Final Access and Institutional Controls Work Plan was approved on May 27, 2003. USEPA believes that PLC and natural attenuation will be sufficient to reduce concentrations to cleanup standards; however, if that is not the case, USEPA will implement contingency measures.

4.2.2.4 Environmental Monitoring Component

To ensure that the performance standards are met for all components of the selected groundwater remedy for as long as contamination remains onsite, an USEPA-approved Final LTGMP (NCI 2002a) is being implemented. The monitoring program is intended to meet several objectives, including:

- Assess compliance with the chemical performance standards and cleanup standards.
- Monitor the effectiveness of the PLC system.
- Detect additional releases of constituents from the landfill.
- Monitor the progress of natural attenuation in groundwater.
- Monitor effluent chemical concentrations from the treatment plant.

NCI is the vehicle for the PRPs to carry out all operations, maintenance, and monitoring at the site. NCI implements all the activities included in the Operations and Maintenance Plan with their staff or with contractors. All plans are approved by USEPA.

NCI maintains field staff for operations, maintenance, and monitoring, and an office staff for administration. Additional operations, maintenance, and monitoring staff are available via an in-place contract included for unusual events or emergencies. NCI has contracts for hydrogeologists and engineers, as needed; gas control engineers make routine site visits to monitor performance.

4.2.3 Operations and Maintenance Costs

Table 4-3 presents both the ROD-estimated costs and the actual dollars spent for the systems. The information was obtained from the Summary of Project Costs in both the *Remedial Action Report for the Gas Control, Cover, and Surface Water Management Systems* (USACE 2002) and the *Interim Remedial Action Report for the Final Remedy Perimeter Liquids Control, Natural Attenuation of Groundwater Contamination, and Long-Term O&M of Environmental Control Systems* (USEPA 2003).

Current O&M costs are generally below the estimated projections found in the site RODs. It should be noted, however, that the PLC systems are not fully operational; therefore, there is very little or no information for maintenance associated with PLC. It is anticipated that annual O&M costs will increase as the treatment and conveyance systems age.

TABLE 4-3
Operations and Maintenance Costs
Third 5-year Review Report for OII Landfill Superfund Site, Monterey Park, California

Remedial Activities	Capital Cost (in millions)		Annual O&M Cost	
			'01 – '02	'03 – '04
Gas Control, Cover and Surface Water	Actual[1]	$102.9	$3.5	NA
	ROD Estimate	$68.4-118.3	$3.7-4.1	NA
Perimeter Liquids Control, Natural Attenuation and Operations & Maintenance	Actual	$0.5[2]	NA	$3.8[4]
	ROD Estimate	$17.6[3]	NA	$6.4

NA – Not available

[1]Does not include North Parcel costs, which are estimated to be less than 2 percent of the total cost of the remedy.

[2]The "actual" remedial action costs presented are for installation of a limited number of groundwater monitoring and extraction wells required as part of the Final Remedy. These wells were installed by the PRPs in 1997 and 1998 as an early action conducted during CD negotiations.

[3]The estimate includes installation and operation of an extensive PLC system around the western and southwestern perimeter of the OII Site. The cost for the PLC system in this area was paid as part of OU-3 and is not reflected in the Actual Cost column.

[4]Costs from September 11, 2003 letter from Les LaFountain to Lance Richman, USEPA Remedial Project Manager

5.0 Progress Since Last 5-Year Review

The last 5-year review conducted at OII was signed and dated by USEPA on February 18, 2000. There were no additional response actions required as a result of the findings of that review. The protectiveness statement expected the remedies to be protective of human health and the environment and also stated that immediate threats had been addressed. The findings were that the remedies implemented and continuing were being conducted in a timely, efficient, and reliable manner. The conclusion was that ongoing remedial and enforcement actions, combined with integration of effective site control and monitoring and leachate management, would continue to be protective of human health and the environment.

From the time of the issuance of the previous 5-year review until present, many activities have occurred and continue to occur at the site. Some of the major milestones are listed below:

5.1 South Parcel

- The landfill cover is completed.
- Integrated surface gas emission and cover and settlement monitoring and evaluation surveys were performed. Annual reports to summarize information gathered during the reporting year relating to settlement and performance of the cover system, roads, and the surface water management systems were submitted.
- The remedial action report for the gas control, cover and surface water management systems, and the interim remedial action report for PLC, natural attenuation of groundwater contamination, and long-term O&M of environmental control systems were prepared and submitted to USEPA.

5.2 North Parcel

- In accordance with CD-3 North Parcel excluded work requirements, a Final Predesign report was prepared for the North Parcel activities in August 2005.
- A Construction Completion Report was prepared for the North Parcel stormwater controls, which were repaired and brought into compliance per Regional Water Quality Control Board standards.

5.3 Sitewide

- The new LFGTS was on-line and passed the first emission limits for an LFG thermal oxidation compliance test. Compliance testing was conducted and reported on, per the requirements of the Third Partial Consent Decree.

- The Final Construction As-Built Report was prepared, including a comprehensive Site Operations Plan and Compliance Testing Plan.
- Continued improvements and upgrades to the groundwater and gas monitoring systems are ongoing.
- A Quality Assurance/Quality Control (QA/QC) Plan, Emergency Response Plan, and SHERP were prepared.
- Microturbine technology was installed to use LFG to generate electricity supply for operations at the landfill site.
- An LTGMP was prepared and three Annual Groundwater Monitoring and Evaluation Reports (2002, 2003, and 2004 were completed).
- An Access and Institutional Controls Work Plan was prepared.
- The Eighth Partial Consent Decree was approved and entered by the Court.
- Annual stormwater discharge reports were prepared and submitted to the Regional Water Quality Control Board, as required by general permit 419S002548 for industrial activities (2001-2002, 2002-2003, 2003-2004).
- The industrial wastewater discharge permit No. 14501 was renewed by the CSDLAC. This permit allows for treated wastewater to be discharged to the sanitary sewer at the LTP located on the North Parcel.
- An RDI was conducted to help refine the areas where PLC actions would be required at the point of compliance (POC) and the types of PLC systems that may be needed in these areas. Following the RDI, a Preliminary Design Report was prepared in accordance with the remedial design process described in the eighth partial Consent Decree. The Consent Decree prescribes that a Preliminary Design Report be prepared to initiate design of remedial systems, including PLC actions. Separate Preliminary Design Reports are required for each part of the larger system, if the total system is to be implemented incrementally. Phase I, or the initial phase, of the preliminary design for PLC systems, which focused on the North Central Area and Northeast Area, was completed and a Pre-Final Preliminary Design Report was prepared.
- A supplemental nickel evaluation was initiated to resolve questions about the source of widespread nickel contamination present north and northwest of the landfill. The results of this effort will affect how the natural attenuation of groundwater contamination will be evaluated in these areas.
- A supplemental investigation was initiated to evaluate the source and contaminant migration pathways that resulted in 1,4-dioxane contamination being detected well downgradient of the landfill.
- Monthly progress report for both the third and eighth partial Consent Decrees over the last 5 years were submitted.

