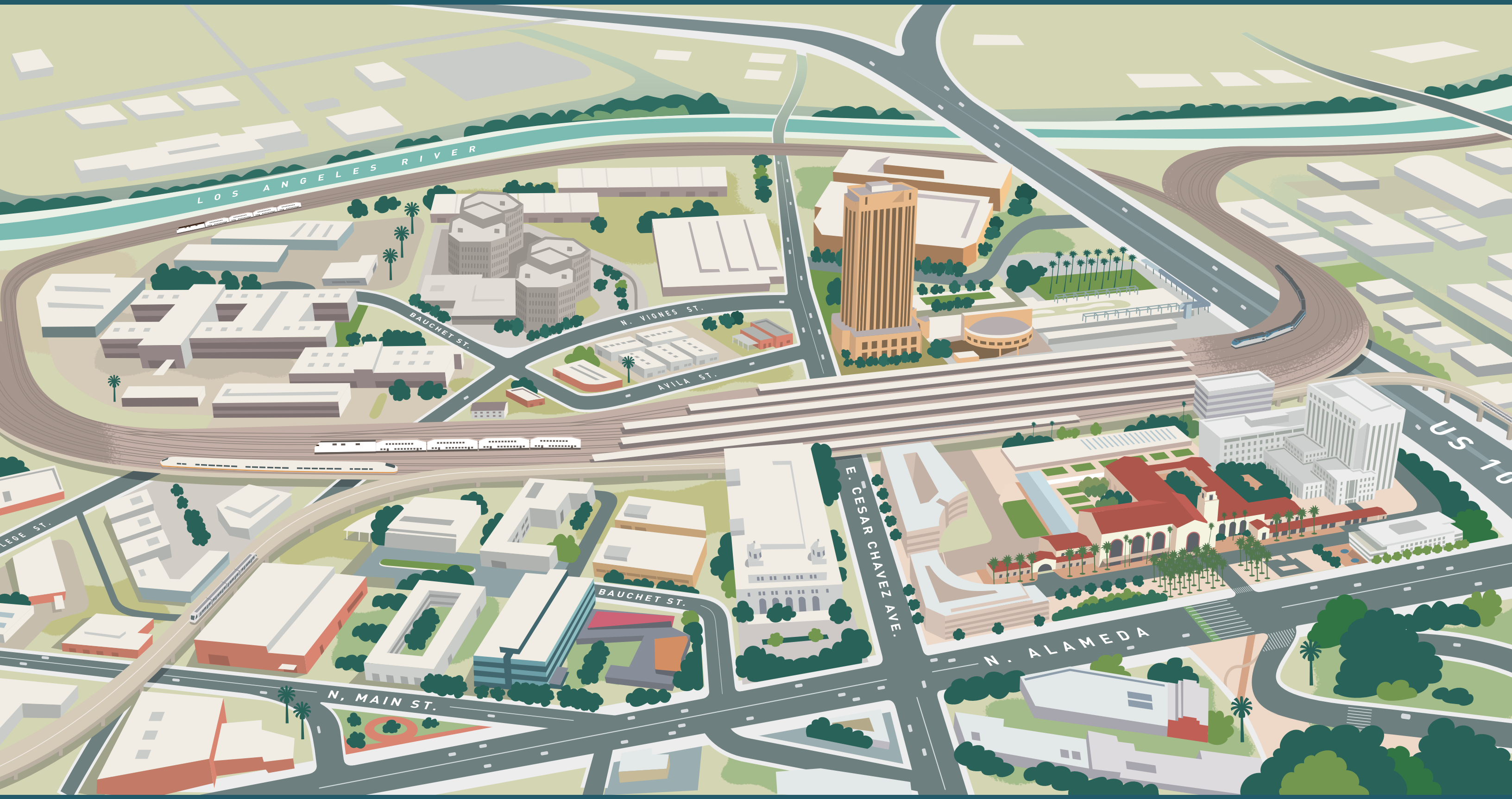
Los Angeles County
Metropolitan Transportation Authority

Link Union Station

DRAFT – Phase I Environmental Site Assessment

October 2016



Metro

(THIS PAGE INTENTIONALLY BLANK)

ABC Environmental Laboratories

Client:	Envirodox, Inc.	Lab Job No.:	EV11A052
Project:	Chevron-901 Alameda, LA	Date Sampled:	1/31/2011
Project Site:	Chevron-901 Alameda, LA	Date Received:	1/31/2011
Matrix:	Soil	Date Analyzed:	2/1/2011
Batch No.:	0201-VOCS	Date Reported:	2/3/2011

EPA 8260B (VOCs & Oxy.) by GC/MS, Page 2 of 2

Reporting Unit: mg/kg (PPM)

Date Analyzed			02/01/11	02/01/11	02/01/11	02/01/11	02/01/11
Dilution Factor			1	1	1	1	1
Lab Sample I.D.			EV11A052-1	EV11A052-2	EV11A052-3	EV11A052-4	EV11A052-5
Client Sample I.D.			B5-10	B5-20	B5-30	B5-35	B6-10
Compound	MDL	RL					
1,1,1,2-Tetrachloroethane	0.0018	0.005	ND	ND	ND	ND	ND
Ethylbenzene	0.001	0.002	ND	ND	0.063	ND	ND
Total Xylene	0.002	0.004	ND	ND	0.048	ND	ND
Styrene	0.0018	0.005	ND	ND	ND	ND	ND
Bromoform	0.0018	0.005	ND	ND	ND	ND	ND
Isopropyl benzene	0.0018	0.005	ND	ND	0.003J	ND	ND
Bromobenzene	0.0018	0.005	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	0.0018	0.005	ND	ND	ND	ND	ND
1,1,2,2,-Tetrachloroethane	0.0018	0.005	ND	ND	ND	ND	ND
Trans-1,4-dichloro-2-butene	0.0018	0.005	ND	ND	ND	ND	ND
2-Chlorotoluene	0.0018	0.005	ND	ND	ND	ND	ND
n-Propyl benzene	0.0018	0.005	ND	ND	ND	ND	ND
4-Chlorotoluene	0.0018	0.005	ND	ND	ND	ND	ND
1,3,5-Trimethyl benzene	0.0018	0.005	ND	ND	ND	ND	ND
tert-Butylbenzene	0.0018	0.005	ND	ND	ND	ND	ND
p-Isopropyl toluene	0.0018	0.005	ND	ND	ND	ND	ND
1,2,4-Trimethyl benzene	0.0018	0.005	ND	ND	0.004J	ND	ND
sec-Butylbenzene	0.0018	0.005	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.0018	0.005	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.0018	0.005	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.0018	0.005	ND	ND	ND	ND	ND
n-Butylbenzene	0.0018	0.005	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropan	0.0018	0.005	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.0018	0.005	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.0018	0.005	ND	ND	ND	ND	ND
Naphthalene	0.0018	0.005	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	0.0018	0.005	ND	ND	ND	ND	ND
Aceton	0.025	0.050	ND	ND	ND	ND	ND
2-Butanone(MEK)	0.01	0.025	ND	ND	ND	ND	ND
Methyl Isobutyl Ketone	0.01	0.025	ND	ND	ND	ND	ND
MTBE	0.0018	0.005	ND	ND	ND	ND	ND
Ethyl-t-butyl Ether(ETBE)	0.0018	0.005	ND	ND	ND	ND	ND
Diisopropyl ether (DIPE)	0.0018	0.005	ND	ND	ND	ND	ND
TAME	0.0018	0.005	ND	ND	ND	ND	ND
t-Butanol	0.010	0.020	ND	ND	ND	ND	ND

RL=Reporting Limit; ND=Not Detected (Below MDL); MDL= Method Detection Limit.
J= Value Detected Bewteen MDL and RL.

1640 South Grove Ave., Suite B
Ontario, CA 91761

Tel: (909)923-8628
(562)413-8343
Fax: (909)923-8628

ABC Environmental Laboratories

Client:	Envirodox, Inc.	Lab Job No.:	EV11A052
Project:	Chevron-901 Alameda, LA	Date Sampled:	1/31/2011
Project Site:	Chevron-901 Alameda, LA	Date Received:	1/31/2011
Matrix:	Soil	Date Analyzed:	2/1/2011
Batch No.:	0201-VOCS	Date Reported:	2/3/2011

EPA 8260B (VOCs & Oxy.) by GC/MS, Page 1 of 2

Reporting Unit: mg/kg (PPM)

Date Analyzed			02/01/11	02/01/11			
Dilution Factor			1	1			
Lab Sample I.D.			EV11A052-6	EV11A052-7			
Client Sample I.D.			B6-20	B6-30			
Compound	MDL	RL					
Dichlorodifluoromethane	0.0018	0.005	ND	ND			
Chloromethane	0.0018	0.005	ND	ND			
Vinyl Chloride	0.0018	0.005	ND	ND			
Bromomethane	0.0018	0.005	ND	ND			
Chloroethane	0.0018	0.005	ND	ND			
Trichlorofluoromethane	0.0018	0.005	ND	ND			
1,1-Dichloroethene	0.0018	0.005	ND	ND			
Carbon disulfide	0.0018	0.005	ND	ND			
Methylene chloride	0.0018	0.005	ND	ND			
Trans-1,2-Dichloroethene	0.0018	0.005	ND	ND			
1,1-Dichloroethane	0.0018	0.005	ND	ND			
2,2-Dichloropropane	0.0018	0.005	ND	ND			
Cis-1,2-Dichloroethene	0.0018	0.005	ND	ND			
Bromochloromethane	0.0018	0.005	ND	ND			
Chloroform	0.0018	0.005	ND	ND			
1,1,1-Trichloroethane	0.0018	0.005	ND	ND			
Vinyl acetate	0.0018	0.005	ND	ND			
Carbontetrachloride	0.0018	0.005	ND	ND			
1,1-Dichloropropene	0.0018	0.005	ND	ND			
1,2-Dichloroethane	0.0018	0.005	ND	ND			
Benzene	0.001	0.002	ND	ND			
Trichloroethene	0.0018	0.005	ND	ND			
1,2-Dichlorpropane	0.0018	0.005	ND	ND			
Methyl methacrylate	0.0018	0.005	ND	ND			
Dibromomethane	0.0018	0.005	ND	ND			
Bromodichloromethane	0.0018	0.005	ND	ND			
2-Chloroethyl Vinyl Ether	0.0018	0.005	ND	ND			
Cis-1,3-Dichloropropene	0.0018	0.005	ND	ND			
Toluene	0.001	0.002	ND	ND			
Trans-1,3-Dichloropropene	0.0018	0.005	ND	ND			
Ethylmethacrylate	0.0018	0.005	ND	ND			
1,1,2-Trichloroethane	0.0018	0.005	ND	ND			
Dibromochloromethane	0.0018	0.005	ND	ND			
1,2-Dibromoethane (EDB)	0.0018	0.005	ND	ND			
Tetrachloroethene	0.0018	0.005	ND	ND			
1,3-Dichloropropane	0.0018	0.005	ND	ND			
Chlorobenzene	0.0018	0.005	ND	ND			

RL=Reporting Limit; ND=Not Detected (Below MDL); MDL= Method Detection Limit.
J= Value Detected Bewteen MDL and RL.

1640 South Grove Ave., Suite B
Ontario, CA 91761

Tel: (909)923-8628
(562)413-8343
Fax: (909)923-8628

ABC Environmental Laboratories

Client:	Envirodox, Inc.	Lab Job No.:	EV11A052
Project:	Chevron-901 Alameda, LA	Date Sampled:	1/31/2011
Project Site:	Chevron-901 Alameda, LA	Date Received:	1/31/2011
Matrix:	Soil	Date Analyzed:	2/1/2011
Batch No.:	0201-VOCS	Date Reported:	2/3/2011

EPA 8260B (VOCs & Oxy.) by GC/MS, Page 2 of 2

Reporting Unit: mg/kg (PPM)

Date Analyzed			02/01/11	02/01/11			
Dilution Factor			1	1			
Lab Sample I.D.			EV11A052-6	EV11A052-7			
Client Sample I.D.			B6-20	B6-30			
Compound	MDL	RL					
1,1,1,2-Tetrachloroethane	0.0018	0.005	ND	ND			
Ethylbenzene	0.001	0.002	ND	ND			
Total Xylene	0.002	0.004	ND	ND			
Styrene	0.0018	0.005	ND	ND			
Bromoform	0.0018	0.005	ND	ND			
Isopropyl benzene	0.0018	0.005	ND	ND			
Bromobenzene	0.0018	0.005	ND	ND			
1,2,3-Trichloropropane	0.0018	0.005	ND	ND			
1,1,2,2,-Tetrachloroethane	0.0018	0.005	ND	ND			
Trans-1,4-dichloro-2-butene	0.0018	0.005	ND	ND			
2-Chlorotoluene	0.0018	0.005	ND	ND			
n-Propyl benzene	0.0018	0.005	ND	ND			
4-Chlorotoluene	0.0018	0.005	ND	ND			
1,3,5-Trimethyl benzene	0.0018	0.005	ND	ND			
tert-Butylbenzene	0.0018	0.005	ND	ND			
p-Isopropyl toluene	0.0018	0.005	ND	ND			
1,2,4-Trimethyl benzene	0.0018	0.005	ND	ND			
sec-Butylbenzene	0.0018	0.005	ND	ND			
1,3-Dichlorobenzene	0.0018	0.005	ND	ND			
1,4-Dichlorobenzene	0.0018	0.005	ND	ND			
1,2-Dichlorobenzene	0.0018	0.005	ND	ND			
n-Butylbenzene	0.0018	0.005	ND	ND			
1,2-Dibromo-3-chloropropan	0.0018	0.005	ND	ND			
1,2,4-Trichlorobenzene	0.0018	0.005	ND	ND			
Hexachlorobutadiene	0.0018	0.005	ND	ND			
Naphthalene	0.0018	0.005	ND	ND			
1,2,3-Trichlorobenzene	0.0018	0.005	ND	ND			
Aceton	0.025	0.050	ND	ND			
2-Butanone(MEK)	0.01	0.025	ND	ND			
Methyl Isobutyl Ketone	0.01	0.025	ND	ND			
MTBE	0.0018	0.005	ND	ND			
Ethyl-t-butyl Ether(ETBE)	0.0018	0.005	ND	ND			
Diisopropyl ether (DIPE)	0.0018	0.005	ND	ND			
TAME	0.0018	0.005	ND	ND			
t-Butanol	0.010	0.020	ND	ND			

RL=Reporting Limit; ND=Not Detected (Below MDL); MDL Method Detection Limit.
J= Value Detected Bewteen MDL and RL.

1640 South Grove Ave., Suite B
Ontario, CA 91761

Tel: (909)923-8628
(562)413-8343
Fax: (909)923-8628

ABC Environmental Laboratories

Client:	Envirodox, Inc.	Lab Job No.:	EV11A052
Project:	Chevron-901 Alameda, LA	Date Sampled:	1/31/2011
Project Site:	Chevron-901 Alameda, LA	Date Received:	1/31/2011
Matrix:	Water	Date Analyzed:	2/1/2011
Batch No.:	0201-VOCW	Date Reported:	2/3/2011

EPA 8260B (VOCs & Oxygenates) by GC/MS, Page 1 of 2

Reporting Unit: ug/L (ppb)

Date Analyzed		02/01/11				
Dilution Factor		1				
Lab Sample I.D.		EV11A052-8				
Client Sample I.D.		B5-W				
Compound	RL					
Dichlorodifluoromethane	0.5	ND				
Chloromethane	0.5	ND				
Vinyl Chloride	0.5	ND				
Bromomethane	0.5	ND				
Chloroethane	0.5	ND				
Trichlorofluoromethane	0.5	ND				
1,1-Dichloroethene	0.5	ND				
Carbon disulfide	0.5	ND				
Methylene chloride	0.5	ND				
Trans-1,2-Dichloroethene	0.5	ND				
1,1-Dichloroethane	0.5	ND				
2,2-Dichloropropane	0.5	ND				
Cis-1,2-Dichloroethene	0.5	ND				
Bromochloromethane	0.5	ND				
Chloroform	0.5	ND				
1,1,1-Trichloroethane	0.5	ND				
Vinyl acetate	0.5	ND				
Carbontetrachloride	0.5	ND				
1,1-Dichloropropene	0.5	ND				
1,2-Dichloroethane	0.5	ND				
Benzene	0.5	ND				
Trichloroethene	0.5	ND				
1,2-Dichlorpropane	0.5	ND				
Methyl methacrylate	1	ND				
Dibromomethane	0.5	ND				
Bromodichloromethane	0.5	ND				
2-Chloroethyl Vinyl Ether	0.5	ND				
Cis-1,3-Dichloropropene	0.5	ND				
Toluene	0.5	ND				
Trans-1,3-Dichloropropene	0.5	ND				
Ethylmethacrylate	0.5	ND				
1,1,2-Trichloroethane	0.5	ND				
Dibromochloromethane	0.5	ND				
1,2-Dibromoethane (EDB)	0.5	ND				
Tetrachloroethene	0.5	ND				
1,3-Dichloropropane	0.5	ND				
Chlorobenzene	0.5	ND				

RL=Reporting Limit; ND=Not Detected (Below RL).

1640 South Grove Ave., Suite B
Ontario, CA 91761

Tel: (909)923-8628
(562)413-8343
Fax: (909)923-8628

ABC Environmental Laboratories

Client:	Envirodox, Inc.	Lab Job No.:	EV11A052
Project:	Chevron-901 Alameda, LA	Date Sampled:	1/31/2011
Project Site:	Chevron-901 Alameda, LA	Date Received:	1/31/2011
Matrix:	Water	Date Analyzed:	2/1/2011
Batch No.:	0201-VOCW	Date Reported:	2/3/2011

EPA 8260B (VOCs & Oxygenates) by GC/MS, Page 2 of 2

Reporting Unit: ug/L (ppb)

Date Analyzed		02/01/11				
Dilution Factor		1				
Lab Sample I.D.		EV11A052-8				
Client Sample I D.		B5-W				
Compound	RL					
1,1,1,2-Tetrachloroethane	0.5	ND				
Ethylbenzene	0.5	5.23				
Total Xylene	0.5	3.29				
Styrene	0.5	ND				
Bromoform	0.5	ND				
Isopropyl benzene	0.5	1.42				
Bromobenzene	0.5	ND				
1,2,3-Trichloropropane	0.5	ND				
1,1,2,2,-Tetrachloroethane	0.5	ND				
Trans-1,4-dichloro-2-butene	0.5	ND				
2-Chlorotoluene	0.5	ND				
n-Propyl benzene	0.5	5.26				
4-Chlorotoluene	0.5	ND				
1,3,5-Trimethyl benzene	0.5	1				
tert-Butylbenzene	0.5	ND				
p-Isopropyl toluene	0.5	ND				
1,2,4-Trimethyl benzene	0.5	1.2				
sec-Butylbenzene	0.5	0.75				
1,3-Dichlorobenzene	0.5	ND				
1,4-Dichlorobenzene	0.5	ND				
1,2-Dichlorobenzene	0.5	ND				
n-Butylbenzene	0.5	1.12				
1,2-Dibromo-3-chloropropan	0.5	ND				
1,2,4-Trichlorobenzene	0.5	ND				
Hexachlorobutadiene	1	ND				
Naphthalene	0.5	ND				
1,2,3-Trichlorobenzene	0.5	ND				
Acetone	5	ND				
2-Butanone(MEK)	5	ND				
MTBE	0.5	ND				
Methyl Isobutyl Ketone	5	ND				
Ethyl-t-butyl Ether(ETBE)	0.5	ND				
Diisopropyl ether (DIPE)	0.5	ND				
TAME	0.5	ND				
t-Butanol	5	ND				

RL=Reporting Limit; ND=Not Detected (Below RL).

1640 South Grove Ave., Suite B
Ontario, CA 91761

Tel: (909)923-8628
(562)413-8343
Fax. (909)923-8628

J-58 - Friedman Bag Co, 801 E Commercial Street

(THIS PAGE INTENTIONALLY LEFT BLANK)

Winston H. Hickox
Secretary for Environmental Protection

California Regional Water Quality Control Board
Los Angeles Region

Over 50 Years Serving Coastal Los Angeles and Ventura Counties
Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600   FAX (213) 576-6640 - Internet Address: http://www.swrcb.ca.gov/rwqcb4

Gray Davis
Governor

August 23, 2002

Mr. Al Friedman
Friedman Bag Company
801 East Commercial Street
Los Angeles, CA 90012

UNDERGROUND TANK CASE CLOSURE
FRIEDMAN BAG COMPANY
801 EAST COMMERCIAL STREET, LOS ANGELES, CA (FILE No. 900120407)

Dear Mr. Friedman:

This letter confirms the completion of a site investigation and corrective action for the underground storage tank(s) formerly located at the above referenced site location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on the information contained in the case file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground tank(s) site is in compliance with the requirements of subdivision (a) and (b) of Section 25299.37 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.77 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (h) of Section 25299.37 of the Health and Safety Code.

Please contact Mr. Arman Toumari at (213) 576-6758 or atoumari@rb4.swrcb.ca.gov if you have any questions regarding this matter.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Mr. Hari Patel, State Water Resources Control Board, UST Cleanup Fund
Dr. Bruce Mowry, Water Replenishment District of Southern California
Dr. Ken Hekimian, HVN Environmental Services Co, Inc. (Huntington Beach Office)

(THIS PAGE INTENTIONALLY LEFT BLANK)

J-63 - Manley Oil, 610 Center Street

(THIS PAGE INTENTIONALLY LEFT BLANK)

AVOCET
ENVIRONMENTAL, INC.

April 26, 2007 Project No. 1208.001

Mr. Peter Cooke
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
1011 Grandview Avenue
Glendale, California 91201

Soil Gas Verification Sampling Report
Former Aliso Street MGP Facility, Sector C, Block N
410 Center Street
Los Angeles, California

Dear Mr. Cooke:

On November 3, 2006, the California Department of Toxic Substances Control (DTSC) approved Tetra Tech's *Removal Action Completion Report* for the property located at 410 Center Street in Los Angeles, California (Figure 1). The letter noted, however, that volatile organic compounds (VOCs) detected in soil gas remained an outstanding issue preventing unrestricted use of the site. Several compounds were detected in the soil gas samples collected by Earth Tech Inc. (Earth Tech) in 2001. Most of the constituents occurred at concentrations well below any recognized risk threshold. Tetrachloroethene (PCE), however, warranted further consideration since it exceeded the residential benchmark established under the California Human Health Screening Levels (CHHSLs).

The property owner, The Greenwald Company, intends to convert it to a different use at some time in the future. As such, the deed for the property will contain a Land Use Covenant (LUC) that will protect human health and the environment. To fully accomplish this, however, requires resolution of the outstanding soil gas issue. At the request of the Greenwald Company Avocet Environmental, Inc. (Avocet) prepared and submitted a work plan to DTSC on January 23, 2007 with the objective of identifying the PCE source and assessing the potential human health risk posed by inhalation of the soil vapors in both commercial and residential scenarios. Avocet conducted the work between February 15 and 19, 2007, which included the installation of five new soil gas probes, collection of soil and soil gas samples, and evaluation of potential human health risk based on the new soil gas data.

Analysis of the soil gas samples found compounds similar to those detected in the original assessment, although at lower concentrations. However, only one of the soil samples contained a detectable concentration of one VOC (PCE), and that result was below the reporting limit. Consequently, we cannot identify the source of the VOCs with certainty at this time. It is not unreasonable to believe, though, that the source of the VOCs is likely located near the northeast quadrant of the facility, in the vicinity of the former Manley Oil Company (Manley Oil) building. In general, the constituents found in shallow soil gas are not found in groundwater,

16 Technology Drive, Suite 154 ■ Irvine, California 92618-2327
Phone 949.296.0977 ■ Fax 949.296.0978
www.avocetenv.com

and, conversely, those in groundwater are not found in shallow soil gas. This suggests that the VOC source is something other than groundwater. Another argument in favor of a surface source is the heterogeneous distribution of PCE across the site, concentrated at the east end of the Manley Oil building. The elevated concentrations in only one portion of the site are indicative of a localized source. Off-gassing from groundwater would tend to produce more uniform concentrations across a wider area of the site. Finally, although low levels of PCE have been detected in an upgradient monitoring well maintained by Sempra Energy, it has not been detected in any of the crossgradient or downgradient monitoring wells.

As with the 2001 soil gas sampling event, PCE was the compound of greatest concern. Although all PCE concentrations were 4 to 48 percent less than the former detections, the residential CHHSL was still exceeded in the samples from the north side of the site. A health risk assessment was performed by McDaniel Lambert, Inc. (McDaniel Lambert) to further evaluate the hazard posed by soil gas. The assessment found that the potential cancer risks to future commercial business employees are below the California Proposition 65 standard (1×10^{-5}) but that cancer risks for future residents was at the 1×10^{-5} residential standard. The residential risk is driven primarily by the PCE. Noncancer hazards for both groups are all well below the target value of 1. A copy of the health risk assessment (McDaniel Lambert, March 28, 2007) is included as Attachment 1 to this report.

In its current state, portions of the site are not suitable for unrestricted use. However, it is believed that if the impacted soil gas is remediated the environmental issues originating from the site will have been addressed in a manner protective of human health. As such, alternative uses of the site can be considered consistent with an LUC attached to the property that addresses the underlying regional groundwater condition.

The remainder of this report presents a detailed description of the site background, previous environmental investigations, field effort, laboratory analyses, and human health risk assessment.

SITE BACKGROUND

The property located at 410 Center Street in Los Angeles, California (Figure 1) is a parcel of approximately 1.5 acres that was formerly part of the Aliso Street Manufactured Gas Plant (MGP). The 56-acre Aliso MGP site was divided into five sectors, A through E, to manage the remedial investigations and subsequent remedial activities. The subject site is in Block N, which is a part of Sector C and is bounded by Jackson Street to the south, Center Street to the west, and Ducommun Street to the north. Portions of Block N were most recently used by (from north to south) Manley Oil, Los Angeles Gas and Electric, and Southern California Gas Company (SCG) (Figure 2). None of the above-mentioned operations are active onsite.

PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Earth Tech performed a Preliminary Endangerment Assessment (PEA) at Sector C of the former Aliso Street MGP between February and July 1998. Based on the PEA, polynuclear aromatic hydrocarbon (PAH)-contaminated soil and hydrocarbon-impacted groundwater was discovered beneath Block N. The PEA concluded that the groundwater contamination appeared regional, whereas the soil contamination appeared localized. The human health risk evaluation for Sector C, conducted as part of the PEA, indicated that the cumulative cancer risk exceeded 1×10^{-6} and the cumulative hazard quotient exceeded 1.0 (Earth Tech, 1998).

Subsequently, Earth Tech performed two remedial investigations at Block N on behalf of SCG from October 2001 through 2003. As part of the 2001 remedial investigation, nine soil gas samples (SN-1 through SN-9) were collected and analyzed for VOCs using U.S. Environmental Protection Agency (EPA) Method TO-14. The soil gas samples were found to contain elevated concentrations of several VOCs, including PCE. Concentrations in two of the samples exceeded the residential CHHSL for PCE (Earth Tech, October 19, 2001). Supplemental sampling was conducted by TRC Alton Geoscience in the northwest corner of the site in 2002 as part of Tetra Tech's Master Remedial Investigation (Tetra Tech, September 2002).

Tetra Tech compiled and submitted a *Removal Action Workplan* to DTSC in June 2004. One of the primary objectives of the removal action was to restore the site to a condition consistent with unrestricted land use. Subsequently, Tetra Tech conducted field activities, on behalf of SCG, to remediate the site, which included soil and soil gas sampling and soil removal (Tetra Tech, 2006). As part of the remediation effort, the impacted soil was excavated and removed from the site. A majority of the excavated soil was in the northwest corner, just south of the Manley Oil building. Several confirmation soil samples were collected in the excavation area, beneath the Manley Oil building and its vicinity, during removal action activities onsite. Site cleanup was based on the most protective removal action goals. The soil cleanup continued until the cleanup goals were achieved, as demonstrated by the confirmation soil sample results. Three confirmation soil gas samples (including one duplicate) were also collected in two locations (SN-10 and SN-11) near the excavation area and analyzed for VOCs using EPA Method TO-15. Tetra Tech submitted a *Removal Action Completion Report* to the DTSC in January 2006. A post-excavation risk evaluation, examining the potential for human health and environmental impacts from chemicals within the limits of Block N, was also included as part of this report. Only risks estimated for exposures to VOCs in indoor air were found to exceed 1×10^{-6}, ranging up to 8×10^{-6} for potential exposure to PCE.

Two aboveground storage tanks previously used by Manley Oil for separating oil and water were dismantled and removed from the site in September 2005. Subsequently, a general cleanup of several sumps and the boiler platform was undertaken to remove accumulated oil sludge and soils contaminated by petroleum hydrocarbons, including benzene and naphthalene. The report (Kleinfelder, 2005) noted that the areas of concern had been cleaned to the satisfaction of the DTSC representative.

SOIL GAS VERIFICATION SAMPLING

As described previously, soil gas was noted as an outstanding issue by DTSC. The soil gas sampling effort in this scope of work proposed to collect verification samples from soil gas probes that would be located relatively close to the original sample locations. The verification sampling was intended to achieve three objectives. The first objective was to confirm that the VOCs were occurring at the locations and concentrations first observed by Earth Tech. The original data were over five years old and the samples were not analyzed using Method TO-15, which is preferred for these types of soil gas evaluations. If the soil gas had attenuated, further work might be unnecessary. The second objective was to attempt to identify the source from which the VOCs are originating. There had been some discussion that the PCE could be originating from groundwater, and PCE has been detected in groundwater well C-6 (Figure 3), located northeast of the site, at least once (February 2005), although it has not been detected in recent sampling events. Consequently, most of the sample locations were clustered around the former Manley Oil building, where the soil gas concentrations are highest. A third objective of the program was to provide recent shallow soil gas results that could be used to support a human health risk assessment.

Following is a description of the onsite field activities, the soil and soil gas sampling results, and the potential human health risks associated with possible VOCs beneath the site.

FIELD ACTIVITIES

Health and Safety

Prior to any field activities involving potential exposure to chemicals in the subsurface, Avocet prepared a site-specific health and safety plan (HASP). The HASP identified the potential hazards (chemical and physical) likely to be encountered at the site and specified the measures to be taken to avoid or minimize these hazards. All Avocet field personnel were required to review the HASP and sign a HASP Distribution Record form to acknowledge that they had reviewed it and agreed to abide by its requirements. While in the field, the supervising Avocet employee evaluated Avocet and subcontractor work practices for consistency with the site-specific HASP. The work related to the soil gas verification sampling was completed without any health and safety incidents of any kind.

Boring Mark-Out and Utility Clearance

Prior to initiating intrusive field activities, Avocet personnel marked out the proposed soil gas sampling locations. Underground Service Alert of Southern California (DigAlert) was notified 72 hours before the field investigation began to allow any utility providers an opportunity to "clear" the investigation area relative to below-surface obstructions. As a final check for possible subsurface utilities, probe locations were hand augered to a depth of 5 feet.

Investigation Locations

The soil and soil gas sampling locations are shown in Figure 2. The location of SGP01 was originally proposed between SN-4 and SN-5 pursuant to the *Confirmation Soil Gas Survey Work Plan* (Avocet 2007). However, this boring met with refusal at the time of hand-augering. Therefore, it was relocated adjoining the southern wall of the existing structure along the northern boundary of the site (SGP01A), where higher soil gas VOCs have historically been reported.

Probe Installation, Sampling, and Analysis

All of the investigation work, including the soil gas probe installation, sampling, and laboratory analysis, was conducted in accordance with the work plan (Avocet, January 23, 2007) that was approved by the DTSC, as well as the DTSC and Los Angeles Regional Water Quality Control Board (LARWQCB) guidance for active soil gas investigations (DTSC/LARWQCB, January 28, 2003). All work pertaining to the shallow soil sampling and soil gas probe installation was conducted by Kehoe Testing & Engineering (Kehoe), of Huntington Beach, California, using a limited-access direct-push GeoProbe™ rig due to the restrictions on entering the existing buildings.

Soil Sampling

Soil samples were collected at each of the locations, except SGP03, at depths of 5, 10, and 15 feet below ground surface (bgs). Only one sample was collected at SGP03, at 5 feet bgs, because the boring could not be advanced any further due to refusal. All the soil samples were collected in 1.5-inch-diameter clear acetate liners contained within stainless steel samplers. The acetate sleeves were cut lengthwise to expose the soil core for logging and subsampling. Soil samples were collected for laboratory analysis by extracting two 5-gram and one 25-gram Encore samples from the cores at the appropriate depths and sealing the Encores in Mylar® envelopes in accordance with EPA Method 5035. Each sample was labeled with the date, time, depth, boring location, and geologist; logged onto a chain-of-custody form; and placed in a sealed plastic bag and put into a chilled cooler until delivery to a state-certified environmental testing laboratory. Samples were analyzed for VOCs using EPA Method 8260B. The sampler was decontaminated between borings to prevent cross-contamination by hand-washing in a detergent solution, rinsing in tap water, and then rinsing in distilled water. The GeoProbe™ rods and bits were also decontaminated between borings.

Soil Gas Probe Installation

The shallow temporary probes were constructed within the 5-foot-deep hand-auger borings, and the deep temporary probes were constructed within borings created using direct-push equipment. All borings, except Boring SGP03, were provided with nested gas probes at 5 and 15 feet bgs. As mentioned earlier, Boring SGP03 could not be advanced beyond 5 feet bgs. A single probe was installed in this boring at a depth of 5 feet bgs.

The soil gas probes consisted of a porous ceramic tip set at the desired sampling depth and connected to ⅛-inch outside diameter nylon tubing extending approximately 2.5 feet above the ground surface. The tip (subsurface termination) was constructed of polymerized ceramic, designed to be gas permeable yet prevent the entrance of fine material that could potentially clog the nylon tubing. The extension tubing was premeasured to ensure that the borehole was the correct depth and that the tube reached the bottom of the borehole. Each probe was completed at the surface with a gas-tight valve to prevent degassing after construction and during equilibration. Each probe was clearly labeled with its unique location identifier and depth. The probe tips were installed midway within a 12-inch-thick filter pack consisting of No. 3 Monterey sand. After installing a 5- to 6-inch-thick bed of sand, the probe tip was installed and the remainder of the filter pack added to cover the tip, and the 12-inch filter interval was completed. Approximately 12 inches of dry granular bentonite was placed above the sand and hydrated in place to provide an annular seal. The remainder of the annular space was then backfilled in 12-inch lifts with additional dry granular bentonite, with each lift hydrated with the recommended volume of water.

For the nested completions, the 15-foot-deep probes were installed as described above. Sequential 12-inch lifts of hydrated No. 16 granular bentonite were then added above the filter pack until a depth of 5 feet was reached. Again, a 5- to 6-inch bed of sand was placed, the probe tip installed, and the remainder of the sand added to cover the tip, and the 12-inch filter pack interval was completed. The filter pack was pneumatically isolated with sequential 12-inch lifts of hydrated granular bentonite until the annular construction reached ground surface. Each probe was labeled immediately after installation to ensure proper identification.

Avocet collected the soil gas samples for fixed laboratory analysis in laboratory-provided 6-liter SUMMA-type canisters (including flow regulators and pressure gauges) on February 19, 2007, after allowing the probes to equilibrate over a period of 48 hours. The samples were submitted to Severn Trent Laboratories, Inc. (STL), of Santa Ana, California, for analysis using EPA Method TO-15. The canisters were “batch certified” as “clean” by STL using EPA Method TO-15 certification criteria. Leak detection tests were performed at each soil gas probe location every time a sample was collected to ensure the integrity of the well seal and the sample train. Avocet used 2-propanol (CAS No. 67-63-0) as the leak detection compound during the collection of SUMMA canister samples.

Wastes and Borehole Decommissioning

Investigation-derived waste (IDW) generated during the course of the soil gas verification sampling included soil cuttings generated by hand-auger utility clearance activities, as well as water generated by equipment decontamination.

The used personal protective equipment (PPE) was limited to discarded gloves, which were not expected to be hazardous and which were disposed of in trash receptacles at the site. Drill cuttings, excess soil sample material, and the equipment decontamination rinsate were placed in a single 55-gallon drum. Based on the results of the soil samples, the contents of the drum are currently being profiled. The profile results and manifest will be submitted under separate cover.

The soil gas borehole was decommissioned in accordance with applicable guidance. The soil gas probes were decommissioned by pulling out the polyethylene tubes, thereby detaching the porous tips, and sealing the resulting hole with granular bentonite. The granular bentonite was hydrated with potable water to seal the tubing holes such that abandoned probes do not provide preferential gas migration pathways in the future.

SUMMARY OF RESULTS

Results of Soil Sample Analyses

The results of the soil analyses are summarized in Table 1. VOCs were detected in only 1 of the 13 samples that were analyzed using EPA Method 5035. Specifically, PCE was reported at 2.75 µg/kg in the 5-foot soil matrix sample from Boring SGP03. However, this result was J-flagged by the laboratory to indicate that it was below the reporting limit (RL) of 5.4 µg/kg and above the Method Detection Limit (MDL). In either case, the PCE concentration in this soil sample is negligible. Figure 3 shows the reported PCE concentrations in the soil samples. The corresponding laboratory reports are provided in Attachment 2.

Results of Soil Gas Analyses

The results of the soil gas analyses are summarized in Table 2. A total of nine soil gas samples were collected and analyzed for VOCs using EPA Method TO-15. In brief, all the soil gas samples contained detectable concentrations of at least one VOC compound. Figure 4 shows all the detected VOCs in the soil gas samples analyzed. The corresponding laboratory reports are provided in Attachment 2.

The detected VOCs and the frequency of detection are summarized below.

Compound	Detection Frequency	Concentration Range (µg/m^3)
1,1,1-Trichloroethane	6 / 9	3.5 (J) – 8.2 (J)
1,2,4-Trimethylbenzene	1 / 9	8.8 (J)
2-Butanone (MEK)	9 / 9	9.1 (J) – 1,800
2-Hexanone	5 / 9	17 (J) – 33 (J)
4-Ehyltoluene	4 / 9	4.7 (J) – 8.5 (J)
Acetone	8 / 9	7.2 (J) - 300
Benzene	1 / 9	3.5 (J)
Chloromethane	1 / 9	3.8 (J)
Dichlorodifluoromethane	7 / 9	2.5 (J) – 3.5 (J)
Ethylbenzene	3 / 9	4.3 (J) – 6.9 (J)
Methylene chloride	5 / 9	3.3 (J) – 4.5 (J)
Tetrachloroethene (PCE)	9 / 9	77 – 3,100
Toluene	8 / 9	5.2 (J) - 18
Trichloroethene (TCE)	4 / 9	10 (J) - 22
Trichlorofluoromethane	2 / 9	54 - 130
Xylenes (Total)	8 / 9	16 - 43

As indicated above, 2-butanone (MEK), acetone, and PCE are the most widely distributed VOCs in the soil gas. Total xylenes, toluene, and dichlorofluoromethane were also detected in several of the analyzed samples at concentrations above the RL but below a level of significance relative to their respective CHHSL.

Review of SCG Groundwater Monitoring Data

SCG provided Avocet with quarterly groundwater monitoring data for all of the wells surrounding the site, including data for a two year period (March 2005 through November 2006) corresponding to Wells C-6, C-8A, TtK-2, TtK-5, TtK-6, and TtO-1, as shown in Figure 3. The data are provided in Attachment 3.

The groundwater monitoring results show that acetone and MEK were not detected in any of the groundwater samples collected during the course of the two-year sampling period. Samples from only two of the wells, C-6 and C-8A, contained PCE at concentrations higher than the reporting limit. PCE was reported at concentrations ranging from 0.5 to 1.4 µg/l in Well C-6; the well nearest to the northern boundary of the subject site. The most recent sample from this well, however, did not detect any PCE. Similarly, although PCE has been reported at concentrations ranging from 0.5 and 1.2 µg/l in Well C-8A, it has not been reported in any of the samples analyzed after the October 2005 sampling event. Conversely, the soil gas samples collected during the most recent soil gas investigation had high concentrations of acetone, PCE, and MEK. The absence or negligible concentrations of acetone, PCE, and MEK in the groundwater and their detection in the soil gas at high concentrations suggest that the underlying groundwater is probably not the source of these compounds.

Conversely, all the wells have consistently shown high concentrations of other VOCs, including benzene, ethylbenzene, isopropylbenzene, and vinyl chloride. Other detected VOCs include *cis*-1,2-dichloroethene, methyl *tert*-butyl ether (MTBE), *n*-propylbenzene, *sec*-butylbenzene, toluene, *trans*-1,2-dicholroethene, and trichloroethene (TCE). In addition, Wells TtK-2 and TtO-1 have shown exceptionally high concentrations of naphthalene (up to 11,800 µg/l), xylenes (up to 1,321 µg/l), toluene (up to 203 µg/l), and total petroleum hydrocarbons (TPH [up to 22,600 µg/l as gasoline]). Although xylene and toluene was detected in some of the soil gas samples at low concentrations, none of the other VOCs were detected in any of the soil gas samples. Again, the presence of high concentrations of the VOCs mentioned above and their corresponding absence in the soil gas suggest that groundwater is probably not the source of these compounds. Since groundwater is typically found at approximately 28 feet bgs, and the soil gas samples were collected at 5 and 15 feet bgs, these VOCs would have been detected in the deeper soil gas probes if off-gassing from the groundwater was occurring.

Based on the available data, it appears that the VOCs detected in the soil gas are probably originating from a near-surface source, and the lack of correlation between the VOCs in the groundwater and soil gas suggests that the near-surface source, if any, has not contributed to the VOC-impacted groundwater.

HUMAN HEALTH RISK EVALUATION

McDaniel Lambert conducted an evaluation of the potential future human health risks from indoor vapor intrusion due to the detected VOCs in the soil gas samples collected in the vicinity of the former Manley Oil building on the site. A copy of the report compiled by McDaniel Lambert is provided as Attachment 1.

The health evaluation primarily focused on the potential exposures of residents or business employees who may reside or work in future onsite buildings. Based on the human health risk evaluation, the potential cancer risks from VOC vapor intrusion to future commercial business employees were found to be below the California Proposition 65 cancer risk level (1×10^{-5} or 1 in 100,000). Cancer risks for future residents were found at the California Proposition 65 cancer risk level of 1×10^{-5}, driven primarily by modeled concentrations of PCE in indoor air. Noncancer hazards for both groups were all well below the target value of 1.

CONCLUSIONS

The analytical results show that soil gas, especially around the former Manley Oil building, is impacted by VOCs. At present, the site poses a potential risk to future residential receptors due to inhalation of soil gas. The primary risk driver within the soil gas is PCE. The data and site configuration suggest that most of the VOCs, and certainly PCE, originate from a near-surface source around the east end of the Manley Oil building. The lack of certain VOCs, such as MEK and acetone, in groundwater further argue that the PCE source is not off-gassing from groundwater. It is not possible, however, to clearly delineate the PCE source at this time with the available data.

In its current state, portions of the site are not suitable for unrestricted use. However, it is believed that if the impacted soil gas is remediated the environmental issues originating from the site will have been addressed in a manner protective of human health. As such, alternative uses of the site can be considered consistent with an LUC attached to the property that addresses the underlying regional groundwater condition.

If you have any questions regarding this report or require additional information, please do not hesitate to call.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Robert Van Hyning, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
ROBERT VAN HYNING
C 054691
Exp. Date 12/31/07
CIVIL
STATE OF CALIFORNIA

RVH:sh
Attachments
cc: Benett Greenwald – The Greenwald Company
Richard Bayer, Esq.
Rita Kamat – Department of Toxic Substances Control

S:\Projects\1208 Former Aliso MGP Site\Soil Gas Verification Sampling Report\Soil Gas Verification Sampling Report 042607.doc

REFERENCES

Avocet Environmental, Inc., January 23, 2007, *Confirmation Soil Gas Survey Work Plan*.

California Department of Toxic Substances Control (DTSC) and California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), January 28, 2003, *Advisory – Active Soil Gas Investigations*.

California Department of Toxic Substances Control, November 3, 2006, *Removal Action Completion Report, Block N, Section C, Former Aliso Street MGP Site, Los Angeles*, letter to Sempra Energy.

California Department of Toxic Substances Control, November 30, 2006, *Manley Oil PCE in Soil Vapor*, e-mail correspondence from Pete Cook (DTSC) to Rita Kamat (DTSC).

Earth Tech, 1998, *Preliminary Endangerment Report - Sector C, Aliso Gas Plant, Los Angeles, California.*

Earth Tech, October 19, 2001, *Remedial Investigation for Block N - Sector C, Former MGP Site, Los Angeles, California*, prepared for Southern California Gas Company.

Kleinfelder, December 20, 2005, *Sump Closure Report Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California.*

McDaniel Lambert, March 28, 2007, *Former Aliso Street MGP Facility, Block N, Soil Gas Human Health Risk Evaluation.*

Tetra Tech, September 2002, *Aliso Remedial Investigation Master Workplan, Los Angeles, California*.

Tetra Tech, June 2004, *Removal Action Workplan, Block N, Sector C, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California.*

Tetra Tech, January 2006, *Removal Action Completion Report for Aliso Street (Sector C) – Block N, Former MGP Site, 410 Center Street, Los Angeles, California*. Unpublished report prepared for Southern California Gas Company.

TRC Alton Geoscience, November 2002, *Supplementary Site Investigation Report, Center Street Terminal*.

Tables

AVOCET ENVIRONMENTAL, INC.

Summary of Soil VOC Analyses

(Concentrations are in ug/kg)

Former Aliso Street MGP Facility

Los Angeles, California

Boring No.	Sample Date	Sample Depth (feet bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene (1,1-Dichloroethylene)	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2-Dibromoethane (EDB, Ethylene dibromide)	1,2-Dichlorobenzene (o-Dichlorobenzene)	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene (m-Dichlorobenzene)	1,3-Dichloropropane	1,4-Dichlorobenzene (p-Dichlorobenzene)	2,2-Dichloropropane	2-Butanone (MEK, Methyl ethyl ketone)	2-Chlorotoluene (o-Chlorotoluene)	2-Hexanone	4-Chlorotoluene (p-Chlorotoluene)	4-Methyl-2-pentanone (MIBK, Methyl isobutyl keton	Acetone	Benzene	Bromobenzene (Phenyl bromide)	Bromochloromethane (Chlorobromomethane)	Bromodichloromethane (Dichlorobromomethane)	Bromoform (Tribromomethane)	Bromomethane (Methyl bromide)
SGP01A	02/15/07	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<25.0	<5.0	<25.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0
	02/15/07	10.0	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<24.0	<4.7	<24.0	<4.7	<24.0	<24.0	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4
	02/15/07	15.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<25.0	<5.0	<25.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0
	02/15/07	15.0	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<12.0	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<29.0	<5.8	<29.0	<5.8	<29.0	<29.0	<5.8	<5.8	<5.8	<5.8	<5.8	<12.0
SGP02	02/15/07	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<25.0	<5.0	<25.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0
	02/15/07	10.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<27.0	<5.4	<27.0	<5.4	<27.0	<27.0	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0
	02/15/07	15.0	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<24.0	<4.8	<24.0	<4.8	<24.0	<24.0	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6
SGP03	02/15/07	5.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<27.0	<5.4	<27.0	<5.4	<27.0	<27.0	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0
SGP04	02/15/07	5.0	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.3	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<23.0	<4.6	<23.0	<4.6	<23.0	<23.0	<4.6	<4.6	<4.6	<4.6	<4.6	<9.3
	02/15/07	10.0	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<24.0	<4.8	<24.0	<4.8	<24.0	<24.0	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5
	02/15/07	15.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<26.0	<5.2	<26.0	<5.2	<26.0	<26.0	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0
SGP05	02/15/07	5.0	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<24.0	<4.8	<24.0	<4.8	<24.0	<24.0	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6
	02/15/07	10.0	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<9.0	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<22.0	<4.5	<22.0	<4.5	<22.0	<22.0	<4.5	<4.5	<4.5	<4.5	<4.5	<9.0
	02/15/07	15.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<26.0	<5.2	<26.0	<5.2	<26.0	<26.0	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0
Screening Criteria																																			
Region 9 Residential Preliminary Remediation Goals (PRGs)			3,200	1,200,000	410	730	510,000	120,000	- -	- -	34	62,000	52,000	30	32	600,000	280	340	21,000	530,000	100,000	3,400	- -	22,000,000	160,000	- -	- -	5,300,000	14,000,000	640	28,000	- -	820	62,000	3,900
Region 9 Industrial Preliminary Remediation Goals (PRGs)			7,300	1,200,000	930	1,600	1,700,000	410,000	- -	- -	76	220,000	170,000	76	73	600,000	600	740	70,000	600,000	360,000	7,900	- -	110,000,000	560,000	- -	- -	47,000,000	54,000,000	1,400	92,000	- -	1,800	220,000	13,000

Notes: Analyses conducted by Severn Trent Laboratories, Inc. using EPA Method 8260B.

< Denotes nondetected at the Reporting Limit (RL) indicated.

Bold type indicates reported at detectable concentration.

J Flag denotes estimated concentration between the Reporting Limit (RL) and the Method Detection Limit (MDL).

AVOCET ENVIRONMENTAL, INC.

Boring No.	Sample Date	Sample Depth (feet bgs)	Carbon disulfide	Carbon tetrachloride (Tetrachloromethane)	Chlorobenzene	Chloroethane	Chloroform (Trichloromethane)	Chloromethane (Methyl chloride)	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene (1,3-Hexachlorobutadiene)	Isopropylbenzene	m- & p-Xylenes	Methylene chloride (Dichloromethane, DCM)	MTBE	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	p-Isopropyltoluene (4-Isopropyltoluene)	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (Tetrachloroethylene)	Toluene (Methyl benzene)	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl chloride (Chloroethene)
SGP01A	02/15/07	5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0
	02/15/07	10.0	<4.7	<4.7	<4.7	<9.4	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7
	02/15/07	15.0	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0
	02/15/07	15.0	<5.8	<5.8	<5.8	<12.0	<5.8	<12.0	<5.8	<5.8	<5.8	<5.8	<12.0	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<12.0	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<12.0	<5.8
SGP02	02/15/07	5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0
	02/15/07	10.0	<5.4	<5.4	<5.4	<11.0	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4
	02/15/07	15.0	<4.8	<4.8	<4.8	<9.6	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8
SGP03	02/15/07	5.0	<5.4	<5.4	<5.4	<11.0	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4	**2.7 J**	<5.4	<5.4	<5.4	<5.4	<11.0	<5.4
SGP04	02/15/07	5.0	<4.6	<4.6	<4.6	<9.3	<4.6	<9.3	<4.6	<4.6	<4.6	<4.6	<9.3	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.3	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.3	<4.6
	02/15/07	10.0	<4.8	<4.8	<4.8	<9.5	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8
	02/15/07	15.0	<5.2	<5.2	<5.2	<10.0	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2
SGP05	02/15/07	5.0	<4.8	<4.8	<4.8	<9.6	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8
	02/15/07	10.0	<4.5	<4.5	<4.5	<9.0	<4.5	<9.0	<4.5	<4.5	<4.5	<4.5	<9.0	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<9.0	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<9.0	<4.5
	02/15/07	15.0	<5.2	<5.2	<5.2	<10.0	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10.0	<5.2
Screening Criteria																																		
Region 9 Residential Preliminary Remediation Goals (PRGs)			360,000	250	150,000	3,000	220	47,000	43,000	780	1,100	-	94,000	400,000	6,200	570,000	270,000	9,100	32,000	56,000	240,000	240,000	- -	- -	220,000	1,700,000	- -	480	520,000	69,000	520,000	- -	390,000	79
Region 9 Industrial Preliminary Remediation Goals (PRGs)			720,000	550	530,000	6,500	470	160,000	150,000	1,800	2,600	-	310,000	400,000	22,000	2,000,000	420,000	21,000	70,000	190,000	240,000	240,000	- -	- -	220,000	1,700,000	- -	1,300	520,000	230,000	520,000	- -	2,000,000	75

Notes: Analyses conducted by American Scientific Laboratories, Inc. using EPA Method 8260B.
< Denotes nondetected at the Reporting Limit (RL) indicated.
Bold type indicates reported at detectable concentration.
J Flag denotes estimated concentration between the Reporting Limit (RL) and the Method Detection Limit (MDL).

AVOCET ENVIRONMENTAL, INC.

Boring No.	Sample Date	Sample Depth (feet bgs)	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene (1,1-Dichloroethylene)	1,1,2-Trichloro-1,2,2-triflouroethane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromoethane (EDB, Ethylene dibromide)	1,2-Dichlorobenzene (o-Dichlorobenzene)	1,2-Dichloroethane	1,2-Dichloropropane	1,2-Dichloro-1,1,2,2-tetraflouroethane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene (m-Dichlorobenzene)	1,4-Dichlorobenzene (p-Dichlorobenzene)	2-Butanone (MEK, Methyl ethyl ketone)	2-Hexanone	4-Ethyltoluene	4-Methyl-2-pentanone (MIBK, Methyl isobutyl ketone)	Acetone	Benzene	Benzyl chloride	Bromodichloromethane (Dichlorobromomethane)
SGP01A	02/19/07	5.0	**4.7 J**	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	<15.0	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**190.0**	**22.0 J**	**4.7 J**	<41.0	**25.0**	<6.4	<130.0	<13.0
	02/19/07	15.0	<11.0	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	<15.0	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**220.0**	**17.0 J**	**8.5 J**	<41.0	**30.0**	<6.4	<130.0	<13.0
SGP02	02/15/07	5.0	<48.0	<61.0	<48.0	<35.0	<34.0	<65.0	<160.0	<65.0	<65.0	<52.0	<35.0	<40.0	<61.0	<65.0	<52.0	<52.0	**1,800.0**	<180.0	<43.0	<180.0	**300.0**	<28.0	<570.0	<57.0
	02/15/07	15.0	<45.0	<57.0	<45.0	<33.0	<32.0	<61.0	<150.0	<61.0	<61.0	<49.0	<33.0	<38.0	<57.0	<61.0	<49.0	<49.0	**1,800.0**	**25.0 J**	<40.0	<170.0	**300.0**	<26.0	<530.0	<53.0
SGP03	02/15/07	5.0	**5.8 J**	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	<15.0	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**9.1 J**	<41.0		<41.0	<21.0	**3.5 J**	<130.0	<13.0
SGP04	02/15/07	5.0	**7.1 J**	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	<15.0	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**15.0 J**	<41.0		<41.0	**7.2 J**	<6.4	<130.0	<13.0
	02/15/07	15.0	**8.2 J**	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	**8.8 J**	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**27.0 J**	<41.0	**7.1 J**	<41.0	**31.0**	<6.4	<130.0	<13.0
SGP05	02/15/07	5.0	**3.5 J**	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	<15.0	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**610.0**	**33.0 J**	**8.2 J**	<41.0	**37.0**	<6.4	<130.0	<13.0
	02/15/07	15.0	**3.9 J**	<14.0	<11.0	<8.1	<7.9	<15.0	<37.0	<15.0	<15.0	<12.0	<8.1	<9.2	<14.0	<15.0	<12.0	<12.0	**550.0**	**31.0 J**		<41.0	**35.0**	<6.4	<130.0	<13.0

Notes: Analyses conducted by Severn Trent Laboratories, Inc. using EPA-2 TO-15.
< Denotes nondetected at the Reporting Limit (RL) indicated.
Bold type indicates reported at detectable concentration.
J Flag denotes estimated concentration between the Reporting Limit (RL) and the Method Detection Limit (MDL).

AVOCET ENVIRONMENTAL, INC.

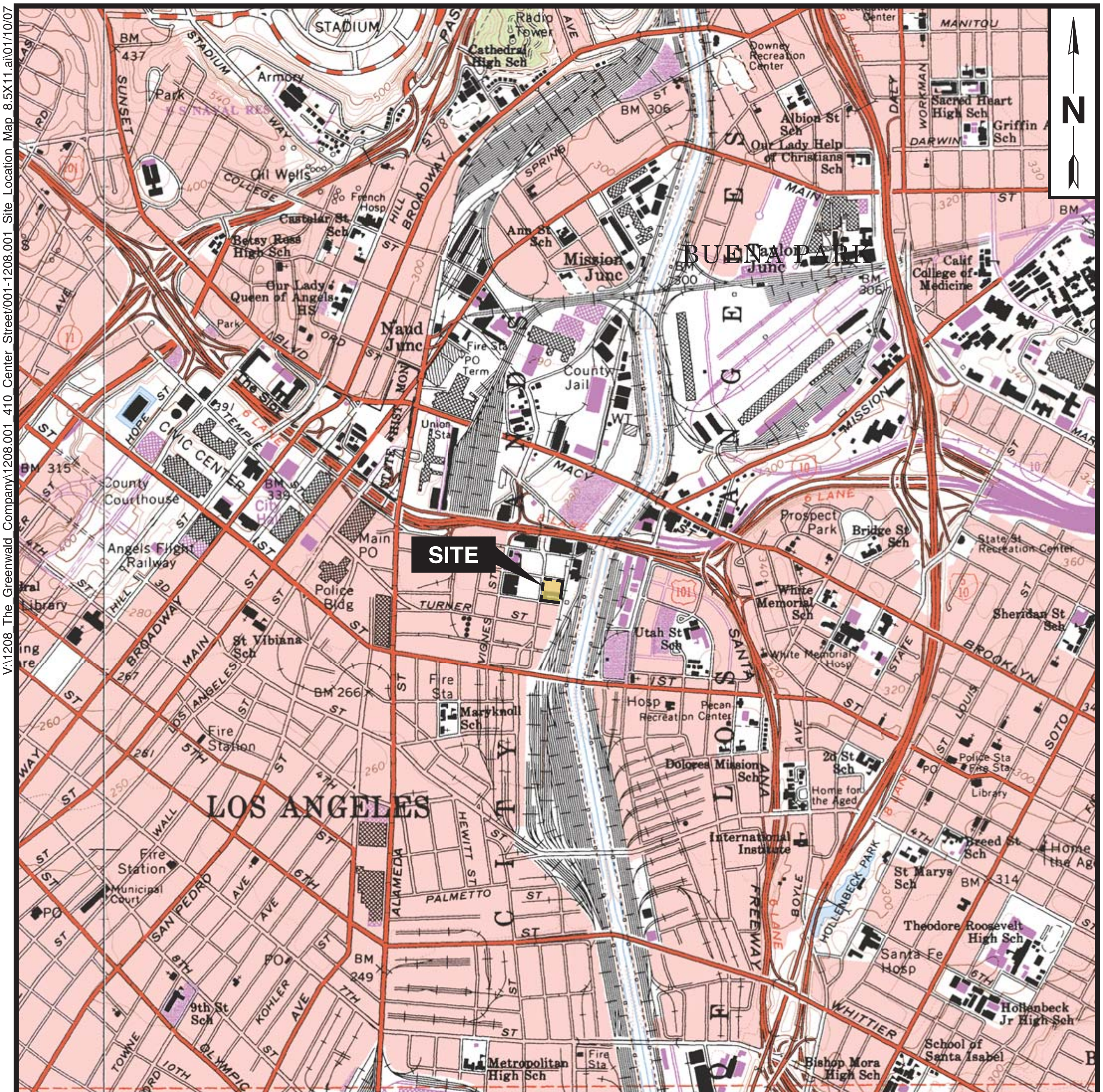
Boring No.	Sample Date	Sample Depth (feet bgs)	Bromoform (Tribromomethane)	Bromomethane (Methyl bromide)	Carbon disulfide	Carbon tetrachloride (Tetrachloromethane)	Chlorobenzene	Chloroethane	Chloroform (Trichloromethane)	Chloromethane (Methyl chloride)	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene (1,3-Hexachlorobutadiene)	Methylene chloride (Dichloromethane, DCM)	Styrene	Tetrachloroethene (Tetrachloroethylene)	Toluene (Methyl benzene)	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl acetate	Vinyl chloride (Chloroethene)	Xylenes (Total)
SGP01A	02/19/07	5.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	<8.2	<7.9	<9.1	<17.0	**2.6 J**	<8.7	<43.0	<6.9	<8.5	**2,000.0**	**8.6**	<7.9	<9.1	**22.0**	<11.0	<35.0	<5.1	**19.0**
	02/19/07	15.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	<8.2	<7.9	<9.1	<17.0	**2.9 J**	**6.9 J**	<43.0	**3.3 J**	<8.5	**1,900.0**	**18.0**	<7.9	<9.1	**10.0 J**	<11.0	<35.0	<5.1	**40.0**
SGP02	02/15/07	5.0	<91.0	<34.0	<130.0	<57.0	<40.0	<44.0	<34.0	<36.0	<34.0	<40.0	<74.0	<43.0	<38.0	<190.0	<30.0	<37.0	**1,300.0**	<33.0	<34.0	<40.0	<11.0	<48.0	<150.0	<22.0	<38.0
	02/15/07	15.0	<86.0	<32.0	<130.0	<53.0	<38.0	<1.0	<32.0	<33.0	<32.0	<37.0	<69.0	<40.0	<35.0	<180.0	<28.0	<35.0	**1,500.0**	**12.0 J**	<32.0	<37.0	**11.0 J**	<45.0	<140.0	<21.0	**24.0 J**
SGP03	02/15/07	5.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	<8.2	<7.9	<9.1	<17.0	**2.5 J**	<8.7	<43.0	<6.9	<8.5	**3,100.0**	**6.9 J**	<7.9	<9.1	**21.0**	<11.0	<35.0	<5.1	**16.0**
SGP04	02/15/07	5.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	<8.2	<7.9	<9.1	<17.0	**3.2 J**	<8.7	<43.0	**4.5 J**	<8.5	**330.0**	**7.1 J**	<7.9	<9.1	<11.0	<11.0	<35.0	<5.1	**18.0**
	02/15/07	15.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	<8.2	<7.9	<9.1	<17.0	**3.3 J**	**4.3 J**	<43.0	**3.9 J**	<8.5	**440.0**	**12.0**	<7.9	<9.1	<11.0	<11.0	<35.0	<5.1	**26.0**
SGP05	02/15/07	5.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	<8.2	<7.9	<9.1	<17.0	**3.5 J**	**7.0 J**	<43.0	**3.9 J**	<8.5	**91.0**	**17.0**	<7.9	<9.1	<11.0	**130.0**	<35.0	<5.1	**43.0**
	02/15/07	15.0	<21.0	<7.8	<31.0	<13.0	<9.2	<10.0	<7.8	**3.8 J**	<7.9	<9.1	<17.0	**3.4 J**	<8.7	<43.0	**3.9 J**	<8.5	**77.0**	**5.2 J**	<7.9	<9.1	<11.0	**54.0**	<35.0	<5.1	**13.0**

Notes: Analyses conducted by Severn Trent Laboratories, Inc. using EPA-2 TO-15.
< Denotes nondetected at the Reporting Limit (RL) indicated.
Bold type indicates reported at detectable concentration.
J Flag denotes estimated concentration between the Reporting Limit (RL) and the Method Detection Limit (MDL).

AVOCET ENVIRONMENTAL, INC.

Figures

AVOCET
ENVIRONMENTAL, INC.



0 2,000 4,000 FEET

APPROXIMATE SCALE

FIGURE 1

SITE LOCATION MAP

410 CENTER STREET
LOS ANGELES, CALIFORNIA

PREPARED FOR

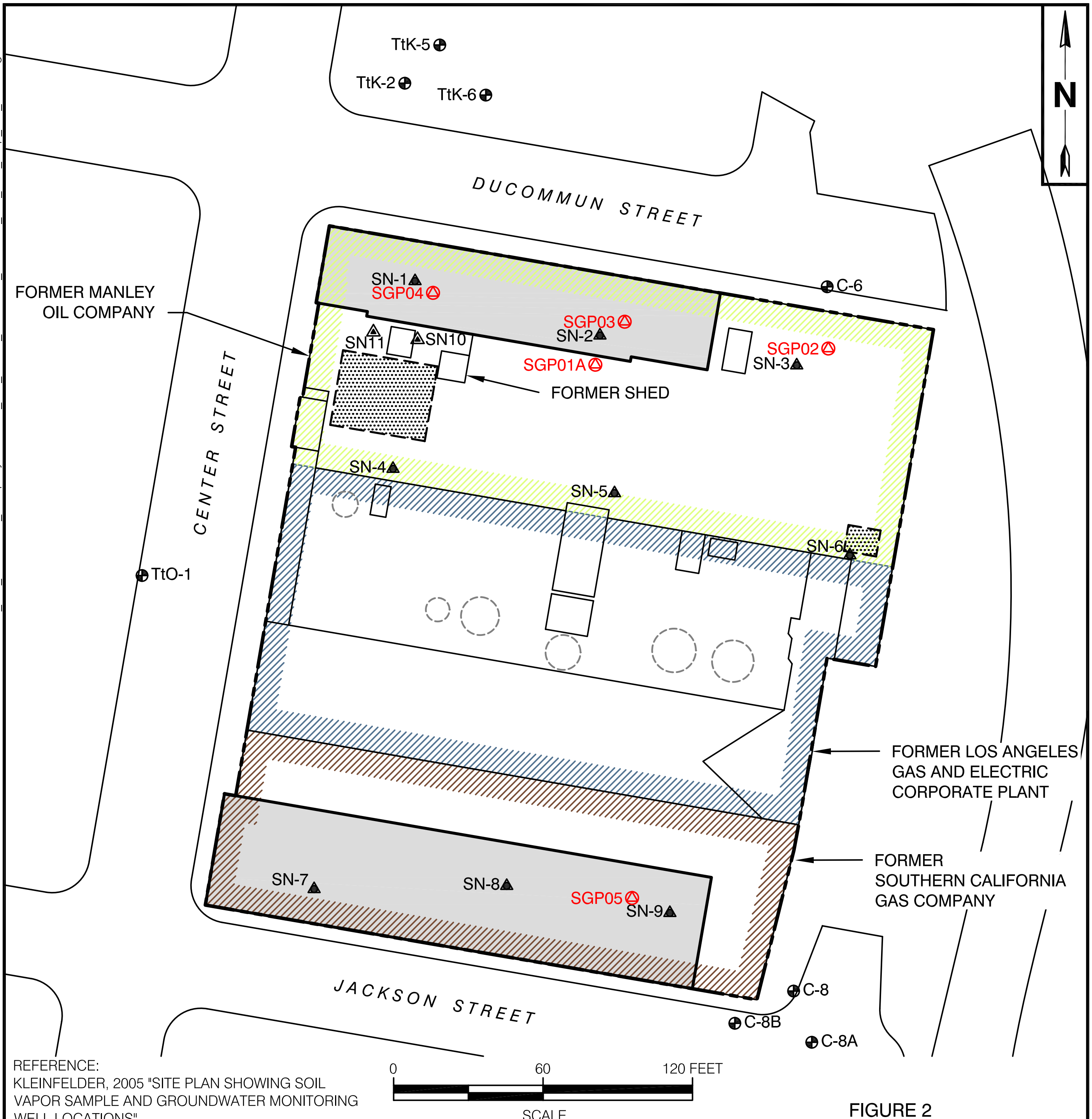
THE GREENWALD COMPANY
SAN DIEGO, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

REFERENCE:
7.5 MINUTE U.S.G.S. TOPOGRAPHIC MAPS
OF HOLLYWOOD AND LOS ANGELES, CALIFORNIA
DATED: 1966
PHOTOREVISED: 1981

V:\1208_The_Greenwald_Company\1208.001_410_Center_Street/001-1208.001_Site_Location_Map_8.5X11.ai\01/10/07

V:\1208_The_Greenwald_Company\1208.001_410_Center_Street\003_1208.001_Site_Plan_Prop_Soil_Gas.dwg\04/12/07



REFERENCE:
KLEINFELDER, 2005 "SITE PLAN SHOWING SOIL VAPOR SAMPLE AND GROUNDWATER MONITORING WELL LOCATIONS"

LEGEND

(red triangle in circle)	SOIL GAS SAMPLE LOCATION
SN-1	SOIL VAPOR SAMPLING LOCATION (EARTH TECH, 2001)
SN10	SOIL VAPOR SAMPLING LOCATION (TETRA TECH, 2005)
TtK-2	EXISTING GROUNDWATER MONITORING WELL
(dashed circle)	FORMER ABOVEGROUND STORAGE TANK (REMOVED)
(stippled area)	AREA OF EXCAVATION (THE GAS COMPANY, 2005)
(grey box)	EXISTING BUILDING
(dashed line)	SITE BOUNDARY

NOTES:
1. GROUNDWATER WELL LOCATIONS FROM DRAWING PROVIDED BY TETRA TECH, 09/29/05.
2. ALL LOCATIONS ARE APPROXIMATE.

FIGURE 2

SITE PLAN SHOWING SOIL GAS SAMPLE LOCATIONS

410 CENTER STREET
LOS ANGELES, CALIFORNIA

PREPARED FOR

THE GREENWALD COMPANY
SAN DIEGO, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

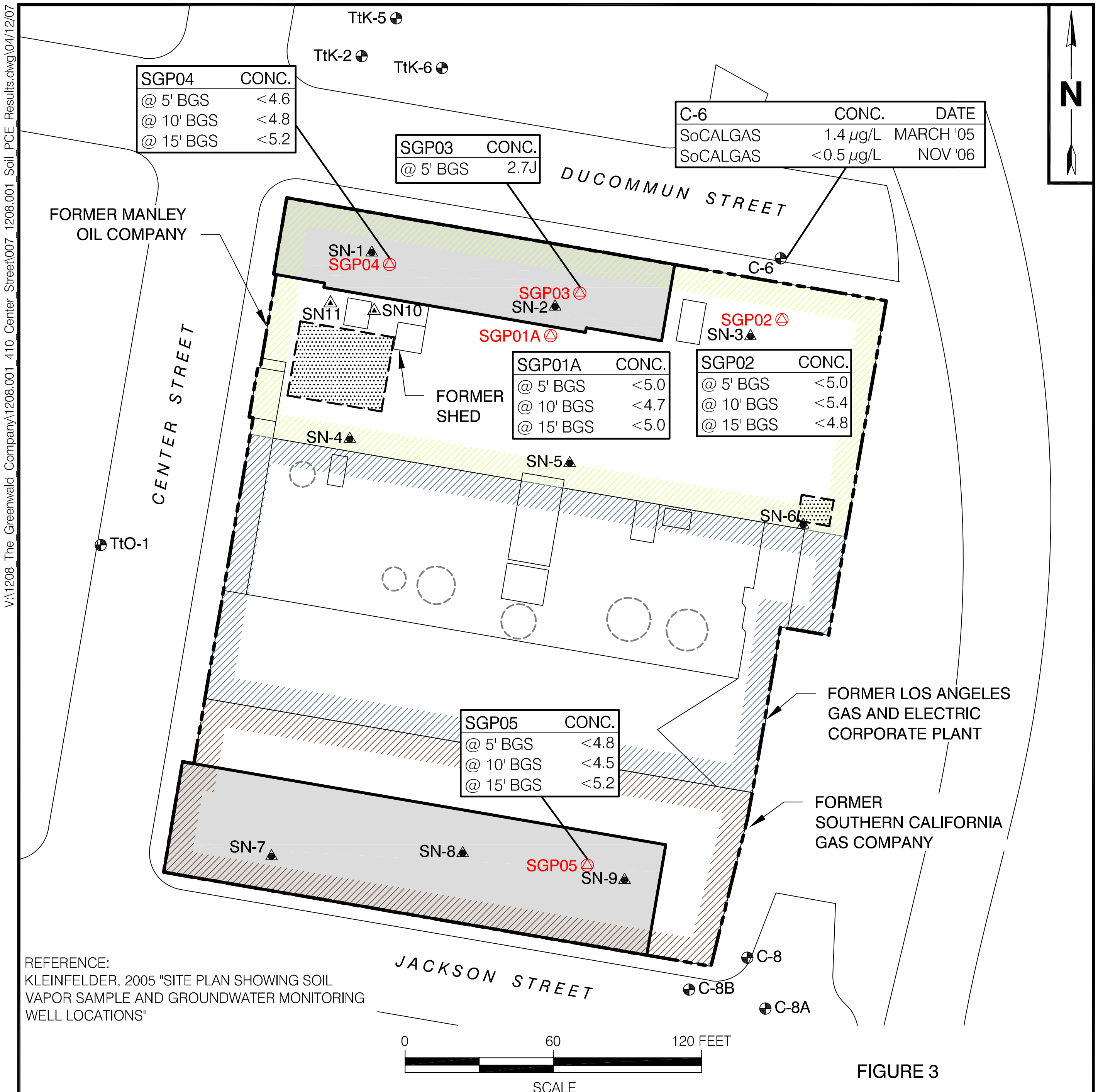


FIGURE 3

TETRACHLOROETHENE (PCE) IN SOIL AND GROUNDWATER

410 CENTER STREET
LOS ANGELES, CALIFORNIA

PREPARED FOR

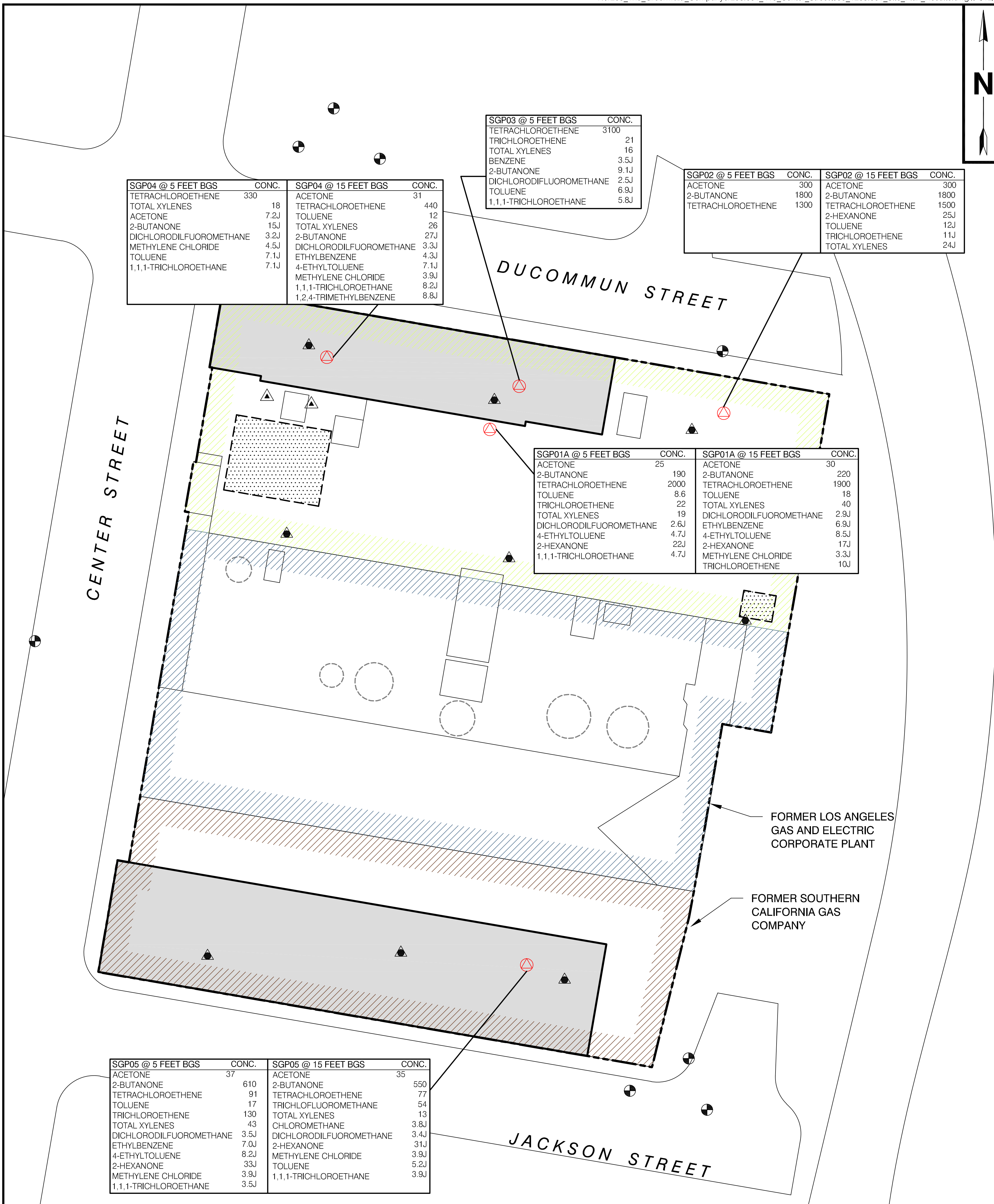
THE GREENWALD COMPANY
SAN DIEGO, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

LEGEND

(red circle-triangle)	SOIL GAS SAMPLE LOCATION
SN-1	SOIL VAPOR SAMPLING LOCATION (EARTH TECH, 2001)
SN10	SOIL VAPOR SAMPLING LOCATION (TETRA TECH, 2005)
TtK-2	EXISTING GROUNDWATER MONITORING WELL
(dashed circle)	FORMER ABOVEGROUND STORAGE TANK (REMOVED)
(dotted box)	AREA OF EXCAVATION (THE GAS COMPANY, 2005)
(grey box)	EXISTING BUILDING
(dashed line)	SITE BOUNDARY

NOTES:
1. GROUNDWATER WELL LOCATIONS FROM DRAWING PROVIDED BY TETRA TECH, 09/29/05.
2. ALL LOCATIONS ARE APPROXIMATE.
3. ALL CONCENTRATIONS (CONC.) IN μg/kg UNLESS OTHERWISE NOTED. ND = NON DETECT.
4. PCE REPORTED IN GROUNDWATER SAMPLES FROM WELL C-6. ACETONE AND MEK WERE NON-DETECT.



SGP04 @ 5 FEET BGS	CONC.
TETRACHLOROETHENE	330
TOTAL XYLENES	18
ACETONE	7.2J
2-BUTANONE	15J
DICHLORODILFUOROMETHANE	3.2J
METHYLENE CHLORIDE	4.5J
TOLUENE	7.1J
1,1,1-TRICHLOROETHANE	7.1J

SGP04 @ 15 FEET BGS	CONC.
ACETONE	31
TETRACHLOROETHENE	440
TOLUENE	12
TOTAL XYLENES	26
2-BUTANONE	27J
DICHLORODILFUOROMETHANE	3.3J
ETHYLBENZENE	4.3J
4-ETHYLTOLUENE	7.1J
METHYLENE CHLORIDE	3.9J
1,1,1-TRICHLOROETHANE	8.2J
1,2,4-TRIMETHYLBENZENE	8.8J

SGP03 @ 5 FEET BGS	CONC.
TETRACHLOROETHENE	3100
TRICHLOROETHENE	21
TOTAL XYLENES	16
BENZENE	3.5J
2-BUTANONE	9.1J
DICHLORODIFLUOROMETHANE	2.5J
TOLUENE	6.9J
1,1,1-TRICHLOROETHANE	5.8J

SGP02 @ 5 FEET BGS	CONC.
ACETONE	300
2-BUTANONE	1800
TETRACHLOROETHENE	1300

SGP02 @ 15 FEET BGS	CONC.
ACETONE	300
2-BUTANONE	1800
TETRACHLOROETHENE	1500
2-HEXANONE	25J
TOLUENE	12J
TRICHLOROETHENE	11J
TOTAL XYLENES	24J

SGP01A @ 5 FEET BGS	CONC.
ACETONE	25
2-BUTANONE	190
TETRACHLOROETHENE	2000
TOLUENE	8.6
TRICHLOROETHENE	22
TOTAL XYLENES	19
DICHLORODILFUOROMETHANE	2.6J
4-ETHYLTOLUENE	4.7J
2-HEXANONE	22J
1,1,1-TRICHLOROETHANE	4.7J

SGP01A @ 15 FEET BGS	CONC.
ACETONE	30
2-BUTANONE	220
TETRACHLOROETHENE	1900
TOLUENE	18
TOTAL XYLENES	40
DICHLORODILFUOROMETHANE	2.9J
ETHYLBENZENE	6.9J
4-ETHYLTOLUENE	8.5J
2-HEXANONE	17J
METHYLENE CHLORIDE	3.3J
TRICHLOROETHENE	10J

SGP05 @ 5 FEET BGS	CONC.
ACETONE	37
2-BUTANONE	610
TETRACHLOROETHENE	91
TOLUENE	17
TRICHLOROETHENE	130
TOTAL XYLENES	43
DICHLORODILFUOROMETHANE	3.5J
ETHYLBENZENE	7.0J
4-ETHYLTOLUENE	8.2J
2-HEXANONE	33J
METHYLENE CHLORIDE	3.9J
1,1,1-TRICHLOROETHANE	3.5J

SGP05 @ 15 FEET BGS	CONC.
ACETONE	35
2-BUTANONE	550
TETRACHLOROETHENE	77
TRICHLOFLUOROMETHANE	54
TOTAL XYLENES	13
CHLOROMETHANE	3.8J
DICHLORODILFUOROMETHANE	3.4J
2-HEXANONE	31J
METHYLENE CHLORIDE	3.9J
TOLUENE	5.2J
1,1,1-TRICHLOROETHANE	3.9J

REFERENCE:
KLEINFELDER, 2005 "SITE PLAN SHOWING SOIL VAPOR SAMPLE AND GROUNDWATER MONITORING WELL LOCATIONS"

LEGEND

- SOIL GAS SAMPLE LOCATION
- SN-1 SOIL VAPOR SAMPLING LOCATION (EARTH TECH, 2001)
- SN10 SOIL VAPOR SAMPLING LOCATION (TETRA TECH, 2005)
- TtK-2 EXISTING GROUNDWATER MONITORING WELL
- FORMER ABOVEGROUND STORAGE TANK (REMOVED)
- AREA OF EXCAVATION (THE GAS COMPANY, 2005)
- EXISTING BUILDING
- SITE BOUNDARY

NOTES:
1. GROUNDWATER WELL LOCATIONS FROM DRAWING PROVIDED BY TETRA TECH, 09/29/05.
2. ALL LOCATIONS ARE APPROXIMATE.
3. ALL CONCENTRATIONS (CONC.) REPORTED IN $\mu g/m^3$

FIGURE 4

SOIL GAS SAMPLING RESULTS

410 CENTER STREET
LOS ANGELES, CALIFORNIA

PREPARED FOR

THE GREENWALD COMPANY
LOS ANGELES, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

Attachment 1

Soil Gas Human Health Risk Evaluation Report
McDaniel Lambert, March 28, 2007

AVOCET
ENVIRONMENTAL, INC.

`

March 28, 2007

Robert Van Hyning
Avocet Environmental Inc.
16 Technology, Suite 154
Irvine, CA 92618

Subject: **Former Aliso Street MGP Facility, Block N, Soil Gas Human Health Risk Evaluation**

Dear Robert,

Per your request, McDaniel Lambert, Inc. has conducted an evaluation of the potential future human health risks from indoor air vapor intrusion as a result of volatile organic compound (VOCs) vapors in soil below the former Aliso Street MGP Facility (Block N) in Los Angeles, CA. The health evaluation focuses on the potential exposures of future residents or business employees who may reside or work in buildings that may be built on the property. Based on the health evaluation, we conclude that the potential cancer risks from VOC vapor intrusion to future commercial business employees are below California Proposition 65 cancer risk level (1×10^{-5} or 1 in 100,000). Cancer risks for future residents are at the California Proposition 65 cancer risk level of 1×10^{-5}, and are driven primarily by modeled concentrations of tetrachloroethene (also known as perchloroethylene or PCE) in indoor air. Noncancer hazards for both populations are all well below the target value of 1.

The health evaluation assessed the potential cancer risks and noncancer hazards from VOC-impacted soil and/or groundwater. This letter describes the data used and how the potential health risks to future residents and business employees were evaluated. The only exposure pathway considered was the inhalation of various VOC vapors in indoor air resulting from VOC-impacted soil/groundwater. The exposures and associated risks were developed using the reasonable maximum exposure approach promulgated by California Environmental Protection Agency (Cal/EPA) and the United State EPA (USEPA). These assumptions were made in accordance with regulatory guidance (Cal/EPA 1994, USEPA 1989) and best professional judgment. Potential health risks were estimated by combining the maximum concentrations of VOCs detected in soil vapor from samples within and adjacent to the footprint of the former MGP and other industrial facilities with site-specific information (as available) and exposure assumptions.

1. Background

The former Aliso Street MGP site is located in downtown Los Angeles, California. The 56-acre Aliso Street MGP site was divided into five sectors, A through E, to manage the remedial investigation and subsequent remediation activities. Block N, the subject of this health evaluation, is located in Sector C, which covers seven city blocks and 16.4 acres. Block N has the street address of 410 Center Street, with Ducommum Street to the north, Jackson Street to the south, Center Street to the west and railroad tracks and the Los Angeles River to the east (Figure 1). Block N (the Site) contains three properties: the former Manley Oil Company on the northern half of the Site, and the former Los Angeles Gas and Electric Corporate Plant property and the former Southern California Gas Company property on the southern portion of the Site. The Manley Oil Building is located on the northwest corner of the Site (Figure 1). Future uses of the Site may include light industrial, warehouses, commercial businesses, and mixed use residential.

2. Environmental Investigations and Results

Earth Tech performed a Preliminary Endangerment Assessment (Earth Tech 1998) and a Remedial Investigation Report (Earth Tech 2001). The geology and hydrology of the Site are summarized in both the Earth Tech (2001) and subsequent Tetra Tech reports (2005 and 2006). In brief, sandy fill material was observed from the surface to 10 feet below ground surface (bgs) in central and northern sections of the Site. Sand or gravelly sand was encountered from surface to 10 feet bgs in the southern section. Groundwater underlying the Site has been encountered at 28 to 31 feet and the saturated zone consists of mostly coarse grained alluvial deposits. Groundwater is contaminated with a number of volatile and semi-volatile compounds.

Soil gas data were collected by both Earth Tech (2001) and Tetra Tech (2005). In the Earth Tech 2001 investigation, soil vapor samples were collected from nine locations on the Block N property; three samples (including one duplicate) were collected in the Tetra Tech supplemental sampling in 2005. All sample locations are shown in Figure 1. The VOCs were analyzed by EPA Method TO-14 in the 2001 study and by TO-15 in the 2005 study. The maximum soil vapor concentrations reported in either of these two studies are presented in Table 1, along with the residential California Human Health Screening Level (CHHSL) for shallow soil gas (Cal/EPA 2005a). No semi-volatile compounds such as naphthalene were detected in either soil gas study. Based on comparisons to the available soil gas CHHSLs, PCE appears to be the primary chemical of potential concern (COPC). Maximum soil gas PCE concentrations (4280 ug/m^3) exceeded the residential CHHSL by more than an order of magnitude, and were found in soil gas under the former Manley Oil Company building.

Subsequent to both of these soil gas investigations, extensive soil remediation activities were carried out at the Site (Tetra Tech 2006). The majority of the excavated and removed from the Site was in the northwest corner, and focused on vadose zone soils. However the area immediately around and under the Manley Oil Building, where the highest soil gas PCE concentrations were detected, was not remediated. Groundwater remediation was not included as part of the 2006 removal activities. Site cleanup was based on the most protective removal action goals, regardless of whether the goals are protective of residents, workers, or groundwater. The soil removal proceeded until the cleanup goals were achieved, demonstrated by the analytical results for confirmation samples collected prior to backfilling.

Table 1. Maximum Soil Gas Concentrations from Earth Tech 2001 and Tetra Tech 2005 Reports

Chemical	Historic Maximum Concentration (ug/m^3)	Residential Soil Gas CHHSL (ug/m^3)
1,1,1-Trichloroethane (TCA)	432	991000
1,1-Dichloroethene	11	NA
1,2,4-Trimethylbenzene	1640	NA
1,3,5-Trimethylbenzene	534	NA
1,4-Dichlorobenzene	10	NA
Acetone	45	NA
Benzene	150	36.2
Bromodichloromethane	10	NA
Chloroform	10	NA
Dibromochloromethane	5	NA
Dichlorodifluoromethane	5	NA
Dicyclopentadiene	3320	NA
Ethylbenzene	555	NA
MTBE	209	4000
Naphthalene	ND[1]	31.9
m,p-Xylenes[1]	2490	315000
o-Xylene	856	315000
Tetrachloroethene (PCE)	4280	180
Toluene	2330	135000
Trichloroethene (TCE)	52	528
Trichlorofluoromethane	137	NA

NA – Not available
[1]ND* – Not detected at method detection limit of 10-210 ug/m^3
[2]CHHSL for m,p-xylenes is o-xylene, the representative value for mixed xylenes.

To assess the current soil gas concentrations in the area of previous PCE detections, further sampling and analyses were performed by Avocet in March, 2007 (Avocet 2007). The five Avocet sampling locations are shown in Figure 1. Four samples (SGP01-SGP04) are clustered in an area underneath and next to the Former Manley Oil Building, with a fifth sample (SGP05) located in the south east corner of the Site where previous PCE soil gas concentrations were very low or nondetect. Soil gas samples were taken at five and fifteen feet below ground surface (bgs) for all samples except SGP03, where only the five feet below bgs sample could be collected. Boring data and methods for these samples are discussed in detail elsewhere (Avocet 2007).

Soil gas samples were analyzed using USEPA Method TO-15. The laboratory data sheets provided by Avocet (Severn Trent Laboratories, Inc.) were evaluated for data usability and method detection limits (MDLs) are sufficiently low for risk assessment purposes, particularly for key COPCs such as PCE. The results of the 2007 soil gas sampling effort are summarized in Table 2. During this soil gas sampling event, soil samples from the borings were also analyzed for VOCs (Avocet 2007). The only detection was of PCE, 2.7 mg/kg at SGPO3 (see Figure 1).

3. Conceptual Exposure Model

The USEPA (1989) defines an exposure pathway as "the course a chemical or pollutant takes from the source to the organism exposed." A complete exposure pathway requires four key elements: chemical sources; migration routes (i.e., environmental transport); potentially exposed human receptors; and routes of exposure to impacted media (e.g., inhalation of chemicals in air). All four factors are required for a complete exposure pathway; if any one factor is missing, the pathway is considered incomplete. Because an incomplete pathway does not pose a potential health hazard, incomplete exposure pathways were not included in these health evaluations.

Based on the data presented in the environmental investigations completed to date, the VOCs detected in soil vapor likely result from contaminated soil and/or groundwater at the Site. Although most Site soils were cleaned to residential soil standards in 2006, the soils beneath and immediately around the former Manley Oil Building were not remediated (Tetra Tech 2006). Volatilization of subsurface contamination into indoor air is assumed to be the only remaining exposure pathway at the Site. Soil ingestion, inhalation, and dermal exposure are not assessed in this report, as they are considered minor exposure pathways given:

- the extensive remediation of the Site to residential standards;
- the probable location of existing PCE contamination (under the building); and
- the future use of the Site (commercial and/or mixed commercial and high density residential) where little if any soil exposure would occur.

To be health-protective and provide as much information as possible, three potential future Site receptors, representing receptors with the greatest potential exposures, were evaluated:

- future residents (adults and children)
- future commercial/business employees (adults)

4. Exposure Evaluation

As described above, the only potential contact future residents and/or business employees may have with subsurface VOC-contamination at the Site is via the inhalation of VOC vapors in indoor air. This is because volatile chemicals can enter indoor air through vapor migration. The Avocet sampling effort included a total of five soil vapor sample locations taken *within* the footprint of the former MGP and related facilities (Avocet 2007). This level of soil gas sampling is adequate for health evaluations of a Site of this nature, particularly since previous soil gas sampling efforts identified the locations of concern (e.g. the northwest corner). However, knowledge of future development and placement of future residences would increase the certainty of sampling adequacy. The modeling of both indoor air vapor concentrations and inhalation of chemicals in indoor air via inhalation are described below.

Any VOC detected during the 2007 soil gas sampling event were included as COPCs in the health evaluation. As shown in Table 2, the chemicals carried forward are: benzene, toluene, ethylbenzene, xylenes, acetone, 2-butanone, chloromethane, dichlorodifluoromethane, 4-ethyltoluene, 2-hexanone, methylene chloride, PCE, trichloroethane, trichloroethene, trichlorofluoromethane, and 1,2,4-trimethylbenzene.

Indoor Air Vapor Modeling

Volatile chemicals may migrate from soil or groundwater to the indoor air of structures. In this health evaluation, the USEPA's 2004 modification of the Advanced Soil Gas Model (SG ADV, Version 3.1) of the Johnson-Ettinger model (USEPA 2003) for vapor intrusion into indoor air was used to estimate the indoor air concentrations of VOCs detected in soil gas. The model predicts the theoretical indoor air concentrations of a chemical based on the diffusion and advection of chemicals through soil and the building floor (e.g. concrete slab) and indoor air mixing processes.

As shown in Table 3 below, default soil and building parameters recommended by USEPA (2003) and/or Cal/EPA (2005b) were used, as appropriate, to ensure conservative results. To ensure that the health evaluations are conservative, the maximum soil vapor VOC concentrations within the footprint of the Site were used to model indoor air concentrations (Tables 2 and 4). Given the limited detects of chemicals in soil, indoor air concentrations were modeled based on the depth at which the soil gas maximum was detected.[1] Based on site boring logs (Earth Tech 2001; Avocet 2007), and to ensure conservative results, soil beneath the building (Layer B) was modeled as sand. The resulting indoor air concentrations for residential and commercial receptors are presented in Table 4.

Table 3. Default Parameters Used in Johnson-Ettinger Vapor Intrusion Modeling

Parameter (units)	Model Values	Source*
Soil vapor concentration (μg/L)	Site specific	Avocet 2007 (See Table 4)
Depth below grade to bottom of enclosed space floor (cm)	9	Cal/EPA 2005b
Soil gas sampling depth below grade (cm)	152.4 (5') or 457.2 (15')	Avocet 2007 (See Table 4)
Average soil temperature (°C)	22	Cal/EPA 2005b
Layer A thickness (cm)	19	Cal/EPA 2005b
Vadose zone SCS soil type (for soil vapor permeability)	S (sand)	Cal/EPA 2005b
Layer A soil dry bulk density (g/cm^3)	1.66	Sand default
Layer A Total Porosity, % bulk volume	37.5	Sand default
Layer A Effective Porosity, % bulk volume	5.4	Sand default
Layer A soil carbon fraction (%)	0.2	Sand default
Layer B thickness (cm)	Site specific-Layer A	Depth of vapor sample used in
Layer B soil type	S (sand)	Site-specific

[1] If the source of subsurface vapors is above the sampling depth, estimated indoor air concentrations could be higher than those modeled based on this assumption.

Layer B soil dry bulk density (g/cm^3)	1.66	Sand default
Layer B Total Porosity, % bulk volume	37.5	Sand default
Layer B Effective Porosity, % bulk volume	5.4	Sand default
Layer B soil carbon fraction (%)	0.2	Sand default
Soil-building pressure differential ($g\text{-}cm\text{-}s^2$)	40	Cal/EPA 2005b
Indoor air exchange rate (1/h)	0.5 – residential 1.0 - commercial	Cal/EPA 2005b
Average vapor flow rate into building	5	Cal/EPA 2005b
Enclosed space floor length (cm)	1000	Cal/EPA 2005b
Enclosed space floor width (cm)	1000	Cal/EPA 2005b
Enclosed space floor height (cm)	244	Cal/EPA 2005b

*As appropriate, default parameters are the same as those used by Cal/EPA to calculate advisory human-exposure-based screening numbers (Cal/EPA 2005b). Layer A thickness includes 9cm slab and 10cm of gravel (modeled as sand).

<u>Inhalation Exposure to Vapor in Indoor Air</u>

Equation 6-16 from the USEPA risk assessment guidelines (USEPA 1989a) was used to quantify the intake of PCE from the indoor air vapor inhalation pathway:

$$I_a = (C_a)(IR)(ET)(EF)(ED) / (BW)(AT)$$

where

- I_a = Chemical intake from inhalation of a VOC in air (mg/kg-d)
- C_a = concentration of VOC in air (mg/m^3) - from indoor air vapor modeling
- IR = inhalation rate (m^3/h)
- ET = exposure time (h/d)
- EF = exposure frequency (d/y)
- ED = exposure duration (y)
- BW = body weight (kg)
- AT = averaging time (d), ED x 365d/y (noncarcinogens); 70y x 365d/y (carcinogens)

For the three receptors evaluated, the inhalation exposure calculations are shown in Table 5. For adults, the inhalation rate is assumed to be 0.83 m^3/hour; for children the inhalation rate is 0.42 m^3/hour (USEPA 2002). Residents conservatively are assumed to be exposed for 24 hours/day, 350 days/year while commercial employees are assumed to be inside the building for eight hours/day, 250 days/year (USEPA 2002 and site-specific). Adult body weights are 70 kg, while children are assumed to weigh 15 kg (USEPA 2002). The exposure duration for residents is 30 years, and for commercial workers is 25 years (USEPA 2002).

5. Dose-Response Evaluation

In accordance with Cal/EPA's suggested hierarchy of sources to identify dose-response values (Cal/EPA 1992), the noncarcinogenic and carcinogenic dose-response values for the various VOCs were obtained from the Office of Environmental Health Hazard Evaluation (OEHHA) Toxicity Criteria Database (Cal/EPA 2006a; 2006b), the USEPA

Integrated Risk Information System (IRIS), or other California EPA sources. These values are presented in Table 6.

Reference Dose (RfD)
The noncarcinogenic hazard associated with exposure to a chemical is expressed as the *Hazard Quotient* (HQ). An HQ is the ratio of the estimated constituent intake, based on the measured or calculated exposure to the constituent (dose), divided by the appropriate oral or inhalation RfD.

Cancer Slope Factor (CSF)
The incremental lifetime cancer risk (ILCR) attributed to a carcinogen is calculated as a product of the daily intake (mg/kg-d) and the CSF. The USEPA's model of carcinogenesis assumes the relationship between exposure to a carcinogen and cancer risk is linear over the entire dose range, except at very high doses (USEPA 1989). This linearity assumes there is no threshold-of-exposure dose below which harmful effects will not occur. Because of this, carcinogenic effects are considered to be cumulative across age groups when considering lifetime exposures. CSFs are upper-bound (95% upper confidence limit [UCL]) estimates of the increased cancer risk per unit dose, in which risk is expressed as the probability that an individual will develop cancer within his or her lifetime as the result of exposure to a given level of a carcinogen. All cancers or tumors are considered whether or not death results. This approach is inherently conservative because of the no-threshold assumption and the use of the 95% UCL of the estimated slope of dose versus cancer risk.

6. Risk Characterization

Human health risk evaluations calculate two different values to evaluate potential health impacts: the Hazard Index (HI) and the ILCR. For noncancer hazards, the potential for harmful effects from exposure to multiple chemicals is assessed by summing the HQs, with the resulting sum designated the *Hazard Index* (HI). The risk that is acceptable is very much dependent on site-specific characteristics that include: the number of people potentially exposed, the likelihood of exposure, the chemicals driving the risk, the future use(s) of the site, and the decisions of local risk managers. The acceptable risk levels, and the results for future residents and/or business employees at the Site potentially exposed to VOC vapors in indoor air, are described below.

Acceptable Non-Cancer Hazard
The USEPA directive, Role of the Baseline Risk Evaluation in Superfund Remedy Selection Decisions (USEPA 1991) states that action is generally not warranted at a site when the cumulative non-carcinogenic Hazard Index (HI) is less than 1.0. The level of concern increases as the HI increases above unity, although the two are not linearly related (USEPA 1989).

Acceptable Cancer Risk
The ILCR is compared to a range of acceptable probabilities to determine whether the potential risk poses an unacceptable health threat. According to the revised National Contingency Plan (USEPA 1990), carcinogenic risks from exposures to chemicals are

considered to be unacceptable at a level greater than 1×10^{-4} (1 in 10,000), whereas risks less than 1×10^{-7} (1 in 10,000,000) are considered to be of minimal concern. Action may or may not be necessary in the risk range of 10^{-7} to 10^{-4}. The USEPA directive, Role of the Baseline Risk Evaluation in Superfund Remedy Selection Decisions (USEPA 1991) states that action is generally not warranted at a site when the cumulative carcinogenic risk for current and future land use is less than 1×10^{-4}. The USEPA uses a potential excess individual lifetime cancer risk of 1×10^{-6} (1 in 1,000,000) as a point of departure for risk management actions. As a risk management policy, the Cal/EPA generally uses 1×10^{-5} (1 in 100,000) as its significant risk level, which also is used as a point of departure for risk management decisions (for example notification or clean-up).

<u>Results</u>

Tables 7 and 8 (below) present the ILCR and HI results for each receptor. Because the reasonable maximum exposure (RME) approach was used to quantify potential health risks, if the RME values are below acceptable limits, then all other, lesser exposures related to the receptors are below these limits (USEPA 1989).

Table 8. Summary of Noncancer Hazard and Cancer Risk from VOC Soil Vapors for Future Residents and Business Employees

Receptor	Noncancer Hazard	Cancer Risk
Resident: Adult	0.11	1E-05
Child	0.25	
Commercial User: Adult	0.01	9E-07

1E-05 = 0.0000001 = 1 excess cancers per hundred thousand residents exposed.

7. Conclusions and Recommendations

This human health risk evaluation looked at the potential cancer risks and noncancer hazards to future residents and commercial employees from VOCs detected in soil gas, including PCE, in the vicinity of the Former Manley Oil Company at the Site. Information regarding the concentrations of PCE and other VOCs is available in the environmental site assessments performed by Earth Tech, Tetra Tech, and Avocet (2001, 2005, and 2007, respectively). Based on environmental data from the Site, only potential exposure to VOC vapors was considered. Redevelopment plans include the possible excavation of soils if warranted based on field observations.

The exposures and associated risks detailed in this evaluation were developed using the reasonable maximum exposure approach promulgated by Cal/EPA and USEPA, along with site-specific information and conservative assumptions. These assumptions were made in accordance with regulatory guidance (Cal/EPA 1994, USEPA 1989), current zoning for the property, future potential uses, and best professional judgment.

The estimated noncancer hazards are well below the level of concern of 1.0 for both future residents (adult and child) and commercial users (see Tables 7 and 8). The estimated cancer risks to future commercial users are well within the 1×10^{-4} (1 in 10,000) to 1×10^{-7} (1 in 10,000,000) acceptable risk management range stipulated by the USEPA (1990), and are below the California Proposition 65 point of departure of 1×10^{-5} (10 in

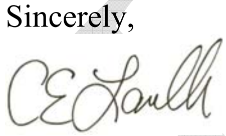
100,000). The estimated cancer risks to future residents are within the $1x10^{-4}$ (1 in 10,000) to $1x10^{-7}$ (1 in 10,000,000) acceptable risk management range stipulated by the USEPA (1990), but are at the California Proposition 65 point of departure of $1x10^{-5}$ (10 in 100,000). The cancer risks are driven by estimated indoor air PCE concentrations, modeled from maximum PCE soil vapor concentrations.

The major conclusions of this evaluation are:

- This health evaluation covers only exposure to indoor VOC vapors from subsurface contamination.
- The total noncancer hazards from VOCs detected in soil gas near the Manley Oil Company Building are below the USEPA level of concern.
- The total cancer risk posed by VOCs detected in soil gas near the Manley Oil Company Building to future commercial users is within the USEPA acceptable risk management range of $1x10^{-7}$ to $1x10^{-4}$, and below the California Proposition 65 risk management point of departure (1×10^{-5} or 1 in 100,000).
- The total cancer risk posed by VOCs detected in soil gas near the Manley Oil Company Building to future residential users is within the USEPA acceptable risk management range of $1x10^{-7}$ to $1x10^{-4}$, and at the California Proposition 65 risk management point of departure (1×10^{-5} or 1 in 100,000).
- PCE in soil gas is the major risk driver at the Site.
- Based on our experience with soil gas modeling, use of the ground floor of future buildings as commercial space or parking and upper floors as residential should be health protective of residents without further remediation. Vapor barriers could also be a very effective mitigation tool allowing residential use of the Site.

If you need additional information regarding the health risk evaluation, or assistance communicating these results to interested parties, please contact either myself or Becky Countway.

Sincerely,



Charles Lambert, Ph.D., DABT

REFERENCES

Avocet Environmental, Inc. (Avocet). 2007. Soil Gas Verification Sampling Report. March.

California Environmental Protection Agency (Cal/EPA). 1992. Supplemental Guidance for Human Health Multimedia Risk Evaluations of Hazardous Waste Sites and Permitted Facilities, Dept. of Toxic Substances Control, Office of Science Advisor, Sacramento, CA.

California Environmental Protection Agency (Cal/EPA). 1994. Preliminary Endangerment Evaluation Guidance Manual, Dept. of Toxic Substances Control, Sacramento, CA, reprinted with corrections from the January 1, 1994 document, June.

California Environmental Protection Agency (Cal/EPA). 2005a. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.

California Environmental Protection Agency (Cal/EPA). 2005b. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil. External Review Draft. Office of Environmental Health Hazard Evaluation. January.

California Environmental Protection Agency (Cal/EPA). 2006a. Office of Environmental Health Hazard Evaluation Toxicity Criteria Database. Internet worldwide web site (http://www.oehha.ca.gov/risk/ChemicalDB/index.asp). November.

California Environmental Protection Agency (Cal/EPA). 2006b. Office of Environmental Health Hazard Evaluation Table of Chronic Inhalation Reference Exposure Levels. Internet worldwide web site (http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html). November.

Earth Technology Corporation. 1998. Preliminary Endangerment Assessment Report Sector C Former MGP, Los Angeles, California.

Earth Technology Corporation. 2001. Remedial Investigation Report, Sector C, Block N, Former Aliso Street Manufactured Gas Plant, 410 Center Street, Los Angeles, California. October 21, 2001.

Tetra Tech, Inc. 2005. Site Investigation, Block N, Sector C, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California. December 2005.

Tetra Tech, Inc. 2006. Removal Action Completion Report, Block N, Sector C, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California. October 2006.

U.S. Environmental Protection Agency (USEPA). 1989. Risk Evaluation Guidance for Superfund (RAGS), Vol. I, Human Health Evaluation Manual, Part A, Interim Final, Office of Emergency and Remedial Response, EPA/540/1-89/002.

U.S. Environmental Protection Agency (USEPA). 1990. National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule, Federal Register, Vol. 55, No. 46, Rules and Regulations, March 8.

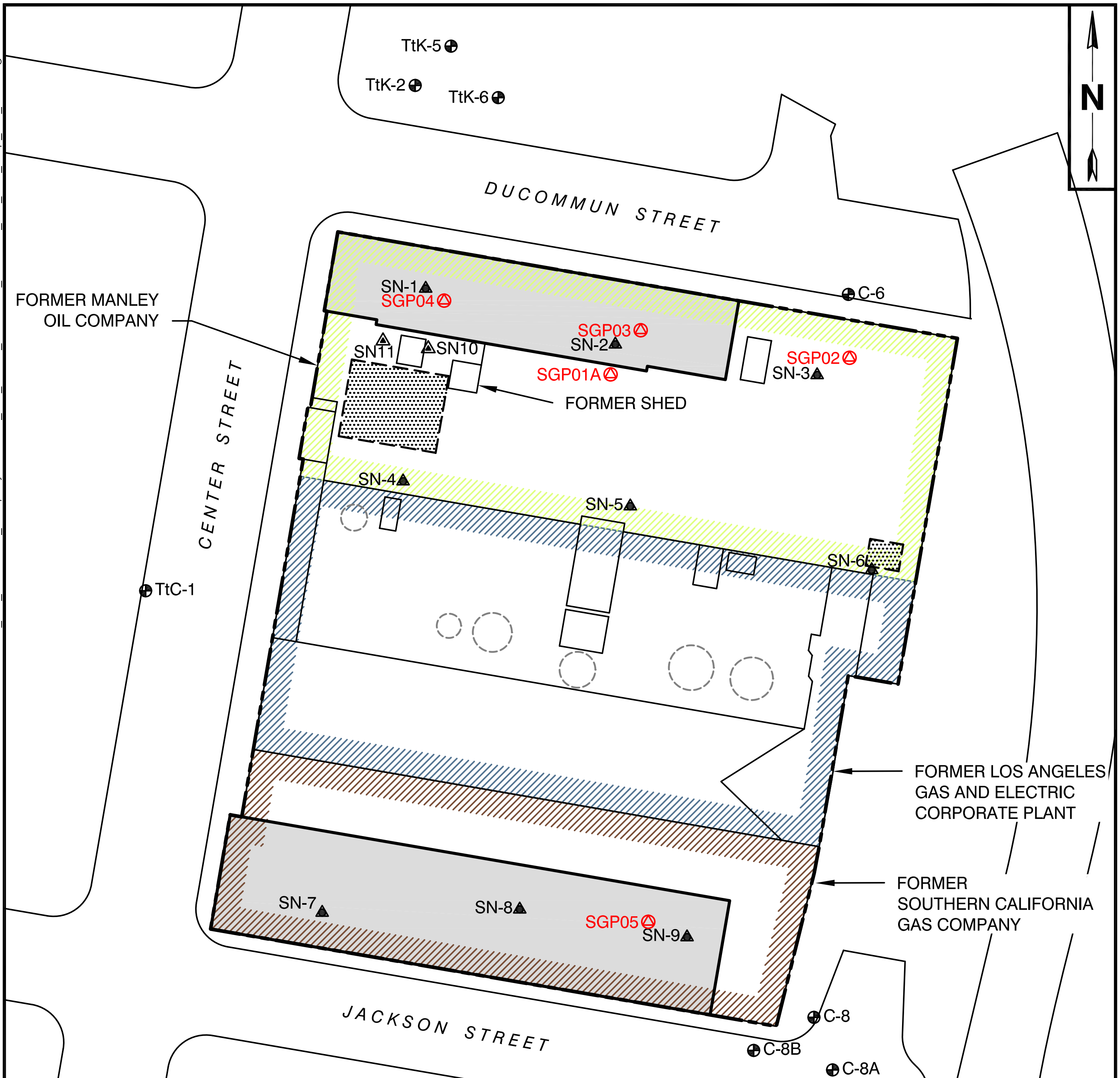
U.S. Environmental Protection Agency (USEPA). 1991. Role of the Baseline Risk Evaluation in Superfund Remedy Selection Decisions. OSWER Directive 9355.0-30.

U.S. Environmental Protection Agency (USEPA). 2002. Supplemental Guidance for Developing Soil Screening Levels at Superfund Sites. December. OSWER 9355.4-24.

U.S. Environmental Protection Agency (USEPA). 2003. Users Guide for Evaluating Subsurface Vapor Intrusion into Buildings. EPA/68-W-01-58. Office of Emergency and Remedial Response. July.

U.S. Environmental Protection Agency (USEPA). 2004. Region 9 Preliminary Remediation Goals (PRGs). Available from worldwide web: www.epa.gov/region09/waste/sfund/prg/index.html.

FIGURES



V:\1208_The_Greenwald_Company\1208.001_410_Center_Street\004_1208.001_Site_Plan_Prop_Soil_Gas.dwg\03/28/07

REFERENCE:
KLEINFELDER, 2005 "SITE PLAN SHOWING SOIL VAPOR SAMPLE AND GROUNDWATER MONITORING WELL LOCATIONS"

0 60 120 FEET
SCALE

LEGEND

(red triangle in circle)	SOIL GAS SAMPLE LOCATION
SN-1	SOIL VAPOR SAMPLING LOCATION (EARTH TECH, 2001)
SN10	SOIL VAPOR SAMPLING LOCATION (TETRA TECH, 2005)
TtK-2	EXISTING GROUNDWATER MONITORING WELL
(dashed circle)	FORMER ABOVEGROUND STORAGE TANK (REMOVED)
(stippled box)	AREA OF EXCAVATION (THE GAS COMPANY, 2005)
(grey box)	EXISTING BUILDING
(dashed line)	SITE BOUNDARY

NOTES:
1. GROUNDWATER WELL LOCATIONS FROM DRAWING PROVIDED BY TETRA TECH, 09/29/05.
2. ALL LOCATIONS ARE APPROXIMATE.

FIGURE 1

SITE PLAN SHOWING SOIL GAS SAMPLE LOCATIONS

410 CENTER STREET
LOS ANGELES, CALIFORNIA

PREPARED FOR

THE GREENWALD COMPANY
SAN DIEGO, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

TABLES

Table 2
Soil Vapor Chemical of Potential Concern Selection Summary

Chemical	Matrix	Frequency Detects / Total	Percent Detects	NonDetects Min – Max	Detects Min – Max	COPC?	Rationale
BTEX							
Benzene	soil gas	1 / 9	11 %	6.4 - 6.4	3.5 - 3.5	Yes	
Ethylbenzene	soil gas	3 / 9	33 %	8.7 - 8.7	4.3 - 7.0	Yes	
Toluene	soil gas	8 / 9	89 %	7.5 - 7.5	5.2 - 18	Yes	
Xylenes (total)	soil gas	8 / 9	89 %	8.7 - 8.7	13 - 43	Yes	
Volatile Organic Compounds (VOCs)							
Acetone	soil gas	8 / 9	89 %	24 - 24	7.2 - 300	Yes	
Benzyl chloride	soil gas	0 / 9	0 %	130 - 130	-	No	Never Detected
Bromodichloromethane	soil gas	0 / 9	0 %	13 - 13	-	No	Never Detected
Bromoform	soil gas	0 / 9	0 %	21 - 21	-	No	Never Detected
Bromomethane	soil gas	0 / 9	0 %	7.8 - 7.8	-	No	Never Detected
2-Butanone	soil gas	9 / 9	100 %	-	9.1 - 1800	Yes	
Carbon disulfide	soil gas	0 / 9	0 %	31 - 31	-	No	Never Detected
Carbon tetrachloride	soil gas	0 / 9	0 %	13 - 13	-	No	Never Detected
Chlorobenzene	soil gas	0 / 9	0 %	9.2 - 9.2	-	No	Never Detected
Chloroethane	soil gas	0 / 9	0 %	10 - 10	-	No	Never Detected
Chloroform	soil gas	0 / 9	0 %	7.8 - 7.8	-	No	Never Detected
Chloromethane	soil gas	1 / 9	11 %	8.2 - 8.2	3.8 - 3.8	Yes	
Dibromochloromethane	soil gas	0 / 9	0 %	17 - 17	-	No	Never Detected
1,2-Dibromoethane	soil gas	0 / 9	0 %	15 - 15	-	No	Never Detected
1,2-Dichlorobenzene	soil gas	0 / 9	0 %	12 - 12	-	No	Never Detected
1,3-Dichlorobenzene	soil gas	0 / 9	0 %	12 - 12	-	No	Never Detected
1,4-Dichlorobenzene	soil gas	0 / 9	0 %	12 - 12	-	No	Never Detected
Dichlorodifluoromethane	soil gas	0 / 9	0 %	9.9 - 9.9	2.6 - 3.5	Yes	
1,1-Dichloroethane	soil gas	0 / 9	0 %	8.1 - 8.1	-	No	Never Detected
1,2-Dichloroethane	soil gas	0 / 9	0 %	8.1 - 8.1	-	No	Never Detected
1,1-Dichloroethene	soil gas	0 / 9	0 %	7.9 - 7.9	-	No	Never Detected
cis-1,2-Dichloroethene	soil gas	0 / 9	0 %	7.9 - 7.9	-	No	Never Detected
trans-1,2-Dichloroethene	soil gas	0 / 9	0 %	7.9 - 7.9	-	No	Never Detected
1,2-Dichloropropane	soil gas	0 / 9	0 %	9.2 - 9.2	-	No	Never Detected
cis-1,3-Dichloropropene	soil gas	0 / 9	0 %	9.1 - 9.1	-	No	Never Detected
trans-1,3-Dichloropropene	soil gas	0 / 9	0 %	9.1 - 9.1	-	No	Never Detected
1,2-Dichloro-1,1,2,2-tetraflouroethane	soil gas	0 / 9	0 %	14 - 14	-	No	Never Detected
4-Ethyltoluene	soil gas	4 / 9	44 %	-	4.7 - 8.5	Yes	
2-Hexanone	soil gas	5 / 9	56 %	41 - 41	17 - 33	Yes	
Methylene chloride	soil gas	5 / 9	56 %	6.9 - 6.9	3.3 - 4.5	Yes	
4-Methyl-2-pentanone	soil gas	0 / 9	0 %	41 - 41	-	No	Never Detected
Styrene	soil gas	0 / 9	0 %	8.5 - 8.5	-	No	Never Detected
1,1,2,2-Tetrachloroethane	soil gas	0 / 9	0 %	14 - 14	-	No	Never Detected
Tetrachloroethene	soil gas	9 / 9	100 %	-	77 - 3100	Yes	
1,2,4-Trichlorobenzene	soil gas	0 / 9	0 %	37 - 37	-	No	Never Detected
1,1,1-Trichloroethane	soil gas	6 / 9	67 %	11 - 11	3.5000 - 8.2000	Yes	
1,1,2-Trichloroethane	soil gas	0 / 9	0 %	11 - 11	-	No	Never Detected
Trichloroethene	soil gas	4 / 9	44 %	11 - 11	10 - 22	Yes	
Trichlorofluoromethane	soil gas	2 / 9	22 %	11 - 11	54 - 130	Yes	
1,1,2-Trichlorotrifluoroethane	soil gas	0 / 9	0 %	15 - 15	-	No	Never Detected
1,2,4-Trimethylbenzene	soil gas	0 / 9	0 %	15 - 15	8.8 - 8.8	Yes	
1,3,5-Trimethylbenzene	soil gas	0 / 9	0 %	15 - 15	-	No	Never Detected
Vinyl acetate	soil gas	0 / 9	0 %	35 - 35	-	No	Never Detected
Vinyl chloride	soil gas	0 / 9	0 %	5.1 - 5.1	-	No	Never Detected
Semiolatile Organic Compounds (SVOCs)							
Hexachlorobutadiene	soil gas	0 / 9	0 %	43 - 43	-	No	Never Detected

Table 4
Exposure Point Concentrations

Chemical	Soil Gas Concentration (ug/m^3)	Residential Indoor Vapor (mg/m^3)	Commercial Indoor Vapor (mg/m^3)	Comments
BTEX				
Benzene	3.5	4.68E-06	2.34E-06	Maximum detect at 5' bgs
Ethylbenzene	7	8.67E-06	4.33E-06	Maximum detect at 5' bgs.
Toluene	**17**	**2.26E-05**	**1.13E-05**	Maximum detect of 18 at 15' bgs
Xylenes (total)	43	5.72E-05	2.86E-05	Maximum detect at 5' bgs
VOCs				
Acetone	300	4.62E-04	2.31E-04	Maximum detect at 5' bgs
2-Butanone	1800	2.31E-02	1.16E-02	Maximum detect at 5' bgs
Chloromethane	*4.1*	*6.35E-06*	*3.18E-06*	Maximum non-detect at 5' bgs
Dichlorodifluoromethane	3.5	4.08E-06	2.04E-06	Maximum detect at 15' bgs
4-Ethyltoluene	8.5	NA	NA	
2-Hexanone	33	NA	NA	
Methylene chloride	4.5	6.39E-06	3.19E-06	Maximum detect at 5' bgs
Tetrachloroethene	3100	3.76E-03	1.88E-03	Maximum detect at 5' bgs
1,1,1-Trichloroethane	**7.1**	**8.96E-06**	**4.48E-06**	Maximum detect of 8.2 at 15' bgs
Trichloroethene	22	2.79E-05	1.40E-05	Maximum detect at 5' bgs
Trichlorofluoromethane	130	1.73E-04	8.64E-05	Maximum detect at 5' bgs
1,2,4-Trimethylbenzene	8.8	4.50E-06	2.25E-06	Only detect at 15' bgs

Table 5
Intake Factors for Exposure via Inhalation of Indoor Vapors

Indoor Vapor Inhalation Intake Factor (IFinh):

$$IF_{inh} = \frac{InhR \times ET \times EF \times ED}{BW \times AT}$$

$$IF_{inh/adj} = \frac{InhR_{child} \times ET_{child} \times EF_{child} \times Ed_{child}}{BW_{child} \times AT} + \frac{InhR_{adult} \times ET_{adult} \times EF_{adult} \times ED_{adult}}{BW_{adult} \times AT}$$

IF_{inh} = Indoor Air Inhalation Intake Factor, m^3 air/kg body weight-day
IR = Inhalation Rate, m^3/hour
ET = Indoor Exposure Time, hours/day
EF = Exposure Frequency, days/year
ED = Exposure Duration, years
BW = Body Weight, kg
AT = Averaging Time, days

Exposure Variable	Population		
	Recreational User		Commercial Users
	Adult	Child (0-6 years)	
IR	0.83	0.42	0.83
ET	24	24	8
EF	350	350	250
ED	24	6	25
BW	70	15	70
$AT_{carcinogens}$	25550	25550	25550
$AT_{noncarcinogens}$	8760	2190	9125

PATHWAY-SPECIFIC INTAKE FACTORS:
Chemical-Specific Intake Factors via Inhalation (IF_{inh}), m^3 air/kg body weight-day

Carcinogens	1.49E-01	NA	2.33E-02
Noncarcinogens	2.74E-01	6.39E-01	6.52E-02

NA = Not applicable

Table 6
Chemicals of Potential Concern Toxicity Criteria

CHEMICAL	Cancer Slope Factors (CSF)		Noncancer Reference Doses (RfD)	
	Inhalation CSF $(mg/kg\text{-}day)^{-1}$	Source	Inhalation RfD (mg/kg-day)	Source
BTEX				
Benzene	1.02E-01	Cal/EPA	1.71E-02	Cal/EPA
Ethylbenzene	3.85E-03	USEPA Region IX 2002 (NCEA)	5.71E-01	Cal/EPA
Toluene	NC		8.57E-02	Cal/EPA
Xylenes (total)	NC		2.00E-01	Cal/EPA
VOCs				
Acetone	NC		9.00E-01	r
2-Butanone	NC		1.43E+00	IRIS
Chloromethane	6.30E-03	USEPA Region IX 2002 (Heast)	2.57E-02	IRIS
Dichlorodifluoromethane	NC		5.71E-02	USEPA Region IX (Heast)
4-Ethyltoluene	NC		NC	
2-Hexanone	NC		NC	
Methylene chloride	3.50E-03	Cal/EPA	1.14E-01	Cal/EPA
Tetrachloroethene	2.07E-02	Cal/EPA	1.00E-02	Cal/EPA (Ch REL)
1,1,1-Trichloroethane	NC		6.30E-01	OEHHA (IRIS; NC in IRIS)
Trichloroethene	7.00E-03	Cal/EPA	1.71E-01	Cal/EPA
Trichlorofluoromethane	NC		2.00E-01	USEPA Region IX (Heast)
1,2,4-Trimethylbenzene	NC		1.70E-03	USEPA Region IX (PPRTV)

NA = Not Applicable
NC = No Criteria
Not Avail = Not Available

Sources:
Cal/EPA = California Office of Environmental Health Hazard Assessment (OHHEA) Toxicity Criteria Database (Cal/EPA 2006)
OEHHA = Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil (Cal/EPA 20(
IRIS = USEPA's Integrated Risk Information System (http://www.epa.gov/iris/) (USEPA 2006)
USEPA Region IX = Region IX PRGs (2004a)
Heast = Health effects summary tables as cited by USEPA Region IX PRGs
NCEA = USEPA's National Center for Environmental Assessment as cited by USEPA Region IX PRGs
PPRTV = Provisional Peer Reviewed Toxicity Values as cited by USEPA Region IX PRGs
r = route extrapolation

Table 7
Risk Estimates for Exposure via Inhalation of Indoor Vapors

Chemical	Cancer Risk		NonCancer Hazard		
	Age-Adjusted Residential User	Commercial Users	Adult Resident	Child Resident	Commercial Users
BTEX					
Benzene	7.06E-08	5.53E-09	7.48E-05	1.74E-04	8.90E-06
Ethylbenzene	4.96E-09	3.89E-10	4.16E-06	9.70E-06	4.95E-07
Toluene	NC	NC	7.22E-05	1.69E-04	8.60E-06
Xylenes (total)	NC	NC	7.83E-05	1.83E-04	9.32E-06
VOCs					
Acetone	NC	NC	1.41E-04	3.28E-04	1.68E-05
2-Butanone	NC	NC	4.43E-03	1.03E-02	5.28E-04
Chloromethane	5.95E-09	4.66E-10	6.77E-05	1.58E-04	8.06E-06
Dichlorodifluoromethane	NC	NC	1.95E-05	4.56E-05	2.33E-06
4-Ethyltoluene	NC	NC	NC	NC	NC
2-Hexanone	NC	NC	NC	NC	NC
Methylene chloride	3.33E-09	2.60E-10	1.53E-05	3.57E-05	1.82E-06
Tetrachloroethene	1.16E-05	9.05E-07	1.03E-01	2.40E-01	1.23E-02
1,1,1-Trichloroethane	NC	NC	3.90E-06	9.10E-06	4.64E-07
Trichloroethene	2.91E-08	2.28E-09	4.47E-05	1.04E-04	5.32E-06
Trichlorofluoromethane	NC	NC	2.37E-04	5.52E-04	2.82E-05
1,2,4-Trimethylbenzene	NC	NC	7.25E-04	1.69E-03	8.63E-05
TOTAL:	**1.17E-05**	**9.14E-07**	**0.11**	**0.25**	**0.01**

Attachment 2

Laboratory Report

SEVERN TRENT STL

STL Los Angeles
1721 South Grand Avenue
Santa Ana, CA 92705

Tel: 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

February 28, 2007

STL LOT NUMBER: **E7B160260**
PO/CONTRACT: 1208.001

ROBERT VAN HYNING
Avocet Environmental Inc
16 Technology Drive, Suite 154
Irvine, CA 92618-2327

Dear ROBERT VAN HYNING,

This report contains the analytical results for the 18 samples received under chain of custody by STL Los Angeles on February 16, 2007. These samples are associated with your FORMER ALISO STREET MGP FACILITY project.

