RECEIVED

9:02 am, Feb 22, 2012

Alameda County
Environmental Health

TESORO

Tesoro Environmental Resource Company
3450 South 344th Way, Suite 201
Auburn, WA 98001-5931
253 896 8700 Phone
253 896 8863 Fax

February 22, 2011

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

Subject: **Fourth Quarter 2011 Status Report**
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434

Dear Mr. Wickham:

Enclosed please find a copy of the quarterly status report for the subject site located at 1619 1st Street in Livermore, California. This report is submitted by Arctos Environmental on behalf of Tesoro Environmental Resources Company.

Based on my inquiry of the person or persons directly responsible for gathering the information contained in this report, I believe the information was prepared by qualified personnel who properly gathered and evaluated the information, and that the information submitted is, to the best of my knowledge and belief, true, correct, and complete. Please feel free to call me at 253/896-8700 or Matthew Nelson of Arctos Environmental at 562/988-2755 with questions.

Sincerely,

Jeffrey M. Baker, P.E.
Supervisor, Environmental
Compliance & Remediation
Tesoro Companies, Inc.

Attachments

CC: Arctos – Matthew Nelson

ARCTOS

Arctos Environmental
1332 Peralta Avenue 510 525-2180 PHONE
Berkeley, CA 94702 510 525-2392 FAX

Main Office
3450 E. Spring St., Suite 212 562 988-2755 PHONE
Long Beach, CA 90806 562 988-2759 FAX

22 February 2012
Project No. 01LV

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

Subject: Fourth Quarter 2011 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 Environmental Resources Company (Tesoro), has prepared this letter report summarizing project tasks completed during the fourth quarter 2011 at the subject site (Figure 1).

Executive Summary

Semiannual groundwater monitoring was conducted on 10, 11, and 25 October 2011. There was an average 2-foot decrease in water levels since the third quarter 2011. Petroleum hydrocarbon concentrations were consistent with the previous quarter.

The soil vapor extraction (SVE) system operated at 98 percent uptime. During operation, 100 pounds of petroleum hydrocarbons were removed through volatilization and an estimated 80 pounds were removed through biodegradation. SVE wells TP-1, TP-2, and VW-2 operated during the fourth quarter 2011. Well MW-11 was shut down on 4 October 2011 for the ISCO pilot test. High water levels limited the mass removal of the SVE system during the quarter.

The oxygen injection system operated at 78 percent uptime during the fourth quarter 2011 because of damage to the oxygen delivery pump. The average dissolved oxygen (DO) concentration dropped to 3 milligrams per liter (mg/l) at the injection wells and 2 mg/l at the monitoring wells located within 10 feet of active injection wells. The system was restarted on 7 December 2011 following pump repairs. The oxygen purity was approximately 93 percent and the average flow rate was 35 standard cubic feet per hour.

During the fourth quarter 2011, an in situ chemical oxidation (ISCO) pilot test was conducted at well IP-9. The objective of the pilot test was to evaluate the effectiveness of the RegenOx™ ISCO technology in remediating petroleum hydrocarbons in the source area identified during a January 2011 membrane interface probe (MIP) investigation. The results of the pilot test will be summarized in a report that will be submitted on 15 March 2012.

Site Background

Hydrocarbon-impacted soil exposed during periods of low groundwater levels is being remediated by an SVE system, which has operated since 28 June 2010. The system removes hydrocarbon mass from the exposed soil and assists with groundwater remediation. Arctos started an oxygen injection system on 18 October 2010 to enhance the biodegradation of petroleum hydrocarbons in groundwater on site.

Arctos performed a MIP investigation to assess the lateral and vertical extent of free product after it was detected at the site on 25 October 2010 in well IP-8. The investigation was conducted in January 2011. The highest impacts were generally encountered between 55 and 70 feet below grade in the southwest portion of the site near the underground storage tanks (USTs). These impacts are approximately 20 feet below the top of the current water table. Based on the results of the MIP borings, Arctos installed deep monitoring well DW-8 on 13 April 2011 downgradient of the USTs. The highest TPHg and benzene concentrations in groundwater at the site are currently reported at well DW-8.

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

Groundwater Monitoring

Arctos's subcontractor, Environmental Field Services, LLC, of Patterson, California, performed semiannual groundwater monitoring from 10 to 11 October 2011 at selected wells. Arctos completed the semiannual monitoring on 25 October 2011 as part of the ISCO pilot test monitoring. Samples were collected from wells MW-1 through MW-11, TP-1 and TP-2, VW-2 and VW-3, and DW-1 through DW-8 (Figure 2) in accordance with the site monitoring plan (Attachment A). 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.

ARCTOS

Analytical Program

Groundwater and vapor samples were analyzed in accordance with the analytical plans in Attachments A and C, respectively.

Groundwater Results

Groundwater elevations were approximately 432 to 441 feet above mean sea level (32 to 38 feet below ground surface). Water levels decreased an average of 2 feet compared to the third quarter 2011 but were an average of 3 feet above water levels in the fourth quarter 2010 (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.022 (1 foot/45 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment D).

During the semiannual monitoring, the highest total petroleum hydrocarbons as gasoline (TPHg) and benzene concentrations of 82,000 and 4,300 micrograms per liter (µg/l), respectively, were at well DW-8, located in P Street downgradient of the USTs. The highest methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA) concentrations of 1,500 and 1,000 µg/l, respectively, were at well TP-1, located in the northwest portion of the site downgradient of the current dispenser islands.

During the fourth quarter 2011, TPHg, benzene, MTBE, and TBA were detected in the farthest downgradient well DW-7 at concentrations of 400, 45, 90, and 180 µg/l, respectively. TPHg and benzene concentrations in well DW-7 have decreased more than 90 percent since it was installed in November 2009. MTBE and TBA concentrations have remained stable since 2009.

Groundwater analytical results are summarized in Table 2. Figures 3, 4, and 5 show isoconcentration contours for TPHg, benzene, and MTBE, respectively. Historical analytical results are in Attachment E, and the laboratory reports and the chain-of-custody forms are in Attachment F.

Source Area Remediation

SVE System
During the fourth quarter 2011, the SVE system operated on wells VW-2, TP-1, and TP-2. Well MW-11 was shut down on 4 October for the ISCO pilot test and was restarted in January 2012. Well MW-1 did not have not enough exposed screen and was not operated during the fourth quarter 2011. The SVE wells are described below.

Well	Well Location	Well Diameter (inches)	Screen Interval (feet bgs[a])
MW-1	SW corner in equipment area	4	34 - 54
MW-11	SW corner adjacent to USTs	4	28 - 43
TP-1	NW corner north of dispensers	2	28 - 43
TP-2	NW corner north of dispensers	2	28 - 43
VW-2	NW corner west of dispensers	2	22 - 37

(a) bgs – Below ground surface.

The SVE system influent was monitored frequently with a field photoionization detector and monthly by laboratory analysis of soil gas samples. The SVE system was monitored to document and optimize hydrocarbon mass removal from the soil. Table 3 summarizes the laboratory analytical results for influent SVE system samples.

Influent TPHg concentrations ranged from 130 parts per million by volume (ppmv; 20 October) to 250 ppmv (19 December). Influent concentrations decreased from the end of the third quarter to the beginning of the fourth quarter 2011. This decrease may be attributable to removing well MW-11 from the operating well field. During October and November 2011, water levels on site increased slightly and influent TPHg concentrations remained stable. In December, water levels on site decreased by over 1 foot and influent TPHg concentrations increased by nearly 50 percent. During the fourth quarter 2011, the system operated at an average flow rate of 16 standard cubic feet per minute and an average vacuum of 3.7 inches of mercury (in. Hg).

Hydrocarbon mass was removed from the subsurface through (1) volatilization caused by the SVE system and (2) in situ bioremediation from increasing oxygen levels. The daily rate of hydrocarbon mass removal by volatilization was calculated from influent soil gas sample results and field flow measurements. Mass removal by biodegradation was calculated using equations from a U.S. Environmental Protection Agency guidance document (EPA, 1995). SVE influent soil gas analytical results and SVE system parameters used for these calculations are summarized in Tables 3 and 4, respectively. The following is a summary of the operating conditions for the system during the fourth quarter 2011.

Operation Period	Operating Wells	Operating Time (days)	Average Vacuum (in. Hg)	Average Mass Removal Rate (pounds/day)	Mass Removed[a] (pounds)
10/1 to 10/4	VW-2, MW-11, TP-1, TP-2	3	3.5	1.7	5
10/4 to 12/31	VW-2, TP-1, TP-2	88	3.7	1.1	97

(a) Mass removed by volatilization only.

During the fourth quarter 2011, approximately 102 pounds of hydrocarbons were removed by the SVE system through volatilization and up to 80 pounds of hydrocarbons were estimated to have been degraded by biodegradation. The equation used to estimate hydrocarbon mass removal by biodegradation was revised during the fourth quarter 2011, resulting in a decrease in the estimate of the total hydrocarbon mass removed to date. The total hydrocarbon mass removed by the SVE system to date is estimated to be 19,700 pounds or approximately 3,030 gallons (at a density of 6.5 pounds per gallon). Figures 6, 7, and 8 show soil vapor influent concentrations, mass removal by volatilization, and mass removal by biodegradation, respectively. Soil vapor sampling procedures are in Attachment C.

Oxygen Injection System

The oxygen injection system operated at 78 percent uptime during the fourth quarter 2011. In early November, the diaphragm of the oxygen delivery pump was damaged and oxygen purity decreased to approximately 50 percent. The system was shut down on 17 November and restarted on 7 December after repairs were made. The system delivered oxygen to the subsurface in pulsed intervals to increase oxygen levels while decreasing the potential for "pushing" dissolved hydrocarbons away from injection wells. Following repairs, the oxygen purity was approximately 93 percent and the average flow rate was 35 standard cubic feet per hour.

During the fourth quarter 2011, oxygen was injected into wells IP-2 through IP-5 for 32 minutes at a time and wells IP-6 and IP-7 for 52 minutes at a time. Wells IP-1 and IP-8 through IP-10 remained shut down because of the ISCO pilot test and will be restarted following an evaluation of the first quarter 2012 groundwater monitoring results. In November, DO was monitored in the operating injection wells and monitoring wells DW-1, MW-1, MW-2, TP-1, and TP-2. Average DO decreased to approximately 3 mg/l at the injection wells and approximately 2 mg/l at the monitoring wells located within 10 feet of active injection wells because of the system downtime. DO readings are expected to increase following consistent operation at the end of the fourth quarter and in the first quarter 2012. Field readings will be collected in first quarter 2012 to confirm proper operation. DO readings are summarized in Table 5.

Conclusions

Results of the groundwater sampling, SVE operation, and oxygen injection system operation indicate the following conclusions:

1. Mass removal by the SVE system improved as water levels decreased.

2. Oxygen demand was met at oxygen injection wells and nearby monitoring wells only when the system operated at full capacity.

Recommendations

Based on the activities completed during this quarter, Arctos recommends the following tasks during the first quarter of 2012:

- Continue operation of the SVE and oxygen injection systems
- Continue to monitor ISCO pilot test groundwater monitoring wells in accordance with the work plan to determine when groundwater concentrations return to baseline.

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, P.E.
Project Engineer

Michael P. Purchase, P.E.
Principal Engineer

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 – SVE Influent Analytical Results
Table 4 – SVE System Parameters
Table 5 – Oxygen System Monitoring Results
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 – Soil Vapor Influent Concentrations
Figure 7 – Mass Removal by Volatilization
Figure 8 – Mass Removal by Biodegradation
Attachment A – Groundwater Sampling QA/QC Procedures
Attachment B – Field Data Sheets

Attachment C – Soil Vapor Sampling QA/QC Procedures
Attachment D – Historical Well and Groundwater Elevations
Attachment E – Historical Groundwater Analytical Results
Attachment F – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment G – 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.

Arctos Environmental, 2011. *Membrane Interface Probe Investigation Results and Work Plan for Deep Monitoring Well Installation, 1619 1st Street, Livermore, California, Tesoro Station No. 67076, Former Beacon Station No. 3604, ACEH Case No. RO0434*, 11 March.

U.S. Environmental Protection Agency, 1995. *Bioventing Principles and Practice, Volume II: Bioventing Design*.

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	11/2/10	37.04	474.21[(c)]	437.17
	2/1/11	32.51		441.70
	4/25/11	27.73		446.48
	8/3/11	31.57		442.64
	10/10/11	33.12		441.09
MW-2	11/2/10	38.15	472.98	434.83
	2/1/11	33.40		439.58
	4/25/11	28.49		444.49
	8/3/11	32.40		440.58
	10/10/11	33.51		439.47
MW-3	11/2/10	37.20	473.37	436.17
	2/1/11	32.59		440.78
	4/25/11	27.60		445.77
	8/3/11	31.69		441.68
	10/10/11	33.96		439.41
MW-4	11/2/10	37.55	473.64	436.09
	2/1/11	32.86		440.78
	4/25/11	28.69		444.95
	8/3/11	32.01		441.63
	10/10/11	34.49		439.15
MW-5	11/2/10	38.75	472.67	433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
	10/10/11	35.58		437.09
MW-6	11/2/10	40.45	471.93	431.48
	2/1/11	35.73		436.20
	4/25/11	30.72		441.21
	8/3/11	34.95		436.98
	10/10/11	37.45		434.48
MW-7	11/2/10	36.68	472.33	435.65
	2/1/11	32.66		439.67
	4/25/11	27.75		444.58

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-7	8/3/11	31.36	472.33	440.97
(cont.)	10/10/11	33.63		438.70
MW-8	11/2/10	38.44	471.18	432.74
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
	10/10/11	35.69		435.49
MW-9	11/2/10	40.30	470.78	430.48
	2/1/11	35.97		434.81
	4/25/11	30.64		440.14
	8/3/11	35.17		435.61
	10/10/11	37.64		433.14
MW-10	11/2/10	38.30	471.63	433.33
	2/1/11	34.63		437.00
	4/25/11	29.63		442.00
	8/3/11	33.26		438.37
	10/10/11	35.62		436.01
MW-11	11/2/10	36.98	472.96[(c)]	435.98
	2/1/11	32.30		440.66
	4/25/11	27.31		445.65
	8/3/11	31.11		441.85
	10/10/11	33.27		439.69
VW-2	11/2/10	DRY[(d)]	472.57[(c)]	--
	2/1/11	32.80		439.77
	4/25/11	25.43		447.14
	8/3/11	26.82		445.75
	10/10/11	33.29		439.28
VW-3	11/2/10	DRY	474.38	--
	2/1/11	32.56		441.82
	4/25/11	27.81		446.57
	8/3/11	28.93		445.45
	10/10/11	33.66		440.72

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)
TP-1	11/2/10	37.46	472.64[(c)]	435.18
	2/1/11	33.01		439.63
	4/25/11	28.23		444.41
	8/3/11	31.85		440.79
	10/10/11	31.60		441.04
TP-2	11/2/10	37.35	472.78[(c)]	435.43
	2/1/11	32.79		439.99
	4/25/11	28.30		444.48
	8/3/11	31.59		441.19
	10/10/11	32.14		440.64
DW-1	11/2/10	37.49	472.85	435.36
	2/1/11	32.83		440.02
	4/25/11	27.96		444.89
	8/3/11	31.96		440.89
	10/10/11	34.40		438.45
DW-2	11/2/10	40.50	471.61	431.11
	2/1/11	35.66		435.95
	4/25/11	30.69		440.92
	8/3/11	35.00		436.61
	10/10/11	37.44		434.17
DW-3	11/2/10	40.00	470.33	430.33
	2/1/11	35.50		434.83
	4/25/11	30.45		439.88
	8/3/11	34.71		435.62
	10/10/11	37.00		433.33
DW-4	11/2/10	39.50	468.48	428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
	10/10/11	36.60		431.88
DW-5	11/2/10	40.00	471.86	431.86
	2/1/11	35.57		436.29
	4/25/11	30.59		441.27

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-5	8/3/11	34.64	471.86	437.22
(cont.)	10/10/11	37.00		434.86
DW-6	11/2/10	40.09	471.77	431.68
	2/1/11	36.35		435.42
	4/25/11	31.32		440.45
	8/3/11	35.63		436.14
	10/10/11	38.09		433.68
DW-7	11/2/10	40.42	470.07	429.65
	2/1/11	35.76		434.31
	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
	10/10/11	37.55		432.52
DW-8	4/25/11	27.23	472.31	445.08
	8/3/11	31.14		441.17
	10/10/11	33.41		438.90

(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) Water Table Elevation = (Casing Elevation - Depth to Water)

(c) Wells were resurveyed by Cross Land Surveying, Inc., per AB 2886 requirements, on 19 October 2010 after remediation system construction.
Benchmark K2-741, elevation is 467.835 feet above MSL.

(d) 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] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	DIPE[a] (µg/l)	ETBE[a] (µg/l)	TAME[a] (µg/l)	TBA[a] (µg/l)	Methanol[a] (µg/l)	Ethanol[a] (µg/l)	1,2-DCA[a] (µg/l)	EDB[a] (µg/l)
MW-1	11/3/10	1,100	7.3	34	18	67	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
	2/1/11	200	ND<0.5	ND<0.5	0.81	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
	4/25/11	130	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
	8/3/11	1,500	2.0	15	44	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
	10/11/11	2,300	6.0	30	15	64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5
MW-2	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	2/2/11	10,000	1,600	130	320	410	410	ND<4	ND<4	4.2	410	ND<400	ND<40	ND<4	ND<4
	4/28/11	13,000	1,400	100	470	670	450	ND<2.5	ND<2.5	4.6	200	ND<250	ND<50	ND<2.5	ND<2.5
	8/4/11	16,000	1,900	200	430	820	660	ND<3	ND<3	5.7	420	ND<1,500	ND<30	ND<3	ND<3
	10/11/11	7,000	810	110	200	430	370	ND<1.5	ND<1.5	3.3	170	ND<250	ND<15	ND<1.5	ND<1.5
MW-3	11/3/10	ND<50	ND<0.5	2.5	ND<0.5	3.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	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
	4/25/11	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
	8/4/11	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
	10/10/11	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	11/3/10	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
	2/1/11	NS[c]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	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-5	11/3/10	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
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	190	ND<0.5	ND<0.5	0.80	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	160	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-6	11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5
	2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
MW-6	4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5
(cont.)	8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5
	10/11/11	10,000	1,000	60	160	66	370	ND<2.5	ND<2.5	3.1	860	ND<250	ND<25	ND<2.5	ND<2.5
MW-7	11/3/10	2,100	4.6	1.3	16	3.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,200	3.3	0.59	1.6	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	1,900	3.5	1.2	0.79	1.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-8	11/3/10	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
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	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-9	11/3/10	430	1.1	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
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,300	14	ND<0.5	2.8	0.71	23	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	470	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-10	11/2/10	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
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	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-11	11/4/10	59,000	2,100	5,400	1,400	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	2/2/11	20,000	210	610	560	3,600	ND<5	ND<5	ND<5	ND<5	38	ND<500	ND<50	ND<5	ND<5
	4/28/11	20,000	300	920	450	4,300	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
MW-11	8/4/11	15,000	96	370	240	2,800	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
(cont.)	10/25/11	18,000	130	500	319	2,900	ND<0.5	ND<0.5	ND<0.5	ND<0.5	18	ND<50	ND<10	ND<0.5	ND<0.5
VW-2	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	0.51	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
VW-3	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	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
TP-1	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	2,000	32	4.3	49	220	1,500	ND<3	ND<3	9.7	1,000	ND<800	ND<30	ND<3	ND<3
TP-2	11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6	14,000	ND<500	ND<50	ND<5	ND<5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	130	1.6	ND<0.5	1.5	5.2	350	ND<0.5	ND<0.5	1.3	630	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	120	ND<0.5	ND<0.5	ND<0.5	380	ND<50	ND<5	ND<0.5	ND<0.5
DW-1	11/4/10	ND<50	0.90	ND<0.5	0.70	1.3	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	58	1.90	ND<0.5	2.0	2.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/28/11	72	2.2	5.7	2.0	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	55	0.57	ND<0.5	0.92	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/11/11	180	3.0	1.0	5.1	10	0.77	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)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
DW-2	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5
	10/11/11	2,700	110	5.0	4.0	11	170	ND<0.5	ND<0.5	1.9	440	ND<100	ND<5	ND<0.5	ND<0.5
DW-3	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	60	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
	4/27/11	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
	8/4/11	310	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
	10/10/11	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
DW-4	11/3/10	ND<50	0.70	4.0	0.59	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	0.67	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
DW-5	11/2/10	5,000	120	3.6	68	35	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/11	3,800	70	2.5	37	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	710	8.0	ND<0.5	4.3	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	6,100	76	3.7	110	97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	10/10/11	6,800	59	4.7	140	150	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
DW-6	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9
	2/1/11	4,000	11	2.9	32	11	6.0	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	3,100	8.8	2.4	12	8.2	6.2	ND<0.5	ND<0.5	ND<0.5	19	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/11	2,900	4.2	0.95	6.0	4.9	6.5	ND<0.5	ND<0.5	ND<0.5	24	ND<50	ND<8	ND<0.5	ND<0.5
	10/10/11	1,500	4.1	3.3	3.0	3.3	4.9	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<5	ND<0.5	ND<0.5
DW-7	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
DW-7	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
(cont.)	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	1.0	160	ND<80	ND<5	ND<0.5	ND<0.5
	10/11/11	400	45	1.1	0.80	1.6	90	ND<0.5	ND<0.5	0.89	180	ND<50	ND<5	ND<0.5	ND<0.5
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20
	10/25/11	82,000	4,300	10,000	1,900	12,000	ND<4	ND<4	ND<4	ND<4	58	ND<400	ND<40	ND<4	ND<4

(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), methanol, ethanol, 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) NS - Not sampled.

