FINAL

REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORTS
OMEGA CHEMICAL CORPORATION SUPERFUND SITE

OPERABLE UNIT 2

LOS ANGELES COUNTY, CALIFORNIA

VOLUME 1

EPA Contract No. EP-S9-08-03

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CH2M HILL PROJECT NO. 386743

Prepared for

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VOLUME 2

Remedial Investigation, continued

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Feasibility Study

Acronyms

°C	degree(s) Celsius
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
µg/m^3	microgram(s) per cubic meter
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane
1,1,2-TCA	1,1,2-trichloroethane
1,2,3-TCP	1,2,3-trichloropropane
1,2-DCA	1,2-dichloroethane
1,2-DCE	1,2-dichloroethene
1,3-DCP	1,3-dichloropropane
AIS	American Integrated Services
AMK	Angeles and McKesson
APCL	Applied P and CH Laboratory
ARAR	applicable or relevant and appropriate requirements
ASCII	American Standard Code for Information Interchange
AST	aboveground storage tank
ASTM	ASTM International
atm-m^3/M	atmospheric-cubic meter per mole
bgs	below ground surface
BOD	biochemical oxygen demand
BTEX	benzene, toluene, ethylbenzene, xylene
CADRE	Computer-Aided Data Review and Evaluation
Cal-EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
Calvada	Calvada Surveyors, Inc.

CAM	California Assessment Manual
CD	Consent Decree
CDPHS	California Department of Public Health Services
CDM	Camp, Dresser & McKee
CDWR	California Department of Water Resources
CENCO	CENCO Oil Company
CERCLA	Comprehensive Environmental Response Comprehensive and Liability Act of 1980
cis-1,2-DCE	cis-1-2-dichloroethene
CLP	Contract Laboratory Program
cm/sec	centimeters per second
COC	chain-of-custody
COD	chemical oxygen demand
COPC	chemical of potential concern
CPT	cone penetrometer test
Cr(VI)	hexavalent chromium
CSM	conceptual site model
CVOC	chlorinated volatile organic compound
d	day
Datachem	Datachem Laboratories, Inc.
DCE	dichloroethene
DEHP	Bis(2-ethylhexyl)phthalate
DHS	California Department of Health Services
DNAPL	dense nonaqueous phase liquid
DO	dissolved oxygen
DOGGR	California Department of Conservation, Division of Oil, Gas, and Geothermal Resources
DOT	Department of Transportation
DQO	data quality objective
DTSC	Department of Toxic Substances Control
EC	electrical conductivity

ELCR	excess lifetime cancer risk
EPA	United States Environmental Protection Agency
EPC	exposure point concentration
ERA	Ecological Risk Assessment
eV	electron-volt
Freon 11	trichlorofluoromethane
Freon 12	dichlorodifluoromethane
Freon 113	trichlorotrifluoromethane
Freon 21	dichlorofluoromethane
fs	sleeve friction
FS	feasibility study
FSP	field sampling plan
ft/day	foot (feet) per day
ft/ft	foot (feet) per foot
ft^2	square foot (feet)
ft^2/d	square foot (feet) per day
ft^2/min	square foot (feet) per minute
FTP	file transfer protocol
GC/MS	gas chromatograph/mass spectrometer
gpm	gallons per minute
GPS	global positioning system
GSWC	Golden State Water Company
GWF	general well function
H	Henry's Law constant
HCL	hydrochloric acid
HHRA	human health risk assessment
HQ	hazard quotient
HSA	hollow-stem auger
HSDB	Hazardous Substances Data Bank
HVAC	heating, ventilation, and air conditioning
ID	inside diameter

IDW	investigation-derived waste
Kr	hydraulic conductivity
LACDHS	Los Angeles County Department of Health Services
LADPW	Los Angeles Department of Public Works
LARWQCB	Los Angeles Regional Water Quality Control Board
LNAPL	light nonaqueous phase liquid
LNR	long normal resistivity
LUFT	leaking underground fuel tank
MC	Monte Carlo
MCL	maximum contaminant level
ME	mean error
MEK	methyl ethyl ketone
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MIBK	methyl isobutyl ketone
min	minute
MIP	membrane interface probe
mL	milliliter(s)
mL/min	milliliter(s) per minute
mm	millimeter(s)
Modine	Modine Manufacturing Company
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
MTBE	methyl-tert-butyl-ether
MW	monitoring well
NAD	North American Datum
NAPL	nonaqueous phase liquid
ND	nondetection
NDMA	N-nitrosodimethylamine
NGVD	National Geodetic Vertical Datum

NL	notification level
NPL	National Priorities List
NTU	nephelometric turbidity unit
OD	outside diameter
OEHHA	Office of Environmental Health Hazard Assessment
OFRP	Oil Field Reclamation Project
Omega	Omega Chemical Corporation
OM&M	operations, maintenance, and monitoring
Omega Site	Omega Chemical Superfund Site
OPOG	Omega Chemical Site PRP Organized Group
ORP	oxidation-reduction potential
OSHA	U.S. Occupational Safety and Health Administration
OSS	Onsite Soils (work plan)
OSVOG	Omega Small Volume Organized Group
OU	operable unit
OVA	organic vapor analyzer
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PID	photoionization detector
ppb	part(s) per billion
ppbv	part(s) per billion by volume
ppm	part(s) per million
PRG	preliminary remediation goal
PRP	potentially responsible party
psi	pound(s) per square inch
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
qc	tip resistance
QC	quality control

QED	QED Environmental Systems
RCRA	Resource Conservation and Recovery Act
Rf	friction ratio
RfD	reference dose
RFA	request for analyses
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
RPD	relative percent difference
RSME	root of the mean squared error
RWQCB	Regional Water Quality Control Board
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
SB	stratigraphic boundaries
SBT	soil behavior type
SCC	Southern California Chemical
SIM	select ion mode
Simulprobe	Maxiprobe Simulprobe® Sampling System
SLERA	Screening Level Ecological Risk Assessment
SLIC	Spills, Leaks, Investigation, and Cleanup Cost Recovery
SNR	short normal resistivity
SOW	Statement of Work
SP	spontaneous potential
STL	Severn Trent Laboratory
SVE	soil vapor extraction
SVOC	semivolatile organic compound
TCA	trichloroethane
TCE	trichloroethene
TDS	total dissolved solids
THM	trihalomethane
TIC	tentatively identified compounds