6.0 5-Year Review Process

Shiann-Jang Chern, USEPA Remedial Project Manager, led the OII 5-year review. Vicki Rosen, USEPA Community Involvement Coordinator, Lance Richman, USEPA Remedial Project Manager, and Eric Esler, USEPA Assistant Regional Counsel were involved as supporting team members familiar with site operations and community issues. CH2M HILL provided technical support to the USEPA. Tedd Yargeau, California Department of Toxic Substances Control, also provided technical comments to this 5-year review document.

The 5-year review consisted of a review of relevant documents, a site inspection, and interviews with former and current OII onsite staff and their consultants, former USACE oversight managers, other USEPA consultants, and community residents and representatives for both Monterey Park and Montebello.

6.1 Community Involvement

Activities to involve the community in the 5-year review included preparation and distribution of a fact sheet in May 2005. The fact sheet outlined the process associated with conducting a 5-year review and invited community involvement.

Following the release of this document, USEPA will produce and distribute a fact sheet to the community near the site. The fact sheet will summarize the findings of the 5-year review and instructions on how to access a copy of the review.

6.2 Documents Review

As a part of the 5-year review process, CH2M HILL conducted a brief review of numerous documents related to site activities. The documents chosen for review ranged in publication date from 1985 to 2005. Appendix A provides a list of the documents reviewed as part of this report.

6.3 Data Reviewed

The following sections describe the periodic reporting and/or monitoring for the treatment facilities, groundwater and other liquids, and other control components of the OII Landfill remedial action activities.

6.3.1 Leachate Treatment Plant

A Leachate Treatment Plant Operations Plan was prepared in May 2000 as part of Volume 2 of the Final Construction As-Built Report under Attachment 3, the Site Operations Plan. The plan is quite comprehensive and outlines general leachate treatment system management, describes the process units and support systems, the unit operations and provides references to other documentation useful in understanding the full system operations. The key elements of the LTP relating to performance standards are the influent treatment and

effluent discharge aspect of the system. These elements and data associated with them are discussed below.

6.3.1.1 Influent Treatment and Effluent Discharge

The effluent discharge from the batch treatment conducted at the leachate treatment plant is regulated by CSDLAC. CSDLAC operates a POTW for treatment of industrial wastewater. The effluent from the OII Site LTP can be discharged into the industrial wastewater stream that goes to the POTW as long as discharge requirements are being met per the Industrial Wastewater Discharge Permit. The Industrial Wastewater Discharge Permit is issued by the CSDLAC and for the discharge of treated wastewater under Permit No. 14501. A copy of the permit is kept on file at the site and was available for review at the treatment facility when the 5-year review site inspection was conducted. This permit will expire on April 10, 2008.

The approved wastewater producing operations are landfill leachate extraction, equipment decontamination, gas condensate, stormwater, utility water, and laboratory wastes. The constituents of the wastewater are acidity, sulfides, chemical oxygen demand (COD), and traces of toxic organics. The treatment plant is currently permitted for and can be operated under various modes including Modes 1, 2, 3, 4a, 4b, 4c and 5. These modes are dependent on the flow rate of wastewater to be treated and the constituents present. Modes 1-4 include influent equalization, sand filtration, GAC, and solids handling. In addition to these, Mode 1 includes the sequence batch reactors (SBRs); Mode 2 includes the SBRs and the chemical precipitation unit (CPU); Mode 3 includes the CPU; and Mode 4 includes the SBRs in modified mode (as a settling basin for Mode 4a, as a CPU for Mode 4b, and as an air stripper for Mode 4c), with the use of CPU as needed. A final mode, Mode 5, includes only the SBRs used as air strippers, followed by sand filtration and GAC. Influent equalization may be used, but is not required, under Mode 5. A remote oil separation facility may be operated in any mode but is not required.

The treated leachate effluent must comply with the following conditions before it can be discharged:

- A permitted discharge flowrate of 27,000 gallons per day with a peak flowrate of 120 gallons per minute
- Effluent discharge limitations and requirements as follows:
  - The concentrations of pollutants in the wastewater effluent discharged from the facility shall not exceed the following limits for all composite or grab samples:

Conventional Pollutants	Maximum Concentration
pH	>6 pH units
Dissolved sulfides	0.1 milligrams per liter (mg/l)
Temperature	140 °F
Closed Cup Flash Point	>140 °F

Heavy Metals and Cyanide	Maximum Concentration
Arsenic (Total)	3 mg/L
Cadmium (Total)	0.69 mg/L
Chromium (Total)	2.77 mg/L
Copper (Total)	3.38 mg/L
Lead (Total)	0.69 mg/L
Mercury (Total)	2 mg/L
Nickel (Total)	3.98 mg/L
Silver (Total)	0.43 mg/L
Zinc (Total)	2.61 mg/L
Cyanide (Total)	1.20 mg/L
Priority Organics	
Volatile Total Toxic Organics	1,000 µg/L
Semivolatile Total Toxic Organics	1,000 µg/L
Total Identifiable Chlorinated Hydrocarbons	Essentially None

