ARCTOS

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19 May 2009
Project No. 01LV

Jerry Wickham
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: First Quarter 2009 Status Report
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434

Dear Mr. Wickham:

Arctos Environmental (Arctos), on behalf of Tesoro Companies, Inc. (Tesoro), has prepared this letter report summarizing project tasks completed during the first quarter 2009 at the subject site (Figure 1).

Executive Summary

Arctos conducted quarterly groundwater monitoring at the site on 11 February 2009. Only 7 of the 19 wells had sufficient water for groundwater monitoring due to a 14-foot decrease in water levels over the third and fourth quarters in 2008. On 2 February 2009, Arctos installed injection well IP-10 in the southwest corner of the site to provide better coverage for a planned oxygen injection system. Injection well IP-10 was also installed to delineate the vertical extent of impacted groundwater beneath the screen of existing well MW-1 and the lateral extent of impacted groundwater south of injection well IP-9. Results from baseline sampling of injection well IP-10 show a correlation between well MW-1 and injection well IP-10. The results also provide lateral and vertical delineation of impacted groundwater in the southwest portion of the site.

Arctos is proposing the installation of three downgradient deep monitoring wells during the second quarter 2009. The proposed deep monitoring wells will assist in the lateral delineation of downgradient impacted groundwater.

Arctos is continuing to work with the City of Livermore to obtain construction permits for the installation of the source area remediation system.

Site Background

The site description and background are included in Arctos's Interim Remedial Action Plan (IRAP) dated 21 March 2008 (Arctos, 2008).

Field Activities

Arctos's subcontractor, Blaine Tech Services, Inc. (Blaine Tech), of San Jose, California, performed groundwater monitoring on 11 February 2009. Samples were collected from wells MW-1 through MW-3, and DW-1 through DW-4. A baseline sample was also collected from new injection well IP-10 (Figure 2). Groundwater monitoring was performed in accordance with the guidelines of the California Underground Storage Tank Regulations, Title 23, Division 3, Chapter 16, California Code of Regulations. Groundwater sampling quality assurance/quality control (QA/QC) procedures are in Attachment A. Field data sheets are in Attachment B.

Analytical Program

The groundwater samples were analyzed in accordance with the analytical plan in Attachment A.

Groundwater Results

Groundwater elevations were approximately 417 to 426 feet above mean sea level (48 to 52 feet below ground surface). Water levels were 1.9 to 3.2 feet higher compared to the October 2008 event (Table 1). Only 7 of the 19 monitoring wells had sufficient water for groundwater monitoring due to the significant decrease in water levels during the third and fourth quarters 2008. The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.017 (1 foot/59 feet; Figure 2). Field data sheets are in Attachment B. Historical water elevations are in Attachment C.

The highest total petroleum hydrocarbons as gasoline (TPHg), benzene, and methyl tert-butyl ether (MTBE) concentrations of 22,000, 4,400, and 650 micrograms per liter (µg/l), respectively, were at source area well MW-2. TPHg and MTBE results in injection wells IP-8 and IP-4 indicate separate releases from the underground storage tanks (USTs) and the dispenser islands. Groundwater analytical results are summarized in Table 2 and injection well analytical results are summarized in Table 3. Elevated TPHg, benzene, and MTBE concentrations in groundwater (8,000, 1,100 and 290 µg/l, respectively) were

also present approximately 170 feet downgradient of the site at well DW-2. Figures 3, 4, and 5 show the isoconcentration contours for TPHg, benzene, and MTBE, respectively. Historical analytical results are in Attachment D, and the laboratory report and the chain-of-custody form are in Attachment E.

Remediation System

Source area concentrations indicate that onsite groundwater remediation is required to decrease the mass flux from the source area. Arctos is continuing to work with the City of Livermore to obtain building permits for construction of the source area remediation system. The City has requested that a noise study be performed to evaluate the impact of the proposed remediation equipment. Arctos will perform the noise study and review the data with the City in the second quarter 2009. Arctos expects to obtain the necessary permits for construction and installation of the remediation system in the second quarter 2009.

Well Installation

New injection well IP-10 was installed during the first quarter 2009 as described in Arctos's work plan for additional well installation dated 26 January 2009. The work plan was approved by Alameda County Environmental Health (ACEH) in a letter dated 29 January 2009. The completed scope of work included the following tasks:

- Obtained permits from Zone 7 Water Agency for the well installation
- Installed one oxygen injection well, designated as IP-10
- Developed the oxygen injection well.

Well Installation
Gregg Drilling & Testing, Inc. (Gregg Drilling), of Martinez, California, drilled one soil boring for oxygen injection well IP-10 on 2 February 2009 using a hollow-stem auger rig. Soil samples were collected at 5 feet below grade and 5-foot intervals thereafter for visual logging and vapor screening. The boring and well construction logs are in Attachment F. Drilling and well installation QA/QC procedures are in Attachment G.

Well Development
Gregg Drilling developed well IP-10 on 6 February 2009 by surging, bailing, and pumping to (1) remove fines from the filter pack and well screen and (2) reduce sediment in the water. Approximately 10 casing volumes of water was removed from the well. The well development log is in Attachment H.

Baseline Sampling

Arctos's subcontractor, Blaine Tech, performed baseline sampling of oxygen injection well IP-10 on 11 February 2009. Groundwater sampling QA/QC procedures and the analytical plan are in Attachment A. Field data sheets are in Attachment B.

Well IP-10 contained TPHg and benzene concentrations of 8,100 and 29 µg/l, respectively. Hydrocarbon concentrations in well IP-10 are of the same magnitude as concentrations in nearby monitoring well MW-1. The data indicates that the lateral extent of impacted groundwater south of injection well IP-9 is delineated with injection well IP-10. Groundwater analytical results are summarized in Table 3 and are shown on Figures 3, 4, and 5. The laboratory report and the chain-of-custody form are in Attachment E.

Downgradient Well Installation Work Plan

Arctos will install three downgradient deep monitoring wells to assess the downgradient lateral and vertical extent of impacted groundwater. To meet this objective, Arctos will perform the following scope of work:

1. Arctos will mobilize for well installation, which includes (1) marking for underground service alert (USA), (2) obtaining well permits from the Zone 7 Water Agency, and (3) preparing a site-specific health and safety plan (HSP).

2. A licensed drilling contractor will be retained to drill three soil borings for the deep monitoring wells, designated as DW-5 to DW-7 (Figure 2). Arctos will collect soil samples 5 feet below grade and at 5-foot intervals for visual logging using the Unified Soil Classification System (USCS) and field headspace measurements using a photoionization detector (PID). Soil samples will not be submitted for analysis to a laboratory.

3. The proposed deep monitoring wells will be constructed using 4-inch-diameter, flush-threaded Schedule 40 polyvinyl chloride (PVC) pipe. The wells will be screened from approximately 50 to 60 feet below grade using 0.020-inch slotted screen (Figure 6). The drilling contractor will develop the wells at least 48 hours after they are installed.

4. The new wells will be sampled at least 72 hours after they have been developed.

5. A State-certified laboratory will analyze water samples for TPHg, benzene, toluene, ethylbenzene, xylenes, MTBE, tert-butyl alcohol, other oxygenates, lead scavengers, methanol, and ethanol analyses using EPA Method 8260B.

6. A licensed surveyor will be contracted to survey the new wells.

Field procedures for the proposed program will be conducted as described in the approved IRAP (Arctos, 2008). A well construction diagram for the proposed deep monitoring wells is shown on Figure 6. Field personnel may adjust the actual well depths and screen placement as required by the field conditions encountered. Arctos will evaluate the field and analytical data and incorporate the results into the second quarter 2009 status report. The report will include the following:

- Field activities and sampling procedures (including boring/well construction logs, development logs, sampling logs, and a figure showing the well locations)
- Laboratory analytical results presented in tables.

Conclusions

Results of the groundwater sampling and well installation indicate the following conclusions:

1. Onsite groundwater remediation is required to decrease the mass flux from the source area.

2. Baseline sampling results from new injection well IP-10 are of the same magnitude as concentrations in adjacent monitoring well MW-1, indicating that injection well IP-10 delineates the lateral and vertical extent of impacted groundwater at the southwest corner of the site.

3. Source area sampling results indicate the major sources of TPHg and MTBE are former releases from the USTs and dispenser islands, respectively.

4. Three additional deep monitoring wells are needed downgradient of the source area to delineate the lateral extent of impacted groundwater.

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Recommendations

Based on the activities proposed in the IRAP and the results of the groundwater monitoring and well installation, Arctos recommends the following tasks during the second quarter of 2009:

- ☐ Install and sample three deep monitoring wells downgradient of the source area to delineate the lateral extent of impacted groundwater
- ☐ Continue quarterly groundwater monitoring
- ☐ Continue to work with the City of Livermore to obtain building permits
- ☐ Install and start the source area remediation system.

If you have questions or comments, please call Mike Purchase at 510/525-2180 or Matthew Nelson at 562/988-2755.

Very truly yours,

ARCTOS ENVIRONMENTAL

Matthew J. Nelson
Senior Staff Engineer

Michael P. Purchase, P.E.
Senior Project Manager

REGISTERED PROFESSIONAL ENGINEER
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Copy: Jeffrey M. Baker, P.E. – Tesoro Companies, Inc.
Colleen Winey – Zone 7 Water Agency

Attachments:
Table 1 – Well and Groundwater Elevations
Table 2 – Groundwater Analytical Results
Table 3 – Groundwater Analytical Results – Injection Wells
Figure 1 – Site Location Map
Figure 2 – Groundwater Elevation Contours
Figure 3 – TPHg Concentration Contours
Figure 4 – Benzene Concentration Contours
Figure 5 – MTBE Concentration Contours
Figure 6 – Deep Monitoring Well Construction Diagram
Attachment A – Groundwater Sampling QA/QC Procedures
Attachment B – Field Data Sheets
Attachment C – Historical Well and Groundwater Elevations
Attachment D – Historical Groundwater Analytical Results
Attachment E – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment F – Boring and Well Construction Log

Attachment D – Historical Groundwater Analytical Results
Attachment E – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment F – Boring and Well Construction Log
Attachment G – Drilling and Well Installation QA/QC Procedures
Attachment H – Well Development Log
Attachment I – Waste Manifests

References

Arctos Environmental, 2008. *Interim Remedial Action Plan for Groundwater, 1619 1st Street, Livermore, California, Tesoro Station No. 67076, Former Beacon Station No. 3604, ACEH Case No. RO0434*, 21 March.

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
MW-1	5/8/08	36.15	474.29	438.14
	7/23/08	45.76		428.53
	10/13/08	51.00		423.29
	2/11/09	48.69		425.60
MW-2	5/8/08	36.70	472.98	436.28
	7/23/08	45.78		427.20
	10/13/08	51.30		421.68
	2/11/09	48.90		424.08
MW-3	5/8/08	35.60	473.37	437.77
	7/23/08	45.00		428.37
	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
MW-4	5/8/08	35.55	473.64	438.09
	7/23/08	43.87		429.77
	10/13/08	Dry [c]		--
	2/11/09	Dry		--
MW-5	5/8/08	36.60	472.67	436.07
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-6	5/8/08	38.50	471.93	433.43
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-7	5/8/08	36.00	472.33	436.33
	7/23/08	44.42		427.91
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-8	5/8/08	36.64	471.18	434.54
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-9	5/8/08	38.90	470.78	431.88
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-10	5/8/08	37.55	471.63	434.08
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-11	12/16/08	Dry	473.26	--
	2/11/09	Dry		--
VW-2	5/8/08	35.31	473.28	437.97
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
VW-3	5/8/08	34.80	474.38	439.58
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
TP-1	5/8/08	36.17	472.82	436.65
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
TP-2	5/8/08	36.62	472.93	436.31
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
DW-1	5/22/08	37.30	472.85	435.55
	7/23/08	45.55		427.30
	10/13/08	51.40		421.45
	2/11/09	48.28		424.57
DW-2	5/22/08	39.80	471.61	431.81
	7/23/08	48.25		423.36

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-2	10/13/08	53.40	471.61	418.21
(cont.)	2/11/09	51.50		420.11
DW-3	5/22/08	40.20	470.33	430.13
	7/23/08	49.09		421.24
	10/13/08	54.62		415.71
	2/11/09	51.96		418.37
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98
	10/13/08	54.90		413.58
	2/11/09	51.71		416.77

(a) Elevation of PVC well casing (north edge) surveyed relative to mean sea level (MSL).
Wells were surveyed by Cross Land Surveying, Inc., per AB 2886 requirements.
Benchmark K2-741, elevation is 467.835 feet above MSL.

(b) Potentiometric Surface Elevation = (Casing Elevation - Depth to Water)

(c) Depth of groundwater assumed to be below screened interval; well had 6 inches or less of water.

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (ug/l)	Benzene[a] (ug/l)	Toluene[a] (ug/l)	Ethylbenzene[a] (ug/l)	Total Xylenes[a] (ug/l)	MTBE[a] (ug/l)	DIPE[a] (ug/l)	ETBE[a] (ug/l)	TAME[a] (ug/l)	TBA[a] (ug/l)	Methanol[a] (ug/l)	Ethanol[a] (ug/l)	1,2-DCA[a] (ug/l)	EDB[a] (ug/l)
MW-1	5/8/08	620	1.8	ND<0.5	12	12	ND<0.5[b]	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	270	0.52	ND<0.5	3.9	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	10/13/08	730	ND<0.5	ND<0.5	0.68	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
MW-2	5/8/08	29,000	3,200	620	1,400	1,700	580	ND<5	ND<5	10	210	ND<1,000	ND<50	ND<5	ND<5
	7/23/08	25,000	3,800	220	1,600	1,000	780	ND<5	ND<5	14	470	ND<900	ND<50	ND<5	ND<5
	10/13/08	31,000	7,600	160	1,800	440	1,600	ND<9	ND<9	20	710	ND<1,500	ND<90	ND<9	ND<9
	2/11/09	22,000	4,400	120	1,500	430	650	ND<9	ND<9	12	330	ND<3,000	ND<90	ND<9	ND<9
MW-3	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS[c]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	5/8/08	15,000	1,700	59	700	130	540	ND<2.5	ND<2.5	5.9	410	ND<2,000	ND<25	ND<2.5	ND<2.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	5/8/08	1,400	2.2	0.74	2.8	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,300	3.9	1.4	8.9	5.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (ug/l)	Benzene[a] (ug/l)	Toluene[a] (ug/l)	Ethylbenzene[a] (ug/l)	Total Xylenes[a] (ug/l)	MTBE[a] (ug/l)	DIPE[a] (ug/l)	ETBE[a] (ug/l)	TAME[a] (ug/l)	TBA[a] (ug/l)	Methanol[a] (ug/l)	Ethanol[a] (ug/l)	1,2-DCA[a] (ug/l)	EDB[a] (ug/l)
MW-10	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-2	5/8/08	3,000	40	3.8	32	34	270	ND<1.5	ND<1.5	2.7	4,500	ND<250	ND<15	ND<1.5	ND<1.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	5/8/08	12,000	890	54	770	380	2,500	ND<5	ND<5	22	3,400	ND<2,500	ND<50	ND<5	ND<5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	5/8/08	7,400	710	10	510	110	6,400	ND<8	ND<8	64	5,200	ND<1,2000	ND<80	ND<8	ND<8
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	5/22/08	5,100	470	150	210	570	100	ND<0.9	ND<0.9	0.98	76	ND<90	ND<9	ND<0.9	ND<0.9
	7/23/08	560	43	5.2	18	40	16	ND<0.5	ND<0.5	ND<0.5	21	ND<100	ND<5	ND<0.5	ND<0.5
	10/13/08	2,800	370	15	120	78	140	ND<0.5	ND<0.5	1.2	220	ND<300	ND<80	ND<0.5	ND<0.5
	2/11/09	520	45	5.3	32	31	42	ND<0.5	ND<0.5	ND<0.5	43	ND<100	ND<8	ND<0.5	ND<0.5
DW-2	5/22/08	11,000	1,300	170	460	230	620	ND<2.5	ND<2.5	9.6	870	ND<400	ND<25	ND<2.5	ND<2.5
	7/23/08	7,600	980	44	180	55	420	ND<2	ND<2	5.7	720	ND<200	ND<20	ND<2	ND<2
	10/13/08	7,300	910	23	120	18	280	ND<1.5	ND<1.5	3.1	650	ND<2,000	ND<50	ND<1.5	ND<1.5
	2/11/09	8,000	1,100	31	230	46	290	ND<2.5	ND<2.5	3.9	600	ND<800	ND<25	ND<2.5	ND<2.5
DW-3	5/22/08	4,700	8.7	2.1	120	200	0.86	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,800	8.1	1.4	94	100	2.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	4,100	59	10	160	70	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<80	ND<0.5	ND<0.5
	2/11/09	1,700	21	1.7	35	21	9.8	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<10	ND<0.5	ND<0.5
DW-4	5/22/08	1,200	4.2	8.6	16	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	91	0.79	ND<0.5	6.5	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (ug/l)	Benzene[(a)] (ug/l)	Toluene[(a)] (ug/l)	Ethylbenzene[(a)] (ug/l)	Total Xylenes[(a)] (ug/l)	MTBE[(a)] (ug/l)	DIPE[(a)] (ug/l)	ETBE[(a)] (ug/l)	TAME[(a)] (ug/l)	TBA[(a)] (ug/l)	Methanol[(a)] (ug/l)	Ethanol[(a)] (ug/l)	1,2-DCA[(a)] (ug/l)	EDB[(a)] (ug/l)
DW-4	10/13/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	43	ND<0.5	ND<0.5
(cont.)	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).