STL Los Angeles certifies that the test results provided in this report meet all the requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA/E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the coolers received for this project can be found on the Project Receipt Checklist.

The preliminary report was sent on February 27, 2007.

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains 000060 pages.

CASE NARRATIVE

Historical control limits for the LCS are used to define the estimate of uncertainty for a method.

All applicable quality control procedures met method-specified acceptance criteria.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Trupti Mistry
Project Manager
CC: Project File

ACCREDITED IN ACCORDANCE WITH nelac

E7B160260

CHAIN OF CUSTODY RECORD

AVOCET
ENVIRONMENTAL, INC.

16 Technology Drive, Suite 154
Irvine, California 92618-2327
(949) 296-0977
FAX (949) 296-0978

Project Name	Former Aliso Street MGP Facility
Project No.	1208.001
Location	410 Center St., Los Angeles, CA
Project Manager	Robert Van Hyning
email:	rvanhyning@avocetenv.com
Sheet of	

Sample Identification	Sample Date	Sample Time	Matrix	Samplers Initials	Number of containers	Analysis: VOC's Full Scan 8260B	Analysis: Hold	Rem.
SGP01-021507-005	02/15/07	9:55	SOIL	mf	3		X	
SGP02-021507-005	↓	10:29	↓	mf	3	X		
SGP02-021507-010	↓	10:36	↓	mf	3	X		
SGP02-021507-015	↓	10:51	↓	mf	3	X		
SGP03-021507-005	↓	11:52	↓	mf	3	X		
SGP04-021507-005	↓	12:12	↓	mf	3	X		
SGP04-021507-010	↓	12:18	↓	mf	3	X		
SGP04-021507-015	↓	12:27	↓	mf	3	X		
SGP05-021507-005	↓	14:09	↓	mf	3	X		
SGP05-0201507-010	↓	14:15	↓	mf	3	X		
SGP05-021507-015	↓	14:27	↓	mf	3	X		
SGP01A-021507-005	↓	15:19	↓	mf	3	X		
SGP01A-021507-010	↓	15:27	↓	mf	3	X		
SGP01A-021507-015 mf	↓	15:36	↓	mf	3	X		
SGP01A-021507-015DUP	↓	15:43	↓	mf	3	X		
FB021507-01	02/15/07	16:27			2	X		
EQ021507-01	02/15/07	16:14			2	X		
TB-021507	02/15/07	NA			1	X		

	Signature	Company	Date	Time
Collected by	[signature]	Avocet Environmental, Inc.	2-16-07	9:20
Relinquished by		Avocet Environmental, Inc.		
Received by		Avocet Environmental, Inc.		
Relinquished by		Avocet Environmental, Inc.		
Received by	[signature]	Test America (Severn Trent Laboratories [STL])	2-16-07	9:20
Relinquished by				
Received by				

STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 2-16-07

Single Cooler Only

LIMS Lot #: E7B160260 Quote #: 74188

Client Name: AVOCET Project: FORMER ALISO STREET

Received by: M GRASSFIELD Date/Time Received: 2-16-07 0920

Delivered by : ☑ Client ☐ STL ☐ DHL ☐ Fed Ex ☐ UPS ☐ Other ______

** **Initial / Date**

Custody Seal Status Cooler: ☐ Intact ☐ Broken ☑ None 2/16

Custody Seal Status Samples: ☐ Intact ☐ Broken ☑ None ....

Custody Seal #(s): ______ ☑ No Seal #..........

Sampler Signature on COC ☑ Yes ☐ No ☐ N/A..........

IR Gun # B Correction Factor -.2 °C IR passed daily verification ☑ Yes ☐ No ....

Temperature - **BLANK** 5.7 °C - .2 CF = 5.5 °C ...**Cooler #1 ID** ______ ....

Temperature – **COOLER** (___°C ___°C ___°C ___°C) = ___ avg °C - .2 CF = N/A °C.....

Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☐ N/A...

Sample Container(s): ☑ STL-LA ☑ Client ....

pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☑ N/A..

Anomalies: ☑ No ☐ Yes – complete CUR and Create NCM ....

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☑ Yes ☐ No.....

Labeled by: ______ ....

****

Turn Around Time: ☐ RUSH–24HR ☐ RUSH–48HR ☐ RUSH–72HR ☒ NORMAL..........

********** LEAVE NO BLANK SPACES ; USE N/A **********

Headspace Anomaly ☐ YES ☒ N/A 2/16

Lab ID	Container(s) #	Headspace	Lab ID	Container(s) #	Headspace
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm

LIMS Lot # E7B160260 **PROJECT RECEIPT CHECKLIST Cont'd**

15 16 17 18

Fraction	1/14	15	16	17										
VOAH		2	2	1										
5g ENC	2													
25g ENC	1													

CR 2/16/07

H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

Condition Upon Receipt Anomaly Form

Anomalies ☐YES ☒N/A CR 2/16/07

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- **CUSTODY SEALS (COOLER(S)** / **CONTAINER(S)**
  - ☐ None / ☐ None
  - ☐ Not Intact / ☐ Not Intact
  - ☐ Other / ☐ Other
- **TEMPERATURE (SPECS 4 ± 2°C)**
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by Client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ Other ☐ COC not received – notify PM
- **CONTAINERS**
  - ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
  - ☐ Broken
  - ☐ Extra
  - ☐ Without Labels
  - ☐ Other:
- **LABELS**
  - ☐ Not the same ID/info as in COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
  - ☐ Torn
- **SAMPLES**
  - ☐ Samples NOT RECEIVED but listed on COC
  - ☐ Samples received but NOT LISTED on COC
  - ☐ Logged based on Label Information
  - ☐ Logged based on info from other samples on COC
  - ☐ Logged according to Work Plan
  - ☐ Logged on HOLD UNTIL FURTHER NOTICE
- ☐ Will be noted on COC--Client to send samples with new COC
- ☐ Mislabeled as to tests, preservatives, etc.
- ☐ Holding time expired – list sample ID and test
- ☐ Improper container used
- ☐ Not preserved/Improper preservative used
- ☐ Improper pH ______ Lab to preserve sample and document
- ☐ Insufficient quantities for analysis ☐ Other

Comments:

☐ Corrective Action Implemented:

☐ Client Informed: verbally on ____________ By: ________ ☐ In writing on ________ By: ________

☐ Sample(s) on hold until: ____________ ☐ Sample(s) processed "as is."

Logged by/Date: Logged in by other STL ☐ ____ CA 2/16/07 **PM Review/Date:** [signature] 8/19/07

SEVERN TRENT STL

Analytical Report

ANALYTICAL REPORT

PROJECT NO. 1208.001

FORMER ALISO ST MGP FACILITY

Lot #: E7B160260

ROBER VAN HYNING

Avocet Environmental Inc

SEVERN TRENT LABORATORIES, INC.

Trupti Mistry
Project Manager

February 28, 2007

EXECUTIVE SUMMARY - Detection Highlights

E7B160260

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SGP03_021507_005 02/15/07 11:52 005				
Tetrachloroethene	2.7 J	5.4	ug/kg	SW846 8260B

METHODS SUMMARY

E7B160260

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B/826
Volatile Organics by GC/MS	SW846 8260B	SW846 5035

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

E7B160260

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
JPKQK	002	SGP02_021507_005	02/15/07	10:29
JPKQM	003	SGP02_021507_010	02/15/07	10:36
JPKQP	004	SGP02_021507_015	02/15/07	10:51
JPKQR	005	SGP03_021507_005	02/15/07	11:52
JPKQ0	006	SGP04_021507_005	02/15/07	12:12
JPKQ3	007	SGP04_021507_010	02/15/07	12:18
JPKQ4	008	SGP04_021507_015	02/15/07	12:27
JPKQ6	009	SGP05_021507_005	02/15/07	14:09
JPKQ9	010	SGP05_021507_010	02/15/07	14:15
JPKRC	011	SGP05_021507_015	02/15/07	14:27
JPKRE	012	SGP01A_021507_005	02/15/07	15:19
JPKRJ	013	SGP01A_021507_010	02/15/07	15:27
JPKRL	014	SGP01A_021507_015	02/15/07	15:36
JPKRN	015	SGP01A_021507_015DUP	02/15/07	15:43
JPKR7	016	FB021507_01	02/15/07	16:27
JPKR9	017	EQ021507_01	02/15/07	16:14
JPKTA	018	TB_021507	02/15/07	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Avocet Environmental Inc

Client Sample ID: SGP02_021507_005

GC/MS Volatiles

Lot-Sample #...: E7B160260-002 **Work Order #...:** JPKQK1AA **Matrix.........:** SO
Date Sampled...: 02/15/07 10:29 **Date Received..:** 02/16/07 09:20 **MS Run #.......:**
Prep Date......: 02/16/07 **Analysis Date..:** 02/20/07
Prep Batch #...: 7050361 **Analysis Time..:** 12:31
Dilution Factor: 1.01
% Moisture.....: **Analyst ID.....:** 004648 **Instrument ID..:** MSO
Method.........: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	25	ug/kg	10
Benzene	ND	5.0	ug/kg	2.0
Bromobenzene	ND	5.0	ug/kg	2.0
Bromochloromethane	ND	5.0	ug/kg	1.0
Bromoform	ND	5.0	ug/kg	2.0
Bromomethane	ND	10	ug/kg	2.0
2-Butanone	ND	25	ug/kg	15
n-Butylbenzene	ND	5.0	ug/kg	2.0
sec-Butylbenzene	ND	5.0	ug/kg	2.0
tert-Butylbenzene	ND	5.0	ug/kg	2.0
Carbon disulfide	ND	5.0	ug/kg	2.0
Carbon tetrachloride	ND	5.0	ug/kg	1.0
Chlorobenzene	ND	5.0	ug/kg	2.0
Dibromochloromethane	ND	5.0	ug/kg	2.0
Bromodichloromethane	ND	5.0	ug/kg	1.0
Chloroethane	ND	10	ug/kg	2.0
Chloroform	ND	5.0	ug/kg	1.0
Chloromethane	ND	10	ug/kg	3.0
2-Chlorotoluene	ND	5.0	ug/kg	2.0
4-Chlorotoluene	ND	5.0	ug/kg	2.0
1,2-Dibromo-3-chloro-propane	ND	10	ug/kg	3.0
1,2-Dibromoethane (EDB)	ND	5.0	ug/kg	2.0
Dibromomethane	ND	5.0	ug/kg	1.0
1,2-Dichlorobenzene	ND	5.0	ug/kg	2.0
1,3-Dichlorobenzene	ND	5.0	ug/kg	2.0
1,4-Dichlorobenzene	ND	5.0	ug/kg	2.0
Dichlorodifluoromethane	ND	10	ug/kg	1.0
1,1-Dichloroethane	ND	5.0	ug/kg	1.0
1,2-Dichloroethane	ND	5.0	ug/kg	1.0
1,1-Dichloroethene	ND	5.0	ug/kg	2.0
cis-1,2-Dichloroethene	ND	5.0	ug/kg	2.0
trans-1,2-Dichloroethene	ND	5.0	ug/kg	2.0
1,2-Dichloropropane	ND	5.0	ug/kg	1.0
1,3-Dichloropropane	ND	5.0	ug/kg	2.0
2,2-Dichloropropane	ND	5.0	ug/kg	2.0
1,1-Dichloropropene	ND	5.0	ug/kg	1.0

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_021507_005

GC/MS Volatiles

Lot-Sample #...: E7B160260-002 **Work Order #...:** JPKQK1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.0	ug/kg	1.0
trans-1,3-Dichloropropene	ND	5.0	ug/kg	2.0
Ethylbenzene	ND	5.0	ug/kg	2.0
Hexachlorobutadiene	ND	5.0	ug/kg	2.0
2-Hexanone	ND	25	ug/kg	10
Isopropylbenzene	ND	5.0	ug/kg	2.0
p-Isopropyltoluene	ND	5.0	ug/kg	2.0
Methylene chloride	ND	5.0	ug/kg	2.0
4-Methyl-2-pentanone	ND	25	ug/kg	10
Methyl tert-butyl ether	ND	5.0	ug/kg	1.0
Naphthalene	ND	5.0	ug/kg	2.0
n-Propylbenzene	ND	5.0	ug/kg	2.0
Styrene	ND	10	ug/kg	2.0
1,1,1,2-Tetrachloroethane	ND	5.0	ug/kg	2.0
1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	2.0
Tetrachloroethene	ND	5.0	ug/kg	2.0
Toluene	ND	5.0	ug/kg	2.0
1,2,3-Trichlorobenzene	ND	5.0	ug/kg	2.0
1,2,4-Trichloro-benzene	ND	5.0	ug/kg	2.0
1,1,1-Trichloroethane	ND	5.0	ug/kg	1.0
1,1,2-Trichloroethane	ND	5.0	ug/kg	2.0
Trichloroethene	ND	5.0	ug/kg	2.0
Trichlorofluoromethane	ND	10	ug/kg	2.0
1,2,3-Trichloropropane	ND	5.0	ug/kg	2.0
1,1,2-Trichlorotrifluoro-ethane	ND	5.0	ug/kg	2.0
1,2,4-Trimethylbenzene	ND	5.0	ug/kg	2.0
1,3,5-Trimethylbenzene	ND	5.0	ug/kg	2.0
Vinyl chloride	ND	10	ug/kg	2.0
m-Xylene & p-Xylene	ND	5.0	ug/kg	2.0
o-Xylene	ND	5.0	ug/kg	2.0
Xylenes (total)	ND	5.0	ug/kg	2.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	91	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
Toluene-d8	88	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP02_021507_010

GC/MS Volatiles

Lot-Sample #...:	E7B160260-003	**Work Order #...:**	JPKQM1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 10:36	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	15:28		
Dilution Factor:	1.09				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	27	ug/kg	11
Benzene	ND	5.4	ug/kg	2.2
Bromobenzene	ND	5.4	ug/kg	2.2
Bromochloromethane	ND	5.4	ug/kg	1.1
Bromoform	ND	5.4	ug/kg	2.2
Bromomethane	ND	11	ug/kg	2.2
2-Butanone	ND	27	ug/kg	16
n-Butylbenzene	ND	5.4	ug/kg	2.2
sec-Butylbenzene	ND	5.4	ug/kg	2.2
tert-Butylbenzene	ND	5.4	ug/kg	2.2
Carbon disulfide	ND	5.4	ug/kg	2.2
Carbon tetrachloride	ND	5.4	ug/kg	1.1
Chlorobenzene	ND	5.4	ug/kg	2.2
Dibromochloromethane	ND	5.4	ug/kg	2.2
Bromodichloromethane	ND	5.4	ug/kg	1.1
Chloroethane	ND	11	ug/kg	2.2
Chloroform	ND	5.4	ug/kg	1.1
Chloromethane	ND	11	ug/kg	3.3
2-Chlorotoluene	ND	5.4	ug/kg	2.2
4-Chlorotoluene	ND	5.4	ug/kg	2.2
1,2-Dibromo-3-chloro-propane	ND	11	ug/kg	3.3
1,2-Dibromoethane (EDB)	ND	5.4	ug/kg	2.2
Dibromomethane	ND	5.4	ug/kg	1.1
1,2-Dichlorobenzene	ND	5.4	ug/kg	2.2
1,3-Dichlorobenzene	ND	5.4	ug/kg	2.2
1,4-Dichlorobenzene	ND	5.4	ug/kg	2.2
Dichlorodifluoromethane	ND	11	ug/kg	1.1
1,1-Dichloroethane	ND	5.4	ug/kg	1.1
1,2-Dichloroethane	ND	5.4	ug/kg	1.1
1,1-Dichloroethene	ND	5.4	ug/kg	2.2
cis-1,2-Dichloroethene	ND	5.4	ug/kg	2.2
trans-1,2-Dichloroethene	ND	5.4	ug/kg	2.2
1,2-Dichloropropane	ND	5.4	ug/kg	1.1
1,3-Dichloropropane	ND	5.4	ug/kg	2.2
2,2-Dichloropropane	ND	5.4	ug/kg	2.2
1,1-Dichloropropene	ND	5.4	ug/kg	1.1

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_021507_010

GC/MS Volatiles

Lot-Sample #...: E7B160260-003 **Work Order #...:** JPKQM1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.4	ug/kg	1.1
trans-1,3-Dichloropropene	ND	5.4	ug/kg	2.2
Ethylbenzene	ND	5.4	ug/kg	2.2
Hexachlorobutadiene	ND	5.4	ug/kg	2.2
2-Hexanone	ND	27	ug/kg	11
Isopropylbenzene	ND	5.4	ug/kg	2.2
p-Isopropyltoluene	ND	5.4	ug/kg	2.2
Methylene chloride	ND	5.4	ug/kg	2.2
4-Methyl-2-pentanone	ND	27	ug/kg	11
Methyl tert-butyl ether	ND	5.4	ug/kg	1.1
Naphthalene	ND	5.4	ug/kg	2.2
n-Propylbenzene	ND	5.4	ug/kg	2.2
Styrene	ND	11	ug/kg	2.2
1,1,1,2-Tetrachloroethane	ND	5.4	ug/kg	2.2
1,1,2,2-Tetrachloroethane	ND	5.4	ug/kg	2.2
Tetrachloroethene	ND	5.4	ug/kg	2.2
Toluene	ND	5.4	ug/kg	2.2
1,2,3-Trichlorobenzene	ND	5.4	ug/kg	2.2
1,2,4-Trichloro-benzene	ND	5.4	ug/kg	2.2
1,1,1-Trichloroethane	ND	5.4	ug/kg	1.1
1,1,2-Trichloroethane	ND	5.4	ug/kg	2.2
Trichloroethene	ND	5.4	ug/kg	2.2
Trichlorofluoromethane	ND	11	ug/kg	2.2
1,2,3-Trichloropropane	ND	5.4	ug/kg	2.2
1,1,2-Trichlorotrifluoro-ethane	ND	5.4	ug/kg	2.2
1,2,4-Trimethylbenzene	ND	5.4	ug/kg	2.2
1,3,5-Trimethylbenzene	ND	5.4	ug/kg	2.2
Vinyl chloride	ND	11	ug/kg	2.2
m-Xylene & p-Xylene	ND	5.4	ug/kg	2.2
o-Xylene	ND	5.4	ug/kg	2.2
Xylenes (total)	ND	5.4	ug/kg	2.2

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	88	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
Toluene-d8	87	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP02_021507_015

GC/MS Volatiles

Lot-Sample #...: E7B160260-004 **Work Order #...:** JPKQP1AA **Matrix.........:** SO
Date Sampled...: 02/15/07 10:51 **Date Received..:** 02/16/07 09:20 **MS Run #.......:**
Prep Date.......: 02/16/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7050361 **Analysis Time..:** 15:48
Dilution Factor: 0.96
% Moisture.....: **Analyst ID.....:** 004648 **Instrument ID..:** MSO
Method.........: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	24	ug/kg	9.6
Benzene	ND	4.8	ug/kg	1.9
Bromobenzene	ND	4.8	ug/kg	1.9
Bromochloromethane	ND	4.8	ug/kg	0.96
Bromoform	ND	4.8	ug/kg	1.9
Bromomethane	ND	9.6	ug/kg	1.9
2-Butanone	ND	24	ug/kg	14
n-Butylbenzene	ND	4.8	ug/kg	1.9
sec-Butylbenzene	ND	4.8	ug/kg	1.9
tert-Butylbenzene	ND	4.8	ug/kg	1.9
Carbon disulfide	ND	4.8	ug/kg	1.9
Carbon tetrachloride	ND	4.8	ug/kg	0.96
Chlorobenzene	ND	4.8	ug/kg	1.9
Dibromochloromethane	ND	4.8	ug/kg	1.9
Bromodichloromethane	ND	4.8	ug/kg	0.96
Chloroethane	ND	9.6	ug/kg	1.9
Chloroform	ND	4.8	ug/kg	0.96
Chloromethane	ND	9.6	ug/kg	2.9
2-Chlorotoluene	ND	4.8	ug/kg	1.9
4-Chlorotoluene	ND	4.8	ug/kg	1.9
1,2-Dibromo-3-chloro-propane	ND	9.6	ug/kg	2.9
1,2-Dibromoethane (EDB)	ND	4.8	ug/kg	1.9
Dibromomethane	ND	4.8	ug/kg	0.96
1,2-Dichlorobenzene	ND	4.8	ug/kg	1.9
1,3-Dichlorobenzene	ND	4.8	ug/kg	1.9
1,4-Dichlorobenzene	ND	4.8	ug/kg	1.9
Dichlorodifluoromethane	ND	9.6	ug/kg	0.96
1,1-Dichloroethane	ND	4.8	ug/kg	0.96
1,2-Dichloroethane	ND	4.8	ug/kg	0.96
1,1-Dichloroethene	ND	4.8	ug/kg	1.9
cis-1,2-Dichloroethene	ND	4.8	ug/kg	1.9
trans-1,2-Dichloroethene	ND	4.8	ug/kg	1.9
1,2-Dichloropropane	ND	4.8	ug/kg	0.96
1,3-Dichloropropane	ND	4.8	ug/kg	1.9
2,2-Dichloropropane	ND	4.8	ug/kg	1.9
1,1-Dichloropropene	ND	4.8	ug/kg	0.96

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_021507_015

GC/MS Volatiles

Lot-Sample #...: E7B160260-004 **Work Order #...:** JPKQP1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	4.8	ug/kg	0.96
trans-1,3-Dichloropropene	ND	4.8	ug/kg	1.9
Ethylbenzene	ND	4.8	ug/kg	1.9
Hexachlorobutadiene	ND	4.8	ug/kg	1.9
2-Hexanone	ND	24	ug/kg	9.6
Isopropylbenzene	ND	4.8	ug/kg	1.9
p-Isopropyltoluene	ND	4.8	ug/kg	1.9
Methylene chloride	ND	4.8	ug/kg	1.9
4-Methyl-2-pentanone	ND	24	ug/kg	9.6
Methyl tert-butyl ether	ND	4.8	ug/kg	0.96
Naphthalene	ND	4.8	ug/kg	1.9
n-Propylbenzene	ND	4.8	ug/kg	1.9
Styrene	ND	9.6	ug/kg	1.9
1,1,1,2-Tetrachloroethane	ND	4.8	ug/kg	1.9
1,1,2,2-Tetrachloroethane	ND	4.8	ug/kg	1.9
Tetrachloroethene	ND	4.8	ug/kg	1.9
Toluene	ND	4.8	ug/kg	1.9
1,2,3-Trichlorobenzene	ND	4.8	ug/kg	1.9
1,2,4-Trichloro-benzene	ND	4.8	ug/kg	1.9
1,1,1-Trichloroethane	ND	4.8	ug/kg	0.96
1,1,2-Trichloroethane	ND	4.8	ug/kg	1.9
Trichloroethene	ND	4.8	ug/kg	1.9
Trichlorofluoromethane	ND	9.6	ug/kg	1.9
1,2,3-Trichloropropane	ND	4.8	ug/kg	1.9
1,1,2-Trichlorotrifluoro-ethane	ND	4.8	ug/kg	1.9
1,2,4-Trimethylbenzene	ND	4.8	ug/kg	1.9
1,3,5-Trimethylbenzene	ND	4.8	ug/kg	1.9
Vinyl chloride	ND	9.6	ug/kg	1.9
m-Xylene & p-Xylene	ND	4.8	ug/kg	1.9
o-Xylene	ND	4.8	ug/kg	1.9
Xylenes (total)	ND	4.8	ug/kg	1.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	84	(60 - 125)
1,2-Dichloroethane-d4	78	(55 - 125)
Toluene-d8	83	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP03_021507_005

GC/MS Volatiles

Lot-Sample #...:	E7B160260-005	**Work Order #...:**	JPKQR1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 11:52	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	16:09		
Dilution Factor:	1.09				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	27	ug/kg	11
Benzene	ND	5.4	ug/kg	2.2
Bromobenzene	ND	5.4	ug/kg	2.2
Bromochloromethane	ND	5.4	ug/kg	1.1
Bromoform	ND	5.4	ug/kg	2.2
Bromomethane	ND	11	ug/kg	2.2
2-Butanone	ND	27	ug/kg	16
n-Butylbenzene	ND	5.4	ug/kg	2.2
sec-Butylbenzene	ND	5.4	ug/kg	2.2
tert-Butylbenzene	ND	5.4	ug/kg	2.2
Carbon disulfide	ND	5.4	ug/kg	2.2
Carbon tetrachloride	ND	5.4	ug/kg	1.1
Chlorobenzene	ND	5.4	ug/kg	2.2
Dibromochloromethane	ND	5.4	ug/kg	2.2
Bromodichloromethane	ND	5.4	ug/kg	1.1
Chloroethane	ND	11	ug/kg	2.2
Chloroform	ND	5.4	ug/kg	1.1
Chloromethane	ND	11	ug/kg	3.3
2-Chlorotoluene	ND	5.4	ug/kg	2.2
4-Chlorotoluene	ND	5.4	ug/kg	2.2
1,2-Dibromo-3-chloro-propane	ND	11	ug/kg	3.3
1,2-Dibromoethane (EDB)	ND	5.4	ug/kg	2.2
Dibromomethane	ND	5.4	ug/kg	1.1
1,2-Dichlorobenzene	ND	5.4	ug/kg	2.2
1,3-Dichlorobenzene	ND	5.4	ug/kg	2.2
1,4-Dichlorobenzene	ND	5.4	ug/kg	2.2
Dichlorodifluoromethane	ND	11	ug/kg	1.1
1,1-Dichloroethane	ND	5.4	ug/kg	1.1
1,2-Dichloroethane	ND	5.4	ug/kg	1.1
1,1-Dichloroethene	ND	5.4	ug/kg	2.2
cis-1,2-Dichloroethene	ND	5.4	ug/kg	2.2
trans-1,2-Dichloroethene	ND	5.4	ug/kg	2.2
1,2-Dichloropropane	ND	5.4	ug/kg	1.1
1,3-Dichloropropane	ND	5.4	ug/kg	2.2
2,2-Dichloropropane	ND	5.4	ug/kg	2.2
1,1-Dichloropropene	ND	5.4	ug/kg	1.1

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP03_021507_005

GC/MS Volatiles

Lot-Sample #...: E7B160260-005 **Work Order #...:** JPKQR1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.4	ug/kg	1.1
trans-1,3-Dichloropropene	ND	5.4	ug/kg	2.2
Ethylbenzene	ND	5.4	ug/kg	2.2
Hexachlorobutadiene	ND	5.4	ug/kg	2.2
2-Hexanone	ND	27	ug/kg	11
Isopropylbenzene	ND	5.4	ug/kg	2.2
p-Isopropyltoluene	ND	5.4	ug/kg	2.2
Methylene chloride	ND	5.4	ug/kg	2.2
4-Methyl-2-pentanone	ND	27	ug/kg	11
Methyl tert-butyl ether	ND	5.4	ug/kg	1.1
Naphthalene	ND	5.4	ug/kg	2.2
n-Propylbenzene	ND	5.4	ug/kg	2.2
Styrene	ND	11	ug/kg	2.2
1,1,1,2-Tetrachloroethane	ND	5.4	ug/kg	2.2
1,1,2,2-Tetrachloroethane	ND	5.4	ug/kg	2.2
Tetrachloroethene	**2.7 J**	**5.4**	**ug/kg**	**2.2**
Toluene	ND	5.4	ug/kg	2.2
1,2,3-Trichlorobenzene	ND	5.4	ug/kg	2.2
1,2,4-Trichloro-benzene	ND	5.4	ug/kg	2.2
1,1,1-Trichloroethane	ND	5.4	ug/kg	1.1
1,1,2-Trichloroethane	ND	5.4	ug/kg	2.2
Trichloroethene	ND	5.4	ug/kg	2.2
Trichlorofluoromethane	ND	11	ug/kg	2.2
1,2,3-Trichloropropane	ND	5.4	ug/kg	2.2
1,1,2-Trichlorotrifluoro-ethane	ND	5.4	ug/kg	2.2
1,2,4-Trimethylbenzene	ND	5.4	ug/kg	2.2
1,3,5-Trimethylbenzene	ND	5.4	ug/kg	2.2
Vinyl chloride	ND	11	ug/kg	2.2
m-Xylene & p-Xylene	ND	5.4	ug/kg	2.2
o-Xylene	ND	5.4	ug/kg	2.2
Xylenes (total)	ND	5.4	ug/kg	2.2

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	95	(60 - 125)
1,2-Dichloroethane-d4	78	(55 - 125)
Toluene-d8	90	(60 - 125)

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP04_021507_005

GC/MS Volatiles

Lot-Sample #...:	E7B160260-006	**Work Order #...:**	JPKQ01AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 12:12	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/20/07		
Prep Batch #...:	7050361	**Analysis Time..:**	12:51		
Dilution Factor:	0.93				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	23	ug/kg	9.3
Benzene	ND	4.6	ug/kg	1.9
Bromobenzene	ND	4.6	ug/kg	1.9
Bromochloromethane	ND	4.6	ug/kg	0.93
Bromoform	ND	4.6	ug/kg	1.9
Bromomethane	ND	9.3	ug/kg	1.9
2-Butanone	ND	23	ug/kg	14
n-Butylbenzene	ND	4.6	ug/kg	1.9
sec-Butylbenzene	ND	4.6	ug/kg	1.9
tert-Butylbenzene	ND	4.6	ug/kg	1.9
Carbon disulfide	ND	4.6	ug/kg	1.9
Carbon tetrachloride	ND	4.6	ug/kg	0.93
Chlorobenzene	ND	4.6	ug/kg	1.9
Dibromochloromethane	ND	4.6	ug/kg	1.9
Bromodichloromethane	ND	4.6	ug/kg	0.93
Chloroethane	ND	9.3	ug/kg	1.9
Chloroform	ND	4.6	ug/kg	0.93
Chloromethane	ND	9.3	ug/kg	2.8
2-Chlorotoluene	ND	4.6	ug/kg	1.9
4-Chlorotoluene	ND	4.6	ug/kg	1.9
1,2-Dibromo-3-chloro-propane	ND	9.3	ug/kg	2.8
1,2-Dibromoethane (EDB)	ND	4.6	ug/kg	1.9
Dibromomethane	ND	4.6	ug/kg	0.93
1,2-Dichlorobenzene	ND	4.6	ug/kg	1.9
1,3-Dichlorobenzene	ND	4.6	ug/kg	1.9
1,4-Dichlorobenzene	ND	4.6	ug/kg	1.9
Dichlorodifluoromethane	ND	9.3	ug/kg	0.93
1,1-Dichloroethane	ND	4.6	ug/kg	0.93
1,2-Dichloroethane	ND	4.6	ug/kg	0.93
1,1-Dichloroethene	ND	4.6	ug/kg	1.9
cis-1,2-Dichloroethene	ND	4.6	ug/kg	1.9
trans-1,2-Dichloroethene	ND	4.6	ug/kg	1.9
1,2-Dichloropropane	ND	4.6	ug/kg	0.93
1,3-Dichloropropane	ND	4.6	ug/kg	1.9
2,2-Dichloropropane	ND	4.6	ug/kg	1.9
1,1-Dichloropropene	ND	4.6	ug/kg	0.93

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_021507_005

GC/MS Volatiles

Lot-Sample #...: E7B160260-006 **Work Order #...:** JPKQ01AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	4.6	ug/kg	0.93
trans-1,3-Dichloropropene	ND	4.6	ug/kg	1.9
Ethylbenzene	ND	4.6	ug/kg	1.9
Hexachlorobutadiene	ND	4.6	ug/kg	1.9
2-Hexanone	ND	23	ug/kg	9.3
Isopropylbenzene	ND	4.6	ug/kg	1.9
p-Isopropyltoluene	ND	4.6	ug/kg	1.9
Methylene chloride	ND	4.6	ug/kg	1.9
4-Methyl-2-pentanone	ND	23	ug/kg	9.3
Methyl tert-butyl ether	ND	4.6	ug/kg	0.93
Naphthalene	ND	4.6	ug/kg	1.9
n-Propylbenzene	ND	4.6	ug/kg	1.9
Styrene	ND	9.3	ug/kg	1.9
1,1,1,2-Tetrachloroethane	ND	4.6	ug/kg	1.9
1,1,2,2-Tetrachloroethane	ND	4.6	ug/kg	1.9
Tetrachloroethene	ND	4.6	ug/kg	1.9
Toluene	ND	4.6	ug/kg	1.9
1,2,3-Trichlorobenzene	ND	4.6	ug/kg	1.9
1,2,4-Trichloro-benzene	ND	4.6	ug/kg	1.9
1,1,1-Trichloroethane	ND	4.6	ug/kg	0.93
1,1,2-Trichloroethane	ND	4.6	ug/kg	1.9
Trichloroethene	ND	4.6	ug/kg	1.9
Trichlorofluoromethane	ND	9.3	ug/kg	1.9
1,2,3-Trichloropropane	ND	4.6	ug/kg	1.9
1,1,2-Trichlorotrifluoro-ethane	ND	4.6	ug/kg	1.9
1,2,4-Trimethylbenzene	ND	4.6	ug/kg	1.9
1,3,5-Trimethylbenzene	ND	4.6	ug/kg	1.9
Vinyl chloride	ND	9.3	ug/kg	1.9
m-Xylene & p-Xylene	ND	4.6	ug/kg	1.9
o-Xylene	ND	4.6	ug/kg	1.9
Xylenes (total)	ND	4.6	ug/kg	1.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	100	(60 - 125)
1,2-Dichloroethane-d4	79	(55 - 125)
Toluene-d8	89	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP04_021507_010

GC/MS Volatiles

Lot-Sample #...:	E7B160260-007	**Work Order #...:**	JPKQ31AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 12:18	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	16:50		
Dilution Factor:	0.95				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	24	ug/kg	9.5
Benzene	ND	4.8	ug/kg	1.9
Bromobenzene	ND	4.8	ug/kg	1.9
Bromochloromethane	ND	4.8	ug/kg	0.95
Bromoform	ND	4.8	ug/kg	1.9
Bromomethane	ND	9.5	ug/kg	1.9
2-Butanone	ND	24	ug/kg	14
n-Butylbenzene	ND	4.8	ug/kg	1.9
sec-Butylbenzene	ND	4.8	ug/kg	1.9
tert-Butylbenzene	ND	4.8	ug/kg	1.9
Carbon disulfide	ND	4.8	ug/kg	1.9
Carbon tetrachloride	ND	4.8	ug/kg	0.95
Chlorobenzene	ND	4.8	ug/kg	1.9
Dibromochloromethane	ND	4.8	ug/kg	1.9
Bromodichloromethane	ND	4.8	ug/kg	0.95
Chloroethane	ND	9.5	ug/kg	1.9
Chloroform	ND	4.8	ug/kg	0.95
Chloromethane	ND	9.5	ug/kg	2.8
2-Chlorotoluene	ND	4.8	ug/kg	1.9
4-Chlorotoluene	ND	4.8	ug/kg	1.9
1,2-Dibromo-3-chloro-propane	ND	9.5	ug/kg	2.8
1,2-Dibromoethane (EDB)	ND	4.8	ug/kg	1.9
Dibromomethane	ND	4.8	ug/kg	0.95
1,2-Dichlorobenzene	ND	4.8	ug/kg	1.9
1,3-Dichlorobenzene	ND	4.8	ug/kg	1.9
1,4-Dichlorobenzene	ND	4.8	ug/kg	1.9
Dichlorodifluoromethane	ND	9.5	ug/kg	0.95
1,1-Dichloroethane	ND	4.8	ug/kg	0.95
1,2-Dichloroethane	ND	4.8	ug/kg	0.95
1,1-Dichloroethene	ND	4.8	ug/kg	1.9
cis-1,2-Dichloroethene	ND	4.8	ug/kg	1.9
trans-1,2-Dichloroethene	ND	4.8	ug/kg	1.9
1,2-Dichloropropane	ND	4.8	ug/kg	0.95
1,3-Dichloropropane	ND	4.8	ug/kg	1.9
2,2-Dichloropropane	ND	4.8	ug/kg	1.9
1,1-Dichloropropene	ND	4.8	ug/kg	0.95

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_021507_010

GC/MS Volatiles

Lot-Sample #...: E7B160260-007 **Work Order #...:** JPKQ31AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	4.8	ug/kg	0.95
trans-1,3-Dichloropropene	ND	4.8	ug/kg	1.9
Ethylbenzene	ND	4.8	ug/kg	1.9
Hexachlorobutadiene	ND	4.8	ug/kg	1.9
2-Hexanone	ND	24	ug/kg	9.5
Isopropylbenzene	ND	4.8	ug/kg	1.9
p-Isopropyltoluene	ND	4.8	ug/kg	1.9
Methylene chloride	ND	4.8	ug/kg	1.9
4-Methyl-2-pentanone	ND	24	ug/kg	9.5
Methyl tert-butyl ether	ND	4.8	ug/kg	0.95
Naphthalene	ND	4.8	ug/kg	1.9
n-Propylbenzene	ND	4.8	ug/kg	1.9
Styrene	ND	9.5	ug/kg	1.9
1,1,1,2-Tetrachloroethane	ND	4.8	ug/kg	1.9
1,1,2,2-Tetrachloroethane	ND	4.8	ug/kg	1.9
Tetrachloroethene	ND	4.8	ug/kg	1.9
Toluene	ND	4.8	ug/kg	1.9
1,2,3-Trichlorobenzene	ND	4.8	ug/kg	1.9
1,2,4-Trichloro- benzene	ND	4.8	ug/kg	1.9
1,1,1-Trichloroethane	ND	4.8	ug/kg	0.95
1,1,2-Trichloroethane	ND	4.8	ug/kg	1.9
Trichloroethene	ND	4.8	ug/kg	1.9
Trichlorofluoromethane	ND	9.5	ug/kg	1.9
1,2,3-Trichloropropane	ND	4.8	ug/kg	1.9
1,1,2-Trichlorotrifluoro- ethane	ND	4.8	ug/kg	1.9
1,2,4-Trimethylbenzene	ND	4.8	ug/kg	1.9
1,3,5-Trimethylbenzene	ND	4.8	ug/kg	1.9
Vinyl chloride	ND	9.5	ug/kg	1.9
m-Xylene & p-Xylene	ND	4.8	ug/kg	1.9
o-Xylene	ND	4.8	ug/kg	1.9
Xylenes (total)	ND	4.8	ug/kg	1.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	91	(60 - 125)
1,2-Dichloroethane-d4	76	(55 - 125)
Toluene-d8	87	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP04_021507_015

GC/MS Volatiles

Lot-Sample #...:	E7B160260-008	**Work Order #...:**	JPKQ41AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 12:27	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	17:10		
Dilution Factor:	1.05				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	26	ug/kg	10
Benzene	ND	5.2	ug/kg	2.1
Bromobenzene	ND	5.2	ug/kg	2.1
Bromochloromethane	ND	5.2	ug/kg	1.0
Bromoform	ND	5.2	ug/kg	2.1
Bromomethane	ND	10	ug/kg	2.1
2-Butanone	ND	26	ug/kg	16
n-Butylbenzene	ND	5.2	ug/kg	2.1
sec-Butylbenzene	ND	5.2	ug/kg	2.1
tert-Butylbenzene	ND	5.2	ug/kg	2.1
Carbon disulfide	ND	5.2	ug/kg	2.1
Carbon tetrachloride	ND	5.2	ug/kg	1.0
Chlorobenzene	ND	5.2	ug/kg	2.1
Dibromochloromethane	ND	5.2	ug/kg	2.1
Bromodichloromethane	ND	5.2	ug/kg	1.0
Chloroethane	ND	10	ug/kg	2.1
Chloroform	ND	5.2	ug/kg	1.0
Chloromethane	ND	10	ug/kg	3.2
2-Chlorotoluene	ND	5.2	ug/kg	2.1
4-Chlorotoluene	ND	5.2	ug/kg	2.1
1,2-Dibromo-3-chloro-propane	ND	10	ug/kg	3.2
1,2-Dibromoethane (EDB)	ND	5.2	ug/kg	2.1
Dibromomethane	ND	5.2	ug/kg	1.0
1,2-Dichlorobenzene	ND	5.2	ug/kg	2.1
1,3-Dichlorobenzene	ND	5.2	ug/kg	2.1
1,4-Dichlorobenzene	ND	5.2	ug/kg	2.1
Dichlorodifluoromethane	ND	10	ug/kg	1.0
1,1-Dichloroethane	ND	5.2	ug/kg	1.0
1,2-Dichloroethane	ND	5.2	ug/kg	1.0
1,1-Dichloroethene	ND	5.2	ug/kg	2.1
cis-1,2-Dichloroethene	ND	5.2	ug/kg	2.1
trans-1,2-Dichloroethene	ND	5.2	ug/kg	2.1
1,2-Dichloropropane	ND	5.2	ug/kg	1.0
1,3-Dichloropropane	ND	5.2	ug/kg	2.1
2,2-Dichloropropane	ND	5.2	ug/kg	2.1
1,1-Dichloropropene	ND	5.2	ug/kg	1.0

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_021507_015

GC/MS Volatiles

Lot-Sample #...: E7B160260-008 **Work Order #...:** JPKQ41AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.2	ug/kg	1.0
trans-1,3-Dichloropropene	ND	5.2	ug/kg	2.1
Ethylbenzene	ND	5.2	ug/kg	2.1
Hexachlorobutadiene	ND	5.2	ug/kg	2.1
2-Hexanone	ND	26	ug/kg	10
Isopropylbenzene	ND	5.2	ug/kg	2.1
p-Isopropyltoluene	ND	5.2	ug/kg	2.1
Methylene chloride	ND	5.2	ug/kg	2.1
4-Methyl-2-pentanone	ND	26	ug/kg	10
Methyl tert-butyl ether	ND	5.2	ug/kg	1.0
Naphthalene	ND	5.2	ug/kg	2.1
n-Propylbenzene	ND	5.2	ug/kg	2.1
Styrene	ND	10	ug/kg	2.1
1,1,1,2-Tetrachloroethane	ND	5.2	ug/kg	2.1
1,1,2,2-Tetrachloroethane	ND	5.2	ug/kg	2.1
Tetrachloroethene	ND	5.2	ug/kg	2.1
Toluene	ND	5.2	ug/kg	2.1
1,2,3-Trichlorobenzene	ND	5.2	ug/kg	2.1
1,2,4-Trichloro-benzene	ND	5.2	ug/kg	2.1
1,1,1-Trichloroethane	ND	5.2	ug/kg	1.0
1,1,2-Trichloroethane	ND	5.2	ug/kg	2.1
Trichloroethene	ND	5.2	ug/kg	2.1
Trichlorofluoromethane	ND	10	ug/kg	2.1
1,2,3-Trichloropropane	ND	5.2	ug/kg	2.1
1,1,2-Trichlorotrifluoro-ethane	ND	5.2	ug/kg	2.1
1,2,4-Trimethylbenzene	ND	5.2	ug/kg	2.1
1,3,5-Trimethylbenzene	ND	5.2	ug/kg	2.1
Vinyl chloride	ND	10	ug/kg	2.1
m-Xylene & p-Xylene	ND	5.2	ug/kg	2.1
o-Xylene	ND	5.2	ug/kg	2.1
Xylenes (total)	ND	5.2	ug/kg	2.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	87	(60 - 125)
1,2-Dichloroethane-d4	78	(55 - 125)
Toluene-d8	86	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP05_021507_005

GC/MS Volatiles

Lot-Sample #...:	E7B160260-009	**Work Order #...:**	JPKQ61AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 14:09	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	17:30		
Dilution Factor:	0.96				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	24	ug/kg	9.6
Benzene	ND	4.8	ug/kg	1.9
Bromobenzene	ND	4.8	ug/kg	1.9
Bromochloromethane	ND	4.8	ug/kg	0.96
Bromoform	ND	4.8	ug/kg	1.9
Bromomethane	ND	9.6	ug/kg	1.9
2-Butanone	ND	24	ug/kg	14
n-Butylbenzene	ND	4.8	ug/kg	1.9
sec-Butylbenzene	ND	4.8	ug/kg	1.9
tert-Butylbenzene	ND	4.8	ug/kg	1.9
Carbon disulfide	ND	4.8	ug/kg	1.9
Carbon tetrachloride	ND	4.8	ug/kg	0.96
Chlorobenzene	ND	4.8	ug/kg	1.9
Dibromochloromethane	ND	4.8	ug/kg	1.9
Bromodichloromethane	ND	4.8	ug/kg	0.96
Chloroethane	ND	9.6	ug/kg	1.9
Chloroform	ND	4.8	ug/kg	0.96
Chloromethane	ND	9.6	ug/kg	2.9
2-Chlorotoluene	ND	4.8	ug/kg	1.9
4-Chlorotoluene	ND	4.8	ug/kg	1.9
1,2-Dibromo-3-chloro-propane	ND	9.6	ug/kg	2.9
1,2-Dibromoethane (EDB)	ND	4.8	ug/kg	1.9
Dibromomethane	ND	4.8	ug/kg	0.96
1,2-Dichlorobenzene	ND	4.8	ug/kg	1.9
1,3-Dichlorobenzene	ND	4.8	ug/kg	1.9
1,4-Dichlorobenzene	ND	4.8	ug/kg	1.9
Dichlorodifluoromethane	ND	9.6	ug/kg	0.96
1,1-Dichloroethane	ND	4.8	ug/kg	0.96
1,2-Dichloroethane	ND	4.8	ug/kg	0.96
1,1-Dichloroethene	ND	4.8	ug/kg	1.9
cis-1,2-Dichloroethene	ND	4.8	ug/kg	1.9
trans-1,2-Dichloroethene	ND	4.8	ug/kg	1.9
1,2-Dichloropropane	ND	4.8	ug/kg	0.96
1,3-Dichloropropane	ND	4.8	ug/kg	1.9
2,2-Dichloropropane	ND	4.8	ug/kg	1.9
1,1-Dichloropropene	ND	4.8	ug/kg	0.96

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_021507_005

GC/MS Volatiles

Lot-Sample #...: E7B160260-009 **Work Order #...:** JPKQ61AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	4.8	ug/kg	0.96
trans-1,3-Dichloropropene	ND	4.8	ug/kg	1.9
Ethylbenzene	ND	4.8	ug/kg	1.9
Hexachlorobutadiene	ND	4.8	ug/kg	1.9
2-Hexanone	ND	24	ug/kg	9.6
Isopropylbenzene	ND	4.8	ug/kg	1.9
p-Isopropyltoluene	ND	4.8	ug/kg	1.9
Methylene chloride	ND	4.8	ug/kg	1.9
4-Methyl-2-pentanone	ND	24	ug/kg	9.6
Methyl tert-butyl ether	ND	4.8	ug/kg	0.96
Naphthalene	ND	4.8	ug/kg	1.9
n-Propylbenzene	ND	4.8	ug/kg	1.9
Styrene	ND	9.6	ug/kg	1.9
1,1,1,2-Tetrachloroethane	ND	4.8	ug/kg	1.9
1,1,2,2-Tetrachloroethane	ND	4.8	ug/kg	1.9
Tetrachloroethene	ND	4.8	ug/kg	1.9
Toluene	ND	4.8	ug/kg	1.9
1,2,3-Trichlorobenzene	ND	4.8	ug/kg	1.9
1,2,4-Trichloro- benzene	ND	4.8	ug/kg	1.9
1,1,1-Trichloroethane	ND	4.8	ug/kg	0.96
1,1,2-Trichloroethane	ND	4.8	ug/kg	1.9
Trichloroethene	ND	4.8	ug/kg	1.9
Trichlorofluoromethane	ND	9.6	ug/kg	1.9
1,2,3-Trichloropropane	ND	4.8	ug/kg	1.9
1,1,2-Trichlorotrifluoro- ethane	ND	4.8	ug/kg	1.9
1,2,4-Trimethylbenzene	ND	4.8	ug/kg	1.9
1,3,5-Trimethylbenzene	ND	4.8	ug/kg	1.9
Vinyl chloride	ND	9.6	ug/kg	1.9
m-Xylene & p-Xylene	ND	4.8	ug/kg	1.9
o-Xylene	ND	4.8	ug/kg	1.9
Xylenes (total)	ND	4.8	ug/kg	1.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	89	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
Toluene-d8	88	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP05_021507_010

GC/MS Volatiles

Lot-Sample #...:	E7B160260-010	**Work Order #...:**	JPKQ91AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 14:15	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	17:51		
Dilution Factor:	0.9				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	22	ug/kg	9.0
Benzene	ND	4.5	ug/kg	1.8
Bromobenzene	ND	4.5	ug/kg	1.8
Bromochloromethane	ND	4.5	ug/kg	0.90
Bromoform	ND	4.5	ug/kg	1.8
Bromomethane	ND	9.0	ug/kg	1.8
2-Butanone	ND	22	ug/kg	14
n-Butylbenzene	ND	4.5	ug/kg	1.8
sec-Butylbenzene	ND	4.5	ug/kg	1.8
tert-Butylbenzene	ND	4.5	ug/kg	1.8
Carbon disulfide	ND	4.5	ug/kg	1.8
Carbon tetrachloride	ND	4.5	ug/kg	0.90
Chlorobenzene	ND	4.5	ug/kg	1.8
Dibromochloromethane	ND	4.5	ug/kg	1.8
Bromodichloromethane	ND	4.5	ug/kg	0.90
Chloroethane	ND	9.0	ug/kg	1.8
Chloroform	ND	4.5	ug/kg	0.90
Chloromethane	ND	9.0	ug/kg	2.7
2-Chlorotoluene	ND	4.5	ug/kg	1.8
4-Chlorotoluene	ND	4.5	ug/kg	1.8
1,2-Dibromo-3-chloro-propane	ND	9.0	ug/kg	2.7
1,2-Dibromoethane (EDB)	ND	4.5	ug/kg	1.8
Dibromomethane	ND	4.5	ug/kg	0.90
1,2-Dichlorobenzene	ND	4.5	ug/kg	1.8
1,3-Dichlorobenzene	ND	4.5	ug/kg	1.8
1,4-Dichlorobenzene	ND	4.5	ug/kg	1.8
Dichlorodifluoromethane	ND	9.0	ug/kg	0.90
1,1-Dichloroethane	ND	4.5	ug/kg	0.90
1,2-Dichloroethane	ND	4.5	ug/kg	0.90
1,1-Dichloroethene	ND	4.5	ug/kg	1.8
cis-1,2-Dichloroethene	ND	4.5	ug/kg	1.8
trans-1,2-Dichloroethene	ND	4.5	ug/kg	1.8
1,2-Dichloropropane	ND	4.5	ug/kg	0.90
1,3-Dichloropropane	ND	4.5	ug/kg	1.8
2,2-Dichloropropane	ND	4.5	ug/kg	1.8
1,1-Dichloropropene	ND	4.5	ug/kg	0.90

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_021507_010

GC/MS Volatiles

Lot-Sample #...: E7B160260-010 **Work Order #...:** JPKQ91AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	4.5	ug/kg	0.90
trans-1,3-Dichloropropene	ND	4.5	ug/kg	1.8
Ethylbenzene	ND	4.5	ug/kg	1.8
Hexachlorobutadiene	ND	4.5	ug/kg	1.8
2-Hexanone	ND	22	ug/kg	9.0
Isopropylbenzene	ND	4.5	ug/kg	1.8
p-Isopropyltoluene	ND	4.5	ug/kg	1.8
Methylene chloride	ND	4.5	ug/kg	1.8
4-Methyl-2-pentanone	ND	22	ug/kg	9.0
Methyl tert-butyl ether	ND	4.5	ug/kg	0.90
Naphthalene	ND	4.5	ug/kg	1.8
n-Propylbenzene	ND	4.5	ug/kg	1.8
Styrene	ND	9.0	ug/kg	1.8
1,1,1,2-Tetrachloroethane	ND	4.5	ug/kg	1.8
1,1,2,2-Tetrachloroethane	ND	4.5	ug/kg	1.8
Tetrachloroethene	ND	4.5	ug/kg	1.8
Toluene	ND	4.5	ug/kg	1.8
1,2,3-Trichlorobenzene	ND	4.5	ug/kg	1.8
1,2,4-Trichloro-benzene	ND	4.5	ug/kg	1.8
1,1,1-Trichloroethane	ND	4.5	ug/kg	0.90
1,1,2-Trichloroethane	ND	4.5	ug/kg	1.8
Trichloroethene	ND	4.5	ug/kg	1.8
Trichlorofluoromethane	ND	9.0	ug/kg	1.8
1,2,3-Trichloropropane	ND	4.5	ug/kg	1.8
1,1,2-Trichlorotrifluoro-ethane	ND	4.5	ug/kg	1.8
1,2,4-Trimethylbenzene	ND	4.5	ug/kg	1.8
1,3,5-Trimethylbenzene	ND	4.5	ug/kg	1.8
Vinyl chloride	ND	9.0	ug/kg	1.8
m-Xylene & p-Xylene	ND	4.5	ug/kg	1.8
o-Xylene	ND	4.5	ug/kg	1.8
Xylenes (total)	ND	4.5	ug/kg	1.8

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	88	(60 - 125)
1,2-Dichloroethane-d4	79	(55 - 125)
Toluene-d8	86	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP05_021507_015

GC/MS Volatiles

Lot-Sample #...:	E7B160260-011	**Work Order #...:**	JPKRC1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 14:27	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7050361	**Analysis Time..:**	18:11		
Dilution Factor:	1.04				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	26	ug/kg	10
Benzene	ND	5.2	ug/kg	2.1
Bromobenzene	ND	5.2	ug/kg	2.1
Bromochloromethane	ND	5.2	ug/kg	1.0
Bromoform	ND	5.2	ug/kg	2.1
Bromomethane	ND	10	ug/kg	2.1
2-Butanone	ND	26	ug/kg	16
n-Butylbenzene	ND	5.2	ug/kg	2.1
sec-Butylbenzene	ND	5.2	ug/kg	2.1
tert-Butylbenzene	ND	5.2	ug/kg	2.1
Carbon disulfide	ND	5.2	ug/kg	2.1
Carbon tetrachloride	ND	5.2	ug/kg	1.0
Chlorobenzene	ND	5.2	ug/kg	2.1
Dibromochloromethane	ND	5.2	ug/kg	2.1
Bromodichloromethane	ND	5.2	ug/kg	1.0
Chloroethane	ND	10	ug/kg	2.1
Chloroform	ND	5.2	ug/kg	1.0
Chloromethane	ND	10	ug/kg	3.1
2-Chlorotoluene	ND	5.2	ug/kg	2.1
4-Chlorotoluene	ND	5.2	ug/kg	2.1
1,2-Dibromo-3-chloro-propane	ND	10	ug/kg	3.1
1,2-Dibromoethane (EDB)	ND	5.2	ug/kg	2.1
Dibromomethane	ND	5.2	ug/kg	1.0
1,2-Dichlorobenzene	ND	5.2	ug/kg	2.1
1,3-Dichlorobenzene	ND	5.2	ug/kg	2.1
1,4-Dichlorobenzene	ND	5.2	ug/kg	2.1
Dichlorodifluoromethane	ND	10	ug/kg	1.0
1,1-Dichloroethane	ND	5.2	ug/kg	1.0
1,2-Dichloroethane	ND	5.2	ug/kg	1.0
1,1-Dichloroethene	ND	5.2	ug/kg	2.1
cis-1,2-Dichloroethene	ND	5.2	ug/kg	2.1
trans-1,2-Dichloroethene	ND	5.2	ug/kg	2.1
1,2-Dichloropropane	ND	5.2	ug/kg	1.0
1,3-Dichloropropane	ND	5.2	ug/kg	2.1
2,2-Dichloropropane	ND	5.2	ug/kg	2.1
1,1-Dichloropropene	ND	5.2	ug/kg	1.0

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_021507_015

GC/MS Volatiles

Lot-Sample #...: E7B160260-011 **Work Order #...:** JPKRC1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.2	ug/kg	1.0
trans-1,3-Dichloropropene	ND	5.2	ug/kg	2.1
Ethylbenzene	ND	5.2	ug/kg	2.1
Hexachlorobutadiene	ND	5.2	ug/kg	2.1
2-Hexanone	ND	26	ug/kg	10
Isopropylbenzene	ND	5.2	ug/kg	2.1
p-Isopropyltoluene	ND	5.2	ug/kg	2.1
Methylene chloride	ND	5.2	ug/kg	2.1
4-Methyl-2-pentanone	ND	26	ug/kg	10
Methyl tert-butyl ether	ND	5.2	ug/kg	1.0
Naphthalene	ND	5.2	ug/kg	2.1
n-Propylbenzene	ND	5.2	ug/kg	2.1
Styrene	ND	10	ug/kg	2.1
1,1,1,2-Tetrachloroethane	ND	5.2	ug/kg	2.1
1,1,2,2-Tetrachloroethane	ND	5.2	ug/kg	2.1
Tetrachloroethene	ND	5.2	ug/kg	2.1
Toluene	ND	5.2	ug/kg	2.1
1,2,3-Trichlorobenzene	ND	5.2	ug/kg	2.1
1,2,4-Trichloro-benzene	ND	5.2	ug/kg	2.1
1,1,1-Trichloroethane	ND	5.2	ug/kg	1.0
1,1,2-Trichloroethane	ND	5.2	ug/kg	2.1
Trichloroethene	ND	5.2	ug/kg	2.1
Trichlorofluoromethane	ND	10	ug/kg	2.1
1,2,3-Trichloropropane	ND	5.2	ug/kg	2.1
1,1,2-Trichlorotrifluoro-ethane	ND	5.2	ug/kg	2.1
1,2,4-Trimethylbenzene	ND	5.2	ug/kg	2.1
1,3,5-Trimethylbenzene	ND	5.2	ug/kg	2.1
Vinyl chloride	ND	10	ug/kg	2.1
m-Xylene & p-Xylene	ND	5.2	ug/kg	2.1
o-Xylene	ND	5.2	ug/kg	2.1
Xylenes (total)	ND	5.2	ug/kg	2.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	87	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
Toluene-d8	86	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_005

GC/MS Volatiles

Lot-Sample #...:	E7B160260-012	**Work Order #...:**	JPKRE1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 15:19	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/20/07		
Prep Batch #...:	7050361	**Analysis Time..:**	11:10		
Dilution Factor:	1.01				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	25	ug/kg	10
Benzene	ND	5.0	ug/kg	2.0
Bromobenzene	ND	5.0	ug/kg	2.0
Bromochloromethane	ND	5.0	ug/kg	1.0
Bromoform	ND	5.0	ug/kg	2.0
Bromomethane	ND	10	ug/kg	2.0
2-Butanone	ND	25	ug/kg	15
n-Butylbenzene	ND	5.0	ug/kg	2.0
sec-Butylbenzene	ND	5.0	ug/kg	2.0
tert-Butylbenzene	ND	5.0	ug/kg	2.0
Carbon disulfide	ND	5.0	ug/kg	2.0
Carbon tetrachloride	ND	5.0	ug/kg	1.0
Chlorobenzene	ND	5.0	ug/kg	2.0
Dibromochloromethane	ND	5.0	ug/kg	2.0
Bromodichloromethane	ND	5.0	ug/kg	1.0
Chloroethane	ND	10	ug/kg	2.0
Chloroform	ND	5.0	ug/kg	1.0
Chloromethane	ND	10	ug/kg	3.0
2-Chlorotoluene	ND	5.0	ug/kg	2.0
4-Chlorotoluene	ND	5.0	ug/kg	2.0
1,2-Dibromo-3-chloro-propane	ND	10	ug/kg	3.0
1,2-Dibromoethane (EDB)	ND	5.0	ug/kg	2.0
Dibromomethane	ND	5.0	ug/kg	1.0
1,2-Dichlorobenzene	ND	5.0	ug/kg	2.0
1,3-Dichlorobenzene	ND	5.0	ug/kg	2.0
1,4-Dichlorobenzene	ND	5.0	ug/kg	2.0
Dichlorodifluoromethane	ND	10	ug/kg	1.0
1,1-Dichloroethane	ND	5.0	ug/kg	1.0
1,2-Dichloroethane	ND	5.0	ug/kg	1.0
1,1-Dichloroethene	ND	5.0	ug/kg	2.0
cis-1,2-Dichloroethene	ND	5.0	ug/kg	2.0
trans-1,2-Dichloroethene	ND	5.0	ug/kg	2.0
1,2-Dichloropropane	ND	5.0	ug/kg	1.0
1,3-Dichloropropane	ND	5.0	ug/kg	2.0
2,2-Dichloropropane	ND	5.0	ug/kg	2.0
1,1-Dichloropropene	ND	5.0	ug/kg	1.0

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_005

GC/MS Volatiles

Lot-Sample #...: E7B160260-012 **Work Order #...:** JPKRE1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.0	ug/kg	1.0
trans-1,3-Dichloropropene	ND	5.0	ug/kg	2.0
Ethylbenzene	ND	5.0	ug/kg	2.0
Hexachlorobutadiene	ND	5.0	ug/kg	2.0
2-Hexanone	ND	25	ug/kg	10
Isopropylbenzene	ND	5.0	ug/kg	2.0
p-Isopropyltoluene	ND	5.0	ug/kg	2.0
Methylene chloride	ND	5.0	ug/kg	2.0
4-Methyl-2-pentanone	ND	25	ug/kg	10
Methyl tert-butyl ether	ND	5.0	ug/kg	1.0
Naphthalene	ND	5.0	ug/kg	2.0
n-Propylbenzene	ND	5.0	ug/kg	2.0
Styrene	ND	10	ug/kg	2.0
1,1,1,2-Tetrachloroethane	ND	5.0	ug/kg	2.0
1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	2.0
Tetrachloroethene	ND	5.0	ug/kg	2.0
Toluene	ND	5.0	ug/kg	2.0
1,2,3-Trichlorobenzene	ND	5.0	ug/kg	2.0
1,2,4-Trichloro- benzene	ND	5.0	ug/kg	2.0
1,1,1-Trichloroethane	ND	5.0	ug/kg	1.0
1,1,2-Trichloroethane	ND	5.0	ug/kg	2.0
Trichloroethene	ND	5.0	ug/kg	2.0
Trichlorofluoromethane	ND	10	ug/kg	2.0
1,2,3-Trichloropropane	ND	5.0	ug/kg	2.0
1,1,2-Trichlorotrifluoro- ethane	ND	5.0	ug/kg	2.0
1,2,4-Trimethylbenzene	ND	5.0	ug/kg	2.0
1,3,5-Trimethylbenzene	ND	5.0	ug/kg	2.0
Vinyl chloride	ND	10	ug/kg	2.0
m-Xylene & p-Xylene	ND	5.0	ug/kg	2.0
o-Xylene	ND	5.0	ug/kg	2.0
Xylenes (total)	ND	5.0	ug/kg	2.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	88	(60 - 125)
1,2-Dichloroethane-d4	76	(55 - 125)
Toluene-d8	88	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_010

GC/MS Volatiles

Lot-Sample #...:	E7B160260-013	**Work Order #...:**	JPKRJ1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 15:27	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/20/07		
Prep Batch #...:	7050361	**Analysis Time..:**	11:31		
Dilution Factor:	0.94				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	24	ug/kg	9.4
Benzene	ND	4.7	ug/kg	1.9
Bromobenzene	ND	4.7	ug/kg	1.9
Bromochloromethane	ND	4.7	ug/kg	0.94
Bromoform	ND	4.7	ug/kg	1.9
Bromomethane	ND	9.4	ug/kg	1.9
2-Butanone	ND	24	ug/kg	14
n-Butylbenzene	ND	4.7	ug/kg	1.9
sec-Butylbenzene	ND	4.7	ug/kg	1.9
tert-Butylbenzene	ND	4.7	ug/kg	1.9
Carbon disulfide	ND	4.7	ug/kg	1.9
Carbon tetrachloride	ND	4.7	ug/kg	0.94
Chlorobenzene	ND	4.7	ug/kg	1.9
Dibromochloromethane	ND	4.7	ug/kg	1.9
Bromodichloromethane	ND	4.7	ug/kg	0.94
Chloroethane	ND	9.4	ug/kg	1.9
Chloroform	ND	4.7	ug/kg	0.94
Chloromethane	ND	9.4	ug/kg	2.8
2-Chlorotoluene	ND	4.7	ug/kg	1.9
4-Chlorotoluene	ND	4.7	ug/kg	1.9
1,2-Dibromo-3-chloro-propane	ND	9.4	ug/kg	2.8
1,2-Dibromoethane (EDB)	ND	4.7	ug/kg	1.9
Dibromomethane	ND	4.7	ug/kg	0.94
1,2-Dichlorobenzene	ND	4.7	ug/kg	1.9
1,3-Dichlorobenzene	ND	4.7	ug/kg	1.9
1,4-Dichlorobenzene	ND	4.7	ug/kg	1.9
Dichlorodifluoromethane	ND	9.4	ug/kg	0.94
1,1-Dichloroethane	ND	4.7	ug/kg	0.94
1,2-Dichloroethane	ND	4.7	ug/kg	0.94
1,1-Dichloroethene	ND	4.7	ug/kg	1.9
cis-1,2-Dichloroethene	ND	4.7	ug/kg	1.9
trans-1,2-Dichloroethene	ND	4.7	ug/kg	1.9
1,2-Dichloropropane	ND	4.7	ug/kg	0.94
1,3-Dichloropropane	ND	4.7	ug/kg	1.9
2,2-Dichloropropane	ND	4.7	ug/kg	1.9
1,1-Dichloropropene	ND	4.7	ug/kg	0.94

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_010

GC/MS Volatiles

Lot-Sample #...: E7B160260-013 **Work Order #...:** JPKRJ1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	4.7	ug/kg	0.94
trans-1,3-Dichloropropene	ND	4.7	ug/kg	1.9
Ethylbenzene	ND	4.7	ug/kg	1.9
Hexachlorobutadiene	ND	4.7	ug/kg	1.9
2-Hexanone	ND	24	ug/kg	9.4
Isopropylbenzene	ND	4.7	ug/kg	1.9
p-Isopropyltoluene	ND	4.7	ug/kg	1.9
Methylene chloride	ND	4.7	ug/kg	1.9
4-Methyl-2-pentanone	ND	24	ug/kg	9.4
Methyl tert-butyl ether	ND	4.7	ug/kg	0.94
Naphthalene	ND	4.7	ug/kg	1.9
n-Propylbenzene	ND	4.7	ug/kg	1.9
Styrene	ND	9.4	ug/kg	1.9
1,1,1,2-Tetrachloroethane	ND	4.7	ug/kg	1.9
1,1,2,2-Tetrachloroethane	ND	4.7	ug/kg	1.9
Tetrachloroethene	ND	4.7	ug/kg	1.9
Toluene	ND	4.7	ug/kg	1.9
1,2,3-Trichlorobenzene	ND	4.7	ug/kg	1.9
1,2,4-Trichloro-benzene	ND	4.7	ug/kg	1.9
1,1,1-Trichloroethane	ND	4.7	ug/kg	0.94
1,1,2-Trichloroethane	ND	4.7	ug/kg	1.9
Trichloroethene	ND	4.7	ug/kg	1.9
Trichlorofluoromethane	ND	9.4	ug/kg	1.9
1,2,3-Trichloropropane	ND	4.7	ug/kg	1.9
1,1,2-Trichlorotrifluoro-ethane	ND	4.7	ug/kg	1.9
1,2,4-Trimethylbenzene	ND	4.7	ug/kg	1.9
1,3,5-Trimethylbenzene	ND	4.7	ug/kg	1.9
Vinyl chloride	ND	9.4	ug/kg	1.9
m-Xylene & p-Xylene	ND	4.7	ug/kg	1.9
o-Xylene	ND	4.7	ug/kg	1.9
Xylenes (total)	ND	4.7	ug/kg	1.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	90	(60 - 125)
1,2-Dichloroethane-d4	79	(55 - 125)
Toluene-d8	87	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_015

GC/MS Volatiles

Lot-Sample #...:	E7B160260-014	**Work Order #...:**	JPKRL1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 15:36	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/20/07		
Prep Batch #...:	7050361	**Analysis Time..:**	11:51		
Dilution Factor:	1.01				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	25	ug/kg	10
Benzene	ND	5.0	ug/kg	2.0
Bromobenzene	ND	5.0	ug/kg	2.0
Bromochloromethane	ND	5.0	ug/kg	1.0
Bromoform	ND	5.0	ug/kg	2.0
Bromomethane	ND	10	ug/kg	2.0
2-Butanone	ND	25	ug/kg	15
n-Butylbenzene	ND	5.0	ug/kg	2.0
sec-Butylbenzene	ND	5.0	ug/kg	2.0
tert-Butylbenzene	ND	5.0	ug/kg	2.0
Carbon disulfide	ND	5.0	ug/kg	2.0
Carbon tetrachloride	ND	5.0	ug/kg	1.0
Chlorobenzene	ND	5.0	ug/kg	2.0
Dibromochloromethane	ND	5.0	ug/kg	2.0
Bromodichloromethane	ND	5.0	ug/kg	1.0
Chloroethane	ND	10	ug/kg	2.0
Chloroform	ND	5.0	ug/kg	1.0
Chloromethane	ND	10	ug/kg	3.0
2-Chlorotoluene	ND	5.0	ug/kg	2.0
4-Chlorotoluene	ND	5.0	ug/kg	2.0
1,2-Dibromo-3-chloro-propane	ND	10	ug/kg	3.0
1,2-Dibromoethane (EDB)	ND	5.0	ug/kg	2.0
Dibromomethane	ND	5.0	ug/kg	1.0
1,2-Dichlorobenzene	ND	5.0	ug/kg	2.0
1,3-Dichlorobenzene	ND	5.0	ug/kg	2.0
1,4-Dichlorobenzene	ND	5.0	ug/kg	2.0
Dichlorodifluoromethane	ND	10	ug/kg	1.0
1,1-Dichloroethane	ND	5.0	ug/kg	1.0
1,2-Dichloroethane	ND	5.0	ug/kg	1.0
1,1-Dichloroethene	ND	5.0	ug/kg	2.0
cis-1,2-Dichloroethene	ND	5.0	ug/kg	2.0
trans-1,2-Dichloroethene	ND	5.0	ug/kg	2.0
1,2-Dichloropropane	ND	5.0	ug/kg	1.0
1,3-Dichloropropane	ND	5.0	ug/kg	2.0
2,2-Dichloropropane	ND	5.0	ug/kg	2.0
1,1-Dichloropropene	ND	5.0	ug/kg	1.0

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_015

GC/MS Volatiles

Lot-Sample #...: E7B160260-014 **Work Order #...:** JPKRL1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.0	ug/kg	1.0
trans-1,3-Dichloropropene	ND	5.0	ug/kg	2.0
Ethylbenzene	ND	5.0	ug/kg	2.0
Hexachlorobutadiene	ND	5.0	ug/kg	2.0
2-Hexanone	ND	25	ug/kg	10
Isopropylbenzene	ND	5.0	ug/kg	2.0
p-Isopropyltoluene	ND	5.0	ug/kg	2.0
Methylene chloride	ND	5.0	ug/kg	2.0
4-Methyl-2-pentanone	ND	25	ug/kg	10
Methyl tert-butyl ether	ND	5.0	ug/kg	1.0
Naphthalene	ND	5.0	ug/kg	2.0
n-Propylbenzene	ND	5.0	ug/kg	2.0
Styrene	ND	10	ug/kg	2.0
1,1,1,2-Tetrachloroethane	ND	5.0	ug/kg	2.0
1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	2.0
Tetrachloroethene	ND	5.0	ug/kg	2.0
Toluene	ND	5.0	ug/kg	2.0
1,2,3-Trichlorobenzene	ND	5.0	ug/kg	2.0
1,2,4-Trichloro- benzene	ND	5.0	ug/kg	2.0
1,1,1-Trichloroethane	ND	5.0	ug/kg	1.0
1,1,2-Trichloroethane	ND	5.0	ug/kg	2.0
Trichloroethene	ND	5.0	ug/kg	2.0
Trichlorofluoromethane	ND	10	ug/kg	2.0
1,2,3-Trichloropropane	ND	5.0	ug/kg	2.0
1,1,2-Trichlorotrifluoro- ethane	ND	5.0	ug/kg	2.0
1,2,4-Trimethylbenzene	ND	5.0	ug/kg	2.0
1,3,5-Trimethylbenzene	ND	5.0	ug/kg	2.0
Vinyl chloride	ND	10	ug/kg	2.0
m-Xylene & p-Xylene	ND	5.0	ug/kg	2.0
o-Xylene	ND	5.0	ug/kg	2.0
Xylenes (total)	ND	5.0	ug/kg	2.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	89	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
Toluene-d8	88	(60 - 125)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_015DUP

GC/MS Volatiles

Lot-Sample #...:	E7B160260-015	**Work Order #...:**	JPKRN1AA	**Matrix.........:**	SO
Date Sampled...:	02/15/07 15:43	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	
Prep Date......:	02/16/07	**Analysis Date..:**	02/20/07		
Prep Batch #...:	7050361	**Analysis Time..:**	12:11		
Dilution Factor:	1.15				
% Moisture.....:		**Analyst ID.....:**	004648	**Instrument ID..:**	MSO
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	29	ug/kg	12
Benzene	ND	5.8	ug/kg	2.3
Bromobenzene	ND	5.8	ug/kg	2.3
Bromochloromethane	ND	5.8	ug/kg	1.2
Bromoform	ND	5.8	ug/kg	2.3
Bromomethane	ND	12	ug/kg	2.3
2-Butanone	ND	29	ug/kg	17
n-Butylbenzene	ND	5.8	ug/kg	2.3
sec-Butylbenzene	ND	5.8	ug/kg	2.3
tert-Butylbenzene	ND	5.8	ug/kg	2.3
Carbon disulfide	ND	5.8	ug/kg	2.3
Carbon tetrachloride	ND	5.8	ug/kg	1.2
Chlorobenzene	ND	5.8	ug/kg	2.3
Dibromochloromethane	ND	5.8	ug/kg	2.3
Bromodichloromethane	ND	5.8	ug/kg	1.2
Chloroethane	ND	12	ug/kg	2.3
Chloroform	ND	5.8	ug/kg	1.2
Chloromethane	ND	12	ug/kg	3.4
2-Chlorotoluene	ND	5.8	ug/kg	2.3
4-Chlorotoluene	ND	5.8	ug/kg	2.3
1,2-Dibromo-3-chloro-propane	ND	12	ug/kg	3.4
1,2-Dibromoethane (EDB)	ND	5.8	ug/kg	2.3
Dibromomethane	ND	5.8	ug/kg	1.2
1,2-Dichlorobenzene	ND	5.8	ug/kg	2.3
1,3-Dichlorobenzene	ND	5.8	ug/kg	2.3
1,4-Dichlorobenzene	ND	5.8	ug/kg	2.3
Dichlorodifluoromethane	ND	12	ug/kg	1.2
1,1-Dichloroethane	ND	5.8	ug/kg	1.2
1,2-Dichloroethane	ND	5.8	ug/kg	1.2
1,1-Dichloroethene	ND	5.8	ug/kg	2.3
cis-1,2-Dichloroethene	ND	5.8	ug/kg	2.3
trans-1,2-Dichloroethene	ND	5.8	ug/kg	2.3
1,2-Dichloropropane	ND	5.8	ug/kg	1.2
1,3-Dichloropropane	ND	5.8	ug/kg	2.3
2,2-Dichloropropane	ND	5.8	ug/kg	2.3
1,1-Dichloropropene	ND	5.8	ug/kg	1.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_021507_015DUP

GC/MS Volatiles

Lot-Sample #...: E7B160260-015 **Work Order #...:** JPKRN1AA **Matrix.........:** SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
cis-1,3-Dichloropropene	ND	5.8	ug/kg	1.2
trans-1,3-Dichloropropene	ND	5.8	ug/kg	2.3
Ethylbenzene	ND	5.8	ug/kg	2.3
Hexachlorobutadiene	ND	5.8	ug/kg	2.3
2-Hexanone	ND	29	ug/kg	12
Isopropylbenzene	ND	5.8	ug/kg	2.3
p-Isopropyltoluene	ND	5.8	ug/kg	2.3
Methylene chloride	ND	5.8	ug/kg	2.3
4-Methyl-2-pentanone	ND	29	ug/kg	12
Methyl tert-butyl ether	ND	5.8	ug/kg	1.2
Naphthalene	ND	5.8	ug/kg	2.3
n-Propylbenzene	ND	5.8	ug/kg	2.3
Styrene	ND	12	ug/kg	2.3
1,1,1,2-Tetrachloroethane	ND	5.8	ug/kg	2.3
1,1,2,2-Tetrachloroethane	ND	5.8	ug/kg	2.3
Tetrachloroethene	ND	5.8	ug/kg	2.3
Toluene	ND	5.8	ug/kg	2.3
1,2,3-Trichlorobenzene	ND	5.8	ug/kg	2.3
1,2,4-Trichloro-benzene	ND	5.8	ug/kg	2.3
1,1,1-Trichloroethane	ND	5.8	ug/kg	1.2
1,1,2-Trichloroethane	ND	5.8	ug/kg	2.3
Trichloroethene	ND	5.8	ug/kg	2.3
Trichlorofluoromethane	ND	12	ug/kg	2.3
1,2,3-Trichloropropane	ND	5.8	ug/kg	2.3
1,1,2-Trichlorotrifluoro-ethane	ND	5.8	ug/kg	2.3
1,2,4-Trimethylbenzene	ND	5.8	ug/kg	2.3
1,3,5-Trimethylbenzene	ND	5.8	ug/kg	2.3
Vinyl chloride	ND	12	ug/kg	2.3
m-Xylene & p-Xylene	ND	5.8	ug/kg	2.3
o-Xylene	ND	5.8	ug/kg	2.3
Xylenes (total)	ND	5.8	ug/kg	2.3

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	88	(60 - 125)
1,2-Dichloroethane-d4	76	(55 - 125)
Toluene-d8	88	(60 - 125)

Avocet Environmental Inc

Client Sample ID: FB021507_01

GC/MS Volatiles

Lot-Sample #...:	E7B160260-016	**Work Order #...:**	JPKR71AA	**Matrix.........:**	WG
Date Sampled...:	02/15/07 16:27	**Date Received..:**	02/16/07 09:20	**MS Run #........:**	7050178
Prep Date......:	02/17/07	**Analysis Date..:**	02/17/07		
Prep Batch #...:	7050300	**Analysis Time..:**	03:42		
Dilution Factor:	1				
Analyst ID.....:	015590	**Instrument ID..:**	MSR		
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	10	ug/L	2.0
Benzene	ND	1.0	ug/L	0.30
Bromobenzene	ND	1.0	ug/L	0.30
Bromochloromethane	ND	1.0	ug/L	0.40
Bromodichloromethane	ND	1.0	ug/L	0.30
Bromoform	ND	1.0	ug/L	0.40
Bromomethane	ND	2.0	ug/L	1.0
2-Butanone	ND	5.0	ug/L	2.5
n-Butylbenzene	ND	1.0	ug/L	0.30
sec-Butylbenzene	ND	1.0	ug/L	0.30
tert-Butylbenzene	ND	1.0	ug/L	0.20
Carbon disulfide	ND	1.0	ug/L	0.40
Carbon tetrachloride	ND	1.0	ug/L	0.30
Chlorobenzene	ND	1.0	ug/L	0.30
Dibromochloromethane	ND	1.0	ug/L	0.40
Chloroethane	ND	2.0	ug/L	0.40
Chloroform	ND	1.0	ug/L	0.30
Chloromethane	ND	2.0	ug/L	0.30
2-Chlorotoluene	ND	1.0	ug/L	0.30
4-Chlorotoluene	ND	1.0	ug/L	0.30
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	1.0
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	0.30
Dibromomethane	ND	1.0	ug/L	0.40
1,2-Dichlorobenzene	ND	1.0	ug/L	0.30
1,3-Dichlorobenzene	ND	1.0	ug/L	0.30
1,4-Dichlorobenzene	ND	1.0	ug/L	0.30
Dichlorodifluoromethane	ND	2.0	ug/L	0.40
1,1-Dichloroethane	ND	1.0	ug/L	0.20
1,2-Dichloroethane	ND	1.0	ug/L	0.40
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.30
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.30
1,1-Dichloroethene	ND	1.0	ug/L	0.30
1,2-Dichloropropane	ND	1.0	ug/L	0.30
1,3-Dichloropropane	ND	1.0	ug/L	0.40
2,2-Dichloropropane	ND	1.0	ug/L	0.40
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.30

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: FB021507_01

GC/MS Volatiles

Lot-Sample #...: E7B160260-016 **Work Order #...:** JPKR71AA **Matrix.........:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.50
1,1-Dichloropropene	ND	1.0	ug/L	0.30
Ethylbenzene	ND	1.0	ug/L	0.30
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	2.0
Isopropylbenzene	ND	1.0	ug/L	0.30
p-Isopropyltoluene	ND	1.0	ug/L	0.30
Methylene chloride	ND	1.0	ug/L	0.30
4-Methyl-2-pentanone	ND	5.0	ug/L	2.0
Methyl tert-butyl ether	ND	1.0	ug/L	0.50
Naphthalene	ND	1.0	ug/L	0.50
n-Propylbenzene	ND	1.0	ug/L	0.40
Styrene	ND	1.0	ug/L	0.30
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.30
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.40
Tetrachloroethene	ND	1.0	ug/L	0.40
Toluene	ND	1.0	ug/L	0.30
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.40
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.30
1,1,1-Trichloroethane	ND	1.0	ug/L	0.20
1,1,2-Trichloroethane	ND	1.0	ug/L	0.30
Trichloroethene	ND	1.0	ug/L	0.30
Trichlorofluoromethane	ND	2.0	ug/L	0.30
1,2,3-Trichloropropane	ND	1.0	ug/L	0.40
1,1,2-Trichlorotrifluoro-ethane	ND	1.0	ug/L	0.40
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.30
1,3,5-Trimethylbenzene	ND	1.0	ug/L	0.20
Vinyl chloride	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.20

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	85	(70 - 125)
1,2-Dichloroethane-d4	90	(55 - 135)
Toluene-d8	96	(70 - 130)

Avocet Environmental Inc

Client Sample ID: EQ021507_01

GC/MS Volatiles

Lot-Sample #...:	E7B160260-017	**Work Order #...:**	JPKR91AA	**Matrix.........:**	WG
Date Sampled...:	02/15/07 16:14	**Date Received..:**	02/16/07 09:20	**MS Run #.......:**	7050178
Prep Date......:	02/17/07	**Analysis Date..:**	02/17/07		
Prep Batch #...:	7050300	**Analysis Time..:**	03:18		
Dilution Factor:	1				
Analyst ID.....:	015590	**Instrument ID..:**	MSR		
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	10	ug/L	2.0
Benzene	ND	1.0	ug/L	0.30
Bromobenzene	ND	1.0	ug/L	0.30
Bromochloromethane	ND	1.0	ug/L	0.40
Bromodichloromethane	ND	1.0	ug/L	0.30
Bromoform	ND	1.0	ug/L	0.40
Bromomethane	ND	2.0	ug/L	1.0
2-Butanone	ND	5.0	ug/L	2.5
n-Butylbenzene	ND	1.0	ug/L	0.30
sec-Butylbenzene	ND	1.0	ug/L	0.30
tert-Butylbenzene	ND	1.0	ug/L	0.20
Carbon disulfide	ND	1.0	ug/L	0.40
Carbon tetrachloride	ND	1.0	ug/L	0.30
Chlorobenzene	ND	1.0	ug/L	0.30
Dibromochloromethane	ND	1.0	ug/L	0.40
Chloroethane	ND	2.0	ug/L	0.40
Chloroform	ND	1.0	ug/L	0.30
Chloromethane	ND	2.0	ug/L	0.30
2-Chlorotoluene	ND	1.0	ug/L	0.30
4-Chlorotoluene	ND	1.0	ug/L	0.30
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	1.0
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	0.30
Dibromomethane	ND	1.0	ug/L	0.40
1,2-Dichlorobenzene	ND	1.0	ug/L	0.30
1,3-Dichlorobenzene	ND	1.0	ug/L	0.30
1,4-Dichlorobenzene	ND	1.0	ug/L	0.30
Dichlorodifluoromethane	ND	2.0	ug/L	0.40
1,1-Dichloroethane	ND	1.0	ug/L	0.20
1,2-Dichloroethane	ND	1.0	ug/L	0.40
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.30
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.30
1,1-Dichloroethene	ND	1.0	ug/L	0.30
1,2-Dichloropropane	ND	1.0	ug/L	0.30
1,3-Dichloropropane	ND	1.0	ug/L	0.40
2,2-Dichloropropane	ND	1.0	ug/L	0.40
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.30

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: EQ021507_01

GC/MS Volatiles

Lot-Sample #...: E7B160260-017 **Work Order #...:** JPKR91AA **Matrix.........:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.50
1,1-Dichloropropene	ND	1.0	ug/L	0.30
Ethylbenzene	ND	1.0	ug/L	0.30
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	2.0
Isopropylbenzene	ND	1.0	ug/L	0.30
p-Isopropyltoluene	ND	1.0	ug/L	0.30
Methylene chloride	ND	1.0	ug/L	0.30
4-Methyl-2-pentanone	ND	5.0	ug/L	2.0
Methyl tert-butyl ether	ND	1.0	ug/L	0.50
Naphthalene	ND	1.0	ug/L	0.50
n-Propylbenzene	ND	1.0	ug/L	0.40
Styrene	ND	1.0	ug/L	0.30
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.30
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.40
Tetrachloroethene	ND	1.0	ug/L	0.40
Toluene	ND	1.0	ug/L	0.30
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.40
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.30
1,1,1-Trichloroethane	ND	1.0	ug/L	0.20
1,1,2-Trichloroethane	ND	1.0	ug/L	0.30
Trichloroethene	ND	1.0	ug/L	0.30
Trichlorofluoromethane	ND	2.0	ug/L	0.30
1,2,3-Trichloropropane	ND	1.0	ug/L	0.40
1,1,2-Trichlorotrifluoro-ethane	ND	1.0	ug/L	0.40
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.30
1,3,5-Trimethylbenzene	ND	1.0	ug/L	0.20
Vinyl chloride	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.20

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	86	(70 - 125)
1,2-Dichloroethane-d4	94	(55 - 135)
Toluene-d8	95	(70 - 130)

Avocet Environmental Inc

Client Sample ID: TB_021507

GC/MS Volatiles

Lot-Sample #...:	E7B160260-018	**Work Order #...:**	JPKTA1AA	**Matrix.........:**	WG
Date Sampled...:	02/15/07	**Date Received..:**	02/16/07 09:20	**MS Run #........:**	7050178
Prep Date......:	02/17/07	**Analysis Date..:**	02/17/07		
Prep Batch #...:	7050300	**Analysis Time..:**	02:54		
Dilution Factor:	1				
Analyst ID.....:	015590	**Instrument ID..:**	MSR		
		Method.........:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	10	ug/L	2.0
Benzene	ND	1.0	ug/L	0.30
Bromobenzene	ND	1.0	ug/L	0.30
Bromochloromethane	ND	1.0	ug/L	0.40
Bromodichloromethane	ND	1.0	ug/L	0.30
Bromoform	ND	1.0	ug/L	0.40
Bromomethane	ND	2.0	ug/L	1.0
2-Butanone	ND	5.0	ug/L	2.5
n-Butylbenzene	ND	1.0	ug/L	0.30
sec-Butylbenzene	ND	1.0	ug/L	0.30
tert-Butylbenzene	ND	1.0	ug/L	0.20
Carbon disulfide	ND	1.0	ug/L	0.40
Carbon tetrachloride	ND	1.0	ug/L	0.30
Chlorobenzene	ND	1.0	ug/L	0.30
Dibromochloromethane	ND	1.0	ug/L	0.40
Chloroethane	ND	2.0	ug/L	0.40
Chloroform	ND	1.0	ug/L	0.30
Chloromethane	ND	2.0	ug/L	0.30
2-Chlorotoluene	ND	1.0	ug/L	0.30
4-Chlorotoluene	ND	1.0	ug/L	0.30
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	1.0
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	0.30
Dibromomethane	ND	1.0	ug/L	0.40
1,2-Dichlorobenzene	ND	1.0	ug/L	0.30
1,3-Dichlorobenzene	ND	1.0	ug/L	0.30
1,4-Dichlorobenzene	ND	1.0	ug/L	0.30
Dichlorodifluoromethane	ND	2.0	ug/L	0.40
1,1-Dichloroethane	ND	1.0	ug/L	0.20
1,2-Dichloroethane	ND	1.0	ug/L	0.40
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.30
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.30
1,1-Dichloroethene	ND	1.0	ug/L	0.30
1,2-Dichloropropane	ND	1.0	ug/L	0.30
1,3-Dichloropropane	ND	1.0	ug/L	0.40
2,2-Dichloropropane	ND	1.0	ug/L	0.40
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.30

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: TB_021507

GC/MS Volatiles

Lot-Sample #...: E7B160260-018 **Work Order #...:** JPKTA1AA **Matrix.........:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.50
1,1-Dichloropropene	ND	1.0	ug/L	0.30
Ethylbenzene	ND	1.0	ug/L	0.30
Hexachlorobutadiene	ND	1.0	ug/L	0.30
2-Hexanone	ND	5.0	ug/L	2.0
Isopropylbenzene	ND	1.0	ug/L	0.30
p-Isopropyltoluene	ND	1.0	ug/L	0.30
Methylene chloride	ND	1.0	ug/L	0.30
4-Methyl-2-pentanone	ND	5.0	ug/L	2.0
Methyl tert-butyl ether	ND	1.0	ug/L	0.50
Naphthalene	ND	1.0	ug/L	0.50
n-Propylbenzene	ND	1.0	ug/L	0.40
Styrene	ND	1.0	ug/L	0.30
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	0.30
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.40
Tetrachloroethene	ND	1.0	ug/L	0.40
Toluene	ND	1.0	ug/L	0.30
1,2,3-Trichlorobenzene	ND	1.0	ug/L	0.40
1,2,4-Trichloro-benzene	ND	1.0	ug/L	0.30
1,1,1-Trichloroethane	ND	1.0	ug/L	0.20
1,1,2-Trichloroethane	ND	1.0	ug/L	0.30
Trichloroethene	ND	1.0	ug/L	0.30
Trichlorofluoromethane	ND	2.0	ug/L	0.30
1,2,3-Trichloropropane	ND	1.0	ug/L	0.40
1,1,2-Trichlorotrifluoro-ethane	ND	1.0	ug/L	0.40
1,2,4-Trimethylbenzene	ND	1.0	ug/L	0.30
1,3,5-Trimethylbenzene	ND	1.0	ug/L	0.20
Vinyl chloride	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.20

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	84	(70 - 125)
1,2-Dichloroethane-d4	92	(55 - 135)
Toluene-d8	94	(70 - 130)

QA/QC

QC DATA ASSOCIATION SUMMARY

E7B160260

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
002	SO	SW846 8260B		7050361	
003	SO	SW846 8260B		7050361	
004	SO	SW846 8260B		7050361	
005	SO	SW846 8260B		7050361	
006	SO	SW846 8260B		7050361	
007	SO	SW846 8260B		7050361	
008	SO	SW846 8260B		7050361	
009	SO	SW846 8260B		7050361	
010	SO	SW846 8260B		7050361	
011	SO	SW846 8260B		7050361	
012	SO	SW846 8260B		7050361	
013	SO	SW846 8260B		7050361	
014	SO	SW846 8260B		7050361	
015	SO	SW846 8260B		7050361	
016	WG	SW846 8260B		7050300	7050178
017	WG	SW846 8260B		7050300	7050178
018	WG	SW846 8260B		7050300	7050178

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B160260
MB Lot-Sample #: E7B190000-300
Work Order #...: JPM541AA
Matrix.........: WATER

Prep Date......: 02/16/07
Analysis Time..: 21:39
Analysis Date..: 02/16/07
Prep Batch #...: 7050300
Instrument ID..: MSR
Dilution Factor: 1

Analyst ID.....: 015590

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	10	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromobenzene	ND	1.0	ug/L	SW846 8260B
Bromochloromethane	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	2.0	ug/L	SW846 8260B
2-Butanone	ND	5.0	ug/L	SW846 8260B
n-Butylbenzene	ND	1.0	ug/L	SW846 8260B
sec-Butylbenzene	ND	1.0	ug/L	SW846 8260B
tert-Butylbenzene	ND	1.0	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	2.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	2.0	ug/L	SW846 8260B
2-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
4-Chlorotoluene	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro-propane	ND	2.0	ug/L	SW846 8260B
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	SW846 8260B
Dibromomethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	2.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
1,3-Dichloropropane	ND	1.0	ug/L	SW846 8260B
2,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
1,1-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPM541AA **Matrix.........:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Hexachlorobutadiene	ND	1.0	ug/L	SW846 8260B
2-Hexanone	ND	5.0	ug/L	SW846 8260B
Isopropylbenzene	ND	1.0	ug/L	SW846 8260B
p-Isopropyltoluene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	1.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	1.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
n-Propylbenzene	ND	1.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,2,4-Trichloro-benzene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	2.0	ug/L	SW846 8260B
1,2,3-Trichloropropane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichlorotrifluoro-ethane	ND	1.0	ug/L	SW846 8260B
1,2,4-Trimethylbenzene	ND	1.0	ug/L	SW846 8260B
1,3,5-Trimethylbenzene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	85	(70 - 125)
1,2-Dichloroethane-d4	88	(55 - 135)
Toluene-d8	96	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPNDW1AA **Matrix.........:** SOLID
MB Lot-Sample #: E7B190000-361

Prep Date......: 02/16/07 **Analysis Time..:** 14:07
Analysis Date..: 02/19/07 **Prep Batch #...:** 7050361 **Instrument ID..:** MSO
Dilution Factor: 1

Analyst ID.....: 004648

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	25	ug/kg	SW846 8260B
Benzene	ND	5.0	ug/kg	SW846 8260B
Bromobenzene	ND	5.0	ug/kg	SW846 8260B
Bromochloromethane	ND	5.0	ug/kg	SW846 8260B
Bromoform	ND	5.0	ug/kg	SW846 8260B
Bromomethane	ND	10	ug/kg	SW846 8260B
2-Butanone	ND	25	ug/kg	SW846 8260B
n-Butylbenzene	ND	5.0	ug/kg	SW846 8260B
sec-Butylbenzene	ND	5.0	ug/kg	SW846 8260B
tert-Butylbenzene	ND	5.0	ug/kg	SW846 8260B
Carbon disulfide	ND	5.0	ug/kg	SW846 8260B
Carbon tetrachloride	ND	5.0	ug/kg	SW846 8260B
Chlorobenzene	ND	5.0	ug/kg	SW846 8260B
Dibromochloromethane	ND	5.0	ug/kg	SW846 8260B
Bromodichloromethane	ND	5.0	ug/kg	SW846 8260B
Chloroethane	ND	10	ug/kg	SW846 8260B
Chloroform	ND	5.0	ug/kg	SW846 8260B
Chloromethane	ND	10	ug/kg	SW846 8260B
2-Chlorotoluene	ND	5.0	ug/kg	SW846 8260B
4-Chlorotoluene	ND	5.0	ug/kg	SW846 8260B
1,2-Dibromo-3-chloro-propane	ND	10	ug/kg	SW846 8260B
1,2-Dibromoethane (EDB)	ND	5.0	ug/kg	SW846 8260B
Dibromomethane	ND	5.0	ug/kg	SW846 8260B
1,2-Dichlorobenzene	ND	5.0	ug/kg	SW846 8260B
1,3-Dichlorobenzene	ND	5.0	ug/kg	SW846 8260B
1,4-Dichlorobenzene	ND	5.0	ug/kg	SW846 8260B
Dichlorodifluoromethane	ND	10	ug/kg	SW846 8260B
1,1-Dichloroethane	ND	5.0	ug/kg	SW846 8260B
1,2-Dichloroethane	ND	5.0	ug/kg	SW846 8260B
1,1-Dichloroethene	ND	5.0	ug/kg	SW846 8260B
cis-1,2-Dichloroethene	ND	5.0	ug/kg	SW846 8260B
trans-1,2-Dichloroethene	ND	5.0	ug/kg	SW846 8260B
1,2-Dichloropropane	ND	5.0	ug/kg	SW846 8260B
1,3-Dichloropropane	ND	5.0	ug/kg	SW846 8260B
2,2-Dichloropropane	ND	5.0	ug/kg	SW846 8260B
1,1-Dichloropropene	ND	5.0	ug/kg	SW846 8260B
cis-1,3-Dichloropropene	ND	5.0	ug/kg	SW846 8260B
trans-1,3-Dichloropropene	ND	5.0	ug/kg	SW846 8260B
Ethylbenzene	ND	5.0	ug/kg	SW846 8260B

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPNDW1AA **Matrix.........:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Hexachlorobutadiene	ND	5.0	ug/kg	SW846 8260B
2-Hexanone	ND	25	ug/kg	SW846 8260B
Isopropylbenzene	ND	5.0	ug/kg	SW846 8260B
p-Isopropyltoluene	ND	5.0	ug/kg	SW846 8260B
Methylene chloride	ND	5.0	ug/kg	SW846 8260B
4-Methyl-2-pentanone	ND	25	ug/kg	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/kg	SW846 8260B
Naphthalene	**2.5 J**	**5.0**	**ug/kg**	**SW846 8260B**
n-Propylbenzene	ND	5.0	ug/kg	SW846 8260B
Styrene	ND	10	ug/kg	SW846 8260B
1,1,1,2-Tetrachloroethane	ND	5.0	ug/kg	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	SW846 8260B
Tetrachloroethene	ND	5.0	ug/kg	SW846 8260B
Toluene	ND	5.0	ug/kg	SW846 8260B
1,2,3-Trichlorobenzene	ND	5.0	ug/kg	SW846 8260B
1,2,4-Trichloro-benzene	ND	5.0	ug/kg	SW846 8260B
1,1,1-Trichloroethane	ND	5.0	ug/kg	SW846 8260B
1,1,2-Trichloroethane	ND	5.0	ug/kg	SW846 8260B
Trichloroethene	ND	5.0	ug/kg	SW846 8260B
Trichlorofluoromethane	ND	10	ug/kg	SW846 8260B
1,2,3-Trichloropropane	ND	5.0	ug/kg	SW846 8260B
1,1,2-Trichlorotrifluoro-ethane	ND	5.0	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene	ND	5.0	ug/kg	SW846 8260B
1,3,5-Trimethylbenzene	ND	5.0	ug/kg	SW846 8260B
Vinyl chloride	ND	10	ug/kg	SW846 8260B
m-Xylene & p-Xylene	ND	5.0	ug/kg	SW846 8260B
o-Xylene	ND	5.0	ug/kg	SW846 8260B
Xylenes (total)	ND	5.0	ug/kg	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	86	(60 - 125)
1,2-Dichloroethane-d4	76	(55 - 125)
Toluene-d8	88	(60 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPM541AC **Matrix.........:** WATER
LCS Lot-Sample#: E7B190000-300
Prep Date......: 02/16/07 **Analysis Date..:** 02/16/07
Prep Batch #...: 7050300 **Analysis Time..:** 21:15
Dilution Factor: 1 **Instrument ID..:** MSR
Analyst ID.....: 015590

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzene	**98**	**(60 - 125)**	**SW846 8260B**
Bromodichloromethane	**96**	**(60 - 130)**	**SW846 8260B**
Carbon tetrachloride	**105**	**(60 - 140)**	**SW846 8260B**
Chloroform	**92**	**(60 - 125)**	**SW846 8260B**
1,1-Dichloroethane	**95**	**(65 - 130)**	**SW846 8260B**
1,2-Dichloroethane	**91**	**(55 - 130)**	**SW846 8260B**
cis-1,2-Dichloroethene	**95**	**(60 - 125)**	**SW846 8260B**
1,1-Dichloroethene	**90**	**(60 - 150)**	**SW846 8260B**
Ethylbenzene	**101**	**(70 - 130)**	**SW846 8260B**
Tetrachloroethene	**99**	**(60 - 130)**	**SW846 8260B**
Toluene	**102**	**(65 - 125)**	**SW846 8260B**
1,1,1-Trichloroethane	**103**	**(70 - 130)**	**SW846 8260B**
Trichloroethene	**88**	**(60 - 130)**	**SW846 8260B**
Vinyl chloride	**102**	**(30 - 155)**	**SW846 8260B**
m-Xylene & p-Xylene	**101**	**(65 - 130)**	**SW846 8260B**
o-Xylene	**99**	**(70 - 130)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	92	(70 - 125)
1,2-Dichloroethane-d4	86	(55 - 135)
Toluene-d8	99	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPM541AC **Matrix.........:** WATER
LCS Lot-Sample#: E7B190000-300
Prep Date......: 02/16/07 **Analysis Date..:** 02/16/07
Prep Batch #...: 7050300 **Analysis Time..:** 21:15
Dilution Factor: 1 **Instrument ID..:** MSR
Analyst ID.....: 015590

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzene	**10.0**	**9.77**	**ug/L**	**98**	**SW846 8260B**
Bromodichloromethane	**10.0**	**9.64**	**ug/L**	**96**	**SW846 8260B**
Carbon tetrachloride	**10.0**	**10.5**	**ug/L**	**105**	**SW846 8260B**
Chloroform	**10.0**	**9.20**	**ug/L**	**92**	**SW846 8260B**
1,1-Dichloroethane	**10.0**	**9.49**	**ug/L**	**95**	**SW846 8260B**
1,2-Dichloroethane	**10.0**	**9.07**	**ug/L**	**91**	**SW846 8260B**
cis-1,2-Dichloroethene	**10.0**	**9.54**	**ug/L**	**95**	**SW846 8260B**
1,1-Dichloroethene	**10.0**	**9.04**	**ug/L**	**90**	**SW846 8260B**
Ethylbenzene	**10.0**	**10.1**	**ug/L**	**101**	**SW846 8260B**
Tetrachloroethene	**10.0**	**9.86**	**ug/L**	**99**	**SW846 8260B**
Toluene	**10.0**	**10.2**	**ug/L**	**102**	**SW846 8260B**
1,1,1-Trichloroethane	**10.0**	**10.3**	**ug/L**	**103**	**SW846 8260B**
Trichloroethene	**10.0**	**8.79**	**ug/L**	**88**	**SW846 8260B**
Vinyl chloride	**10.0**	**10.2**	**ug/L**	**102**	**SW846 8260B**
m-Xylene & p-Xylene	**20.0**	**20.3**	**ug/L**	**101**	**SW846 8260B**
o-Xylene	**10.0**	**9.86**	**ug/L**	**99**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	92	(70 - 125)
1,2-Dichloroethane-d4	86	(55 - 135)
Toluene-d8	99	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPNDW1AC-LCS **Matrix.........:** SOLID
LCS Lot-Sample#: E7B190000-361 JPNDW1AD-LCSD
Prep Date......: 02/16/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7050361 **Analysis Time..:** 13:27
Dilution Factor: 1 **Instrument ID..:** MSO
Analyst ID.....: 004648

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**81**	**(70 - 130)**			**SW846 8260B**
	78	**(70 - 130)**	**2.9**	**(0-30)**	**SW846 8260B**
Carbon tetrachloride	**78**	**(60 - 140)**			**SW846 8260B**
	78	**(60 - 140)**	**0.070**	**(0-30)**	**SW846 8260B**
Bromodichloromethane	**87**	**(70 - 135)**			**SW846 8260B**
	88	**(70 - 135)**	**2.0**	**(0-30)**	**SW846 8260B**
Chloroform	**80**	**(70 - 130)**			**SW846 8260B**
	80	**(70 - 130)**	**0.22**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethane	**78**	**(70 - 130)**			**SW846 8260B**
	76	**(70 - 130)**	**2.3**	**(0-30)**	**SW846 8260B**
1,2-Dichloroethane	**83**	**(70 - 130)**			**SW846 8260B**
	83	**(70 - 130)**	**0.55**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**60**	**(50 - 160)**			**SW846 8260B**
	66	**(50 - 160)**	**8.4**	**(0-30)**	**SW846 8260B**
cis-1,2-Dichloroethene	**84**	**(70 - 130)**			**SW846 8260B**
	82	**(70 - 130)**	**2.6**	**(0-30)**	**SW846 8260B**
Ethylbenzene	**95**	**(70 - 130)**			**SW846 8260B**
	94	**(70 - 130)**	**1.3**	**(0-30)**	**SW846 8260B**
Tetrachloroethene	**94**	**(70 - 130)**			**SW846 8260B**
	93	**(70 - 130)**	**0.62**	**(0-30)**	**SW846 8260B**
Toluene	**95**	**(70 - 130)**			**SW846 8260B**
	93	**(70 - 130)**	**2.1**	**(0-30)**	**SW846 8260B**
1,1,1-Trichloroethane	**79**	**(65 - 140)**			**SW846 8260B**
	78	**(65 - 140)**	**1.3**	**(0-30)**	**SW846 8260B**
Trichloroethene	**79**	**(70 - 135)**			**SW846 8260B**
	79	**(70 - 135)**	**0.35**	**(0-30)**	**SW846 8260B**
Vinyl chloride	**72**	**(40 - 160)**			**SW846 8260B**
	72	**(40 - 160)**	**0.16**	**(0-35)**	**SW846 8260B**
m-Xylene & p-Xylene	**96**	**(70 - 130)**			**SW846 8260B**
	95	**(70 - 130)**	**0.39**	**(0-30)**	**SW846 8260B**
o-Xylene	**94**	**(70 - 130)**			**SW846 8260B**
	94	**(70 - 130)**	**0.34**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	87	(60 - 125)
	86	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
	75	(55 - 125)
Toluene-d8	89	(60 - 125)
	85	(60 - 125)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPNDW1AC-LCS **Matrix.........:** SOLID
LCS Lot-Sample#: E7B190000-361 JPNDW1AD-LCSD

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPNDW1AC-LCS **Matrix.........:** SOLID
LCS Lot-Sample#: E7B190000-361 JPNDW1AD-LCSD
Prep Date......: 02/16/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7050361 **Analysis Time..:** 13:27
Dilution Factor: 1 **Instrument ID..:** MSO
Analyst ID.....: 004648

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Benzene	50.0	40.4	ug/kg	81		SW846 8260B
	50.0	39.2	ug/kg	78	2.9	SW846 8260B
Carbon tetrachloride	50.0	38.9	ug/kg	78		SW846 8260B
	50.0	38.8	ug/kg	78	0.070	SW846 8260B
Bromodichloromethane	50.0	43.3	ug/kg	87		SW846 8260B
	50.0	44.2	ug/kg	88	2.0	SW846 8260B
Chloroform	50.0	39.9	ug/kg	80		SW846 8260B
	50.0	40.0	ug/kg	80	0.22	SW846 8260B
1,1-Dichloroethane	50.0	39.0	ug/kg	78		SW846 8260B
	50.0	38.1	ug/kg	76	2.3	SW846 8260B
1,2-Dichloroethane	50.0	41.6	ug/kg	83		SW846 8260B
	50.0	41.3	ug/kg	83	0.55	SW846 8260B
1,1-Dichloroethene	50.0	30.1	ug/kg	60		SW846 8260B
	50.0	32.8	ug/kg	66	8.4	SW846 8260B
cis-1,2-Dichloroethene	50.0	41.9	ug/kg	84		SW846 8260B
	50.0	40.8	ug/kg	82	2.6	SW846 8260B
Ethylbenzene	50.0	47.7	ug/kg	95		SW846 8260B
	50.0	47.1	ug/kg	94	1.3	SW846 8260B
Tetrachloroethene	50.0	46.9	ug/kg	94		SW846 8260B
	50.0	46.6	ug/kg	93	0.62	SW846 8260B
Toluene	50.0	47.4	ug/kg	95		SW846 8260B
	50.0	46.4	ug/kg	93	2.1	SW846 8260B
1,1,1-Trichloroethane	50.0	39.5	ug/kg	79		SW846 8260B
	50.0	39.0	ug/kg	78	1.3	SW846 8260B
Trichloroethene	50.0	39.6	ug/kg	79		SW846 8260B
	50.0	39.7	ug/kg	79	0.35	SW846 8260B
Vinyl chloride	50.0	36.2	ug/kg	72		SW846 8260B
	50.0	36.1	ug/kg	72	0.16	SW846 8260B
m-Xylene & p-Xylene	100	95.8	ug/kg	96		SW846 8260B
	100	95.4	ug/kg	95	0.39	SW846 8260B
o-Xylene	50.0	47.0	ug/kg	94		SW846 8260B
	50.0	46.9	ug/kg	94	0.34	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	87	(60 - 125)
	86	(60 - 125)
1,2-Dichloroethane-d4	77	(55 - 125)
	75	(55 - 125)
Toluene-d8	89	(60 - 125)
	85	(60 - 125)

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPNDW1AC-LCS **Matrix.........:** SOLID
LCS Lot-Sample#: E7B190000-361 JPNDW1AD-LCSD

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...:	E7B160260	**Work Order #...:**	JPKXE1A1-MS	**Matrix.........:**	WATER
MS Lot-Sample #:	E7B160281-002		JPKXE1A2-MSD		
Date Sampled...:	02/15/07 14:30	**Date Received..:**	02/16/07 12:15	**MS Run #.......:**	7050178
Prep Date......:	02/17/07	**Analysis Date..:**	02/17/07		
Prep Batch #...:	7050300	**Analysis Time..:**	00:55		
Dilution Factor:	1	**Analyst ID.....:**	015590	**Instrument ID..:**	MSR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**88**	**(60 - 125)**			**SW846 8260B**
	99	**(60 - 125)**	**13**	**(0-25)**	**SW846 8260B**
Bromodichloromethane	**88**	**(60 - 130)**			**SW846 8260B**
	101	**(60 - 130)**	**13**	**(0-30)**	**SW846 8260B**
Carbon tetrachloride	**90**	**(60 - 140)**			**SW846 8260B**
	100	**(60 - 140)**	**11**	**(0-30)**	**SW846 8260B**
Chloroform	**82**	**(60 - 125)**			**SW846 8260B**
	94	**(60 - 125)**	**13**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethane	**81**	**(65 - 130)**			**SW846 8260B**
	91	**(65 - 130)**	**11**	**(0-30)**	**SW846 8260B**
1,2-Dichloroethane	**84**	**(55 - 130)**			**SW846 8260B**
	96	**(55 - 130)**	**14**	**(0-30)**	**SW846 8260B**
cis-1,2-Dichloroethene	**80**	**(60 - 125)**			**SW846 8260B**
	92	**(60 - 125)**	**11**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**77**	**(60 - 150)**			**SW846 8260B**
	84	**(60 - 150)**	**8.5**	**(0-25)**	**SW846 8260B**
Ethylbenzene	**89**	**(70 - 130)**			**SW846 8260B**
	101	**(70 - 130)**	**13**	**(0-30)**	**SW846 8260B**
Tetrachloroethene	**82**	**(60 - 130)**			**SW846 8260B**
	92	**(60 - 130)**	**12**	**(0-30)**	**SW846 8260B**
Toluene	**87**	**(65 - 125)**			**SW846 8260B**
	98	**(65 - 125)**	**12**	**(0-25)**	**SW846 8260B**
1,1,1-Trichloroethane	**89**	**(70 - 130)**			**SW846 8260B**
	99	**(70 - 130)**	**11**	**(0-30)**	**SW846 8260B**
Trichloroethene	**77**	**(60 - 130)**			**SW846 8260B**
	88	**(60 - 130)**	**13**	**(0-25)**	**SW846 8260B**
Vinyl chloride	**84**	**(30 - 155)**			**SW846 8260B**
	93	**(30 - 155)**	**10**	**(0-35)**	**SW846 8260B**
m-Xylene & p-Xylene	**89**	**(65 - 130)**			**SW846 8260B**
	101	**(65 - 130)**	**13**	**(0-30)**	**SW846 8260B**
o-Xylene	**88**	**(70 - 130)**			**SW846 8260B**
	101	**(70 - 130)**	**14**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(70 - 125)
	95	(70 - 125)
1,2-Dichloroethane-d4	89	(55 - 135)
	89	(55 - 135)

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPKXE1A1-MS **Matrix.........:** WATER
MS Lot-Sample #: E7B160281-002 JPKXE1A2-MSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	94	(70 - 130)
	94	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPKXE1A1-MS **Matrix.........:** WATER
MS Lot-Sample #: E7B160281-002 JPKXE1A2-MSD
Date Sampled...: 02/15/07 14:30 **Date Received..:** 02/16/07 12:15 **MS Run #.......:** 7050178
Prep Date......: 02/17/07 **Analysis Date..:** 02/17/07
Prep Batch #...: 7050300 **Analysis Time..:** 00:55
Dilution Factor: 1 **Analyst ID.....:** 015590 **Instrument ID..:** MSR

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzene	**ND**	**10.0**	**8.76**	**ug/L**	**88**		**SW846 8260B**
	ND	**10.0**	**9.94**	**ug/L**	**99**	**13**	**SW846 8260B**
Bromodichloromethane	**ND**	**10.0**	**8.85**	**ug/L**	**88**		**SW846 8260B**
	ND	**10.0**	**10.1**	**ug/L**	**101**	**13**	**SW846 8260B**
Carbon tetrachloride	**ND**	**10.0**	**8.96**	**ug/L**	**90**		**SW846 8260B**
	ND	**10.0**	**10.0**	**ug/L**	**100**	**11**	**SW846 8260B**
Chloroform	**ND**	**10.0**	**8.24**	**ug/L**	**82**		**SW846 8260B**
	ND	**10.0**	**9.40**	**ug/L**	**94**	**13**	**SW846 8260B**
1,1-Dichloroethane	**0.71**	**10.0**	**8.84**	**ug/L**	**81**		**SW846 8260B**
	0.71	**10.0**	**9.85**	**ug/L**	**91**	**11**	**SW846 8260B**
1,2-Dichloroethane	**ND**	**10.0**	**8.42**	**ug/L**	**84**		**SW846 8260B**
	ND	**10.0**	**9.64**	**ug/L**	**96**	**14**	**SW846 8260B**
cis-1,2-Dichloroethene	**1.6**	**10.0**	**9.58**	**ug/L**	**80**		**SW846 8260B**
	1.6	**10.0**	**10.7**	**ug/L**	**92**	**11**	**SW846 8260B**
1,1-Dichloroethene	**ND**	**10.0**	**7.73**	**ug/L**	**77**		**SW846 8260B**
	ND	**10.0**	**8.42**	**ug/L**	**84**	**8.5**	**SW846 8260B**
Ethylbenzene	**ND**	**10.0**	**8.86**	**ug/L**	**89**		**SW846 8260B**
	ND	**10.0**	**10.1**	**ug/L**	**101**	**13**	**SW846 8260B**
Tetrachloroethene	**ND**	**10.0**	**8.19**	**ug/L**	**82**		**SW846 8260B**
	ND	**10.0**	**9.20**	**ug/L**	**92**	**12**	**SW846 8260B**
Toluene	**ND**	**10.0**	**8.66**	**ug/L**	**87**		**SW846 8260B**
	ND	**10.0**	**9.80**	**ug/L**	**98**	**12**	**SW846 8260B**
1,1,1-Trichloroethane	**ND**	**10.0**	**8.90**	**ug/L**	**89**		**SW846 8260B**
	ND	**10.0**	**9.93**	**ug/L**	**99**	**11**	**SW846 8260B**
Trichloroethene	**ND**	**10.0**	**7.73**	**ug/L**	**77**		**SW846 8260B**
	ND	**10.0**	**8.83**	**ug/L**	**88**	**13**	**SW846 8260B**
Vinyl chloride	**ND**	**10.0**	**8.41**	**ug/L**	**84**		**SW846 8260B**
	ND	**10.0**	**9.34**	**ug/L**	**93**	**10**	**SW846 8260B**
m-Xylene & p-Xylene	**ND**	**20.0**	**17.8**	**ug/L**	**89**		**SW846 8260B**
	ND	**20.0**	**20.2**	**ug/L**	**101**	**13**	**SW846 8260B**
o-Xylene	**ND**	**10.0**	**8.78**	**ug/L**	**88**		**SW846 8260B**
	ND	**10.0**	**10.1**	**ug/L**	**101**	**14**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(70 - 125)
	95	(70 - 125)
1,2-Dichloroethane-d4	89	(55 - 135)
	89	(55 - 135)

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B160260 **Work Order #...:** JPKXE1A1-MS **Matrix.........:** WATER
MS Lot-Sample #: E7B160281-002 JPKXE1A2-MSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	94	(70 - 130)
	94	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

ANALYTICAL REPORT

PROJECT NO. 1208.001

FORMER ALISO ST MGP FACILITY

Lot #: E7B190167

ROBER VAN HYNING

Avocet Environmental Inc

SEVERN TRENT LABORATORIES, INC.