TKN	total Kjeldahl nitrogen
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TPH-d	total petroleum hydrocarbons as diesel
TPH-g	total petroleum hydrocarbons as gasoline
trans-1,2-DCE	trans-1,2-dichloroethene
trans-1,3-DCP	trans-1,3-dichloropropene
U	penetration pore pressure
UAO	Unilateral Administrative Order
UCL	upper confidence limit
USA	Underground Service Alert
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UST	underground storage tank
UTM	Universal Transverse Mercator
VOA	volatile organic analysis
VOC	volatile organic compound
WDC	Water Development Corporation
WDI	Waste Disposal, Inc.
WDIG	WDI Group
Weston	Weston Solutions, Inc.
WRD	Water Replenishment District of Southern California
yd^3	cubic yard(s)

FINAL

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OMEGA CHEMICAL CORPORATION SUPERFUND SITE

OPERABLE UNIT 2

LOS ANGELES COUNTY, CALIFORNIA

EPA Contract No. EP-S9-08-03

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CH2M HILL PROJECT NO. 386743

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1. Introduction

The United States Environmental Protection Agency (EPA), under the authority of the Comprehensive Environmental Response, Comprehensive, and Liability Act of 1980 (CERCLA), is conducting a remedial investigation/feasibility study (RI/FS) to address groundwater contamination at the Omega Chemical Corporation Superfund Site (Omega Site) downgradient of the former Omega Chemical Corporation, Inc. (Omega) property located in Whittier, California (Figure 1-1).

EPA manages the Omega Site as three operable units (OUs)—OU1, which includes the contaminated soil and groundwater in the immediate vicinity of the former Omega property; OU2, comprising the groundwater contamination outside and generally downgradient of OU1; and OU3, comprising the indoor air contamination at the former Skateland building and other buildings within and near OU1. This RI report presents the results of EPA's investigation of the OU2 area, which EPA began in 2001. The RIs were carried out by EPA and its contractors, including CH2M HILL. The purpose of the RI is to evaluate the nature and extent of groundwater contamination and to assess the potential risks posed by this contamination to human health and the environment. The results of the RI will be used for the following:

- Provide the basis for determining whether or not remedial action is necessary to protect human health and the environment
- Support the determination of risk-based cleanup levels
- Lay the foundation for the development and evaluation of possible cleanup alternatives in the FS

Figure 1-2 summarizes the phases of the overall Superfund remedial response process (or CERCLA process) and shows the status of progress on the Omega Site. This section of the RI report describes the report development and organization, site background, and historical and recent site investigations.

1.1 Report Development and Organization

EPA has prepared this draft RI report in consultation with stakeholders, including the State of California Department of Toxic Substances Control (DTSC), the lead state agency for National Priorities List (NPL) sites, and the United States Geological Survey (USGS). As such, this document provides a forum for those stakeholders with an interest in developing a better understanding of groundwater contamination in OU2.

This report presents the following important aspects of the RI for the OU2 area:

- **Site Investigation and Data Collection –** The report summarizes the history of the Omega Site and RI activities performed by EPA.
- **Data Analysis –** The report presents EPA's evaluation of data collected during the RI.

- **Conceptual Site Model –** The report describes EPA's refined understanding or conceptual model of groundwater contamination for the Omega Site.
- **Risk Assessment –** The report presents the results of a baseline risk assessment conducted for the Omega Site.
- **Recommendations –** The report identifies any additional data that may be needed and presents recommendations for future investigation and remediation work for the Omega Site.

The remainder of this document is organized as shown in Table 1-1. Figures and tables are provided at the end of each section in which they are discussed.

1.1.1 Terminology

The following terms were adopted for the purpose of the OU2 RI report:

Omega Site	The Omega Site (or Omega Chemical Corporation Superfund Site) consists of three OUs (OU1, OU2, and OU3) as described later in this table.
Omega property	The Omega property (also referred to in this report as the "former Omega Chemical property") is the location of the former Omega Chemical Corporation facility and occupies Los Angeles County Assessor Tract Number 13486, Lots 3 and 4 with street addresses 12504 and 12512 East Whittier Boulevard.
Omega wells	This term means (a) wells installed by EPA and the potentially responsible party (PRP) group named Omega Small Volume Organized Group (OSVOG), and (b) wells installed by the Omega Chemical Site PRP Organized Group (OPOG).
Omega Contaminants	Omega Contaminants are chemicals found at concentrations exceeding their screening levels (shown in Tables 5-1 to 5-4) at OU1 Wells OW1A, OW1B, OW2, OW3A, OW3B, OW8A, and OW8B. These compounds are believed to have been introduced to groundwater as a result of the hazardous substances released at the former Omega facility. The same chemicals are also believed to have been introduced to groundwater at other facilities throughout OU2. Omega Contaminants also include the degradation products of these chemicals.
Chemicals of potential concern (COPCs)	COPCs are all chemicals found at concentrations exceeding their screening levels in OU1 and OU2. They may have originated from hazardous substances released from known and unknown sources. Some of these compounds may be naturally occurring. Treatment of these chemicals will potentially be required for the groundwater remedy.
OU1	OU1 is an area encompassing the former Omega Property and extending about 100 feet southwest across Putnam Street.
OU2	OU2 is defined by the extent of the Omega Contaminants that are above screening levels in groundwater. Within OU2, groundwater contamination from the Omega property has commingled with chemicals released at other source areas; consequently, it is not always possible to distinguish exactly the extent of hazardous substances released from individual sources.
OU3	OU3 is defined by the extent of indoor air impacts at the former Omega Chemical property as well as adjacent and nearby properties where the underlying vadose zone has been impacted by contamination derived from the former Omega Chemical property.
Sources of groundwater contamination, or source areas	Sites (or properties) that have impacted groundwater by release(s) of chemicals at concentrations above their screening levels are referred to as sources of contamination, or source areas. The use of operator names in identifying the properties is not necessarily intended to imply liability.

