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Alameda County
Environmental Health

Mr. Jerry Wickham
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RE: Eagle Gas Station
4301 San Leandro Street
Oakland, California 94601

LOP StID# 2118
Fuel Leak Case No. RO0000096
USTCF Claim No. 014551
Clearwater Group Project # ZP046D

Dear Mr. Wickham,

As the legally authorized representative of the above-referenced project location, I have reviewed the report, ***Quarterly Groundwater Monitoring Report – First Quarter 2007*** prepared by my consultant of record, Clearwater Group, Inc. I declare, under penalty of perjury, that the information and/or recommendations contained in this report are true and correct to the best of my knowledge.

Sincerely,

Ms. Farah Naz

Date 6/6/07

CLEARWATER
GROUP
Environmental Services

June 4, 2007

Mr. Jerry Wickham, P.G.
Hazardous Materials Specialist
Alameda County Environmental Health Services
Environmental Protection Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: ***Quarterly Groundwater Monitoring Report – First Quarter 2007***
Eagle Gas Station, 4301 San Leandro Street
Oakland, California 94601
LOP Site ID# 2118
USTCF Claim No. 014551
Clearwater Project No. ZP046I

Dear Mr. Wickham:

Clearwater Group (Clearwater) has prepared this First Quarter 2007 Groundwater Monitoring Report for the Eagle Gas Station site. This report presents the groundwater monitoring activities and associated results.

SITE DESCRIPTION

The site is located in the southern portion of the City of Oakland, Alameda County, California, at the southern corner of the intersection of San Leandro Street and High Street. The site is located approximately 1,100 feet east of Interstate Highway 880 (**Figure 1**). The site is bounded by commercial property to the southeast and southwest, by High Street to the northwest, and by San Leandro Street to the northeast (**Figure 2**). The site is in use as a gas station and convenience store.

BACKGROUND

On April 21 and 22, 1999, Clearwater (formerly Artesian Environmental) oversaw the removal of five underground storage tanks (USTs) consisting of two 6,000-gallon gasoline tanks, two 4,000-gallon diesel tanks, and one 300-gallon used-oil tank from the site. Strong petroleum hydrocarbon odors were detected emanating from soils near the former UST locations during field observation. Five soil samples and three groundwater samples were collected from the UST excavation for confirmation sampling after completion of the UST excavation. Field observations and laboratory analysis indicated that an unauthorized release of petroleum hydrocarbons had occurred. The former UST excavation area is shown in **Figure 2** and was defined by driven steel shoring installed to protect the on-site and off-site buildings prior to the field activities.

In a letter dated May 10, 1999, Alameda County Environmental Health Services (ACEH) staff recommended that the soil at the site be remediated by over-excavation and that "as much groundwater as possible" be pumped from the excavation. Approximately 800 tons of petroleum hydrocarbon-impacted soil were excavated and disposed of as Class II non-hazardous waste, and approximately 1,000 gallons of petroleum hydrocarbon-impacted groundwater were pumped and removed from the site. Groundwater did not recharge quickly after the initial pumping. Existing on- and off-site structures and associated shoring limited the amount of soil that could be safely excavated. Soil samples collected from the excavation walls and product-piping trenches indicated that residual concentrations of petroleum hydrocarbons and methyl-tert-butyl-ether (MTBE) remained.

On August 4 and 5, 1999, approximately 100 linear feet of product piping were removed. Vent piping from between the former USTs and the southern corner of the on-site building was also removed. All piping was cut up and disposed of as scrap metal. On August 5, 1999, confirmation soil samples were collected along the piping trench. Six samples were collected from approximately 3 feet below ground surface (bgs). An additional four samples were collected, one from each of the four former fuel dispensers. Laboratory analytical results indicated that hydrocarbon-related contamination remained along the piping trenches.

On September 26, 2000, West Hazmat of Rancho Cordova, California, used a CME 75 drill rig to advance three borings to approximately 25 feet bgs and collect soil samples. Each of the three borings was converted to a groundwater-monitoring well (**Figure 2**) using clean, flush-threaded, 2-inch diameter polyvinyl chloride (PVC) for the well casing. The construction data for these three wells are presented in **Table 1**.

On October 3 and 10, 2000, Clearwater surveyed the top-of-the-casing (TOC) elevation of each of the wells relative to an arbitrary datum and developed the wells for monitoring purposes. Initial groundwater samples collected from these wells contained 83,000 micrograms per liter (µg/L) to 250,000 µg/L total petroleum hydrocarbon as gasoline (TPH-g) and 33,000 µg/L to 400,000 µg/L MTBE.

On August 3, 2001, Clearwater submitted its *Groundwater Monitoring Report—Second Quarter 2001* and *Sensitive Receptor Survey and Workplan for Continuing Investigation.* It was determined, at that time, that there were no major ecological receptors, permanent surface waters, or domestic-use wells within a 2,000-foot radius of the site. The proposed scope of the workplan included the installation of eight groundwater-monitoring wells around the site to delineate the MTBE plume in groundwater. In response to Clearwater's workplan, ACEH staff, in correspondence dated October 18, 2001, recommended postponing the installation of the additional off-site wells at this time. Instead, ACEH staff requested that further characterization of subsurface soils and groundwater on the subject site be completed prior to the installation of any off-site wells.

Quarterly monitoring was suspended after the Third Quarter 2001 event on August 3, 2001. Quarterly monitoring resumed in July 2003 and has continued every quarter since then. The historical groundwater monitoring and groundwater sample analytical results are listed in **Table 2**.

On January 9, 2004, after completing the review of the *Third Quarter 2003 Groundwater Monitoring Report*, ACEH staff requested a workplan that included additional on-site and off-site subsurface investigations and addressed the extent of groundwater impact on the site. Clearwater submitted its *Interim Remedial Action Plan* (IRAP), as requested by ACEH staff, on January 14, 2004.

ACEH staff provided review comments for the IRAP and the *First Quarter 2005 Groundwater Monitoring Report* in a letter dated May 26, 2005. Pursuant to the ACEH request described in this letter, Clearwater submitted a *Soil and Groundwater Investigation Workplan* on August 10, 2005. In review letters dated September 21, 2005, and November 1, 2005, ACEH approved the implementation of a modified IRAP proposed in Clearwater's June 13, 2005, letter entitled *Recommendations for Interim Remedial Actions* and the August 10, 2005, *Soil and Groundwater Investigation Workplan*. On the basis of the above-mentioned documents and correspondences, Clearwater installed 15 additional on-site wells between December 15 and December 20, 2005, and conducted Geoprobe soil sampling from December 6 to December 9, 2005, and from March 29 to April 2, 2006. In order to monitor the level of groundwater impact and the magnitude of vertical migration of contaminants in deeper groundwater, two deep monitoring wells (MW-4D and MW-5D) were installed. These wells were screened between 35 and 45 feet bgs. The construction data for the new wells are also presented in **Table 1**. All the wells were surveyed by Clearwater using a global positioning system (GPS) and laser level on March 16 and 28, 2006.

On May 30, 2006, Clearwater submitted its *Soil and Groundwater Investigation Report* to the ACEH, which included an updated Site Conceptual Model for the site. In response to the report, ACEH requested a Workplan to present proposed additional on- and off-site investigations. ACEH staff also provided Technical Comments to be addressed in the Workplan. Clearwater's *Response to Comments* was sent to ACEH on July 7, 2006. ACEH responded with an August 11, 2006, letter with revised Technical Comments to be incorporated into the Workplan. Clearwater submitted its *Revised Workplan* to the ACEH on December 19, 2006. ACEH responded in a letter dated January 4, 2007, with Technical Comments, which are to be addressed and incorporated during the field investigation, and a submittal of a revised workplan is not required. Clearwater is in the process of implementing the *Revised Workplan* including recent Technical Comments.

Resurvey of Groundwater Monitoring Wells

Because of unusually steep on-site groundwater gradients, ACEH staff requested a check of the groundwater elevation data. Each well's horizontal position was originally determined using a GPS survey in 2005. Clearwater field-checked the well locations of all the groundwater monitoring wells on August 18, 2006, using a 100-foot-long cloth tape. The horizontal distances between wells were measured, and the well positions were triangulated from these measurements. Several well locations were adjusted slightly on the base map; the revised base map with the resurveyed well locations is shown on **Figure 2** and used throughout.

The TOC elevations of all the wells were remeasured on September 12, 2006, using a survey level and survey staff, accurate to within 1/100th of a foot. The TOC elevation for well MW-1 (northwest corner of site) was the starting datum, and the TOC elevation for all the other wells was calculated as the relative difference from MW-1's TOC elevation. The surveyed TOC elevations were compared with the previously used TOC elevations, which were determined using a laser level. The relative difference in TOC elevation for each well was determined. The maximum vertical difference was found to be 0.12 foot for well IS-3. **Table 2** presents the original elevations followed by the resurveyed TOC elevations. The overall groundwater gradient pattern did not significantly change after completion of the resurvey of the wells.

GROUNDWATER MONITORING ACTIVITIES

The First Quarter 2007 groundwater-monitoring event was performed on February 13 and 14, 2007. The monitoring included measurement of depths to groundwater, well purging and sampling, and laboratory analysis of groundwater samples. All work was performed in accordance with Clearwater's Groundwater Monitoring and Sampling Field Procedures (**Attachment A**). These activities are described below:

Groundwater Gauging, Purging, and Sampling

On February 13, 2007, the depth to groundwater in all 18 wells was measured. An electronic water level indicator accurate to within ±0.01 foot was used to measure the depth to water. All the wells were checked for the presence of Separate Phase Hydrocarbons with an electronic interface probe prior to purging.

Prior to groundwater sampling, all wells were purged of approximately three well casing volumes using a disposable bailer until temperature measurements stabilized to less than 1.8 degrees Fahrenheit, conductivity measurements stabilized to less than 10% change in micro mhos, and pH measurements changed to than 0.25 pH units. Depth to water and well purging data were recorded on Well Gauging/Purging Calculations and Purging Data Sheets (**Attachment B**). Following recovery of water levels to at least 80% of their static levels, groundwater samples were collected from the wells using a new disposable polyethylene bailer for each well. The samples were labeled, documented on a chain-of-custody form, and placed on ice in a chilled cooler for transport to the laboratory. The purge water and rinseate were pumped into an internal tank in the sampling van and removed from the site for disposal at InStrat, Rio Vista, California, a licensed treatment, storage, and disposal facility.

Laboratory Analysis

Kiff Analytical LLC, a California Department of Health Services-certified laboratory, located in Davis, California, analyzed the groundwater samples. The samples were analyzed by EPA Method 8260B for TPH-g; benzene, toluene, ethylbenzene, and xylenes (BTEX); seven oxygenates including MTBE, di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), tert-butanol (TBA). The laboratory analytical reports (#54846 and #54847) including the chain-of-custody forms are included in **Attachment C**.

GROUNDWATER MONITORING RESULTS

Observations During Groundwater Sampling

During well purging, petroleum hydrocarbon-like odors were detected emanating from monitoring wells MW-1 through MW-6, MW-8, and IS-1 through IS-6, and extraction wells EW-1 and EW-2. Sheen was observed in the groundwater samples from monitoring wells MW-2, MW-4, MW-6, MW-8, and EW-1, EW-2, and IS-4. The sample turbidity ranged from high to low; water purged from wells IS-5, MW-4, and MW-5 had high turbidity. Groundwater in the other wells had moderate to low turbidity. The water ranged in color from gray to tan to clear. The field-measured water quality data are included in **Table 3** and are described in Natural Attenuation Processes and Recommended Monitoring Guidelines (**Attachment A**).

It should be noted that neither sheen nor odor was identified in the groundwater from deep monitoring wells MW-4D and MW-5D.

Groundwater Elevation and Flow

On February 13, 2007, the depths to groundwater in the shallow monitoring wells ranged from 6.12 feet (IS-6) to 12.78 feet (MW-2) bgs. The shallow groundwater elevations ranged from 9.20 feet above mean sea level (msl) [MW-2] to 15.34 feet above msl (EW-1). The groundwater elevations for deep monitoring wells MW-4D and MW-5D were 5.71 feet above msl and 5.74 feet above msl, respectively. The groundwater contour elevation map for this event is shown in **Figure 3** and does not include groundwater elevation data from deep wells MW-4D and MW-5D.

The groundwater contour elevation map, **Figure 3**, shows numerous groundwater flow directions caused by a groundwater mound, including the two shown to the northwest and west with gradients of 0.53 foot/foot (ft/ft) and 0.050 ft/ft, respectively. A groundwater high located in the vicinity of well IS-1 may correlate with the sewer line leak described in further detail under the following section, "Additional Activities".

Groundwater Sample Analytical Results

TPH-g concentrations were reported below the method-reporting limit in samples collected from all the shallow wells, except for MW-6 (2,400 μg/L); however, the reporting limits varied from 2,500 μg/L (MW-1) to 150,000 μg/L (MW-4 and IS-3). The concentrations reported for diesel-range hydrocarbons (TPH-d) ranged from below the reporting limit of 200 μg/L (MW-3) to 4,100 μg/L (MW-8).

Elevated benzene concentrations ranged from 52 μg/L in MW-3 to 3,600 μg/L in IS-5, and elevated MTBE concentrations were found in all the shallow wells and ranged from 3,600 μg/L (IS-1) to 640,000 μg/L (MW-4). Elevated TBA concentrations were detected in samples from all the shallow wells and ranged from 28,000 μg/L (IS-5) to 350,000 μg/L (MW-5).

For deep wells MW-4D and MW-5D, the groundwater sample analytical results were below the detection limits for all analytes. The analytical data for the above-mentioned results are listed in **Table 2** as well as shown on **Figure 4**.

FINDINGS AND CONCLUSIONS

The groundwater sample analytical results indicate that the site groundwater is impacted by petroleum hydrocarbons, consistent with previous groundwater monitoring events. TBA levels have generally increased over time, probably indicative of aerobic degradation of MTBE to TBA.

The Groundwater Contour Elevation Map (**Figure 3**) for this quarterly monitoring event has a pattern similar to that of the Groundwater Contour Elevation Map for the Fourth Quarter 2006 groundwater-monitoring event. There appears to be a groundwater mound between the site building and the two dispenser islands.

Comparison of the groundwater elevations in monitoring well pairs MW-4/MW-4D and MW-5/MW-5D indicates that the site may have a downward vertical gradient. Although constituents of concern (COC) are found in groundwater of shallow wells MW-4 and MW-5, those COC were not detected in groundwater samples from the adjacent deep wells, MW-4D and MW-5D, respectively, during this groundwater-monitoring event.

ADDITIONAL ACTIVITIES

Water Line and Sewer System Leak Investigation

ACEH staff concurred with Clearwater's recommendation to find and repair suspected leaks from the on-site water line and the sewer system in a letter dated January 4, 2007. On April 11, 2007, Clearwater oversaw Pipe Pros, Inc. of Concord, California, in locating any leaks in the water and sewer lines on site. The Daily Field Report, with field sketch, write-up, and subcontractor's map for this event are provided in **Attachment D** and the results are listed below:

- No leak was detected in the water line.
- Two leaks were detected in the sewer line near well IS-1: Pipe Pros noted (1) a possible crack in the cast-iron sewer line lateral pipe at 32.4 feet (measured from the sewer clean-out within the site building toward the High Street lateral/main junction) and (2) an offset in the pipe at the transition from cast-iron to clay piping at 35.2 feet measure from the same clean-out. (Because the offset inlet pipe is higher than the downstream pipe, no blockage is occurring.)

Revision of Site Base Map

Based upon the above water line and sewer leak investigation and a review of historic UST excavation photographs and the soil boring log for well IS-1, Clearwater came to the conclusion that well IS-1 could not be located in, or immediately adjacent to, the former UST excavation. The base map used to create **Figure 2** though **Figure 4** has been changed to reflect the revised former UST excavation perimeter. This revised base map will be used for future report maps.

FUTURE ACTIVITIES

Clearwater is in the process of implementing the *Revised Workplan* including ACEH's January 4, 2007 Technical Comments (**Attachment E**, Revised Schedule, May 4, 2007). Activities include acquiring access agreements from adjacent property owners to perform soil borings on their properties; obtaining a traffic plan from the City of Oakland to perform soil borings in both High and San Leandro Streets; and scheduling a High-Vacuum Dual Phase Extraction Pilot Test and a Persulfate Bench Test.

The East Bay Municipal Utility District (EBMUD) wastewater discharge permit for the future interim remedial system to the sewer system was obtained in January 2006; the 1st Quarter 2007 fees were paid in March 2007. As a quarterly discharge report was due to EBMUD, Clearwater wrote a letter to EBMUD on June 1, 2007, to update the file about impending work (**Attachment F**).

The Bioremediation Feasibility Study Report will be produced under a separate cover. On the Revised Schedule, this report (First Quarter 2007 Groundwater Monitoring) was to have included it.

The Second Quarter 2007 groundwater monitoring event was preformed May 14 and 15, 2007, and the report is in preparation.

CERTIFICATION

This report was prepared under the supervision of a Professional Geologist registered in the State of California. All statements, conclusions, and recommendations are based solely upon published results from previous consultants, field observations by Clearwater staff, and laboratory analyses performed by a State-of-California-certified laboratory related to the work performed by Clearwater. Information and interpretation presented herein are for the sole use of the client and regulatory agency. A third party should not rely upon the information and interpretation contained in this document.

The service provided by Clearwater has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of this profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

LICENSED PROFESSIONALS

In-house licensed professionals direct all projects. These professionals, including geologists or engineers, shall be guided by the highest standards of ethics, honesty, integrity, fairness, personal honor, and professional conduct. To the fullest extent possible, the licensed professional shall protect the public health and welfare and property in carrying out their professional duties. In the course of normal business, recommendations by the in-house professional may include the use of equipment, services, or products in which the Company has an interest. Therefore, the Company is making full disclosure of potential or perceived conflicts of interest to all parties.