(b) ND - Not detected at the reporting limit listed.

(c) Not sampled; well dry during sampling event.

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

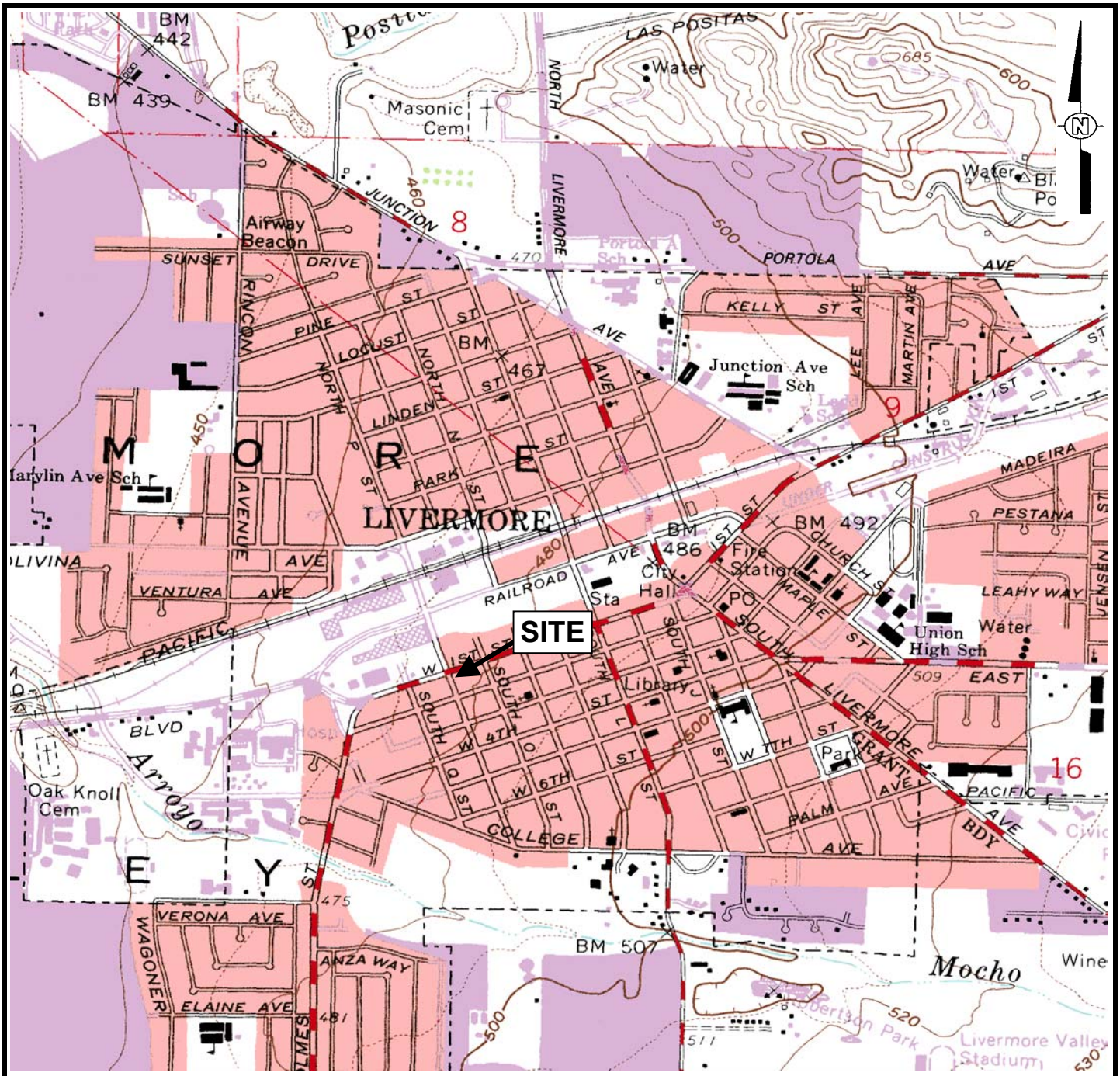
Monitoring Well	Sample Date	TPHg[a] (ug/l)	Benzene[a] (ug/l)	Toluene[a] (ug/l)	Ethylbenzene[a] (ug/l)	Total Xylenes[a] (ug/l)	MTBE[a] (ug/l)	DIPE[a] (ug/l)	ETBE[a] (ug/l)	TAME[a] (ug/l)	TBA[a] (ug/l)	Methanol[a] (ug/l)	Ethanol[a] (ug/l)	1,2-DCA[a] (ug/l)	EDB[a] (ug/l)
IP-1	7/23/08[b]	62,000	2,100	6,800	2,700	11,000	16	ND<15[c]	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	10/13/08	55,000	3,100	3,300	2,300	7,700	ND<15	ND<15	ND<15	ND<15	98	ND<1,500	ND<150	ND<15	ND<15
IP-2	7/23/08[b]	5,500	160	43	130	350	10	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	13,000	1,900	58	600	630	180	ND<0.9	ND<0.9	9.4	46	ND<90	ND<20	ND<0.9	ND<0.9
IP-3	7/23/08[b]	1,100	23	14	7.5	90	32	ND<0.5	ND<0.5	ND<0.5	32	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	1,700	83	4.7	11	54	72	ND<0.5	ND<0.5	0.84	71	ND<50	ND<8	ND<0.5	ND<0.5
IP-4	7/23/08[b]	7,600	130	45	240	750	940	ND<1.5	ND<1.5	6.9	890	ND<150	ND<15	ND<1.5	ND<1.5
	10/13/08	4,200	110	11	78	310	3,700	ND<1.5	ND<1.5	7.1	15,000	ND<2,000	ND<15	ND<1.5	ND<1.5
IP-5	7/23/08[b]	2,000[d]	3.0	17	5.1	31	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	720	14	13	8.7	32	19	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
IP-6	7/23/08[b]	4,400	260	78	98	340	180	ND<0.5	ND<0.5	1.6	190	ND<80	ND<9	ND<0.5	ND<0.5
	10/13/08	1,400	150	1.6	1.5	3.5	7.4	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<50	ND<0.5	ND<0.5
IP-7	7/23/08[b]	4,200	190	12	99	190	49	ND<0.9	ND<0.9	1.1	58	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	6,000	350	6.6	150	60	97	ND<0.9	ND<0.9	2.5	76	ND<90	ND<50	ND<0.9	ND<0.9
IP-8	12/16/08[b]	120,000	7,800	20,000	3,500	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
IP-9	12/16/08[b]	110,000	7,800	23,000	2,800	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
IP-10	2/11/09[b]	8,100	29	58	170	1,200	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (ug/l).

(b) Baseline remediation system values.

(c) ND - Not detected at the reporting limit listed.

(d) Primarily compounds not found in typical Gasoline



REFERENCE

7.5 MINUTE USGS TOPOGRAPHIC MAP OF
LIVERMORE, CALIFORNIA QUADRANGLE
DATE: 1961, PHOTOREVISED 1980
SCALE = 1:24,000

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
SITE LOCATION MAP			
PROJECT NO. 01LV	DRAWN BY MP	CHECKED BY MP	APPROVED BY JG
FILE NO. Site Map.xls		**FIGURE 1**	

Legend

- MW-7 ⊕ Groundwater Monitoring Well With Groundwater Elevation (Feet, MSL) Measured 11 February 2009
- DW-1 ✚ Deep Groundwater Monitoring Well with Groundwater Elevation (Feet, MSL) Measured 11 February 2009
- DW-5 ✚ Proposed Deep Groundwater Monitoring Well
- IP-1 ▲ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well
- TP-2 ⊗ Temporary Monitoring Well
- 423 Goundwater Elevation Contour

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
3	0	MY	7/31/08	Second Quarter 2008 Monitoring Report
	1	MY	10/31/08	Third Quarter 2008 Monitoring Report
	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

GROUNDWATER ELEVATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20403.DWG

FIGURE 2

5/11/2009 12:14PM 01LV11B-20403.dwg

Legend

- MW-7 ⊕ Groundwater Monitoring Well with 13 October 2008 and 11 February 2009 Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- DW-1 ✜ Deep Groundwater Monitoring Well with 13 October 2008 and 11 February 2009 TPHg Results in µg/L
- IP-1 ▲ Injection Well with 13 October 2008 and 11 February 2009 TPHg Results in µg/L
- IP-6 △ Angled Injection Well Screen Location with 13 October 2008 and 11 February 2009 TPHg Results in µg/L
- VW-2 ⊞ Vapor Extraction Well with 13 October 2008 and 11 February 2009 TPHg Results in µg/L
- TP-2 ⊗ Temporary Monitoring Well with 13 October 2008 and 11 February 2009 TPHg Results in µg/L
- 1,000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (730/2,100) Previous Quarter/Current Quarter TPHg Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
3	0	MY	7/31/08	Second Quarter 2008 Monitoring Report
	1	MY	10/31/08	Third Quarter 2008 Monitoring Report
	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

TPHg CONCENTRATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20503.DWG

FIGURE 3

01LV11B-20503.dwg 4/22/2009 5:47AM

Legend

- MW-7 ⊕ Groundwater Monitoring Well with 13 October 2008 and 11 February 2009 Benzene Results in µg/L
- DW-1 ⊞ Deep Groundwater Monitoring Well with 13 October 2008 and 11 February 2009 Benzene Results in µg/L
- IP-1 ▲ Injection Well with 13 October 2008 and 11 February 2009 Benzene Results in µg/L
- IP-6 △ Angled Injection Well Screen Location with 13 October 2008 and 11 February 2009 Benzene Results in µg/L
- VW-2 ⊞ Vapor Extraction Well with 13 October 2008 and 11 February 2009 Benzene Results in µg/L
- TP-2 ⊗ Temporary Monitoring Well with 13 October 2008 and 11 February 2009 Benzene Results in µg/L
- 1,000 Benzene Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (ND<0.5/4.1) Previous Quarter/Current Quarter Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
3	0	MY	7/31/08	Second Quarter 2008 Monitoring Report
	1	MY	10/31/08	Third Quarter 2008 Monitoring Report
	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

BENZENE CONCENTRATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20603.DWG

FIGURE 4

4/22/2009 5:49AM 01LV11B-20603.dwg

Legend

- MW-7 ⌖ Groundwater Monitoring Well with 13 October 2008 and 11 February 2009 Methyl Tert-Butyl Ether (MTBE) Results in µg/L
- DW-1 ⌖ Deep Groundwater Monitoring Well with 13 October 2008 and 11 February 2009 MTBE Results in µg/L
- IP-1 ▲ Injection Well with 13 October 2008 and 11 February 2009 MTBE Results in µg/L
- IP-6 △ Angled Injection Well Screen Location with 13 October 2008 and 11 February 2009 MTBE Results in µg/L
- VW-2 ⌖ Vapor Extraction Well with 13 October 2008 and 11 February 2009 MTBE Results in µg/L
- TP-2 ⊗ Temporary Monitoring Well with 13 October 2008 and 11 February 2009 MTBE Results in µg/L
- 100 — MTBE Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (ND<0.5/ND<0.5) Previous Quarter/Current Quarter MTBE Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
3	0	MY	1/31/08	Second Quarter 2008 Monitoring Report
	1	MY	10/31/08	Third Quarter 2008 Monitoring Report
	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

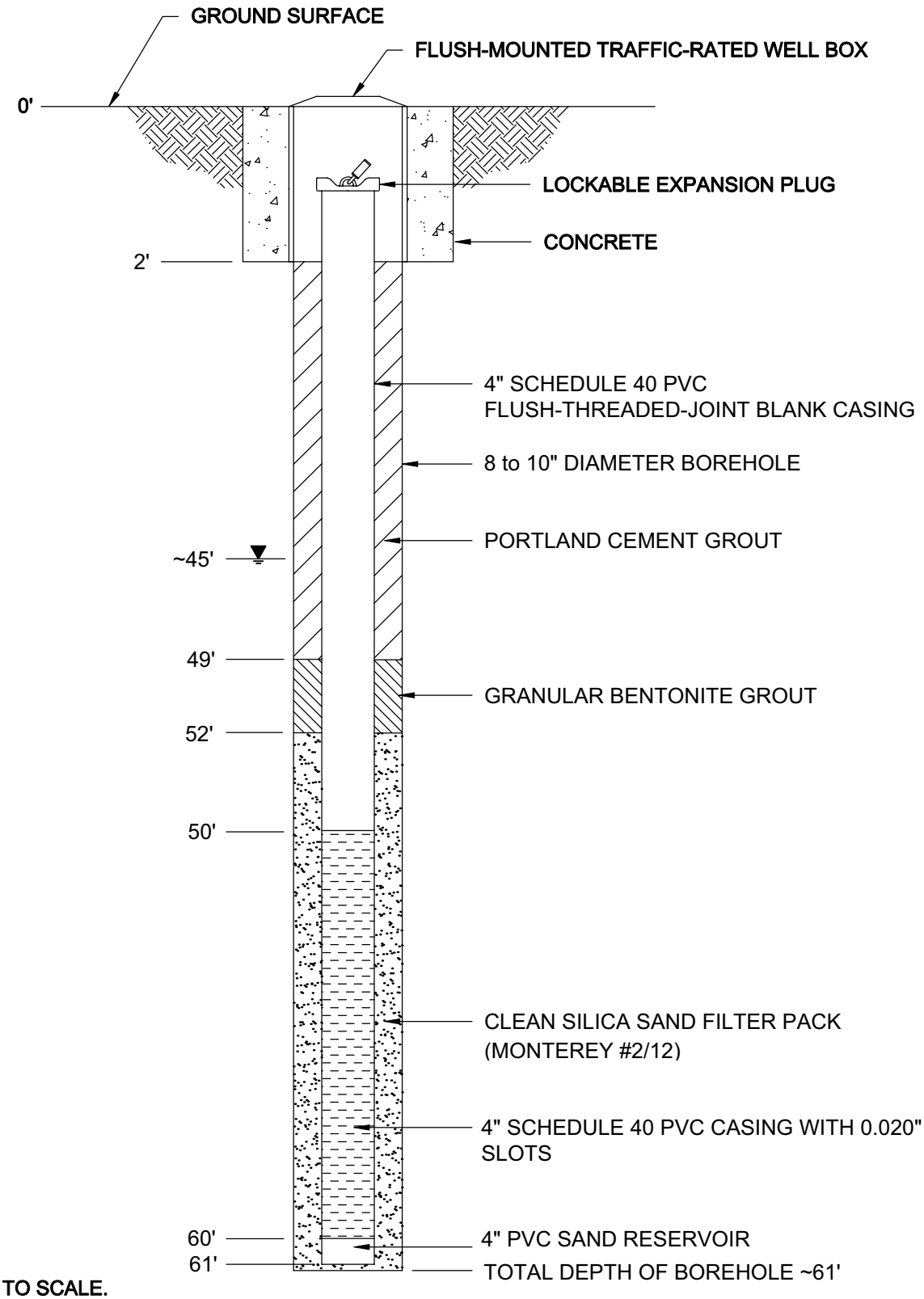
MTBE CONCENTRATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20703.DWG

FIGURE 5

01LV11B-20703.dwg 4/22/2009 5:52AM



NOTES:

1. DRAWING NOT TO SCALE.
2. ACTUAL WELL CONSTRUCTION MAY VARY BASED ON FIELD INVESTIGATION.

REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
0	0	MN	5/19/09	First Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

DEEP MONITORING WELL CONSTRUCTION DIAGRAM

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. DW-5 to DW-7 Well Const.pdf

FIGURE 6

ATTACHMENT A

GROUNDWATER SAMPLING QA/QC PROCEDURES

ARCTOS

ATTACHMENT A
GROUNDWATER SAMPLING QA/QC PROCEDURES

Analytical Plan

The groundwater samples were analyzed by Kiff Analytical LLC (Kiff), a State-certified laboratory in Davis, California, for total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and total xylenes (BTEX); methyl tert-butyl ether (MTBE); and other oxygenates using EPA Method 8260B.