1.2 Site Background

1.2.1 Physical Location

EPA manages the Omega Site as three operable units (OU1, OU2, and OU3). OU1 includes the soil and groundwater contamination at the former Omega facility, located at 12504 and 12512 East Whittier Boulevard, and extending downgradient approximately 100 feet southwest of Putnam Street (Figure 1-3). The Omega property occupies Los Angeles County Assessor Tract Number 13486 (Lots 3 and 4). It covers an area of approximately 41,000 square feet (200 feet wide by 205 feet long) and contains two structures—a 140- by 50-foot warehouse and an 80- by 30-foot administrative building. A loading dock is attached to the rear of the warehouse. The Omega property is paved with concrete and secured with a 7-foot-high perimeter fence and locking gate. The fence is topped with razor wire. Prior to construction of buildings at the Omega property in July 1951, the property was used for agriculture.

OU2 generally includes the groundwater-contaminated area that extends from the former Omega facility to approximately 4.5 miles south-southwest of the site. A site map showing the approximate boundaries of OU1 and OU2 is presented in Figure 1-4.

EPA created OU3 to address potential indoor air impacts at the former Omega Chemical property, as well as adjacent and nearby properties where the underlying vadose zone has been impacted by contamination derived from the former Omega Chemical property.

1.2.2 Regulatory History

The following summary of the regulatory history of the former Omega facility is based on information summarized in the Request for a Removal Action (EPA, 2006) and the Onsite Soils (OSS) RI/FS Workplan (Camp, Dresser & McKee [CDM], 2003a).

Omega was a refrigerant/solvent recycling and treatment facility that operated from approximately 1976 to 1991. Drums and bulk loads of waste solvents and chemicals from various industrial activities were processed to produce commercial products. Wastes generated from treatment and recycling activities included still bottoms resulting from distillation of spent solvents, aqueous fractions, and nonrecoverable solvents.

Environmental regulatory action at the Omega Site began with several notices of violations from the Los Angeles County Department of Health Services (LACDHS). On November 1990, the Los Angeles County Superior Court issued a preliminary injunction to prevent further acceptance of offsite hazardous waste. In February 1991, Los Angeles County and San Bernardino County District Attorneys' offices issued warrants to search three railcars at the site. The search revealed illegal storage and transport of 700 hazardous waste drums and falsified waste manifests and drum labels. As a result, the Los Angeles County Superior Court ordered Omega to cease all operations, remove all hazardous wastes, and close the facility. EPA entered into an Administrative Order of Consent in October 1991 requiring Omega to perform several interim measures to mitigate current or potential threats to human health and the environment and to submit a Resource Conservation and Recovery Act (RCRA) facility investigation. At that time, the California Environmental Protection Agency (Cal-EPA)/DTSC was the lead agency at the Omega Site.

Although the Omega facility officially closed in 1991, the president and owner of the company continued to operate under a different company name on a limited basis, accepting primarily refrigerants (Freons). After the DTSC requested EPA's assistance, EPA conducted a site assessment in August 1993, during which approximately 2,900 drums of hazardous waste were observed, many weathered from years of outside storage. In 1995, the company manager was found guilty of contempt of court by the Los Angeles County Superior Court and was ordered to cease all operations. Operations ceased at the Omega facility at that time.

EPA conducted another preliminary assessment of the site in January 1995, and observed more than 3,000 drums, stacked three high, some without pallets between them. A large majority of the drums appeared to be extremely corroded and many were leaking onto other drums and a concrete pad on the property.

On May 9, 1995, EPA issued a Unilateral Administrative Order (UAO) to PRPs that had shipped more than 10 tons of hazardous wastes to Omega. At that time, EPA became the lead agency at the site. The PRPs subsequently formed a group and established OPOG to perform the work. Between 1995 and 1996, OPOG removed approximately 2,700 drums from the site and conducted a preliminary site investigation. The Omega Site was placed on the NPL in January 1999. OPOG entered into a partial Consent Decree (CD) in February 2001. Under the CD and its associated Statement of Work (SOW), OPOG has performed an RI/FS for the vadose zone soil at OU1, including a human health risk assessment (HHRA) for the vadose zone soils, completed an Engineering Evaluation/Cost Analysis to evaluate OU1 groundwater cleanup alternatives, and has installed an interim OU1 groundwater remedy.

Upon evaluating data collected for the OU1 RI, it was found that soil vapor had migrated into several buildings near or at the site, including "Skateland," an indoor roller-skating rink. EPA created OU3 to mitigate indoor air contaminant vapor intrusion at Skateland and potentially other buildings. EPA issued an Action Memorandum for a removal action to mitigate the vapor intrusion at Skateland on April 6, 2006. OPOG entered into the First Amendment to the CD and agreed to mitigate the indoor vapor exposure at Skateland or conduct an Alternate Response Action (EPA, 2006). After undertaking some of the testing work prior to selecting an appropriate mitigation measure, OPOG elected to purchase the property and close Skateland operations. The Skateland building was subsequently demolished in March 2007.

1.2.3 Omega Facility History and Operation

1.2.3.1 Current Use

Van Owen Holdings LLC of Los Angeles, California, purchased the property in 2003 and owns the property to the present day. The former Omega facility is divided into the following two parcels:

- Northern parcel – 12504 Whittier Boulevard. Currently being leased by Star City Auto Body to conduct automotive body repair and painting. The auto body shop also leases the small paved parking lot north of the warehouse building for automobile parking.

- Southern parcel – 12512 Whittier Boulevard. The former administrative building and the paved parking area south of the warehouse have had a variety of tenants since the 2003 purchase of the property and both are vacant as of May 2010. The building was previously used for administration and equipment storage, while the concrete paved exterior yard was used for parking and temporary storage of heavy construction equipment. Ten soil vapor extraction (SVE) wells were installed at five locations in the parking lot during September 2006 and were used by OPOG for SVE pilot testing.

1.2.3.2 Former Use

The known environmental history of the Omega property was documented in the Data Summary Report prepared by CDM in December 2001 (CDM, 2001c) and a facility History Memorandum prepared by Science Applications International Corporation (SAIC) in July 2006 (SAIC, 2006).