Trupti Mistry
Project Manager

March 19, 2007

EXECUTIVE SUMMARY - Detection Highlights

E7B190167

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SGP01A_GS021907_005 02/19/07 07:27 001				
Dichlorodifluoromethane	0.52 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	11	10	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	63	10	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	0.86 J	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	4.1	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	2.3	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	290	2.0	ppb(v/v)	EPA-2 TO-15
2-Hexanone	5.3 J	10	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	4.3	2.0	ppb(v/v)	EPA-2 TO-15
4-Ethyltoluene	0.95 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	25	24	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	190	29	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	2.6 J	9.9	ug/m3	EPA-2 TO-15
4-Ethyltoluene	4.7 J	9.8	ug/m3	EPA-2 TO-15
2-Hexanone	22 J	41	ug/m3	EPA-2 TO-15
Tetrachloroethene	2000	14	ug/m3	EPA-2 TO-15
Toluene	8.6	7.5	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	4.7 J	11	ug/m3	EPA-2 TO-15
Trichloroethene	22	11	ug/m3	EPA-2 TO-15
Xylenes (total)	19	8.7	ug/m3	EPA-2 TO-15
SGP01A_GS021907_015 02/19/07 07:29 002				
Dichlorodifluoromethane	0.58 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	13	10	ppb(v/v)	EPA-2 TO-15
Methylene chloride	0.94 J	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	75	10	ppb(v/v)	EPA-2 TO-15
Trichloroethene	1.9 J	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	4.7	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	280	2.0	ppb(v/v)	EPA-2 TO-15
2-Hexanone	4.2 J	10	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	1.6 J	2.0	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	9.3	2.0	ppb(v/v)	EPA-2 TO-15
4-Ethyltoluene	1.7 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	30	24	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	220	29	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	2.9 J	9.9	ug/m3	EPA-2 TO-15
Ethylbenzene	6.9 J	8.7	ug/m3	EPA-2 TO-15
4-Ethyltoluene	8.5 J	9.8	ug/m3	EPA-2 TO-15
2-Hexanone	17 J	41	ug/m3	EPA-2 TO-15
Methylene chloride	3.3 J	6.9	ug/m3	EPA-2 TO-15
Tetrachloroethene	1900	14	ug/m3	EPA-2 TO-15
Toluene	18	7.5	ug/m3	EPA-2 TO-15

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

E7B190167

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SGP01A_GS021907_015 02/19/07 07:29 002				
Trichloroethene	10 J	11	ug/m3	EPA-2 TO-15
Xylenes (total)	40	8.7	ug/m3	EPA-2 TO-15
SGP02_GS021907_005 02/19/07 08:13 003				
Acetone	120	44	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	610	44	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	190	8.7	ppb(v/v)	EPA-2 TO-15
Acetone	300	100	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	1800	130	ug/m3	EPA-2 TO-15
Tetrachloroethene	1300	61	ug/m3	EPA-2 TO-15
SGP02_GS021907_015 02/19/07 08:04 004				
Acetone	130	41	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	620	41	ppb(v/v)	EPA-2 TO-15
Trichloroethene	2.1 J	8.2	ppb(v/v)	EPA-2 TO-15
Toluene	3.3 J	8.2	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	230	8.2	ppb(v/v)	EPA-2 TO-15
2-Hexanone	6.1 J	41	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	5.6 J	8.2	ppb(v/v)	EPA-2 TO-15
Acetone	300	98	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	1800	120	ug/m3	EPA-2 TO-15
2-Hexanone	25 J	170	ug/m3	EPA-2 TO-15
Tetrachloroethene	1500	57	ug/m3	EPA-2 TO-15
Toluene	12 J	31	ug/m3	EPA-2 TO-15
Trichloroethene	11 J	45	ug/m3	EPA-2 TO-15
Xylenes (total)	24 J	35	ug/m3	EPA-2 TO-15
SGP03_GS021907_005 02/19/07 07:39 005				
Dichlorodifluoromethane	0.51 J	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	3.1 J	10	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	1.1 J	2.0	ppb(v/v)	EPA-2 TO-15
Benzene	1.1 J	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	3.9	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	1.8 J	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	460	2.0	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	3.7	2.0	ppb(v/v)	EPA-2 TO-15
Benzene	3.5 J	6.4	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	9.1 J	29	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	2.5 J	9.9	ug/m3	EPA-2 TO-15
Tetrachloroethene	3100	14	ug/m3	EPA-2 TO-15

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

E7B190167

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SGP03_GS021907_005 02/19/07 07:39 005				
Toluene	6.9 J	7.5	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	5.8 J	11	ug/m3	EPA-2 TO-15
Trichloroethene	21	11	ug/m3	EPA-2 TO-15
Xylenes (total)	16	8.7	ug/m3	EPA-2 TO-15
SGP04_GS021907_005 02/19/07 07:18 006				
Dichlorodifluoromethane	0.64 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	3.0 J	10	ppb(v/v)	EPA-2 TO-15
Methylene chloride	1.3 J	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	4.9 J	10	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	1.3 J	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	1.9 J	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	48	2.0	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	4.0	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	7.2 J	24	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	15 J	29	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	3.2 J	9.9	ug/m3	EPA-2 TO-15
Methylene chloride	4.5 J	6.9	ug/m3	EPA-2 TO-15
Tetrachloroethene	330	14	ug/m3	EPA-2 TO-15
Toluene	7.1 J	7.5	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	7.1 J	11	ug/m3	EPA-2 TO-15
Xylenes (total)	18	8.7	ug/m3	EPA-2 TO-15
SGP04_GS021907_015 02/19/07 07:05 007				
Dichlorodifluoromethane	0.68 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	13	10	ppb(v/v)	EPA-2 TO-15
Methylene chloride	1.1 J	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	9.1 J	10	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	1.5 J	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	3.1	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	65	2.0	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	1.0 J	2.0	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	6.0	2.0	ppb(v/v)	EPA-2 TO-15
4-Ethyltoluene	1.4 J	2.0	ppb(v/v)	EPA-2 TO-15
1,2,4-Trimethylbenzene	1.8 J	3.0	ppb(v/v)	EPA-2 TO-15
Acetone	31	24	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	27 J	29	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	3.3 J	9.9	ug/m3	EPA-2 TO-15
Ethylbenzene	4.3 J	8.7	ug/m3	EPA-2 TO-15
4-Ethyltoluene	7.1 J	9.8	ug/m3	EPA-2 TO-15
Methylene chloride	3.9 J	6.9	ug/m3	EPA-2 TO-15

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

E7B190167

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SGP04_GS021907_015 02/19/07 07:05 007				
Tetrachloroethene	440	14	ug/m3	EPA-2 TO-15
Toluene	12	7.5	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	8.2 J	11	ug/m3	EPA-2 TO-15
1,2,4-Trimethylbenzene	8.8 J	15	ug/m3	EPA-2 TO-15
Xylenes (total)	26	8.7	ug/m3	EPA-2 TO-15
SGP05_GS021907_005 02/19/07 09:04 008				
Dichlorodifluoromethane	0.71 J	2.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	22	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	16	10	ppb(v/v)	EPA-2 TO-15
Methylene chloride	1.1 J	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	210	10	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	0.65 J	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	4.4	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	13	2.0	ppb(v/v)	EPA-2 TO-15
2-Hexanone	8.0 J	10	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	1.6 J	2.0	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	9.9	2.0	ppb(v/v)	EPA-2 TO-15
4-Ethyltoluene	1.7 J	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	37	24	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	610	29	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	3.5 J	9.9	ug/m3	EPA-2 TO-15
Ethylbenzene	7.0 J	8.7	ug/m3	EPA-2 TO-15
4-Ethyltoluene	8.2 J	9.8	ug/m3	EPA-2 TO-15
2-Hexanone	33 J	41	ug/m3	EPA-2 TO-15
Methylene chloride	3.9 J	6.9	ug/m3	EPA-2 TO-15
Tetrachloroethene	91	14	ug/m3	EPA-2 TO-15
Toluene	17	7.5	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	3.5 J	11	ug/m3	EPA-2 TO-15
Trichlorofluoromethane	130	11	ug/m3	EPA-2 TO-15
Xylenes (total)	43	8.7	ug/m3	EPA-2 TO-15
SGP05_GS021907_015 02/19/07 09:08 009				
Dichlorodifluoromethane	0.68 J	2.0	ppb(v/v)	EPA-2 TO-15
Chloromethane	1.8 J	4.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	9.7	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	15	10	ppb(v/v)	EPA-2 TO-15
Methylene chloride	1.1 J	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	190	10	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	0.71 J	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	1.4 J	2.0	ppb(v/v)	EPA-2 TO-15

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

E7B190167

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SGP05_GS021907_015 02/19/07 09:08 009				
Tetrachloroethene	11	2.0	ppb(v/v)	EPA-2 TO-15
2-Hexanone	7.6 J	10	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	3.0	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	35	24	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	550	29	ug/m3	EPA-2 TO-15
Chloromethane	3.8 J	8.2	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	3.4 J	9.9	ug/m3	EPA-2 TO-15
2-Hexanone	31 J	41	ug/m3	EPA-2 TO-15
Methylene chloride	3.9 J	6.9	ug/m3	EPA-2 TO-15
Tetrachloroethene	77	14	ug/m3	EPA-2 TO-15
Toluene	5.2 J	7.5	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	3.9 J	11	ug/m3	EPA-2 TO-15
Trichlorofluoromethane	54	11	ug/m3	EPA-2 TO-15
Xylenes (total)	13	8.7	ug/m3	EPA-2 TO-15

METHODS SUMMARY

E7B190167

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Volatile Organics by TO15	EPA-2 TO-15	

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

E7B190167

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
JPM8E	001	SGP01A_GS021907_005	02/19/07	07:27
JPM94	002	SGP01A_GS021907_015	02/19/07	07:29
JPNAE	003	SGP02_GS021907_005	02/19/07	08:13
JPNAH	004	SGP02_GS021907_015	02/19/07	08:04
JPNAN	005	SGP03_GS021907_005	02/19/07	07:39
JPNAV	006	SGP04_GS021907_005	02/19/07	07:18
JPNA4	007	SGP04_GS021907_015	02/19/07	07:05
JPNA8	008	SGP05_GS021907_005	02/19/07	09:04
JPNCF	009	SGP05_GS021907_015	02/19/07	09:08
JPNCK	010	EQ021907_001	02/19/07	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-001 **Work Order #...:** JPM8E1AD **Matrix.........:** V
Date Sampled...: 02/19/07 07:27 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 18:27
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.52 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	**11**	**10**	**ppb(v/v)**	**2.0**
Methylene chloride	ND	2.0	ppb(v/v)	0.80
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**63**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	**0.86 J**	**2.0**	**ppb(v/v)**	**0.50**
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	**4.1**	**2.0**	**ppb(v/v)**	**0.50**
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**2.3**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**290**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	**5.3 J**	**10**	**ppb(v/v)**	**1.0**
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-001 **Work Order #...:** JPM8E1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	ND	2.0	ppb(v/v)	1.0
Xylenes (total)	**4.3**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	**0.95 J**	**2.0**	**ppb(v/v)**	**0.70**
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro-benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-001 **Work Order #...:** JPM8E1AE **Matrix.........:** V
Date Sampled...: 02/19/07 07:27 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 18:27
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**25**	**24**	**ug/m3**	**4.7**
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**190**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**2.6 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	ND	8.7	ug/m3	4.3
4-Ethyltoluene	**4.7 J**	**9.8**	**ug/m3**	**3.4**
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	**22 J**	**41**	**ug/m3**	**4.1**
Methylene chloride	ND	6.9	ug/m3	2.8
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-001 **Work Order #...:** JPM8E1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**2000**	**14**	**ug/m3**	**4.1**
Toluene	**8.6**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro-benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	**4.7 J**	**11**	**ug/m3**	**2.7**
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	**22**	**11**	**ug/m3**	**2.7**
Trichlorofluoromethane	ND	11	ug/m3	2.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**19**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-002 **Work Order #...:** JPM941AD **Matrix.........:** V
Date Sampled...: 02/19/07 07:29 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 19:00
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.58 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	**13**	**10**	**ppb(v/v)**	**2.0**
Methylene chloride	**0.94 J**	**2.0**	**ppb(v/v)**	**0.80**
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**75**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)	0.50
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	**1.9 J**	**2.0**	**ppb(v/v)**	**0.50**
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**4.7**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**280**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	**4.2 J**	**10**	**ppb(v/v)**	**1.0**
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-002 **Work Order #...:** JPM941AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	**1.6 J**	**2.0**	**ppb(v/v)**	**1.0**
Xylenes (total)	**9.3**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	**1.7 J**	**2.0**	**ppb(v/v)**	**0.70**
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro-benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-002 **Work Order #...:** JPM941AE **Matrix.........:** V
Date Sampled...: 02/19/07 07:29 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 19:00
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**30**	**24**	**ug/m3**	**4.7**
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**220**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**2.9 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	**6.9 J**	**8.7**	**ug/m3**	**4.3**
4-Ethyltoluene	**8.5 J**	**9.8**	**ug/m3**	**3.4**
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	**17 J**	**41**	**ug/m3**	**4.1**
Methylene chloride	**3.3 J**	**6.9**	**ug/m3**	**2.8**
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP01A_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-002 **Work Order #...:** JPM941AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**1900**	**14**	**ug/m3**	**4.1**
Toluene	**18**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro- benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	ND	11	ug/m3	2.7
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	**10 J**	**11**	**ug/m3**	**2.7**
Trichlorofluoromethane	ND	11	ug/m3	2.8
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**40**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-003 **Work Order #...:** JPNAE1AD **Matrix.........:** V
Date Sampled...: 02/19/07 08:13 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 19:33
Dilution Factor: 4.35
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	ND	8.7	ppb(v/v)	2.2
Chloromethane	ND	17	ppb(v/v)	4.4
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	8.7	ppb(v/v)	3.5
Vinyl chloride	ND	8.7	ppb(v/v)	3.5
Bromomethane	ND	8.7	ppb(v/v)	4.4
Chloroethane	ND	17	ppb(v/v)	3.5
Trichlorofluoromethane	ND	8.7	ppb(v/v)	2.2
1,1-Dichloroethene	ND	8.7	ppb(v/v)	2.2
Carbon disulfide	ND	44	ppb(v/v)	8.7
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	8.7	ppb(v/v)	2.2
Acetone	**120**	**44**	**ppb(v/v)**	**8.7**
Methylene chloride	ND	8.7	ppb(v/v)	3.5
trans-1,2-Dichloroethene	ND	8.7	ppb(v/v)	2.2
1,1-Dichloroethane	ND	8.7	ppb(v/v)	2.2
Vinyl acetate	ND	44	ppb(v/v)	8.7
cis-1,2-Dichloroethene	ND	8.7	ppb(v/v)	3.5
2-Butanone (MEK)	**610**	**44**	**ppb(v/v)**	**8.7**
Chloroform	ND	8.7	ppb(v/v)	3.5
1,1,1-Trichloroethane	ND	8.7	ppb(v/v)	2.2
Carbon tetrachloride	ND	8.7	ppb(v/v)	2.2
Benzene	ND	8.7	ppb(v/v)	3.5
1,2-Dichloroethane	ND	8.7	ppb(v/v)	3.5
Trichloroethene	ND	8.7	ppb(v/v)	2.2
1,2-Dichloropropane	ND	8.7	ppb(v/v)	3.5
Bromodichloromethane	ND	8.7	ppb(v/v)	3.5
cis-1,3-Dichloropropene	ND	8.7	ppb(v/v)	2.2
4-Methyl-2-pentanone (MIBK)	ND	44	ppb(v/v)	8.7
Toluene	ND	8.7	ppb(v/v)	2.2
trans-1,3-Dichloropropene	ND	8.7	ppb(v/v)	4.4
1,1,2-Trichloroethane	ND	8.7	ppb(v/v)	2.6
Tetrachloroethene	**190**	**8.7**	**ppb(v/v)**	**2.6**
2-Hexanone	ND	44	ppb(v/v)	4.4
Dibromochloromethane	ND	8.7	ppb(v/v)	4.4
1,2-Dibromoethane (EDB)	ND	8.7	ppb(v/v)	2.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-003 **Work Order #...:** JPNAE1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	8.7	ppb(v/v)	2.2
Ethylbenzene	ND	8.7	ppb(v/v)	4.4
Xylenes (total)	ND	8.7	ppb(v/v)	2.6
Styrene	ND	8.7	ppb(v/v)	4.4
Bromoform	ND	8.7	ppb(v/v)	2.2
1,1,2,2-Tetrachloroethane	ND	8.7	ppb(v/v)	2.2
Benzyl chloride	ND	110	ppb(v/v)	35
4-Ethyltoluene	ND	8.7	ppb(v/v)	3.0
1,3,5-Trimethylbenzene	ND	13	ppb(v/v)	4.8
1,2,4-Trimethylbenzene	ND	13	ppb(v/v)	5.7
1,3-Dichlorobenzene	ND	8.7	ppb(v/v)	3.5
1,4-Dichlorobenzene	ND	8.7	ppb(v/v)	3.5
1,2-Dichlorobenzene	ND	8.7	ppb(v/v)	3.9
1,2,4-Trichloro-benzene	ND	22	ppb(v/v)	5.7
Hexachlorobutadiene	ND	17	ppb(v/v)	5.7

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-003 **Work Order #...:** JPNAE1AE **Matrix.........:** V
Date Sampled...: 02/19/07 08:13 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 19:33
Dilution Factor: 4.35
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**300**	**100**	**ug/m3**	**20**
Benzene	ND	28	ug/m3	11
Benzyl chloride	ND	570	ug/m3	180
Bromodichloromethane	ND	57	ug/m3	23
Bromoform	ND	91	ug/m3	23
Bromomethane	ND	34	ug/m3	17
2-Butanone (MEK)	**1800**	**130**	**ug/m3**	**26**
Carbon disulfide	ND	130	ug/m3	27
Carbon tetrachloride	ND	57	ug/m3	13
Chlorobenzene	ND	40	ug/m3	10
Dibromochloromethane	ND	74	ug/m3	37
Chloroethane	ND	44	ug/m3	9.1
Chloroform	ND	34	ug/m3	17
Chloromethane	ND	36	ug/m3	9.1
1,2-Dibromoethane (EDB)	ND	65	ug/m3	17
1,2-Dichlorobenzene	ND	52	ug/m3	23
1,3-Dichlorobenzene	ND	52	ug/m3	21
1,4-Dichlorobenzene	ND	52	ug/m3	21
Dichlorodifluoromethane	ND	43	ug/m3	11
1,1-Dichloroethane	ND	35	ug/m3	8.7
1,2-Dichloroethane	ND	35	ug/m3	14
cis-1,2-Dichloroethene	ND	34	ug/m3	14
trans-1,2-Dichloroethene	ND	34	ug/m3	8.7
1,1-Dichloroethene	ND	34	ug/m3	8.7
1,2-Dichloropropane	ND	40	ug/m3	16
cis-1,3-Dichloropropene	ND	40	ug/m3	10
trans-1,3-Dichloropropene	ND	40	ug/m3	20
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	61	ug/m3	24
Ethylbenzene	ND	38	ug/m3	19
4-Ethyltoluene	ND	43	ug/m3	15
Hexachlorobutadiene	ND	190	ug/m3	61
2-Hexanone	ND	180	ug/m3	18
Methylene chloride	ND	30	ug/m3	12
4-Methyl-2-pentanone (MIBK)	ND	180	ug/m3	36
Styrene	ND	37	ug/m3	18

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-003 **Work Order #...:** JPNAE1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	61	ug/m3	15
Tetrachloroethene	**1300**	**61**	**ug/m3**	**18**
Toluene	ND	33	ug/m3	8.3
1,2,4-Trichloro-benzene	ND	160	ug/m3	42
1,1,1-Trichloroethane	ND	48	ug/m3	12
1,1,2-Trichloroethane	ND	48	ug/m3	14
Trichloroethene	ND	48	ug/m3	12
Trichlorofluoromethane	ND	48	ug/m3	12
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	65	ug/m3	17
1,2,4-Trimethylbenzene	ND	65	ug/m3	28
1,3,5-Trimethylbenzene	ND	65	ug/m3	23
Vinyl acetate	ND	150	ug/m3	30
Vinyl chloride	ND	22	ug/m3	8.7
Xylenes (total)	ND	38	ug/m3	11

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-004 **Work Order #...:** JPNAH1AD **Matrix.........:** V
Date Sampled...: 02/19/07 08:04 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 20:06
Dilution Factor: 4.08
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	ND	8.2	ppb(v/v)	2.0
Chloromethane	ND	16	ppb(v/v)	4.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	8.2	ppb(v/v)	3.3
Vinyl chloride	ND	8.2	ppb(v/v)	3.3
Bromomethane	ND	8.2	ppb(v/v)	4.1
Chloroethane	ND	16	ppb(v/v)	3.3
Trichlorofluoromethane	ND	8.2	ppb(v/v)	2.0
1,1-Dichloroethene	ND	8.2	ppb(v/v)	2.0
Carbon disulfide	ND	41	ppb(v/v)	8.2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	8.2	ppb(v/v)	2.0
Acetone	**130**	**41**	**ppb(v/v)**	**8.2**
Methylene chloride	ND	8.2	ppb(v/v)	3.3
trans-1,2-Dichloroethene	ND	8.2	ppb(v/v)	2.0
1,1-Dichloroethane	ND	8.2	ppb(v/v)	2.0
Vinyl acetate	ND	41	ppb(v/v)	8.2
cis-1,2-Dichloroethene	ND	8.2	ppb(v/v)	3.3
2-Butanone (MEK)	**620**	**41**	**ppb(v/v)**	**8.2**
Chloroform	ND	8.2	ppb(v/v)	3.3
1,1,1-Trichloroethane	ND	8.2	ppb(v/v)	2.0
Carbon tetrachloride	ND	8.2	ppb(v/v)	2.0
Benzene	ND	8.2	ppb(v/v)	3.3
1,2-Dichloroethane	ND	8.2	ppb(v/v)	3.3
Trichloroethene	**2.1 J**	**8.2**	**ppb(v/v)**	**2.0**
1,2-Dichloropropane	ND	8.2	ppb(v/v)	3.3
Bromodichloromethane	ND	8.2	ppb(v/v)	3.3
cis-1,3-Dichloropropene	ND	8.2	ppb(v/v)	2.0
4-Methyl-2-pentanone (MIBK)	ND	41	ppb(v/v)	8.2
Toluene	**3.3 J**	**8.2**	**ppb(v/v)**	**2.0**
trans-1,3-Dichloropropene	ND	8.2	ppb(v/v)	4.1
1,1,2-Trichloroethane	ND	8.2	ppb(v/v)	2.4
Tetrachloroethene	**230**	**8.2**	**ppb(v/v)**	**2.4**
2-Hexanone	**6.1 J**	**41**	**ppb(v/v)**	**4.1**
Dibromochloromethane	ND	8.2	ppb(v/v)	4.1
1,2-Dibromoethane (EDB)	ND	8.2	ppb(v/v)	2.0

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-004 **Work Order #...:** JPNAH1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	8.2	ppb(v/v)	2.0
Ethylbenzene	ND	8.2	ppb(v/v)	4.1
Xylenes (total)	**5.6 J**	**8.2**	**ppb(v/v)**	**2.4**
Styrene	ND	8.2	ppb(v/v)	4.1
Bromoform	ND	8.2	ppb(v/v)	2.0
1,1,2,2-Tetrachloroethane	ND	8.2	ppb(v/v)	2.0
Benzyl chloride	ND	100	ppb(v/v)	33
4-Ethyltoluene	ND	8.2	ppb(v/v)	2.9
1,3,5-Trimethylbenzene	ND	12	ppb(v/v)	4.5
1,2,4-Trimethylbenzene	ND	12	ppb(v/v)	5.3
1,3-Dichlorobenzene	ND	8.2	ppb(v/v)	3.3
1,4-Dichlorobenzene	ND	8.2	ppb(v/v)	3.3
1,2-Dichlorobenzene	ND	8.2	ppb(v/v)	3.7
1,2,4-Trichloro-benzene	ND	20	ppb(v/v)	5.3
Hexachlorobutadiene	ND	16	ppb(v/v)	5.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-004 **Work Order #...:** JPNAH1AE **Matrix.........:** V
Date Sampled...: 02/19/07 08:04 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 20:06
Dilution Factor: 4.08
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**300**	**98**	**ug/m3**	**19**
Benzene	ND	26	ug/m3	11
Benzyl chloride	ND	530	ug/m3	170
Bromodichloromethane	ND	53	ug/m3	22
Bromoform	ND	86	ug/m3	21
Bromomethane	ND	32	ug/m3	16
2-Butanone (MEK)	**1800**	**120**	**ug/m3**	**24**
Carbon disulfide	ND	130	ug/m3	25
Carbon tetrachloride	ND	53	ug/m3	13
Chlorobenzene	ND	38	ug/m3	9.4
Dibromochloromethane	ND	69	ug/m3	35
Chloroethane	ND	41	ug/m3	8.6
Chloroform	ND	32	ug/m3	16
Chloromethane	ND	33	ug/m3	8.6
1,2-Dibromoethane (EDB)	ND	61	ug/m3	16
1,2-Dichlorobenzene	ND	49	ug/m3	22
1,3-Dichlorobenzene	ND	49	ug/m3	20
1,4-Dichlorobenzene	ND	49	ug/m3	20
Dichlorodifluoromethane	ND	40	ug/m3	10
1,1-Dichloroethane	ND	33	ug/m3	8.2
1,2-Dichloroethane	ND	33	ug/m3	13
cis-1,2-Dichloroethene	ND	32	ug/m3	13
trans-1,2-Dichloroethene	ND	32	ug/m3	8.2
1,1-Dichloroethene	ND	32	ug/m3	8.2
1,2-Dichloropropane	ND	38	ug/m3	15
cis-1,3-Dichloropropene	ND	37	ug/m3	9.4
trans-1,3-Dichloropropene	ND	37	ug/m3	18
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	57	ug/m3	23
Ethylbenzene	ND	35	ug/m3	18
4-Ethyltoluene	ND	40	ug/m3	14
Hexachlorobutadiene	ND	180	ug/m3	57
2-Hexanone	**25 J**	**170**	**ug/m3**	**17**
Methylene chloride	ND	28	ug/m3	11
4-Methyl-2-pentanone (MIBK)	ND	170	ug/m3	33
Styrene	ND	35	ug/m3	17

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP02_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-004 **Work Order #...:** JPNAH1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	57	ug/m3	14
Tetrachloroethene	**1500**	**57**	**ug/m3**	**17**
Toluene	**12 J**	**31**	**ug/m3**	**7.8**
1,2,4-Trichloro- benzene	ND	150	ug/m3	39
1,1,1-Trichloroethane	ND	45	ug/m3	11
1,1,2-Trichloroethane	ND	45	ug/m3	13
Trichloroethene	**11 J**	**45**	**ug/m3**	**11**
Trichlorofluoromethane	ND	45	ug/m3	11
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	61	ug/m3	16
1,2,4-Trimethylbenzene	ND	61	ug/m3	26
1,3,5-Trimethylbenzene	ND	61	ug/m3	22
Vinyl acetate	ND	140	ug/m3	29
Vinyl chloride	ND	21	ug/m3	8.2
Xylenes (total)	**24 J**	**35**	**ug/m3**	**11**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP03_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-005 **Work Order #...:** JPNAN1AD **Matrix.........:** V
Date Sampled...: 02/19/07 07:39 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 20:51
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.51 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	ND	10	ppb(v/v)	2.0
Methylene chloride	ND	2.0	ppb(v/v)	0.80
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**3.1 J**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	**1.1 J**	**2.0**	**ppb(v/v)**	**0.50**
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	**1.1 J**	**2.0**	**ppb(v/v)**	**0.80**
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	**3.9**	**2.0**	**ppb(v/v)**	**0.50**
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**1.8 J**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**460**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	ND	10	ppb(v/v)	1.0
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP03_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-005 **Work Order #...:** JPNAN1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	ND	2.0	ppb(v/v)	1.0
Xylenes (total)	**3.7**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	ND	2.0	ppb(v/v)	0.70
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro-benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP03_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-005 **Work Order #...:** JPNAN1AE **Matrix.........:** V
Date Sampled...: 02/19/07 07:39 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 20:51
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	24	ug/m3	4.7
Benzene	**3.5 J**	**6.4**	**ug/m3**	**2.6**
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**9.1 J**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**2.5 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	ND	8.7	ug/m3	4.3
4-Ethyltoluene	ND	9.8	ug/m3	3.4
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	ND	41	ug/m3	4.1
Methylene chloride	ND	6.9	ug/m3	2.8
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP03_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-005 **Work Order #...:** JPNAN1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**3100**	**14**	**ug/m3**	**4.1**
Toluene	**6.9 J**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro- benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	**5.8 J**	**11**	**ug/m3**	**2.7**
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	**21**	**11**	**ug/m3**	**2.7**
Trichlorofluoromethane	ND	11	ug/m3	2.8
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**16**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-006 **Work Order #...:** JPNAV1AD **Matrix.........:** V
Date Sampled...: 02/19/07 07:18 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 21:27
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.64 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	**3.0 J**	**10**	**ppb(v/v)**	**2.0**
Methylene chloride	**1.3 J**	**2.0**	**ppb(v/v)**	**0.80**
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**4.9 J**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	**1.3 J**	**2.0**	**ppb(v/v)**	**0.50**
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	ND	2.0	ppb(v/v)	0.50
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**1.9 J**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**48**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	ND	10	ppb(v/v)	1.0
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-006 **Work Order #...:** JPNAV1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	ND	2.0	ppb(v/v)	1.0
Xylenes (total)	**4.0**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	ND	2.0	ppb(v/v)	0.70
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro- benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-006 **Work Order #...:** JPNAV1AE **Matrix.........:** V
Date Sampled...: 02/19/07 07:18 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 21:27
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**7.2 J**	**24**	**ug/m3**	**4.7**
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**15 J**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**3.2 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	ND	8.7	ug/m3	4.3
4-Ethyltoluene	ND	9.8	ug/m3	3.4
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	ND	41	ug/m3	4.1
Methylene chloride	**4.5 J**	**6.9**	**ug/m3**	**2.8**
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-006 **Work Order #...:** JPNAV1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**330**	**14**	**ug/m3**	**4.1**
Toluene	**7.1 J**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro- benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	**7.1 J**	**11**	**ug/m3**	**2.7**
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	ND	11	ug/m3	2.7
Trichlorofluoromethane	ND	11	ug/m3	2.8
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**18**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-007 **Work Order #...:** JPNA41AD **Matrix.........:** V
Date Sampled...: 02/19/07 07:05 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 22:06
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.68 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	**13**	**10**	**ppb(v/v)**	**2.0**
Methylene chloride	**1.1 J**	**2.0**	**ppb(v/v)**	**0.80**
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**9.1 J**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	**1.5 J**	**2.0**	**ppb(v/v)**	**0.50**
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	ND	2.0	ppb(v/v)	0.50
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**3.1**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**65**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	ND	10	ppb(v/v)	1.0
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-007 **Work Order #...:** JPNA41AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	**1.0 J**	**2.0**	**ppb(v/v)**	**1.0**
Xylenes (total)	**6.0**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	**1.4 J**	**2.0**	**ppb(v/v)**	**0.70**
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	**1.8 J**	**3.0**	**ppb(v/v)**	**1.3**
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro- benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-007 **Work Order #...:** JPNA41AE **Matrix.........:** V
Date Sampled...: 02/19/07 07:05 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 22:06
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**31**	**24**	**ug/m3**	**4.7**
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**27 J**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**3.3 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	**4.3 J**	**8.7**	**ug/m3**	**4.3**
4-Ethyltoluene	**7.1 J**	**9.8**	**ug/m3**	**3.4**
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	ND	41	ug/m3	4.1
Methylene chloride	**3.9 J**	**6.9**	**ug/m3**	**2.8**
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP04_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-007 **Work Order #...:** JPNA41AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**440**	**14**	**ug/m3**	**4.1**
Toluene	**12**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro-benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	**8.2 J**	**11**	**ug/m3**	**2.7**
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	ND	11	ug/m3	2.7
Trichlorofluoromethane	ND	11	ug/m3	2.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	**8.8 J**	**15**	**ug/m3**	**6.4**
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**26**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-008 **Work Order #...:** JPNA81AD **Matrix.........:** V
Date Sampled...: 02/19/07 09:04 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 22:42
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.71 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	**22**	**2.0**	**ppb(v/v)**	**0.50**
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	**16**	**10**	**ppb(v/v)**	**2.0**
Methylene chloride	**1.1 J**	**2.0**	**ppb(v/v)**	**0.80**
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**210**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	**0.65 J**	**2.0**	**ppb(v/v)**	**0.50**
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	ND	2.0	ppb(v/v)	0.50
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**4.4**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**13**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	**8.0 J**	**10**	**ppb(v/v)**	**1.0**
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-008 **Work Order #...:** JPNA81AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	**1.6 J**	**2.0**	**ppb(v/v)**	**1.0**
Xylenes (total)	**9.9**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	**1.7 J**	**2.0**	**ppb(v/v)**	**0.70**
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro- benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-008 **Work Order #...:** JPNA81AE **Matrix.........:** V
Date Sampled...: 02/19/07 09:04 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 22:42
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**37**	**24**	**ug/m3**	**4.7**
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**610**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**3.5 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	**7.0 J**	**8.7**	**ug/m3**	**4.3**
4-Ethyltoluene	**8.2 J**	**9.8**	**ug/m3**	**3.4**
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	**33 J**	**41**	**ug/m3**	**4.1**
Methylene chloride	**3.9 J**	**6.9**	**ug/m3**	**2.8**
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_005

GC/MS Volatiles

Lot-Sample #...: E7B190167-008 **Work Order #...:** JPNA81AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**91**	**14**	**ug/m3**	**4.1**
Toluene	**17**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro-benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	**3.5 J**	**11**	**ug/m3**	**2.7**
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	ND	11	ug/m3	2.7
Trichlorofluoromethane	**130**	**11**	**ug/m3**	**2.8**
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**43**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-009 **Work Order #...:** JPNCF1AD **Matrix.........:** V
Date Sampled...: 02/19/07 09:08 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 23:23
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.68 J**	**2.0**	**ppb(v/v)**	**0.50**
Chloromethane	**1.8 J**	**4.0**	**ppb(v/v)**	**1.0**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	**9.7**	**2.0**	**ppb(v/v)**	**0.50**
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	**15**	**10**	**ppb(v/v)**	**2.0**
Methylene chloride	**1.1 J**	**2.0**	**ppb(v/v)**	**0.80**
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	**190**	**10**	**ppb(v/v)**	**2.0**
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	**0.71 J**	**2.0**	**ppb(v/v)**	**0.50**
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	ND	2.0	ppb(v/v)	0.50
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	**1.4 J**	**2.0**	**ppb(v/v)**	**0.50**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	**11**	**2.0**	**ppb(v/v)**	**0.60**
2-Hexanone	**7.6 J**	**10**	**ppb(v/v)**	**1.0**
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-009 **Work Order #...:** JPNCF1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	ND	2.0	ppb(v/v)	1.0
Xylenes (total)	**3.0**	**2.0**	**ppb(v/v)**	**0.60**
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	ND	2.0	ppb(v/v)	0.70
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro-benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-009 **Work Order #...:** JPNCF1AE **Matrix.........:** V
Date Sampled...: 02/19/07 09:08 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 23:23
Dilution Factor: 1
Analyst ID.....: 402431 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	**35**	**24**	**ug/m3**	**4.7**
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	**550**	**29**	**ug/m3**	**5.9**
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	**3.8 J**	**8.2**	**ug/m3**	**2.1**
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	**3.4 J**	**9.9**	**ug/m3**	**2.5**
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	ND	8.7	ug/m3	4.3
4-Ethyltoluene	ND	9.8	ug/m3	3.4
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	**31 J**	**41**	**ug/m3**	**4.1**
Methylene chloride	**3.9 J**	**6.9**	**ug/m3**	**2.8**
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: SGP05_GS021907_015

GC/MS Volatiles

Lot-Sample #...: E7B190167-009 **Work Order #...:** JPNCF1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	**77**	**14**	**ug/m3**	**4.1**
Toluene	**5.2 J**	**7.5**	**ug/m3**	**1.9**
1,2,4-Trichloro-benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	**3.9 J**	**11**	**ug/m3**	**2.7**
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	ND	11	ug/m3	2.7
Trichlorofluoromethane	**54**	**11**	**ug/m3**	**2.8**
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	**13**	**8.7**	**ug/m3**	**2.6**

NOTE(S):

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: EQ021907_001

GC/MS Volatiles

Lot-Sample #...: E7B190167-010 **Work Order #...:** JPNCK1AD **Matrix.........:** V
Date Sampled...: 02/19/07 **Date Received..:** 02/19/07 10:05 **MS Run #.......:**
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 23:56
Dilution Factor: 1
Analyst ID.....: 117751 **Instrument ID..:** MSA
Method.........: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	ND	2.0	ppb(v/v)	0.50
Chloromethane	ND	4.0	ppb(v/v)	1.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	0.80
Vinyl chloride	ND	2.0	ppb(v/v)	0.80
Bromomethane	ND	2.0	ppb(v/v)	1.0
Chloroethane	ND	4.0	ppb(v/v)	0.80
Trichlorofluoromethane	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethene	ND	2.0	ppb(v/v)	0.50
Carbon disulfide	ND	10	ppb(v/v)	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	0.50
Acetone	ND	10	ppb(v/v)	2.0
Methylene chloride	ND	2.0	ppb(v/v)	0.80
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.50
1,1-Dichloroethane	ND	2.0	ppb(v/v)	0.50
Vinyl acetate	ND	10	ppb(v/v)	2.0
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	0.80
2-Butanone (MEK)	ND	10	ppb(v/v)	2.0
Chloroform	ND	2.0	ppb(v/v)	0.80
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)	0.50
Carbon tetrachloride	ND	2.0	ppb(v/v)	0.50
Benzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichloroethane	ND	2.0	ppb(v/v)	0.80
Trichloroethene	ND	2.0	ppb(v/v)	0.50
1,2-Dichloropropane	ND	2.0	ppb(v/v)	0.80
Bromodichloromethane	ND	2.0	ppb(v/v)	0.80
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	0.50
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	2.0
Toluene	ND	2.0	ppb(v/v)	0.50
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	1.0
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	0.60
Tetrachloroethene	ND	2.0	ppb(v/v)	0.60
2-Hexanone	ND	10	ppb(v/v)	1.0
Dibromochloromethane	ND	2.0	ppb(v/v)	1.0
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	0.50

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: EQ021907_001

GC/MS Volatiles

Lot-Sample #...: E7B190167-010 **Work Order #...:** JPNCK1AD **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Chlorobenzene	ND	2.0	ppb(v/v)	0.50
Ethylbenzene	ND	2.0	ppb(v/v)	1.0
Xylenes (total)	ND	2.0	ppb(v/v)	0.60
Styrene	ND	2.0	ppb(v/v)	1.0
Bromoform	ND	2.0	ppb(v/v)	0.50
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	0.50
Benzyl chloride	ND	25	ppb(v/v)	8.0
4-Ethyltoluene	ND	2.0	ppb(v/v)	0.70
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	1.1
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	1.3
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	0.80
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	0.90
1,2,4-Trichloro-benzene	ND	5.0	ppb(v/v)	1.3
Hexachlorobutadiene	ND	4.0	ppb(v/v)	1.3

Avocet Environmental Inc

Client Sample ID: EQ021907_001

GC/MS Volatiles

Lot-Sample #...:	E7B190167-010	**Work Order #...:**	JPNCK1AE	**Matrix.........:**	V
Date Sampled...:	02/19/07	**Date Received..:**	02/19/07 10:05	**MS Run #.......:**	
Prep Date......:	02/19/07	**Analysis Date..:**	02/19/07		
Prep Batch #...:	7074272	**Analysis Time..:**	23:56		
Dilution Factor:	1				
Analyst ID.....:	402431	**Instrument ID..:**	MSA		
		Method.........:	EPA-2 TO-15		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acetone	ND	24	ug/m3	4.7
Benzene	ND	6.4	ug/m3	2.6
Benzyl chloride	ND	130	ug/m3	41
Bromodichloromethane	ND	13	ug/m3	5.4
Bromoform	ND	21	ug/m3	5.2
Bromomethane	ND	7.8	ug/m3	3.9
2-Butanone (MEK)	ND	29	ug/m3	5.9
Carbon disulfide	ND	31	ug/m3	6.2
Carbon tetrachloride	ND	13	ug/m3	3.1
Chlorobenzene	ND	9.2	ug/m3	2.3
Dibromochloromethane	ND	17	ug/m3	8.5
Chloroethane	ND	10	ug/m3	2.1
Chloroform	ND	7.8	ug/m3	3.9
Chloromethane	ND	8.2	ug/m3	2.1
1,2-Dibromoethane (EDB)	ND	15	ug/m3	3.8
1,2-Dichlorobenzene	ND	12	ug/m3	5.4
1,3-Dichlorobenzene	ND	12	ug/m3	4.8
1,4-Dichlorobenzene	ND	12	ug/m3	4.8
Dichlorodifluoromethane	ND	9.9	ug/m3	2.5
1,1-Dichloroethane	ND	8.1	ug/m3	2.0
1,2-Dichloroethane	ND	8.1	ug/m3	3.2
cis-1,2-Dichloroethene	ND	7.9	ug/m3	3.2
trans-1,2-Dichloroethene	ND	7.9	ug/m3	2.0
1,1-Dichloroethene	ND	7.9	ug/m3	2.0
1,2-Dichloropropane	ND	9.2	ug/m3	3.7
cis-1,3-Dichloropropene	ND	9.1	ug/m3	2.3
trans-1,3-Dichloropropene	ND	9.1	ug/m3	4.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	5.6
Ethylbenzene	ND	8.7	ug/m3	4.3
4-Ethyltoluene	ND	9.8	ug/m3	3.4
Hexachlorobutadiene	ND	43	ug/m3	14
2-Hexanone	ND	41	ug/m3	4.1
Methylene chloride	ND	6.9	ug/m3	2.8
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	8.2
Styrene	ND	8.5	ug/m3	4.2

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: EQ021907_001

GC/MS Volatiles

Lot-Sample #...: E7B190167-010 **Work Order #...:** JPNCK1AE **Matrix.........:** V

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	3.4
Tetrachloroethene	ND	14	ug/m3	4.1
Toluene	ND	7.5	ug/m3	1.9
1,2,4-Trichloro-benzene	ND	37	ug/m3	9.6
1,1,1-Trichloroethane	ND	11	ug/m3	2.7
1,1,2-Trichloroethane	ND	11	ug/m3	3.3
Trichloroethene	ND	11	ug/m3	2.7
Trichlorofluoromethane	ND	11	ug/m3	2.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	15	ug/m3	3.8
1,2,4-Trimethylbenzene	ND	15	ug/m3	6.4
1,3,5-Trimethylbenzene	ND	15	ug/m3	5.4
Vinyl acetate	ND	35	ug/m3	7.0
Vinyl chloride	ND	5.1	ug/m3	2.0
Xylenes (total)	ND	8.7	ug/m3	2.6

QC DATA ASSOCIATION SUMMARY

E7B190167

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
002	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
003	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
004	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
005	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
006	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
007	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
008	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
009	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	
010	V	EPA-2 TO-15		7052530	
	V	EPA-2 TO-15		7074272	

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JPTXW1AA **Matrix.........:** AIR
MB Lot-Sample #: M7B210000-530
Prep Date......: 02/19/07 **Analysis Time..:** 11:50
Analysis Date..: 02/19/07 **Prep Batch #...:** 7052530 **Instrument ID..:** MSA
Dilution Factor: 1
Analyst ID.....: 117751

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Dichlorodifluoromethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Chloromethane	ND	4.0	ppb(v/v)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Vinyl chloride	ND	2.0	ppb(v/v)	EPA-2 TO-15
Bromomethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Chloroethane	ND	4.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethene	ND	2.0	ppb(v/v)	EPA-2 TO-15
Carbon disulfide	ND	10	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Acetone	ND	10	ppb(v/v)	EPA-2 TO-15
Methylene chloride	ND	2.0	ppb(v/v)	EPA-2 TO-15
trans-1,2-Dichloroethene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Vinyl acetate	ND	10	ppb(v/v)	EPA-2 TO-15
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)	EPA-2 TO-15
2-Butanone (MEK)	ND	10	ppb(v/v)	EPA-2 TO-15
Chloroform	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Carbon tetrachloride	ND	2.0	ppb(v/v)	EPA-2 TO-15
Benzene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,2-Dichloroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,2-Dichloropropane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Bromodichloromethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)	EPA-2 TO-15
4-Methyl-2-pentanone (MIBK)	ND	10	ppb(v/v)	EPA-2 TO-15
Toluene	ND	2.0	ppb(v/v)	EPA-2 TO-15
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	ND	2.0	ppb(v/v)	EPA-2 TO-15
2-Hexanone	ND	10	ppb(v/v)	EPA-2 TO-15
Dibromochloromethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)	EPA-2 TO-15
Chlorobenzene	ND	2.0	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	ND	2.0	ppb(v/v)	EPA-2 TO-15
Xylenes (total)	ND	2.0	ppb(v/v)	EPA-2 TO-15

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JPTXW1AA **Matrix.........:** AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Styrene	ND	2.0	ppb(v/v)	EPA-2 TO-15
Bromoform	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)	EPA-2 TO-15
Benzyl chloride	ND	25	ppb(v/v)	EPA-2 TO-15
4-Ethyltoluene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,3,5-Trimethylbenzene	ND	3.0	ppb(v/v)	EPA-2 TO-15
1,2,4-Trimethylbenzene	ND	3.0	ppb(v/v)	EPA-2 TO-15
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)	EPA-2 TO-15
1,2,4-Trichloro-benzene	ND	5.0	ppb(v/v)	EPA-2 TO-15
Hexachlorobutadiene	ND	4.0	ppb(v/v)	EPA-2 TO-15

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JQ43J1AA **Matrix.........:** AIR
MB Lot-Sample #: M7C150000-272
Prep Date......: 02/19/07 **Analysis Time..:** 11:50
Analysis Date..: 02/19/07 **Prep Batch #...:** 7074272 **Instrument ID..:** MSA
Dilution Factor: 1
Analyst ID.....: 402431

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	24	ug/m3	EPA-2 TO-15
Benzene	ND	6.4	ug/m3	EPA-2 TO-15
Benzyl chloride	ND	130	ug/m3	EPA-2 TO-15
Bromodichloromethane	ND	13	ug/m3	EPA-2 TO-15
Bromoform	ND	21	ug/m3	EPA-2 TO-15
Bromomethane	ND	7.8	ug/m3	EPA-2 TO-15
2-Butanone (MEK)	ND	29	ug/m3	EPA-2 TO-15
Carbon disulfide	ND	31	ug/m3	EPA-2 TO-15
Carbon tetrachloride	ND	13	ug/m3	EPA-2 TO-15
Chlorobenzene	ND	9.2	ug/m3	EPA-2 TO-15
Dibromochloromethane	ND	17	ug/m3	EPA-2 TO-15
Chloroethane	ND	10	ug/m3	EPA-2 TO-15
Chloroform	ND	7.8	ug/m3	EPA-2 TO-15
Chloromethane	ND	8.2	ug/m3	EPA-2 TO-15
1,2-Dibromoethane (EDB)	ND	15	ug/m3	EPA-2 TO-15
1,2-Dichlorobenzene	ND	12	ug/m3	EPA-2 TO-15
1,3-Dichlorobenzene	ND	12	ug/m3	EPA-2 TO-15
1,4-Dichlorobenzene	ND	12	ug/m3	EPA-2 TO-15
Dichlorodifluoromethane	ND	9.9	ug/m3	EPA-2 TO-15
1,1-Dichloroethane	ND	8.1	ug/m3	EPA-2 TO-15
1,2-Dichloroethane	ND	8.1	ug/m3	EPA-2 TO-15
cis-1,2-Dichloroethene	ND	7.9	ug/m3	EPA-2 TO-15
trans-1,2-Dichloroethene	ND	7.9	ug/m3	EPA-2 TO-15
1,1-Dichloroethene	ND	7.9	ug/m3	EPA-2 TO-15
1,2-Dichloropropane	ND	9.2	ug/m3	EPA-2 TO-15
cis-1,3-Dichloropropene	ND	9.1	ug/m3	EPA-2 TO-15
trans-1,3-Dichloropropene	ND	9.1	ug/m3	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	14	ug/m3	EPA-2 TO-15
Ethylbenzene	ND	8.7	ug/m3	EPA-2 TO-15
4-Ethyltoluene	ND	9.8	ug/m3	EPA-2 TO-15
Hexachlorobutadiene	ND	43	ug/m3	EPA-2 TO-15
2-Hexanone	ND	41	ug/m3	EPA-2 TO-15
Methylene chloride	ND	6.9	ug/m3	EPA-2 TO-15
4-Methyl-2-pentanone (MIBK)	ND	41	ug/m3	EPA-2 TO-15
Styrene	ND	8.5	ug/m3	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	ND	14	ug/m3	EPA-2 TO-15
Tetrachloroethene	ND	14	ug/m3	EPA-2 TO-15
Toluene	ND	7.5	ug/m3	EPA-2 TO-15

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JQ43J1AA **Matrix.........:** AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
1,2,4-Trichloro-benzene	ND	37	ug/m3	EPA-2 TO-15
1,1,1-Trichloroethane	ND	11	ug/m3	EPA-2 TO-15
1,1,2-Trichloroethane	ND	11	ug/m3	EPA-2 TO-15
Trichloroethene	ND	11	ug/m3	EPA-2 TO-15
Trichlorofluoromethane	ND	11	ug/m3	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	15	ug/m3	EPA-2 TO-15
1,2,4-Trimethylbenzene	ND	15	ug/m3	EPA-2 TO-15
1,3,5-Trimethylbenzene	ND	15	ug/m3	EPA-2 TO-15
Vinyl acetate	ND	35	ug/m3	EPA-2 TO-15
Vinyl chloride	ND	5.1	ug/m3	EPA-2 TO-15
Xylenes (total)	ND	8.7	ug/m3	EPA-2 TO-15

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JPTXW1AC-LCS **Matrix.........:** AIR
LCS Lot-Sample#: M7B210000-530 JPTXW1AD-LCSD
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 10:24
Dilution Factor: 1 **Instrument ID..:** MSA
Analyst ID.....: 117751

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
1,1-Dichloroethene	**94**	**(70 - 125)**			**EPA-2 TO-15**
	92	**(70 - 125)**	**1.5**	**(0-30)**	**EPA-2 TO-15**
Methylene chloride	**84**	**(75 - 120)**			**EPA-2 TO-15**
	85	**(75 - 120)**	**0.63**	**(0-30)**	**EPA-2 TO-15**
1,1-Dichloroethane	**94**	**(70 - 130)**			**EPA-2 TO-15**
	95	**(70 - 130)**	**0.48**	**(0-30)**	**EPA-2 TO-15**
Chloroform	**102**	**(70 - 130)**			**EPA-2 TO-15**
	101	**(70 - 130)**	**0.75**	**(0-30)**	**EPA-2 TO-15**
1,1,1-Trichloroethane	**109**	**(70 - 130)**			**EPA-2 TO-15**
	110	**(70 - 130)**	**0.18**	**(0-30)**	**EPA-2 TO-15**
Benzene	**83**	**(70 - 130)**			**EPA-2 TO-15**
	84	**(70 - 130)**	**1.9**	**(0-30)**	**EPA-2 TO-15**
Trichloroethene	**93**	**(70 - 125)**			**EPA-2 TO-15**
	92	**(70 - 125)**	**1.3**	**(0-30)**	**EPA-2 TO-15**
1,2-Dichloropropane	**95**	**(70 - 130)**			**EPA-2 TO-15**
	94	**(70 - 130)**	**1.4**	**(0-30)**	**EPA-2 TO-15**
Toluene	**89**	**(75 - 125)**			**EPA-2 TO-15**
	91	**(75 - 125)**	**1.6**	**(0-30)**	**EPA-2 TO-15**
Tetrachloroethene	**100**	**(70 - 130)**			**EPA-2 TO-15**
	98	**(70 - 130)**	**1.5**	**(0-30)**	**EPA-2 TO-15**
Chlorobenzene	**94**	**(70 - 130)**			**EPA-2 TO-15**
	94	**(70 - 130)**	**0.31**	**(0-30)**	**EPA-2 TO-15**
1,1,2,2-Tetrachloroethane	**95**	**(65 - 130)**			**EPA-2 TO-15**
	96	**(65 - 130)**	**0.75**	**(0-30)**	**EPA-2 TO-15**
1,2,4-Trimethylbenzene	**87**	**(70 - 130)**			**EPA-2 TO-15**
	89	**(70 - 130)**	**2.0**	**(0-30)**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**102**	**(70 - 130)**			**EPA-2 TO-15**
	101	**(70 - 130)**	**0.63**	**(0-30)**	**EPA-2 TO-15**
m-Xylene & p-Xylene	**94**	**(70 - 130)**			**EPA-2 TO-15**
	92	**(70 - 130)**	**1.5**	**(0-30)**	**EPA-2 TO-15**
o-Xylene	**93**	**(70 - 130)**			**EPA-2 TO-15**
	91	**(70 - 130)**	**2.6**	**(0-30)**	**EPA-2 TO-15**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JPTXW1AC-LCS **Matrix.........:** AIR
LCS Lot-Sample#: M7B210000-530 JPTXW1AD-LCSD
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7052530 **Analysis Time..:** 10:24
Dilution Factor: 1 **Instrument ID..:** MSA
Analyst ID.....: 117751

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
1,1-Dichloroethene	**50.0**	**47.0**	**ppb(v/v)**	**94**		**EPA-2 TO-15**
	50.0	**46.2**	**ppb(v/v)**	**92**	**1.5**	**EPA-2 TO-15**
Methylene chloride	**50.0**	**42.2**	**ppb(v/v)**	**84**		**EPA-2 TO-15**
	50.0	**42.5**	**ppb(v/v)**	**85**	**0.63**	**EPA-2 TO-15**
1,1-Dichloroethane	**50.0**	**47.2**	**ppb(v/v)**	**94**		**EPA-2 TO-15**
	50.0	**47.4**	**ppb(v/v)**	**95**	**0.48**	**EPA-2 TO-15**
Chloroform	**50.0**	**50.9**	**ppb(v/v)**	**102**		**EPA-2 TO-15**
	50.0	**50.5**	**ppb(v/v)**	**101**	**0.75**	**EPA-2 TO-15**
1,1,1-Trichloroethane	**50.0**	**54.7**	**ppb(v/v)**	**109**		**EPA-2 TO-15**
	50.0	**54.8**	**ppb(v/v)**	**110**	**0.18**	**EPA-2 TO-15**
Benzene	**50.0**	**41.5**	**ppb(v/v)**	**83**		**EPA-2 TO-15**
	50.0	**42.2**	**ppb(v/v)**	**84**	**1.9**	**EPA-2 TO-15**
Trichloroethene	**50.0**	**46.6**	**ppb(v/v)**	**93**		**EPA-2 TO-15**
	50.0	**46.0**	**ppb(v/v)**	**92**	**1.3**	**EPA-2 TO-15**
1,2-Dichloropropane	**50.0**	**47.5**	**ppb(v/v)**	**95**		**EPA-2 TO-15**
	50.0	**46.9**	**ppb(v/v)**	**94**	**1.4**	**EPA-2 TO-15**
Toluene	**50.0**	**44.6**	**ppb(v/v)**	**89**		**EPA-2 TO-15**
	50.0	**45.3**	**ppb(v/v)**	**91**	**1.6**	**EPA-2 TO-15**
Tetrachloroethene	**50.0**	**49.9**	**ppb(v/v)**	**100**		**EPA-2 TO-15**
	50.0	**49.1**	**ppb(v/v)**	**98**	**1.5**	**EPA-2 TO-15**
Chlorobenzene	**50.0**	**47.2**	**ppb(v/v)**	**94**		**EPA-2 TO-15**
	50.0	**47.0**	**ppb(v/v)**	**94**	**0.31**	**EPA-2 TO-15**
1,1,2,2-Tetrachloroethane	**50.0**	**47.6**	**ppb(v/v)**	**95**		**EPA-2 TO-15**
	50.0	**48.0**	**ppb(v/v)**	**96**	**0.75**	**EPA-2 TO-15**
1,2,4-Trimethylbenzene	**50.0**	**43.8**	**ppb(v/v)**	**87**		**EPA-2 TO-15**
	50.0	**44.6**	**ppb(v/v)**	**89**	**2.0**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**50.0**	**51.0**	**ppb(v/v)**	**102**		**EPA-2 TO-15**
	50.0	**50.6**	**ppb(v/v)**	**101**	**0.63**	**EPA-2 TO-15**
m-Xylene & p-Xylene	**100**	**93.9**	**ppb(v/v)**	**94**		**EPA-2 TO-15**
	100	**92.5**	**ppb(v/v)**	**92**	**1.5**	**EPA-2 TO-15**
o-Xylene	**50.0**	**46.6**	**ppb(v/v)**	**93**		**EPA-2 TO-15**
	50.0	**45.4**	**ppb(v/v)**	**91**	**2.6**	**EPA-2 TO-15**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JQ43J1AC-LCS **Matrix.........:** AIR
LCS Lot-Sample#: M7C150000-272 JQ43J1AD-LCSD
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 10:24
Dilution Factor: 1 **Instrument ID..:** MSA
Analyst ID.....: 402431

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**83**	**(70 - 130)**			**EPA-2 TO-15**
	84	**(70 - 130)**	**1.8**	**(0-30)**	**EPA-2 TO-15**
Chlorobenzene	**94**	**(70 - 130)**			**EPA-2 TO-15**
	94	**(70 - 130)**	**0.31**	**(0-30)**	**EPA-2 TO-15**
Chloroform	**102**	**(70 - 130)**			**EPA-2 TO-15**
	101	**(70 - 130)**	**0.74**	**(0-30)**	**EPA-2 TO-15**
m-Xylene & p-Xylene	**94**	**(70 - 130)**			**EPA-2 TO-15**
	92	**(70 - 130)**	**1.5**	**(0-30)**	**EPA-2 TO-15**
o-Xylene	**93**	**(70 - 130)**			**EPA-2 TO-15**
	91	**(70 - 130)**	**2.6**	**(0-30)**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**102**	**(70 - 130)**			**EPA-2 TO-15**
	101	**(70 - 130)**	**0.63**	**(0-30)**	**EPA-2 TO-15**
1,1-Dichloroethane	**94**	**(70 - 130)**			**EPA-2 TO-15**
	95	**(70 - 130)**	**0.48**	**(0-30)**	**EPA-2 TO-15**
1,1-Dichloroethene	**94**	**(70 - 125)**			**EPA-2 TO-15**
	92	**(70 - 125)**	**1.5**	**(0-30)**	**EPA-2 TO-15**
1,2-Dichloropropane	**95**	**(70 - 130)**			**EPA-2 TO-15**
	94	**(70 - 130)**	**1.4**	**(0-30)**	**EPA-2 TO-15**
Methylene chloride	**84**	**(75 - 120)**			**EPA-2 TO-15**
	85	**(75 - 120)**	**0.64**	**(0-30)**	**EPA-2 TO-15**
1,1,2,2-Tetrachloroethane	**95**	**(65 - 130)**			**EPA-2 TO-15**
	96	**(65 - 130)**	**0.75**	**(0-30)**	**EPA-2 TO-15**
Tetrachloroethene	**100**	**(70 - 130)**			**EPA-2 TO-15**
	98	**(70 - 130)**	**1.5**	**(0-30)**	**EPA-2 TO-15**
Toluene	**89**	**(75 - 125)**			**EPA-2 TO-15**
	91	**(75 - 125)**	**1.6**	**(0-30)**	**EPA-2 TO-15**
1,1,1-Trichloroethane	**109**	**(70 - 130)**			**EPA-2 TO-15**
	110	**(70 - 130)**	**0.18**	**(0-30)**	**EPA-2 TO-15**
Trichloroethene	**93**	**(70 - 125)**			**EPA-2 TO-15**
	92	**(70 - 125)**	**1.3**	**(0-30)**	**EPA-2 TO-15**
1,2,4-Trimethylbenzene	**88**	**(70 - 130)**			**EPA-2 TO-15**
	89	**(70 - 130)**	**2.0**	**(0-30)**	**EPA-2 TO-15**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E7B190167 **Work Order #...:** JQ43J1AC-LCS **Matrix.........:** AIR
LCS Lot-Sample#: M7C150000-272 JQ43J1AD-LCSD
Prep Date......: 02/19/07 **Analysis Date..:** 02/19/07
Prep Batch #...: 7074272 **Analysis Time..:** 10:24
Dilution Factor: 1 **Instrument ID..:** MSA
Analyst ID.....: 402431

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Benzene	**159**	**132**	**ug/m3**	**83**		**EPA-2 TO-15**
	159	**135**	**ug/m3**	**84**	**1.8**	**EPA-2 TO-15**
Chlorobenzene	**230**	**217**	**ug/m3**	**94**		**EPA-2 TO-15**
	230	**216**	**ug/m3**	**94**	**0.31**	**EPA-2 TO-15**
Chloroform	**244**	**248**	**ug/m3**	**102**		**EPA-2 TO-15**
	244	**246**	**ug/m3**	**101**	**0.74**	**EPA-2 TO-15**
m-Xylene & p-Xylene	**433**	**407**	**ug/m3**	**94**		**EPA-2 TO-15**
	433	**401**	**ug/m3**	**92**	**1.5**	**EPA-2 TO-15**
o-Xylene	**217**	**202**	**ug/m3**	**93**		**EPA-2 TO-15**
	217	**197**	**ug/m3**	**91**	**2.6**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**300**	**306**	**ug/m3**	**102**		**EPA-2 TO-15**
	300	**304**	**ug/m3**	**101**	**0.63**	**EPA-2 TO-15**
1,1-Dichloroethane	**202**	**190**	**ug/m3**	**94**		**EPA-2 TO-15**
	202	**191**	**ug/m3**	**95**	**0.48**	**EPA-2 TO-15**
1,1-Dichloroethene	**198**	**186**	**ug/m3**	**94**		**EPA-2 TO-15**
	198	**183**	**ug/m3**	**92**	**1.5**	**EPA-2 TO-15**
1,2-Dichloropropane	**231**	**219**	**ug/m3**	**95**		**EPA-2 TO-15**
	231	**216**	**ug/m3**	**94**	**1.4**	**EPA-2 TO-15**
Methylene chloride	**173**	**146**	**ug/m3**	**84**		**EPA-2 TO-15**
	173	**147**	**ug/m3**	**85**	**0.64**	**EPA-2 TO-15**
1,1,2,2-Tetrachloroethane	**343**	**326**	**ug/m3**	**95**		**EPA-2 TO-15**
	343	**329**	**ug/m3**	**96**	**0.75**	**EPA-2 TO-15**
Tetrachloroethene	**338**	**338**	**ug/m3**	**100**		**EPA-2 TO-15**
	338	**332**	**ug/m3**	**98**	**1.5**	**EPA-2 TO-15**
Toluene	**188**	**168**	**ug/m3**	**89**		**EPA-2 TO-15**
	188	**170**	**ug/m3**	**91**	**1.6**	**EPA-2 TO-15**
1,1,1-Trichloroethane	**272**	**298**	**ug/m3**	**109**		**EPA-2 TO-15**
	272	**299**	**ug/m3**	**110**	**0.18**	**EPA-2 TO-15**
Trichloroethene	**268**	**250**	**ug/m3**	**93**		**EPA-2 TO-15**
	268	**247**	**ug/m3**	**92**	**1.3**	**EPA-2 TO-15**
1,2,4-Trimethylbenzene	**245**	**215**	**ug/m3**	**88**		**EPA-2 TO-15**
	245	**219**	**ug/m3**	**89**	**2.0**	**EPA-2 TO-15**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Attachment 3

Quarterly Groundwater Monitoring Data Provided by SCG

AVOCET ENVIRONMENTAL, INC.

LA ALISO - PAH Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Date Collected	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) Anthracene	Benzo (a) Pyrene	Benzo (b) Fluoranthene	Benzo (g,h,i) Perylene	Benzo (k) Fluoranthene	Chrysene	Dibenzo (a,h) Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-c,d) Pyrene	Naphthalene	Phenanthrene	Pyrene
C-6																	
	3/2/05	1.40	2.91	5.13	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.36	1.28	<1.0	<1.0	<1.0	3.15
	5/16/05	1.50	4.81	5.53	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.42	1.00	<1.0	1.43	<1.0	3.16
	8/16/05	1.80	3.42	5.25	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.32	1.50	<1.0	<1.0	<1.0	2.94
	10/24/05	1.05	1.56	2.31	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.17	1.47	<1.0	1.37	<1.0	2.60
	2/2/06	<1.0	5.90	4.18	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.96	<1.0	<1.0	<1.0	<1.0	2.73
	5/5/06	1.22	3.31	4.62	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.32	<1.0	<1.0	<1.0	<1.0	3.01
	8/7/06	<1.0	2.17	4.23	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.48	<1.0	<1.0	1.15	<1.0	2.94
	11/3/06	**<1.0**	**2.20**	**2.51**	**<1.0**	**<0.2**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**2.67**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**2.27**
C-8A																	
	2/24/05	<1.0	1.48	1.12	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.15	<1.0	<1.0	25.4	<1.0	1.75
	5/24/05	1.05	<1.0	<1.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.07	<1.0	<1.0	5.13	<1.0	1.60
	8/8/05	1.22	1.00	<1.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.06	<1.0	<1.0	<1.0	<1.0	1.82
	10/24/05	1.06	1.24	<1.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.14	<1.0	<1.0	1.49	<1.0	1.56
	1/31/06	<1.0	1.94	<1.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	1.94	<1.0	<1.0	<1.0	<1.0	1.48
	5/5/06	<1.0	<1.0	<1.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	1.53	<1.0	<1.0	<1.0	<1.0	1.13
	8/3/06	<1.0	1.30	<1.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.19	<1.0	<1.0	<1.0	<1.0	1.66
	11/3/06	**<1.0**	**1.41**	**<1.0**	**<1.0**	**<0.2**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**1.53**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**1.26**
TtK-2																	
	3/2/05	41.7	8.10	2.09	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	40.6	<1.0	294	27.1	<1.0
	5/17/05	39.4	<1.0	1.91	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	34.0	<1.0	404	21.2	<1.0
	8/16/05	55.1	<1.0	2.05	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	40.3	<1.0	345	23.8	<1.0
	10/27/05	53.2	3.58	1.79	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	37.7	<1.0	321	22.1	<1.0
	1/26/06	68.6	<1.0	2.06	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	41.6	<1.0	431	26.1	<1.0
	5/9/06	46.5	<1.0	1.45	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	29.6	<1.0	262	20.1	<1.0
	8/8/06	56.4	18.8	2.09	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	35.2	<1.0	229	26.5	<1.0
	11/3/06	**53.2**	**54.4**	**1.60**	**<1.0**	**<0.2**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**31.0**	**<1.0**	**20.5**	**17.2**	**<1.0**
TtK-5																	
	3/2/05	10.1	16.8	21.8	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	6.74	31.7	<1.0	67.8	13.2	7.75
	5/17/05	8.41	10.1	22.9	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.46	29.9	<1.0	31.5	7.92	7.59
	8/16/05	10.4	12.3	26.1	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.82	31.2	<1.0	13.5	9.98	7.67
	10/27/05	9.42	16.5	23.3	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.50	24.9	<1.0	6.47	7.98	8.66
	2/3/06	6.25	10.3	21.4	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.07	21.5	<1.0	1.65	5.70	6.74
	5/9/06	7.25	9.40	25.4	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.75	20.4	<1.0	1.93	3.58	8.31
	8/8/06	4.98	5.19	22.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.66	15.5	<1.0	1.80	<1.0	7.55
	11/6/06	**6.73**	**12.6**	**22.5**	**<1.0**	**<0.2**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**8.04**	**14.9**	**<1.0**	**1.84**	**3.94**	**9.33**
TtK-6																	
	3/2/05	7.02	9.59	20.6	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	6.68	37.4	<1.0	3.43	2.74	7.79
	5/17/05	9.77	19.5	24.3	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	8.99	48.2	<1.0	4.08	3.29	9.75
	8/16/05	1.57	<1.0	23.6	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.52	11.1	<1.0	3.26	1.00	7.76
	10/27/05	1.65	2.99	23.2	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.83	11.9	<1.0	<1.0	<1.0	9.28
	1/26/06	<1.0	<1.0	24.9	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.75	12.5	<1.0	<1.0	<1.0	8.59
	5/9/06	<1.0	2.17	20.7	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.82	8.25	<1.0	<1.0	<1.0	8.13
	8/8/06	<1.0	<1.0	20.0	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	7.35	6.80	<1.0	1.17	<1.0	7.54
	11/6/06	**1.31**	**1.35**	**20.6**	**<1.0**	**<0.2**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**7.29**	**9.12**	**<1.0**	**<1.0**	**<1.0**	**8.55**

LA ALISO - PAH Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Date Collected	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) Anthracene	Benzo (a) Pyrene	Benzo (b) Fluoranthene	Benzo (g,h,i) Perylene	Benzo (k) Fluoranthene	Chrysene	Dibenzo (a,h) Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-c,d) Pyrene	Naphthalene	Phenanthrene	Pyrene
TtO-1																	
	3/1/05	9.26	14.3	7.09	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.06	20.5	<1.0	8030	21.8	3.49
	6/2/05	14.4	<1.0	7.90	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.69	24.0	<1.0	5850	25.6	2.74
	8/16/05	28.8	<1.0	8.42	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.86	26.7	<1.0	8290	27.4	2.71
	10/28/05	16.7	<1.0	7.26	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.06	26.5	<1.0	7490	24.8	3.02
	2/3/06	21.2	<1.0	7.78	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.12	32.1	<1.0	6710	27.0	2.92
	5/11/06	13.1	7.80	7.32	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	2.76	23.5	<1.0	5900	23.4	2.64
	8/15/06	16.6	<1.0	8.19	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	3.15	28.6	<1.0	14100	29.4	2.98
	11/7/06	**17.3**	**80.4**	**7.85**	**<1.0**	**<0.2**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**3.12**	**30.2**	**<1.0**	**6200**	**23.9**	**3.27**

LA Aliso - Petroleum Hydrocarbon results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Date Collected	TPH (Diesel)	TPH (Gasoline)
C-6			
	3/2/05	606	1110
	5/16/05	939	1080
	8/16/05	830	640
	10/24/05	677	886
	2/2/06	682	742
	5/5/06	696	981
	8/7/06	932	865
	11/3/06	**747**	**102**
C-8A			
	2/24/05	<500	751
	5/24/05	797	728
	8/8/05	593	633
	10/24/05	<500	702
	1/31/06	615	551
	5/5/06	752	771
	8/3/06	620	852
	11/3/06	**704**	**142**
TtK-2			
	3/2/05	1530	4140
	5/17/05	1510	3920
	8/16/05	1720	3420
	10/27/05	1240	3930
	1/26/06	1560	2270
	5/9/06	1490	3480
	8/8/06	1350	2970
	11/3/06	**1130**	**4150**
TtK-5			
	3/2/05	1630	1460
	5/17/05	1410	790
	8/16/05	1540	714
	10/27/05	1120	1050
	2/3/06	1070	662
	5/9/06	1800	910
	8/8/06	1540	887
	11/6/06	**1430**	**847**
TtK-6			
	3/2/05	1460	1210
	5/17/05	1540	719
	8/16/05	1290	501
	10/27/05	828	737
	1/26/06	1200	587
	5/9/06	1370	772
	8/8/06	1160	776
	11/6/06	**971**	**606**

LA Aliso - Petroleum Hydrocarbon results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Date Collected	TPH (Diesel)	TPH (Gasoline)
TtO-1			
	3/1/05	3430	19900
	6/2/05	1500	22100
	8/16/05	2140	15600
	10/28/05	1610	22600
	2/3/06	1190	14500
	5/11/06	1630	20500
	8/15/06	1490	22600
	11/7/06	**1500**	**18000**

LA Aliso VOC Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Date Collected	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Butadiene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chloroethyl Vinyl Ether	2-Chlorotoluene
C-6																										
	3/2/05	<0.5	<0.5	<0.5	<0.5	4.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/16/05	<0.5	<0.5	<0.5	<0.5	5.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/16/05	<0.5	<0.5	<0.5	<0.5	6.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	10/24/05	<0.5	<0.5	<0.5	<0.5	7.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	2/2/06	<0.5	<0.5	<0.5	<0.5	5.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/5/06	<0.5	<0.5	<0.5	<0.5	4.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/7/06	<0.5	<0.5	<0.5	<0.5	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	11/3/06	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**3.6**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**
C-8A																										
	2/24/05	<0.5	<0.5	<0.5	<0.5	3.4	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/24/05	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/8/05	<0.5	<0.5	<0.5	<0.5	3.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	10/24/05	<0.5	<0.5	<0.5	<0.5	6.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	1/31/06	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/5/06	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/3/06	<0.5	<0.5	<0.5	<0.5	2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	11/3/06	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**4.35**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**
TtK-2																										
	3/2/05	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	9.7	<1.0	<0.5	<0.5	<0.5	<0.5	3.7	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/17/05	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	11.3	<1.0	<0.5	<0.5	<0.5	<0.5	3.8	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/16/05	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	11.8	<1.0	<0.5	<0.5	<0.5	<0.5	3.4	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	10/27/05	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	14.2	<1.0	<0.5	<0.5	<0.5	<0.5	4.2	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	1/26/06	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	12.6	<1.0	<0.5	<0.5	<0.5	<0.5	3.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/9/06	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	7.4	<1.0	<0.5	<0.5	<0.5	<0.5	2.1	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/8/06	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.4	<1.0	<0.5	<0.5	<0.5	<0.5	1.8	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	11/3/06	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**0.73**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**7.01**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**1.36**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**

LA Aliso VOC Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Date Collected	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Butadiene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chloroethyl Vinyl Ether	2-Chlorotoluene
TtK-5																										
	3/2/05	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	4.0	<1.0	<0.5	<0.5	<0.5	<0.5	2.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/17/05	<0.5	<0.5	<0.5	<0.5	4.6	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<1.0	<0.5	<0.5	<0.5	<0.5	0.8	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/16/05	<0.5	<0.5	<0.5	<0.5	5.1	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<1.0	<0.5	<0.5	<0.5	<0.5	0.6	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	10/27/05	<0.5	<0.5	<0.5	<0.5	3.7	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<1.0	<0.5	<0.5	<0.5	<0.5	0.7	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	2/3/06	<0.5	<0.5	<0.5	<0.5	3.3	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<1.0	<0.5	<0.5	<0.5	<0.5	0.6	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/9/06	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/8/06	<0.5	<0.5	<0.5	<0.5	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	11/6/06	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**2.34**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**
TtK-6																										
	3/2/05	<0.5	<0.5	<0.5	<0.5	4.6	<0.5	<0.5	<0.5	<0.5	<0.5	2.6	<1.0	<0.5	<0.5	<0.5	<0.5	1.3	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/17/05	<0.5	<0.5	<0.5	<0.5	4.8	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<1.0	<0.5	<0.5	<0.5	<0.5	1.4	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/16/05	<0.5	<0.5	<0.5	<0.5	5.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	10/27/05	<0.5	<0.5	<0.5	<0.5	4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	1/26/06	<0.5	<0.5	<0.5	<0.5	4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/9/06	<0.5	<0.5	<0.5	<0.5	4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/8/06	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	11/6/06	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**2.83**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**
TtO-1																										
	3/1/05	<0.5	<0.5	<0.5	<0.5	3.2	<0.5	<0.5	<0.5	<0.5	<0.5	316	<1.0	<0.5	<0.5	<0.5	<0.5	23.9	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	6/2/05	<0.5	<0.5	<0.5	<0.5	3.1	<0.5	<0.5	<0.5	<0.5	<0.5	388	<1.0	<0.5	<0.5	<0.5	<0.5	21.3	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/16/05	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	<0.5	<0.5	<0.5	382	<1.0	<0.5	<0.5	<0.5	<0.5	24.8	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	10/28/05	<0.5	<0.5	<0.5	<0.5	4.3	<0.5	<0.5	<0.5	<0.5	<0.5	536	<1.0	<0.5	<0.5	<0.5	<0.5	24.6	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	2/3/06	<0.5	<0.5	<0.5	<0.5	3.1	<0.5	<0.5	<0.5	<0.5	<0.5	282	<1.0	<0.5	<0.5	<0.5	<0.5	26.7	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	5/11/06	<0.5	<0.5	<0.5	<0.5	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	209	<1.0	<0.5	<0.5	<0.5	<0.5	18.4	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	8/15/06	<0.5	<0.5	<0.5	<0.5	2.7	<0.5	<0.5	<0.5	<0.5	<0.5	253	<1.0	<0.5	<0.5	<0.5	<0.5	31.1	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5
	11/7/06	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**287**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**27.2**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**

LA Aliso VOC Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	2-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dicyclopentadiene	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m,p-Xylenes	Methylene Chloride	MTBE
C-6																										
	<1.0	<0.5	<1.0	<1.0	250	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	6.6	<0.5	<0.5	<0.5	<1.0	6.2	<1.0	46.4	1.4	<1.0	4.2
	<1.0	<0.5	<1.0	<1.0	327	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	7.4	<0.5	<0.5	<0.5	<1.0	3.0	<1.0	49.5	1.6	<1.0	5.6
	<1.0	<0.5	<1.0	<1.0	276	<0.5	<0.5	<0.5	<1.0	<1.0	4.4	<0.5	<0.5	<0.5	<1.0	6.2	<0.5	<0.5	<0.5	<1.0	1.7	<1.0	37.7	1.0	<1.0	4.7
	<1.0	<0.5	<1.0	<1.0	323	<0.5	<0.5	<0.5	<1.0	<1.0	0.8	<0.5	<0.5	<0.5	<1.0	6.4	<0.5	<0.5	<0.5	<1.0	1.7	<1.0	38.8	1.0	<1.0	5.5
	<1.0	<0.5	<1.0	<1.0	267	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	5.8	<0.5	<0.5	<0.5	<1.0	1.6	<1.0	34.3	1.1	<1.0	4.0
	<1.0	<0.5	<1.0	<1.0	206	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	6.6	<0.5	<0.5	<0.5	<1.0	1.6	<1.0	28.6	<1.0	<1.0	3.8
	<1.0	<0.5	<1.0	<1.0	176	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	5.4	<0.5	<0.5	<0.5	<1.0	2.1	<1.0	28.1	<1.0	<1.0	2.0
	<1.0	**<0.5**	**<1.0**	**<1.0**	**185**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**0.72**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**5.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**1.15**	**<1.0**	**32.6**	**<1.0**	**<1.0**	**1.93**
C-8A																										
	<1.0	<0.5	<1.0	<1.0	208	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	7.8	<0.5	<0.5	<0.5	3.4	1.0	<1.0	25.1	<1.0	<1.0	4.3
	<1.0	<0.5	<1.0	<1.0	196	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	6.1	<0.5	<0.5	<0.5	<1.0	0.8	<1.0	25.1	<1.0	<1.0	3.3
	<1.0	<0.5	<1.0	<1.0	170	<0.5	<0.5	<0.5	<1.0	<1.0	1.4	<0.5	<0.5	<0.5	<1.0	6.3	<0.5	<0.5	<0.5	<1.0	1.1	<1.0	17.4	<1.0	<1.0	3.7
	<1.0	<0.5	<1.0	<1.0	237	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	7.9	<0.5	<0.5	<0.5	<1.0	0.7	<1.0	12.9	<1.0	<1.0	6.1
	<1.0	<0.5	<1.0	<1.0	187	<0.5	<0.5	<0.5	<1.0	<1.0	9.3	<0.5	<0.5	<0.5	<1.0	6.3	<0.5	<0.5	<0.5	<1.0	0.6	<1.0	17.3	<1.0	<1.0	4.2
	<1.0	<0.5	<1.0	<1.0	169	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	6.9	<0.5	<0.5	<0.5	<1.0	0.5	<1.0	15.0	<1.0	<1.0	4.0
	<1.0	<0.5	<1.0	<1.0	160	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	6.3	<0.5	<0.5	<0.5	<1.0	0.8	<1.0	16.1	<1.0	<1.0	2.2
	<1.0	**<0.5**	**<1.0**	**<1.0**	**197**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**9.08**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<1.0**	**13.3**	**<1.0**	**<1.0**	**<1.0**
TtK-2																										
	<1.0	<0.5	<1.0	<1.0	386	<0.5	<0.5	<0.5	<1.0	<1.0	1.2	<0.5	<0.5	<0.5	<1.0	5.2	<0.5	<0.5	<0.5	<1.0	352	<1.0	15	71.0	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	525	<0.5	<0.5	<0.5	<1.0	<1.0	1.1	<0.5	<0.5	<0.5	<1.0	5.7	<0.5	<0.5	<0.5	<1.0	418	<1.0	17.1	69.8	<1.0	1.1
	<1.0	<0.5	<1.0	<1.0	418	<0.5	<0.5	<0.5	<1.0	<1.0	2.8	<0.5	<0.5	<0.5	<1.0	5.9	<0.5	<0.5	<0.5	<1.0	376	<1.0	15.2	64.0	<1.0	1.3
	<1.0	<0.5	<1.0	<1.0	440	<0.5	<0.5	<0.5	<1.0	<1.0	0.8	<0.5	<0.5	<0.5	<1.0	4.2	<0.5	<0.5	<0.5	<1.0	473	<1.0	18.9	53.0	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	577	<0.5	<0.5	<0.5	<1.0	<1.0	1.4	<0.5	<0.5	<0.5	<1.0	5.1	<0.5	<0.5	<0.5	<1.0	524	<1.0	17.1	37.7	<1.0	1.1
	<1.0	<0.5	<1.0	<1.0	376	<0.5	<0.5	<0.5	<1.0	<1.0	0.8	<0.5	<0.5	<0.5	<1.0	3.6	<0.5	<0.5	<0.5	<1.0	311	<1.0	11.9	16.1	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	286	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	3.1	<0.5	<0.5	<0.5	<1.0	296	<1.0	14.3	16.1	<1.0	<1.0
	<1.0	**<0.5**	**<1.0**	**<1.0**	**384**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**1.7**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**5.04**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**348**	**<1.0**	**16.1**	**12.5**	**<1.0**	**<1.0**

LA Aliso VOC Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	2-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dicyclopentadiene	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m,p-Xylenes	Methylene Chloride	MTBE
TtK-5																										
	<1.0	<0.5	<1.0	<1.0	154	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	4.3	<0.5	<0.5	<0.5	<1.0	197	<1.0	49.9	5.7	<1.0	1.3
	<1.0	<0.5	<1.0	<1.0	115	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	5.2	<0.5	<0.5	<0.5	<1.0	138	<1.0	57.6	1.7	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	102	<0.5	<0.5	<0.5	<1.0	<1.0	2.6	<0.5	<0.5	<0.5	<1.0	5.7	<0.5	<0.5	<0.5	1.0	118	<1.0	45.0	1.5	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	88.3	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	4.4	<0.5	<0.5	<0.5	<1.0	122	<1.0	58.7	1.5	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	78.7	<0.5	<0.5	<0.5	<1.0	<1.0	7.7	<0.5	<0.5	<0.5	<1.0	4.1	<0.5	<0.5	<0.5	7.6	61.3	<1.0	34.6	2.0	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	92.1	<0.5	<0.5	<0.5	<1.0	<1.0	0.6	<0.5	<0.5	<0.5	<1.0	4.9	<0.5	<0.5	<0.5	4.5	67.6	<1.0	44.3	1.2	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	65.9	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	3.6	<0.5	<0.5	<0.5	10.6	55.3	<1.0	42.1	1.1	<1.0	<1.0
	<1.0	**<0.5**	**<1.0**	**<1.0**	**76.0**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**4.05**	**<0.5**	**<0.5**	**<0.5**	**5.31**	**44.5**	**<1.0**	**41.5**	**<1.0**	**<1.0**	**<1.0**
TtK-6																										
	<1.0	<0.5	<1.0	<1.0	177	<0.5	<0.5	<0.5	<1.0	<1.0	0.6	<0.5	<0.5	<0.5	<1.0	4.4	<0.5	<0.5	<0.5	<1.0	70.3	<1.0	48.4	4.1	<1.0	2.4
	<1.0	<0.5	<1.0	<1.0	157	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	4.9	<0.5	<0.5	<0.5	<1.0	85.6	<1.0	57.4	4.1	<1.0	1.5
	<1.0	<0.5	<1.0	<1.0	100	<0.5	<0.5	<0.5	<1.0	<1.0	5.0	<0.5	<0.5	<0.5	<1.0	5.2	<0.5	<0.5	<0.5	<1.0	1.6	<1.0	35.2	1.0	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	90.4	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	4.2	<0.5	<0.5	<0.5	<1.0	1.3	<1.0	45.1	<1.0	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	103	<0.5	<0.5	<0.5	<1.0	<1.0	1.8	<0.5	<0.5	<0.5	<1.0	4.5	<0.5	<0.5	<0.5	<1.0	1.7	<1.0	35.6	<1.0	<1.0	1.0
	<1.0	<0.5	<1.0	<1.0	105	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	5.1	<0.5	<0.5	<0.5	<1.0	1.6	<1.0	38.5	<1.0	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	72.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	4.0	<0.5	<0.5	<0.5	<1.0	1.5	<1.0	33.0	<1.0	<1.0	<1.0
	<1.0	**<0.5**	**<1.0**	**<1.0**	**91.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**4.59**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**1.35**	**<1.0**	**34.8**	**<1.0**	**<1.0**	**<1.0**
TtO-1																										
	<1.0	<0.5	<1.0	<1.0	256	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	7.1	<0.5	<0.5	<0.5	<1.0	1460	<1.0	44.0	639	<1.0	1.4
	<1.0	<0.5	<1.0	<1.0	277	<0.5	<0.5	<0.5	<1.0	<1.0	0.6	<0.5	<0.5	<0.5	<1.0	9.4	<0.5	<0.5	<0.5	<1.0	2500	<1.0	44.2	931	<1.0	1.2
	<1.0	<0.5	<1.0	<1.0	261	<0.5	<0.5	<0.5	<1.0	<1.0	10.5	<0.5	<0.5	<0.5	<1.0	10.3	<0.5	<0.5	<0.5	<1.0	2670	<1.0	47.8	775	<1.0	1.4
	<1.0	<0.5	<1.0	<1.0	371	<0.5	<0.5	<0.5	<1.0	<1.0	0.9	<0.5	<0.5	<0.5	<1.0	12.4	<0.5	<0.5	<0.5	<1.0	3080	<1.0	43.2	917	<1.0	1.8
	<1.0	<0.5	<1.0	<1.0	258	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	8.9	<0.5	<0.5	<0.5	<1.0	1860	<1.0	47.0	573	<1.0	1.0
	<1.0	<0.5	<1.0	<1.0	206	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<1.0	6.9	<0.5	<0.5	<0.5	<1.0	1320	<1.0	32.3	553	<1.0	<1.0
	<1.0	<0.5	<1.0	<1.0	243	<0.5	<0.5	<0.5	<1.0	<1.0	1.0	<0.5	<0.5	<0.5	<1.0	8.1	<0.5	<0.5	<0.5	<1.0	2190	<1.0	58.0	588	<1.0	<1.0
	<1.0	**<0.5**	**<1.0**	**<1.0**	**254**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**2140**	**<1.0**	**51.3**	**585**	**<1.0**	**<1.0**

LA Aliso VOC Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	p-Isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride
C-6																
	<1.0	<0.5	5.9	<0.5	<0.5	3.1	<0.5	<0.5	1.4	1.5	3.0	<0.5	5.1	<0.5	<1.0	35.9
	<1.0	<0.5	4.5	<0.5	<0.5	3.2	<0.5	<0.5	1.3	1.7	4.1	<0.5	5.4	<0.5	<1.0	50.1
	1.4	<0.5	1.9	<0.5	<0.5	3.1	<0.5	<0.5	0.7	1.5	5.1	<0.5	4.3	<0.5	<1.0	80.6
	1.6	<0.5	2.1	<0.5	<0.5	3.6	<0.5	<0.5	<0.5	1.6	6.3	<0.5	4.0	<0.5	<1.0	77.2
	<1.0	<0.5	1.9	<0.5	<0.5	2.8	<0.5	<0.5	0.8	1.9	4.8	<0.5	3.2	<0.5	<1.0	50.6
	<1.0	<0.5	1.8	<0.5	<0.5	2.4	<0.5	<0.5	0.6	1.6	3.9	<0.5	2.9	<0.5	<1.0	31.0
	1.1	<0.5	2.0	<0.5	<0.5	2.0	<0.5	<0.5	0.7	1.4	2.7	<0.5	2.4	<0.5	<1.0	29.6
	<1.0	**<0.5**	**1.48**	**<0.5**	**<0.5**	**1.68**	**<0.5**	**<0.5**	**<0.5**	**1.13**	**3.12**	**<0.5**	**2.2**	**<0.5**	**<1.0**	**32.7**
C-8A																
	49.1	<0.5	1.4	<0.5	<0.5	1.2	<0.5	<0.5	1.2	0.7	2.1	<0.5	5.1	<0.5	<1.0	22.1
	2.5	<0.5	1.0	<0.5	<0.5	1.5	<0.5	<0.5	0.6	0.8	2.0	<0.5	4.4	<0.5	<1.0	25.2
	1.6	<0.5	0.7	<0.5	<0.5	1.2	<0.5	<0.5	0.7	0.8	2.5	<0.5	4.3	<0.5	<1.0	30.6
	3.4	<0.5	0.6	<0.5	<0.5	1.8	<0.5	<0.5	<0.5	0.8	4.7	<0.5	4.4	<0.5	<1.0	52.4
	1.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	0.5	0.9	4.0	<0.5	3.4	<0.5	<1.0	39.9
	<1.0	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	0.7	3.3	<0.5	4.0	<0.5	<1.0	29.0
	1.1	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	0.5	0.8	2.4	<0.5	2.9	<0.5	<1.0	29.4
	4.83	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**0.72**	**<0.5**	**<0.5**	**<0.5**	**0.59**	**4.27**	**<0.5**	**2.38**	**<0.5**	**<1.0**	**41.3**
TtK-2																
	316	<0.5	12.9	32.9	<0.5	0.7	<0.5	<0.5	<0.5	16.9	1.3	<0.5	1.6	<0.5	<1.0	<1.0
	926	<0.5	13.8	34.7	<0.5	0.6	<0.5	<0.5	<0.5	17.6	1.5	<0.5	1.7	<0.5	<1.0	3.1
	350	1.0	13.3	36.6	2.7	0.6	<0.5	<0.5	<0.5	15.9	1.5	<0.5	1.7	<0.5	<1.0	<1.0
	515	1.4	16.9	36.7	<0.5	0.8	<0.5	<0.5	<0.5	15.6	1.2	<0.5	1.3	<0.5	<1.0	<1.0
	651	<0.5	15.0	38.8	<0.5	0.8	<0.5	<0.5	<0.5	14.6	1.4	<0.5	1.7	<0.5	<1.0	<1.0
	219	<0.5	9.9	20.7	1.8	<0.5	<0.5	<0.5	<0.5	8.9	0.9	<0.5	1.2	<0.5	<1.0	<1.0
	218	1.2	11.4	20.4	1.9	<0.5	1.6	<0.5	<0.5	11.9	0.7	<0.5	1.1	<0.5	<1.0	<1.0
	589	**0.93**	**12.0**	**17.5**	**1.5**	**<0.5**	**2.38**	**<0.5**	**<0.5**	**10.3**	**1.06**	**<0.5**	**1.12**	**<0.5**	**<1.0**	**2.02**

LA Aliso VOC Results in (ug/L)
Block N Vicinity Monitoring Wells

Well Name	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	p-Isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride
TtK-5																
	76.6	3.0	12.0	3.9	<0.5	2.3	<0.5	<0.5	<0.5	2.0	3.1	<0.5	1.5	<0.5	<1.0	28.9
	49.4	2.9	10.5	2.0	<0.5	2.7	<0.5	<0.5	<0.5	1.7	3.4	<0.5	1.2	<0.5	<1.0	29.9
	16.5	<0.5	8.8	1.7	1.7	2.7	<0.5	<0.5	<0.5	1.4	3.6	<0.5	1.1	<0.5	<1.0	37.2
	8.8	3.4	10.1	7.0	<0.5	3.5	<0.5	<0.5	<0.5	1.6	3.0	<0.5	0.8	<0.5	<1.0	26.5
	1.7	<0.5	4.9	1.5	<0.5	2.0	<0.5	<0.5	<0.5	1.6	2.6	<0.5	0.6	<0.5	<1.0	15.6
	1.3	<0.5	5.8	1.2	1.4	2.7	<0.5	0.6	<0.5	1.2	3.3	<0.5	0.9	<0.5	<1.0	22.5
	3.3	1.7	4.8	0.9	1.1	2.4	0.5	<0.5	<0.5	1.1	2.1	<0.5	0.6	<0.5	<1.0	22.9
	1.52	**1.5**	**4.21**	**0.65**	**0.87**	**2.19**	**<0.5**	**<0.5**	**<0.5**	**0.89**	**2.4**	**<0.5**	**0.65**	**<0.5**	**<1.0**	**14.6**
TtK-6																
	6.8	3.0	8.9	3.3	0.6	3.6	<0.5	0.6	<0.5	2.5	3.5	<0.5	2.0	<0.5	<1.0	41.2
	4.4	3.3	11.9	3.4	<0.5	3.7	<0.5	0.7	<0.5	2.5	3.6	<0.5	1.7	<0.5	<1.0	37.5
	5.2	<0.5	2.4	<0.5	<0.5	4.0	<0.5	0.6	<0.5	1.1	3.9	<0.5	1.0	<0.5	<1.0	53.2
	<1.0	<0.5	2.7	<0.5	<0.5	5.1	<0.5	<0.5	<0.5	1.0	3.3	<0.5	0.8	<0.5	<1.0	31.2
	1.1	<0.5	2.1	<0.5	<0.5	4.2	<0.5	<0.5	<0.5	1.2	3.9	<0.5	0.9	<0.5	<1.0	33.9
	<1.0	<0.5	2.0	<0.5	<0.5	4.3	<0.5	0.6	<0.5	1.2	3.9	<0.5	1.0	<0.5	<1.0	33.7
	1.9	<0.5	1.6	<0.5	<0.5	3.5	<0.5	<0.5	<0.5	1.1	2.7	<0.5	0.6	<0.5	<1.0	32.0
	1.0	**1.04**	**1.76**	**<0.5**	**<0.5**	**3.46**	**<0.5**	**<0.5**	**<0.5**	**0.92**	**3.1**	**<0.5**	**0.66**	**<0.5**	**<1.0**	**23.1**
TtO-1																
	7690	<0.5	22.9	216	0.9	<0.5	1.4	<0.5	<0.5	136	2.8	<0.5	1.1	<0.5	<1.0	13.4
	11800	2.5	21.8	362	1.7	1.2	1.1	<0.5	<0.5	166	3.3	<0.5	1.0	<0.5	<1.0	15.3
	7830	<0.5	24.1	333	1.9	1.2	0.8	1.7	<0.5	203	3.7	<0.5	1.1	<0.5	<1.0	17.9
	8020	<0.5	23.6	404	2.1	<0.5	<0.5	<0.5	<0.5	171	4.0	<0.5	1.0	<0.5	<1.0	16.4
	3140	<0.5	23.4	253	0.8	<0.5	<0.5	<0.5	<0.5	164	3.3	<0.5	1.0	<0.5	<1.0	10.9
	2560	<0.5	14.0	214	0.5	1.3	0.5	<0.5	<0.5	127	2.3	<0.5	0.7	<0.5	<1.0	7.5
	7150	2.4	25.5	273	2.0	<0.5	1.8	<0.5	<0.5	185	3.1	<0.5	0.9	<0.5	<1.0	11.1
	6220	**2.19**	**21.8**	**229**	**1.58**	**1.17**	**3.3**	**1.15**	**<0.5**	**198**	**<0.5**	**<0.5**	**0.87**	**<0.5**	**<1.0**	**<1.0**

TETRA TECH, INC.
3475 E. Foothill Boulevard
Pasadena, California 91107
Main #: (626) 351-4664
Direct #: (626) 470-2462
E-fax #: (626) 470-2662
Salar.Niku@tetratech.com

October 30, 2006

Mr. Masood Hosseini T15969-16
Senior Project Manager
Site Assessment and Mitigation
555 West Fifth Street, GT16G2
Los Angeles, California 90013-1011

Subject: Final Removal Action Completion Report and Response to DTSC Comments Dated September 26, 2006 and October 27, 2006
Former Aliso Street Sector C Block N Former MGP Site
Located at 410 Center Street, Los Angeles, California
Master Agreements 6100000232 and 6160000372
Service Release No. 5500000669 and 5660000968

Dear Mr. Hosseini:

On Tuesday September 26, 2006, Mr. Pete Cooke, the Department of Toxics Substances Control (DTSC) Project Manager, sent an e-mail to Southern California Gas Company (SCG) requesting few changes to the final Removal Action Completion Report for the Former Aliso Street Sector C Block N MGP Site. On Thursday October 19, 2006, there was a conference call between DTSC (Mr. Cooke, and Ms. Rita Kamat the Unit Chief), SCG (Mr. Hosseini), Mr. William Girolamo of Enviropro Inc. representing the Site owner, and Tetra Tech, Inc. (Salar Niku). During this conference call the content of Mr. Cooke e-mail was discussed.

The risk assessment in the completion report was acceptable to DTSC. DTSC commented that contaminants resulting from the prior MGP use had been remediated to a level allowing unrestricted use of the site; however, the report required modification to state that unrestricted use of the site was not currently possible due to the presence of tetrachloroethene (PCE) in the soil gas. DTSC requested that the risk assessment be revised to remove all referenced that there is no risk left at the Site. DTSC also requested that in the conclusion section, all references to no further action should be removed. The corrections were made in this final submittal of the completion report.

On Wednesday October 25, 2006 Mr. Cooke requested Tetra Tech an electronic copy of the completion report text to be able to search all other possible areas that need correction. The text was sent to Mr. Cooke on a confidential basis. Mr. Cooke had additional comments on October 27, 2006 in an e-mail To Tetra Tech. The comments were responded.

Enclosed is one copy of the corrected pages of the Report for the former Aliso Street Sector C Block N former manufactured gas plant (MGP) Site. We have modified the text of document in Sections 1, 6, and 7 and in the executive summary, as well as the signature page. Please replace the text of the document (dated January 2006, as modified May 9, 2006 and August 9, 2006) with the attached revised text (dated Revised October 2006). With this inclusion, the original draft Removal Action Completion Report dated January 2006 may be considered to be the final document.

Per your instruction, I am forwarding three copies of this Report to the Department of Toxic Substances Control. Two copies will be forwarded to the attention of Mr. Pete Cooke, DTSC Project Manager and one copy will be forwarded to the attention of Dr. Kimiko Klein in Sacramento office. I am also forwarding a copy of the revised pages to Mr. William Girolamo of Enviropro, who is representing the Site owner.

If you have any questions regarding the corrections to the Report, please call me at (626) 351-4664.

Respectfully Submitted,
TETRA TECH, INC.

Salar D. Niku, P.E.
Project Manager

cc: Mr. Pete Cooke, DTSC (2 copies)
Dr. Kimiko Klein (1 copy)
Mr. William Girolamo (1 copy)

REMOVAL ACTION COMPLETION REPORT
for
ALISO STREET, SECTOR C, BLOCK N
FORMER MANUFACTURED GAS PLANT (MGP) SITE
Located at
410 CENTER STREET, LOS ANGELES, CALIFORNIA

Prepared for:
Southern California Gas Company
555 West Fifth Street
Los Angeles, California 90013-1011

Prepared by:
Tetra Tech, Inc.
3475 East Foothill Boulevard
Pasadena, California 91107
(626) 351-4664

Master Agreement 6160000372.0
Service Release No: 556000968
Tetra Tech Project No. 15969

May 2006
Revised August and October 2006

REGISTERED PROFESSIONAL ENGINEER SALAR D. NIKU NO. 32003 EXP. 12/31/06 CIVIL STATE OF CALIFORNIA

Prepared by: for James McHarry, R.G.
Task Manager
Tetra Tech, Inc.

Reviewed by: Salar D. Niku, Ph.D., P.E.
Project Manager
Tetra Tech, Inc.

Submitted by: Masood Hosseini, Senior Project Manager
San Diego Gas & Electric
Authorized Agent for
Southern California Gas Company

10/30/06
Date

Copy 2 of 6
DTSC Copy 1 of 3

DISCLAIMER

This Removal Action Completion Report (Report) is prepared for the sole use and benefit of the Southern California Gas Company (Client) and for the specific Site known as former Aliso Street MGP Site, Sector C – Block N, located in Los Angeles, California. **Neither this Report nor any of the information contained therein shall be used or relied upon for any purpose by any person or entity other than the Client and for the Aliso Site.**

This Report was prepared based partially on information supplied to Tetra Tech from outside sources and other information which is in the public domain, and partially on the information Tetra Tech obtained during the removal action activities. Documentation for the statements made in the Report is on file at Tetra Tech's Pasadena, California, office. Tetra Tech makes no warranty as to the accuracy of statements made by others which are contained in this Report, nor are any other warranties or guarantees, expressed or implied, included or intended in the Report with respect to information supplied by outside sources or conclusions or recommendations substantially based on information supplied by outside sources. This Report has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Since the facts forming the basis for this Report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards, which could possibly cause accidents, injuries, or damage unless those hazards were apparent, and should have been discovered, as a result of the services Tetra Tech performed for the Client. This Report represents the best professional judgment of Tetra Tech; however, compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of the Client's obligations under local, state, or federal laws, or any modifications or changes to such laws.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

This Removal Action Completion Report has been prepared by Tetra Tech, Inc. Mr. James McHarry, R.G., was the Site Manager during the removal activities and the author of this report. Mr. Salar Niku, Ph.D., P.E. was the Project Manager.

El Capitan Environmental Services, Inc. was the general contractor for the Southern California Gas Company and was in charge of the removal activities at the Site. Mr. M. Mesrop, P.E., R.G. of Geotechnical Soilutions, Inc. managed the geotechnical issues at the Site.

All work was managed under the direction of Mr. Masood Hosseini, Senior Project Manager of Southern California Gas Company, managing the work under the supervision of Dr. Todd Sostek, Manager of Site Mitigation.

All work was performed under the direct oversight of the Department of Toxic Substances Control (DTSC). Mr. Pete Cooke, R.G. was the DTSC Project Manager and Dr. Richard Coffman, R.G. was the DTSC Geologist, both working under the direction of Ms. Rita Kamat, DTSC Unit Chief. Mr. Cooke or Dr. Coffman together performed continuing site inspections during the removal action activities on behalf of DTSC.

TABLE OF CONTENTS

SECTION **PAGE**

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF APPENDICES

Introduction

This Removal Action Completion Report (Report) is submitted by the Southern California Gas Company (SCG) to the Department of Toxic Substances Control (DTSC) to comply with the Voluntary Cleanup Agreement (VCA) [Docket No. HAS-A00\01-100] dated October 10, 2000 [DTSC, 2000a]. This Report presents the removal action activities completed at the former Aliso Street Manufactured Gas Plant (MGP), Sector C Block N, hereinafter referred to as the "Site".

SCG contracted with Tetra Tech, Inc. for management of the removal action activities at the northwest corner of the Site, in accordance with the Removal Action Workplan (RAW), as approved by DTSC.

Site Location and Description

The Site has a street address of 410 Center Street, Los Angeles, California, and is located on the southeast corner of the intersection of Center Street and Ducommun Street (County Assessor reference is 5173-021-002). The Site, located in an industrial land use area, was formerly owned by SCG and later on by Manley Oil Company. In 2004 the Site was sold to the current owner.

The Manley Oil building is situated on the northwest corner of the Site. The building consists of a brick structure with a pit present at the southern boundary of the building. This pit runs east west and continues along the brick wall south of the Manley Oil Building. The surrounding properties are used for industrial purposes, including a car storage and towing facility, fish processing, and cold storage.

Site Past History

Block N was purchased in 1902 by Los Angeles Gas and Electric Company, a predecessor to SCG. The historical MGP operations at the Site included gas compression and warehouse storage. SCG first used Block N for two aboveground gasholders, which are present on the 1905 Sanborn map of the area. The two gasholders located on the Site were removed in approximately 1920. New structures were built following the removal of the gasholders including generators, gas compressors used for gas compression and transmission, blowers for gas transmission, and warehouses. The newer facilities were used to support MGP operations until 1927. After that date, the facilities were used in support of butadiene production elsewhere at the former Aliso Street MGP site. SCG or its predecessors operated facilities on the Site as early as 1904 until 1979, when part of the property was sold to Manley Oil Company.

Site Investigations

Earth Tech performed the site-wide investigations for SCG, including a preliminary endangerment assessment (1998) and a remedial investigation (2001). A supplemental sampling in the northwest corner of Block N was performed by TRC and Tetra Tech (2002). A fourth investigation was conducted in June 2003 in the northwest corner of Block N to further delineate the horizontal extent of contamination observed in the northwest corner area of the Site (i.e., at Boring N-2). The purpose of this supplementary investigation was to collect additional information to prepare a Removal Action Workplan for the northwest corner of the Site.

Removal Action Goals

The objective of this removal action was to remove sources of contaminated soils at Block N on the northwest corner area of the Site. The goal was to cleanup the Site to a non-restricted (residential) land use. In general, Site cleanup was based on the most protective (i.e., lowest) removal action goals, regardless of whether the goals are protective of residents, workers, or groundwater. This set of health-protective goals was presented in Table 5-1 in the Removal Action Workplan [Tetra Tech, 2004b].

In addition, because the remedial goal for the Site was non-restricted land use, DTSC requested that total petroleum hydrocarbon (TPH) concentrations detected in the soil be remediated to screening levels listed in the May 1996 California Regional (Region IV) Water Quality Control Board Interim Site Assessment and Cleanup Guidebook.

Groundwater was not a part of this remedial activity. The groundwater management for the entire former Aliso MGP site will be addressed as one operable unit and will be discussed in a separate document under the groundwater management plan.

Removal Action Activities

Excavation activities were conducted at the Site from June through December 2005. Excavation was conducted in accordance with the Removal Action Workplan, approved by DTSC and the excavation plan approved by the City of Los Angeles.

The proposed area of excavation was situated in the northwest corner area of the Site between the south and east outer retaining walls of the concrete pit located south of the Manley Oil Building (Figure 2-1) and in part, inside the Building. The base of the footing for the pit was approximately 12 feet bgs. Initial soil removal was conducted by open excavation to a depth of approximately 8 feet bgs to be protective of the structural integrity of the sump walls. Following the initial excavation, the deeper contaminated soil was removed by auger drilling and backfilling with cement slurry. The auger drilling method consisted of drilling through the contaminated soil using 2- or 3-foot diameter auger. Open excavation was performed following the completion of excavation by auger drilling and slurry replacement.

Soils from the contaminated area were removed to depths ranging from 28 to 30 feet bgs over an area of approximately 27 feet wide by 33 feet long. The extent of impacted soil that was excavated during the removal action is shown on Figure 2-1 in Section 2 of this Report. The total volume of contaminated soil augered and/or excavated from the Site during the remedial excavation was approximately 1,664 cubic yards or 2,663 tons.

Additional investigation was conducted in August and then in October through December 2005 beneath the Manley Oil Building and under the concrete lined pit south of the building. The investigation consisted of drilling and sampling 11 soil borings, nine in the building and two in the pit, and sampling two soil gas probes installed in the pit. Elevated concentrations of C-PAHs and TPH were detected in the 6-foot and 10-foot samples collected beneath the northwest corner area of the building (Boring NB-7). The contaminated soil beneath the Building was removed through excavation of two trenches (ET1 and ET2) around boring NB-7. A small lens of hardened, dry, and black stained silty-sand was observed in the soils excavated from the trenches, in the north and west sidewalls of trench ET2, at depths ranging from 8 to 12 feet bgs. Since trenching next to the north wall of the Building was not feasible, the bucket-auger drilling method was employed to remove the contaminated soils observed in the north wall of trench ET2. Six borings were drilled using a 2.5-foot diameter bucket auger, removing the soil located between the north wall of the trench and the building's footing. The bucket auger borings were drilled to depths ranging from 5.5 to 13 feet bgs. All contaminated soils beneath the Building were removed except a small and limited section under the footing of the Building.

Two additional removal actions were conducted in other parts of Block N. A small quantity of soil was removed using 3-foot auger drilling around boring BN-7 in the eastern part of the Site where elevated C-PAHs had previously been detected. Asphalt and soil were removed in a small area (2 feet by 2 feet by 1 foot) east of the main excavation area where a mercury spill occurred.

Confirmation Sampling

Under the supervision of the DTSC Project Manager, confirmation samples representing the condition of the soil remaining at the Site were collected and analyzed for PAHs, volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and metals by EPA Methods 8310 (HPLC), 5035/8260, 8015 (modified), and 6010/7000 CAM, respectively. A summary of the chemical results in soil and soil gas are included in Section 5. In general, PAHs and VOCs are low in the remaining soils with higher concentrations, if present, in the deeper soils below 20 feet. Benzene and naphthalene were not detected in the new soil gas samples, although PCE and other organic compounds were present.

Backfill

Imported clean soil was brought from the University of California Los Angeles (UCLA) Campus located in the City of Los Angeles, California. A parking structure was being constructed on the UCLA campus. The soil excavated from the construction site at the campus was imported to Block N as clean backfill material. Prior to import and placement, the imported soil was analyzed and certified clean. The backfill soil was compacted to 95% relative compaction.

Treatment and Recycling

Wastes generated during the removal action activities included contaminated soils, concrete, asphalt, and abandoned pipelines. All contaminated soils were manifested and transported offsite to TPS Technologies Inc. in Adelanto, California, a treatment/recycling facility that treats the soil by thermal desorption. The treated soil was not returned or reused at the Site.

Risk Assessment

The remedial action objective for the removal of MGP-related residuals and other contaminants conducted at this Site was to restore the Site to conditions requiring no land use restrictions (i.e., to residential standards), although the Site is currently used for commercial/industrial purposes.

Based on the determinations described above, the removal activities have effectively reduced the C-PAH concentrations at the Site to background levels. The residual concentrations of C-PAH in soils across the Site are sufficiently low that if subsurface soils were redistributed on the surface, the resulting concentrations would be lower than background levels. In other words, the risks from C-PAHs to future residents potentially living on the Site under post-excavation conditions would be no more than people living and working elsewhere in southern California.

From a cumulative risk standpoint, since C-PAH levels are sufficiently low that they would not represent a significant risk above background, the cumulative lifetime incremental cancer risk for the PAHs, metals, and VOCs is no more than $2x10^{-6}$ to $1x10^{-5}$. Also, since this risk estimate is within the acceptable cancer risk range of 10^{-6} to 10^{-4} recommended by the USEPA and DTSC, the residual constituents do not pose a significant health risk for potential future residents (i.e., unrestricted Site use). Similarly, for non-carcinogenic health effects, the cumulative hazard index calculated for all of the PAHs, metals, and VOCs is well below the critical threshold value of 1.0 and, thus, no adverse non-cancer health effects would be expected under a residential exposure scenario.

Comparisons of chemical concentrations in recent samples and those used to evaluate risks previously show that none of the recent sampling results would result in unacceptable residential risks, except possibly for tetrachloroethene in soil gas.

For groundwater, the removal activities have removed soils and sufficient chemical mass that predicted impacts of chemical migration to groundwater are less than potentially applicable water quality criteria. In particular, based on the mass remaining in soils, the predicted concentrations of benzene and naphthalene in groundwater do not exceed the drinking water MCL and Notification Level, respectively.

The data indicate that removal activities conducted at the Site have been successful in achieving the remediation action objective for the Site and that the COPCs (PAHs, metals, and VOCs) have been remediated to levels that are protective of human health for unrestricted land use except possibly for tetrachloroethene in soil gas.

The Department of Toxics Substances Control has determined (please refer to the DTSC comments dated July 28, 2006 in Appendix V) that "….the impact of tetrachloroethene at the site remains unresolved". DTSC further recommends that, in order to develop the Site for sensitive uses, including residential, one of the following three actions may be necessary: "(1) the impact of tetrachloroethene to the site be reduced to levels which would allow unrestricted use, or (2) a land use restriction be enacted to limit site use to non-sensitive uses, including residential use, or (3) implement engineering controls that would allow mixed use."

Site Restoration

The excavations and trenches were backfilled with cement slurry and clean imported soil following completion of removal activities. The excavated areas were repaved with asphalt.

Removal action Oversight

The soil removal and all confirmation soil sampling activities were performed under the oversight of the DTSC. Mr. Pete Cooke, Project Manager (DTSC), visited the Site one to two times a week and Dr. Richard Coffman, geologist (DTSC), visited the Site periodically to observe the sampling procedures.

Conclusion

Through this remedial action, the requirements of the Removal Action Workplan (RAW) have been satisfied, and the Southern California Gas Company (SCG) requests from DTSC a Certificate of Completion for implementation of the RAW.

This Removal Action Completion Report (Report) was prepared by the Southern California Gas Company (SCG) for the former Aliso Street Manufactured Gas Plant (MGP) Site, Sector C, Block N, located at 410 Center Street, Los Angeles, California (hereinafter referred to as the "Site") for submittal to the Department of Toxic Substances Control (DTSC), to comply with the Voluntary Cleanup Agreement (VCA) [Docket No. HAS-A-00/01-26] executed between DTSC and the SCG dated October 26, 2000.

Tetra Tech prepared the Removal Action Workplan (RAW) dated June 2004 [Tetra Tech, 2004a]. During the removal action, Tetra Tech oversaw the removal activities for SCG. Kleinfelder (formerly Geologic Services Corporation) oversaw the removal activities for the current property owner of the Site. El Capitan Environmental Inc. was the general contractor for the removal action activities, directly contracted by SCG. Geotechnical Soilutions, Inc. was contracted by SCG to design and oversee the geotechnical issues of the Site. Tetra Tech oversaw the removal activities on behalf of SCG and is the principal author of this Report.

1.1 PURPOSE

The purpose of this Removal Action Completion Report is to document the removal action activities at the Site, provide the results of post-excavation soil sampling, and request from DTSC a Certification of Completion of remedial action at this Site as stated in the RAW.

The removal action was performed to remediate the Site to unrestricted land use. Removal action activities were focused and were primarily performed in the northwest corner area of the Site (Block N).

1.2 SITE LOCATION, BOUNDARIES, AND DESCRIPTION

The former Aliso Street MGP site is located in downtown Los Angeles (Figure 1-1). The Aliso MGP site boundary covers an area from south of the railroad tracks by Bauchet Street to the north, across the 101 Hollywood Freeway to about East Temple Street to the south, and between Union Station to the west, and the Los Angeles River to the east (Figure 1-2). The Site is located in Township 1 South, Range 13 West, Section 27, of the San Bernardino Meridian.

For ease of managing the required investigation and remediation activities, SCG has divided the approximately 56-acre[1] Aliso Street MGP site into five sectors, A through E, as shown on Figure 1-2. SCG determined sector boundaries based on past and current ownership, as well as physical boundaries and past operations. The boundaries do not necessarily correspond exactly to the areas used by the former MGP facilities.

[1] The acreage estimate given here is based on the previous reports that cite the size of the Aliso MGP site as 52 acres based on previous boundaries. The actual acreage of the Aliso MGP site based on current site boundaries is approximately 56.3 acres.

Block N is located in Sector C. Sector C includes seven city blocks covering approximately 16.4 acres. **Block N is a property with the street address of 410 Center Street.** Ducommun Street bounds the Site to the north, Jackson Street to the south, Center Street to the west, and railroad tracks and the Los Angeles River to the east (Figure 1-3).

The Site (Block N) is further subdivided into three properties: the former Manley Oil Company property located on the north half of the Site, and the former Los Angeles Gas and Electric Corporate Plant property and the former Southern California Gas Company property located on the south half of the Site. The Manley Oil Building is located on the northwest corner of the Site (Figure 1-3).

Based on SCG's review of current land use maps and land planning documents, the current and reasonably anticipated future land uses for the Aliso MGP site (56-acre site) are expected to remain commercial, industrial, public institutional, and transportation. Land uses may include office buildings, public institutions, enclosed warehouse spaces, indoor and outdoor manufacturing areas, restaurants, exterior storage yards, parking lots, and public transportation right-of-ways (e.g., highways and rail).

1.3 MGP AND POST-MGP OPERATIONS AT THE SITE

The historical MGP operations within Block N included gas compression and warehouse storage in support of other facilities located adjacent to the Site. The present day 101 (Hollywood) Freeway was built on the former route of Aliso Street. Block N was purchased in 1902. The SCG first used the Site for two aboveground gasholders, which are present on the 1905 Sanborn map of the area. Earlier maps of the Site in the 1890s indicate that it was used for residential lots or the lots were vacant. Physical structures used by SCG at Block N included:

- Generators;
- Gas compressors used for gas compression and transmission;
- Blowers for gas transmission;
- Two gasholders (1,000,000 cubic foot, pre-1921); and
- Warehouses.

The two gasholders located on the Site were removed in approximately 1920. These gasholders existed when the property was first used for MGP operations in 1910 [Earth Tech, 2001]. New structures were built following the removal of the gasholders. The facilities at the Site were used to support MGP operations until 1927. After that date, the facilities at the Site were used in support of butadiene production elsewhere at the former Aliso Street MGP site. Butadiene was not stored or produced on Block N. SCG, or its predecessors, operated facilities on the Site as early as 1904 until 1979, when part of the property was sold to Manley Oil Company.

The Manley Oil Company building located on the corner of Center and Ducommun Streets remains standing to this day. A review of the Foundation and Trench Plan drawings associated with this building's construction show that the building consists of a brick structure with a pit present at the southern boundary of the building. This pit runs east-to-west and continues along the brick wall south of the Manley Oil Building. The Design Engineering Trench Plan drawings show one of the existing tanks to be used for drip oil, another for dirty oil, another for separator oil, and two for lube oil [SCGC, 1956]. There was no label showing what type of liquid was to be stored in the future tank. No underground tanks were found during removal activities; therefore it is evident that all the subsurface structures in this area have been removed sometime in the past. SCG and Tetra Tech are not aware of any records showing the closure of these tanks. There are also no records that SCG is aware of to document the tanks' use or integrity testing.

1.4 SUMMARY OF PREVIOUS SITE INVESTIGATIONS AND REMEDIATIONS

Three site-specific investigations were previously performed at the Site. These include:

- Preliminary Endangerment Assessment, Earth Tech [1998];
- Remedial Investigation, Earth Tech [2001]; and
- Supplemental Sampling in the Northwest Corner, TRC (for Tetra Tech Master Remedial Investigation) [2002].