Arctos, as Tesoro's Authorized Responsible Party for the site, also electronically submitted the groundwater monitoring results to the State Water Resources Control Board (SWRCB). The data were submitted in the State-mandated Electronic Data Format (EDF), in accordance with Assembly Bill 2886 requirements for underground storage tank (UST) sites in California.

Purge-and-Bail Sampling

The depth to groundwater and total well depth were measured before sampling using an electronic water well sounder. The sequence of well sampling depended on the level of contamination in each well, if known, and was determined before sampling. Sampling occurred beginning at the well with the lowest contaminant concentration and ending at the well with the highest contaminant concentration. Before sampling, at least 3 casing volumes were purged from each monitoring well using a submersible pump. Throughout purging, pH, conductivity, turbidity, and temperature were measured and recorded for the evacuated groundwater. These measurements were used to confirm that the well was purged sufficiently. Water samples were generally collected after the measurements of pH, conductivity, and temperature had stabilized to within 10 percent of the previous readings. Copies of the well purging and sampling logs are provided in Attachment B.

Sampling was performed with a new 1-1/2-inch-diameter disposable polyethylene bailer suspended from new nylon line. The bailer was equipped with a bottom-release device. Groundwater was collected with the bailer from just below the water surface in each monitoring well. Water samples were collected from the bailers in new 40-milliliter glass bottles provided by the analytical laboratory. The samples were collected so that no headspace was present in each bottle. The preservatives necessary for the analyses performed were provided in the glass bottles by the analytical laboratory.

The collected water samples were placed in sealable plastic bags and packed on ice in a portable ice chest immediately after collection. Samples were delivered within 24 to 48 hours to the analytical laboratory. Additional QA/QC procedures, including the use of sample identification labels and chain-of-custody forms, were followed to track sample collection and delivery.

General Field Quality Assurance/Control (QA/QC) Procedures

Chain-of-Custody Records

Chain-of-custody records were completed before samples were packaged for shipment. One copy of these records was placed in the project file. A second copy accompanied samples during transportation to the laboratory. The individual in the analytical laboratory who accepted responsibility for samples signed and dated the chain-of-custody record.

Equipment Decontamination Procedures

Field equipment was decontaminated between sampling events using the following procedures:

1. Rinsed with water using a brush to remove soil and mud.
2. Washed with non-phosphate detergent and water using a brush.
3. Rinsed with deionized or distilled water.
4. Rinsed again with deionized or distilled water.
5. Air dried.

Personal Decontamination Procedures

At a minimum, field personnel followed the following decontamination procedures:

1. Wore appropriate gloves.
2. Washed hands thoroughly with soap and water.
3. Avoided unnecessary contact with groundwater.

The site health and safety plan was reviewed for site-specific personal decontamination procedures.

Wastewater and Solid Waste Storage and Disposal

Small volumes of used wash and rinse solutions were collected during field work and transported to a central decontamination area. This wastewater was containerized in labeled 55-gallon DOT drums or holding tanks and stored in a secured area at the site. The Project Manager determined the appropriate disposal method for this wastewater.

Solid wastes such as used personal protective equipment, paper towels, trash bags, and any other solid debris were collected for disposal. Because the sampled groundwater was not a hazardous waste, the solid wastes were disposed with the onsite trash.

Field Investigation Documentation Procedures

Field personnel followed documentation procedures developed for site investigation work. The procedures served to (1) provide a record of the activities performed in the field and (2) permit identification of samples and tracking of their status in the field, during shipment, and at the laboratory. All documentation was recorded with waterproof ink.

Groundwater sampling activities were documented on daily field reports and on the well purge and sample log.

Health and Safety

Arctos used a site-specific health and safety plan (HSP) with procedures that were followed by field personnel for equipment safety, medical surveillance, personal protection, air quality monitoring, exposure control, emergency response, and general work practices during field activities. Before beginning work at the site, a site safety meeting was conducted. Field personnel reviewed the HSP and signed the accompanying acknowledgment form before initiating field activities. Field personnel were required to comply with the HSP throughout performance of site assessment activities.

Analytical QA/QC Procedures

Laboratory analytical QA/QC procedures included (1) preparing and analyzing laboratory samples to assess the performance of the analytical laboratory and (2) conducting data validation in accordance with the protocols described below. QC samples prepared by the laboratory included method blanks, matrix spike and matrix spike duplicates, and laboratory control samples.

The laboratory results were reviewed in general accordance with EPA guidelines for data validation. The data validation process included reviewing laboratory results for the following parameters:

- Completeness of the data package
- Compliance with EPA-required holding times
- Agreement of dilution factors with reported detection limits
- Presence or absence of analytes in the method blanks
- Agreement of duplicate samples
- Percent recovery and relative percent difference results for matrix spike and matrix spike duplicate analyses
- Percent recovery results for laboratory control samples.

ATTACHMENT B

FIELD DATA SHEETS

1/2

WELL GAUGING DATA

Project # 090211-JP1 Date 2/11/09 Client ARCTOS ENV.

Site 1619 1ST ST, LIVERMORE, CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes	
VW-3	0940	2					DRY	36.21			
MW-1	0946	4	ODOR				48.69	54.45			
MW-4	1021	2					DRY	46.69			
MW-8	1056	2					44.11	44.38			* .27
MW-10	0948	2					44.78	44.92			* .14
MW-3	1014	4					47.81	52.61			
MW-5	1038	2					DRY	46.11			
MW-7	1046	2					DRY	46.69		TR	
MW-9	0941	2					DRY	44.45			
MW-6	0958	2					DRY	47.46			
MW-2	0956	4	ODOR				48.90	53.97			
MW-11	0918	4					42.50	42.73			* .23
VW-2	1015	2					36.11	36.70			* .59
TP-1	1004	2					42.74	43.07			* .33
TP-2	1021	2					DRY	40.98			
DW-1	1031	4					48.28	64.69			
DW-2	0953	4					51.50	59.48			

WELL GAUGING DATA

Project # 090211-JP1 Date 2/11/09 Client ARCTOS ENV.

Site 1619 1ST, LIVERMORE, CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
DW-3	0936	4					51.96	59.43		
DW-4	0929	4					51.71	69.91		
IP-1D	0926	2					48.77	62.91		

...LL MONITORING DATA SH...T

Project #: 090214-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP (RM)	Date: 2/4/09
Well I.D.: DW-1	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 64.69	Depth to Water (DTW): 48.28 (16.41)
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 51.56	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, ~~Electric Submersible~~, Waterra, Peristaltic, Extraction Pump, Other____

Sampling Method: ~~Bailer~~, (Disposable Bailer), Extraction Port, Dedicated Tubing, Other: ____

10.7 (Gals.) X 3 = 32.1 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1547	64.4	7.61	1064	224	10.7	slightly cloudy
1549	66.1	7.41	1049	71000	21.4	murky
1551	66.0	7.39	1051	71000	32.1	" "
			DTW- 60.02			

Did well dewater? Yes (No) Gallons actually evacuated: 32.1

Sampling Date: 2/4/09 Sampling Time: 1535 Depth to Water: 48.69

Sample I.D.: DW-1 Laboratory: (Kiff) CalScience Other____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH...T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP / RW	Date: 2/11/09
Well I.D.: DW-2	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 59.48	Depth to Water (DTW): 51.50 (7.98)
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 53.09	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; ~~Electric Submersible~~; Waterra Peristaltic; Extraction Pump; Other____

Sampling Method: Bailer; ~~Disposable Bailer~~; Extraction Port; Dedicated Tubing; Other: ____

5.2 (Gals.) X	3	=	15.6 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1308	64.3	7.22	1146	>1000	5.2	brown
1309	67.5	7.07	1155	>1000	10.4	" "
1310	68.1	7.04	1142	>1000	15.6	" "
			DTW- 53.34			

Did well dewater? Yes (No) Gallons actually evacuated: 15.6

Sampling Date: 2/11/09 Sampling Time: 1320 Depth to Water: 52.24

Sample I.D.: DW-2 Laboratory: (Kiff) CalScience Other____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: 8260 60C

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

.LL MONITORING DATA SH .T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP (RW)	Date: 2/11/09
Well I.D.: DW-3	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 59.43	Depth to Water (DTW): 51.96 7.47
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 53.45	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; ~~Electric~~ Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; ~~Disposable Bailer~~; Extraction Port; Dedicated Tubing; Other: _____

5 (Gals.) X	3	=	15 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1231	63.9	7.43	1163	432	5	cloudy
1232	66.7	7.31	1249	>1000	10	brown
1233	67.3	7.27	1167	>1000	15	" "
			DTW - 54.92			

Did well dewater? Yes (No)		Gallons actually evacuated: 15	
Sampling Date: 2/11/09	Sampling Time: 1245	Depth to Water: 53.34	
Sample I.D.: DW-3		Laboratory: (Kiff) CalScience Other_____	
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5)		Other: ~~TEC~~ TDC	
EB I.D. (if applicable): @ Time		Duplicate I.D. (if applicable):	
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5)		Other:	
D.O. (if req'd): Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd): Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH...T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP (RM)	Date: 2/11/09
Well I.D.: DW-4	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 69.91	Depth to Water (DTW): 51.71 18.2
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 55.35	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; (Electric Submersible); Waterra; Peristaltic; Extraction Pump; Other____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: ____

1 Case Volume		Specified Volumes		Calculated Volume
11.9	(Gals.) X	3	=	35.7 Gals.

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1304	65.1	7.66	946.9	230	11.9	clear
1306	67.8	7.47	948.5	71000	23.8	cloudy
1308	67.1	7.47	940.9	71000	35.7	" "
			DTW- 64.32			

Did well dewater? Yes (No) Gallons actually evacuated: 35.7

Sampling Date: 2/11/09 Sampling Time: 1320 Depth to Water: 55.35

Sample I.D.: DW-4 Laboratory: (Kiff) CalScience Other____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: ~~SVOC~~ VOC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH.. .T

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: (JP) RM	Date: 2/11/09
Well I.D.: IP-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 62.91	Depth to Water (DTW): 48.77
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 51.60	

Purge Method: Bailer / X Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / X Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

2.5 (Gals.) X 3 = 7.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1253	63.4	7.96	1758	>1000	2.5	ODOR, CLOUDY
1302	63.5	7.97	1971	>1000	5.0	CLOUDY BROWN +ODC
1308	63.1	8.02	~~1881~~ 1981	>1000	7.5	" " "

Did well dewater? Yes (No) Gallons actually evacuated: 7.5

Sampling Date: 2/11 Sampling Time: 1550 Depth to Water: 48.71

Sample I.D.: IP-10 Laboratory: (Kiff) CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

.LL MONITORING DATA SH. .T

Project #: 090211-JP1	Client: ARCTOS ENV
Sampler: (JP), RM	Date: 2/11/09
Well I.D.: MW-1	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 54.45	Depth to Water (DTW): 48.69
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 49.84	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; X Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

4.0 (Gals.) X 3 = 12.0 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1147	620	895	1035	215	4.0	CLOUDY
1148	* WELL DEWATERED @ 6 GAL *					
~~1149~~						
1540	63.4	7.89	9808	55		

Did well dewater? (Yes) No Gallons actually evacuated: 6.0

Sampling Date: 2/11/09 Sampling Time: 1540 Depth to Water: 49.90

Sample I.D.: MW-1 Laboratory: (Kiff) CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: (JP), RM	Date: 2/11/09
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 53.97	Depth to Water (DTW): 48.90
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 49.91	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; X Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

3.3 (Gals.) X 3 = 9.9 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1228	63.7	7.40	1126	812	3.3	ODOR
1229	65.0	6.88	1212	478	6.6	"
1230	65.9	6.79	1217	274	9.9	"

Did well dewater? Yes (No) Gallons actually evacuated: 9.9

Sampling Date: 2/11/09 Sampling Time: 1550 Depth to Water: 49.02

Sample I.D.: MW-2 Laboratory: (Kiff) CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ELL MONITORING DATA SHEET

Project #: 090211-JP1	Client: ARCTOS ENV
Sampler: (JP) RM	Date: 2/11/09
Well I.D.: MW-3	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 52.61	Depth to Water (DTW): 47.81
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 48.77	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; X Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

3.5 (Gals.) X	3	=	10.5 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1203	64.4	8.15	1119	204	3.5	CLEAR
1204	65.4	7.44	1128	>1000	7.0	CLEAR
1205	65.4	7.33	1113	>1000	10.5	CLOUDY
1206	66.0	7.20	1114	>1000	14.0	BROWN, SILTY
1209	65.8	7.13	1108	>1000	17.5	" "

Did well dewater? Yes (No) Gallons actually evacuated: 17.5

Sampling Date: 2/11/09 Sampling Time: 1605 Depth to Water: 47.61

Sample I.D.: MW-3 Laboratory: (Kiff) CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

LL MONITORING DATA SH T

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: (JP), RM	Date: 2/11/09
Well I.D.: MW-4	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 46.69	Depth to Water (DTW): DRY
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
* WELL DRY - UNABLE TO PURGE/SAMPLE *						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:		mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:		mV	Post-purge:	mV

...LL MONITORING DATA SH...T

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: JP/RM	Date: 2/11/09
Well I.D.: MW-5	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 46.11	Depth to Water (DTW): DRY
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
* WELL DRY - UNABLE TO PURGE/SAMPLE *						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 090211-JP1	Client: ARCOS ENVIRONMENTAL
Sampler: JP KM	Date: 2/11/09
Well I.D.: MW-6	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 47.46	Depth to Water (DTW): DRY
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other_____

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: _____

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
	WELL DRY					

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH... T

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: JP, RM	Date: 2/11/09
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 46.69	Depth to Water (DTW): DRY
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other:_____

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
*	WELL DRY - NOT ABLE TO PURGE/SAMPLE *					

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 090211-JP	Client: ARCTOS ENV.
Sampler: JP, RM	Date: 2/11/09
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 44.38	Depth to Water (DTW): 44.11
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: ———	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

1 Case Volume	(Gals.) X Specified Volumes	= Calculated Volume
———	———	——— Gals.

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
* INSUFFICIENT H_2O TO PURGE & SAMPLE *						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

W .L MONITORING DATA SHE

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: JP, RM	Date: 2/11/09
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 44.45	Depth to Water (DTW): Dry
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other ____

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ____

____ (Gals.) X ____ = ____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
* WELL DRY - UNABLE TO SAMPLE/PURGE. *						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other ____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH...T

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: JP, RM	Date: 2/11/09
Well I.D.: ~~MW-8~~ MW-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 44.92	Depth to Water (DTW): 44.78
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: ~~Bailer~~ / Disposable Bailer / Positive Air Displacement / Electric Submersible / ~~Waterra~~ / Peristaltic / Extraction Pump / Other ____

Sampling Method: ~~Bailer~~ / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: ____

____ (Gals.) X ____ = ____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
* INSUFFICIENT H_2O TO PURGE/SAMPLE *						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other ____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH...T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: (JP) RM	Date: 2/11/09
Well I.D.: MW-11	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 42.73	Depth to Water (DTW): 42.50
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
INSUFFICIENT WATER TO PURGE & SAMPLE						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

.LL MONITORING DATA SH T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP/RM	Date: 2/11/08
Well I.D.: VW-2	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 36.70	Depth to Water (DTW): 36.11
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
	INSUFFICIENT WATER TO PURGE + SAMPLE					

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

LL MONITORING DATA SH T

Project #: 090211-JP1	Client: ARCTOS ENV.
Sampler: (JP), RM	Date: 2/11/09
Well I.D.: VW-3	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 36.27	Depth to Water (DTW): DRY
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: ———	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
*	WELL DRY - INSUFFICIENT H_2O				TO SAMPLE	*

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

...LL MONITORING DATA SH...T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP/RM	Date: 2/11/09
Well I.D.: TP-1	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 43.07	Depth to Water (DTW): 42.74
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: _____

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
INSUFFICIENT WATER TO PURGE & SAMPLE						

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

LL MONITORING DATA SH[illegible]T

Project #: 090211-JP1	Client: ARCTOS ENVIRONMENTAL
Sampler: JP/RM	Date: 2/4/09
Well I.D.: ~~TP-10~~ TP-2	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 40.98	Depth to Water (DTW): DRY
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other_____

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other:_____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
	WELL DRY					