Following is a summary of property owners/operators:

- Late 1930s – The property was undeveloped or used for agricultural purposes.
- 1951 –The property was developed; office and warehouse were constructed for Sierra Manufacturing Company. Later created Sierra Bullets, Inc. in 1955. Operations including manufacturing of metal jacketed rifle and pistol projectiles and metal cups for detonation devices. During operation of the Sierra Bullet facility, a 500-gallon underground storage tank (UST) was used for storage of kerosene. Trichloroethene (TCE) also was reportedly used at the site.
- 1963 through 1966 – The northern property purchased and occupied by Fred R. Rippy, Inc. for the purposes of die making and operation of a stamping machine shop.
- 1966 through 1974 – The northern property used to convert vans to ambulances.
- 1974 through 1976 – The northern property occupied by Bachelor Chemical Processing. Operations reportedly included the recycling of Freons.
- 1976 – Omega Chemical Corporation (Mr. Dennis O'Meara) purchased Bachelor Chemical Processing (northern parcel) and assumes the property lease.
- 1987 – Omega purchased the leased parcel and adjoining southern parcel from Rippy.
- April 11, 1991 – Omega was ordered by the Superior Court of the County of Los Angeles to cease operation, remove all hazardous wastes, and close the facility.
- September 1991 – Omega filed Chapter 11 bankruptcy, which was dismissed on September 7, 1993.

The former Omega facility provided treatment of commercial and industrial solid and liquid wastes and a transfer station for the storage and consolidation of wastes to be shipped to other treatment and disposal facilities. According to its October 29, 1990, Operation Plan for Hazardous Waste Recovery, the Omega facility maintained 11 treatment units comprising distillation columns, reactors, wipe film processor, liquid extractor, and solid waste grinder. The facility also maintained 22 stainless steel tanks with capacities ranging from 500 to 10,000 gallons, and five carbon steel tanks with capacities of 5,000 gallons (CDM, 2001c).

Manifest records indicate approximately 18,000 tons of waste were delivered to the facility during its years of operation. The majority of the waste consisted of industrial solvents and refrigerants.

From approximately 1999 through 2001, the northern parcel (12504 Whittier Boulevard) was leased by Mr. Nicholas Stymuiank, who occupied the warehouse and stored miscellaneous equipment and materials in the warehouse and service yards. The warehouse was converted in 2003 to be used by Star City Auto Body for auto body repair.

During the past few years, several tenants have occupied the southern parcel (12512 Whittier Boulevard). C&I Electric used the property for equipment and billboard storage. Following the termination of the C&I Electric lease, Three Kings Construction occupied the property. In December 2006, L&M Pallets leased the exterior yard for pallet storage and continued to use the yard through 2007.

1.3 Historical and Recent Site Investigations

1.3.1 Historical Investigations at OU2

Weston Solutions, Inc. (Weston), an EPA contractor, performed the first OU2 field investigations in 2001. The initial phase included the installation of 30 cone penetrometer test (CPT) probes for lithologic logging, collection of groundwater samples from CPT borings at 80 locations, and laboratory analysis of groundwater samples for volatile organic compounds (VOCs). Results of the initial phase are included in the Phase 1 Groundwater Characterization Study (Weston, 2002). The second phase included installation of six CPT probes and 19 hollow-stem auger (HSA) borings for lithologic logging, installation of 18 monitoring wells for lithologic logging and future monitoring, collection of groundwater samples at 34 CPT probe and HSA boring locations, and laboratory analysis of groundwater samples for VOCs. Results of the Phase 2 investigation are included in the Phase 2 Groundwater Characterization Study (Weston, 2003).

The 18 EPA monitoring wells were sampled quarterly since February 2002 along with 10 OU1 wells monitored by OPOG; semiannual monitoring started in 2006. Results are presented in groundwater monitoring reports prepared by EPA and OPOG. EPA, through its support contractor CH2M HILL, began routine sampling of the EPA wells in March 2004.

In January 2004, EPA issued a UAO (the 2004 UAO; EPA, 2004b) to certain PRPs that had not signed the Partial CD to perform RI/FS work. The 2004 UAO was amended in June 2004 (First Amended UAO; EPA, 2004c). Fifteen of the parties named in the First Amended UAO, known as OSVOG, performed consultant and field services to comply with the First Amended UAO. As part of the SOW, OSVOG installed 23 monitoring wells (at 12 locations) and one extraction well between May 2005 and April 2006, and sampled the new wells in June 2006. The results of this investigation are published in the Final Project Completion Report (ARCADIS, 2007).

EPA performed oversight of the OSVOG construction activities and evaluated the OU2 hydrogeology and extent of groundwater contamination based on information from the new wells, recent groundwater monitoring results, and information from other contaminated sites that are under the Los Angeles Regional Water Quality Control Board (LARWQCB) or

DTSC oversight. EPA concluded that additional wells were needed to complete the characterization of the extent of groundwater contamination in OU2.

EPA also concluded several suspected sources of groundwater contamination were in OU2 (other than the former Omega facility) that might be contributing to the OU2 plume, and undertook a review of State of California agency files to evaluate those potential sources.

1.3.2 File Review

As part of the RI, EPA's contractor, CH2M HILL, conducted a file review in 2005 to identify facilities that are potential sources of groundwater contamination in OU2 (other than the former Omega facility). CH2M HILL reviewed state and local agency files for facilities within the OU2 area and developed a list of known or potential sources of VOC contamination in groundwater in the area. EPA performed further records searches, and obtained information from various additional sources, and determined that no further investigation was required to substantiate the existence of several of the known sources of contamination. CH2M HILL used the information from EPA's records search in the preparation of this report. A more detailed discussion of the history and contaminant distribution at the following source areas is presented in Section 5.

Sites (or properties) that have impacted groundwater are referred to as sources of contamination, or source areas. The main sources of contamination at OU2 have been identified based on information obtained from file reviews and findings from field investigations. Other as yet unidentified sources of groundwater contamination may exist within the OU2 area. The following sections occasionally identify a source area with reference to the name of a facility that operated or continues to operate on the property within such source area. This report is not intended to include all entities that may have contributed to contamination at such source areas. The use of operator names in identifying the properties is not necessarily intended to imply liability.