Sincerely,
CLEARWATER GROUP

ROBERT L. NELSON
No. 2087
CERTIFIED ENGINEERING GEOLOGIST

JAMES ALAN JACOBS
NO. 88
CERTIFIED HYDROGEOLOGIST

Robert L. Nelson

Robert L. Nelson, P.G. #6270, C.E.G. #2087
Senior Geologist

James A. Jacobs, P.G. #4815, C.H.G. #88
Chief Hydrogeologist

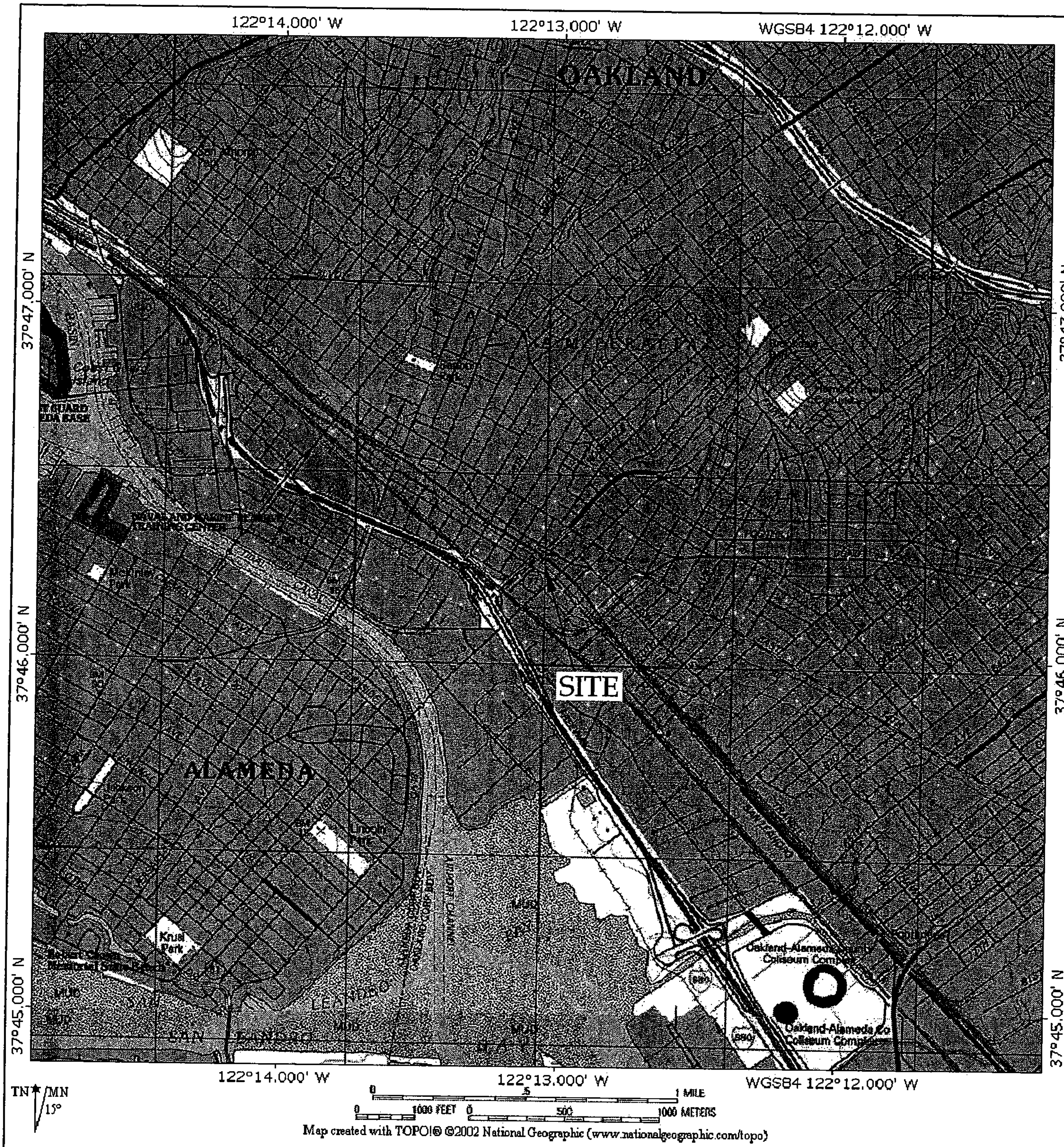
cc: Mr. Muhammad Jamil, 40092 Davis Street, Fremont, CA 94538

FIGURES

TABLES

ATTACHMENTS

FIGURES



Map created with TOPO!® ©2002 National Geographic (www.nationalgeographic.com/topo)

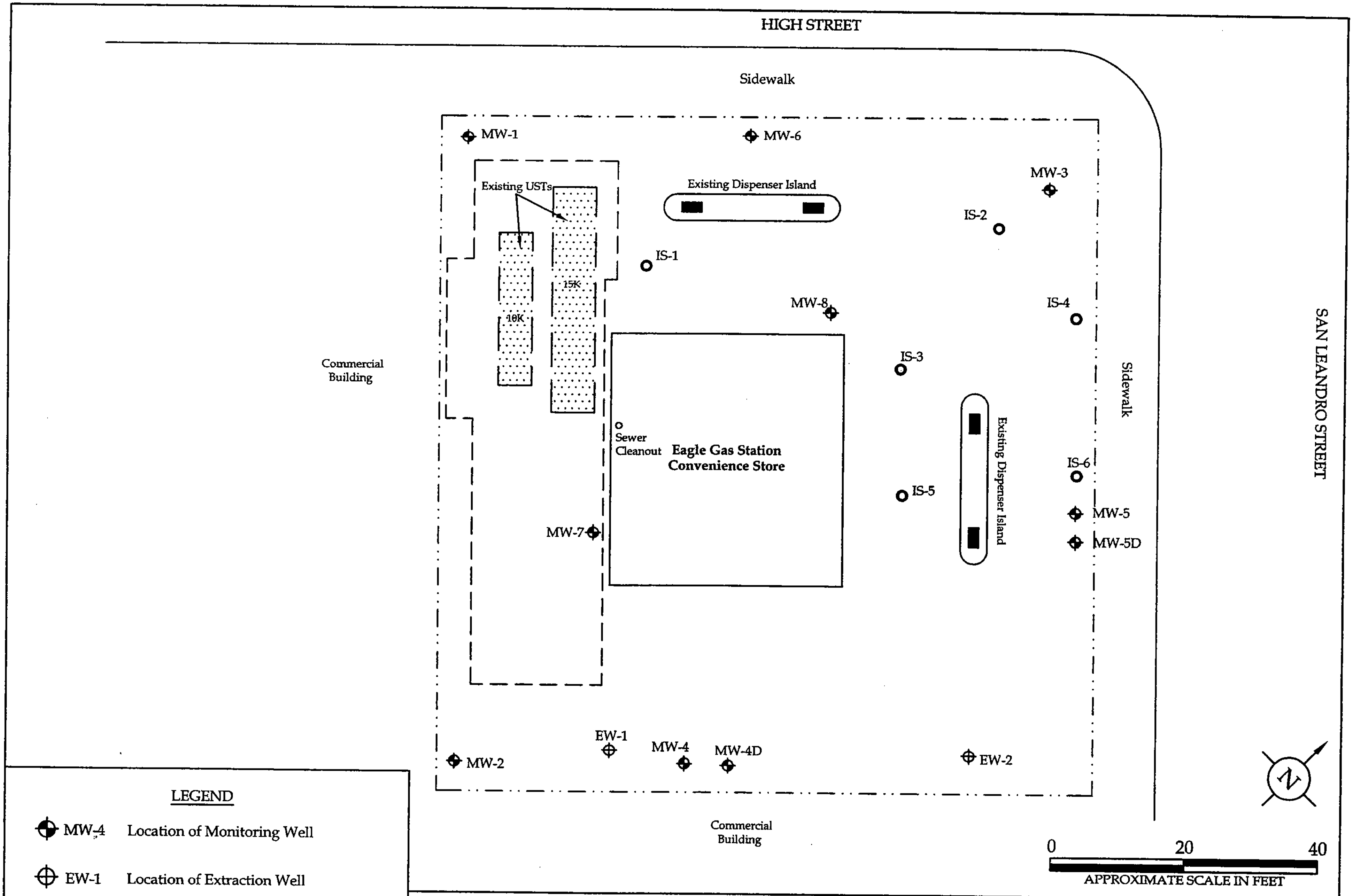
N

SITE VICINITY MAP

Eagle Gas
4301 San Leandro Street
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
ZP046	**5/06**	**1**



LEGEND

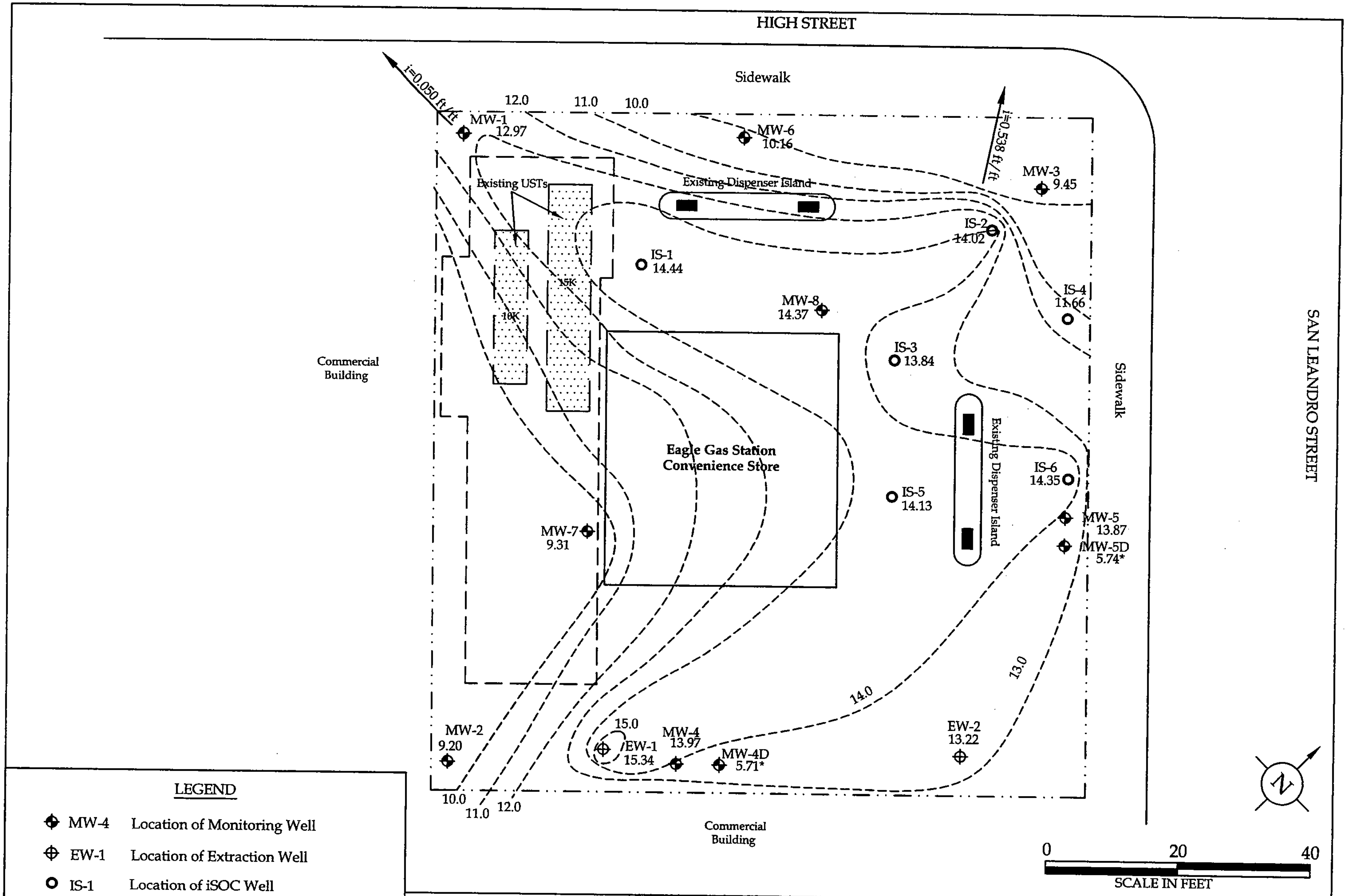
- ⊕ MW-4 Location of Monitoring Well
- ⊕ EW-1 Location of Extraction Well
- ○ IS-1 Location of iSOC Well
- —·— Property Line

Site Plan

Eagle Gas
4301 San Leandro Street
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
ZP046	6/07	2



LEGEND

⊕ MW-4 Location of Monitoring Well

⊕ EW-1 Location of Extraction Well

○ IS-1 Location of iSOC Well

—·· — Property Line

Groundwater Elevation Contour
(feet above mean sea level)

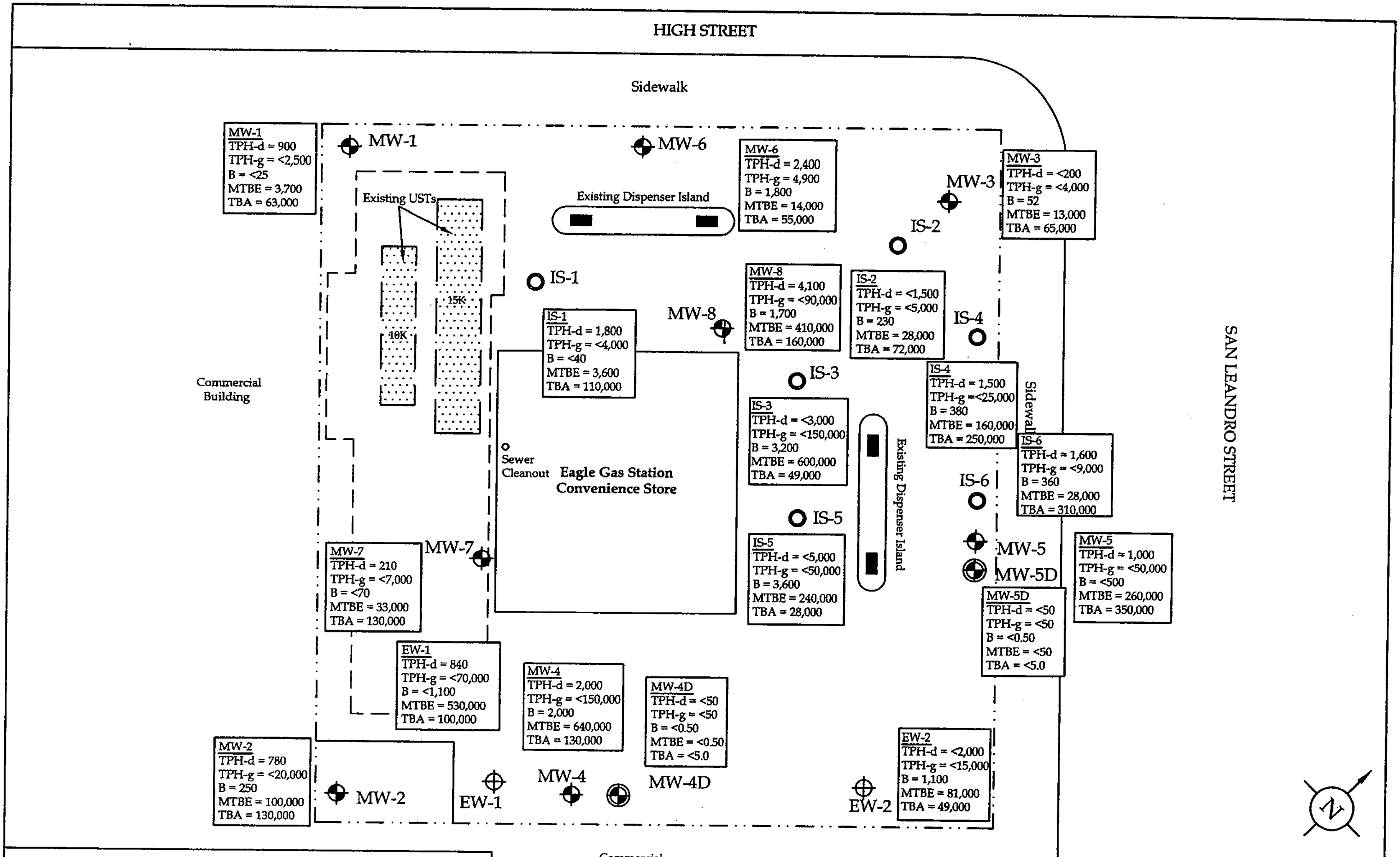
* not included in Contouring

Groundwater Contour Elevation Map
February 13, 2007
Eagle Gas
4301 San Leandro Street
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
ZP046I	6/07	3

\\Tagi\Shares\Department\Jobs\ZP046 Eagle Gas\Quaterly Reports\1Q07\Figures\ZP046D -Figure 3 Groundwater Contour Elevation Map



LEGEND

⊕ MW-2	Location of Monitoring Well
⊕ EW-1	Location of Extraction Well
○ IS-1	Location of iSOC Well
— · · —	Property Line
▭	Former UST Excavation Area
NA	Not Analyzed

MW-2
TPH-d = NA
TPH-g = <40,000
B = <400
MTBE = 140,000
TBA = 170,000

Concentrations of: Total Petroleum Hydrocarbons as Diesel (TPH-d), Total Petroleum Hydrocarbons as Gasoline (TPH-g), Benzene (B), and Methyl Tertiary Butyl Ether (MTBE). Tertiary Butyl Alcohol (TBA). All concentrations reported in micrograms per Liter (μg/L).

0 20 40
APPROXIMATE SCALE IN FEET

Dissolved Petroleum Hydrocarbon Map
Febuary 13, 2007
Eagle Gas
4301 San Leandro Street
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
ZP046D	6/07	4

H:\Department\Jobs\ZP046 Eagle Gas\CAD\Remedial Investigation Report\Figures\Fig 4 Dissolved Petroleum Hydrocarbon Map

TABLES

TABLE 1
WELL CONSTRUCTION DATA
Eagle Gas

4301 San Leandro Street
Oakland, California
Clearwater Group Project No. ZP046

Well I.D.	Date Installed	Installed by	Borehole Diameter (inches)	Casing Diameter (inches)	Depth of Borehole (feet)	Cement (feet)	Bentonite Seal (feet)	Filter Pack (feet)	Filter Pack Material	Screened Interval (feet)	Slot Size (inches)
MW-1	9/25/1996	West Hazmat	8	2	25	0-5	5-7	7-25	2/12 sand	10-25	0.01
MW-2	9/25/1996	West Hazmat	8	2	25	0-5	5-7	7-25	2/12 sand	10-25	0.01
MW-3	9/25/1996	West Hazmat	8	2	25	0-5	5-7	7-25	2/12 sand	10-25	0.01
MW-4	12/18/2001	HEW Drilling	8	2	25	0-5	5-8	8-25	#3 sand	10-25	0.02
MW-4D	12/18/2001	HEW Drilling	8	2	45	0-30	30-33	33-45	#3 sand	35-45	0.02
MW-5	12/14/2001	HEW Drilling	8	2	25	0-5	5-8	8-25	#3 sand	10-25	0.02
MW-5D	12/14/2001	HEW Drilling	8	2	45	0-30	30-33	33-45	#3 sand	35-45	0.02
MW-6	12/19/2001	HEW Drilling	8	2	25	0-5	5-8	8-25	#3 sand	10-25	0.02
MW-7	12/18/2001	HEW Drilling	8	2	25	0-5	5-8	8-25	#3 sand	10-25	0.02
MW-8	12/20/2001	HEW Drilling	8	2	25	0-5	5-8	8-25	#3 sand	10-25	0.02
IS-1	12/19/2001	HEW Drilling	8	2	25	0-3	3-6	6-25	#3 sand	10-25	0.02
IS-2	12/19/2001	HEW Drilling	8	2	25	0-3	3-6	6-25	#3 sand	10-25	0.02
IS-3	12/20/2001	HEW Drilling	8	2	25	0-3	3-6	6-25	#3 sand	10-25	0.02
IS-4	12/19/2001	HEW Drilling	8	2	25	0-3	3-6	6-25	#3 sand	10-25	0.02
IS-5	12/20/2001	HEW Drilling	8	2	25	0-3	3-6	6-25	#3 sand	10-25	0.02
IS-6	12/19/2001	HEW Drilling	8	2	25	0-3	3-6	6-25	#3 sand	10-25	0.02
EW-1	12/15/2001	HEW Drilling	8	4	25	0-3	3-6	6-25	#3 sand	10-25	0.02
EW-2	12/15/2001	HEW Drilling	8	4	25	0-3	3-6	6-25	#3 sand	10-25	0.02

Note: All depths and intervals are below ground surface

TABLE 2. GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLE ANATLYTICAL RESULTS