TABLE 3

SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg[a] (ppmv)	Benzene[a] (ppmv)	Toluene[a] (ppmv)	Ethylbenzene[a] (ppmv)	Xylenes[a] (ppmv)	MTBE[a] (ppmv)	Methane[b] (%)	Carbon Dioxide[b] (%)	Carbon Monoxide[b] (%)	Oxygen[b] (%)	Nitrogen[b] (%)
SVE-Influent-0	6/29/10	5,300	16	20	45	110	75	--[c]	--	--	--	--
SVE-Influent-1	6/29/10	4,700	15	12	36	90	58	0.58	3.6	ND<0.5[d]	16.4	79.4
SVE-Influent	6/30/10	3,200	12	20	30	76	60	--	--	--	--	--
SVE-Influent	7/1/10	3,400	12	22	34	84	68	ND<0.5	4.0	ND<0.5	15.9	80.1
SVE-Influent	7/6/10	4,000	9.4	24	36	92	87	ND<0.5	4.3	ND<0.5	16.1	79.5
SVE-Influent	7/8/10	7,500	14	25	44	110	87	ND<0.5	5.3	ND<0.5	13.5	81.0
SVE-Influent	7/14/10	4,200	7.0	22	29	82	50	ND<0.5	5.5	ND<0.5	15.5	78.9
SVE-Influent	7/28/10	3,000	3.5	15	20	64	34	ND<0.5	4.0	ND<0.5	17.4	78.6
SVE-Manifold	8/5/10	4,800	4.4	12	20	66	28	ND<0.5	5.3	ND<0.5	12.1	82.4
SVE-Manifold	8/18/10	4,300	4.3	12	19	72	29	ND<0.5	5.2	ND<0.5	13.2	81.5
SVE-Manifold	9/7/10	1,100	2.2	6.2	4.8	26	10	ND<0.5	4.1	ND<0.5	17.6	78.3
SVE-Manifold	9/16/10	1,600	3.2	8.3	7.6	44	13	ND<0.5	4.0	ND<0.5	17.6	78.4
SVE-Manifold	9/29/10	1,800	2.8	5.6	6.1	34	12	ND<0.5	3.6	ND<0.5	15.4	81.0
SVE-Manifold	10/7/10	2,100	6.1	8.8	7.3	36	11	ND<0.5	3.6	ND<0.5	18.1	78.2
SVE-Manifold	10/13/10	2,100	7.8	10	6.1	32	8.9	ND<0.5	3.4	ND<0.5	16.8	79.7
SVE-Manifold	12/8/10	2,500	2.6	6.4	4.8	28	5.4	ND<0.5	4.7	ND<0.5	23.8	71.4
SVE-Manifold	12/14/10	1,700	2.1	5.4	5.2	30	4.9	ND<0.5	4.1	ND<0.5	18.3	77.6
SVE-Manifold	12/21/10	640	0.9	4.1	3.9	26	3.8	ND<0.5	2.2	ND<0.5	20.1	77.7
SVE-Manifold	12/29/10	150	ND<0.05	ND<0.05	ND<0.05	0.09	ND<0.05	ND<0.5	2.3	ND<0.5	19.2	78.4
SVE-Manifold	1/12/11	280	ND<0.05	ND<0.05	ND<0.05	0.09	--	ND<0.5	3.5	ND<0.5	18.5	77.9
SVE-Manifold	3/4/11	620	ND<0.1	ND<0.09	ND<0.08	0.1	--	ND<0.5	5.1	ND<0.5	46.6	48.3
SVE-Manifold	3/9/11	440	ND<0.1	ND<0.09	ND<0.08	ND<0.08	ND<0.1	ND<0.5	4.2	ND<0.5	24.6	71.2

TABLE 3

SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg[a] (ppmv)	Benzene[a] (ppmv)	Toluene[a] (ppmv)	Ethylbenzene[a] (ppmv)	Xylenes[a] (ppmv)	MTBE[a] (ppmv)	Methane[b] (%)	Carbon Dioxide[b] (%)	Carbon Monoxide[b] (%)	Oxygen[b] (%)	Nitrogen[b] (%)
SVE-Manifold	3/30/11	5.2	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	3.3	ND<0.5	22.9	73.8
SVE-Manifold	4/19/11	38	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.6	ND<0.5	18.9	76.5
SVE-Manifold	4/28/11	150	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.8	ND<0.5	17.5	77.6
SVE-Manifold	5/12/11	280	ND<0.06	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.7	ND<0.5	17.2	78.1
SVE-Manifold	5/25/11	330	0.2	0.1	ND<0.05	0.10	ND<0.1	ND<0.5	5.1	ND<0.5	16.4	78.5
SVE-Manifold	6/8/11	340	0.1	ND<0.05	ND<0.05	0.084	ND<0.1	ND<0.5	4.5	ND<0.5	15.9	79.6
SVE-Manifold	6/16/11	370	0.1	0.1	0.1	0.15	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	360	0.2	ND<0.07	ND<0.06	0.13	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	370	0.2	0.1	0.1	0.18	ND<0.1	ND<0.5	4.8	ND<0.5	15.6	79.6
SVE-Manifold	6/27/11	310	0.2	0.1	ND<0.05	0.18	ND<0.1	ND<0.5	4.7	ND<0.5	16.5	78.9
SVE-Manifold	7/711	130	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.5	ND<0.5	18.3	77.2
SVE-Manifold	7/13/11	78	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.9	ND<0.5	18.4	76.7
SVE-Manifold	7/27/11	88	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.4	ND<0.5	19.0	76.6
SVE-Manifold	8/9/11	87	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.2	ND<0.5	19.6	76.2
SVE-Manifold	8/23/11	92	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.3	ND<0.5	19.7	76.0
SVE-Manifold	9/1/11	140	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.2	ND<0.5	19.5	76.3
SVE-Manifold	9/1/11	310	0.1	0.3	0.1	1.5	ND<0.1	ND<0.5	3.6	ND<0.5	22.9	73.5
SVE-Manifold	9/15/11	310	0.3	1.2	0.2	4.3	ND<0.1	ND<0.5	2.8	ND<0.5	20.1	77.1
SVE-Manifold	9/27/11	360	0.2	0.9	0.2	3.4	ND<0.1	ND<0.5	2.7	ND<0.5	20.3	77.1
SVE-Manifold	10/20/11	130	ND<0.05	0.2	0.1	1.3	0.1	ND<0.5	2.7	ND<0.5	21.8	75.5
SVE-Catox Influent[e]	11/10/11	110	ND<0.05	0.1	ND<0.05	0.8	ND<0.1	ND<0.5	2.7	ND<0.5	21.3	76.1
SVE-Manifold	11/21/11	190	ND<0.05	0.1	ND<0.05	0.8	0.1	ND<0.5	2.7	ND<0.5	20.4	76.9

TABLE 3

SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg[(a)] (ppmv)	Benzene[(a)] (ppmv)	Toluene[(a)] (ppmv)	Ethylbenzene[(a)] (ppmv)	Xylenes[(a)] (ppmv)	MTBE[(a)] (ppmv)	Methane[(b)] (%)	Carbon Dioxide[(b)] (%)	Carbon Monoxide[(b)] (%)	Oxygen[(b)] (%)	Nitrogen[(b)] (%)
SVE-Manifold	12/7/11	170	ND<0.05	ND<0.05	ND<0.05	0.4	ND<0.1	ND<0.5	2.5	ND<0.5	20.8	76.7
SVE-Manifold	12/19/11	250	ND<0.05	ND<0.05	ND<0.05	0.6	0.1	ND<0.5	2.6	ND<0.5	21.6	75.7

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE), analyzed by EPA Method 8260; reported in parts per million by volume (ppmv).

(b) Fixed gases analyzed by Method ASTM D-1946; reported in percent (%)

(c) "--" - Not analyzed.

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

(e) SVE manifold influent vapor sample damaged during shipping to lab. Results of total well inlet and recirculation air used for data analysis.

TABLE 4

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Oxygen (%)	Mass Removal Rate (lbs/day)
1	6/29/10	8.7	0.4	5,300	--[a]	--	1.5	63[b]	124	--	NA[c]
2	6/29/10	12.9	0.5	4,700	--	--	1.25	63[b]	110	16.4	98
3	6/30/10	31	1	3,200	0.03	71	1.5	63[b]	75	--	NA
4	7/1/10	56	2	3,400	0.05	72	1.5	63[b]	80	15.9	108
5	7/6/10	175	7	4,000	0.04	69	1.5	63[b]	94	16.1	104
6	7/8/10	200	8	7,500	0.03	73	1.5	63[b]	176	13.5	161
7	7/14/10	343	14	4,200	1.25	90.0	1.5	81	127	15.5	151
8	7/28/10	625	26	3,000	0.62	68.0	1.5	59	65	17.4	71
9	8/5/10	793	33	4,800	0.73	68	1.0	65	115	12.1	196
10	8/18/10	985	41	4,300	0.64	71	1.0	60	97	13.2	160
11	9/7/10	1,309	55	1,100	2.05	75	1.6	106	43	17.6	120
12	9/16/10	1,473	61	1,600	0.81	76	1.4	67	40	17.6	76
13	9/29/10	1,628	68	1,800	0.08	89	1.5	21	14	15.4	39
14	10/7/10	1,821	76	2,100	0.26	69	1.5	38	30	18.1	37
15	10/13/10	1,866	78	2,100	0.09	76	3.3	21	16	16.8	29
16	12/8/10	1,912	80	2,500	1.02	53	2.4	74	69	23.8	0[e]
17	12/14/10	2,051	85	1,700	1.45	58	2.1	89	56	18.3	79
18	12/21/10	2,221	93	640	0.78	59	2.1	65	15	20.1	18
19	12/29/10[d]	2,412	101	150	0.35	49	4.1	41	2.3	19.2	24
20	1/12/11	2,748	115	280	--	54	4.2	14[f]	1.5	18.5	12
21	3/4/11	2,922	122	620	--	63	5.9	15	3.5	46.6	0
22	3/9/11	3,040	127	440	--	68	2.4	13	2.1	24.6	0

TABLE 4

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Oxygen (%)	Mass Removal Rate (lbs/day)
23	3/30/11	3,539	147	5.2	--	55	2.4	12	0.02	22.9	0
24	4/19/11	4,020	168	38	--	63	2.3	12	0.2	18.9	8
25	4/28/11	4,238	177	150	--	65	2.3	15	0.9	17.5	18
26	5/12/11	4,570	190	280	--	60	2.4	14	1.5	17.2	18
27	5/25/11	4,885	204	330	--	66	2.4	11	1.4	16.4	17
28	6/8/11	5,219	217	340	--	64	2.4	9	1.2	15.9	16
29	6/16/11	5,410	225	370	--	68	2.4	9	1.2	15.0	17
30	6/16/11	5,412	225	360	--	73	4.1	15	2.0	15.0	31
31	6/16/11	5,416	226	370	--	83	4.0	13	1.7	15.6	23
32	6/27/11	5,676	237	310	--	71	4.0	16	1.8	16.5	24
33	7/7/11	5,918	247	130	--	91	4.0	15	0.7	18.3	14
34	7/13/11	6,062	253	78	--	72	4.1	16	0.5	18.4	14
35	7/27/11	6,395	266	88	--	74	4.0	16	0.5	19.0	10
36	8/9/11	6,709	280	87	--	75	4.0	16	0.5	19.6	7
37	8/23/11	7,015	292	92	--	83	4.0	15	0.5	19.7	6
38	9/1/11	7,227	301	140	--	66	4.0	20	1.0	19.5	9
39	9/1/11	7,231	301	310	--	74	3.6	14	1.6	22.9	0
40	9/15/11	7,566	315	310	--	70	3.6	17	2.0	20.1	5
41	9/27/11	7,857	327	360	--	81	3.5	13	1.7	20.3	3
42	10/20/11	8,379	349	130	--	74	3.6	20	1.0	21.8	0
43	11/10/11	8,867	369	110	--	60	3.7	11	0.5	21.3	0
44	11/21/11	9,131	380	190	--	57	3.7	17	1.2	20.4	3
45	12/7/11	9,513	396	170	--	54	3.7	16	1.0	20.8	1

TABLE 4

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Oxygen (%)	Mass Removal Rate (lbs/day)
46	12/19/11	9,798	408	250	--	51	3.7	--	--	21.6	0

(a) "--" not sampled, analyzed, or collected.

(b) An average flow rate was used due to inaccurate system parameter readings.

(c) NA - not applicable.

(d) Only operating on well VW-2 due to high water levels.

(e) Mass removal rate by bioremediation estimated to be 0 lb/day when concentration of oxygen in soil vapor exceeds atmospheric concentration of 20.9%.

(f) Flow measurements taken with a TSI anemometer for better accuracy at low flow rates.

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-1	10/15/2010	0.03	NM[(c)]
	10/18/2010	NM	NM
	10/22/2010	9.96	NM
	10/25/2010	41.75	82.2
	11/1/2010	51.19	77.7
	12/9/2010	24.66	51.3
	12/14/2010	23.67	53.3
	12/23/2010	28.27	58.1
	1/5/2011	29.06	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.25	88.9
	3/4/2011	15.02	90.4
	4/8/2011	0.12	49.8
	5/3/2011	0.01	88.0
	6/27/2011	0.01	0.0
	6/28/2011	0.24	91.3
	6/30/2011	0.08	94.3
	7/5/2011	0.13	94.5
	7/7/2011	0.01	94.2
	7/13/2011	0.01	95.3
	7/22/2011	0.01	94.5
	8/9/2011	0.01	94.5
	9/1/2011	0.05	92.9
	11/29/2011	NM	0.0
IP-2	10/15/2010	0.03	NM
	10/18/2010	NM	NM
	10/22/2010	0.05	NM
	10/25/2010	0.29	82.2
	11/1/2010	0.02	77.7
	12/9/2010	0.46	51.3
	12/14/2010	0.84	53.3
	12/23/2010	0.41	58.1
	1/5/2011	NM	52.0
	1/18/2011	2.01	0

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-2	2/1/2011	2.09	88.9
(cont.)	3/4/2011	1.45	90.4
	4/8/2011	3.38	49.8
	5/3/2011	0.47	88.0
	6/27/2011	0.01	0.0
	6/28/2011	25.05	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	9.31	94.5
	8/9/2011	17.38	94.5
	9/1/2011	24.79	92.9
	11/29/2011	1.14	0.0
IP-3	10/15/2010	0.06	NM
	10/18/2010	NM	NM
	10/22/2010	NM	NM
	10/25/2010	NM	82.2
	11/1/2010	0.12	77.7
	12/9/2010	0.15	51.3
	12/14/2010	0.19	53.3
	12/23/2010	0.33	58.1
	1/5/2011	0.66	52.0
	1/18/2011	0.08	0.0
	2/1/2011	15.12	88.9
	3/4/2011	14.61	90.4
	4/8/2011	20.46	49.8
	5/3/2011	5.59	88.0
	6/27/2011	0.01	0.0
	6/28/2011	0.96	91.3
	6/30/2011	0.67	94.3
	7/5/2011	0.55	94.5
	7/7/2011	1.32	94.2
	7/13/2011	0.26	95.3

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-3	7/22/2011	0.30	94.5
(cont.)	8/9/2011	0.49	94.5
	9/1/2011	3.63	92.9
	11/29/2011	2.11	0.0
IP-4	10/15/2010	0.01	NM
	10/18/2010	NM	NM
	10/22/2010	0.04	NM
	10/25/2010	0.14	82.2
	11/1/2010	0.15	77.7
	12/9/2010	0.09	51.3
	12/14/2010	0.01	53.3
	12/23/2010	0.03	58.1
	1/5/2011	0.02	52.0
	1/18/2011	1.04	0.0
	2/1/2011	1.25	88.9
	3/4/2011	0.18	90.4
	4/8/2011	1.02	49.8
	5/3/2011	13.77	88.0
	6/27/2011	1.33	0.0
	6/28/2011	7.11	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	9.74	94.5
	8/9/2011	15.48	94.5
	9/1/2011	16.45	92.9
	11/29/2011	0.91	0.0
IP-5	10/15/2010	0.02	NM
	10/18/2010	NM	NM
	10/22/2010	0.04	NM
	10/25/2010	0.09	82.2
	11/1/2010	0.02	77.7
	12/9/2010	0.21	51.3

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-5	12/14/2010	0.01	53.3
(cont.)	12/23/2010	0.07	58.1
	1/5/2011	NM	52.0
	1/18/2011	0.72	0.0
	2/1/2011	0.77	88.9
	3/4/2011	50.28	90.4
	4/8/2011	25.82	49.8
	5/3/2011	19.23	88
	6/27/2011	0.03	0.0
	6/28/2011	38.65	91.3
	6/30/2011	30.79	94.3
	7/5/2011	41.81	94.5
	7/7/2011	42.53	94.2
	7/13/2011	38.87	95.3
	7/22/2011	31.29	94.5
	8/9/2011	32.78	94.5
	9/1/2011	40.51	92.9
	11/29/2011	13.76	0.0
IP-6	10/15/2010	0.25	NM
	10/18/2010	NM	NM
	10/22/2010	0.27	NM
	10/25/2010	0.44	82.2
	11/1/2010	11.22	77.7
	12/9/2010	12.55	51.3
	12/14/2010	12.79	53.3
	12/23/2010	12.82	58.1
	1/5/2011	14.3	52
	1/18/2011	5.19	0.0
	2/1/2011	15.94	88.9
	3/4/2011	10.31	90.4
	4/8/2011	13.22	49.8
	5/3/2011	9.97	88.0
	6/27/2011	4.88	0.0
	6/28/2011	3.65	91.3