- Batch discharge of treated wastewater to the sanitary system is required. Continuous, flow-through discharge of treated wastewater is not permitted. Manual control of the batch discharge system must be exercised at all times. Batches of treated wastewater may only be discharged to the existing 60° v-notch weir followed by the sanitary sewer via the effluent storage tanks (Tanks T-9, T-10, and T-11), except during operation in Mode 5, when discharge via the SBR wet wells (Tank T-8A and T-8B) is allowed.
- A representative sample of each batch of treated wastewater must be collected and analyzed before the batch is discharged to the sanitary sewer. To obtain a representative sample, the contents of each batch of wastewater must be thoroughly mixed (i.e., pump recirculation) prior to sample collection.
- Each batch of treated wastewater shall be analyzed for pH and dissolved sulfides. The batch may be discharged to the sanitary sewer only if its contents meet the effluent discharge limits. All sewer discharge laboratory analyses, including those for wastewater that does not meet the discharge limits, shall be retained onsite for at least 180 days and made available to CSDLAC personnel upon request. CSDLAC may require batch testing for additional parameters if discharge violations occur.
- Adequate onsite or readily-available facilities, including analytical instruments and technical personnel, must be provided to satisfy the batch-discharge analysis requirements. The laboratory must be certified by the State of California.

  - Wastewater containing pollutants in excess of any discharge limitations must be rerouted through the appropriate treatment unit(s) for removal of the pollutants before discharge to the public sewers.
  - A log book must be maintained for the batch discharge system. The date, time, volume, treatment provided, and analytical results for each batch of wastewater discharged must be entered into the log book, as well as any corrective action taken on off-spec batches. The log book must be kept onsite and made available for inspection by CSDLAC personnel upon request.

- Grab sampling must be conducted at the 60° v-notch weir located at the north end of the bermed LTP area prior to discharge.
- Self-monitoring Reports that cover the reporting period of the previous three months must be submitted on the 15th of every third month. For example, the report due on the 15th of July would cover the reporting period from April 1 through June 30.
- The following discharges are prohibited:
  - Any toxic, flammable, explosive, corrosive, radioactive, or non-biodegradable substance.
  - Uncontaminated cooling water, groundwater, storm water, or surface drainage water.
  - Industrial wastewater with temperatures exceeding 140°F.

Other provisions include:

- A surcharge test must be conducted monthly depending on flow rate. The parameters for this test include COD and suspended solids. A long form detailing analytical results with surcharge test results must be submitted annually.
- Rain water must be collected and pumped to the equalization tank for the first 0.65 inch of rain. After 0.65 inch, rain is collected and pumped to a stormwater holding tank. All equipment associated with the rainwater cups, gauges, pumps, and valves must be properly maintained.
- Flow monitoring maintenance must be recorded on the Flow Monitoring System Maintenance Records Form at the LTP monthly log book. These forms must also be submitted to CSDLAC along with instrumentation calibration reports annually.
- A spill log book must be kept to record all spills. This log book must contain the date, time, and cause of spill, name and quantity of material spilled, method of disposal, operator name, and corrective action to prevent spill from re-occurring.
- Instrumentation maintenance must be performed annually on the effluent flow monitoring devices. Hydraulic calibration of the entire system must be performed every 3 years.
- Maintenance of the v-notch weir is required monthly.

Some of the quarterly industrial wastewater self-monitoring reports were reviewed to ascertain if OII is properly reporting per the permit requirements. These reports included a completed Self-monitoring Report form which is preprinted with the reporting parameters and provided by CSDLAC. These reports included the analytical results from an offsite laboratory. The analytical laboratory that OII is currently using is Columbia Analytical Services, Inc., a State-certified laboratory located in Canoga Park, California. The onsite laboratory located at the LTP plant is set up to provide analytical results for the pH, total suspended solids, sulfides, and COD. The permit discharge requirements were all being met.

The wastewater treatment surcharge statement for 2003-2004 was also reviewed. The permit requires OII Landfill, as an industrial user, to be a participant in The CSDLAC Surcharge Program. This means that OII is subject to additional self-monitoring requirements, including monitoring for COD and suspended solids at a frequency dependent upon yearly cumulative flow from each outlet. During the 2003-2004 reporting year, from July 1, 2003 through June 30, 2004, the sampling frequency for COD and suspended solids averaged once every 3 months, which is in compliance with the frequency requirement based on yearly cumulative flow, which was about 4.5 million gallons.

An effluent flow measurement system calibration report prepared in September 2004 was reviewed to assure that the discharge requirement for annual calibration was being met. Each year, an instrument calibration check is required for the flow measurement devices located at the LTP. The calibration activities are overseen by a California-registered professional engineer. The report includes the certification of test results for the calibration check, as well as the flow monitoring system maintenance, calibration check, instrumentation and control loop test records, and the certificate of calibration with associated test results.

6.3.2 Landfill Gas Treatment System

An LFGTS Plan was prepared in May 2000 as part of Volume 3 of the Final Construction As-Built Report under Attachment 3, the Site Operations Plan. The plan is quite comprehensive and describes the system and processes, outlines operations, monitoring, and maintenance requirements; lists reporting and evaluation information; and explains emergency response procedures. The key elements of the LFGTS, also known as the thermal destruction facility, relating to performance standards are the influent treatment and effluent discharge aspect of the system. Elements and data associated with these aspects are discussed below.

The thermal destruction facility is required to achieve a DRE of 99.99 percent, reduce hydrogen chloride emission to 1.8 kilograms per hour or 1 percent of the hydrogen chloride in the stack gasses, and must not release particulates in excess of 180 milligrams per dry standard cubic meter corrected for the amount of oxygen in the stack gas. To ensure that these remedial objectives are being met, a performance test is conducted once every 5 years for each of the thermal oxidizer units. The northernmost stack was tested in 2000, and the results were reported in the Performance Test Final Report (NCI 2001). The south stack testing is currently being conducted. The south stack performance test report will be available in Fall 2005.