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Sample ID	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPH-d (µg/L)	TPH-g (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	DCA (µg/L)	EDB (µg/L)
ESL (µg/L)^^					500	500	46	130	290	100	1,800	--	--	--	18,000	--	50,000	200	150
MW-1	10/3/2000	18.37	8.96	9.41	460	93,000	<500	<500	<500	<500	130,000	<10,000	<10,000	<10,000	<2,000	---	---	---	---
	10/27/2000	18.37	7.27	11.10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1/26/2001	18.37	7.60	10.77	1,600*	51,000	270	<100	<100	<100	77,000	<5,000	<5,000	<5,000	<20,000	---	---	---	---
	5/8/2001	18.37	7.50	10.87	470*	36,000*	<100	<100	<100	<100	15,000	<5,000	<5,000	<5,000	<20,000	---	---	---	---
	8/3/2001	18.37	7.09	11.28	2,200*	19,000*	<50	59	<50	<50	96,000	<5,000	<5,000	<5,000	<20,000	---	---	---	---
	7/1/2003	18.37	7.59	10.78	3,000	<25,000	<250	<250	<250	<250	170,000	<250	<250	980	8,700	---	---	---	---
	10/1/2003	18.37	8.36	10.01	2,600	<20,000	<200	<200	<200	<200	69,000	<200	<200	270	15,000	---	---	---	---
	2/13/2004	18.37	8.80	9.57	1,800	<10,000	<100	<100	<100	<100	85,000	<100	<100	390	79,000	---	---	---	---
	5/17/2004	18.37	10.92	7.45	5,400	<15,000	<150	<150	<150	<150	60,000	<150	<150	260	160,000	---	---	---	---
	8/6/2004	18.37	7.76	10.61	510	<10,000	<100	<100	<100	<100	26,000	<100	<100	100	250,000	---	---	---	---
	11/12/2004	18.37	9.25	9.12	3,500	<5,000	<50	<50	<50	<50	25,000	<50	<50	150	160,000	---	---	---	---
	2/15/2005	18.37	10.12	8.25	2,900	<5,000	<50	<50	<50	<50	12,000	<50	<50	70	160,000	---	---	---	---
	5/9/2005	18.37	9.58	8.79	1,700	<5,000	<50	<50	<50	<50	11,000	<50	<50	53	200,000	---	---	---	---
	8/8/2005''	20.08	10.09	9.99	2,000	<5,000	<50	<50	<50	<50	8,500	<50	<50	<50	250,000	---	---	---	---
	11/16/2005	20.08	9.81	10.27	3,600	<5,000	<50	<50	<50	<50	3,800	<50	<50	<50	140,000	<5,000	<500	<50	<50
	2/22/2006	20.08	9.58	10.50	2,600	<5,000	<50	<50	<50	<50	5,800	<50	<50	<50	120,000	<5,000	<500	<50	<50
	5/16/2006	20.08	6.89	13.19	4,700	<5,000	<50	<50	<50	<50	3,700	<50	<50	<50	150,000	<5,000	<500	<50	<50
	8/23/2006'	20.08	9.21	10.87	2,000	<5,000	<50	<50	<50	<50	3,700	<50	<50	<50	110,000	<5,000	<500	<50	<50
	11/13/2006	20.08	8.55	11.53	NA	<4,000	<40	<40	<40	<40	2,000	<40	<40	<40	79,000	NA	NA	NA	NA
	2/13/2007	**20.08**	**7.11**	**12.97**	**900**	**<2,500**	**<25**	**<25**	**<25**	**<25**	**3,700**	**<25**	**<25**	**25**	**63,000**	**NA**	**NA**	**NA**	**NA**
MW-2	10/3/2000	20.28	20.26	0.02	210	250,000	<1,250	<1,250	<1,250	<1,250	400,000	<25,000	<25,000	<25,000	<100,000	---	---	---	---
	10/27/2000	20.28	13.88	6.40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1/26/2001	20.28	12.10	8.18	6,000*	740,000	3,800	<500	940	1,600	1,000,000	<50,000	<50,000	<50,000	<200,000	---	---	---	---
	5/8/2001	20.28	12.05	8.23	2,100*	140,000	2,800	<250	780	640	840,000	<50,000	<50,000	<50,000	<200,000	---	---	---	---
	8/3/2001	20.28	13.30	6.98	2,600*	42,000*	1,100	63	230	130	880,000	<25,000	<25,000	<25,000	<100,000	---	---	---	---
	7/1/2003	20.28	14.98	5.30	2,200	<200,000	<2,000	<2,000	<2,000	<2,000	790,000	<2,000	<2,000	3,400	<20,000	---	---	---	---
	10/1/2003	20.28	15.99	4.29	870	<100,000	<1,000	<1,000	<1,000	<1,000	620,000	<1,000	<1,000	2,700	<20,000	---	---	---	---
	2/13/2004	20.28	13.88	6.40	1,200	<20,000	860	<200	260	<200	710,000	<200	<200	2,000	<25,000	---	---	---	---
	5/17/2004	20.38	14.68	5.70	2,500	<50000	860	<500	<500	<500	760,000	<500	<500	2,500	13,000J	---	---	---	---
	8/6/2004	20.38	15.36	5.02	420	<50000	590	<500	<500	<500	810,000	<500	<500	3,600	17,000J	---	---	---	---
	11/12/2004	20.38	15.49	4.89	500	<150,000	<1500	<1500	<1500	<1500	700,000	<1500	<1500	2,800	25,000J	---	---	---	---

TABLE 2. GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLE ANATLYTICAL RESULTS

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Sample ID	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPH-d (µg/L)	TPH-g (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	DCA (µg/L)	EDB (µg/L)
ESL (µg/L)^^					500	500	46	130	290	100	1,800	--	--	--	18,000	--	50,000	200	150
MW-2	2/15/2005	20.38	14.16	6.22	990	<150,000	<1,500	<1,500	<1,500	<1,500	630,000	<1,500	<1,500	2,600	32,000	---	---	---	---
cont'd	5/9/2005	20.38	13.62	6.76	1,100	<150,000	<1,500	<1,500	<1,500	<1,500	570,000	<1,500	<1,500	2,300	32,000	---	---	---	---
	8/8/2005**	22.05	13.36	8.69	770	<150,000	<1,500	<1,500	<1,500	<1,500	770,000	<1,500	<1,500	2,200	85,000	---	---	---	---
	11/16/2005	22.05	14.51	7.54	890	<70,000	<700	<700	<700	<700	430,000	<700	<700	2,100	130,000	<100,000	<7,000	<700	<700
	2/22/2006	22.05	12.69	9.36	<1,500	<70,000	800	<700	<700	<700	400,000	<700	<700	1,700	130,000	<70,000	<7,000	<700	<700
	5/16/2006	22.05	12.01	10.04	1,100	<70,000	<700	<700	<700	<700	250,000	<700	<700	940	140,000	<70,000	<7,000	<700	<700
	8/23/2006'	21.98	11.33	10.65	660	<40,000	<400	<400	<400	<400	200,000	<400	<400	830	170,000	<40,000	<4,000	<400	<400
	11/13/2006	21.98	13.64	8.34	NA	<40,000	<400	<400	<400	<400	140,000	<400	<400	490	170,000	NA	NA	NA	NA
	2/13/2007	**21.98**	**12.78**	**9.20**	**780**	**<20,000**	**250**	**<200**	**<200**	**<200**	**100,000**	**<200**	**<200**	**240**	**130,000**	**NA**	**NA**	**NA**	**NA**
MW-3	10/3/2000	18.98	---	—	120	83,000	<500	<500	<500	<500	33,000	<2,500	<2,500	<2,500	<10,000	—	—	—	—
	10/27/2000	18.98	18.75	0.23	---	—	---	—	---	---	—	—	---	—	—	—	—	—	—
	1/26/2001	18.98	13.38	5.60	900*	230,000	930	<500	<500	<500	330,000	<25,000	<25,000	<25,000	<100,000	—	—	—	—
	5/8/2001	18.98	11.82	7.16	1,100*	95,000	840	<250	<250	<250	390,000	<12,500	<12,500	<12,500	<50,000	—	—	—	—
	8/3/2001	18.98	13.44	5.54	290*	30,000*	<50	51	<50	<50	270,000	<12,500	<12,500	<12,500	<50,000	—	—	—	—
	7/1/2003	18.98	12.67	6.31	620	<50,000	<500	<500	<500	<500	230,000	<500	<500	1,800	<5,000	—	—	—	—
	10/1/2003	18.98	14.04	4.94	370	<20,000	<200	<200	<200	<200	120,000	<200	<200	1,200	<5,000	—	—	—	—
	2/13/2004	18.98	12.20	6.78	430	<20,000	280	<200	<200	<200	210,000	<200	<200	1,200	<5,000	—	—	—	—
	5/17/2004	18.98	11.87	7.11	920	<25,000	<250	<250	<250	<250	150,000	<250	<250	1,100	5,600J	—	—	—	—
	8/6/2004	18.98	13.07	5.91	78	<20,000	<200	<200	<200	<200	110,000	<200	<200	760	<2,500	—	—	—	—
	11/12/2004	18.98	12.83	6.15	120	<20,000	<200	<200	<200	<200	100,000	<200	<200	660	6,000	—	—	—	—
	2/15/2005	18.98	11.95	7.03	130	<25,000	<250	<250	<250	<250	110,000	<250	<250	760	12,000	—	—	—	—
	5/9/2005	18.98	10.51	8.47	320	<15,000	<150	<150	<150	<150	97,000	<150	<150	780	30,000	—	—	—	—
	8/8/2005**	20.73	10.98	9.75	180	<15,000	<150	<150	<150	<150	75,000	<150	<150	500	44,000	—	—	—	—
	11/16/2005	20.73	12.89	7.84	<200	<5,000	<50	<50	<50	<50	37,000	<50	<50	190	38,000	<5,000	<500	<50	<50
	2/22/2006	20.73	10.31	10.42	<600	<5,000	88	<50	<50	<50	57,000	<50	<50	420	65,000	<9,000	<500	<50	<50
	5/16/2006	20.73	9.03	11.70	<600^	<9,000	110	<90	<90	<90	42,000	<90	<90	340	68,000	<9,000	<900	<90	<90
	8/23/2006'	20.68	10.81	9.87	<200^	<4,000	<40	<40	<40	<40	18,000	<40	<40	120	60,000	<4,000	<400	<40	<40
	11/13/2006	20.68	12.29	8.39	NA	<2,000	<20	<20	<20	<20	6,100	<20	<20	30	54,000	NA	NA	NA	NA
	2/13/2007	**20.68**	**11.23**	**9.45**	**<200^**	**<4,000**	**52**	**<40**	**<40**	**<40**	**13,000**	**<40**	**<40**	**82**	**65,000**	**NA**	**NA**	**NA**	**NA**

TABLE 2. GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLE ANATLYTICAL RESULTS

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Sample ID	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPH-d (µg/L)	TPH-g (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	DCA (µg/L)	EDB (µg/L)
ESL (µg/L)^^					500	500	46	130	290	100	1,800	--	--	--	18,000	--	50,000	200	150
MW-4	2/22/2006	21.63	7.87	13.76	<8,000	<150,000	3,200	2,000	1,600	3,800	770,000	<1,500	<1,500	3,300	59,000	<150,000	<15,000	<1,500	<1,500
	5/16/2006	21.63	8.04	13.59	3,800	<70,000	2,100	<700	930	1,500	410,000	<700	<700	2,500	110,000	<70,000	<7,000	<700	<700
	8/23/2006'	21.53	9.77	11.76	8,400	89,000	4,500	<700	2,100	2,800	870,000	<700	<700	4,000	89,000	<70,000	<7,000	<700	<700
	11/13/2006	21.53	8.78	12.75	NA	<150,000	3,700	<1,500	<1,500	2,400	950,000	<1,500	<1,500	4,000	110,000	NA	NA	NA	NA
	2/13/2007	**21.53**	**7.56**	**13.97**	2,000	<150,000	2,000	<1,500	<1,500	<1,500	640,000	<1,500	<1,500	2,900	130,000	NA	NA	NA	NA
MW-4D	2/21/2006	21.54	15.58	5.96	<50	<90	<0.90	<0.90	<0.90	<0.90	440	<0.90	<0.90	2	<5.0	<90	<9.0	<0.90	<0.90
	5/16/2006	21.54	13.23	8.31	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
	8/23/2006'	21.44	15.33	6.11	<50	<50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	<0.50	<5.0	93	8	<0.50	<0.50
	11/13/2006	21.44	16.23	5.21	NA	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	NA	NA	NA	NA
	2/13/2007	**21.44**	**15.73**	**5.71**	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	NA	NA	NA	NA
MW-5	2/21/2006	20.48	6.63	13.85	<3,000	<10,000	460	<100	170	<100	480,000	<100	<100	3,000	95,000	<90,000	<1,000	<100	<100
	5/16/2006	20.48	6.62	13.86	1,600	<90,000	<900	<900	<900	<900	480,000	<900	<900	2,300	130,000	<90,000	<9,000	<900	<900
	8/23/2006'	20.41	7.62	12.79	1,400	<90,000	<900	<900	<900	<900	510,000	<900	<900	2,400	270,000	<90,000	<9,000	<900	<900
	11/13/2006	20.41	7.31	13.10	NA	<90,000	<900	<900	<900	<900	430,000	<900	<900	2,200	350,000	NA	NA	NA	NA
	2/13/2007	**20.41**	**6.54**	**13.87**	1,000	<50,000	<500	<500	<500	<500	260,000	<500	<500	740	350,000	NA	NA	NA	NA
MW-5D	2/21/2006	20.32	13.68	6.64	<50	<50	<0.50	<0.50	<0.50	<0.50	8	<0.50	<0.50	<0.50	6	<50	<5.0	<0.50	<0.50
	5/16/2006	20.32	12.72	7.60	**<50**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<5.0**	**<50**	**<5.0**	**<0.50**	**<0.50**
	8/23/2006'	20.22	14.48	5.74	<50	<50	<0.50	<0.50	<0.50	<0.50	56	<0.50	<0.50	<0.50	<5.0	120	6	<0.50	<0.50
	11/13/2006	20.22	14.98	5.24	NA	<50	<0.50	<0.50	<0.50	<0.50	81	<0.50	<0.50	<0.50	<5.0	NA	NA	NA	NA
	2/13/2007	**20.22**	**14.48**	**5.74**	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	NA	NA	NA	NA
MW-6	2/22/2006	20.45	9.88	10.57	2,900	<10,000	620	<100	<100	<100	50,000	<100	<100	210	24,000	<10,000	<1,000	<100	<100
	5/16/2006	20.45	9.35	11.10	3,200	<9,000	1,500	<90	<90	<90	50,000	<90	<90	280	27,000	<10,000	<900	<90	<90
	8/23/2006'	20.47	10.48	9.99	3,400	<9,000	1,600	<90	<90	<90	39,000	<90	<90	190	55,000	<9,000^{++}	<900	<90	<90
	11/13/2006	20.47	10.86	9.61	NA	<5,000	1,200	<50	<50	<50	17,000	<50	<50	66	71,000	NA	NA	NA	NA
	2/13/2007	**20.47**	**10.31**	**10.16**	2,400	4,900	1,800	<25	<25	<25	14,000	<25	<25	65	55,000	NA	NA	NA	NA

TABLE 2. GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLE ANATLYTICAL RESULTS

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Sample ID	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPH-d (µg/L)	TPH-g (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	DCA (µg/L)	EDB (µg/L)
ESL (µg/L)^^					500	500	46	130	290	100	1,800	--	--	--	18,000	--	50,000	200	150
MW-7	2/22/2006	21.13	11.72	9.41	400	<10,000	<100	<100	<100	<100	88,000	<100	<100	430	90,000	<10,000	<1,000	<100	<100
	5/16/2006	21.13	8.72	12.41	340	<5,000	<50	<50	<50	<50	28,000	<50	<50	120	47,000	<5,000	<500	<50	<50
	8/23/2006'	21.14	11.34	9.80	280	<9,000	<90	<90	<90	<90	62,000	<90	<90	280	160,000	<18,000^{++}	<900	<90	<90
	11/13/2006	21.14	12.53	8.61	NA	<9,000	<90	<90	<90	<90	49,000	<90	<90	280	130,000	NA	NA	NA	NA
	2/13/2007	**21.14**	**11.83**	**9.31**	210	<7,000	<70	<70	<70	<70	33,000	<70	<70	170	130,000	NA	NA	NA	NA
MW-8	2/22/2006	21.03	7.28	13.75	6,800	<10,000	1,200	<100	270	220	400,000	<100	<100	2,100	63,000	<300,000	<1,000	<100	<100
	5/16/2006	21.03	7.48	13.55	3,800	<90,000	1,600	<900	<900	<900	620,000	<900	<900	3,000	46,000	<90,000	<9,000	<900	<900
	8/23/2006'	20.95	8.19	12.76	17,000	<90,000	940	<900	<900	<900	340,000	<900	<900	1,200	74,000	<90,000	<9,000	<900	<900
	11/13/2006	20.95	8.15	12.80	**NA**	**<25,000**	**490**	**<250**	**<250**	**<250**	**120,000**	**<250**	**<250**	**360**	**130,000**	**NA**	**NA**	**NA**	**NA**
	2/13/2007	**20.95**	**6.58**	**14.37**	4,100	<90,000	1,700	<900	<900	<900	410,000	<900	<900	1,700	160,000	NA	NA	NA	NA
IS-1	2/22/2006	20.57	6.91	13.66	4,400	<5,000	160	<50	<50	<50	21,000	<50	<50	64	130,000	<5,000	<500	<50	<50
	5/16/2006	20.57	7.01	13.56	3,800	<5,000	150	<50	<50	<50	24,000	<50	<50	58	130,000	<5,000	<500	<50	<50
	8/23/2006'	20.58	7.82	12.76	3,800	<5,000	65	<50	<50	<50	5,800	<50	<50	<50	110,000	<5,000	<500	<50	<50
	11/13/2006	20.58	8.21	12.37	NA	<5,000	<50	<50	<50	<50	1,000	<50	<50	<50	100,000	NA	NA	NA	NA
	2/13/2007	**20.58**	**6.14**	**14.44**	1,800	<4,000	<40	<40	<40	<40	3,600	<40	<40	<40	110,000	NA	NA	NA	NA
IS-2	2/22/2006	20.87	6.92	13.95	<4,000	8,600	1,200	<9.0	240	17	190,000	<9.0	9	1,700	29,000	<150,000	<90	<9.0	<9.0
	5/16/2006	20.87	6.99	13.88	<3,000^	<15,000	500	<150	<150	<150	130,000	<150	<150	880	24,000	<15,000	<1,500	<150	<150
	8/23/2006'	20.78	7.91	12.87	2,700	<40,000	490	<400	<400	<400	150,000	<400	<400	1,200	39,000	<40,000^{++}	<4,000	<400	<400
	11/13/2006	20.78	8.23	12.55	NA	<40,000	<400	<400	<400	<400	160,000	<400	<400	990	120,000	NA	NA	NA	NA
	2/13/2007	**20.78**	**6.76**	**14.02**	<1,500^	<5,000	230	<50	<50	<50	28,000	<50	<50	250	72,000	NA	NA	NA	NA
IS-3	2/22/2006	20.99	7.32	13.67	<4,000	29,000	2,700	820	1,100	2,900	750,000	<100	<100	3,400	40,000	<80,000	<1,000	<100	<100
	5/16/2006	20.99	7.86	13.13	8,000	<20,000	1,110	<200	450	<200	300,000	<200	<200	1,600	65,000	<20,000	<2,000	<200	<200
	8/23/2006'	20.87	8.19	12.68	4,800	<50,000	2,900	<500	1,100	660	970,000	<500	<500	3,900	54,000	<50,000	<5,000	<500	<500
	11/13/2006	20.87	8.03	12.84	NA	<200,000	2,800	<2,000	<2,000	<2,000	1,100,000	<2,000	<2,000	4,500	65,000	NA	NA	NA	NA
	2/13/2007	**20.87**	**7.03**	**13.84**	<3,000	<150,000	3,200	<1,500	<1,500	<1,500	600,000	<1,500	<1,500	3,300	49,000	NA	NA	NA	NA

TABLE 2. GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLE ANATLYTICAL RESULTS