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-6	6/30/2011	NM	94.3
(cont.)	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	2.69	94.5
	8/9/2011	2.40	94.5
	9/1/2011	2.79	92.9
	11/29/2011	1.17	0.0
IP-7	10/15/2010	0.01	NM
	10/18/2010	NM	NM
	10/22/2010	0.13	NM
	10/25/2010	0.17	82.2
	11/1/2010	0.34	77.7
	12/9/2010	5.75	51.3
	12/14/2010	4.72	53.3
	12/23/2010	6.29	58.1
	1/5/2011	5.75	52.0
	1/18/2011	0.14	0.0
	2/1/2011	32.69	88.9
	3/4/2011	10.22	90.4
	4/8/2011	2.58	49.8
	5/3/2011	0.75	88.0
	6/27/2011	0.26	0.0
	6/28/2011	0.26	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	0.15	94.5
	8/9/2011	0.10	94.5
	9/1/2011	0.24	92.9
	11/29/2011	0.74	0.0
IP-8	10/15/2010	0.02	NM
	10/18/2010	NM	NM

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-8	10/22/2010	0.27	NM
(cont.)	10/25/2010	0.21	82.2
	11/1/2010	NM	77.7
	12/9/2010	NM	51.3
	12/14/2010	NM	53.3
	12/23/2010	NM	58.1
	1/5/2011	NM	52.0
	1/18/2011	NM	0.0
	2/1/2011	NM	88.9
	3/4/2011	NM	90.4
	4/8/2011	24.74	49.8
	5/3/2011	5.15	88
	6/27/2011	0.01	0
	6/28/2011	21.98	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	11.34	94.5
	8/9/2011	12.88	94.5
	9/1/2011	16.02	92.9
	11/29/2011	NM	0.0
IP-9	10/15/2010	0.01	NM
	10/18/2010	NM	NM
	10/22/2010	11.27	NM
	10/25/2010	18.36	82.2
	11/1/2010	18.96	77.7
	12/9/2010	31.42	51.3
	12/14/2010	33.16	53.3
	12/23/2010	31.77	58.1
	1/5/2011	35.3	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.65	88.9
	3/4/2011	0.45	90.4

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-9	4/8/2011	0.42	49.8
(cont.)	5/3/2011	0.55	88.0
	6/27/2011	0.01	0.0
	6/28/2011	NM	91.3
	6/30/2011	27.14	94.3
	7/5/2011	23.48	94.5
	7/7/2011	22.62	94.2
	7/13/2011	21.37	95.3
	7/22/2011	20.65	94.5
	8/9/2011	16.24	94.5
	9/1/2011	36.38	92.9
	11/29/2011	NM	0.0
IP-10	10/15/2010	0.11	NM
	10/18/2010	NM	NM
	10/22/2010	0.07	NM
	10/25/2010	5.33	82.2
	11/1/2010	8.48	77.7
	12/9/2010	0.25	51.3
	12/14/2010	0.30	53.3
	12/23/2010	0.04	58.1
	1/5/2011	0.01	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.18	88.9
	3/4/2011	0.04	90.4
	4/8/2011	26.54	49.8
	5/3/2011	4.45	88.0
	6/27/2011	0.04	0.0
	6/28/2011	10.08	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	29.15	94.5
	8/9/2011	11.44	94.5

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-10	9/1/2011	37.28	92.9
(cont.)	11/29/2011	NM	0.0
MW-1	10/15/2010	0.11	NM
	10/18/2010	NM	NM
	10/22/2010	0.31	NM
	10/25/2010	0.35	82.2
	11/1/2010	1.79	77.7
	12/9/2010	0.21	51.3
	12/14/2010	0.01	53.3
	12/23/2010	0.01	58.1
	1/5/2011	0.0	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.66	88.9
	3/4/2011	NM	90.4
	4/8/2011	10.53	49.8
	5/3/2011	10.43	88.0
	6/27/2011	0.71	0.0
	6/28/2011	NM	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	11.42	95.3
	7/22/2011	16.04	94.5
	8/9/2011	27.72	94.5
	9/1/2011	32.16	92.9
	11/29/2011	NM	0.0
MW-2	10/15/2010	0.02	NM
	10/18/2010	NM	NM
	10/22/2010	0.15	NM
	10/25/2010	0.04	82.2
	11/1/2010	0.08	77.7
	12/9/2010	0.03	51.3
	12/14/2010	0.21	53.3
	12/23/2010	0.01	58.1

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-2	1/5/2011	0.06	52.0
(cont.)	1/18/2011	0.0	0.0
	2/1/2011	0.15	88.9
	3/4/2011	0.44	90.4
	4/8/2011	0.06	49.8
	5/3/2011	0.01	88.0
	6/27/2011	0.02	0.0
	6/28/2011	NM	91.3
	6/30/2011	0.04	94.3
	7/5/2011	0.01	94.5
	7/7/2011	0.07	94.2
	7/13/2011	0.04	95.3
	7/22/2011	0.11	94.5
	8/9/2011	1.14	94.5
	9/1/2011	0.24	92.9
	11/29/2011	0.71	0.0
MW-11	10/15/2010	0.04	NM
	10/18/2010	NM	NM
	10/22/2010	29.48	NM
	10/25/2010	29.78	82.2
	11/1/2010	32.42	77.7
	12/9/2010	5.07	51.3
	12/14/2010	13.39	53.3
	12/23/2010	11.87	58.1
	1/5/2011	11.42	52.0
	1/18/2011	0.0	0.0
	2/1/2011	1.18	88.9
	3/4/2011	0.23	90.4
	4/8/2011	16.87	49.8
	5/3/2011	12.14	88.0
	6/27/2011	0.01	0.0
	6/28/2011	36.72	91.3
	6/30/2011	32.83	94.3
	7/5/2011	33.76	94.5

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-11	7/7/2011	33.91	94.2
(cont.)	7/13/2011	35.42	95.3
	7/22/2011	33.97	94.5
	8/9/2011	34.22	94.5
	9/1/2011	27.88	92.9
	11/29/2011	NM	0.0
DW-1	10/15/2010	0.03	NM
	10/18/2010	NM	NM
	10/22/2010	NM	NM
	10/25/2010	NM	82.2
	11/1/2010	0.03	77.7
	12/9/2010	10.38	51.3
	12/14/2010	9.93	53.3
	12/23/2010	7.14	58.1
	1/5/2011	15.77	52.0
	1/18/2011	11.58	0.0
	2/1/2011	24.42	88.9
	3/4/2011	28.71	90.4
	4/8/2011	19.81	49.8
	5/3/2011	0.01	88.0
	6/27/2011	0.02	0.0
	6/28/2011	0.24	91.3
	6/30/2011	0.05	94.3
	7/5/2011	0.08	94.5
	7/7/2011	0.16	94.2
	7/13/2011	0.04	95.3
	7/22/2011	0.08	94.5
	8/9/2011	0.46	94.5
	9/1/2011	0.09	92.9
	11/29/2011	0.94	0.0
TP-1	10/15/2010	0.12	NM
	10/18/2010	NM	NM
	10/22/2010	2.11	NM
	10/25/2010	16.11	82.2

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

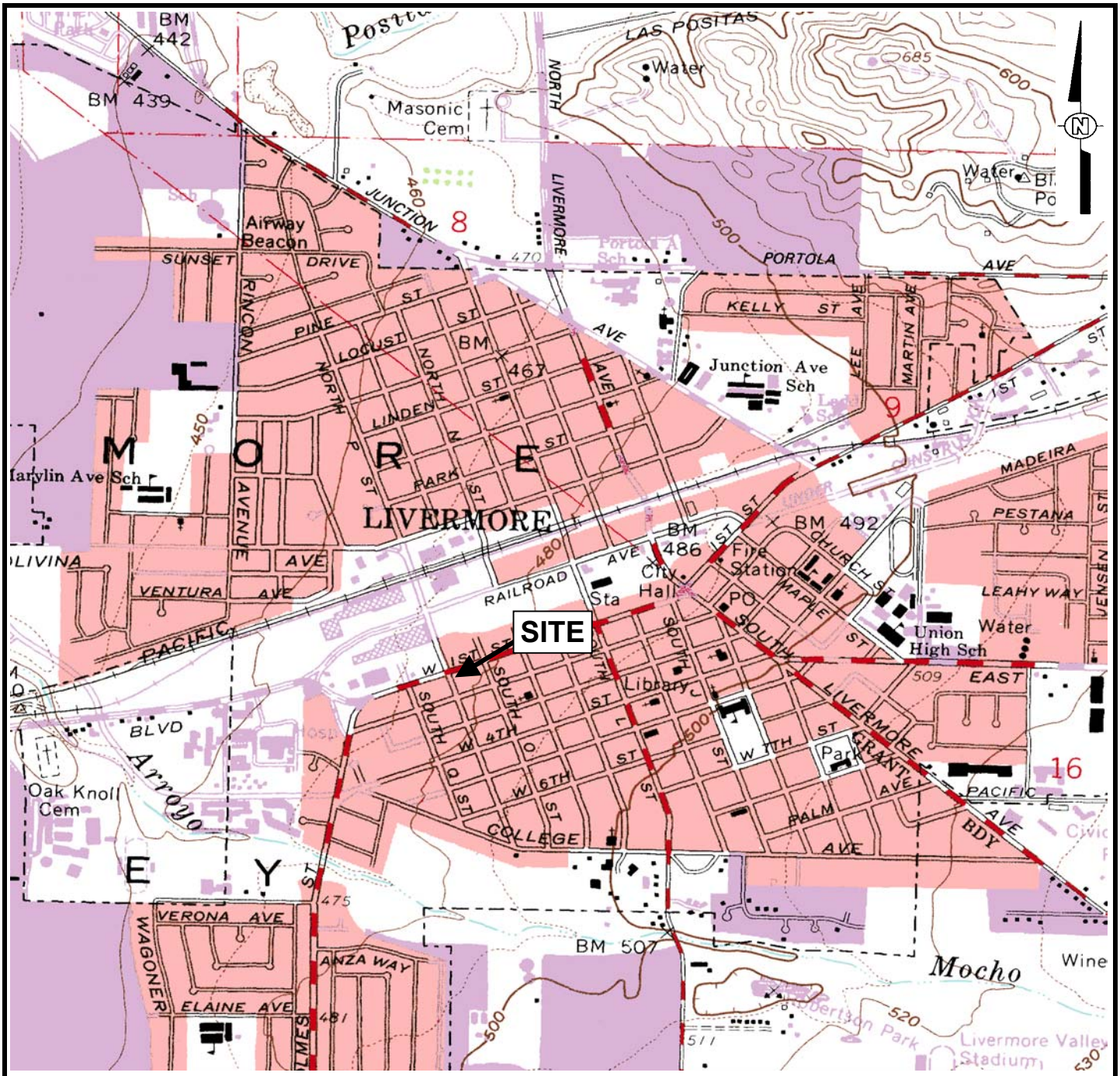
Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
TP-1	11/1/2010	5.15	77.7
(cont.)	12/9/2010	0.01	51.3
	12/14/2010	0.33	53.3
	12/23/2010	0.16	58.1
	1/5/2011	0.0	52.0
	1/18/2011	0.0	0.0
	2/1/2011	27.22	88.9
	3/4/2011	12.11	90.4
	4/8/2011	15.61	49.8
	5/3/2011	1.25	88.0
	6/27/2011	0.01	0.0
	6/28/2011	7.49	91.3
	6/30/2011	0.02	94.3
	7/5/2011	0.19	94.5
	7/7/2011	8.43	94.2
	7/13/2011	0.02	95.3
	7/22/2011	11.89	94.5
	8/9/2011	18.19	94.5
	9/1/2011	10.35	92.9
	11/29/2011	0.67	0.0
TP-2	10/15/2010	0.05	NM
	10/18/2010	NM	NM
	10/22/2010	25.44	NM
	10/25/2010	24.90	82.2
	11/1/2010	25.83	77.7
	12/9/2010	6.03	51.3
	12/14/2010	5.12	53.3
	12/23/2010	0.63	58.1
	1/5/2011	0.43	52.0
	1/18/2011	0.0	0.0
	2/1/2011	33.44	88.9
	3/4/2011	34.15	90.4
	4/8/2011	19.31	49.8
	5/3/2011	11.95	88

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
TP-2	6/27/2011	0.01	0.0
(cont.)	6/28/2011	24.27	91.3
	6/30/2011	23.57	94.3
	7/5/2011	31.33	94.5
	7/7/2011	33.74	94.2
	7/13/2011	33.16	95.3
	7/22/2011	33.72	94.5
	8/9/2011	35.64	94.5
	9/1/2011	26.08	92.9
	11/29/2011	0.69	0.0

(a) Dissolved oxygen measured in milligrams per liter (mg/l).
(b) Oxygen purity measured at injection manifold (same for all wells) in percent (%).
(c) Not measured.



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 10 October2011
- DW-1 ⊞ Deep Groundwater Monitoring Well with Groundwater Elevation (Feet, MSL) Measured 10 October2011
- IP-1 ▲ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well with Groundwater Elevation (Feet, MSL) Measured 10 October2011
- TP-2 ⊗ Monitoring Well/Vapor Extraction Well with Groundwater Elevation (Feet, MSL) Measured 10 October2011
- 432 Groundwater Elevation Contour
- * Groundwater Elevation Not Used for Contours

0 30' 60'
SCALE

REVISION 14

NO.	BY	DATE	DESCRIPTION
9	MY	11/19/10	Third Quarter 2010 Monitoring Report
10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report
11	MY	5/13/11	First Quarter 2011 Monitoring Report
12	MY	8/15/11	Second Quarter 2011 Monitoring Report
13	MY	11/15/11	Third Quarter 2011 Monitoring Report
14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

GROUNDWATER ELEVATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG
FILE NO. 01LV11B-20414.DWG		FIGURE 2	

2/7/2012 12:46PM 01LV11B-20414.dwg

Legend

- MW-7 ⊕ Groundwater Monitoring Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- DW-1 ⊕ Deep Groundwater Monitoring Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 TPHg Results in µg/L
- IP-1 ✦ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 TPHg Results in µg/L
- TP-2 ⊗ Monitoring Well/Vapor Extraction Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 TPHg Results in µg/L
- 1000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (130/1,500) Previous Quarter/Current Quarter TPHg Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
14	10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report
	11	MY	5/13/11	First Quarter 2011 Monitoring Report
	12	MY	8/15/11	Second Quarter 2011 Monitoring Report
	13	MY	11/15/11	Third Quarter 2011 Monitoring Report
	14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

TPHg CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20514.DWG

FIGURE 3

1/11/2012 4:01PM 01LV11B-20514.dwg

Legend

- MW-7 — Groundwater Monitoring Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 Benzene Results in µg/L
- DW-1 — Deep Groundwater Monitoring Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 Benzene Results in µg/L
- IP-1 — Injection Well
- IP-6 △ — Angled Injection Well Screen Location
- VW-2 — Vapor Extraction Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 Benzene Results in µg/L
- TP-2 — Monitoring Well/Vapor Extraction Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 Benzene Results in µg/L
- 1,000 — Benzene Concentration Contour (µg/L), Queried Where Uncertain
- ND — Not Detected
- NS — Not Sampled
- (2.0/6.0) — Previous Quarter/Current Quarter Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
14	10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report
	11	MY	5/13/11	First Quarter 2011 Monitoring Report
	12	MY	8/15/11	Second Quarter 2011 Monitoring Report
	13	MY	11/15/11	Third Quarter 2011 Monitoring Report
	14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

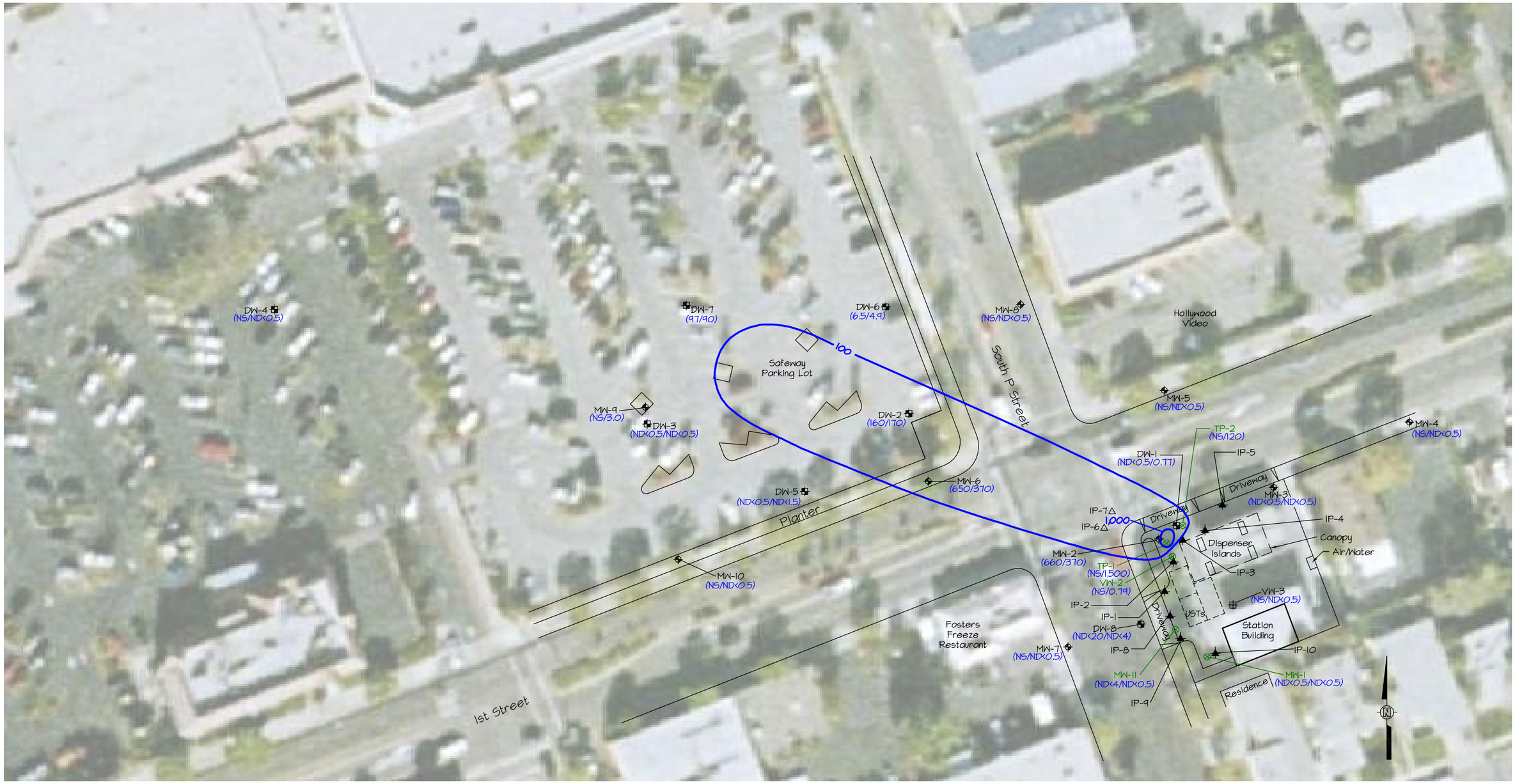
BENZENE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20614.DWG