Earth Tech performed the site-wide investigations for SCG. A fourth investigation was conducted in June 2003 to further delineate the horizontal extent of contamination observed in the northwest corner area of the Site (i.e., at Boring N-2). The purpose of this supplementary investigation was to collect additional information to prepare a Removal Action Workplan for the northwest corner of the Site.

Summaries of the observed geology, hydrogeology, and nature and extent of contamination delineated during these investigations are presented below. Additional information from site investigations performed at locations adjacent to the Site that is relevant to the delineation of the extent of contamination at the Site is also provided below.

During site investigation activities, areas of the Site that were accessible were investigated by SCG. In many cases, however, sampling beneath the location of former tanks, buildings, concrete pads, and other support structures at the Site was either highly limited or not possible. Please refer to Figure 1-3 from Removal Action Workplan [Tetra Tech 2004a] showing the historical structures and Figures 4, 5A, and 5B from Remedial Investigation Report [Earth Tech 2001] showing the presence of concrete layers at the Site. Copies of these 4 figures are included in Appendix V.

1.5 GEOLOGIC SETTINGS

1.5.1 Geology

The subsurface lithology underlying the Site can be generalized as coarsening downward with artificial fill material in the upper few feet of the soil column. In the northwest corner of the Site concrete structures and foundation footings encountered during removal action activities extended as deep as 12 feet bgs. Fill materials observed in the trenches and borings excavated and drilled in the Manley Oil Building were also observed at depths ranging as deep as 12 feet below surface grade (Appendix J). Concrete structures and foundations were encountered in borings drilled in central and southern sections of the Site at depths ranging between 8 and 14 feet bgs [Earth Tech, 2001]. Sandy fill material was observed from surface to 10 feet bgs in central and northern sections of the Site. Sand or gravelly sand was encountered from surface to 10 feet bgs in the southern section of the Site.

In the northwest corner of the Site where removal action activities were implemented, and across the rest of the Site, native alluvium of medium to coarse sands (both well and poorly graded) were observed to extend from the fill layer at approximately 10 to 12 feet bgs to the top of the groundwater table, approximately 30 feet bgs. In the central area of the Site (boring BN-04) sand, gravelly sand, and silty sand were observed to be below the groundwater table (approximately 30 feet bgs) to the bedrock layer at 78.5 feet bgs (Figure 2-1). The gravelly sands and sandy gravel encountered near the water table contained rock fragments and cobbles. Soil color ranged from various shades of brown (light yellowish brown to olive brown) to gray above the water table, and gray to dark gray at the capillary fringe and water-saturated zone, respectively [Earth Tech, 2001]. These geologic zones were confirmed during the removal action activities.

1.5.2 Hydrogeology

The former Aliso Street MGP site is located within the Los Angeles Forebay Area of the Los Angeles Central Groundwater Basin [California Division of Water Resources, (CDWR), 1961, "Ground Water Geology of the Coastal Plain of Los Angeles County", Bulletin 104]. Eight aquifers and associated aquitards have been mapped in the basin area. The aquifers, from shallowest to deepest are: Gaspur, Exposition, Gage, Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside. Except for the Gaspur aquifer, all aquifers of the basin thin and pinch out towards the southern portion of the Aliso Street MGP site. The Gaspur aquifer has been mapped to continue northward from the basin through the Aliso Street MGP site.

Previous hydrogeologic investigations in the MGP site have established the presence of groundwater in the underlying river alluvial deposits at depths ranging between 29 and 42 feet below ground surface (bgs). This groundwater is unconfined and has a flow direction to the south. There are no intervening, continuous, confining layers. The base of the saturated zone is bedrock, encountered at depths from 45 feet bgs in well C-10, located near the corner of East Temple Street and Center Street on Block Q to 145 feet bgs in TtS-2, located on Sector E in the northern part of the Aliso Street MGP site. In some places, the underlying bedrock is dry such as beneath Sector A, while in other places there are thin, permeable sand layers in the weathered bedrock formation. The saturated hydraulic conductivity of bedrock samples range from 3.2E-7 to 7.0E-9 cm/sec, compared to 1.55E-03 cm/sec for the site-wide mean for samples from the alluvium.

Groundwater underlying the Site was encountered at approximately 30 feet bgs during the PEA investigation and the saturated zone consisted of mostly coarse-grained alluvial deposits [Earth Tech, 1998]. During the 2001 RI investigations by Earth Tech, the depth to groundwater observed in the borings and temporary wells was 29 to 31 feet bgs. During the removal activities conducted in the northwest corner of the Site, the depth to groundwater ranged from approximately 28 to 30 feet bgs (Appendix S). There are no permanent wells on Block N.

In the central area of the Site (Boring BN-04), the saturated alluvium zone was observed to extend to 78.5 feet bgs, the top of the bedrock layer (Fernando Formation). The saturated alluvium comprises one aquifer overlying the bedrock, which may correspond to the Gaspur aquifer. The deeper aquifers below the Gaspur aquifer found elsewhere in the Los Angeles Basin are not present beneath Block N. Based on the network of shallow wells at the Aliso Site, the groundwater flow direction across Block N varies from south along the eastern part near the Los Angeles River to southwest.

1.6 MEDIA OF INTEREST

Removal action activities focused on excavating and removing from the Site, mainly from the northwest corner area, vadose zone contaminated source soils. Groundwater remediation was not a part of this removal activity. The groundwater remediation management for the entire former Aliso MGP site will be addressed as one operable unit and will be discussed in a separate document under the groundwater management plan.

1.7 PROPOSED REMOVAL ACTIVITIES

Removal action was performed by removing the impacted soil to meet the removal action goals. In general, Site cleanup was based on the most protective (i.e., lowest) removal action goals, regardless of whether the goals are protective of residents, workers, or groundwater. This set of health-protective goals was presented in Table 5-1 in the Removal Action Workplan [Tetra Tech, 2004a]. The soil removal proceeded until the cleanup goals were achieved. This was demonstrated by the analytical results of the confirmation samples collected prior to backfilling.

1.7.1 Removal Action Workplan

A Removal Action Workplan (RAW) was prepared by Tetra Tech for Aliso Block N [Tetra Tech, 2004]. The RAW included all necessary detailed plans and specifications required to conduct the removal activities at the Aliso Block N, considering all physical, geotechnical, structural, and environmental constraints.

1.7.2 Geotechnical Studies

Geotechnical studies were conducted to evaluate potential strategies for safely excavating impacted soils from the Site, particularly at the depths and locations in which such excavations would be performed. Geotechnical plans were prepared for the removal and replacement of contaminated soils. These plans (hereinafter referred to as "approved City of Los Angeles excavation plan") were reviewed and approved by City of Los Angeles on March 21, 2005 (City

Approval Log No. 46381-01). A Request for Modification to use slurry as backfill was approved by the City of Los Angeles on May 9, 2005 (File No. 12578).

Geotechnical evaluation was performed during removal action activities by the Geotechical Contractor (Geotechnical Soilutions, Inc.), when necessary, to evaluate the soil condition at the Site and to revise or modify the conceptual recommendations presented in Section 5.2.1 of the RAW. The conceptual recommendations provided in the RAW were based on generally accepted engineering practices and were only based on limited information obtained from the as-built drawings provided by SCG [Tetra Tech, 2004a]. A geotechnical assessment had not been previously performed for this Site.

This section describes the field activities performed during the removal action at the former Aliso Street MGP Site, Block N of Sector C. The removal activities were implemented with the approval of DTSC. The site removal action was focused on the northwest corner area of the Site and was implemented by proceeding with removal of contaminated soils in the vadose zone from the Site until the cleanup goals were achieved.

2.1 CONTRACTORS AND SUBCONTRACTORS

The contractors and subcontractors that were involve in the removal activities included:

- Tetra Tech was the environmental consultant and under a direct contract with SCG oversaw and managed the removal activities for SCG.
- Kleinfelder was the environmental consultant that oversaw and managed the removal activities for the property owner.
- Geotechnical Soilutions, Inc. under a direct contract with SCG managed the geotechnical issues.
- El Capitan Environmental Services, Inc. (El Capitan) was the general contractor under a direct contract with the SCG, performed all removal action and trenching activities at Block N.
- American Environmental Testing Laboratory (AETL), a vendor under direct contract with SCG, performed all soil and air sample analyses.
- TPS Technology managed transportation, treatment, and recycling of all excavated contaminated soils under a direct contract with the SCG. Belshire Environmental services provided transportation services under the direct contract with TPS.
- J&I Trucking was a subcontractor to El Capitan for transporting all the non-contaminated material such as concrete, asphalt, and metal pipes out of the Site.
- Windrow Earth Transporting Inc. was a subcontractor to El Capitan for transporting clean soil for backfill to the Site.
- S&S Paving was a subcontractor to El Capitan in charge of paving activities.
- Standard Concrete Products was a subcontractor to El Capitan in charge of delivering cement slurry to the Site.

2.2 SITE SECURITY

An 11-foot high, brick wall around the Site provided security for the Site and the areas of excavation. There was adequate room within the walled-off area to operate excavation, loading, and hauling equipment. The walled-off area also encompassed the exclusion, decontamination, and support zones. During non-working hours, the gate to the Site was shut and kept locked. The brick wall around the Site acted as a visual barrier and windscreen around the Site, reducing the visual impact of Site activities and minimizing potential dust moving offsite. The staging area was located onsite within the walled-off area.

2.3 SITE ACCESS

2.3.1 Site Access

During removal activities, Site access was limited to the authorized personnel only. A sign-in log was maintained at the Site to document personnel entering the Site.

2.3.2 Site Visitors

For the duration of the soil removal activities the following people visited the Site: Mr. Masood Hosseini, Senior Project Manager (SCG), visited the Site daily; Mr. Pete Cooke, Project Manager (DTSC), visited the Site one to two times a week; and Dr. Richard Coffman, geologist (DTSC), visited the Site periodically to observe the sampling procedures. The visitors' log is kept on file at El Capitan's office.

2.3.3 Traffic Control

Access to the Site for the trucks and personal vehicles was through the main gated entrance off of Ducommun Street (Photo number 1 in Appendix B). Traffic control measures were applied (i.e., use of flagmen in Ducommun Street and at the gated entrance) during the removal activities for the trucks entering and exiting the Site. One to two flagmen were assigned to monitor and direct the incoming and outgoing trucks and equipment to and from the Site.

2.4 PERMIT REQUIREMENTS

The removal action contractor (El Capitan Environmental Services, Inc.) obtained the necessary permits for removal activities, transportation, and air quality. The following permits were obtained for this project. Copies of these permits are included in Appendix A.

- Excavation permit from City of Los Angeles – Department of Building and Safety. Excavation and grading permit were prepared by Geotechnical Soilutions, Inc., and approved by City of Los Angeles (permit number 05030-10000-01227) on April 4, 2002.

- Modification to Excavation Permit from City of Los Angeles – Department of Building and Safety. A Request for Modification to use slurry as backfill was approved by the City of Los Angeles on May 9, 2005 (File No. 12578).

- South Coast Air Quality Management District – (SCAQMD assigned to El Capitan Environmental Services, Inc reference number is 105386, dated May 27, 2005).

- Annual Trench/Excavation permit – State of California Department of Industrial Relations Division of Occupational Safety and Health, reference number 2005-902415, issued to El Capitan Environmental Services, Inc and valid through December 31, 2005.

2.5 MOBILIZATION

The removal action contractor (El Capitan Environmental Services, Inc.) mobilized onsite on May 31, 2005. A trailer unit placed on the Site by El Capitan was utilized for an office during the removal activities. This office was used by the El Capitan crew, Geotechnical Soilutions, Kleinfelder, Tetra Tech, and the SCG. Staging areas, and truck loading, decontamination, and support zones on the Site were clearly identified. The health and safety, noise, dust, and odor control equipment and materials were positioned for use when necessary.

The following construction equipment was used at the Site: a loader (Volvo DeNardi, L120C), backhoe (Cat446B turbo 4x4), a drill auger attached to a modified excavator (325 Cat), a concrete saw, a concrete pump, a compressor, a medium sized Hatachi EX 270LC excavator, and a sheep's foot attached to the excavator used for soil compaction.

2.6 SITE PHOTOGRAPHS

Many photographs were taken at the Site during removal activities. A few representative photographs (as referred to in this report) have been included in Appendix B. Additional photographs of removal activities are on file in the Tetra Tech Pasadena office.

2.7 REMOVAL ACTIVITIES

Excavation activities were conducted at the Site from June through December 2005. Excavation was conducted in accordance with the approved City of Los Angeles excavation plan [Geotechnical Soilutions, March 2005] and the Block N, Sector C, Removal Action Workplan [Tetra Tech, 2004].

2.7.1 Description of the Proposed Area of Excavation

The proposed area of excavation and environmental cleanup was situated in the northwest corner area of the Site, between the south and east outer retaining walls of the concrete pit located south of the Manley Oil Building (Figure 2-1). The depth of the concrete pit was approximately 11 feet bgs. The construction of the pit consisted of 6-inch thick concrete walls. The base of the footing for the pit was approximately 12 feet bgs. A sump and a drain were located in the floor of the pit. The sump was centrally positioned in the pit and was located approximately 8 feet south of the Manley Oil Building (Photo number 34). The sump was approximately 2-foot by 2-foot square and approximately 2.5-foot deep (Appendix D). The floor of the sump appeared to be concrete lined. The drain, approximately 6-inches in diameter, was located near the west-end of the pit, approximately 8 feet south of the Manley Oil Building (Photo number 35). In addition, three 2-inch diameter holes were observed in retaining wall of the pit adjacent to the proposed area of excavation (Photo number 36). The 2-inch diameter holes were located approximately 6 inches above the floor of the pit.

2.7.2 Grid System

Prior to soil removal activities, the proposed area of excavation located in the northwest corner area of the Site was divided for ease of reference and sample labeling by a grid system. As shown on Figure 2-1, the grid system was comprised of approximate 3-foot by 3-foot virtual squares. The grid was labeled numerically starting at the northwest corner of the proposed area of excavation, in ascending order from west to east (1 through 18) and alphabetically from north to south (A through R). The area initially proposed for excavation was approximately 26 feet by 26 feet.

2.7.3 Removal of Asphalt

Excavation activities began with the removal of the asphalt that was covering the proposed area of excavation. The asphalt was removed and transported off-site to an asphalt recycling facility.

2.7.4 Initial Excavation Activities

Soil removal activities were begun in the northwest corner area of the Site on June 2, 2005 (Photo number 2). In accordance with the approved excavation report [Geotechnical Soilutions, March 2005], initial soil removal activities were conducted in the area of proposed removal action to a depth of approximately 8 feet bgs (Photo number 2). The depth of the initial excavation was purposely kept approximately 1 to 2 feet above the bottom of the concrete footings of the retaining walls (i.e., at approximately 10 feet bgs) to be protective of their structural integrity and to help insure the support of the walls during augering and soil removal activities. Soil samples from selected locations of the initial excavation were collected and analyzed.

Portions of the excavation temporarily exceeded 8-foot in depth to remove deeper concrete structures. Soil from the excavation was temporarily used to fill in areas in the floor of the excavation where the removal of concrete structures resulted in holes deeper than 8 feet. The south portion of the excavation was temporarily lowered an additional 3.5 feet for removal of abandoned subsurface concrete structures and to facilitate soil augering operations (Photo number 3). This area was backfilled with soil from other parts of the excavation back up to 8 feet bgs to support the retaining wall (Photo number 5). Some near-surface old abandoned buried pipes and debris were exposed and removed from the Site during shallow subsurface excavation activities.

2.7.5 Soil Removal by Auger Drilling and Slurry Replacement

In accordance with the excavation plan approved by City of Los Angeles, a vertical excavation of approximately 8 feet bgs, was made adjacent to the concrete lined sumps and footings on the north, south, and west walls. In addition, a 1:1 slope of the east side was necessary before excavation was made. Following these initial excavation activities, soil removal from the excavation was performed through auger drilling and cement slurry replacement per specifications indicated in the approved City of Los Angeles plans. This method served two purposes: 1) to replace the contaminated soil with clean materials, and 2) to provide support for the adjacent concrete retaining walls.

Auger drilling activities at the Site were begun on June 6, 2005. The auger drilling method consisted of drilling through the contaminated soil using 2- and 3-foot diameter auger (Photo number 4). The first six auger borings drilled at the Site (No.'s 1 through 6) were located to the east and south of the excavation limits proposed in the approved City of Los Angeles excavation plan (Figure 2-1). These borings were drilled to evaluate the limits of the contaminated soils at the Site.

A total of 117 borings were drilled at the Site by auger drilling method (Appendix S). Of these, 102 auger borings were drilled using the 3-foot diameter auger in the Deep Excavated Area (Figure 2-1). The final surface area dimensions of the deep excavated area were approximately 27 feet by 33 feet. The auger borings in the Deep Excavated Area were drilled to depths ranging from approximately 28 to 30 feet bgs. Each of these auger borings was drilled until groundwater was encountered at approximately 28 to 30 feet bgs of approximately 20 to 22 feet below the bottom of the 8-foot deep open excavation. Caving occurred while drilling many of the boreholes resulting in an auger-boring diameter of approximately 4 feet. The borings were drilled to overlap each other to eliminate or minimize the amount of contaminated soil left behind. Soil samples from selected borings were collected and analyzed.

The contamination along the southern limits of the excavation was removed by drilling three additional rows of borings (Rows I, J, and K) beyond the limits initially proposed in the approved City of Los Angeles excavation plan (Figure 2-1). Contamination in the northeast corner of the excavation was removed by drilling two extra boring locations, No's 100 and 106 (Appendix S).

A total of 15 other auger borings were drilled on the Site outside the limits of the Deep Excavated Area. They include auger boring No's 2 through 6, 40, 47 through 51, 68, and 114 on Figure 2-1, and auger borings NB-5 and NB-6 on Figure 2-2. These borings were drilled with 2- to 3-foot diameter auger and ranged in depth from 5 feet to 30 feet bgs.

In both cases the contaminated soil was removed and the borings backfilled with 2-sack cement sand slurry. The borings were replaced with slurry the same day as recommended in the Los Angeles City approved plans.

The majority of the boreholes were drilled with 3-foot diameter auger. Some additional boreholes located near the limits of the excavation were drilled for confirmation sample collection with 2-foot diameter auger (Figure 2-1). Each auger boring was tremmied to the surface with 2-sack cement sand slurry per specification of the approved Los Angeles City plans, with a minimum compressive strength of 100 psi (Appendix T). The auger borings drilled in the deep excavated area were backfilled with slurry up to the base of the initial excavation, approximately 8 feet bgs. The drilled boreholes were backfilled as soon as possible and no later than the end of each working day as recommended in the Los Angeles City approved plans. A curing period of 24 hours was granted between adjacent drilled boreholes, such that a hole could not be drilled if the adjacent holes had been backfilled in less than 24 hours with slurry. The location of the additional slurry holes along the southern and eastern limits of the excavation are shown on Figure 2-1.

2.7.6 Open Excavation

Open excavation was performed on July 13, 2005 following the completion of excavation activities by auger drilling and slurry replacement. These additional excavation activities were conducted at the southern and eastern limits of the excavation. Open excavation activities were limited to shallow depths (i.e., not exceeding 11.5 feet bgs) because no more contamination was found below these depths. Soil samples were collected from the limits of these areas (Photo number 7) and analyzed. The results show that the contamination levels were below the cleanup goals.

Open excavation was performed as follows:

1. In the southern portion of the excavation, backfilled soil temporarily placed from 8 to 11.5 feet bgs on the floor of the excavation as fill was removed (Figure 2-1; Photo numbers 5 and 6).

2. At the east side, soil was excavated to approximately 8 feet to 10 feet bgs until the contamination identified in borings 48, 49, and 50 was removed. A sump and piping were exposed (Figure 2-1; Photo numbers 8 and 9). The sump was backfilled with slurry. The piping was left, with DTSC approval, capped as found (Appendix K).

3. The excavation on the northern and western sides was limited by the sump retaining walls.

A 1:1 slope of the east wall was completed before proceeding with open excavation activities.

2.7.7 Additional Excavation at BN7

On June 21, 2005 two 3-foot diameter auger borings, NB-5 and NB-6, were drilled at boring BN-7 (Figure 2-2) to remove elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) that have been detected in the soil at that location during pervious remedial investigation activities [Tetra Tech, 2004]. Benzo(a)pyrene [B(a)P] equivalent concentrations of C-PAH exceeding the remedial goal were detected during previous investigation activities in a 3-foot sample collected from boring BN7 [Tetra Tech, 2004]. At the request of the property owner, the soil at the location where the 3-foot sample from boring BN7 had been collected was augered out and removed.

During auger boring activities at BN7, two former boring locations were visually identified at BN7. Auger borings NB-5 and NB-6 were drilled to remove the soil from both of the visually identified boring locations. Auger boring NB5 was drilled to 5 feet bgs when refusal was encountered. Auger boring NB6 was drilled to completion at 10 feet bgs. Samples NB5-3', and NB6-5' and NB6-10' were collected from the two auger boring locations. Auger borings NB-5 and NB-6 are identified in Appendix S as boring No.'s 77 and 78. Photo number 10 shows the excavation activities. Auger borings NB5 and NB6 were backfilled with cement slurry (Photo number 11).

2.7.8 Breach and Repair of Section of North Pit Retaining Wall

A section of the pit retaining wall in the northwest corner of the excavation was breached during soil removal activities. Photo number 12 shows the breach. The wall was later repaired with cinder block construction to match the previous structure. Photo number 13 shows the wall following its repair.

2.7.9 Sampling, Remedial Action, and Excavation Conducted in the Mercury Contaminated Area

A few droplets of silvery liquid material (Photo number 15) were first observed at the Site on June 8, 2005 on the asphalt pavement west of the contractor's trailer on June 8, 2005. The area was cordoned off with caution tape and covered with plastic sheeting (Photo number 16). A sample of the liquid material was collected in a glass jar. The sample, identified as "EX1-1", was sent to the laboratory for analysis by EPA Method 7470A. Results of laboratory analysis indicated that the sample was 99.9 percent mercury by weight. Results of sample analysis are included on Table E-9 in Appendix E.

Mercury cleanup activities were performed by El Capitan on June 21, 2005 at the location west of the trailer over an area approximately 7 feet by 7 feet on the sides and roughly triangular in shape (Figure 2-2). Mercon Merconsorb Powder, according to directions provided by the manufacturer, was applied across the affected area. The location was then carefully wet down with water. A brush was then used to mix the Merconsorb Powder with the water and any liquid mercury present to form a slurried material (Photo number 17). The slurried material and excess reactant were then swept up (Photo number 18). The used cleanup materials were drummed.

Following cleanup activities, a mercury indicator powder (Spilfyter, NPS Corporation, Green Bay, WI) was then applied according to directions provided by the manufacturer to the affected area (Photo numbers 19 and 20). A light sprinkle of water was carefully applied and mixed on the asphalt surface with the indicator powder. After a 24-hour period the area was inspected and no color changes were observed, indicating that the liquid mercury in the affected area had been removed. The affected area was delineated by white marking paint.

On June 24, 2005, a sample of the asphalt from where the mercury was observed, identified as "Asphalt #01", was collected and sent to the laboratory for analysis (Photo number 21). The sample was analyzed for mercury and other CAM metals by EPA Method 6010B/7000CAM. A concentration of 1,190 mg/kg of mercury was detected in the sample. On August 12, 2005, a section of asphalt from where the above sample was collected, approximately 2-foot by 2-foot square, was cut and removed. Soil beneath the asphalt cut was excavated to approximately 1-foot bgs (Photo number 22). Soil samples NMSA-F1-1’ and NMSA-F2-1’ were collected from the limits of the excavation and sent to the laboratory for analysis by EPA Method 6010/7000. Detected concentrations of 0.1 mg/kg and 0.15 mg/kg of mercury were detected in samples NMSA-F1-1’ and NMSA-F2-1’, respectively. The complete results of the sample analysis are included on Table E-8 in Appendix E.

The asphalt and soil cuttings, along with the materials from the mercury cleanup activities, were containerized in a 55-gallon DOT drum. The drummed materials were stored onsite pending completion of chemical analysis and transferred, based on analytical results and applicable federal, state, and local regulations, to an appropriate disposal facility. However, on September 28, 2205, the Southern California Gas Company informed Tetra Tech that the drum in which the stored wastes had been containerized had been opened and mixed by the property owner’s contractor with other material onsite for disposal. A copy of a letter from Tetra Tech to SCG Company documenting this event is included in Appendix L.

2.8 CONFIRMATION SAMPLES

Confirmation samples are those samples that were collected from the limits of the excavation and from the Site during removal action activities. These samples represent the condition of the in-place soils remaining at the Site following the completion of removal action. Please refer to Section 5.2 for a detailed discussion on confirmation sampling.

2.9 EXTENT OF EXCAVATION AND VOLUME OF SOIL REMOVED

Vadose zone contaminated soils (and in some areas the loose soil, concrete, and debris) were removed to the extent physically, structurally, and geotechnically feasible and to the extent allowed by excavation permit requirements (Appendix A). Due to constraints of excavation, any vadose zone contaminated soils located beneath the concrete lined pits along the northern and western limits of the deep excavated area were left in place. In the excavation, contaminated soils and concrete structures were removed in the shallow excavated areas to depths ranging from 8 feet to 11.5 feet bgs. In the augered area of the excavation contaminated soils were removed to depths ranging from approximately 28 feet to 30 feet below surface. Some accessible debris and non-contaminated soils were also removed during the remedial activities to prepare the Site for proper compaction. The final extent of the excavation, including the open excavation area, encompassed an area approximately 50 feet by 55 feet. The final extent of soil removal is shown on Figure 2-1.

The total volume of contaminated soil augered and/or excavated from the Site during the remedial excavation was approximately 1,664 cubic yards or 2,663 tons (Appendix M). Figure 2-1 shows the area and the depth of the excavation.

2.10 GEOTECHNICAL AND STRUCTURAL MONITORING

2.10.1 Monitoring Sump Retaining Walls

The retaining walls of the sumps were monitored during the excavation activities. The augered borings were backfilled daily in order to avoid settlement of the walls following soil removal activities. Visual monitoring of the retaining walls was performed daily by the general and geotechnical contractors, and was continued throughout the excavation activities, until the excavation was backfilled.

2.10.2 Geotechnical Oversight

A representative of Geotechnical Soilutions, Inc. was present on-site at all times during the excavation and backfill activities to observe excavation procedures and provide necessary modifications during the duration of the project.

2.11 WASTE TRANSPORTATION

Wastes generated during the removal activities included:

1. **Contaminated soil**. The contaminated soils associated with the removal action were manifested and transported to the TPS Technologies, Inc., a soil treatment and recycling facility, located in Adelanto, California. If pieces of bricks contaminated with PAHs were excavated they were also transported to the TPS Technologies Inc. None of the treated soils were returned or reused at the Site.

2. **Solid wastes such as concrete and asphalt.** Approximately 180 tons (7 loads) of concrete were transported to Nu-Way Live Oak Reclamation, in the City of Irwindale and Shamrock Base Corp. in Los Angeles (Appendix O). Approximately 44 tons (2 loads) of asphalt was transported to Nu-Way Live Oak Reclamation (Appendix O).

3. **Abandoned pipelines.** Approximately 64.5 feet of pipes that were 6-inch in diameter, and 26.5 feet of pipes that were 8-inch in diameter were transported off of the Site to Irwindale Iron and Metal for recycling (Appendix O).

A detailed log of the contaminated soil loads hauled from the Site is included in Appendix M. Each load of waste was off-loaded for treatment in a manner consistent with current Federal EPA, State, and local regulations. During loading, dust and odor emissions were monitored and mitigated as necessary according to discussions earlier in this section. During transportation, the soil and debris in the trucks were tightly covered by a heavy tarp.

Each contaminated soil load that was transported offsite was subject to inspection conducted by the Contractor and/or Tetra Tech representatives prior to departure. Each shipment was accompanied by a completed Non-Hazardous Waste Manifest (Appendix M). Total tonnage was calculated from the certified scale tickets.

Transportation
Transportation activities were performed in strict compliance with regulations and ordinances. Transporters were certified by the USEPA and the State of California as hazardous waste transporters that permitted to haul contaminated waste material. The transportation contractors were fully licensed and permitted by the USEPA and the State of California. The DOT and California Highway Patrol (CHP) safety regulations were strictly followed.

Treatment/Recycling Facility
TPS Technologies, Inc. (TPS) is a treatment/recycling facility that treats soil by thermal desorption[1]. TPS is located at 12328 Hibiscus Avenue, Adelanto, California. TPS has proper permits from the Regional Water Quality Control Board Lahontan Region (Board Order No. 6-91-935A1 WDID No. 6B369107002); County of San Bernardino Air Pollution Control District (File B002924/C002925); Mojave Desert Air Quality Management District (Certificate Nos B003664 and C003663); County of San Bernardino Environmental Health Services (no jurisdiction); and City of Adelanto to operate and recycle the treated soil.

Thermal desorption involves induced volatilization of organic wastes by low temperature heating, and subsequent destruction or capture of the resulting gaseous emissions. A thermal desorption system typically consists of a low temperature (300 to 800 ^{o}Farenheit [F]) primary chamber, and a secondary afterburner, operating at a temperature of 2000+ ^{o}F. A wet scrubber control system is typically used to control air emissions. This process is effective for the treatment of TPH and PAHs.

2.12 BACKFILL OPERATIONS

The augered areas were backfilled with a 2-sack cement sand slurry mix (Appendix C). Open excavation areas were backfilled with clean imported soil. During the backfilling operation, none of the excavated soils were re-used for backfill at the Site. The entire site was backfilled with clean virgin soil, except the areas that were backfilled with cement/sand slurry.

Source of Import Soil
Imported clean soil was brought from the University of California, Los Angeles (UCLA) Campus located in City of Los Angeles, California. A parking structure was being constructed on the UCLA campus. The soil excavated from the construction site at the campus was imported to Block N as clean backfill material.

Backfill Soil Sampling
When brought on to the Site, the backfill soil was temporarily stockpiled near the east side of the primary excavation (photo number 25) until the time it was used for backfill. Eight soil samples were collected from the clean imported soil during the backfilling activities. The analytical results demonstrated that the soil was clean and suitable for backfilling at Block N. In general,

[1] Thermal desorption involves induced volatilization of organic wastes by low temperature heating, and subsequent destruction or capture of the resulting gaseous emissions. A thermal desorption system typically consists of a low temperature (300 to 800 ^{o}F) primary chamber, and a secondary afterburner, operating at a temperature of 2000+ ^{o}F. A wet scrubber control system is typically used to control air emissions. This process is effective for the treatment of TPH and PAHs.

for collection of soil samples for backfill materials, the “DTSC Clean Imported Fill Material Information Advisory, October 2001” was used as the guide. The backfill samples were analyzed using the following methods:

- Total petroleum hydrocarbons (EPA Method 8015M for gasoline [C_4-C_{12}], diesel [C_{12}-C_{23}], and heavy hydrocarbons [C_{23}-C_{40}])
- VOCs (EPA Method 8260B)
- SVOCs (EPA Method 8270C)
- PAHs (EPA Method 8310)
- TPHs (EPA Method 8015)
- California Assessment Manual (CAM) 17 Metals (EPA Method 6010/7000 CAM)
- Pesticides (EPA Method 8081)
- Herbicides (EPA Method 8151)

All soil samples collected from the backfill soil were sent to American Environmental Testing Laboratory (AETL) for chemical analyses. AETL is a State of California certified environmental laboratory. Summary of the analytical results are included in Appendix F in Tables F-1 through F-10. Based on the sampling results, all of the fill material was determined to be suitable for backfilling at the Site.

Compaction

The excavation was backfilled with imported soil compacted to 95% or greater relative compaction. Where the minimum relative compaction was not achieved, the area was re-worked, re-compacted, and re-tested until the minimum relative compaction was achieved. A loader and a sheep-foot attached to an excavator were used to compact the backfill (Photo number 26).

Field density tests were performed by Geotechnical Soilutions, Inc to determine the relative compaction of the fill material. The relative compaction of the fill material was determined by the sand cone test method ASTM D1556-90.

A summary of the compaction report from Geotechnical Soilutions, Inc. is included in Appendix C.

2.13 SITE RESTORATION

The excavated areas at the Site were leveled and sloped properly for drainage purposes. The large excavation in the northwest corner area of the Site was backfilled with clean backfill materials up to approximately 9 inches below finish grade. A minimum of 2 inches of base was placed on top of the compacted fill. The base was compacted with a vibrator roller. The backfill was placed according to the grading requirements and specifications of Los Angeles City approved plans.

On September 7, 2005, after completion of backfilling activities, the three areas of the Site where removal activities were conducted (i.e., the large excavation in the northwest corner area, the excavation at BN7, and the excavation in the Mercury Cleanup Area) were re-paved with asphalt and restored to their original condition. The excavated areas of the Site were restored to finish grade with new asphalt pavement (Figure 2-2). The finished grade was similar to the grade prior to the excavation. Photo number 27 shows Block N in the area of large excavation after completion of restoration activities.

3. SITE INVESTIGATION DURING REMOVAL ACTION ACTIVITIES

During removal action activities, elevated concentrations of the constituents identified in the June 2004 Removal Action Workplan as being chemicals of potential concern (COPCs) where detected in selected soil samples collected from the north limits of the deep excavation area. As a result, a limited investigation was performed to obtain information of the subgrade soils located beneath the Manley Oil Building and the concrete lined pit south of the Manley Oil Building.

This section describes investigation activities performed in the course of removal action at the former Aliso Street MGP Site, Block N of Sector C. The technical procedures of the sampling performed with the investigation activities are also included in this section. The investigation activities performed during removal action were implemented with the approval of DTSC. The approach of the investigation activity was to perform a limited investigation of subsurface soils located beneath the northwestern corner area of the Site, including those areas of the Site located beneath the Manley Oil Building and the pit south of the Manley Oil Building.

3.1 CONTRACTORS AND SUBCONTRACTORS

The contractors and subcontractors that were involve in the removal activities included:

- Tetra Tech was the environmental consultant who under a direct contract with SCG oversaw and managed the investigation activities.

- Test America Drilling Corporation was a subcontractor to Tetra Tech to perform soil boring and soil gas probe installation at the Site.

- R.B. Concrete Cutting, Inc., and Skaggs Concrete Cutting were subcontractors to Test America Drilling Corporation for concrete coring services.

- Spectrum Geophysics was a subcontractor to Tetra Tech to perform underground utility locating service.

- Kleinfelder was the environmental consultant that oversaw investigation activities for the property owner.

- Geotechnical Soilutions, Inc. who under a direct contract with SCG managed the geotechnical issues that arose during the investigation activities.

- El Capitan Environmental Services, Inc. was the general contractor who, under a direct contract with the SCG, performed all trenching activities conducted during the investigation.

- August Construction was a subcontractor to El Capitan for limited access rig (LAR) bucket auger drilling activities.

- American Environmental Testing Laboratory (AETL), a vendor under direct contract with SCG, performed all sample analyses and soil gas collection.

- TPS Technologies, Inc. managed transportation, treatment, and recycling of all excavated contaminated soils under a direct contract with the SCG. Belshire Environmental services provided transportation services under the direct contract with TPS.

3.2 SOIL BORING ACTIVITIES

3.2.1 Mobilization

Tetra Tech contracted with Test America Drilling Corporation to perform soil boring and soil gas probe installation inside the Manley Oil Building. On August 10, 2005, Test America Drilling mobilized a limited access hollow stem auger drilling rig inside the Manley Oil Building to perform drilling operations. Prior to drilling, Dig Alert was notified and each boring location was cleared by an underground utility locating service.

3.2.2 Soil Borings Drilled Inside Manley Oil Building

On August 10 and 11, 2005, SCG performed soil boring activities inside the Manley Oil Building (Photo number 14). The boring activities were performed in conjunction with the removal activities conducted on Block N in June and July 2005. These soil boring and sampling activities were conducted to delineate under the Manley Oil Building any detectable concentrations of the constituents identified in the June 2004 Removal Action Workplan as being chemicals of potential concern (COPCs) and to characterize the soil under the Building. The borings were located under the Manley Oil Building, where only a limited amount of data had been collected during previous investigation activities.

The planned scope of work was to drill and collect samples from 5 soil borings drilled to 30 feet bgs. However, refusal was encountered in two of the five planned boring locations, NB-7 and NB-11. At boring NB-7, refusal was encountered due to rock or a subsurface concrete structure at 20 feet bgs. In response, boring NB-7A was added, located 5 feet west of boring NB-7, to provide soil data in the same area as boring NB-7 at the depth range of 20 to 30 feet bgs. At boring NB-11, refusal was encountered at approximately 3 feet bgs due to a subsurface concrete structure. Borings NB-11A was added to replace NB-11. However, refusal at 3 feet bgs was also encountered in boring NB-11A and likewise in boring NB-11B due to the concrete structure. Drilling at boring NB-11C, however, was able to proceed past the concrete structure. Borings NB-7A, NB-8, NB-9, NB-10, and NB-11C (five borings) were completed to 30 feet bgs. Figure 3-1 shows the boring locations inside the Manley Oil Building.

3.2.3 Soil Borings Drilled in the Pit South of the Manley Oil Building

On October 14, 2005, two soil borings, SN-10 and SN-11, were hand augered in the pit south of the Manley Oil Building. These soil boring and sampling activities were conducted to delineate under the pit area between the Manley Oil Building and the deep excavated area any detectable concentrations of the constituents identified in the June 2004 Removal Action Workplan as being chemicals of potential concern (COPCs) and to characterize the soil under the Pit. The two borings were located in the northwest corner area of Block N, in the pit south of the Manley Oil Building, where either no data or only a very limited amount of data had been collected during previous investigation activities (Figure 3-1).

Boring SN-10 was drilled through the floor of a 2-foot by 2-foot sump located in the pit. A portion of the floor of the sump were the boring would be located had been broken out prior to drilling. Boring SN-11 was located in the pit approximately 16 feet west of SN-10 (Figure 3-1). At SN-11 the concrete was approximately 14 inches thick and was cored. These soil borings were hand augered as opposed to power drilling due to the difficulty that would be inherent in setting up a powered drilling rig on the floor of the concrete lined pit.

3.2.4 Soil Sample Collection

Each boring location drilled inside the Manley Oil Building was cored and hand augered, where possible, to 5 feet bgs. The borings were drilled with a hollow stem auger (HSA) limited access rig (LAR). Soil samples were collected from each of the borings at 1-foot, 3-foot, and 5-foot and from each 5-foot interval following using the modified split spoon method. Samples were collected in stainless steel rings, capped, labeled, entered on a Chain of Custody, and placed in a cooler on ice. Samples for VOC analysis were collected by EPA Method 5035A.

Soil borings SN-10 and SN-11 were hand augered to approximately 6 feet and 5 feet bgs, respectively, using a 4-inch diameter auger barrel. Soil samples were collected at 3-foot and 6-foot in SN-10, and at 1.5-foot and 5-foot in SN-11. The samples were collected at the selected depth intervals from soil filled auger barrels in 4-ounce glass jars by pressing the opened end of the jars into the soil retrieved in the auger barrel. The samples were then sealed, labeled, entered on a Chain of Custody, and place in a cooler on ice.

Soil samples collected for VOC analysis form the borings drilled in the Manley Oil Building and from the Pit were collected by EPA Method 5035A.

Portions of each sample were analyzed for visible contamination, odor, and volatile organic vapors using a Mini-RAE 2000 PID. A California Registered Geologist described the sample cores according to the Unified Soil Classification System and standard geologic terminology (Appendix D). Each of the borings were drilled and sampled in accordance with procedures outlined in the Aliso Remedial Investigation Master Workplan dated September 2002 [Tetra Tech, 2002].

Selected samples collected from the borings were analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA Methods 8310, volatile organic compounds (VOCs) by EPA Methods 5035A/8260B, and total petroleum hydrocarbons (TPHs) by EPA Methods 8015M. Results of sample analysis are included in Appendix E.

3.2.5 Boring Completion

Each of the borings drilled in the Manley Oil Building was backfilled with bentonite grout and capped with concrete to match the surface grade. Soil gas probes were installed in borings, SN-10 and SN-11, drilled through the floor of the pit. The soil cuttings and decontamination water from the drilling activities was containerized in labeled 55-gallon drums. The drums were inventoried and stored onsite pending completion of chemical analysis (Appendix N).

3.3 SOIL GAS PROBE INSTALLATION AND SAMPLE COLLECTION

3.3.1 Soil Gas Probe Installation

The installation of the soil gas probes was conducted in accordance with the Los Angeles Regional Water Quality Control Board's requirements for active soil gas investigation dated January 28, 2003. The soil gas probes were installed at boring locations SN-10 and SN-11 in the Pit South of the Manley Oil Building. Soil gas probes consisted of 1/4"-diameter Nylaflow TM tubing. The lower 6 inches of the soil gas inlet end of the probe was slotted (Figure 3-3). The surface end of the probe was plugged with a galvanized sheet screw.

Soil gas probes were installed by feeding the slotted end of the probe down the center hole of the auger or drill casing until it reached the desired subgrade depth. A one-inch protective PVC pipe was used during the construction of the soil gas points to feed the probes down hole and prevent entangling or collapsing of the tubing (Photo number 28). Once a soil gas probe was in place, soil gas point construction began by backfilling the boring with #3 sand around the slotted section of soil gas probe. The #3 sand was backfilled in the boring around the slotted probe section beginning approximately 0.5 foot beneath the end of the probe to approximately 0.5 foot above the top of the slotted section of the probe. The sand was used as a filtration pack to allow soil gas from the subgrade formation into the slotted section of the probe. Backfilled in the boring above the #3 sand was approximately 0.5 foot of #30 sand. The #30 sand was used as a protective layer to keep water and debris materials from mixing with the filter pack. A thin layer of dry granular bentonite, up to 0.5 foot thick, was used above the sand sequence to wick up any moisture. The remainder of the borehole was backfilled with hydrated granular bentonite.

The probes were installed at subgrade depths ranging from 5 to 6 feet bgs. A cross-section of a soil gas point construction is shown on Figure 3-3.

3.3.2 Soil Gas Sample Collection

Soil gas sampling was conducted at the Site on November 1, 2005. Fieldwork procedures, sample collection, and analyses were performed in accordance with Los Angeles Regional Water Quality Control Board's requirements for active soil gas investigation dated January 28, 2003 and the approved Aliso Remedial Investigation Master Workplan dated September 2002 [Tetra Tech, 2002].

The soil gas sampling was performed to evaluate the subsurface soil gas for any detectable concentrations of the constituents identified in the June 2004 Removal Action Workplan as being chemicals of potential concern (COPCs), and to characterize the soil under the Pit (Appendix K). Two soil gas samples and one duplicate soil gas sample were collected and analyzed for VOCs by EPA Method TO-15. The TO-15 compound list used for reporting results was appended to include 55 compounds, including methyl-tert-butyl-ether (MTBE), naphthalene, dicyclopentadiene, 1,3-butadiene, and ferrocene. The soil gas sample locations are shown on Figure 3-1. Results of sample analysis are included in Table E-13 of Appendix E.

The soil gas probes installed during drilling activities at boring locations SN-10 and SN-11 were allowed to equilibrate for at least 48 hours after installation before they were sampled. A technician from American Environmental Testing Laboratory (AETL) collected soil gas samples from the probes following the equilibration period.

At each selected soil gas sample point, a pre-calculated measured volume of soil gas was purged from the selected soil gas probe prior to soil gas sample collection (Appendix Q). Soil gas purging was accomplished by attaching an adjustable vacuum pump to the surface end of the selected probe. The vacuum pump was used to purge the soil gas from the probe at a rate of approximately 100 to 200 milliliters per minute (ml/min). The volume of gas purged from the probe prior to sampling was equal to approximately 3 times the volume of the soil gas probe plus the volume of the tubing attaching the probe to the vacuum pump. Purging was performed to pull in a fresh volume of soil gas from the formation into the probe for sample collection.

Each soil gas sample was immediately collected from a probe once the required volume of soil gas had been purged. One 3-liter Summa canister was used for each sample (Photo number 29). The Summa canister samples were collected by attaching the canister to the vacuum pump and probe assembly. With the pump in non-operational mode (i.e., turned off), the valves to the Summa canister and pump assembly were opened to allow soil gas from the probe to flow into the canister. The valves were left open for 12 minutes. Afterwards, the valves were closed and the air pressure in the Summa canister was checked using a vacuum gauge to verify that it had been filled.

During sampling, a leak-check compound, such as isobutane, was placed on the ground surface around the probe tubing. Detection of the leak-check compound in a soil gas sample could indicate an intrusion of ambient air, and require further investigation to evaluate the sample results.

The soil gas filled Summa canisters were analyzed for VOCs within a 14-day holding time. Following the completion of sampling activities, the surface end of the tubing of both soil gas probes was re-plugged with a machine screw.

3.4 TRENCHING ACTIVITIES INSIDE THE MANLEY OIL BUILDING

3.4.1 Exploration Trenches ET1 and ET2

On October 28 and November 2, 2005, two exploratory trenches were dug in the subgrade soils beneath the Manley Oil Building. The trenches were dug using a backhoe CAT Model No. 446B equipped with a 3-foot bucket. The trenches, ET1 and ET2, were located near the northwest corner area of the Manley Oil Building and overlapped with the locations of previous drilled borings NB-7 and NB-7A (Figure 3-1). The trenches were dug to investigate the vertical and lateral extent of soil contamination in the vicinity of NB-7. Elevated concentrations of C-PAHs and TPH diesel were detected in the 6-foot and 10-foot samples collected from NB-7 (Appendix E). In addition, the Department of Toxic Substances Control requested SCG to remove TPH contaminated soils located beneath the northwest corner of the Manley Oil Building to a depth of 10 feet bgs.

On October 28, 2005, trenching activities were initiated by removing a rectangular shaped section of the concrete slab floor of the Manley Oil Building (Figure 3-1). The rectangular cut was approximately 17 feet long by 10.5 feet wide. After removing the cut section of the concrete slab, a trench identified as ET1 was dug in the south half of the exposed subgrade soil area. Excavation of trench ET1 was completed on November 1, 2005. The final limits of trench ET1 were approximately 12 long by 5 feet wide, by 12 feet deep (Appendix J). On November 2, 2005, a second trench was dug in the northern half of the concrete cleared area (Figure 3-1). The final extent of the trench, identified as ET2, was approximately 16.5 feet long, by 5.5 feet wide, by 12.5 feet deep. Both trenches were excavated under the observation of DTSC, a Registered Geologist (R.G.), a Geotechnical/Civil Engineer (P.E.), the SCG Project Manager, and the Tetra Tech Site Manager.

A total of 15 soil samples were collected from the two trenches, eight from ET1 and seven from ET2. Soil from the north, south, east, and west sidewalls, and from the trench floor, were sampled. The samples were collected, either from soil cuttings in the backhoe bucket or from the trench sidewalls, in 4-ounce glass jars. Due to safety concerns, Method 5035 samples were collected from soil filled 4-ounce glass jars. The samples were analyzed for VOCs, PAHs, and TPH. The location of the samples are shown on Figure 3-1 and on the figures included in Appendix J. The soil filled jars and the VOC samples were labeled, packaged, and placed in a chilled ice chest to preserve the samples. The samples were delivered with the chain-of-custody forms to a state-certified laboratory (AETL) for analysis.

The trenches and soil samples were named and identified sequentially. For example, for sample ET1-7E-10’, the “ET1” stands for the first exploratory trench, the “7” is the sequential number of the trench samples, the “E” stands for the east wall of the trench, and the “10’” stands for the depth below the surface from which the sample was collected.

A California Registered Geologist examined each of the sample locations. Identification of the soil types observed in each of the trench sidewalls was based on the United Soils Classification System (USCS). The contacts in the trenches between soils types were also recorded (Appendix J).

Both ET1 and ET2 were backfilled up to the base of the concrete slab with 2-sack cement sand slurry following completion of trenching and sampling activities (Photo number 30).

3.4.2 Bucket Auger Drilling Conducted along Northern Limits of Trench ET2

On December 7 and 8, 2005, a total of six bucket-auger borings were drilled in the Manley Oil Building (Figure 3-1). The bucket auger borings were located between the northern limits of trench ET2 and the northern wall of the Manley Oil Building. The borings were drilled with a propane powered limited access rig and a 2.5-foot diameter bucket auger (Photo numbers 37 and 38). The borings overlapped the northern edge of trench ET2. However, continued trenching along the north wall was not feasible due to safety concerns about the stability of the footing and building wall. Therefore, the bucket-auger drilling method was employed to remove the contaminated soil observed in the north wall of trench ET2, located between the north wall of the trench and the footing for the north wall of the Manley Oil Building.

On December 6, 2005, bucket-auger boring activities were initiated by removing a rectangular shaped section of the concrete slab floor of the Manley Oil Building located between trench ET2 and the building wall. The rectangular cut was approximately 17 feet long by 2 feet wide. After removing the cut section of the concrete slab, six bucket-auger borings, ETB1 through ETB6, were drilled in the exposed subgrade soil area (Figure 3-2). Four of the borings (ETB1, ETB2, ETB4, and ETB5) were drilled to depths ranging between 10 feet to 13 feet bgs. In the remaining two borings (ETB3 and ETB6) refusal was encountered at 5.5 feet bgs due to a concrete slab (Appendix J). The bucket auger borings were drilled and excavated under the observation of a Registered Geologist (R.G.), a Geotechnical Engineer (P.E.), the SCG Project Manager, and the Tetra Tech Project Manager.

A total of 11 soil samples were collected from the borings. The samples were collected by pressing 4-ounce glass jars into the least-disturbed soil cuttings recovered in the bucket auger. Selected samples were analyzed for TPH and VOCs. The location of the samples are shown on Figure 3-2 and on the figures included in Appendix E. The soil filled jars and the VOC samples were labeled, packaged, and placed in a chilled ice chest to preserve the samples. The samples were delivered with the chain-of-custody forms to a state-certified laboratory (AETL) for analysis.

Portions of each sample were collected in sealable plastic bags and were analyzed for visible contamination, odor, and volatile organic vapors using a Mini-RAE 2000 PID. A California Registered Geologist described the sample cores according to the Unified Soil Classification System and standard geologic terminology (Appendix D). Each of the borings were drilled and sampled in accordance with procedures outlined in the Aliso Remedial Investigation Master Workplan dated September 2002 [Tetra Tech, 2002].

A California Registered Geologist examined each of the sample locations. Identification of the soil types observed in each of the trench sidewalls was based on the United Soils Classification System (USCS). The contacts in the trenches between soils types were recorded (Appendix J).

The bucket auger borings were backfilled up to the base of the concrete slab with 2-sack cement sand slurry following completion of drilling and sampling activities (Photo number 39).

3.4.3 Slab Restoration

On December 12, 2005 new slab was constructed inside the Manley Oil Building at the location where slab had previously been removed (Photo number 40). The new slab was constructed using 0.5-inch diameter rebar dowelled into the cut sides of the concrete slab. A concrete mix with a minimum compressive strength of 3,000 psi was used to construct the slab. The thickness of the newly poured concrete slab was at a minimum equal to that of the existing slab and was finished at matching grade to that of the surrounding slab.

3.4.4 Description of Black Stained Lens of Subgrade Materials Observed in Trench Sidewalls

A lens of hardened, dry, black stained material with little to no discernable hydrocarbon odor was observed in trenches ET1 and ET2 (Photo number 31). The material was composed of a silty sand lithology, approximately 80% very fine to coarse-grained sand and 20% silt. In trench ET1, the black stained material was observed at approximately 10 feet below grade in the excavation (Photo number 32). The lens appeared to taper out vertically below 10 feet and in both the eastward and southward directions. In trench ET2, a 4-foot lens of the black stained material was observed from 8 feet to 12 feet bgs in the northern and western sidewalls (Photo number 33). Unstained native soils were observed in ET2 at depths ranging below 12 feet. Soil samples were collected from the sidewalls and floors of both trenches, including from locations were the black stained material was observed.

This black stained layer was also observed in the bucket auger borings. A sketch showing the approximate subgrade depth of the lens observed in the borings is included in Appendix J. Pockets of loose un-compacted soils with concrete and brick fragments were also observed in the subgrade materials excavated from bucket auger boring ETB4. Slight to moderate hydrocarbons odors were observed in the 6-foot and 7-foot samples collected from ETB4, which was ultimately removed from the Site.

Results of the analytical analysis of the samples collected from the trenches and the bucket auger borings are included in Appendix E.

3.4.5 Volume Estimate of the Black Stained Material and TPH Left beneath the Main Operations Room of Manley Oil Building

An estimate was made of the thickness and extent of the lens of black stained subgrade material left beneath a small section of footing of the Manley Oil Building. The thickness of the lens, based on observations logged while drilling the bucket auger borings, was estimated at the western end of the trench to extend from 8 feet to approximately 11.5 feet bgs or 3.5 feet. At the east end of the trench, the black stained lens was observed to thin out and was estimated to pinch out beneath the concrete slab encountered in borings ETB3 and ETB6. The black stained lens was estimated to extend laterally as far as the outer edge of the north wall and far side of the middle wall separating the main operations room of the Manley Oil Building from the office. Based on this estimated volume of the black stained lens left beneath the building and the analytical results for TPH diesel reported for the three bucket auger boring soil samples ETB1-10’, ETB2-7’, and ETB4-7’, there is estimated to be approximately 19 pounds of soil with TPH residuals remaining beneath the a small section of the footing of the Manley Oil Building (Appendix R). It should be noted that the remaining TPH is very isolated and as observed during excavation, the TPH appeared to be very dry and showed no sign of mobility.

3.5 WASTE TRANSPORTATION

The drummed wastes from the nine borings drilled inside the Manley Oil building were transferred to TPS Technologies Soil Recycling based on analytical results and applicable federal, state, and local regulations. The manifest is included in Appendix N.

Soil excavated from trenches ET1 and ET2 was stockpiled on the Site near the trench on plastic sheeting. The stockpile was covered by plastic sheeting. The drummed wastes from the soil borings SN-10 and SN-11 were transferred to the soil stockpiled from Trenches ET1 and ET2. Soils from the bucket auger borings were containerized in two 10-yard bins. The non-hazardous stockpiled and containerized soils generated from the investigation activities were transported accompanied by a completed Non-Hazardous Waste Manifest to TPS Technologies Facility in Adelanto, California for treatment and disposal (Appendix M). Total tonnage was calculated from the certified scale tickets.

3.6 EXTENT OF TRENCHING AND VOLUME OF SOIL REMOVED

Contaminated soils were removed from the Site during the investigation activities conducted inside the Manley Oil Building. During the investigation activities, contaminated soils along with some accessible debris and non-contaminated soils were removed from Trenches ET1 and ET2 and from the bucket auger borings. The final extent of the trenched area was approximately 17 feet long by 12 feet wide (Figure 3-1). The total volume of soil removed from the combined ET1/ET2 trench and bucket auger borings was approximately 64 cubic yards or 102 tons (Appendix M).

A combined total volume of approximately 1,728 cubic yards (2,765 tons) of contaminated soil removed from the excavation and the ET1/ET2 trench was transported to the TPS facility as non-hazardous materials for thermal desorption treatment (Appendix M).

A total of six drums of containerized soil from the borings (borings NB-7 through NB-11C) drilled inside the Manley Oil Building were also transported to the TPS facility as non-hazardous materials for thermal desorption treatment (Appendix N).

3.7 GEOTECHNICAL AND STRUCTURAL MONITORING

3.7.1 Monitoring Footing of Building

A section of the buildings footing next to the trench was monitored during the trenching and bucket augering activities. During the trenching activities, soil located at 1.5 feet or more bgs, that was immediately adjacent to the buildings footing, was left undisturbed to limit any settlement of the buildings walls following soil removal. Monitoring of the retaining walls continued throughout the trenching and augering activities until the trench was backfilled.

3.7.2 Geotechnical Oversight

A representative of Geotechnical Soilutions, Inc. was present on-site during the trenching and backfilling activities to observe procedures and provide necessary modifications during the duration of the project.

3.8 DECONTAMINATION

Hollow-stem augers and drill rods were steam-cleaned prior to drilling each boring to avoid cross contamination during drilling. The sampling equipment was decontaminated after each sample interval by washing with an Alconox™ solution (a non-phosphate detergent), rinsing with tap water, and rinsing with de-ionized water. The decontamination water was stored onsite in a 55-gallon DOT drum.

4. ENVIRONMENTAL MONITORING

This section describes controls and procedures that SCG and Tetra Tech employed during Site activities to identify, monitor, and control potential noise and odor sources and receptors. This section also describes the monitoring methods, worker protections, and mitigation measures applied at the Site during removal action activities. The environmental monitoring measures specified in the Workplan were followed during the Site activities program as indicated below.

4.1 NOISE MONITORING AND CONTROL

Any noise above 85 decibels or above background (whichever was higher) was considered a noise source. During the removal activities, heavy vehicle equipment, generator operation, and excavation equipment operation were considered noise sources. Appropriate worker hearing protections were used for anticipated noise exposure above 85 decibels, based on time-weighted average for 8 hours of exposure. Workers were required to have appropriate hearing protection at all times within the exclusion zone per the health and safety plan.

4.2 AIR QUALITY MONITORING AND DUST CONTROL

The primary dust source at the Site was due to the exposed soil during soil excavation, stockpiling, and loading activities. Potential dust receptors included onsite workers, pedestrians adjacent to the Site, and vehicle drivers adjacent to the Site. During excavation activities, the work areas were sprayed with water to reduce the dust levels. Dust monitoring occurred within the exclusion zone and at the perimeters of the Site.

The Site is bordered by Ducommun Street on the north side, former Los Angeles Gas and Electric Corporate Plant property to the south, railroad tracks and the Los Angeles River to the east, and Center Street to the west. During the soil removal activities, air monitoring and air sampling was conducted onsite by an OVA/PID, a Summa canister, and at the Site perimeter by two high volume continuous samplers during excavation operations as indicated above.

Real-time Air Monitoring

Mini-Ram dust meter (PDK-3) was used by the contractor to measure real-time dust levels within the exclusion zone.

Perimeter and Area Wide Air Monitoring

Continuous air sampling was conducted with two modified high volume (HIVOL)[1] samplers that were stationed at the perimeter of the work area and at sensitive strategic locations within the Site as follows:

[1] Each HI VOL sampler consisted of a sampling pump system with a flow range greater than 200 liters per minute, an orifice and magnehelic gauge to document continuous flow rate, and a sample module that included a PUF and/or XAD-2 cartridge and quartz filter.

- One sampler was stationed approximately 60 feet south of the work area (Photo number 23).
- The other sampler was stationed on top of the roof of a trailer located near the east end of the Manley Oil Building and East by northeast of the work area (Photo number 24).

Figure P-1 in Appendix P shows the location of the HIVOL Puff sample stations. The air samples from each HIVOL sampler were collected over 24-hour periods. The samples were analyzed for PAH compounds by EPA Compendium Method TO-13. SCG provided the high volume air sampler stations at the Site. The results of the air sample analysis are on file at the Tetra Tech Pasadena office.

All air-monitoring results were tabulated and kept onsite. Documentation included equipment calibration data, background concentrations, date, monitoring result, monitoring location, source description, air temperature, and wind direction. Worker protection was conducted according to the health and safety plan.

4.3 ODOR MONITORING AND CONTROL

Odor monitoring was conducted during the soil removal activities in compliance with SCAQMD requirements. The main requirements by SCAQMD (Southern California Air Quality Management District) for odor monitoring and control are Rules 1166 (excavation of soil contaminated with volatile organic compounds) and Rule 402 (odor and nuisance). To comply with Rules 1166 and 402, VOCs were monitored onsite using a properly calibrated organic vapor analyzer (OVA). The odor mitigation measures were in place during work hours. The primary sources of odor at the Site were petroleum and naphthalene, from MGP and sump wastes, and from contaminated soils that were excavated and exposed.

4.4 STORMWATER MANAGEMENT

During excavation, necessary measures were taken to prevent surface water from entering or exiting the work area. The clean up activities took place during Non rainy season.

4.5 HEALTH AND SAFETY

No accident or injury was reported during the soil removal activities at Block N. The removal activities at the Site were performed in accordance with the applicable State and Federal occupational health and safety standards and the site-specific health and safety plan prepared for the Site. The health and safety plan was prepared according to the requirements contained in 29 CFR 1910.120, and CCR Title 8 GISO 5192 (General Industrial Safety Order), for work at hazardous waste sites. The removal action contractor monitored emissions in order to protect its workers and the community.

Environmental monitoring was performed using a Photo Ionization Detector (PID) and Mini Rae

2000 for monitoring VOCs levels, Mini Ram PDK3 for measuring dust levels, and Gas Tech GT302 for detecting hydrogen sulfide (H_2S). In addition, extensive air monitoring was conducted onsite as specified in the RAW to monitor and ensure that there was no exposure of the community to contaminants during the removal actions. Air monitoring was located at both upwind and downwind locations.

The excavation activities were performed in Level “D” personal protective equipment (PPE). No adverse findings were identified. No significant health and safety incidents or documented incidents of worker exposure occurred during the Site cleanup activities.

In this section the results of the removal activities are discussed. This section also presents the methods of sampling and analysis that were used to confirm completion of removal action activities at the Site.

5.1 DEFINITIONS

Grid System

The Site was divided by a virtual grid system approximately 3 feet by 3 feet as shown on Figure 2-1 in Section 2. For ease of reference, the grid was labeled numerically starting at the north corner of the area excavated in ascending order from west to east (1 through 18) and alphabetically north to south (A through R).

Excavation Sample Designation

Excavation samples were labeled with unique identification codes, as follows. Each sample begins with the alpha designation letter N for Block N. The second letter indicates the primary designation of the sample (i.e., "F" for floor sample, "N" for north wall, "S" for south wall, "E" for east wall, "W" for west wall were used). Samples of a primary designation type were identified by a number in ascending order: "1" for the first sample, "2" for the second sample, and "3" for the third sample, etc. Each sample designation is also followed by a number to specify the depth of the sample. Duplicate samples were identified with a "D" at the end of the sample designation.

As an example, NS20-18' designates that this excavation sample was collected from Block N and is from a borehole located at the limits of the south wall, is the twentieth sample of that designation type, and was collected at approximately 18 feet below ground surface.

Sample Designation for Backfill Material

Each backfill soil sample has a unique identification code, as follows. The samples have a prefix that identifies the location of the source of the imported backfill. For example UCLA#44 indicates that this sample was collected from the trucks importing the excess clean soil from the UCLA site located in Westwood, California. The #44 indicates that this sample was collected from the 44th truckload of backfill material brought to the Site. Tables F-1 through F-10 in Appendix F shows the result of the soil samples collected for backfill.

5.2 CONFIRMATION SAMPLES

Confirmation samples refer to those soil samples that were collected during removal action activities conducted at the Site. These samples were collected from the limits of the deep excavation in the northwest corner, from beneath the Manley Oil Building, the pit south of the Manley Oil Building, the excavation around BN7 (on the southeast side of the Site), and the area where mercury droplets were identified. The following provides descriptions of the confirmation samples considered representative of in-place soils remaining at the Site and those samples that were removed.

Sample Location Approach used in Deep Northwest Corner Excavation

A systematic sampling system was implemented during the auger boring and open excavation activities conducted in the northwest corner area of the Site. This sampling system consisted of overlaying a 3-foot by 3-foot virtual grid over the planned area of removal action activity (Figure 2-1). A 3-foot by 3-foot grid spacing was used to approximate what the diameter of the borings that would be generated when using a 3-foot diameter auger. Confirmation samples were collected from selected augered locations within the excavation. Confirmation samples were collected from the bottom (i.e., floor) and the sidewalls of auger borings and from the open excavation conducted in this section of the Site. Floor and sidewall samples were collected to confirm that the horizontal boundaries of the impacted soil had been adequately defined and removed. Although systematic floor and sidewall sampling was the overall goal, the number and location of samples were adjusted based on observations in the field.

After the first set of confirmation samples was collected, it was determined that additional soil removal was necessary at some locations. Therefore, additional soil was removed by auger from those locations. Confirmation samples that were later removed were considered as over-excavated; some of these samples were considered as representative of conditions remaining at the Site. Table E-1 lists all the confirmation samples collected and the status, as explained in more detail below.

Summary of Sample Types Representative of Current Conditions

In Appendix E, Tables E-2 through E-11 show the analytical results of the laboratory analysis of the confirmation samples (i.e., all samples collected during removal activities that are still present at the Site). The analytical results for the soil samples that were collected during previous investigations and still remain at the Site are also provided in Appendix E. The soil samples that were collected at the Site were divided into the following categories:

1. **In place.** These samples are still present at the Site and were not removed during removal activities.
    a. Samples collected from the bottom of augers. These samples were generally collected at about 28 feet to 30 feet bgs (or, approximately at the top of the groundwater table).
    b. During soil removal activities, soil samples were collected from the walls and floors of the excavations and trenches. These samples represent the soil remaining in the sidewalls of the excavated areas.
    c. Samples collected during the previous investigations that were not targeted by the removal action (e.g., sample TtNB-25-15') and therefore, were not excavated.

2. **Excavated-representative.** These samples were removed during removal activities but were considered to be representative of materials that are still in-place at the Site.
    a. Samples that were collected from augers at the edge of the excavation area. These soil samples were collected from excavated soil coming out from the auger

drilling. Although the soils that were sampled have been excavated, it was assumed that the samples represent the soil remaining at the same horizon adjacent to where the samples were collected. These samples were usually collected next to the final sidewalls where no further excavation was necessary or geotechnically feasible.

3. **Excavated.** These samples were removed during removal activities at the Site and are not considered as representative of conditions at the Site. The analytical results for these samples are not provided in Appendix E.
   a. Confirmation samples that was over-excavated.
   b. Samples collected during the past investigations that were removed during the removal action.

For ease of reference, Figures 5-1 through 5-4 show the locations of confirmation samples as well as the samples from previous investigations at different depth intervals.

Sample Analyses

All confirmation soil samples were analyzed for PAHs by EPA Method 8310, for VOCs by EPA Method 8260B, and for total petroleum hydrocarbons (TPH) by EPA Method 8015. Selected confirmation samples were analyzed for metals by EPA Method 6010/7000. American Environmental Testing Laboratory, Inc. analyzed all samples.

Sample Collection Methodology used in the Removal Action Excavation

The auger boring locations were sampled using glass jars to collect soil from the auger flights. Prior to sampling, any loose material or soil was brushed off the surface of the soil on the drilling auger. The open excavation area soil samples were also collected manually and placed in the glass jars. A shovel was used to collect the samples when it was not safe to collect them by hand.

Only sample containers supplied by the laboratory were used. After filling the sample container, the container lid was sealed. For VOC analysis, samples were collected[1] in accordance with the recently revised SW-846 update III guidance from the U.S. EPA, Method 5035. The samples were picked up daily by the laboratory, using appropriate chain-of-custody and shipping procedures.

5.3 ANALYTICAL RESULTS

Polycyclic aromatic hydrocarbons (PAHs)

All soil samples that were selected for analysis were analyzed by EPA method 8310 (HPLC) for

[1] If access was available to the sample location, the VOC samples were collected from the undisturbed soil. If access to the sample point was not available due to physical location of the sample point, the soil samples were collected from the soil mass in the excavator or from the soil on auger flights immediately upon removal of soil from its original location, using sample collection Method 5035.

PAHs. Polycyclic aromatic hydrocarbons (PAHs) are common constituents of lampblack and tars from the gas manufacturing processes. Table E-2 shows the result of carcinogenic polycyclic aromatic hydrocarbons (C-PAHs). In these tables, each detected C-PAH compound is shown. When the results of the analyzed compound was less than its listed Method Detection Limit (MDL)[1], the concentrations are listed as less than (<) the MDL value in the Table. All C-PAH compounds have been added in the last column of the Table to list the total values. The following procedure was used:

1) If all C-PAH compounds were detected in a sample, the sum of C-PAHs is the total value of each C-PAH compound in the sample.

2) If some C-PAH compounds were detected and one or a few compounds were not detected (e.g., <MDL) in a sample, then the sum of C-PAHs is equal to adding all detected values plus one-half of the MDL value of those compounds not detected.

3) If all C-PAH compounds in one sample were non-detected, the sum of C-PAHs is considered to be non-detect, and listed as ND.

Because all of the C-PAHs do not have the same potency, one cannot simply add the concentration of each C-PAH and use it as the total C-PAH concentration. The Environmental Protection Agency (EPA) has established a set of relative potency values [Cal-EPA, 1993] to be used in conjunction with the measured concentration of each C-PAH to calculate a C-PAH concentration for each C-PAH compound, expressed as benzo(a)pyrene [B(a)P] equivalent. To convert measured levels of C-PAHs in terms of B(a)P equivalent, the California EPA has identified the following "Potency Equivalency Factors (PEFs)" which express the carcinogenic potency for each of the C-PAHs relative to the potency of B(a)P. To calculate the B(a)P equivalent value of total C-PAHs in a sample, the measured concentration of each individual C-PAH is multiplied by the appropriate PEF value, and then the calculated values of all of the compounds are summed. Presentation of C-PAHs in B(a)P equivalent allows comparison of results of total C-PAHs from one sample to another on a comparable and the same basis. Benzo(a)pyrene-equivalency concentrations of each C-PAH compound have been calculated using the following values:

Factors to Calculate Total C-PAHs as Benzo(a)pyrene Equivalency *

Compound	**PEF**
Benzo(a)pyrene	1 (index compound)

[1] **Definition of "Method Detection Limit and Practical Quantification Limit".** The Method Detection Limit (MDL) or the detected chemical is defined as a specific compound or class of compounds that exceeds its instrument detection limit under an acceptable Federal (U.S. EPA) or State (California) analytical protocol. An instrument detection limit is the lowest amount that can be distinguished from normal "noise" of the analytical instrument or method. Due to the irregular nature of instrument or method noise, reproducible quantification of a chemical is not possible at the detection limit. Generally, a factor of 3 to 5 is applied to the detection limit to obtain a Practical Quantification Limit (PQL) which is considered to be the lowest level at which a chemical may be accurately and reproducibly quantified [U.S. EPA, 1989]. Therefore, a chemical that was detected at or close to the detection limit may not actually be present in a sample.

Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(j)fluoranthene	0.1
Benzo(k)fluoranthene	0.1
Chrysene	0.01
Dibenzo(a,h,anthracene)	0.34
Indeno[1,2,3-c,d]pyrene	0.1

*Based on Cal EPA, 1994 Appendix 1 [Cal EPA, 1994, 1999]

Table E-3 shows the results of non-carcinogenic PAHs (NC-PAHs). Total value of NC-PAHs was calculated using procedures explained above to calculate total C-PAHs. The sum of the carcinogenic B(a)P equivalent concentrations of PAHs is included in Table E-4.

Volatile and Semi-Volatile Organic Compounds (VOCs and SVOCs)

Soil samples were collected and analyzed for VOCs and SVOCs using EPA Methods 5035/8260B and 8270C. Analytical results for VOCs and SVOCs are summarized in Tables E-5 and E-6.

Total Petroleum Hydrocarbons (TPHs)

Crude oil was generally used as the feedstock for the manufactured gas process at oil based MGPs. Several soil samples were analyzed for total petroleum hydrocarbons (TPH, EPA Method 8015 Modified) to investigate the extent of contamination, if any, with crude oil compounds. Table E-7 shows the results of TPHs.

Metals

Soil samples were analyzed for metals using EPA Method 6010/7000. Analytical results for metals are summarized in Table E-8. One sample collected at the Site, EX1-1, was analyzed for mercury using EPA Method 7470A. The analytical result for this analysis is also included in Table E-8.

Cyanide, Polychlorinated Biphenyls (PCBs), and Aroclor

As part of remedial investigation activities Selected soil samples collected from the Site during remedial investigation activities were analyzed for cyanide, PCBs, and aroclor (PCBs) by EPA Methods 9010B, 8080, and 8082, respectively. Analytical results for these test methods are included in Tables E-9 through E-11.

5.4 DATA QUALITY

The following quality assurance and quality control (QA/QC) data were included with the laboratory data sheets:

- Chain-of-custody documentation;
- Field duplicate sample analyses;
- Method blanks, matrix spikes, and matrix spike duplicates; and
- Surrogate recovery results for volatile organic analyses.

Laboratory QA/QC included method blank, matrix spike, surrogate recovery, and duplicate sample analyses data. Field QA/QC included duplicate sample analyses and chain-of-custody records. The laboratory data were evaluated to ensure that units were correct, detection limits were provided, all blank analyses were below detection limits, holding time requirements (e.g., 7 days for extraction of organics) were met, and percent recoveries from the matrix spike analyses were within the prescribed limits (70%-120%). The percent recoveries of some of the matrix spike analysis, however, were not within the prescribed limits. Although the percent recoveries of some of the matrix spikes analyses were not within the prescribed limits, the surrogate recoveries on individual samples were within the acceptable limits and the corresponding lab control samples (LCSs) were also within the acceptable limits. Therefore, the data were acceptable. Finally, the chain-of-custody forms were cross-referenced during the data review to ensure that all requested analyses had been performed.

5.5 SUMMARY OF CHEMICAL RESULTS

The results of the chemical analyses in soil and soil gas are summarized below.

Main Excavation Area

C-PAHs were detected in soil samples from the walls and floor of the main excavation area, ranging from 0.009 mg/kg to 0.85 mg/kg, as B(a)P eq. The maximum concentration as B(a)P eq was from a grab sample at a depth of 3 feet (NS24-3) along the slope near the southwest corner of the main excavation (see Figure 5-1). Most of the samples with elevated naphthalene and NC-PAHs within the main excavation were removed, except for some deep samples along the north wall next to the pit. The highest naphthalene concentrations in the remaining samples were 910 mg/kg in NN10-21' and 531 mg/kg in NN9-21', both along the northern wall next to the pit. In general, VOCs were detected only in the deeper samples at greater than 20 feet, which also had higher TPH levels. Arsenic and thallium were measured in nine samples from the main excavation, although two of them were later excavated. Arsenic ranged from 1.25 to 5.35 mg/kg in the non-excavated samples. Thallium was below detection in all the samples at detection limits of 1 or 5 mg/kg. Soil samples within the top 25 feet from the previous investigations in areas not excavated were included in the Risk Assessment, and have been included in the data tables in Appendix E. Metals were analyzed in 27 previous samples, although eight of them were from depths below 25 feet. Cyanide and PCBs were measured in some of the previous samples, but none of these compounds were detected.

Samples were also obtained from a sump and drain found within the pit south of the Manley Oil Building, shown on Figure 3-1, which is located just north of the main excavation area. No C-PAHs or VOCs were detected in the five samples from depths of 1.5 to 6 feet in the sump area. The only NC-PAH detected in the sump samples was benzo(ghi)perylene. One sump area sample and a duplicate were analyzed for all the CAM metals. Arsenic was <1 and 3.8 mg/kg. Other detected metals in the sump samples were barium, chromium, cobalt, copper, nickel, vanadium, and zinc; concentrations were not elevated.

Beneath Manley Oil Company Building

A series of nine borings were installed inside the Manley Oil Building; part of this area was later excavated in two trenches and using bucket augers (ET1 and ET2). The maximum oncentrations of PAHs were found in boring NB-7; C-PAHs as B(a)P eq were 3.5 mg/kg at a depth of 6 feet and 2.2 mg/kg at 10 feet. This boring also had elevated levels of diesel and heavy hydrocarbon range TPH. This boring is located within the area that was excavated (ET2) to a depth of 12.5 feet, as shown on Figure 3-1. The detected C-PAHs as B(a)P eq in the non-excavated trench samples ranged from 0.02 mg/kg to 2.9 mg/kg. Naphthalene was not detected in the non-excavated trench samples. The only other VOCs detected in these trench samples were: benzene (<0.002 to 0.032 mg/kg), m,p-xylenes (<0.002 to 0.004 mg/kg), and toluene (0.002 to 0.008 mg/kg). NC-PAHs and diesel and heavy TPH were detected in some of the trench samples. Deeper samples beneath the trench had C-PAHs and NC-PAHs. The highest naphthalene was in NB-7A at a depth of 30 feet (5.12 mg/kg from the 8310 analyses and 16.9 mg/kg from the 8260B analyses). The high observed concentrations at 30 feet indicate that the source is the groundwater, since the shallower samples from 20 and 25 feet had no detected naphthalene. Other VOCs were also detected in the sample at 30 feet from NB-7A including 1,2,4- and 1,3,5-TMB, DCP, E, X, and six substituted BTEX compounds.

The C-PAHs as B(a)P eq, outside of the trench areas ranged from 0.01 mg/kg to 0.23 mg/kg in NB-8 at a depth of 30 feet; this boring is located south of the trenches. The maximum total NC-PAHs were 5.92 mg/kg in NB-9 at a depth of 30 feet and 1.94 mg/kg at a depth of 30 feet in NB-8. Naphthalene was detected in NB-8 at 30 feet (0.05 mg/kg by the 8310 method only, in NB-9 at 30 feet (0.48 mg/kg by 8260B) and in NB-11C at 10 feet (0.013 mg/kg). The deep samples from 30 feet in NB-8 and NB-9 had detected concentrations of similar VOCs, as detected in NB-7A. The shallower samples from NB-8 and NB-9 had no detected VOCs, except for benzene (0.008 mg/kg in NB-9 at 10 feet). The other borings beneath the building (NB-10 and NB-11C) had only two detected VOCs (0.025 mg/kg of benzene in NB-10 at 5 feet and 0.013 mg/kg of naphthalene in NB-11C at 10 feet). TPH was detected at higher concentrations in the samples from 25 feet or deeper, and was mostly diesel and heavy TPH.

<u>Excavation at BN-7</u>

The location of the small excavation area near BN-7 is shown on Figure 2-2. C-PAHs as B(a)P eq from the confirmation samples following excavation of the top 3 feet of soil at BN-7 were low, ranging from 0.014 mg/kg to 0.262 mg/kg. Low concentrations of seven of the nine non-carcinogenic PAHs were detected in one of the soil samples, NB-5, at a depth of 3 feet. Naphthalene was 0.14 mg/kg. Two VOCs were detected in this soil sample (0.005 mg/kg of benzene and 0.002 m/kg of toluene). No TPH was detected in the three confirmation samples near BN-7. Metals were not analyzed in the samples near BN-7.

<u>Excavation at Mercury Spill Area</u>

A mercury spill was found west of the main excavation area, and confirmed by analyzing a sample of the liquid, which turned out to be 99.9 percent elemental mercury. An asphalt sample was also analyzed for metals. The asphalt sample had high mercury (1,190 mg/kg) and, therefore, was excavated within a 2-foot by 2-foot area along with the underlying one-foot of soil, as described in Section 2.7.9. The soil samples collected below the excavation had low mercury (0.1 and 0.15 mg/kg). These soil samples were analyzed for other metals, but not organic compounds.

Soil Gas Results

Two soil gas probes were installed around the sump, located within the pit, SN-10 and SN-11. Soil gas samples were collected at depths of 6 and 5 feet, respectively. Benzene and naphthalene were not detected in either probe or the duplicate sample from SN-10 collected on the same day. However, other organics were detected, 9 to 10 compounds in SN-10 and 13 compounds in SN-11. PCE was detected in all three soil gas samples, ranging from 630 to 827 $\mu g/m^3$, as was 1,1,1-TCA (17.8 to 32.7 $\mu g/m^3$). Dicyclopentadiene was detected in only one sample from SN-11 (3,320 $\mu g/m^3$). Additional soil gas samples were collected during the RI, and were used in the risk assessment, as discussed in Section 6.

6. POST-EXCAVATION RISK EVALUATION

This post-excavation risk evaluation examines the potential for human health and environmental impacts from chemicals within the limits of Block N of the former Aliso Street manufactured gas plant (MGP) (hereinafter referred to as the "Site") based on data available following the completion of removal activities at the Site.

The Site is a portion of the former Aliso Street MGP. Historical MGP operations within Block N included gas compression and warehouse storage in support of other facilities located adjacent to the Site. Later, the facilities at the Site were used in support of butadiene production elsewhere on the former Aliso Street MGP, although butadiene is not known to have been stored or produced on Block N. In 1979, part of the property was sold to Manley Oil Company, which has used the Site, including a building located on the corner of Center and Duccomun Streets, for commercial/industrial purposes. Manley Oil sold the property to the current owner of the Site in 2004.

A focused human health risk assessment [Tetra Tech 2003] was performed previously for the Site, which identified several chemicals of potential concern as exceeding remedial goals developed for the Site. Therefore, a removal action workplan (RAW) was developed for the Site [Tetra Tech 2004]. The RAW was implemented from about June to December 2005. As described in Section 2, the removal action consisted of excavating soils to a maximum depth of approximately 30 feet in the northwest corner of the Site. Additional smaller selected areas were also excavated in: 1) two large trenches underneath the Manley Oil Building, 2) to the south of the Manley Oil Building, and 3) along the eastern boundary of the Site. Figures 5-1 through 5-4 show the locations of the confirmation samples collected during removal activities and the locations of the RI samples that are still in place following completion of removal activities at the Site. Figures 2-1, 2-2, and 3-1 show the areas excavated at the Site. Excavated soils were replaced with either clean backfill or cement-sand slurry. This risk assessment confirms the completion of removal activities at the Site.

To address the carcinogenic PAHs (C-PAHs) in soils, C-PAH concentrations remaining in soils at the Site are compared to background C-PAH concentrations in southern California soils. The methodology and background database used for evaluating PAHs is described in the report, "A Methodology for Using Background PAHs to Support Remediation Decisions" [Environ Corporation 2002].

The residual levels of the other COPCs identified using available data are addressed by a standard risk assessment process wherein risks are calculated on the basis of exposures estimated for future unrestricted Site use. This post-excavation risk assessment is consistent with the DTSC [1992, 1997, 1999, 2000a, 2000b] and the USEPA [1989, 1990, 1991, 1992a, 1992b, 1996a, 1996b, 1997, 2002a,b, 2004] guidance and consists of four main steps: 1) identification of the chemicals of potential concern (COPCs), 2) the identification of receptors and exposure pathways, 3) toxicity assessment, and 4) risk characterization, including consideration of potential uncertainties in the risk analyses.

An additional evaluation is conducted on the potential for groundwater impact of the residual chemicals in soils that could migrate to groundwater in the future. Predicted impacts to groundwater are compared to potential water quality criteria to assess the effectiveness of the removal action. Supporting materials for all of these evaluations are provided in the appendices.

A scoping level ecological risk assessment consistent with DTSC [1996, 1999] guidance is presented in Section 6.7.

6.1 CHEMICALS OF POTENTIAL CONCERN

6.1.1 Data Evaluation

To determine the effects of the removal actions on residual chemical concentrations, samples considered representative of current on-site soil conditions were identified from a combination of confirmation samples and samples from previous investigations that are still in place at the Site following the completion of removal activities. The sample locations have been shown on Figure 2-1 of the RAW [Tetra Tech 2004a], and a copy is included in Appendix V for ease of reference. As described in Sections 2 through 5, confirmation samples (including duplicates) were collected from the floors and sidewalls of the excavated areas. In addition, samples collected from augers along the edges of the excavations were considered to be representative of soils remaining in place, although the auger "borings" were filled with cement-sand slurry. Samples collected below the water table (i.e., identified as 25 feet bgs for purposes of this removal action) were not considered in the evaluation of residual risks because contact with soils at these depths is unlikely and constituents should be in equilibrium with groundwater (i.e., groundwater measurements are considered as representative of the chemical concentrations in these soil samples). Samples collected from the west sidewall of the excavation in the northwest corner were considered to be representative of off-site conditions as they extend beyond the western boundary of the Site, while on-site soils have been replaced by cement-sand slurry in this area of the Site. As a result of these considerations, 102 confirmation samples were identified as representative of soils remaining on-site (see Appendix H).

The lateral and vertical extent of onsite excavations was compared to the locations of soil samples collected during past investigations to determine those that are likely to still remain in place. A total 59 samples from previous investigations were identified for use in the evaluation of post-excavation conditions (see Appendix H).

Finally, five samples were collected from the imported fill material before it was put in place at the Site. These sample results were used in the evaluation of the mass of selected constituents potentially remaining in soils at this Site.

Altogether, a total of 166 samples collected at 0 to 25 feet bgs were used in the post-excavation risk assessment, including:

- 102 confirmation samples;
- 59 samples from previous investigation; and

- 5 fill material samples.

Listings of all soil samples collected at the Site and used in the risk assessment are presented in Table 6-1.

6.1.2 Selection of COPCs

All chemicals detected in soils remaining at the Site are shown in Table 6-1. These chemicals consist of metals, PAHs, and VOCs. The type of soil samples (e.g., post- or pre-remediation samples) and the general depth in which each chemical was detected (e.g., less than 10 feet or more than 10 feet bgs) are shown in Table 6-3.

The removal action objective for this Site was to restore the Site to a condition acceptable for unrestricted land use. Chemicals present at concentrations equivalent to (or lower than) background concentrations do not need to be considered as COPCs [DTSC 1999, USEPA 1989]. The initial determination for this Site, therefore, consisted of an examination of two groups of constituents, i.e., C-PAHs and metals, to assess whether they should be considered COPCs. This was accomplished by comparing C-PAH concentrations in soils after the completion of the removal activities to Southern California background conditions. This evaluation was then followed by an examination of metal concentrations in soils with background concentrations. All constituents detected in soils, other than the C-PAHs and metals, were also evaluated in the identification of COPCs. Background comparisons and the identification of COPCs are described in more detail below.

Evaluation of C-PAHs

To determine whether C-PAH concentrations met the remedial action objective of unrestricted future land use, two procedures were used to evaluate C-PAH concentrations in soils at the Site. First, it was determined whether people assumed to be living on the Site would be exposed to levels of C-PAHs greater than background levels in southern California surface soils. This was based on a statistical comparison to a dataset developed for C-PAH concentrations in Southern California soils [Environ 2002]. Second, residual C-PAHs were evaluated to determine whether they pose an incremental health risk inconsistent with the goal of restoring the Site to a condition requiring no land use restrictions. To support this second analysis, volume-weighted C-PAH concentrations were estimated for soils at the Site and compared to the remedial goals for C-PAHs in soils. Each of these procedures, and their results, are described below.

As described in Section 5, the C-PAH evaluations were conducted using benzo(a)pyrene-equivalent (B(a)P) concentrations calculated according to DTSC [1999] guidance. Of the 54 pre- and post-remediation samples collected at depths up to 10 feet bgs and analyzed for PAHs, C-PAHs were below detection limits in 27 samples (or 50%) (Table 6-4). In the samples in which C-PAHs were detected, concentrations ranged from 0.0985 mg/kg to 2.9 mg/kg B(a)P-equivalents, with a median concentration of 0.105 mg/kg.

To determine whether removal activities resulted in the reduction of C-PAH concentrations to background levels, residual concentrations of C-PAHs in soils from 0 to 10 feet bgs were compared to background levels of C-PAHs in Southern California surface soils (Table 6-5). This comparison was performed using a two-step process. In the first step, the distribution of the C-

PAHs remaining in soils at the Site were evaluated; while in the second step, a statistical test was conducted to compare Site and background C-PAH concentrations. The data distributions in background and on-site samples were determined using the Shapiro-Wilk's test for normality [USEPA 2000, 2002c]. As shown in Table 6-2 (with supporting descriptive statistics, such as UCL_{95} concentrations in Appendix H-1), background C-PAH data fit a lognormal distribution, but the C-PAH data from the Site did not fit either a normal or lognormal distribution. Based on these determinations, the median concentrations of the two datasets were compared using the Wilcoxon rank sum test (also known as the Mann-Whitney U test) [USEPA 2000, 2002c, DTSC 1997]. The results of this test indicate that the C-PAH concentrations in soils at the Site are below Southern California background C-PAH concentrations (N Site = 54, N background = 84, adjusted Z = 2.17, $p = 0.03$) (Table 6-2).

In addition to the above statistical analyses, which do not account for the imported clean fill, a volume-weighted evaluation was conducted to examine whether the removal action at the Site achieved an acceptable level of C-PAHs in soils at the Site. This procedure consisted of the calculation of a volume-weighted mean concentration and a comparison of the resulting concentrations with the remedial goal protective of unrestricted Site use for C-PAHs in soils. This analysis addresses the few samples remaining in place with residual C-PAH concentrations above the average background concentration (e.g., at ET2-3E-5 under the Manley Oil Building), although the entire set of C-PAH data for the samples remaining in place is statistically below the concentrations in southern California background surface soil. The volume-weighted C-PAH concentration was calculated for the soil interval future receptors could potentially contact (i.e., the top 10 feet of soil). This concentration was then compared to the concentration in background Southern California surface soils, which is protective of unrestricted Site use. In this case, the background Southern California surface soil concentration was based on the 95^{th} percent upper confidence limit on the mean concentration (UCL_{95}) of 0.24 mg/kg [Environ 2002].

A four-step process was used to volume-weight C-PAH concentrations in the top ten feet of soils remaining at the Site. These steps consisted of: 1) contouring of C-PAH concentrations in soil; 2) replacement of C-PAHs concentrations within each excavation with a concentration representative of fill material; 3) calculation of the average C-PAH concentration in each contoured depth interval; and 4) calculation of the average volume-weighted concentration across the Site. The specific procedures involved in each step of the volume weighting are described in Appendix I. As shown in Table 6-6, these calculations determined that the volume-weighted C-PAH concentration for soils across the Entire Site (0.07 mg/kg) is substantially below the Southern California background concentration of 0.24 mg/kg and also below the risk-based remedial goal (6 mg/kg), protective of future on-site workers [Tetra Tech 2004]. These results indicate that if future activities at the Site brought subsurface soil to the surface, the resulting concentrations would be lower than background and that land-use restrictions, or other measures, to prevent the excavation and spreading of subsurface soils across the surface of the Site in the future are not necessary. Further, since C-PAH concentrations do not exceed background, there are no incremental risks above levels of exposure typical of southern California soils. Based on these results, C-PAHs were not identified as COPCs.

The same process used to estimate a volume-weighted concentration for C-PAHs was also used to estimate volume-weighted concentrations for benzene and naphthalene (see Appendix I). Concentration contours were developed for each 5-foot depth interval to a depth of 25 feet (i.e., approximately to the water table). Appendix I presents the excavation areas for each depth zone.

Evaluation of Metals

Consistent with DTSC [1997, 1999] and USEPA [1989] guidance, metals detected in soils at concentrations that fall within the range of background concentrations are not likely to be due to past releases at the Site and, thus, do not require further evaluation. In accordance with DTSC [1997] guidance, the comparison of metal concentrations to background concentrations is an iterative process in which the first step is a simple comparison of maximum concentrations of metals at the Site to maximum background metals concentrations. When the maximum detected concentration at the Site falls below the upper bound background concentration for a given metal, it may be concluded that the Site concentrations for that metal are within the range of background concentrations. The second step involves a more robust statistical analysis that is employed in cases where maximum concentrations of metals at the Site exceed upper bound background concentrations. Use of this approach is important because failing the simple comparison method described above does not necessarily mean that the distribution of metal concentrations at the Site is not within the range of background concentrations. In these cases, DTSC [1997] and U.S. EPA [2000, 2002a] guidance was followed to statistically compare metal concentration distributions from the Site to local background metal distributions.

The maximum detected concentrations of metals in soils at the Site are compared to local background concentrations in Table 6-2. Sixteen soil samples were collected for use as local background from eight borings near the former Aliso MGP [Tetra Tech 2004] (see also Appendix H). The results of this comparison indicate that six metals (i.e., barium, cadmium, cobalt, nickel, vanadium, and zinc) are clearly within the range of the local background concentrations. Metals not detected in Site soils were considered to be within background and were not identified as COPCs.

The remaining metals (i.e., antimony, arsenic, chromium, copper, lead, and mercury) were statistically compared to background, except for three metals (i.e., antimony arsenic, and mercury) that were either not detected in local background soils or were detected infrequently (i.e., detection frequency of 11 percent or lower) in Site soils and, therefore, could not be statistically evaluated. As shown in Table 6-2, one of these metals (antimony) exceeds the range of regional background concentrations [Bradford *et al.* 1996] and was identified as a COPC. As shown in Table 6-2, arsenic and mercury are within the range of regional background concentrations. Also, the average and UCL_{95} concentrations of arsenic within the upper ten feet of soils remaining at the Site (3.6 and 5.3 mg/kg, respectively) are less than the background concentration identified for the Los Angeles Unified School District, i.e., 6 mg/kg [DTSC June 2005]. Altogether these findings support the determination that these metals are generally within background levels for Los Angeles and are not associated with contamination at this Site. On this basis, these two metals were not identified as COPCs.

Statistical comparisons were conducted using the statistical test appropriate for the distribution of both the Site-specific and local background data. The distribution of the data for each metal in each dataset was tested using the Shapiro-Wilk's test [U.S.EPA 2000]. For metals that are normally or log-normally distributed in both the Site and background soils, the *t*-test was used for the comparisons [U.S.EPA 2000, 2002a]. For metals that fit neither a normal or log-normal distribution in either soil or background soil datasets, the Wilcoxon rank sum (WRS) test was used to assess whether the distribution of metal concentrations at the Site statistically differ from background at $p = 0.05$ [DTSC 1997; U.S.EPA 2000, 2002a]. For the statistical comparisons, sample results less than the detection limits were replaced by one-half of the detection limit [DTSC 1992b]. As shown in Table 6-2, the results of the statistical testing indicate that none of the tested metals differ from the local background concentrations. Therefore, these metals (i.e., chromium, copper, and lead) were not selected as COPCs. Based on all of these evaluations, the only metal that is identified as a COPC is antimony.

Evaluation of Organics

As shown in Table 6-7, 24 organic constituents other than the C-PAHs (not including naphthalene) were detected in soils following the completion of remediation activities. These consisted of one carcinogenic PAH (naphthalene), five volatile non-carcinogenic PAHs (acenaphthene, acenaphthylene, anthracene, fluorene, and phenanthrene), three non-volatile non-carcinogenic PAHs (fluoranthene, benzo(g,h,i)perylene, and pyrene) and 15 other volatile organic constituents. All of these organic constituents were identified as COPCs, since the non-volatile constituents were detected in the top ten feet of soil and the volatile constituents could be emitted from any depth down to the water table (i.e., 25 feet bgs).

Only two soil gas samples (plus one duplicate) were collected as part of the post-remediation confirmation sampling (see Figure 3-1 and Appendix E-13). The results of this and past soil gas sampling were used to evaluate the modeling conducted for migration of benzene and naphthalene vapors from soils to indoor air (see Appendix H.1-3 and Appendix H.3, Table H.3-1). This approach was considered appropriate because use of soil gas data reduces uncertainties associated with soil to vapor equilibrium partitioning [DTSC 2005]. Also, the recently collected soil gas samples provide additional information for assessing potential volatilization for these two chemicals detected in soils sampled in relatively inaccessible areas during the removal action. In particular, analyses for naphthalene below the pit south of the Manley Oil building provides an indication that this constituent is not present in soil gas (at a detection limit of 10 ug/m^3, although for geotechnical reasons it was not feasible to fully assess residual levels of naphthalene in soils near the water table (e.g., 531 mg/kg at NN7-25) extending below the pit. Similar, the benzene analyses in these soil gas samples beneath the pit confirm the relatively limited extent of levels previously observed beneath the Manley Oil Building (e.g., 40 ug/m^3 at SN-1).

The other chemicals detected in soil gas were not evaluated quantitatively because of two main determinations. One, the maximum concentrations of constituents detected currently are substantially lower than levels evaluated in the focused risk assessment [Tetra Tech 2003]. Comparisons of chemical concentrations in recent samples and those used to evaluate risks previously show that none of the recent sampling results would result in unacceptable residential risks, except possibly tetrachloroethene (see Appendix H.3, Table H.3-1). It is likely that tetrachloroethene in soil gas is due to upgradient groundwater or other unknown sources because it was detected only once just above the detection limit in soils. Second, other constituents detected in soil gas and not evaluated previously have also not been detected in soils and the likely source of these other constituents is groundwater.

The entire list of COPCs is provided in Table 6-7.

6.2 RECEPTORS AND EXPOSURE PATHWAYS

The Site has been used in the past for commercial/industrial purposes and the likely future use of this Site is for commercial purposes including office buildings, public institutions, enclosed warehouse spaces, indoor and outdoor manufacturing areas, exterior storage yards, and public transportation right-of-ways (e.g. highways and rail). However, to assess whether unrestricted site use[1] is feasible, a residential land use evaluation was performed. Potential chemical exposures were evaluated for the Site by considering the following four factors:

- Sources of chemicals of potential concern;
- Environmental media in which chemicals of potential concern have been detected (e.g., soil);
- Exposure or contact points with the environmental media (e.g., direct soil contact); and
- Exposure routes for chemical intake by a receptor (e.g., ingestion).

The exposure pathways identified for the Site were based on evaluations of the likelihood of receptors directly contacting chemicals of potential concern in soil and the mechanisms governing the fate and transport of the chemicals of potential concern. Based on a review of current conditions, the only potentially complete exposure pathways may be for future on-site receptors. At present, the entire Site is either paved or covered by buildings, greatly limiting the potential for contact. Therefore, under current conditions, soil contact, including incidental soil ingestion, dermal contact, and airborne dust inhalation, are considered incomplete. However, for risk assessment purposes, it was assumed in the future on-site residents might be exposed to COPCs in surface soils at the Site via these pathways. This allows for a determination of whether Site conditions are consistent with unrestricted Site use.

Residential exposures were assessed at the Site for direct exposures to soils to a depth of 10 feet bgs and exposures to indoor air from VOCs detected in soils down to the water table (i.e., 25 feet bgs). The depth of samples used for direct exposure from soils (i.e., 0-10 feet bgs) is considered the maximum depth to which residents are likely to excavate at their properties for such purposes as building a pool, basement, or planting trees. It was assumed these soils could be re-distributed across the surface, resulting in exposure to the COPCs via direct contact (i.e., incidental ingestion, dermal contact, and the inhalation of dusts) [DTSC, 1992].

Chemicals detected in soil may be transported to groundwater by rainwater infiltration and dissolution, with subsequent migration to groundwater. The potential for the volatile organic chemicals that may readily dissolve in infiltrating water and migrate to groundwater was, therefore, selected for evaluation. This is health-protective because groundwater use in the vicinity of the Site is unlikely due to: 1) naturally high levels of dissolved solids and nitrates, 2) the presence of the constituents of natural petroleum hydrocarbons, as noted in reports by the USACOE and LA GED [2001], and 3) the occurrence of upgradient sources of hydrocarbons and

[1] The current owner of the Site has requested that the Site be cleaned up for unrestricted residential use.

solvents, such as tetrachloroethene, trichloroethene, and vinyl chloride. Further, the nearest downgradient municipal water supply wells are in the City of Vernon, located approximately 3 miles to the south of the Site and in deeper aquifers (i.e., more than 500 feet bgs) than those sampled as part of this risk assessment. Also, future groundwater use will be examined in the groundwater management plan being developed for the entire former Aliso Street MGP.

6.2.1 Quantitative Exposure Analysis

Quantitative exposure analysis consists of estimates of the type, timing, and magnitude of exposures human receptors may experience at the Site. In order to calculate risks protective of future receptors, exposure parameters were determined for each of the identified receptors based on DTSC [1992, 1999, 2000b] and USEPA [1989, 1991b, 1997b, 2001b, 2002, 2004] guidance. Exposure parameters were estimated for future onsite residents potentially exposed to COPCs as a result of incidental soil ingestion, dermal contact with soil, and by the inhalation of dusts in outdoor air and volatile constituents in indoor air. Exposure to vapors in indoor air was considered protective of exposures to vapors in outdoor air and, therefore, this latter pathway was not evaluated quantitatively.

The exposure parameters and formulas used to calculate risks for exposures to COPCs in soil are shown in Tables 6-8 to 6-10.

Predicted groundwater concentrations were compared to potential drinking water criteria, including drinking water maximum contaminant levels (MCLs) and USEPA [2004] tap water preliminary remediation goals (PRGs), as was done in the focused risk assessment for this Site [Tetra Tech 2003]. Also, for naphthalene, predicted concentrations were compared to the Notification Level (NL), the health-based advisory level established by the California Department of Health Services (CDHS) to ensure that drinking water provided by public water supplies is protective of public health.

6.2.2 Exposure Point Concentrations

Exposure point concentrations (EPCs) are represented by the reasonable maximum exposure (RME) point concentrations, i.e., the lower of either the maximum or UCL_{95} concentration calculated for the depth intervals that individuals might contact. RME concentrations were calculated according to USEPA [1989, 1992c] and DTSC [1992] risk assessment guidance (Table 6-15) using data determined to be representative of post-remediation soil conditions. RMEs were also calculated for chemicals detected in soil gas.

For volatile chemicals, RMEs were calculated for each 5-ft depth interval to a depth of 25 ft bgs. The RMEs for each depth interval were used as source terms in the fate and transport analyses, as described in Section 6.3, to calculate the EPCs for vapors in indoor air and impacts to groundwater. For benzene and naphthalene, the source terms used to predict migration to indoor air were, however, based on soil gas, although the results of these evaluations are compared to those based on concentrations measured in soils (see Section 6.5).

Separate RMEs and fate and transport analyses were conducted for each of two areas at the Site: 1) the Entire site and 2) the area within the footprint of the Manley Oil Building (hereinafter also referred to as "Manley Building") (see Table 6-15). The results of the evaluations for each of these two areas are presented separately below.

6.3 FATE AND TRANSPORT ANALYSIS

In order to assess the potential chemical concentrations receptors could be exposed to, the effects of chemical fate and transport processes were evaluated, including inter-media transfer and chemical transport. Inter-media transfer is the movement of chemicals between environmental media such as soil and air. Chemical transport occurs through the movement of an environmental medium by natural advective and dispersive processes, such as air dispersion. Of particular concern at the Site is the migration of volatile COPCs through soil pores upward to the ground surface and downward to groundwater. At the ground surface, volatile chemicals can be released as vapors to the atmosphere or indoor air. At the water table, volatile chemicals will mix with groundwater.

Analysis of chemical fate and transport was conducted using models to calculate concentrations in air due to the migration of volatiles in soils upwards to indoor air and to calculate concentrations in groundwater due to the downwards migration of volatiles in soils.

6.3.1 Migration to Indoor Air

The Johnson and Ettinger indoor air model [USEPA 2003] was used to model migration of chemicals from soil to indoor air. The model incorporates both convective and diffusive mechanisms that drive vapor intrusion rates, and also accounts for subsurface soil and building properties. The Johnson and Ettinger indoor air model is one of the models recommended in the *Air/Superfund National Technical Guidance Study Series on Assessing Potential Indoor Air Impacts for Superfund Sites* [USEPA 1992c]. The finite source version of the Johnson and Ettinger indoor air model [USEPA 2003; CalEPA 2003] was used (as described in Appendix H) with site-specific soil properties to model emissions to indoor air from soils for 6 and 30 years. These time periods correspond to the exposures durations used to estimate exposures to child residents for noncarcinogenic effects and both child and adult residents for carcinogenic effects, respectively. Additional perspective on the potential migration of volatiles in soils to indoor air is provided for benzene and naphthalene based on soil gas and volume-weighted average concentrations in soils as the source terms. For modeling emissions from soil gas, the infinite source version of the Johnson and Ettinger model was used [USEPA 2003]. Further details of the indoor air modeling are described in Appendix H. The derivation of volume-weighted average concentrations used for modeling of benzene and naphthalene is described in Appendix H.

6.3.2 Migration to Groundwater

Volatile chemicals in soils may also migrate downwards into shallow groundwater. Chemical concentrations in shallow groundwater directly under the Site were predicted using VLEACH. VLEACH calculates the pore water concentrations for chemicals at the water table. In turn, these pore water concentrations (C_{pw}) were used to calculate chemical concentrations in groundwater using a groundwater dilution factor (DAF) of 20 [USEPA 1996], as used in the focused human health risk assessment [Tetra Tech 2003]. The dilution factor accounts for dilution due to mixing of the pore water concentration with underlying ambient groundwater.

6.4 TOXICITY ASSESSMENT

The toxic effects of the COPCs were estimated by using toxicity assessments published by the California Environmental Protection Agency (Cal EPA) and the USEPA. The Cal EPA and USEPA have determined which COPCs are probable or possible carcinogens and have derived toxicity values, known as slope factors (SFs) that quantitatively define the relationship between exposure and the likelihood of carcinogenic effects. SFs are used for estimating the individual upperbound excess lifetime cancer risks associated with various levels of lifetime exposure to potential human carcinogens. In practice, SFs (expressed in units of $(mg/kg/day)^{-1}$) are derived from the results of human epidemiology studies or chronic animal bioassays. For this report, the Cal EPA [2005] slope factors were used preferentially, unless a Cal EPA slope factor was not available, in which case a slope factor from USEPA's [2005] IRIS was used. Tabulations of the oral and inhalation SFs are provided in Tables 6-11 and 6-12, respectively.

The USEPA has determined which constituents potentially cause adverse health effects other than cancer. Typically, these non-carcinogenic adverse health effects may not occur until a specific level of exposure occurs. Toxicity values for non-carcinogens are, therefore, based on a threshold level of exposure, typically demonstrated in laboratory animals, with the incorporation of several uncertainty factors to ensure the protection of sensitive human individuals. The resulting chronic reference doses (RfDs) are defined as an estimate of the maximum daily exposure that will not produce an appreciable risk of adverse health effects during a lifetime. For this report, the following hierarchy of sources was used for the RfDs:

1) Cal EPA [2005] chronic reference exposure levels (RELs), but only if lower than those obtained from the USEPA [2005] Integrated Risk Information System (IRIS);

2) USEPA [2005] IRIS;

3) USEPA Region IX [2004] PRG tables; and

4) USEPA [1997] Health Effects Assessment Tables (HEAST).

Tabulations of the oral and inhalation RfDs for the COPCs are provided in Tables 6-13 and 6-14, respectively.

The toxicity data for dicyclopentadiene were re-evaluated as part of the RAW for this Site [Tetra Tech, 2004]. The determination was made that the most representative toxicity data for dicyclopentadiene exposure were those determined for the oral exposure pathway. Consequently, using a route-to-route extrapolation, the oral RfD was used to evaluate both oral and inhalation exposures to dicyclopentadiene.

6.5 RISK CHARACATERIZATION

Risk characterization integrates the exposure assessment and chemical toxicity information to quantitatively estimate potential health risks due to COPCs. Risk estimates were determined for individual routes of chemical exposure, as well as for additive effects. Due to fundamental differences in the calculation of critical toxicity values, the estimates of potential individual excess carcinogenic risks and noncarcinogenic health effects were developed separately.

The risk of cancer from carcinogens is assumed to be proportional to the dose and any exposure results in a nonzero risk probability. Carcinogenic risk probabilities were calculated by multiplying the estimated exposure level by the route-specific cancer SF for each carcinogen [USEPA 1989]:

$$Risk = E \times SF$$

where:

Risk	=	Estimated individual excess lifetime cancer risk;
E	=	Exposure or Intake level for each COPC (mg/kg/day); and
SF	=	Route- and chemical-specific slope factor ($(mg/kg/day)^{-1}$).

Risk probabilities determined for each carcinogen were also considered to be additive over all exposure pathways.

Risk probabilities can be compared to the generally acceptable risk range specified by the USEPA. According to the revised National Contingency Plan (NCP) [USEPA, 1990], carcinogenic risks from exposures at Superfund sites are considered to be unacceptable at a level greater than 1×10^{-4}, whereas risks less than 1×10^{-6} are considered to be of minimal concern. Action may not be necessary in the risk range of 10^{-6} to 10^{-4}. In general, a potential excess individual lifetime cancer risk of 1×10^{-6} is used as a "point of departure" when determining whether chemical exposures represent a potentially unacceptable level of risk to public health. Altogether, this range of potentially acceptable risks helps put the numerical risk estimates into perspective.

In contrast to carcinogens, noncarcinogens are considered to be threshold chemicals; i.e., a critical chemical dose must be exceeded before an adverse health effect is observed. The likelihood of a potential adverse health effect is represented by the ratio of the chemical exposure level and the route-specific RfD:

$$HQ = \frac{E}{RfD}$$

where:

HQ	=	Hazard Quotient for each chemical of potential concern;
E	=	Exposure or Intake level for each COPC (mg/kg/day); and
RfD	=	Route- and chemical-specific Reference Dose (mg/kg/day).

Also, in a manner similar to carcinogens, hazard quotient (HQ) values were summed across exposure pathways and for all chemical exposures to develop Hazard Index (HI) values. An HQ or HI value greater than 1 indicates an adverse health effect may occur due to a chemical exposure. HQs and HIs are not risk probabilities, but currently are accepted by the USEPA and DTSC as quantitative levels of risk for noncarcinogens or the noncarcinogenic endpoints of carcinogens. In cases where the summation of HIs exceed 1 and the COPCs do not cause the same health effect, the HIs are presented separately for COPCs potentially causing the same type of health effect (i.e., same toxic endpoint) [USEPA 1989].

6.5.1 Risk Estimates

The total carcinogenic risks and overall non-carcinogenic HIs were estimated for residents across the entire site and within the footprint of the Manley Oil Building (Tables 6-16 and 6-17). Risks are provided for each COPC and each potentially complete exposure pathway. Each set of risk analyses provides a determination of the contribution (noted as percentages) of each compound to the overall risk estimates. The risk analyses, therefore, provide an indication of the influence of individual organic compounds or metals on the overall risk estimates.

Risks are discussed separately for direct soil contact (i.e., ingestion, dermal contact, and dust inhalation) and for the inhalation of vapors in indoor air, in order to examine the results of indoor vapor modeling.

<u>Entire Site</u>

Carcinogenic risk probabilities were calculated for future residents potentially exposed to COPCs in post-remediation soils across the Entire Site. Table 6-16 shows that the overall risk estimate for direct contact with soils at the Site (i.e., incidental soil ingestion, soil dermal contact, and dust inhalation) is approximately 8 x 10^{-9}. This risk estimate is well below the USEPA [1990] target risk range of 10^{-6} to 10^{-4} and the point of departure of 1 x 10^{-6}.

The risks estimated for residential exposures that includes the indoor vapor inhalation pathway range from approximately 2 x 10^{-6} to 1 x 10^{-5}. These risk estimates are within the USEPA [1990] target risk range of 10^{-6} to 10^{-4} but exceed the point of departure of 1 x 10^{-6}. As shown in Table 6-16 and Appendix H.3, exposure via the indoor vapor inhalation risk estimates is the primary source of the estimated risks. Exposure to benzene in indoor air results in a risk estimate of approximately 2 x 10^{-6}, while the risks estimated for tetrachloroethene exposure range from approximately 1 x 10^{-7} to 8 x 10^{-6}, depending on whether risks are based on soils or soil gas data. Since DTSC [2005] guidance recommends the use of soil gas data in evaluating indoor air exposures, the primary source of risks from indoor air exposures appears to be tetrachloroethene (approximately 50 to 80 percent of the total calculated incremental risk), although tetrachloroethene was detected only once in soils (at a concentration of 0.02 mg/kg at (NE6-16).

Non-carcinogenic HIs were also calculated for future residents potentially exposed to COPCs in soils and indoor vapors across the Entire site. All of the HQs were determined to be less than 1, with the overall HI estimated at approximately 1. Since the overall HI does not exceed the threshold value of 1, the likelihood of a future resident experiencing non-carcinogenic adverse health effects at the Site is negligible.

Manley Oil Building
Carcinogenic risk probabilities were calculated for future residents potentially exposed to COPCs within the footprint of the Manley Oil Building. Table 6-17 shows that the overall risk estimate for direct contact with soils at the Manley Oil Building (i.e., incidental soil ingestion, soil dermal contact, and dust inhalation) is approximately 6×10^{-7}. This risk estimate is below the USEPA [1990] target risk range of 10^{-6} to 10^{-4} and the point of departure of 1×10^{-6}.

The total risk from assumed residential exposures to soils and the inhalation of indoor vapors, based on soil gas as the source term under the Manley Oil Building, is approximately 6×10^{-7}. This results in an overall risk estimate (including the inhalation of vapors in indoor air) of $6x10^{-7}$ for residential exposures at the Manley Oil Building. Thus, carcinogenic risks estimated for this area of this Site do not exceed the point of departure of 1×10^{-6}.

Non-carcinogenic HIs were also calculated for future residents potentially exposed to COPCs in soils and indoor vapors at the Manley Oil Building. All of the HQs were determined to be substantially less than 1, with the overall HI estimated at approximately 0.3. Since the overall HI does not exceed the threshold value of 1, the likelihood of a future resident experiencing non-carcinogenic adverse health effects at the Manley Oil Building is negligible.

6.5.2 Groundwater

The potential for volatile chemicals remaining in soils to impact groundwater was evaluated by predicting concentrations resulting from downwards migration and mixing with shallow groundwater. The evaluation was conducted using the RME and volume-weighted chemical concentrations to predict potential impacts to groundwater beneath the Site. The predicted concentrations were then compared to potential water quality criteria protective of use of the water as a drinking water source. These criteria consisted of tap water PRGs [USEPA 2004] and MCLs [DHS 2002] for those chemicals with both sets of groundwater protective criteria. Also, for naphthalene, predicted concentrations were compared to the Notification Level (NL), the health-based advisory level established by the California Department of Health Services (CDHS) to ensure that drinking water provided by public water supplies is protective of public health.

Table 6-18 shows that none of the COPCs in soils are predicted to migrate to groundwater at concentrations exceeding the potentially applicable water quality criteria, except for benzene and naphthalene. Also, in these cases, only the predictions based on the RME concentrations in soil exceed the PRGs, while those based on the volume-weighted means do not exceed either the MCL or NL. These results, therefore, indicate that the mass of these two contaminants remaining in soils does not represent future sources of health concerns, based on the drinking water criteria. Thus, the soil removal actions have successfully reduced VOCs to levels that do not pose future impacts to groundwater beneath the Site.

6.6 UNCERTAINTY ANALYSIS

The risk estimates for this Site must be considered in terms of the conditions assumed in identifying the COPCs, quantifying exposures, estimating dose-response variables, and characterizing risks. USEPA and DTSC guidance was used in the calculations of the risk estimates. Health protective assumptions were used in the risk evaluations, such as those outlined below:

- The metals identified as COPCs at this Site were determined by comparing onsite and background concentrations. These comparisons were conducted using a combination of a comparison of maximum reported concentrations and statistical testing, depending on the frequency of detection of each metal. This process could have resulted in uncertainty in the selection of COPCs, since the limited number of detections for certain metals (e.g., antimony, arsenic, and mercury) precluded a statistical comparison to background. In order to ensure that the background comparisons were placed into proper perspective, therefore, a regional background dataset was used that contains more samples than the local background dataset. This comparison showed that only antimony may be elevated over metal concentrations found in soils in California. Nevertheless, the identification of metals as COPCs may be a source of uncertainty in the evaluation of post-remediation risks for this Site.

- The results of three soil sample analyses collected as part of sump closure activities by Kleinfelder [2006] were received after the risks were calculated for this Site. One of these samples was collected beneath the sump sampled at SN-10. Since the analytical results for the two depths sampled at SN-10 were used in this risk assessment, only the two other samples represent areas not included in this risk assessment. The reported analytical results for those samples collected in the other two areas indicate that all VOCs (except acetone) and SVOCs were not detected and metals were not considered hazardous. Some uncertainty may have occurred by not including the analyses from these two other areas in the risk assessment, but given the lack of detection of VOCs and SVOCs would likely result in the calculation of lower exposure point concentrations. Consequently, excluding the analyses from these two other areas may have resulted in the over-estimation of risks.

- At this Site, reasonable maximum exposures were typically characterized by using the 90^{th} or 95^{th} percentile of the various exposure parameters. Use of these values in calculating risks for future residential, unrestricted Site use is likely to be highly protective. For example, it was assumed that residential receptors would reside on the Site for a total of 30 years, first as a child, then as an adult. A 30-year occupancy of a house is the 95^{th} percentile residence time in the United States. This contrasts with the average residential occupancy of 9 years [USEPA, 1997], thereby indicating that on the basis of this factor alone, risks may be overestimated for the typical resident by a factor of about three. Nevertheless, use of the 95^{th} percentile of residential occupancy ensures that the risk estimates provided in this report are health protective.

- The health protective assumption was also made that future unrestricted Site use could result in on-site residents being exposed on a daily basis to the COPCs in soils at the Site. However, the Site is currently entirely paved or covered with structures, and any future development would probably result in much of the Site being paved or covered with structures, as well. Further, the Site has been used in the past for commercial/industrial purposes and is likely to be used for such purposes in the future. Thus, chemical exposures in the future are likely to be substantially less than those used in evaluating risks for this Site.

- The potency equivalency factors (PEFs) used in characterizing the potential carcinogenic effects of the C-PAHs also include uncertainties. Of the seven potential C-PAHs, the USEPA and Cal EPA have developed cancer slope factors for only two: benzo(a)pyrene and dibenzo(a,h) anthracene. In order to assess these chemicals as one group, the USEPA and Cal EPA have developed PEFs that are for the most part based on short-term animal tests. The results of these short-term tests were used to extrapolate to longer-term carcinogenic effects. Thus, use of benzo(a)pyrene-equivalents for assessing risks is likely to include various sources of uncertainty.

- As mentioned in Section 6.5.1, soil gas data for benzene and naphthalene were used preferentially to predict indoor vapor exposures. Guidance from both DTSC [2005] and USEPA [2003a] support the preferential use of soil gas data because this approach reduces uncertainties in the equilibrium partitioning and the fate and transport models used to predict vapor intrusion into buildings. The level of uncertainty in the fate and transport analyses conducted for this Site can be determined by comparing the indoor vapor concentrations predicted for benzene and naphthalene using soil gas and soils as the source terms. As naphthalene was not detected in soil gas, the comparison presented below is based on the typical detection limit of 60 ug/m^3 for naphthalene in soil gas.

Predicted indoor vapor concentrations[1] (mg/m^3) by source term

Area	**Entire Site**		**Manley Oil Building**	
Source term	**Soils[2]**	**Soil gas**	**Soils[2]**	**Soil gas**
Benzene	2.62E-04	1.03E-04	1.09E-04	3.79E-05
Naphthalene	3.75E-03	<4.37E-5	1.17E-02	<4.37E-5

Notes:

1 – Assuming exposures over a 30-year period for emissions from soils and over an infinite period for soil gas.

2- volume-weighted concentration (see Appendix I).

As shown above, using soils rather than soil gas as a source term for indoor vapor concentrations of benzene and naphthalene could result in predicted indoor vapor concentrations that are higher for both chemicals and comparably higher risks. For benzene, predicted indoor vapor concentrations are approximately two times higher across the entire site and almost four times higher for the Manley Oil Building. Naphthalene shows a larger degree of uncertainty. Indoor vapor concentrations for naphthalene are two to three orders of magnitude higher when estimated using soils as a source term than when using the soil gas detection limits. Since naphthalene was not detected in soil gas, the indoor vapor predictions for naphthalene based on the soil gas detection limits represent the concentrations *below* which naphthalene may be present. This difference appears to indicate that naphthalene in soils is less volatile than would be predicted using equilibrium partitioning models, one of the key reasons that DTSC [2005] and USEPA [2003a] recommend the preferential use of soil gas data to estimate indoor vapor intrusion.

- For naphthalene, it should also be noted that naphthalene was primarily detected in soils from 20-25 ft bgs, as shown below.

Depth (feet bgs)		Volume Weighted Concentration
Minimum	**Maximum**	**(mg/kg)**
0	5	0.01
>5	10	0.005
>10	15	0.005
>15	20	0.005
>20	25	1.2

As all soil gas samples were collected at approximately 7 feet bgs, the soil gas analytical results should reflect any volatilization of naphthalene from soils at 20-25 feet bgs. This is particularly important in the area beneath the pit just south of the Manley Oil Building where it was not feasible to collect soil samples near the water table and yet soil gas samples demonstrated that naphthalene was not present in soil vapors. Thus, the soil gas data for naphthalene at the Site is appropriate to use in modeling indoor vapor intrusion (i.e., the soil gas data should be representative of all naphthalene sources at the Site).

- The Cal EPA naphthalene inhalation slope factor was used in the calculation of indoor vapor risks. This is notable because the USEPA has not developed a cancer slope factor for naphthalene. The use of the Cal EPA inhalation slope factor results in carcinogenic risks for naphthalene at the detection limit in soil gas that shows risks based on direct vapor measurements are well below the point of departure, although risks from modeled vapor emissions from soils are higher. The noncarcinogenic HI for naphthalene is substantially below the hazard threshold of 1, which indicates that risks for naphthalene exposures based on Cal EPA toxicity analysis have been overestimated relative to those based on USEPA toxicity analyses.