6.3.2.1 North Stack Performance Test Results

The performance test was conducted to determine the compliance status at both a high-load and low-load operating conditions for the following emission and operating limits:

- Target operating temperature of 1,800°F ± 50 °F
- Minimum residence time of 1 second
- Benzene DRE of ≥99.99 percent, based on the results of each run
- Particulate matter emission limit of ≤0.08 grains per dry standard cubic foot at 1 atmosphere and 68 °F (gr/dscf) at 7 percent oxygen, based on the results of each run
- Hydrogen chloride emission limit of ≤4 pounds per hour, based on the results of each run
- Oxides of nitrogen emission limit of ≤0.08 pounds per million British Thermal Units, based on the average of three runs
- Particulate matter emission limit of ≤0.04 gr/dscf at 7 percent oxygen, based on the average of three runs
- Carbon monoxide emission limit of ≤100 ppm at 7 percent oxygen, based on the average of three runs
- Total reduced sulfur concentration at the inlet location of ≤40 ppm, based on the average of three runs
- Vinyl chloride 24-hour ground level concentration of ≤10 parts per billion by volume

All exhaust gas sampling was conducted on the platform to Thermal Oxidizer-101, also known as the north stack. Combustion air sampling was conducted at the inlet air duct to TO-101, and LFG samples were collected from the LFG feed line to TO-101. Three test runs were conducted for each operating condition.

Emissions of particulate matter and hydrogen chloride were found to be well below the established limits, as specified in the original and amended ROD. The unit also demonstrated a percent-destruction efficiency greater than the required DRE of 99.99 percent for the POHC (benzene) during all six test runs (three high and three low).

In addition to the emission limits in the original and amended ROD, the ROD also cited a number of other federal and state regulations as applicable or relevant and appropriate requirements (ARARs). (See Appendix B for a list of all the ARARs defined in the RODs.) In regard to these emission criteria, particulate matter, total reduced sulfur, vinyl chloride, and oxides of nitrogen were found to be below the established limits. Since the vinyl chloride stack gas concentration of 0.17 parts per billion by volume was well below the 10 parts per billion by volume ground level concentration limit, no dispersion modeling was performed to demonstrate compliance. Ground-level concentrations will be even further below the limit. The unit also demonstrated a total gaseous non-methane organics (TGNMO) destruction efficiency greater than 98 percent.

In regard to the operational limits set forth in the ROD, the thermal oxidizer unit was operated within the target combustion temperature of 1,800°F ± 50°F during each test run. The thermal oxidizer unit demonstrated a residence time greater than 1 second during each run, and the hourly rolling average for carbon monoxide was well below the limit of 100 ppm during each test day.

The performance test was deemed by USEPA to be in compliance by meeting the performance standards for emission limits and testing requirements of the third partial Consent Decree, the 1988 ROD, and the 1990 ROD amendment.

6.3.2.2 South Stack Performance Test Results

The south unit (TO-151) stack was tested in July/August 2005. NCI had submitted both a thermal oxidizer performance test proposal and plan addendum to USEPA in early 2005. USEPA approved the final thermal testing package, and NCI started the stack performance test on July 18, 2005. The tests were similar to the north unit (T-101) stack performance tests conducted in 2000, except the POHC was changed. Benzene was used as the POHC in 2000, but due to hazardous issues and safety concerns, NCI proposed to use toluene as the POHC in 2005. The tests (using toluene as the POHC) were completed on August 6, 2005. NCI will prepare a report to document the performance test results for the south unit (TO-151) stack and submit to USEPA for review and comment.

6.3.3 Air

The third partial Consent Decree specified that compliance testing could begin after approval of the Construction As-Built Final Report for the entire site, with testing conducted in two consecutive 90-day compliance testing periods. The Construction As-Built Report was approved by USEPA on September 11, 2002 and included an approved Compliance Testing Plan. Three types of compliance testing were performed during two separate compliance testing periods from October 2002 through March 2003. The results of each of these compliance tests for each testing period were reviewed in the May 2003 report entitled *First and Second Compliance Testing Periods, Third Partial Consent Decree* (NCI 2003b). According to these reports, the compliance testing that was conducted included subsurface gas migration, gas emission through the cover and methane in onsite structures.

6.3.3.1 Compliance Testing Period - Subsurface Gas Migration

Subsurface gas migration was monitored at a series of probe locations that each contain a probe cluster with up to six completions at various depths. Both hand-recorded pressure data and data-logger methane data were collected, compiled, and entered into the site database system (per appropriate SOP). The results over each of the 3-month periods met the performance standard of ≤ 5 percent methane in the compliance probes and the LFG system.

6.3.3.2 Compliance Testing Period - Surface Emissions Monitoring

Data were collected in compliance with the appropriate SOP. The results from the compliance testing period were used to satisfy both the compliance testing requirements, as well as the Third Partial Consent Decree Operations Plan emissions survey requirements. Two emission surveys are required annually. The results showed that surface emissions met

the compliance performance standard, and the surface emissions system was operating in compliance with the requirements of the Consent Decree.

6.3.3.3 Compliance Testing Period - Methane in Onsite Structures

Methane was reported per the appropriate SOP, and the results indicated that the methane levels met the performance standard for all sensors at a value of 0 percent of the methane lower explosive limit.

On June 20, 2003, USEPA deemed that that compliance testing activities had been successfully completed but did not include the North Parcel item of Excluded Work. This notification by USEPA confirmed that the 3-year joint O&M of all systems had begun.

6.3.3.4 O&M - Surface Emissions Monitoring

Surface gas emission surveys are conducted semi-annually to evaluate the effectiveness of the landfill cover and the gas extraction system in controlling movement of LFG through the cover. Two surveys were conducted in 2004, one in May/June and the other in November/December.

The survey employs integrated sampling along routes specified in the approved SOP and a 50 parts per million by volume trigger level for initiation of the location of emission sources greater than 500 ppm. The survey was conducted by traversing 212 routes. The field crew collected a composite samples for each route in a 10 liter Tedlar bag while walking an approximately 250 foot route. The results indicated that no values were > 50 parts per million by volume during the survey; therefore, no cover repairs were required.

6.3.4 Landfill Cover and Related Components

There is an annual reporting requirement regarding settlement of the landfill and performance of the cover system. The report summarizes information gathered during each year from implementation of SOPs relevant to the landfill settlement and the performance of the cover system, roads, and the surface water management system. Both the 2003 and 2004 annual reports were reviewed. Table 6-1 provides a summary of the major topics and reporting results for each year.