FIGURE 4

2/7/2012 12:48PM 01LV11B-20614.dwg



Legend

MW-7 ⊕ Groundwater Monitoring Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 Methyl Tert-Butyl Ether (MTBE) Results in µg/L

DW-1 ⊞ Deep Groundwater Monitoring Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 MTBE Results in µg/L

IP-1 ▲ Injection Well

IP-6 △ Angled Injection Well Screen Location

VW-2 ⊞ Vapor Extraction Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 MTBE Results in µg/L

TP-2 ⊗ Monitoring Well/Vapor Extraction Well with 3 and 4 August 2011 and 10, 11 and 25 October 2011 MTBE Results in µg/L

1000 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
14	9	MY	11/19/10	Third Quarter 2010 Monitoring Report
	11	MY	5/13/11	First Quarter 2011 Monitoring Report
	12	MY	8/15/11	Second Quarter 2011 Monitoring Report
	13	MY	11/15/11	Third Quarter 2011 Monitoring Report
	14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

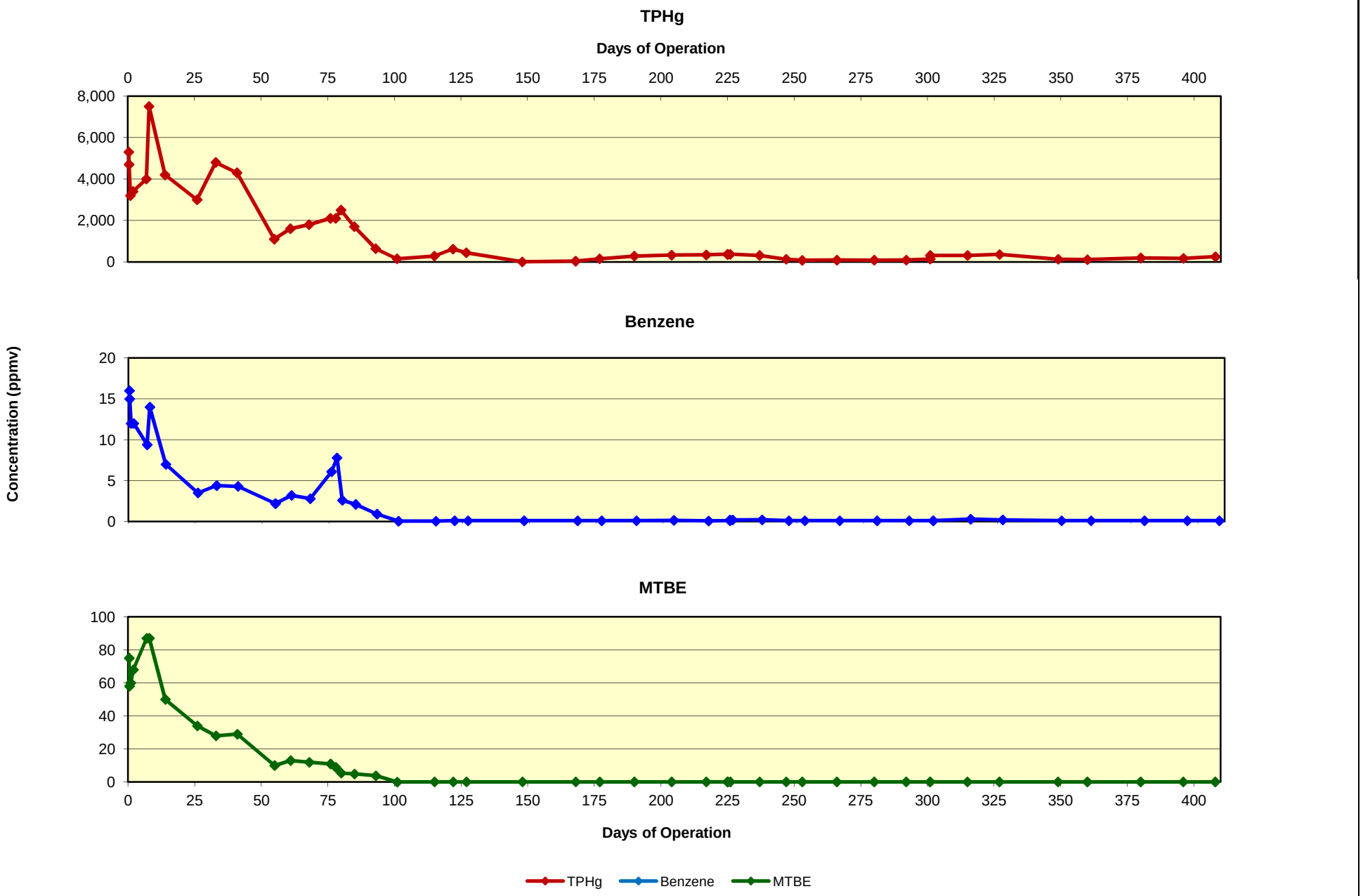
MTBE CONCENTRATION CONTOURS

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

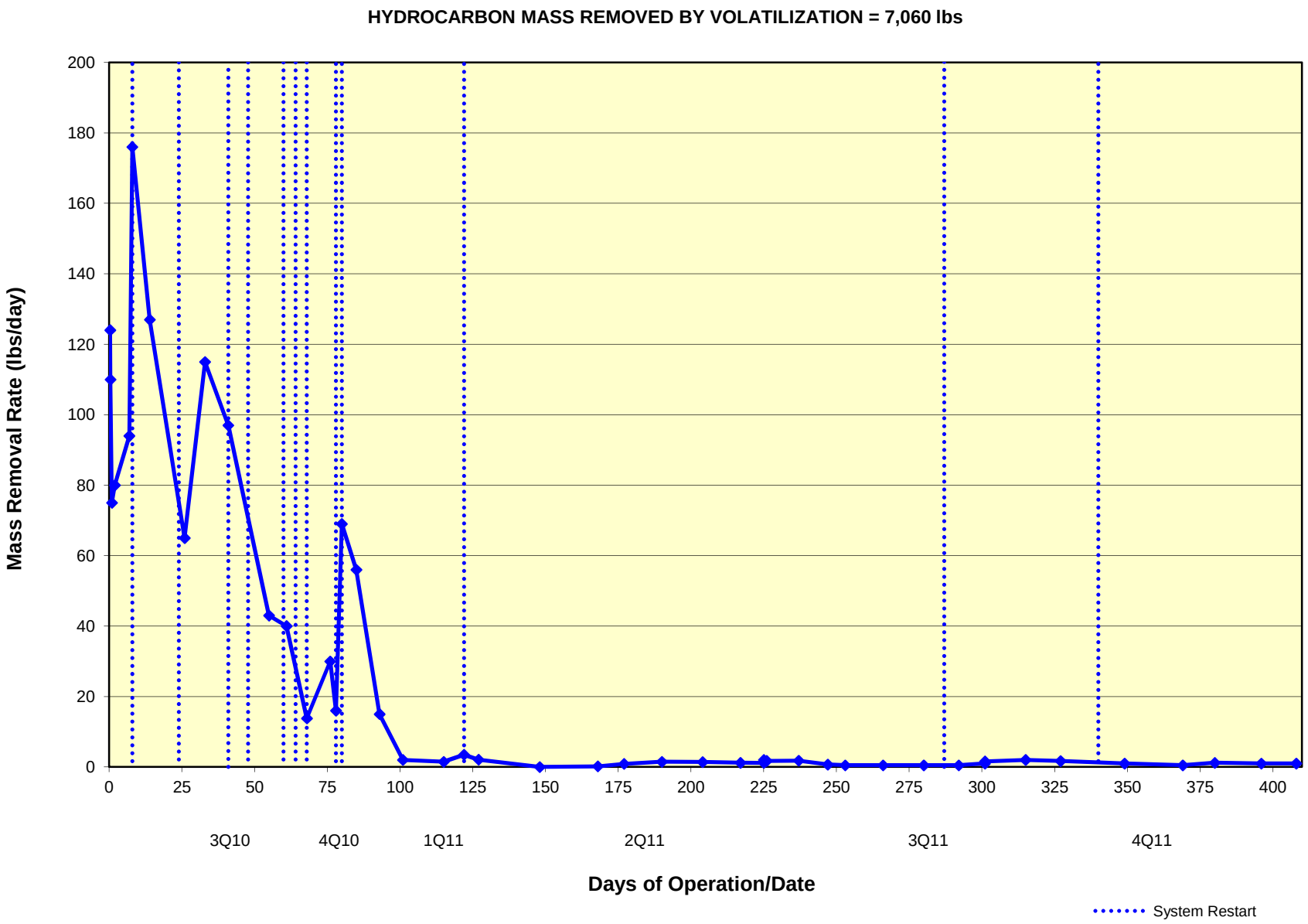
FILE NO. 01LV11B-20714.DWG

FIGURE 5

1/11/2012 4:04PM 01LV11B-20714.dwg

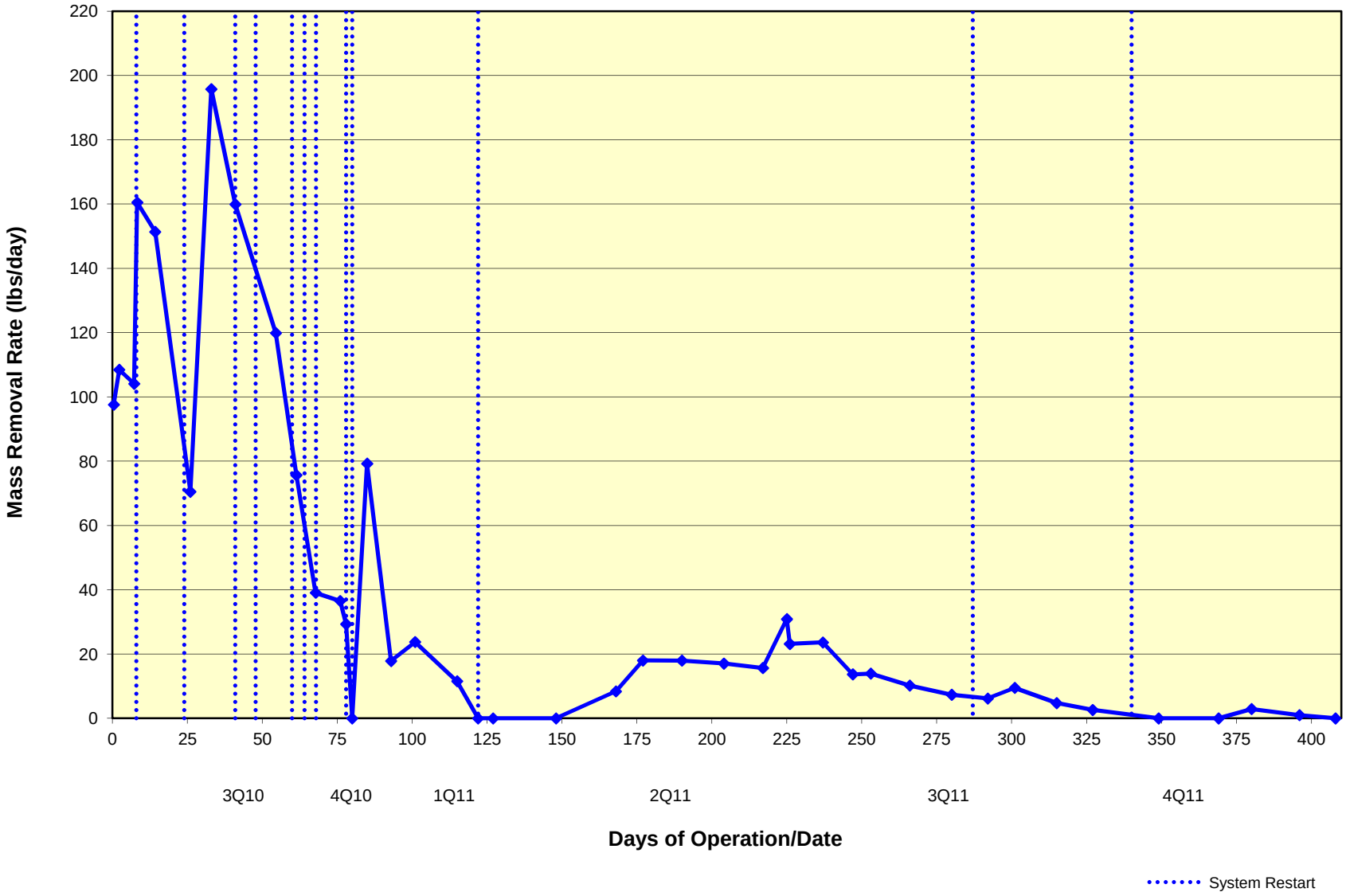


ARCTOS Arctos Environmental	Tesoro - Livermore	SOIL VAPOR INFLUENT CONCENTRATIONS	Figure 6
4Q11 System Graphs.xlsx | 2/15/2012			



ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY VOLATILIZATION	Figure 7
4Q11 System Graphs.xlsx | 2/15/2012			

HYDROCARBON MASS REMOVED BY BIODEGRADATION = 12,600 lbs



ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY BIODEGRADATION	Figure 8
4Q11 System Graphs.xlsx | 2/15/2012			

ATTACHMENT A

GROUNDWATER SAMPLING QA/QC PROCEDURES

ATTACHMENT A
GROUNDWATER SAMPLING QA/QC PROCEDURES

Monitoring Plan

In accordance with the California State Water Resources Control Board's (SWRCB) Resolution No. 2009-0042, referenced in Alameda Environmental Health's (ACEH) 23 July 2009 letter to Tesoro Environmental Resources Company (Tesoro), Arctos Environmental (Arctos) proposed to reduce the monitoring and sampling frequency to semiannually in the second quarter 2009 status report. Select wells will continue to be monitored quarterly to assess the effectiveness of the groundwater remediation system according to the following groundwater monitoring plan:

Well Designation	Location	Sampling Frequency
MW-1, MW-3, MW-11, and DW-8	Upgradient	Quarterly
MW-2 and DW-1	Source area	
MW-6, DW-2, DW-3, DW-5, DW-6, and DW-7	Downgradient	
MW-4 and VW-3	Upgradient	Semiannually (2nd and 4th quarters)
TP-1, TP-2, and VW-2	Source area	
MW-5 and MW-7	Cross gradient	
MW-8, MW-9, MW-10, and DW-4	Downgradient	

Analytical Plan

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

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

Purge-and-Bail Sampling Procedures

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 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 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 (HSP) 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 stored in a holding tank. The Project Manager determined the appropriate disposal method for this wastewater. Waste manifests for this quarter are in Attachment G.

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 well purge and sample logs.

Health and Safety
Arctos used a site-specific 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

Field Data Sheet

Date: 10/10/2011 **Project Name:** Tesoro #67076 **Project Number:** 01LV

Technician: C.Arroyo/A.Pantoja **Location:** Livermore, CA **Global ID :** T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	33.12	-	
MW-2	4"	54.1	-	33.51	-	
MW-3	4"	52.9	-	33.96	-	
MW-4	2"	46.8	-	34.49	-	
MW-5	2"	46.27	-	35.58	-	
MW-6	2"	47.65	-	37.45	-	
MW-7	2"	46.8	-	33.63	-	
MW-8	2"	44.5	-	35.69	-	
MW-9	2"	44.58	-	37.64	-	
MW-10	2"	45.1	-	35.62	-	
MW-11	4"	42.85	-	33.27	-	not sampled this quarter
DW-1	4"	64.75	-	34.4	-	
DW-2	4"	59.84	-	37.44	-	
DW-3	4"	59.74	-	37	-	
DW-4	4"	70.04	-	36.6	-	
DW-5	4"	59.8	-	37	-	
DW-6	4"	60.15	-	38.09	-	
DW-7	4"	65.2	-	37.55	-	
DW-8	4"	64.65		33.41		not sampled this quarter
TP-1	2"	43.22	-	31.6	-	
TP-2	2"	41.21	-	32.14	-	
VW-2	2"	36.78	-	33.29	-	
VW-3	2"	36.34	-	33.66	-	

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	MW-2	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X	0.17	=			
3		-	=		X	0.38	=			
4		**54.1**		**33.51**		**20.59**		**0.66**		**13.59**
4.5		-	=		X	0.83	=			
6		-	=		X	1.5	=			

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	8:35	1.48	1.069	62.8	5.46	6.72	19.78
1	14	8:46	1.465	1.039	-43.2	4.36	6.74	20.62
2	28	8:57	1.367	0.968	-40.4	5.01	6.8	20.7
3	42	9:09	1.336	0.943	-47	4.14	6.83	20.82
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	33.51	
(P) After Purging	36.49	
P- 0.8(P-I) =	33.79	80% Recovery
(S) Before Sampling	33.62	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 10:02 **Turbidity (NTU):** 20.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	MW-1	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X		0.17		=	
3		-	=		X		0.38		=	
4		**54.55**		**33.12**		**21.43**		**0.66**		**14.14**
4.5		-	=		X		0.83		=	
6		-	=		X		1.5		=	

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	7:12	1.528	1.108	170.8	7.51	8.59	19.62
1	14	7:19	1.485	1.076	196.7	6.66	8.12	19.62
2	28	7:26	1.524	1.104	212.5	8.66	8.32	19.65
3	42	7:33	1.54	1.114	220.3	11.34	8.48	19.67
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	33.12	
(P) After Purging	34.24	
P- 0.8(P-I) =	33.34	80% Recovery
(S) Before Sampling	33.34	
Sampled 80% - 100%	Yes	

Sample Date : 10/11/11 **Time:** 8:39

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Turbidity (NTU): 23.4

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	MW-4	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	46.8	-	34.49	=	12.31	X 0.17	2.09
3	-		=		X	0.38	=
4	-		=		X	0.66	=
4.5	-		=		X	0.83	=
6	-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (µS/cm)	tds (ppm)	ORP	DO %	pH	Temp. (°C)
0	Int.	10:51	1.085	0.775	118.7	2.73	7.33	20.3
1	2	10:55	1.09	0.778	113.6	1.87	7.31	20.31
2	4	10:59	1.105	0.789	110.8	1.48	7.31	20.32
3	6	11:04	1.099	0.788	108.3	1.47	7.32	20.24
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.49	
(P) After Purging	35.36	
P- 0.8(P-I) =	34.66	80% Recovery
(S) Before Sampling	34.66	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 11:18 **Turbidity (NTU):** 17.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	MW-3	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-		=		X	0.17	=	
3		-		=		X	0.38	=	
4	**52.6**		**33.96**		**18.94**		**0.66**		**12.5**
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	9:27	1.113	0.808	273.6	5.17	7.35	19.54
1	12.5	9:37	1.094	0.789	264.6	1.37	7.23	19.86
2	25	9:46	1.067	0.769	257.6	1.43	7.25	19.82
3	37.5	9:55	1.071	0.774	250	2.09	7.25	19.78
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	33.96	
(P) After Purging	36.31	
P- 0.8(P-I) =	34.43	80% Recovery
(S) Before Sampling	34.28	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 10:15 **Turbidity (NTU):** 27.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	MW-7	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2	46.8		33.63		13.17		0.17		2.23
3	-		=		X		0.38		=
4	-		=		X		0.66		=
4.5	-		=		X		0.83		=
6	-		=		X		1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	12:07	1.053	0.744	-67.3	4.73	7.19	20.82
1	2.5	12:10	1.079	0.763	-93.7	1.57	7.1	20.75
2	5	12:13	1.1	0.78	-100.4	1.1	7.1	20.68
3	7	12:15	1.095	0.776	-102	0.57	7.08	20.69
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	33.63	
(P) After Purging	34.02	
P- 0.8(P-I) =	33.7	80% Recovery
(S) Before Sampling	33.65	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 12:30 **Turbidity (NTU):** 103