- Finally, it should be recognized the evaluations of VOC migration to groundwater were conducted assuming that groundwater beneath the Site is suitable for use as a potable water supply and is uncontaminated. However, groundwater at the Site is not currently suitable for beneficial purposes because of the presence of: 1) naturally high levels of dissolved solids and nitrates, 2) the constituents of natural petroleum hydrocarbons, and 3) the occurrence of upgradient sources of hydrocarbon and solvent contamination. Evaluations of future groundwater use will be presented in the groundwater management plan for the entire former Aliso Street MGP.

6.7 ECOLOGICAL RISK ASSESSMENT

A scoping assessment was conducted to assess whether the potential for ecological risk exists at this Site [DTSC 1996, 1999]. The scoping assessment addresses the following three questions:

- Are there any potentially affected habitats or receptors of concern present at or near the Site?

- Are there potentially complete pathways through which biological resources of concern may be exposed to released chemicals?

- Are potentially harmful chemicals released or present at the Site?

A negative response to any one of the above questions indicates the absence of potential ecological impacts.

The Site consists of one city block in an area of Los Angeles used for commercial, light industrial, public institutions, and transportation purposes. The surrounding properties are used for various industrial purposes, including a car storage and towing facility (north), fish processing (west), and cold storage (south). Due east of the Site are a number of railroad and transit tracks. The Site has buildings on the northern and southern boundaries and is otherwise entirely covered by asphalt paving or concrete slabs.

The nearest surface water (i.e., the Los Angeles River) is located east of the Site and in this section of Los Angeles has a concrete-lined channel. Groundwater is found at a depth of about 25 to 30 feet bgs and in the vicinity of the river is between 5 to 20 feet below the bottom of the channel. Groundwater, therefore, does not discharge to the surface. Groundwater flow is also generally towards the south and not directly towards the river. Based on these observations, there is no habitat available for terrestrial plants or animals and none for aquatic receptors. Thus, no biological receptors of regulatory, ecological, or commercial/recreational concern are likely to be at or near the Site.

The potential for ecological risks exists when ecological receptors may be exposed to chemical constituents through complete exposure pathways. At this Site, the ecological exposure pathways are considered to be incomplete because 1) no terrestrial or aquatic biota were identified as biological receptors of concern, 2) biota cannot contact soils that are currently paved or under a building, 3) groundwater is too deep for plants or animals to contact, and 4) groundwater does not discharge at locations where aquatic biota could be exposed. Thus, biota is not likely to be exposed to the affected environmental media.

Without complete exposure pathways, ecological receptors are not exposed to any chemicals of potential concern. Therefore, as a result of this determination, the potential that this Site represents risks to ecological receptors is negligible.

6.8 RISK SUMMARY

The remedial action objective for the removal of MGP-related *or other* residuals conducted at this Site was to restore the Site to conditions requiring no land use restrictions (i.e., to residential standards), although the Site is currently used for commercial/industrial purposes and is likely to be used for similar purposes in the future.

Based on the determinations described above using available data, the removal activities have effectively reduced the C-PAH concentrations at the Site to background levels. The residual concentrations of C-PAH in soils across the Site are sufficiently low that if subsurface soils were redistributed on the surface, the resulting concentrations would be lower than background levels.

In other words, the risks from C-PAHs to future residents potentially living on the Site under post-excavation conditions would be no more than people living and working elsewhere in southern California.

From a cumulative risk standpoint, since C-PAH levels are sufficiently low that they would not represent a significant risk above background, the cumulative lifetime incremental cancer risk for the PAHs, metals, is less than 1×10^{-6}. Only risks estimated for exposures to VOCs in indoor air exceed 1×10^{-6}, ranging up to 8×10^{-6} for potential exposure to tetrachloroethene. Nonetheless these risk estimates are within the acceptable cancer risk range of 10^{-6} to 10^{-4} recommended by the USEPA and DTSC.

Similarly, for noncarcinogenic health effects, the cumulative hazard index calculated for all of the PAHs, metals, and VOCs is well below the critical threshold value of 1.0 and, thus, no adverse noncancer health effects would be expected under a residential exposure scenario.
For groundwater, the removal activities have removed soils and sufficient chemical mass that predicted impacts of chemical migration to groundwater are less than potentially applicable water quality criteria. In particular, based on the mass remaining in soils, the predicted concentrations of benzene and naphthalene in groundwater do not exceed the drinking water MCL and Notification Level, respectively.

No habitat is available at the Site for terrestrial plants or animals and none for aquatic receptors. On this basis there are no complete exposure pathways for ecological receptors to be exposed to COPCs at this Site. Therefore, the potential that this Site represents risks to ecological receptors is negligible.

The available data also indicate that removal activities conducted at the Site have been successful in achieving the removal action objective for the Site and that the COPCs (PAHs, metals, and VOCs) have been remediated to levels that are protective of human health for unrestricted land use, except possibly for tetrachloroethene detected in soil gas.

The Department of Toxics Substances Control has determined (please refer to the DTSC comments dated July 28, 2006 in Appendix V) that "….the impact of tetrachloroethene at the site remains unresolved". DTSC further recommends that, in order to use the Site for sensitive users (including residential), one of the following three actions may be necessary: "(1) the impact of tetrachloroethene to the site be reduced to levels which would allow unrestricted use, or (2) a land use restriction be enacted to limit site use to non-sensitive uses, including residential use, or (3) implement engineering controls that would allow mixed use."

The removal action activities at Aliso Sector C Block N former MGP Site located at 410 Center Street, Los Angeles, California have been completed, as stated in the approved Removal Action Workplan (RAW). All MGP-related and other contaminated soils in the area located at the northwest corner of the Site and the area inside the building have been excavated and removed.

A closure report entitled " Sump Closure Report, Former Aliso street MGP Site, 410 North Center Street, Los Angeles, California", prepared by Klienfelder, the consulting firm representing the current owner of the Site, related to oil sump cleanup is submitted with this report to DTSC in a separate volume.

All of the investigation and removal activities at the Site were performed under the direct oversight of the Department of Toxic Substances Control (DTSC). Therefore, through this remedial action, the requirements of the Removal Action Workplan (RAW) have been satisfied, and the Southern California Gas Company (SCG) requests from DTSC a Certificate of Completion for implementation of the RAW.

Bradford, G.R., A.C. Chang, A.L. Page, D. Bakhtar, J.A. Frampton, and H. Wright. 1996. *Background Concentrations of Trace and Major Elements in California Soils*. Kearney Foundation of Soil Science, University of California, Riverside. March.

California Department of Water Resources (CDWR), 1961. *Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County, Appendix B, Groundwater Geology: CDWR Bulletin 104*.

Cal EPA, Air Resources Board (Cal/EPA ARB), 1993. *Benzo(a)pyrene as a Toxic Air Contaminant*. *Part B Health Assessment*. Office of Environmental Health Hazard Assessment. August.

Cal EPA, 1994. *California Cancer Potency Factors: Update*. Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (Cal-EPA), November 1994.

California Environmental Protection Agency (Cal EPA), 1999. *California Cancer Potency Factors Table* from CAL/EPA to Standards and Criteria Work Group, April 1999.

California Regional Water Quality Control Board (RWQCB), Los Angeles Region, 1996. *Interim Site Assessment and Cleanup Guidebook*, *California Regional Water Quality Control Board Los Angeles and Ventura Counties, Region 4*. May 1996.

California Department of Health Services (Cal DHS). 2002. *Drinking Water Standards*, *Primary Maximum Contaminant Levels (MCLs) and Lead and Copper Action Levels*. On-line database available at http://www.dhs.ca.gov/org/ps/ddwem/chemicals/chemindex.htm

California Department of Health Services (Cal DHS). 2005. *DHS Drinking Water Notification Levels, An Overview*. Available online at http://www.dhs.ca.gov/ps/ddwem/

California Environmental Protection Agency (Cal EPA). Department of Toxic Substances Control (DTSC). 2003. Modified version of the Johnson and Ettinger model incorporating Cal EPA toxicity values.

California Environmental Protection Agency (Cal EPA). 2005. Toxicity criteria database. Office of Environmental Health Hazard Assessment (OEHHA). Available on-line at http://www.oehha.org/risk/chemicalDB/index.asp

DTSC, 2000a. *Voluntary Cleanup agreement between DTSC and Southern California Gas Company, Docket Number HAS-A00\01-100,* dated October 10, 2000.

Department of Toxic Substances Control (DTSC). 1992. *Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities*.

Office of the Science Advisor, State of California Department of Toxic Substances Control, Sacramento, CA.

Department of Toxic Substances Control (DTSC). 1997. *Selecting Inorganic Constituents as Chemicals of Potential Concern for Risk Assessments at hazardous waste Sites and Permitted Facilities*. Final Policy.

Department of Toxic Substances Control (DTSC). 1999. *Preliminary Endangerment Assessment: Guidance Manual*. Second printing.

Department of Toxic Substances Control (DTSC), 2000a. *Voluntary Cleanup Agreement between DTSC and Southern California Gas Company*, Docket Number HAS-A00\01-100 dated October 10, 2000.

Department of Toxic Substances Control (DTSC). 2000b. *Draft memorandum: Guidance for the Dermal Exposure Pathway*. January, 2000.

Department of Toxic Substances Control (DTSC). 2005. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. Interim Final. Revised February 7, 2005.

Earth Technology Corporation (ETC), 1998. *Preliminary Endangerment Assessment Report Sector C Former MGP, Los Angeles, California.*

Earth Technology Corporation (Earth Tech), 2001. *Remedial Investigation Report, Sector C-Block N, Former Aliso Street Manufactured Gas Plant, 410 Center Street, Los Angeles, California*. October 21, 2001.

ENVIRON Corporation, 2002. *A Methodology for Using Background PAHs to Support Remediation Decisions*. January, 2002.

Geotechnical Soilutions, March 2005. *City of Los Angeles Approved Geotechnical Plans, Block N, Sector C, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California*. March 2005.

Klienfelder, 2005a. Field Activities Report, Southern California Gas Company, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California. October 3, 2005.

Klienfelder, 2005b. Sump Closure Report, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California. December 20, 2005.

Los Angeles Geotechnical Engineering Division (LA GED), 2002. Memo dated January 2, 2002. *Los Angeles River Channel Oil Seep near Cesar Chavez Avenue Bridge*. Memo accompanied report by Pinnacle Environmental Technologies titled *Hydrocarbon Seep Investigation on Piper Technical Center*. December 2001.

Ravi, V. and J.A. Johnson. 1996. *VLEACH A One-Dimensional Finite Difference Vadose Zone Leaching Model*. Version 2.2. Developed for U.S. Environmental Protection Agency, Office of Research and Development, Robert S. Kerr Environmental Research Laboratory. Ada, Oklahoma.

Southern California Gas Company (SCGC). 1956. *Concrete Details Pipe Culvert and Trench at Auxiliary Building, Ducommun Street Compressor Station, Drawing No. 20832-A*. June 1956.

Tetra Tech, Inc. (Tetra Tech), 2002. *Aliso Remedial Investigation Master Workplan, Los Angeles, California*. September 2002.

Tetra Tech, Inc. 2003. *Focused Human Health Risk Assessment for Block N, Sector C, Former Aliso Street MGP Site, Los Angeles, California*. July 2003.

Tetra Tech, Inc. 2004a. *California Background Sampling Report, Former Aliso Street MGP Site, Los Angeles, California.* April, 2004.

Tetra Tech, Inc. (Tetra Tech), 2004b. *Removal Action Workplan, Block N, Sector C, Former Aliso Street MGP Site, 410 Center Street, Los Angeles, California*. June 2004.

U.S. Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund (RAGS). Human Health Evaluation Manual Part A.* Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002.

U.S. Environmental Protection Agency (USEPA). 1990. *National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Final Rule)*. 40 CFR Part 300: 55 Federal Register 8666.

U.S. Environmental Protection Agency (USEPA). 1991. *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors*. Office of Emergency and Remedial Response, Washington, D.C. OSWER Directive 9285.6-03.

U.S. Environmental Protection Agency (USEPA). 1992a. *Dermal Exposure Assessment: Principles and Applications*. Office of Research and Development, Washington, D.C. Interim Report. EPA/600/8-91/011B.

U.S. Environmental Protection Agency (USEPA). 1992b. *Supplemental Guidance to RAGS: Calculating the Concentration Term.* Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Publication 9285.7-081.

U.S. Environmental Protection Agency (USEPA). 1992c. *Air/Superfund National Technical Guidance Study Series on Assessing Potential Indoor Air Impacts for Superfund Sites*.

U.S. Environmental Protection Agency (USEPA). 1996. *Soil screening guidance: User's Guide*. Office of Solid Waste and Emergency Response. EPA/540/R-95/018.

U.S. Environmental Protection Agency (USEPA). 1997a. *Health Effects Assessment Summary Tables (HEAST).* FY-1997 Annual. Office of Solid Waste and Emergency Response, Washington, D.C. EPA 540/R-94/020.

U.S. Environmental Protection Agency (USEPA). 1997b. *Exposure Factors Handbook. National Center for Environmental Assessment*, Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fa. August.

U.S. Environmental Protection Agency (USEPA). 2001a. *Guidance for characterizing background chemicals in soils at Superfund sites*. External Review Draft. Office of Emergency and Remedial Response. EPA 540-R-01-003. OSWER 9285.7-41.

U.S. Environmental Protection Agency (USEPA). 2001b. *Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Interim Guidance*. EPA/540/R-99/005. Office of Solid Waste and Emergency Response, Washington DC. PB99-963312.

U.S. Environmental Protection Agency (USEPA). 2002a. *Guidance for comparing background and chemical concentrations in soil for CERCLA sites*. Office of Emergency and Remedial Response. EPA 540-R-01-003. OSWER 9285.7-41.

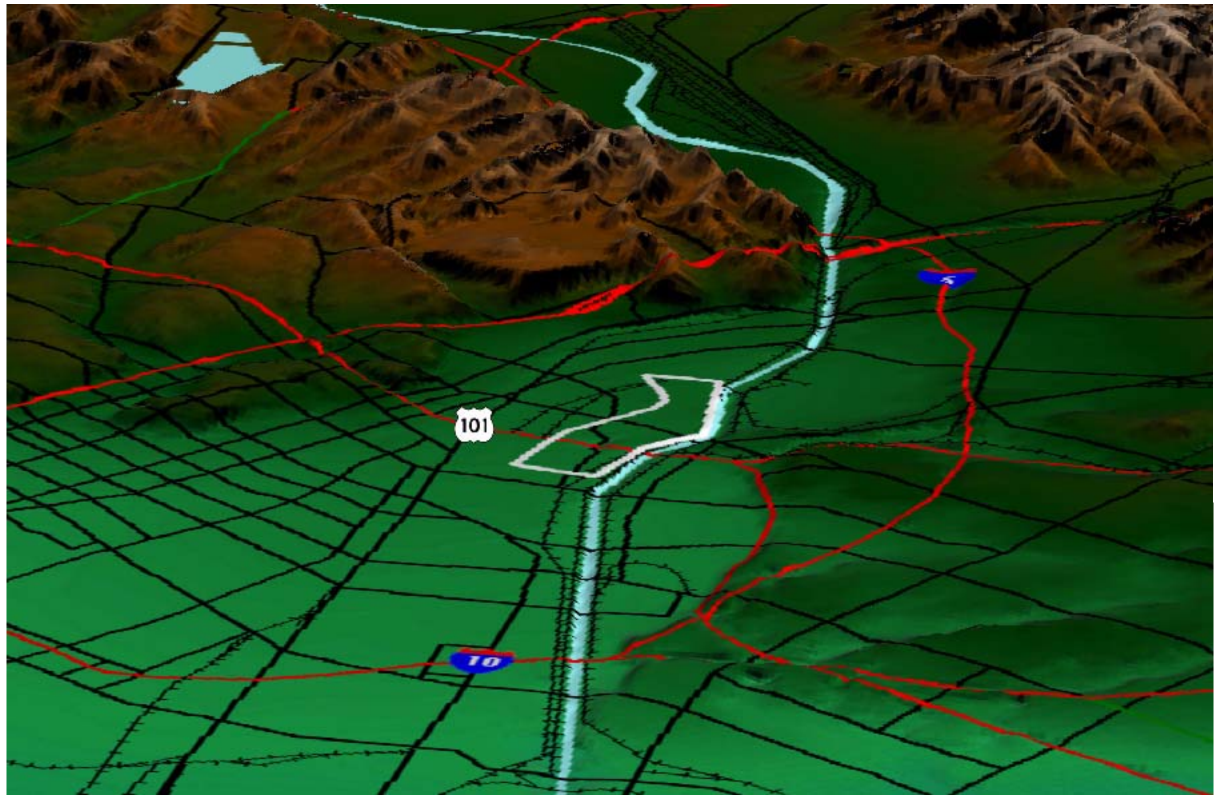
U.S. Environmental Protection Agency (USEPA). 2002b. *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*. Office of Solid Waste and Emergency Response.

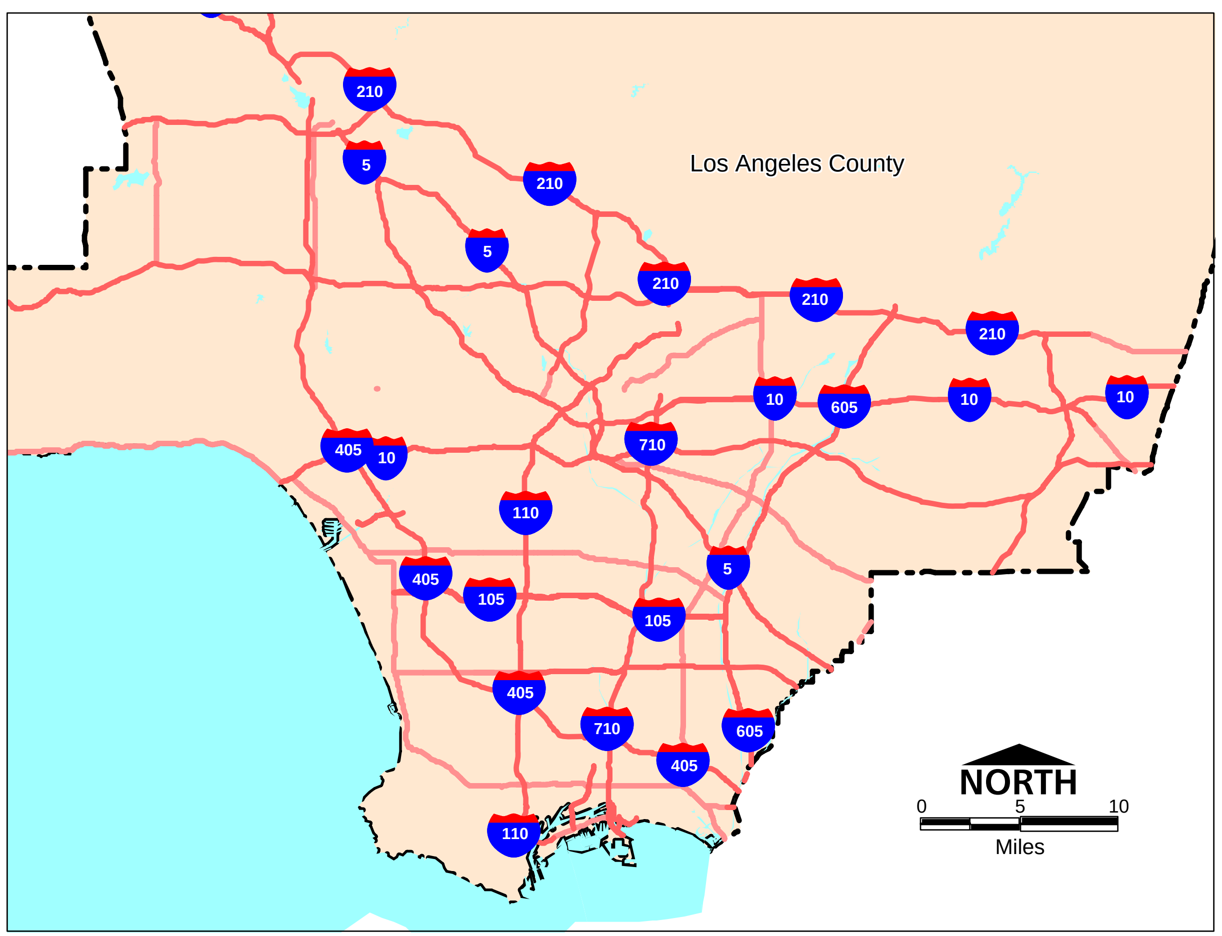
U.S. Environmental Protection Agency (USEPA). 2003. *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. Office of Emergency and Remedial Response*. Available on-line at http://www.epa.gov/superfund/programs/risk/airmodel/johnson_ettinger.htm.

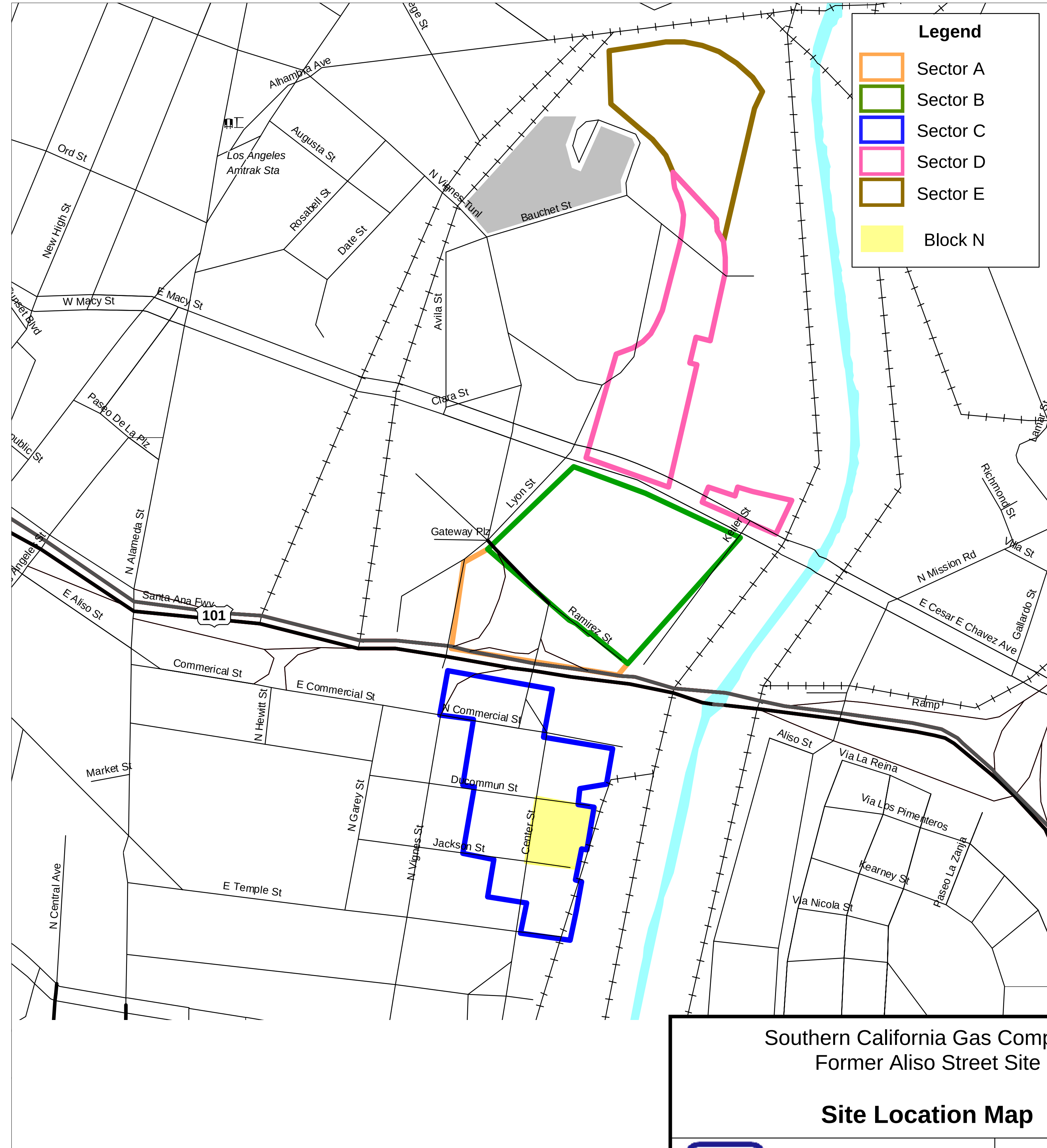
U.S. Environmental Protection Agency (USEPA). 2004a. *U.S. EPA Region IX, Preliminary Remediation Goals (PRGs)*. Available online at http://www.epa.gov/region9/waste/sfund/prg/index.html.

U.S. Environmental Protection Agency (USEPA). 2004b. *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment).* Office of Superfund Remediation and Technology Innovation. EPA/540/R/99/005, OSWER 9285.7-02EP, PB99-963312.

U.S. Environmental Protection Agency (USEPA). 2005. *Integrated Risk Information System (IRIS)*. On-line database available at www.epa.gov/iris/subst/index







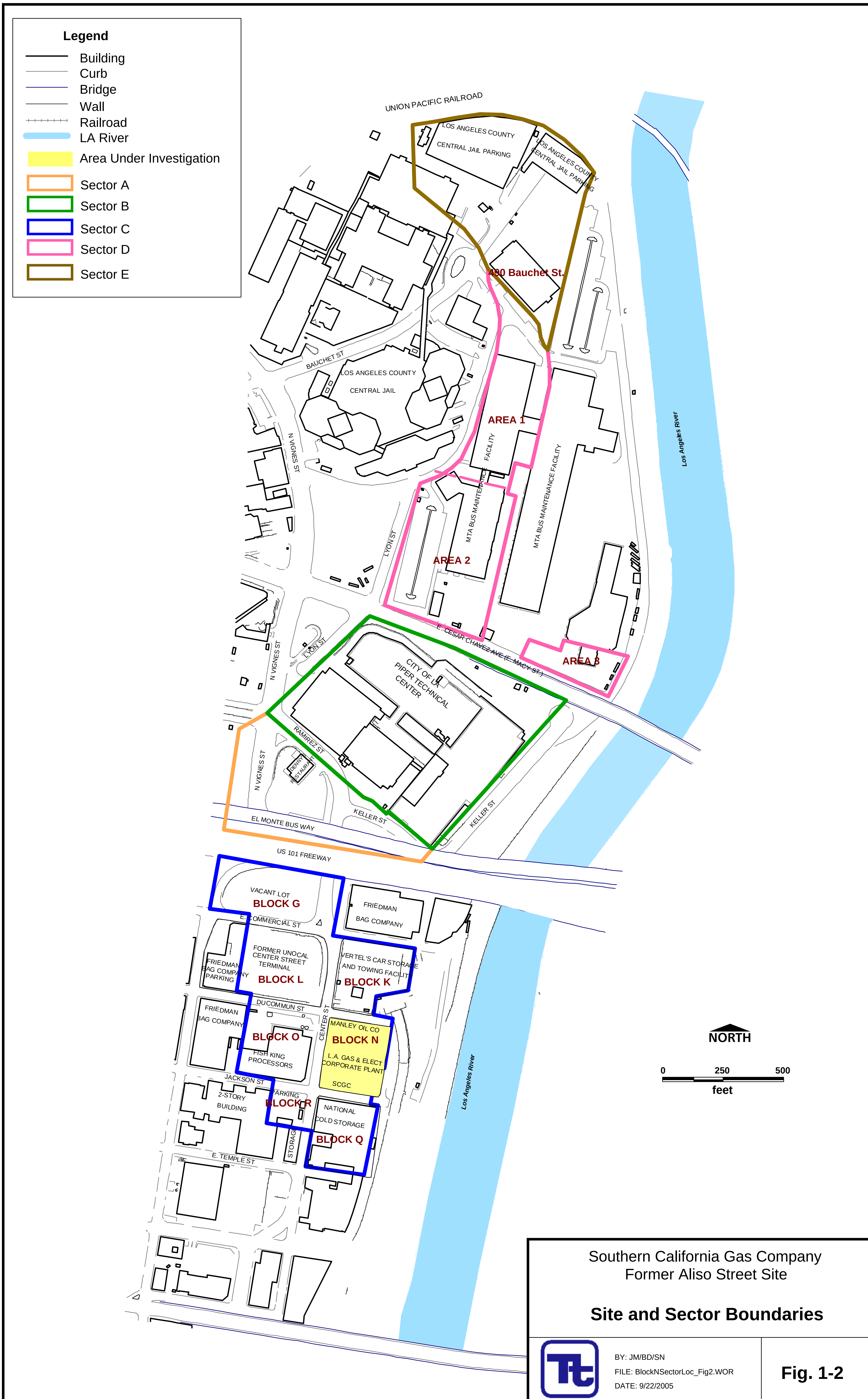
Southern California Gas Company
Former Aliso Street Site

Site Location Map

Tetra Tech, Inc.

BY: JM/BD/SN
FILE: Site_locationFig1.WOR
DATE: 9/22/2005

Fig. 1-1

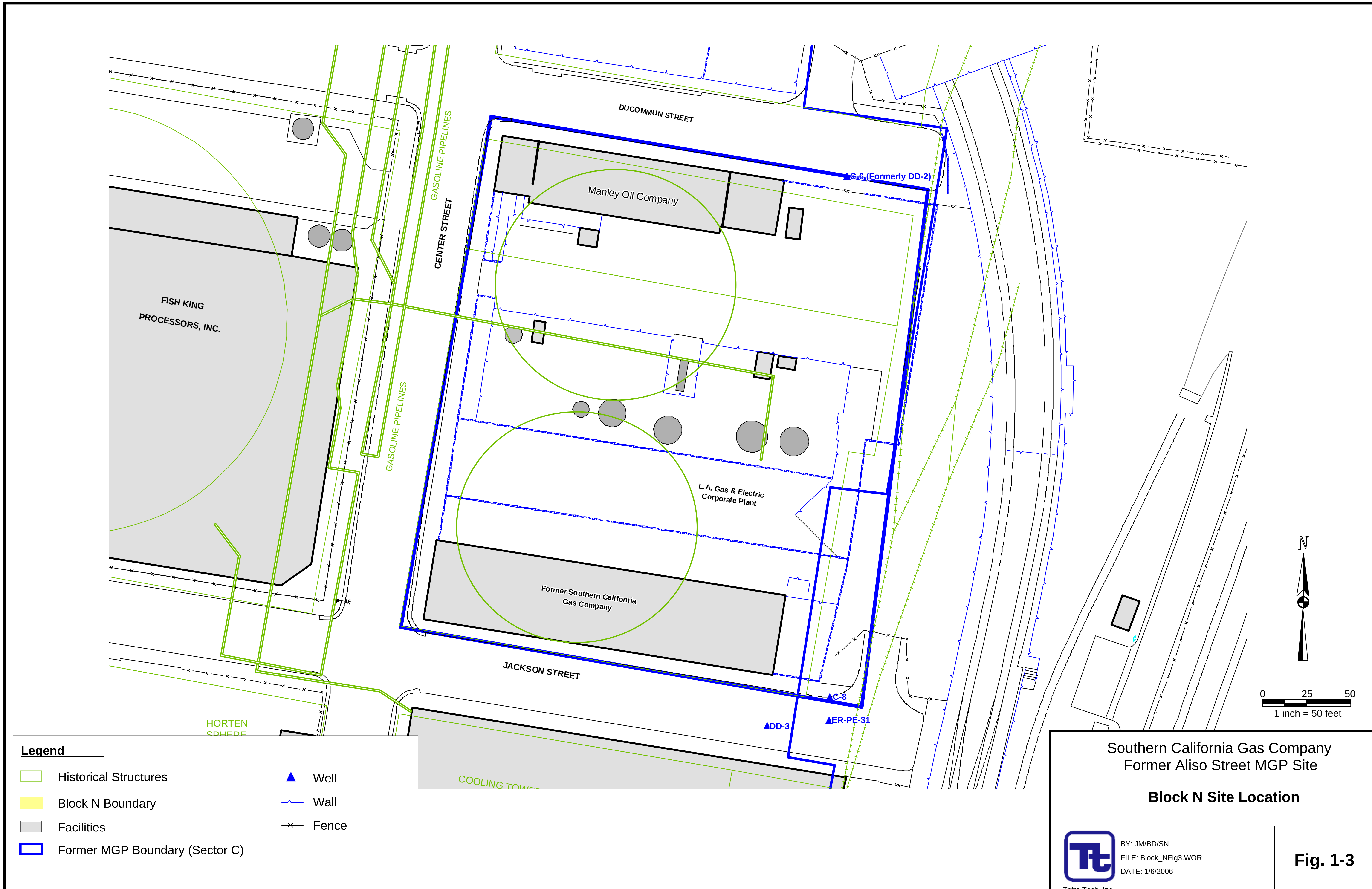


Southern California Gas Company
Former Aliso Street Site

Site and Sector Boundaries

BY: JM/BD/SN
FILE: BlockNSectorLoc_Fig2.WOR
DATE: 9/22/2005

Fig. 1-2



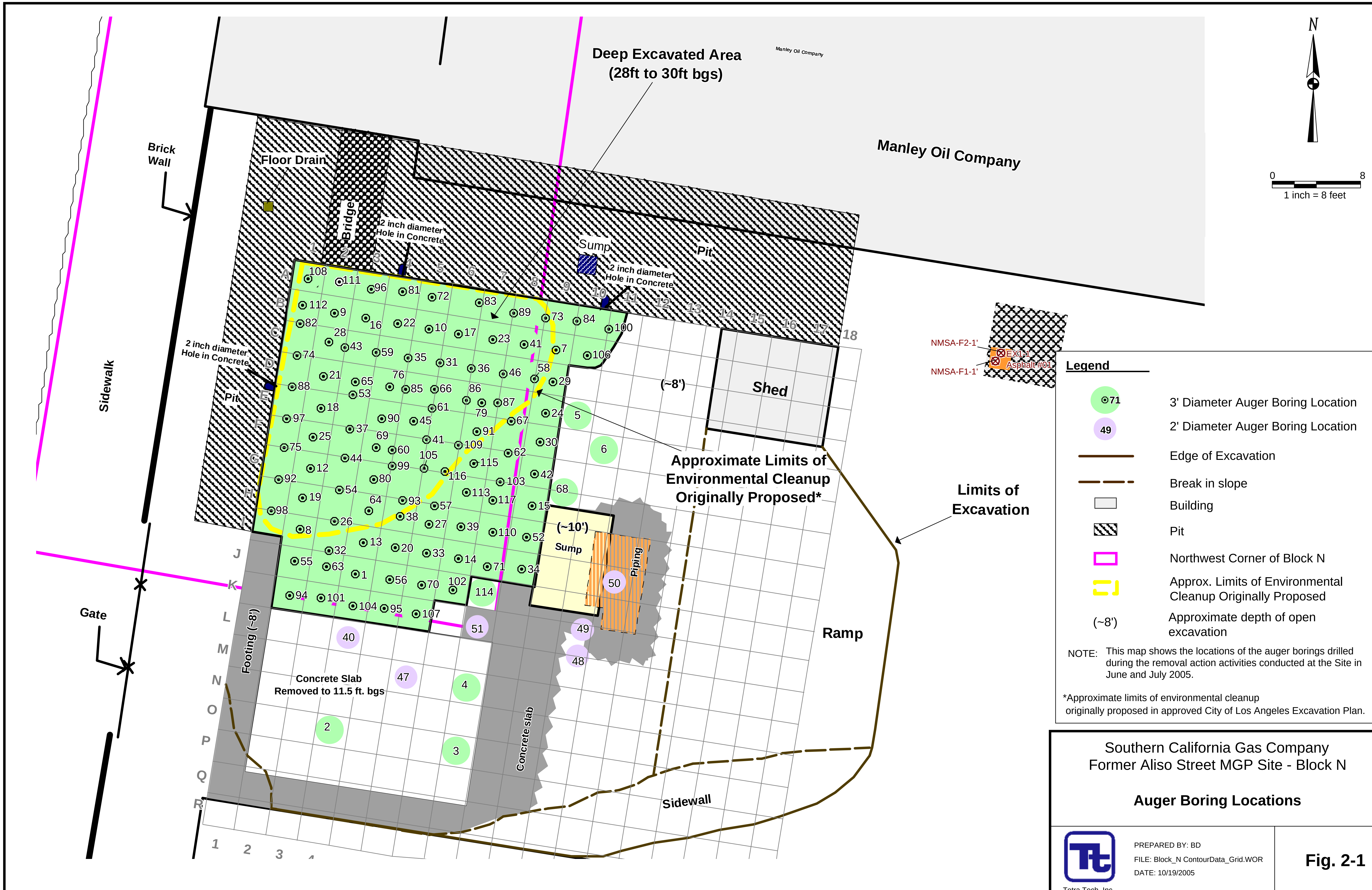
Southern California Gas Company
Former Aliso Street MGP Site

Block N Site Location

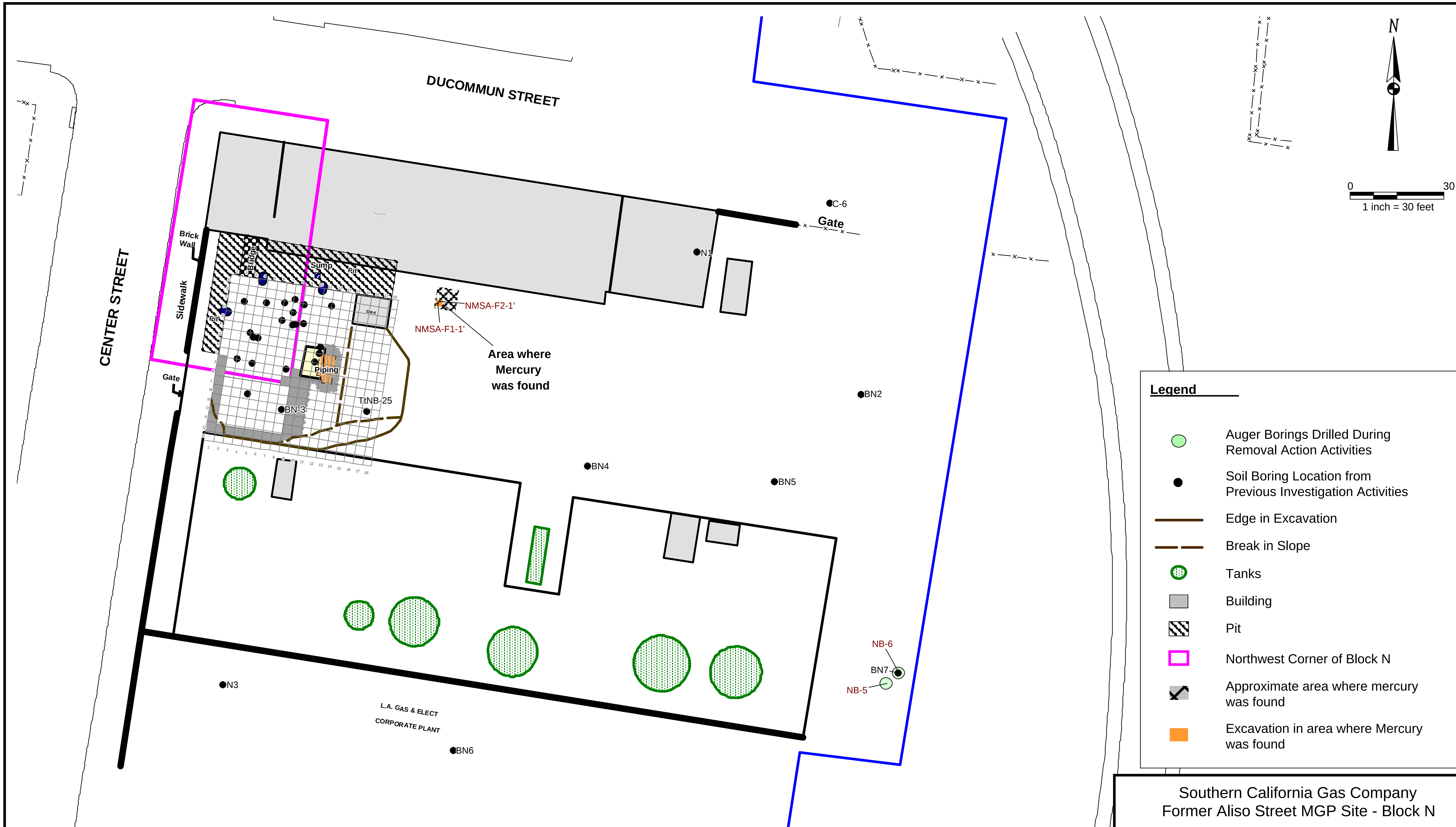
Tetra Tech, Inc.

BY: JM/BD/SN
FILE: Block_NFig3.WOR
DATE: 1/6/2006

Fig. 1-3



Deep Excavated Area
(28ft to 30ft bgs)
Manley Oil Company
Manley Oil Company
0
8
1 inch = 8 feet
N
Brick Wall
Floor Drain
Bridge
2 inch diameter Hole in Concrete
Sump
2 inch diameter Hole in Concrete
Pit
2 inch diameter Hole in Concrete
Pit
Sidewalk
Gate
(~8')
Shed
(~10')
Sump
Piping
Approximate Limits of Environmental Cleanup Originally Proposed*
Limits of Excavation
Ramp
Footing (~8')
Concrete Slab Removed to 11.5 ft. bgs
Concrete slab
Sidewall
NMSA-F2-1'
NMSA-F1-1'
EX1-1
Asphalt #01
Legend
3' Diameter Auger Boring Location
2' Diameter Auger Boring Location
Edge of Excavation
Break in slope
Building
Pit
Northwest Corner of Block N
Approx. Limits of Environmental Cleanup Originally Proposed
(~8') Approximate depth of open excavation
NOTE: This map shows the locations of the auger borings drilled during the removal action activities conducted at the Site in June and July 2005.
*Approximate limits of environmental cleanup originally proposed in approved City of Los Angeles Excavation Plan.
Southern California Gas Company
Former Aliso Street MGP Site - Block N
Auger Boring Locations
Tetra Tech, Inc.
PREPARED BY: BD
FILE: Block_N ContourData_Grid.WOR
DATE: 10/19/2005
Fig. 2-1



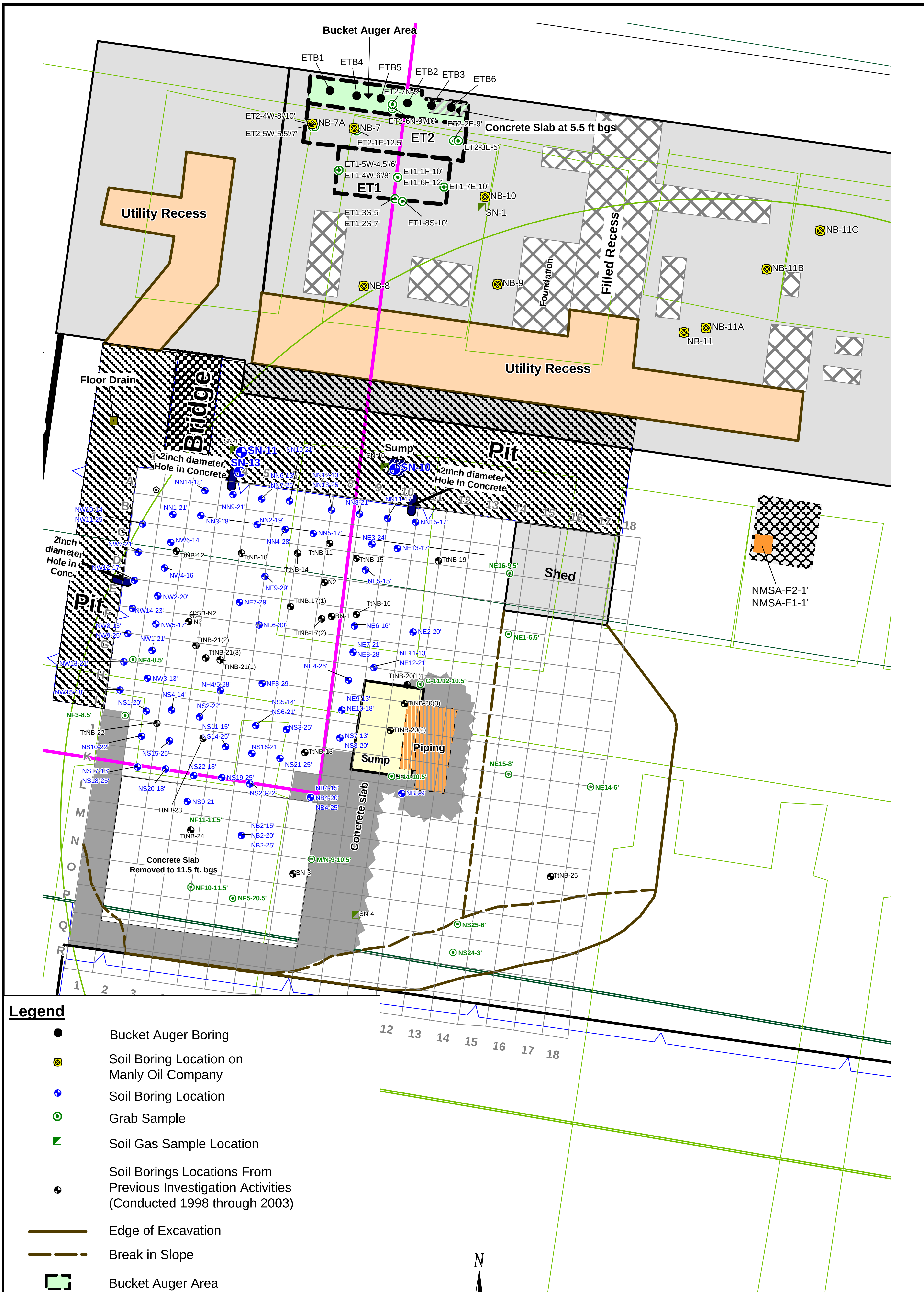
Southern California Gas Company
Former Aliso Street MGP Site - Block N

Site Plan Showing Excavation at BN7 and Area where Mercury was found

Tetra Tech, Inc.

BY: JM/BD/SN
FILE: Block_N ContourData_Grid.WOR
DATE: 1/06/06

Fig. 2-2



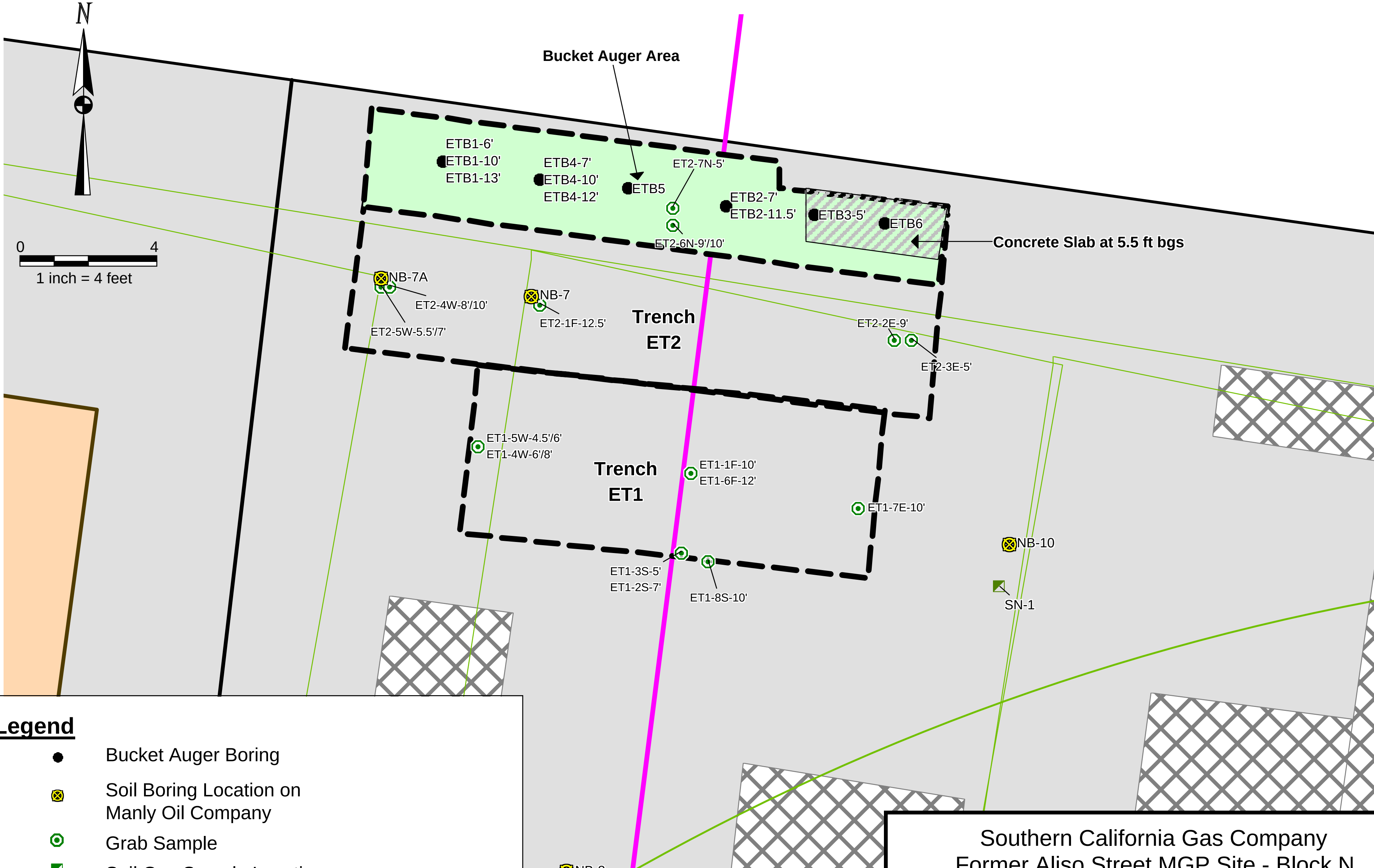
Southern California Gas Company
Former Aliso Street MGP Site - Block N

Soil Sample Locations in the Northwest Corner Area of Block N

Tetra Tech, Inc.

BY: JM/BD/SN
FILE: Manly Drill.WOR
DATE: 1/6/2006

Fig. 3-1



Legend

- Bucket Auger Boring
- Soil Boring Location on Manly Oil Company
- Grab Sample
- Soil Gas Sample Location
- Bucket Auger Area
- Trenches in Manley Oil Building
- Building
- Concrete Slab at 5.5 ft bgs (size and shape based on visual observation)
- Northwest Corner of Block N

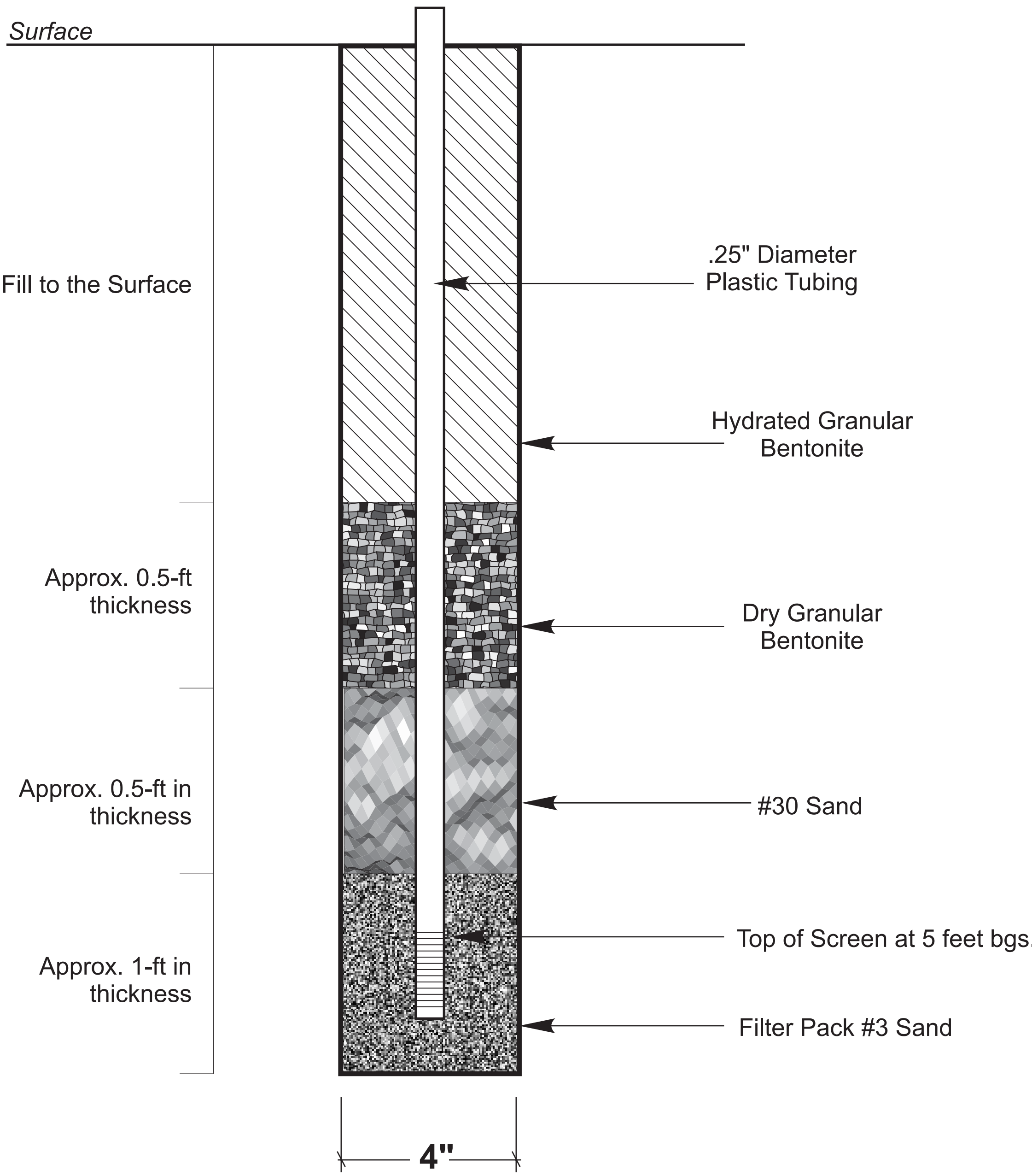
Southern California Gas Company
Former Aliso Street MGP Site - Block N

Trenches and Bucket Augered Area in Manley Oil Building

Tetra Tech, Inc.

BY: JM/BD/SN
FILE: Manly Drill.WOR
DATE: 12/16/2005

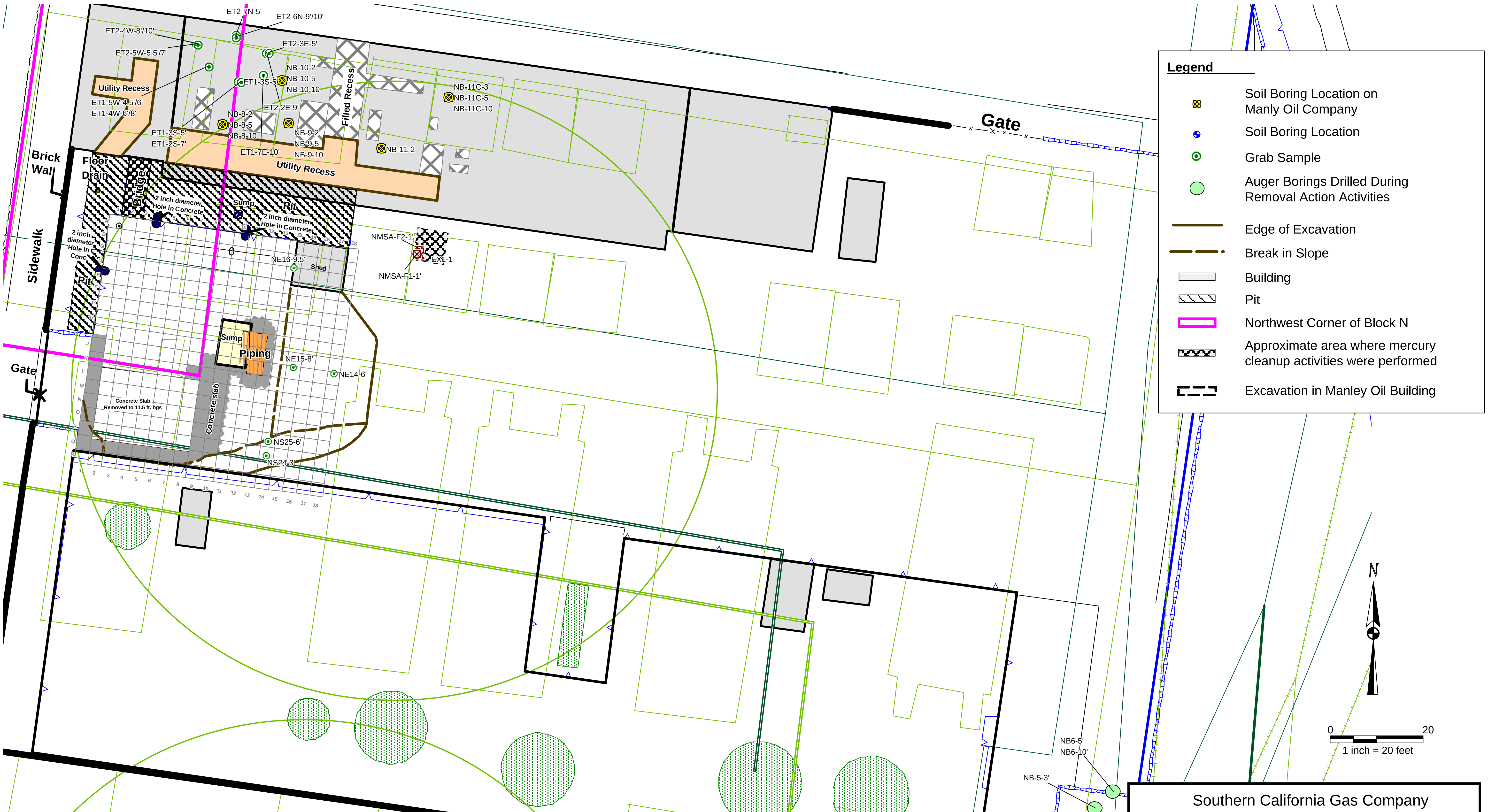
Fig. 3-2



Multi-Depth Gas Probe Construction Diagram

NOT TO SCALE

Southern California Gas Company Former Ventura MGP Site **TYPICAL SOIL GAS PROBE CONSTRUCTION**		
Tetra Tech, Inc.	Prepared By: M.ROMERO File: 15969-11_Gas-Probe.cdr Date: 11/11/05	**FIGURE 3-3**



Southern California Gas Company
Former Aliso Street MGP Site - Block N

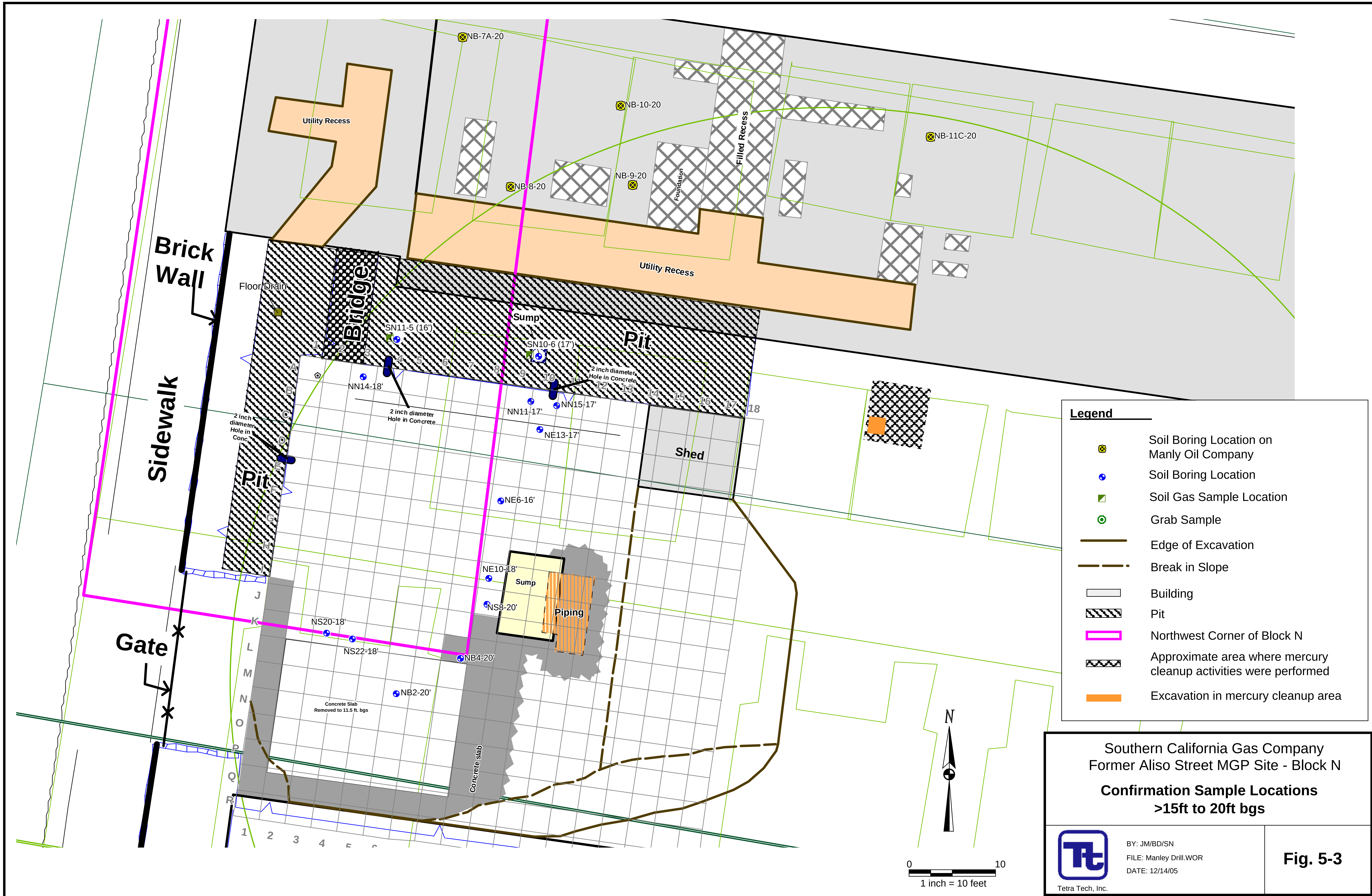
Confirmation Sample Locations
0 to 10ft bgs

Tetra Tech, Inc.

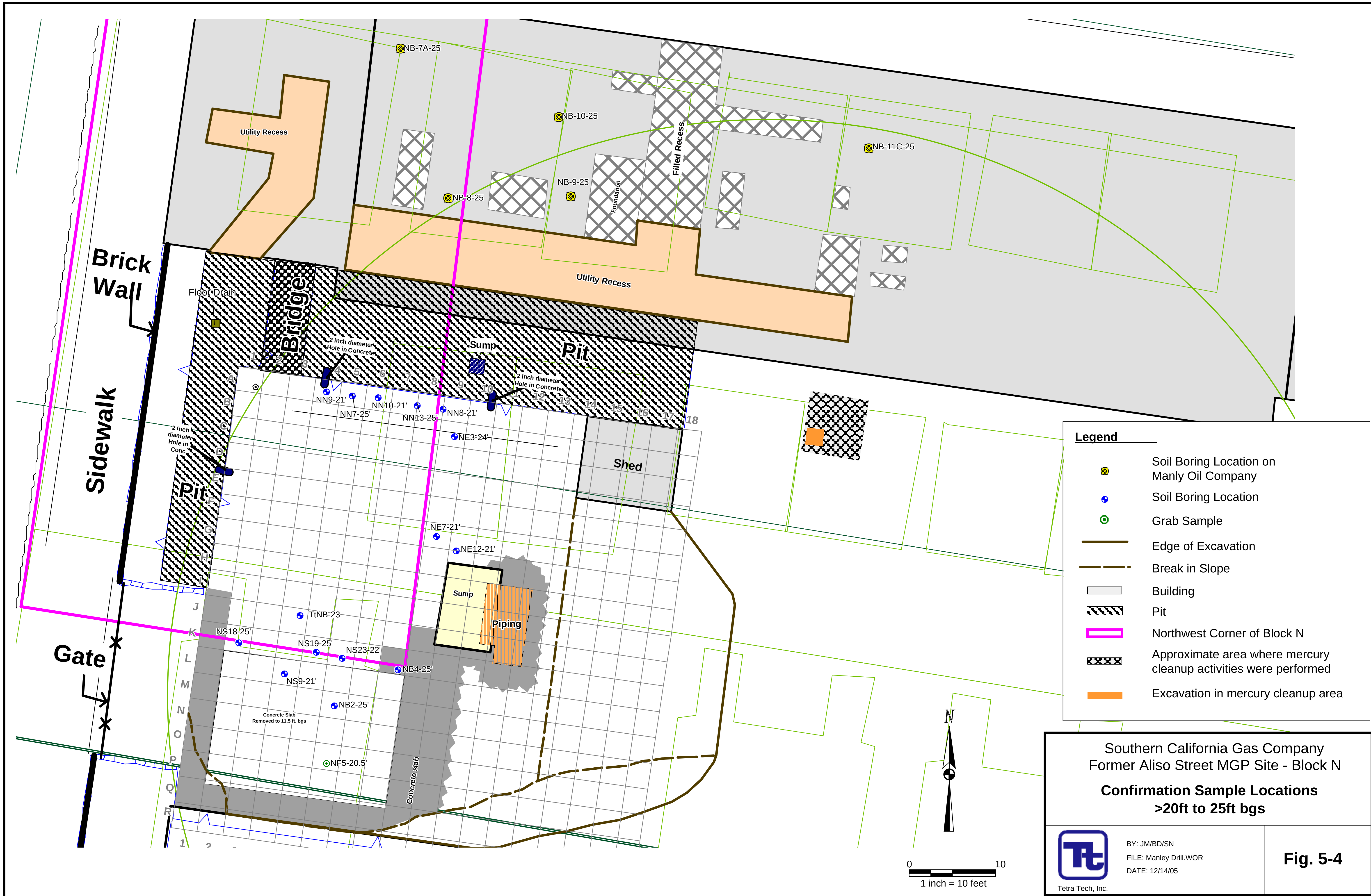
BY: JM/BD/SN
FILE: Manley Drill.WOR
DATE: 12/14/05

Fig. 5-1

Legend
Soil Boring Location on Manly Oil Company
Soil Boring Location
Grab Sample
Edge of Excavation
Break in Slope
Building
Pit
Northwest Corner of Block N
Approximate area where mercury cleanup activities were performed
Excavation in mercury cleanup area
Excavation in Manley Building
NB-7-15'
ET2-1F-12.5'
ET1-6F-12'
NB-10-15'
NB-11C-15'
NB-9-15'
NB-8-15'
Utility Recess
Utility Recess
Filled Recess
Foundation
Brick Wall
Floor Drain
Bridge
Pit
Sump
SN11-1.5 (12.5')
SN10-3 (14')
NN6-13'
NN12-13'
2 inch diameter Hole in Concrete
2 inch diameter Hole in Concrete
2 inch diameter Hole in Concrete
Sidewalk
Pit
Shed
NE5-15'
NE11-13'
G-11/12-10.5'
NE9-13'
Sump
Piping
NS7-13'
J-11-10.5'
NS17-13'
Gate
NB4-15'
NB2-15'
Concrete Slab Removed to 11.5 ft. bgs
M/N-9-10.5'
NF10-11.5'
Concrete slab
N
0
10
1 inch = 10 feet
Southern California Gas Company
Former Aliso Street MGP Site - Block N
Confirmation Sample Locations
>10ft to 15ft bgs
BY: JM/BD/SN
FILE: Manley Drill.WOR
DATE: 12/14/05
Tetra Tech, Inc.
Fig. 5-2



NB-7A-20
NB-10-20
NB-11C-20
NB-9-20
NB-8-20
Utility Recess
Utility Recess
Filled Recess
Foundation
Brick Wall
Floor Drain
Bridge
Sump
Pit
SN11-5 (16')
SN10-6 (17')
2 inch diameter Hole in Concrete
2 inch diameter Hole in Concrete
2 inch diameter Hole in Conc.
NN14-18'
NN11-17'
NN15-17'
NE13-17'
Shed
Sidewalk
Pit
NE6-16'
NE10-18'
Sump
Piping
NS8-20'
NS20-18'
NS22-18'
NB4-20'
NB2-20'
Gate
Concrete Slab Removed to 11.5 ft. bgs
Concrete slab
Legend
Soil Boring Location on Manly Oil Company
Soil Boring Location
Soil Gas Sample Location
Grab Sample
Edge of Excavation
Break in Slope
Building
Pit
Northwest Corner of Block N
Approximate area where mercury cleanup activities were performed
Excavation in mercury cleanup area
N
0
10
1 inch = 10 feet
Southern California Gas Company
Former Aliso Street MGP Site - Block N
Confirmation Sample Locations
>15ft to 20ft bgs
Tetra Tech, Inc.
BY: JM/BD/SN
FILE: Manley Drill.WOR
DATE: 12/14/05
Fig. 5-3



Brick Wall
Sidewalk
Gate
Floor Drain
Bridge
Pit
Sump
Shed
Piping
Utility Recess
Utility Recess
Filled Recess
Foundation
2 inch diameter Hole in Concrete
2 inch diameter Hole in Concrete
2 inch diameter Hole in Conc
Concrete Slab Removed to 11.5 ft. bgs
Concrete slab
NB-7A-25
NB-10-25
NB-11C-25
NB-9-25
NB-8-25
NN9-21'
NN7-25'
NN10-21'
NN13-25'
NN8-21'
NE3-24'
NE7-21'
NE12-21'
TtNB-23
NS18-25'
NS19-25'
NS23-22'
NB4-25'
NS9-21'
NB2-25'
NF5-20.5'
Legend
Soil Boring Location on Manly Oil Company
Soil Boring Location
Grab Sample
Edge of Excavation
Break in Slope
Building
Pit
Northwest Corner of Block N
Approximate area where mercury cleanup activities were performed
Excavation in mercury cleanup area
N
0
10
1 inch = 10 feet
Southern California Gas Company
Former Aliso Street MGP Site - Block N
Confirmation Sample Locations
>20ft to 25ft bgs
Tetra Tech, Inc.
BY: JM/BD/SN
FILE: Manley Drill.WOR
DATE: 12/14/05
Fig. 5-4

Table 6-1
Chemicals Detected in Post-Excavation Soils
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Chemical	Post-remediation		Pre-remediation	
	0 to 10 ft bgs	>10 ft - 25 bgs	0 to 10 ft bgs	>10 ft - 25 bgs
Metals				
Antimony	X			
Arsenic	X	X		
Barium	X		X	X
Cadmium	X			X
Chromium, Total	X		X	X
Cobalt	X		X	
Copper	X		X	X
Lead	X		X	X
Mercury	X		X	
Nickel	X		X	X
Vanadium	X		X	X
Zinc	X		X	X
Carcinogenic PAHs				
Benzo(a)anthracene	X	X	X	X
Benzo(a)pyrene	X	X	X	X
Benzo(b)fluoranthene	X	X	X	X
Benzo(k)fluoranthene	X	X	X	X
Chrysene	X	X	X	X
Dibenzo(a,h)anthracene		X	X	X
Indeno(1,2,3-cd)pyrene	X	X	X	X
Naphthalene	X	X	X	X
Non-carcinogenic PAHs				
Volatile PAHs				
Acenaphthene		X		X
Acenaphthylene		X		X
Anthracene		X	X	X
Fluorene	X	X		X
Phenanthrene	X	X	X	X
Non-volatile PAHs				
Fluoranthene	X	X	X	X
Benzo(g,h,i)perylene	X	X	X	X
Pyrene	X	X	X	X
Other organics				
Benzene	X	X	X	X
n-Butylbenzene		X		
tert-Butylbenzene		X		
sec-Butylbenzene		X		X
Dicyclopentadiene		X		
Ethylbenzene		X		X
Isopropylbenzene		X		X
p-Isopropyltoluene		X		X
n-Propylbenzene		X		X
Tetrachloroethene		X		
Toluene	X	X		
1,2,4-Trimethylbenzene		X		X
1,3,5-Trimethylbenzene		X		
m,p-Xylenes		X		X
o-Xylene		X		X

Definitions:

ft - feet
bgs - below ground surface

Table 6-2
Statistical Comparison
Metals in Background vs. Site Soils
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Detected Concentrations (mg/kg)										Statistical Testing			
	Site		Local Background		Regional Background		Distribution[1]		Percent Detected			Test results		
Metal	**Minimum**	**Maximum**	**Minimum**	**Maximum**	**Minimum**	**Maximum**	**Site**	**Local Background[2]**	**Site**	**Local Background[2]**	**Statistical Test Used**	**Statistic[4]**	***p***	**COPC Yes or No**
0 to 10 ft														
Antimony	**4.75**	**4.75**	**ND**	**ND**	**0.15**	**1.95**	**N**	**-**	**6**	**0**	**-**	**-**	**-**	**Yes[5]**
Arsenic	7.95	10.4	1.3	6.3	0.6	11	N	N	11	38	-	-	-	No[6]
B(a)P equivalents	0.00875	4.0	-	-	0.0002	4.1	N	Log-normal	50	84	WRS test	2.17	0.030	No[8]
Barium	17.8	115	34.3	119	133	1,400	(Log)-Normal	(Log)-Normal	100	100	t-test	-2.84	0.008	No[7,8]
Cadmium	1.65	1.65	1.7	4.5	0.05	1.7	N	N	6	0	-	-	-	No[7]
Chromium (III)	3.3	32.2	2.5	18.8	23	1,579	Log-normal	(Log)-Normal	100	100	t-test[3]	-9.37	<0.0001	No[7,8]
Cobalt	3.1	8.7	3	12.4	2.7	46.9	(Log)-Normal	(Log)-Normal	89	100	t-test	-2.64	0.01	No[7,8]
Copper	7.9	48.9	3.6	20.9	9.1	96.4	Log-normal	(Log)-Normal	100	100	t-test[3]	-9.39	<0.0001	No[7,8]
Lead	2.6	144	2.5	52	12.4	97.1	N	Log-normal	78	100	WRS	-1.04	0.3	No[8]
Mercury	0.1	0.2	ND	ND	0.1	0.9	N	-	28	0	-	-	-	No[6]
Nickel	2.6	14.8	4.4	15.6	9	509	(Log)-Normal	Normal	89	87.5	t-test	-1.87	0.07	No[7,8]
Vanadium	5.8	31.1	10.6	41.8	39	288	(Log)-Normal	(Log)-Normal	100	100	t-test	-2.85	0.008	No[7,8]
Zinc	19.9	69	14.8	79.5	88	236	N	(Log)-Normal	100	100	WRS	-2.81	0.005	No[7,8]

Definitions:

Log-normal - Data is log-normally distributed.
(Log-)Normal - Data fit both a log-normal and a normal distribution.
N - Data is neither log-normally or normally distributed.
ND - Not detected.
Normal - Data is normally distributed.
WRS Test - Wilcoxon rank sum test

Notes:

BOLD - Metal determined to be elevated above background levels.
1 - Assessed for normality and log-normality using the Shapiro-Wilks test. If the data fit neither distriubtion, "N" is given as the result.
2 - For BaP-equivalents, value is for Southern California background.
3 - Data log-transformed prior to analysis.
4 - t statistic given for the t-test and adjusted Z statistic given for the WRS test.
5 - Maximum site concentration exceeds maximum of local and regional background concentrations
6 - Maximum site concentration does not exceed regional background concentrations; insufficient detections to test statistically
7 - Maximum site concentration does not exceed maximum of local background
8 - Test result indicates there is a significant difference between background and Site concentrations. However, Site concentrations are significantly lower than background concentrations.

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
1JACKSN3-SS3						X
2JACKSN3-SS1						X
BN10-10						X
BN10-15						X
BN10-25						X
BN10-3						X
BN10-5						X
BN1-10		X				
BN1-11		X				
BN1-15		X				
BN1-25		X				
BN1-3		X				
BN1-5		X				
BN2-10						X
BN2-15						X
BN2-25						X
BN2-3						X
BN2-5						X
BN3 @10		X				
BN3 @15						X
BN3 @16						X
BN3 @25						X
BN3 @3		X				
BN3 @5		X				
BN4-15						X
BN4-20						X
BN4-25						X
BN4-3						X
BN4-5						X
BN5-10						X
BN5-15						X
BN5-25						X
BN5-3						X
BN5-5						X
BN6-10						X
BN6-15						X
BN6-16						X
BN6-20						X
BN6-25						X
BN7 @10		X				
BN7 @15						X
BN7 @25						X
BN7 @3		X				
BN7 @5		X				
BN8-10						X
BN8-11						X
BN8-15						X
BN8-5						X
BN9-10						X
BN9-3						X
ET1-1F-10	X					
ET1-2S-7					X	
ET1-3S-5					X	
ET1-4W-6/8					X	
ET1-5W-4.5/6					X	
ET1-6F-12					X	
ET1-6F-12D					X	
ET1-7E-10					X	
ET1-8S-10					X	
ET2-1F-12.5					X	
ET2-2E-9					X	
ET2-3E-5					X	
ET2-4W-8 /10					X	
ET2-5W-5.5/7					X	

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
ET2-6N-9/10					X	
ET2-6N-9/10 DUP					X	
ET2-7N-5					X	
G-11/12-10.5					X	
J-11-10.5					X	
J4-SS3						X
M/N9-10.5					X	
N1-SS1						X
N1-SS5						X
N2-SS1		X				
N2-SS3		X				
N2-SS5		X				
N3-SS1						X
N3-SS3						X
NB-10-10					X	
NB-10-15					X	
NB-10-2					X	
NB-10-20					X	
NB-10-25					X	
NB-10-5					X	
NB-11-2					X	
NB-11C-10					X	
NB-11C-15					X	
NB-11C-20					X	
NB-11C-25					X	
NB-11C-3					X	
NB-11C-5					X	
NB-11C-5d					X	
NB2-15					X	
NB2-20					X	
NB2-25					X	
NB3-9	X					
NB4-15			X			
NB4-20			X			
NB4-25			X			
NB5-3			X		X	
NB6-10			X		X	
NB6-5			X		X	
NB-7-10	X					
NB-7-10d	X					
NB-7-15					X	
NB-7-2	X					
NB-7-6	X					
NB-7A-20					X	
NB-7A-25					X	
NB-8-10					X	
NB-8-15					X	
NB-8-2					X	
NB-8-20					X	
NB-8-25					X	
NB-8-5					X	
NB-9-10					X	
NB-9-15					X	
NB-9-2					X	
NB-9-20					X	
NB-9-25					X	
NB-9-5					X	
NE10-18			X			
NE11-13			X			
NE12-21			X			
NE13-17			X			
NE14-6					X	
NE15-8					X	
NE1-6.5	X					

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	**Post-remediation**	**Pre-remediation**	**Post-remediation**	**Pre-remediation**	**Post-remediation**	**Pre-remediation**
NE16-9.5					X	
NE2-20	X					
NE3-24			X			
NE5-15			X			
NE6-16			X			
NE7-21			X			
NE9-13			X			
NF10-11.5					X	
NF1-9	X					
NF2-8.5	X					
NF3-8.5	X					
NF4-8.5	X					
NF5-20.5					X	
NMSA-F1-1					X	
NMSA-F2-1					X	
NN10-21			X			
NN11-17			X			
NN1-21	X					
NN12-13			X			
NN13-25			X			
NN14-18			X			
NN15-17			X			
NN2-19	X					
NN3-18	X					
NN5-17	X					
NN6-13			X			
NN7-25			X			
NN8-21			X			
NN9-21			X			
NS10-22	X					
NS11-15	X					
NS1-20	X					
NS14-25	X					
NS15-25	X					
NS16-21	X					
NS17-13			X			
NS18-25			X			
NS19-25			X			
NS20-18			X			
NS21-25	X					
NS22-18			X			
NS2-22	X					
NS23-22			X			
NS24-3					X	
NS25-6					X	
NS3-25	X					
NS4-14	X					
NS5-14	X					
NS6-21	X					
NS7-13			X			
NS8-20			X			
NS9-21			X			
NW10-14	X					
NW11-25	X					
NW1-21	X					
NW12-17	X					
NW13-21	X					
NW14-23	X					
NW15-18	X					
NW2-20	X					
NW3-17	X					
NW4-16	X					
NW5-17	X					
NW6-14	X					

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
NW7-21	X					
NW8-13	X					
NW9-25	X					
SN10-3					X	
SN10-6					X	
SN11-1.5					X	
SN11-1.5D					X	
SN11-5					X	
TtNB-11-15		X				
TtNB-11-20		X				
TtNB11-5		X				
TtNB-11-5		X				
TtNB-12-15		X				
TtNB-12-20		X				
TtNB12-25		X				
TtNB-12-25		X				
TtNB12-5		X				
TtNB-12-5		X				
TtNB-13-15		X				
TtNB-13-20						X
TtNB13-25						X
TtNB-13-25						X
TtNB13-5		X				
TtNB-13-5		X				
TtNB-14-15		X				
TtNB-14-20		X				
TtNB-14-25		X				
TtNB-14-5		X				
TtNB-14-5 Dup		X				
TtNB-15-15				X		
TtNB-15-25				X		
TtNB-15-5				X		
TtNB-16-15				X		
TtNB-16-25				X		
TtNB-16-5				X		
TtNB-17-15		X				
TtNB-17-25		X				
TtNB-17-5		X				
TtNB-18-15		X				
TtNB-18-20		X				
TtNB-18-25		X				
TtNB-18-5		X				
TtNB-18-5 Dup		X				
TtNB-19-15						X
TtNB-19-20						X
TtNB-19-25						X
TtNB-19-5		X				
TtNB-20-10		X				
TtNB-20-15						X
TtNB-20-25						X
TtNB-20-5		X				
TtNB-21-10		X				
TtNB-21-15		X				
TtNB-21-20		X				
TtNB-21-25		X				
TtNB-21-5		X				
TtNB-22-5		X				
TtNB-23-15		X				
TtNB-23-25		X				
TtNB-23-5		X				
TtNB-23-5 Dup		X				
TtNB-25-15						X
TtNB-25-25						X
TtNB-25-5		X				

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
Grand Total	43	55	34	6	68	53

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
1JACKSN3-SS3						X
2JACKSN3-SS1						X
BN10-10						X
BN10-15						X
BN10-25						X
BN10-3						X
BN10-5						X
BN1-10		X				
BN1-11		X				
BN1-15		X				
BN1-25		X				
BN1-3		X				
BN1-5		X				
BN2-10						X
BN2-15						X
BN2-25						X
BN2-3						X
BN2-5						X
BN3 @10		X				
BN3 @15						X
BN3 @16						X
BN3 @25						X
BN3 @3		X				
BN3 @5		X				
BN4-15						X
BN4-20						X
BN4-25						X
BN4-3						X
BN4-5						X
BN5-10						X
BN5-15						X
BN5-25						X
BN5-3						X
BN5-5						X
BN6-10						X
BN6-15						X
BN6-16						X
BN6-20						X
BN6-25						X
BN7 @10		X				
BN7 @15						X
BN7 @25						X
BN7 @3		X				
BN7 @5		X				
BN8-10						X
BN8-11						X
BN8-15						X
BN8-5						X
BN9-10						X
BN9-3						X
ET1-1F-10	X					
ET1-2S-7					X	
ET1-3S-5					X	
ET1-4W-6/8					X	
ET1-5W-4.5/6					X	
ET1-6F-12					X	
ET1-6F-12D					X	
ET1-7E-10					X	
ET1-8S-10					X	
ET2-1F-12.5					X	
ET2-2E-9					X	
ET2-3E-5					X	
ET2-4W-8 /10					X	
ET2-5W-5.5/7					X	

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
ET2-6N-9/10					X	
ET2-6N-9/10 DUP					X	
ET2-7N-5					X	
G-11/12-10.5					X	
J-11-10.5					X	
J4-SS3						X
M/N9-10.5					X	
N1-SS1						X
N1-SS5						X
N2-SS1		X				
N2-SS3		X				
N2-SS5		X				
N3-SS1						X
N3-SS3						X
NB-10-10					X	
NB-10-15					X	
NB-10-2					X	
NB-10-20					X	
NB-10-25					X	
NB-10-5					X	
NB-11-2					X	
NB-11C-10					X	
NB-11C-15					X	
NB-11C-20					X	
NB-11C-25					X	
NB-11C-3					X	
NB-11C-5					X	
NB-11C-5d					X	
NB2-15					X	
NB2-20					X	
NB2-25					X	
NB3-9	X					
NB4-15			X			
NB4-20			X			
NB4-25			X			
NB5-3			X		X	
NB6-10			X		X	
NB6-5			X		X	
NB-7-10	X					
NB-7-10d	X					
NB-7-15					X	
NB-7-2	X					
NB-7-6	X					
NB-7A-20					X	
NB-7A-25					X	
NB-8-10					X	
NB-8-15					X	
NB-8-2					X	
NB-8-20					X	
NB-8-25					X	
NB-8-5					X	
NB-9-10					X	
NB-9-15					X	
NB-9-2					X	
NB-9-20					X	
NB-9-25					X	
NB-9-5					X	
NE10-18			X			
NE11-13			X			
NE12-21			X			
NE13-17			X			
NE14-6					X	
NE15-8					X	
NE1-6.5	X					

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	**Post-remediation**	**Pre-remediation**	**Post-remediation**	**Pre-remediation**	**Post-remediation**	**Pre-remediation**
NE16-9.5					X	
NE2-20	X					
NE3-24			X			
NE5-15			X			
NE6-16			X			
NE7-21			X			
NE9-13			X			
NF10-11.5					X	
NF1-9	X					
NF2-8.5	X					
NF3-8.5	X					
NF4-8.5	X					
NF5-20.5					X	
NMSA-F1-1					X	
NMSA-F2-1					X	
NN10-21			X			
NN11-17			X			
NN1-21	X					
NN12-13			X			
NN13-25			X			
NN14-18			X			
NN15-17			X			
NN2-19	X					
NN3-18	X					
NN5-17	X					
NN6-13			X			
NN7-25			X			
NN8-21			X			
NN9-21			X			
NS10-22	X					
NS11-15	X					
NS1-20	X					
NS14-25	X					
NS15-25	X					
NS16-21	X					
NS17-13			X			
NS18-25			X			
NS19-25			X			
NS20-18			X			
NS21-25	X					
NS22-18			X			
NS2-22	X					
NS23-22			X			
NS24-3					X	
NS25-6					X	
NS3-25	X					
NS4-14	X					
NS5-14	X					
NS6-21	X					
NS7-13			X			
NS8-20			X			
NS9-21			X			
NW10-14	X					
NW11-25	X					
NW1-21	X					
NW12-17	X					
NW13-21	X					
NW14-23	X					
NW15-18	X					
NW2-20	X					
NW3-17	X					
NW4-16	X					
NW5-17	X					
NW6-14	X					

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
NW7-21	X					
NW8-13	X					
NW9-25	X					
SN10-3					X	
SN10-6					X	
SN11-1.5					X	
SN11-1.5D					X	
SN11-5					X	
TtNB-11-15		X				
TtNB-11-20		X				
TtNB11-5		X				
TtNB-11-5		X				
TtNB-12-15		X				
TtNB-12-20		X				
TtNB12-25		X				
TtNB-12-25		X				
TtNB12-5		X				
TtNB-12-5		X				
TtNB-13-15		X				
TtNB-13-20						X
TtNB13-25						X
TtNB-13-25						X
TtNB13-5		X				
TtNB-13-5		X				
TtNB-14-15		X				
TtNB-14-20		X				
TtNB-14-25		X				
TtNB-14-5		X				
TtNB-14-5 Dup		X				
TtNB-15-15				X		
TtNB-15-25				X		
TtNB-15-5				X		
TtNB-16-15				X		
TtNB-16-25				X		
TtNB-16-5				X		
TtNB-17-15		X				
TtNB-17-25		X				
TtNB-17-5		X				
TtNB-18-15		X				
TtNB-18-20		X				
TtNB-18-25		X				
TtNB-18-5		X				
TtNB-18-5 Dup		X				
TtNB-19-15						X
TtNB-19-20						X
TtNB-19-25						X
TtNB-19-5		X				
TtNB-20-10		X				
TtNB-20-15						X
TtNB-20-25						X
TtNB-20-5		X				
TtNB-21-10		X				
TtNB-21-15		X				
TtNB-21-20		X				
TtNB-21-25		X				
TtNB-21-5		X				
TtNB-22-5		X				
TtNB-23-15		X				
TtNB-23-25		X				
TtNB-23-5		X				
TtNB-23-5 Dup		X				
TtNB-25-15						X
TtNB-25-25						X
TtNB-25-5		X				

Table 6-3
Summary of Sample Designations for Soils at 0-25 ft bgs
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Excavated		Excavated-representative		Present	
Sample_ID	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation	Post-remediation	Pre-remediation
Grand Total	43	55	34	6	68	53

Table 6-5
Concentrations of C-PAHs in Southern California Background Soils from ENVIRON [2002]
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

B(a)P-equivalents[1] (mg/kg)	Qualifier	Sample ID	Site
0.0278		BK-1	Alhambra
0.0765		BK-11	Alhambra
0.007502	U	BK-13	Alhambra
0.007253	U	BK-14	Alhambra
0.0541		BK-19	Alhambra
0.2492		BK-20	Alhambra
0.00701	U	BK-25	Alhambra
0.006771	U	BK-26	Alhambra
0.006537	U	BK-27	Alhambra
0.0209		BK-32	Alhambra
0.0399		BK-33	Alhambra
0.0726		BK-35	Alhambra
0.0723		BK-36	Alhambra
0.0189		BK-38	Alhambra
0.0329		BK-39	Alhambra
0.006309	U	BK-4	Alhambra
0.006084	U	BK-43	Alhambra
0.0351		BK-44	Alhambra
0.1121		BK-45	Alhambra
0.0263		BK-51	Alhambra
0.022		BK-52	Alhambra
0.005865	U	BK-54	Alhambra
0.00565	U	BK-55	Alhambra
0.0926		BK-57	Alhambra
0.1854		BK-60	Alhambra
0.1083		BK-62	Alhambra
0.1197		BK-64	Alhambra
0.0388		BK-69	Alhambra
0.005439	U	BK-7	Alhambra
0.1644		BK-70	Alhambra
0.2229		BK-71	Alhambra
0.3992		BK-72	Alhambra
0.0889		BK-73	Alhambra
0.005233	U	BK-75	Alhambra
0.005031	U	BK-76	Alhambra
0.0836		BK-77	Alhambra
0.0541		BK-78	Alhambra
0.024		BK-79	Alhambra
0.0516		BK-8	Alhambra
0.004833	U	BK-80	Alhambra
0.0766		BK-82	Alhambra
0.0501		BK-83	Alhambra
0.0412		BK-85	Alhambra
0.1536		BK-87	Alhambra
0.004639	U	BK-9	Alhambra
0.0213		BK-90	Alhambra
0.0373		BK-95	Alhambra

Table 6-5
Concentrations of C-PAHs in Southern California Background Soils from ENVIRON [2002]
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

B(a)P-equivalents[1] (mg/kg)	Qualifier	Sample ID	Site
0.001098	U	BS-10	Beaumont
0.1424		BS-6	Beaumont
0.0083		BS-7	Beaumont
0.0177		BS-8	Beaumont
0.0026		BS-9	Beaumont
0.0177		CLT-BK-01	Colton
0.007756	U	CLT-BK-02	Colton
0.0296		CLT-BK-03	Colton
0.018		CLT-BK-04	Colton
0.0312		CLT-BK-05	Colton
0.0175		CLT-BK-06	Colton
0.0176		CLT-BK-07	Colton
0.0351		CLT-BK-08	Colton
0.0339		CLT-BK-09	Colton
0.0579		CLT-BK-10	Colton
0.0037		A	Corona
0.0084		B	Corona
0.1348		BG-1	Corona
0.1223		BG-2	Corona
0.0651		BG-3	Corona
0.002596	U	BG-5	Corona
0.0958		BG-7	Corona
0.0217		BG-8	Corona
0.0219		BG-9	Corona
0.031		BCK-1	Covina
0.1615		BCK-2	Covina
0.5901		BCK-3	Covina
0.1608		BCK-4	Covina
0.0345		TTOS-E	Covina
0.0177		TTOS-N	Covina
0.3274		TTOS-NE	Covina
0.1305		TTOS-NW	Covina
0.1497		TTOS-S	Covina
0.004449	U	TTOS-SE	Covina
0.3331		TTOS-SW	Covina
1.4284		TTOS-W	Covina

Table 6-5
Concentrations of C-PAHs in Southern California Background Soils from ENVIRON [2002]
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

B(a)P-equivalents[1] (mg/kg)	Qualifier	Sample ID	Site
0.0357		BG-1-B	Dinuba
1.6772		BG-2-B	Dinuba
0.0476		BG-3-B	Dinuba
0.0419		BG-4-B	Dinuba
0.0607		BG-5-B	Dinuba
0.000221	U	BG-6-B	Dinuba
0.1932		C-1018	Dinuba
0.0196		C-1020	Dinuba
0.27		C-1047	Dinuba
0.121		C-1052	Dinuba
0.0167		C-1102	Dinuba
0.0614		C-1105	Dinuba
0.0078		C-145	Dinuba
0.0033		C-323	Dinuba
0.0438		C-348	Dinuba
0.0044		C-396	Dinuba
0.0088		C-456	Dinuba
0.0174		C-518	Dinuba
0.0313		C-599	Dinuba
0.0722		C-624	Dinuba
0.1098		C-696	Dinuba
0.6085		C-7	Dinuba
0.01		C-770	Dinuba
0.0364		C-843	Dinuba
0.0252		DHS-BG-1-1B	Dinuba
0.0069		DHS-BG-1-2B	Dinuba
0.000486	U	DHS-BG-2-1B	Dinuba
0.000358	U	DHS-BG-2-2B	Dinuba
0.197		DL3-D1	Dinuba
0.011945	U	UG No. 1	Elsinore
0.011602	U	UG No. 2	Elsinore
0.5291		UG No. 3	Elsinore
0.024		Background A	Former Ontario
0.0145		Background B	Former Ontario
0.2985		B-1	Fullerton
0.1198		B-2	Fullerton
0.0564		B-3	Fullerton
0.2224		B-4	Fullerton
0.0096		HSB-1	Hemet
0.0167		HSB-2	Hemet
0.0023	U	HSB-3	Hemet
0.0132		HSB-4	Hemet
0.0884		HSB-5	Hemet
0.004263	U	B-1-NS	Ingelwood

Table 6-5
Concentrations of C-PAHs in Southern California Background Soils from ENVIRON [2002]
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

B(a)P-equivalents[1] (mg/kg)	Qualifier	Sample ID	Site
0.0683		LA-BK-1	LA Alameda
0.1212		LA-BK-2	LA Alameda
0.0235		LA-BK-3	LA Alameda
0.0568		LA-BK-4	LA Alameda
0.0195		BG-1	LA Main St.
0.0388		BG-2	LA Main St.
0.0259		BG-3	LA Main St.
0.3458		MBG-1	Monrovia
0.0357		MBG-2	Monrovia
1.5412		MBG-4	Monrovia
0.0302		MBG-5	Monrovia
0.0357		PBG-1	Pomona
0.1184		PBG-2	Pomona
0.1306		PBG-3	Pomona
0.1798		PBG-4	Pomona
0.0348		PBG-5	Pomona
0.0934		RS-10	Redlands
0.3126		RS-6	Redlands
0.1727		RS-7	Redlands
0.2295		RS-8	Redlands
0.0154		RS-9	Redlands
0.0455		RVB1	Riverside
0.0523		B-10-1A	San Pedro
0.00135	U	B-11-1A	San Pedro
0.0244		B-12-1A	San Pedro
0.0347		B-13-1A	San Pedro
0.1064		B-14-1A	San Pedro
0.0688		BG-1	Santa Ana
0.0476		BG-8	Santa Ana
0.1206		BG-9	Santa Ana
2.4386		SBG-1	Santa Ana
0.018		SBG-2	Santa Ana
0.072		SBG-3	Santa Ana
0.1531		02-BKG-104	Santa Barbara
0.0174		02-BKG-118	Santa Barbara
0.954		02-BKG-129	Santa Barbara
4.052		02-BKG-160	Santa Barbara
0.281		02-BKG-26	Santa Barbara
0.1561		02-BKG-33	Santa Barbara
0.761		02-BKG-60	Santa Barbara
0.0342		02-BKG-65	Santa Barbara
0.1142		02-BKG-69	Santa Barbara
1.005		02-BKG-78	Santa Barbara
0.2189		02-BKG-83	Santa Barbara
0.0798		02-BKG-92	Santa Barbara

Table 6-5
Concentrations of C-PAHs in Southern California Background Soils from ENVIRON [2002]
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

B(a)P-equivalents[1] (mg/kg)	Qualifier	Sample ID	Site
0.8173		BACK-1	Visalia
0.3432		BACK-2	Visalia
0.18		BACK-3	Visalia
0.4773		BACK-4	Visalia
0.0243		BACK-5	Visalia
0.0654		BACK-6	Visalia
0.004081	U	BACK-7	Visalia
0.003902	U	BACK-8	Visalia
0.003727	U	BACK-9	Visalia
0.0316		WH-BK-1	Whittier
0.0271		WH-BK-2	Whittier
0.0179		WH-BK-3	Whittier
0.3246		WH-BK-4	Whittier

Definitions:

B(a)P-equivalents - Benzo(a)pyrene equivalent concentration.
bgs - Below ground surface.
C-PAH - Carcinogenic polycyclic aromatic hydrocarbons.
ft - Feet.
U - Indicates a sample in which no carcinogenic PAHs were detected.

Notes:

1 - All data obtained from ENVIRON [2002]. Smoothed dataset given.

Table 6-6
Comparison of Volume Weighted BaP-equivalent Concentrations to Background
Former Aliso (MGP) Block N
Los Angeles, CA

Location	Concentration (mg/kg)
Entire Site[1]	0.07
Manley Oil Building[1]	0.1
Southern Califronia Background	0.24

Note:
1 - Volume-weighting based on natural neighbor contouring

Table 6-7
Chemicals of Potential Concern
Former Aliso Street MGP Sector C Block N
Los Angeles, California

	Soil	
Chemical	**0 to 10 ft bgs**	**>10 ft - 25 bgs**
Metals		
Antimony	X	X
Carcinogenic PAHs		
C-PAHs	1	
Naphthalene	X	X
Non-carcinogenic PAHs		
Volatile PAHs		
Acenaphthene		X
Acenaphthylene		X
Anthracene	X	X
Fluorene	X	X
Phenanthrene	X	X
Non-volatile PAHs		
Fluoranthene	X	X
Benzo(g,h,i)perylene	X	X
Pyrene	X	X
Other organics		
Benzene	X	X
n-Butylbenzene		X
tert-Butylbenzene		X
sec-Butylbenzene		X
Dicyclopentadiene		X
Ethylbenzene		X
Isopropylbenzene		X
p-Isopropyltoluene		X
n-Propylbenzene		X
Tetrachloroethene		X
Toluene	X	X
1,2,4-Trimethylbenzene		X
1,3,5-Trimethylbenzene		X
m,p-Xylenes		X
o-Xylene		X

Definitions:

COPC - chemical of potential concern
C-PAHs - carcinogenic polycyclic aromatic hydrocarbons
ft - feet
bgs - below ground surface

Note:

1 - C-PAHs as benzo(a)pyrene-equivalents do not differ from background; evaluated only for non-carcinogenic hazards.

Table 6-8
Exposure Formula and Parameters for Soil Ingestion Pathway
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Incidental Soil Ingestion

$$Intake\ (mg/kg/day) = \frac{C_s \times CF \times FI \times IR \times EF \times ED}{BW \times AT}$$

Variable	Parameter	RME Value		Source/Rationale
C_s	Chemical concentration in soil		mg/kg	Units for soil
CF	Conversion factor for chemical fraction of soil	10^{-6}	kg/mg	-
FI	Fraction of chemical ingested from soil			
	Resident	1	unitless	Conservative assumption
IR	Soil Ingestion Rate			
	Resident			
	Adult	100	mg/day	U.S. EPA 2002
	Child	200	mg/day	U.S. EPA 2002
EF	Exposure Frequency			
	Resident	350	days/year	U.S. EPA 2002, 2004
ED	Exposure Duration			
	Resident			
	Adult	24	years	U.S. EPA 1991a
	Child	6	years	U.S. EPA 1991a
BW	Body Weight			
	Resident			
	Adult	70	kg	U.S. EPA 1989a
	Child	15	kg	U.S. EPA 1989a
AT	Averaging Time			
	Carcinogen	70 years x 365 days/year		Lifetime (U.S. EPA 1989a)
	Non-carcinogen	ED x 365 days/year		U.S. EPA 1989a

Definitions:
RME - reasonable maximum exposure

Table 6-9
Exposure Formula and Parameters for Soil Dermal Contact Pathway
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Dermal Exposure to Soil

$$Intake(mg/kg/day) = \frac{C_s \times CF \times SA \times FC \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Variable	Parameter	RME Value		Source/Rationale
C_s	Chemical concentration in soil		mg/kg	Units for soil
CF	Conversion factor for chemical fraction of soil	10^{-6}	kg/mg	-
SA	Skin surface area			
	Resident			
	Adult	5,700	cm^2	U.S. EPA 2002, 2004, DTSC 2000a
	Child	2,900	cm^2	U.S. EPA 2000a
FC	Fraction contacted			
	Resident	1	unitless	Conservative assumption
AF	Soil Adherence Factor			
	Resident			
	Adult	0.07	mg/cm^2	DTSC 2000a, U.S. EPA 2002, 2004
	Child	0.2	mg/cm^2	DTSC 2000a, U.S. EPA 2002, 2004
ABS	Absorption fraction	chemical-specific		-
EF	Exposure frequency			
	Resident	350	days/year	U.S. EPA 1991a, 2002, 2004
ED	Exposure Duration			
	Resident			
	Adult	24	years	U.S. EPA 1991a
	Child	6	years	U.S. EPA 1991a
BW	Body weight			
	Resident			
	Adult	70	kg	U.S. EPA 1989a
	Child	15	kg	U.S. EPA 1989a
AT	Averaging time			
	Carcinogen	70 years x 365 days/year		Lifetime (U.S. EPA 1989a)
	Noncarcinogen	ED x 365 days/year		U.S. EPA 1989a

Definitions:

RME - reasonable maximum exposure

Table 6-10
Exposure Formula and Parameters for Inhalation of Dust and Vapor
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Inhalation of Dust/Vapor

$$Intake(mg/kg/day) = \frac{C_a \times IN \times ET \times EF \times ED}{BW \times AT}$$

Variable	Parameter	RME Value		Source/Rationale
C_a	Chemical concentration in air		mg/m^3	Units for air
IN	Inhalation rate			
	Resident			
	Adult	0.83	m^3/hour	U.S. EPA 1989a, 1997a
	Child	0.42	m^3/hour	U.S. EPA 1989a, 1997a
FI	Fraction inhaled at site			
	Resident			
	Adult	1	unitless	Conservative assumption
	Child	1	unitless	Conservative assumption
ET	Exposure time			
	Resident			
	Adult	24	hour/day	Conservative assumption
	Child	24	hour/day	Conservative assumption
EF	Exposure frequency			
	Resident			
	Adult	350	days/year	U.S. EPA 1991a
	Child	350	days/year	U.S. EPA 1991a
ED	Exposure duration			
	Resident			
	Adult	24	years	U.S. EPA 1991a
	Child	6	years	U.S. EPA 1991a
BW	Body weight			
	Resident			
	Adult	70	kg	U.S. EPA 1989a
	Child	15	kg	U.S. EPA 1989a
AT	Averaging time			
	Carcinogen	70 years x 365 days/year		Lifetime (U.S. EPA 1989a)
	Non-carcinogen	ED x 365 days/year		U.S. EPA 1989a

Definitions:

RME - reasonable maximum exposure

Table 6-11
Oral Carcinogenic Slope Factors
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Chemical	Oral Slope Factor $(mg/kg/day)^{-1}$	Weight of Evidence	Tumor	Test Species	Slope Factor Source	Date
Metals						
Antimony	-	-	-	-	-	-
Carcinogenic PAHs						
Naphthalene	1.20E-01	C	Nasal	Rat	CalEPA	Sept-05
Non-carcinogenic PAHs						
Volatile PAHs						
Acenaphthene	-	-	-	-	1	-
Acenaphthylene	-	D	-	-	-	-
Anthracene	-	D	-	-	-	-
Fluorene	-	D	-	-	-	-
Phenanthrene	-	D	-	-	-	-
Non-volatile PAHs						
Fluoranthene	-	D	-	-	-	-
Benzo(g,h,i)perylene	-	D	-	-	-	-
Pyrene	-	D	-	-	-	-
Other organics						
Benzene	1.00E-01	A	Leukemia	Human	Cal EPA	Sept-05
n-Butylbenzene	-	-	-	-	1	-
tert-Butylbenzene	-	-	-	-	1	-
sec-Butylbenzene	-	-	-	-	1	-
Dicyclopentadiene	-	-	-	-	1	-
Ethylbenzene	-	D	-	-	-	-
Isopropylbenzene	-	D	-	-	-	-
p-Isopropyltoluene	-	D	-	-	2	-
n-Propylbenzene	-	-	-	-	1	-
Tetrachloroethene	5.40E-01	C	Hepatocarcinoma	Rat	Cal EPA	Sept-05
Toluene	-	D	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	1	-
1,3,5-Trimethylbenzene	-	-	-	-	1	-
m,p-Xylenes	-	D	-	-	-	-
o-Xylene	-	D	-	-	-	-

Definitions:

Cal EPA - California Environmental Protection Agency.

IRIS - Integrated Risk Information System.

SF - Slope Factor

Notes:

1 - No SFs available from USEPA or CalEPA

2 - Isopropylbenzene used as a surrogate.

All weight of evidence classifications were obtained from USEPA (2005) Integrated Risk Information System (IRIS).

Table 6-12
Inhalation Carcinogenic Slope Factors
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Chemical	Inhalation Slope Factor $(mg/kg/day)^{-1}$	Weight of Evidence	Tumor	Test Species	Slope Factor Source	Date
Metals						
Antimony	-	-	-	-	-	-
Carcinogenic PAHs						
Naphthalene	1.20E-01	C	Nasal	Rat	CalEPA	Sept-05
Non-carcinogenic PAHs						
Volatile PAHs						
Acenaphthene	-	-	-	-	1	-
Acenaphthylene	-	D	-	-	-	-
Anthracene	-	D	-	-	-	-
Fluorene	-	D	-	-	-	-
Phenanthrene	-	D	-	-	-	-
Non-volatile PAHs			-	-	-	-
Fluoranthene	-	D	-	-	-	-
Benzo(g,h,i)perylene	-	D	-	-	-	-
Pyrene	-	D	-	-	-	-
Other organics						
Benzene	1.00E-01	A	Leukemia	Human	Cal EPA	Sept-05
n-Butylbenzene	-	-	-	-	1	-
tert-Butylbenzene	-	-	-	-	1	-
sec-Butylbenzene	-	-	-	-	1	-
Dicyclopentadiene	-	-	-	-	1	-
Ethylbenzene	-	D	-	-	-	-
Isopropylbenzene	-	D	-	-	-	-
p-Isopropyltoluene	-	D	-	-	2	-
n-Propylbenzene	-	-	-	-	1	-
Tetrachloroethene	2.10E-02		Hepatic	Mouse	Cal EPA	Sep-05
Toluene	-	D	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	1	-
1,3,5-Trimethylbenzene	-	-	-	-	1	-
m,p-Xylenes	-	D	-	-	-	-
o-Xylene	-	D	-	-	-	-

Definitions:

Cal EPA - California Environmental Protection Agency.
IRIS - Integrated Risk Information System.
SF - Slope Factor

Notes:

1 - No slope factors available from the USEPA or Cal/EPA.
2 - Isopropylbenzene used as a surrogate.

All weight of evidence classifications were obtained from USEPA (2005) Integrated Risk

Table 6-13
Chronic Oral Reference Doses
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Chemical	RfD (mg/kg/day)	Confidence	MF	UF	Critical Effect	Test Species	Source	Date
Metals								
Antimony	4.00E-04	Low	1	1000		Rat	IRIS	Dec-05
Carcinogenic PAHs								
Total CPAHs	2.00E-02	-	-	-	-	-	1	-
Naphthalene	2.00E-02	Low	1	3,000	Decreased mean body weight	Rat	IRIS	Sep-05
Non-carcinogenic PAHs								
Volatile PAHs								
Acenaphthene	6.00E-02	Low	1	3,000	Liver toxicity	Mouse	IRIS	Sep-05
Acenaphthylene	2.00E-02	-	-	-	-	-	1	-
Anthracene	3.00E-01	Low	1	3,000	No oberved effects	Mouse	IRIS	Sep-05
Fluorene	4.00E-02	Low	1	3,000	Decreased RBC, packed cell volume and hemoglobin	Mouse	IRIS	Sep-05
Phenanthrene	2.00E-02	-	-	-	-	-	1	-
Non-volatile PAHs								
Fluoranthene	4.00E-02	Low	1	3,000	Nephropathy, increased liver weights, hematological alterations, clinical effects	Mouse	IRIS	Sep-05
Benzo(g,h,i)perylene	2.00E-02	-	-	-	-	-	1	-
Pyrene	3.00E-02	Low	1	3,000	Kidney Effects	Mouse	IRIS	Sep-05
Other organics								
Benzene	4.00E-03	Medium	1	300	Decreased lymphocyte count	Human	IRIS	Oct-04
n-Butylbenzene	4.00E-02	-	-	-	-	-	PRG	Oct-04
tert-Butylbenzene	4.00E-02	-	-	-	-	-	PRG	Oct-04
sec-Butylbenzene	4.00E-02	-	-	-	-	-	PRG	Oct-04
Dicyclopentadiene	3.00E-02	-	-	-	No oberved effects	Rat	HEAST	1997
Ethylbenzene	1.00E-01	Low	1	1,000	Liver and kidney toxicity	Rat	IRIS	Sep-05
Isopropylbenzene	1.00E-01	Low	1	1,000	Increased kidney weight in females	Rat	IRIS	Sep-05
p-Isopropyltoluene	1.00E-01	-	-	-	-	-	2	-
n-Propylbenzene	4.00E-02	-	-	-	-	-	PRG	Oct-04
Tetrachloroethene	1.00E-02	Medium	1	1,000	Hepatotoxicty	Rat, Mouse	IRIS	Sep-05
Toluene	8.00E-02	Medium	1	3,000	Liver and kidney weight changes	Rat	IRIS	Sep-05
1,2,4-Trimethylbenzene	5.00E-02	-	-	-	-	-	PRG	Oct-04
1,3,5-Trimethylbenzene	5.00E-02	-	-	-	-	-	PRG	Oct-04
m,p-Xylenes	2.00E-01	Medium	1	1,000	Decreased body weight, increased mortality	Rat	IRIS	Sep-05
o-Xylene	2.00E-01	Medium	1	1,000	Decreased body weight, increased mortality	Rat	IRIS	Sep-05

Definitions:

IRIS - Integrated Risk Information System. Available online at www.epa.gov/iris/
HEAST - Human Effects Assessment Summary Tables, USEPA FY 1997
MF - Modifying factor
PRG - Preliminary Remidiation Goals. Available online at http://www.epa.gov/region09/waste/sfund/prg/index.htm
UF - Uncertainty factor

Notes:

1 - Naphthalene used as a surrogate.
2 - Isopropylbenzene used as a surrogate.

Table 6-14
Chronic Inhalation Reference Doses
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Chemical	RfD (mg/kg/day)	REL (ug/m³)	RfC (mg/m³)	Confidence	MF	UF	Critical Effect	Test Species	Source	Date
Metals										
Antimony	4.00E-04	-	-	-	-	-	-	-	1	Dec-05
Carcinogenic PAHs		-								
Total CPAHs	8.57E-04	-	-	-	-	-	-	-	1	-
Naphthalene	8.57E-04	9.00E+00	3.00E-03	Medium	1	3,000	Nasal effects	Mouse	IRIS;2	Sep-05
Non-carcinogenic PAHs										
Volatile PAHs		-	-							
Acenaphthene	6.00E-02	-	-	-	-	-	-	-	3	-
Acenaphthylene	8.57E-04	-	-	-	-	-	-	-	1	-
Anthracene	3.00E-01	-	-	-	-	-	-	-	3	-
Fluorene	4.00E-02	-	-	-	-	-	-	-	3	-
Phenanthrene	8.57E-04	-	-	-	-	-	-	-	1	-
Non-volatile PAHs										
Fluoranthene	4.00E-02	-	-	-	-	-	-	-	3	-
Benzo(g,h,i)perylene	8.57E-04	-	-	-	-	-	-	-	1	-
Pyrene	3.00E-02	-	-	-	-	-	-	-	3	-
Other organics										
Benzene	8.57E-03	6.00E+01	3.00E-02	Medium	1	300	Decreased lymphocyte count	Human	IRIS;2	Sep-05
n-Butylbenzene	4.00E-02	-	-	-	-	-	-	-	PRG	Oct-04
tert-Butylbenzene	4.00E-02	-	-	-	-	-		-	PRG	Oct-04
sec-Butylbenzene	4.00E-02	-	-	-	-	-	-	-	PRG	Oct-04
Dicyclopentadiene	3.00E-02	-	-	-	-	-	-	-	3	-
Ethylbenzene	2.86E-01	2.00E+03	1.00E+00	Low	1	300	Develomental toxicity	Rat, rabbit	IRIS;2	Sep-05
Isopropylbenzene	1.14E-01	-	4.00E-01	Medium	1	1,000	Increased kidney weights in females; increased adrenal weights in both sexes	Rat	IRIS	Sep-05
p-Isopropyltoluene	1.14E-01	-	-	-	-	-	-	-	4	-
n-Propylbenzene	4.00E-02	-	-	-	-	-	-	-	PRG	Oct-04
Tetrachloroethene	1.00E-02	3.50E+01	-	-	-	-	-	-	OEHHA	Sep-05
Toluene	8.57E-02	3.00E+02	5.00E+00	-	-	100	Neurological Effects	Rat	OEHHA;5	Sep-05
1,2,4-Trimethylbenzene	1.70E-03	-	-	-	-	-	-	-	PRG	Oct-04
1,3,5-Trimethylbenzene	1.70E-03	-	-	-	-	-	-	-	PRG	Oct-04
m,p-Xylenes	2.86E-02	7.00E+02	1.00E-01	Medium	1	300	Impaired motor coordination	Human	IRIS;2	Sep-05
o-Xylene	2.86E-02	7.00E+02	1.00E-01	Medium	1	300	Impaired motor coordination	Human	IRIS;2	Sep-05

Definitions:

HEAST - Health Effects Assessment Summary Tables
IRIS - Integrated Risk Information System
MF - modifying factor
mg/kg/day - milligrams per kilogram per day
mg/m^3 - milligrams per cubic meter
RfC - reference concentration
RfD - reference dose
UF - uncertainty factor
PPRTV - Provisional Peer Reviewed Toxicity Values

Notes: -

1 - Naphthalene used as a surrogate
2 - IRIS RfC used to calculate RfD
3 - No inhalation RfD available. A route to route extrapolation from the oral RfD was used.
4 - Isopropylbenzene used as a surrogate.
5 - OEHHA REL used to calculte RFD

Table 6-15
Exposure Point Concentrations for Chemicals of Potential Concern in Soil and Vapors Emitted from Soil
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

Receptor	Ingestion/Dermal COPC	Ingestion/Dermal RME (mg/kg)	Vapor/Dust COPC	Vapor/Dust RME (mg/m^3) Resident	Vapor/Dust RME (mg/m^3) Child
			Indoor Vapor[1]		
Entire Site	Antimony	4.75E+00	Acenaphthene	1.30E-03	1.31E-03
(0–10 ft bgs)	Benzene	9.70E-03	Acenaphthylene	3.60E-05	3.61E-05
	Total C-PAHS	2.29E-01	Anthracene	1.28E-05	1.29E-05
	Benzo(g,h,i)perylene	2.34E-01	Benzene[2]	1.03E-04	1.03E-04
	Fluoranthene	1.01E-01	n-Butylbenzene	2.91E-04	1.45E-03
	Fluorene	1.10E-02	sec-Butylbenzene	2.41E-04	2.61E-04
	Naphthalene	1.98E-02	tert-Butylbenzene	6.54E-05	3.27E-04
	Phenanthrene	3.85E-02	Dicyclopentadiene	1.58E-04	7.90E-04
	Pyrene	1.73E-01	Ethylbenzene	2.15E-04	1.07E-03
	Toluene	4.46E-03	Fluorene	3.53E-05	3.56E-05
			Isopropylbenzene	3.33E-04	1.67E-03
			p-Isopropyltoluene	1.05E-04	4.72E-04
			Naphthalene[2,3]	-	-
			n-Propylbenzene	3.14E-04	1.57E-03
			Phenanthrene	2.03E-04	2.05E-04
			Tetrachloroethene	4.28E-05	2.14E-04
			1,2,4-Trimethylbenzene	2.29E-04	1.15E-03
			1,3,5-Trimethylbenzene	6.10E-05	3.05E-04
			Toluene	1.55E-04	7.77E-04
			m,p-Xylenes	1.36E-04	6.80E-04
			o-Xylene	1.04E-04	5.20E-04
			Dust (0–10 ft bgs)		
			Antimony	4.35E-07	
			Total C-PAHS	1.15E-07	
			Benzo(g,h,i)perylene	1.17E-07	
			Fluoranthene	5.04E-08	
			Pyrene	8.66E-08	
Manley Building	Benzene	8.73E-03	Acenaphthene	4.34E-05	4.36E-05
(0–10 ft bgs)	Total C-PAHS	1.87E-01	Anthracene	8.41E-06	8.68E-06
	Benzo(g,h,i)perylene	8.75E-01	Benzene[2]	3.79E-05	3.79E-05
	Fluoranthene	2.34E-01	Fluorene	2.08E-05	2.11E-05
	Fluorene	1.10E-02	Naphthalene[2,3]	-	-
	Naphthalene	1.48E-02	Phenanthrene	2.45E-04	2.51E-04
	Phenanthrene	6.85E-02	Toluene	1.84E-05	9.19E-05
	Pyrene	5.09E-01	m,p-Xylenes	1.46E-05	7.31E-05
			Dust (0–5 ft bgs)		
			Total C-PAHS	8.22E-09	
			Benzo(g,h,i)perylene	3.84E-08	
			Fluoranthene	1.03E-08	
			Pyrene	2.24E-08	

Definitions:

COPC - chemical of potential concern
ft bgs - feet below ground surface
µg/L - micrograms per liter.
mg/kg - milligrams per kilogram.
mg/m^3 - milligrams per cubic meter.
RME - reasonable maximum exposure.
Italics - Values are from volume weighted results (see Appendix C).

Table 6-15
Exposure Point Concentrations for Chemicals of Potential Concern in Soil and Vapors Emitted from Soil
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Ingestion/Dermal	Vapor/Dust	
	RME	COPC	RME (mg/m^3)

NA - not applicable

Notes:

1 - EPCs estimated using a soil source with the finite source version of the Johnson and Ettinger model; with 30 year exposures for "residents" and 6 year exposures for child residents.

2 - EPCs estimated using soil gas as the source term at the RME concentration of 109 $\mu g/m^3$ (See Table H-1 Appendix H with the infinite source version of the Johnson and Ettinger model.

3 - Not detected in soil gas. Therefore, not assumed to be present in indoor air.

PAHs were analyzed using both 8310 and 8270. When detected using both methods, the EPC is based on 8310.