1.3.2.1 Known Sources of Groundwater Contamination

The following is a list of known sources of contamination for which adequate information is available to support the RI:

- Foss Plating Co., Inc. ("Foss Plating") – 8140 Secura Way, Santa Fe Springs, California
- Phibro-Tech, Inc. ("Phibro-Tech") – 8851 Dice Road, Santa Fe Springs, California
- Bodycote Thermal Processing, Inc. ("Techni-Braze") – 11845 Burke Street, Santa Fe Springs, California
- Pilot Chemical Corporation ("Pilot Chemical") – 11756 Burke Street, Santa Fe Springs, California
- Angeles Chemical Co., Inc. ("Angeles") – 8915 Sorensen Avenue, Santa Fe Springs, California
- McKesson Facility ("McKesson") – 9005 Sorensen Avenue, Santa Fe Springs, California
- Modine Manufacturing Company ("Modine Manufacturing") – 12252 East Whittier Boulevard, Whittier, California

- "Site A" – 12128 Burke Street, Santa Fe Springs, California.
- CENCO Refinery – 12345 Lakeland Road, Santa Fe Springs, California
- Earl Manufacturing – 11862 Burke Street, Santa Fe Springs, California
- G&M Oil Company – 12559 Lambert Road, Whittier, California
- The Santa Fe Springs Oil Field and the Oil Field Reclamation Project (OFRP) – former oil fields located in Santa Fe Springs, California
- Unocal Corporation – 9645 South Santa Fe Springs Road, Santa Fe Springs, California
- Mission Linen Supply – 11904 – 11920 East Washington Boulevard, Whittier, California

1.3.2.2 Potential Sources of Groundwater Contamination at OU2

The following facilities were determined to be potential additional sources of contamination based on available file review information:

- "Site B" – 8921 Dice Road, Santa Fe Springs, California
- "Site C" – 9120-9160 Norwalk Boulevard and 11925-11933 Los Nietos Road (aka 9100 Norwalk Blvd.), Santa Fe Springs, California
- "Site D" – 8421 South Chetle Avenue, Santa Fe Springs, California
- "Site E" – 12200 Los Nietos Road, Santa Fe Springs, California
- "Site F" – 8623 South Dice Road, Santa Fe Springs, California
- "TCE Source at Whittier Boulevard" – located in the vicinity of Whittier Boulevard and Mar Vista Street, Whittier, California
- "Site G" – 9128 and 9132 Dice Road, Santa Fe Springs, California
- "Site H" – 9101 Sorensen Avenue, Santa Fe Springs, California
- "Site I" – 10643 Norwalk Boulevard, Santa Fe Springs, California
- "Site J" – 10607 Norwalk Boulevard, Santa Fe Springs, California
- "Site K" – 12080 and 12100 Rivera Road, and 8550 Chetle Avenue, Whittier, California
- "Site L" – 9620 Santa Fe Springs Road, Santa Fe Springs, California

A map of the previously listed facilities is presented in Figure 1-5. Further field investigations were conducted as part of the RI to characterize the contaminant distribution near five of these suspected source areas. A discussion of the field methods and results are presented in Sections 2 and 5, respectively.

1.3.2.3 Other Sites

Information from the following facilities also was used in support of this RI:

- Ashland Chemical – 10505 South Painter Avenue, Santa Fe Springs, California

- Lincoln Distribution Center – 12500 Slauson Avenue, Santa Fe Springs, California
- Valvoline Oil Company ("Valvoline Oil") – 9520 John Street, Santa Fe Springs, California
- Waste Disposal, Inc. (WDI) Superfund Site – Los Nietos Road at Greenleaf Avenue, Santa Fe Springs, California

1.3.3 Recent Investigations at OU2

1.3.3.1 Routine Groundwater Sampling

Routine sampling of EPA's monitoring well network has been conducted by CH2M HILL since March 2004. The last sampling round for which analytical data are included in this RI report was conducted in July through August 2007. CH2M HILL will continue to monitor the EPA wells on at least a semiannual basis, or as directed by EPA. Further discussion of the routine groundwater sampling conducted by CH2M HILL and other consultants is presented in Section 2.

1.3.3.2 Additional Field Investigation Activities

EPA contracted with CH2M HILL to complete the RI field investigation at OU2. Activities of the field investigation were conducted in accordance with CH2M HILL's field sampling plan (FSP) (CH2M HILL, 2004a) and FSP addendum (CH2M HILL, 2006a). Field activities performed include the installation of four single-screen and four multiple-screen (nested) monitoring wells. The purpose of the wells was to characterize the horizontal and vertical extent of the groundwater contaminant plume.

A second component of the field investigation included the collection and analysis of HydroPunch® groundwater samples and soil samples near the five facilities suspected to be sources of VOC contamination. Characterization of these potential source areas was required for selecting an appropriate remedy for OU2.