TABLE 6-1
Summary of Annual Report Findings relating to Cover Settlement Monitoring and Evaluation
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

Major Topic	2003	2004
Landfill Settlement	A survey of the top deck indicated that drainage was as designed and ponding is not occurring. GPS surveys along settlement profiles and bench roads will be performed in 2004 and reported in the 2004 annual report.	Survey data show no areas of rapid settlement and indicate no areas of potential rainwater ponding, other than settlement of the V-ditches. In 2004, maintenance repairs to the North Slope and miscellaneous other areas due to settlement cracks were made. There have been no other major areas of settlement that indicate need for repairs or corrective action.

TABLE 6-1
Summary of Annual Report Findings relating to Cover Settlement Monitoring and Evaluation
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

Major Topic	2003	2004
Monocover	No significant cover damage due to storm events or earthquakes occurred in 2003. Slopes were found to be stable and vegetation cover was good. The evapotranspiration layer functioned as designed. Extensive repairs were made to the cover on the North Slope due to normal settlement-induced cracking.	Following repairs made during summer 2004, the monocover, vegetation and North Slope were in good condition with no instability issues as of the December annual inspection. By implementation of appropriate SOPs for monocover system maintenance and repair, the cover complies with performance standards.
GCL Cover	The GCL layer did not show signs of distress, evidence of tears or punctures, or depressions that would cause ponding or infiltration. Soil cover areas requiring attention were repaired, and re-seeding of isolated areas was performed.	The GCL cover is in good condition with no instability, depression or deep rooting vegetation problems as of the December 2004 annual inspection. Burrows noted during the inspection may require additional vector controls or relocation of the existing bird perches if there is an increase in burrowing animal activity. By implementation of appropriate SOPs for GCL cover maintenance and repair, the cover complies with performance standards.
Access and Bench Roads	The bench roads are in good condition following repair work in 2002 and 2003. No instability issues, major erosion, or loss of road base were noted as of the December 2003 annual inspection.	The bench roads are in fair condition (some subsidence and cracking continues to occur) following re-work in 2002 and 2003. Re-grading repairs will be required on the 480-North Bench Road after the rainy season, due to landfill settlement. Continued implementation of appropriate SOPs relating to bench road maintenance and repair will provide all-weather access and comply with performance standards.
Toe Buttress	In August 2003, repairs were performed on the Toe Buttress Road associated with depression and adverse grades. During the annual inspection, no issues were noted along the Toe Buttress Road area.	The Toe Buttress area is stable. The profile data indicate minor movement (<0.2 foot) over the period from March to September. However, the changes in elevation were very close to the accuracy limits of the GPS survey equipment. Subsequent surveys would be needed to confirm displacement concerns.

TABLE 6-1
Summary of Annual Report Findings relating to Cover Settlement Monitoring and Evaluation
Third 5-year Review Report for OII Landfill Superfund Site, Monterey Park, California

Major Topic	2003	2004
Surface Water Management Systems	The 540-Southeast Road was re-graded in August and September 2003, and the existing 6-inch HDPE pipe culverts were replaced. The soil loss and sediment retained in the southeast detention basin during the 2002-2003 wet season was low. The cover system showed adequate performance as indicated in the annual stormwater report required by the Regional Water Quality Control Board.	The surface water management system complied with the performance standards relevant to landfill settlement and cover system performance. No further action or modification to the storm water system is required, other than continued implementation of relevant SOPs.

GCL = geosynthetic clay liner.
HDPE = high-density polyethylene.
GPS = global positioning system.

6.3.5 Stormwater

An annual report for stormwater discharges associated with industrial activities is required to be submitted to the local LARWQCB every year by July 1. This is required by under the Statewide General Industrial Activities Storm Water Discharge Permit No. 419S002548 (General Permit). For this 5-year review, annual stormwater reports from 2001 to 2004 were reviewed.

The OII Landfill is required to collect and analyze samples from two rain events, defined as steady rain of at least 1 hour duration, in accordance with the General Permit. In 2003 and 2004, OII collected samples during only one rain event due to lack of storm events during work hours and lack of flow. There are 22 stormwater discharge locations at the facility, and four were sampled during the first event on March 1, 2004. According to the annual report, these locations were the only ones with enough flow to capture a sample. In 2002 and 2003, OII collected samples at all but one of the 22 locations during four rain events. The discharge locations were sampled in December 2002 and February 2003. In 2001 and 2002, OII collected no samples during rain events due to lack of storm events during work hours and lack of flow.

Visual observations were made of all drainage areas to detect the presence of unauthorized non-stormwater discharges and their sources, as required by the General Permit. No unauthorized non-stormwater discharges were detected in any of the years that were reviewed.

Monthly visual observations of stormwater discharges occurred at all locations during the wet season, as required in the General Permit. The wet season months are October through May. An Annual Comprehensive Site Compliance Evaluation, as required by Section A.9 of the General Permit, was conducted each year according to the stormwater reports. According to the annual reports, all appropriate potential pollutant source/industrial activity area inspections were made, and the Storm Water Pollution Prevention Plan was reviewed to assure that all Best Management Practices were being implemented.

When sampling was able to be conducted, the samples were analyzed for ammonia, COD, chloride, specific conductance, cyanide, nitrate, oil and grease, pH, total dissolved solids, total suspended solids, sulfate, volatile organic compounds, semivolatile organic compounds, and hexavalent chromium. For the purposes of the annual stormwater reporting requirements in the General Permit, only the basic parameters of pH, total suspended solids, specific conductance, and oil and grease were reported in the sampling and analysis results table. Columbia Analytical Services, Inc., a state-approved laboratory, performed the analysis.

6.3.6 Groundwater

The remedial activities that are required per the 1996 Final Remedy ROD are intended to control site-associated liquids and remediate groundwater, as well as provide for long-term administration, operation, monitoring, and maintenance of all environmental control facilities at the site. The control of contaminated groundwater will be achieved through natural attenuation and focused contingency actions, if necessary. The control of site-associated liquids will be achieved through implementation of PLC actions, as necessary, at the landfill perimeter. These specific and detailed performance standards are outlined under Section 2.2 of the Scope of Work, found as Exhibit C of the eighth partial Consent Decree.