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Sample ID	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPH-d (µg/L)	TPH-g (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	DCA (µg/L)	EDB (µg/L)
ESL (µg/L)^^					500	500	46	130	290	100	1,800	--	--	--	18,000	--	50,000	200	150
IS-4	2/22/2006	20.79	6.95	13.84	3,100	11,000	790	<100	120	<100	280,000	<100	<100	2,400	51,000	<10,000	<1,000	<100	<100
	5/16/2006	20.79	7.17	13.62	5,600	<15,000	610	<150	<150	<150	220,000	<150	<150	1,700	53,000	<15,000	<1,500	<150	<150
	8/23/2006'	20.68	7.83	12.85	4,300	6,100	280	<40	<40	<40	270,000	<40	<40	1,600	100,000	<80,000^{++}	<400	<40	<40
	11/13/2006	20.68	8.46	12.22	NA	<50,000	<500	<500	<500	<500	230,000	<500	<500	1,100	220,000	NA	NA	NA	NA
	2/13/2007	**20.68**	**9.02**	**11.66**	1,500	<25,000	380	<250	<250	<250	160,000	<250	<250	570	250,000	NA	NA	NA	NA
IS-5	2/22/2006	21.02	7.17	13.85	35,000	66,000	4,100	<250	3,100	7,700	420,000	<250	<250	4,600	40,000	<25,000	<2,500	<250	<250
	5/16/2006	21.02	6.81	14.21	11000+	33,000	2,800	<200	1,700	1,900	350,000	<200	<200	3,400	29,000	<20,000	<2,000	<200	<200
	8/23/2006'	20.91	8.12	12.79	11,000	71,000	5,200	<500	6,200	4,500	350,000	<500	<500	3,900	32,000	<50,000	<5,000	<500	<500
	11/13/2006	20.91	8.41	12.50	NA	<50,000	930	<500	<500	<500	440,000	<500	<500	2,800	89,000	NA	NA	NA	NA
	2/13/2007	**20.91**	**6.78**	**14.13**	<5,000	<50,000	3,600	<500	2,200	3,800	240,000	<500	<500	3,600	28,000	NA	NA	NA	NA
IS-6	2/22/2006	20.56	6.89	13.67	3,000	11,000	1,000	<100	560	180	130,000	<100	<100	1,400	210,000	<15,000	<1,000	<100	<100
	5/16/2006	20.56	6.44	14.12	3,300	<20,000	1,300	<200	730	<200	96,000	<200	<200	1,300	260,000	<25,000	<2,500	<200	<200
	8/23/2006'	20.47	7.69	12.78	2,900	<20,000	580	<200	<200	<200	54,000	<200	<200	500	370,000	<20,000	<2,000	<200	<200
	11/13/2006	20.47	7.72	12.75	NA	<9,000	220	<90	<90	<90	20,000	<90	<90	170	260,000	NA	NA	NA	NA
	2/13/2007	**20.47**	**6.12**	**14.35**	1,600	<9,000	360	<90	<90	<90	28,000	<90	<90	210	310,000	NA	NA	NA	NA
EW-1	2/22/2006	21.74	8.06	13.68	3,200	<150,000	3,100	<1,500	<1,500	<1,500	700,000	<1,500	<1,500	5,100	59,000	<150,000	<15,000	<1,500	<1,500
	5/16/2006	21.74	7.97	13.77	**1,600**	**<100,000**	**2,000**	**<1,000**	**<1,000**	**<1,000**	**630,000**	**<1,000**	**<1,000**	**4,700**	**57,000**	**<100,000**	**<10,000**	**<1,000**	**<1,000**
	8/23/2006'	21.65	9.61	12.04	2,600	<150,000	2,200	<1,500	<1,500	<1,500	1,000,000	<1,500	<1,500	5,200	79,000	<150,000	<15,000	<1,500	<1,500
	11/13/2006	21.65	8.78	12.87	NA	<100,000	<1,000	<1,000	<1,000	<1,000	610,000	<1,000	<1,000	4,000	110,000	NA	NA	NA	NA
	2/13/2007	**21.65**	**6.31**	**15.34**	840	<70,000	1,200	<700	<700	<700	530,000	<700	<700	2,500	100,000	NA	NA	NA	NA
EW-2	2/22/2006	20.46	7.31	13.15	<3,000	10,000	1,800	<100	700	670	120,000	<100	<100	1,200	36,000	<80,000	<1,000	<100	<100
	5/16/2006	20.46	7.25	13.21	<3,000^	<25,000	2,400	<250	1,110	880	180,000	<250	<250	1,400	45,000	<25,000	<2,500	<250	<250
	8/23/2006'	20.37	8.31	12.06	<2,000	<25,000	1,600	<250	520	<250	120,000	<250	<250	930	35,000	<25,000	<2,500	<250	<250
	11/13/2006	20.37	8.18	12.19	NA	<10,000	610	<100	170	<100	60,000	<100	<100	380	25,000	NA	NA	NA	NA
	2/13/2007	**20.37**	**7.15**	**13.22**	<2,000	<15,000	1,100	<150	230	<150	81,000	<150	<150	700	49,000	NA	NA	NA	NA

TABLE 2. GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLE ANATLYTICAL RESULTS

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Sample ID	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPH-d (µg/L)	TPH-g (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	DCA (µg/L)	EDB (µg/L)
ESL (µg/L)^^					500	500	46	130	290	100	1,800	--	--	--	18,000	--	50,000	200	150

NOTES:

TOC	Top of well casing referenced to arbitrary datum prior to 3Q2005
DTW	Depth to water
GWE	Groundwater elevation
TPHd	Total petroleum hydrocarbons as diesel by EPA Method 8015 (modified)
TPHg	Total petroleum hydrocarbons as gasoline by EPA Method 8260B
BTEX	Benzene, toluene, ethylbenzene, total xylenes by EPA Method 8260B
MTBE	Methyl tertiary butyl ether by EPA Method 8260B
DIPE	Di-isopropyl ether by EPA Method 8260B
ETBE	Ethyl tertiary butyl ether by EPA Method 8260B
TAME	Tertiary amyl methyl ether by EPA Method 8260B
TBA	Tertiary butyl alcohol by EPA Method 8260B
DCA	1,2-Dichloroethane
EDB	1,2-Dibromoethane
(µg/L)	Micrograms per liter
<#	Not detected in concentrations above laboratory reporting limit
---	No samples collected, no data available
*	Laboratory note:"Results within quantitation range; chromatographic pattern not typical of fuel"
**	Wells re-surveyed on 3/28/2005
^	The method reporting limit for TPH-d is increased due to interference from gasoline-range hydrocarbons
+	Surrogate recovery for test method Mod. EPA 8015 was outside of control limits. This may indicate a bias in the analysis due to the sample's matrix or an interference from compounds present in the sample
++	The method reporting limit for methanol has been increased due to the presence of an interfering compound.
Date'	TOC was re-surveyed on September 12, 2006.
^^	Environmental Screening Levels Deep Soils and groundwater is not a current or potential source of drinking water; San Francisco Bay Regional Water Quality Control Board February 2005
NA	Not analyzed
--	Not provided
J	estimated quantity below the detection limit

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (μS/cm)
IS-1	2/21/2006 (1)	3.06	228.10	3.30	3.30	0.0	6.92	63.68	1,090
	5/16/2006	NA	NA	NA	NA	NA	7.97	66.80	1,139
	8/23/2006	NA	NA	NA	NA	NA	6.83	71.83	1,257
	11/13/2006	NA	NA	NA	NA	NA	6.70	68.87	1,134
	2/13/2007	NA	NA	NA	NA	NA	6.95	59.10	848
IS-2	2/21/2006 (1)	3.84	220.60	3.30	3.30	0.0	7.02	64.93	956
	5/16/2006	NA	NA	NA	NA	NA	7.45	66.43	612
	8/23/2006	NA	NA	NA	NA	NA	7.34	71.34	1,012
	11/13/2006	NA	NA	NA	NA	NA	7.04	69.46	975
	2/13/2007	NA	NA	NA	NA	NA	6.80	59.43	436
IS-3	2/21/2006 (1)	4.07	151.10	3.30	2.56	0.7	6.90	62.30	965
	5/16/2006	NA	NA	NA	NA	NA	7.56	64.60	1,164
	8/23/2006	NA	NA	NA	NA	NA	6.73	69.07	1,099
	11/13/2006	NA	NA	NA	NA	NA	2.24	66.27	1,056
	2/13/2007	NA	NA	NA	NA	NA	6.77	61.11	425

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (µS/cm)
IS-4	2/21/2006 (1)	3.73	184.10	3.30	2.81	0.5	6.95	64.20	1,052
	5/16/2006	NA	NA	NA	NA	NA	7.22	66.93	883
	8/23/2006	NA	NA	NA	NA	NA	6.75	74.00	1,068
	11/13/2006	NA	NA	NA	NA	NA	6.87	69.55	1,090
	2/13/2007	NA	NA	NA	NA	NA	6.81	61.98	813
IS-5	2/21/2006 (1)	0.64	207.10	NA	NA	NA	6.77	63.56	1,031
	5/16/2006	NA	NA	NA	NA	NA	7.43	64.02	999
	8/23/2006	NA	NA	NA	NA	NA	6.69	68.77	1,142
	11/13/2006	NA	NA	NA	NA	NA	-0.98	67.19	1,100
	2/13/2007	NA	NA	NA	NA	NA	6.69	60.62	411
IS-6	2/21/2006 (1)	4.05	198.70	3.30	2.46	0.8	6.94	64.00	1,092
	5/16/2006	NA	NA	NA	NA	NA	8.35	67.29	1,120
	8/23/2006	NA	NA	NA	NA	NA	6.67	71.82	1,149
	11/13/2006	NA	NA	NA	NA	NA	7.08	69.35	1,088
	2/13/2007	NA	NA	NA	NA	NA	6.80	60.56	862

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (µS/cm)
MW-1	2/21/2006 (1)	3.44	203.20	3.30	2.65	0.7	6.94	63.59	1,011
	5/16/2006	NA	NA	NA	NA	NA	7.96	66.24	1,023
	8/23/2006	NA	NA	NA	NA	NA	6.92	72.10	1,116
	11/13/2006	NA	NA	NA	NA	NA	7.50	68.50	1,013
	2/13/2007	NA	NA	NA	NA	NA	7.00	58.48	356
MW-2	2/21/2006 (1)	3.29	205.90	3.30	3.01	0.3	6.74	62.44	1,038
	5/16/2006	NA	NA	NA	NA	NA	7.42	62.74	981
	8/23/2006	NA	NA	NA	NA	NA	6.70	65.08	1,036
	11/13/2006	NA	NA	NA	NA	NA	0.44	64.64	1,011
	2/13/2007	NA	NA	NA	NA	NA	6.77	60.79	765
MW-3	2/21/2006 (1)	3.55	209.60	1.08	0.95	0.1	6.89	66.20	870
	5/16/2006	NA	NA	NA	NA	NA	8.36	67.43	877
	8/23/2006	NA	NA	NA	NA	NA	6.93	71.69	908
	11/13/2006	NA	NA	NA	NA	NA	6.68	70.25	837
	2/13/2007	NA	NA	NA	NA	NA	6.94	60.52	667

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (µS/cm)
MW-4	2/21/2006 (1)	3.13	228.80	3.30	3.30	0.0	6.83	62.09	1,051
	5/16/2006	NA	NA	NA	NA	NA	7.63	63.42	1,045
	8/23/2006	NA	NA	NA	NA	NA	6.70	68.65	1,245
	11/13/2006	NA	NA	NA	NA	NA	1.12	66.55	1,235
	2/13/2007	NA	NA	NA	NA	NA	6.78	58.58	868
MW-4D	2/21/2006 (1)	5.94	187.40	0.11	0.00	0.1	7.08	64.43	830
	5/16/2006	NA	NA	NA	NA	NA	8.10	65.94	745
	8/23/2006	NA	NA	NA	NA	NA	7.12	65.49	794
	11/13/2006	NA	NA	NA	NA	NA	7.81	65.31	920
	2/13/2007	NA	NA	NA	NA	NA	7.30	60.21	609
MW-5	2/21/2006 (1)	3.90	241.50	3.13	2.28	0.9	6.84	63.34	978
	5/16/2006	NA	NA	NA	NA	NA	7.50	69.62	890
	8/23/2006	NA	NA	NA	NA	NA	6.72	73.21	1,127
	11/13/2006	NA	NA	NA	NA	NA	1.25	68.95	1,098
	2/13/2007	NA	NA	NA	NA	NA	6.84	59.32	385

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (µS/cm)
MW-5D	2/21/2006 (1)	4.23	222.00	0.09	0.00	0.1	7.21	65.95	810
	5/16/2006	NA	NA	NA	NA	NA	8.02	67.45	770
	8/23/2006	NA	NA	NA	NA	NA	6.87	68.33	777
	11/13/2006	NA	NA	NA	NA	NA	8.02	65.97	915
	2/13/2007	NA	NA	NA	NA	NA	7.17	59.25	576
MW-6	2/21/2006 (1)	3.37	206.20	0.82	0.09	0.7	7.16	64.37	1,268
	5/16/2006	NA	NA	NA	NA	NA	8.06	67.14	1,126
	8/23/2006	NA	NA	NA	NA	NA	7.01	70.80	1,193
	11/13/2006	NA	NA	NA	NA	NA	7.08	70.20	1,174
	2/13/2007	NA	NA	NA	NA	NA	6.93	62.30	802
MW-7	2/21/2006 (1)	3.96	207.00	0.54	0.46	0.1	7.12	65.21	1,680
	5/16/2006	NA	NA	NA	NA	NA	8.45	67.06	823
	8/23/2006	NA	NA	NA	NA	NA	6.96	70.91	1,616
	11/13/2006	NA	NA	NA	NA	NA	6.75	68.35	1,596
	2/13/2007	NA	NA	NA	NA	NA	7.04	60.58	1,137

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (µS/cm)
MW-8	2/21/2006 (1)	3.40	214.50	3.30	3.12	0.2	6.85	63.40	1,205
	5/16/2006	NA	NA	NA	NA	NA	7.23	63.54	995
	8/23/2006	NA	NA	NA	NA	NA	6.78	68.56	1,384
	11/13/2006	NA	NA	NA	NA	NA	1.18	66.05	1,347
	2/13/2007	NA	NA	NA	NA	NA	6.83	61.15	976
EW-1	2/21/2006 (1)	3.55	213.60	3.17	2.29	0.9	6.89	62.73	1,179
	5/16/2006	NA	NA	NA	NA	NA	7.53	63.75	1,032
	8/23/2006	NA	NA	NA	NA	NA	6.74	68.87	1,235
	11/13/2006	NA	NA	NA	NA	NA	1.31	66.45	1,198
	2/13/2007	NA	NA	NA	NA	NA	6.88	56.29	349
EW-2	2/21/2006 (1)	3.74	221.90	3.30	3.30	0.0	6.75	61.92	889
	5/16/2006	NA	NA	NA	NA	NA	8.34	63.92	954
	8/23/2006	NA	NA	NA	NA	NA	6.68	68.12	982
	11/13/2006	NA	NA	NA	NA	NA	0.27	66.70	901
	2/13/2007	NA	NA	NA	NA	NA	6.77	60.40	741

TABLE 3. WATER QUALITY DATA

4301 San Leandro Street, Oakland, California 94601
Clearwater Group Project No. ZP046

Well ID	Date	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Total Iron (mg/L)	Measured Iron(II) (mg/L)	Calculated Iron(III) (mg/L)	pH	Temperature (F)	Conductivity (µS/cm)
Average	2/21/2006 (1)	3.61	208.41	2.47	2.11	0.36	6.93	63.80	1,055
	5/16/2006	NA	NA	NA	NA	NA	7.81	65.80	954
	8/23/2006	NA	NA	NA	NA	NA	6.84	69.92	1,119
	11/13/2006	NA	NA	NA	NA	NA	4.35	67.70	1,094
	2/13/2007	NA	NA	NA	NA	NA	6.89	60.04	668

Note:

mg/L	milligrams per liter
mV	millivolts
F	degrees Fahrenheit
µS/cm	micro Siemens per centimeter
(1)	2/21/2006 sampling data represent the baseline geochemical conditions
NA	Not analyzed

ATTACHMENTS

ATTACHMENT A

CLEARWATER GROUP

Groundwater Monitoring and Sampling Field Procedures

Groundwater Monitoring

Prior to beginning, a decontamination area is established. Decontamination procedures consist of scrubbing downhole equipment in an Alconox® solution wash (wash solution is pumped through any purging pumps used), and rinsing in a first rinse of potable water and a second rinse of potable water or deionized water if the latter is required. Any non-dedicated downhole equipment is decontaminated prior to use.

Prior to gauging, purging, and sampling a well, caps for all on-site wells should be opened to allow atmospheric pressure to equalize if local groundwater is under confined or semi-confined conditions. The static water level is measured to the nearest 0.01 feet with an electronic water sounder. Depth to bottom is typically measured once per year, at the request of the project manager, and during Clearwater's first visit to a site. If historical analytical data are not available, with which to establish a reliable order of increasing well contamination, the water sounder and tape will be decontaminated between each well. Floating separate-phase hydrocarbons (SPH) where suspected or observed will be collected using a clear, open-ended product bailer, and the thickness is measured to the nearest 0.01 feet in the bailer. SPH may alternatively be measured with an electronic interface probe. Any monitoring well containing a measurable thickness of SPH before or during purging is not additionally purged, and no sample is collected from that well. Wells containing hydrocarbon sheen are sampled, unless otherwise specified by the project manager. Field observations of well integrity, water level, and floating product thicknesses are noted on the Gauging Data/Purge Calculations form.

Well Purging

Each monitoring well to be sampled is purged using either a PVC bailer or a submersible pump. Physical parameters (pH, temperature, and conductivity) of the purge water are monitored during purging activities to assess if the water sample collected is representative of the aquifer. If required, parameters such as dissolved oxygen, turbidity, salinity, etc. are also measured. Samples are considered representative if parameter stability is achieved. Stability is defined as a change of less than 0.25 pH units, less than 10% change in conductivity in micro mhos, and less than 1.0 degree centigrade (1.8 degrees Fahrenheit) change in temperature. Parameters are measured in a discrete sample decanted from the bailer separately from the rest of the purge water. Parameters are measured at least four times during purging: initially, and at purging volume intervals of one casing volume. Purging continues until three well casing volumes have been removed or until the well completely dewaters. Wells that dewater or demonstrate a slow recharge rate may be sampled after fewer than three well volumes have been removed. Well purging information is recorded on the Purge Data sheet. All meters used to measure parameters are calibrated daily. Investigation-derived wastes (purge and rinseate water) is handled in one of three ways: 1) Purge and rinseate water is sealed, labeled, and stored on site in D.O.T.-approved 55-gallon drums. After being chemically profiled, the water is removed to an appropriate disposal facility. 2) Purge and rinseate water is collected into a 250-gallon portable holding tank and transported to the Clearwater equipment yard in Point Richmond, CA. At the yard, the investigation-derived waste is then transferred to 55-gallon drums pending disposal at an appropriate disposal facility, or 3) Purge and rinseate water is collected in a 250-gallon portable holding tank and transported to the appropriate disposal facility. The applicable method will be indicated in the field log sheets and the corresponding technical report.

Groundwater Sample Collection

Groundwater samples are collected immediately after purging, with the following exception: If the purging rate exceeds well recharge rate, samples are collected when the well has recharged to at least 80% of its static water level. If recharge is extremely slow, the well is allowed to recharge for at least two hours, if practicable, or until sufficient volume for sampling has accumulated. The well is sampled within 24 hours of purging or is re-purged. Samples are collected using polyethylene bailers, either disposable or dedicated to the well. Samples being analyzed for compounds most sensitive to volatilization are collected first. Water samples are placed in appropriate laboratory-supplied containers, labeled, documented on a chain-of-custody form and placed on ice in a chilled cooler for transport to a state-certified analytical laboratory. Analytical detection limits match or surpass standards required by relevant local or regional guidelines.

Quality Assurance Procedures

To prevent contamination of the samples, Clearwater personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves is put on prior to sampling each well.
- Wells are gauged and purged and groundwater samples are collected in the expected order of increasing degree of contamination based on historical analytical results.
- All purging equipment is thoroughly decontaminated between each well, using the procedures previously described at the beginning of this section.
- During sample collection for volatile organic analysis, the amount of air passing through the sample is minimized. This helps prevent the air from stripping the volatiles from the water. Sample bottles are filled by slowly running the sample down the side of the bottle until there is a convex meniscus over the mouth of the bottle. The lid is carefully screwed onto the bottle such that no air bubbles are present within the bottle. If a bubble is present, the cap is removed and additional water is added to the sample container. After resealing the sample container, if bubbles still are present inside, the sample container is discarded and the procedure is repeated with a new container.