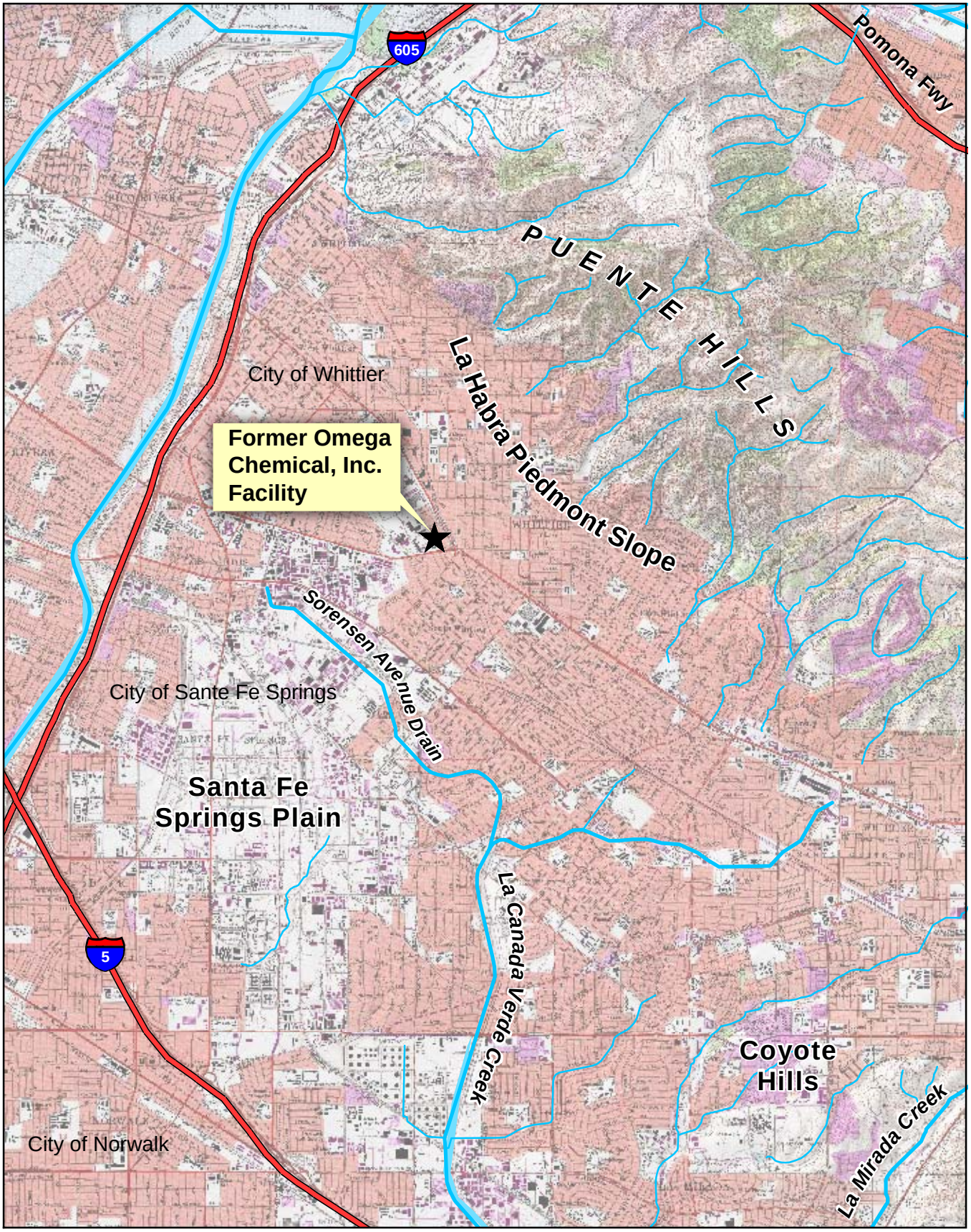
The third component of the field investigation included the sampling of soil gas, soil, and groundwater in a residential apartment community located approximately 2,000 feet west of the former Omega facility (Figure 1-5). The purpose of this investigation was to evaluate the human health risks associated with potential soil gas vapor intrusion into indoor air. The residential area was of potential concern due to the relatively shallow depth of groundwater and relatively high concentration of VOCs beneath this area.

The last component of the field investigation included the sampling of three production wells in February 2010.

The results of the monitoring well installation and routine groundwater sampling, source area investigation, and residential area sampling are presented in Section 5. These data were subsequently evaluated as part of the HHRA for OU2.

Table 1-1
Report Organization
Omega Chemical Superfund Site

RI Report Section	Title	Subject
1	Introduction	General background, purpose of the RI report, site-specific background information, and an overview of previous investigation activities at the former Omega Facility and OU2.
2	EPA RI Field Activities	A summary of EPA RI activities, including field investigation and sampling activities and methodologies, data quality objectives, contaminant source and groundwater investigations, and community involvement.
3	Data Quality	Summary of chemical data quality, including split sample results, data validation, and overall data assessment.
4	Physical Characteristics of the Study Area	Physical characteristics of OU2, including surface features, climate, hydrology, geology, hydrogeology, and land use.
5	Nature and Extent of Contamination	Nature and extent of contamination, including contaminant sources, and groundwater, soil, and vadose zone contamination.
6	Contaminant Fate and Transport	Contaminant fate and transport including potential migration routes, transport processes, and contaminant persistence.
7	Baseline Risk Assessment	Summary of the baseline human health risk assessment and screening-level ecological risk assessment.
8	Summary, Findings, and Recommendations	Summary, findings, identification of data gaps, and recommendations for future work.
9	References	References.