Cleanup through natural attenuation is required in areas where constituent concentrations in groundwater exceed the cleanup standards specified in the ROD. In areas requiring cleanup, the ROD also specified the projected cleanup times and anticipated distances of additional constituent migration before cleanup standards would be met. These times and distances are presented in Table 6-2. The distances were used to identify groundwater compliance lines that define whether or not the natural attenuation remedy is in compliance. Groundwater monitoring at sentinel wells (located at the compliance lines) determines whether the remedy complies with performance standards. Groundwater monitoring throughout the areas of contamination is used to assess whether the natural attenuation remedy is progressing in accordance with the cleanup times listed in Table 6-2 and is therefore in compliance.

TABLE 6-2
Natural Attenuation Requirements-Max Times[a] and Distances[b] to Reach Cleanup Standards in Groundwater
Third 5-year Review Report for Oil Landfill Superfund Site, Monterey Park, California

	Organic Constituents		Inorganic Constituents	
Area	**Years**	**Distance (feet)**	**Years**	**Distance (feet)**
Northwest Area-Shallow Units	12	0	56	600
Northwest Area-Deeper Units	12	0	56	600
Southwest Area-Shallow Units	34	200	150	1,000
Eastern Area	18	0	56	600

Notes:
[a] Times are years for constituent concentrations in groundwater to be reduced to cleanup standards from the first date when PLC meets performance standards at the upgradient point of compliance in that subarea.
[b] Distances listed refer to distances beyond the extent of cleanup standard exceedances and were used to set the groundwater compliance lines.

PLC actions are required in areas where constituent concentrations at the landfill perimeter point of compliance exceed the standards listed in the ROD. Performance criteria that may be used to demonstrate compliance in areas with active PLC actions include one or more of the following:

- Liquids are no longer present (i.e., the perimeter area has been dewatered).
- A reversal of hydraulic gradient has been demonstrated within the area where USEPA requires perimeter liquids control.
- Overlapping capture zones have been established between adjoining extraction wells.

As PLC actions are implemented, the PRPs will seek USEPA approval for the specific performance criteria to be used for each action.

To track whether performance standards are being adequately met, groundwater monitoring is conducted semiannually (generally conducted in February and August), as described in the Final LTGMP (NCI 2002a). In selected instances (i.e., new wells or if requested by USEPA), monitoring is conducted quarterly. The LTGMP was approved by USEPA in May 2002. One of the documents required per the LTGMP is an Annual Groundwater Monitoring and Evaluation Report. This report is meant to document the results and evaluation of the detection groundwater monitoring and compliance/performance monitoring programs. To date, three annual reports have been generated. Both the 2002 and 2003 annual reports have been reviewed and approved by USEPA. The 2004 report, submitted in March 2005, is pending USEPA approval. All of the reports were reviewed as part of the 5-year review process. The 2004 annual report provides the most recent data. It should be noted that groundwater monitoring was being conducted prior to the LTGMP being approved by USEPA. This plan was prepared to formalize the groundwater monitoring program requirements and associated reporting deliverables.

6.3.6.1 Groundwater Monitoring

Water Elevations. In 2004, quarterly groundwater monitoring events were conducted in February, May, and August. Shallow- and deep-zone water levels along the POC (see Figure 6-1) generally remained stable (this includes wells where water levels fluctuate within a narrow range) or decreased over the past year. Most downgradient water levels have either remained stable or decreased since 2000. The August 2000 and August 2004 groundwater elevation maps are found on Figures 6-2 and 6-3, respectively.

Detection Monitoring. Detection monitoring was conducted in POC wells where verified chemical performance standard (CPS) exceedances were not present. With the exception of well OI-30A, results indicate that there are no new releases from the landfill.

In the case of well OI-30A in Subarea D (northeast), which historically had CPS exceedances, recent constituent concentrations had declined to the point where exceedances were no longer verified. However, trichloroethene (TCE) was detected above the CPS in August 2003 and subsequently in February and August 2004. Two additional volatile organic compounds (VOCs) exceeded CPS during the February event, and six VOCs exceeded CPS in August, confirming a new release in this area.

The area of the landfill in the vicinity of well OI-30A and other wells, OI-75A and OI-60A, has experienced enhanced *in-situ* thermal oxidation resulting in settlement. This condition prompted a reduction in the rate of LFG extraction starting in 2000. In December 2004, one of the dual-cased LFG extraction wells (IV-5) at the northeast corner of the landfill in Subarea D was found to have been sheered as a result of settlement. It is thought that the combined effect of reduced LFG extraction since 2000 and no extraction from IV-5 has resulted in increased LFG contact with groundwater, resulting in increased VOC concentrations in groundwater in the area.

Currently, there are three VOCs with verified exceedances in well OI-30A. This area is part of an ongoing remedial design investigation that will lead to the installation of a PLC to address these exceedances and those detected in OI-60A. The proposed PLC activities area discussed further below.

Compliance Monitoring. It should be noted that true compliance monitoring can not occur until after PLC actions have been implemented in each subarea for which they are required. At this stage, the data summarized in this section are from POC wells where CPS exceedances have been verified. At these wells, monitoring results indicate that conditions are generally stable or improving. Despite the fact that a number of anticipated PLC systems have not been installed yet, many constituent concentrations were shown to decrease in 2004.

There are a number of exceptions to this trend at specific wells in different subareas (subareas are shown in Figure 6-4), including increasing trends in vinyl chloride, manganese, and arsenic in Subarea A; vinyl chloride, nickel, TCE, cis-1,2-dichloroethene (cis-1,2-DCE), tetrachloroethene (PCE), 1,1-dichloroethane (1,1-DCA), 1,4-dichlorobenzene and 1,4-dioxane concentrations in Subarea C; and TCE, PCE, and cis-1,2-DCE in Subarea D. The ongoing design and implementation of PLC systems is expected to address these areas with increasing trends.