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	MW-6	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy/Sunny

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2	**47.65**		**37.45**		**10.2**		**0.17**		**1.73**
3	-		=		X		**0.38**		=
4	-		=		X		**0.66**		=
4.5	-		=		X		**0.83**		=
6	-		=		X		**1.5**		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	12:33	1.531	1.055	-67.9	1.57	6.85	21.98
1	2	12:38	1.532	1.069	-70.4	0.86	6.83	21.36
2	3	12:43	1.525	1.074	-71.5	7.31	6.78	20.9
3	4	12:47	1.523	1.073	-71.5	2.21	6.81	20.89
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.45	
(P) After Purging	37.45	
P- 0.8(P-I) =	37.45	80% Recovery
(S) Before Sampling	37.45	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 12:55 **Turbidity (NTU):** 19.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	MW-5	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	46.27		35.58		10.69	0.17	1.81
3	-		=		X	0.38	=
4	-		=		X	0.66	=
4.5	-		=		X	0.83	=
6	-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	11:31	1.297	0.923	226.6	4.96	6.98	20.41
1	2	11:33	1.348	0.955	29.7	2.1	6.92	20.69
2	4	11:36	1.382	0.981	-4.3	1.66	6.94	20.63
3	6	11:38	1.409	0.999	-34.1	2.08	6.94	20.61
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	35.58	
(P) After Purging	37.68	
P- 0.8(P-I) =	36	80% Recovery
(S) Before Sampling	35.69	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 11:45 **Turbidity (NTU):** 48.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	MW-8	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (gal.)
2	44.5		35.69		8.81	0.17		1.49
3	-		=		X	0.38		=
4	-		=		X	0.66		=
4.5	-		=		X	0.83		=
6	-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	8:47	1.203	0.86	265.7	4.23	7.27	20.17
1	1.5	8:49	1.227	0.862	263	3.59	7.18	21.06
2	3	8:51	1.246	0.868	260.2	3.14	7.18	21.47
3	4.5	8:52	1.217	0.854	259	4.99	7.21	21.16
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	35.69	
(P) After Purging	38.8	
P- 0.8(P-I) =	36.31	80% Recovery
(S) Before Sampling	35.82	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 9:10 **Turbidity (NTU):** 26.9

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	MW-9	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy/Sunny

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	44.58		37.64		6.94	0.17	1.17
3	-		=		X	0.38	=
4	-		=		X	0.66	=
4.5	-		=		X	0.83	=
6	-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	14:43	1.106	0.804	-47.2	5.52	7.87	21.41
1	1	14:46	1.259	0.869	-96.4	1.97	7.06	21.94
2	2	14:49	1.279	0.885	-102.3	1.1	7.03	21.87
3	3	14:52	1.297	0.898	-104.7	1.23	7.03	21.81
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.64	
(P) After Purging	38.12	
P- 0.8(P-I) =	37.73	80% Recovery
(S) Before Sampling	37.73	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 15:00 **Turbidity (NTU):** 17.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	MW-10	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	45.1		35.62		9.48	0.17	1.61
3	-		=		X	0.38	=
4	-		=		X	0.66	=
4.5	-		=		X	0.83	=
6	-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	9:10	1.505	1.073	275.9	5.56	7.51	20.47
1	2	9:11	1.536	1.084	271.7	4.76	7.46	20.87
2	4	9:12	1.552	1.094	267.9	3.84	7.5	20.93
3	6	9:15	1.53	1.081	263.3	4.1	7.64	20.84
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	35.62	
(P) After Purging	40.84	
P- 0.8(P-I) =	36.66	80% Recovery
(S) Before Sampling	35.93	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 11:00 **Turbidity (NTU):** 32.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	DW-1	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2		-		=		X	0.17	=
3		-		=		X	0.38	=
4		**64.75**		**34.4**		**30.35**	**0.66**	**20.03**
4.5		-		=		X	0.83	=
6		-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	9:28	1027	0.736	29.6	11.66	7.58	20.2
1	20	9:46	1.031	0.736	89.1	8.25	7.44	20.29
2	40	10:04	1.031	0.737	84.7	5.87	7.4	20.29
3	60	10:19	1.044	0.747	90.1	7.49	7.33	20.24
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.4	
(P) After Purging	35.62	
P- 0.8(P-I) =	34.64	80% Recovery
(S) Before Sampling	34.64	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 10:33 **Turbidity (NTU):** 16.1

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	DW-2	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X		0.17	=	
3		-	=		X		0.38	=	
4		**59.84**		**37.44**		**22.4**	**0.66**		**14.78**
4.5		-	=		X		0.83	=	
6		-	=		X		1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	11:35	1.204	0.841	-52.6	2.07	7.06	21.41
1	15	11:47	1.197	0.841	-78.5	0.85	7.03	21.07
2	30	11:58	1.199	0.842	-87.8	0.82	7.04	21.07
3	45	12:09	1.205	0.844	-91.6	2.26	7.01	21.24
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.44	
(P) After Purging	37.49	
P- 0.8(P-I) =	37.45	80% Recovery
(S) Before Sampling	37.45	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 12:20 **Turbidity (NTU):** 13.1

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	DW-3	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (gal.)
2		-		=		X	0.17		=
3		-		=		X	0.38		=
4		**59.74**		**37**		**22.74**	**0.66**		**15**
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	12:55	1.174	0.818	79.6	4.72	7.6	21.55
1	15	13:08	1.169	0.814	15.2	1.62	7.33	21.54
2	30	13:22	1.168	0.813	-27.9	5.1	7.29	21.53
3	45	13:36	1.165	0.812	-33.6	1.88	7.25	21.48
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37	
(P) After Purging	38.83	
P- 0.8(P-I) =	37.36	80% Recovery
(S) Before Sampling	37.03	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 13:50 **Turbidity (NTU):** 17.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	DW-4	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-		=		X		0.17		=
3		-		=		X		0.38		=
4		70.04		36.6		33.44		0.66		22.07
4.5		-		=		X		0.83		=
6		-		=		X		1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	10:14	0.962	0.682	267.1	4.76	7.31	20.58
1	22	10:31	0.979	0.688	248.3	1.19	7.26	21.06
2	44	10:53	0.984	0.69	230.6	1.43	7.27	21.17
3	66	11:10	0.985	0.691	221.2	1.47	7.26	21.17
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	36.6	
(P) After Purging	41.54	
P- 0.8(P-I) =	37.58	80% Recovery
(S) Before Sampling	37.01	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 11:25 **Turbidity (NTU):** 32.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	DW-5	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Sunny

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (gal.)
2		-		=		X	0.17		=
3		-		=		X	0.38		=
4		**59.8**		**37**		**22.8**	**0.66**		**15.04**
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** Yes **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	14:09	1.0544	0.743	81.7	4.52	7.57	20.97
1	15	14:25	1.069	0.751	-47.2	1.65	7.24	21.07
2	30	14:43	1.064	0.749	-99.3	1.19	7.2	21.01
3	45	14:56	1.073	0.756	-106	3.52	7.2	20.96
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37	
(P) After Purging	38.79	
P- 0.8(P-I) =	37.35	80% Recovery
(S) Before Sampling	37.11	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 15:10 **Turbidity (NTU):** 25.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	DW-6	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy/Rain

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-		=		X	0.17	=
3	-		=		X	0.38	=
4	**60.15**		**38.09**		**22.06**	**0.66**	**14.55**
4.5	-		=		X	0.83	=
6	-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	15:19	1.08	0.762	-81.9	7.77	7.23	20.92
1	14.5	15:32	1.103	0.772	-108.2	3.51	7.13	21.27
2	29	15:45	1.113	0.778	-109.9	1.39	7.12	21.33
3	43.5	15:58	1.112	0.778	-109.1	1.24	7.13	21.27
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	38.09	
(P) After Purging	38.68	
P- 0.8(P-I) =	38.2	80% Recovery
(S) Before Sampling	38.09	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 16:10 **Turbidity (NTU):** 30

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	DW-7	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy/Sunny

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (gal.)
2		-		=		X	0.17		=
3		-		=		X	0.38		=
4		**65.2**		**37.55**		**27.65**	**0.66**		**18.24**
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	13:19	1.277	0.866	-69.1	3.55	7.05	22.82
1	18	13:35	1.233	0.847	-76.5	1.16	7.01	22.16
2	36	13:54	1.218	0.839	-75.4	0.71	7	22.03
3	54	14:12	1.212	0.834	-73.5	0.9	7.02	22.07
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.55	
(P) After Purging	38.63	
P- 0.8(P-I) =	37.76	80% Recovery
(S) Before Sampling	37.72	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 14:25 **Turbidity (NTU):** 15.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	TP-1	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	43.22	-	31.6	=	11.62	X 0.17	1.97
3		-		=		X 0.38	=
4		-		=		X 0.66	=
4.5		-		=		X 0.83	=
6		-		=		X 1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	7:46	1.488	1.056	232.4	11.48	6.83	20.57
1	2	7:50	1.518	1.075	236.5	11.54	6.73	20.71
2	4	7:54	1.519	1.076	242.1	11.77	6.73	20.67
3	6	7:58	1.568	1.112	245.9	11.61	6.73	20.66
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.6	
(P) After Purging	4.36	
P- 0.8(P-I) =	33.35	80% Recovery
(S) Before Sampling	33.16	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 8:50 **Turbidity (NTU):** 21.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/11/11
Well Number:	TP-2	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Cloudy

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	41.21		21.14		9.07	0.17	1.54
3	-		=		X	0.38	=
4	-		=		X	0.66	=
4.5	-		=		X	0.83	=
6	-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump **Hand Bail** Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	8:09	1.508	1.073	243.5	12.07	6.96	20.48
1	1.5	8:13	1.518	1.078	247.5	12.6	6.91	20.54
2	3	8:17	1.529	1.087	250.3	12.66	6.91	20.52
3	4.5	8:22	1.522	1.083	255.5	13.13	6.9	20.46
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	32.14	
(P) After Purging	35.72	
P- 0.8(P-I) =	32.85	80% Recovery
(S) Before Sampling	32.72	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/11/11 **Time:** 9:05 **Turbidity (NTU):** 26.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	VW-2	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Rain

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (gal.)
2		-		33.29		X	0.17		=
3		-		=		X	0.38		=
4		-		=		X	0.66		=
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump | Honda Pump | Hand Bail | **Grab Sample**

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	16:29	1.182	0.843	54.6	8.03	7.08	20.59
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	33.29	
(P) After Purging		
P- 0.8(P-I) =		80% Recovery
(S) Before Sampling		
Sampled 80% - 100%		

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 16:30 **Turbidity (NTU):** 320

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Groundwater Sampling Form

Project Name:	Tesoro # 67076	**Project Number:**	01LV-5A
Location:	Livermore, CA	**Date:**	10/10/11
Well Number:	VW-3	**Well Integrity:**	Good
Technician:	A. Pantoja	**Ambient Conditions:**	Partly Sunny

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2	**36.34**		**33.66**		**2.68**		**0.17**		=
3	-		=		X		**0.38**		=
4	-		=		X		**0.66**		=
4.5	-		=		X		**0.83**		=
6	-		=		X		**1.5**		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** No **Odor:** No

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail **Grab Sample**

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(◦C)
0	Int.	8:10	1.815	1.323	217.8	3.19	6.94	19.26
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	33.66	
(P) After Purging		
P- 0.8(P-I) =		80% Recovery
(S) Before Sampling		
Sampled 80% - 100%		

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 10/10/11 **Time:** 8:10 **Turbidity (NTU):** 19.8

Sampling Equipment : Disposable Bailer

Calibrate Date: 10/10/11

Comments:

Daily Field Report

Date: October 10 - 11 2011

Company: Orion Environmental

Contact: Matthew Nelson

Project Name: Tesoro #67076

Location: Livermore, Ca

Prepared by:

Environmental Field Services, LLC

Peter Arroyo

227 Palomino Way

Patterson Ca, 95363

(209) 321-6255

Fax: (209) 892-1190

www.environmentalfieldwork.com

Notes:

Arrive on-site, check in with attendant, locate & open wells, allow wells to equilibrate.

Wells were gauged using a Solonist water level meter (TD & DTW). (see Field Data Sheet)

Hanna 9828 meter was calibrated with Quick Cal solution.

All equipment was decontaminated between each use, using water & Alcanox.

Monitoring wells were purged with a submersible pump, speeds controlled with a ball valve for minimum drawdown. Disposable tubing was used for each well & discarded after each use.

Wells were purged in sampling sequence.

PH, Cond, Temp., DO, ORP & tds readings were taken for each volume of water purged.

Turbidity readings were taken at time of sampling.

Samples were taken using a new disposable bailer for each well. Samples were packed in bubble wrap & zip loc bags that were labeled. Samples were picked up by a Kiff Analytical courier on the last day of sampling.

Purge water was stored in self contained tank & was off loaded to Excel Environmental for disposal daily. A total of 530 gallons was removed from the site.

Please see groundwater sampling form for each wells data.

All wells secure, no purge water drums on-site, all trash removed before departing site.

MW-11 & DW-8 were not sampled this quarter.

Signature:

ATTACHMENT C

SOIL VAPOR SAMPLING QA/QC PROCEDURES

ATTACHMENT C
SOIL VAPOR SAMPLING QA/QC PROCEDURES

Vapor Sample Collection

Vapor samples were collected using a vacuum chamber with a Tedlar bag. Sample lines were ¼-inch-diameter Teflon or new vinyl tubing with a length not exceeding 10 feet. Generally, the length of tubing was the minimum necessary to connect the sample source to the sampling apparatus. Samples bags were made of Tedlar film with a minimum thickness of 0.002 inches.

An airtight rigid vacuum chamber was used when the bags were filled by applying vacuum. The chamber was opaque (to decrease sample degradation due to ultraviolet light) except for a small window that allowed the sampler to check the condition of the bag during sampling. The chamber had the necessary couplings to connect with sample bags, sample line, and vacuum line and a flow control valve to shut off the flow to the bag. The chamber was also equipped with a vacuum relief valve to protect both the bag and container. An oil-less vacuum pump with a minimum capacity of 2 liters per minute was used. If it was necessary to observe the sampling rate, a rotameter (or equivalent) flowmeter was used with a range of 0.05 to 1.0 liter per minute. All connections were leak checked before collecting gas samples. To leak check the connections, a Tedlar bag was placed inside the rigid container with the valve on the bag closed. The vacuum pump was turned on and the vacuum monitored until 15 inches of water column was maintained.

The following procedures were followed when collecting a vapor sample for laboratory analysis:

1. Assemble the sample train and check the connections for leaks.
2. Place an open Tedlar bag inside the vacuum chamber and connect both the Tedlar bag and vacuum line to the sample train.
3. Turn on the vacuum pump and open the desired sample port or wellhead valve.
4. Wait for the sample line to be purged of 3 to 5 casing volumes.
5. Switch the vacuum line from the sample train to the chamber and allow the chamber vacuum to inflate the Tedlar bag.
6. Fill the Tedlar bag to approximately 80 percent capacity.
7. Close the sample port and turn off the vacuum pump.

8. Release the vacuum on the chamber by disconnecting the vacuum line.

9. Open the chamber and close the Tedlar bag.

Once collected, vapor samples were stored and shipped in an opaque container free of sharp edges, metal closures, or staples to protect the integrity of the Tedlar bag. Vapor samples collected in Tedlar bags were analyzed by a State-certified analytical laboratory within 72 hours of collection.

Analytical Plan

The vapor samples were submitted to Kiff Analytical LLC, a State-certified laboratory in Davis, California, and analyzed for the following parameters:

- Total petroleum hydrocarbons as gasoline; benzene, toluene, ethylbenzene, and total xylenes; and methyl tert-butyl ether using Environmental Protection Agency Method 8260B

- Fixed gases (oxygen, nitrogen, methane, and carbon dioxide) by American Society for Testing and Materials Method D1946 or equivalent.

Analytical QA/QC Procedures
Laboratory analytical QA/QC procedures are described in Attachment A.