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Kiff CalScience Other_____

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ATTACHMENT C

HISTORICAL WELL AND GROUNDWATER ELEVATIONS

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1	6/1/93	37.50	474.29	436.79
	6/22/93	38.46		435.83
	10/6/93	42.22		432.07
	1/13/94	34.52		439.77
	3/30/94	31.93		442.36
	4/25/94	33.49		440.80
	8/12/94	41.03		433.26
	12/14/94	38.63		435.66
	2/10/95	30.80		443.49
	6/15/95	25.46		448.83
	9/26/95	31.05		443.24
	12/15/95	28.11		446.18
	3/21/96	17.67		456.62
	6/13/96	22.86		451.43
	9/16/96	30.04		444.25
	12/2/96	26.74		447.55
	3/7/97	20.84		453.45
	6/12/97	28.71		445.58
	9/29/97	33.91		440.38
	12/1/97	34.88		439.41
	3/19/98	19.83		454.46
	5/29/98	21.57		452.72
	9/15/98	31.68		442.61
	11/30/98	36.80		437.49
	1/17/99	30.02		444.27
	6/10/99	29.30		444.99
	9/7/99	31.41		442.88
	12/13/99	32.95		441.34
	3/13/00	25.74		448.55
	6/12/00	28.24		446.05
	11/10/00	30.56		443.73

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1 (cont.)	12/31/00	31.71	474.29	442.58
	3/27/01	30.43		443.86
	6/30/01	36.61		437.68
	9/26/01	45.10		429.19
	12/18/01	39.39		434.90
	3/18/02	38.24		436.05
	8/21/02	36.71		437.58
	12/3/02	36.85		437.44
	3/4/03	33.72		440.57
	6/10/03	31.31		442.98
	9/9/03	35.05		439.24
	12/23/03	30.15		444.14
	3/23/04	26.61		447.68
	5/10/04	30.31		443.98
	8/4/04	34.77		439.52
	11/4/04	33.93		440.36
	1/12/05	27.82		446.47
	5/2/05	24.87		449.42
	7/19/05	29.26		445.03
	11/21/05	31.15		443.14
	2/9/06	26.24		448.05
	5/16/06	24.87		449.42
	8/9/06	31.64		442.65
	11/8/06	31.16		443.13
	2/14/07	30.00		444.29
	5/17/07	33.75		440.54
	8/2/07	40.00		434.29
	11/12/07	48.55		425.74
	2/14/08	34.74		438.55
	5/8/08	36.15		438.14

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1 (cont.)	7/23/08	45.76	474.29	428.53
	10/13/08	51.00		423.29
	2/11/09	48.69		425.60
MW-2	6/1/93	38.02	472.98	434.96
	6/22/93	39.07		433.91
	10/6/93	43.72		429.26
	1/13/94	35.85		437.13
	3/30/94	32.82		440.16
	4/25/94	34.76		438.22
	8/12/94	44.33		428.65
	12/14/94	40.00		432.98
	2/10/95	32.16		440.82
	6/15/95	25.93		447.05
	9/26/95	32.42		440.56
	12/15/95	29.41		443.57
	3/21/96	17.47		455.51
	6/13/96	23.69		449.29
	9/16/96	31.24		441.74
	12/2/96	26.90		446.08
	3/7/97	21.33		451.65
	6/12/97	29.94		443.04
	9/29/97	34.22		438.76
	12/1/97	35.94		437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00
	9/7/99	31.85		441.13
	12/13/99	33.72		439.26
	3/13/00	26.54		446.44

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2 (cont.)	6/12/00	28.44	472.98	444.54
	11/10/00	31.31		441.67
	12/31/00	32.68		440.30
	3/27/01	30.81		442.17
	6/30/01	37.58		435.40
	9/26/01	44.97		428.01
	12/18/01	40.67		432.31
	3/18/02	38.94		434.04
	6/5/02	36.45		436.53
	8/21/02	37.15		435.83
	12/3/02	36.76		436.22
	3/4/03	33.60		439.38
	6/10/03	32.89		440.09
	9/9/03	35.45		437.53
	12/23/03	31.79		441.19
	3/23/04	28.25		444.73
	5/10/04	30.91		442.07
	8/4/04	35.36		437.62
	11/4/04	34.92		438.06
	1/12/05	29.46		443.52
	5/2/05	25.61		447.37
	7/19/05	30.11		442.87
	11/21/05	32.04		440.94
	2/9/06	27.11		445.87
	5/17/06	25.18		447.80
	8/9/06	32.69		440.29
	11/8/06	33.21		439.77
	2/14/07	31.27		441.71
	5/17/07	34.40		438.58
	8/2/07	41.23		431.75
	11/12/07	48.22		424.76
	2/14/08	36.31		436.67

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2 (cont.)	5/8/08	36.70	472.98	436.28
	7/23/08	45.78		427.20
	10/13/08	51.30		421.68
	2/11/09	48.90		424.08
MW-3	6/1/93	36.18	473.37	437.19
	6/22/93	37.11		436.26
	10/6/93	41.15		432.22
	1/13/94	33.95		439.42
	3/30/94	30.97		442.40
	4/25/94	32.46		440.91
	8/12/94	41.72		431.65
	12/14/94	37.62		435.75
	2/10/95	29.96		443.41
	6/15/95	23.66		449.71
	9/26/95	29.62		443.75
	12/15/95	27.10		446.27
	3/21/96	15.85		457.52
	6/13/96	21.31		452.06
	9/16/96	28.62		444.75
	12/2/96	25.55		447.82
	3/7/97	19.77		453.60
	6/12/97	27.67		445.70
	9/29/97	29.60		443.77
	12/1/97	33.37		440.00
	3/19/98	18.76		454.61
	5/29/98	20.64		452.73
	9/15/98	30.70		442.67
	11/30/98	34.96		438.41
	1/17/99	28.81		444.56
	6/10/99	28.10		445.27
	9/7/99	30.38		442.99
	12/13/99	31.46		441.91

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-3 (cont.)	3/13/00	24.28	473.37	449.09
	6/12/00	26.80		446.57
	11/10/00	29.47		443.90
	12/31/00	31.38		441.99
	3/27/01	29.94		443.43
	6/30/01	37.54		435.83
	9/26/01	45.17		428.20
	12/18/01	39.41		433.96
	3/18/02	37.73		435.64
	6/5/02	35.35		438.02
	8/21/02	36.21		437.16
	12/3/02	35.62		437.75
	3/4/03	32.75		440.62
	6/10/03	31.26		442.11
	9/9/03	34.72		438.65
	12/23/03	30.47		442.90
	3/23/04	26.67		446.70
	5/10/04	30.25		443.12
	8/4/04	34.70		438.67
	11/4/04	33.94		439.43
	1/12/05	28.21		445.16
	5/2/05	24.56		448.81
	7/19/05	29.39		443.98
	11/21/05	31.30		442.07
	2/9/06	26.21		447.16
	5/16/06	24.36		449.01
	8/9/06	31.90		441.47
	11/8/06	31.30		442.07
	2/14/07	30.20		443.17
	5/17/07	33.64		439.73
	8/2/07	41.74		431.63

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-3 (cont.)	11/12/07	47.41	473.37	425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77
	7/23/08	45.00		428.37
	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
MW-4	3/30/94	31.56	473.64	442.08
	4/25/94	32.73		440.91
	8/12/94	41.61		432.03
	12/14/94	38.11		435.53
	2/10/95	30.50		443.14
	6/15/95	23.63		450.01
	9/26/95	29.70		443.94
	12/15/95	27.56		446.08
	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4 (cont.)	11/10/00	29.71	473.64	443.93
	12/31/00	31.79		441.85
	3/27/01	29.98		443.66
	6/30/01	36.88		436.76
	9/26/01	43.87		429.77
	12/18/01	39.30		434.34
	3/18/02	37.75		435.89
	6/5/02	35.68		437.96
	8/21/02	36.58		437.06
	12/3/02	35.90		437.74
	3/4/03	32.73		440.91
	6/10/03	31.20		442.44
	9/9/03	34.64		439.00
	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	Dry[(c)]		--
	2/14/08	34.53		439.11

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4 (cont.)	5/8/08	35.55	473.64	438.09
	7/23/08	43.87		429.77
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62
	3/19/98	20.93		451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01
	3/13/00	25.87		446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
	12/31/00	31.81		440.86
	3/27/01	30.57		442.10

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-5 (cont.)	6/30/01	37.24	472.67	435.43
	9/26/01	44.53		428.14
	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	12/3/02	36.12		436.55
	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
	11/4/04	34.34		438.33
	1/12/05	29.19		443.48
	5/2/05	25.31		447.36
	7/19/05	30.49		442.18
	11/21/05	32.35		440.32
	2/9/06	27.19		445.48
	5/16/06	25.30		447.37
	8/9/06	32.68		439.99
	11/8/06	32.22		440.45
	2/14/07	34.00		438.67
	5/17/07	34.29		438.38
	8/2/07	41.72		430.95
	11/12/07	Dry		--
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6	3/30/94	33.38	471.93	438.55
	4/25/94	35.49		436.44
	8/12/94	45.14		426.79
	12/14/94	40.99		430.94
	2/10/95	33.34		438.59
	6/15/95	26.88		445.05
	9/26/95	33.55		438.38
	12/15/95	30.32		441.61
	3/21/96	18.89		453.04
	6/13/96	24.62		447.31
	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
	12/13/99	35.84		436.09
	3/13/00	28.45		443.48
	6/12/00	30.52		441.41
	11/10/00	32.99		438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	Dry		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6 (cont.)	12/18/01	43.36	471.93	428.57
	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	9/9/03	37.66		434.27
	12/23/03	33.43		438.50
	3/23/04	29.96		441.97
	5/10/04	32.98		438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	8/2/07	42.24		429.69
	11/12/07	Dry		--
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-7	3/30/94	31.98	472.33	440.35
	4/25/94	33.56		438.77

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7 (cont.)	8/12/94	43.35	472.33	428.98
	12/14/94	39.34		432.99
	2/10/95	32.11		440.22
	6/15/95	25.51		446.82
	9/26/95	31.43		440.90
	12/15/95	28.97		443.36
	3/21/96	17.36		454.97
	6/13/96	23.47		448.86
	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24
	6/12/00	28.76		443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	6/30/01	37.50		434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	3/18/02	39.22		433.11

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7 (cont.)	6/5/02	36.55	472.33	435.78
	8/21/02	36.81		435.52
	12/3/02	36.52		435.81
	3/4/03	32.60		439.73
	6/10/03	31.33		441.00
	9/9/03	34.71		437.62
	12/23/03	30.80		441.53
	3/23/04	26.41		445.92
	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	Dry		--
	2/14/08	36.51		435.82
	5/8/08	36.00		436.33
	7/23/08	44.42		427.91
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-8	12/23/03	32.01	471.18	439.17
	3/23/04	28.50		442.68
	5/10/04	31.44		439.74
	8/4/04	35.11		436.07

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-8 (cont.)	11/4/04	34.77	471.18	436.41
	1/12/05	29.66		441.52
	5/2/05	25.91		445.27
	7/19/05	30.56		440.62
	11/21/05	32.48		438.70
	2/9/06	27.40		443.78
	5/16/06	25.60		445.58
	8/9/06	32.77		438.41
	11/8/06	32.10		439.08
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	Dry		--
	2/14/08	35.55		435.63
	5/8/08	36.64		434.54
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-9	12/23/03	34.03	470.78	436.75
	3/23/04	30.01		440.77
	5/10/04	33.61		437.17
	8/4/04	37.47		433.31
	11/4/04	37.44		433.34
	5/2/05	27.73		443.05
	7/19/05	32.90		437.88
	11/21/05	34.15		436.63
	2/9/06	29.44		441.34
	5/16/06	27.50		443.28
	8/9/06	35.85		434.93
	11/8/06	34.18		436.60
	2/14/07	34.00		436.78
	5/17/07	36.88		433.90

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-9 (cont.)	8/2/07	44.11	470.78	426.67
	11/12/07	Dry		--
	2/14/08	39.32		431.46
	5/8/08	38.90		431.88
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-10	12/23/03	33.80	471.63	437.83
	3/23/04	28.68		442.95
	5/10/04	32.15		439.48
	8/4/04	36.40		435.23
	11/4/04	36.21		435.42
	1/12/05	31.64		439.99
	5/2/05	27.01		444.62
	7/19/05	31.59		440.04
	11/21/05	32.96		438.67
	2/9/06	28.56		443.07
	5/16/06	26.83		444.80
	8/9/06	34.37		437.26
	11/8/06	33.41		438.22
	2/14/07	32.81		438.82
	5/17/07	35.85		435.78
	8/2/07	43.46		428.17
	11/12/07	Dry		--
	2/14/08	39.71		431.92
	5/8/08	37.55		434.08
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
MW-11	12/16/08	Dry	473.26	--
	2/11/09	Dry		--
VW-2	8/4/04	34.13	473.28	439.15

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-2 (cont.)	11/4/04	34.75	473.28	438.53
	1/12/05	29.35		443.93
	5/2/05	25.34		447.94
	7/19/05	29.76		443.52
	11/21/05	31.81		441.47
	2/9/06	27.21		446.07
	5/17/06	25.26		448.02
	8/9/06	31.74		441.54
	11/8/06	33.52		439.76
	2/14/07	30.77		442.51
	5/17/07	33.17		440.11
	8/2/07	36.33		436.95
	11/12/07	Dry		--
	2/14/08	35.55		437.73
	5/8/08	35.31		437.97
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
VW-3	8/4/04	32.89	474.38	441.49
	11/4/04	34.78		439.60
	1/12/05	29.51		444.87
	5/2/05	24.79		449.59
	7/19/05	28.91		445.47
	11/21/05	31.07		443.31
	2/9/06	26.60		447.78
	5/16/06	24.19		450.19
	8/9/06	30.53		443.85
	11/8/06	31.62		442.76
	2/14/07	30.48		443.90
	5/17/07	31.70		442.68
	8/2/07	35.55		438.83
	11/12/07	Dry		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-3 (cont.)	2/14/08	Dry	474.38	--
	5/8/08	34.80		439.58
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
TP-1	7/19/05	29.91	472.82	442.91
	11/21/05	32.28		440.54
	2/9/06	28.02		444.80
	5/17/06	25.18		447.64
	8/9/06	32.81		440.01
	11/8/06	32.02		440.80
	2/14/07	33.59		439.23
	5/17/07	33.52		439.30
	8/2/07	40.30		432.52
	11/12/07	Dry		--
	2/14/08	36.17		436.65
	5/8/08	36.17		436.65
	7/23/08	Dry		--
	10/13/08	Dry		--
	2/11/09	Dry		--
TP-2	7/19/05	29.67	472.93	443.26
	11/21/05	31.43		441.50
	2/9/06	27.27		445.66
	5/17/06	25.00		447.93
	8/9/06	31.74		441.19
	11/8/06	32.80		440.13
	2/14/07	30.32		442.61
	5/17/07	33.28		439.65
	8/2/07	39.35		433.58
	11/12/07	Dry		--
	2/14/08	35.62		437.31
	5/8/08	36.62		436.31

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
TP-2 (cont.)	7/23/08	Dry	472.93	--
	10/13/08	Dry		--
	2/11/09	Dry		--
DW-1	5/22/08	37.30	472.85	435.55
	7/23/08	45.55		427.30
	10/13/08	51.40		421.45
	2/11/09	48.28		424.57
DW-2	5/22/08	39.80	471.61	431.81
	7/23/08	48.25		423.36
	10/13/08	53.40		418.21
	2/11/09	51.50		420.11
DW-3	5/22/08	40.20	470.33	430.13
	7/23/08	49.09		421.24
	11/13/08	54.62		415.71
	2/11/09	51.96		418.37
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98
	10/13/08	54.90		413.58
	2/11/09	51.71		416.77
MW-A	1/17/99	30.13	NM[(d)]	NM
MW-B	1/17/99	30.29	NM	NM
MW-C	1/17/99	30.60	NM	NM
MW-D	1/17/99	31.32	NM	NM
MW-E	1/17/99	31.36	NM	NM
MW-W	1/17/99	30.91	NM	NM

(a) Elevation of PVC well casing (north edge) surveyed relative to mean sea level (MSL).
Wells were surveyed by Cross Land Surveying, Inc., per AB 2886 requirements.
Benchmark K2-741, elevation is 467.835 feet above MSL.

(b) Potentiometric Surface Elevation = (Casing Elevation - Depth to Water)

(c) Depth of groundwater assumed to be below screened interval; well had 6 inches or less of water.

(d) NM = Well not surveyed.