Table 6-17
Risks to Residents
Surface Soil (0 to 5 ft, Underneath the Manley Building)
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Risk Probabilities					
	Soil					
Carcinogen	**Ingestion**	**Dermal Contact**	**Inhalation of Dust**	**Inhalation of Indoor Vapor**	**Summation**	**% Contribution**
Benzene	1.37E-09	4.41E-10	-	5.63E-07	5.65E-07	99%
Naphthalene	2.78E-09	1.34E-09	-	-	4.12E-09	1%
Summation	4.15E-09	1.78E-09	-	5.63E-07	5.69E-07	

	Hazard Index-Child					
	Soil					
Noncarcinogen	**Ingestion**	**Dermal Contact**	**Inhalation of Dust**	**Inhalation of Indoor Vapor**	**Summation**	**% Contribution**
Acenaphthene	-	-	-	4.65E-04	4.65E-04	0%
Anthracene	-	-	-	1.85E-05	1.85E-05	0%
Benzene	2.79E-05	8.09E-06	-	2.83E-03	2.87E-03	1%
Total C-PAHs	1.20E-04	5.20E-05	6.11E-06	-	1.78E-04	0%
Benzo(g,h,i)perylene	5.59E-04	2.43E-04	2.86E-05	-	8.31E-04	0%
Fluoranthene	7.48E-05	3.25E-05	1.64E-07	-	1.07E-04	0%
Fluorene	3.52E-06	1.53E-06	-	3.37E-04	3.42E-04	0%
Naphthalene	9.46E-06	4.12E-06	-	-	1.36E-05	0%
Phenanthrene	4.38E-05	1.90E-05	-	1.87E-01	1.87E-01	96%
Pyrene	2.17E-04	9.44E-05	4.75E-07	-	3.12E-04	0%
Toluene	-	-	-	6.86E-04	6.86E-04	0%
m,p-Xylenes	-	-	-	1.63E-03	1.63E-03	1%
Summation	1.06E-03	4.55E-04	3.53E-05	1.93E-01	1.95E-01	

Definitions:

Italics - Risk estimates are from volume weighted results (See Appendix I).

Table 6-17
Risks to Residents
Surface Soil (0 to 5 ft, Underneath the Manley Building)
Former Aliso Street MGP Sector C, Block N
Los Angeles, California

	Risk Probabilities					
	Soil					
Carcinogen	**Ingestion**	**Dermal Contact**	**Inhalation of Dust**	**Inhalation of Indoor Vapor**	**Summation**	**% Contribution**
Benzene	1.37E-09	4.41E-10	-	5.63E-07	5.65E-07	99%
Naphthalene	2.78E-09	1.34E-09	-	-	4.12E-09	1%
Summation	4.15E-09	1.78E-09	-	5.63E-07	5.69E-07	

	Hazard Index-Child					
	Soil					
Noncarcinogen	**Ingestion**	**Dermal Contact**	**Inhalation of Dust**	**Inhalation of Indoor Vapor**	**Summation**	**% Contribution**
Acenaphthene	-	-	-	4.65E-04	4.65E-04	0%
Anthracene	-	-	-	1.85E-05	1.85E-05	0%
Benzene	2.79E-05	8.09E-06	-	2.83E-03	2.87E-03	1%
Total C-PAHs	1.20E-04	5.20E-05	6.11E-06	-	1.78E-04	0%
Benzo(g,h,i)perylene	5.59E-04	2.43E-04	2.86E-05	-	8.31E-04	0%
Fluoranthene	7.48E-05	3.25E-05	1.64E-07	-	1.07E-04	0%
Fluorene	3.52E-06	1.53E-06	-	3.37E-04	3.42E-04	0%
Naphthalene	9.46E-06	4.12E-06	-	-	1.36E-05	0%
Phenanthrene	4.38E-05	1.90E-05	-	1.87E-01	1.87E-01	96%
Pyrene	2.17E-04	9.44E-05	4.75E-07	-	3.12E-04	0%
Toluene	-	-	-	6.86E-04	6.86E-04	0%
m,p-Xylenes	-	-	-	1.63E-03	1.63E-03	1%
Summation	1.06E-03	4.55E-04	3.53E-05	1.93E-01	1.95E-01	

Definitions:

Italics - Risk estimates are from volume weighted results (See Appendix I).

Table 6-18
Volatile Chemical Maximum Predicted Concentrations in Groundwater
Former Aliso Street Manufactured Gas Plant
Sector C - Block N, Los Angeles, California

Chemical	Maximum predicted concentration in groundwater (μg/l)	CA MCL[1] (ug/l)	Tap water PRG[2] (ug/l)
Entire Site			
Acenaphthene	3.48E+01	-	370
Acenaphthylene	1.31E+00	-	-
Anthracene	1.32E-01	-	1,800
Benzene	6.47E-01	1	0.35
Benzene[4]	4.96E-01	1	0.35
n-Butylbenzene	6.12E-01	-	240
sec-Butylbenzene	5.44E-01	-	240
tert-Butylbenzene	1.72E-01	-	240
Dicyclopentadiene[3]	3.97E-01	-	180
Ethylbenzene	7.64E-01	700	1,340
Fluorene	8.20E-01	-	240
Isopropylbenzene	7.05E-03	-	660
p-Isopropyltoluene	6.92E-02	-	-
m-Xylene	4.59E-01	-	210
Naphthalene	7.41E+03	17	0.11
Naphthalene[4]	1.64E+01	17	0.11
o-Xylene	4.44E-01	-	210
Phenanthrene	2.79E+01	-	-
n-Propylbenzene	9.63E-01	-	240
Tetrachloroethene	7.14E-02	-	0.1
Toluene	5.56E-01	150	720
1,2,4-Trimethylbenzene	5.23E-01	-	12
1,3,5-Trimethylbenzene	1.40E-01	-	12

Definitions:

μg/l - Micrograms per liter.

Notes:

[box] Predicted concentration in groundwater exceeds potentially applicable criterion.

1 - California Maximum Contaminant Level (MCL) (2002), except for naphthalene the value is the Notification Limit (DHS 2005).

2 - USEPA Region 9 Preliminary Remediation Goals (PRGs) (2004).

3 - PRG is recalculated using updated toxicity data.

4 - Concentration based on volume-weighted analysis.

(THIS PAGE INTENTIONALLY LEFT BLANK)

J-66 - Former Aliso Sector Denny Site, 530 E. Ramirez Street

(THIS PAGE INTENTIONALLY LEFT BLANK)

TETRA TECH, INC.
3475 E Foothill Boulevard
Pasadena, California 91107
Telephone (626) 351-4664
FAX (626) 351-5291
Salar Niku@tetratech com

July 22, 2003

Mr. Masood Hosseini
Senior Project Manager
Site Assessment and Mitigation
Southern California Gas Company
555 West Fifth Street, GT16G2
Los Angeles, California 90013-1011

TC 11925-11

Subject: **Removal Action Workplan (RAW)**
Former Aliso Street (Sector A – East Parcel) MGP Site
Master Agreement 6100000232, Service Release No. 5500000669

Dear Mr. Hosseini:

Enclosed is one copy of the Final Removal Action Workplan for the former Aliso Street (Sector A – East Parcel) manufactured gas plant (MGP) Site.

This submittal includes all the sections, tables, figures, and appendices of the draft RAW except Appendices A, B, and C. There were no changes in these appendices. Please place the existing Appendices A, B, and C from the draft RAW in the appropriate locations in this submittal.

Per your instruction, I am forwarding four copies of this Final Remedial Action Workplan to DTSC, attention of Mr. Stephen Cutts, P.E. If you have any further question regarding this RAW, please call me at (626) 470-2462.

Respectfully Submitted,
TETRA TECH, INC.

Salar D. Niku, Ph.D., P.E.
Project Manager

cc: Mr. Stephen Cutts, DTSC (4 copies)

FINAL
REMOVAL ACTION WORKPLAN

for

ALISO STREET (SECTOR A)
EAST PARCEL
FORMER MANUFACTURED GAS PLANT (MGP) SITE
LOS ANGELES, CALIFORNIA

Prepared for:
The Southern California Gas Company
555 West Fifth Street
Los Angeles, California 90013-1011

Prepared by:
Tetra Tech, Inc.
3475 East Foothill Boulevard
Pasadena, California 91107
(626) 351-4664

Master Agreement No. 6100000232
Service Release No 5500000669
Tetra Tech Project No. TC 11925-11

REGISTERED PROFESSIONAL ENGINEER SALAR D. NIKU NO. 32003 EXP. 12/31/04 CIVIL STATE OF CALIFORNIA

July 2003

Prepared by: Salar D. Niku, Ph.D., P.E. — Date: 7/16/03
Project Manager
Tetra Tech, Inc.

Submitted by: Masood Hosseini, Senior Project Manager — Date: 7-16-03
San Diego Gas & Electric
Authorized Agent for
Southern California Gas Company

Copy 3 of 11
DTSC Copy 3 of 4

DISCLAIMER

This Removal Action Workplan Report (Report) is prepared for the sole use and benefit of the Southern California Gas Company (SCG), A Sempra Energy Utilities Company (Client) and for the specific Site known as the Sector A of Former Aliso Street Manufactured Gas Plant (Site), located in Los Angeles, California. **Neither this RAW nor any of the information contained therein shall be used or relied upon for any purpose by any person or entity other than the Client and for the Aliso Site.**

This Report was prepared based partially on information supplied to Tetra Tech from outside sources and other information which is in the public domain, and partially on the information Tetra Tech obtained during previous activities at this Site. Documentation for the statements made in the Report is on file at Tetra Tech's Pasadena, California, office Tetra Tech makes no warranty as to the accuracy of statements made by others which are contained in this Report, nor are any other warranties or guarantees, expressed or implied, included or intended in the Report with respect to information supplied by outside sources or conclusions or recommendations substantially based on information supplied by outside sources. This Report has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Since the facts forming the basis for this Report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards, which could possibly cause accidents, injuries, or damage unless those hazards were apparent, and should have been discovered, as a result of the services Tetra Tech performed for the Client. This Report represents the best professional judgement of Tetra Tech; however, compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of the Client's obligations under local, state, or federal laws, or any modifications or changes to such laws.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION **PAGE**

TABLE OF CONTENTS

SECTION **PAGE**

FIGURES

TABLES

TABLE OF CONTENTS

SECTION **PAGE**

TABLES (cont'd)

APPENDICES

This Removal Action Workplan has been prepared by Tetra Tech, Inc. for the Southern California Gas Company (SCG).

This Workplan is being submitted to the California Department of Toxic Substances Control (DTSC) for review and approval. Mr Stephen Cutts is the DTSC's Project Manager, Mr. Dean Wright, R.G and Dr. Richard Coffman, R.G are the project Geologists, Dr. Kimi Klein is the Project Toxicologist, all performing under the direction of Ms. Rita Kamat.

Tetra Tech, Inc. is the principal author of the Workplan. The Workplan has been prepared with assistance from Ms. Karen Summers, R.G., Stephen Anderson, R.G., Dr. Kay Johnson, and Dr Cris Liban. Dr. Salar Niku, P.E. is the Project Manager and the principal author of the report.

Mr. Mesrop A. Mesrop, P.E., G.E. of Geotechnical SOILutions, Inc., a subcontractor to Tetra Tech, has prepared the geotechnical section of the Workplan.

All work has been managed under the direction of Mr. Masood Hosseini, Senior Project Manager of Southern California Gas Company, under the supervision of Dr Todd Sostek.

This Removal Action Workplan (RAW) is submitted by Southern California Gas Company (SCG) to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), to comply with a Voluntary Cleanup Agreement (VCA) [Docket No. HAS-A00\01-100] executed between the DTSC and SCG, dated October 10, 2000 [DTSC, 2000]. In addition to DTSC approval, Caltrans approval of the RAW is also necessary as Caltrans is the property owner and the entity in charge of the maintenance and integrity of the overhead Busway and the Freeway passing above and south of the Site, respectively. The RAW represents the plan for remediation of the former Aliso Street Manufactured Gas Plant (MGP) Busway East parcel, hereinafter referred to as the "Site"

There are three contaminants of concern (COPC) identified for this Site These include carcinogenic polycyclic aromatic hydrocarbons (C-PAHs), benzene, and naphthalene. Two sets of risk-based cleanup goals were calculated using the results of the remedial investigation earlier conducted for the Site. The two sets of cleanup goals correspond to the two endpoints being considered: 1) remedial goals protective of workers (utility/construction, industrial, and mechanic), and 2) remedial goals protective of groundwater.

The most stringent cleanup goal among those calculated for each of the contaminants of concern was selected as the basis for comparison with detected soil analyte concentrations These selected cleanup goals are:

- 7 mg/kg for carcinogenic PAHs (for workers protection, surface to 10 feet bgs only);
- 0.03 mg/kg for benzene (for groundwater protection); and
- 8 mg/kg for naphthalene (for groundwater protection)

Detected concentrations for each of the COPCs at the various depth intervals (0-5 feet bgs; >5 – 10 feet bgs; >10-20 feet bgs; and >20-28 feet bgs) were then compared to the cleanup concentration values to determine those locations where remedial action is needed. A feasibility study identified soil excavation, treatment, and disposal as the preferred alternative to remediate the Site.

Several physical constraints limit implementation of an unrestricted excavation of impacted soil. These include the proximity of impacted soil to major roadways such as Ramirez Street and the 101 Freeway, as well as proximity to Bent 8, which supports the El Monte Busway Bridge Additional Site constraints include the existence of 28' x 28' x 12' concrete blocks located in the middle of the Site. Depth to groundwater is also a site constraint, as some impacted soil appear to be limited to depths influenced by groundwater fluctuation

A geotechnical study was performed to determine the maximum limit of where excavation can be performed at the Site without shoring The results of the geotechnical study have been presented to Caltrans for approval.

A map showing the maximum extent of potential excavation was then overlaid onto a map summarizing the contaminant concentrations exceeding clean-up goals. The final limit of proposed excavation was then delineated and presented to DTSC

The Site was divided into four sections for the purpose of outlining the general areas impacted by the Site-specific constraints and the limit of excavation. These include: 1) northern section, 2) area around Bent 8, 3) area within and adjacent to the concrete blocks, and 4) southern portion near and under Freeway Bridge. The areas where excavation can proceed as approved by Caltrans and the Department of Toxic Substances are then identified as follows:

The DTSC accepted proposed limit of excavation will include removal of impacted soil that will not require placement of any structural supports but will result in the reduction of risk, and be protective of human health. Details are as follows:

- **Site-wide.** Two feet of soil will be removed Site-wide (with the exception of only up to 1 5 feet around Bent 8) in Section 2. Excavation of soil up to two feet below ground surface will be performed to remove soil as well as to grade and level any uneven surfaces at the Site The 1.5 feet depth at Bent 8 corresponds to the top of the Bent 8 pile cap. Soil removed at Bent 8 need to be replaced within 24 hours if additional soil is removed up to the bottom of the pile cap (see additional discussion below)

- **Section 1 (Northern Section).** The northern portion of this Section is currently above grade (with a maximum elevation difference at the corner of Ramirez and Center Streets). Therefore, removal of soil up to the street level can proceed without any geotechnical reinforcements of the existing sidewalk. An additional two feet of soil can be removed below Street level without any need for sidewalk protection after the soil at this Section is made flushed with the sidewalk Removal of soil beyond two feet below the sidewalk elevation up to four feet below the sidewalk elevation can be accomplished if excavation is performed in alternate sections, and each section is backfilled before excavation of the other adjacent sections. Therefore, in Section 1, between 4 to 8 feet bgs of contaminated soil may be excavated next to Ramirez Street without shoring.

  Removal of additional soil beyond 2 feet below the street level can be accomplished by implementing a 1:1 slope from the edge of the sidewalk Therefore, no shoring will be necessary along Ramirez Street sidewalk to perform excavation up to 12 feet bgs, as long as the 1:1 slope is maintained With this approach, some contaminants may remain below the 1:1 sloped area

  It may not be necessary to conduct excavation beyond 12 feet bgs at TtAB-24 although it is assumed that naphthalene contamination is related to groundwater fluctuation and not from shallow sources above. However, some residual contamination may remain at this location in the soil within the 1:1 slope.

  During the excavation, the walls and the bottom of the excavation (to be determined during confirmation sampling) may appear to be heavily contaminated. SCG will continue to remove all impacted soil outside of the 1:1 slope within the limits of geotechnical constraints

- **Section 2 (Area Around Bent 8).** The area around TtAB-14 will be excavated and removed to 5 feet bgs using slot cut methods with soil replacement within 24 hours for excavation Any excavation beyond 5 feet requires a major shoring activity around the columns of Bent 8 Soil removal up to 5 feet bgs will leave residual benzene concentrations protective of human health but exceeding the groundwater cleanup goal

  Benzene is the chemical driver for any removal action at Bent 8 in Section 2 However, the selected benzene cleanup goal (0.03 mg/kg) is based on the federal maximum contaminant level (MCL) for benzene (this cleanup goal is lowest calculated benzene Site cleanup goal of the three cleanup goals Current benzene groundwater concentration is already greater than the MCL and therefore any mass contribution of residual contamination to the underlying groundwater will be negligible compared to the benzene already present in the groundwater

  It was also pointed out that any residual contamination will be highly immobile due to its co-solvency with high concentrations of petroleum hydrocarbons In addition, future use of groundwater has been assumed to be unlikely and that there are ubiquitous anthropogenic sources of hydrocarbon and solvent contamination of groundwater in this part of downtown Los Angeles As such, soil removal at Bent 8 beyond 5 feet bgs will not provide any incremental benefit to the protection of the underlying groundwater Remedial action of the regional groundwater underlying the Site and the rest of the former Aliso Street MGP site will be addressed separately

- **Section 3 (Area Within and Adjacent to the Concrete Blocks).** This area includes at least three concrete blocks, remaining from former MGP generating units These concrete blocks are approximately 28' x 28' x 12' It is believed that the top of these blocks is approximately two feet bgs There was only one boring drilled in this area Other attempts to drill were unsuccessful The single boring TtAB-19 does not show contamination in this area Removal action below two feet in this Section will not be necessary, as concentrations of impacted soil do not exceed the calculated remedial goals from 0 to 20 feet bgs Therefore, no excavation will be performed in this area, except the general 2 feet excavation proposed site-wide.

  As Sections 1 and 3 are directly adjacent to one another, any impacted soil observed during Section 1 excavation that extends into the concrete blocks will be removed Appropriate steps will be adopted if the extent of contamination in Section 1 is observed to extend below the base of the concrete blocks (excavation up to 20 feet below the original ground surface can be performed without shoring around and within the generator blocks

- **Section 4 (Southern Portion Near and Under Freeway Bridge).** No excavation will be performed in this area, except the general 2 feet excavation proposed site-wide

  Removal of impacted soil below two feet bgs cannot be performed without compromising the structural integrity of the 101 Freeway Residual contamination is, however considered immobile due to the same reasons already mentioned for residual contamination in Bent 8

Estimated total volume of excavation is 3,319 cubic yards, or approximately 4,480 tons The estimated cost to implement this removal action is $602,098

Confirmation samples will be collected following excavation activities and prior to backfilling to document that: (1) the performance of the excavation has adequately remediated the Site, or (2) concentrations of contaminants left on the Site due to limitations to further excavation would be protective of human health. In both cases, a post excavation risk assessment will be prepared

The post-excavation risk assessment will be performed after the removal action to demonstrate that residual contamination left in place will result in acceptable risk to human receptors. Residual concentrations to be used in the calculation of post-excavation risk will be calculated using the volume weighted average methodology.

This Removal Action Workplan (RAW) is submitted by Southern California Gas Company (SCG) to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), to comply with a Voluntary Cleanup Agreement (VCA) [Docket No HAS-A00\01-100] executed between the DTSC and the SCG, dated October 10, 2000 [DTSC, 2000].

This RAW represents the plan for remediation of the former Aliso Street Manufactured Gas Plant (MGP) Site, Sector A (see Section 1.2 for location) Sector A has been divided into three parcels, the Denny's parcel, Busway West parcel (West parcel), and the Busway East parcel (East parcel). **This RAW was specifically prepared for the East parcel, hereinafter referred to as the "Site".** The RAW for the West parcel will be presented as a separate document. The Denny's parcel had been remediated in 1999.

1.1 OBJECTIVE

This RAW includes plans and specifications for the removal of contaminants from the Site. It also includes a post-confirmation sampling plan to confirm that the Site remediation is complete After Site remediation, SCG will request DTSC for Site closure.

1.2 SITE LOCATION AND OWNERSHIP

The former Aliso Street MGP site is approximately 52 acres[1] in size, and is located in downtown Los Angeles (Figure 1-1) The Aliso Street site boundary covers an area from south of the railroad tracks by Bauchet Street to the north, across the 101 Hollywood Freeway (also referred to as the Santa Ana Freeway) to about Jackson Street to the south The middle part of the Aliso Street site is located east of Union Station in Los Angeles, and west of the Los Angeles River The Aliso Street site is located in the Township 1 South, Range 13 West, and Section 27 of the San Bernardino Meridian.

For ease of managing the required investigation activities, SCG has divided the Aliso Street site into five sectors, A through E (Figure 1-2) SCG selected sector boundaries arbitrarily based on previous and current ownership records. The boundaries do not necessarily correspond exactly to areas used by the former MGP and butadiene facilities

Sector A is approximately 6 1 acres and is located north of the 101 Freeway (also referred to as the Hollywood Freeway), between Vignes Street to the west, Keller Street to the east, and Ramirez Street to the north. The northwest portion of Sector A is occupied by Denny's restaurant and a parking lot The southern part of Sector A is used for transportation (the El Monte Busway, and a new bus-ramp which is in the design phase by the Los Angeles County

[1] The acreage estimate given here is based on the previous reports that cite the size of the Site as 52 acres based on previous boundaries The actual acreage of the Aliso Street MGP site based on current site boundaries is approximately 56.3 acres.

Metropolitan Transit Authority (MTA)). For ease of reference, Sector A has been divided into three parcels: 1) Denny's parcel, 2) West parcel, and 3) East parcel.

1 The "Denny's parcel" includes the area now occupied by a Denny's restaurant and the surrounding parking lot, located at 530 Ramirez Street in Los Angeles, CA, (also referred to as Aliso/530 Ramirez site). The Denny's parcel is owned by the Los Angeles County Metropolitan Transit Authority (MTA). This parcel was remediated in 1999 (except the area under the restaurant building) This parcel is not the subject of this RAW

2 The "West Parcel" refers to the area under the El Monte Busway and is located south of the Denny's parcel as illustrated on Figure 1-3. Other boundaries of the West parcel include the freeway off-ramp at N. Vignes Street to the west, the Denny's restaurant and parking lot to the north, Center Street to the east, and the 101 Hollywood Freeway to the south. The West parcel is vacant and has been paved with asphalt in 1999 upon completion of the Denny's remediation project This parcel is not the subject of this RAW Its remediation is being addressed in a separate volume.

3. The "**East parcel**" refers to the area under the El Monte Busway located southeast of the Denny's parcel as illustrated on Figure 1-3. The West and East parcels are separated by Center Street. The boundaries of the East parcel are Center Street to the west, Ramirez Street to the north, Keller Street to the east, and the 101 Hollywood Freeway to the south. The West and East parcels are owned by the California Department of Transportation (Caltrans). The East parcel is currently used for temporary storage of autos belonging to the Los Angeles Police Department (LAPD). This RAW covers the remediation of this parcel.

1.3 PAST LAND USE AND OPERATIONS

The MGP operations on Sector A began in 1874 using coal-based processes The plant was converted to the Lowe water gas process after 1894 and to oil-based processes by 1906 MGP operations continued until natural gas became available for mixing with the manufactured gas in 1922 The plant was placed on standby in 1927, when only natural gas was used. Part of the plant was converted to a butadiene plant during World War II for the U.S. Defense Plant Corporation, which was operated by the Southern California Gas Company from 1943 until 1947 The major former features from the MGP/butadiene operations included two gasholder bases, purifiers, scrubbers, pipelines, and a Cottrell precipitator on the west side, and a gasholder, retorts, the first oil-gas generating plant, and oil tanks on the east side. The MGP/butadiene facilities on Sector A had been removed by 1952.

Following the demolition of most of the MGP facilities in the early 1950's, the properties formerly occupied by the plant were subdivided and sold to various private and public parties Most of the property was subsequently redeveloped into commercial, light industrial, public institutional, and transportation land uses As illustrated on Figure 1-3, the street configuration in Sector A has been changed considerably since the time of the MGP facilities.

1.4 CURRENT AND FUTURE LAND USES

There are no current residential properties within the boundary of the former Aliso Street MGP site, specifically within Sector A. The Denny's parcel is now occupied by a Denny's restaurant and a parking lot. The West parcel is vacant and is located under the elevated El Monte Busway. A new bus-ramp (the Metropolitan Transportation Authority (MTA)) Bus Flyover, which is in the design stage, may occupy a portion of the Denny's parcel in the future

The East parcel is unpaved, and is currently used by the City of Los Angeles Police Department for storage of police cars The elevated El Monte Busway runs through the southern part of the East parcel. Two of the bents (Bents 8 and 9) that is holding the El Monte Busway penetrate the Site soil.

Based on SCG's review of current land use maps and land planning documents, the current and reasonably anticipated future land uses for this area are expected to remain commercial, industrial, public institutional, and transportation Activities consistent with these land uses may include office buildings, public offices and institutions, enclosed warehouse spaces, indoor and outdoor manufacturing, exterior storage yards, and public transportation right-of-way (e g., highway and rail).

1.5 GEOLOGY

The Aliso Street site is located on the northern part of the Los Angeles Coastal Plain, which is near the junction of the Peninsular Ranges Geomorphic/Structural Province and the Transverse Range Province The Peninsular Ranges are associated with mostly northwest-trending right lateral faults and folds, while the Transverse Ranges have northward-dipping thrust faults along their southern margins that are uplifting the mountains The Elysian and Repetto Hills are a northwest-trending extension of the Peninsular Ranges The east-west oriented San Gabriel and Santa Monica Mountains are part of the Transverse Ranges.

In-between the above mountain ranges, there is a deep structural basin, referred to as the Los Angeles Basin. The basin is about 30,000 feet deep along its axis near the City of Downey and about 16,000 feet deep beneath the Central District of Los Angeles The basement rocks of the deep central basin have not been reached, but are inferred from geophysical data to be metamorphosed sedimentary rocks of Jurassic age and the granitic rocks of the southern California Batholith, which are exposed in the eastern Santa Monica Mountains [Norris and Webb, 1990]

The closest hills are the Elysian and Repetto Hills, located north of the Aliso Street site The oldest formations exposed in these hills are Miocene-age sedimentary bedrock formations The specific formations include sandstone, siltstone, and claystone of the Puente Formation of Pliocene age The overlying Pliocene to Pleistocene age Fernando Formation consists of siltstone near its base and conglomerate near its top This unit was the last marine unit deposited in the Los Angeles Basin, about 3 million years ago [Namson and Davis, 1988 and Davis et al., 1989]. Following the period of marine deposition, uplift of the Repetto and Elysian Park Hills continued, accompanied by terrestrial alluvial fan deposition from the Transverse Mountain Ranges.

Alluvium

The alluvial deposits of Recent age in the Los Angeles Basin were deposited by the Los Angeles River. River channel and flood plain sediments are generally coalescing silts, sands, and gravels that are laterally discontinuous. The formations encountered in the vicinity of the Aliso Street site are predominantly unconsolidated fill, typically 5 to 10 feet thick, underlain by sands and sandy gravels with some discontinuous silts and clays. Most of these sediments were deposited by the Los Angeles River, which borders the Aliso Street site to the east. A coarse gravel layer is often found near the contact with the alluvium and the siltstone/claystone of the underlying Puente/Fernando Bedrock Formations. The shallow alluvium is directly underlain by bedrock and not the sequence of deeper aquifers found further south in the basin (e.g., the Silverado and Sunnyside aquifers).

Bedrock

In the vicinity of the Aliso Street site, the bedrock formations beneath the alluvium are the Puente Formation and the Fernando Formation. In many places, these marine formations are not distinguished due to their similarity and changes in naming conventions. For example, older publications may refer to the Pico Formation instead of the Fernando Formation. The recently completed seismic and deep boring investigation indicates that the bedrock on the Aliso Site north of Caesar Chavez Avenue, formerly Macy Street, is the Puente Formation, while the part south of Commercial St on Sector C is the Fernando Formation

The Puente Formation consists of shale, sandstone, siltstone, and claystone and in some locations has been divided into four members (e.g., layers) [Durham and Yerkes, 1964]. The youngest member (Sycamore Canyon Member) includes poorly sorted light brown to gray siltstone and very fine-grained sandstone with thin bedding planes, shale, and orange limestone inclusions. The Yorba Member, consisting of light gray to white shale and white to gray diatomaceous shale with sandstone and limestone layers, underlies the Sycamore Canyon Member. The Yorba Member is underlain by the Soquel Member that consists of light yellowish-brown, medium grained to pebbly feldspathic sandstone with interbedded light gray to light yellowish-brown siltstone. The oldest member (La Vida Member) is a medium brown to light-gray sandstone with calcareous nodules.

The Fernando Formation consists primarily of siltstone, sandstone, and conglomerate, and has been divided into three members. The Upper Member is a brown conglomerate with a soft, poorly-sorted sandstone matrix. The Middle Member is tan to brown coarse-grained to pebbly sandstone. The Lower Member is a light brown to medium gray siltstone with hard calcareous beds and soft, micaceous zones.

Additional deep borings and wells and a seismic survey were conducted on the entire Aliso Site to better characterize the bedrock surface topography, composition, and permeability. The depth to bedrock on the Aliso site varies from 45 feet bgs in well C-10, located near the corner of East

Temple Street and Center Street on Block Q of Sector C to 145 feet bgs in TtS-2, located on Sector E upgradient of the 490 Bauchet Street site. The bedrock surface is irregular with deeper zones beneath Sector E and Sector A. South of the Aliso Site, beginning at First Street, the bedrock depth increases.

1.6 NEARBY OIL FIELDS

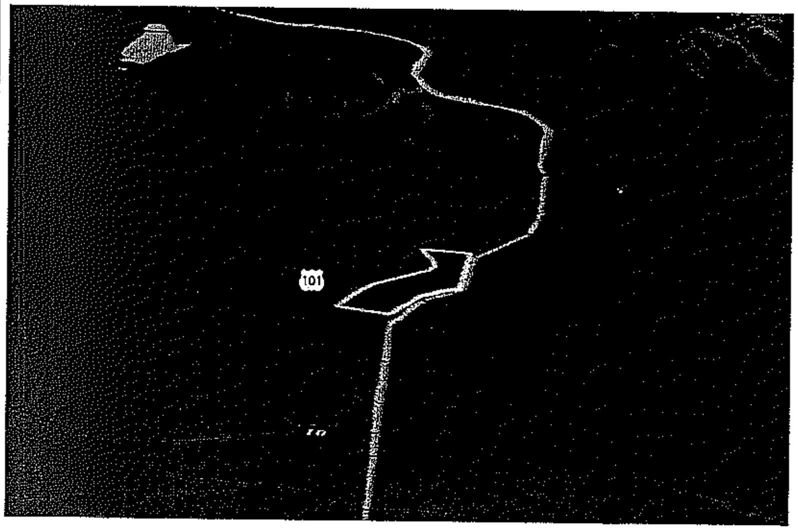
The Los Angeles Basin is one of the most hydrocarbon-rich areas in the world There are many individual oil fields in the Los Angeles Basin The two major oil fields near the Site are the Los Angeles City Field and the Union Station Oil Field The Aliso Site is located just southeast of the Los Angeles City Field, located on the Elysian Park Anticline. The southern part of Sector C overlies the Union Station Oil Field.

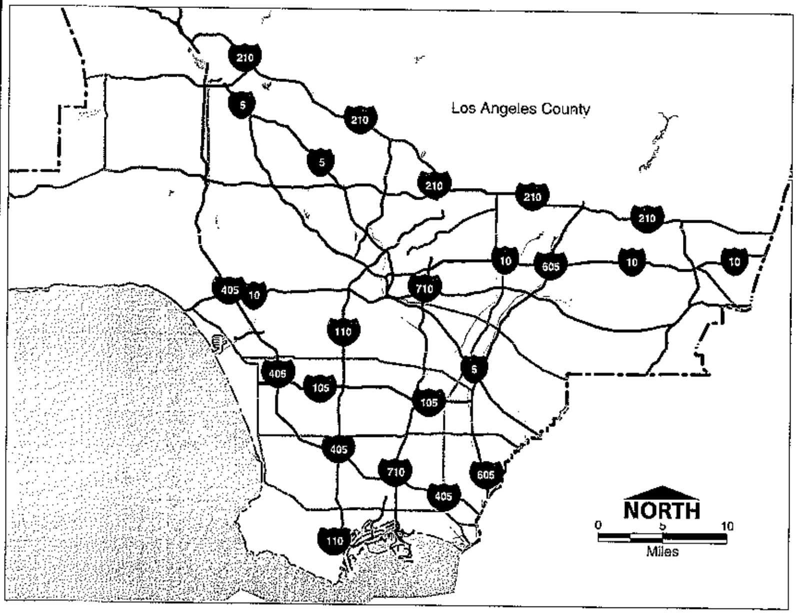
In addition to the commercial oil fields, the bedrock formations in the Los Angeles Basin often contain natural, immature petroleum hydrocarbons along fractures and bedding planes [Link, 1952; Yerkes et al , 1977; and Jeffrey et al 1991]. A U.S. Geological Survey Bulletin from 1907 noted that petroleum hydrocarbons were found in the alluvium and bedrock on the northern edge of the Aliso Street site, but the deposits were not considered economical to develop [McLaren Hart, 1995]. The U S. Army Corps of Engineers also found natural oil seeps along both sides of the Los Angeles River next to and north of the Aliso Street site at the time of construction of the concrete river channel in 1940. In June 2001, oil seeps were noted from seams and cracks in the concrete lining of the Los Angeles River channel and east of the channel [LA GED, 2002]. An investigation of these seeps showed that some of them dated to the 1940's and all were natural crude oil. Further investigation of natural oil deposits in the vicinity of the Aliso site was conducted for the Northeast Interceptor Sewer Project [LA GED, 2001] Near-surface oil deposits were found along the Los Angeles River between the Freeway and Cesar Chavez Street and in a series of borings east of the river opposite the Aliso Site

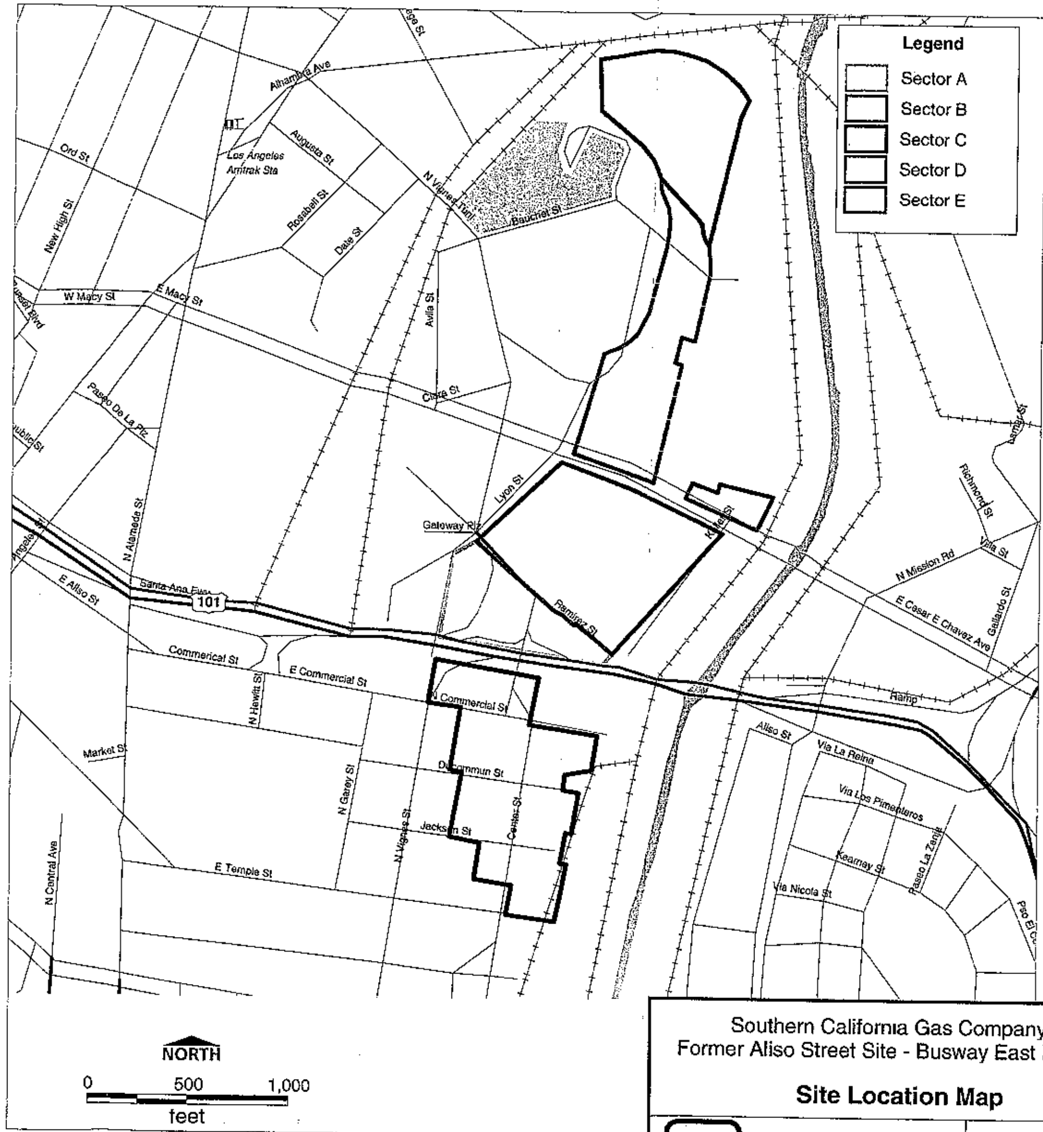
1.7 REGIONAL HYDROGEOLOGY

The Aliso Street site is located in the northern portion of the Central Groundwater Basin within the Los Angeles Forebay area Eight aquifers and associated aquitards have been mapped in the main part of the basin, south of the Aliso street site area by CDWR [CDWR, 1961]. The aquifers, from shallowest to deepest are: 1) Gaspur, 2) Exposition, 3) Gage, 4) Hollydale, 5) Jefferson, 6) Lynnwood, 7) Silverado, and 8) Sunnyside These aquifers pinch out south of the Aliso Street site as the basin thins, with the exception of the Gaspur aquifer. The groundwater on the Aliso Site is not used for water supply purposes

The general flow direction in the shallow groundwater in the vicinity of the Aliso Street site is to the south. The depths to groundwater across the entire Aliso Site vary from 28 to 41 feet bgs The alluvium functions as a single, unconfined aquifer, and there are no intervening continuous, confining layers. The base of the alluvium is the bedrock at depths ranging from 45 feet bgs to 145 feet bgs. The underlying bedrock is dry in some areas such as beneath Sector A area, but has thin permeable zones in other areas such as in the southern part of Sector C.







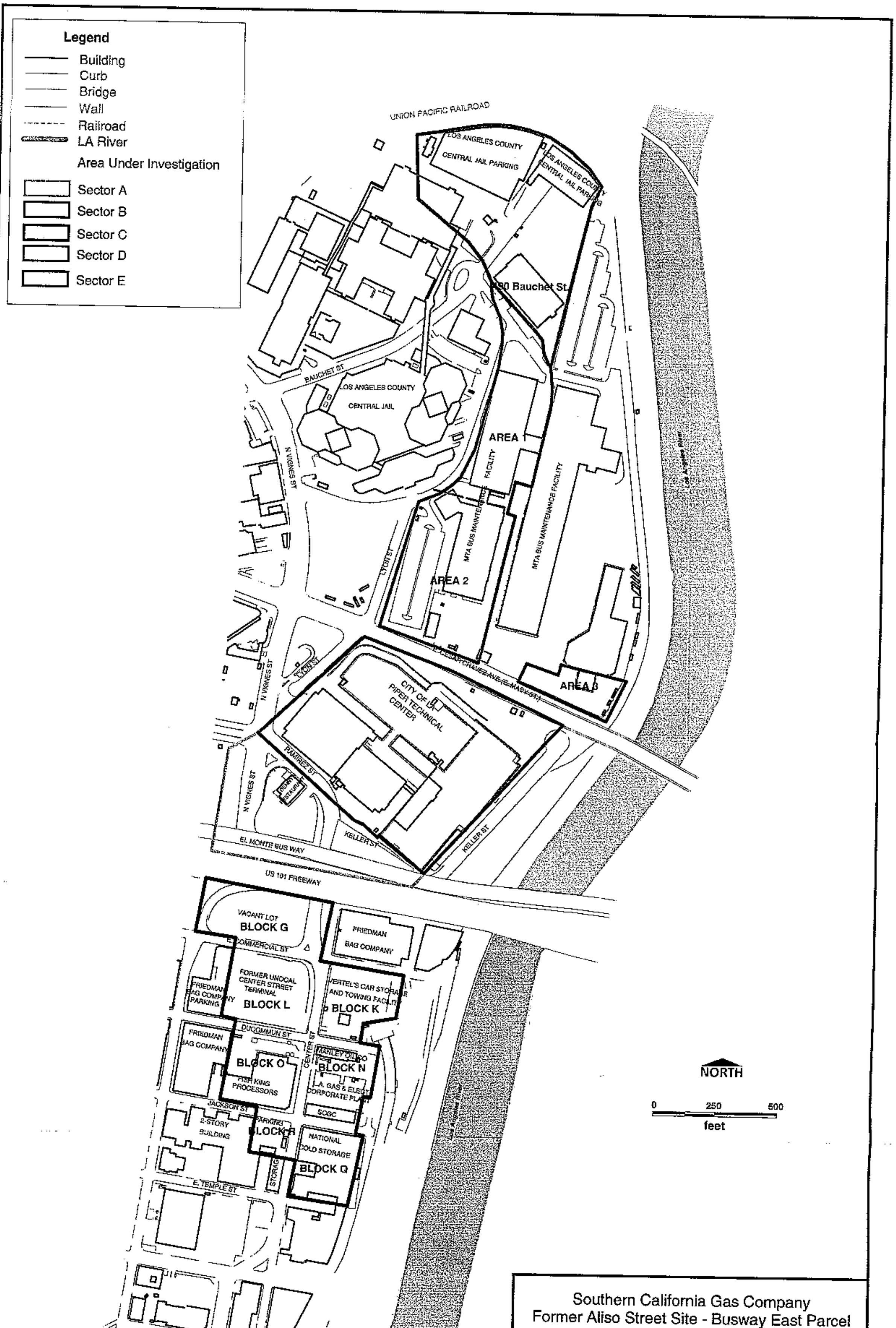
Southern California Gas Company
Former Aliso Street Site - Busway East Parcel

Site Location Map

Tetra Tech, Inc.

PREPARED BY: BLD
FILE: Site_Location.WOR
DATE: 6-3-2003

Fig. 1-1

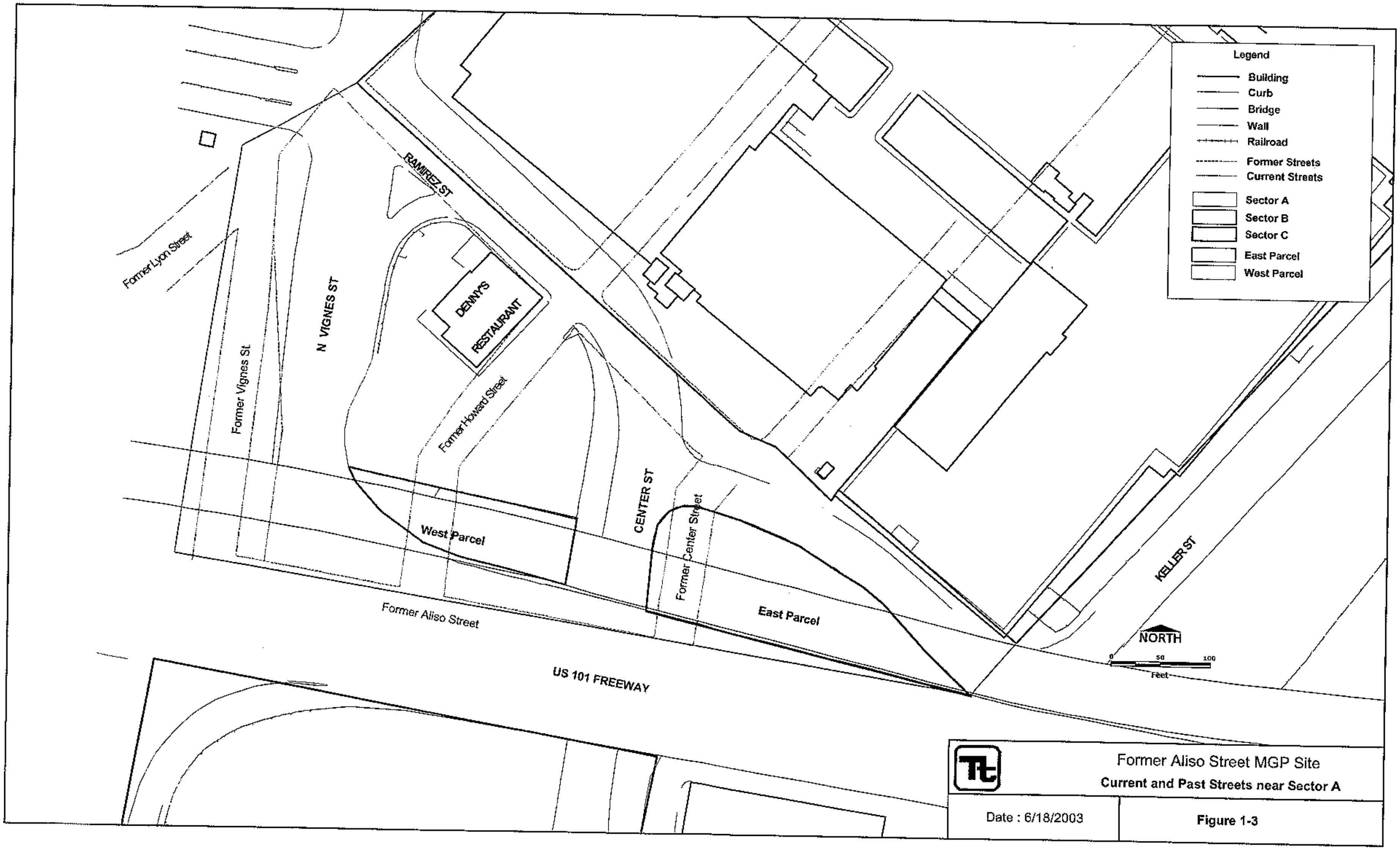


Southern California Gas Company
Former Aliso Street Site - Busway East Parcel

Site and Sector Boundaries

Tetra Tech, Inc.
PREPARED BY: BLD
FILE: SiteandSectorBoundaries.WOR
DATE: 6-11-2003

Fig. 1-2



Former Aliso Street MGP Site
Current and Past Streets near Sector A

Date : 6/18/2003

Figure 1-3

2.1 PAST SITE INVESTIGATIONS

Between 1981 and 1997, several site investigations have been conducted at Sector A. A detailed discussion of the past site investigations is included in Section 3 of the Remedial Investigation Master Workplan [Tetra Tech, 2001]. Five past boring locations with analyzed data have been included in this RAW (Figure 2-1) These boring are: FD-EB-1B, FD-EB-1 (same as Well A-2), FD-EB-3, FD-EB-4 (same as Well A-3), and FD-EB-5.

2.2 RECENT SITE INVESTIGATIONS

Tetra Tech performed additional field activities in the West and East parcels in two time intervals. The first group of borings was drilled between November 27, 2000 and December 7, 2000. The second group was drilled between January 23, 2001 and February 6, 2001 The results of these site investigations are included in the Remedial Investigation Report (RI Report) dated June 2002 [Tetra Tech, Inc.] and is briefly summarized below

Soil Sampling. Subsurface soil samples were collected from 10 boring locations (TtAB-14, 15, 17, 18, 19, 20, 21, 23, 24, and 30). Nine borings were drilled to two feet below the water table (approximately 34 feet), and one boring (TtAB-30) was drilled to bedrock (approximately 90 feet). Location of soil borings is shown on Figure 2-1.

Soil Chemical Analysis. A total of 89 soil samples (both previous and recent samples) were analyzed for the East parcel. The American Environmental Testing Laboratories (AETL), a California State certified laboratory, performed all chemical analyses The number of soil samples collected from each boring and the types of analyses at each depth for the East parcel are summarized in Table 2-1[1] Soil samples were analyzed for the following compounds:

- PAHs[2] by EPA Method 8310 (High Pressure Liquid Chromatography (HPLC));
- Volatile organic compounds (purgeables) by EPA Method 5035/8260B or 8040;
- BTEX compounds by EPA Method 8020;
- Total petroleum hydrocarbons (TPH) by EPA Method 8015 modified;
- Metals by EPA Method 6010/7000 series (Title 22 metals);

---

[1] Data extracted from Table 5-1 of the RI report [Tetra Tech, 2002].

[2] A total of 16 compounds in the PAH group are analyzed by EPA Method 8310. Seven PAH compounds have been identified as probable human carcinogens. Nine other PAH compounds have been identified as non-carcinogenic, but potentially toxic

Carcinogenic PAHs (C-PAHs) include:	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene
Non-carcinogenic PAHs (NC-PAHs) include:	acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, pyrene, phenanthrene

- Cyanide by EPA Method 9010B;
- pH by EPA method 9045C or 9040B; and
- Sulfide by EPA method 9030B

The chemical data for all of soil samples in the East parcel are presented in Tables 2-2 through 2-10[3]. Thirty-three organic chemicals (including PAHs, BTEX, dicyclopentadiene, and styrene), 12 metals, cyanide, and several petroleum hydrocarbon fractions (e.g., heavy hydrocarbons, C23-C-40) were detected in soils in the East parcel (Table 2-12).

Soil-Gas Sampling. A soil gas survey was also conducted. Two sampling clusters were placed on the East parcel (TtAG-11, TtAG-12) (Figure 2-1). Each cluster consisted of two probes to depths of 5 and 15 feet bgs. Soil gas samples were analyzed for VOCs including halogenated and aromatic hydrocarbons, dicyclopentadiene, and MTBE using EPA Method TO14 (Table 2-11). The samples were also analyzed for hydrogen sulfide (H_2S) (Table 2-11B). Ten chemicals were detected in soil gas in the East parcel (Table 2-13).

Monitoring Wells. Two shallow wells (A-2 and A3) had previously been installed on the East parcel. Groundwater samples were collected from two existing monitoring wells on the East parcel (monitoring wells A-2, and A-3). Groundwater was analyzed for PAHs, BTEX, cyanide, 1,3-butadiene, dicyclopentadiene, butadiene, styrene, sulfide, sulfate, nitrate, chloride, and TDS. The 35 chemicals detected in groundwater in the most recent sampling event (spring 2001) are shown in Table 2-14. As noted, 10 of these chemicals are non-volatile, whereas the other 25 are volatile chemicals.

2.3 CHEMICALS OF POTENTIAL CONCERN

Chemicals of potential concern (COPCs) are chemicals that may affect human health or the environment. To ensure that health protective remedial goals were developed for the East parcel, all of the constituents detected in soil, soil gas, and groundwater were considered chemicals of potential concern (COPCs) [Tetra Tech, June 2002].

2.4 SOIL SAMPLE DEPTH CLASSIFICATION

For ease of discussion, soil samples collected at different depths were grouped as different zones as follow (see Remedial Investigation Report [Tetra Tech, Inc., June 2002]).

Zone Name	Sample Depth in feet bgs
Fill	0 - 25 feet
Capillary Fringe/Water Table	26-35
Alluvium	36-85
Alluvium/Fernando Interface	86-90
Fernando Formation	91-100

[3] Data extracted from Tables 5-2 through 5-10 of the RI report [Tetra Tech, 2002].

The focus of this RAW is to remove the contaminants from the Site to the extent feasible (additional details are discussed in Section 5). The media of interest for removal action is within the top 25 feet of soil or the fill zone. The Fill zone (0 to 25 feet bgs) represents samples collected from shallow, unsaturated soils that sometimes contained the presence of man-made objects like brick and metal fragments.

The fill zone is further divided into four layers (0 to 5 feet, >5 to 10 feet, >10 to 20 feet, and >20 to 28 feet) for use in the risk assessment and feasibility study. These layers represent depths that different receptors could be exposed to. The 0 to 5 feet layer represents the area that the utility maintenance workers may be exposed to. The 5 to 10 feet layer represents additional depth that construction worker may be exposed to. The 20 feet depth represents a depth at which concentrations can impact receptors through volatilization and groundwater through contaminant migration, which also is the approximate bottom of the former gasholder base. The bottom of fill zone is at 25 feet, and an additional three feet of soil within the capillary fringe (for a total depth of 28 feet bgs) has been included in the feasibility study and the risk assessment.

2.5 VERTICAL AND HORIZONTAL EXTENT OF SOIL CONTAMINATION

The extent of contamination has been discussed in detail in the RI Report [Tetra Tech, Inc.]. The detected chemicals in the East parcel soils are listed in Tables 2-2 through 2-10. The extent of contamination within the top 28 feet of soil is briefly discussed below.

Polycyclic Aromatic Hydrocarbons (PAHs)

All soil samples selected for chemical analyses were analyzed by EPA method 8310 (HPLC) for PAHs. Naphthalene was also analyzed using EPA Method 8260B. PAHs have been separated into two tables showing the carcinogenic compounds (C-PAHs) and the non-carcinogenic compounds (NC-PAHs). Table 2-2 shows each individual C-PAH compound. All C-PAH compounds have been added in the second to last column of Table 2-2 to list the total C-PAHs[4]. Because all of the C-PAH compounds do not have the same potency, one cannot simply add the concentration of each C-PAH and use it as the total C-PAHs concentration for human health risk assessment purposes. The California Environmental Protection Agency (Cal-EPA) has established a set of relative potency factors [Cal-EPA, 1993] to be used in conjunction with the measured concentration of each C-PAH to express C-PAHs as benzo(a)pyrene [B(a)P] equivalent. To convert measured levels of C-PAHs to B(a)P equivalent, the Cal-EPA has identified the following "Potency Equivalency Factors (PEFs)" which express the carcinogenic

[4] The following procedure has been used for handling non-detected PAH compounds when calculating the total concentrations in Table 2-2. When the result of the analyzed compound was less than its listed Practical Quantitation Limit (PQL), the concentrations are listed as less than (<) the PQL value in the Table.

1) If all C-PAH compounds were detected in a sample, the sum of the C-PAHs is the total value of each C-PAH compound in the sample;
2) If some C-PAH compounds were detected and one or a few compounds were not detected (e.g., less than the PQL) in a sample, then the sum of the C-PAHs is equal to adding all detected values plus one-half of the PQL value of those compounds not detected; and
3) If all the C-PAH compounds in one sample were not detected, the sum of the C-PAHs is considered to be non-detect, and listed as ND.

potency for each of the C-PAHs relative to the potency of B(a)P To calculate the B(a)P equivalent of total C-PAHs in a sample, the measured concentration of each individual C-PAH is multiplied by the appropriate PEF, and then the calculated values of each compound are summed. Presentation of C-PAHs as B(a)P equivalent concentrations allows comparison of the results of total C-PAHs from one sample to another on a comparable basis, and provides a more realistic estimate of the potential carcinogenic risk The Potency Equivalency Factors (PEF) for each C-PAH compound are calculated using the following values:

Factors to Calculate Total C-PAHs as Benzo(a)pyrene Equivalent*

Compound	**PEF**
Benzo(a)pyrene	1 (index compound)
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(j)fluoranthene	0.1
Benzo(k)fluoranthene	0.1
Chrysene	0.01
Dibenzo(a,h,anthracene)	0.34
Indeno[1,2,3-c,d]pyrene	0.1

*Based on CAL-EPA, 1994 Appendix 1 [Cal EPA, 1994]

The total C-PAHs as B(a)P equivalent are shown in the last column of Table 5-2. Because the other PAHs have lower potency than B(a)P, the total C-PAHs expressed as B(a)P equivalent will always be less than or equal to the mathematical sum of the total C-PAHs

Table 2-3 shows each individual NC-PAH compound. All NC-PAH compounds have been added in Table 2-2 to list the total NC-PAHs. The same procedure that has been used to calculate the total C-PAHs has also been used to calculate the total NC-PAHs.

A summary table, Table 2-4, has also been prepared showing the total PAHs as well as C-PAHs and NC-PAHs, reorganized based on depth of sampling rather than borings. For ease of reference, the analytical results for C-PAHs shown in Tables 2-4 are expressed in both total concentration as well as B(a)P equivalent concentrations (using PEFs).

2.6 EXTENT OF CONTAMINATION

Northern Part of East Parcel

The maximum total C-PAH concentration, expressed in B(a)P equivalent, in the soil samples from the northern part of the East parcel was 248.3 mg/kg (TtAB-24 at 5 feet bgs). This boring was drilled between the oil gas generating plant and a former boiler and engine room and near the former retorts. This sample also had TPH as diesel (1,850 mg/kg) and TPH as heavy hydrocarbons (365 mg/kg). Naphthalene concentration was 22.3 mg/kg and benzene concentration was 0.080 mg/kg. The sample was described as black hydrocarbon-stained sand representing the interval between the depths of 4 and 7 feet bgs. The underlying fill at this location had lower C-PAHs (e.g., 14.52 mg/kg at a depth of 10.5 feet and 3.44 mg/kg at 20 feet). The TPH in boring TtAB-24 was 2,215 mg/kg at 5 feet.

Southeast Corner of East Parcel

C-PAH concentrations, expressed in B(a)P equivalent, in the two soil samples collected from the southeast corner of the East parcel near the former oil-gas plant were also relatively high (115.24 mg/kg in FD-EB-1B at a depth of 10 feet and 113.21 mg/kg in TtAB-23 at 20.5 feet bgs). The upper fill in TtAB-23 had low concentrations of C-PAHs (e.g., 0.43 to 0.76 mg/kg). Historical records indicate that there was an oil tank in this corner of the parcel, but it was removed prior to construction of the oil-gas plant that extended over this area. TPH was present in the deeper fill (20.5 and 25 feet). The material between 18 and 26 feet was sand and gravel, and was impacted by hydrocarbons (with some odor). The total TPH concentration was 3,830 mg/kg in the 20.5 feet sample and 4,040 mg/kg in the 25 feet sample. Benzene was detected only in the 25 feet sample (116 µg/kg).

On the East parcel, naphthalene concentration was elevated only in the deeper fill at 17 to 25 feet in the southeastern part. The maximum naphthalene concentration was 2,230 mg/kg in FD-EB-1B (from the PEA investigation). The location of this sample was within the footprint of the former oil-gas generating plant and near both the early gasholder and an oil tank.

Near Former Gasholder Base

Elevated C-PAHs were found in some borings near the former gasholder base on the East parcel. The highest C-PAHs concentration in this area was 91.31 mg/kg (in B(a)P equivalent) in TtAB-21 at a depth of 20.5 feet (Figure 2-1). C-PAH concentrations in the other samples from around the former gasholder base were less, ranging from non-detect to 31.66 mg/kg in TtAB-20 at a depth of 5 feet in material described as layers of black sands, possibly lampblack, mixed with soil. Benzene concentration in this boring was below detection in the upper fill (0 to a depth of 10 feet as seen on Figure 2-1), 5.6 µg/kg at 11.5 feet, and 265 µg/kg at 20.5 feet.

Remaining East Parcel Area

The samples in the west part of the East parcel had low concentrations of C-PAHs, with maximum concentrations as B(a)P equivalent of 1.85 mg/kg in TtAB-14 in the 0 to 5-foot depth interval, 2.68 mg/kg in TtAB-14 in the 5 to 10-foot interval, 0.04 mg/kg in TtAB-18 in the 10 to 20-foot interval, and 5.06 mg/kg in TtAB-15 in the 20- to 25-foot interval. However, benzene concentration in boring TtAB-14 was elevated, ranging from 180 to 292 µg/kg from the surface to a depth of 25 feet bgs. The fill in this boring consisted of sand with brick fragments and hydrocarbon-stains and odors. This boring was next to the former oil-gas generating plant and older retorts.

The remaining areas had relatively low benzene concentrations with pockets of slightly higher concentrations for a given depth interval. The range of benzene was ND to 80 µg/kg in TtAB-24 for the 0 to 5-foot interval, ND to 150 μg/kg in TtAB-18 for the 5 to 10-foot interval, ND to 5.6 μg/kg in TtAB-21 for the 10 to 20-foot interval, and ND to 116 μg/kg in TtAB-23 for the 20 to 25-foot interval. The locations with benzene also had elevated TPH.

Capillary Fringe (Water Table) Layer (26-35 feet) - East Parcel

On the East Parcel, the two highest C-PAHs were found in sample TtAB-30 at 34.5 feet bgs (34.9 mg/kg) and in sample TtAB-21 at 25.5 feet bgs (30.7 mg/kg). The sample from TtAB-30 had benzene of 1,410 μg/kg and naphthalene of 728 mg/kg with total PAHs of 1,219 mg/kg. TPH was present as gasoline (297 mg/kg), as diesel (11,400 mg/kg) and as heavy hydrocarbons (3,800 mg/kg). The sample from TtAB-30 was described as sand that partially-saturated with hydrocarbons. This boring is located within the footprint of the former retort house and the oil-gas generating plant. Naphthalene in TtAB-21 was 256 mg/kg, while the total PAHs were 886.3 mg/kg. Boring TtAB-21 is near the early former gasholder that was removed to install the first oil-gas generating plant. The material was described as light gray, gravelly sand.

The concentrations of C-PAHs increased in the capillary fringe/water table layer in one of the deep wells near Center Street south of the Freeway (Figure 5-1e of the RI Report). The highest concentration was in well TtA-5D at a depth of 30 feet (43.16 mg/kg C-PAHs expressed as B(a)P equivalent). Total PAHs in this sample was 493.5 mg/kg of which 30.6 mg/kg was naphthalene. This sample also had 66.8 μg/kg benzene and 175 mg/kg as TPH gasoline, 7,050 mg/kg as TPH diesel, and 3,190 mg/kg as TPH heavy hydrocarbons. The soils above the groundwater table only had minimal contamination with no detected TPH, suggesting that the compounds are being transported by the groundwater, and are retained in the capillary fringe as the groundwater table fluctuates. The combination of elevated TPH and PAHs may allow further migration of the strongly-sorbed PAHs than would otherwise occur.

The highest detected benzene concentration on the East parcel was 1,410 μg/kg in boring TtAB-30 at a depth of 34.5 feet bgs. This sample was described as sand with free hydrocarbons (see boring log in Appendix F of the RI Report). This boring is located next to the former oil-gas generating plant. Two nearby borings (TtAB-18 and TtAB-15) also had high VOCs due to the presence of free product. Benzene was 124 μg/kg at 30 feet bgs and 1,040 μg/kg at 35 feet bgs in a sample described as sand and gravel with free product. Dicyclopentadiene and naphthalene concentrations were also elevated in these two samples. Boring TtAB-15 had similar benzene concentrations (1,200 μg/kg) at a depth of 35.5 feet bgs in a gravelly sand sample with free phase hydrocarbons. This boring is on the edge of former Center Street, which ran next to the oil gas generating plant.

The highest TPH concentrations as diesel on the East parcel were 7,500 mg/kg in sample TtAB-24 at 31 feet bgs and 7,900 mg/kg in sample TtAB-23 at 31 feet bgs (Figure 5-4b of the RI Report). Boring TtAB-24 is between the oil-gas generating plant and the former boiler and engine room. The sample was collected from the sand above the groundwater table that had hydrocarbon odors and some clay and gravel. Another boring near TtAB-24 also had elevated TPH in a sample described as gravelly sand with free hydrocarbon fluid (5,900 mg/kg TPH-diesel and 7,800 mg/kg heavy TPH) at 31 feet bgs. Boring TtAB-23 is located next to the former oil tank. The sample was from sand and gravel zone near the groundwater table. A sample from below the water table at 35 5 feet bgs, described as sand stained by hydrocarbons, also had high TPH as diesel (6,370 mg/kg) Heavy TPH (i.e., TPH with a carbon range of C_{23} to C_{40}) concentrations were also elevated in this boring (2,600 mg/kg in sample TtAB-23 at 31 feet bgs) (Figure 5-4c of the RI Report)

The discussion of the extent of contamination in the lithologic layers below the water table is not included in this RAW and will be evaluated in a separate RAW for the groundwater management of the entire Aliso Street site

2.7 BUTADIENE-RELATED COMPOUNDS

Former butadiene processing facilities were located upgradient of the West parcel on Sector A and upgradient of the East parcel on Sector B The depths, where dicyclopentadiene was found, were near or below the water table, consistent with groundwater transport from upgradient The detected dicyclopentadiene concentrations in the samples of the East parcel were: TtAB-15 (74.5 µg/kg at a depth of 35 5 feet bgs); and TtAB-21 (557 µg/kg at a depth of 20.5 feet bgs and 144 µg/kg at a depth of 25.5 feet bgs). Some samples that had to be diluted during the lab analysis resulted in high detection limits The related compounds 1,3-butadiene and hexachlorobutadiene were not detected in any of the soil samples.

2.8 OTHER COMPOUNDS

VOCs. Other VOCs than mentioned above were detected in some samples as shown in Table 2-5. Some of these compounds are not MGP- or butadiene-related compounds, but instead are related to common fuel-related compounds, such as the trimethylbenzenes, MTBE, and solvents. MTBE was not detected in the soil samples, although it has been detected in groundwater samples. Solvents were also not detected in the soil samples, but have been detected in groundwater samples Sources of MTBE and solvents post-date the MGP/butadiene operations Known sources have been identified upgradient of Sector A [Tetra Tech, 2000 and 2001].

pH. The pH of the soil samples is listed in Table 2-9. The pH values in samples from the East parcel were all less than 10 and above 4.5 The samples with pH value less than 6 were also mostly from the fill material

Sulfides. Sulfides were not detected in the soils of East parcel.

Cyanide Compounds. Because cyanide compounds have been previously found at the Aliso Street MGP site, soil samples were analyzed to determine the extent of cyanide contamination. Cyanide results are included in Table 2-8. None of the detected cyanide concentrations exceeded the Residential Preliminary Remediation Goals (PRG) [U.S. EPA, 2000] or the Industrial PRGs for cyanide of 11 and 35 mg/kg, respectively The only sample with cyanide over 1 mg/kg on East parcel was from TtAB-19 at 10 feet (1 1 mg/kg) next to the former gasholder.

Metals. Table 2-7 includes metals data for Site soils. Soil samples were analyzed for the Title

22 CAM 17 metals. Antimony, arsenic, beryllium, cadmium, selenium, silver, and thallium were not detected in any of the soil samples. None of the metals exceeded the pertinent Industrial PRGs or the Residential PRGs, including the residential PRG for lead of 250 mg/kg[5]. Both the industrial and residential PRGs are listed in Table 2-7. The maximum lead concentration in the soil samples was 52 mg/kg from TtAB-24 at 5 feet on the East parcel. This boring is located on the top of the slope next to Center Street in an unpaved area currently used as a parking lot for storage of cars by the Los Angeles Police Department. The ranges of concentrations for the remaining detected metals are listed below:

- Barium: 22.1 to 146 mg/kg in ItAB-19 at 10 feet;
- Chromium: 2.9 to 75 mg/kg in TtAB-18 at 30 feet;
- Cobalt: 2.5 to 12.7 mg/kg in TtAB-19 at 10 feet;
- Copper: 3.4 to 44.4 mg/kg in TtAB-18 at 35 feet;
- Molybdenum: 2.7 mg/kg in TtAB-21-25.5 feet, only sample detected;
- Nickel: 2.5 to 35.1 mg/kg in TtAB-18 at 30 feet; and
- Vanadium: 13.3 to 47.4 mg/kg in TtAB-19 at 10 feet

[5] California Modified PRG from DISC lead spreadsheet model* (1994)

TABLE 2-1

Summary of borings, samples collected, and samples analyzed

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth	Date	PAHs 8310	Purgeables 8260B	8040	BETX 8020	TPH M8015	Metals 6010/7000CAM	Cyanide 9010B	pH 9045C/9040B	Sulfide	TO-14	Hydrogen Sulfide EPA-16	Total Organic Carbon 9060
TT-AB-14 @5'	5'	12/5/00	X	X			X			X				
TT-AB-14 @10'	10'	12/5/00	X	X			X			X				
TT-AB-14 @20.5'	20.5'	12/5/00	X	X			X			X				
TT-AB-14 @20.5'Dup	20.5'	12/5/00	X	X			X			X				
TT-AB-14 @25'	25'	12/5/00	X	X			X			X				
TT-AB-14 @31'	31'	12/5/00	X	X			X			X				
TT-AB-14 @35.5'	35.5'	12/5/00	X	X			X			X				
TT-AB-15 @5'	5'	12/4/00	X	X			X			X				
TT-AB-15 @10'	10'	12/4/00	X	X			X			X				
TT-AB-15 @20.5'	20.5'	12/4/00	X	X			X			X				
TT-AB-15 @25'	25'	12/4/00	X	X			X			X				
TT-AB-15 @30'	30'	12/4/00	X	X			X			X				
TT-AB-15 @35.5'	35.5'	12/4/00	X	X			X			X				
TT-AB-17- 5.5'	5.5'	12/1/00	X	X			X			X				
TT-AB-17-10'	10'	12/1/00	X	X			X			X				
TT-AB-17-10'Dup	10'	12/1/00	X	X			X			X				
TT-AB-17- 20.5'	20.5'	12/1/00	X	X			X			X				
TT-AB-17- 30.5'	30.5'	12/1/00	X	X			X			X				
TT-AB-17- 35.5'	35.5'	12/1/00	X	X			X			X				
TT-AB-18 @5'	5'	12/4/00	X	X			X			X				
TT-AB-18 @10'	10'	12/4/00	X	X			X			X				
TT-AB-18 @15'	15'	12/4/00	X				X	X	X	X				
TT-AB-18 @20'	20'	12/4/00	X	X			X			X				
TT-AB-18 @25'	25'	12/4/00						X	X					
TT-AB-18 @30'	30'	12/4/00	X	X			X	X	X	X				
TT-AB-18 @35'	35'	12/4/00	X	X			X	X	X	X				
TT-AB-19 @5.5'	5.5'	12/4/00	X	X			X			X				
TT-AB-19 @5.5'Dup	5.5'	12/4/00	X	X			X			X				
TT-AB-19 @10'	10'	12/4/00	X	X			X	X	X	X				
TT-AB-19 @21'	21'	12/4/00	X	X			X			X				
TT-AB-19 @25'	25'	12/4/00	X	X			X	X	X	X				
TT-AB-19 @31'	31'	12/4/00	X	X			X	X	X	X				
TT-AB-19 @35.5'	35.5'	12/4/00	X	X			X			X				
TT-AB-20 @5'	5'	12/4/00	X	X			X			X				
TT-AB-20 @10'	10'	12/4/00	X	X			X	X	X	X				
TT-AB-20 @20'	20'	12/4/00	X	X			X			X				
TT-AB-20 @26'	26'	12/4/00	X	X			X	X	X	X				
TT-AB-20 @31'	31'	12/4/00	X	X			X	X	X	X				

TABLE 2-1

Summary of borings, samples collected, and samples analyzed

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth	Date	PAHs 8310	Purgeables 8260B	8040	BETX 8020	TPH M8015	Metals 6010/7000CAM	Cyanide 9010B	pH 9045C/9040B	Sulfide	TO-14	Hydrogen Sulfide EPA-16	Total Organic Carbon 9060
TT-AB-20 @35'	35'	12/4/00	X	X			X			X				
TT-AB-21- 6.5'	6.5'	12/1/00	X	X			X			X				
TT-AB-21- 11.5'	11.5'	12/1/00	X	X			X			X				
TT-AB-21-15'	15'	12/1/00						X	X					
TT-AB-21- 20.5'	20.5'	12/1/00	X	X			X			X				
TT-AB-21-25'	25'	12/1/00						X	X					
TT-AB-21- 25.5'	25.5'	12/1/00	X	X			X	X	X	X				
TT-AB-23 @5'	5'	12/5/00	X	X			X			X				
TT-AB-23 @10'	10'	12/5/00	X	X			X			X				
TT-AB-23 @20.5'	20.5'	12/5/00	X	X			X			X				
TT-AB-23 @25'	25'	12/5/00	X	X			X			X				
TT-AB-23 @31'	31'	12/5/00	X	X			X			X				
TT-AB-23 @35.5'	35.5'	12/5/00	X	X			X			X				
TT-AB-24 @5'	5'	12/7/00	X	X			X	X		X				
TT-AB-24 @10.5'	10.5'	12/7/00	X	X			X			X				
TT-AB-24 @10.5'Dup	10.5'	12/7/00	X	X			X			X				
TT-AB-24 @15'	15'	12/7/00						X						
TT-AB-24 @20'	20'	12/7/00	X	X			X			X				
TT-AB-24 @31'	31'	12/7/00	X	X			X	X		X				
TT-AB-24 @35'	35'	12/7/00	X	X			X			X				
A-2-5' (see notes)	5	10/8/96	X	X		X	X	X						
A-2-10'	10	10/8/96	X	X		X	X	X						
A-2-15'	15	10/8/96	X			X	X							
A-2-20'	20	10/8/96	X	X		X	X	X						X
A-2-30'	30	10/8/96	X	X		X	X	X						
A-2-40'	40	10/8/96	X			X	X							X
A-3-0.5' (see notes)	0.5	10/3/96	X	X	X		X	X	X					
A-3-11'	11	10/3/96	X	X			X	X						
A-3-20'	20	10/4/96	X	X			X	X						X
A-3-25'	25	10/4/96	X				X							
A-3-31'	31	10/4/96	X	X			X	X						
A-3-39.5'	31	10/4/96												X
FD-EB-1A-3' (see notes	3	10/8/96							X					
FD-EB-1B-5'	5	10/8/96	X	X		X	X	X						
FD-EB-1B-10'	10	10/8/96	X	X		X	X	X						
FD-EB-1B-20'	20	10/8/96	X	X		X	X	X						X
FD-EB-1B-33'	33	10/8/96	X	X		X	X	X						
FD-EB-3-0.5'	0.5	10/4/96	X	X	X	X	X	X	X					

TABLE 2-1

Summary of borings, samples collected, and samples analyzed

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth	Date	PAHs 8310	Purgeables 8260B	8040	BETX 8020	TPH M8015	Metals 6010/7000CAM	Cyanide 9010B	pH 9045C/9040B	Sulfide	TO-14	Hydrogen Sulfide EPA-16	Total Organic Carbon 9060
FD-EB-3-5'	5	10/4/96	X	X		X	X	X						
FD-EB-3-10'	10	10/4/96	X	X		X	X	X						
FD-EB-3-20'	20	10/4/96	X	X		X	X	X						
FD-EB-3-25'	25	10/4/96	X			X	X							
FD-EB-3-30'	30	10/4/96	X	X		X	X	X						
FD-EB-3-40'	40	10/4/96												X
FD-EB-5-0.5'	0.5	10/4/96	X	X	X	X	X	X	X					
FD-EB-5-5'	5	10/4/96	X	X		X	X	X						
FD-EB-5-10'	10	10/4/96	X	X		X	X	X						
FD-EB-5-20'	20	10/4/96	X	X		X	X	X						X
FD-EB-5-30'	30	10/4/96	X	X		X	X	X						
FD-EB-5-35'	35	10/4/96	X											
FD-EB-5-40'	40	10/4/96												X
TT-AG-1 @5'	5'	12/27/00										X	X	
TT-AG-2 @5'	5'	12/27/00										X	X	
TT-AG-2 @15'	15'	12/27/00										X	X	
TT-AG-3 @5'	5'	12/27/00										X	X	
TT-AG-3 @15'	15'	12/27/00										X	X	
TT-AG-4 @5'	5'	12/27/00										X	X	
TT-AG-4 @15'	15'	12/27/00										X	X	
TT-AG-5 @5'	5'	12/27/00										X	X	
TT-AG-5 @15'	15'	12/27/00										X	X	
TT-AG-6 @5'	5'	12/27/00										X	X	
TT-AG-6 @15'	15'	12/27/00										X	X	
TT-AG-7 @5'	5'	12/27/00										X	X	
TT-AG-7 @15'	15'	12/27/00										X	X	
TT-AG-8 @5'	5'	12/27/00										X	X	
TT-AG-8 @15'	15'	12/27/00										X	X	
TT-AG-10 @5'	5'	12/27/00										X	X	
TT-AG-10 @15'	15'	12/27/00										X	X	
TT-AG-11 @5'	5'	12/27/00										X	X	
TT-AG-11 @15'	15'	12/27/00										X	X	
TT-AG-12 @5'	5'	12/27/00										X	X	
TT-AG-12 @15'	15'	12/27/00										X	X	
Total			**81**	**75**	**3**	**21**	**80**	**38**	**17**	**54**	**0**	**21**	**21**	**8**

***Note:** A-2 = FD-EB-2 and A-3 = FD-EB-4. FD-EB-1A is an offset boring of FD-EB-1B.*

TABLE 2-2

Carcinogenic polycyclic aromatic hydrocarbons (C-PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (ft)	Date	MDL	PQL	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Indeno(1,2,3-cd)pyrene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Sum of Carcinogenic PAHs(1)	B(a)P Equivalent Concentration (2)
TT-AB-14 @5'	5'	12/5/00	0.050	0.100	0.483	1.36	1.23	1.46	0.416	0.625	0.361	5.935	1.848
TT-AB-14 @10'	10'	12/5/00	0.100	0.200	0.488	1.9	1.87	2.45	0.536	0.668	0.701	8.613	2.679
TT-AB-14 @20.5'	20.5'	12/5/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-14 @20.5'Dup	20.5'	12/5/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-14 @25'	25'	12/5/00	0.050	0.100	0.177	0.646	0.705	1.04	0.197	0.229	0.307	3.301	0.965
TT-AB-14 @31'	31'	12/5/00	0.200	0.400	6.5	9.56	8.01	5.79	2.85	6.5	1.9	41.11	12.586
TT-AB-14 @35.5'	35.5'	12/5/00	0.010	0.020	0.046	0.071	0.059	0.055	0.022	0.05	0.025	0.328	0.098
TT-AB-15 @5'	5'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-15 @10'	10'	12/4/00	0.010	0.020	<0.02	0.014	0.013	0.015	<0.02	<0.02	<0.02	0.082	0.022
TT-AB-15 @20.5'	20.5'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-15 @25'	25'	12/4/00	0.200	0.400	2.55	3.88	3.06	2.32	1.23	3.13	0.682	16.852	5.059
TT-AB-15 @30'	30'	12/4/00	0.400	0.800	5.65	4.72	4.65	2.69	1.46	5.17	2.43	26.77	7.043
TT-AB-15 @35.5'	35.5'	12/4/00	0.200	0.400	2.11	3.4	2.85	1.85	1.11	2.74	0.827	14.887	4.501
TT-AB-17- 5.5'	5.5'	12/1/00	0.020	0.040	0.075	0.638	0.507	1.79	0.182	0.104	0.253	3.549	0.980
TT-AB-17-10'	10'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-17-10'Dup	10'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-17- 20.5'	20.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-17- 30.5'	30.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-17- 35.5'	35.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-18 @5'	5'	12/4/00	0.010	0.020	<0.02	0.021	0.019	0.026	<0.02	<0.02	0.013	0.109	0.032
TT-AB-18 @10'	10'	12/4/00	0.010	0.020	0.061	0.242	0.225	0.256	0.075	0.061	0.081	1.001	0.332
TT-AB-18 @15'	15'	12/4/00	0.010	0.020	<0.02	0.029	0.026	0.025	<0.02	0.011	<0.02	0.121	0.040
TT-AB-18 @20'	20'	12/4/00	0.040	0.080	0.162	0.459	0.434	0.328	0.144	0.245	0.207	1.979	0.639
TT-AB-18 @30'	30'	12/4/00	0.200	0.400	1.61	3.63	3.23	2.24	1.08	2.26	0.48	14.53	4.632
TT-AB-18 @35'	35'	12/4/00	0.200	0.400	1.32	1.99	1.78	1.12	0.536	1.82	0.749	9.315	2.738
TT-AB-19 @5.5'	5.5'	12/4/00	0.050	0.100	0.286	0.655	0.557	0.608	0.206	0.323	0.155	2.79	0.877
TT-AB-19 @5.5'Dup	5.5'	12/4/00	0.050	0.100	0.496	1.22	1.06	1.04	0.386	0.534	0.223	4.959	1.599
TT-AB-19 @10'	10'	12/4/00	0.010	0.020	0.052	0.112	0.096	0.085	0.036	0.046	0.02	0.447	0.146
TT-AB-19 @21'	21'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-19 @25'	25'	12/4/00	0.100	0.200	0.751	1.85	1.32	1.67	0.477	0.905	0.903	7.876	2.588
TT-AB-19 @31'	31'	12/4/00	0.040	0.080	2.99	1	1.37	0.609	0.39	3.56	<0.08	9.959	1.585
TT-AB-19 @35.5'	35.5'	12/4/00	0.100	0.200	1.86	0.71	0.904	0.491	0.208	3.16	0.1	7.433	1.122
TT-AB-20 @5'	5'	12/4/00	0.500	i	9.87	24.6	19.9	21.5	6.81	9.92	3.38	95.98	**31.656**
TT-AB-20 @10'	10'	12/4/00	0.250	0.500	3.71	7.46	5.82	4.29	2.44	3.71	1.i	28.53	**9.497**
TT-AB-20 @20'	20'	12/4/00	0.010	0.020	0.014	0.036	0.03	0.026	<0.02	0.015	0.042	0.173	0.058
TT-AB-20 @26'	26'	12/4/00	0.100	0.200	2	2.92	2.59	2.06	0.859	2.64	0.874	13.943	3.994
TT-AB-20 @31'	31'	12/4/00	0.100	0.200	5.86	1.07	1.49	0.571	0.281	9.66	0.1	19.032	2.021

TABLE 2-2

Carcinogenic polycyclic aromatic hydrocarbons (C-PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (ft)	Date	MDL	PQL	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Indeno(1,2,3-cd)pyrene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Sum of Carcinogenic PAHs(1)	B(a)P Equivalent Concentration (2)
TT-AB-20 @35'	35'	12/4/00	0.200	0.400	3.68	1.73	1.96	0.837	0.36	3.67	0.2	12.437	2.518
TT-AB-21- 6.5'	6.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-21- 11.5'	11.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
TT-AB-21- 20.5'	20.5'	12/1/00	2	4	45.9	69.6	42.5	30.9	22.8	56.5	20.4	288.6	91.311
TT-AB-21- 25.5'	25.5'	12/1/00	1	2	14.8	23.6	15.3	13.3	7.24	16.2	5.6	96.04	30.730
TT-AB-23 @5'	5'	12/5/00	0.050	0.100	0.069	0.29	0.293	0.418	0.093	0.103	0.15	1.416	0.429
TT-AB-23 @10'	10'	12/5/00	0.050	0.100	0.156	0.596	0.507	0.46	0.167	0.253	0.086	2.225	0.757
TT-AB-23 @20.5'	20.5'	12/5/00	2	4	29.9	93.4	68.4	56.5	22.3	33.1	5.19	308.79	113.206
TT-AB-23 @25'	25'	12/5/00	0.200	0.400	5.52	9.57	7.27	5.26	2.96	7.25	1.79	39.62	12.352
TT-AB-23 @31'	31'	12/5/00	0.200	0.400	4.26	2.45	2.59	1.5	0.695	5.07	0.2	16.765	3.473
TT-AB-23 @35.5'	35.5'	12/5/00	0.200	0.400	4.78	5.31	4.58	3.22	1.6	5.65	2.37	27.51	7.590
TT-AB-24 @5'	5'	12/7/00	4	8	49.4	189	164	163	58.4	72.7	44.3	740.8	**248.269**
TT-AB-24 @10.5'	10.5'	12/7/00	0.010	0.020	0.02	0.074	0.062	0.073	0.02	0.026	0.026	0.301	0.101
TT-AB-24 @10.5'Dup	10.5'	12/7/00	0.500	1	4.82	11.6	8.66	7.23	3.81	5.41	1.22	42.75	**14.521**
TT-AB-24 @20'	20'	12/7/00	0.200	0.400	1.23	2.69	2.1	1.9	0.83	1.4	0.385	10.535	3.441
TT-AB-24 @31'	31'	12/7/00	0.200	0.400	9.78	2.31	3.03	1.41	0.698	8.96	0.2	26.388	3.959
TT-AB-24 @35'	35'	12/7/00	0.040	0.080	1.5	0.364	0.476	0.196	0.091	1.37	<0.08	4.037	0.618
A-2-5'	5	10/8/96		1	2.33	3.36	2.57	<1	13	8.96	4.13	34.85	6.694
A-2-10'	10	10/8/96		0.2	0.658	1.07	1.1	0.816	0.636	1.87	2.24	8.39	2.171
A-2-15'	15	10/8/96		1	31.9	27.2	15.8	<1	8.2	137	<1	221.1	34.380
A-2-20'	20	10/8/96		1	36.1	8.37	6.93	<1	4.67	26.6	<1	83.67	13.626
A-2-30'	30	10/8/96		1	5.96	5.6	3.78	<1	2.14	6.35	2.57	26.9	7.775
A-2-40'	40	10/8/96		0.04	0.465	0.438	0.433	0.121	0.166	2.12	0.269	4.012	0.669
A-3-0.5'	0.5	10/3/96		0.02	1.55	3.25	2.74	0.646	1.12	1.81	4.25	15.366	5.319
A-3-11'	11	10/3/96		0.02	0.962	1.21	1.05	0.484	0.565	3.01	0.944	8.225	1.867
A-3-20'	20	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
A-3-25'	25	10/4/96		0.4	<0.40	1.41	2.16	<0.40	<0.40	<0.40	3.29	7.66	2.807
A-3-31'	31	10/4/96		0.1	0.51	2.86	0.55	<0.1	2.73	1.66	<0.1	8.41	3.278
FD-EB-1B-5'	5	10/8/96		0.02	0.121	0.064	0.056	0.027	0.027	0.104	0.071	0.47	0.112
FD-EB-1B-10'	10	10/8/96		1	87.1	80.1	54.2	33.1	31.9	305	33.5	624.9	**115.170**
FD-EB-1B-20'	20	10/8/96		1	22.6	21.9	15.2	<1	7.83	85.5	<1	154.03	27.538
FD-EB-1B-33'	33	10/8/96		0.2	5.6	2.81	2.44	<0.2	<0.2	7.6	<0.2	18.75	3.744
FD-EB-3-0.5'	0.5	10/4/96		0.1	4.17	1.03	0.982	0.935	0.442	2.99	1.13	11.679	2.097
FD-EB-3-5'	5	10/4/96		0.02	0.042	0.086	0.074	0.119	0.031	0.047	0.109	0.508	0.150
FD-EB-3-10'	10	10/4/96		0.04	0.074	0.119	0.097	0.091	0.045	0.083	0.124	0.633	0.193
FD-EB-3-20'	20	10/4/96		1	11.5	13.8	12	10.6	6.22	15.2	13.4	82.72	22.540
FD-EB-3-25'	25	10/4/96		2	21.8	16.5	13.7	3.9	6.64	76	13	151.54	26.284

TABLE 2-2

Carcinogenic polycyclic aromatic hydrocarbons (C-PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (ft)	Date	MDL	PQL	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Indeno(1,2,3-cd)pyrene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Sum of Carcinogenic PAHs(1)	B(a)P Equivalent Concentration (2)
FD-EB-3-30'	30	10/4/96		0.1	3.41	1.41	1.25	1.68	<0.1	5.8	<0.1	13.65	2.124
FD-EB-5-0.5'	0.5	10/4/96		0.1	1.39	2.51	2.07	3.1	0.895	1.55	2.81	14.325	4.226
FD-EB-5-5'	5	10/4/96		1	5.52	8.2	6.9	7.25	2.95	5.77	8	44.59	**13.240**
FD-EB-5-10'	10	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
FD-EB-5-20'	20	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	ND
FD-EB-5-30'	30	10/4/96		0.1	9.01	2.9	2.96	<0.1	2.22	15.2	<0.1	32.39	4.493
FD-EB-5-35'	35	10/4/96		0.2	10.9	5.69	5.29	1.54	6.69	13.1	2.99	46.2	9.280

1. See the text for explanation of procedure as how the sum of C-PAHs has been calculated.
2. See the text for explanation of procedure as how the B(a)P equivalent values have been calculated.

<: Compound not detected at or above detection limit. Value shown in the Table is the detection limit (PQL) of the compound for the analytical process.

Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-3

Noncarcinogenic polycyclic aromatic hydrocarbons (NC-PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (ft)	Date	MDL	PQL	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalene	Phenan-threne	Pyrene	Sum of Non-Carcinogenic PAHs(1)
TT-AB-14 @5'	5'	12/5/00	0.050	0.100	1.34	<0.10	0.153	1.59	1.43	<0.10	1.34	1.25	1.84	9.04
TT-AB-14 @10'	10'	12/5/00	0.100	0.200	<0.20	<0.20	0.164	3.26	1.91	<0.20	2.4	1.45	2.9	12.38
TT-AB-14 @20.5'	20.5'	12/5/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-14 @20.5'Dup	20.5'	12/5/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-14 @25'	25'	12/5/00	0.050	0.100	<0.10	<0.10	0.078	1.24	0.607	<0.10	0.535	0.491	0.883	3.98
TT-AB-14 @31'	31'	12/5/00	0.200	0.400	28.3	1.65	10.9	5.02	29.9	15	341	64.7	30.4	526.87
TT-AB-14 @35.5'	35.5'	12/5/00	0.010	0.020	0.088	<0.02	0.065	0.057	0.178	0.066	0.264	0.353	0.193	1.27
TT-AB-15 @5'	5'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-15 @10'	10'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	0.011	0.031	<0.02	<0.02	0.028	0.035	0.16
TT-AB-15 @20.5'	20.5'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-15 @25'	25'	12/4/00	0.200	0.400	15.2	0.473	5.92	1.95	11	5.53	<0.40	28.8	11.2	80.27
TT-AB-15 @30'	30'	12/4/00	0.400	0.800	19.8	<0.80	6.73	1.98	12.9	9.11	237	46.1	13.9	347.92
TT-AB-15 @35.5'	35.5'	12/4/00	0.200	0.400	9.23	<0.40	5.36	1.7	9.88	4.53	42.4	24.5	9.89	107.69
TT-AB-17- 5.5'	5.5'	12/1/00	0.020	0.040	<0.04	<0.04	<0.04	2.15	0.282	<0.04	<0.04	0.055	0.754	3.34
TT-AB-17-10'	10'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-17-10'Dup	10'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-17- 20.5'	20.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09
TT-AB-17- 30.5'	30.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-17- 35.5'	35.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.018	0.10
TT-AB-18 @5'	5'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	0.025	0.019	<0.02	<0.02	0.014	0.028	0.14
TT-AB-18 @10'	10'	12/4/00	0.010	0.020	<0.02	<0.02	0.023	0.284	0.199	<0.02	0.02	0.107	0.248	0.91
TT-AB-18 @15'	15'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	0.028	0.052	<0.02	<0.02	0.04	0.064	0.23
TT-AB-18 @20'	20'	12/4/00	0.040	0.080	0.486	<0.08	0.262	0.401	0.98	0.279	2.64	1.5	1.13	7.72
TT-AB-18 @30'	30'	12/4/00	0.200	0.400	9.49	<0.40	3.74	2.27	10.8	5.35	125	27.6	11.4	195.85
TT-AB-18 @35'	35'	12/4/00	0.200	0.400	4.79	<0.40	2.15	1.33	5.81	2.58	68.7	12.4	6.75	104.71
TT-AB-19 @5.5'	5.5'	12/4/00	0.050	0.100	<0.10	0.133	0.162	0.587	1.51	0.088	0.949	1.73	1.83	7.04
TT-AB-19 @5.5'Dup	5.5'	12/4/00	0.050	0.100	0.062	0.211	0.361	1.09	2.63	0.181	0.284	2.92	3.22	10.96
TT-AB-19 @10'	10'	12/4/00	0.010	0.020	0.02	0.014	0.051	0.094	0.258	0.025	0.158	0.303	0.298	1.22
TT-AB-19 @21'	21'	12/4/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	0.022	<0.02	<0.02	0.035	0.023	0.14
TT-AB-19 @25'	25'	12/4/00	0.100	0.200	1.16	<0.20	0.501	1.47	1.53	0.61	21.6	4.7	1.72	33.39
TT-AB-19 @31'	31'	12/4/00	0.040	0.080	5.35	<0.08	1.52	<0.08	3.07	2.87	<0.08	12.2	3.62	28.75
TT-AB-19 @35.5'	35.5'	12/4/00	0.100	0.200	3.38	3.38	1.01	<0.20	2.07	1.51	0.16	9.56	2.5	23.67
TT-AB-20 @5'	5'	12/4/00	0.500	1	<1.0	<1.0	3.31	22.7	46.8	<1.0	<1.0	24.5	60.5	159.81
TT-AB-20 @10'	10'	12/4/00	0.250	0.500	<0.50	<0.50	1.33	4.12	18.7	<0.50	<0.50	7.14	20.1	52.39
TT-AB-20 @20'	20'	12/4/00	0.010	0.020	<0.02	<0.02	0.011	0.026	0.09	<0.02	<0.02	0.049	0.11	0.33
TT-AB-20 @26'	26'	12/4/00	0.100	0.200	6.29	2.15	3.1	1.49	8.48	4.49	144	21.7	9.09	200.79
TT-AB-20 @31'	31'	12/4/00	0.100	0.200	6.53	<0.20	1.44	<0.20	2.96	2.6	0.126	15.7	3.53	33.09

TABLE 2-3

Noncarcinogenic polycyclic aromatic hydrocarbons (NC-PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (ft)	Date	MDL	PQL	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalene	Phenan-threne	Pyrene	Sum of Non-Carcinogenic PAHs(1)
TT-AB-20 @35'	35'	12/4/00	0.200	0.400	6.51	<0.40	1.94	0.622	5.04	2.53	<0.40	17.1	6	40.14
TT-AB-21- 6.5'	6.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
TT-AB-21- 11.5'	11.5'	12/1/00	0.010	0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.035	<0.02	0.12
TT-AB-21- 20.5'	20.5'	12/1/00	2	4	24.6	24.3	46.8	20.3	192	95.7	1240	512	220	2375.70
TT-AB-21- 25.5'	25.5'	12/1/00	1	2	4.71	12.8	17.6	10.2	51.3	37.5	487	167	67.5	855.61
TT-AB-23 @5'	5'	12/5/00	0.050	0.100	<0.10	<0.10	<0.10	0.45	0.28	<0.10	<0.10	0.132	0.399	1.51
TT-AB-23 @10'	10'	12/5/00	0.050	0.100	<0.10	<0.10	0.074	0.616	0.996	<0.10	<0.10	0.575	1.47	3.93
TT-AB-23 @20.5'	20.5'	12/5/00	2	4	18.7	58.9	60.6	70.3	275	55.6	1100	529	346	2514.10
TT-AB-23 @25'	25'	12/5/00	0.200	0.400	21.3	3.4	13.4	4.68	31.1	24.3	467	91.5	35.5	692.18
TT-AB-23 @31'	31'	12/5/00	0.200	0.400	7.25	<0.40	3.02	0.973	7.09	5.34	82.6	33.9	9.03	149.40
TT-AB-23 @35.5'	35.5'	12/5/00	0.200	0.400	9.12	2.77	5.59	2.8	16.9	8.23	151	47.7	21.8	265.91
TT-AB-24 @5'	5'	12/7/00	4	8	31	<8.0	35.5	164	316	12.5	22.3	293	460	1338.30
TT-AB-24 @10.5'	10.5'	12/7/00	0.010	0.020	<0.02	<0.02	0.015	0.075	0.102	<0.02	0.011	0.11	0.135	0.48
TT-AB-24 @10.5'Dup	10.5'	12/7/00	0.500	1	<1.0	<1.0	3.39	6.29	12.9	1.24	<1.0	16.2	14.6	56.12
TT-AB-24 @20'	20'	12/7/00	0.200	0.400	0.662	0.776	1.3	1.79	6.23	2.5	6.88	12.5	6.69	39.33
TT-AB-24 @31'	31'	12/7/00	0.200	0.400	10.9	<0.40	2.67	<0.40	7.08	6.78	70.8	31.4	7.37	137.40
TT-AB-24 @35'	35'	12/7/00	0.040	0.080	1.81	<0.08	0.519	<0.08	1.11	1	3.96	5.67	1.26	15.41
A-2-5'	5	10/8/96		1	<1.0	2.36	<1.0	<1.0	4.22	<1.0	<1.0	5.99	4.51	19.58
A-2-10'	10	10/8/96		0.2	<0.2	<0.2	<0.2	<0.2	1.07	<0.2	1.26	0.445	i.19	4.47
A-2-15'	15	10/8/96		i	<1.0	13.5	8.39	<1.0	64.4	162	456	208	84.7	997.99
A-2-20'	20	10/8/96		1	<1.0	<1.0	<1.0	<1.0	16.4	28.3	93	59	21.5	220.20
A-2-30'	30	10/8/96		1	9.92	<1.0	11.7	2.77	29.2	5.22	94.2	28	21.7	203.21
A-2-40'	40	10/8/96		0.04	<0.04	<0.04	0.284	<0.04	0.85	0.593	0.254	0.868	1.11	4.02
A-3-0.5'	0.5	10/3/96		0.02	<0.02	<0.02	<0.02	<0.02	4.34	<0.02	<0.02	1.99	5.82	12.210
A-3-11'	11	10/3/96		0.02	<0.02	0.556	0.594	<0.02	3.73	0.688	<0.02	4.02	3.34	12.958
A-3-20'	20	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	0.056	<0.02	<0.02	<0.02	0.056	0.182
A-3-25'	25	10/4/96		0.4	3.27	1.26	<0.4	<0.4	<0.4	2.48	30.2	<0.4	5.58	43.590
A-3-31'	31	10/4/96		0.1	1.19	<0.1	<0.1	<0.1	1.19	0.63	7.14	1.8	1.09	13.190
FD-EB-1B-5'	5	10/8/96		0.02	<0.02	<0.02	<0.02	<0.02	0.065	<0.02	0.05	0.022	0.088	0.28
FD-EB-1B-10'	10	10/8/96		i	<1.0	<1.0	<1.0	<1.0	342	38.8	<1.0	288	256	927.30
FD-EB-1B-20'	20	10/8/96		1	<1.0	<1.0	10.7	<1.0	51	140	330	159	59.9	752.10
FD-EB-1B-33'	33	10/8/96		0.2	4.37	<0.2	3.99	<0.2	4.96	3.74	47.5	15	6.14	85.90
FD-EB-3-0.5'	0.5	10/4/96		0.1	0.324	<0.10	0.666	<0.10	<0.10	0.923	4.56	2.61	2.76	11.99
FD-EB-3-5'	5	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	0.086	<0.02	<0.02	<0.02	0.145	0.30
FD-EB-3-10'	10	10/4/96		0.04	<0.04	<0.04	<0.04	<0.04	0.234	<0.04	<0.04	0.65	0.2	1.20
FD-EB-3-20'	20	10/4/96		1	<1.0	6.4	16.5	<1.0	40.2	53.7	20.3	46.5	18.6	203.20
FD-EB-3-25'	25	10/4/96		2	34.8	<2	22.6	<2	41.6	64	30.1	82	39.8	316.90

TABLE 2-3

Noncarcinogenic polycyclic aromatic hydrocarbons (NC-PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (ft)	Date	MDL	PQL	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalene	Phenan-threne	Pyrene	Sum of Non-Carcinogenic PAHs(1)
FD-EB-3-30'	30	10/4/96		0.1	3.8	<0.10	<0.10	<0.10	20.6	2.38	38.3	9.04	4	78.27
FD-EB-5-0.5'	0.5	10/4/96		0.1	<0.10	<0.10	0.325	<0.10	3.53	<0.10	<0.10	1.4	4.94	10.45
FD-EB-5-5'	5	10/4/96		1	<1.0	<1.0	<1.0	<1.0	20.1	<1.0	<1.0	7.35	16.7	47.15
FD-EB-5-10'	10	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
FD-EB-5-20'	20	10/4/96		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND
FD-EB-5-30'	30	10/4/96		0.1	10.4	<0.10	4.75	<0.10	73.6	5.6	54.2	20.4	14.1	183.15
FD-EB-5-35'	35	10/4/96		0.2	17.6	1.32	<0.2	4.34	9.01	14.9	181	25.2	9.88	263.35

1. See the text for explanation of procedure as how the sum of non-carcinogenic PAHs has been calculated.

<: Compound not detected at or above detection limit. Value shown in the Table is the detection limit (PQL) of the compound for the analytic process.

Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-4

Total Polycyclic aromatic hydrocarbons (PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Data organized based on depth of the sample

Sample Number	Depth (ft)	Date	Sum of Carcinogenic PAHs(1)	Sum of Non-Carcinogenic PAHs(2)	Total PAHs(3)	Sum of Carcinogenic B(a)P Equivalent Concentration
A-3-0.5'	0.5	10/3/96	15.366	12.210	27.576	5.319
FD-EB-3-0.5'	0.5	10/4/96	11.679	11.99	23.672	2.097
FD-EB-5-0.5'	0.5	10/4/96	14.325	10.45	24.770	4.226
TT-AB-14 @5'	5	12/5/00	5.935	9.04	14.978	1.848
TT-AB-15 @5'	5	12/4/00	ND	ND	ND	ND
TT-AB-18 @5'	5	12/4/00	0.109	0.14	0.245	0.032
TT-AB-20 @5'	5	12/4/00	95.98	159.81	255.790	**31.656**
TT-AB-23 @5'	5	12/5/00	1.416	1.51	2.927	0.429
TT-AB-24 @5'	5	12/7/00	740.8	1338.30	2079.100	**248.269**
A-2-5'	5	10/8/96	34.85	19.58	54.430	6.694
FD-EB-1B-5'	5	10/8/96	0.47	0.28	0.745	0.112
FD-EB-3-5'	5	10/4/96	0.508	0.30	0.809	0.150
FD-EB-5-5'	5	10/4/96	44.59	47.15	91.740	**13.240**
TT-AB-17- 5.5'	5.5	12/1/00	3.549	3.34	6.890	0.980
TT-AB-19 @5.5'	5.5	12/4/00	2.79	7.04	9.829	0.877
TT-AB-19 @5.5'Dup	5.5	12/4/00	4.959	10.96	15.918	1.599
TT-AB-21- 6.5'	6.5	12/1/00	ND	ND	ND	ND
TT-AB-14 @10'	10	12/5/00	8.613	12.38	20.997	2.679
TT-AB-15 @10'	10	12/4/00	0.082	0.16	0.237	0.022
TT-AB-17-10'	10	12/1/00	ND	ND	ND	ND
TT-AB-17-10'Dup	10	12/1/00	ND	ND	ND	ND
TT-AB-18 @10'	10	12/4/00	1.001	0.91	1.912	0.332
TT-AB-19 @10'	10	12/4/00	0.447	1.22	1.668	0.146
TT-AB-20 @10'	10	12/4/00	28.53	52.39	80.920	**9.497**
TT-AB-23 @10'	10	12/5/00	2.225	3.93	6.156	0.757
A-2-10'	10	10/8/96	8.39	4.47	12.855	2.171
FD-EB-1B-10'	10	10/8/96	624.9	927.30	1552.200	**115.170**
FD-EB-3-10'	10	10/4/96	0.633	1.20	1.837	0.193
FD-EB-5-10'	10	10/4/96	ND	ND	ND	ND
TT-AB-24 @10.5'	10.5	12/7/00	0.301	0.48	0.779	0.101
TT-AB-24 @10.5'Dup	10.5	12/7/00	42.75	56.12	98.870	**14.521**
A-3-11'	11	10/3/96	8.225	12.958	21.183	1.867
TT-AB-21- 11.5'	11.5	12/1/00	ND	0.12	0.115	ND
TT-AB-18 @15'	15	12/4/00	0.121	0.23	0.355	0.040
A-2-15'	15	10/8/96	221.1	997.99	1219.090	34.380
TT-AB-18 @20'	20	12/4/00	1.979	7.72	9.697	0.639

TABLE 2-4

Total Polycyclic aromatic hydrocarbons (PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Data organized based on depth of the sample

Sample Number	Depth (ft)	Date	Sum of Carcinogenic PAHs(1)	Sum of Non-Carcinogenic PAHs(2)	Total PAHs(3)	Sum of Carcinogenic B(a)P Equivalent Concentration
TT-AB-20 @20'	20	12/4/00	0.173	0.33	0.499	0.058
TT-AB-24 @20'	20	12/7/00	10.535	39.33	49.863	3.441
A-2-20'	20	10/8/96	83.67	220.20	303.870	13.626
A-3-20'	20	10/4/96	ND	0.182	0.182	ND
FD-EB-1B-20'	20	10/8/96	154.03	752.10	906.130	27.538
FD-EB-3-20'	20	10/4/96	82.72	203.20	285.920	22.540
FD-EB-5-20'	20	10/4/96	ND	ND	ND	ND
TT-AB-14 @20.5'	20.5	12/5/00	ND	ND	ND	ND
TT-AB-14 @20.5'Dup	20.5	12/5/00	ND	ND	ND	ND
TT-AB-15 @20.5'	20.5	12/4/00	ND	ND	ND	ND
TT-AB-17- 20.5'	20.5	12/1/00	ND	0.09	0.090	ND
TT-AB-21- 20.5'	20.5	12/1/00	288.6	2375.70	2664.300	91.311
TT-AB-23 @20.5'	20.5	12/5/00	308.79	2514.10	2822.890	113.206
TT-AB-19 @21'	21	12/4/00	ND	0.14	0.140	ND
TT-AB-14 @25'	25	12/5/00	3.301	3.98	7.285	0.965
TT-AB-15 @25'	25	12/4/00	16.852	80.27	97.125	5.059
TT-AB-19 @25'	25	12/4/00	7.876	33.39	41.267	2.588
TT-AB-23 @25'	25	12/5/00	39.62	692.18	731.800	12.352
A-3-25'	25	10/4/96	7.66	43.590	51.25	2.807
FD-EB-3-25'	25	10/4/96	151.54	316.90	468.440	26.284
TT-AB-21- 25.5'	25.5	12/1/00	96.04	855.61	951.650	30.730
TT-AB-20 @26'	26	12/4/00	13.943	200.79	214.733	3.994
TT-AB-15 @30'	30	12/4/00	26.77	347.92	374.690	7.043
TT-AB-18 @30'	30	12/4/00	14.53	195.85	210.380	4.632
A-2-30'	30	10/8/96	26.9	203.21	230.110	7.775
FD-EB-3-30'	30	10/4/96	13.65	78.27	91.920	2.124
FD-EB-5-30'	30	10/4/96	32.39	183.15	215.540	4.493
TT-AB-17- 30.5'	30.5	12/1/00	ND	ND	ND	ND
TT-AB-14 @31'	31	12/5/00	41.11	526.87	567.980	12.586
TT-AB-19 @31'	31	12/4/00	9.959	28.75	38.709	1.585
TT-AB-20 @31'	31	12/4/00	19.032	33.09	52.118	2.021
TT-AB-23 @31'	31	12/5/00	16.765	149.40	166.168	3.473
TT-AB-24 @31'	31	12/7/00	26.388	137.40	163.788	3.959
A-3-31'	31	10/4/96	8.41	13.190	21.6	3.278
FD-EB-1B-33'	33	10/8/96	18.75	85.90	104.650	3.744
TT-AB-18 @35'	35	12/4/00	9.315	104.71	114.025	2.738
TT-AB-20 @35'	35	12/4/00	12.437	40.14	52.579	2.518

TABLE 2-4

Total Polycyclic aromatic hydrocarbons (PAHs) (EPA Method 8310), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Data organized based on depth of the sample

Sample Number	Depth (ft)	Date	Sum of Carcinogenic PAHs(1)	Sum of Non-Carcinogenic PAHs(2)	Total PAHs(3)	Sum of Carcinogenic B(a)P Equivalent Concentration
TT-AB-24 @35'	35	12/7/00	4.037	15.41	19.446	0.618
FD-EB-5-35'	35	10/4/96	46.2	263.35	309.550	9.280
TT-AB-14 @35.5'	35.5	12/5/00	0.328	1.27	1.602	0.098
TT-AB-15 @35.5'	35.5	12/4/00	14.887	107.69	122.577	4.501
TT-AB-17- 35.5'	35.5	12/1/00	ND	0.10	0.098	ND
TT-AB-19 @35.5'	35.5	12/4/00	7.433	23.67	31.103	1.122
TT-AB-23 @35.5'	35.5	12/5/00	27.51	265.91	293.420	7.590
A-2-40'	40	10/8/96	4.012	4.02	8.031	0.669

1. Data are from Table 2-2.
2. Data are from Table 2-3.
3. Sum of carcinogenic and non-carcinogenic PAHs.

Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

			TT-AB-14 @5	TT-AB-14 @10	TT-AB-14 @20.5	TT-AB-14 @20.5'Dup	TT-AB-14 @25
Analyte	MDL	PQL	12/5/00	12/5/00	12/5/00	12/5/00	12/5/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	7.9	<10.0	<10.0	5.2
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	6.1	<10.0	<10.0	<10.0
1,3-Butadiene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
2-Butanone (MEK)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
2-Hexanone	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	1-34,000	1-68,000	<50.0	35.8	<50.0	<50.0	<50.0
Benzene	0.5-2,720	0.5-13,600	**180.0**	**292.0**	<10.0	<10.0	**193.0**
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Bromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Chlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroethane	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Dibromomethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Dichlorodifluoromethane	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Dicyclopentadiene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Ethylbenzene	0.5-2,720	0.5-13,600	<10.0	10.1	<10.0	<10.0	6.4
Ferrocene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Hexachlorobutadiene	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Isopropylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
m,p-Xylenes	1-2,720	1-27,200	<20.0	16.5	<20.0	<20.0	9.6
Methylene chloride (DCM)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Naphthalene	1-6,800	1-13,600	<10.0	29.7	<10.0	<10.0	<10.0
n-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
o-Xylene	0.5-2,720	0.5-13,600	<10.0	7.4	<10.0	<10.0	<10.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Styrene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	5.6	51.6	<10.0	<10.0	27.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Trichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Vinyl Acetate	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

			TT-AB-14 @31'	TT-AB-14 @35.5'	TT-AB-15 @5'	TT-AB-15 @10'	TT-AB-15 @20.5'
Analyte	MDL	PQL	12/5/00	12/5/00	12/4/00	12/4/00	12/4/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,3-Butadiene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
2-Butanone (MEK)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
2-Hexanone	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
Acetone	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
Benzene	0.5-2,720	0.5-13,600	<50.0	23.3	6.6	<10.0	<10.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Bromochloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<30.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Chlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Chloroethane	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<30.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<30.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Dibromomethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Dichlorodifluoromethane	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<30.0
Dicyclopentadiene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Ethylbenzene	0.5-2,720	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Ferrocene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Hexachlorobutadiene	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<30.0
Isopropylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
m,p-Xylenes	1-2,720	1-27,200	<100.0	<20.0	<20.0	<20.0	<20.0
Methylene chloride (DCM)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Naphthalene	1-6,800	1-13,600	7,670.0	106.0	7.5	<10.0	28.5
n-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
o-Xylene	0.5-2,720	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	67.5	<10.0	<10.0	<10.0	<10.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Styrene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	153.0	<10.0	<10.0	<10.0	<10.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Trichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<10.0
Vinyl Acetate	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<30.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

			TT-AB-15 @25	TT-AB-15 @30'	TT-AB-15 @35.5	TT-AB-17- 5.5'	TT-AB-17-10'
Analyte	MDL	PQL	12/4/00	12/4/00	12/4/00	12/1/00	12/1/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	213.0	<10.0	<10.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	1,420.0	<10.0	<10.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<50.0	44.0	1,310.0	<10.0	<10.0
1,3-Butadiene	1-6,800	1-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
2-Butanone (MEK)	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
2-Hexanone	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
Acetone	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
Benzene	0.5-2,720	0.5-13,600	<50.0	<50.0	**1,200.0**	16.9	<10.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Bromochloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<150.0	<150.0	<150.0	<30.0	<30.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Chlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Chloroethane	1-20,400	1-40,800	<150.0	<150.0	<150.0	<30.0	<30.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<150.0	<150.0	<150.0	<30.0	<30.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Dibromomethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Dichlorodifluoromethane	1-20,400	1-40,800	<150.0	<150.0	<150.0	<30.0	<30.0
Dicyclopentadiene	1-6,800	1-13,600	<50.0	<50.0	74.5	<10.0	<10.0
Ethylbenzene	0.5-2,720	0.5-13,600	<50.0	341.0	11,700.0	<10.0	<10.0
Ferrocene	1-6,800	1-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Hexachlorobutadiene	1-20,400	1-40,800	<150.0	<150.0	<150.0	<30.0	<30.0
Isopropylbenzene	0.5-6,800	0.5-13,600	34.5	409.0	3,010.0	<10.0	<10.0
m,p-Xylenes	1-2,720	1-27,200	<100.0	31.0	1,520.0	<20.0	<20.0
Methylene chloride (DCM)	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Naphthalene	1-6,800	1-13,600	989.0	**8,830.0**	**62,700.0**	22.3	<10.0
n-Butylbenzene	0.5-6,800	0.5-13,600	69.0	<50.0	<50.0	<10.0	<10.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<50.0	397.0	2,930.0	<10.0	<10.0
o-Xylene	0.5-2,720	0.5-13,600	<50.0	<50.0	490.0	<10.0	<10.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<50.0	109.0	931.0	<10.0	<10.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	95.5	325.0	1,060.0	<10.0	<10.0
Styrene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	87.0	92.0	110.0	<10.0	<10.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Trichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<50.0	<10.0	<10.0
Vinyl Acetate	1-34,000	1-68,000	<250.0	<250.0	<250.0	<50.0	<50.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<150.0	<150.0	<150.0	<30.0	<30.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

			TT-AB-17-10'Dup	TT-AB-17- 20.5'	TT-AB-17- 30.5'	TT-AB-17- 35.5'	TT-AB-18 @5
Analyte	MDL	PQL	12/1/00	12/1/00	12/1/00	12/1/00	12/4/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3-Butadiene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
2-Butanone (MEK)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
2-Hexanone	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	0.5-2,720	0.5-13,600	<10.0	<10.0	<10.0	5.6	<10.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Bromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Chlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroethane	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Dibromomethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Dichlorodifluoromethane	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Dicyclopentadiene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Ethylbenzene	0.5-2,720	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Ferrocene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Hexachlorobutadiene	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0
Isopropylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
m,p-Xylenes	1-2,720	1-27,200	<20.0	<20.0	<20.0	<20.0	<20.0
Methylene chloride (DCM)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Naphthalene	1-6,800	1-13,600	<10.0	<10.0	15.8	<10.0	<10.0
n-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
o-Xylene	0.5-2,720	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Styrene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Trichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<10.0	<10.0
Vinyl Acetate	1-34,000	1-68,000	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<30.0	<30.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Analyte	MDL	PQL	TT-AB-18 @10 12/4/00	TT-AB-18 @20 12/4/00	TT-AB-18 @30 12/4/00	TT-AB-18 @35' 12/4/00	TT-AB-19 @5.5 12/4/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	83.5	<10.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	26.2	<10.0	774.0	186.0	<10.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	22.2	<10.0	171.0	177.0	<10.0
1,3-Butadiene	1-6,800	1-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
2-Butanone (MEK)	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
2-Hexanone	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
Acetone	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
Benzene	0.5-2,720	0.5-13,600	**150.0**	5.1	**124.0**	**1,040.0**	6.5
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Bromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<30.0	<30.0	<150.0	<150.0	<30.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Chlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Chloroethane	1-20,400	1-40,800	<30.0	<30.0	<150.0	<150.0	<30.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<30.0	<30.0	<150.0	<150.0	<30.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Dibromomethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Dichlorodifluoromethane	1-20,400	1-40,800	<30.0	<30.0	<150.0	<150.0	<30.0
Dicyclopentadiene	1-6,800	1-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Ethylbenzene	0.5-2,720	0.5-13,600	8.1	<10.0	7,130.0	2,630.0	<10.0
Ferrocene	1-6,800	1-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Hexachlorobutadiene	1-20,400	1-40,800	<30.0	<30.0	<150.0	<150.0	<30.0
Isopropylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	1,060.0	913.0	<10.0
m,p-Xylenes	1-2,720	1-27,200	11.2	<20.0	1,080.0	492.0	<20.0
Methylene chloride (DCM)	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Naphthalene	1-6,800	1-13,600	719.0	564.0	**83,600.0**	**67,400.0**	<10.0
n-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	1,150.0	922.0	<10.0
o-Xylene	0.5-2,720	0.5-13,600	5.8	<10.0	160.0	116.0	<10.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	469.0	302.0	<10.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	570.0	689.0	<10.0
Styrene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	7.4	<10.0	103.0	118.0	<10.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Trichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<50.0	<50.0	<10.0
Vinyl Acetate	1-34,000	1-68,000	<50.0	<50.0	<250.0	<250.0	<50.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<30.0	<30.0	<150.0	<150.0	<30.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Analyte	MDL	PQL	TT-AB-19 @5.5'Dup 12/4/00	TT-AB-19 @10' 12/4/00	TT-AB-19 @21' 12/4/00	TT-AB-19 @25' 12/4/00	TT-AB-19 @31' 12/4/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	11.7	43.0	<50.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	14.8	<50.0	<50.0
1,3-Butadiene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
2-Butanone (MEK)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
2-Hexanone	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
Acetone	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
Benzene	0.5-2,720	0.5-13,600	12.4	8.7	5.5	<50.0	<50.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Bromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<150.0	<150.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Chlorobenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Chloroethane	1-20,400	1-40,800	<30.0	<30.0	<30.0	<150.0	<150.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<150.0	<150.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Dibromomethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Dichlorodifluoromethane	1-20,400	1-40,800	<30.0	<30.0	<30.0	<150.0	<150.0
Dicyclopentadiene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Ethylbenzene	0.5-2,720	0.5-13,600	<10.0	<10.0	<10.0	33.0	<50.0
Ferrocene	1-6,800	1-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Hexachlorobutadiene	1-20,400	1-40,800	<30.0	<30.0	<30.0	<150.0	<150.0
Isopropylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	64.5	1,320.0
m,p-Xylenes	1-2,720	1-27,200	<20.0	<20.0	7.6	<100.0	<100.0
Methylene chloride (DCM)	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Naphthalene	1-6,800	1-13,600	74.3	54.4	101.0	**11,800.0**	279.0
n-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	92.0	1,660.0
o-Xylene	0.5-2,720	0.5-13,600	<10.0	<10.0	8.5	<50.0	<50.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	36.0	<50.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	62.5	1,370.0
Styrene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	94.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	<10.0	5.0	<10.0	93.0	108.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Trichloroethene	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<10.0	<10.0	<10.0	<50.0	<50.0
Vinyl Acetate	1-34,000	1-68,000	<50.0	<50.0	<50.0	<250.0	<250.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<30.0	<30.0	<30.0	<150.0	<150.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