ATTACHMENT D

HISTORICAL WELL AND GROUNDWATER ELEVATIONS

TABLE D-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 D-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	12/31/00	31.71	474.29	442.58
(cont.)	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		436.05
	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		439.55
	5/8/08	36.15		438.14
	7/23/08	45.76		428.53

TABLE D-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	10/13/08	51.00	474.29	423.29
(cont.)	2/11/09	48.69		425.60
	4/27/09	41.90		432.39
	8/4/09	51.44		422.85
	12/8/09	39.87		434.42
	2/11/10	35.20		439.09
	5/3/10	31.23		443.06
	8/2/10	34.56	474.21[c]	439.65
	11/2/10	37.04		437.17
	2/1/11	32.51		441.70
	4/25/11	27.73		446.48
	8/3/11	31.57		442.64
	10/10/11	33.12		441.09
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

TABLE D-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	9/29/97	34.22	472.98	438.76
(cont.)	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
	6/12/00	28.44		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

TABLE D-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	5/2/05	25.61	472.98	447.37
(cont.)	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
	5/8/08	36.70		436.28
	7/23/08	45.78		427.20
	10/13/08	51.30		421.68
	2/11/09	48.90		424.08
	4/27/09	42.62		430.36
	8/4/09	51.83		421.15
	12/8/09	40.82		432.16
	2/11/10	36.54		436.44
	5/3/10	32.44		440.54
	8/2/10	35.34		437.64
	11/2/10	38.15		434.83
	2/1/11	33.40		439.58
	4/25/11	28.49		444.49
	8/3/11	32.40		440.58
	10/10/11	33.51		439.47
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

TABLE D-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	3/30/94	30.97	473.37	442.40
(cont.)	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
	3/13/00	24.28		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

TABLE D-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	12/18/01	39.41	473.37	433.96
(cont.)	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
	11/12/07	47.41		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
	4/27/09	41.18		432.19

TABLE D-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	8/4/09	51.89	473.37	421.48
(cont.)	12/8/09	39.50		433.87
	2/11/10	35.19		438.18
	5/3/10	31.39		441.98
	8/2/10	34.61		438.76
	11/2/10	37.20		436.17
	2/1/11	32.59		440.78
	4/25/11	27.60		445.77
	8/3/11	31.69		441.68
	10/10/11	33.96		439.41
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

TABLE D-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	6/10/99	27.60	473.64	446.04
(cont.)	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
	11/10/00	29.71		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

TABLE D-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	2/14/07	30.46	473.64	443.18
(cont.)	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY[(d)]		--
	2/14/08	34.53		439.11
	5/8/08	35.55		438.09
	7/23/08	43.87		429.77
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	40.64		433.00
	8/4/09	DRY		--
	12/8/09	39.46		434.18
	2/11/10	35.31		438.33
	5/3/10	31.55		442.09
	8/2/10	35.15		438.49
	11/2/10	37.55		436.09
	2/1/11	32.86		440.78
	4/25/11	28.69		444.95
	8/3/11	32.01		441.63
	10/10/11	34.49		439.15
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

TABLE D-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	12/2/96	26.51	472.67	446.16
(cont.)	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
	6/30/01	37.24		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

TABLE D-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	11/4/04	34.34	472.67	438.33
(cont.)	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		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
	2/11/10	36.62		436.05
	5/3/10	32.89		439.78
	8/2/10	36.16		436.51
	11/2/10	38.75		433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
	10/10/11	35.58		437.09
MW-6	3/30/94	33.38	471.93	438.55
	4/25/94	35.49		436.44

TABLE D-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	8/12/94	45.14	471.93	426.79
(cont.)	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		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64

TABLE D-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	6/5/02	38.85	471.93	433.08
(cont.)	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		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91

TABLE D-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	2/11/10	38.89	471.93	433.04
(cont.)	5/3/10	34.56		437.37
	8/2/10	37.87		434.06
	11/2/10	40.45		431.48
	2/1/11	35.73		436.20
	4/25/11	30.72		441.21
	8/3/11	34.95		436.98
	10/10/11	37.45		434.48
MW-7	3/30/94	31.98	472.33	440.35
	4/25/94	33.56		438.77
	8/12/94	43.35		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

TABLE D-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	12/13/99	33.98	472.33	438.35
(cont.)	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
	6/5/02	36.55		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

TABLE D-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	8/2/07	37.09	472.33	435.24
(cont.)	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		--
	4/27/09	41.80		430.53
	8/4/09	DRY		--
	12/17/09	39.26		433.07
	2/11/10	36.18		436.15
	5/3/10	31.80		440.53
	8/2/10	34.31		438.02
	11/2/10	36.68		435.65
	2/1/11	32.66		439.67
	4/25/11	27.75		444.58
	8/3/11	31.36		440.97
	10/10/11	33.63		438.70
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
	11/4/04	34.77		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

TABLE D-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	2/14/07	30.94	471.18	440.24
(cont.)	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		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	39.92		431.26
	2/11/10	36.72		434.46
	5/3/10	32.81		438.37
	8/2/10	36.08		435.10
	11/2/10	38.44		432.74
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
	10/10/11	35.69		435.49
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

TABLE D-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	11/8/06	34.18	470.78	436.60
(cont.)	2/14/07	34.00		436.78
	5/17/07	36.88		433.90
	8/2/07	44.11		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		--
	4/27/09	43.79		426.99
	8/4/09	DRY		--
	12/8/09	43.61		427.17
	2/11/10	39.48		431.30
	5/3/10	34.96		435.82
	8/2/10	38.00		432.78
	11/2/10	40.30		430.48
	2/1/11	35.97		434.81
	4/25/11	30.64		440.14
	8/3/11	35.17		435.61
	10/10/11	37.64		433.14
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

TABLE D-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-10	5/16/06	26.83	471.63	444.80
(cont.)	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		--
	4/27/09	45.10		426.53
	8/4/09	44.52		427.11
	12/8/09	42.80		428.83
	2/11/10	39.74		431.89
	5/3/10	33.97		437.66
	8/2/10	36.12		435.51
	11/2/10	38.30		433.33
	2/1/11	34.63		437.00
	4/25/11	29.63		442.00
	8/3/11	33.26		438.37
	10/10/11	35.62		436.01
MW-11	12/16/08	DRY	473.26	--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	40.25		433.01
	2/11/10	NM[e]		--
	5/3/10	31.36		441.90
	8/2/10	31.94	472.96[c]	441.02

TABLE D-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-11	11/2/10	36.98	472.96	435.98
(cont.)	2/1/11	32.30		440.66
	4/25/11	27.31		445.65
	8/3/11	31.11		441.85
	10/10/11	33.27		439.69
VW-2	8/4/04	34.13	473.28	439.15
	11/4/04	34.75		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		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	NM		--
	5/3/10	31.84		441.44
	8/2/10	33.15	472.57[(c)]	439.42
	11/2/10	DRY		--

TABLE D-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	2/1/11	32.80	472.57	439.77
(cont.)	4/25/11	25.43		447.14
	8/3/11	26.82		445.75
	10/10/11	33.29		439.28
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		--
	2/14/08	DRY		--
	5/8/08	34.80		439.58
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	DRY		--
	5/3/10	31.85		442.53
	8/2/10	34.72		439.66
	11/2/10	DRY		--
	2/1/11	32.56		441.82

TABLE D-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.)	4/25/11	27.81	474.38	446.57
	8/3/11	28.93		445.45
	10/10/11	33.66		440.72
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		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	41.39		431.43
	2/11/10	NM		--
	5/3/10	32.32		440.50
	8/2/10	33.96	472.64[(c)]	438.68
	11/2/10	37.46		435.18
	2/1/11	33.01		439.63
	4/25/11	28.23		444.41
	8/3/11	31.85		440.79
	10/10/11	31.60		441.04
TP-2	7/19/05	29.67	472.93	443.26
	11/21/05	31.43		441.50

TABLE D-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	2/9/06	27.27	472.93	445.66
(cont.)	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
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	40.08		432.85
	2/11/10	NM		--
	5/3/10	31.85		441.08
	8/2/10	33.57	472.78[(c)]	439.21
	11/2/10	37.35		435.43
	2/1/11	32.79		439.99
	4/25/11	28.30		444.48
	8/3/11	31.59		441.19
	10/10/11	32.14		440.64
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
	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06

TABLE D-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)
DW-1	2/11/10	35.57	472.85	437.28
(cont.)	5/3/10	31.70		441.15
	8/2/10	34.76		438.09
	11/2/10	37.49		435.36
	2/1/11	32.83		440.02
	4/25/11	27.96		444.89
	8/3/11	31.96		440.89
	10/10/11	34.40		438.45
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
	4/27/09	44.71		426.90
	8/4/09	54.67		416.94
	12/8/09	42.88		428.73
	2/11/10	38.63		432.98
	5/3/10	34.46		437.15
	8/2/10	37.72		433.89
	11/2/10	40.50		431.11
	2/1/11	35.66		435.95
	4/25/11	30.69		440.92
	8/3/11	35.00		436.61
	10/10/11	37.44		434.17
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
	4/27/09	45.17		425.16
	8/4/09	56.32		414.01
	12/8/09	42.92		427.41
	2/11/10	38.75		431.58

TABLE D-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)
DW-3	5/3/10	34.51	470.33	435.82
(cont.)	8/2/10	35.59		434.74
	11/2/10	40.00		430.33
	2/1/11	35.50		434.83
	4/25/11	30.45		439.88
	8/3/11	34.71		435.62
	10/10/11	37.00		433.33
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
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
	2/11/10	37.98		430.50
	5/3/10	34.04		434.44
	8/2/10	36.94		431.54
	11/2/10	39.50		428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
	10/10/11	36.60		431.88
DW-5	12/8/09	43.05	471.86	428.81
	2/11/10	38.93		432.93
	5/3/10	34.55		437.31
	8/2/10	37.56		434.30
	11/2/10	40.00		431.86
	2/1/11	35.57		436.29
	4/25/11	30.59		441.27
	8/3/11	34.64		437.22
	10/10/11	37.00		434.86

TABLE D-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)
DW-6	12/8/09	43.50	471.77	428.27
	2/11/10	39.22		432.55
	5/3/10	35.15		436.62
	8/2/10	38.35		433.42
	11/2/10	40.09		431.68
	2/1/11	36.35		435.42
	4/25/11	31.32		440.45
	8/3/11	35.63		436.14
	10/10/11	38.09		433.68
DW-7	12/8/09	43.01	470.07	427.06
	2/11/10	38.70		431.37
	5/3/10	34.64		435.43
	8/2/10	37.82		432.25
	11/2/10	40.42		429.65
	2/1/11	35.76		434.31
	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
	10/10/11	37.55		432.52
DW-8	4/25/11	27.23	472.31	445.08
	8/3/11	31.14		441.17
	10/10/11	33.41		438.90
MW-A	1/17/99	30.13	NM	--
MW-B	1/17/99	30.29	NM	--
MW-C	1/17/99	30.60	NM	--
MW-D	1/17/99	31.32	NM	--
MW-E	1/17/99	31.36	NM	--
MW-W	1/17/99	30.91	NM	--
IP-1	7/23/08	45.49	473.16	427.67
	10/13/08	51.30		421.86
	5/3/10[(f)]	33.80		439.36
	4/25/11	27.97		445.19

TABLE D-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)
IP-2	7/23/08	46.83	473.21	426.38
	10/13/08	51.40		421.81
	5/3/10[(f)]	32.00		441.21
	4/25/11	28.04		445.17
IP-3	7/23/08	45.47	472.97	427.50
	10/13/08	51.11		421.86
	5/3/10[(f)]	31.68		441.29
	4/25/11	28.07		444.90
IP-4	7/23/08	44.55	473.02	428.47
	10/13/08	50.89		422.13
	5/3/10[(f)]	31.61		441.41
	4/25/11	27.93		445.09
IP-5	7/23/08	44.70	473.06	428.36
	10/13/08	51.06		422.00
	5/3/10[(f)]	31.60		441.46
	4/25/11	27.80		445.26
IP-6	7/23/08	49.91	472.73	422.82
	10/13/08	55.63		417.10
	5/3/10[(f)]	34.98		437.75
	4/25/11	30.60		442.13
IP-7	7/23/08	51.45	472.86	421.41
	10/13/08	57.23		415.63
	5/3/10[(f)]	35.75		437.11
	4/25/11	31.51		441.35
IP-8	12/16/08	50.48	473.13	422.65
	5/3/10[(f)]	33.34		439.79
	4/25/11	28.07		445.06
IP-9	12/16/08	52.51	473.47	420.96
	5/3/10[(f)]	31.79		441.68
	4/25/11	27.84		445.63

TABLE D-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)
IP-10	2/11/09	48.77	473.78	425.01
	5/3/10[(f)]	32.23		441.55
	4/25/11	27.79		445.99

(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) Water Table Elevation = (Casing Elevation - Depth to Water)

(c) Wells were resurveyed by Cross Land Surveying, Inc., per AB 2886 requirements, on 19 October 2010 after remediation system construction.
Benchmark K2-741, elevation is 467.835 feet above MSL.

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

(e) NM - Not measured.

(f) Baseline remediation system values.

ATTACHMENT E

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/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	NS[e]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-1	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	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	--	--	--	--	--	--	--	--
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-1	4/27/09	2,800	9.9	34	94	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
(cont.)	8/4/09	890	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<20	ND<0.5	ND<0.5
	2/11/10	1,300	3.7	1.7	13	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	5/5/10	710	2.2	0.92	5.9	2.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	1,200	2.4	3.7	22	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
	11/3/10	1,100	7.3	34	18	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	200	ND<0.5	ND<0.5	0.81	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
	4/25/11	130	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
	8/3/11	1,500	2.0	15	44	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
	10/11/11	2,300	6.0	30	15	64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-2	3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--
(cont.)	6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--
	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-2	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
(cont.)	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[f]	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[f]	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
	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
	4/28/09	28,000	3,400	600	1,500	1,700	380	ND<8	ND<8	8.1	150	ND<1,000	ND<80	ND<8	ND<8
	8/4/09	30,000	5,800	170	1,500	370	1,400	ND<9	ND<9	18	670	ND<3,000	ND<90	ND<9	ND<9
	12/8/09	24,000	3,100	200	1,200	830	520	ND<7	ND<7	8.0	250	ND<700	ND<70	ND<7	ND<7
	2/12/10	19,000	2,900	440	940	1,300	820	ND<7	ND<7	9.5	400	ND<700	ND<70	ND<7	ND<7

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-2	5/3/10	26,000	3,100	870	1,100	2,200	530	ND<7	ND<7	8.0	370	ND<700	ND<70	ND<7	ND<7
(cont.)	8/3/10	19,000	2,000	150	840	730	280	ND<4	ND<4	4.4	200	ND<400	ND<40	ND<4	ND<4
	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	2/2/11	10,000	1,600	130	320	410	410	ND<4	ND<4	4.2	410	ND<400	ND<40	ND<4	ND<4
	4/28/11	13,000	1,400	100	470	670	450	ND<2.5	ND<2.5	4.6	200	ND<250	ND<50	ND<2.5	ND<2.5
	8/4/11	16,000	1,900	200	430	820	660	ND<3	ND<3	5.7	420	ND<1,500	ND<30	ND<3	ND<3
	10/11/11	7,000	810	110	200	430	370	ND<1.5	ND<1.5	3.3	170	ND<250	ND<15	ND<1.5	ND<1.5
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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-3	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
(cont.)	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
	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
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	0.64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	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
	12/8/09	150	3.6	1.1	2.4	2.6	0.82	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	2/11/10	61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	5/6/10	ND<50	ND<0.5	1.0	ND<0.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	74	2.4	5.5	0.96	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	ND<50	ND<0.5	2.5	ND<0.5	3.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	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
	4/25/11	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
	8/4/11	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
	10/10/11	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	--	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-4	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
(cont.)	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	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
	4/27/09	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
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	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
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	ND<50	2.4	1.8	2.3	4.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	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 E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-4	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	4/26/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	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-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	--	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-5	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	890	0.65	ND<0.5	ND<0.5	ND<0.5	3.1	--	--	--	--	--	--	--	--
	6/5/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--
	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	12/23/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-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
(cont.)	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
	4/27/09	250	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
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	140	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
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	220	ND<0.5	ND<0.5	2.2	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
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	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
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	190	ND<0.5	ND<0.5	0.80	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	160	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-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	--	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-6	2/10/95	63,000	21,000	8,400	2,000	14,000	--	--	--	--	--	--	--	--	--
(cont.)	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	--	--	--	--	--	--	--	--
	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-6	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
(cont.)	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	1,800	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
	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	3.0	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
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
(cont.)	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
	4/28/09	16,000	2,200	160	860	230	320	ND<2.5	ND<2.5	3.8	580	ND<1,000	ND<25	ND<2.5	ND<2.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	15,000	2,100	96	800	160	340	ND<5	ND<5	ND<5	460	ND<2,000	ND<50	ND<5	ND<5
	2/12/10	21,000	2,500	140	1,000	240	540	ND<5	ND<5	6.0	460	ND<500	ND<50	ND<5	ND<5
	5/4/10	17,000	2,100	120	780	260	820	ND<5	ND<5	8.6	450	ND<500	ND<50	ND<5	ND<5
	8/3/10	21,000	2,700	120	690	250	730	ND<5	ND<5	7.4	480	ND<500	ND<50	ND<5	ND<5
	11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5
	2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5
	4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5
	8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5
	10/11/11	10,000	1000	60	160	66	370	ND<2.5	ND<2.5	3.1	860	ND<250	ND<25	ND<2.5	ND<2.5
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	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-7	3/7/97	4,500	35	19	360	470	ND<25	--	--	--	--	--	--	--	--
(cont.)	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	--	--	--	--	--	--	--	--
	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	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-7	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
(cont.)	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	2.0	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	0.56	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
	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
	4/28/09	4,500	7.4	3.8	33	7.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	4,500	6.7	3.4	27	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-7	5/6/10	3,600	7.9	3.6	14	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
(cont.)	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	2,100	4.6	1.3	16	3.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,200	3.3	0.59	1.6	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	1900	3.5	1.2	0.79	1.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-8	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	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
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	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
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	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
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	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-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5	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	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	2.0	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
	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	1.0	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-9	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
(cont.)	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	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	1,200	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
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	2,700	120	7.0	35	14	44	ND<0.5	ND<0.5	0.52	31	ND<200	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	430	1.1	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
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,300	14	ND<0.5	2.8	0.71	23	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	470	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-10	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
(cont.)	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	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
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	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
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/2/10	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
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	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 E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-10	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	10/10/11	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-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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	100,000	6,100	9,000	3,100	20,000	3.3	ND<0.5	ND<0.5	ND<0.5	25	ND<200	ND<20	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/3/10	62,000	3,600	5,900	2,600	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	8/3/10	53,000	2,800	3,800	2,100	10,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	11/4/10	59,000	2,100	5,400	1,400	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	2/2/11	20,000	210	610	560	3,600	ND<5	ND<5	ND<5	ND<5	38	ND<500	ND<50	ND<5	ND<5
	4/28/11	20,000	300	920	450	4,300	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	8/4/11	15,000	96	370	240	2,800	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	10/10/11	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[f]	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[f]	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[f]	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	7.0	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	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
VW-2	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	2,800	130	6.1	170	130	1,300	ND<2.5	ND<2.5	12	1,700	ND<250	ND<25	ND<2.5	ND<2.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	0.51	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
VW-3	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<5	ND<50	ND<5	ND<0.5	ND<0.5	1,100
(cont.)	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
	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	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
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	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
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	6,800	ND<15	ND<15	47	4,400	ND<8,000	ND<150	ND<15	ND<15