ATTACHMENT D

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-1	6/1/93	27,000	2,200	400	ND<0.5[c]	4,900	--[d]	--	--	--	--	--	--	--	--
	6/22/93	87,000	8,000	10,000	260	10,000	--	--	--	--	--	--	--	--	--
	10/6/93	40,000	4,700	6,500	740	5,300	--	--	--	--	--	--	--	--	--
	1/13/94	9,400	1,300	9,500	110	850	--	--	--	--	--	--	--	--	--
	3/30/94	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/25/94	11,000	1,500	1,800	290	1,700	--	--	--	--	--	--	--	--	--
	8/12/94	11,000	550	330	260	1,400	--	--	--	--	--	--	--	--	--
	12/14/94	11,000	1,000	1,200	320	1,500	--	--	--	--	--	--	--	--	--
	2/10/95	9,300	1,200	1,500	280	1,500	--	--	--	--	--	--	--	--	--
	6/15/95	140	5.6	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	410	140	ND<0.5	ND<0.5	43	--	--	--	--	--	--	--	--	--
	12/15/95	740	250	ND<1.3	ND<1.3	87	--	--	--	--	--	--	--	--	--
	3/21/96	ND<50	0.52	ND<0.5	ND<0.5	0.51	--	--	--	--	--	--	--	--	--
	6/13/96	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/16/96	720	70	ND<0.5	1.0	5.1	ND<5	--	--	--	--	--	--	--	--
	12/2/96	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	600	6.7	ND<0.5	1.2	1.8	ND<5	--	--	--	--	--	--	--	--
	6/12/97	18,000	180	800	410	1,800	ND<5	--	--	--	--	--	--	--	--
	9/29/97	350	120	1.5	ND<0.5	12	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	7.0	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/15/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/31/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	90	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-1 (cont.)	11/4/04	4,500	2.5	5.8	79	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	78	0.80	0.70	0.86	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<40	ND<5	ND<0.5	ND<0.5
	7/19/05	290	ND<0.5	ND<0.5	4.0	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	370	ND<0.5	ND<0.5	0.75	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	140	ND<0.5	ND<0.5	0.67	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	400	ND<0.5	ND<0.5	1.7	1.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	410	ND<0.5	ND<0.5	2.2	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	2,300	ND<0.5	0.66	17	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	--	--
	8/2/07	580	5.7	0.64	6.8	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	750	0.85	2.7	4.2	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	2/14/08	1,700	3.3	17	38	83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	620	1.8	ND<0.5	12	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	270	0.52	ND<0.5	3.9	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	10/13/08	730	ND<0.5	ND<0.5	0.68	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
MW-2	6/1/93	170,000	20,000	21,000	3,300	18,000	--	--	--	--	--	--	--	--	--
	6/22/93	160,000	19,000	22,000	3,500	18,000	--	--	--	--	--	--	--	--	--
	10/6/93	110,000	17,000	17,000	3,000	15,000	--	--	--	--	--	--	--	--	--
	1/13/94	93,000	20,000	19,000	2,300	14,000	--	--	--	--	--	--	--	--	--
	3/30/94	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/25/94	41,000	9,600	7,300	840	7,800	--	--	--	--	--	--	--	--	--
	8/12/94	59,000	11,000	11,000	2,300	11,000	--	--	--	--	--	--	--	--	--
	12/14/94	63,000	13,000	13,000	2,200	12,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	12,000	12,000	2,200	11,000	--	--	--	--	--	--	--	--	--
	6/15/95	61,000	11,000	12,000	1,900	11,000	--	--	--	--	--	--	--	--	--
	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
	3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--
	6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-2 (cont.)	9/29/97	15,000	1,500	97	740	1,800	ND<250	--	--	--	--	--	--	--	--
	12/1/97	13,000	900	37	860	2,400	ND<250	--	--	--	--	--	--	--	--
	3/19/98	42,000	5,000	3,600	2,000	8,300	ND<250	--	--	--	--	--	--	--	--
	5/29/98	68,000	5,600	4,700	2,400	11,000	ND<250	--	--	--	--	--	--	--	--
	9/15/98	36,000	3,900	1,200	1,400	7,800	ND<250	--	--	--	--	--	--	--	--
	11/30/98	16,000	2,200	59	1,200	1,500	ND<250	--	--	--	--	--	--	--	--
	1/17/99	30,000	4,000	2,200	2,100	9,500	ND<250	--	--	--	--	--	--	--	--
	6/10/99	70,000	6,300	1,800	3,600	14,000	ND<500	--	--	--	--	--	--	--	--
	9/7/99	42,000	3,800	840	1,900	8,000	150	--	--	--	--	--	--	--	--
	12/13/99	14,000	1,400	87	690	110	34	--	--	--	--	--	--	--	--
	3/13/00	38,000	2,400	2,300	1,600	6,400	2,400	--	--	--	--	--	--	--	--
	6/12/00	56,000	4,000	950	2,300	7,200	ND<50	--	--	--	--	--	--	--	--
	11/10/00	35,000	5,100	850	1,500	3,200	230	--	--	--	--	--	--	--	--
	12/31/00	21,000	3,200	420	1,300	1,200	440	--	--	--	--	--	--	--	--
	3/27/01	3,500	420	64	16	280	120	--	--	--	--	--	--	--	--
	6/30/01	1,200	88	4.5	65	37	29	--	--	--	--	--	--	--	--
	9/26/01	53,000	8,500	1,500	2,400	4,600	270	--	--	--	--	--	--	--	--
	12/18/01	26,000	5,400	900	1,500	2,200	430	--	--	--	--	--	--	--	--
	1/22/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/18/02	4,200	240	7.3	200	53	89	--	--	--	--	--	--	--	--
	6/5/02	25,000	3,500	390	1,400	2,400	550	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	32	620	300	160	--	--	--	--	--	--	--	--
	12/3/02	3,700	110	2.5	130	11	29	--	--	--	--	--	--	--	--
	3/4/03	8,700	1,100	77	350	540	230	ND<0.5	ND<0.5	ND<10	21	ND<150	ND<5	ND<0.5	ND<0.5
	6/10/03	6,300	660	35	190	120	410	ND<2.5	ND<2.5	ND<5	ND<25	ND<250	ND<25	ND<2.5	ND<2.5
	9/9/03	6,900	500	ND<20	360	29	9,500	ND<20	ND<20	60	ND<200	ND<2,000	ND<200	ND<20	ND<20
	12/23/03	22,000	4,900	1,300	720	2,300	1,700	ND<20	ND<20	21	ND<200	ND<2,000	ND<200	ND<20	ND<20
	3/23/04	45,000	5,200	1,500	1,800	5,000	750	ND<20	ND<20	34	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	7,300	1,000	51	240	290	1,800	ND<5	ND<5	14	ND<50	ND<500	ND<50	ND<5	ND<5
	8/4/04	45,000	7,200	1,900	1,800	5,100	2,500	ND<25	ND<25	31	ND<250	ND<2,500	ND<250	ND<25	ND<25
	11/4/04	27,000	4,400	1,100	840	2,200	3,500	ND<9	ND<9	29	ND<50	ND<900	ND<90	ND<9	ND<9
	1/12/05	16,000	1,900	640	570	1,500	1,900	ND<4	ND<4	19	28[e]	ND<400	ND<40	ND<4	ND<4
	5/2/05	44,000	5,200	1,100	1,800	4,800	2,200	ND<20	ND<20	30	ND<200	ND<2,000	ND<200	ND<20	ND<20
	7/20/05	21,000	3,000	500	1,000	1,500	4,400	ND<7	ND<7	32	74[e]	ND<700	ND<70	ND<7	ND<7
	11/22/05	33,000	4,400	880	1,200	2,600	2,200	ND<9	ND<9	19	480	ND<900	ND<90	ND<9	ND<9
	2/9/06	25,000	3,300	720	1,300	2,200	2,500	ND<7	ND<7	27	490	ND<700	ND<70	ND<7	ND<7

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-2 (cont.)	5/17/06	22,000	3,200	240	1,200	2,100	4,600	ND<7	ND<7	46	1,000	ND<700	ND<70	ND<7	ND<7
	8/9/06	34,000	4,200	830	1,300	2,400	2,900	ND<9	ND<9	25	1,600	ND<900	ND<90	ND<9	ND<9
	11/8/06	27,000	3,600	300	1,200	1,800	1,500	ND<9	ND<9	15	1,100	ND<900	ND<90	ND<9	ND<9
	2/14/07	36,000	4,600	740	1,600	2,100	1,800	ND<5	ND<5	20	910	ND<700	ND<50	ND<5	ND<5
	5/17/07	37,000	7,400	680	1,900	2,400	3,000	ND<9	ND<9	24	2,600	ND<4,000	ND<90	--	--
	8/2/07	37,000	4,200	500	1,800	2,200	1,300	ND<9	ND<9	18	1,200	ND<2,000	ND<90	ND<9	ND<9
	11/12/07	25,000	5,900	120	1,700	820	1,400	ND<15	ND<15	16	720	ND<1,500	ND<150	ND<15	ND<15
	2/14/08	31,000	5,400	450	1,900	2,000	1,200	ND<15	ND<15	16	410	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	29,000	3,200	620	1,400	1,700	580	ND<5	ND<5	10	210	ND<1,000	ND<50	ND<5	ND<5
	7/23/08	25,000	3,800	220	1,600	1,000	780	ND<5	ND<5	14	470	ND<900	ND<50	ND<5	ND<5
	10/13/08	31,000	7,600	160	1,800	440	1,600	ND<9	ND<9	20	710	ND<1,500	ND<90	ND<9	ND<9
	2/11/09	22,000	4,400	120	1,500	430	650	ND<9	ND<9	12	330	ND<3,000	ND<90	ND<9	ND<9
MW-3	6/1/93	270	4.6	ND<0.5	ND<0.5	1.9	--	--	--	--	--	--	--	--	--
	6/22/93	160	8.2	ND<0.5	ND<0.5	0.72	--	--	--	--	--	--	--	--	--
	10/6/93	740	57	110	24	120	--	--	--	--	--	--	--	--	--
	1/13/94	83	2.6	0.67	0.78	4.2	--	--	--	--	--	--	--	--	--
	3/30/94	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/25/94	60	0.75	3.2	0.50	3.6	--	--	--	--	--	--	--	--	--
	8/12/94	310	7.3	14	2.6	13	--	--	--	--	--	--	--	--	--
	12/14/94	75	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	96	1.4	ND<0.5	ND<0.5	1.8	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	140	ND<0.5	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-3 (cont.)	11/12/07	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/08	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	3/30/94	120	4.2	15	2.5	26	--	--	--	--	--	--	--	--	--
	4/25/94	65	ND<0.5	1.8	ND<0.5	2.1	--	--	--	--	--	--	--	--	--
	8/12/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/14/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	1.8	1.1	1.4	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS[f]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-5 (cont.)	2/10/95	5,200	490	ND<13	23	19	--	--	--	--	--	--	--	--	--
	6/15/95	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	1,400	61	ND<0.5	3.1	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	2,100	77	1.5	10	1.5	--	--	--	--	--	--	--	--	--
	3/21/96	930	35	2.0	2.0	18	--	--	--	--	--	--	--	--	--
	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--
	12/31/00	1,300	21	ND<0.5	4.3	2.6	10	--	--	--	--	--	--	--	--
	3/27/01	1,200	11	ND<0.5	2.6	ND<0.5	21	--	--	--	--	--	--	--	--
	6/30/01	1,400	4.8	ND<0.5	1.5	0.56	14	--	--	--	--	--	--	--	--
	9/26/01	660	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	--	--	--	--	--	--	--	--
	12/18/01	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/18/02	890	0.65	ND<0.5	ND<0.5	ND<0.5	3.1	--	--	--	--	--	--	--	--
	6/5/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--
	12/3/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/03	490	10	ND<0.5	2.2	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/9/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-5 (cont.)	12/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/23/04	440	2.3	ND<0.5	1.0	5.9	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/4/04	160	ND<0.5	ND<0.5	ND<0.5	0.71	0.94	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	290	0.74	ND<0.5	0.58	1.3	0.61	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	300	ND<0.5	ND<0.5	0.51	1.6	0.73	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	0.63	1.0	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	220	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	200	ND<0.5	ND<0.5	ND<0.5	1.1	2.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	980	ND<0.5	ND<0.5	2.1	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	3/30/94	63,000	21,000	8,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	4/25/94	77,000	22,000	12,000	2,300	16,000	--	--	--	--	--	--	--	--	--
	8/12/94	65,000	12,000	8,100	2,200	16,000	--	--	--	--	--	--	--	--	--
	12/14/94	65,000	18,000	9,500	2,200	14,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	21,000	8,400	2,000	14,000	--	--	--	--	--	--	--	--	--
	6/15/95	75,000	20,000	11,000	2,100	15,000	--	--	--	--	--	--	--	--	--
	9/26/95	62,000	15,000	9,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--
	3/21/96	65,000	18,000	9,800	2,400	16,000	--	--	--	--	--	--	--	--	--
	6/13/96	29,000	8,600	3,300	2,200	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	42,000	6,400	1,800	2,100	11,000	ND<250	--	--	--	--	--	--	--	--
	12/2/96	28,000	3,000	1,100	970	8,300	ND<500	--	--	--	--	--	--	--	--
	3/7/97	12,000	2,000	190	520	2,300	ND<250	--	--	--	--	--	--	--	--
	6/12/97	37,000	3,900	470	1,600	6,200	ND<100	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-6 (cont.)	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--
	12/1/97	20,000	2,100	ND<10	1,200	2,200	ND<100	--	--	--	--	--	--	--	--
	3/19/98	24,000	2,900	460	1,100	3,400	ND<100	--	--	--	--	--	--	--	--
	5/29/98	38,000	3,500	700	1,800	5,200	ND<100	--	--	--	--	--	--	--	--
	9/15/98	22,000	1,900	110	1,400	3,000	ND<100	--	--	--	--	--	--	--	--
	11/30/98	9,900	770	16	820	710	ND<100	--	--	--	--	--	--	--	--
	1/17/99	14,000	2,200	160	1,700	3,600	ND<100	--	--	--	--	--	--	--	--
	6/10/99	22,000	1,600	160	1,400	2,900	5.5	--	--	--	--	--	--	--	--
	9/7/99	17,000	1,400	33	1,300	1,800	ND<50	--	--	--	--	--	--	--	--
	12/13/99	16,000	790	9.2	840	780	ND<25	--	--	--	--	--	--	--	--
	3/13/00	16,000	790	85	780	1,600	ND<25	--	--	--	--	--	--	--	--
	6/12/00	24,000	1,100	150	1,300	2,300	5,600	--	--	--	--	--	--	--	--
	11/10/00	13,000	440	7.0	760	350	1,000	--	--	--	--	--	--	--	--
	12/31/00	12,000	680	8.0	820	190	1,400	--	--	--	--	--	--	--	--
	3/27/01	14,000	330	17	940	670	380	--	--	--	--	--	--	--	--
	6/30/01	750	45	0.93	47	14	54	--	--	--	--	--	--	--	--
	9/26/01	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	1/22/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/18/02	33,000	2,600	120	1,800	2,800	740	--	--	--	--	--	--	--	--
	6/5/02	10,000	1,100	16	700	180	600	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	23	710	290	370	--	--	--	--	--	--	--	--
	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
	3/4/03	16,000	1,700	25	1,200	40	7,700	ND<20	ND<20	ND<70	ND<200	ND<2,000	ND<200	ND<20	ND<20
	6/10/03	9,500	860	15	380	47	2,600	ND<5	ND<5	18	ND<50	ND<500	ND<50	ND<5	ND<5
	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<5	ND<5
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<10	ND<10
	3/23/04	24,000	1,400	71	1,500	2,000	7,500	ND<20	ND<20	66	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	6,500	550	ND<10	71	43	3,700	ND<10	ND<10	31	ND<100	ND<1,000	ND<100	ND<10	ND<10
	8/4/04	8,200	990	19	300	120	3,300	ND<5	ND<5	23	ND<50	ND<500	ND<50	ND<5	ND<5
	11/4/04	9,600	1,100	30	320	160	2,200	ND<4	ND<4	18	22	ND<400	ND<40	ND<4	ND<4
	1/12/05	12,000	1,100	34	600	500	3,600	ND<4	ND<4	31	30	ND<400	ND<40	ND<4	ND<4
	5/2/05	14,000	630	22	610	920	4,000	ND<10	ND<10	32	120	ND<3,000	ND<100	ND<10	ND<10
	7/20/05	9,800	1,200	21	340	150	1800	ND<2.5	ND<2.5	14	140	ND<500	ND<25	ND<2.5	ND<2.5
	11/21/05	6,600	150	26	580	640	100	ND<1	ND<1	ND<1	13	ND<100	ND<10	ND<1	ND<1
	2/9/06	7,100	340	11	370	360	910	ND<2	ND<2	9.3	120	ND<200	ND<20	ND<2	ND<2