Laboratory and field handling procedures may be monitored, if required by the client or regulators, by including quality control (QC) samples for analysis with the groundwater samples. Examples of different types of QC samples are as follows:

- Trip blanks are prepared at the analytical laboratory by laboratory personnel to check field handling procedures. Trip blanks are transported to the project site in the same manner as the laboratory-supplied sample containers to be filled. They are not opened and are returned to the laboratory with the samples collected. Trip blanks are analyzed for purgeable organic compounds.
- Equipment blanks are prepared in the field to determine if decontamination of field sampling equipment has been effective. The sampling equipment used to collect the groundwater samples is rinsed with distilled water that is then decanted into laboratory-supplied containers. The equipment blanks are transported to the laboratory and are analyzed for the same chemical constituents as the samples collected at the site.
- Duplicates are collected at the same time standard groundwater samples are collected; they are analyzed for the same compounds in order to verify the reproducibility of laboratory data. They are usually collected from only one well per sampling event. The duplicate is assigned an identification number that will not associate it with the source well.

Generally, trip blanks and field blanks verify field handling and transportation procedures. Duplicates verify laboratory procedures. The configuration of QC samples is determined by Clearwater depending on site conditions and regulatory requirements.

CLEARWATER GROUP

Natural Attenuation Processes and Recommended Monitoring Guidelines

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The following document details the processes involved in the natural attenuation of petroleum hydrocarbons in soil and groundwater and presents recommendations for monitoring and confirming these processes. By confirming natural attenuation, a conceptual basis is provided for regulatory site closure.

Natural Attenuation Processes

The predominant attenuation process is intrinsic biodegradation (aerobic and anaerobic) mediated by hydrocarbon degrading bacteria. Other factors in natural attenuation include physical and chemical processes such as volatilization, dispersion, sorption and hydrolysis. Unless otherwise referenced, the following information was derived from McAllister and Chiang (1994).

Aerobic degradation.

In aerobic respiration, microbes utilize dissolved oxygen (DO) as an electron acceptor during hydrocarbon oxidation (degradation), producing carbon dioxide, water, and microbial biomass. The electron acceptor is a substance that facilitates the reaction by taking up the electrons released by oxidation; the electron acceptor then becomes reduced during the process of biodegradation.

The aerobic process is the most important form of biodegradation wherever DO concentrations exceed 1 to 2 mg/L. Under hypoxic conditions (0.1 to 2 mg/L DO), aerobic degradation may occur along the edges of the plume while anaerobic degradation predominates in the center of the plume.

Anaerobic degradation.

Microbes may also degrade hydrocarbons via anaerobic processes by utilizing alternate biochemical pathways when DO concentrations are insufficient for aerobic degradation. Anaerobic degradation is much slower than the aerobic process and not all BTEX compounds (benzene, toluene, ethylbenzene, and xylenes) are consistently degraded. Some studies indicate benzene is recalcitrant to anaerobic degradation while others have demonstrated limited degradation (Rifai et al, 1995). Anaerobic degradation generally occurs in the center of the plume where DO has been depleted by aerobic degradation. Research into the efficacy of anaerobic processes is ongoing.

Anaerobic electron acceptors include [in order of sequential use and decreasing redox potential (Eh)]:

- nitrate (NO_3^-),
- oxides of ferric iron (Fe^{3+}),
- sulfate (SO_4^{2+}),
- water.

The associated biochemical processes are: denitrification (or nitrate reduction), iron reduction, sulfate reduction, and methanogenesis. Manganese (Mn^{4+}) may also function as an electron acceptor. Nitrate and sulfate reduction do not degrade alkanes such as methane, propane, and butane.

Volatilization

Dissolved plume mass can be reduced by volatilization of contaminants to the vapor phase in the unsaturated zone. Normally volatilization is a negligible component of natural attenuation, however, it may contribute 5% or more of total mass loss in shallow (<15 feet), warm and/or fluctuating water table conditions in permeable soils (Rifai et al, 1995).

Dispersion

Mechanical/molecular mixing reduces dissolved concentrations substantially by lateral spread. No dissolved contaminant mass is removed from the system by this process. Dispersion (D) is generally modeled based on the length of the plume (x). Conservative practice calls for dispersion in the downgradient direction (longitudinal dispersivity, D_X) to be modeled at 0.1 times the plume length. Dispersion in the transverse direction (transverse dispersivity, D_y) is modeled at 0.33 times D_x; dispersion in the vertical direction (vertical dispersivity, D_z) is modeled at 0.05 times D_x (Connor, et al., 1995).

Sorption

Contaminants partition between the aqueous phase and the soil matrix. Adsorption onto the soil surface significantly retards migration but does not permanently remove BTEX which may desorb later. Carbon is the most effective sorption material in soils, and although clay minerals and amorphous minerals such as iron hydroxides also have some influence, only sorption to carbon in soil is included in most contaminant fate and transport computer models.

Sorption is controlled by the organic carbon content of soil (f_{oc}), the chemical specific organic carbon partition coefficient (K_{oc}), the soil bulk density (ρ_s), and the water content of the soil as measured by the porosity (ϕ_s). K_{oc} is a measure of the affinity of a given chemical to sorb from water onto solid organic material (Table 1). Once the porosity, bulk density, K_{oc}, and f_{oc} have been established, the retardation factor (R) for the site can be calculated as follows:

$$R = (1 + k_s * \rho_s / \phi_s) \qquad \text{where: } k_s = f_{oc} * K_{oc}$$

The retardation factor is used in transport models (discussed below) as a measure of the degree to which the rate of plume migration is reduced by sorption processes.

Hydrolysis etc.

Other chemical reactions such as hydrolysis may reduce contaminant mass without microbial mediation. Hydrolysis occurs when an organic molecule reacts with water or a component ion of water. Unlike biodegradation, hydrolysis is not catalyzed by microorganisms. Hydrolysis has not been observed to reduce BTEX concentrations, but is significant for halogenated volatile organics (solvents, etc.).

Monitoring Groundwater For Natural Attenuation

Assessment and monitoring of natural attenuation should be performed to confirm that intrinsic bioremediation and other forms of natural attenuation are occurring in the subsurface and are sufficient to limit plume migration by achieving an equilibrium between hydraulic transport (advection) and removal/degradation/reduction of mobile contaminants. To confirm natural attenuation, it needs to be demonstrated that intrinsic factors are limiting migration, and that they will continue to do so until the plume has degraded to acceptable levels.

Natural attenuation can be evaluated by monitoring specific indicator parameters over a given period of time. As further confirmation, simple fate and transport models can be applied to the site using the site-specific information obtained. Several lines of evidence will generally need to be combined to provide a convincing case of natural attenuation. First, it is necessary to establish that the plume is stable or being reduced in terms of size and concentrations, by review of historical data, possibly including statistical analysis. At least one year of monitoring data utilizing an adequate distribution of wells should be sufficient. For all chemical parameters, background concentrations need to be established by sampling one or more clean wells. In addition to plume concentrations, Rifai et al., (1995), recommends, at a minimum, monitoring the following parameters:

- Microbial enumeration [total heterotrophic bacteria (plate count), and total hydrocarbon using bacteria (ASTM method G-2)].
- Temperature (field measurement)
- pH (field measurement)
- Dissolved Oxygen (field measurement or EPA Method 360.1)

If DO is depleted relative to background concentrations, additional monitoring for anaerobic processes may be considered and should include the following:

- Eh (field measurement)
- Sulfate (EPA method 300 or 375.4)
- Nitrate/nitrite (EPA method 300, 353.1 or 353.2)
- Dissolved iron (EPA method 200.7)
- Total iron (EPA Method 236.1 or 6010)

- Methane (field measurement)
- Alkalinity (EPA method 310.1)
- Dissolved carbon dioxide (with alkalinity or method SM406C)

Certain parameters, notably DO and Eh, may be measured in the field using downhole meters. Most of the other parameters require laboratory analysis of a groundwater sample for accurate quantification. Trends in methane concentrations may be identified using an organic vapor meter fitted with an appropriate filter at the wellhead.

The combination of parameters that Clearwater will monitor at a particular site will depend on site-specific conditions and previous site investigation. The minimum set of parameters as defined by Rifai will always be included for at least one clean (background) well and at least one well representative of mid-plume conditions.

The following sections provide a detailed description of monitoring methods and anticipated results for indicator parameters outlined above.

Microbial Populations

Hydrocarbon degrading bacteria are generally ubiquitous; however, the total population of microbes (measured in counts per liter) is dependent on the available energy source (ie., hydrocarbons). To evaluate natural attenuation, microbial counts should include separate enumerations for hydrocarbon degrading bacteria and for total heterotrophic bacteria, both normally obtained from cultured plate counts. The ratio of hydrocarbon degraders to total heterotrophs is the most useful in assessing natural attenuation. This ratio should be relatively large in samples from contaminated wells, compared to the ratio in samples from clean wells, indicating a proliferation of the indicator species in contaminated areas, independent of overall microbial population variations. Such a distribution of bacteria may require 1 to 2 years to become established once hydrocarbon contamination is present. As further confirmation, it may be useful to establish that sufficient concentrations of microbial nutrients such as nitrogen and phosphorous are present in the subsurface.

Groundwater typically contains total microbial counts of 10^3 to 10^8 counts per liter. Lower counts in contaminated areas may indicate toxic conditions. In sites with organic rich soils, microbial populations may be high but hydrocarbon degradation may be inhibited because the microbes preferentially degrade the naturally occurring carbon compounds found in the soils (Cookson, 1995).

pH

pH is best measured with a meter or by collecting a sample for laboratory analysis. The probe portion of pH meters must be regularly cleaned and periodically soaked in solutions designed to remove oil and protein build up. Lowered pH corresponding spatially to the plume may be indicative of the production of organic acid metabolic end-products of aerobic hydrocarbon degradation. Uncontaminated groundwater is commonly slightly alkaline, but pH varies widely depending on many natural and human influenced factors. pH between 6 and 8 is optimal for BTEX degradation.

Redox Potential (Eh)

Eh is a measure of electron activity within a solution. Each pathway of degradation is generally restricted to a prescribed range of Eh values. Hydrocarbon degradation reduces the Eh of the system in which it occurs, unless the groundwater recharge rate exceeds the utilization rate of the electron acceptor (this is normally not the case since mixing is limited). Once an electron acceptor has been utilized and thereby depleted in the system, Eh conditions determine which next electron acceptor in the sequence will become predominant.

The utility of Eh measurement is as an adjunct to electron acceptor concentration measurements (discussed below). Eh must be measured in situ to avoid atmospheric influence as described in the section on DO sampling. Eh units are millivolts (mV). Decreased Eh should coincide with elevated contaminant concentrations, and depleted DO. Very low Eh (reducing conditions: <0 mV) should coincide with depleted anaerobic electron acceptors. Table 2 presents Eh values typical of each biodegradation pathway.

Dissolved Oxygen (DO)

DO is best measured with a downhole meter measuring in mg/L. Some meters also read DO as a percentage of saturation at a given temperature, however, the volumetric concentration has more utility in fate and transport models. Measurement of DO and Eh are both sensitive to several factors associated with field methodologies, particularly exposure to atmospheric oxygen; hence the preferred use of a downhole meter. It is necessary to strictly adhere to instructions provided with a given model of instrument. DO meters function by permitting a small quantity of oxygen to diffuse across a porous membrane. Consequently, it is necessary to keep water moving in the vicinity of the membrane to prevent a depletion of DO immediately adjacent to the membrane. This can be achieved manually, by a gentle raising and lowering of the meter in the well. The membrane is delicate and must be carefully maintained.

A negative correlation should occur between DO concentrations and hydrocarbon concentrations. Background concentrations should exceed 1 to 2 mg/L for effective aerobic degradation. DO in groundwater is derived from the atmosphere at the recharge area or the vadose zone. Surface water saturated with oxygen by contact with atmospheric air will contain between approximately 7.5 mg/L at 5°C and 12.75 mg/L at 30°C, though these figures may vary somewhat depending on other chemical parameters. DO concentrations in groundwater are generally less than those for surface water by an amount dependent on the quantity of oxidizable materials (e.g. sulfides) in contact with the groundwater, and the length of time the groundwater has been stored in the aquifer. Background groundwater DO concentrations in shallow aquifers can be as high as 12 mg/L in warm conditions or as low as 1 mg/L in cool conditions. (Hem, 1985). DO may be increased by local groundwater recharge (e.g. irrigation). Aerobic degradation typically occurs when Eh is approximately +800 mV (discussed below).

Anaerobic Electron Acceptors

Analysis of water samples for nitrate, dissolved iron, and/or sulfate can provide data indicative of intrinsic bioremediation. The higher the background concentrations the better, unless they are so high as to create toxicity for the microbes or exceed water quality standards. Depleted dissolved electron acceptor concentrations (except iron, see below) in areas of high hydrocarbon concentration are indicative of microbial degradation.

Nitrate. Nitrate concentrations may be derived by analyzing nitrate plus nitrite as N (EPA Method 353.2). This laboratory method calculates total nitrate, since nitrite is metastable in groundwater and seldom present in sufficient quantities to affect the ionic balance (Wiedemeier et al, 1995). The bulk of nitrates in groundwater are derived from human contamination (e.g.. agricultural runoff/septic systems). Background concentrations vary widely with human activity in the site vicinity, and would otherwise be commonly less than 1 mg/L. Concentrations considered indicative of a significant biodegradation capacity might be those in excess of 20 mg/L. Denitrification/nitrate reduction typically occurs when Eh is approximately +750 mV (but more than 0 mV).

Iron. Laboratory analysis of iron concentration may be accomplished by collecting an unfiltered groundwater sample to obtain the total iron content (precipitated and dissolved), or by passing the sample through a 0.45 micron filter immediately after collection to obtain the dissolved iron concentration. Iron in groundwater is derived primarily from soil minerals. Dissolved iron concentrations are very sensitive to changes in pH and Eh. Free dissolved ferric iron can only exist stably under extremely acidic conditions (pH<2) (Hem, 1985). Ferric iron reduction to ferrous iron occurs at intermediate Eh values. Under aerobic, moderately acidic or alkaline conditions, dissolved iron is typically present as a hydroxide; the ferric species is ferric orthohydroxide (Wiedemeier et al, 1995). Dissolved ferric iron is usually rapidly reprecipitated as a sulfide, oxide or hydroxide. Since microbes utilize insoluble sedimentary ferric iron oxides as their energy source, producing more soluble ferrous iron, an increase in total dissolved iron is indicative of microbial hydrocarbon degradation.

The solubility of ferrous iron is significantly reduced by the presence of sulfides, the end-product of sulfate reduction (Barker et al, 1995). Analytical results of dissolved ferrous iron concentration will likely give an underestimate, since it is not based on the actual amount of ferric hydroxide (the electron acceptor) present in the aquifer, but the amount of reduced ferrous iron (the end-product) remaining in solution at the time of sampling.

Typical background concentrations of total dissolved iron in groundwater are below 1.0 mg/L. Results in excess of 1.0 mg/L indicate iron-reducing conditions (Cookson, 1995) which may have resulted from anaerobic hydrocarbon degradation. High dissolved iron concentrations may also indicate the presence of very fine particulates, low pH, or high organic content. High organic content induces stability of soluble iron complexes (Hem, 1985). Measurement of the total iron content of a sample is useful as a background datum against which to compare changes in the dissolved concentration.

Sulfate. Sulfate is derived primarily from soil minerals. The occurrence of sulfate reduction may be inferred from the presence of black acid volatile sulfide deposits on materials in long-term contact with contaminated groundwater

(Barker et al, 1995). Pyrite may be precipitated in the soil. Sulfate concentrations in groundwater are naturally higher than those for nitrate. Sulfate concentrations of 100 mg/L might be considered moderate and several hundred mg/L is not uncommon. Concentrations below 40 mg/L are indicative of methanogenic conditions (Cookson, 1995). Sulfate reduction typically occurs when Eh is approximately -200 mV.

Methanogenesis. Under methanogenic conditions (Eh of approximately -250 mV), carbon dioxide and methane are both produced by hydrocarbon oxidation. The utility of measurement of these compounds is discussed below (metabolic end-products).

Carbonate/Hardness/Total alkalinity

One of these associated analyses is typically conducted at the laboratory on collected water samples. Increased carbonate concentration will commonly occur where acidity dissolves carbonates from the soil. Sufficient concentrations of carbonate will buffer the pH and prevent acid toxicity that may result from hydrocarbon degradation. Total alkalinity (as carbonate) concentrations exceeding 100 mg/L may be considered conducive to effective buffering. Dissolved carbon dioxide may be assessed in conjunction with total alkalinity analysis.

Metabolic end-products

Metabolic end-products of hydrocarbon biodegradation include carbon dioxide, water, nitrogen, nitrites, ferrous iron, sulfites, sulfides, hydrogen sulfide, and methane. Carbon dioxide, hydrogen sulfide and methane may be measured with a gas meter at the wellhead. Reduced ferrous iron, sulfite and sulfide may be analyzed in water samples. Sulfides may precipitate into the soil and be under-represented in groundwater samples. Nitrite is metastable and therefore nitrite detection (generally <0.1 mg/L) is indicative of ongoing denitrification. Ammonium ions in excess of 1.0 mg/L may also be indicative of anaerobic conditions. Elevated concentrations of all metabolic end-products should correlate positively with elevated hydrocarbons.

Field measurement of dissolved carbon dioxide (DCD) is of secondary importance but may provide useful data. Dissolved carbon dioxide is derived primarily from the atmosphere. Elevated DCD spatially correlated with decreased DO concentration, may be indicative of aerobic microbial hydrocarbon degradation as DCD is a metabolic end-product. Elevated DCD may also result from anaerobic degradation. High background DCD is a desirable feature in terms of the capacity of the groundwater to buffer decreases in pH produced by microbial hydrocarbon degradation which may otherwise limit biological activity. Carbon dioxide is more soluble than oxygen and average concentrations are around an order of magnitude higher.

Contaminant Fate and Transport Modeling

Plume transport can be modeled using simple analytical equations. Transport assuming no attenuation can be modeled and the results compared with field data to provide a preliminary indication of the extent of natural attenuation. Transport models can be modified to include various natural attenuation factors based on actual site data. Comparison of these modeling results to actual field results can be used to confirm natural attenuation.

To model plume transport, the following basic site characteristics need to be determined:

- Historical dissolved hydrocarbon distribution
- Hydraulic conductivity
- Soil density/porosity
- Aquifer thickness
- Groundwater gradient/depth fluctuations
- Possible preferential migration pathways
- Organic content of the soil, f_{oc}.

Laboratory analysis of soil samples may be necessary to establish f_{oc}, which is useful for modeling sorption. Hydraulic conductivity may be obtained as an estimate from the literature based on soil type (for homogeneous lithologies), or by performing an aquifer test (slug or pump).

For plumes under steady-state conditions, contaminant transport models such as the Domenico Transport Equation can be modified to include the processes of dispersion and sorption to predict contaminant concentrations at a given distance from the source (Connor et al, 1995). In addition, biological and chemical degradation may be collectively modeled by a first-order decay function requiring assignment of a literature-based decay half-life value (in days) for each contaminant. Conservative decay half-life default values from Connor et al (1995) are provided in Table 1. Alternatively, for most realistic results, biodegradation may be modeled based on actual concentrations of electron acceptors, by determining the biodegradation capacity (BC) for each electron acceptor and contaminant concentration (Connor et al, 1995).

The biodegradation capacity is a measure of the actual potential of an electron acceptor (n) to remove contaminant mass. The BC_n is calculated for each contaminant and electron acceptor by dividing the concentration of the acceptor in the groundwater by its utilization factor (UF_n). The UF_n can be easily derived from the stoichiometric equation for the particular degradation reaction and represents the ratio of mass of electron acceptor utilized to the mass of hydrocarbon degraded (Wiedemeier, 1995). Values of UF_n for benzene for each pathway are presented in Table 2. The sum of the BC_n values obtained for the principal electron acceptors is the total biodegradation capacity of the groundwater (BC_t) (Connor et al, 1995). This datum is necessary in contaminant fate and transport models to realistically evaluate the potential for plume attenuation resulting from intrinsic biodegradation.

MTBE is almost completely recalcitrant to biological degradation and does not sorb onto the soil. Due to these properties, MTBE concentrations generally mimic non-attenuated plume transport. Therefore, MTBE may be used as a conservative tracer or "internal standard" for modeling plume transport with no attenuation.