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
TP-1	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
(cont.)	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	10,000	690	19	700	45	1,000	ND<2.5	ND<2.5	8.8	2,900	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	15,000	2,100	360	1,100	620	3,400	ND<8	ND<8	27	4,500	ND<800	ND<80	ND<8	ND<8
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	2000	32	4.3	49	220	1500	ND<3	ND<3	9.7	1000	ND<800	ND<30	ND<3	ND<3
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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
TP-2	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	--	--
(cont.)	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
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	7,200	950	ND<25	77	ND<25	13,000	ND<25	ND<25	130	20,000	ND<2,500	ND<250	ND<25	ND<25
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	6,400	740	ND<25	450	130	14,000	ND<25	ND<25	130	9,900	ND<2,500	ND<250	ND<25	ND<25
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6.3	14,000	ND<500	ND<50	ND<5	ND<5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	130	1.6	ND<0.5	1.5	5.2	350	ND<0.5	ND<0.5	1.3	630	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	120	ND<0.5	ND<0.5	ND<0.5	380	ND<50	ND<5	ND<0.5	ND<0.5
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
	4/28/09	2,700	250	36	160	190	86	ND<0.5	ND<0.5	0.84	120	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	2,100	330	17	87	53	220	ND<0.5	ND<0.5	2.0	310	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	6,200	560	63	400	490	140	ND<0.5	ND<0.5	1.1	200	ND<200	ND<8	ND<0.5	ND<0.5
	2/12/10	2,000	200	36	130	150	49	ND<0.5	ND<0.5	ND<0.5	58	ND<200	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-1	5/4/10	1,800	160	27	110	140	21	ND<0.5	ND<0.5	ND<0.5	41	ND<100	ND<5	ND<0.5	ND<0.5
(cont.)	8/2/10	1,400	53	11	67	78	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	ND<50	0.90	ND<0.5	0.70	1.3	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	58	1.9	ND<0.5	2.0	2.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/28/11	72	2.2	5.7	2.0	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	55	0.57	ND<0.5	0.92	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/11/11	180	3.0	1.0	5.1	10	0.77	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	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
	4/28/09	5,800	500	27	110	55	330	ND<1	ND<1	4.4	600	ND<400	ND<10	ND<1	ND<1
	8/4/09	6,800	910	19	37	27	200	ND<1	ND<1	2.7	530	ND<200	ND<10	ND<1	ND<1
	12/9/09	6,600	450	14	55	34	210	ND<0.9	ND<0.9	2.6	410	ND<200	ND<9	ND<0.9	ND<0.9
	2/11/10	4,500	340	14	44	25	320	ND<0.9	ND<0.9	3.9	520	ND<300	ND<9	ND<0.9	ND<0.9
	5/4/10	2,300	110	7.1	17	16	350	ND<0.9	ND<0.9	4.1	550	ND<200	ND<9	ND<0.9	ND<0.9
	8/2/10	3,800	420	22	21	28	300	ND<0.9	ND<0.9	3.5	600	ND<300	ND<20	ND<0.9	ND<0.9
	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5
	10/11/11	2,700	110	5.0	4.0	11	170	ND<0.5	ND<0.5	1.9	440	ND<100	ND<5	ND<0.5	ND<0.5
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
	4/27/09	1,800	16	2.3	26	10	3.0	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-3	8/4/09	1,200	6.8	0.99	4.3	3.4	18	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	12/9/09	2,200	24	5.9	56	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.2	ND<300	ND<20	ND<0.5	ND<0.5
	2/11/10	700	9.5	2.0	18	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	5/4/10	420	5.5	0.93	8.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/2/10	640	4.0	ND<0.5	5.3	3.9	0.59	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	60	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
	4/27/11	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
	8/4/11	310	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
	10/10/11	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
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
	4/27/09	ND<50	0.50	ND<0.5	1.1	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
	8/5/09	52	1.7	ND<0.5	1.4	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/9/09	ND<50	3.0	ND<0.5	2.0	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	180	3.3	3.7	13	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	0.70	4.0	0.59	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	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
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	0.67	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
DW-5	12/9/09	15,000	140	25	200	960	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	1,600	37	2.5	36	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-5	5/4/10	2,100	69	2.9	41	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
(cont.)	8/2/10	12,000	240	9.4	350	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	11/2/10	5,000	120	3.6	68	35	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/11	3,800	70	2.5	37	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	710	8.0	ND<0.5	4.3	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	6,100	76	3.7	110	97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	10/10/11	6,800	59	4.7	140	150	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
DW-6	12/9/09	6,200	33	4.3	100	43	9.7	ND<1	ND<1	ND<1	10	ND<100	ND<10	ND<1	ND<1
	2/11/10	4,800	18	3.0	44	15	14	ND<0.5	ND<0.5	ND<0.5	9.2	ND<80	ND<10	ND<0.5	ND<0.5
	5/4/10	4,600	13	3.5	29	17	5.6	ND<0.5	ND<0.5	ND<0.5	7.2	ND<80	ND<8	ND<0.5	ND<0.5
	8/2/10	4,500	13	4.4	54	14	5.9	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<8	ND<0.5	ND<0.5
	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9
	2/1/11	4,000	11	2.9	32	11	6.0	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	3,100	8.8	2.4	12	8.2	6.2	ND<0.5	ND<0.5	ND<0.5	19	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/11	2,900	4.2	0.95	6.0	4.9	6.5	ND<0.5	ND<0.5	ND<0.5	24	ND<50	ND<8	ND<0.5	ND<0.5
	10/10/11	1,500	4.1	3.3	3.0	3.3	4.9	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<5	ND<0.5	ND<0.5
DW-7	12/9/09	10,000	500	20	310	110	160	ND<2	ND<2	ND<2	270	ND<200	ND<20	ND<2	ND<2
	2/12/10	12,000	590	23	440	120	190	ND<2	ND<2	2.4	290	ND<200	ND<20	ND<2	ND<2
	5/4/10	4,100	250	15	89	32	97	ND<0.5	ND<0.5	1.0	160	ND<80	ND<5	ND<0.5	ND<0.5
	8/3/10	3,500	280	13	49	30	130	ND<0.5	ND<0.5	1.3	220	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	0.96	160	ND<80	ND<5	ND<0.5	ND<0.5
	10/11/11	400	45	1.1	0.80	1.6	90	ND<0.5	ND<0.5	0.89	180	ND<50	ND<5	ND<0.5	ND<0.5
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20
	10/10/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
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	--	--	--	--	--	--	--	--
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15	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
	5/5/10[g]	33,000	900	1,500	1,400	5,000	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	4/27/11	24,000	750	2,200	420	4,800	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
IP-2	7/23/08	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
	5/5/10[g]	2,700	66	220	61	240	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	350	8.9	1.7	4.7	5.7	0.90	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-3	7/23/08	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
	5/5/10[g]	430[h]	6.4	22	4.9	21	3.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	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
IP-4	7/23/08	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
	5/6/10[g]	190	5.4	25	6.9	29	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	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
IP-5	7/23/08	2,000[h]	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
	5/6/10[g]	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
IP-6	7/23/08	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
	5/5/10[g]	8,000[h]	24	100	18	98	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	1.1	0.66	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-7	7/23/08	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
	5/5/10[g]	33,000	49	62	38	69	14	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<9	ND<0.9	ND<0.9
	4/27/11	220	8.1	0.69	3.4	1.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-8	12/16/08	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
	5/5/10[g]	83,000	3,900	13,000	2,400	14,000	ND<25	ND<25	ND<25	ND<25	ND<150	ND<2,500	ND<250	ND<25	ND<25
	4/28/11	13,000	620	2,000	240	2,200	ND<3	ND<3	ND<3	ND<3	27	ND<300	ND<30	ND<3	ND<3
IP-9	12/16/08	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
	5/5/10[g]	92,000	6,000	19,000	2,500	14,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	4/28/11	38,000	1,400	4,300	860	6,000	ND<6	ND<6	ND<6	ND<6	38	ND<600	ND<60	ND<6	ND<6
IP-10	2/11/09	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
	5/3/10[g]	3,600	73	80	140	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/26/11	4,300	28	140	110	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5

(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) NS - Not sampled.

(f) 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.

(g) Baseline remediation system values.

(h) Primarily compounds not found in typical Gasoline.

ATTACHMENT F

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

Laboratory Results

Matt Nelson
Orion Environmental
3450 East Spring Street, Suite 212
Long Beach, CA 90806

Subject : 21 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Nelson,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. Testing procedures comply with the 2003 NELAC standard. All soil samples are reported on a total weight (wet weight) basis unless noted otherwise in the case narrative. Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the National Environmental Laboratory Accreditation Program (NELAP), lab # 08263CA. If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

Subject : 21 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 TP-1, DW-2 and DW-7.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for sample MW-1.

California Laboratory Services provided analytical testing associated with these samples, but is not accredited by the National Environmental Laboratory Accreditation Program (NELAP).

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **VW-3** Matrix : Water Lab Number : 79048-01
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 14:52
Methanol	< 50	50	ug/L	EPA 8260B	10/17/11 14:52
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 14:52
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/17/11 14:52
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 14:52
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	10/17/11 14:52
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	10/17/11 14:52

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-8** Matrix : Water Lab Number : 79048-02
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 15:25
Methanol	< 50	50	ug/L	EPA 8260B	10/17/11 15:25
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 15:25
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/17/11 15:25
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:25
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	10/17/11 15:25
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	10/17/11 15:25

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-3** Matrix : Water Lab Number : 79048-03
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 15:57
Methanol	< 50	50	ug/L	EPA 8260B	10/17/11 15:57
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 15:57
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/17/11 15:57
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 15:57
1,2-Dichloroethane-d4 (Surr)	103		% Recovery	EPA 8260B	10/17/11 15:57
Toluene - d8 (Surr)	98.6		% Recovery	EPA 8260B	10/17/11 15:57

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-10** Matrix : Water Lab Number : 79048-04
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/15/11 17:25
Methanol	< 50	50	ug/L	EPA 8260B	10/15/11 17:25
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/15/11 17:25
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/15/11 17:25
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 17:25
1,2-Dichloroethane-d4 (Surr)	103		% Recovery	EPA 8260B	10/15/11 17:25
Toluene - d8 (Surr)	94.0		% Recovery	EPA 8260B	10/15/11 17:25

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-4** Matrix : Water Lab Number : 79048-05
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Toluene	**0.67**	0.50	ug/L	EPA 8260B	10/15/11 18:05
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/15/11 18:05
Methanol	< 50	50	ug/L	EPA 8260B	10/15/11 18:05
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/15/11 18:05
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/15/11 18:05
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/15/11 18:05
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	10/15/11 18:05
Toluene - d8 (Surr)	93.2		% Recovery	EPA 8260B	10/15/11 18:05

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-5** Matrix : Water Lab Number : 79048-06
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 16:30
Methanol	< 50	50	ug/L	EPA 8260B	10/17/11 16:30
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 16:30
TPH as Gasoline	**160**	50	ug/L	EPA 8260B	10/17/11 16:30
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 16:30
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	10/17/11 16:30
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	10/17/11 16:30

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-7** Matrix : Water Lab Number : 79048-07
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**3.5**	0.50	ug/L	EPA 8260B	10/17/11 17:02
Toluene	**1.2**	0.50	ug/L	EPA 8260B	10/17/11 17:02
Ethylbenzene	**0.79**	0.50	ug/L	EPA 8260B	10/17/11 17:02
Total Xylenes	**1.6**	0.50	ug/L	EPA 8260B	10/17/11 17:02
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 17:02
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 17:02
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 17:02
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 17:02
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 17:02
Methanol	< 50	50	ug/L	EPA 8260B	10/17/11 17:02
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 17:02
TPH as Gasoline	**1900**	50	ug/L	EPA 8260B	10/17/11 17:02
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 17:02
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 17:02
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	10/17/11 17:02
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	10/17/11 17:02

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-3** Matrix : Water Lab Number : 79048-08
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 23:46
Methanol	< 50	50	ug/L	EPA 8260B	10/17/11 23:46
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/11 23:46
TPH as Gasoline	**120**	50	ug/L	EPA 8260B	10/17/11 23:46
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/11 23:46
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	10/17/11 23:46
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	10/17/11 23:46

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-5** Matrix : Water Lab Number : 79048-09
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**59**	1.5	ug/L	EPA 8260B	10/18/11 05:17
Toluene	**4.7**	1.5	ug/L	EPA 8260B	10/18/11 05:17
Ethylbenzene	**140**	1.5	ug/L	EPA 8260B	10/18/11 05:17
Total Xylenes	**150**	1.5	ug/L	EPA 8260B	10/18/11 05:17
Methyl-t-butyl ether (MTBE)	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 05:17
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 05:17
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 05:17
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 05:17
Tert-Butanol	< 7.0	7.0	ug/L	EPA 8260B	10/18/11 05:17
Methanol	< 150	150	ug/L	EPA 8260B	10/18/11 05:17
Ethanol	< 15	15	ug/L	EPA 8260B	10/18/11 05:17
TPH as Gasoline	**6800**	150	ug/L	EPA 8260B	10/18/11 05:17
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 05:17
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 05:17
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	10/18/11 05:17
Toluene - d8 (Surr)	94.5		% Recovery	EPA 8260B	10/18/11 05:17

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-6** Matrix : Water Lab Number : 79048-10
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**4.1**	0.50	ug/L	EPA 8260B	10/18/11 00:18
Toluene	**3.3**	0.50	ug/L	EPA 8260B	10/18/11 00:18
Ethylbenzene	**3.0**	0.50	ug/L	EPA 8260B	10/18/11 00:18
Total Xylenes	**3.3**	0.50	ug/L	EPA 8260B	10/18/11 00:18
Methyl-t-butyl ether (MTBE)	**4.9**	0.50	ug/L	EPA 8260B	10/18/11 00:18
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:18
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:18
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:18
Tert-Butanol	**20**	5.0	ug/L	EPA 8260B	10/18/11 00:18
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 00:18
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 00:18
TPH as Gasoline	**1500**	50	ug/L	EPA 8260B	10/18/11 00:18
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:18
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:18
1,2-Dichloroethane-d4 (Surr)	95.4		% Recovery	EPA 8260B	10/18/11 00:18
Toluene - d8 (Surr)	94.0		% Recovery	EPA 8260B	10/18/11 00:18

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **VW-2** Matrix : Water Lab Number : 79048-11
Sample Date :10/10/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
Total Xylenes	**0.51**	0.50	ug/L	EPA 8260B	10/18/11 00:51
Methyl-t-butyl ether (MTBE)	**0.79**	0.50	ug/L	EPA 8260B	10/18/11 00:51
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 00:51
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 00:51
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 00:51
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/18/11 00:51
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 00:51
1,2-Dichloroethane-d4 (Surr)	105		% Recovery	EPA 8260B	10/18/11 00:51
Toluene - d8 (Surr)	99.5		% Recovery	EPA 8260B	10/18/11 00:51

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-1** Matrix : Water Lab Number : 79048-12
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**6.0**	0.50	ug/L	EPA 8260B	10/18/11 01:23
Toluene	**30**	0.50	ug/L	EPA 8260B	10/18/11 01:23
Ethylbenzene	**15**	0.50	ug/L	EPA 8260B	10/18/11 01:23
Total Xylenes	**64**	0.50	ug/L	EPA 8260B	10/18/11 01:23
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:23
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:23
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:23
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:23
Tert-Butanol	**10**	5.0	ug/L	EPA 8260B	10/18/11 01:23
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 01:23
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	10/18/11 01:23
TPH as Gasoline	**2300**	50	ug/L	EPA 8260B	10/18/11 01:23
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:23
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:23
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	10/18/11 01:23
Toluene - d8 (Surr)	96.2		% Recovery	EPA 8260B	10/18/11 01:23

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **TP-1** Matrix : Water Lab Number : 79048-13
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**32**	3.0	ug/L	EPA 8260B	10/18/11 14:03
Toluene	**4.3**	3.0	ug/L	EPA 8260B	10/18/11 14:03
Ethylbenzene	**49**	3.0	ug/L	EPA 8260B	10/18/11 14:03
Total Xylenes	**220**	3.0	ug/L	EPA 8260B	10/18/11 14:03
Methyl-t-butyl ether (MTBE)	**1500**	3.0	ug/L	EPA 8260B	10/18/11 14:03
Diisopropyl ether (DIPE)	< 3.0	3.0	ug/L	EPA 8260B	10/18/11 14:03
Ethyl-t-butyl ether (ETBE)	< 3.0	3.0	ug/L	EPA 8260B	10/18/11 14:03
Tert-amyl methyl ether (TAME)	**9.7**	3.0	ug/L	EPA 8260B	10/18/11 14:03
Tert-Butanol	**1000**	15	ug/L	EPA 8260B	10/18/11 14:03
Methanol	< 800	800	ug/L	EPA 8260B	10/18/11 14:03
Ethanol	< 30	30	ug/L	EPA 8260B	10/18/11 14:03
TPH as Gasoline	**2000**	300	ug/L	EPA 8260B	10/18/11 14:03
1,2-Dichloroethane	< 3.0	3.0	ug/L	EPA 8260B	10/18/11 14:03
1,2-Dibromoethane	< 3.0	3.0	ug/L	EPA 8260B	10/18/11 14:03
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	10/18/11 14:03
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	10/18/11 14:03

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **TP-2** Matrix : Water Lab Number : 79048-14
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Methyl-t-butyl ether (MTBE)	**120**	0.50	ug/L	EPA 8260B	10/18/11 01:55
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
Tert-Butanol	**380**	5.0	ug/L	EPA 8260B	10/18/11 01:55
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 01:55
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 01:55
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/18/11 01:55
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:55
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	10/18/11 01:55
Toluene - d8 (Surr)	94.4		% Recovery	EPA 8260B	10/18/11 01:55

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-2** Matrix : Water Lab Number : 79048-15
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	10/12/11 09:22
Benzene	**810**	1.5	ug/L	EPA 8260B	10/18/11 12:55
Toluene	**110**	1.5	ug/L	EPA 8260B	10/18/11 12:55
Ethylbenzene	**200**	1.5	ug/L	EPA 8260B	10/18/11 12:55
Total Xylenes	**430**	1.5	ug/L	EPA 8260B	10/18/11 12:55
Methyl-t-butyl ether (MTBE)	**370**	1.5	ug/L	EPA 8260B	10/18/11 12:55
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 12:55
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 12:55
Tert-amyl methyl ether (TAME)	**3.3**	1.5	ug/L	EPA 8260B	10/18/11 12:55
Tert-Butanol	**170**	7.0	ug/L	EPA 8260B	10/18/11 12:55
Methanol	< 250	250	ug/L	EPA 8260B	10/18/11 05:12
Ethanol	< 15	15	ug/L	EPA 8260B	10/18/11 12:55
TPH as Gasoline	**7000**	150	ug/L	EPA 8260B	10/18/11 12:55
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 12:55
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	10/18/11 12:55
1,2-Dichloroethane-d4 (Surr)	98.6		% Recovery	EPA 8260B	10/18/11 12:55
Toluene - d8 (Surr)	98.3		% Recovery	EPA 8260B	10/18/11 12:55

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-1** Matrix : Water Lab Number : 79048-16
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	10/12/11 09:26
Benzene	**3.0**	0.50	ug/L	EPA 8260B	10/18/11 02:36
Toluene	**1.0**	0.50	ug/L	EPA 8260B	10/18/11 02:36
Ethylbenzene	**5.1**	0.50	ug/L	EPA 8260B	10/18/11 02:36
Total Xylenes	**10**	0.50	ug/L	EPA 8260B	10/18/11 02:36
Methyl-t-butyl ether (MTBE)	**0.77**	0.50	ug/L	EPA 8260B	10/18/11 02:36
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:36
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:36
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:36
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 02:36
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 02:36
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 02:36
TPH as Gasoline	**180**	50	ug/L	EPA 8260B	10/18/11 02:36
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:36
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:36
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	10/18/11 02:36
Toluene - d8 (Surr)	93.9		% Recovery	EPA 8260B	10/18/11 02:36

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-4** Matrix : Water Lab Number : 79048-17
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	10/12/11 09:27
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 03:16
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 03:16
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 03:16
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/18/11 03:16
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 03:16
1,2-Dichloroethane-d4 (Surr)	105		% Recovery	EPA 8260B	10/18/11 03:16
Toluene - d8 (Surr)	94.8		% Recovery	EPA 8260B	10/18/11 03:16

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-2** Matrix : Water Lab Number : 79048-18
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	10/12/11 09:28
Benzene	**110**	0.50	ug/L	EPA 8260B	10/18/11 12:53
Toluene	**5.0**	0.50	ug/L	EPA 8260B	10/18/11 12:53
Ethylbenzene	**4.0**	0.50	ug/L	EPA 8260B	10/18/11 12:53
Total Xylenes	**11**	0.50	ug/L	EPA 8260B	10/18/11 12:53
Methyl-t-butyl ether (MTBE)	**170**	0.50	ug/L	EPA 8260B	10/18/11 12:53
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 12:53
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 12:53
Tert-amyl methyl ether (TAME)	**1.9**	0.50	ug/L	EPA 8260B	10/18/11 12:53
Tert-Butanol	**440**	5.0	ug/L	EPA 8260B	10/18/11 12:53
Methanol	< 100	100	ug/L	EPA 8260B	10/18/11 12:53
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 12:53
TPH as Gasoline	**2700**	50	ug/L	EPA 8260B	10/18/11 12:53
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 12:53
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 12:53
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	10/18/11 12:53
Toluene - d8 (Surr)	96.3		% Recovery	EPA 8260B	10/18/11 12:53