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-6 (cont.)	5/17/06	7,100	270	5.1	320	290	930	ND<2	ND<2	8.4	260	ND<200	ND<20	ND<2	ND<2
	8/9/06	5,800	440	7.5	120	45	670	ND<2	ND<2	7.3	380	ND<2,000	ND<50	ND<2	ND<2
	11/8/06	9,200	990	37	390	140	310	ND<2	ND<2	3.2	110	ND<200	ND<20	ND<2	ND<2
	2/14/07	5,900	480	10	73	23	1,600	ND<2	ND<2	14	1,100	ND<500	ND<20	ND<2	ND<2
	5/17/07	3,700	240	3.4	30	10	770	ND<0.5	ND<0.5	9.2	800	ND<2,000	ND<5	--	--
	8/2/07	15,000	1,800	120	980	510	310	ND<2.5	ND<2.5	3.	180	ND<250	ND<25	ND<2.5	ND<2.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	14,000	2,000	63	750	190	810	ND<2.5	ND<2.5	7.7	600	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	15,000	1,700	59	700	130	540	ND<2.5	ND<2.5	5.9	410	ND<2,000	ND<25	ND<2.5	ND<2.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	3/30/94	43,000	7,200	2,400	1,600	11,000	--	--	--	--	--	--	--	--	--
	4/25/94	30,000	3,900	1,000	940	6,900	--	--	--	--	--	--	--	--	--
	8/12/94	30,000	3,800	1,400	1,300	7,500	--	--	--	--	--	--	--	--	--
	12/14/94	31,000	3,600	1,200	900	6,400	--	--	--	--	--	--	--	--	--
	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--
	3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--
	6/13/96	5,900	98	19	370	620	ND<50	--	--	--	--	--	--	--	--
	9/16/96	7,800	140	43	440	590	ND<25	--	--	--	--	--	--	--	--
	12/2/96	6,300	87	29	290	430	ND<50	--	--	--	--	--	--	--	--
	3/7/97	4,500	35	19	360	470	ND<25	--	--	--	--	--	--	--	--
	6/12/97	3,900	29	5.2	170	48	ND<5	--	--	--	--	--	--	--	--
	9/29/97	6,100	56	9.0	340	190	ND<25	--	--	--	--	--	--	--	--
	12/1/97	6,500	24	ND<2.5	400	250	ND<25	--	--	--	--	--	--	--	--
	3/19/98	2,000	20	ND<2.5	73	79	ND<25	--	--	--	--	--	--	--	--
	5/29/98	5,700	22	7.3	290	350	ND<25	--	--	--	--	--	--	--	--
	9/15/98	1,700	15	ND<2.5	44	5.1	ND<25	--	--	--	--	--	--	--	--
	11/30/98	4,800	42	12	270	640	ND<25	--	--	--	--	--	--	--	--
	1/17/99	3,400	33	ND<5	200	190	ND<50	--	--	--	--	--	--	--	--
	6/10/99	1,700	7.8	1.5	23	4.1	ND<5	--	--	--	--	--	--	--	--
	9/7/99	1,900	9.7	2.1	70	2.9	ND<5	--	--	--	--	--	--	--	--
	12/13/99	1,900	8.0	1.1	10	1.1	ND<5	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-7 (cont.)	3/13/00	1,500	7.5	ND<0.5	6.7	2.9	ND<5	--	--	--	--	--	--	--	--
	6/12/00	1,200	5.4	ND<0.5	5.2	1.0	ND<5	--	--	--	--	--	--	--	--
	11/10/00	1,000	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/31/00	620	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	1,200	4.8	ND<0.5	6.7	0.94	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	2,800	10	1.7	75	170	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	1,900	16	0.89	2.3	25	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	3,000	13	0.88	3.4	3.4	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/18/02	3,100	7.3	1.5	38	110	ND<0.5	--	--	--	--	--	--	--	--
	6/5/02	1,800	7.6	1.0	39	20	ND<0.5	--	--	--	--	--	--	--	--
	8/21/02	3,300	7.6	0.70	85	36	ND<0.5	--	--	--	--	--	--	--	--
	12/3/02	1,700	5.4	ND<0.5	15	5.5	ND<0.5	--	--	--	--	--	--	--	--
	3/4/03	440	1.8	ND<0.5	0.54	2.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	550	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	9/9/03	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	2,600	2.5	ND<0.5	36	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	1,600	2.	ND<0.5	16	16	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	830	1.6	ND<0.5	15	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	710	ND<0.5	ND<0.5	0.75	0.52	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,400	1.1	ND<0.5	9.2	8.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,100	0.6	ND<0.5	3.4	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	270	ND<0.5	ND<0.5	1.2	0.98	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	930	0.84	ND<0.5	10	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	650	ND<0.5	ND<0.5	1.2	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	800	ND<0.5	ND<0.5	1.0	0.62	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	800	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	700	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	3,200	1.3	ND<0.5	50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	1,600	1.2	ND<0.5	4.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	1,400	2.2	0.74	2.8	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,300	3.9	1.4	8.9	5.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-7	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	7.3	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.57	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	1.2	1.9	ND<0.5	0.66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5[b]	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	1,100	2.4	ND<0.5	0.80	0.80	2.1	ND<0.5	ND<0.5	ND<0.5	5.9	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	760	8.5	ND<0.5	4.9	0.95	18.00	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	1,100	4.4	ND<0.5	1.3	0.67	11	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	1,200	3.4	0.59	16	7.6	6.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	610	0.52	ND<0.5	1.3	ND<0.5	2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	1,400	1.6	0.55	5.5	1.1	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	1,500	10	0.55	6.7	1.1	27	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,800	5.5	0.69	12	1.6	10	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,200	0.94	ND<0.5	1.4	ND<0.5	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	1,200	2.8	0.51	6.4	0.84	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-9 (cont.)	5/16/06	1,600	3.8	0.57	12	1.8	4.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	760	ND<0.5	ND<0.5	1.	ND<0.5	2.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	1,700	1.7	0.53	6.7	1.4	1.7	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	1,000	ND<0.5	ND<0.5	0.51	ND<0.5	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	870	ND<0.5	ND<0.5	0.54	ND<0.5	0.93	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	NS[f]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	3,300	68	2.1	110	7.8	16	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-2	8/4/04	5,700	480	ND<20	600	ND<20	12,000	ND<20	ND<20	110	ND<90	ND<2,000	ND<200	ND<20	ND<20
	11/4/04	5,800	340	ND<20	38	ND<20	10,000	ND<20	ND<20	120	ND<90	ND<2,000	ND<200	ND<20	ND<20
	1/12/05	3,800	210	ND<5	90	54	2,900	ND<5	ND<5	33	26[e]	ND<500	ND<50	ND<5	ND<5
	5/2/05	2,600	84	ND<2	13	7.0	960	ND<2	ND<2	12	57	ND<500	ND<20	ND<2	ND<2
	7/20/05	6,200	240	13	290	480	6,600	ND<2	ND<2	56	59[e]	ND<2,000	ND<20	ND<2	ND<2
	11/21/05	3,100	100	ND<9	22	10	5,300	ND<9	ND<9	54	76[e]	ND<900	ND<90	ND<9	ND<9
	2/9/06	3,500	140	ND<25	130	36	12,000	ND<25	ND<25	65	2,800	ND<2,500	ND<250	ND<25	ND<25
	5/17/06	1,800	90	2.6	39	11	1,200	ND<2.5	ND<2.5	12	700	ND<250	ND<25	ND<2.5	ND<2.5
	8/9/06	4,300	86	3.5	200	16.	2,500	ND<2.5	ND<2.5	28	2,800	ND<5,000	ND<25	ND<2.5	ND<2.5
	11/8/06	3,200	46.	3.1	10.	4.8	1,500	ND<3	ND<3	11	7,100	ND<800	ND<30	ND<3	ND<3
	2/14/07	3,300	75	4.6	50	82	580	ND<2	ND<2	7.	4,100	ND<500	ND<20	ND<2	ND<2
	5/17/07	3,500	51	7.3	17	24	100	ND<2.5	ND<2.5	ND<2.5	7,100	ND<250	ND<25	--	--
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	5,700	180	14	150	120	530	ND<2.5	ND<2.5	4.1	5,000	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	3,000	40	3.8	32	34	270	ND<1.5	ND<1.5	2.7	4,500	ND<250	ND<15	ND<1.5	ND<1.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
VW-3 (cont.)	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	7/20/05	42,000	2,800	1,100	1,700	4,800	12,000	ND<20	ND<20	92	130	ND<2,000	ND<200	ND<20	ND<20
	11/22/05	36,000	2,100	290	1,400	2,600	11,000	ND<20	ND<20	70	810	ND<2,000	ND<200	ND<20	ND<20
	2/9/06	19,000	1,400	230	990	1,700	8,900	ND<15	ND<15	72	2,200	ND<1,500	ND<150	ND<15	ND<15
	5/17/06	20,000	1,400	200	920	1,800	9,200	ND<20	ND<20	37	2,500	ND<10,000	ND<200	ND<20	ND<20
	8/9/06	28,000	1,600	150	1,200	2,200	13,000	ND<15	ND<15	84	4,900	ND<2,500	ND<150	ND<15	ND<15
	11/8/06	20,000	1,100	78	990	1,600	6800	ND<15	ND<15	47	4,400	ND<8,000	ND<150	ND<15	ND<15
	2/14/07	15,000	820	37	810	1,000	8,300	ND<15	ND<15	58	8,500	ND<4,000	ND<150	ND<15	ND<15
	5/17/07	16,000	850	35	810	1,200	6,700	ND<10	ND<10	42	12,000	ND<2,000	ND<100	--	--
	8/2/07	15,000	2,000	100	970	630	3,400	ND<7	ND<7	25	4,000	ND<700	ND<70	ND<7	ND<7
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	18,000	1,100	49	1,200	910	7,000	ND<15	ND<15	58	4,200	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	12,000	890	54	770	380	2,500	ND<5	ND<5	22	3,400	ND<2,500	ND<50	ND<5	ND<5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	7/20/05	26,000	1,800	1,100	1,100	2,500	63,000	ND<150	ND<150	400	ND<700	ND<15,000	ND<1,500	ND<150	ND<150
	11/22/05	16,000	1,200	140	840	820	52,000	ND<90	ND<90	340	1,200	ND<9,000	ND<900	ND<90	ND<90
	2/9/06	2,700	94	2.9	28	14	1,200	ND<2.5	ND<2.5	13	1,600	ND<250	ND<25	ND<2.5	ND<2.5
	5/17/06	31,000	2,200	1,100	1,500	3,300	87,000	ND<90	ND<90	680	4,800	ND<15,000	ND<1,500	ND<90	ND<90
	8/9/06	14,000	1,400	86	1,200	830	56,000	ND<2.5	ND<2.5	350	2,800	ND<4,000	ND<25	ND<2.5	ND<2.5
	11/8/06	16,000	1,300	ND<90	930	370	38,000	ND<90	ND<90	280	3,600	ND<40,000	ND<900	ND<90	ND<90
	2/14/07	22,000	1,900	230	1,700	1,600	53,000	ND<90	ND<90	400	2,800	ND<20,000	ND<900	ND<90	ND<90
	5/17/07	ND<25,000	2,400	51	1,500	510	69,000	ND<2	ND<0.5	550	4,300	ND<25,000	ND<5	--	--
	8/2/07	10,000	1,200	ND<25	640	140	14,000	ND<25	ND<25	110	16,000	ND<10,000	ND<250	ND<25	ND<25
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	12,000	920	28	850	740	17,000	ND<25	ND<25	120	5,900	ND<4,000	ND<250	ND<25	ND<25
	5/8/08	7,400	710	10	510	110	6,400	ND<8	ND<8	64	5,200	ND<12,000	ND<80	ND<8	ND<8
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	5/22/08	5,100	470	150	210	570	100	ND<0.9	ND<0.9	0.98	76	ND<90	ND<9	ND<0.9	ND<0.9
	7/23/08	560	43	5.2	18	40	16	ND<0.5	ND<0.5	ND<0.5	21	ND<100	ND<5	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
DW-1	10/13/08	2,800	370	15	120	78	140	ND<0.5	ND<0.5	1.2	220	ND<300	ND<80	ND<0.5	ND<0.5
(cont.)	2/11/09	520	45	5.3	32	31	42	ND<0.5	ND<0.5	ND<0.5	43	ND<100	ND<8	ND<0.5	ND<0.5
DW-2	5/22/08	11,000	1,300	170	460	230	620	ND<2.5	ND<2.5	9.6	870	ND<400	ND<25	ND<2.5	ND<2.5
	7/23/08	7,600	980	44	180	55	420	ND<2	ND<2	5.7	720	ND<200	ND<20	ND<2	ND<2
	10/13/08	7,300	910	23	120	18	280	ND<1.5	ND<1.5	3.1	650	ND<2,000	ND<50	ND<1.5	ND<1.5
	2/11/09	8,000	1,100	31	230	46	290	ND<2.5	ND<2.5	3.9	600	ND<800	ND<25	ND<2.5	ND<2.5
DW-3	5/22/08	4,700	8.7	2.1	120	200	0.86	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,800	8.1	1.4	94	100	2.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	4,100	59	10	160	70	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<80	ND<0.5	ND<0.5
	2/11/09	1,700	21	1.7	35	21	9.8	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<10	ND<0.5	ND<0.5
DW-4	5/22/08	1,200	4.2	8.6	16	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	91	0.79	ND<0.5	6.5	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	43	ND<0.5	ND<0.5
	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-A	1/17/99	5,800	1,700	85	65	320	ND<5	--	--	--	--	--	--	--	--
MW-B	1/17/99	4,400	240	30	21	39	ND<5	--	--	--	--	--	--	--	--
MW-C	1/17/99	1,800	0.80	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--
MW-W	1/17/99	23,000	7,600	760	1,400	5,000	ND<50	--	--	--	--	--	--	--	--
	6/10/99	16,000	4,100	420	1,300	4,000	ND<50	--	--	--	--	--	--	--	--

(a) Samples collected before July 2005 collected by others; data provided by Delta Environmental Consultants, Inc., Second Quarter 2005 Groundwater Monitoring Report dated 31 July 2005.
(b) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).
(c) ND - Not detected at the reporting limit listed.
(d) "-" Not analyzed.
(e) TBA results may be biased slightly high. A fraction of MTBE (typically less than 10 percent) converts to TBA during the analysis of water samples. This conversion effect is considered to be mathematically significant in samples that contain MTBE/TBA ratios of over 20:1.
(f) Not sampled; well dry during sampling event.

ATTACHMENT E

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Mike Purchase
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 8 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Purchase,

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

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Subject : 8 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples DW-1, DW-2 and MW-2.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for samples DW-1, DW-3, IP-10 and MW-1.