Performance Monitoring. Performance monitoring continues to yield information regarding the progress of natural attenuation in areas downgradient of the landfill where groundwater concentrations exceed cleanup standards. Until PLC actions are installed to effectively cut off the source of water contamination, conclusions relating to natural attenuation can only be made in general terms regarding the spatial and temporal trends observed in water quality downgradient of the POC. According to NCI, future annual groundwater monitoring and evaluation reports produced after PLC actions have been completely installed and implemented will include conclusions regarding the rate of natural attenuation and quantitatively evaluate the progress in terms of the expected remediation time frames and constituent travel distances. Findings to date have indicated that, even without current PLCs in place, most of the downgradient constituent concentrations are either stable or decreasing, except for an increasing trend of 1,4-dioxane in monitoring well OI-35A (Figure 6-5).

NCI has installed and additional monitoring well to assess the source and transport pathway of 1, 4-dioxane concentrations detected in OI-35A. In addition, quarterly monitoring is being conducted at several wells in this area to provide the data necessary to understand 1,4-dioxane conditions in this area west of the landfill.

Adequacy of Groundwater Monitoring Program. The analytical program is generally adequate to satisfy the requirements of detection, compliance and performance monitoring. However, as noted above, quarterly sampling will continue at well OI-35A and other wells in the vicinity as part of the evaluation of 1,4-dioxane exceedances.

Downgradient well OI-75A, located in Subarea D to the northeast, has shown verified exceedances of VOCs including benzene, cis-1,2-DCE, PCE, TCE, and vinyl chloride. NCI has recommended that a new monitoring well be installed in the vicinity of OI-75A to further characterize the hydrogeology in this area (specifically, the groundwater flow direction).

An ongoing program to evaluate the potential source of elevated nickel concentrations continues in Subarea C. The source of the elevated nickel present throughout Subarea C has not been agreed upon by NCI and USEPA. NCI and its consultant believe that nickel originated from the stainless-steel well casings within the monitoring wells. However, USEPA concluded that a landfill source for nickel could not be dismissed based on available data. To resolve the issue, USEPA has requested that a well constructed of polyvinyl chloride casing be installed adjacent to a stainless-steel casing well that has shown high nickel concentrations. If the subsequent sampling and analysis of groundwater collected from the polyvinyl chloride well did not show elevated nickel concentrations, USEPA would concur that stainless-steel casings are the primary source for elevated nickel in Subarea C. The new well has been installed adjacent to well OI-38A in accordance with the USEPA-approved supplemental nickel evaluation proposal prepared by NCI.

6.3.6.2 Perimeter Liquids Control

The only active PLC system is the SWEAP system, located around the western/southwestern perimeter of the landfill. The SWEAP system addresses both landfill gas and liquids at the POC. However, NCI has not yet demonstrated that the operating SWEAP system fully complies with the performance criteria required of a PLC.

To date, no other PLC systems have been implemented; however, ongoing investigations have been conducted to assess where and whether they are needed. The First Area Specific Evaluation (NCI 2002b) identified four areas of the site where it was recommended that additional information be collected to design appropriate PLCs. One area is at the northwestern perimeter, two areas are at the north central perimeter (one shallow, one deep), and one area is located at the northeastern perimeter. In October 2004, NCI prepared a Pre-Final Preliminary Design Report that addresses the initial phase of PLC actions needed to address the north central and northeastern areas. NCI is in the process of implementing the PD work. Once that is complete, NCI will commence a second phase that will include evaluation of the data collected in the first phase and a description of the design of the remaining portion of the north central area PLC. NCI is anticipating that the northeastern area may require additional time for data collection; therefore, a separate Phase 2 preliminary design will be performed for that area.

The initial preliminary design work associated with the north-central area included installation of extraction and monitoring wells adjacent to OI-73A. OI-73A is a perimeter well that has shown exceedances of VOCs, including 1,1-DCA, 1,2-DCA, 1,4-dichlorobenzene, 1,4-dioxane, benzene, cis-1,2-DCE, TCE, and vinyl chloride. The new wells

will be tested and sampled quarterly to provide data necessary for system design. At the time of this 5-year review, no data were available for review relating to this activity.

6.4 Site Inspection

Representatives of USEPA, NCI (OII Site Management Team) and CH2M HILL performed a site inspection on April 28, 2005 to observe the current status of operations. The inspection included the components of OU-1 and OU-3, as well as a driving tour of the surrounding area including some of the offsite wells. A summary of the inspection findings is presented below. The site inspection checklist and photos are provided in Appendices C and D, respectively.

The purpose of the inspection was to assess the protectiveness of the remedy, including systems for leachate and landfill gas collection and treatment, surface water management systems, groundwater monitoring systems, the integrity of the cap, and presence of fencing to restrict access.

No significant issues have been identified relating to the South Parcel based upon the site inspection. All of the systems appeared to be properly monitored, operated, and maintained. The LFG and surface water conveyance piping appeared to be in good condition.

The issue at the North Parcel is that the 10-acre area requiring remedial action including a constructed cap with associated landfill gas and surface water control systems has not yet been constructed. The area of the North Parcel where the landfill waste is disposed is currently covered, with no indication of releases of harmful constituents that would put protectiveness in question. However, the fully appropriate remedial actions have not been conducted on the North Parcel.

On the day that the site inspection was conducted, the weather was slightly rainy in the morning and clear by the afternoon. The temperature was about 70 °F. The rainfall event was not significant enough to be able to observe any of the surface water diversion features that have been constructed at the site for the purpose of assisting in maintaining the integrity of the cap. While touring the South Parcel, it was noted that some slope failure/slump had occurred along the steep north slope. Also, repairs were being made along some of the bench roads. It appeared that these repairs were being appropriately attended to. Some ponded water was observed in low spots along the bench roads, but there was no ponding noted on top of the landfill. There were no unusual or distinctive odors or any exposed waste debris observed while the site tour was being conducted.

Both the LTP and the LFGTS, located next to one another on the North Parcel, seemed to be very well-maintained. The site is completely secured around its perimeter by fencing. No breaches were observed, and no evidence of vandalism was present.