N

0.5 0 0.5

Miles

Figure 1-1
Facility Location Map
Omega Chemical Superfund Site

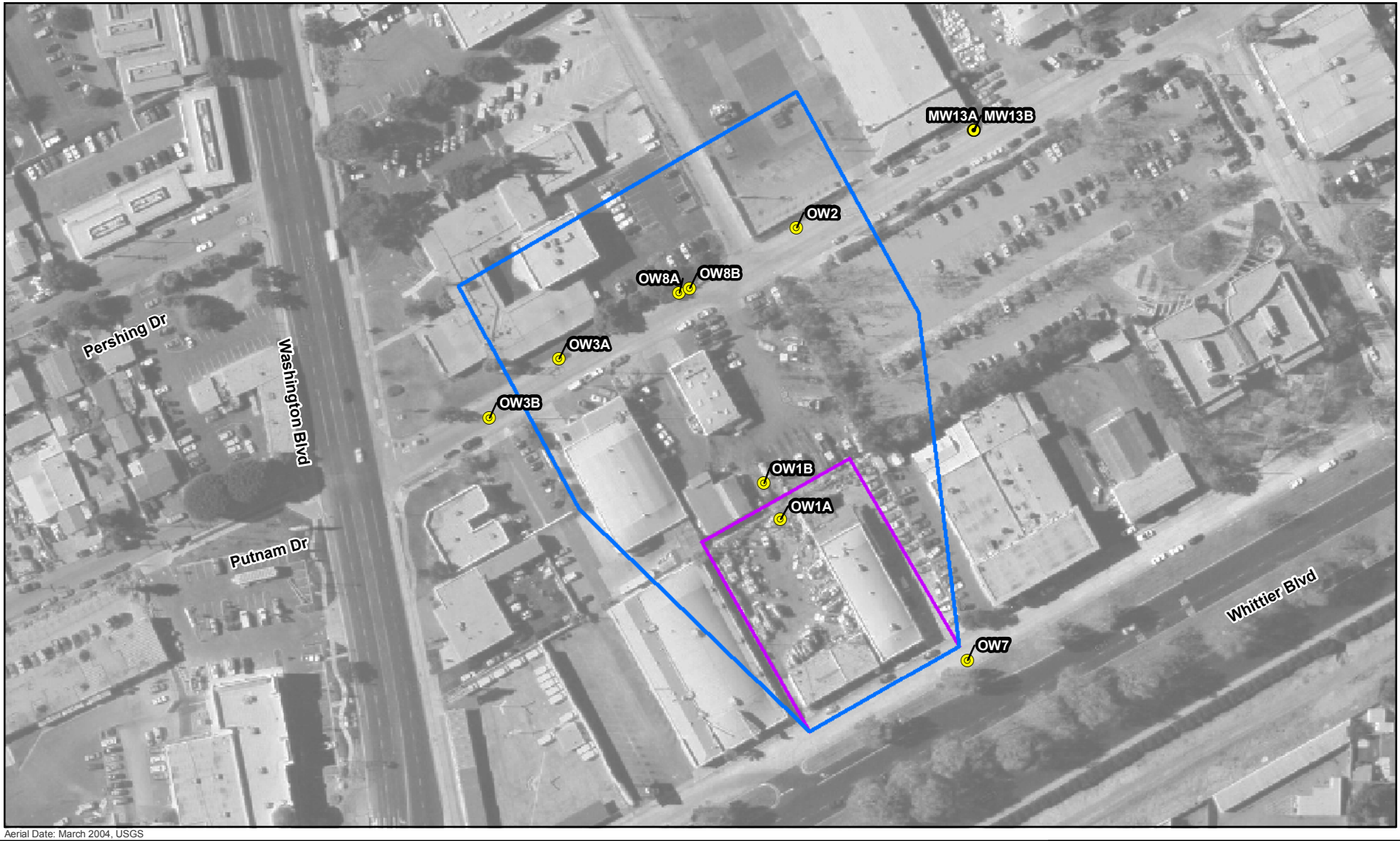
CH2MHILL

ES062006002SCO335392.RR.01 EPA_Omega_SiteLoc.ai 05/08

CERCLA Phase	Activities	Omega Chemical Operable Unit 2 Status
Pre-Remedial Process		
• Preliminary Assessment • Site Investigation • HRS Evaluation • NPL Listing	Perform preliminary identification of site hazards and evaluation of the need for action under Superfund remedial program	
Remedial Investigation/Feasibility Study		
• Scoping the RI/FS • Site Characterization • Baseline risk Assessment • Treatability Studies • Development and Screening of Alternatives • Detailed Analysis of Alternatives	Gather information sufficient to support an informed risk management decision regarding which remedy appears to be the most appropriate for a given site	**OU2**
Remedy Selection Process		
• Identification of Preferred Alternative	Make initial identification of Preferred Alternative based upon preliminary balancing of tradeoffs among alternatives using the nine criteria	
Proposed Plan		
	Present Preferred Alternative	
Public Comment		
	Hold minimum 30-day public comment period on the Proposed Plan, RI/FS, and other contents of the Administrative Record file	
Remedy Selection		
	Make final determination on remedy	
Record of Decision (ROD)		
	Certify that the remedy complies with CERCLA, outline the technical goals of the remedy, provide background information on the site, summarize the analysis of alternatives, and explain the rationale for the remedy selected	
Remedy Implementation		
• Remedial Design • Remedial Action	Design and construct remedy utilizing information contained in the ROD and other relevant documents. Write Explanation of Significant Differences (ESD) or ROD Amendments (if appropriate)	
Long-term Remedy Maintenance		
• Operation and Maintenance • 5-Year Reviews	Operate and maintain the remedy and ensure protectiveness through 5-year reviews	

Modified from the Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents (EPA, 1999).

Figure 1-2
OU2 Site Status
Omega Chemical Superfund Site



Aerial Date: March 2004, USGS

Legend

- Former Omega Facility
- Operable Unit 1

N

0 150 Feet

Figure 1-3
Operable Unit Location Map Unit 1
Omega Chemical Superfund Site

CH2MHILL

Date: 5/30/2008

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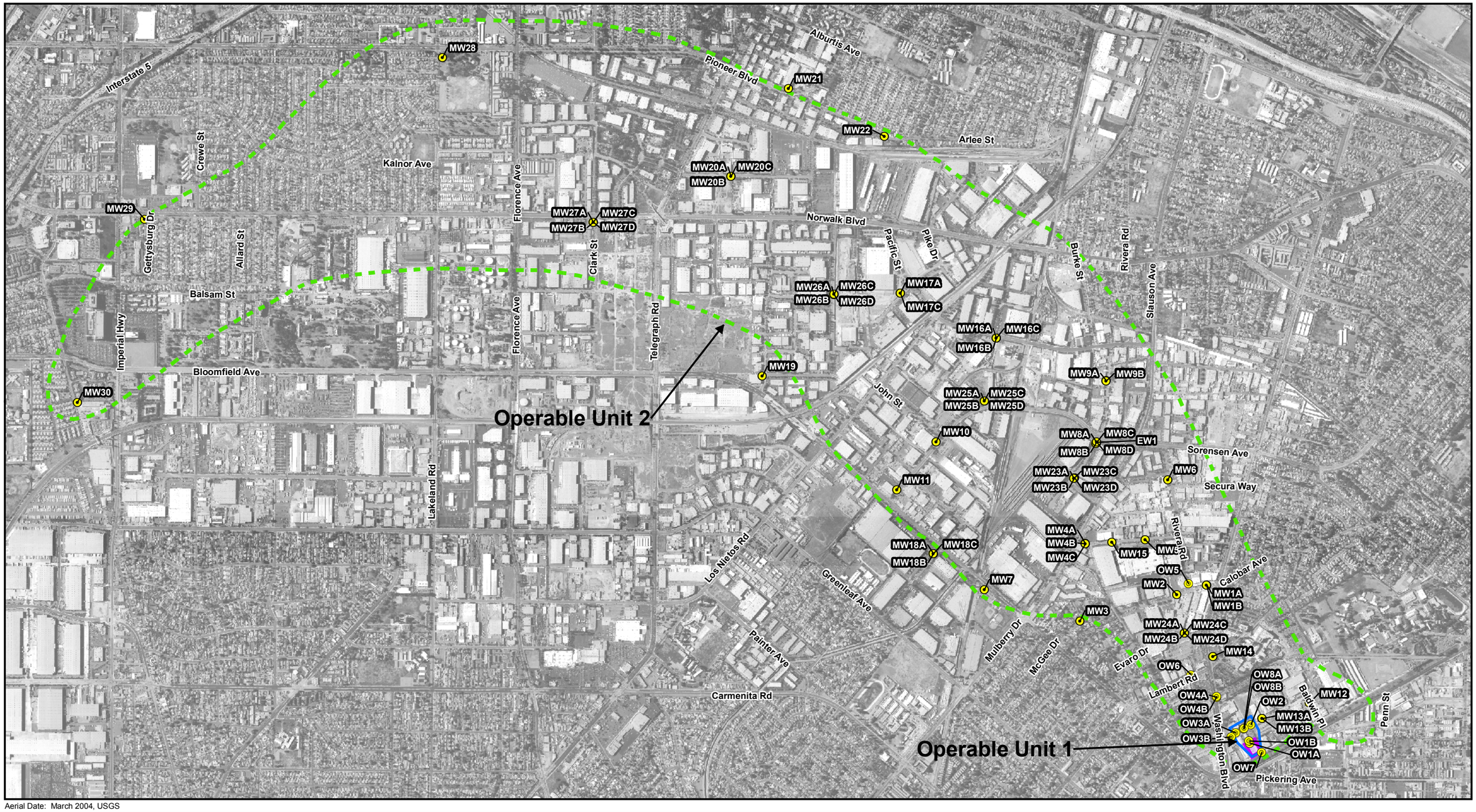