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **DW-1** Matrix : Water Lab Number : 67347-01
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**45**	0.50	ug/L	EPA 8260B	02/14/2009
Toluene	**5.3**	0.50	ug/L	EPA 8260B	02/14/2009
Ethylbenzene	**32**	0.50	ug/L	EPA 8260B	02/14/2009
Total Xylenes	**31**	0.50	ug/L	EPA 8260B	02/14/2009
Methyl-t-butyl ether (MTBE)	**42**	0.50	ug/L	EPA 8260B	02/14/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-Butanol	**43**	5.0	ug/L	EPA 8260B	02/14/2009
Methanol	**< 100**	100	ug/L	EPA 8260B	02/14/2009
Ethanol	**< 8.0**	8.0	ug/L	EPA 8260B	02/14/2009
TPH as Gasoline	**520**	50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane-d4 (Surr)	95.8		% Recovery	EPA 8260B	02/14/2009
Toluene - d8 (Surr)	110		% Recovery	EPA 8260B	02/14/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **DW-2** Matrix : Water Lab Number : 67347-02
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1100**	2.5	ug/L	EPA 8260B	02/17/2009
Toluene	**31**	2.5	ug/L	EPA 8260B	02/17/2009
Ethylbenzene	**230**	2.5	ug/L	EPA 8260B	02/17/2009
Total Xylenes	**46**	2.5	ug/L	EPA 8260B	02/17/2009
Methyl-t-butyl ether (MTBE)	**290**	2.5	ug/L	EPA 8260B	02/17/2009
Diisopropyl ether (DIPE)	**< 2.5**	2.5	ug/L	EPA 8260B	02/17/2009
Ethyl-t-butyl ether (ETBE)	**< 2.5**	2.5	ug/L	EPA 8260B	02/17/2009
Tert-amyl methyl ether (TAME)	**3.9**	2.5	ug/L	EPA 8260B	02/17/2009
Tert-Butanol	**600**	15	ug/L	EPA 8260B	02/17/2009
Methanol	**< 800**	800	ug/L	EPA 8260B	02/17/2009
Ethanol	**< 25**	25	ug/L	EPA 8260B	02/17/2009
TPH as Gasoline	**8000**	250	ug/L	EPA 8260B	02/17/2009
1,2-Dichloroethane	**< 2.5**	2.5	ug/L	EPA 8260B	02/17/2009
1,2-Dibromoethane	**< 2.5**	2.5	ug/L	EPA 8260B	02/17/2009
1,2-Dichloroethane-d4 (Surr)	94.1		% Recovery	EPA 8260B	02/17/2009
Toluene - d8 (Surr)	96.5		% Recovery	EPA 8260B	02/17/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **DW-3** Matrix : Water Lab Number : 67347-03
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**21**	0.50	ug/L	EPA 8260B	02/14/2009
Toluene	**1.7**	0.50	ug/L	EPA 8260B	02/14/2009
Ethylbenzene	**35**	0.50	ug/L	EPA 8260B	02/14/2009
Total Xylenes	**21**	0.50	ug/L	EPA 8260B	02/14/2009
Methyl-t-butyl ether (MTBE)	**9.8**	0.50	ug/L	EPA 8260B	02/14/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-Butanol	**16**	5.0	ug/L	EPA 8260B	02/14/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	02/14/2009
Ethanol	**< 10**	10	ug/L	EPA 8260B	02/14/2009
TPH as Gasoline	**1700**	50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane-d4 (Surr)	95.4		% Recovery	EPA 8260B	02/14/2009
Toluene - d8 (Surr)	108		% Recovery	EPA 8260B	02/14/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **DW-4** Matrix : Water Lab Number : 67347-04
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**0.68**	0.50	ug/L	EPA 8260B	02/14/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethylbenzene	**1.4**	0.50	ug/L	EPA 8260B	02/14/2009
Total Xylenes	**1.4**	0.50	ug/L	EPA 8260B	02/14/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	02/14/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	02/14/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	02/14/2009
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	02/14/2009
Toluene - d8 (Surr)	110		% Recovery	EPA 8260B	02/14/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **IP-10** Matrix : Water Lab Number : 67347-05
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**29**	1.5	ug/L	EPA 8260B	02/19/2009
Toluene	**58**	1.5	ug/L	EPA 8260B	02/19/2009
Ethylbenzene	**170**	1.5	ug/L	EPA 8260B	02/19/2009
Total Xylenes	**1200**	1.5	ug/L	EPA 8260B	02/19/2009
Methyl-t-butyl ether (MTBE)	**< 1.5**	1.5	ug/L	EPA 8260B	02/19/2009
Diisopropyl ether (DIPE)	**< 1.5**	1.5	ug/L	EPA 8260B	02/19/2009
Ethyl-t-butyl ether (ETBE)	**< 1.5**	1.5	ug/L	EPA 8260B	02/19/2009
Tert-amyl methyl ether (TAME)	**< 1.5**	1.5	ug/L	EPA 8260B	02/19/2009
Tert-Butanol	**< 7.0**	7.0	ug/L	EPA 8260B	02/19/2009
Methanol	**< 150**	150	ug/L	EPA 8260B	02/19/2009
Ethanol	**< 20**	20	ug/L	EPA 8260B	02/19/2009
TPH as Gasoline	**8100**	150	ug/L	EPA 8260B	02/19/2009
1,2-Dichloroethane	**< 1.5**	1.5	ug/L	EPA 8260B	02/19/2009
1,2-Dibromoethane	**< 1.5**	1.5	ug/L	EPA 8260B	02/19/2009
1,2-Dichloroethane-d4 (Surr)	97.4		% Recovery	EPA 8260B	02/19/2009
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	02/19/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **MW-1** Matrix : Water Lab Number : 67347-06
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**4.1**	0.50	ug/L	EPA 8260B	02/14/2009
Toluene	**8.1**	0.50	ug/L	EPA 8260B	02/14/2009
Ethylbenzene	**18**	0.50	ug/L	EPA 8260B	02/14/2009
Total Xylenes	**36**	0.50	ug/L	EPA 8260B	02/14/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	02/14/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	02/14/2009
Ethanol	**< 50**	50	ug/L	EPA 8260B	02/14/2009
TPH as Gasoline	**2100**	50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane-d4 (Surr)	94.8		% Recovery	EPA 8260B	02/14/2009
Toluene - d8 (Surr)	107		% Recovery	EPA 8260B	02/14/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **MW-2** Matrix : Water Lab Number : 67347-07
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**4400**	9.0	ug/L	EPA 8260B	02/18/2009
Toluene	**120**	9.0	ug/L	EPA 8260B	02/18/2009
Ethylbenzene	**1500**	9.0	ug/L	EPA 8260B	02/18/2009
Total Xylenes	**430**	9.0	ug/L	EPA 8260B	02/18/2009
Methyl-t-butyl ether (MTBE)	**650**	9.0	ug/L	EPA 8260B	02/18/2009
Diisopropyl ether (DIPE)	**< 9.0**	9.0	ug/L	EPA 8260B	02/18/2009
Ethyl-t-butyl ether (ETBE)	**< 9.0**	9.0	ug/L	EPA 8260B	02/18/2009
Tert-amyl methyl ether (TAME)	**12**	9.0	ug/L	EPA 8260B	02/18/2009
Tert-Butanol	**330**	50	ug/L	EPA 8260B	02/18/2009
Methanol	**< 3000**	3000	ug/L	EPA 8260B	02/18/2009
Ethanol	**< 90**	90	ug/L	EPA 8260B	02/18/2009
TPH as Gasoline	**22000**	900	ug/L	EPA 8260B	02/18/2009
1,2-Dichloroethane	**< 9.0**	9.0	ug/L	EPA 8260B	02/18/2009
1,2-Dibromoethane	**< 9.0**	9.0	ug/L	EPA 8260B	02/18/2009
1,2-Dichloroethane-d4 (Surr)	97.3		% Recovery	EPA 8260B	02/18/2009
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	02/18/2009

KIFF Analytical LLC

Report Number : 67347
Date : 02/19/2009

Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **MW-3** Matrix : Water Lab Number : 67347-08
Sample Date :02/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	02/14/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	02/14/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	02/14/2009
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane-d4 (Surr)	98.3		% Recovery	EPA 8260B	02/14/2009
Toluene - d8 (Surr)	109		% Recovery	EPA 8260B	02/14/2009

Report Number : 67347

QC Report : Method Blank Data

Date : 02/19/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/17/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Methanol	< 50	50	ug/L	EPA 8260B	02/17/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/17/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/17/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/17/2009
1,2-Dichloroethane-d4 (Surr)	97.7		%	EPA 8260B	02/17/2009
Toluene - d8 (Surr)	98.9		%	EPA 8260B	02/17/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/18/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Methanol	< 50	50	ug/L	EPA 8260B	02/18/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/18/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/18/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	02/18/2009
Toluene - d8 (Surr)	97.7		%	EPA 8260B	02/18/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/18/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Methanol	< 50	50	ug/L	EPA 8260B	02/18/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/18/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/18/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/18/2009
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	02/18/2009
Toluene - d8 (Surr)	99.4		%	EPA 8260B	02/18/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/14/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Methanol	< 50	50	ug/L	EPA 8260B	02/14/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/14/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/14/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/14/2009
1,2-Dichloroethane-d4 (Surr)	99.0		%	EPA 8260B	02/14/2009
Toluene - d8 (Surr)	109		%	EPA 8260B	02/14/2009

Report Number : 67347

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/19/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

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
1,2-Dichloroethane	67319-09	<0.50	40.1	40.1	38.4	37.3	ug/L	EPA 8260B	2/17/09	95.8	93.0	2.99	70-130	25
Benzene	67319-09	<0.50	39.1	39.1	39.0	38.4	ug/L	EPA 8260B	2/17/09	99.7	98.2	1.53	70-130	25
Methyl-t-butyl ether	67319-09	0.56	39.3	39.3	38.0	37.8	ug/L	EPA 8260B	2/17/09	95.1	94.6	0.528	70-130	25
Tert-Butanol	67319-09	<5.0	199	199	206	207	ug/L	EPA 8260B	2/17/09	103	104	0.529	70-130	25
Toluene	67319-09	<0.50	39.9	39.9	39.6	39.0	ug/L	EPA 8260B	2/17/09	99.2	97.6	1.55	70-130	25
1,2-Dichloroethane	67365-09	0.60	40.0	39.9	39.3	37.0	ug/L	EPA 8260B	2/18/09	96.8	91.0	6.12	70-130	25
Benzene	67365-09	<0.50	39.0	39.0	38.9	39.3	ug/L	EPA 8260B	2/18/09	99.6	101	1.32	70-130	25
Methyl-t-butyl ether	67365-09	<0.50	39.3	39.2	35.4	32.7	ug/L	EPA 8260B	2/18/09	90.2	83.5	7.77	70-130	25
Tert-Butanol	67365-09	<5.0	198	198	205	212	ug/L	EPA 8260B	2/18/09	103	107	3.26	70-130	25
Toluene	67365-09	<0.50	39.8	39.7	39.2	39.6	ug/L	EPA 8260B	2/18/09	98.6	99.5	0.966	70-130	25
1,2-Dichloroethane	67348-02	<0.50	40.3	40.3	44.8	44.3	ug/L	EPA 8260B	2/18/09	111	110	1.19	70-130	25
Benzene	67348-02	<0.50	39.3	39.3	42.1	41.7	ug/L	EPA 8260B	2/18/09	107	106	1.10	70-130	25
Methyl-t-butyl ether	67348-02	<0.50	39.6	39.6	40.0	39.8	ug/L	EPA 8260B	2/18/09	101	101	0.334	70-130	25
Tert-Butanol	67348-02	<5.0	200	200	205	208	ug/L	EPA 8260B	2/18/09	102	104	1.61	70-130	25
Toluene	67348-02	<0.50	40.1	40.1	41.1	40.4	ug/L	EPA 8260B	2/18/09	102	101	1.54	70-130	25
1,2-Dichloroethane	67326-04	<0.50	40.3	40.3	44.4	43.5	ug/L	EPA 8260B	2/14/09	110	108	2.02	70-130	25
Benzene	67326-04	<0.50	39.3	39.3	38.4	37.2	ug/L	EPA 8260B	2/14/09	97.6	94.6	3.14	70-130	25
Methyl-t-butyl ether	67326-04	<0.50	39.6	39.6	36.6	35.5	ug/L	EPA 8260B	2/14/09	92.5	89.8	2.95	70-130	25
Tert-Butanol	67326-04	<5.0	200	200	206	202	ug/L	EPA 8260B	2/14/09	103	101	2.06	70-130	25

Report Number : 67347

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/19/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

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
Toluene	67326-04	<0.50	40.1	40.1	45.3	43.4	ug/L	EPA 8260B	2/14/09	113	108	4.38	70-130	25

Report Number : 67347

QC Report : Laboratory Control Sample (LCS)

Date : 02/19/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dichloroethane	40.3	ug/L	EPA 8260B	2/17/09	95.8	70-130
Benzene	39.3	ug/L	EPA 8260B	2/17/09	100	70-130
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	2/17/09	97.0	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/17/09	99.6	70-130
Toluene	40.1	ug/L	EPA 8260B	2/17/09	98.8	70-130
1,2-Dichloroethane	40.3	ug/L	EPA 8260B	2/18/09	98.6	70-130
Benzene	39.3	ug/L	EPA 8260B	2/18/09	100	70-130
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	2/18/09	88.8	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/18/09	102	70-130
Toluene	40.1	ug/L	EPA 8260B	2/18/09	99.6	70-130
1,2-Dichloroethane	40.3	ug/L	EPA 8260B	2/18/09	113	70-130
Benzene	39.3	ug/L	EPA 8260B	2/18/09	109	70-130
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	2/18/09	102	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/18/09	103	70-130
Toluene	40.1	ug/L	EPA 8260B	2/18/09	104	70-130
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	2/14/09	107	70-130
Benzene	39.2	ug/L	EPA 8260B	2/14/09	98.0	70-130
Methyl-t-butyl ether	39.5	ug/L	EPA 8260B	2/14/09	93.9	70-130
Tert-Butanol	200	ug/L	EPA 8260B	2/14/09	101	70-130

Report Number : 67347

QC Report : Laboratory Control Sample (LCS)

Date : 02/19/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Toluene	40.0	ug/L	EPA 8260B	2/14/09	113	70-130

CLEARWATER TECH SERVICES, INC.

FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 090211-JP1

CLIENT: Arctos Environmental, Inc.

SITE: Tesoro - Livermore

1619 1st Street

Livermore, CA

LIMITS SET BY CALIFORNIA DHS AND
☐ EPA ☐ RWQCB REGION
☐ LIA
☐ OTHER

67347

SPECIAL INSTRUCTIONS

Invoice and Report to : Arctos Environmental, Inc.

Attn: Mike Purchase

1332 Peralta Ave. Berkeley, CA 94702
Ph. 510-525-2180
mpurchase@arctosenv.com

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL	CONTAINERS VOA/HCL	C = COMPOSITE ALL CONTAINERS	TPH-G + BTEX + MTBE (8260)	(7) Oxygenates & Lead Scavengers (8260)	Total Sulfide (376.2)	Ferrous Iron (24 hr. Hold time)	Nitrate, Sulfate, Chloride, Nitrite	Phosphorous (365.3) & COD (410.4)	Total Alkalinity (SM2320B)	Carbon Dioxide (SM4500-CO2D) & Methane	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
DW-1	2/11/09	1535	W	3	3		X	X										01
DW-2	2/11/09	1220		3	3		X	X										02
DW-3	2/11/09	1245		3	3		X	X										03
DW-4	2/11/09	1320		3	3		X	X										04
IP-10	2/11/09	1550		3	3		X	X										05
MW-1	2/11/09	1540		3	3		X	X										06
MW-2	2/11/09	1550		3	3		X	X										07
MW-3	2/11/09	1605	↓	3	3		X	X							SAMPLE RECEIPT IR-5 Temp °C 0.6 Therm. ID# [illegible] Initial MR Date 02.13.09 Time 1953 Coolant present (Yes) No			08

SAMPLING COMPLETED	DATE	TIME
	2/11/09	1605

SAMPLING PERFORMED BY J. Parker R McCarthy

RESULTS NEEDED NO LATER THAN Standard TAT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	2/11/09	1745	[signature] (SAMPLE CUSTODIAN)	2/11/09	1745
[signature]	02/13/09	1438			
			[signature] Kiff Analytical	021309	1438

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

ATTACHMENT F

BORING AND WELL CONSTRUCTION LOG

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

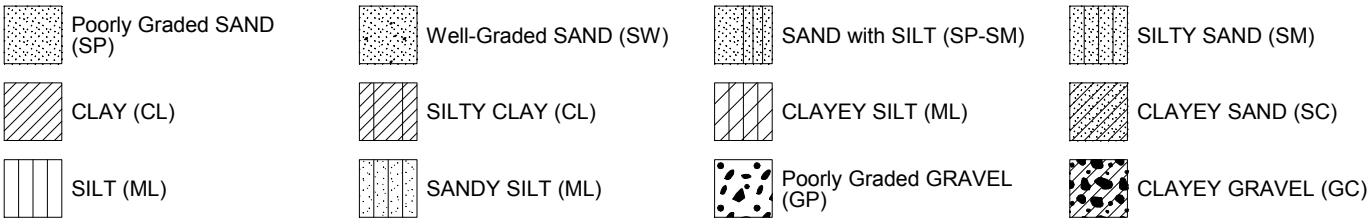
Key to Log of Boring / Well

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12

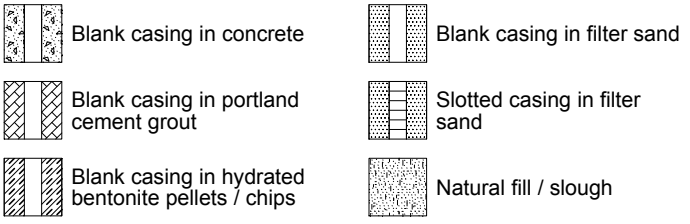
COLUMN DESCRIPTIONS

1. **Elevation:** Elevation in feet relative to mean sea level (MSL).
2. **Depth:** Depth in feet below the ground surface.
3. **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.
4. **Sample Number:** Sample identification number.
5. **Blows / 6 in.:** Number of blows required to advance driven sampler each 6-inch drive interval, or distance noted, using a 140-lb hammer with a 30-inch drop. "-" indicates data not recorded on field log.
6. **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.
7. **Material Description:** Description of material encountered; may include density/consistency, moisture, and color.
8. **Well Completion Diagram:** Well schematic; materials are listed in header block; graphics are explained below.
9. **Headspace PID:** Photoionization device (PID) field sample headspace reading in parts per million (ppm).
10. **Background PID:** Photoionization device (PID) background reading in parts per million (ppm).
11. **Drilling Progress:** Time (in 24-hour clock) at sampling and other events during downhole advance.
12. **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel.