Some of the offsite groundwater monitoring wells were examined as part of the site inspection. The wells that were observed are located in the Costco parking lot on the east side of OII landfill. The wells were flush-mounted and appeared to be secure and tamper-proof.

Some areas of the landfill are directly next to the City of Montebello neighborhoods, especially along the southern border. Despite the proximity, the landfill appears well-maintained, and no encroachment or nuisance issues were observed.

6.5 Interviews

Interview summary forms are provided in Appendix C. Both community and technical interviews were conducted. The following representatives, community officials, and residents from both Monterey Park and Montebello were interviewed.

- Norma Lopez-Reid/Resident and second term City Council person of Montebello/April 27, 2005/In Person
- Ben "Frank" Venti/Mayor Pro Tem of the City of Monterey Park/April 27, 2005/In Person
- Resident, City of Montebello/April 27, 2005/In Person
- Resident, City of Monterey Park/April 27, 2005/In Person

Technical interviews conducted with NCI staff, a former PRP consultant on the OII project (CDM), USACE staff as oversight contractor for USEPA, and other consultants familiar to the project included:

- Les LaFountain, Ph.D./NCI/Former President/April 28, 2005/Onsite
- Eleovardo Robles/NCI/Operations Manager/April 28, 2005/Onsite
- Joe Peel/CDM/Member of USEPA Tiger Team/May 31, 2005/E-mail
- Richard Magruder/USACE/Former USEPA Onsite Representative/May 15, 2005/E-mail
- John Erwin/USACE/Project Manager/May 15, 2005/ E-mail
- David Towell/CH2M HILL/Project Manager and Hydrogeologist/August 11, 2005/ E-mail

The following people provided valuable input to the report but were not formally interviewed.

- Lance Richman/USEPA/Project Manager working on the North Parcel
- Albert O'Shaughnessy/USACE/Onsite Representative

Norma Lopez-Reid is a councilwoman and long-time resident of Montebello. She feels that the work conducted at the site has been outstanding. She said that odors and noise at the landfill have been mitigated since the closure activities began and that the community feels more secure and confident about the site. She said she was thankful for USEPA's successful control of the landfill.

Monterey Park Mayor Pro-Tem, Ben "Frank" Venti, has toured the site and thinks that the cleanup effort has been excellent. He has not heard of any complaints in the last 5 years. The

odor and eyesore problems have been eliminated. He does hope that USEPA will take a more aggressive approach to getting the North Parcel developed because it has taken more time than originally thought.

The Montebello resident has lived in the neighborhood for many years since before the site remediation activities. She said that thanks to USEPA "things are much better and quieter". She did note several concerns, however. She is worried about the dry vegetation which she believes is a potential fire hazard and a fine yellow dust that covers her patio during some times of the year. She also said there seem to be many mosquitoes in the area.

The Monterey Park residents stated that they thought the cleanup went well. They were in the area during the worst times and they said that there has definitely been an improvement. Their main concern is they do not feel very well informed about the development at the North Parcel. They don't understand why it is taking so long. They feel like they get different answers depending on who they talk to. They would like to know the "correct" story.

Dr. Les LaFountain is the retired President of NCI and has served several different roles at the site since 1994. He believes that the work conducted by NCI is proactive. He said that the cover, storm water , and landfill gas systems are similar to any landfill, but the monocover is unique and innovative. It is evapotranspirative and the first permitted at a hazardous waste landfill in California. He gave a detailed overview of the site history and system operations. He noted that there have been some contaminant exceedances in groundwater recently reported in the annual report. There was a new exceedance in the south corner and 1,4-dioxane exceedance at the west side. Overall he feels that things are going well. Current total costs range from $5 to $7 million annually, and $2 to 3 million of that is spent on O&M, mostly for CD-3 and CD-7.

Eleovardo "Ed" Robles is the current NCI Operations Manager. He began working at the site in 1989 and is a resident of Montebello. He thinks that the system at OII landfill is the best in southern California. There are currently no construction activities, only O&M. Design and sampling at the North Parcel is being conducted to prepare for remediation. Six new wells have recently been installed for the RDI.

Joe Peel, retired from CDM Federal Programs Corporation, is a member of USEPA's Tiger Team involved with the oversight of the North Parcel remedial activities being undertaken by NCI as CD-3 Excluded Work. He formerly assisted USEPA in oversight of CD-1 Work that was being performed CURE, Inc. He thought that, in general, the work in the field has been good and the staff has been very competent. Sometimes the review process for CD-required deliverables has been frustrating. He feels that, in general, the site looks well maintained and the remedial actions to date appear to be protective.

Richard Magruder, is retired from USACE, but was the former USEPA onsite representative (August 1997 until November 2001). He then became the OII oversight contract project manager (November 2001 until December 2002). Although he retired in December 2002, he had a small contract with USACE to provide technical support on the OII site from February 2003 to February 2005. Some issues that he felt needed attention were to review the site vegetation to see if it is in compliance with the predesign documents. He believes that NCI has not done a good job to use and maintain native plants and to control nonnative invasive

plants. He thinks that repairs to the monocover should be well documented. He feels that the information about what crack areas have been repaired and how much grout was injected to repair them is important information. He knows that some records have been kept, but the historic record of how many repairs have been done and the amount of filling (grout injected) each time may not be available. He said that settlement has resulted in sags allowing for water ponding and reduced surface water flow capacity during rain events.

John Erwin is the current USACE project manager provided contract support and some civil engineering technical oversight on behalf of USEPA. His general impression of the site is that toxic releases are being successfully controlled. However, he feels that communication between NCI and USACE has been inconsistent or combative. The problems he noted were 1) inconsistent performance standards for Baker Tank Road and 2) design for vegetation may not be appropriate.

David Towell, a hydrogeologist with CH2M HILL, is the lead technical reviewer for the PLC and groundwater components of CD-8. He thinks that the technical quality of the work is acceptable, that the remedial design process will result in implementation of an appropriate PLC system and a solid framework has been established for evaluating natural attenuation of groundwater contamination. The only problem noted was that he felt like USEPA should encourage NCI to accelerate design and implementation of the PLC actions, reducing the time until all offsite migration of contaminated liquids is achieved.