Confirming Natural Attenuation

To best confirm natural attenuation in anticipation of site closure, the assessment and monitoring activities should confirm the following plume characteristics:

1) Fieldscale contaminant mass has been reduced (based on historical groundwater analyses). Figure 1 illustrates a generally accepted methodology for calculating residual dissolved contaminant mass.

2) Microbial activity is occuring in the plume (based on microbial counts)

3) The less recalcitrant compounds are reduced in concentration and extent relative to the more recalcitrant compounds. The approximate order of increasing recalcitrance for BTEX aromatics is: toluene, o-xylene, m- and p-xylene, benzene, ethylbenzene. That is, toluene concentrations should be most attenuated; ethylbenzene least attenuated.

3) Electron acceptors such as DO, nitrate and sulfate are depleted within the plume

4) Metabolic end-products such as carbon dioxide, hydrogen sulfide and methane have accumulated within the plume relative to outside of the plume.

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ATTACHMENT B

updated on 10/18/2006 by ht

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WELL GAUGING/PURGING CALCULATIONS
DATA SHEET

Date: 2-13-07

Job No.: 2P046I

Location: 4301 San Leandro St. Oakland, CA.

Tech(s): Eric Austin / Rodney Berry

Drums on Site @ TOA/TOD
Soil: 0 Water: 0

Total number of DRUMS used for this event
Soil: 0 Water:

Well No.	Diameter (in)	DTB (ft)	DTW (ft)	ST (ft)	CV (gal)	PV (gal)	SPL (ft)	Notes
Mw-5D	2 in	41.65	14.48	27.17	4.35	13.05		
Mw-4D	2 in	42.35	15.73	26.62	4.26	12.78		
Mw-1	2 in	24.51	7.11	17.40	2.79	8.37		
IS-1	2 in	24.93	6.14	18.37	2.94	8.82		
Mw-7	2 in	25.50	11.83	13.67	2.18	6.54		
Mw-3	2 in	23.07	11.23	11.84	1.89	5.67		
Mw-6	2 in	24.91	10.31	14.65	2.34	7.02		
IS-2	2 in	24.96	6.76	18.20	2.91	8.73		

Explanation:
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW) must be > 1 foot
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf)
2-inch diameter well cf = 0.16 gal/ft
4-inch diameter well cf = 0.65 gal/ft
6-inch diameter well cf = 1.44 gal.ft

Well No.	Diameter (in)	DTB (ft)	DTW (ft)	ST (ft)	CV (gal)	PV (gal)	SPL (ft)	Notes
IS-4	2 in	24.94	9.02	15.92	2.54	7.62		
IS-6	2 in	25.16	6.12	19.04	3.05	9.15		
IS-3	2 in	24.60	7.03	17.57	2.81	8.43		
IS-5	2 in	18.15	6.78	11.37	1.82	5.46		
Ew-2	4 in	25.20	7.15	18.05	11.73	35.19		Dryed out.
Mw-2	2 in	24.76	12.78	11.98	1.92	5.76		
Mw-4	2 in	24.78	7.56	17.22	2.76	8.28		
Mw-5	2 in	25.08	6.54	18.54	2.97	8.91		
Mw-8	2 in	24.57	6.58	17.99	2.86	8.64		
Ew-1	4 in.	25.10	6.31	18.79	12.21	36.63		Dried out

Explanation:

DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW) must be > 1 foot
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf)

2-inch diameter well cf = 0.16 gal/ft
4-inch diameter well cf = 0.65 gal/ft
6-inch diameter well cf = 1.44 gal.ft

PURGE DATA SHEET

ob No.: ZP046I Location: Oakland, CA. Date: 2-13-07 Sheet 1 of 9

Tech: Eric Austin
Rodney Berry

WELL #	TIME	VOL. (gal.)	ORP	CND µS/cm	TMP °F	DO	pH	Fe^{2+}	Fe$_T$
MW-5D	7:46	5.00		576	59.25		7.17		
'alc. purge	7:58	10.00		576	59.30		7.18		
olume 13.05	8:05	13.00		575	59.33		7.18		

Sample for: TBA - 5ox's

[✓ TPHg TPHd] 8260

[✓ BTEX] [✓ MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Tan, low, Poor - No sheen - No Odor

POST DEPTH TO WATER: 16.03 SAMPLE TIME: 8:15

b No.: Location: Date: Tech:

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe$_T$
MW-4D	8.16	4.00		609	60.21		7.30		
lc. purge	8.27	8.00		610	60.17		7.30		
lume 12.78	8.34	13.00		610	60.17		7.29		

Sample for: TBA - 5ox's

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Clear, low, poor - No sheen No Odor

POST DEPTH TO WATER: 16.91 SAMPLE TIME: 8.45

PURGE DATA SHEET

Job No.: 2P046T **Location:** Oakland, CA. **Date:** 2-13-07 **Sheet** 2 of 7 **Tech:** EA/RB

WELL #	**TIME**	**VOL. (gal.)**	**ORP**	**CND**	**TMP**	**DO**	**pH**	**Fe^{2+}**	**Fe$_T$**	
MW-1	8:46	2.00		356	58.48		7.00			Sample for: TBA/5oxys [✓ TPHg TPHd] 8260 [✓ BTEX MTBE] Metals
Calc. purge	8:51	5.00		355	58.48		7.00			
volume 8.37	8:56	8.00		355	58.47		7.01			

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Clear, low, Poor No sheen Has odor

POST DEPTH TO WATER: 7.51 SAMPLE TIME: 9:00

WELL #	**TIME**	**VOL. (gal.)**	**ORP**	**CND**	**TMP**	**DO**	**pH**	**Fe^{2+}**	**Fe$_T$**	
IS-1	9:01	2.00		848	59.10		6.95			Sample for: TBA/5oxys [✓ TPHg TPHd] 8260 [✓ BTEX MTBE] Metals
Calc. purge	9:05	5.00		847	59.11		6.95			
volume 8.82	9:09	9.00		847	59.12		6.96			

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Lt. Brown, Moderate, poor - No sheen - Has odor

POST DEPTH TO WATER: 6.44 SAMPLE TIME: 9:15

PURGE DATA SHEET

Job No.: I9046I　Location: Oakland, CA　Sheet 3 of 9

Date: 2-13-07　Tech: EA/RA

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T
MW-7	9:16	2.00		1137	60.58		7.04		
Calc. purge	9:20	4.00		1135	60.60		7.04		
olume 6.54	9:25	7.00		1135	60.59		7.02		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ ~~BTEX~~ MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ ~~Disp. Bailer~~]

COMMENTS: color, turbidity, recharge, sheen, odor Clear, low, Poor No sheen - No Odor

POST DEPTH TO WATER: 12.09　SAMPLE TIME: 9:30

ob No.:　Location:

Date:　Tech:

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T
MW-3	9:31	2.00		667	60.52		6.94		
alc. purge	9:35	4.00		663	60.46		6.88		
lume 5.67	9:39	6.00		665	60.45		6.89		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ ~~BTEX~~ MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ ~~Disp. Bailer~~]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, low, poor No sheen - Has odor

POST DEPTH TO WATER: 11.37　SAMPLE TIME: 9:45

PURGE DATA SHEET

Job No.: 2P046I **Location:** Oakland, CA **Date:** 2-13-07 **Sheet** 4 **of** 9 **Tech:** EA/RB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe²⁺	Fe$_T$
MW-6	9:46	2.00		802	62.30		6.93		
Calc. purge	9:50	4.00		801	62.30		6.94		
volume 7.02	9:55	7.00		801	62.28		6.94		

Sample for: 5oxy/TBA

[✓ TPHg] ~~TPHd~~ 8260

[✓ BTEX] [✓ MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Clear, low, poor Has sheen Has Odor

POST DEPTH TO WATER: 10.72 SAMPLE TIME: 10:00

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe²⁺	Fe$_T$
IS-2	10:01	2.00		436	59.43		6.80		
Calc. purge	10:06	5.00		435	59.39		6.80		
volume 8.73	10:12	9.00		435	59.38		6.79		

Sample for: 5oxys/TBA

[✓ TPHg] ~~TPHd~~ 8260

[✓ BTEX] [✓ MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, Moderate, poor No sheen, Has Odor

POST DEPTH TO WATER: 6.99 SAMPLE TIME: 10:15

PURGE DATA SHEET

Job No.: 2P046I **Location:** Oakland, CA. Sheet 5 of 9

Date: 2-13-07 **Tech:** EH/RB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T
IS-4	10:16	2.00		813	61.98		6.81		
Calc. purge	10:27	4.00		814	61.99		6.82		
volume 7.62	10:39	8.00		814	61.98		6.82		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, Moderate, poor, slight sheen - Has Odor

POST DEPTH TO WATER: 9.41 SAMPLE TIME: 11:00

---

ob No.: 2P046I **Location:**

Date: 2-14-07 **Tech:** EH/RB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T
IS-6	8:01	2.00		862	60.56		6.80		
alc. purge	8:08	5.00		862	60.17		6.81		
lume 9.15	8:16	9.00		863	60.11		6.81		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Clear, low, poor - No sheen Has Odor

POST DEPTH TO WATER: 10:42 SAMPLE TIME: 8:30

PURGE DATA SHEET

Job No.: ZP046I **Location:** Oakland **Sheet** 6 **of** 9

Date: 2-14-07 **Tech:** EA/MB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T
IS-3	8:31	2.00		425	61.11		6.77		
Calc. purge	8:36	4.00		424	61.10		6.76		
volume 8.43	8:44	8.00		424	61.10		6.76		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Clear, low, Poor, No sheen - Has Odor

POST DEPTH TO WATER: 7.91

SAMPLE TIME: 8:45

ob No.:

Location:

Date:

Tech:

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP 15.9°C	DO	pH	Fe^{2+}	Fe_T
IS-5	8:47	1.00		411	60.62		6.69		
alc. purge	8:51	3.00		411	60.60		6.70		
lume 5.46	8:55	5.00		410	60.59		6.70		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, High, Poor - No sheen, Has Odor

POST DEPTH TO WATER: 7.81

SAMPLE TIME: 9:15

PURGE DATA SHEET

Job No.: ZP046I **Location:** Oakland, CA **Date:** 2-14-07 **Sheet** 7 **of** 9

Tech: EA/RB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T	
EW-2	9:30	12.00		741	60.40		6.77			Sample for: 5oxys/TBA
Calc. purge	9:43	24.00		741	60.37		6.77			[✓ TPHg TPHd] 8260
volume 35.19	9:54	32.00		740	60.33		6.78			[✓ BTEX MTBE] Metals

Purging Method: Dried out Before Full Purging Volume PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Lt. Brown, low, Poor (Very), slight sheen - Has Odor

POST DEPTH TO WATER: 25.18 SAMPLE TIME: 10:00

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T	
MW-2	10:03	1.00		765	60.79		6.77			Sample for: 5oxys/TBA
Calc. purge	10:07	3.00		763	61.04		6.77			[✓ TPHg TPHd] 8260
volume 5.76	10:12	6.00		763	61.07		6.77			[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, Moderate, poor - Has sheen Has odor

POST DEPTH TO WATER: 14.01 SAMPLE TIME: 10:15

PURGE DATA SHEET

Job No.: ZP046T **Location:** Oakland, CA. **Sheet** 8 **of** 9

Date: 2-14-07 **Tech:** EA/RB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP 14.77	DO	pH	Fe^{2+}	Fe_T
MW-4	10:17	2.00		868	58.58		6.78		
Calc. purge	10:21	5.00		868	58.58		6.78		
volume 8.28	10:25	8.00		868	58.60		6.78		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor gray, High, OK, Has sheen and Odor

POST DEPTH TO WATER: 8.71 SAMPLE TIME: 10:30

ob No.: Location:

Date: Tech:

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T
mw-5	10:33	2.00		385	59.32		6.84		
alc. purge	10:38	6.00		385	59.33		6.84		
lume 8.91	10:42	9.00		384	59.34		6.83		

Sample for: 5oxys/TBA

[✓ TPHg TPHd] 8260

[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, High, OK, - No sheen, slight odor

POST DEPTH TO WATER: 7.80 SAMPLE TIME: 10:45

PURGE DATA SHEET

Job No.: ZP046I **Location:** Oakland, CA. **Date:** 2-14-07 **Sheet** 9 **of** 9 **Tech:** EA/RB

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP 16.19°C	DO	pH	Fe^{2+}	Fe_T	
MW-8	10:48	2.00		976	61.15		6.82			Sample for: 5oxys/TBA
Calc. purge	10:53	5.00		977	61.22		6.83			[✓ TPHg TPHd] 8260
volume 8.64	11:00	9.00		977	61.21		6.83			[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]

COMMENTS: color, turbidity, recharge, sheen, odor Gray, Moderate, Poor, Has sheen and odor

POST DEPTH TO WATER: 7.69 SAMPLE TIME: 11:15

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe^{2+}	Fe_T	
~~MW-~~ EW-1	11:28	12.00		349	56.29		6.86			Sample for: 5oxys/TBA
Calc. purge	11:39	24.00		347	55.90		6.77			[✓ TPHg TPHd] 8260
volume 36.63	11:46	33.00		347	54.97		6.77			[✓ BTEX MTBE] Metals

Purging Method: PVC Bailer / Pump / [✓ Disp. Bailer]
Dried out Before Full Purging

COMMENTS: color, turbidity, recharge, sheen, odor Gray, High - Very poor Has odor and sheen

POST DEPTH TO WATER: 25.07 SAMPLE TIME: 12:00

Clearwater Group, Inc. - 229 Tewksbury Avenue, Point Richmond, California 94801
Phone : (510) 307-9943 Fax : (510) 232-2823

H:/Department/World/Purge Data Sheet Updated 06.xls

ATTACHMENT C

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Rob Nelson
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 9 Water Samples
Project Name : NAZ EAGLE GAS STATION
Project Number : ZP046I

Dear Mr. Nelson,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Subject : 9 Water Samples
Project Name : NAZ EAGLE GAS STATION
Project Number : ZP046I

Case Narrative

The Method Reporting Limit for TPH as Diesel is increased due to interference from Gasoline-Range Hydrocarbons for samples MW-3 and IS-2.

Approved By: ________________
Joel Kiff

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-5D**
Matrix : Water
Lab Number : 54846-01
Sample Date :2/13/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	97.2		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	100		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**< 50**	50	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	130		% Recovery	M EPA 8015	2/17/2007

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-4D**
Sample Date :2/13/2007
Matrix : Water
Lab Number : 54846-02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	96.3		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	99.8		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**< 50**	50	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	130		% Recovery	M EPA 8015	2/15/2007

Joel Kiff

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-1**
Matrix : Water
Lab Number : 54846-03
Sample Date :2/13/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Toluene	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**3700**	25	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**25**	25	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**63000**	150	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 2500**	2500	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	93.6		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**900**	50	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	130		% Recovery	M EPA 8015	2/15/2007

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **IS-1**
Matrix : Water
Lab Number : 54846-04
Sample Date :2/13/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Toluene	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**3600**	40	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**< 40**	40	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**110000**	200	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 4000**	4000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	97.7		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**1800**	50	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	126		% Recovery	M EPA 8015	2/17/2007

Joel Kiff

Approved By: Joel Kiff

Report Number : 54846

Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**

Project Number : **ZP046I**

Sample : **MW-7**

Matrix : Water

Lab Number : 54846-05

Sample Date :2/13/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 70**	70	ug/L	EPA 8260B	2/15/2007
Toluene	**< 70**	70	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 70**	70	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 70**	70	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**33000**	70	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 70**	70	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 70**	70	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**170**	70	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**130000**	400	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 7000**	7000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	103		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**210**	50	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	124		% Recovery	M EPA 8015	2/17/2007

Joel Kiff

Approved By: Joel Kiff

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-3**
Matrix : Water
Lab Number : 54846-06
Sample Date :2/13/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**52**	40	ug/L	EPA 8260B	2/14/2007
Toluene	**< 40**	40	ug/L	EPA 8260B	2/14/2007
Ethylbenzene	**< 40**	40	ug/L	EPA 8260B	2/14/2007
Total Xylenes	**< 40**	40	ug/L	EPA 8260B	2/14/2007
Methyl-t-butyl ether (MTBE)	**13000**	40	ug/L	EPA 8260B	2/14/2007
Diisopropyl ether (DIPE)	**< 40**	40	ug/L	EPA 8260B	2/14/2007
Ethyl-t-butyl ether (ETBE)	**< 40**	40	ug/L	EPA 8260B	2/14/2007
Tert-amyl methyl ether (TAME)	**82**	40	ug/L	EPA 8260B	2/14/2007
Tert-Butanol	**65000**	200	ug/L	EPA 8260B	2/14/2007
TPH as Gasoline	**< 4000**	4000	ug/L	EPA 8260B	2/14/2007
Toluene - d8 (Surr)	98.9		% Recovery	EPA 8260B	2/14/2007
4-Bromofluorobenzene (Surr)	97.7		% Recovery	EPA 8260B	2/14/2007
TPH as Diesel	**< 200**	200	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	124		% Recovery	M EPA 8015	2/17/2007

Joel Kiff

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-6**
Matrix : Water
Lab Number : 54846-07
Sample Date :2/13/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1800**	25	ug/L	EPA 8260B	2/15/2007
Toluene	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**14000**	25	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 25**	25	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**65**	25	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**55000**	150	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**4900**	2500	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**2400**	50	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	121		% Recovery	M EPA 8015	2/17/2007

Approved By: Joel Kiff

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **IS-2**
Sample Date :2/13/2007

Matrix : Water

Lab Number : 54846-08

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**230**	50	ug/L	EPA 8260B	2/15/2007
Toluene	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**28000**	50	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 50**	50	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**250**	50	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**72000**	250	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 5000**	5000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	103		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**< 1500**	1500	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	102		% Recovery	M EPA 8015	2/17/2007

Approved By: Joel Kiff

KIFF Analytical LLC

Report Number : 54846
Date : 2/21/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **IS-4**
Sample Date :2/13/2007

Matrix : Water

Lab Number : 54846-09

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**380**	250	ug/L	EPA 8260B	2/15/2007
Toluene	**< 250**	250	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 250**	250	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 250**	250	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**160000**	250	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 250**	250	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 250**	250	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**570**	250	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**250000**	1500	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 25000**	25000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	95.6		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**1500**	50	ug/L	M EPA 8015	2/17/2007
Octacosane (Diesel Surrogate)	122		% Recovery	M EPA 8015	2/17/2007

Approved By: Joel Kiff

Report Number : 54846

Date : 2/21/2007

QC Report : Method Blank Data

Project Name : **NAZ EAGLE GAS STATION**

Project Number : **ZP046I**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 50	50	ug/L	M EPA 8015	2/16/2007
Octacosane (Diesel Surrogate)	93.9		%	M EPA 8015	2/16/2007
TPH as Diesel	< 50	50	ug/L	M EPA 8015	2/14/2007
Octacosane (Diesel Surrogate)	114		%	M EPA 8015	2/14/2007
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/14/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/14/2007
Toluene - d8 (Surr)	98.0		%	EPA 8260B	2/14/2007
4-Bromofluorobenzene (Surr)	97.6		%	EPA 8260B	2/14/2007
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/14/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/14/2007
Toluene - d8 (Surr)	100		%	EPA 8260B	2/14/2007
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/14/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/14/2007
Toluene - d8 (Surr)	96.4		%	EPA 8260B	2/14/2007
4-Bromofluorobenzene (Surr)	101		%	EPA 8260B	2/14/2007