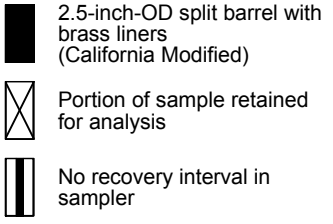
TYPICAL SOIL GRAPHIC SYMBOLS



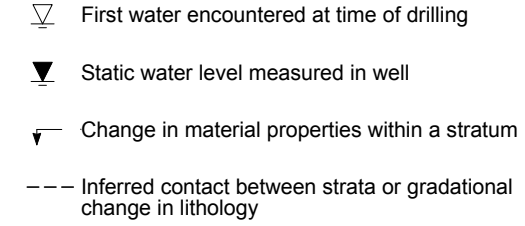
TYPICAL WELL GRAPHIC SYMBOLS



TYPICAL SAMPLER GRAPHIC SYMBOLS



OTHER GRAPHIC SYMBOLS



GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-10

Date(s) Drilled	**2/2/09 (well installed 2/2/09-2/3/09)**	Logged By	**M. Nelson**	Checked By	**M. Purchase**
Drilling Method	**Hollow-Stem Auger**	Drill Bit Size/Type	**6-inch-OD auger (sample) / 10-inch-OD auger (ream for well)**	Total Depth of Borehole	**65.0 feet**
Drill Rig Type	**Rhino M5T LAR**	Drilling Contractor	**Gregg Drilling & Testing**	Surface Elevation	**Not available**
Groundwater Level (feet bgs) First **55** / Completion **--** / Development **--**		Sampling Method	**California Modified split spoon**	Top of Casing Elevation	**Not available**
Diameter of Hole (inches)	**10** / Diameter of Well (inches) **1 and 2**	Type of Well Casing	**1-in. and 2-in.-dia. Sch. 40 PVC**	Screen Perforation	**0.020-in. slotted PVC (58-63 feet)**
Type of Sand Pack	**Monterey #2/12 (57-64 feet)**	Type and Depth of Seal(s)	**Bentonite chips 64-65 ft and 55-57 ft, portland cement grout 2-55 ft, concrete 0-2 ft**		
Comments	**Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.**				

Elevation, feet / Depth, feet	SAMPLES Type / Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
0	[no samples retained for lab testing]			Concrete 5 inches thick					Air knife first 5 ft of borehole.
				[No soil logging in upper 10 feet; air knife to 5 feet and recover only slough from air knifing in first drive sample.]					
5		12 20				0.0	0.0	0745	Slough from air knifing in 5-ft sample.
10		10 18 22		Medium dense, dry, brown, well-graded SAND with SILT and GRAVEL (SW-SM), fine- to coarse-grained sand, no odor		0.0	0.0	0750	
15		20 22 26		Very stiff to hard, dry, brown, CLAYEY SILT with SAND and GRAVEL (ML), no odor		0.3	0.0	0755	
20		10 20 26				0.2	0.0	0800	PID in operator breathing zone (OBZ)=0.0 ppm
25		6 10 31		Very stiff to hard, dry, reddish brown, CLAYEY SILT (ML), no odor		0.1	0.0	0808	
30		15 19 23		Medium dense, moist, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, no odor		0.3	0.0	0815	

ORION_1W; TESLVMOR.GPJ-IP-10; 2/19/09

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-10

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
30					Medium dense, moist, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, no odor (continued)					
35			9 17 20		Medium dense, moist, gray, well-graded SAND with GRAVEL (SW), fine- to coarse-grained sand, no odor		1.3	0.0	0822	OBZ=0.0 ppm
40			18 18 20		Medium dense, moist, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, no odor		33.4	0.0	0830	
45			7 7 31		Medium dense, moist, brown and gray, poorly graded SAND with CLAY (SP-SC), coarse-grained sand, odor		36.8	0.0	0835	
50			18 23 29		Becomes dense, with gravel		19.0	0.0	0843	OBZ=0.6 ppm
55			13 17 54		Becomes dense to very dense	▽	62.5	0.0	0852	
60			7 9 11		Stiff to very stiff, wet, reddish brown, CLAYEY SILT (ML), strong odor		1,243	0.0	0858	OBZ=0.4 ppm
65			23 27 29		Dense, wet, reddish brown, SILTY SAND with GRAVEL (SM), fine-to coarse-grained sand, trace clay, slight odor		7.3	0.0	0908	
					Bottom of boring at 65.0 feet.					
70										

ORION_1W; TESLVMOR.GPJ-IP-10; 2/19/09

ATTACHMENT G

DRILLING AND WELL INSTALLATION QA/QC PROCEDURES

ATTACHMENT G
DRILLING AND WELL INSTALLATION QA/QC PROCEDURES

Hollow-Stem Auger Drilling and Sampling

Soil borings were advanced with 6-inch-diameter, hollow-stem, continuous-flight augers. Soil samples were collected using a split-spoon sampler (California-modified or similar) containing three brass tubes, each 2 inches in diameter and 6 inches in length. The sampler was driven to the sampling depth by dropping a 140-pound hammer approximately 30 inches. Samples were collected for visual logging at various depth intervals with the objectives of observing and describing the locations of lithologic units and obtaining representative samples for physical and/or chemical analysis. Soil samples were collected at the ground surface and at 5-foot intervals.

After the sampler was retrieved from the auger, it was placed on a portable field stand near the boring and the tubes were removed. The ends of one of the tubes was covered with Teflon sheeting, capped with PVC end caps, and placed in a sealable plastic bag. A portion of the soil from one of the tubes was extruded and placed in a sealable plastic bag, which was closed and allowed to equilibrate for approximately 10 minutes. The organic vapor levels in the headspace were measured using a field photoionization detector (PID).

The same sample was visually examined and the results of the visual observation and headspace reading were recorded on the boring logs. Soil samples were examined for staining or odors. Soils were classified following the Unified Soil Classification System (USCS).

Equipment Decontamination Procedures

Soil sampling equipment was decontaminated between sampling events using the following procedures:

- Rinse with water using a brush to remove soil and mud
- Wash with non-phosphate detergent and water using a brush
- Rinse with deionized water
- Rinse again with deionized water
- Air dry.

Brass tubes and end caps were new or cleaned using the decontamination procedures described above. Drill augers were steam-cleaned before each boring is drilled.

Management of Drill Cuttings and Wastewater

Drill cuttings were placed in 55-gallon drums that meet U.S. Department of Transportation specifications and stored on site. Each drum was labeled with the date and drum contents. The soil was transported off site by Belshire Environmental Services, Inc., (Belshire), of Lake Forest, California, for recycling as a non-hazardous waste at the TPST Soil Recyclers of California facility in Adelanto, California. Manifests for the soil disposal are included in Attachment I.

Documentation Procedures

Arctos personnel followed documentation procedures developed for site investigation work. The procedures serve to provide a record of the activities performed in the field.

Arctos field personnel were on site to observe the progress of sampling and to log the boring. The information recorded on the boring log included drilling equipment used, boring location, nature of the materials encountered, sampling depth, time of day, and other pertinent data. The boring log was drafted for presentation in this report.

Well Installation

Before initiating drilling activities, Arctos marked the well location and contacted underground service alert (USA) to clear the area of subsurface lines and utilities. Arctos also obtained a boring and well permit from Zone 7 Water Agency.

An Arctos registered civil engineer supervised well construction and installation. One injection well, designated as IP-10, was installed approximately 2 feet north and 5 feet east of existing monitoring well MW-1, in the southwest corner of the site (Figure 2). The injection well was designed to target saturated sands and sandy silts between approximately 45 to 65 feet below grade. The soil boring for the installation of oxygen injection well IP-10 was drilled with a 6-inch-diameter hollow-stem continuous-flight auger to create a pilot hole, and then over drilled with a 10-inch-diameter hollow-stem continuous-flight auger.

The injection well was constructed as a dual-casing injection/monitoring well using 1-inch-diameter Schedule 40 polyvinyl chloride (PVC) casing for the injection well and 2-inch-diameter Schedule 40 PVC casing for the monitoring well. Both casings were screened from approximately 58 to 63 feet below grade using 0.020-inch slotted screen. The well was initially designed with the screen from 60 to 65 feet; however the highest PID reading collected during installation was encountered at a clayey silt layer at 60 feet. Based on boring logs from adjacent wells it was determined that this was not a confining layer. A field decision was made to raise the screen 2 feet to include the clayey silt layer.

A Monterey #2/12 sand pack filled the annular space around the casings to approximately 1 foot above and below the screened interval. A 2- to 3-foot thick bentonite seal was placed on top of the sand pack, and a 1-foot thick bentonite seal was placed below the sand pack. The remaining annular space was filled with Portland cement slurry. The

injection well was completed at the surface with a 12-inch-diameter traffic-rated vault set in concrete. A well construction diagram is shown in Attachment F.

After installation of the three proposed downgradient deep monitoring wells, a licensed surveyor will survey the elevation and location of the new wells following the requirements of State Assembly Bill 2886. The locations will be measured to the nearest 1/10 foot and the elevations to the nearest 1/100 foot relative to mean sea level.

Well Development

The well was developed approximately 72 hours after installation. Well development activities were recorded on a Daily Field Report and Well Development Log (Attachment H). Immediately before well development commenced, the depth to groundwater and total well depth were measured using an electric water well sounder with an accuracy of 0.01 feet. A Smeal rig outfitted with a surge block continuously swabbed the well screen at 5-foot intervals for 15 minutes. Immediately following surging, a stainless steel bottom bailer was used to remove fines from the water column. After bailing, a stainless steel pump was lowered into the well to rapidly evacuate fines.

Field measurements of the evacuated groundwater were collected at regular intervals including pH, specific conductivity, temperature, and turbidity. Development was considered complete when pH, temperature, and specific conductivity measurements of the evacuated groundwater stabilized to within 10 percent of the previous readings and turbidity readings dropped below 50 Nephelometric Turbidity Units (NTUs).

Wastewater generated during well development was stored on site in 55-gallon drums that meet U.S. Department of Transportation specifications. Belshire transported the wastewater off site for recycling as a non-hazardous waste to the DeMenno Kerdoon facility in Los Angeles, California. Manifests for the soil disposal and wastewater recycling are included in Attachment I.

General Field Quality Assurance/Control (QA/QC) Procedures

See Attachment A for general field QA/QC procedures.

ATTACHMENT H

WELL DEVELOPMENT LOG

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

IP-10

Well Number ~~MW-1~~ (NEW)
Date 2-6-09
Time Start: 8:15 End: 10:00
Client ARCTOS
Project 1619 1st St
Job Number D2080398
Installation Date —
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5'
Measured Depth (pre-development) 63.3
Measured Depth (post-development) 63.36
Static Water Level (ft.) 49.2
Standing Water Column (ft.) 14.16
One Well Volume (gal.) 2.407
One Annulus Vol. (gal.) —

Sample ID —
Qty. of Drilling Fluid Lost —
Minimum Gal. to be Purged 24.07
Development Method Bail - SURGE - Bail - pump
Purging Equipment SS Bailer. 2" pump
Water Level Equipment Solinst
pH/EC Meter HORIBA U10
Turbidity Meter HORIBA U10
Other —

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC	Turbidity	D.O.	D.O. Temp.	SAL.	GPM / W.L.		
9:15	12	7.61	2.19	418	—	17.5	0.12	1/3/55.1	Bail - 2 GAL	
9:19	14	7.27	2.11	207	—	17.6	0.12	1/2/55.1	SURGE - 15 MIN	
9:23	16	7.14	2.15	114	—	17.4	0.12	1/2/56.2	Bail - 6 GAL	
9:27	18	7.16	2.11	117	—	17.8	0.12	1/2/56.2		
9:31	20	7.14	2.11	76	—	17.7	0.12	1/2/56.8		
9:35	22	7.16	2.10	48	—	17.7	0.12	1/2/56.8		
9:39	24	7.14	2.11	41	—	17.8	0.12	1/2/56.8		
9:43	26	7.12	2.14	47	—	17.7	0.12	1/2/57.1		
									FAX TO Client	

FINAL FIELD PARAMETER MEASUREMENTS

ATTACHMENT I

WASTE MANIFESTS

NO. 678308

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME: TESORO ENVIRONMENTAL RESOURCES COMPANY
ADDRESS: 3450 S. 334TH, SUITE 201 AUBURN, WA 98001
CITY, STATE, ZIP:

GENERATING SITE: TESORO 67076 (FORMER)
1619 FIRST ST.
LIVERMORE, CA 94550

EPA I.D. NO.
PROFILE NO.
PHONE NO. ( )

CONTAINERS: No. 5 VOLUME 275 WEIGHT

TYPE: ☑ TANK TRUCK ☐ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION: NON-HAZARDOUS WATER
GENERATING PROCESS: WELL PURGING / DECON WATER

COMPONENTS OF WASTE	PPM	%
1. WATER		99-100%
2. TPH		<1%
3.		
4.		

COMPONENTS OF WASTE	PPM	%
5.		
6.		
7. BESI:164571		
8.		

PROPERTIES: pH 7-10 ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: 24-HOUR EMERGENCY PHONE: 949-699-3706

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Larry Moothart of BESI on behalf of generator — 2/17/09
TYPED OR PRINTED FULL NAME & SIGNATURE — DATE

TRANSPORTER

NAME: BELSHIRE
ADDRESS: 25971 TOWNE CENTRE DRIVE
CITY, STATE, ZIP: FOOTHILL RANCH, CA 92610
PHONE NO.: (949) 460-6200

EPA I.D. NO.: NIETO & SONS
1281 BREA CANYON ROAD
BREA, CA 92821
(714) 990-6855

SERVICE ORDER NO.
PICK UP DATE: 2/17/09

TRUCK, UNIT, I.D. NO.: 244-360

Miguel Lara Miguel Lara — 2-23-09
TYPED OR PRINTED FULL NAME & SIGNATURE — DATE

TSD FACILITY

NAME: DEMENNO KERDOON
ADDRESS: 2000 N. ALAMEDA ST
CITY, STATE, ZIP: COMPTON, CA 90222
PHONE NO.: 310-537-7100

EPA I.D. NO.

DISPOSAL METHOD
☐ LANDFILL ☐ OTHER

Fernando Marquez — 2-23-09
TYPED OR PRINTED FULL NAME & SIGNATURE — DATE

GEN	OLD/NEW	L A	TONS	
TRANS		S B		
C/Q		RT/CD	HWDF NONE	DISCREPANCY

Manifest

TPST Soil Recyclers of CA
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPST:	Load #
2/20/09		207 1926	A07	31254	017

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
TESORO ENVIRONMENTAL RESOURCES COMPANY 3460 S. 334TH, SUITE 201 AUBURN, WA 98001	Person to Contact:	
	FAX#:	Customer Account Number with TPST:
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
	Person to Contact:	
	FAX#:	Customer Account Number with TPST:
Generation Site (Transport from): *(name & address)* TESORO 67076 (FORMER) 1619 FIRST ST. LIVERMORE, CA 94550	Site Phone #:	BTEX Levels
	Person to Contact:	TPH Levels
	FAX#:	AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF CALIFORNIA 12328 HIBISCUS AVENUE ADELANTO, CA 92301	Facility Phone #: (800) 862-8001	Facility Permit Numbers
	Person to Contact: DELLENA JEFFREY	
	FAX#: (760) 246-8004	
Transporter Name and Mailing Address: BELSHIRE 26971 TOWNE CENTRE DRIVE FOOTHILL RANCH, CA 92610 BESI: 164671	Transporter's Phone #: (949) 460-5200	Transporter's US EPA ID No.: CAR000163913
	Person to Contact: LARRY MOOTHART	Transporter's DOT No.: 460847
	FAX#: (949) 460-5210	Customer Account Number with TPST:

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐	8 drums		9860	4900	4960
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					2.48

List any exception to items listed above: Scale Ticket# 66923

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
Larry Moothart of BESI on behalf of generator		2	17	09

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
Frank Salazar		2	20	09

Recycling Facility

Discrepancies:
1619 FIRS
402793

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
D. JEFFREY/J. PROVANSAL	2/20/09

Please print or type.

TRANSPORTER COPY