Aerial Date: March 2004, USGS

Legend

- Operable Unit 1
- Operable Unit 2
- Former Omega Facility

N

0 1,600 3,200 Feet

Figure 1-4
Operable Unit Location Map
Units 1 and 2
Omega Chemical Superfund Site

CH2MHILL

Date: May 30, 2008

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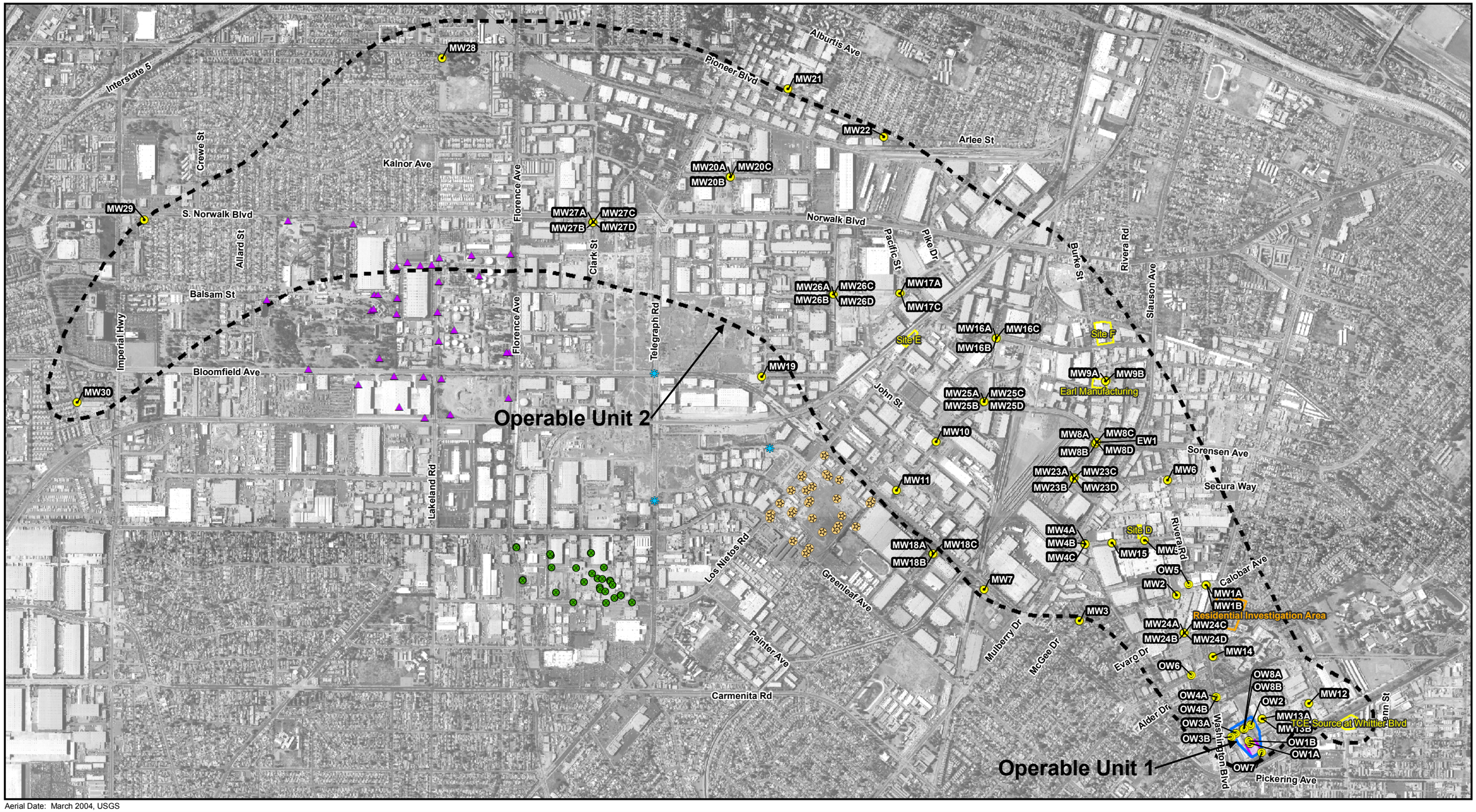

Aerial Date: March 2004, USGS

Legend

- EPA Monitoring Well
- Omega Potentially Responsible Parties Organized Group (OPOG) Monitoring Well
- Oil Field Reclamation Project (OFRP) Well
- Waste Disposal, Inc. (WDI) Well
- Ashland Chemical Well
- CENCO Wells
- Production Well
- Operable Unit 1
- Operable Unit 2
- Former Omega Facility
- Potential Source Area Facility
- Residential Investigation Area

Note: Other facility well IDs may be found in Appendix N

N

0 1,600 3,200 Feet

Figure 1-5
Field Investigation Study Area
Omega Chemical Superfund Site

CH2MHILL

Date: May 30, 2008

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