Approved By: Joel Kiff

QC Report : Matrix Spike/ Matrix Spike Duplicate

Report Number : 54846

Date : 2/21/2007

Project Name : **NAZ EAGLE GAS**

Project Number : **ZP046I**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH as Diesel	Blank	<50	1000	1000	905	889	ug/L	M EPA 8015	2/16/07	90.5	88.9	1.73	70-130	25
Benzene	54832-01	<0.50	39.8	39.6	42.3	42.0	ug/L	EPA 8260B	2/14/07	106	106	0.268	70-130	25
Toluene	54832-01	<0.50	39.8	39.6	40.8	40.7	ug/L	EPA 8260B	2/14/07	102	103	0.355	70-130	25
Tert-Butanol	54832-01	370	199	198	566	570	ug/L	EPA 8260B	2/14/07	97.5	99.9	2.43	70-130	25
Methyl-t-Butyl Ether	54832-01	1.6	39.8	39.6	44.0	40.7	ug/L	EPA 8260B	2/14/07	106	98.6	7.54	70-130	25
Benzene	54826-03	2.0	39.8	40.0	39.6	39.7	ug/L	EPA 8260B	2/14/07	94.4	94.1	0.302	70-130	25
Toluene	54826-03	<0.50	39.8	40.0	41.1	41.2	ug/L	EPA 8260B	2/14/07	103	103	0.0476	70-130	25
Tert-Butanol	54826-03	<5.0	199	200	197	201	ug/L	EPA 8260B	2/14/07	98.9	100	1.62	70-130	25
Methyl-t-Butyl Ether	54826-03	0.74	39.8	40.0	41.8	42.0	ug/L	EPA 8260B	2/14/07	103	103	0.0157	70-130	25
Benzene	54840-01	<0.50	40.0	40.0	39.9	38.7	ug/L	EPA 8260B	2/14/07	99.8	96.7	3.21	70-130	25
Toluene	54840-01	<0.50	40.0	40.0	38.2	37.1	ug/L	EPA 8260B	2/14/07	95.6	92.9	2.94	70-130	25
Tert-Butanol	54840-01	<5.0	200	200	214	193	ug/L	EPA 8260B	2/14/07	107	96.7	9.89	70-130	25
Methyl-t-Butyl Ether	54840-01	<0.50	40.0	40.0	40.3	39.7	ug/L	EPA 8260B	2/14/07	101	99.4	1.41	70-130	25
TPH as Diesel	Blank	<50	1000	1000	761	816	ug/L	M EPA 8015	2/14/07	76.1	81.6	7.01	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 54846
Date : 2/21/2007

QC Report : Laboratory Control Sample (LCS)

Project Name : **NAZ EAGLE GAS**
Project Number : **ZP046I**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	2/14/07	106	70-130
Toluene	40.0	ug/L	EPA 8260B	2/14/07	101	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/14/07	95.3	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/14/07	110	70-130
Benzene	40.0	ug/L	EPA 8260B	2/14/07	96.1	70-130
Toluene	40.0	ug/L	EPA 8260B	2/14/07	102	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/14/07	102	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/14/07	105	70-130
Benzene	40.0	ug/L	EPA 8260B	2/14/07	88.2	70-130
Toluene	40.0	ug/L	EPA 8260B	2/14/07	86.4	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/14/07	96.4	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/14/07	88.3	70-130

Approved By: Joel Kiff

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 54846

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): ROB NELSON

California EDF Report? ☒ Yes ☐ No

Company / Address: CLEARWATER GROUP 229 TEWKSBURY AVE PT. RICHMOND, CA

Sampling Company Log Code: CWGO

Phone #: (510) 307-9943

Fax #: (510) 232-2823

Global ID: T0605300219

Project #: ZP046I

P.O. #:

EDF Deliverable To (Email Address): JPORRE@CLEARWATERGROUP.COM

Project Name: NAZ EAGLE GAS STATION

Sampler Signature: Rodney Berry

Project Address: 4301 SAN LEANDRO ST, OAKLAND, CA

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Sleeve	Poly	Glass	Tedlar	Preservative: HCl	HNO3	None	Matrix: Water	Soil	Air
MW-5D	2/13/07	815	X6					X			X		
MW-4D		845	X					X			X		
MW-1		900	X					X			X		
IS-1		915	X					X			X		
MW-7		930	X					X			X		
MW-3		945	X					X			X		
MW-6		1000	X					X			X		
IS-2		1015	X					X			X		
IS-4		1100	X					X			X		

Analysis Request

Sample Designation	MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb	MTBE (EPA 8260B) @ 0.5 ppb	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (EPA 8260B)	7 Oxygenates (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB-EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	Total Lead (EPA 6010)	W.E.T. Lead (STLC)	TBA	TAT: ☐ 12 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ 1 wk	For Lab Use Only
MW-5D		X	X	X	X						X				X	X	01
MW-4D		X	X	X	X						X				X	X	02
MW-1		X	X	X	X						X				X	X	03
IS-1		X	X	X	X						X				X	X	04
MW-7		X	X	X	X						X				X	X	05
MW-3		X	X	X	X						X				X	X	06
MW-6		X	X	X	X						X				X	X	07
IS-2		X	X	X	X						X				X	X	08
IS-4		X	X	X	X						X				X	X	09

Relinquished by:	Date	Time	Received by:
Rodney Berry	2/13/07	1230	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	021407	1300	Kiff Analytical

Remarks: PROVIDE XLS / SEND to PM's E-MAIL ADDRESS

Bill to:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
1.8	ADL	021407	1747	IR-5	[✓ Yes] / No

Distribution: White - Lab; Pink - Originator
Rev: 051805

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Rob Nelson
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 9 Water Samples
Project Name : NAZ EAGLE GAS STATION
Project Number : ZP046I

Dear Mr. Nelson,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Subject :	9 Water Samples
Project Name :	NAZ EAGLE GAS STATION
Project Number :	ZP046I

Case Narrative

The Method Reporting Limit for TPH as Diesel is increased due to interference from Gasoline-Range Hydrocarbons for samples IS-3, IS-5 and EW-2.

Approved By: Joel Kiff
Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **IS-6**
Matrix : Water
Lab Number : 54847-01
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**360**	90	ug/L	EPA 8260B	2/14/2007
Toluene	**< 90**	90	ug/L	EPA 8260B	2/14/2007
Ethylbenzene	**< 90**	90	ug/L	EPA 8260B	2/14/2007
Total Xylenes	**< 90**	90	ug/L	EPA 8260B	2/14/2007
Methyl-t-butyl ether (MTBE)	**28000**	90	ug/L	EPA 8260B	2/14/2007
Diisopropyl ether (DIPE)	**< 90**	90	ug/L	EPA 8260B	2/14/2007
Ethyl-t-butyl ether (ETBE)	**< 90**	90	ug/L	EPA 8260B	2/14/2007
Tert-amyl methyl ether (TAME)	**210**	90	ug/L	EPA 8260B	2/14/2007
Tert-Butanol	**310000**	500	ug/L	EPA 8260B	2/14/2007
TPH as Gasoline	**< 9000**	9000	ug/L	EPA 8260B	2/14/2007
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	2/14/2007
4-Bromofluorobenzene (Surr)	99.4		% Recovery	EPA 8260B	2/14/2007
TPH as Diesel	**1600**	50	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	111		% Recovery	M EPA 8015	2/15/2007

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **IS-3**
Sample Date :2/14/2007

Matrix : Water

Lab Number : 54847-02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3200**	1500	ug/L	EPA 8260B	2/17/2007
Toluene	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Ethylbenzene	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Total Xylenes	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Methyl-t-butyl ether (MTBE)	**600000**	1500	ug/L	EPA 8260B	2/17/2007
Diisopropyl ether (DIPE)	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Ethyl-t-butyl ether (ETBE)	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Tert-amyl methyl ether (TAME)	**3300**	1500	ug/L	EPA 8260B	2/17/2007
Tert-Butanol	**49000**	7000	ug/L	EPA 8260B	2/17/2007
TPH as Gasoline	**< 150000**	150000	ug/L	EPA 8260B	2/17/2007
Toluene - d8 (Surr)	96.9		% Recovery	EPA 8260B	2/17/2007
4-Bromofluorobenzene (Surr)	104		% Recovery	EPA 8260B	2/17/2007
TPH as Diesel	**< 3000**	3000	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	117		% Recovery	M EPA 8015	2/15/2007

Approved By: Joel Kiff

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **IS-5**
Matrix : Water
Lab Number : 54847-03
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3600**	500	ug/L	EPA 8260B	2/17/2007
Toluene	**< 500**	500	ug/L	EPA 8260B	2/17/2007
Ethylbenzene	**2200**	500	ug/L	EPA 8260B	2/17/2007
Total Xylenes	**3800**	500	ug/L	EPA 8260B	2/17/2007
Methyl-t-butyl ether (MTBE)	**240000**	500	ug/L	EPA 8260B	2/17/2007
Diisopropyl ether (DIPE)	**< 500**	500	ug/L	EPA 8260B	2/17/2007
Ethyl-t-butyl ether (ETBE)	**< 500**	500	ug/L	EPA 8260B	2/17/2007
Tert-amyl methyl ether (TAME)	**3600**	500	ug/L	EPA 8260B	2/17/2007
Tert-Butanol	**28000**	2500	ug/L	EPA 8260B	2/17/2007
TPH as Gasoline	**< 50000**	50000	ug/L	EPA 8260B	2/17/2007
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	2/17/2007
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	2/17/2007
TPH as Diesel	**< 5000**	5000	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	115		% Recovery	M EPA 8015	2/15/2007

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **EW-2**
Matrix : Water
Lab Number : 54847-04
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1100**	150	ug/L	EPA 8260B	2/15/2007
Toluene	**< 150**	150	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**230**	150	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 150**	150	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**81000**	150	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 150**	150	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 150**	150	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**700**	150	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**49000**	700	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 15000**	15000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**< 2000**	2000	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	118		% Recovery	M EPA 8015	2/15/2007

Joel Kiff

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-2**
Matrix : Water
Lab Number : 54847-05
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**250**	200	ug/L	EPA 8260B	2/15/2007
Toluene	**< 200**	200	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 200**	200	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 200**	200	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**100000**	200	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 200**	200	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 200**	200	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**240**	200	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**130000**	900	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 20000**	20000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	94.9		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**780**	50	ug/L	M EPA 8015	2/16/2007
Octacosane (Diesel Surrogate)	116		% Recovery	M EPA 8015	2/16/2007

Joel Kiff

Approved By: Joel Kiff

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-4**　　Matrix : Water　　Lab Number : 54847-06
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**2000**	1500	ug/L	EPA 8260B	2/17/2007
Toluene	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Ethylbenzene	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Total Xylenes	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Methyl-t-butyl ether (MTBE)	**640000**	1500	ug/L	EPA 8260B	2/17/2007
Diisopropyl ether (DIPE)	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Ethyl-t-butyl ether (ETBE)	**< 1500**	1500	ug/L	EPA 8260B	2/17/2007
Tert-amyl methyl ether (TAME)	**2900**	1500	ug/L	EPA 8260B	2/17/2007
Tert-Butanol	**130000**	7000	ug/L	EPA 8260B	2/17/2007
TPH as Gasoline	**< 150000**	150000	ug/L	EPA 8260B	2/17/2007
Toluene - d8 (Surr)	97.4		% Recovery	EPA 8260B	2/17/2007
4-Bromofluorobenzene (Surr)	103		% Recovery	EPA 8260B	2/17/2007
TPH as Diesel	**2000**	50	ug/L	M EPA 8015	2/16/2007
Octacosane (Diesel Surrogate)	120		% Recovery	M EPA 8015	2/16/2007

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-5**
Matrix : Water
Lab Number : 54847-07
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 500**	500	ug/L	EPA 8260B	2/15/2007
Toluene	**< 500**	500	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 500**	500	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 500**	500	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**260000**	500	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 500**	500	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 500**	500	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**740**	500	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**350000**	2500	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 50000**	50000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	104		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	96.3		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**1000**	50	ug/L	M EPA 8015	2/16/2007
Octacosane (Diesel Surrogate)	116		% Recovery	M EPA 8015	2/16/2007

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **MW-8**
Matrix : Water
Lab Number : 54847-08
Sample Date :2/14/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1700**	900	ug/L	EPA 8260B	2/15/2007
Toluene	**< 900**	900	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	**< 900**	900	ug/L	EPA 8260B	2/15/2007
Total Xylenes	**< 900**	900	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	**410000**	900	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	**< 900**	900	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	**< 900**	900	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	**1700**	900	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	**160000**	5000	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	**< 90000**	90000	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	97.4		% Recovery	EPA 8260B	2/15/2007
TPH as Diesel	**4100**	50	ug/L	M EPA 8015	2/16/2007
Octacosane (Diesel Surrogate)	119		% Recovery	M EPA 8015	2/16/2007

Joel Kiff

Approved By: Joel Kiff

KIFF
Analytical LLC

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS STATION**
Project Number : **ZP046I**

Sample : **EW-1**
Sample Date :2/14/2007

Matrix : Water

Lab Number : 54847-09

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1200**	800	ug/L	EPA 8260B	2/22/2007
Toluene	**< 700**	700	ug/L	EPA 8260B	2/22/2007
Ethylbenzene	**< 700**	700	ug/L	EPA 8260B	2/22/2007
Total Xylenes	**< 700**	700	ug/L	EPA 8260B	2/22/2007
Methyl-t-butyl ether (MTBE)	**530000**	800	ug/L	EPA 8260B	2/22/2007
Diisopropyl ether (DIPE)	**< 700**	700	ug/L	EPA 8260B	2/22/2007
Ethyl-t-butyl ether (ETBE)	**< 700**	700	ug/L	EPA 8260B	2/22/2007
Tert-amyl methyl ether (TAME)	**2500**	700	ug/L	EPA 8260B	2/22/2007
Tert-Butanol	**100000**	4000	ug/L	EPA 8260B	2/22/2007
TPH as Gasoline	**< 70000**	70000	ug/L	EPA 8260B	2/22/2007
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	2/22/2007
4-Bromofluorobenzene (Surr)	94.9		% Recovery	EPA 8260B	2/22/2007
TPH as Diesel	**840**	50	ug/L	M EPA 8015	2/16/2007
Octacosane (Diesel Surrogate)	122		% Recovery	M EPA 8015	2/16/2007

Approved By: Joel Kiff

Report Number : 54847

Date : 2/22/2007

QC Report : Method Blank Data

Project Name : **NAZ EAGLE GAS STATION**

Project Number : **ZP046I**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 50	50	ug/L	M EPA 8015	2/15/2007
Octacosane (Diesel Surrogate)	94.9		%	M EPA 8015	2/15/2007
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/14/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/14/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/14/2007
Toluene - d8 (Surr)	100		%	EPA 8260B	2/14/2007
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	2/14/2007
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/15/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/15/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/15/2007
Toluene - d8 (Surr)	100		%	EPA 8260B	2/15/2007
4-Bromofluorobenzene (Surr)	104		%	EPA 8260B	2/15/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/21/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/21/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/21/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/21/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/21/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/21/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/21/2007
Toluene - d8 (Surr)	97.2		%	EPA 8260B	2/21/2007
4-Bromofluorobenzene (Surr)	95.3		%	EPA 8260B	2/21/2007
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/17/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/17/2007
Toluene - d8 (Surr)	107		%	EPA 8260B	2/17/2007
4-Bromofluorobenzene (Surr)	99.8		%	EPA 8260B	2/17/2007

Approved By: Joel Kiff

Report Number : 54847

Date : 2/22/2007

QC Report : Method Blank Data

Project Name : **NAZ EAGLE GAS STATION**

Project Number : **ZP046I**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/22/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/22/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/22/2007
Benzene	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Toluene	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	2/17/2007
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	2/17/2007
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	2/17/2007
Toluene - d8 (Surr)	96.5		%	EPA 8260B	2/17/2007
4-Bromofluorobenzene (Surr)	104		%	EPA 8260B	2/17/2007

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Matrix Spike/ Matrix Spike Duplicate

Report Number : 54847
Date : 2/22/2007

Project Name : **NAZ EAGLE GAS**
Project Number : **ZP046I**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH as Diesel	Blank	<50	1000	1000	901	931	ug/L	M EPA 8015	2/15/07	90.1	93.1	3.32	70-130	25
Benzene	54826-03	2.0	39.8	40.0	39.6	39.7	ug/L	EPA 8260B	2/14/07	94.4	94.1	0.302	70-130	25
Toluene	54826-03	<0.50	39.8	40.0	41.1	41.2	ug/L	EPA 8260B	2/14/07	103	103	0.0476	70-130	25
Tert-Butanol	54826-03	<5.0	199	200	197	201	ug/L	EPA 8260B	2/14/07	98.9	100	1.62	70-130	25
Methyl-t-Butyl Ether	54826-03	0.74	39.8	40.0	41.8	42.0	ug/L	EPA 8260B	2/14/07	103	103	0.0157	70-130	25
Benzene	54841-04	0.95	39.7	40.0	38.6	38.9	ug/L	EPA 8260B	2/15/07	94.8	94.8	0.0468	70-130	25
Toluene	54841-04	<0.50	39.7	40.0	40.6	40.6	ug/L	EPA 8260B	2/15/07	102	102	0.599	70-130	25
Tert-Butanol	54841-04	10	198	200	199	200	ug/L	EPA 8260B	2/15/07	95.4	95.1	0.335	70-130	25
Methyl-t-Butyl Ether	54841-04	3.5	39.7	40.0	43.7	44.5	ug/L	EPA 8260B	2/15/07	102	103	1.06	70-130	25
Benzene	54912-03	<0.50	40.0	40.0	42.3	41.6	ug/L	EPA 8260B	2/17/07	106	104	1.71	70-130	25
Toluene	54912-03	<0.50	40.0	40.0	46.0	43.5	ug/L	EPA 8260B	2/17/07	115	109	5.54	70-130	25
Tert-Butanol	54912-03	22	200	200	220	224	ug/L	EPA 8260B	2/17/07	99.4	101	1.95	70-130	25
Methyl-t-Butyl Ether	54912-03	1.1	40.0	40.0	44.9	43.3	ug/L	EPA 8260B	2/17/07	110	105	3.88	70-130	25
Benzene	54912-02	<0.50	40.0	40.0	41.2	39.1	ug/L	EPA 8260B	2/17/07	103	97.8	5.22	70-130	25
Toluene	54912-02	<0.50	40.0	40.0	39.8	37.7	ug/L	EPA 8260B	2/17/07	99.6	94.3	5.46	70-130	25
Tert-Butanol	54912-02	<5.0	200	200	193	190	ug/L	EPA 8260B	2/17/07	96.7	94.9	1.91	70-130	25
Methyl-t-Butyl Ether	54912-02	1.6	40.0	40.0	44.4	42.4	ug/L	EPA 8260B	2/17/07	107	102	4.94	70-130	25

Approved By: Joel Kiff

Report Number : 54847

Date : 2/22/2007

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **NAZ EAGLE GAS**

Project Number : **ZP046I**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	54951-04	1.8	39.4	39.6	41.8	45.5	ug/L	EPA 8260B	2/21/07	102	110	8.25	70-130	25
Toluene	54951-04	<0.50	39.4	39.6	39.3	42.1	ug/L	EPA 8260B	2/21/07	99.8	106	6.34	70-130	25
Tert-Butanol	54951-04	6.5	197	198	181	189	ug/L	EPA 8260B	2/21/07	88.8	92.1	3.60	70-130	25
Methyl-t-Butyl Ether	54951-04	<0.50	39.4	39.6	37.5	42.6	ug/L	EPA 8260B	2/21/07	95.3	108	12.2	70-130	25
Benzene	54938-01	0.76	40.0	40.0	42.8	42.2	ug/L	EPA 8260B	2/22/07	105	104	1.42	70-130	25
Toluene	54938-01	<0.50	40.0	40.0	41.8	41.3	ug/L	EPA 8260B	2/22/07	104	103	1.18	70-130	25
Tert-Butanol	54938-01	36	200	200	240	243	ug/L	EPA 8260B	2/22/07	102	103	1.23	70-130	25
Methyl-t-Butyl Ether	54938-01	<0.50	40.0	40.0	41.0	41.2	ug/L	EPA 8260B	2/22/07	102	103	0.596	70-130	25

Approved By: Joel Kiff

Report Number : 54847

Date : 2/22/2007

QC Report : Laboratory Control Sample (LCS)