			TT-AB-19 @35.5'	TT-AB-20 @5'	TT-AB-20 @10'	TT-AB-20 @20'	TT-AB-20 @26'
Analyte	MDL	PQL	12/4/00	12/4/00	12/4/00	12/4/00	12/4/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	94.6	<10.0	<10.0	<10.0	48.6
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	2,010.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	521.0
1,3-Butadiene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
2-Butanone (MEK)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
2-Hexanone	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
Acetone	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
Benzene	0.5-2,720	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Bromochloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<150.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Chlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Chloroethane	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<150.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<150.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Dibromomethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Dichlorodifluoromethane	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<150.0
Dicyclopentadiene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Ethylbenzene	0.5-2,720	0.5-13,600	<50.0	<10.0	<10.0	<10.0	7,920.0
Ferrocene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Hexachlorobutadiene	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<150.0
Isopropylbenzene	0.5-6,800	0.5-13,600	679.0	<10.0	<10.0	<10.0	1,530.0
m,p-Xylenes	1-2,720	1-27,200	<100.0	<20.0	<20.0	<20.0	1,360.0
Methylene chloride (DCM)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Naphthalene	1-6,800	1-13,600	47.3	<10.0	<10.0	<10.0	**90,500.0**
n-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
n-Propylbenzene	0.5-6,800	0.5-13,600	829.0	<10.0	<10.0	<10.0	1,590.0
o-Xylene	0.5-2,720	0.5-13,600	<50.0	<10.0	<10.0	<10.0	367.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	521.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	667.0	<10.0	<10.0	<10.0	664.0
Styrene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	46.8	<10.0	<10.0	<10.0	<50.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	95.7	<10.0	<10.0	<10.0	<50.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Trichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<10.0	<50.0
Vinyl Acetate	1-34,000	1-68,000	<250.0	<50.0	<50.0	<50.0	<250.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<30.0	<150.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Analyte	MDL	PQL	TT-AB-20 @31 12/4/00	TT-AB-20 @35' 12/4/00	TT-AB-21- 6.5' 12/1/00	TT-AB-21- 11.5' 12/1/00	TT-AB-21- 20.5 12/1/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	204.0	<50.0	<10.0	<10.0	15,000.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	99.0	120.0	<10.0	<10.0	6,230.0
1,3-Butadiene	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
2-Butanone (MEK)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
2-Hexanone	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
Acetone	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
Benzene	0.5-2,720	0.5-13,600	<50.0	**124.0**	<10.0	5.6	**265.0**
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Bromochloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0	<300.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Chlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Chloroethane	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0	<300.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0	<300.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Dibromomethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Dichlorodifluoromethane	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0	<300.0
Dicyclopentadiene	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0	557.0
Ethylbenzene	0.5-2,720	0.5-13,600	27.5	<50.0	<10.0	<10.0	8,610.0
Ferrocene	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Hexachlorobutadiene	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0	<300.0
Isopropylbenzene	0.5-6,800	0.5-13,600	2,720.0	2,300.0	<10.0	<10.0	890.0
m,p-Xylenes	1-2,720	1-27,200	29.7	<100.0	<20.0	<20.0	3,860.0
Methylene chloride (DCM)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Naphthalene	1-6,800	1-13,600	899.0	162.0	<10.0	<10.0	**506,000.0**
n-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
n-Propylbenzene	0.5-6,800	0.5-13,600	3,700.0	2,380.0	<10.0	<10.0	742.0
o-Xylene	0.5-2,720	0.5-13,600	<50.0	<50.0	<10.0	<10.0	3,540.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	390.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	2,300.0	2,360.0	<10.0	<10.0	175.0
Styrene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	112.0	103.0	<10.0	<10.0	263.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Trichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0	<100.0
Vinyl Acetate	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0	<500.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0	<300.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Analyte	MDL	PQL	TT-AB-21- 25.5' 12/1/00	TT-AB-23 @5 12/5/00	TT-AB-23 @10 12/5/00	TT-AB-23 @20.5' 12/5/00	TT-AB-23 @25' 12/5/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	194.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	3,950.0	<10.0	<10.0	43,700.0	19,200.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	1,540.0	<10.0	<10.0	16,200.0	6,300.0
1,3-Butadiene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
2-Butanone (MEK)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
2-Hexanone	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	705.0
Acetone	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
Benzene	0.5-2,720	0.5-13,600	**50.5**	<10.0	<10.0	<70.0	**116.0**
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Bromochloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<210.0	<150.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Chlorobenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Chloroethane	1-20,400	1-40,800	<150.0	<30.0	<30.0	<210.0	<150.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<210.0	<150.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Dibromomethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Dichlorodifluoromethane	1-20,400	1-40,800	<150.0	<30.0	<30.0	<210.0	<150.0
Dicyclopentadiene	1-6,800	1-13,600	144.0	<10.0	<10.0	<70.0	<50.0
Ethylbenzene	0.5-2,720	0.5-13,600	1,220.0	<10.0	<10.0	10,900.0	27,100.0
Ferrocene	1-6,800	1-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Hexachlorobutadiene	1-20,400	1-40,800	<150.0	<30.0	<30.0	<210.0	<150.0
Isopropylbenzene	0.5-6,800	0.5-13,600	157.0	<10.0	<10.0	1,720.0	5,220.0
m,p-Xylenes	1-2,720	1-27,200	533.0	<20.0	<20.0	6,090.0	9,400.0
Methylene chloride (DCM)	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Naphthalene	1-6,800	1-13,600	**256,000.0**	<10.0	<10.0	**193,000.0**	**124,000.0**
n-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
n-Propylbenzene	0.5-6,800	0.5-13,600	164.0	<10.0	<10.0	3,550.0	8,650.0
o-Xylene	0.5-2,720	0.5-13,600	537.0	<10.0	<10.0	10,500.0	4,920.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	133.0	<10.0	<10.0	1,770.0	4,150.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	1,110.0	2,980.0
Styrene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	301.0	148.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	86.0	<10.0	<10.0	185.0	155.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Trichloroethene	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<50.0	<10.0	<10.0	<70.0	<50.0
Vinyl Acetate	1-34,000	1-68,000	<250.0	<50.0	<50.0	<350.0	<250.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<150.0	<30.0	<30.0	<210.0	<150.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Analyte	MDL	PQL	TT-AB-23 @31' 12/5/00	TT-AB-23 @35.5' 12/5/00	TT-AB-24 @5' 12/7/00	TT-AB-24 @10.5 12/7/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<50.0	466.0	<10.0	<10.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	161.0	81.5	<10.0	<10.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	57.1	28.0	<10.0	<10.0
1,3-Butadiene	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
2-Butanone (MEK)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<250.0	<250.0	<50.0	<50.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
2-Hexanone	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<250.0	2,080.0	<50.0	<50.0
Acetone	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
Benzene	0.5-2,720	0.5-13,600	<50.0	**110.0**	**80.0**	<10.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Bromochloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<250.0	<250.0	<50.0	<50.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Chlorobenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Chloroethane	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Dibromomethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Dichlorodifluoromethane	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0
Dicyclopentadiene	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0
Ethylbenzene	0.5-2,720	0.5-13,600	332.0	30.0	<10.0	<10.0
Ferrocene	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0
Hexachlorobutadiene	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0
Isopropylbenzene	0.5-6,800	0.5-13,600	2,260.0	3,590.0	<10.0	<10.0
m,p-Xylenes	1-2,720	1-27,200	76.0	39.0	<20.0	<20.0
Methylene chloride (DCM)	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<50.0	<50.0	<10.0	<10.0
Naphthalene	1-6,800	1-13,600	2,390.0	726.0	15.5	<10.0
n-Butylbenzene	0.5-6,800	0.5-13,600	1,680.0	2,870.0	<10.0	<10.0
n-Propylbenzene	0.5-6,800	0.5-13,600	3,660.0	6,060.0	<10.0	<10.0
o-Xylene	0.5-2,720	0.5-13,600	38.1	37.0	<10.0	<10.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	308.0	<50.0	<10.0	<10.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	1,600.0	2,960.0	<10.0	<10.0
Styrene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	113.0	97.5	16.9	<10.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Trichloroethene	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<50.0	<50.0	<10.0	<10.0
Vinyl Acetate	1-34,000	1-68,000	<250.0	<250.0	<50.0	<50.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<150.0	<150.0	<30.0	<30.0

TABLE 2-5

Purgeables (EPA Method 8260B), in ug/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Analyte	MDL	PQL	TT-AB-24 @10.5'Dup 12/7/00	TT-AB-24 @20' 12/7/00	TT-AB-24 @31 12/7/00	TT-AB-24 @35' 12/7/00
1,1,1,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,1,1-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,1,2-Trichloroethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,1-Dichloroethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,1-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,1-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2,3-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2,3-Trichloropropane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2,4-Trichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2,4-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	812.0
1,2-Dibromo-3-chloropropane	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
1,2-Dibromoethane (EDB)	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2-Dichloroethane (EDC)	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,3,5-Trimethylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,3-Butadiene	1-6,800	1-13,600	<10.0	<60.0	<50.0	<50.0
1,3-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,3-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
1,4-Dichlorobenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
2,2-Dichloropropane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
2-Butanone (MEK)	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
2-Chloroethyl vinyl ether	1-68,000	1-68,000	<50.0	<300.0	<250.0	<250.0
2-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
2-Hexanone	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
4-Chlorotoluene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
4-Methyl-2-pentanone (MIBK)	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
Acetone	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
Benzene	0.5-2,720	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Bromobenzene (Phenyl bromide)	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Bromochloromethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Bromodichloromethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Bromoform (Tribromomethane)	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
Bromomethane (Methyl bromide)	1-20,400	1-40,800	<30.0	<180.0	<150.0	<150.0
Carbon Disulfide	0.5-34,000	0.5-68,000	<50.0	<300.0	<250.0	<250.0
Carbon tetrachloride	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Chlorobenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Chloroethane	1-20,400	1-40,800	<30.0	<180.0	<150.0	<150.0
Chloroform (Trichloromethane)	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Chloromethane (Methyl chloride)	1-20,400	1-40,800	<30.0	<180.0	<150.0	<150.0
cis-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
cis-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Dibromochloromethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Dibromomethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Dichlorodifluoromethane	1-20,400	1-40,800	<30.0	<180.0	<150.0	<150.0
Dicyclopentadiene	1-6,800	1-13,600	<10.0	<60.0	<50.0	<50.0
Ethylbenzene	0.5-2,720	0.5-13,600	<10.0	<60.0	<50.0	84.0
Ferrocene	1-6,800	1-13,600	<10.0	<60.0	<50.0	<50.0
Hexachlorobutadiene	1-20,400	1-40,800	<30.0	<180.0	<150.0	<150.0
Isopropylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	4,130.0	572.0
m,p-Xylenes	1-2,720	1-27,200	<20.0	<120.0	<100.0	<100.0
Methylene chloride (DCM)	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
Methyl-tert-butyl ether (MTBE)	1-6,800	1-13,600	<10.0	<60.0	<50.0	<50.0
Naphthalene	1-6,800	1-13,600	<10.0	**8,380.0**	**51,600.0**	5,340.0
n-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	2,140.0	<50.0
n-Propylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	4,750.0	750.0
o-Xylene	0.5-2,720	0.5-13,600	<10.0	<60.0	<50.0	<50.0
p-Isopropyltoluene	0.5-6,800	0.5-13,600	<10.0	<60.0	252.0	<50.0
sec-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	3,590.0	595.0
Styrene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
tert-Butylbenzene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Tetrachloroethene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Toluene (Methyl benzene)	0.5-2,720	0.5-13,600	<10.0	<60.0	<50.0	<50.0
trans-1,2-Dichloroethene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
trans-1,3-Dichloropropene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Trichloroethene	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Trichlorofluoromethane	0.5-6,800	0.5-13,600	<10.0	<60.0	<50.0	<50.0
Vinyl Acetate	1-34,000	1-68,000	<50.0	<300.0	<250.0	<250.0
Vinyl chloride (Chloroethene)	1-20,400	1-40,800	<30.0	<180.0	<150.0	<150.0

TABLE 2-5

Purgeables (EPA Method 8260B), in mg/kg

Site Investigation at former Aliso
MGP Site - Sector A East Parcel

Parameter	Detection_Limit	A-2-5' 10/8/96	A-2-10' 10/8/96	A-2-20' 10/8/96	A-2-30' 10/8/96	A-3-0.5' 10/3/96	A-3-11' 10/3/96	A-3-20' 10/4/96	A-3-31' 10/4/96
1,1,1,2-Tetrachloroethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,1,1-Trichloroethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,1,2,2-Tetrachloroethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,1,2-Trichloroethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,1-Dichloroethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,1-Dichloroethene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,1-Dichloropropene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2,3-Trichlorobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2,3-Trichloropropane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2,4-Trichlorobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2,4-Trimethylbenzene	0.01-20	0.0413	<0.01	14.6	0.59	<0.01	<0.01	<0.01	<0.2
1,2-Dibromoethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2-Dichlorobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2-Dichloroethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,2-Dichloropropane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,3,5-Trimethylbenzene	0.01-20	0.0232	<0.01	5.22	<0.4	<0.01	<0.01	<0.01	<0.2
1,3-Dichlorobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,3-Dichloropropane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1,4-Dichlorobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
1-Phenylpropane	0.01-20	<0.01	<0.01	<1	2.66	<0.01	<0.01	<0.01	1.95
2,2-Dichloropropane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
2-Chlorotoluene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
4-Chlorotoluene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Benzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Bromobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Bromochloromethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Bromoform	0.05-100	<0.05	<0.05	<5	<2	<0.05	<0.05	<0.05	<1
Bromomethane	0.03-60	<0.03	<0.03	<3	<1.2	<0.03	<0.03	<0.03	<0.6
Carbon Tetrachloride	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Chlorobenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Chlorodibromomethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Chloroethane	0.03-60	<0.03	<0.03	<3	<1.2	<0.03	<0.03	<0.03	<0.6
Chloroform	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Chloromethane	0.03-60	<0.03	<0.03	<3	<1.2	<0.03	<0.03	<0.03	<0.6
Cis-1,2-Dichloroethene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Cis-1,3-Dichloropropene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Dibromochloropropane	0.05-100	<0.05	<0.05	<5	<2	<0.05	<0.05	<0.05	<1
Dibromomethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Dichlorobromomethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Dichlorodifluoromethane	0.03-60	<0.03	<0.03	<3	<1.2	<0.03	<0.03	<0.03	<0.6
Ethylbenzene	0.01-20	<0.01	<0.01	7.81	<0.4	<0.01	<0.01	<0.01	<0.2
Hexachlorobutadiene	0.03-60	<0.03	<0.03	<3	<1.2	<0.03	<0.03	<0.03	<0.6
Isopropylbenzene	0.01-20	<0.01	<0.01	<1	2.24	<0.01	<0.01	<0.01	1.73
Methylene Chloride	0.05-100	<0.05	<0.05	<5	<2	<0.05	<0.05	<0.05	<1
Naphthalene	0.01-40	1.31	0.176	1130	241	0.09	0.656	<0.01	41
n-Butylbenzene	0.01-20	<0.01	<0.01	<1	1.38	<0.01	<0.01	<0.01	1.12
p-Isopropyltoluene	0.01-20	<0.01	<0.01	<1	0.562	<0.01	<0.01	<0.01	<0.2
sec-Butylbenzene	0.01-20	<0.01	<0.01	<1	1.26	<0.01	<0.01	<0.01	1.67
Styrene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
tert-Butylbenzene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Tetrachloroethene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Toluene	0.01-20	0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
trans-1,2-Dichloroethene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
trans-1,3-Dichloropropene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Trichloroethene	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Trichlorofluoromethane	0.01-20	<0.01	<0.01	<1	<0.4	<0.01	<0.01	<0.01	<0.2
Vinyl Chloride	0.03-60	<0.03	<0.03	<3	<1.2	<0.03	<0.03	<0.03	<0.6

Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-5

Purgeables (EPA Method 8260B), in mg/kg

Site Investigation at former Aliso
MGP Site - Sector A East Parcel

Parameter	Detection_Limit	FD-EB-1B-5' 10/8/96	FD-EB-1B-10' 10/8/96	FD-EB-1B-20' 10/8/96	FD-EB-1B-33' 10/8/96	FD-EB-3-0.5 10/4/96	FD-EB-3-5' 10/4/96	FD-EB-3-10' 10/4/96
1,1,1,2-Tetrachloroethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,1,2-Trichloroethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,1-Dichloroethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,1-Dichloroethene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,1-Dichloropropene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2,3-Trichlorobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2,3-Trichloropropane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2,4-Trichlorobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2,4-Trimethylbenzene	0.01-20	<0.01	0.0183	37.9	<0.4	<0.01	<0.01	<0.01
1,2-Dibromoethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2-Dichlorobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2-Dichloroethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,2-Dichloropropane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,3,5-Trimethylbenzene	0.01-20	<0.01	0.01	<20	<0.4	<0.01	<0.01	<0.01
1,3-Dichlorobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,3-Dichloropropane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1,4-Dichlorobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
1-Phenylpropane	0.01-20	<0.01	<0.01	<20	6.25	<0.01	<0.01	<0.01
2,2-Dichloropropane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
2-Chlorotoluene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
4-Chlorotoluene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Benzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Bromobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Bromochloromethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Bromoform	0.05-100	<0.05	<0.05	<100	<2	<0.05	<0.05	<0.05
Bromomethane	0.03-60	<0.03	<0.03	<60	<1.2	<0.03	<0.03	<0.03
Carbon Tetrachloride	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Chlorobenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Chlorodibromomethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Chloroethane	0.03-60	<0.03	<0.03	<60	<1.2	<0.03	<0.03	<0.03
Chloroform	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Chloromethane	0.03-60	<0.03	<0.03	<60	<1.2	<0.03	<0.03	<0.03
Cis-1,2-Dichloroethene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Cis-1,3-Dichloropropene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Dibromochloropropane	0.05-100	<0.05	<0.05	<100	<2	<0.05	<0.05	<0.05
Dibromomethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Dichlorobromomethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Dichlorodifluoromethane	0.03-60	<0.03	<0.03	<60	<1.2	<0.03	<0.03	<0.03
Ethylbenzene	0.01-20	<0.01	<0.01	<20	<0.4	0.011	<0.01	<0.01
Hexachlorobutadiene	0.03-60	<0.03	<0.03	<60	<1.2	<0.03	<0.03	<0.03
Isopropylbenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Methylene Chloride	0.05-100	<0.05	<0.05	<100	<2	<0.05	<0.05	<0.05
Naphthalene	0.01-40	0.0304	3.94	2230	249	0.0475	<0.01	<0.01
n-Butylbenzene	0.01-20	<0.01	<0.01	<20	3.02	<0.01	<0.01	<0.01
p-Isopropyltoluene	0.01-20	<0.01	<0.01	<20	4.16	<0.01	<0.01	<0.01
sec-Butylbenzene	0.01-20	<0.01	<0.01	<20	3.2	<0.01	<0.01	<0.01
Styrene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
tert-Butylbenzene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Tetrachloroethene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Toluene	0.01-20	<0.01	0.0166	<20	<0.4	0.012	<0.01	<0.01
trans-1,2-Dichloroethene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
trans-1,3-Dichloropropene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Trichloroethene	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Trichlorofluoromethane	0.01-20	<0.01	<0.01	<20	<0.4	<0.01	<0.01	<0.01
Vinyl Chloride	0.03-60	<0.03	<0.03	<60	<1.2	<0.03	<0.03	<0.03

Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-5b
EPA Method 8020, in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Station	Depth	Date	Benzene	Ethylbenzene	Toluene	Xylenes
A-2-5'	5	10/8/96	<0.005	<0.005	<0.005	<0.01
A-2-10'	10	10/8/96	<0.005	<0.005	<0.005	<0.01
A-2-15'	15	10/8/96	**1.01**	29.9	1.28	49.2
A-2-20'	20	10/8/96	**0.13**	7.54	0.228	11.7
A-2-30'	30	10/8/96	**0.663**	0.473	0.351	2.04
A-2-40'	40	10/8/96	0.029	0.101	0.016	0.129
A-3-0.5'	0.5	10/3/96	<0.005	<0.005	<0.005	<0.01
A-3-11'	11	10/3/96	<0.005	<0.005	<0.005	<0.01
A-3-20'	20	10/4/96	<0.005	<0.005	<0.005	<0.01
A-3-25'	25	10/4/96	**0.096**	1.04	0.282	2.02
A-3-31'	31	10/4/96	**0.064**	0.726	0.115	0.838
FD-EB-1B-5'	5	10/8/96	<0.005	<0.005	<0.005	<0.01
FD-EB-1B-10'	10	10/8/96	<0.005	<0.005	<0.005	<0.01
FD-EB-1B-20'	20	10/8/96	0.029	5.65	0.034	7.39
FD-EB-1B-33'	33	10/8/96	**0.251**	0.644	0.394	0.911
FD-EB-3-0.5'	0.5	10/4/96	<0.005	0.021	<0.005	<0.01
FD-EB-3-5'	5	10/4/96	<0.005	<0.005	<0.005	<0.01
FD-EB-3-10'	10	10/4/96	<0.005	<0.005	<0.005	<0.01
FD-EB-3-20'	20	10/4/96	<0.05	6.91	0.157	8.98
FD-EB-3-25'	25	10/4/96	<1	9.48	7.74	11.7
FD-EB-3-30'	30	10/4/96	**0.071**	0.519	0.098	0.477
FD-EB-5-0.5'	0.5	10/4/96	<0.005	<0.005	<0.005	<0.01
FD-EB-5-5'	5	10/4/96	<0.005	<0.005	<0.005	<0.01
FD-EB-5-10'	10	10/4/96	<0.005	<0.005	<0.005	<0.01
FD-EB-5-20'	20	10/4/96	<0.005	<0.005	<0.005	<0.01
FD-EB-5-30'	30	10/4/96	**0.212**	0.686	0.502	3.27

***Note:** A-2 = FD-EB-2 and A-3 = FD-EB-4*

TABLE 2-6
Total Petroleum Hydrocarbons (TPH)
Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth	Date	TPH (M8015G), in **ug/kg** — TPH as Gasoline and Light HC. (C4-C12)						TPH (M8015D), in **mg/kg** — TPH as Diesel (C12-C23)					TPH as Heavy Hydrocarbons (C23-C40)					TPH Total as Diesel and Heavy HC.C12-C40				
MDL			500	2,500	5,000	10,000	25,000	50,000	5.0	10	25	50	100	5.0	10	25	50	100	5.0	10	25	50	100
PQL			1,000	5,000	10,000	20,000	50,000	100,000	10.0	20	50	100	200	10.0	20	50	100	200	10.0	20	50	100	200
TT-AB-14 @5'	5'	12/5/00	<1,000						94.9					97.6					192.5				
TT-AB-14 @10'	10'	12/5/00	<1,000						114					119					233				
TT-AB-14 @20.5'	20.5'	12/5/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-14 @20.5'Dup	20.5'	12/5/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-14 @25'	25'	12/5/00	<1,000						40.5					31.5					72				
TT-AB-14 @31'	31'	12/5/00			447000							4410					1230					**5640**	
TT-AB-14 @35.5'	35.5'	12/5/00	<1,000						31.5					<10.0					31.5				
TT-AB-15 @5'	5'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-15 @10'	10'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-15 @20.5'	20.5'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-15 @25'	25'	12/4/00		57200								2200					320					**2520**	
TT-AB-15 @30'	30'	12/4/00		268000							6300					2000					**8300**		
TT-AB-15 @35.5'	35.5'	12/4/00		168000							1900					400					**2300**		
TT-AB-17- 5.5'	5.5'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-17-10'	10'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-17-10'Dup	10'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-17- 20.5'	20.5'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-17- 30.5'	30.5'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-17- 35.5'	35.5'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-18 @5'	5'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-18 @10'	10'	12/4/00	<1,000						6.1					<10.0					6.1				
TT-AB-18 @15'	15'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-18 @20'	20'	12/4/00	959						65.8					12					77.8				
TT-AB-18 @30'	30'	12/4/00		116000								2100					430					**2530**	
TT-AB-18 @35'	35'	12/4/00		14300					97.4					29.6					127				
TT-AB-19 @5.5'	5.5'	12/4/00	<1,000						11.8					<10.0					11.8				
TT-AB-19 @5.5'Dup	5.5'	12/4/00	<1,000						17.4					<10.0					17.4				
TT-AB-19 @10'	10'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-19 @21'	21'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-19 @25'	25'	12/4/00		46400					715					221					936				
TT-AB-19 @31'	31'	12/4/00				242000					5900					1900					**7800**		
TT-AB-19 @35.5'	35.5'	12/4/00				195000					2140					680					**2820**		
TT-AB-20 @5'	5'	12/4/00	<1,000								188					8					196		
TT-AB-20 @10'	10'	12/4/00	<1,000								285					24					309		
TT-AB-20 @20'	20'	12/4/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-20 @26'	26'	12/4/00			141000						1980					480					**2460**		
TT-AB-20 @31'	31'	12/4/00			249000						5200					1700					**6900**		
TT-AB-20 @35'	35'	12/4/00			207000						3820					1310					**5130**		
TT-AB-21- 6.5'	6.5'	12/1/00	<1,000						<10.0					<10.0					<10.0				
TT-AB-21- 11.5'	11.5'	12/1/00	<1,000						<10.0					<10.0					<10.0				

TABLE 2-6
Total Petroleum Hydrocarbons (TPH)

Site Investigation at former Aliso MGP Site - Sector A East Parcel

			TPH (M8015G), in **ug/kg**						TPH (M8015D), in **mg/kg**															
	Sample Number	Depth	Date	TPH as Gasoline and Light HC. (C4-C12)						TPH as Diesel (C12-C23)					TPH as Heavy Hydrocarbons (C23-C40)					TPH Total as Diesel and Heavy HC.C12-C40				
MDL				500	2,500	5,000	10,000	25,000	50,000	5.0	10	25	50	100	5.0	10	25	50	100	5.0	10	25	50	100
PQL				1,000	5,000	10,000	20,000	50,000	100,000	10.0	20	50	100	200	10.0	20	50	100	200	10.0	20	50	100	200
	TT-AB-21- 20.5'	20.5'	12/1/00			223000							1450					62					**1512**	
	TT-AB-21- 25.5'	25.5'	12/1/00		53700					773					77					850				
	TT-AB-23 @5'	5'	12/5/00	<1,000						<10.0					30.4					30.4				
	TT-AB-23 @10'	10'	12/5/00	<1,000						<10.0					38					38				
	TT-AB-23 @20.5'	20.5'	12/5/00			287000							3620					210					**3830**	
	TT-AB-23 @25'	25'	12/5/00			335000							3420					620					**4040**	
	TT-AB-23 @31'	31'	12/5/00				713000						7900					2600					**1050**	
	TT-AB-23 @35.5'	35.5'	12/5/00					638000					6370					1790					**8160**	
	TT-AB-24 @5'	5'	12/7/00	<1,000									1850					365					**2215**	
	TT-AB-24 @10.5'	10.5'	12/7/00	<1,000						<10.0					<10.0					<10.0				
	TT-AB-24 @10.5'Dup	10.5'	12/7/00	<1,000						214					34					248				
	TT-AB-24 @20'	20'	12/7/00				22900			99.5					<10.0					99.5				
	TT-AB-24 @31'	31'	12/7/00				494000						7500					2320					**9820**	
	TT-AB-24 @35'	35'	12/7/00		61200					2510					887					3397				

Sample ID	Depth	Date	Units	Diesel	Gasoline
A-2-5'	5	10/8/96	mg/Kg	691	<1
A-2-10'	10	10/8/96	mg/Kg	42	<1
A-2-15'	15	10/8/96	mg/Kg	25800	269
A-2-20'	20	10/8/96	mg/Kg	3030	76
A-2-30'	30	10/8/96	mg/Kg	8140	95
A-2-40'	40	10/8/96	mg/Kg	467	4.4
A-3-0.5'	0.5	10/3/96	mg/Kg	138	<1
A-3-11'	11	10/3/96	mg/Kg	90	<1
A-3-20'	20	10/4/96	mg/Kg	27	<1
A-3-25'	25	10/4/96	mg/Kg	8620	62
A-3-31'	31	10/4/96	mg/Kg	5790	24
FD-EB-1B-5'	5	10/8/96	mg/Kg	<10	<1
FD-EB-1B-10'	10	10/8/96	mg/Kg	5510	<1
FD-EB-1B-20'	20	10/8/96	mg/Kg	4320	91
FD-EB-1B-33'	33	10/8/96	mg/Kg	9810	114
FD-EB-3-0.5'	0.5	10/4/96	mg/Kg	235	i
FD-EB-3-5'	5	10/4/96	mg/Kg	<10	<1
FD-EB-3-10'	10	10/4/96	mg/Kg	38	<1
FD-EB-3-20'	20	10/4/96	mg/Kg	4750	90
FD-EB-3-25'	25	10/4/96	mg/Kg	12600	218
FD-EB-3-30'	30	10/4/96	mg/Kg	8850	80
FD-EB-5-0.5'	0.5	10/4/96	mg/Kg	327	<1
FD-EB-5-5'	5	10/4/96	mg/Kg	1240	<1
FD-EB-5-10'	10	10/4/96	mg/Kg	567	<1
FD-EB-5-20'	20	10/4/96	mg/Kg	<10	<1
FD-EB-5-30'	30	10/4/96	mg/Kg	15900	107

Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-7
Metal (EPA Method 6010/7000CAM), in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth (feet)	Date	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Ti	V	Zn
TT-AB-18 @15'	15'	12/4/00	<10.0	<10.0	26.2	<2.5	<2.5	4.3	2.9	4.6	<5.0	<0.2	<5.0	2.5	<10.0	<5.0	<10.0	12.3	15.9
TT-AB-18 @25'	25'	12/4/00	<10.0	<10.0	31.8	<2.5	<2.5	5.1	3.7	9	<5.0	<0.2	<5.0	3.9	<10.0	<5.0	<10.0	16.1	24.6
TT-AB-18 @30'	30'	12/4/00	<10.0	<10.0	17.2	<2.5	<2.5	75	3	10.6	<5.0	<0.2	<5.0	35.1	<10.0	<5.0	<10.0	12.5	19.3
TT-AB-18 @35'	35'	12/4/00	<10.0	<10.0	93.5	<2.5	<2.5	14.5	9	44.4	4.1	0.1	<5.0	10	<10.0	<5.0	<10.0	35.5	60
TT-AB-19 @10'	10'	12/4/00	<10.0	<10.0	146	<2.5	<2.5	16.7	12.7	24.8	4.1	0.2	<5.0	13.1	<10.0	<5.0	<10.0	47.4	67
TT-AB-19 @25'	25'	12/4/00	<10.0	<10.0	38.4	<2.5	<2.5	7.5	3	12.4	<5.0	<0.2	<5.0	3.4	<10.0	<5.0	<10.0	13.8	21.3
TT-AB-19 @31'	31'	12/4/00	<10.0	<10.0	35.2	<2.5	<2.5	4.5	3.5	16.1	<5.0	<0.2	<5.0	2.9	<10.0	<5.0	<10.0	21.3	22.5
TT-AB-20 @10'	10'	12/4/00	<10.0	<10.0	83	<2.5	<2.5	10.1	7.1	11.9	<5.0	0.1	<5.0	7.2	<10.0	<5.0	<10.0	29.5	39
TT-AB-20 @26'	26'	12/4/00	<10.0	<10.0	27.9	<2.5	<2.5	5.5	3.2	28.6	<5.0	<0.2	<5.0	4.5	<10.0	<5.0	<10.0	14.7	31.1
TT-AB-20 @31'	31'	12/4/00	<10.0	<10.0	24.5	<2.5	<2.5	4.8	2.9	7.1	<5.0	<0.2	<5.0	2.9	<10.0	<5.0	<10.0	17.2	17.3
TT-AB-21-15'	15'	12/1/00	<10.0	<10.0	82	<2.5	<2.5	11.1	8.1	27.8	3.3	<0.2	<5.0	8.5	<10.0	<5.0	<10.0	33.1	38.9
TT-AB-21-25'	25'	12/1/00	<10.0	<10.0	47.9	<2.5	<2.5	7.9	4.5	8.4	2.5	<0.2	<5.0	4.3	<10.0	<5.0	<10.0	19.6	22.7
TT-AB-21- 25.5'	25.5'	12/1/00	<10.0	<10.0	45	<2.5	<2.5	14.4	3.7	6.3	4.4	<0.2	2.7	4	<10.0	<5.0	<10.0	15.9	26.7
TT-AB-24 @5'	5'	12/7/00	<10.0	<10.0	90	<2.5	<2.5	11	9.4	18.6	52	0.1	<5.0	18.1	<10.0	<5.0	<10.0	32.9	69.5
TT-AB-24 @15'	15'	12/7/00	<10.0	<10.0	39.7	<2.5	<2.5	4.9	4.3	6.8	<5.0	<0.2	<5.0	4.1	<10.0	<5.0	<10.0	16.2	19.3
TT-AB-24 @31'	31'	12/7/00	<10.0	<10.0	22.1	<2.5	<2.5	4.4	3.1	10	<5.0	<0.2	<5.0	3.6	<10.0	<5.0	<10.0	20	18.6
A-2-5'	5	10/8/96	<10	<1	66.4	<2.5	<2.5	6.63	<5	5.96	9.55	<0.2	<5	<5	<0.5	<5	<10	19	14.9
A-2-10'	10	10/8/96	<10	<1	168	<2.5	<2.5	11.9	6.33	25.8	725	<0.2	<5	7.26	<0.5	<5	<10	23.1	74.3
A-2-20'	20	10/8/96	<10	<1	19.1	<2.5	<2.5	5.09	<5	<5	<5	<0.2	<5	<5	<0.5	<5	<10	8.91	14.6
A-2-30'	30	10/8/96	<10	<1	17.4	<2.5	<2.5	5.61	<5	<5	<5	<0.2	<5	<5	<0.5	<5	<10	11.1	16.2
A-3-0.5'	0.5	10/3/96	<10	13.9	130	<2.5	<2.5	12.1	7.73	41.5	99	<0.2	<5	13.6	4.3	<5	<10	29.5	133
A-3-11'	11	10/3/96	<10	8.9	49.2	<2.5	<2.5	<5	<5	7.86	<5	<0.2	<5	<5	6.8	<5	<10	16.4	26.6
A-3-20'	20	10/4/96	<10	6.21	27.4	<2.5	<2.5	<5	<5	6.13	<5	<0.2	<5	<5	7.12	<5	<10	11	20.8
A-3-31'	31	10/4/96	<10	4.66	15.5	<2.5	<2.5	<5	<5	5.6	<5	<0.2	<5	<5	6.71	<5	<10	8	14.8
FD-EB-1B-5'	5	10/8/96	<10	<1	64.6	<2.5	<2.5	10	6.1	11.8	<5	<0.2	<5	6.16	<0.5	<5	<10	21.4	34.5
FD-EB-1B-10'	10	10/8/96	<10	<1	30.8	<2.5	<2.5	5.95	<5	<5	<5	<0.2	<5	<5	<0.5	<5	<10	13.7	19.4
FD-EB-1B-20'	20	10/8/96	<10	<1	19.4	<2.5	<2.5	<5	<5	5.2	<5	<0.2	<5	<5	<0.5	<5	<10	10.3	20.5
FD-EB-1B-33'	33	10/8/96	<10	<1	16.9	<2.5	<2.5	<5	<5	<5	<5	<0.2	<5	<5	<0.5	<5	<10	7.76	14.3
FD-EB-3-0.5'	0.5	10/4/96	<10	9.92	98.6	<2.5	<2.5	9.23	5.97	22.1	85.4	<0.2	<5	8.37	4.79	<5	<10	23.6	86.3
FD-EB-3-5'	5	10/4/96	<10	12.4	82.4	<2.5	<2.5	9.4	7.8	12.6	5.7	<0.2	<5	8.62	5.88	<5	<10	25.4	42.7
FD-EB-3-10'	10	10/4/96	<10	14.7	86	<2.5	<2.5	20	9.03	28.6	30	<0.2	<5	20.2	2.44	<5	<10	37.2	66.8
FD-EB-3-20'	20	10/4/96	<10	5.57	16.8	<2.5	<2.5	<5	<5	10.5	<5	<0.2	<5	<5	7.08	<5	<10	7.23	14
FD-EB-3-30'	30	10/4/96	<10	4.76	24	<2.5	<2.5	<5	<5	8.07	<5	<0.2	<5	<5	7.32	<5	<10	10.4	19.4
FD-EB-5-0.5'	0.5	10/4/96	<10	7.37	56	<2.5	<2.5	<5	<5	16.8	96.4	<0.2	<5	5.04	6.23	<5	<10	11.9	50.4
FD-EB-5-5'	5	10/4/96	<10	13.5	81.1	<2.5	<2.5	7.72	6.87	15.9	23.3	<0.2	<5	7.6	7.71	<5	<10	25.5	47.7
FD-EB-5-10'	10	10/4/96	<10	8.1	61.6	<2.5	<2.5	6.29	5.52	10.4	<5	<0.2	<5	<5	4.66	<5	<10	20.1	34.8
FD-EB-5-20'	20	10/4/96	<10	7.89	28.9	<2.5	<2.5	<5	<5	17.5	<5	<0.2	<5	39.6	6.16	<5	<10	12.9	24.2
FD-EB-5-30'	30	10/4/96	<10	5.5	29.9	<2.5	<2.5	<5	<5	<5	<5	<0.2	<5	<5	7.28	<5	<10	17.9	15.9
Ind. PRG (EPA 2000)			820	440	10,000	2,200	810	450	100,000	76,000	750	610	10,000	41,000	10,000	10,000	130	14,000	100,000
RES. PRG			31	22*	5,400	150	9**	210	4,700	2,900	250	23	390	150**	390	390	5.2	550	23,000

*Residential PRG for non-carcinogenic case
**Based on Cal-modified PRG
Note: A-2 = FD-EB-2 and A-3 = FD-EB-4

TABLE 2-8

Cyanide analysis, in mg/kg

Site Investigation at former Aliso MGP Site - Sector A East Parcel

	Sample Number	Depth (feet)	Date	Cyanide 9010B
MDL				0.1
PQL				0.5
	TT-AB-18 @15'	15'	12/4/00	<0.50
	TT-AB-18 @25'	25'	12/4/00	<0.50
	TT-AB-18 @30'	30'	12/4/00	0.5
	TT-AB-18 @35'	35'	12/4/00	0.4
	TT-AB-19 @10'	10'	12/4/00	1.1
	TT-AB-19 @25'	25'	12/4/00	0.4
	TT-AB-19 @31'	31'	12/4/00	0.3
	TT-AB-20 @10'	10'	12/4/00	0.4
	TT-AB-20 @26'	26'	12/4/00	<0.50
	TT-AB-20 @31'	31'	12/4/00	<0.50
	TT-AB-21-15'	15'	12/1/00	0.4
	TT-AB-21-25'	25'	12/1/00	0.2
	TT-AB-21- 25.5'	25.5'	12/1/00	<0.50
	A-3-0.5'	0.5	10/3/96	<0.50
	FD-EB-1A-3'	3	10/8/96	<0.50
	FD-EB-3-0.5'	0.5	10/4/96	<0.50
	FD-EB-5-0.5'	0.5	10/4/96	<0.50

Note: A-3 = FD-EB-4

TABLE 2-9

pH - (9045C), in pH unit

Site Investigation at former Aliso MGP Site - Sector A East Parcel

Sample Number	Depth(feet)	Date	pH unit
TT-AB-14 @5'	5'	12/5/00	8.55
TT-AB-14 @10'	10'	12/5/00	8.88
TT-AB-14 @20.5'	20.5'	12/5/00	8.16
TT-AB-14 @20.5'Dup	20.5'	12/5/00	8.35
TT-AB-14 @25'	25'	12/5/00	9.16
TT-AB-14 @31'	31'	12/5/00	8.85
TT-AB-14 @35.5'	35.5'	12/5/00	9.1
TT-AB-15 @5'	5'	12/4/00	8.53
TT-AB-15 @10'	10'	12/4/00	7.94
TT-AB-15 @20.5'	20.5'	12/4/00	7.89
TT-AB-15 @25'	25'	12/4/00	4.58
TT-AB-15 @30'	30'	12/4/00	8.7
TT-AB-15 @35.5'	35.5'	12/4/00	8.78
TT-AB-17- 5.5'	5.5'	12/1/00	7.96
TT-AB-17-10'	10'	12/1/00	6.81
TT-AB-17-10'Dup	10'	12/1/00	7.3
TT-AB-17- 20.5'	20.5'	12/1/00	6.07
TT-AB-17- 30.5'	30.5'	12/1/00	8.43
TT-AB-17- 35.5'	35.5'	12/1/00	8.44
TT-AB-18 @5'	5'	12/4/00	8.69
TT-AB-18 @10'	10'	12/4/00	8.57
TT-AB-18 @15'	15'	12/4/00	8.65
TT-AB-18 @20'	20'	12/4/00	7.39
TT-AB-18 @30'	30'	12/4/00	8.97
TT-AB-18 @35'	35'	12/4/00	8.21
TT-AB-19 @5.5'	5.5'	12/4/00	7.81
TT-AB-19 @5.5'Dup	5.5'	12/4/00	7.86
TT-AB-19 @10'	10'	12/4/00	7.99
TT-AB-19 @21'	21'	12/4/00	4.87
TT-AB-19 @25'	25'	12/4/00	7.54
TT-AB-19 @31'	31'	12/4/00	8.99
TT-AB-19 @35.5'	35.5'	12/4/00	9.23
TT-AB-20 @5'	5'	12/4/00	5.11
TT-AB-20 @10'	10'	12/4/00	5.67
TT-AB-20 @20'	20'	12/4/00	5.78
TT-AB-20 @26'	26'	12/4/00	9.01
TT-AB-20 @31'	31'	12/4/00	9.02
TT-AB-20 @35'	35'	12/4/00	9.12
TT-AB-21- 6.5'	6.5'	12/1/00	8.33
TT-AB-21- 11.5'	11.5'	12/1/00	5.5
TT-AB-21- 20.5'	20.5'	12/1/00	8.13
TT-AB-21- 25.5'	25.5'	12/1/00	7.32
TT-AB-23 @5'	5'	12/5/00	8.4
TT-AB-23 @10'	10'	12/5/00	8.53
TT-AB-23 @20.5'	20.5'	12/5/00	8.98
TT-AB-23 @25'	25'	12/5/00	8.82
TT-AB-23 @31'	31'	12/5/00	9.12
TT-AB-23 @35.5'	35.5'	12/5/00	8.97
TT-AB-24 @5'	5'	12/7/00	7.86
TT-AB-24 @10.5'	10.5'	12/7/00	7.92
TT-AB-24 @10.5'Dup	10.5'	12/7/00	7.79
TT-AB-24 @20'	20'	12/7/00	7.82
TT-AB-24 @31'	31'	12/7/00	7.34
TT-AB-24 @35'	35'	12/7/00	7.76

TABLE 2-10
Sulfide analysis, in mg/kg

Site Investigation at former Aliso MGP Site -- Sector A

No Sulfides were analyzed at the East Parcel.

TABLE 2-11
Soil Gas Results by Location and Depth, EPA Method TO-14 in (μg/m3)

Site Investigation at former Aliso MGP Site - Sector A

Analyte	PQL	MDL	TT-AG-11 @5' 12/27/00	TT-AG-11 @15' 12/27/00	TT-AG-12 @5' 12/27/00	TT-AG-12 @15' 12/27/00
1,1,1-Trichloroethane	11-60	11-60	29.5	30.1	<11	<11
1,1,2,2-Tetrachloroethane	28-154	28-154	<28	<28	<28	<28
1,1,2-Trichloroethane	11-60	11-60	<11	<11	<11	<11
1,1-Dichloroethane	8-44	8-44	<8	<8	<8	<8
1,1-Dichloroethene	8-44	8-44	<8	<8	<8	<8
1,2,4-Trichlorobenzene	30-165	30-165	<30	<30	<30	<30
1,2,4-Trimethylbenzene	20-110	20-110	<20	<20	<20	659
1,2-Dibromoethane (EDB)	16-88	16-88	<16	<16	<16	<16
1,2-Dichlorobenzene	12-66	12-66	<12	<12	<12	<12
1,2-Dichloroethane (EDC)	8-44	8-44	<8	<8	<8	<8
1,2-Dichloropropane	10-55	10-55	<10	<10	<10	<10
1,2-Dichlorotetrafluoroethane (Freon114)	14-77	14-77	<14	<14	<14	<14
1,3,5-Trimethylbenzene	20-110	20-110	<20	<20	<20	133
1,3-Butadiene	22-121	22-121	<22	<22	<22	<22
1,3-Dichlorobenzene	12-66	12-66	<12	<12	<12	<12
1,4-Dichlorobenzene	12-66	12-66	<12	<12	<12	12.7
Benzene	6-33	6-33	<6	<6	<6	<6
Bromomethane (Methyl bromide)	8-44	8-44	<8	<8	<8	<8
Carbon tetrachloride	12-66	12-66	<12	<12	<12	<12
Chlorobenzene	10-55	10-55	<10	<10	<10	<10
Chloroethane	6-33	6-33	<6	<6	<6	<6
Chloroform (Trichloromethane)	10-55	10-55	<10	<10	<10	<10
Chloromethane (Methyl chloride)	8-44	8-44	<8	<8	<8	<8
cis-1,2-Dichloroethene	8-44	8-44	<8	<8	<8	<8
cis-1,3-Dichloropropene	9-49	9-49	<9	<9	<9	<9
Dichlorodifluoromethane	10-55	10-55	<10	<10	<10	<10
Dicyclopentadiene	60-330	60-330	<60	<60	<60	<60
Ethylbenzene	8-44	8-44	<8	<8	<8	86.9
Ferrocene	80-440	80-440	<80	<80	<80	<80
Hexachlorobutadiene	22-121	22-121	<22	<22	<22	<22
m,p-Xylenes	8-44	8-44	<8	8.7	12.6	326
Methylene chloride (DCM)	7-38	7-38	<7	<7	<7	<7
Methyl-tert-butyl ether	8-44	8-44	<8	<8	<8	<8
Naphthalene	60-330	60-330	<60	<60	<60	189
o-Xylene	8-44	8-44	<8	<8	<8	100
Styrene	8-44	8-44	<8	<8	<8	<8
Tetrachloroethene	14-77	14-77	25.9	59.9	<14	<14
Toluene (Methyl benzene)	8-44	8-44	<8	<8	<8	45.3
trans-1,3-Dichloropropene	9-49	9-49	<9	<9	<9	<9
Trichloroethene	10-55	10-55	<10	<10	<10	<10
Trichlorofluoromethane	12-66	12-66	<12	<12	<12	<12
Trichlorotrifluoroethane (Freon-113)	16-88	16-88	<16	<16	<16	<16
Vinyl chloride (Chloroethene)	6-33	6-33	<6	<6	<6	<6

Values below detection shown as less than specific PQL for that sample.

TABLE 2-11B

Hydrogen Sulfide - (EPA-16), in mg/m^3

Site Investigation at former Aliso MGP Site - Sector A

Sample Number	Depth	Date	PQL	MDL	Hydrogen Sulfide
TT-AG-11 @5'	5'	12/27/00	2.8	2.8	<2.8
TT-AG-11 @15'	15'	12/27/00	2.8	2.8	<2.8
TT-AG-12 @5'	5'	12/27/00	2.8	2.8	<2.8
TT-AG-12 @15'	15'	12/27/00	2.8	2.8	<2.8

Table 2-12
Chemicals Detected in Soils
Busway Parcels

Chemical	Busway West 0-10 feet	Busway West All Depths	Busway East 0-10 feet	Busway East All Depths
1,1 2-Trichloroethane				X
1 2 4-Trimethylbenzene	X	X	X	X
1 3 5-Trimethylbenzene	X	X	X	X
1-Phenylpropane				X
4-Methyl-2-pentanone (MIBK)				X
Acenaphthene	X	X	X	X
Acenaphthylene	X	X	X	X
Acetone	X	X	X	X
Anthracene	X	X	X	X
Arsenic	X	X	X	X
Barium	X	X	X	X
Benzene - EPA 8020	X	X		X
Benzene - EPA 8260	X	X	X	X
Benzo(a)anthracene	X	X	X	X
Benzo(a)pyrene	X	X	X	X
Benzo(b)fluoranthene	X	X	X	X
Benzo(g,h,i)perylene	X	X	X	X
Benzo(k)fluoranthene	X	X	X	X
Chromium	X	X	X	X
Chrysene	X	X	X	X
Cobalt	X	X	X	X
Copper	X	X	X	X
Cyanide	X	X	X	X
Dibenzo(a h)anthracene	X	X	X	X
Dicyclopentadiene		X		X
Diesel	X	X	X	X
Ethylbenzene - EPA 8020	X	X	X	X
Ethylbenzene - EPA 8260	X	X	X	X
Fluoranthene	X	X	X	X
Fluorene	X	X	X	X
Gasoline	X	X	X	X
Indeno(1,2,3-c d)pyrene	X	X	X	X
Isopropylbenzene		X		X
Lead	X	X	X	X
m,p-Xylenes	X	X	X	X
Mercury	X	X	X	X
Molybdenum				X
n-Butylbenzene		X		X
n-Propylbenzene		X		X
Naphthalene - EPA 8260	X	X	X	X
Naphthalene - EPA 8310	X	X	X	X
Nickel	X	X	X	X
o-Xylene	X	X	X	X
p-Isopropyltoluene		X		X
Phenanthrene	X	X	X	X
Pyrene	X	X	X	X
sec-Butylbenzene		X		X
Selenium	X	X	X	X
Styrene	X	X		X
Sulfides		X		X
tert-Butylbenzene		X		X
Toluene - EPA 8020	X	X	X	X
Toluene - EPA 8260	X	X		X
Total xylenes	X	X		X
TPH as Heavy Hydrocarbons (C23-C40)	X	X	X	X
TPH Total as Diesel and Heavy HC C12-C40	X	X	X	X
Vanadium	X	X	X	X
Zinc	X	X	X	X

Table 2-13
Chemicals Detected in Soil Gas Samples
Busway Parcels

Chemical in Soil Gas[1]	Busway West	Busway East
1,1,1-Trichloroethane	X	X
1,2,4-Trimethylbenzene		X
1,3,5-Trimethylbenzene		X
1,4-Dichlorobenzene		X
Chloroform (Trichloromethane)	X	
Ethylbenzene		X
Naphthalene		X
Tetrachloroethene	X	X
Toluene		X
m,p-Xylenes	X	X
o-Xylene		X

Note:

1- Four soil gas samples collected in the busway parcels

Table 2-14

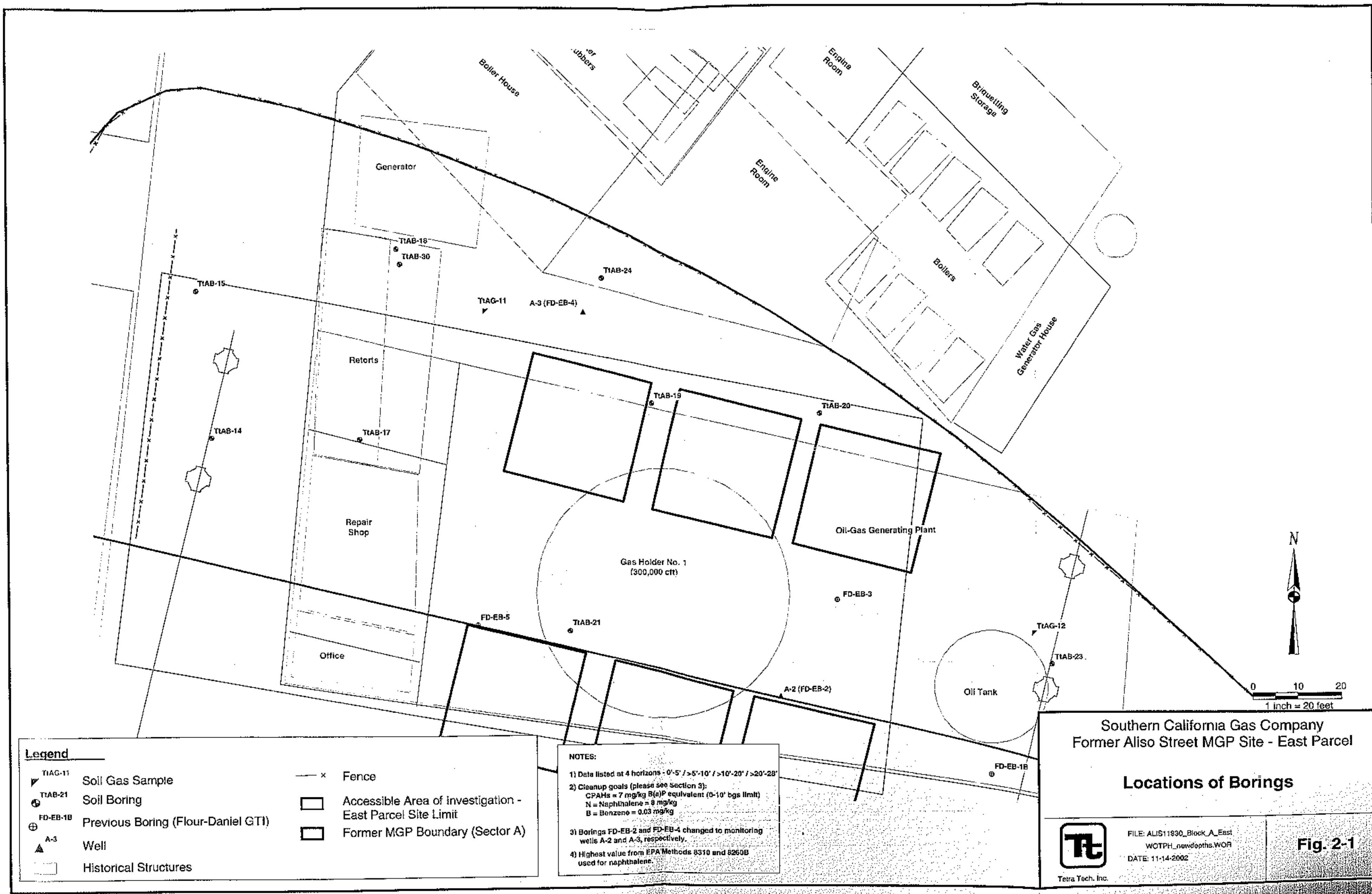
Chemicals Detected in Groundwater[1]
Busway Parcels

Volatile Chemicals	Non-Volatile Chemicals
1,1-Dichloroethane	Benzo(a)anthracene
1,2,4-Trimethylbenzene	Benzo(a)pyrene
1,3,5-Trimethylbenzene	Benzo(b)fluoranthene
Acenaphthene	Benzo(g,h,i)perylene
Acenaphthylene	Benzo(k)fluoranthene
Anthracene	Chrysene
Benzene	Dibenzo(a,h)anthracene
n-Butylbenzene	Fluoranthene
sec-Butylbenzene	Indeno(1,2,3-c,d)pyrene
tert-Butylbenzene	Pyrene
Carbon Disulfide	
cis-1,2-Dichloroethene	
Dicyclopentadiene	
Ethylbenzene	
Fluorene	
Isopropylbenzene	
p-Isopropyltoluene[2]	
Naphthalene - 8260B	
Naphthalene -8310	
Phenanthrene	
n-Propylbenzene	
Toluene	
trans-1,2-Dichloroethene	
Trichloroethene	
Vinyl chloride	
o-Xylene	
m,p-Xylenes	

Notes:

1 - Detected in groundwater samples collected in spring 2001

2 - Chemical not evaluated for vapor migration


Boiler House
Engine Room
Engine Room
Briquetting Storage
Boilers
Water Gas Generator House
Generator
Retorts
Repair Shop
Office
Gas Holder No. 1 (300,000 cft)
Oil-Gas Generating Plant
Oil Tank
TtAB-18
TtAB-30
TtAB-24
TtAB-15
TtAG-11
A-3 (FD-EB-4)
TtAB-14
TtAB-17
TtAB-19
TtAB-20
FD-EB-3
FD-EB-5
TtAB-21
A-2 (FD-EB-2)
TtAG-12
TtAB-23
FD-EB-1B
N
0
10
20
1 inch = 20 feet
Legend
TtAG-11 Soil Gas Sample
TtAB-21 Soil Boring
FD-EB-1B Previous Boring (Flour-Daniel GTI)
A-3 Well
Historical Structures
Fence
Accessible Area of Investigation - East Parcel Site Limit
Former MGP Boundary (Sector A)
NOTES:
1) Data listed at 4 horizons - 0'-5' / >5'-10' / >10'-20' / >20'-28'
2) Cleanup goals (please see Section 3):
CPAHs = 7 mg/kg B(a)P equivalent (0-10' bgs limit)
N = Naphthalene = 8 mg/kg
B = Benzene = 0.03 mg/kg
3) Borings FD-EB-2 and FD-EB-4 changed to monitoring wells A-2 and A-3, respectively.
4) Highest value from EPA Methods 8310 and 8260B used for naphthalene.
Southern California Gas Company
Former Aliso Street MGP Site - East Parcel
Locations of Borings
Tetra Tech, Inc.
FILE: ALIS11930_Block_A_East WOTPH_newdepths.WOR
DATE: 11-14-2002
Fig. 2-1

3. RISK-BASED CLEANUP GOAL AND EXTENT OF CONTAMINATION

For more detailed information on risk-based remedial goals, please refer to the Risk-Based Cleanup Goals report, prepared by Tetra Tech for Sector A [Tetra Tech, June 2002b]. This report has been submitted to DTSC in June 2002, and has been approved by DTSC on December 2002. In this section, the results will be briefly discussed.

3.1 EXPOSURE PATHWAYS

Identification of exposure pathways is key to developing health-protective remedial goals. An exposure pathway describes the course that a chemical takes from a source to an exposed individual. The primary group of receptors who may be exposed to COPCs in soil and groundwater at the East parcel are mechanics that outfit new police cars that are currently parked on this parcel. These mechanics reportedly visit the parcel about once per day to retrieve one of the cars stored on this property that requires outfitting for police work. Exposure to COPCs in soil could possibly occur due to dusts emitted from unpaved surface soils that settle on the parked cars. These mechanics may also inhale the airborne dust and vapors emitted from soil and groundwater.

In addition, utility workers may potentially be exposed directly to COPCs in soil in the future. Hypothetically, future utility workers may occasionally need to service the future underground utility lines. Caltrans workers or other construction workers are likely to have exposures similar to utility workers at this parcel because subsurface access is highly limited in order to maintain the integrity of the footings. Thus, remedial goals were developed to be protective of utility/construction workers at the East parcel. These workers were assumed to contact soil to a depth of approximately 10 feet below ground surface (bgs) because utility lines may be at approximately 6 to 8 feet bgs. Also, construction activities are typically considered to occur to a depth of 10 feet bgs.

In addition to these evaluations, remedial goals were also developed for future industrial workers to provide an indication of remedial levels required to allow hypothetical future industrial or commercial use of this parcel. For this hypothetical exposure scenario it was assumed that industrial workers under future conditions might be exposed directly to COPCs in unpaved surface soils and to vapors emitted from soil and groundwater.

3.2 TARGET RISK LEVELS

Target risk levels were determined according to USEPA and DTSC guidance. USEPA guidance indicates that a carcinogenic risk probability between 1 in 10,000 and 1 in 1,000,000 (1×10^{-4} to 1×10^{-6}) is considered to be safe and protective of public health. The DTSC and USEPA point of departure for carcinogenic risks is 1×10^{-6}. The lower end of this risk range is typically applied to residential situations, whereas higher soil remedial goals may be considered appropriate for industrial situations. Since the East parcel is located in an area currently zoned and used for commercial, industrial, and transportation purposes, health-protective concentrations for COPCs in soils were developed for a risk of $1x10^{-5}$

Non-carcinogenic health effects are determined by estimating the ratio between the level of exposure and each non-carcinogen's reference dose This ratio is considered to be a hazard quotient (HQ) for each evaluated exposure pathway, whereas the sum of all the HQs is defined as a hazard index (HI) The USEPA considers an HI less than 1 to not be a potential health concern. Health-protective concentrations were developed using a target hazard index of 1 for each of the non-carcinogenic COPCs

Risk-based goals have been developed for COPCs as has been detailed in the Risk-Based Remedial Goals [Tetra Tech, June 2002]. For the direct contact exposure pathways, the most health protective goal, based on either a cancer or non-cancer endpoint, was used to derive a health-protective concentration for each COPC detected in the top ten feet of soil. The same type of back-calculation process was used to determine risk-based concentrations for volatile chemicals in air that are protective of each group of identified receptors. These risk-based concentration goals (RBCGs) were used in the derivation of remedial goals for soils.

3.3 RISK-BASED CLEANUP GOALS

Remedial goals were developed for the East parcel of the southern portion of Sector A of the former Aliso MGP site. Remedial goals were developed to be protective of onsite receptors and of groundwater Factors considered in determining remedial goals for onsite receptors included receptor contact with soil and volatilization of chemicals from soils to the atmosphere. The remedial goal process also included the evaluation of chemical migration from soil to groundwater. All of the remedial goals were developed in accordance with USEPA guidance [1991a] for developing risk-based goals

Remedial goals were derived primarily for the chemicals of potential concern (COPCs) that are typically associated with MGP residues (e.g., PAHs and BTEX) and those associated with former butadiene-production facilities (e.g., dicyclopentadiene). Since the East parcel is located in an area currently zoned and used for commercial, industrial, and transportation purposes, health-protective concentrations for COPCs in soils were developed for a risk of $1x10^{-5}$ and a hazard index of 1

Remedial goals were derived for workers who could potentially be exposed directly (i.e., incidental soil ingestion, dermal contact with soil, and airborne dust inhalation) to COPCs in soil. These goals were developed by rearranging the equations used for estimating risks. The parameters used in these equations were based primarily on determinations of the frequency and duration of worker exposures to soil. For the East parcel, remedial goals were developed for three groups of workers: mechanics, future industrial workers, and future utility/construction workers.

Mechanics currently may visit the parcel about one hour per day to retrieve automobiles that require outfitting for police work. The duration of the mechanic activities at the East parcel is uncertain Police cars have been stored at this parcel for only a few years (approximately two or three) and relatively few cars are currently present on Site Thus, it was assumed that the exposure duration for the mechanics is equivalent to the average length of employment for one job in the United States; i e., 6.6 years [USEPA 1997a].

The development of this parcel is likely to be highly limited due to restrictions imposed by the overhead El Monte Busway and the 101 Freeway. Future uses of this parcel are, therefore, expected to be temporary, such as uses to support remedial construction activities Given these restrictions, it was assumed that hypothetical future industrial workers might be present at the East parcel for the length of time that a construction trailer may be present (i e., approximately five years). This exposure duration was considered reasonable since it is similar to the length of employment at one job

Utility or construction workers may occasionally need to service future underground utility lines at or in the vicinity of the parcel Future onsite activities for utility/construction workers were assumed to be necessary for a project of only limited duration, such as a recent pipeline removal project (i.e., 30 days in one year). Thus, remedial goals were also developed for this group of receptors who could possibly be exposed to soils at the East parcel

Fate and transport modeling was conducted with the Remedial Options Assessment Model (ROAM) to determine remedial goals that are protective of workers potentially inhaling volatile chemicals emitted from soils and migrating to groundwater ROAM was used primarily because it simulates the dissolution of chemicals from the immobile free phase observed in soils (i.e., high concentrations of hydrocarbons) as well as chemical adsorption, dissolution, and volatilization

Due to the high organic hydrocarbon contamination detected in the southeastern portion of the East parcel, the parcel was subdivided into two separate areas The two areas of concern are the Busway East-Eastern Area, and Busway East-Western Area Three depth intervals were used to evaluate chemical migration in each area; therefore, the soil remedial goals are also depth-specific For the volatile chemicals detected at the East parcel, the remedial goals protective of the vapor inhalation pathway are lower than those for the direct contact pathways The overall goals for these chemicals are, therefore, influenced substantially by the inhalation of these volatile chemicals by the three groups of potential onsite workers.

The choice of goals to apply at the East parcel is dependent on the receptor of concern and the objective of the selected remedial action The overall goals protective of future onsite workers are shown in Table 3-1 Remedial goals for the carcinogenic PAHs are presented in terms of benzo(a)pyrene-equivalent concentrations As shown in Table 3-1, the benzo(a)pyrene-equivalent goals for workers exposed to shallow (0-5 feet bgs) soils range from 7 to 8 mg/kg, while the goal for workers potentially exposed to deeper (0-10 feet bgs) soils is 42 mg/kg These goals should therefore be applied appropriately to assess whether benzo(a)pyrene-equivalent concentrations measured at different depth intervals should be considered for remediation.

Depth intervals, and the presence of petroleum hydrocarbons, should also be considered in selecting the remedial goals protective of workers potentially exposed to volatile chemicals at this parcel To be health protective, only those goals protective of future industrial workers are shown in Table 3-1; higher goals were derived for the other two groups of future onsite workers. Also, since higher levels of free phase hydrocarbons were detected in the Busway East-Eastern Area, the highest remedial goals for the volatile chemicals were developed for soils in this area. However, if the quantity of free phase hydrocarbon is affected by the remedial action, then the remedial goals will need to be reviewed for appropriateness

Chemical concentrations in soil that are protective of groundwater were also determined, although the groundwater underlying the East parcel is not used. Future use of the groundwater is also unlikely because the groundwater has naturally high concentrations of dissolved solids, nitrates, and the constituents of natural petroleum hydrocarbons. Further, there are ubiquitous anthropogenic sources of hydrocarbon and solvent contamination of groundwater in downtown Los Angeles. Groundwater protection was evaluated using the USEPA [2000] tap water preliminary remediation goals (PRGs). For benzene, remedial goals in soil were determined that are protective of the California drinking water maximum contaminant level (MCL) in groundwater. As indicated above, ROAM was used to evaluate chemical migration from soil to groundwater.

Table 3-2 shows a set of remedial goals that could be applied in order to protect groundwater The magnitude of the remedial goals for the mobile COPCs is influenced by the presence of free phase hydrocarbons in soils. High levels of hydrocarbons, such as in the 20- to21-foot depth interval in Busway East-Eastern Area, limited the leaching of volatile chemicals into pore water (i.e., soil moisture) and, therefore, their migration to groundwater That is, the chemicals remain preferentially dissolved in the organic hydrocarbons rather than in water moving through the soil pore spaces. Experimental leaching tests [Western Research Institute, 2001] were used to confirm the levels that volatile constituents leach from soil samples collected from this Site Modeling conducted was, therefore, calibrated using the experimental results. In turn, the modeling process results in different remedial goals for the volatile chemicals in each area of concern. For example, the remedial goals for naphthalene vary from 5 to 100 mg/kg, because of the different levels of hydrocarbons in the soils to retard naphthalene migration to groundwater. Higher levels of free phase hydrocarbons were detected in shallow soils in the Busway East-Eastern Area and, therefore, the highest remedial goals for naphthalene were developed for shallow soils in this area. Removal, or other substantial changes (e.g., solidification), of the free phase hydrocarbons in one or more of the depth intervals may require the development of more protective remedial goals for the COPCs detected in all the soil intervals.

A determination of technically and economically feasible remedial options can be made by separate comparisons of remedial goals protective of workers and groundwater with chemical concentrations measured at the East parcel

3.4 SELECTION OF CLEAN-UP GOAL CONCENTRATIONS

Two sets of remedial goals were presented above (Tables 3-1 and 3-2) based on the endpoint being considered: 1) remedial goals protective of workers (utility/construction, industrial, and mechanic), and 2) remedial goals protective of groundwater The most stringent remedial goal among those calculated for each of the contaminants of concern was selected as the basis for detected soil analyte concentration comparison The selected remedial goals include:

- 7 mg/kg for carcinogenic PAHs (for workers protection, surface to 10 feet bgs);
- 0.03 mg/kg for benzene (for groundwater protection); and
- 8 mg/kg for naphthalene (for groundwater protection)

Detected concentrations for each of these analytes at the various depth intervals (0-5 feet bgs; >5 – 10 feet bgs; >10-20 feet bgs; and >20-28 feet bgs) were then compared to the cleanup concentration values to determine those locations where remedial action is needed.

3.5 EXTENT OF CONTAMINATION

On Figures 3-1 through 3-6, next to each boring, the measured concentration of the three main sets of chemicals (CPAHs, naphthalene, and benzene) is listed for ease of reference For each compound, data are listed for 4 different horizons (0'-5', >5' 10', >10'-20', and >20' 28'), each separated with a "/" mark Each chemical concentration has been compared with its applicable cleanup goal from Tables 3-1 and 3-2. Those concentrations that have been exceeded the cleanup goal have been highlighted in red[1].

Figures 3-2 through 3-5 show the extent of contamination at the Site at different vertical horizons based on the most stringent cleanup goal discussed above (Table 3-1). The isopleth lines are plotted at the approximate distance between any two boring locations, one with a concentration of above cleanup goal and one with a concentration below the cleanup goal. The isopleth lines consider all chemicals of concern (e.g., C-PAHs, naphthalene, and benzene). Figure 3-2 shows the limits of contamination from the ground surface to 5 feet bgs (disregard to the location of concrete blocks). Figures 3-3 shows the limit of contamination between >5 to 10 feet bgs (disregard to the location of concrete blocks) Figures 3-4 shows the limit of contamination between >10 to 20 feet bgs Figures 3-5 shows the limit of contamination between >20 to approximately 28 feet bgs (water table) Figure 3-6 shows combined limits of contamination for all four different horizons

[1] Please note that cleanup goals for C-PAHs are applicable from surface to 10 feet bgs Therefore, if concentration of C-PAHs exceeded the cleanup goal below the 10 feet, it has not been highlighted in red.

Table 3-1
Remedial Goals for Chemicals of Concern in Soils
Protective of Workers
Busway East Parcel

Area of Concern	Chemical	Remedial Goals[1] (mg/kg) by Depth Category		
Entire Busway East Parcel	**Carcinogenic PAHs as B(a)P-equivalents[2]**			
	Receptor	**0-5 or 0-10 ft bgs**	**Greater than 10 ft bgs**	
	Utility/Construction Worker	42	NA	
	Industrial worker	8	NA	
	Mechanic	7	NA	
Busway East[3] Eastern Area		**0-20 ft bgs[2]**	**20-21 ft bgs[4]**	**21-28 ft bgs[4]**
	Acenaphthylene	190	830	830
	Benzene	6	290	130
	Dicyclopentadiene	NG	19	5
	Ethylbenzene	330	>100,000	>100,000
	Naphthalene	360	>100,000	>100,000
	Phenanthrene	14,000	>100,000	>100,000
	Toluene	11,000	>100,000	>100,000
	Xylene	>100,000	>100,000	>100,000
Busway East[3] Western Area		**0-10 ft bgs[2]**	**10-20 ft bgs[4]**	**20-28 ft bgs[4]**
	Acenaphthylene	170	640	1,800
	Benzene	15	10	38
	Ethylbenzene	9,000	NG	>100,000
	Naphthalene	290	>100,000	>100,000
	Phenanthrene	14,000	>100,000	>100,000
	Toluene	10,000	NG	>100,000
	Xylene	10,000	NG	>100,000

Notes:

1 - Goals for workers are based on either a target risk of 1×10^{-5} or a HI of 1.
Health protective goals were developed for industrial workers and mechanics potentially exposed to chemicals of potential concern in shallow (0-5 ft) soils and for utility/construction workers potentially exposed to chemicals of potential concern in deeper (0-10 ft) soils.

2 - Protective of dermal contact, ingestion, and inhalation

3 - Goals presented are those calculated for Industrial Workers which are protective of both Utility/Construction Workers and Mechanics

4 - Protective of the inhalation of volatiles

Definitions:

B(a)P - Benzo(a)pyrene

NA - Not Applicable

NG - No goal because chemical was not detected in identified soil interval

Table 3-2
Remedial Goals for Chemicals of Concern in Soil Protective of Groundwater Busway East Parcel

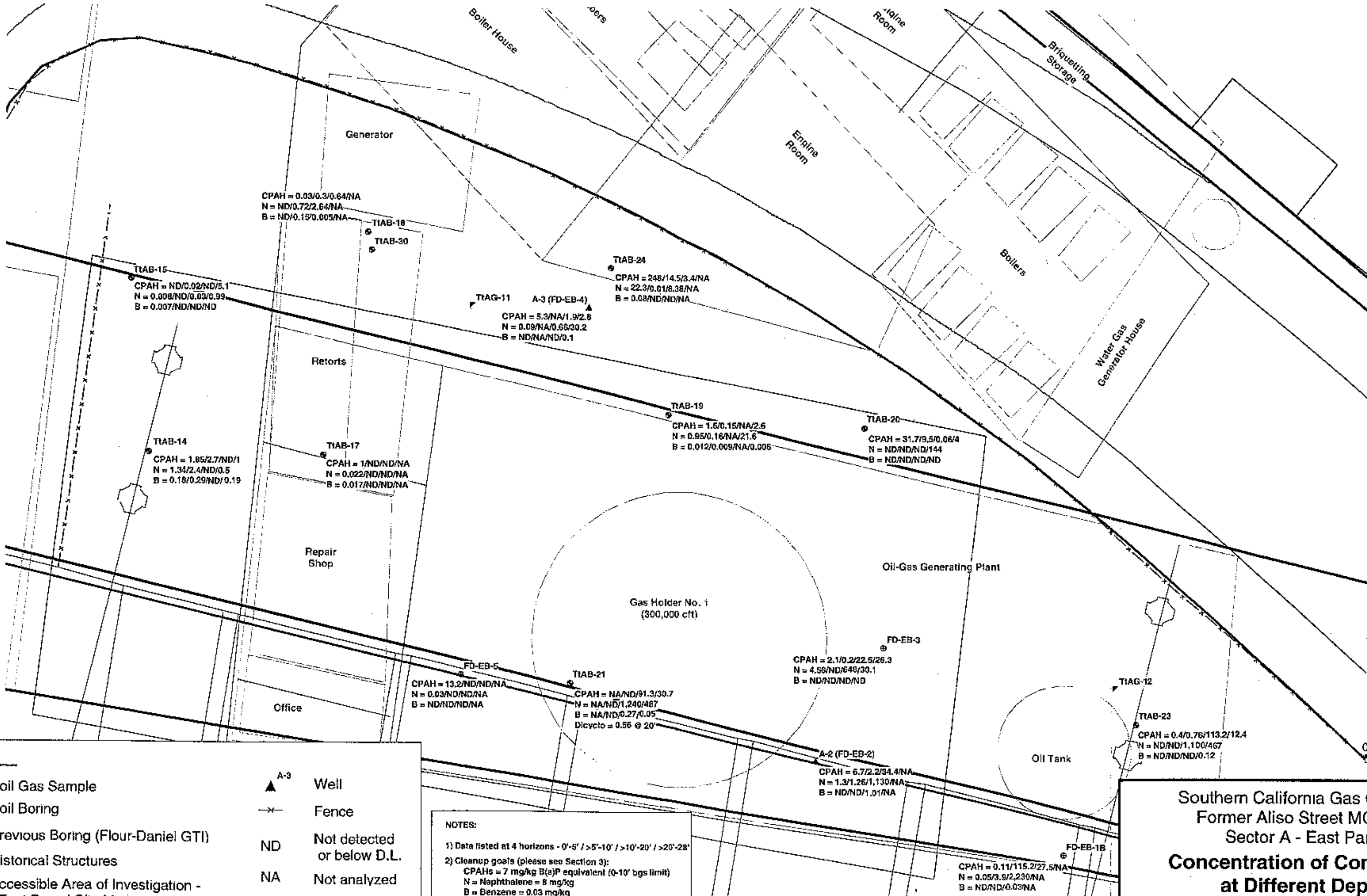
Area of Concern	Chemical	Remedial Goals (mg/kg) by Depth Category		
Busway East		**0-20 ft bgs**	**20-21 ft bgs**	**21-28 ft bgs**
Eastern Area	Acenaphthylene	4	18	4
	Benzene[1]	0 03	0.07	0.03
	Dicyclopentadiene	NG	0.1	0 02
	Ethylbenzene	250	250	250
	Naphthalene	100	100	5
	Phenanthrene	240	240	70
	Toluene	45	45	40
	Xylene	420	150	130
Busway East		**0-10 ft bgs**	**10-20 ft bgs**	**20-28 ft bgs**
Western Area	Acenaphthylene	6	6	6
	Benzene[1]	0 03	0 03	0 03
	Ethylbenzene	350	NG	350
	Naphthalene	8	8	8
	Phenanthrene	1,200	120	120
	Toluene	60	NG	60
	Xylene	400	NG	400

Notes:

1 . The proposed groundwater protective remedial goals for benzene are those set to achieve the drinking water MCL.

Definitions:

NG - No goal because chemical was not detected in identified soil interval.



Legend

- TtAG-11 — Soil Gas Sample
- TtAB-21 — Soil Boring
- FD-EB-1B — Previous Boring (Flour-Daniel GTI)
- Historical Structures
- Accessible Area of Investigation - East Parcel Site Limit
- Former MGP Boundary (Sector A)
- A-3 — Well
- Fence
- ND — Not detected or below D.L.
- NA — Not analyzed

NOTES:

1) Data listed at 4 horizons - 0'-5' / >5'-10' / >10'-20' / >20'-28'
2) Cleanup goals (please see Section 3):
   CPAHs = 7 mg/kg B(a)P equivalent (0-10' bgs limit)
   N = Naphthalene = 8 mg/kg
   B = Benzene = 0.03 mg/kg
3) Borings FD-EB-2 and FD-EB-4 changed to monitoring wells A-2 and A-3, respectively.
4) Highest value from EPA Methods 8310 and 8260B used for naphthalene.

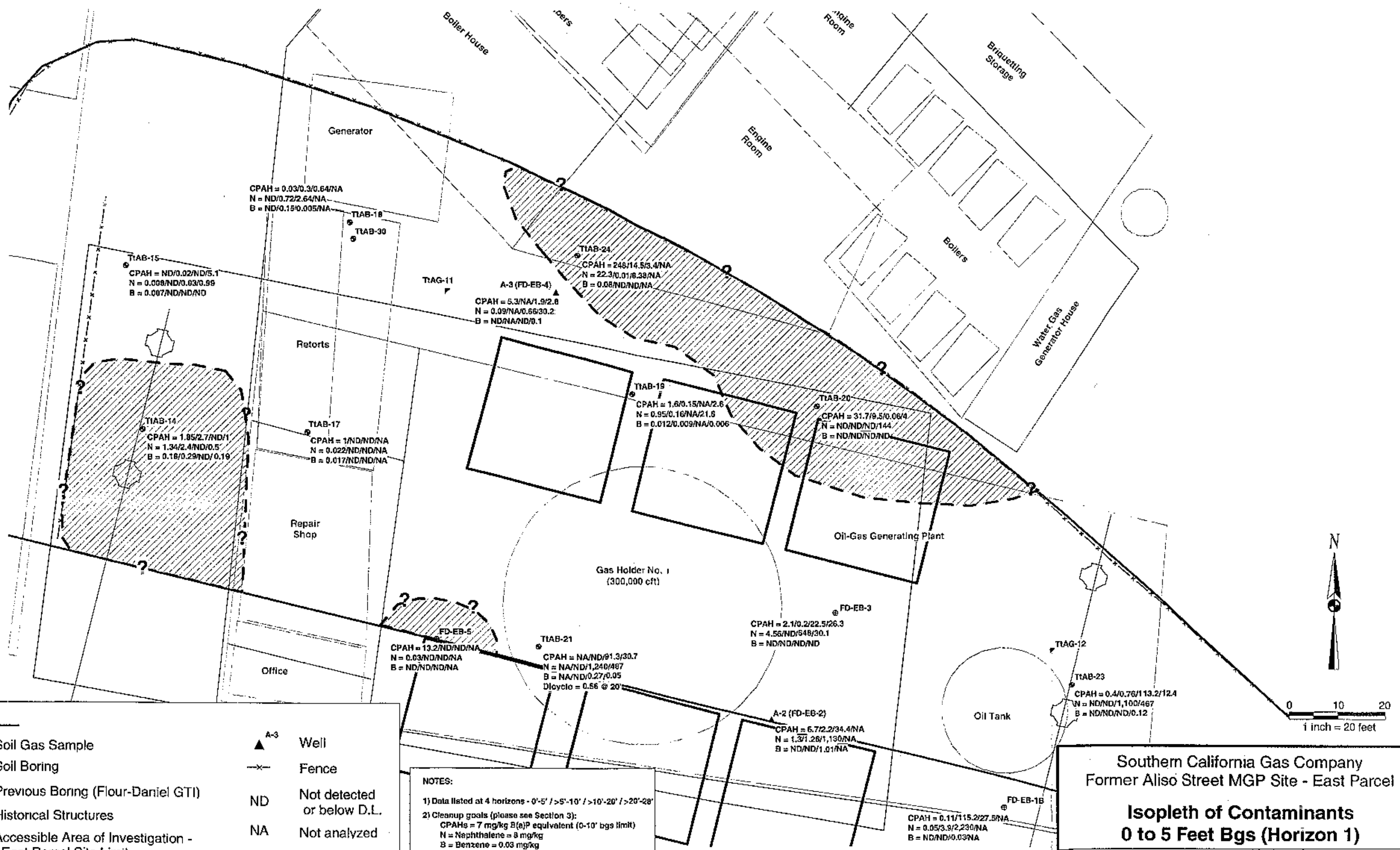
Southern California Gas Company
Former Aliso Street MGP Site
Sector A - East Parcel

Concentration of Compounds at Different Depths

Tetra Tech, Inc.

FILE: AUS11930_Block_A_East WOTPH_newdepths.WOR
DATE: 11-14-2002

Fig. 3-1



Legend

- TtAG-11 — Soil Gas Sample
- TtAB-21 — Soil Boring
- FD-EB-1B — Previous Boring (Flour-Daniel GTI)
- Historical Structures
- Accessible Area of Investigation - East Parcel Site Limit
- Former MGP Boundary (Sector A)
- A-3 — Well
- Fence
- ND — Not detected or below D.L.
- NA — Not analyzed

NOTES:

1) Data listed at 4 horizons - 0'-5' / >5'-10' / >10'-20' / >20'-28'

2) Cleanup goals (please see Section 3):
   CPAHs = 7 mg/kg B(a)P equivalent (0-10' bgs limit)
   N = Naphthalene = 8 mg/kg
   B = Benzene = 0.03 mg/kg

3) Borings FD-EB-2 and FD-EB-4 changed to monitoring wells A-2 and A-3, respectively.

4) Highest value from EPA Methods 8310 and 8260B used for naphthalene.

Southern California Gas Company
Former Aliso Street MGP Site - East Parcel

Isopleth of Contaminants 0 to 5 Feet Bgs (Horizon 1)

Tetra Tech, Inc.

FILE: ALIS11930_Block_A_East WOTPH_newdepths.WOR
DATE: 11-14-2002

Fig. 3-2

Legend

TtAG-11	Soil Gas Sample
TtAB-21	Soil Boring
FD-EB-1B	Previous Boring (Flour-Daniel GTI)
	Historical Structures
	Accessible Area of Investigation - East Parcel Site Limit
	Former MGP Boundary (Sector A)
A-3	Well
	Fence
ND	Not detected or below D.L.
NA	Not analyzed

NOTES:

1) Data listed at 4 horizons - 0'-5' / >5'-10' / >10'-20' / >20'-28'

2) Cleanup goals (please see Section 3):
CPAHs = 7 mg/kg B(a)P equivalent (0-10' bgs limit)
N = Naphthalene = 8 mg/kg
B = Benzene = 0.03 mg/kg

3) Borings FD-EB-2 and FD-EB-4 changed to monitoring wells A-2 and A-3, respectively.

4) Highest value from EPA Methods 8310 and 8260B used for naphthalene.

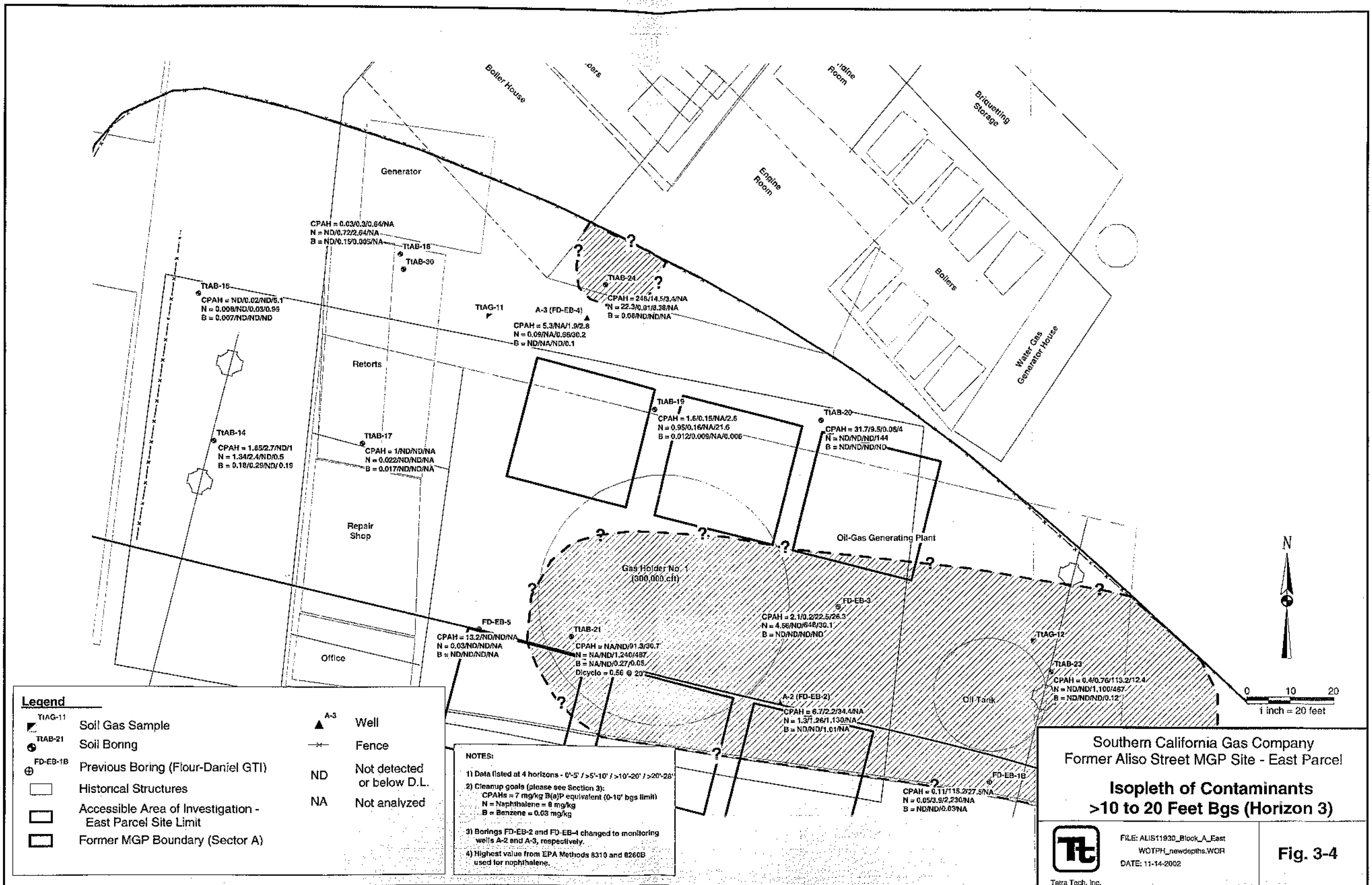
Southern California Gas Company
Former Aliso Street MGP Site - East Parcel

Isopleth of Contaminants >5 to 10 Feet Bgs (Horizon 2)

Tetra Tech, Inc.

FILE: ALIS11930_Block_A_East WOTPH_newdepths.WOR
DATE: 11-14-2002

Fig. 3-3


Boiler House
Engine Room
Briquetting Storage
Boilers
Water Gas Generator House
Generator
Retorts
Repair Shop
Office
Gas Holder No. 1 (300,000 cft)
Oil-Gas Generating Plant
Oil Tank
CPAH = 0.03/0.3/0.64/NA
N = ND/0.72/2.64/NA
B = ND/0.15/0.005/NA
TtAB-18
TtAB-30
TtAB-15
CPAH = ND/0.02/ND/5.1
N = 0.008/ND/0.03/0.99
B = 0.007/ND/ND/ND
TtAG-11
A-3 (FD-EB-4)
CPAH = 5.3/NA/1.9/2.8
N = 0.09/NA/0.66/30.2
B = ND/NA/ND/0.1
TtAB-24
CPAH = 248/14.5/3.4/NA
N = 22.3/0.91/8.38/NA
B = 0.08/ND/ND/NA
TtAB-14
CPAH = 1.85/2.7/ND/1
N = 1.34/2.4/ND/0.5
B = 0.18/0.29/ND/0.19
TtAB-17
CPAH = 1/ND/ND/NA
N = 0.022/ND/ND/NA
B = 0.017/ND/ND/NA
TtAB-19
CPAH = 1.6/0.15/NA/2.6
N = 0.95/0.16/NA/21.6
B = 0.012/0.009/NA/0.006
TtAB-20
CPAH = 31.7/9.5/0.06/4
N = ND/ND/ND/144
B = ND/ND/ND/ND
FD-EB-5
CPAH = 13.2/ND/ND/NA
N = 0.03/ND/ND/NA
B = ND/ND/ND/NA
TtAB-21
CPAH = NA/ND/91.3/30.7
N = NA/ND/1,240/487
B = NA/ND/0.27/0.05
Dicyclo = 0.56 @ 20'
FD-EB-3
CPAH = 2.1/0.2/22.5/26.3
N = 4.56/ND/648/30.1
B = ND/ND/ND/ND
A-2 (FD-EB-2)
CPAH = 6.7/2.2/34.4/NA
N = 1.3/1.26/1,130/NA
B = ND/ND/1.01/NA
TtAG-12
TtAB-23
CPAH = 0.4/0.76/113.2/12.4
N = ND/ND/1,100/467
B = ND/ND/ND/0.12
FD-EB-1B
CPAH = 0.11/115.2/27.5/NA
N = 0.05/3.9/2,230/NA
B = ND/ND/0.03/NA
N
0 10 20
1 inch = 20 feet
Legend
TtAG-11 Soil Gas Sample
TtAB-21 Soil Boring
FD-EB-1B Previous Boring (Flour-Daniel GTI)
Historical Structures
Accessible Area of Investigation - East Parcel Site Limit
Former MGP Boundary (Sector A)
A-3 Well
Fence
ND Not detected or below D.L.
NA Not analyzed
NOTES:
1) Data listed at 4 horizons - 0'-5' / >5'-10' / >10'-20' / >20'-28'
2) Cleanup goals (please see Section 3):
CPAHs = 7 mg/kg B(a)P equivalent (0-10' bgs limit)
N = Naphthalene = 6 mg/kg
B = Benzene = 0.03 mg/kg
3) Borings FD-EB-2 and FD-EB-4 changed to monitoring wells A-2 and A-3, respectively.
4) Highest value from EPA Methods 8310 and 8260B used for naphthalene.
Southern California Gas Company
Former Aliso Street MGP Site - East Parcel
Isopleth of Contaminants
>10 to 20 Feet Bgs (Horizon 3)
Tt
Tetra Tech, Inc.
FILE: ALIS11930_Block_A_East WOTPH_newdepths.WOR
DATE: 11-14-2002
Fig. 3-4

Legend

TtAG-11	Soil Gas Sample
TtAB-21	Soil Boring
FD-EB-1B	Previous Boring (Flour-Daniel GTI)
	Historical Structures
	Accessible Area of Investigation - East Parcel Site Limit
	Former MGP Boundary (Sector A)
A-3	Well
	Fence
ND	Not detected or below D.L.
NA	Not analyzed

NOTES:

1) Data listed at 4 horizons - 0'-5' / >5'-10' / >10'-20' / >20'-28'
2) Cleanup goals (please see Section 3):
   CPAHs = 7 mg/kg B(a)P equivalent (0-10' bgs limit)
   N = Naphthalene = 8 mg/kg
   B = Benzene = 0.03 mg/kg
3) Borings FD-EB-2 and FD-EB-4 changed to monitoring wells A-2 and A-3, respectively.
4) Highest value from EPA Methods 8310 and 8260B used for naphthalene.

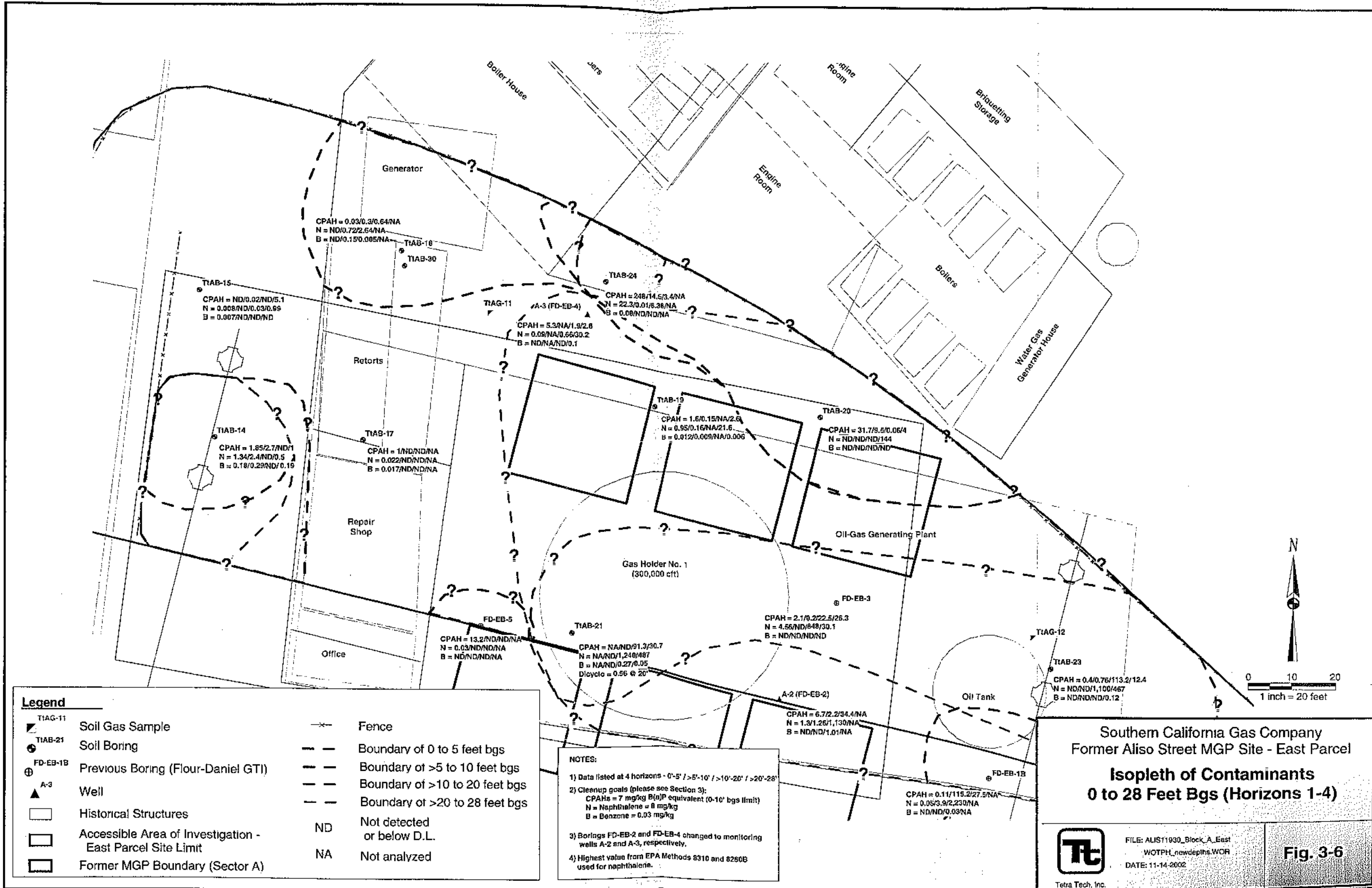
Southern California Gas Company
Former Aliso Street MGP Site - East Parcel

Isopleth of Contaminants >20 to 28 Feet Bgs (Horizon 4)

Tetra Tech, Inc.

FILE: ALIS11930_Block_A_East WOTPH_newdepths.WOR
DATE: 11-14-2002

Fig. 3-5



Southern California Gas Company
Former Aliso Street MGP Site - East Parcel
Isopleth of Contaminants
0 to 28 Feet Bgs (Horizons 1-4)
Fig. 3-6

A comprehensive feasibility study report was prepared by the RETEC Group, Inc. (RETEC) in June 2002 [RETEC, 2002]. The purpose of the feasibility study (FS) was to identify remedial alternatives directly applicable to the Site, to evaluate relevant information concerning the remedial action options, and to recommend a remedial alternative that can effectively mitigate potential risks associated with the contamination found at the Site.

The primary objectives of the FS were to evaluate the requirements for excavation beneath the El Monte Busway and along the 101 Freeway, and to evaluate potential in situ treatment options for materials that could not be excavated. The FS summarizes the geotechnical investigations performed to determine whether contaminated soils and residues could be safely excavated, as well as the results of treatability tests conducted to determine the potential efficacy of in situ treatment.

4.1 SITE SPECIFIC LIMITATION CONSIDERED IN THE FEASIBILITY STUDY

There are significant site specific constraints to remediation in the East parcel, including:

1) Structural and geotechnical limitations due to the location of the El Monte Busway bents.

2) Difficulties in gaining access to the impacted areas or the adjoining areas, needed for staging or operations. The El Monte Busway bents further limit access to the parcel.

3) Limited vertical and lateral access to the impacted areas due to the height of the overhead El Monte Busway, and the presence of bridge supports.

4) Limited vertical access to the impacted areas due to the location next to an active freeway.

5) The limited space available on the Site for conducting any remedial operations.

6) The presence of subsurface structures (piping, large concrete blocks, bridge supports, etc.) that could limit the ability to excavate MGP residues. For example, the eastern section of the East parcel contains several very large (28'x28'x12'deep) concrete generator blocks below the ground surface (approximately 2 feet bgs).

Given these constraints, the FS focused on identifying the volumes of impacted material that can be safely excavated by analyzing specific methodologies through geotechnical investigations, and evaluating potential in situ treatment technologies that may be applicable for any remaining materials that cannot be excavated.

4.2 REMEDIAL ALTERNATIVES

A number of remedial technologies for contaminant-affected subsurface soil at the Site were reviewed, including:

- No Action,
- Institutional controls including groundwater monitoring program,
- Removal including shallow and deep soil excavation,
- Excavation with off-site thermal desorption,
- Excavation with off-Site disposal,
- Soil vapor extraction,
- In situ stabilization,
- In situ chemical reduction/oxidation, and
- Site capping.

To evaluate the remedial alternatives, two levels of technology screening were used. The first screening included all technologies that can potentially be applied at the Site. Most of the available technologies were rejected during the first-level screening because of the site-specific constraints. The secondary level screening of technologies included an evaluation based on effectiveness, implementability, and cost. As part of this detailed evaluation, a treatability study was performed for in situ thermal treatment. Any ex situ on-site treatment was immediately not considered due to space limitations at the Site. Advantages and disadvantages, limitations, and regulatory and economic concerns for the remediation alternatives were discussed and reported in the FS Report [RETEC, 2002]. The justifications for elimination of the remedial alternative are discussed below.

4.2.1 Soil Vapor Extraction

In soil vapor extraction, a vacuum pump induces vapor flow through the unsaturated soil zone and the rate of volatilization is enhanced. The most volatile compounds are preferentially removed. Due to composition changes with time, the effluent vapor concentrations and mass removal rates by venting decrease with time. A benefit of soil venting would be that the rate of aerobic biodegradation of contaminants by indigenous microorganisms increases as oxygen is drawn into the subsurface.

Soil vapor extraction is effective at sites where most of the contaminants are volatile compounds. However, since the volatiles are associated with residual oil and tarry materials at this Site, this technology would have limited effectiveness without enhancement (e.g., heat). In addition, soil vapor extraction has limited effectiveness in reducing the mass of carcinogenic PAHs at this Site.

4.2.2 In Situ Stabilization

One technique that can be used for subsurface contamination is solidification/stabilization. It involves mixing the soil with chemical binders that immobilize the constituents of concern. One method of accomplishing this is by using an auger to form a series of overlapping eight-foot diameter stabilized soil columns. A crane-mounted drill attachment turns a single-shaft large-diameter auger head that consists of two or more cutting edges and mixing blades As the auger head is advanced into the soil, grout is pumped through a hollow drill shaft and injected into the soil at the pilot bit Cement, bentonite, additives and proprietary chemicals may also be mixed into the grout. The cutting edges and mixing blades blend the soil and grout with a shearing motion When the design depth is reached, the auger head is raised to expose the mixing blade at the surface and then allowed to re-advance to the bottom Once the shaft is completed, another column is drilled using a specified pattern of overlapping columns so what is left behind is a series of interlinked columns, which will have the following properties: immobilized contaminants, neutralized soil, improved bearing capacity or shear strength, and if reinforced, the ability to withstand differential soil and hydrostatic loading Site limitations inhibit implementation of this technology at the Site. The overhead clearance is insufficient to accommodate the crane and other equipment necessary to implement the technology at the Site Smaller equipment is not sufficient enough to reach into the contaminated zones. Therefore, this technology was not retained for further consideration.

4.2.3 In Situ Chemical Reduction/Oxidation

In this process, hazardous contaminants are converted to non-hazardous compounds that are more stable, less mobile, and/or inert. The reducing/oxidizing agents most commonly used for treatment include ozone, hydrogen peroxide, hypochlorites, chlorine, chlorine, dioxide, and permanganates A combination of these reagents, or combining them with ultraviolet oxidation, makes the process more effective

This technology is of limited applicability and effectiveness, especially in deep soil contamination, because of implementability problems. Specifically, strong oxidants could affect the adjacent concrete bridge supports There is little evidence in either literature or experience that oxidizing and reducing agents will not have any impact to the existing structures. The potential liability of weakening the bridge supports by applying this technology outweighs contaminant reduction benefits.

4.2.4 Site Capping

Site capping can be implemented in various forms. At this Site, a design involving shallow soil excavation and subsequent placement of an appropriate cap in the accessible, impacted areas is feasible The surface would be graded and/or landscaped to the existing surface level The goal of the cap design would be to control dust emissions, prevent rainwater infiltration through the impacted deep soils, and prevent soil vapors from rising to the surface The cap will also minimize receptor exposure at the surface

The cap should be designed to facilitate water collection into drains and minimize pooling. Cap maintenance consists of inspection for and occasional repair of cracks This alternative is specifically applicable to Busway East. It is however, not acceptable to leave impacted soils in place without any institutional controls.

The final design of the Site cap depends on the structural and performance requirements considering the El Monte Busway, the 101 Freeway, and the presence of generator blocks in the East parcel

4.2.5 Enhanced Organic Removal Using Hot Water Flushing and Steam Injection

The process involves injecting hot water (at a temperature of 190°F) and steam (at a temperature of 210°F) into the soil Both media enhances organic waste removal by lowering the viscosity and density of the organic waste The mobilized portion of the organic waste is then transported to the condensation front where it condenses and is removed by pumping.

The residual organic waste remaining in the contaminated zone after treatment is immobile and does not continue to spread from its present location This containment of the organic residual is further enhanced when the treated area returns to ambient temperature This containment is due to the residual organic saturation-being inversely proportional to temperature; that is, as the temperature increases, the residual saturation decreases Therefore, at ambient temperature, the saturation of the organic waste after flushing will be considerably below the residual saturation for ambient-temperature conditions and will be highly immobile The use of steam injection has been used at a number of MGP sites to remove coal tar

In situ thermal treatment was considered promising enough to warrant laboratory treatability testing The tests, conducted by Western Research Institute, were performed on two Site samples (full report provided in Appendix E of the FS) These samples were taken from areas considered difficult or impossible to excavate Specifically these include the areas surrounding TtAB-8 (in the West parcel) and TtAB-18 (in the East parcel)

Results of Laboratory Study. The treatability study showed that, even under ideal conditions in the laboratory, in situ thermal treatment removed little of the contamination from a sample containing tarry residues Treatment at 190°F (simulating hot water injection) removed only 13% of the total organic carbon (TOC) from this sample Treatment at 210°F (a temperature more representative of steam injection) removed only 34% of the TOC Performance was somewhat better for another, less contaminated sample (removals of 53% and 68%, respectively) Benzene removals averaged 92% and 42% for the two temperatures, but little or no removal was measured for any of the PAHs In addition, in situ thermal treatment will have limited efficacy for the most contaminated areas (particularly the remaining gasholder base contents), because of the highly heterogeneous subsurface conditions that can result in channeling and limited access to residual oils and tarry materials Finally, the impacts of hot water or steam injection on the bridge bents and freeway integrity and stability are not known

Given the relatively poor performance under ideal laboratory conditions, as well as the other site-specific constraints, in situ thermal treatment was rejected for use at this time

4.2.6 Soil Excavation

A geotechnical study was conducted to evaluate potential strategies for excavating impacted soils, particularly the depths and locations in which such excavations can be performed safely

Based on this study, excavation can proceed up to 10 feet deep in some areas of the Site, given appropriate geotechnical controls and supports, but excavation cannot be safely performed in other areas For the most impacted materials (in particular the remaining gasholder base contents in the West parcel), it may be necessary to support the El Monte Busway bents.

4.3 DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

Detailed evaluations of the remaining remedial alternatives were then performed, to determine costs, risk reduction, and compliance with applicable or relevant and appropriate requirements (ARARs). The remedial alternatives selected and evaluated included:

1. No Action;
2. Institutional Controls; and
3. Shallow Excavation with off-Site Thermal Desorption, Institutional Controls, and Capping

Nine federal criteria were used to determine the extent of which the presented remedial options meet the remedial action objectives EPA guidance on evaluating remedial alternatives describes these nine criteria under three primary categories: threshold criteria, primary balancing criteria, and modifying criteria Of these nine criteria, seven are addressed in the FS The remaining two, acceptance by supporting agencies (DTSC in this case), and acceptance by the community, will be addressed when these parties have reviewed and commented on the FS or RAW [RETEC, 2002]

Alternative 1 is the No Action alternative This alternative is not protective of human health and the environment. Alternative 2 involves institutional controls and provides only limited protection for human health and the environment The monitoring component can warn of any migration of contaminants. Alternative 3 involves excavation with off-site thermal desorption treatment of excavated soil and is acceptable with respect to all criteria.

4.4 SELECTED REMEDIAL ACTION ALTERNATIVE

The preferred remedial action at this Site is partial excavation with off-site treatment using thermal desorption, institutional controls and capping of known and potential areas of contamination inaccessible by excavation.

Contaminated soil will be excavated in East parcel up to the maximum extent feasible, and the excavated soil will be transported off-site for thermal desorption treatment While excavation may not be implementable in all portions of the Site, capping will be used to reduce soil vapor migration, groundwater infiltration, and exposure of non-industrial receptors. Additional monitoring requirements that are part of this alternative can also warn of any contaminant migration.

The most difficult issue in remediating this Site is that excavation can potentially jeopardize the structural integrity of the busway or the adjacent US 101 Freeway Other problems include: 1) difficulties in gaining access to the impacted areas, or the adjoining areas needed for staging or operations; 2) the presence of subsurface structures (piping, concrete blocks, bridge supports, etc.) that could limit the ability to excavate MGP residues; 3) limited physical access to the impacted areas (given the overhead El Monte Busway), the presence of bridge supports, and the location next to an active freeway; and 4) the limited space available on the Site for conducting any remedial operations

4.5 ESTIMATED VOLUME OF EXCAVATION (For FS Only)

The benzo(a)pyrene equivalent carcinogenic polycyclic aromatic hydrocarbons (CPAH) and benzene concentrations in Site soils were compared to remedial goals (Section 3) to develop an initial remedial volume estimate of soil excavation In the East parcel, it is estimated that an area in the central-north portion of the East parcel of approximately 4,000 square feet will be removed to a maximum depth of 10 feet This area encompasses Borings TtAB-24 and TtAB-20 The volume of soil to be removed is estimated to be 1,480 yd^3

The limits of excavation will be further developed in Sections 5 The volumes can change based on field observation and soil testing during excavation (Also see Sections 4 6 and 5 6)

4.6 ESTIMATED COST OF REMEDIATION

The estimated cost to implement the above selected alternative (Alternative 3) for the East parcel is $590,334 In addition to the excavation cost, these costs also include the cost of monitoring, pavement, soil treatment, and pavement maintenance [RETEC, 2002]

Updated values for volume of excavation and cost are presented in Section 5 6 These new values were calculated based on additional Site-information and decisions made in meetings among DTSC, SCG, and Tetra Tech during the development of this RAW

A comprehensive feasibility study report was prepared by the RETEC Group, Inc. (RETEC) in June 2002 [RETEC, 2002]. The purpose of the feasibility study (FS) was to identify remedial alternatives directly applicable to the Site, to evaluate relevant information concerning the remedial action options, and to recommend a remedial alternative that can effectively mitigate potential risks associated with the contamination found at the Site.

The primary objectives of the FS were to evaluate the requirements for excavation beneath the El Monte Busway and along the 101 Freeway, and to evaluate potential in situ treatment options for materials that could not be excavated. The FS summarizes the geotechnical investigations performed to determine whether contaminated soils and residues could be safely excavated, as well as the results of treatability tests conducted to determine the potential efficacy of in situ treatment.

4.1 SITE SPECIFIC LIMITATION CONSIDERED IN THE FEASIBILITY STUDY

There are significant site specific constraints to remediation in the East parcel, including:

1) Structural and geotechnical limitations due to the location of the El Monte Busway bents.

2) Difficulties in gaining access to the impacted areas or the adjoining areas, needed for staging or operations. The El Monte Busway bents further limit access to the parcel.

3) Limited vertical and lateral access to the impacted areas due to the height of the overhead El Monte Busway, and the presence of bridge supports.

4) Limited vertical access to the impacted areas due to the location next to an active freeway.

5) The limited space available on the Site for conducting any remedial operations.

6) The presence of subsurface structures (piping, large concrete blocks, bridge supports, etc.) that could limit the ability to excavate MGP residues. For example, the eastern section of the East parcel contains several very large (28'x28'x12'deep) concrete generator blocks below the ground surface (approximately 2 feet bgs).

Given these constraints, the FS focused on identifying the volumes of impacted material that can be safely excavated by analyzing specific methodologies through geotechnical investigations, and evaluating potential in situ treatment technologies that may be applicable for any remaining materials that cannot be excavated.

4.2 REMEDIAL ALTERNATIVES

A number of remedial technologies for contaminant-affected subsurface soil at the Site were reviewed, including:

- No Action,
- Institutional controls including groundwater monitoring program,
- Removal including shallow and deep soil excavation,
- Excavation with off-site thermal desorption,
- Excavation with off-Site disposal,
- Soil vapor extraction,
- In situ stabilization,
- In situ chemical reduction/oxidation, and
- Site capping.

To evaluate the remedial alternatives, two levels of technology screening were used. The first screening included all technologies that can potentially be applied at the Site. Most of the available technologies were rejected during the first-level screening because of the site-specific constraints. The secondary level screening of technologies included an evaluation based on effectiveness, implementability, and cost. As part of this detailed evaluation, a treatability study was performed for in situ thermal treatment. Any ex situ on-site treatment was immediately not considered due to space limitations at the Site. Advantages and disadvantages, limitations, and regulatory and economic concerns for the remediation alternatives were discussed and reported in the FS Report [RETEC, 2002]. The justifications for elimination of the remedial alternative are discussed below.

4.2.1 Soil Vapor Extraction

In soil vapor extraction, a vacuum pump induces vapor flow through the unsaturated soil zone and the rate of volatilization is enhanced. The most volatile compounds are preferentially removed. Due to composition changes with time, the effluent vapor concentrations and mass removal rates by venting decrease with time. A benefit of soil venting would be that the rate of aerobic biodegradation of contaminants by indigenous microorganisms increases as oxygen is drawn into the subsurface.

Soil vapor extraction is effective at sites where most of the contaminants are volatile compounds. However, since the volatiles are associated with residual oil and tarry materials at this Site, this technology would have limited effectiveness without enhancement (e.g., heat). In addition, soil vapor extraction has limited effectiveness in reducing the mass of carcinogenic PAHs at this Site.

4.2.2 In Situ Stabilization

One technique that can be used for subsurface contamination is solidification/stabilization. It involves mixing the soil with chemical binders that immobilize the constituents of concern. One method of accomplishing this is by using an auger to form a series of overlapping eight-foot diameter stabilized soil columns. A crane-mounted drill attachment turns a single-shaft large-diameter auger head that consists of two or more cutting edges and mixing blades. As the auger head is advanced into the soil, grout is pumped through a hollow drill shaft and injected into the soil at the pilot bit. Cement, bentonite, additives and proprietary chemicals may also be mixed into the grout. The cutting edges and mixing blades blend the soil and grout with a shearing motion. When the design depth is reached, the auger head is raised to expose the mixing blade at the surface and then allowed to re-advance to the bottom. Once the shaft is completed, another column is drilled using a specified pattern of overlapping columns so what is left behind is a series of interlinked columns, which will have the following properties: immobilized contaminants, neutralized soil, improved bearing capacity or shear strength, and if reinforced, the ability to withstand differential soil and hydrostatic loading. Site limitations inhibit implementation of this technology at the Site. The overhead clearance is insufficient to accommodate the crane and other equipment necessary to implement the technology at the Site. Smaller equipment is not sufficient enough to reach into the contaminated zones. Therefore, this technology was not retained for further consideration.

4.2.3 In Situ Chemical Reduction/Oxidation

In this process, hazardous contaminants are converted to non-hazardous compounds that are more stable, less mobile, and/or inert. The reducing/oxidizing agents most commonly used for treatment include ozone, hydrogen peroxide, hypochlorites, chlorine, chlorine, dioxide, and permanganates. A combination of these reagents, or combining them with ultraviolet oxidation, makes the process more effective.

This technology is of limited applicability and effectiveness, especially in deep soil contamination, because of implementability problems. Specifically, strong oxidants could affect the adjacent concrete bridge supports. There is little evidence in either literature or experience that oxidizing and reducing agents will not have any impact to the existing structures. The potential liability of weakening the bridge supports by applying this technology outweighs contaminant reduction benefits.

4.2.4 Site Capping

Site capping can be implemented in various forms. At this Site, a design involving shallow soil excavation and subsequent placement of an appropriate cap in the accessible, impacted areas is feasible. The surface would be graded and/or landscaped to the existing surface level. The goal of the cap design would be to control dust emissions, prevent rainwater infiltration through the impacted deep soils, and prevent soil vapors from rising to the surface. The cap will also minimize receptor exposure at the surface.

The cap should be designed to facilitate water collection into drains and minimize pooling. Cap maintenance consists of inspection for and occasional repair of cracks. This alternative is specifically applicable to Busway East. It is however, not acceptable to leave impacted soils in place without any institutional controls.

The final design of the Site cap depends on the structural and performance requirements considering the El Monte Busway, the 101 Freeway, and the presence of generator blocks in the East parcel.

4.2.5 Enhanced Organic Removal Using Hot Water Flushing and Steam Injection

The process involves injecting hot water (at a temperature of 190°F) and steam (at a temperature of 210°F) into the soil. Both media enhances organic waste removal by lowering the viscosity and density of the organic waste. The mobilized portion of the organic waste is then transported to the condensation front where it condenses and is removed by pumping.

The residual organic waste remaining in the contaminated zone after treatment is immobile and does not continue to spread from its present location. This containment of the organic residual is further enhanced when the treated area returns to ambient temperature. This containment is due to the residual organic saturation-being inversely proportional to temperature; that is, as the temperature increases, the residual saturation decreases. Therefore, at ambient temperature, the saturation of the organic waste after flushing will be considerably below the residual saturation for ambient-temperature conditions and will be highly immobile. The use of steam injection has been used at a number of MGP sites to remove coal tar.

In situ thermal treatment was considered promising enough to warrant laboratory treatability testing. The tests, conducted by Western Research Institute, were performed on two Site samples (full report provided in Appendix E of the FS). These samples were taken from areas considered difficult or impossible to excavate. Specifically these include the areas surrounding TtAB-8 (in the West parcel) and TtAB-18 (in the East parcel).

Results of Laboratory Study. The treatability study showed that, even under ideal conditions in the laboratory, in situ thermal treatment removed little of the contamination from a sample containing tarry residues. Treatment at 190°F (simulating hot water injection) removed only 13% of the total organic carbon (TOC) from this sample. Treatment at 210°F (a temperature more representative of steam injection) removed only 34% of the TOC. Performance was somewhat better for another, less contaminated sample (removals of 53% and 68%, respectively). Benzene removals averaged 92% and 42% for the two temperatures, but little or no removal was measured for any of the PAHs. In addition, in situ thermal treatment will have limited efficacy for the most contaminated areas (particularly the remaining gasholder base contents), because of the highly heterogeneous subsurface conditions that can result in channeling and limited access to residual oils and tarry materials. Finally, the impacts of hot water or steam injection on the bridge bents and freeway integrity and stability are not known.

Given the relatively poor performance under ideal laboratory conditions, as well as the other site-specific constraints, in situ thermal treatment was rejected for use at this time.

4.2.6 Soil Excavation

A geotechnical study was conducted to evaluate potential strategies for excavating impacted soils, particularly the depths and locations in which such excavations can be performed safely.

Based on this study, excavation can proceed up to 10 feet deep in some areas of the Site, given appropriate geotechnical controls and supports, but excavation cannot be safely performed in other areas. For the most impacted materials (in particular the remaining gasholder base contents in the West parcel), it may be necessary to support the El Monte Busway bents.

4.3 DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

Detailed evaluations of the remaining remedial alternatives were then performed, to determine costs, risk reduction, and compliance with applicable or relevant and appropriate requirements (ARARs) The remedial alternatives selected and evaluated included:

1 No Action;
2 Institutional Controls; and
3 Shallow Excavation with off-Site Thermal Desorption, Institutional Controls, and Capping.

Nine federal criteria were used to determine the extent of which the presented remedial options meet the remedial action objectives. EPA guidance on evaluating remedial alternatives describes these nine criteria under three primary categories: threshold criteria, primary balancing criteria, and modifying criteria Of these nine criteria, seven are addressed in the FS. The remaining two, acceptance by supporting agencies (DTSC in this case), and acceptance by the community, will be addressed when these parties have reviewed and commented on the FS or RAW [RETEC, 2002]

Alternative 1 is the No Action alternative. This alternative is not protective of human health and the environment. Alternative 2 involves institutional controls and provides only limited protection for human health and the environment. The monitoring component can warn of any migration of contaminants Alternative 3 involves excavation with off-site thermal desorption treatment of excavated soil and is acceptable with respect to all criteria.

4.4 SELECTED REMEDIAL ACTION ALTERNATIVE

The preferred remedial action at this Site is partial excavation with off-site treatment using thermal desorption, institutional controls and capping of known and potential areas of contamination inaccessible by excavation.

Contaminated soil will be excavated in East parcel up to the maximum extent feasible, and the excavated soil will be transported off-site for thermal desorption treatment. While excavation may not be implementable in all portions of the Site, capping will be used to reduce soil vapor migration, groundwater infiltration, and exposure of non-industrial receptors[1]. Additional monitoring requirements that are part of this alternative can also warn of any contaminant migration.

[1] The type of a cap, if becomes necessary at the completion of remedial action, will be determined and designed before installation.

Based on this study, excavation can proceed up to 10 feet deep in some areas of the Site, given appropriate geotechnical controls and supports, but excavation cannot be safely performed in other areas. For the most impacted materials (in particular the remaining gasholder base contents in the West parcel), it may be necessary to support the El Monte Busway bents.

4.3 DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

Detailed evaluations of the remaining remedial alternatives were then performed, to determine costs, risk reduction, and compliance with applicable or relevant and appropriate requirements (ARARs). The remedial alternatives selected and evaluated included:

1. No Action;
2. Institutional Controls; and
3. Shallow Excavation with off-Site Thermal Desorption, Institutional Controls, and Capping.

Nine federal criteria were used to determine the extent of which the presented remedial options meet the remedial action objectives. EPA guidance on evaluating remedial alternatives describes these nine criteria under three primary categories: threshold criteria, primary balancing criteria, and modifying criteria. Of these nine criteria, seven are addressed in the FS. The remaining two, acceptance by supporting agencies (DTSC in this case), and acceptance by the community, will be addressed when these parties have reviewed and commented on the FS or RAW [RETEC, 2002].

Alternative 1 is the No Action alternative. This alternative is not protective of human health and the environment. Alternative 2 involves institutional controls and provides only limited protection for human health and the environment. The monitoring component can warn of any migration of contaminants. Alternative 3 involves excavation with off-site thermal desorption treatment of excavated soil and is acceptable with respect to all criteria.

4.4 SELECTED REMEDIAL ACTION ALTERNATIVE

The preferred remedial action at this Site is partial excavation with off-site treatment using thermal desorption, institutional controls and capping of known and potential areas of contamination inaccessible by excavation.

Contaminated soil will be excavated in East parcel up to the maximum extent feasible, and the excavated soil will be transported off-site for thermal desorption treatment. While excavation may not be implementable in all portions of the Site, capping will be used to reduce soil vapor migration, groundwater infiltration, and exposure of non-industrial receptors. Additional monitoring requirements that are part of this alternative can also warn of any contaminant migration.

The most difficult issue in remediating this Site is that excavation can potentially jeopardize the structural integrity of the busway or the adjacent US 101 Freeway. Other problems include: 1) difficulties in gaining access to the impacted areas, or the adjoining areas needed for staging or operations; 2) the presence of subsurface structures (piping, concrete blocks, bridge supports, etc.) that could limit the ability to excavate MGP residues; 3) limited physical access to the impacted areas (given the overhead El Monte Busway), the presence of bridge supports, and the location next to an active freeway; and 4) the limited space available on the Site for conducting any remedial operations.