Project Name : **NAZ EAGLE GAS**

Project Number : **ZP046I**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	2/14/07	96.1	70-130
Toluene	40.0	ug/L	EPA 8260B	2/14/07	102	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/14/07	102	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/14/07	105	70-130
Benzene	40.0	ug/L	EPA 8260B	2/15/07	94.8	70-130
Toluene	40.0	ug/L	EPA 8260B	2/15/07	101	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/15/07	93.4	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/15/07	99.9	70-130
Benzene	40.0	ug/L	EPA 8260B	2/17/07	101	70-130
Toluene	40.0	ug/L	EPA 8260B	2/17/07	111	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/17/07	93.2	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/17/07	108	70-130
Benzene	40.0	ug/L	EPA 8260B	2/17/07	94.7	70-130
Toluene	40.0	ug/L	EPA 8260B	2/17/07	94.7	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/17/07	91.2	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/17/07	99.6	70-130
Benzene	40.0	ug/L	EPA 8260B	2/21/07	103	70-130

Approved By: Joel Kiff

Report Number : 54847
Date : 2/22/2007

QC Report : Laboratory Control Sample (LCS)

Project Name : **NAZ EAGLE GAS**
Project Number : **ZP046I**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Toluene	40.0	ug/L	EPA 8260B	2/21/07	101	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/21/07	95.1	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/21/07	96.2	70-130
Benzene	40.0	ug/L	EPA 8260B	2/22/07	105	70-130
Toluene	40.0	ug/L	EPA 8260B	2/22/07	102	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/22/07	101	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	2/22/07	101	70-130

Approved By: Joel Kiff

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 54847

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): ROD NELSON

California EDF Report? ☒ Yes ☐ No

Company / Address: CLEARWATER GROUP 229 TEWKSBURY AVE Pt. Richmond, CA

Sampling Company Log Code: CWGO

Phone #: (510) 307-9943

Fax #: (510) 232-2823

Global ID: T0605300219

JDOPF@CLEARWATERGROUP.COM

Project #: ZP046I

P.O. #:

EDF Deliverable To (Email Address): JDOPF@CLEARWATERGROUP.COM

Project Name: NAZ EAGLE GAS STATION

Sampler Signature: RODNEY BERRY

Project Address: 4301 SAN LEANDRO St. OAKLAND, CA

	Sampling		Container						Preservative					Matrix				Analysis Request																	TAT	
Sample Designation	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar		HCl	HNO_3	None			Water	Soil	Air		MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb	MTBE (EPA 8260B) @ 0.5 ppb	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (EPA 8260B)	7 Oxygenates (EPA 8260B)	Lead Scav.(1,2 DCA & 1,2 EDB-EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	Total Lead (EPA 6010)	W.E.T. Lead (STLC)	TBA			☐ 12 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ 1 wk	For Lab Use Only
IS-6	2/14/[illegible]	[illegible]	X						X					X					X	X	X	X						X				X			X	01
IS-3		845	X						X					X					X	X	X	X						X				X			X	02
IS-5		915	X						X					X					X	X	X	X						X				X			X	03
EW-2		1000	X						X					X					X	X	X	X						X				X			X	04
MW-2		1015	X						X					X					X	X	X	X						X				X			X	05
MW-4		1030	X						X					X					X	X	X	X						X				X			X	06
MW-5		1045	X						X					X					X	X	X	X						X				X			X	07
MW-8		1115	X						X					X					X	X	X	X						X				X			X	08
EW-1		1200	X						X					X					X	X	X	X						X				X			X	09

Relinquished by:	Date	Time	Received by:
RODNEY BERRY	2/14/07	1300	
	021407	1320	Kiff Analytical

Remarks: PROVIDE XLs / SEND to PM's E-MAIL ADDRESS

Bill to:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
1.8	ADG	021407	1747	IR-5	[✓ Yes] No

Distribution: White - Lab; Pink - Originator
Rev: 051805

ATTACHMENT D

CLEARWATER
GROUP
Environmental Services

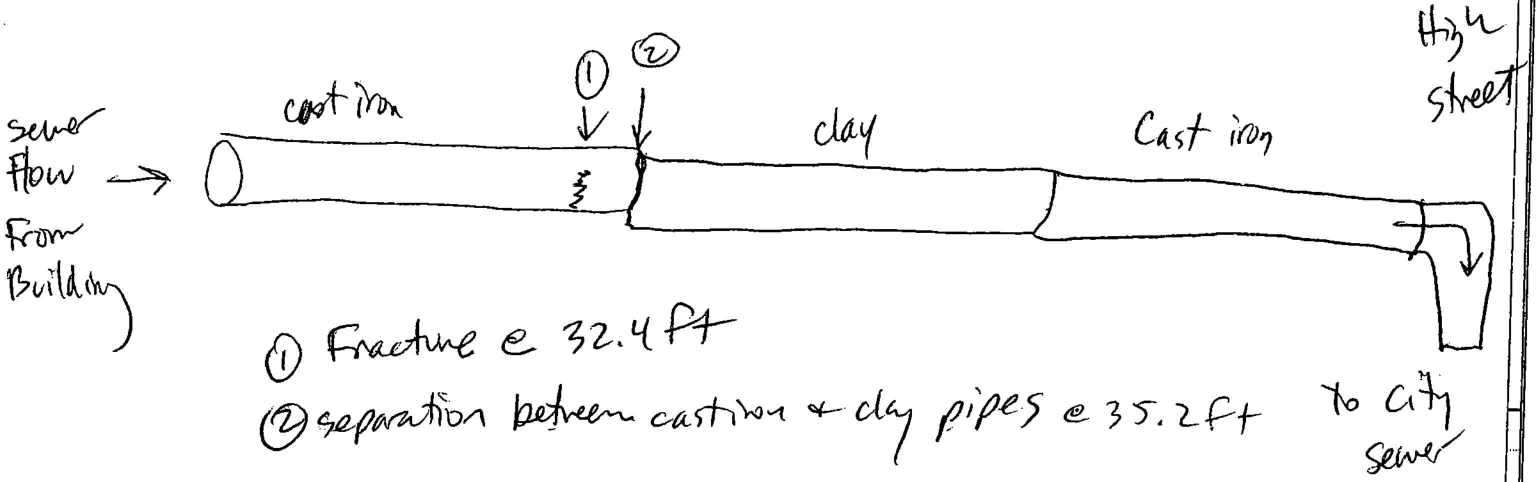
DAILY FIELD REPORT

Date April 11, 2007
Geologist/ Technician Karel Detterman
Project Name: Eagle Gas
Project Number: ZP046D
Time Left For Site: 0430 AM
Time Arrived on site: 0455 AM
Time Departed site: 0700 AM

Page: 1 **of** 1
Company/ Firm: Pipe Pros, Inc. 800/517-7473
Project Manager: Karel Detterman
Site Contact (name/phone): Shan Sundar 650/248-8945
Weather Conditions: (on-site) 55.0 °F Rain
Comments on Traffic: Light at this early hour

Time **EVENTS/COMMENTS/REMARKS**

0500AM - Arrived on-site; went into store and introduced myself to Shahid the clerk; reminded him that we'd need to turn off the water to test the line for water leaks; he said no one had told him but he commenced making coffee immediately. Mark of Pipe Pros arrived at 0500 AM; he found the water meter in the sidewalk; and after verifying with Shahib that the coffee was made, Mark turned off the water at the meter in the sidewalk. Abdul Jamil, Muhammad Jamil's cousin, arrived about 0510 AM and showed Mark & I where he thought there might be a break, in the vicinity of well IS-1, south west of the High Street pump island (pump # 8). Mark pressurized the water line with carbon dioxide and saw that the gauge did not move after 15 minutes, indicating that there was no water leak. Mark turned on the water at 5:30 AM. Mark checked the sewer line next starting at 5:35 AM by putting a camera in the 3-inch diameter sewer clean out; Shan Sundar, the owner of the gas station, arrived about 5:45 AM. At 32.4 feet into the sewer line, he found a possible crack in the cast iron pipe, indicated by a shiny surface of relatively newly exposed cast iron. At 35.2 feet into the sewer line, at the transition, there appeared to be a separation between the cast iron and clay pipes. See sketch below. It was 76 feet from the sewer clean out inside the store to the point at which the sewer line vertically drops into the city sewer line. Mark commented that the 4-inch diameter cast iron pipe provided very good flow to the sewer as there were no debris in the line, very little standing water in the line, and the inside shape of the line was still circular. At 06:45 AM - Mark put away his equipment and left at 0700AM. I left at 7 AM.



______ gal/drum #2 ☐ Tank to Instrat; ☐ Tank to Drum: ☐ Drum Left On Site:
______ gal/drum #3 ☐ Tank to Instrat; ☐ Tank to Drum: ☐ Drum Left On Site:

Attachments:
- ☐ Well Gauging/Purging Calculation Data Sheet
- ☐ Purge Data Sheet
- ☐ Equipment & Materials Billing Sheet
- ☐ iSOC System Field Monitoring Data Sheet

Maintenance Comments:

Signature: Karel Dette 4/11/07 **Figures Included:**

PIPE PROS
INCORPORATED

1000 Detroit Avenue, Suite T
Concord, CA 94518
Fax (925) 969-9184
License #821986
1-800-517-PIPE (7473)

Name Auger Group / Clear H2O Grp

Address Karel Detterman

City ________ Zip ________

Telephone ________

Job Address EAGLE GAS

4301 San Leandro

City Oakland Zip ________

Invoice # 82100

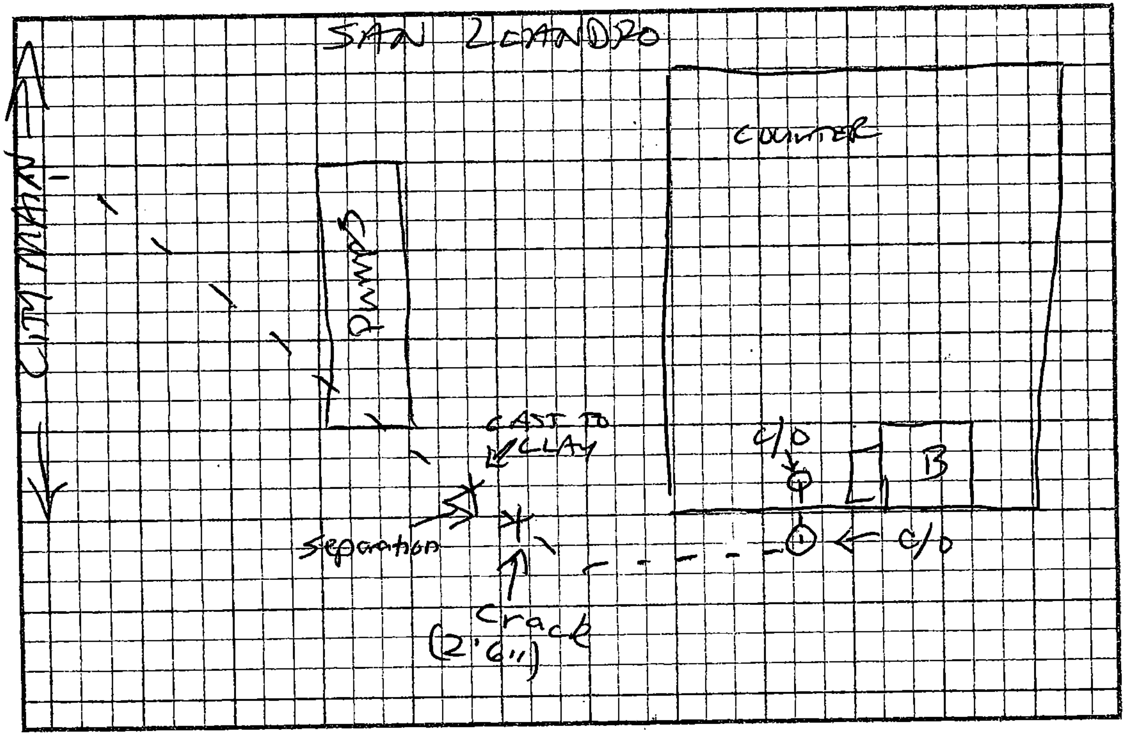
UNDERGROUND FACILITY LOCATION SKETCH

TIME ARRIVED 0500 TIME COMPLETED 0700

HAND DIG AND EXPOSE ALL FACILITIES BEFORE USING MECHANICAL DEVICES NEAR UNDERGROUND FACILITIES

HOW MARKED: PAINT ☒ FLAGS ☐ NYLON WHISKERS ☐ PRINT # ________

SKETCH AREA



DRAWING SYMBOLS

DIG AREA ▨▨▨▨▨▨
GAS — — — — — — — —
PHONE — — — — — — — —
WATER —W—W—W—W—
FENCE —X—X—X—X—
ELECTRIC ————————
CATV — — — — — — — —
SEWER —S—S—S—S—

COLOR CODE

PHONE = ORANGE GAS = YELLOW ELECTRIC = RED CABLE = ORANGE WATER = BLUE SEWER = GREEN

THIS SKETCH IS APPROXIMATE. 24 INCHES HORIZONTALLY FROM EXTERIOR MARK IS CONSIDERED A CORRECT LOCATION.

COMMENTS: Line is old cast w/ a new clay repair & X = large crack in cast & large Separation @ cast to clay transition

NOTE: All markings are good for 14 days and only for the utilities marked by Pipe Pros Inc. We assume no liability for utilities not specifically marked by Pipe Pros Inc. or damaged by mechanical means as well excavation shall be done by hand within 2 feet of all utilities.

SIGNATURE ________ DATE 4-11-07

ATTACHMENT E

Karel Detterman

From: Wickham, Jerry, Env. Health [jerry.wickham@acgov.org]
Sent: Tuesday, May 08, 2007 2:24 PM
To: Karel Detterman
Cc: Olivia Jacobs; Sandy Young; Hermy Tam
Subject: RE: Fuel Leak Case # RO 0096, Eagle Gas, 4301 San Leandro Street, Oakland, CA, Interim Remediation Report Separation and Extension Request, Clearwater Project # ZP046D

Karel,

I have no objection to separating the Site Investigation and Interim Remediation into separate reports. Based on your request, the schedule for both reports is extended to August 27, 2007. You may submit an alternate schedule for the Site Investigation Report upon completion of access agreements.

Regards,
Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
510-567-6791 phone
510-337-9335 fax
jerry.wickham@acgov.org

From: Karel Detterman [mailto:KDetterman@clearwatergroup.com]
Sent: Monday, May 07, 2007 1:45 PM
To: Wickham, Jerry, Env. Health
Cc: Olivia Jacobs; Sandy Young; Hermy Tam
Subject: Fuel Leak Case # RO 0096, Eagle Gas, 4301 San Leandro Street, Oakland, CA, Interim Remediation Report Separation and Extension Request, Clearwater Project # ZP046D

Dear Mr. Wickham:

I'd like to introduce myself as the new Clearwater Group project manager for the Eagle Gas Station project.

In a letter dated January 4, 2007, Alameda County Environmental Health (ACEH) requested that the *Site Investigation and Interim Remediation Report* be submitted by May 25, 2007. Clearwater Group requests that the *Site Investigation and Interim Remediation Report* be separated and submitted in two reports, *Site Investigation Report* and *Interim Remediation Report*, and also requests an extension for the submittal of both reports. These changes are being requested because of the necessity to place soil borings SB-12, SB-13, SB-14, SB-15, and SB-17 in neighboring properties; we do not know how long it will take to obtain access agreements from the property owners. Clearwater has initiated the process of acquiring the access agreements and will proceed with acquiring necessary permits for the on-site well installation and off-site soil borings in High and San Leandro Streets.

Attached is a revised schedule for each report; however, a separate schedule for off-site borings SB-12, SB-13, SB-14, SB-15, and SB-17 will be submitted to ACEH upon acquisition of the access agreements. Should you have any questions or comments regarding this request, please call or e-mail me at the numbers below or contact Olivia Jacobs at 510-307-9943 x 223.

Thank you,

Karel Detterman, P.G.
Clearwater Group
229 Tewksbury Avenue
Point Richmond, CA 94801
510) 307-9943 Ext. 228
Fax (510) 232-2823

Eagle Gas Station, 4301 San Leandro Street, Oakland, California 94601
LOP Site ID# 2118, USTCF Claim No. 014551

REVISED SCHEDULE as of May 4, 2007

Site Investigation Report Tasks for on-site wells, off-site borings, and street soil boring locations

Description	Approximate start date or projected time period	Approximate Duration	Notes/Agency
Submit Work Plan	December 19, 2006		
Approve Work Plan	January 4, 2007	2 – 4 weeks	ACEH
Obtain drill bids	April 6, 2007	5 days	
Schedule driller	May 2007	1 day	
Initiate process to obtain off-site access agreements for SB-14, SB-15, and SB-17 boring locations	March 8, 2007	Unknown	One owner
Initiate process to obtain off-site access agreements for SB-12 and SB-13 boring locations	March 27, 2007	Unknown	Four owners: two Trusts and two Limited Liability Partnerships
Submit Traffic Plan	April 25, 2007	4 –6 weeks	In review at the City of Oakland Public Works Agency
Submit Boring and Well Permit Applications	May 2007	2 weeks	Alameda County Public Works Agency, Water Resources Section
Drill 9 off-site borings in High Street & San Leandro Street	Depends on acquiring the Traffic Plan	3 days	
Drill off-site borings SB-12 through SB-15 & SB-17	Depends on acquiring access agreements	2 days	
Install 2 deep on-site monitoring wells	May 2007	2 days	
Install 6 permanent soil vapor monitoring wells	May 2007	2 days	
Develop 2 deep monitoring wells	Depends on driller's schedule	1 day	
Survey wells and borings	Depends on driller's schedule & acquisition of access agreements	1 day	
Dispose of soil cuttings	Depends on driller's schedule	20 days	
Submit report to ACEH	Depends on acquisition of site access agreements		Schedule pending

Eagle Gas Station, 4301 San Leandro Street, Oakland, California 94601
LOP Site ID# 2118, USTCF Claim No. 014551

REVISED SCHEDULE as of May 4, 2007

Interim Remediation Report Tasks

Description	Approximate start date or time period	Duration	Notes/Agency
Analyze samples for Bioremediation Feasibility Study	April 9, 2007	2 weeks	
Produce Bioremediation Feasibility Study Report	April 23, 2007	1 month	Included with the First Quarter 2007 Groundwater Monitoring & Sampling Report
Persulfate Bench Test	June 2007	2 months	
Sample & analyze soil vapor samples	June 2007	2 weeks	
HVDPE Pilot Test	June-July 2007	5 days	
Analyze samples from HVDPE Pilot Test	June-July 2007	2 weeks	
Submit Interim Remediation report to ACEH	September 2007		

ATTACHMENT F

CLEARWATER
GROUP
Environmental Services

June 1, 2007

Ms. Deirdre Mena
Waste Water Control Representative
Environmental Services Division
East Bay Municipal Utility District
P. O. Box 24055
Oakland, California 94623-1065

Re: Wastewater Discharge Permit No. 50586681
Non-Submittal of Semi-Annual Technical Report
Naz Eagle Gas Station
4301 San Leandro Street
Oakland, California 94601

Dear Ms. Mena;

Clearwater Group (Clearwater) is in receipt of your letter dated June 1, 2007, referencing the above permit. As of June 1, 2007, Clearwater has not installed the groundwater extraction, treatment and discharge system at the Naz Eagle Gas Station at 4301 San Leandro Street, Oakland. Therefore, Clearwater has no data to submit in the form of a Semi-Annual Technical Report for the period January 1, 2007 through June 1, 2007.

Clearwater is currently revaluating this site's hydrogeology and contaminant characterization, in order to select the best groundwater remedial alternative and to finalize the remediation compound design. Clearwater wishes to keep the wastewater discharge permit (50586681) active and will notify EBMUD of any modification to the remediation compound design prior to discharge of any treated groundwater from the site. Please call me at 510-307-9943, Ext. 237 if you have any questions.

Sincerely,

Robert L. Nelson

Robert L. Nelson, PG, CEG
Senior Geologist

Cc: Jerry Wickham, Alameda County Environmental Health

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

Olivia Jacobs

Olivia Jacobs, CEO
Clearwater Group

6-1-07
Date