4.5 ESTIMATED VOLUME OF EXCAVATION (For FS Only)

The benzo(a)pyrene equivalent carcinogenic polycyclic aromatic hydrocarbons (CPAH) and benzene concentrations in Site soils were compared to remedial goals (Section 3) to develop an initial remedial volume estimate of soil excavation. In the East parcel, it is estimated that an area in the central-north portion of the East parcel of approximately 4,000 square feet will be removed to a maximum depth of 10 feet. This area encompasses Borings TtAB-24 and TtAB-20. The volume of soil to be removed is estimated to be 1,480 yd^3.

The limits of excavation will be further developed in Sections 5. The volumes can change based on field observation and soil testing during excavation.

4.6 ESTIMATED COST OF REMEDIATION

The estimated cost to implement the above selected alternative (Alternative 3) for the East parcel is $590,334. In addition to the excavation cost, these costs also include the cost of monitoring, pavement, soil treatment, and pavement maintenance [RETEC, 2002].

The Site physical and geotechnical constraints are discussed in this section Additional calculations on the impact of excavation to residual contamination are also included The section concludes by outlining the final limits of excavation considering the chemical and risk information in Section 3 (Cleanup Goal Calculations), and the limitations identified in Section 4 (Feasibility Study) Consideration of the lowest cleanup goals for each contaminant of concern, as well as all comments received from the Department of Toxic Substances Control (DTSC) and the California Department of Transportation (Caltrans) were also included in the determination of final excavation limits

The final selected remedial action for soil at the Site consists of removing contaminated soil from the Site to the extent structurally and geotechnically feasible A small volume of impacted soil containing concentrations of compounds exceeding cleanup goals will be left in place These are located in the inaccessible areas such as below 5 feet from ground surface at Bent 8, soils co-located with the generator blocks, and soils located adjacent to the 101 Freeway In addition, soils that will be underneath the slopes required by geotechnical constraints (when excavating adjacent to specific locations in the East parcel up to a certain depth) will also be left in place Human health and groundwater risk associated with leaving these contaminants in place will be calculated using volume weighted average methodology Specific details of the steps leading to this selection are provided below

5.1 EXTENT OF CONTAMINATION

Figures 3-2 through 3-5 in Section 3 show the lateral and vertical extent of contamination These figures represent soils impacted by COPCs (e g , C-PAHs, benzene, and naphthalene), at selected soil layers: 0 to 5 feet below ground surface (bgs), >5 to 10 feet bgs, >10 to 20 feet bgs, and >20 to 28 feet bgs A soil sample is included within each delineated depth and extent of contamination if at least one of the soil samples has a COPC concentration exceeding the calculated cleanup goal for that analyte

5.2 SITE PHYSICAL CONSTRAINTS

Several physical constraints that limit unrestricted excavation of impacted soil exist at this Site These include the proximity of impacted soil to major roadways such as Ramirez Street and the 101 Freeway, as well as proximity to Bent 8, which supports the El Monte Busway Bridge Additional Site constraints include the existence of 28' x 28' x 12' concrete blocks in the middle of the Site Depth to groundwater is also a site constraint, as some impacted soil appear to be limited to depths influenced by groundwater fluctuation Full details are presented in Appendix A (Geotechnical Report for Removal of Contaminated Soil Along State Highway in Los Angeles, California) Caltrans Comments to this report and supplemental calculations as well as comments to these comments are presented in Appendix B Highlights are presented below

Busway Bridge Bents and Column Supports. The Busway Bridge over the East parcel is supported by two bents (each with two columns). The two bents located in the East parcel are Bents 8 and 9 The pile caps of Bent 8 measure 9' x 12' x 3'5", with ground elevation of the pile cap top at 278 feet. Soil overlying the pile cap is 1.5 feet thick. Pile cap thickness is 3.4 feet. The elevation of the pile cap bottom is 273.1 feet. The Bent 9 columns measure 12' x 15' x 4'3", with surface ground elevation at 278.8 feet. The bottom of the pile cap is at 264.5 feet. Thickness of the soil from ground surface to top of the pile cap is 10 feet.

101 Freeway. There are eight piers supporting the 101 Freeway on the south side of the East parcel. The as-built plans of the widening of Los Angeles River Bridge and Overhead at Aliso Street, West Approach, dated October 18, 1955, shows two rows of concrete blocks located below ground surface. Each row has seven concrete blocks. The blocks are each approximately 28' x 28' x 12' and are apparently the remains of former generator blocks related to MGP operations. The concrete blocks are in two parallel rows, trending east to west. One row is under the 101 Freeway and the other is under the El Monte Busway.

The SCG did not perform a subsurface investigation to verify whether these blocks exist or have already been removed. However, in an attempt to drill holes in the East parcel, refusal was encountered near the surface at numerous locations. Based on the 101 Freeway as-built plans dated October 15, 1955 (Plans), it appears that the concrete blocks that are underneath the 101 Freeway piers were left in place and the piers of the Freeway are pinned to the concrete blocks. It also appears that Piers No. 4 through 9 are supported and/or bridged over these generator blocks. The Plans also show that the piers are supported on piles embedded approximately 5 feet below ground surface Copies of the 101 Freeway Plans that show the concrete blocks to be under the Freeway piers are included in Appendix A

Ramirez Street. Impacted soil is also directly adjacent to Ramirez Street. Removal of soil below four feet deep could undermine the roadway and impact its structural integrity. The geotechnical study considered this potential impact The geotechnical study report determines the depth of excavation, the proper excavation methods to remove impacted soil, and the appropriate shoring system that can be used to preserve the roadway's structural integrity.

Groundwater. At the time of subsurface investigation in November 2000, groundwater was encountered at elevation of 248.5 feet in the East parcel. This corresponds to a depth of 29.5 feet bgs.

5.3 GEOTECHNICAL STUDIES

Geotechnical studies have been conducted by Geotechnical Soilutions, Inc., a subcontractor to Tetra Tech The scope of the study included: 1) a review of readily available geotechnical information and as-built plans obtained from Caltrans files; 2) excavation, logging, and sampling of four borings drilled for geotechnical purposes; 3) laboratory testing of selected soil samples for soil physical parameters; 4) geotechnical analysis, and 5) preparation of a report including geotechnical recommendations for temporary excavations and backfill.

Several excavation scenarios have been examined to determine feasible removal options through an ensuing geotechnical analysis and discussions with Caltrans. This was necessary as preservation of existing structures during contaminant removal is of major concern. The geotechnical report presented in Appendix A presents different methods and procedures that can be performed at the Site depending on the locations of the excavations and their proximity to the bridge supports and existing streets. These include the following:

- Soil slurry replacement is necessary if excavation is performed adjacent to the bridge supports (e.g., bents and columns);
- Soldier piles could be used if vertical excavation is performed along Ramirez Street beyond 4 feet below surface street;
- 1:1 temporary cuts could be used for excavation adjacent to the sidewalks and along the 101 Freeway.

In addition, open excavation could be performed without the preceding restrictions subject to the limitations outlined in the geotechnical report. The areas where unrestricted open excavation can be performed include:

- Soil overlying the pile caps;
- Soil adjacent to/surrounding the pile cap at Bent 8 (between the top and bottom of pile caps) if excavation is performed and backfilled within 24 hours of the excavation;
- Soil beyond the 1:1 projection from the 16-foot soil setback from the pile cap. This is specifically applicable if the excavation around Bent 8 would be left open for more than 24 hours;
- Soil beyond the 1:1 projection from the sidewalks and 101 Freeway; and
- The location of the concrete blocks.

The 16-foot setback mentioned above was delineated in the geotechnical report in order not to compromise the integrity of the soil bearing capacity adjacent to the bridge supports. This setback zone is placed between the bridge supports and the top of the excavation. Beyond the 16-foot setback, the excavation should be trimmed down to no steeper than a 1:1 slope.

If impacted soil is within the 16-foot setback, it is possible to remove the contaminated soil adjacent to the pile caps by drilling a series of boreholes around the pile caps and replacing the contaminated soils with slurry. Slurry replacements will increase the lateral strength and bearing capacity of the soil around the pile caps and thus reduce the setback requirement from 16 feet (without slurry replacement) to approximately 8 feet (with slurry replacement). Slurry replacement procedures are detailed in Appendix A.

Maximum Limits of Excavation

The maximum limit of open excavation without shoring, based on the geotechnical and structural constraints are shown on Figure 5-1 (same as Plate 1 of Appendix A). This is the limit that has been approved by Caltrans (Appendix C). Based on the geotechnical study, excavation can proceed below the existing ground surface to 12 feet bgs and in certain areas to 28 feet bgs. Appropriate structural and geotechnical shoring techniques shall be employed if the impacted soil is to be removed beyond specific depth limits adjacent to the roadways, the 101 Freeway, and the Busway Bridge bents. This would require the installation of a slurry ring and cone shaped slurry around Bent 8 and soldier piles along Ramirez Street

For ease of discussion, the Site has been divided into four sections: 1) northern section, 2) area around Bent 8, 3) area within and adjacent to the concrete blocks, and 4) southern portion near and under Freeway Bridge. Figure 5-2 shows the Site division according to these specific excavation sections (Plate 1 of Appendix A shows these same areas but without the Sections identified). Specific details of the maximum limits of excavation are as follows:

Section 1 (Northern Section). Site-wide excavation up to two feet bgs east of the Site gate (where the soil is level with the sidewalk elevation) and up to six feet bgs near the corner of Ramirez and Center Street (where the soil is up to a maximum of four feet higher than the sidewalk elevation) can be performed in this Section without any shoring. Beyond these excavation limits, excavation of up to an additional two feet deep can be performed using slot cut alternate sections method. A shoring system designed for a 12-foot excavation (as measured from the sidewalk elevation) will be used if excavation is to be performed below 12 feet bgs The shoring system would consist of soldier piles whose bottoms extend beyond 12 feet from the sidewalk elevation. Any excavation deeper than 12 feet could be trimmed at a 3 5:1 slope beginning from the bottom of the 12 foot excavation

Section 2 (Area around Bent 8). Impacted soil around Bent 8 can be removed by placement of a slurry ring and cone shaped slurry. This methodology could be cost prohibitive depending on how much soil is removed and the depth of interest to remove impacted soil

Section 3 (Area within and adjacent to the concrete blocks). There are no specific limitations to excavation at this Section. The generator blocks could be removed if excavation is to proceed below 12 feet bgs

Section 4 (Southern portion near and under Freeway Bridge). The south side of this section is adjacent to the 101 Freeway piers This side should be trimmed to no steeper than 1:1 slope A 5-foot setback should be provided between the piers and the top of the excavation. It should be noted that the piers are embedded 5 feet bgs into the generator blocks.

5.4 MEETINGS WITH DTSC AND CALTRANS

The SCG and Tetra Tech had several meetings with DTSC and Caltrans to discuss the remedial activities at Sector A of the former Aliso MGP Site. DTSC is overseeing the implementation of the remedial action while Caltrans is the property owner and the entity in charge of the maintenance and integrity of the overhead Busway and the Freeway

Ms. Rita Kamat of DTSC arranged the initial meeting held with Caltrans on July 12, 2002 During that meeting, SCG and Tetra Tech provided an overview of the results of the recent site investigations as well as the physical constraints to remediation at the Site. Available site remediation options were discussed considering this information Details of the geotechnical studies conducted at the Site as well as the associated removal action options were provided in a report submitted to Caltrans by SCG during that meeting

Subsequent meetings were held with Caltrans, DTSC, SCG, and Tetra Tech to discuss comments on the geotechnical report The SCG and Tetra Tech responded to these comments with a more comprehensive document adding more information provided in earlier Caltrans submittals The additional information considered Caltrans' guidance in the preparation of design documents to meet Caltrans requirements

Another meeting among DTSC, SCG, and Tetra Tech was conducted on May 8, 2003 During the meeting, Tetra Tech presented an excavation plan that took into account the maximum extent of excavation outlined in Section 5 3 and the extent of contamination presented in Sections 3 and 5 1 A mutually agreed upon limit of excavation was finalized during this meeting that considered COPC concentrations exceeding Site cleanup goals as well as geotechnical and structural limitations

5.5 PROPOSED EXCAVATION DETAILS

As was discussed in May 8, 2003 meeting with DTSC, SCG is making every effort in planning the removal of any existing Site contaminant sources that could potentially impact current and future receptors and the underlying groundwater, to the point physically and structurally feasible However, the number of geotechnical, structural, and technical challenges that exist at the Site limit the ability to fully remove all identified soil impacted by MGP residues The following section outlines the approach in addressing the removal of all accessible impacted soil and in addressing the residual contamination in the soil that cannot be physically removed because of the existing Site constraints

The proposed limit of excavation, accepted by DTSC, will include removal of impacted soil that will not require placement of any structural supports but will result in the reduction of risk, protective of human health. The accepted excavation limits are presented on Figure 5-3. Proposed excavation details are as follows:

Site-wide

Two feet of soil will be removed Site-wide (with the exception of only up to 1 5 feet around Bent 8) in Section 2. Excavation of soil up to two feet bgs will be performed both to remove surface soils as well as to grade and level any uneven surfaces at the Site The 1 5 feet depth at Bent 8 corresponds to the top of the Bent 8 pile cap Soil removed at Bent 8 will be replaced within 24 hours if additional soil is removed up to the bottom of the pile cap (see additional discussion below)

Section 1 (Northern Section)

The northern portion of the Site is contaminated with C-PAHs and benzene up to 10 feet bgs. Naphthalene has been detected above cleanup goals in the mid-horizon of 10 to 20 feet bgs, but only at TtAB-24. Soils impacted with naphthalene have been detected above cleanup goals below water table. C-PAHs are not of concern below 10 feet. Soil in this Section will be excavated and removed up to 12 feet bgs

The northern portion of this Section is currently above grade (with a maximum elevation difference at the corner of Ramirez and Center Streets). Therefore, removal of soil up to the street level can proceed without any geotechnical reinforcements of the existing sidewalk. An additional two feet of soil can be removed below Street level without any need for sidewalk protection after the soil at this Section is made flushed with the sidewalk. Removal of soil beyond two feet below the sidewalk elevation up to four feet below the sidewalk elevation can be accomplished if excavation is performed in alternate sections, and each section is backfilled before excavation of the other adjacent sections. Therefore, in Section 1, between 4 to 8 feet bgs of contaminated soil may be excavated next to Ramirez Street without shoring.

Removal of additional soil beyond 2 feet below the street level can be accomplished by implementing a 1:1 slope from the edge of the sidewalk. Therefore, no shoring will be necessary along Ramirez Street sidewalk to perform excavation up to 12 feet bgs, as long as the 1:1 slope is maintained. With this approach, some contaminants may be remained below the 1:1 sloped area.

Within the area adjacent to TtAB-24, it is assumed that naphthalene contamination is related to groundwater fluctuation and not from sources above. It may not be necessary to conduct excavation beyond 12 feet bgs at this location. However, some residual contamination may remain at this location in the soil within the 1:1 slope. In addition, during the excavation, the walls and the bottom of the excavation (to be determined during confirmation sampling) may appear to be heavily contaminated. SCG will continue to remove all impacted soil outside of the 1:1 slope within the limits of geotechnical constraints.

A post-excavation risk assessment will be performed after the removal action to demonstrate that residual contamination left in place will result in acceptable risk to human receptors. Residual concentrations to be used in the calculation of post-closure risk will be calculated using the volume weighted average methodology. An illustration of volume weighted average calculation is presented in Appendix D

Section 2 (Area Around Bent 8)

C-PAHs and naphthalene have not been detected above cleanup goals in the in this section of the Site along Bent 8. Benzene has been detected above cleanup goal in boring TtAB-14 at concentrations of 0.18 to 0.29 mg/kg at 5 and 10 feet bgs. In TtAB-14, benzene was not detected at 20-foot sample, but has been detected in the 25-foot sample. No benzene exceeding the cleanup goal has been detected in Boring TtAB-17. The area around TtAB-14 will be excavated and removed to 5 feet bgs using slot cut methods with soil replacement within 24 hours.

Benzene is the chemical driver for any removal action at Bent 8 in Section 2. However, the selected benzene cleanup goal (0.03 mg/kg) is based on the federal maximum contaminant level (MCL) for benzene (this cleanup goal is lowest calculated benzene Site cleanup goal of the three goals that were calculated [Tetra Tech, 2002]. Current benzene groundwater concentration is already greater than the MCL and therefore any mass contribution of residual contamination to the underlying groundwater will be negligible compared to the benzene already present in the groundwater

Any excavation beyond 5 feet requires a major shoring activity around the columns of Bent 8. The only contamination left in this area after removing the top 5-foot section will be within the vicinity of Boring TtAB-14 at 10 feet for benzene at a low concentration of 0.29 mg/kg. As discussed in a previous meeting with DTSC, knowing that benzene was not detected at 20 feet in this boring, and the insignificant level detected at 10 feet, it is not worthwhile to jeopardize the stability of the Busway Bridge by excavating beyond 5 feet bgs in this area. Therefore, residual contamination between the >5 to 10 feet bgs layer in Section 2 will be left in place

It has been pointed out that any residual contamination will be highly immobile due to its co-solvency with high concentrations of petroleum hydrocarbons. In addition, future use of groundwater has been assumed to be unlikely and that there are ubiquitous anthropogenic sources of hydrocarbon and solvent contamination of groundwater in this part of downtown Los Angeles. As such, soil removal at Bent 8 beyond 5 feet bgs will not provide any incremental benefit to the protection of the underlying groundwater. Issues related to the regional groundwater underlying the Site and the rest of the former Aliso Street MGP site will be addressed separately

Section 3 (Area Within and Adjacent to the Concrete Blocks)

This area includes at least three concrete blocks, remaining from former MGP generating units. These concrete blocks are approximately 28' x 28' x 12' It is believed that the top of these blocks is approximately two feet bgs. There was only one boring drilled in this area. Other attempts to drill were unsuccessful The single boring TtAB-19 does not show contamination in this area. Removal action below two feet in this Section will not be necessary, as concentrations of impacted soil do not exceed the calculated remedial goals from 0 to 20 feet bgs. Therefore, no excavation will be performed in this area, except the general 2 feet excavation proposed site-wide

As Sections 1 and 3 are directly adjacent to one another, any impacted soil observed during Section 1 excavation that extends into the concrete blocks will be removed Appropriate steps will be adopted if the extent of contamination in Section 1 is observed to extend below the base of the concrete blocks (excavation up to 20 feet below the original ground surface can be performed without shoring around and within the generator blocks.

Section 4 (Southern Portion Near and Under Freeway Bridge)

Contamination has been detected in six borings in this area Boring FD-EB-5 has elevated C-PAH concentration of 13.2 mg/kg at 5 feet and TPH contamination at 10 feet This boring is within the area outside the maximum limit of excavation (Figure 5-2) Below the Sitewide two foot deep excavation, the area around these borings will not be excavated

Borings Tt-AB21, FD-EB-3, FD-EB-2 (same as Well A-2), and Tt-AB-23 do not show contamination within the top 10 feet of soil, however they have contamination below 10 feet. The contaminated areas are also within the locations not allowed by Caltrans for excavation. Therefore, no excavation will be performed in this area, except the general 2 feet excavation proposed site-wide.

Removal of impacted soil below two feet bgs cannot be performed without compromising the structural integrity of the 101 Freeway. If removal is nevertheless implemented, the cost to remove residual contamination will result in negligible incremental risk reduction for the entire Site and will also provide no incremental benefit to the protection of the underlying groundwater. Similar to the reasons already mentioned for residual contamination in Bent 8, residual contamination in this area could be considered immobile due to its co-solvency with high concentrations of petroleum hydrocarbons. The future use of groundwater is remains unlikely and that there are ubiquitous anthropogenic sources of hydrocarbon and solvent contamination of groundwater in this area.

5.6 POST EXCAVATION ACTIVITIES

All excavations, regardless of the method, will be overseen by the Geotechnical Engineer (Geotechnical Soilutions, Inc.) Backfill and grading after excavation will be performed according to the specifications outlined in Section 10 of Appendix A. These include performance of maximum density tests; meeting backfill requirements for R-value, maximum rock diameter, and expansion index; and placement, spreading, and compacting of fill requirements. Adherence to field density tests per Caltrans or ASTM specifications will also be observed

A post-excavation risk assessment will be performed after the removal action to demonstrate that residual contamination left in place will result in acceptable risk to human receptors. Residual concentrations to be used in the calculation of post-closure risk will be calculated using the volume weighted average methodology. An illustration of volume weighted average calculation is presented in Appendix C. The methods used in this example were prepared using Busway East parcel data. But the same methodology could be applied to the Site

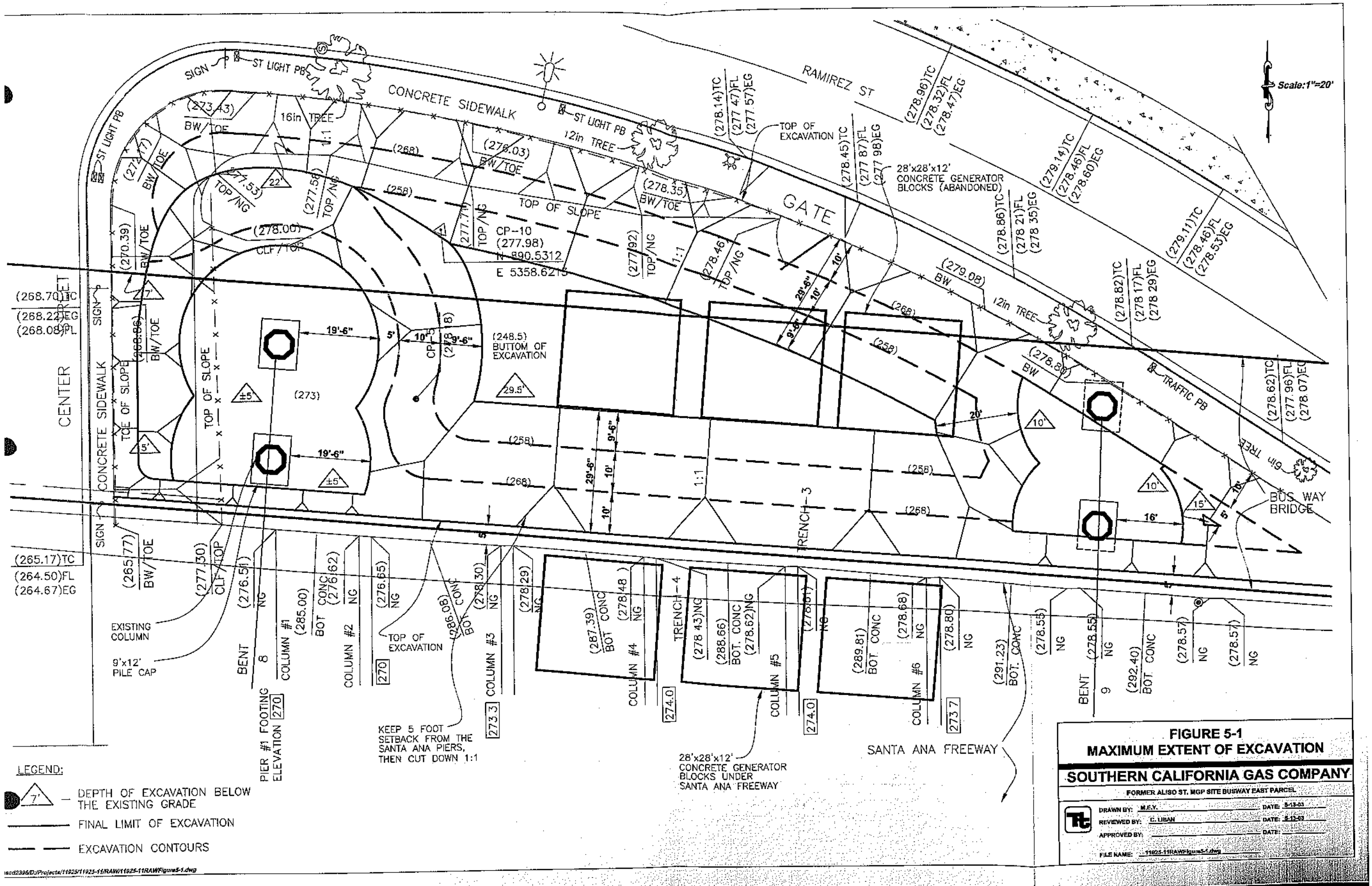
5.7 VOLUME OF EXCAVATION

Volume of excavation, based on the limits shown on Figure 5-3 is 3,319 cubic yards, or approximately 4,480 tons. The estimated cost to implement this removal action is $602,098. Additional cost details are presented in Table 5-1.

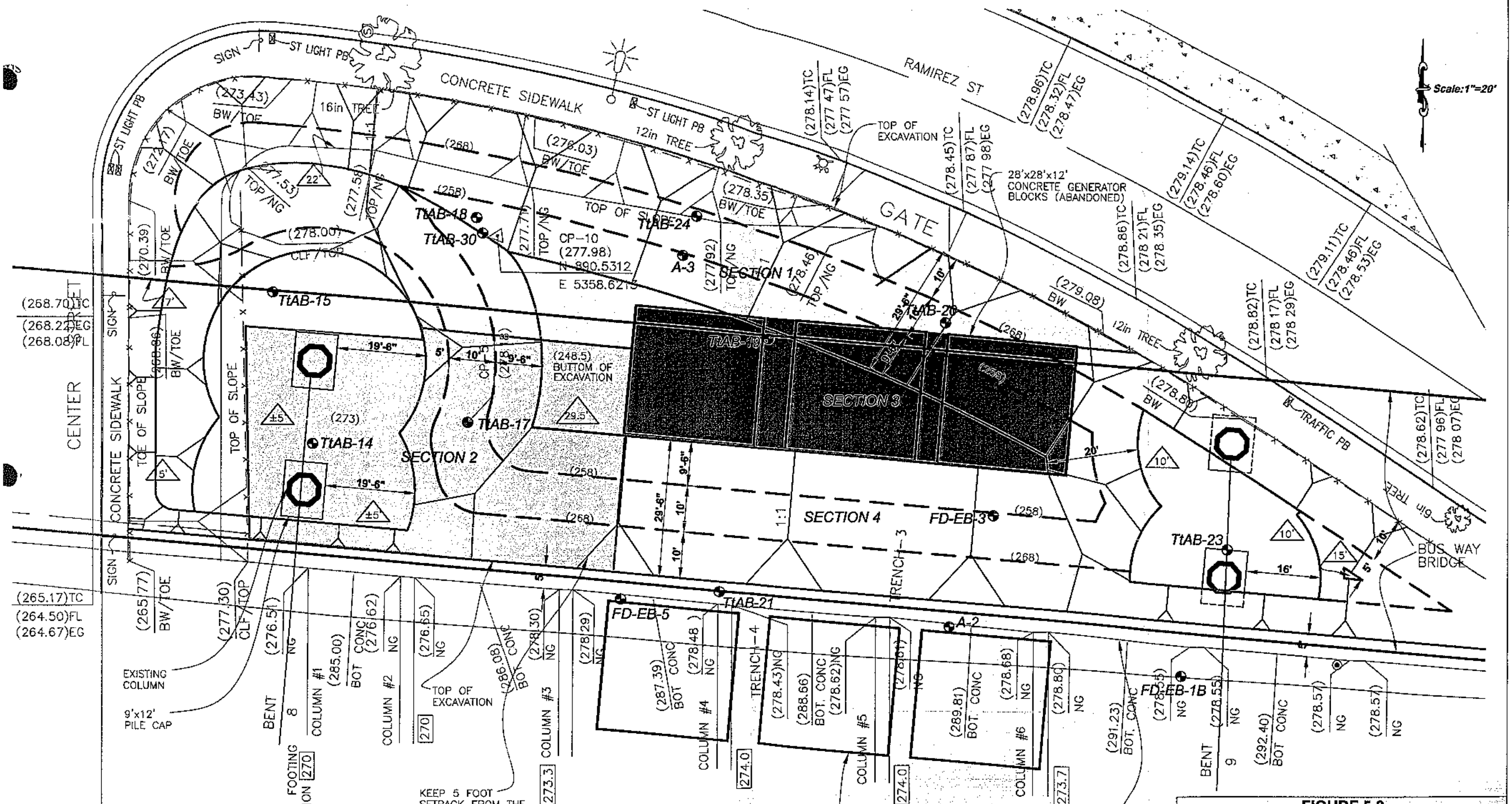
TABLE 5-1
ALISO SITE COST ESTIMATE (East Parcel)*
SHALLOW EXCAVATION, EXCAVATE OPEN AREAS AND BACKFILL AND CAPPING, WITHOUT SHORING

Description	Quantity	Units	Unit Cost	Contingency and Multiplier	Sub-Total	Total Cost	Notes
TASK 100 - PROJECT MANAGEMENT				**TASK TOTAL**		**$32,255**	6% of total Task 400 cost
TASK 200 - HEALTH AND SAFETY PLAN				**TASK TOTAL**		**$0**	Already developed during the RAW
TASK 300 - SYSTEM DESIGN/PERMITTING				**TASK TOTAL**		**$0**	Already developed during the RAW
TASK 400 - SHALLOW EXCAVATION							
Direct Labor						$0	Included in Task 100
ODC						$537,588	
Subcontracted Labor							
Soilutions, Inc.	200	Hrs	$ 150	1.10	$33,000		Assume 10 hrs per day, for 4 weeks
Excavation, Immediate Backfill							
Mobilization	1	L.S.	$ 5,000	1.10	$5,500		
Excavation Shoring	0	C.Y.	$ 700	1.10	$0		Assume no bent reinforcement is necessary
Excavate and Stockpile Overburden	4,480	Tons	$ 8	1.10	$39,424		
Air Monitoring	20	Days	$ 500	1.10	$11,000		Assume 5 days per week for 4 weeks
Odor Supression and Dust Control	1	LS	$ 13,000	1.10	$14,300		Assume total cost for odor suppression and dust control for the Busway West parcel
Soil Samples							
Confirmation Samples, including validation	1	LS	$ 29,500	1.10	$32,450		Assume local laboratory to do analysis. Assume 8021B and 8310 analysis. Samples to be collected at the end of removal action. See Figure 7-1 for locations
Surveying	1	LS	$ 5,000	1.10	$5,500		Includes surveying for both East and West Parcel
Off-Site Treatment (TPS)							
Transportation, Treatment and Disposal	4,480	Tons	$ 47	1.10	$231,616		Assume that decontaminated soil is not available back to the site when the truck unloads contaminated soil for treatment, cost includes trucking cost
Backfilling							
Import, Backfill, and Compact Fill Material	7,482	Tons	$ 10	1.10	$82,298		
Paving (Asphalt)	25,000	S.F.	$ 3.00	1.10	$82,500		
				TASK TOTAL		**$569,843**	
TASK 500 - CONSTRUCTION REPORT				**TASK TOTAL**		**$0**	Cost Included in Task 100
ESTIMATED TOTAL						**$602,098**	

Note: Unit costs presented above are updates of those presented in the FS by RETEC [2000].



Scale:1"=20'
RAMIREZ ST
CONCRETE SIDEWALK
GATE
TOP OF SLOPE
TOE OF SLOPE
TOP OF EXCAVATION
28'x28'x12' CONCRETE GENERATOR BLOCKS (ABANDONED)
CP-10 (277.98) N 890.5312 E 5358.6215
(248.5) BUTTOM OF EXCAVATION
TRENCH-3
TRENCH-4
BUS WAY BRIDGE
TRAFFIC PB
CENTER
EXISTING COLUMN
9'x12' PILE CAP
PIER #1 FOOTING ELEVATION 270
KEEP 5 FOOT SETBACK FROM THE SANTA ANA PIERS, THEN CUT DOWN 1:1
28'x28'x12' CONCRETE GENERATOR BLOCKS UNDER SANTA ANA FREEWAY
SANTA ANA FREEWAY
BENT 8
BENT 9
COLUMN #1
COLUMN #2
COLUMN #3
COLUMN #4
COLUMN #5
COLUMN #6
LEGEND:
7' — DEPTH OF EXCAVATION BELOW THE EXISTING GRADE
FINAL LIMIT OF EXCAVATION
EXCAVATION CONTOURS
FIGURE 5-1
MAXIMUM EXTENT OF EXCAVATION
SOUTHERN CALIFORNIA GAS COMPANY
FORMER ALISO ST. MGP SITE BUSWAY EAST PARCEL
DRAWN BY: M.F.Y. DATE: 5-13-03
REVIEWED BY: C. LIBAN DATE: 5-13-03
APPROVED BY: DATE:
FILE NAME: 11925-11RAWFigure5-1.dwg



LEGEND:

- 7' — DEPTH OF EXCAVATION BELOW THE EXISTING GRADE
- FINAL LIMIT OF EXCAVATION
- EXCAVATION CONTOURS

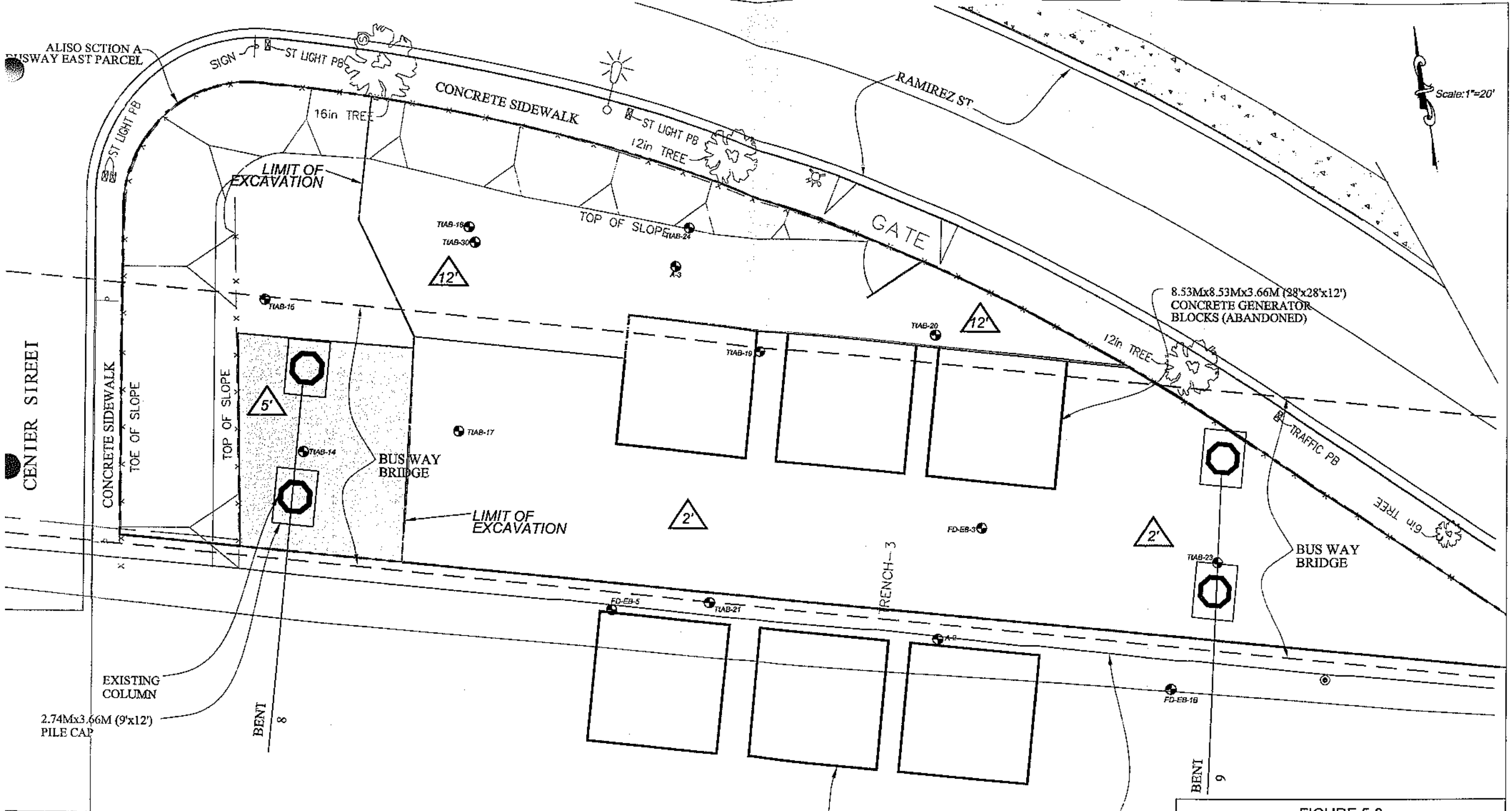
cd2396/D:/Projects/11925/11925-11/RAW/11925-11RAWFigure5-2.dwg

FIGURE 5-2
MAXIMUM EXTENT OF EXCAVATION AND SECTION LIMITS

SOUTHERN CALIFORNIA GAS COMPANY

FORMER ALISO ST. MGP SITE BUSWAY EAST PARCEL

DRAWN BY: M.B.V. DATE: 5-13-03
REVIEWED BY: C. LIBAN DATE: 5-13-03
APPROVED BY: DATE:
FILE NAME: 11925-11RAWFigure5-2.dwg



LEGEND

△ 12' Maximum depth of excavation from current ground surface

Note: 1. Soil up to two feet below ground surface will be removed sitewide.
2. Excavation at Bent 8 can be removed up to maximum depth of 5 feet if soil is replaced within 24 hours of excavation.

FIGURE 5-3
PROPOSED LIMIT OF EXCAVATION

SOUTHERN CALIFORNIA GAS COMPANY

FORMER ALISO ST. MGP SITE BUSWAY EAST PARCEL

DRAWN BY: M.A.R. DATE: 5-13-03
REVIEWED BY: C. LIBAN DATE: 5-13-03
APPROVED BY: DATE:
FILE NAME: 11925-11RAWFigure5-3.dwg

x2300/D:/Projects/11925/11925-11/RAW/11925-11RAWFigure5-3.dwg

6. REMOVAL ACTION IMPLEMENTATION

This section describes the removal action requirements, as well as plans, procedures, and guidelines to implement the removal actions at the Site. This section also includes the following:

1 Site security
2 Site access
3 Traffic control
4 Permit requirements
5. Noise monitoring and control
6. Odor monitoring and control
7. Dust monitoring and control
8. Storm-water management
9. Excavation
10. Material segregation
11. Waste transportation and treatment/disposal
12. Backfill and compaction
13 Site restoration

6.1 SUMMARY OF SELECTED REMEDIAL ACTION

The selected remedial action for soil at the Site consists of removing contaminated soil from the Site to the extent structurally and geotechnically feasible.

The contaminants of concern for this Site are carcinogenic polycyclic aromatic hydrocarbons (C-PAHs). As explained in Section 5, the lowest cleanup goal for C-PAHs to protect on-site workers, expressed in B(a)P equivalents, is 7 mg/kg. However, the appropriate clean-up goal to be used for comparison depends on the depth of impacted soil being considered. Consequently, the concentration of C-PAHs protective of future industrial workers exposed to shallow soils (0 to 5 feet bgs) range from 7 to 8 mg/kg while the goal for workers potentially exposed to deeper soils (0 to 10 feet bgs) is 42 mg/kg. Other chemicals of potential concern including TPH, BTEX, cyanide, and certain metals co-exist with C-PAH contaminants, and mostly will be removed during the removal of C-PAH contaminated soil.

A summary of the vertical and lateral extent of contamination per depth was previously shown in 5-1. Figure 5-1 was plotted by superimposing the isopleth lines developed for specific depth intervals shown in Figures 3-1 to 3-4. Figures 3-1 to 3-4 show the lateral and vertical extent of contamination at the Site.

Proposed limit of excavation is shown on Figure 5-3. Implicit in this figure is the removal of soil up to 2 feet bgs of soil sitewide The actual limit of excavation may change during field implementation considering any additional Site-specific constraints that may appear during the implementation of the remedial action. These may include any historical artifacts, unaccounted dry pipes, and other unaccounted structures at the Site put up during MGP and post-MGP operations.

6.2 PROPOSED REMOVAL ACTIVITIES

Removal action will be performed by removing any impacted soil to meet the remediation goals specified in Section 3 and the guidelines presented in Section 5. Specific removal action activities are presented below.

Removal of Contaminated Soils

Contaminated soil will be excavated and removed from the Site following the proposed limits shown on Figures 6-1 through 6-3. Excavation is proposed from the surface to two feet bgs across the Site. Excavation will then proceed for another three feet near Bent 8. Excavation up to 12 feet bgs will also continue in the northern portion of the Site observing a 1:1 slope along the edges of the excavation.

In general, during excavation the Field Manager along with the presence of the Geotechnical Engineer and the DTSC Project Manager will visually examine the excavation walls and bottom. Excavation will be continue as long as there are any visual signs of contamination (e.g., hydrocarbon saturated soil or significant soil staining) observable in the walls or bottom of proposed excavated areas. Post-excavation soil samples will then be collected from the walls and bottom of excavated areas as discussed in Section 8. These soil samples will be sent to a State-certified laboratory for analysis. If analytical results show any further contamination above cleanup goals, additional excavation will be conducted until the proposed clean-up goals are met.

In some areas of the Site, contamination has been found close to the Site boundaries. As demonstrated in Section 5, the removal of impacted soil will reduce Site human health risks to acceptable values. It is not anticipated that soil contamination has migrated outside of the Site boundaries. However, the walls of excavation in excavation areas will be carefully examined during the removal action to determine if contamination has migrated offsite. If there is any contiguous layer of contamination migrating offsite, the soils in the areas of contamination will be removed to the extent possible[1]. Post-excavation confirmation samples will be collected to verify that the contaminated soils with C-PAHs equal or below 7 mg/kg B(a)P equivalent have been removed.

Excavated soils with potential elevated benzene concentration will be stockpiled and properly covered prior to transport off-site for treatment. Samples of soil will be collected from the stockpiled soils and will be analyzed for characterization of benzene. Benzene concentration criteria have been previously used at Sector A to determine whether stockpiled soil is acceptable for thermal desorption treatment. If the results of analysis show that the level of benzene in the excavated soil is below the limits acceptable by the treatment facility (i.e., TPS) for thermal desorption, then the stockpile will be transported to the treatment facility. If the level of benzene concentration is not acceptable by TPS for thermal desorption, then the contaminated soil will be transported to an appropriate disposal facility approved by DTSC.

[1] The obstacles that may prohibit extending the excavation are if the excavation limits come close to existing building foundations, to the point that any further excavation may threat the safety and stability of the building. Such decisions will be made in the field, by Field Manager under the supervision of the DTSC Project Manager.

At the conclusion of each segment of excavation, the excavated area will be covered with 10-mil polyethylene sheets The sheets will be secured by placing stakes and security tape to prevent any mixing with contaminated soil or equipment being generated from excavation still being performed at the other portions of the Site.

Confirmation samples will be collected according to the post-excavation confirmation-sampling plan (Section 7), when all contaminated soils are removed. After evaluation of the results of the confirmation samples, if necessary, additional soils may be removed until the cleanup goals are met. After successful completion of removal activities, excavated areas of the Site will be backfilled with clean soil and the Site will be restored.

6.3 SITE SURVEY AND SITE CONDITION DOCUMENTATION

A pre-excavation photogrametric/topographic survey was performed at the Site on December 21, 2000 by Coory Engineering. The survey was conducted to document the existing grade prior to excavation. More importantly, the survey was performed to document the original Site condition to facilitate calculation of the volume of soil to be excavated from the Site and to provide a benchmark for Site restoration. A copy of the surveyed map is on file at the Southern California Gas Company The survey has been used to prepare the excavation plan for removal activities.

A Site video documentation will also be performed prior to excavation to document existing bridge and freeway structural conditions. This would consist of obtaining pictures or digital video of exposed surfaces.

6.4 GEOTECHNICAL INVESTIGATION

SOILutions, Inc. performed a limited geothechnical investigation at the Site in November 2000 The purpose of this investigation was to: 1) observe surface conditions at the Site, and 2) perform a geotechnical analysis of the soil (including stability analysis). Four borings were drilled for subsurface exploration. The borings range in depth from 30 to 35 feet bgs. Two of these borings (TtAB-A drilled to 35 feet bgs and TtAb-12 drilled to 30 feet bgs) are located in the East Parcel. The other two borings (TtAB-3 drilled to 36.5 feet bgs and TtAB-6 drilled to 35 feet bgs) are located in the West Parcel. A copy of the geotechnical investigation prepared by SOILutions is included in Appendix A.

6.5 SITE SECURITY

During removal activities, the Site will be secured to provide protection and safety of onsite personnel and equipment and prevent unauthorized access. The Site is currently secured with a 6-foot high, chain link security fence and a gate A new security fence will be installed to include all excavation and work areas in the areas of the Site that the security fence is missing, or if a portion of the fence need to be removed to establish access to the excavation area. There is adequate room within the fenced area to operate excavation, loading, and hauling equipment.

The security fencing will encompass the exclusion, decontamination, and support zones. During non-working hours, the fenced area will be kept locked.

The Site staging area will be located onsite within the fenced area. Fences around the Site will be covered with a visual barrier (e.g., heavy plastic sheets or tarp) to minimize any possible dust moving offsite and to reduce any visual impact of the Site activities.

6.6 SITE ACCESS

During all removal activities, site access will be limited to authorized personnel. There will be only one entrance to and one exit from the Site through the existing gate

6.7 TRAFFIC CONTROL

Limited traffic control measures are required during performance of the removal actions. All onsite work will be performed within the fenced area. The only traffic control measure will be during entrance or exiting of equipment from the Site at Ramirez Street. Extra caution will be exercised during entrance and exiting from the Site to ensure safe and uninterrupted flow of traffic in and out of the Site

6.8 PERMIT REQUIREMENTS

All necessary permits for removal activities, transportation, and air quality, will be obtained by the removal action contractor. The permits will be kept onsite and will be available for inspection at the Site during work activities. Permits will include, but not be limited to, the following:

1. Excavation permit and grading permit
2. Waste transportation route permit, and encroachment permit (if necessary).
3. South Coast Air Quality Management District for Rule 1166 (volatile organic compound emissions from decontamination of soil) permit.

6.9 SEQUENCE OF WORK

The general sequences of work are briefly presented below.

6.9.1 Mobilization

1. All applicable and necessary permits will be obtained (see Section 6.8).

2. The removal action contractor will mobilize to the Site and prepare the Site for work activities.

3. Temporary facilities and utilities, such as an office-trailer, sanitation facilities, and utilities (e.g., power, lighting, and telephone) will be installed, as necessary, for use by the onsite personnel

4 The exclusion, decontamination, and support zones will be identified and clearly marked. The exclusion zone will include all areas of excavation, contaminated-soil staging, and truck loading. The decontamination zone will be located immediately adjacent to the exclusion zone for purposes of decontaminating personnel, equipment, and vehicles exiting the exclusion zone. The support zone will be located within the designated work area but outside of the exclusion and decontamination zones The support zone will be used to temporarily store equipment, vehicles, personnel, and clean soil.

5. The contaminated-soil staging area(s) will be identified and marked onsite.

6 All health and safety, noise, dust, and odor control equipment and materials will be positioned for use when necessary.

6.9.2 Removal Activities

The removal action contractor will take the following steps during the removal activities:

1. Mark the Site to establish the estimated areas of excavation as established during the site investigation and identified in this RAW The Site has already been surveyed to establish the elevations and property lines.

2 Excavate the subsurface contaminated areas as shown on the Site Excavation Plan (Figures 6-1 to 6-3). Cover the excavated areas with plastic and secure the areas with wood stakes and caution tapes.

3 Conduct odor, dust, and noise monitoring and control (as appropriate) during all soil removal activities, to minimize any impact to onsite workers and offsite residents.

4. Load the excavated contaminated soil into hauling trucks, properly manifest and transport offsite to the approved treatment facility.

5. The limits of excavation (walls, as well as bottom of excavation) will be carefully examined by the Engineer or Geologist onsite, with the presence of the DTSC Project Manager If there is any visual sign of significant contamination in the walls or bottom of proposed excavated areas, then excavation may continue up to the limit permitted as discussed in Section 5, to remove significant and contiguous contaminated soils. If removal of contaminated soil beyond the limit of excavation becomes necessary, the Geothechnical Engineer (SOILutions) will be notified for further direction and determination of safe excavation limits.

6 Collect post-excavation confirmation soil samples from the excavation sidewalls and bottom (according to Section 7) and analyze to determine if the cleanup goals have been met.

7. If the soil confirmation samples do not indicate that the cleanup goals have been achieved, it will be necessary to further excavate those areas with C-PAHs above 7 mg/kg in 1-foot lifts

8. Upon completion of all excavations, backfill the excavated areas with imported certified clean fill to the original grade.

9. Clean the area of work.

10. Demobilize all vehicles, equipment, and personnel from the Site.

6.10 NOISE MONITORING AND CONTROL PLAN

The purpose of the noise monitoring and control plan is to identify noise sources, receptors, monitoring methods, worker hearing protection, and mitigation measures.

Noise Sources. Any noise above 85 decibels or above background, whichever is higher, will be considered a noise source. During the removal activities, heavy vehicle and equipment operation, saw cutting, generator operation, and excavation equipment operation may be noise sources. Manufacturer equipment specifications will be reviewed for noise levels produced by any onsite equipment.

Noise Receptors. Potential noise receptors include onsite workers, pedestrians adjacent to the Site, and vehicle drivers adjacent to the Site

Noise Monitoring. Noise monitoring will be conducted with a sound level meter. Noise monitoring will occur within the exclusion zone, and around the perimeter of the Site. The monitoring frequency will be determined at the Site according to the type and location of operations

Worker Protection. Appropriate worker hearing protection will be required for any anticipated noise exposure above 85 decibels, based on time-weighted average for 8 hours of exposure. Workers will be required to have an appropriate hearing protection at all times within the exclusion zone (see health and safety section)

Noise Mitigation Measures. Noise mitigation measures will become necessary if the noise level exceeds 85 decibels outside the exclusion zone or 70 decibels at the Site perimeter. Mitigation measures will be instituted which may include one or more of the following:

1. The work area will be expanded such that the noise level is below 70 decibels at the Site perimeter
2. Mufflers will be used on selected equipment to mitigate noise.
3. Sound barriers will be placed around the work area.
4. Alternate equipment will be specified.
5. Operation times will be modified.

6.11 ODOR MONITORING AND CONTROL PLAN

The purpose of the odor monitoring and control plan is to identify potential odor sources, receptors, monitoring methods, worker protection, and mitigation measures.

Potential Odor Sources. The primary potential odor source at the Site will be the MGP wastes that are excavated and exposed which may have odors of petroleum or naphthalene.

Potential Odor Receptors. Potential odor receptors include onsite workers, pedestrians adjacent to the Site, and vehicle drivers adjacent to the Site.

Odor Monitoring. Odor monitoring will be conducted if onsite workers perceive odors. Odor monitoring will occur within the exclusion zone and perimeter of the Site. Monitoring locations will be based on onsite activities and prevailing wind directions. The monitoring frequency will be determined at the Site according to the type and location of operations.

The main requirements by SCAQMD (Southern California Air Quality Management District) for odor monitoring is Rule 1166 (excavation of soil contaminated with volatile organic compounds). In order to comply with Rule 1166, VOCs will be monitored onsite using a properly calibrated organic vapor analyzer (OVA). If OVA readings exceed 50 ppm at 3 inches above the working face of the odor source, work will be stopped until conditions can be brought into compliance (see odor mitigation measures, below).

The Site is bordered by Ramirez Street to the north, Keller Street to the east, 101 Freeway to the south, and Center Street to the west. Therefore, immediately adjacent to the Site boundaries, there are limited number of humans directly exposed to odors from the Site However, air monitoring will be conducted at the Site perimeters using an OVA meter to ensure that there will be no exposure of the community to contaminants during the removal actions. Air monitoring will be located at both upwind and downwind locations. The air monitoring equipment will be located to ensure that monitoring is performed with consideration to changing daily wind direction Background air sampling may be conducted prior to Site activities in order to quantify ambient concentrations of contaminants of concern. In addition, personal monitoring pumps, organic vapor analyzers and real-time dust monitoring will be employed to determine overall emission levels during excavation

Air samples will be collected to quantify volatile emissions by EPA Compendium Method TO-14 if volatile emissions are suspected based on OVA results or through identification of significant odor sources The air samples will be collected by evacuating a SUMMA® Canister near the suspected air emission source The sample will be submitted to a qualified laboratory for analysis.

In addition to air sampling for VOCs, the air sampling will also be conducted to measure the amount of dust at the Site. Continuous air sampling will be conducted with three modified high volume (HI VOL) samplers that will be stationed at the perimeter of the work area. One of the samples will be stationed upgradient of work area based on the prevailing wind direction The other two samplers will be stationed in downgradient direction from the work area based on prevailing wind direction and proximity to potential receptors. Each HIVOL sampler will consist of a sampling pump system with a flow range greater than 200 liters per minute, an orifice and magnehelic gauge to document continuous flow rate, and a sample module that includes a PUF and/or XAD-2 cartridge and quartz filter. The air samples from each HIVOL sampler will be collected over 24-hour periods or the duration of daily work activities during the duration of the whole project. The samples will be analyzed for semi-volatile organic compounds by EPA Compendium Method TO-13.

All air monitoring results will be immediately documented and kept onsite. At a minimum, documentation will include equipment calibration data, background concentrations, date, monitoring result, monitoring location, source description, air temperature, and wind direction.

Worker Protection. Worker protection will be conducted according to the Site Health and Safety Plan and may include using respirators, rotating crews in work area, and/or mitigating odors.

Odor Mitigation Measures. The main requirement by SCAQMD for odor control is Rule 402 (odor and nuisance). If any strong odors within the work area are noticed, or if OVA readings are above background at the perimeter of the work area, the odor mitigation measures will be established, as follows (listed in general order of preferential use):

1. Application of water.
2. Application of water with environmentally safe additives[2] or chemical suppressants[3].
3. Application of chemical foams.
4. Coverage of area with 10-mil plastic sheeting or clean soil and re-evaluating the situation

6.12 DUST CONTROL PLAN

The purpose of the dust control plan is to identify dust sources, receptors, monitoring methods, worker protection, and mitigation measures.

Dust Sources. The primary dust source at the Site will be the exposed soil (especially if mixed with powder-like lampblack particles) during soil excavation, stockpiling, and loading activities

Dust Receptors. Potential dust receptors include onsite workers, pedestrians adjacent to the Site, and vehicle drivers adjacent to the Site.

Dust Monitoring. Dust monitoring will occur within the exclusion zone and at the perimeters of the Site. Monitoring locations will be based on onsite activities and prevailing wind directions. The monitoring frequency will be determined at the Site according to the type and location of operations. Real-time dust monitoring will occur throughout the time period when excavation is taking place.

[2] e.g., Envirotech Vapor Suppression, Simple Green, or equivalent.

[3] e.g., EcoSorb, Citriclean, or equivalent

A MiniRam dust meter (PDM-3 or equivalent) will be used to measure real-time dust levels Action levels will be based on the Site health and safety plan According to the health and safety plan provided in Appendix E, if dust levels range from 2 to 5 mg/m^3, work should be stopped, and mitigative measures will be undertaken before work resumes.

Worker Protection. Worker protection will be conducted according to the Site health and safety plan. Worker protection may include using respirators, rotating crews in work areas, and/or mitigating the dust.

Dust Mitigation Measures. Dust mitigation measures will be specified based on the results of the dust monitoring. In general, during high wind conditions, SCAQMD Rule 403 best [reasonable] available control measures will be used to minimize dust emissions. The preferred method of dust control at this Site is spraying water over the dust source(s) periodically to keep the exposed surface moist. Plastic sheets will be used to cover stockpiled soil and other exposed soil areas.

6.13 STORMWATER MANAGEMENT PLAN

The purpose of the Stormwater Management Plan is to prevent surface water from entering or exiting the work area. There are no storm drains onsite. Prior to removal action activities, the storm drains near the Site (offsite) will be located and temporarily protected by placing a waterproof cover over the drains or berms (e.g. sand bags) around them to prevent an unauthorized discharge into navigable waters. These temporary controls will be inspected daily to ensure proper placement and integrity

During excavation activities, and in case of heavy rainfalls, the excavation areas will be covered with heavy plastic sheets or will be protected by placing berms around the excavation area to prevent water run-on or run-off All soil piles will also be covered with plastic and surrounded by berms.

In the event of rain, sump pumps or a vacuum truck will also be used to keep all excavations free of water. Any exposed soil will remain covered if rain continues for several days

6.14 MATERIAL SEGREGATION PLAN

The excavated materials will be segregated based on type and/or contamination shown in the Table below The excavated material will initially be segregated according to existing soil quality data, field observation, and field monitoring results.

SOIL SEGREGATION PLAN

Soil/Waste Type	Description	Temporary Containment and Final Disposal
Contaminated Soil and Debris	Soil containing significant visual or odor evidence of contamination Soil exceeding 7 mg/kg C-PAHs (PEF equivalent value). Soil may contain debris such as concrete asphalt, and bricks	Directly loaded into hauling trucks for transportation to offsite treatment facility
Clean Soil	Soil less than 7 mg/kg C-PAHs (PEF equivalent value)	Directly loaded into hauling trucks for transportation to offsite treatment facility
Clean Construction Debris	Demolished asphalt and concrete surfaces and other excavated debris that does not indicate evidence of MGP waste.	Loaded into metal bins or covered with 10- mil plastic sheets and will be transported to a recycling facility
Liquid waste	Liquids such as rinsate or decontamination water	Loaded into DOT-approved drums or vacuum truck and will be mixed with contaminated soil and transported to offsite treatment facility or transported offsite for recycling
Soil considered hazardous for disposal or treatment purposes	Stockpiled soil containing lead with STLC>5 mg/kg (or TTLC >50 mg/kg)	Stockpile soil separately. Collect representative sample of stockpiled soil and analyze for TCLP test for lead. Transport to treatment facility or Class I Landfill based on results of TCLP analysis.

6.15 WASTE TRANSPORTATION AND DISPOSAL PLAN

Soil contaminated primarily with PAHs, will be transported to a soil treatment/recycling facility. The treatment/recycling facility chosen to treat contaminated soil from this Site is TPS Technologies, Inc located in Adelanto, California.

Waste Transportation

All transportation activities will be performed in strict compliance with all regulations and ordinances. The selected transportation company will be certified by the Federal EPA and the State of California as a hazardous waste hauler, permitted to haul contaminated waste material. The hauling contractor(s) used to transport contaminated waste will be fully licensed and

permitted by the U S EPA and the State of California All DOT and CHP safety regulations will be strictly followed
Transportation equipment will be chosen to safely transport the expected volumes of soil, taking into consideration the types of roads to be traveled and their loading capacity Routine truck maintenance and repairs will be performed at the remediation contractor's premises prior to picking up loads of waste material from the Site. The remediation contractor will be required to clean up, to the satisfaction of the regulatory agencies involved, any spills resulting from maintenance of the trucks or due to road accidents during the operation of this project All vehicles, trailers, and containers of the subcontractors will be inspected by the Southern California Gas Company on a routine basis.

Trucks will use only pre-planned and authorized routes. A detailed log of the loads hauled from the Site will be maintained The log will include, at a minimum, the date and the time trucks were loaded and off-loaded, the destination, size (volume and weight) of the load, description of contents, name and signature of the hauler, and name and signature of the Contractor's representative. The waste will be off-loaded for treatment or disposal in a manner consistent with current Federal EPA, State, and local regulations.

Trucks used for the offsite transportation of contaminated soil and debris will remain on clean areas at all times to minimize the need to decontaminate the truck tires. During loading, dust and odor emissions will be monitored and mitigated as necessary according to discussions earlier in this section. The hauling trucks will be equipped to fully cover all soil and debris during transportation. At a minimum, the soil and debris will be tightly covered by a heavy tarp

Treatment/Recycling Facility

All soils contaminated with PAHs will be transported to the TPS Technologies Inc. (TPS) located at 12328 Hibiscus Avenue, Adelanto, California. TPS is a treatment/recycling facility that treats the soil by thermal desorption. TPS has proper permits from the Regional Water Quality Control Board Lahontan Region (Board Order No. 6-91-935A1 WDID No. 6B369107002); County of San Bernardino Air Pollution Control District (File B002924/C002925); Mojave Desert Air Quality Management District (Certificate Nos B003664 and C003663); County of San Bernardino Environmental Health Services (no jurisdiction); and City of Adelanto to operate and recycle the treated soil[4]

The treated soil may be recycled as general backfill material, or reused for asphalt mix or road base[i] The treated soil will not be returned or reused at the Site Any contaminated debris, concrete, or bricks will also be transported to TPS Technologies, Inc.

If any hazardous waste encountered at the Site which cannot be transported to TPS Technologies, Inc will be transported to one of the landfills approved by the Southern California Gas Company including: 1) Laidlaw Environmental Services, Inc., Button Willow Landfill, located at 2500 West Loken Road, Button Willow, California (Tel 805/762-7372), or 2) Waste

---

4 The permit requirements of TPS (Monitoring and Reporting Program No 91-935, Section under Discharge Specification, Section number I E 2) states: " Treated soil shall only be used for industrial purposes such as roadbase construction, commercial fill applications, soil cement admix, or returned to its location of origin "

Management, Inc., Kettleman Hills Landfill, located at 35251 Old Skyland Road, Kettleman City, California (Tel. 888/543-9646).

6.16 BACKFILL PLAN

The excavated areas will be backfilled after completion of excavation and soil confirmation sampling activities. The backfill soil will be selected from a known source. The fill source area will be selected from a non-industrial area, and not from sites undergoing a cleanup, even when the soil has been identified as non-hazardous. In general, acceptable non-industrial sources include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include former waste process byproducts. Former retail commercial sites may be considered, however, care must be taken to ensure that any previous commercial site activities did not involve the use, handling or storage of hazardous materials or other chemicals of concern[5]. The potential locations of fill source will be identified during the bidding process of selecting the Removal Action Contractor. Soil will not be removed form the borrow area and delivered to the site until after it has been determined to be free of contamination and acceptable for use

Representative samples of backfill material (at the source or as it is stockpiled) will be analyzed for PAHs (EPA Method 8310), total petroleum hydrocarbons (EPA Method 8015M), volatile organic compounds (EPA Method 8260), pesticides (EPA Method 8080), herbicides, semi-volatile organic compounds (EPA Method 8270), and CAM-17 metals (EPA Method 6010)[6].

The anticipated volume of fill material required is not exactly known at this time. If the excavation will be consistent with the proposed excavated volume presented in Section 4 and modified in Section 5, then approximately 5,600 cubic yards (or 7,500 tons) of imported soil will be required for this activity.

An appropriate number of backfill samples for chemical analysis will be determined by estimating the approximate volume of soil to be removed from the borrow area. A horizontal and vertical sampling grid will then be established across the borrow area corresponding to the estimated removal area/volume. The following table can be used as a guide to determine how many samples should be collected and analyzed.

---

5 Sources to avoid include industrial and/or commercial sites where hazardous materials were used, handled or stored as part of the business operations. Other unacceptable sites include but are not limited to unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil, former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities, metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, etc. When the source is a construction site, a copy of the environmental assessment report should be obtained, if available, and evaluated for potential contaminants. In general, only construction sites that were previously undeveloped should be considered as a potential fill source

6 A laboratory data package for the fill analyses that includes a summary of the QA/QC sample results will be prepared. That summary will include blanks, matrix spike/matrix spike duplicates, surrogate recoveries, laboratory control samples, etc., as specified by the applicable analytical method. The laboratory will be requesting to provide a narrative stating whether the QC was met and listing any discrepancies. The data will be qualified in accordance with National Functional Guidelines

Based on the table, a minimum of 14 samples should be collected and submitted for chemical analysis. The actual number of samples from the fill source required for analysis will, however, be determined in the field as the actual backfill volume of excavation may vary depending on the volume of impacted soil actually excavated based on field observations during the removal action

Area / volume of fill source	Sampling requirements
2 acres or less	Minimum of 4 samples
2-4 acres	Every ½ acres
4-10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 sub-samples per location
Less than 1,000 cubic yards (~<1,350 tons)	1 sample per 250 cubic yards
1,000-10,000 cubic yards (~1,350 tons to 13,500 tons)	4 samples for first 1000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 10,000 cubic yards (~>1,350 tons)	12 samples for first 5,000 cubic yards +1 sample per each additional 1,000 cubic yards

Composite sampling for borrow area characterization may or may not be acceptable, depending on fill volume, homogeneity of source/borrow area, and borrow area chemicals of concern. Those samples to be composited will be from the same soil horizon or stratigraphic layer. Samples from different soil horizons or layers will not be composited together. Samples for VOC analysis will not be composited.

The fill material will be placed in proper layers with dust suppression as required by SCAQMD. The maximum particle size of backfill material will not be greater than six inches, and backfill material larger than 4 inches will not be placed within 1-foot of any pipelines (if any), structures (if any), or within sub-grade limits. The backfilled soil will be compacted to 90% of relative density.

After backfilling, the Site will be left free and clear of debris and materials associated with the excavation activities.

Also see Section 5.6 and Appendix A (Section 10) of this RAW.

6.17 CONTINGENCY PLANS - SPILLS

In the event of a spill, the remediation contractor will be responsible and will be prepared to respond in a safe and efficient manner, specific to any particular spill situation. Standards will be set and consistent procedures will be used for handling of spills. This would include response to both onsite spills or spills occurring during transportation. The project's specific health and safety plan will address the handling of onsite spills. Safety and protection of the public and the environment are of foremost concern. An Emergency Spill Contingency Plan (ESCP, a uniform reporting procedure) will be prepared to ensure that all drivers and dispatchers know their responsibilities in the unlikely event that an accident occurs during loading or while transporting contaminated material.

The drivers, dispatchers, managers, and emergency response personnel will be required to know the procedures for emergency spill response. The ESCP will be prepared to meet or exceed all Federal, State and County regulations currently in effect. The provisions of the ESCP will be strictly adhered to, in order to ensure continued protection of the public safety and the environment.

6.18 HEALTH AND SAFETY PLAN

The purpose of the Health and Safety (H&S) plan is to describe the controls and procedures that shall be implemented to minimize the incidents, injury, and health risks associated with the remedial activities to be conducted at the Site.

All work at the Site will be performed in accordance with applicable State and Federal occupational health and safety standards. The remediation contractor will develop a Site specific health and safety plan to address activities at the Site. The health and safety plan will be prepared according to the requirements contained in 29 CFR 1910 120, and CCR Title 8 GISO 5192 (General Industrial Safety Order), for work at hazardous waste sites.

A health and safety plan has been prepared for site removal activities and is included in Appendix E.

The removal action contractor will be responsible for monitoring emissions in order to protect its workers. The Southern California Gas Company will perform additional sampling to ensure that the action levels specified in the health and safety plan are not violated

6.19 PUBLIC PARTICIPATION ACTIVITIES

An information letter will be prepared (in English, and Spanish) and mailed to the mandatory mailing list and the community members within a ¼-mile radius of the Site. This information letter will inform the community of upcoming field activities. The information letter will be prepared by the Southern California Gas Company under the direction of DTSC.

A copy of all Final Workplan, fact sheets, information letters, and site investigation report/removal action workplan (RAW) will be placed at the designated information repository to be designated before this draft RAW is approved

The Southern California Gas Company continues to inform the owners, and interested community members, about the upcoming removal action activities. Upon approval of this RAW, and before the start of Site Removal Action activities, a fact sheet will be prepared and distributed to the mailing list, under the direction of the DTSC.

7. POST-EXCAVATION CONFIRMATION SAMPLING AND ANALYSIS PLAN

This section presents the post-excavation confirmation sampling and analysis plan that will be used to confirm completion of removal action activities at the Site.

7.1 OBJECTIVE

The objective of the post-excavation confirmation sampling and analysis plan is to confirm removal of impacted soil based on the remedial action goals specified in Section 3 and refined with Site-specific constraints outlined in Section 5.

7.2 CONFIRMATION SAMPLING PLAN, SYSTEMATIC GRID SAMPLING

Confirmation samples will be collected following excavation activities and prior to backfilling to document that: (1) the performance of the excavation has adequately remediated the Site, or (2) concentrations of contaminants left on the Site due to limitations to further excavation would be protective of human health. In both cases, a post remedial action risk assessment will be prepared.

The following section provides a brief overview of the process that will be used to demonstrate attainment of the calculated remedial action goals. The section also presents a summary of the minimum number of confirmation samples that will be needed to support the risk assessment, as well as a discussion of the overall confirmation sampling program.

As discussed in Sections 3 and 5, C-PAHs, benzene, and naphthalene are the contaminants of concern. The initial excavation target are soils impacted with C-PAHs at a concentration of 7 mg/kg, in benzo(a)pyrene equivalents. Additional criteria such as benzene (0.03 mg/kg) and naphthalene (8 mg/kg) concentrations are used where C-PAH concentrations are not applicable. These include areas wherein C-PAH target goals are not exceeded and benzene or naphthalene target concentrations are exceeded Additional excavation targets also include all areas where visible lampblack is identified. After soil removal, confirmation samples will be collected from the walls and bottom of the excavation.

Confirmation samples collected from the walls and bottom of the excavation will be combined with the initial soil samples collected from the unremediated portion of the Site. The combined data set will be used in the risk assessment.

As required by the Department of Toxic Substances Control (DTSC), the final test confirming completion of Site remediation will involve calculating the volume-weighted average concentration of C-PAHs (in B(a)P equivalents) remaining in Site soils. This requirement is based on the assumption that future uses of the Site could involve excavation of subsurface soil and spreading of the excavated soil across the surface of the Site The 95% upper confidence limit (UCL) of the mean volume-weighted average concentration of C-PAHs will be compared to the risk-based Reference Concentration corresponding to an incremental cancer risk of 10^{-5} to demonstrate that the concentrations in the subsurface soil do not represent a risk (were they to be brought to the surface and spread across the Site, such as in the installation of a basement),

If the 95% UCL of the mean volume-weighted average concentration is less than the Reference Concentration, then remediation activities at the Site will be considered complete, and the DTSC will issue a Certificate of Completion.

If the 95% UCL of the mean volume-weighted average concentration is greater than the Reference Concentration, then appropriate risk management options for the Site will be considered.

A preliminary analysis to determine the number of samples needed to do a post-closure assessment indicates that additional 50 excavation floor and wall samples will provide more than an adequate level of statistical power necessary to demonstrate Site attainment of the remedial action goals. This will be in addition to the number of soil samples collected from unremediated areas (i.e., areas discussed in Section 5 where excavation is not geotechnically or structurally possible). Unremediated areas include those areas adjacent to the bents and the 101 Freeway whose integrity would be jeopardized if soil is excavated within lateral and vertical limits without proper geotechnical engineering controls (see discussions in Section 5 and Appendix A for details). The confirmation sampling program will be sufficient to characterize the residual levels of COPCs that remain in the areas that have been excavated. Depending on the final excavation extent, additional samples may need to be collected, however, to address the irregular geometry of the final excavated area.

A systematic grid sampling plan for confirmation samples will be implemented beginning from the bottom of the excavation to determine the residual levels of C-PAHs that may remain in soils following excavation. A systematic grid pattern has the following advantages:

- It is relatively easy to use; and
- It provides a uniform coverage of the area being sampled, whereas simple random or stratified random sampling can leave sub-areas that are not sampled.

To assure collection of an adequate number of samples, the spacing between the sampling points will be no more than 20 feet except when it is not structurally possible to collect a sample within 20 feet of the other sample (such as Bent 8)

Sidewall samples will also be collected at intervals of no more than 20 feet to confirm that the horizontal boundaries of the impacted soil have been adequately defined and removed. Sidewall samples will be collected at depths approximately halfway between the surface and the bottom of the excavation. Although systematic sidewall sampling at 20-foot intervals is the overall goal, the number and location of sidewall samples may need to be adjusted based on observations in the field. For example, if visual indications of lampblack contamination lead to additional horizontal excavation of soil, then the location of the sidewall sample may need to correspond to the suspected edge of the contamination to confirm that all impacted soil has been removed. Similarly, in smaller excavations, it may be necessary to collect samples closer together than 20 feet.

7.3 SOIL SAMPLE COLLECTION LOCATION AND METHODOLOGY

Figure 7-1 shows the proposed locations of post-excavation confirmation sampling. The following procedures will be used to collect the soil samples at each sample location:

Sample Collection

All equipment (e.g., trowel, hand auger, gloves, etc.) will be decontaminated prior to sampling Prior to sampling, any loose material or soil will be gently brushed off the surface of the excavation and care will be taken to collect the sample from an area unaffected by the excavation. Excavation sidewall samples may be collected as a composite of material along the vertical depth of the excavation, or as discrete samples based on visual cues (e.g., black or staining soil, etc.). Post confirmation sampling will be conducted under the supervision of the DTSC Project Manager onsite.

Using a stainless steel or Teflon-coated trowel or hand auger, a sufficient quantity of surface soil will be collected (for PAH, cyanide, or metal analyses) to completely fill the laboratory sample container(s) specified for the sample location. Only sample containers supplied by the laboratory will be used. After filling the appropriate sample container(s), the container lid(s) will be sealed Container lids will be lined with Teflon and Teflon tape will be wrapped around the outer seam of the lid and container

Figures 7-2 and 7-3 illustrate systematic approaches regarding the types of samples that can be collected at the bottom of the excavation or the sidewalls of the excavation, respectively. The types of samples depend on the presence of staining or discoloration at either the bottom or sidewalls. In general, if any discoloration or visual staining is observed after excavating to the proposed excavation limits, samples will be collected at both the discolored or stained section of the bottom or wall. These samples will be collected in lieu of any previously planned sampling at the same location. Additional details are provided in the individual figures.

For VOC analysis, undisturbed samples will be collected, in accordance with the recently revised SW-846 update III guidance from the U.S. EPA Method 5035. The samples will be shipped to the laboratory using appropriate chain-of-custody and shipping procedures.

Sample Designation

Each confirmation soil sample will have a unique identification code. The samples will be named based on the row/column number that the sample has been collected from. Following the row/column number there would be a second letter designation of "N" for north wall, "S" for south wall, "E" for east wall, "W" for west wall, and "F" for floor sample. If there are more than one sample in any block, the first, the second, or third, etc. sample will be identified with number 1, 2, or 3, etc. at the end of its designation. Each sample designation will also be followed with a number to specify the depth of the sample. Duplicate samples will have a designation of "D" at the end of the sample designation.

As an example, B3-E (A)-6 designates that this sample is from Block B3, from the east sidewall, collected at 6 feet bgs. Letter "(A)" indicates that there is more than one sample in this block; this is first sample A.

7.4 ANALYTICAL PARAMETERS

All confirmation soil samples will be analyzed for PAHs (EPA Method 8310). In the areas with contamination other than PAHs, several samples will be analyzed for TPH (Method 8015M), BTEX (EPA Method 8260), and metals (EPA Method 6010) to confirm that all contaminants have been removed and the remedial action goals have been met. The QA/QC Plan specifies data quality objectives for the laboratory analyses. The state certified analytical laboratory to be used for this project is:

American Environmental Testing Laboratory, Inc.
2834 North Naomi Street
Burbank, CA 91504
Telephone: (818) 845-8200
Fax: (818) 895-8840

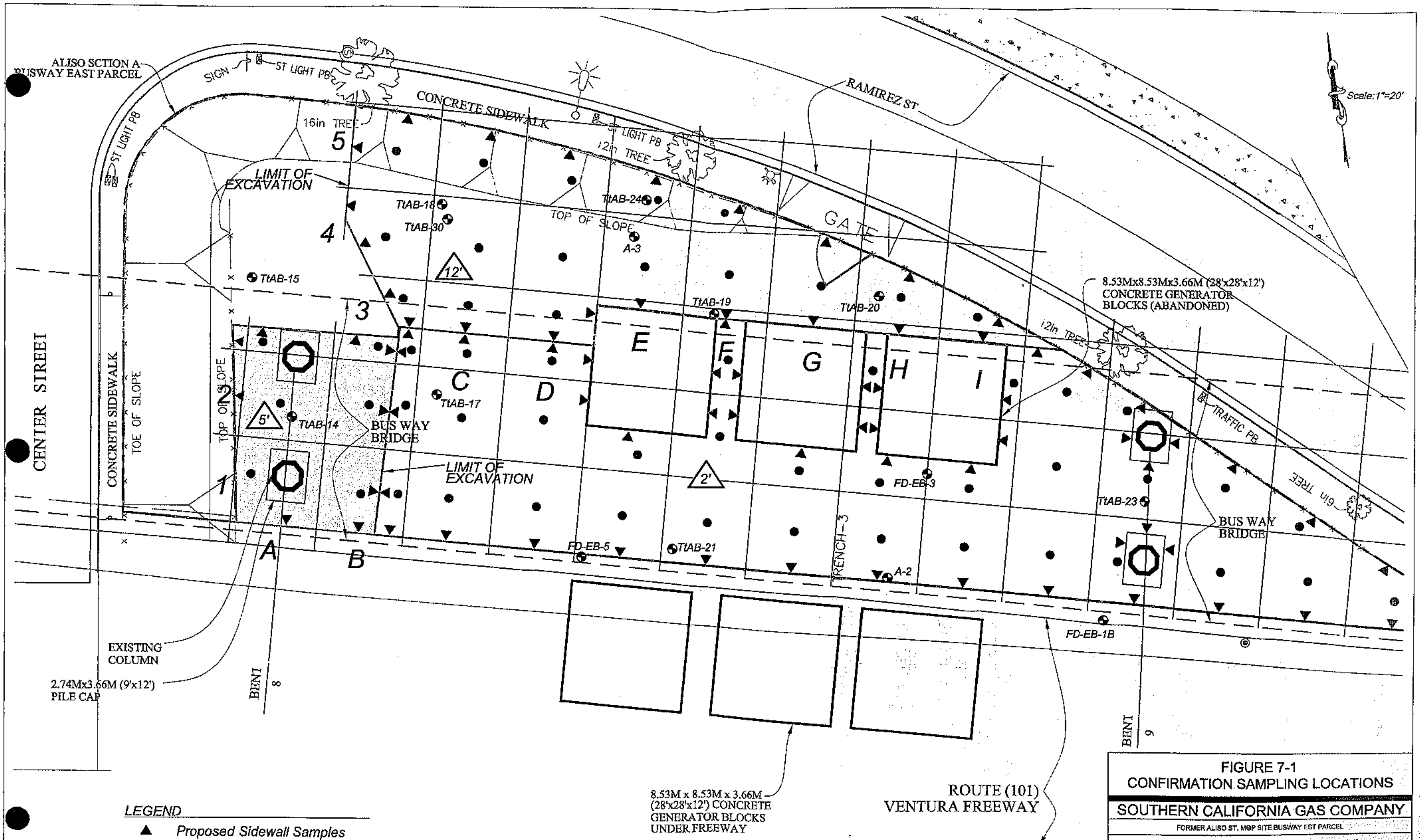
7.5 DOCUMENTATION OF REMOVAL ACTIVITIES

Prior to removal action activities, photo-documentation will be recorded for the Site. The photographs will show the condition of the Site prior to work activities. The location of post-excavation confirmation samples will also be documented through color photographs. Photographs will be taken with 35-millimeter film. Photographs will be taken with equipment that provides date and time stamping.

During field activities, the removal action contractor will maintain daily logs that will include:

1. Sign-in and sign-out of all personnel at the Site;
2. Activities conducted;
3. Excavation material types and quantities. The removal action contractor will be responsible for detailing the excavation material quantities and types;
4. Materials used;
5. Equipment used; and
6. Calibration of field monitoring equipment.

The analytical results will be evaluated during excavation activities. The analytical results will be compared to the soil cleanup goal as discussed in Section 7.2, to determine if further excavation and/or confirmation sampling is necessary.



LEGEND

- ▲ *Proposed Sidewall Samples*
- ● *Proposed Bottom Samples*
- △12' *Maximum depth ot excavation*

Note: Soil up to two feet below ground surface will be removed sitewide.

FIGURE 7-1
CONFIRMATION SAMPLING LOCATIONS

SOUTHERN CALIFORNIA GAS COMPANY

FORMER ALISO ST. MGP SITE BUSWAY EST PARCEL

DRAWN BY:	M.A.R.	DATE:	4-17-03
REVIEWED BY:	C. LIBAN	DATE:	4-17-03
APPROVED BY:		DATE:	
FILE NAME:	11925-11RAWFigure7-1.dwg		

Pascd2396/D/Projects/11925/11925-11/RAW-East/11925-11RAWFigure7-1.dwg

Figure 7-2 Sampling Flowchart, Bottom of Excavation

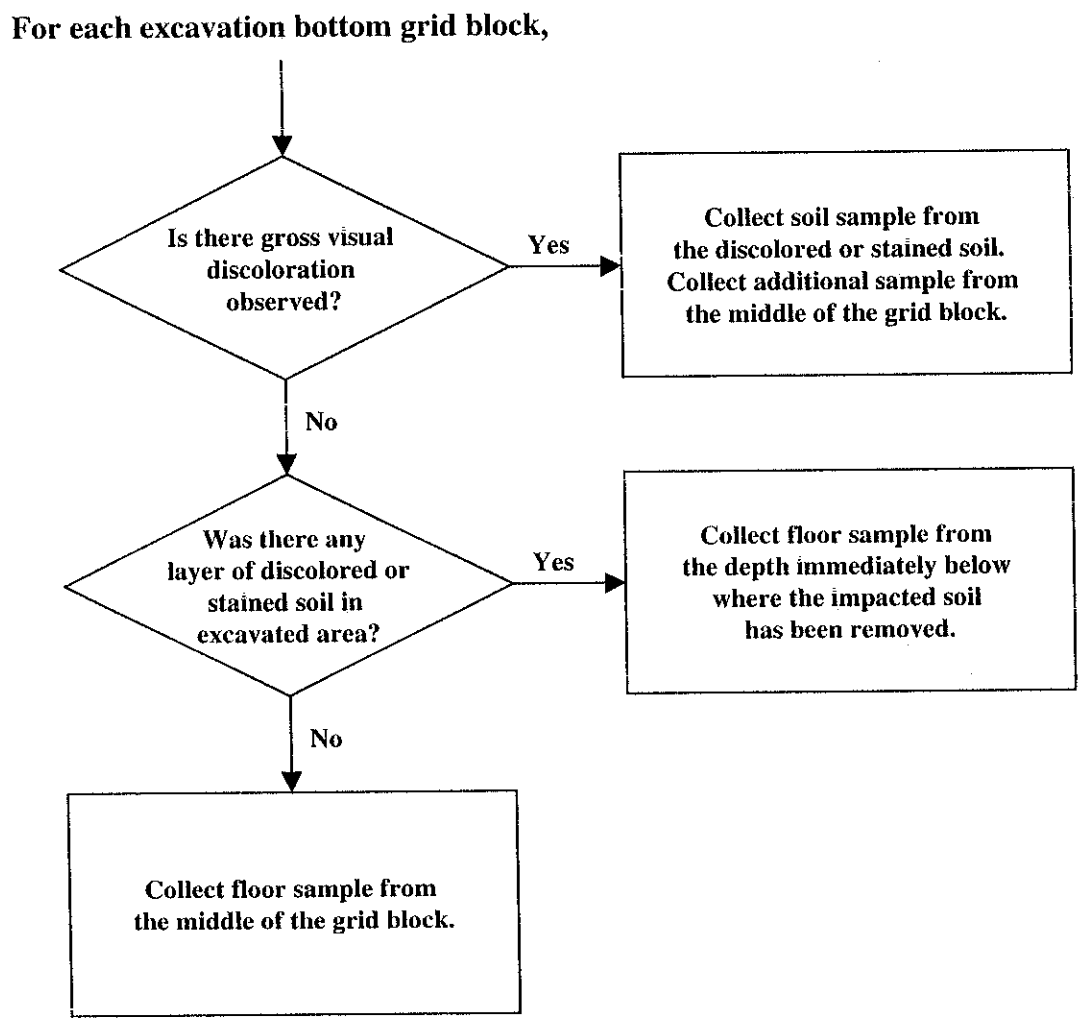
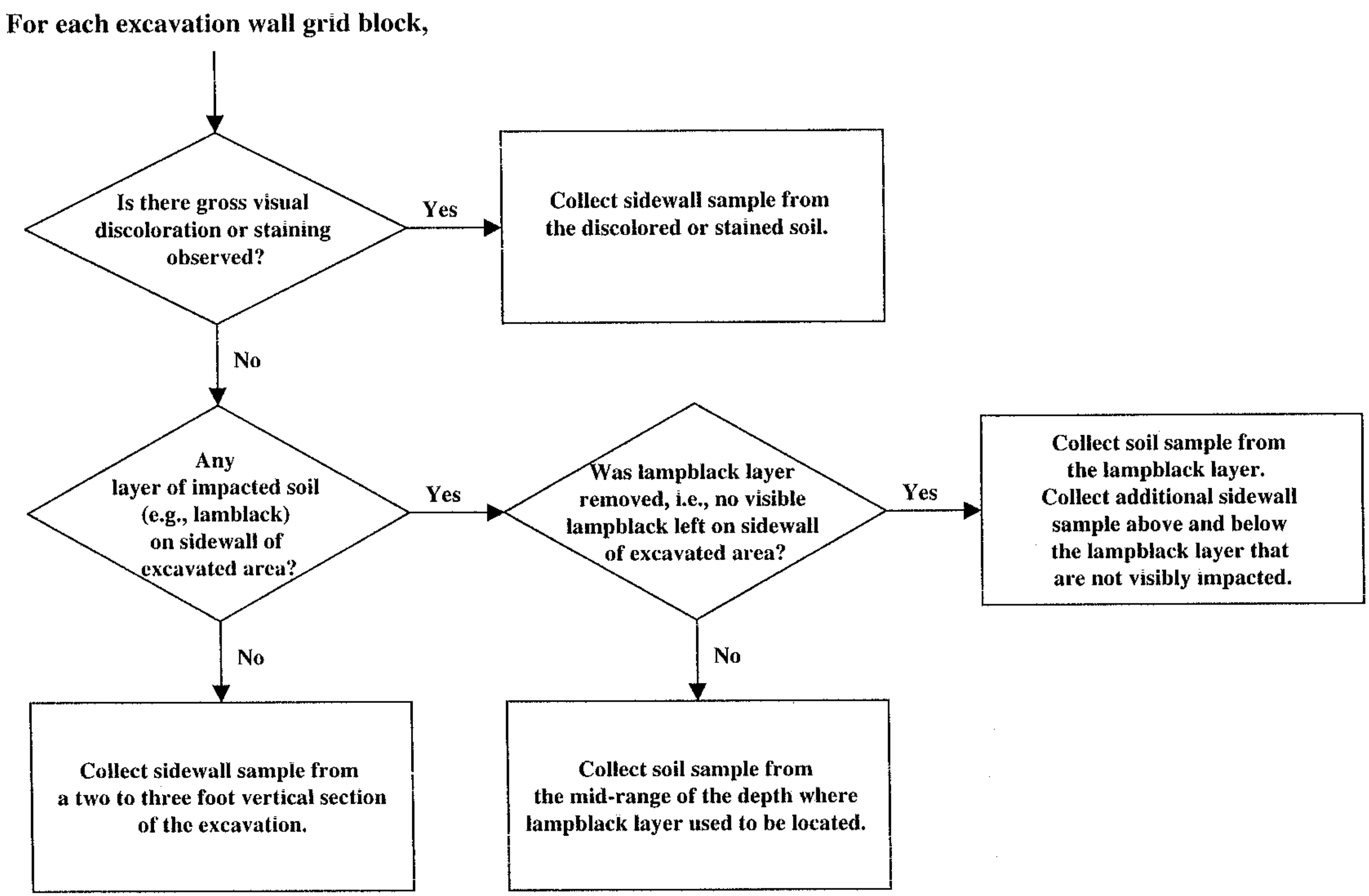


Figure 7-3 Sampling Flowchart, Sidewalls of Excavation



8.1 PROJECT ORGANIZATION

The project organization (Figure 8-1) for the former Aliso Street Sector A MGP Site is discussed below.

Department of Toxic Substances Control

The Department of Toxic Substances Control (DTSC) will be the agency overseeing the project and reviewing all workplans and project reports. The DTSC Project Manager is Mr. Stephen Cutts, P.E.: (818) 551-2178. The DTSC Project Geologist is Dr. Richard Coffman, R.G.: (818) 551-2175. The DTSC Project Toxicologist is Dr. Kimiko Klein: (916) 255-6643. The DTSC Unit Chief is Ms Rita Kamat (818) 551-2831.

The Southern California Gas Company

This removal action workplan will be implemented and managed by the Southern California Gas Company under the direction of Dr. Todd Sostek. Mr. Masood Hosseini will be the Southern California Gas Company's Project Manager. He will receive all notices, comments, approvals and other communications from DTSC, other agencies, media and other parties. He will be responsible for distributing the submittals to DTSC and for disseminating information to third parties. Ms. Webber will also directly oversee the work of Tetra Tech and the removal action contractor.

Tetra Tech

Tetra Tech will be the Construction Manager performing removal action oversight at the Site. Mr. Salar Niku, P.E., will be Tetra Tech's Project Manager. He will be the primary liaison between the Southern California Gas Company and Tetra Tech. He will provide technical direction and will be responsible for allocation of company resources. He will also monitor day-to-day activities to ensure that quality work is done on time and within budget. He will also be responsible for reporting work progress and findings to the Southern California Gas Company. Mr. Niku is a Registered Civil Engineer in the State of California.

Mr. Dan Hencey, R.G., will serve as Site Manager. He is a registered geologist in California who has performed a significant number of remedial action projects, and has overseen at least two manufactured gas plant site remediations for SCG. Mr. Hencey will primarily be responsible for the environmental and health and safety aspects of this project. Mr. Hencey will also act as the Site Safety Coordinator under the direction of Mr. Michael Ridosh, CIH.

Mr. Mesrop Mesrop, P.E., G.E., a registered geotechnical engineer in California, will primarily be responsible for overseeing the engineering and geotechnical aspects of the remedial action. Mr. Mesrop will work closely with Mr. Hencey to ensure that removal of impacted soil will not jeopardize the integrity of existing structures. Both Mr. Hencey and Mr. Mesrop will report directly to Dr. Salar Niku, P.E., a Registered Civil Engineer in California and the Tetra Tech Project Manager of this project.

Removal Action Contractor

The removal action activities will be performed by a removal action contractor under the direct contract with the Southern California Gas Company, selected through a competitive bidding process. All excavation, transportation; and backfill activities will be performed by the removal action contractor. Other contractors that will be involved in site removal action activities include AETL, for Laboratory Analysis, and TPS, for Treatment/Recycling Facility.

8.2 REMOVAL ACTION IMPLEMENTATION SCHEDULE

The removal action schedule is shown below:

Description	Start	Finish
Draft Removal Action Workplan to DTSC		6/11/2003
DTSC Review	6/11/2003	6/30/2003
Response to DTSC comments	6/30/2003	7/18/2003
Approval of Final Removal Action Workplan by DTSC	-	8/1/2003
Prepare and Issue an Information Letter	6/2/2003	6/27/2003
Prepare CEQA Document under DTSC oversight	6/2/2003	6/27/2003
CEQA Implementation	6/30/2003	8/29/2003
Public Comment Period	08/1/2003	9/1/2003
Prepare bidding package and selection of removal action contractor	6/30/2003	9/1/2003
Remedial actions	1/5/2004	3/26/2004
Draft Site Closure Report to DTSC	-	6/25/2004
Final Site Closure Report to DTSC	-	8/13/2004
Site Certification letter by DTSC	-	8/27/2004

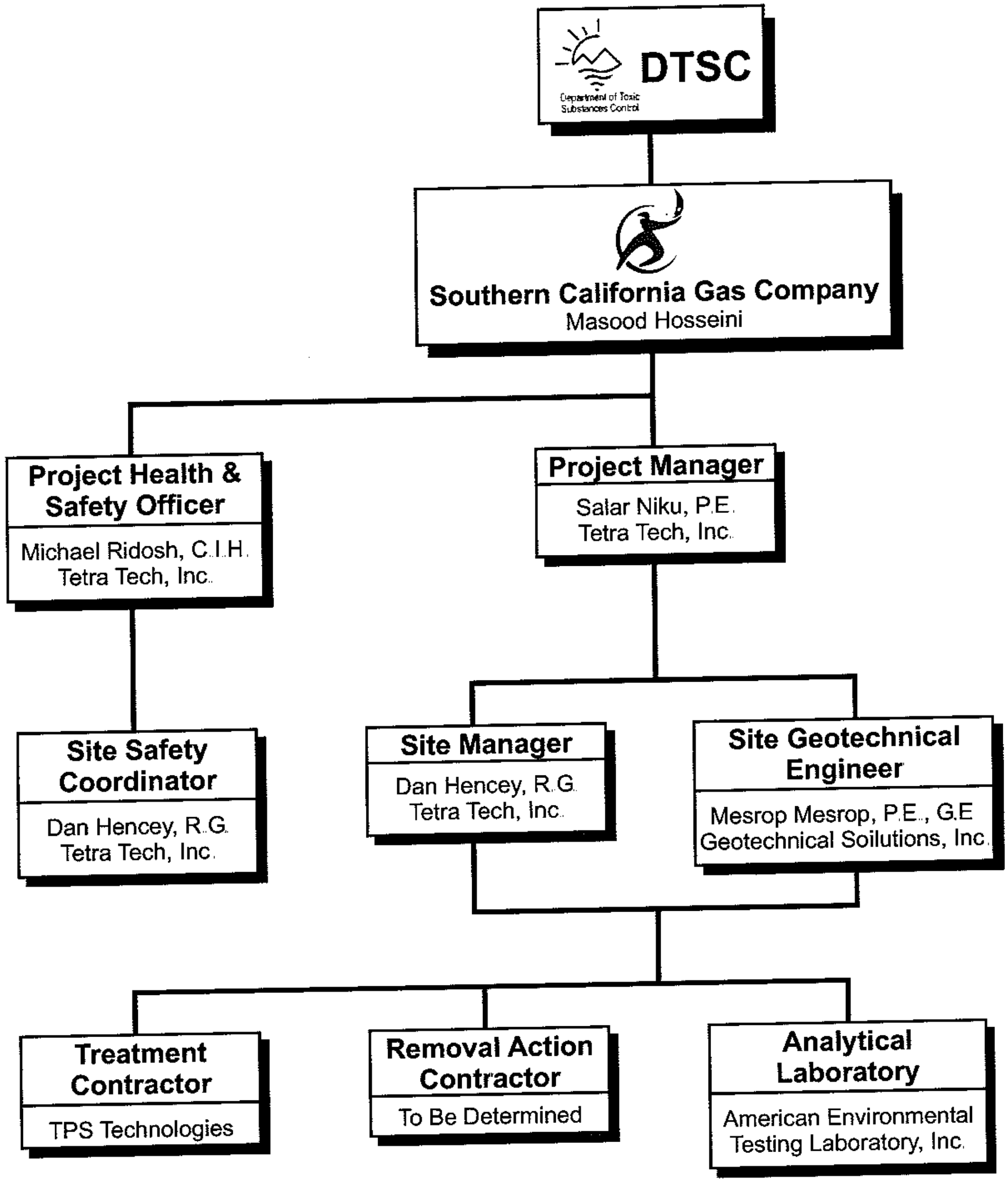


FIGURE 8-1
PROJECT ORGANIZATION

SOUTHERN CALIFORNIA GAS COMPANY

FORMER ALISO ST. MGP SITE BUSWAY EAST PARCEL

DRAWN BY: M.E.Y.	DATE: 7-18-03
REVIEWED BY: C. LIBAN	DATE: 7-18-03
APPROVED BY:	DATE:
FILE NAME: 11925-11Figure8-1.cdr	

Pascd2396\projects\11925\11925-11\11925-11Figure8-1.cdr

9. SITE CERTIFICATION

As stated in Section 3, the fundamental remedial action goal proposed for the former Aliso Sector A Busway East Parcel MGP Site is to restore the soil at the Site to background conditions Restoration to background conditions imply that risk and hazard to exposure of potential Site workers to PAHs and other chemicals of potential concern (e.g., TPH, BTEX, cyanide, and metals) will have been reduced to acceptable levels In other words, the goal after remediation is to ensure that potential future receptors working at the Site experience no or *de minimis* incremental risk above background Achieving the primary goal of PAH cleanup will require considering both the background concentrations of PAHs in southern California soils and the PAH concentrations corresponding to acceptable risk levels.

Following excavation, confirmation soil samples will be collected and analyzed for PAH concentrations. The measured concentrations from these samples will be combined with PAH data from unexcavated areas to confirm attainment of the remedial action goals. Statistical analyses will be performed to compare post remediation concentrations against background concentrations and to determine if the Site has been restored to background conditions. Other chemicals of potential concern will be removed from the Site along with the removal of PAHs. Confirmation samples will be collected and analyzed for other chemical of potential concern to ensure that all cleanup goals have been met.

Once these criteria are met, the Southern California Gas Company will apply for a "Certificate of Completion" and "No Further Action" for the Site The certification will be requested in duplicate. The Southern California Gas Company would provide one copy of the "Certificate of Completion" to the owners of the Site property.

The Certificate of Completion may state the following: "All contaminants from the former Aliso Sector A Busway East Parcel Manufactured Gas Manufacturing Plant have been removed and the Property has been restored to levels that are protective of human health and is safe for industrial uses."

10. ADMINISTRATIVE RECORD LIST AND REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR), 1995. *Toxicological Profiles for Polycyclic Aromatic Hydrocarbons (PAHs)*. Atlanta, Georgia. August.

ASTM, 1996. American Society Testing and Materials *Annual Book of ASTM Standards, Section 4 - Construction*.

Becker, Richard, A., 1993. *Assessing the Potential Human Health Threats of Chemical Contaminants at Former Towne Gas Sites*, Memorandum from Richard A. Becker, Ph.D., DART, Department of Toxic Substances Control, December 10.

California Environmental Protection Agency (Cal EPA), Air Resources Board (Cal EPA ARB), 993. *Benzo(a)pyrene as a Toxic Air Contaminant. Part B Health Assessment*. Office of Environmental Health Hazard Assessment. August.

Cal EPA, 1994a. *Memorandum to EPA – Departments, Boards and Offices from Standards and Criteria Group, Office of Environmental Health Hazard Assessment. Subject: California Cancer Potency Factors*. November 1.

Cal EPA, 1994b. *California Cancer Potency Factors: Update*. Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (Cal-EPA), November.

Cal EPA, 1999. *California Modified PRGs*. Office of Environmental Health Hazard Assessment.

California Code of Regulations. *Title 8, Subchapters 4 and 8, Article 105, Section 5095 to 5100; Title 22, Division 4, Chapter 30 Articles 5, 6, 6.5, and 7*.

California Joint Utility Traffic Control Committee, 1993. *Work Area Protection and Traffic Control Manual*, December.

California Department of Water Resources (CDWR), 1981. California Department of Water Resources, *California Rainfall Summary, Monthly Total Precipitation*, 41 P.

CH2M Hill, 2000. *Removal Action Completion Report for the Aliso/530 Ramirez – Former Manufactured Gas Plant Site 530 Ramirez Street Los Angeles, California*.

Davis, T.L., J. Namson, and R.F. Yerkes. 1989. A Cross-section of the Los Angeles Areas Seismically Active Fold and Thrust Belt, the Whittier Narrows Earthquake and Earthquake Hazard. *Journal of Geophysical Research*, **94**: 9644-9664.

Department of Toxic Substances Control (DTSC), 1992. *Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities*, Office of the Science Advisor, State of California Department of Toxic Substances Control, Sacramento, CA. July.

DTSC, 1994. *Preliminary Endangerment Assessment Guidance Manual*. State of California Environmental Protection Agency, January.

DTSC, 2000. *Voluntary Cleanup agreement between DTSC and Southern California Gas Company, Docket Number HAS-A00\01-100*, dated October 10.

Durham, D.L. and R. F. Yerkes. 1964. *Geology and Oil Resources of the Eastern Puente Hills Area, Southern California*. U.S. Geological Survey Professional Paper 420-B, 62 p.

Freeze, R. A., J. A. Cherry, 1979. *Groundwater*. Prentice-Hall, Inc., New Jersey, 604 pp.

Gilbert, R.O., 1987. *Statistical Methods for Environmental Pollution Monitoring*. Van Nostrand Reinhold Company, New York, 320 pages.

Gas Research Institute (GRI), 1988. *Laboratory Study of Thermal Desorption Treatment of Former Manufactured Gas Plant Sites*, August.

Namson, J. and T. Davis. 1988. Structural Transect of the Western Transverse Ranges, California: Implications for Lithospheric Kinematics and Seismic Risk Evaluation. *Geology*, **16**: 675-679.

Norris, R.M. and R.W. Webb. 1990. *Geology of California*. John Wiley & Sons, New York, N.Y.

Remediation Technologies, Inc. (RETEC), 1987. Atlantic Environmental Services, Inc., and Keystone Environmental Resources, Inc. *Management of Manufactured Gas Plant Sites, Volume I, Wastes and Chemicals of Interest*. Prepared for Gas Research Institutes, October.

RETEC, 2002. *Feasibility Study Report, Former Aliso Street MGP Site, Los Angeles, California*, June.

SCAQMD, 1996. *South Coast Air Quality management District, Rules and Regulations (SCAQMD), Volumes 1 and 2*, January.

Tetra Tech, 2001. *Remedial Investigation Master Workplan, Former Aliso Street MGP Site, Los Angeles, California*.

Tetra Tech, 2002a. *Remedial Investigation Report, Former Aliso Street MGP Site, Los Angeles, California*, June.

Tetra Tech, 2002b. *Risk-Based Remedial Goals for Former Aliso Street MGP Site, Los Angeles, California*, June.

Thomas Brothers Maps, 2002. *The Thomas Guide, Los Angeles County*

U. S. Code of Federal Regulations, Title 40, Parts 261 through 265; Title 49, Parts 100 through 179; Title 29, Sections 1910.120 and 1926.

U.S. Environmental Protection Agency (U.S. EPA), 1986. U.S. Environmental Protection Agency, *Superfund Public Health Evaluation Manual (SPHEM), Office of Emergency and Remedial Response*, Washington, D.C. EPA/540/1-86/060 (OSWER Directive 9285.4-1).

U.S. EPA, 1988a. *CERCLA Compliance with Other Laws Manual; Interim Final.* EPA/540/G-89/006.

U.S. EPA, 1988b. *CERCLA Compliance with Other Laws Manual: Part II, Clean Air Act and Other Environmental Statues and State Requirements.* EPA/540/G-89/009 - State.

U.S. EPA, 1988c. U.S. Environmental Protection Agency (U.S. EPA), *Superfund Exposure Assessment Manual (SEAM).* Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-88/001 (OSWER Directive 9285.5-1).

U.S. EPA, 1988d. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final.* EPA/540/G-89/004.

U.S. EPA, 1989a. U.S. Environmental Protection Agency (U.S. EPA). *Risk Assessment Guidance for Superfund. Volume I, Human Health Evaluation Manual (Part A)*, EPA 540/1-89/002.

U.S. EPA, 1989b. *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Interim Final Guidance.* Office of Solid Waste. April

U.S. EPA, 1990. U.S. Environmental Protection Agency (U.S. EPA), *National Oil and Hazardous Substances Pollution Contingency Plan (Final Rule)* 40 CFR Part 300; 55 Federal Register 8666.

U.S. EPA, 1991a. *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual. Supplemental Guidance. Standard Default Exposure Factors.* Office of Emergency and Remedial Response, Toxics Integration Branch. March 25

U.S. EPA, 1991b. U.S. Environmental Protection Agency (U.S. EPA). *Risk Assessment Guidance for Superfund. Volume I--Human Health Evaluation Manual (Part B), Development of Risk-Based Preliminary Remediation Goals*, Publication 9285.7-01B, December.

U.S. EPA, 1991c. U.S. Environmental Protection Agency (U.S. EPA), *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors.*

Office of Emergency and Remedial Response, Washington, D.C. OSWER Directive 9285.6-03.

U.S. EPA, 1991b. *Risk Assessment Guidance for Superfund. Volume I- Human Health Evaluation Manual.* (Part B, Development of Risk-Based Preliminary Remediation Goals). Publication 9285.701B.

U.S. EPA, 1992. U.S. Environmental Protection Agency (U.S. EPA), *Supplemental Guidance to RAGS: Calculating the Concentration Term.* Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Publication 9285.7-081.

U.S. EPA, 1992a. *Dermal Exposure Assessment: Principles and applications. Interim Final.* Office of Research and Development. EPA/600/8-91/011B. Washington, D.C. January.

U.S. EPA, 1992b. *Health Effects Assessment Summary Tables.* Annual FY 1992. Office of Research and Development. March.

U.S. EPA, 1993. U.S. Environmental Protection Agency, *Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA*, EPA/540-R-93-057, August.

U.S. EPA, 1994. U.S. Environmental Protection Agency, *Health Effects Assessment Summary Tables (HEAST).* Office of Solid Waste and Emergency Response, Washington, D.C. EPA/540/R-94/020.

U.S. EPA, 1996a. *Soil Screening Guidance: Technical Background Document.* EPA/540/R-95/128. Office of Emergency and Remedial Response, Washington, D.C.

U.S. EPA. 1996b. *Integrated Risk Information System (IRIS).* Office of Research and Development. Office of Health and Environmental Assessment.

U.S. EPA, 2000. *Region 9 Preliminary Remediation Goals Table, 2000 update*: Letter from Region 9, November 1, 2000. Additional updates on http://www.epa.gov/region09/waste/sfund/prg/index.htm.

U.S. EPA, 2003. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846.* Latest version of tests can be found at http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm.

United States Geological Survey (USGS), 1984. *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*: United States Geological Survey Professional Paper 1270.

Department of Toxic Substances Control

Linda Adams
Secretary for
Environment Protection

Maureen F. Gorsen, Director
1011 N. Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

October 10, 2007

Mr. Masood Hosseini
Project Manager
555 West Fifth Street
Los Angeles, California 90013-1011

PARTIAL SITE CERTIFICATION FOR SOIL: EAST PARCEL, ALISO STREET MANUFACTURED GAS PLANT (MGP) SITE, LOS ANGELES

Dear Mr. Hosseini:

The Department of Toxic Substances Control (DTSC) has reviewed the Removal Action Completion Report for the Aliso Street (Sector A) – East Parcel, MGP Site. DTSC has determined that the Report meets the requirements of the approved Removal Action Workplan (RAW) for the site. Therefore, no further surface or near surface remediation is necessary for this site. Based on this information, we have no further requirements for soil investigation and/or cleanup at this time.

However, groundwater underneath the site is still contaminated with petroleum hydrocarbons, polynuclear aromatic hydrocarbons, volatile organic compounds, vinyl chloride, metals and cyanide. DTSC understands that the groundwater will be addressed as a separate operable unit, which will encompass the entire 52-acre Aliso MGP site.

If you have any questions, please contact Mr. Stephen McArdle, Project Manager, at (818) 551-2852 or me, at (818) 551-2822.

Sincerely,

Sara Amir

Sayareh Amir, Chief
Southern California Cleanup Operations Branch – Glendale Office

cc: Salar D. Niku, Ph.D., P.E.
Vice President
Tetra Tech, Inc.
3475 East Foothill Boulevard
Pasadena, California 91107

(THIS PAGE INTENTIONALLY LEFT BLANK)

J-67 - Piper Technical Center, 555 Ramirez Street

(THIS PAGE INTENTIONALLY LEFT BLANK)

QUARTERLY GROUNDWATER MONITORING REPORT FIRST QUARTER, 2016

Piper Technical Center
555 Ramirez Street
Los Angeles, California

April 1, 2016

Prepared for:

CITY OF LOS ANGELES
FOUNDED 1781

Geotechnical Engineering Group

Prepared by:

PINNACLE
ENVIRONMENTAL TECHNOLOGIES
2 Santa Maria
Foothill Ranch, California 92610
(949) 470-3691

REGISTERED GEOLOGIST
KEITH G. THOMPSON
No. 5543
STATE OF CALIFORNIA

Keith G. Thompson, P.G., C.Hg.
Principal

William E. Malvey
Principal

EXECUTIVE SUMMARY

This report summarizes the quarterly monitoring and sampling activities completed by Pinnacle Environmental Technologies (Pinnacle) at Piper Technical Center, located at 555 Ramirez Street, Los Angeles, California. This site is the location of the headquarters facility for the Los Angeles Police Department (LAPD).

The following summary and conclusions are based on the results of this sampling event:

- Quarterly groundwater monitoring and sampling activities were completed on March 21, 2016 on thirteen groundwater monitoring wells installed at the site. The depth to groundwater in each well was measured to the nearest 0.01 foot.
- The average groundwater elevations in the wells increased 0.20 feet since the previous sampling event on December 27, 2015. The historic high average elevation was 254.61 feet MSL measured on September 14, 2001. The historic low average elevation was 250.31 feet MSL measured on September 14, 2015.
- Groundwater flow is toward the south-southwest at a calculated gradient of 0.001 feet/foot.
- Potable water is not produced within at least one mile of the site. The nearest wells have been designated as inactive since at least 1975.
- Dissolved-phase TPHG was detected in ten of the thirteen sampled wells at concentrations from 400 micrograms per liter (ug/L) (in wells MW-4 and MW-6) to 34,000 ug/L (in well MW-11). The historic high dissolved-phase TPH concentration was 74,815 ug/L in well MW-11 on January 15, 2007.
- Dissolved-phase BTEX is currently present in nine of the thirteen wells sampled at the site. Benzene was detected in nine wells at concentrations from 2.5 micrograms per liter (ug/L) (in well MW-6) to 150.8 ug/L (in well MW-3). Benzene concentrations were not significantly different than last quarter results. The historic high dissolved-phase benzene concentration was 1,082.6 ug/L in well MW-11 on September 16, 2003.
- MTBE was detected in three wells at concentrations from 3.2 micrograms per liter (ug/L) (in well MW-4) and 17.7 ug/L (in well MW-2). Concentrations of MTBE were similar to last quarter results.
- Dissolved-phase TBA, ETBE, TAME, and DIPE were not detected in any of the groundwater well samples. There are no historical detections of these compounds.
- Dissolved-phase vinyl chloride was detected in each of the groundwater well samples at concentrations from 2.1 ug/L (MW-3) to 67.7 ug/L (MW-6). Vinyl chloride results were generally higher than the last quarter results. The results from wells MW-12 and MW-13

were lower that last quarter. The historic high concentration of vinyl chloride was 237.9 ug/L measured on December 10, 2010.

- Dissolved-phase cis-1,2-DCE was detected in eleven of the groundwater well samples at concentrations from 3.0 ug/L (MW-4) to 69.6 ug/L (MW-2). The cis-1,2-DCE results from this quarter were higher in a majority of the wells compared to the last quarter results. The historic high dissolved-phase cis-1,2-DCE concentration was 178.6 ug/L in well MW-8 on June 11, 2004.
- Dissolved-phase trans-1,2-DCE was detected in seven of the groundwater well samples at a concentration from 0.8 ug/L (MW-7) to 4.9 ug/L (MW-2). The historic high dissolved-phase trans-1,2-DCE concentration was 40.1 ug/L in well MW-2 on December 31, 2004.
- Dissolved-phase isopropylbenzene was detected in nine of the groundwater well samples at concentrations from 1.4 ug/L (MW-6) and 140.2 ug/L (MW-11). Isopropylbenzene concentrations were similar to last quarter results except for well MW-11, where it was significantly lower. The historic high dissolved-phase isopropylbenzene concentration, 344.8 ug/L, was in well MW-11 from the third quarter 2013 sampling event.
- Dissolved-phase naphthalene was detected in five of the groundwater well samples at concentrations from 11 ug/L (MW-6) to 2,410 ug/L (MW-11).

These results suggest that a set of historical onsite sources of contamination (underground storage tanks and the previous manufactured gas plant) as well as upgradient sources of contamination have contributed to the dissolved-phase contaminants detected at depth.

TABLE OF CONTENTS

INTRODUCTION

This report summarizes the quarterly monitoring and sampling activities completed by Pinnacle Environmental Technologies (Pinnacle) at Piper Technical Center, located at 555 Ramirez Street, Los Angeles, California. The Piper Technical Center is approximately 66 acres in size. It is operated by the City of Los Angeles, which provides numerous services such as vehicle repair, a police crime laboratory, police helicopter base, General Services yard, construction and maintenance shops, and various other services in support of City activities. Pinnacle completed this work on the behalf of the Los Angeles Department of Public Works, Bureau of Engineering, Geotechnical Engineering Group (GEO).

BACKGROUND

The site vicinity has long history of industrial, commercial and energy-related activities. Adjacent sites have been investigated to delineate natural crude oil seeps observed in the Los Angeles River channel. Activities at other sites in the area have resulted in significant impacts to soil and groundwater. SEMPRA Energy has conducted a comprehensive site investigation, risk assessment and remediation of the former Aliso Manufactured Gas Plant (MGP) site on which Piper Technical Center is located. DTSC was the lead agency on the site providing oversight for the SEMPRA activities. The City has not been required to conduct any work beyond quarterly monitoring and sampling.

Fifteen current or former USTs have been installed at seven locations on site (Figure 2). The USTs have or currently contain gasoline, diesel, jet-A (for City helicopters), transmission fluid, motor oil and waste oil. City forces and Pinnacle have advanced approximately 75 borings and installed and sampled and 13 four-inch groundwater monitoring wells. There have been also 17 soil vapor probes (that have been removed), and nine groundwater monitoring wells drilled on site by SEMPRA Energy/Tetra Tech. These wells are not included in this sampling event.

SITE DESCRIPTION

The site is located to the east of downtown Los Angeles at an approximate elevation of approximately 280 feet above mean sea level (MSL) (Figure 1). The area is predominantly office and industrial buildings (mixed high-rise and lower multi-story). It occupies a full city block. Cesar Chavez Avenue, which crosses the Los Angeles River, is located immediately north of the site. Lyon Street is west of the site. Keller Street is located east of the site. A railroad right-of-way and recently completed locomotive staging area is located between

Keller Street and the Los Angeles River. Ramirez Street is located south of the site. An elevated portion of the 101 Freeway is located at the southeast corner of the site (Figure 2).

The site cover is a combination of asphalt and concrete and is generally flat-lying. A single large structure with a central drive-through is located at the center of the site. Local topography slopes away from this building. Regional topography in the area rises to the north towards Chavez Ravine, which is approximately one and one-half miles to the north, and falls towards the east-southeast. The Los Angeles River, which is located approximately 300 feet east of the site, flows toward the south.

Los Angeles County Flood Control District Well (LACFCD) #2765 is located approximately 0.8 miles south of the site. Depth to groundwater was measured in that well to be 62.6 feet in October 1975. The well has been listed as inactive since 1975.

GEOLOGY AND HYDROGEOLOGY

The site is situated on unconsolidated alluvial Quaternary-age sediments of the Los Angeles River plain. Low hills to the north contain outcrops of the Miocene-age Puente Formation, which is comprised of deep marine siltstones and fine-grained sandstones. The subject site is underlain by approximately 100 feet of unconsolidated alluvial gravels, sands, and cobbles. Cobbles are more frequent with depth. These sediments are in turn underlain by an indeterminate thickness of sediments of the Fernando Formation, which is also a late Tertiary Formation comprised of fine-grained marine and non-marine rocks.

Groundwater in the area occurs at a depth of between 25 and 35 feet below ground surface in a perched aquifer comprised of alluvial sediments that overlie the relatively impermeable Fernando and Puente Formations. Flow direction is consistently toward the Los Angeles River.

The Union Station Oilfield is located 1,000 feet to the southwest and extends for another 2,500 feet to the south-southwest along the Los Angeles River. This field was discovered in 1967 and produces small amounts of oil and gas from the Miocene-age Puente Formation at an approximate depth of 5,000 feet bgs. No active oil wells are located within a 1/2–mile radius of the site. Naturally-occurring oil seeps have been observed along the Los Angeles River adjacent to the site.

GROUNDWATER MONITORING AND SAMPLING

Sampling was conducted on March 21, 2016. Three wells located in Keller Street (MW-2, MW-3 and MW4) were paved over shortly before sampling was conducted in May 2012. They were subsequently uncovered in preparation for sampling in September 2012. They were covered with asphalt again before sampling could be performed. Each of these wells was then uncovered and raised so that they were available for sampling during subsequent sampling events. Each of the Pinnacle wellheads was replaced prior to the March 2013 sampling event. The concrete apron and well cover at well PMW-4 required replacement again on October 6, 2015.

The top-of-casing elevations were resurveyed by surveyors provided by the City of Los Angeles. The depths to groundwater and to floating product (if present) in each well were measured to the nearest 0.01-foot. The groundwater elevation in each well was calculated using the top-of-casing elevation data obtained from the top-of-casing surveys performed by the City of Los Angeles survey crew on February 21, 2013.

Table 1 summarizes the historical and latest depth-to-groundwater and groundwater elevation data at the site. Appendix A details the field procedures used during this quarterly sampling event.

The groundwater elevations in the wells decreased an average of 0.05 feet since the previous sampling event on March 21, 2016. The calculated groundwater gradient was 0.001 across the site on the monitoring date. The flow direction was to the south (Figure 3). The gradient has not appreciably changed since the last monitoring event.

None of the wells contained measurable thicknesses of floating product on the sampling date. Pinnacle has not observed measurable floating product in wells at the subject site.

The standing water in each of the accessible wells was purged prior to sample collection. Approximately 150 gallons of groundwater was purged from the 13 monitoring wells available for sampling.

One groundwater sample was collected from each of the purged wells using a disposable Teflon bailer equipped with a low-flow bottom-emptying device. The bailer was slowly lowered into the water column of the well to be sampled and withdrawn from the well when sufficient water was obtained to fill the sample containers. The sample was slowly decanted into the sample containers to minimize agitation of the sample and release of volatile petroleum hydrocarbons from the sample. The samples were placed in an ice chest cooled with ice for transport to the laboratory.

ANALYTICAL PROCEDURES

The groundwater samples were delivered to a California state-licensed hazardous materials laboratory under proper chain-of-custody protocol for analysis. The following analyses were completed:

- Total Petroleum Hydrocarbons – full-range scan (TPHG/TPHD/TPHWO) using EPA Method 8015M.

- Volatile Organic Compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8260B.

- Fuel oxygenates ethyl-tertiary-butyl-ether (ETBE), tertiary-amyl-methyl-ether (TAME), diisopropyl ether (DIPE), tertiary-butyl-alcohol (TBA), and methyl-tertiary-butyl-ether (MTBE) using EPA Method 8260B.

- Semi-Volatile Organic Compounds (SVOCs) using EPA Method 8270C.

RESULTS

The following results were obtained during this groundwater sampling event:

- The groundwater elevations in the individual wells increased an average of 0.20 feet since the previous sampling event on December 27, 2015. The historic high elevation was 254.61 feet MSL measured on September 14, 2001. The historic low elevation of 250.31 feet MSL was observed on September 14, 2015 (Table 1).

- Groundwater flow direction was to the south. The potentiometric surface is a nearly planar surface below the site based on the available well data (Figure 3). The calculated gradient was 0.001 feet per foot (ft/ft).

- Dissolved-phase TPHG was detected in ten of the thirteen sampled wells at concentrations from 400 micrograms per liter (ug/L) (in wells MW-4 and MW-6) to 34,000 ug/L (in well MW-11). The historic high dissolved-phase TPH concentration was 74,815 ug/L in well MW-11 on January 15, 2007 (Table 2, Figure 4).

- Dissolved-phase TPHD and TPHWO was not detected in any of the groundwater samples (Table 2).

- Dissolved-phase BTEX is currently present in nine of the thirteen wells sampled at the site. Benzene was detected in nine wells at concentrations from 2.5 micrograms per liter (ug/L) (in well MW-6) to 150.8 ug/L (in well MW-3). Benzene concentrations were not significantly different than last quarter results. The historic high dissolved-phase benzene concentration was 1,082.6 ug/L in well MW-11 on September 16, 2003 (Table 3, Figure 5).

- MTBE was detected in three wells at concentrations from 3.2 micrograms per liter (ug/L) (in well MW-4) and 17.7 ug/L (in well MW-2). Concentrations of MTBE were similar to last quarter results (Table 4, Figure 6).

- Dissolved-phase TBA, ETBE, TAME, and DIPE were not detected in any of the groundwater well samples. There are no historical detections of these compounds (Table 4).