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-6** Matrix : Water Lab Number : 79048-19
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	**0.18**	0.10	mg/L	SM 3500-Fe D	10/12/11 09:30
Benzene	**1000**	2.5	ug/L	EPA 8260B	10/18/11 04:37
Toluene	**60**	2.5	ug/L	EPA 8260B	10/18/11 04:37
Ethylbenzene	**160**	2.5	ug/L	EPA 8260B	10/18/11 04:37
Total Xylenes	**66**	2.5	ug/L	EPA 8260B	10/18/11 04:37
Methyl-t-butyl ether (MTBE)	**370**	2.5	ug/L	EPA 8260B	10/18/11 04:37
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	10/18/11 04:37
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	10/18/11 04:37
Tert-amyl methyl ether (TAME)	**3.1**	2.5	ug/L	EPA 8260B	10/18/11 04:37
Tert-Butanol	**860**	15	ug/L	EPA 8260B	10/18/11 04:37
Methanol	< 250	250	ug/L	EPA 8260B	10/18/11 04:37
Ethanol	< 25	25	ug/L	EPA 8260B	10/18/11 04:37
TPH as Gasoline	**10000**	250	ug/L	EPA 8260B	10/18/11 04:37
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	10/18/11 04:37
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	10/18/11 04:37
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	10/18/11 04:37
Toluene - d8 (Surr)	93.9		% Recovery	EPA 8260B	10/18/11 04:37

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **DW-7** Matrix : Water Lab Number : 79048-20
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	10/12/11 09:32
Benzene	**45**	0.50	ug/L	EPA 8260B	10/18/11 01:56
Toluene	**1.1**	0.50	ug/L	EPA 8260B	10/18/11 01:56
Ethylbenzene	**0.80**	0.50	ug/L	EPA 8260B	10/18/11 01:56
Total Xylenes	**1.6**	0.50	ug/L	EPA 8260B	10/18/11 01:56
Methyl-t-butyl ether (MTBE)	**90**	0.50	ug/L	EPA 8260B	10/18/11 01:56
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:56
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:56
Tert-amyl methyl ether (TAME)	**0.89**	0.50	ug/L	EPA 8260B	10/18/11 01:56
Tert-Butanol	**180**	5.0	ug/L	EPA 8260B	10/18/11 01:56
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 01:56
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 01:56
TPH as Gasoline	**400**	50	ug/L	EPA 8260B	10/18/11 01:56
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:56
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 01:56
1,2-Dichloroethane-d4 (Surr)	103		% Recovery	EPA 8260B	10/18/11 01:56
Toluene - d8 (Surr)	97.7		% Recovery	EPA 8260B	10/18/11 01:56

KIFF Analytical LLC

Report Number : 79048
Date : 10/18/2011

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

Sample : **MW-9** Matrix : Water Lab Number : 79048-21
Sample Date :10/11/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Ferrous Iron	**0.19**	0.10	mg/L	SM 3500-Fe D	10/12/11 09:33
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Methyl-t-butyl ether (MTBE)	**3.0**	0.50	ug/L	EPA 8260B	10/18/11 02:29
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 02:29
Methanol	< 50	50	ug/L	EPA 8260B	10/18/11 02:29
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/11 02:29
TPH as Gasoline	**470**	50	ug/L	EPA 8260B	10/18/11 02:29
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/11 02:29
1,2-Dichloroethane-d4 (Surr)	99.5		% Recovery	EPA 8260B	10/18/11 02:29
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	10/18/11 02:29

Report Number : 79048

Date : 10/18/2011

QC Report : Method Blank Data

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	10/18/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Methanol	< 50	50	ug/L	EPA 8260B	10/18/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/18/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	10/18/2011
Toluene - d8 (Surr)	98.4		%	EPA 8260B	10/18/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Methanol	< 50	50	ug/L	EPA 8260B	10/17/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/17/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
1,2-Dichloroethane-d4 (Surr)	103		%	EPA 8260B	10/17/2011
Toluene - d8 (Surr)	95.2		%	EPA 8260B	10/17/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/15/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Methanol	< 50	50	ug/L	EPA 8260B	10/15/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/15/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/15/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/15/2011
1,2-Dichloroethane-d4 (Surr)	106		%	EPA 8260B	10/15/2011
Toluene - d8 (Surr)	94.9		%	EPA 8260B	10/15/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Methanol	< 50	50	ug/L	EPA 8260B	10/17/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/17/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	10/17/2011
Toluene - d8 (Surr)	101		%	EPA 8260B	10/17/2011

KIFF ANALYTICAL, LLC

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

Report Number : 79048

Date : 10/18/2011

QC Report : Method Blank Data

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	10/17/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Methanol	< 50	50	ug/L	EPA 8260B	10/17/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/17/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/17/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/17/2011
1,2-Dichloroethane-d4 (Surr)	105		%	EPA 8260B	10/17/2011
Toluene - d8 (Surr)	100		%	EPA 8260B	10/17/2011
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	10/18/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	10/18/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	10/18/2011
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	10/18/2011
Toluene - d8 (Surr)	100		%	EPA 8260B	10/18/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	10/12/2011

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
Ferrous Iron														
	79048-15	< 0.10	0.251	0.251	0.258	0.246	mg/L	SM 3500-Fe D	10/12/11	89.8	85.0	4.76	70.0-130	25
1,2-Dibromoethane														
	79045-01	<0.50	39.8	39.8	40.7	39.8	ug/L	EPA 8260B	10/18/11	102	99.8	2.42	80-120	25
1,2-Dichloroethane														
	79045-01	<0.50	40.0	40.0	40.3	39.5	ug/L	EPA 8260B	10/18/11	101	98.7	2.13	75.7-122	25
Benzene														
	79045-01	<0.50	40.0	40.0	41.4	40.0	ug/L	EPA 8260B	10/18/11	104	99.9	3.54	80-120	25
Diisopropyl ether														
	79045-01	<0.50	39.6	39.6	42.3	41.6	ug/L	EPA 8260B	10/18/11	107	105	1.54	80-120	25
Ethanol														
	79045-01	<5.0	99.7	99.7	97.2	104	ug/L	EPA 8260B	10/18/11	97.4	104	6.58	55.1-159	25
Ethyl-tert-butyl ether														
	79045-01	<0.50	39.9	39.9	41.7	40.9	ug/L	EPA 8260B	10/18/11	104	102	1.87	76.5-120	25
Ethylbenzene														
	79045-01	<0.50	40.0	40.0	41.4	39.5	ug/L	EPA 8260B	10/18/11	104	98.7	4.88	80-120	25
Methanol														
	79045-01	<50	998	998	918	956	ug/L	EPA 8260B	10/18/11	92.0	95.8	4.06	53.2-147	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
Methyl-t-butyl ether														
	79045-01	<0.50	40.2	40.2	42.8	42.3	ug/L	EPA 8260B	10/18/11	106	105	1.04	69.7-121	25
P + M Xylene														
	79045-01	<0.50	40.0	40.0	38.6	36.4	ug/L	EPA 8260B	10/18/11	96.4	91.1	5.65	76.8-120	25
Tert-Butanol														
	79045-01	<5.0	193	193	205	205	ug/L	EPA 8260B	10/18/11	106	106	0.0554	80-120	25
Tert-amyl-methyl ether														
	79045-01	<0.50	39.9	39.9	42.4	42.3	ug/L	EPA 8260B	10/18/11	106	106	0.303	78.9-120	25
Toluene														
	79045-01	<0.50	40.0	40.0	40.5	38.6	ug/L	EPA 8260B	10/18/11	101	96.6	4.67	80-120	25
1,2-Dibromoethane														
	79048-01	<0.50	39.8	39.8	39.7	39.9	ug/L	EPA 8260B	10/15/11	99.7	100	0.434	80-120	25
1,2-Dichloroethane														
	79048-01	<0.50	40.0	40.0	44.7	44.4	ug/L	EPA 8260B	10/15/11	112	111	0.566	75.7-122	25
Benzene														
	79048-01	<0.50	40.0	40.0	38.5	38.0	ug/L	EPA 8260B	10/15/11	96.3	95.1	1.24	80-120	25
Diisopropyl ether														
	79048-01	<0.50	39.6	39.6	43.5	43.9	ug/L	EPA 8260B	10/15/11	110	111	0.918	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
Ethanol														
	79048-01	9.6	99.7	99.7	132	139	ug/L	EPA 8260B	10/15/11	123	130	5.51	55.1-159	25
Ethyl-tert-butyl ether														
	79048-01	<0.50	39.9	39.9	42.7	42.9	ug/L	EPA 8260B	10/15/11	107	107	0.543	76.5-120	25
Ethylbenzene														
	79048-01	<0.50	40.0	40.0	40.4	39.7	ug/L	EPA 8260B	10/15/11	101	99.3	1.56	80-120	25
Methanol														
	79048-01	<50	998	998	1370	1310	ug/L	EPA 8260B	10/15/11	137	132	4.26	53.2-147	25
Methyl-t-butyl ether														
	79048-01	<0.50	40.2	40.2	41.9	41.9	ug/L	EPA 8260B	10/15/11	104	104	0.0594	69.7-121	25
P + M Xylene														
	79048-01	<0.50	40.0	40.0	39.7	39.2	ug/L	EPA 8260B	10/15/11	99.3	98.0	1.31	76.8-120	25
Tert-Butanol														
	79048-01	<5.0	193	193	209	202	ug/L	EPA 8260B	10/15/11	108	104	3.41	80-120	25
Tert-amyl-methyl ether														
	79048-01	<0.50	39.9	39.9	41.4	40.9	ug/L	EPA 8260B	10/15/11	104	102	1.19	78.9-120	25
Toluene														
	79048-01	<0.50	40.0	40.0	36.9	36.4	ug/L	EPA 8260B	10/15/11	92.2	91.1	1.20	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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-Dibromoethane														
	79097-05	<0.50	39.8	39.8	40.5	37.8	ug/L	EPA 8260B	10/17/11	102	95.0	6.90	80-120	25
1,2-Dichloroethane														
	79097-05	<0.50	40.0	40.0	45.7	42.3	ug/L	EPA 8260B	10/17/11	114	106	7.73	75.7-122	25
Benzene														
	79097-05	<0.50	40.0	40.0	38.9	36.2	ug/L	EPA 8260B	10/17/11	97.3	90.5	7.26	80-120	25
Diisopropyl ether														
	79097-05	<0.50	39.6	39.6	43.2	39.6	ug/L	EPA 8260B	10/17/11	109	99.8	8.80	80-120	25
Ethanol														
	79097-05	<5.0	99.7	99.7	128	122	ug/L	EPA 8260B	10/17/11	128	122	4.95	55.1-159	25
Ethyl-tert-butyl ether														
	79097-05	<0.50	39.9	39.9	42.5	40.1	ug/L	EPA 8260B	10/17/11	106	100	5.76	76.5-120	25
Ethylbenzene														
	79097-05	<0.50	40.0	40.0	40.6	38.0	ug/L	EPA 8260B	10/17/11	102	95.1	6.62	80-120	25
Methanol														
	79097-05	<50	998	998	1280	1190	ug/L	EPA 8260B	10/17/11	129	119	7.88	53.2-147	25
Methyl-t-butyl ether														
	79097-05	<0.50	40.2	40.2	42.2	39.4	ug/L	EPA 8260B	10/17/11	105	98.0	6.96	69.7-121	25
P + M Xylene														
	79097-05	<0.50	40.0	40.0	40.2	37.5	ug/L	EPA 8260B	10/17/11	100	93.8	6.96	76.8-120	25

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
Tert-Butanol														
	79097-05	220	193	193	434	402	ug/L	EPA 8260B	10/17/11	109	92.2	16.4	80-120	25
Tert-amyl-methyl ether														
	79097-05	<0.50	39.9	39.9	41.8	39.1	ug/L	EPA 8260B	10/17/11	105	98.0	6.72	78.9-120	25
Toluene														
	79097-05	<0.50	40.0	40.0	37.5	35.1	ug/L	EPA 8260B	10/17/11	93.7	87.7	6.63	80-120	25
1,2-Dibromoethane														
	79031-03	<0.50	39.8	39.8	44.6	44.4	ug/L	EPA 8260B	10/17/11	112	112	0.334	80-120	25
1,2-Dichloroethane														
	79031-03	<0.50	40.0	40.0	44.2	43.3	ug/L	EPA 8260B	10/17/11	110	108	1.98	75.7-122	25
Benzene														
	79031-03	<0.50	40.0	40.0	40.9	39.6	ug/L	EPA 8260B	10/17/11	102	99.0	3.17	80-120	25
Diisopropyl ether														
	79031-03	<0.50	39.6	39.6	42.7	42.3	ug/L	EPA 8260B	10/17/11	108	107	0.944	80-120	25
Ethanol														
	79031-03	<5.0	99.7	99.7	111	118	ug/L	EPA 8260B	10/17/11	112	119	6.02	55.1-159	25
Ethyl-tert-butyl ether														
	79031-03	<0.50	39.9	39.9	45.6	44.8	ug/L	EPA 8260B	10/17/11	114	112	1.72	76.5-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
Ethylbenzene														
	79031-03	<0.50	40.0	40.0	40.9	40.0	ug/L	EPA 8260B	10/17/11	102	100	2.12	80-120	25
Methanol														
	79031-03	<50	998	998	748	737	ug/L	EPA 8260B	10/17/11	75.0	73.9	1.42	53.2-147	25
Methyl-t-butyl ether														
	79031-03	2.2	40.2	40.2	45.7	45.2	ug/L	EPA 8260B	10/17/11	108	107	1.06	69.7-121	25
P + M Xylene														
	79031-03	<0.50	40.0	40.0	41.0	39.5	ug/L	EPA 8260B	10/17/11	102	98.8	3.64	76.8-120	25
Tert-Butanol														
	79031-03	<5.0	193	193	209	206	ug/L	EPA 8260B	10/17/11	108	107	1.42	80-120	25
Tert-amyl-methyl ether														
	79031-03	<0.50	39.9	39.9	46.2	46.0	ug/L	EPA 8260B	10/17/11	116	115	0.286	78.9-120	25
Toluene														
	79031-03	<0.50	40.0	40.0	41.7	40.8	ug/L	EPA 8260B	10/17/11	104	102	2.38	80-120	25
1,2-Dibromoethane														
	79097-06	<0.50	39.8	39.8	41.6	42.7	ug/L	EPA 8260B	10/17/11	104	107	2.67	80-120	25
1,2-Dichloroethane														
	79097-06	<0.50	40.0	40.0	42.4	41.6	ug/L	EPA 8260B	10/17/11	106	104	1.68	75.7-122	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
Benzene														
	79097-06	<0.50	40.0	40.0	40.9	39.6	ug/L	EPA 8260B	10/17/11	102	99.0	3.11	80-120	25
Diisopropyl ether														
	79097-06	<0.50	39.6	39.6	41.0	42.4	ug/L	EPA 8260B	10/17/11	103	107	3.31	80-120	25
Ethanol														
	79097-06	<5.0	99.7	99.7	116	100	ug/L	EPA 8260B	10/17/11	116	101	14.1	55.1-159	25
Ethyl-tert-butyl ether														
	79097-06	<0.50	39.9	39.9	41.3	44.1	ug/L	EPA 8260B	10/17/11	103	110	6.53	76.5-120	25
Ethylbenzene														
	79097-06	<0.50	40.0	40.0	40.7	41.5	ug/L	EPA 8260B	10/17/11	102	104	1.98	80-120	25
Methanol														
	79097-06	<50	998	998	792	756	ug/L	EPA 8260B	10/17/11	79.4	75.8	4.62	53.2-147	25
Methyl-t-butyl ether														
	79097-06	<0.50	40.2	40.2	38.8	42.2	ug/L	EPA 8260B	10/17/11	96.6	105	8.29	69.7-121	25
P + M Xylene														
	79097-06	<0.50	40.0	40.0	40.4	41.0	ug/L	EPA 8260B	10/17/11	101	102	1.29	76.8-120	25
Tert-Butanol														
	79097-06	240	193	193	452	447	ug/L	EPA 8260B	10/17/11	108	105	2.44	80-120	25
Tert-amyl-methyl ether														
	79097-06	<0.50	39.9	39.9	41.7	44.5	ug/L	EPA 8260B	10/17/11	104	112	6.64	78.9-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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														
	79097-06	<0.50	40.0	40.0	39.6	40.8	ug/L	EPA 8260B	10/17/11	98.9	102	3.09	80-120	25
1,2-Dibromoethane														
	79045-03	<0.50	39.8	39.8	41.6	41.1	ug/L	EPA 8260B	10/18/11	104	103	1.26	80-120	25
1,2-Dichloroethane														
	79045-03	<0.50	40.0	40.0	40.3	40.1	ug/L	EPA 8260B	10/18/11	101	100	0.534	75.7-122	25
Benzene														
	79045-03	<0.50	40.0	40.0	40.1	38.6	ug/L	EPA 8260B	10/18/11	100	96.6	3.59	80-120	25
Diisopropyl ether														
	79045-03	<0.50	39.6	39.6	41.0	39.4	ug/L	EPA 8260B	10/18/11	104	99.4	4.18	80-120	25
Ethanol														
	79045-03	<5.0	99.7	99.7	105	112	ug/L	EPA 8260B	10/18/11	105	112	6.48	55.1-159	25
Ethyl-tert-butyl ether														
	79045-03	<0.50	39.9	39.9	40.1	40.0	ug/L	EPA 8260B	10/18/11	100	100	0.106	76.5-120	25
Ethylbenzene														
	79045-03	<0.50	40.0	40.0	40.8	38.9	ug/L	EPA 8260B	10/18/11	102	97.4	4.71	80-120	25
Methyl-t-butyl ether														
	79045-03	<0.50	40.2	40.2	38.5	38.2	ug/L	EPA 8260B	10/18/11	95.9	95.0	0.923	69.7-121	25

KIFF ANALYTICAL, LLC

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

Report Number : 79048

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 10/18/2011

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
P + M Xylene														
	79045-03	<0.50	40.0	40.0	40.2	38.7	ug/L	EPA 8260B	10/18/11	100	96.8	3.68	76.8-120	25
Tert-Butanol														
	79045-03	<5.0	193	193	201	199	ug/L	EPA 8260B	10/18/11	104	103	1.20	80-120	25
Tert-amyl-methyl ether														
	79045-03	<0.50	39.9	39.9	40.4	40.8	ug/L	EPA 8260B	10/18/11	101	102	0.789	78.9-120	25
Toluene														
	79045-03	<0.50	40.0	40.0	40.5	38.6	ug/L	EPA 8260B	10/18/11	101	96.6	4.67	80-120	25

KIFF ANALYTICAL, LLC

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

QC Report : Laboratory Control Sample (LCS)

Date : 10/18/2011

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	10/18/11	101	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	10/18/11	99.9	75.7-122
Benzene	40.0	ug/L	EPA 8260B	10/18/11	103	80-120
Diisopropyl ether	39.6	ug/L	EPA 8260B	10/18/11	105	80-120
Ethanol	99.7	ug/L	EPA 8260B	10/18/11	96.8	55.1-159
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	10/18/11	103	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	10/18/11	105	80-120
Methanol	998	ug/L	EPA 8260B	10/18/11	92.4	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	10/18/11	105	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	10/18/11	104	76.8-120
TPH as Gasoline	504	ug/L	EPA 8260B	10/18/11	106	70.0-130
Tert-Butanol	193	ug/L	EPA 8260B	10/18/11	106	80-120
Tert-amyl-methyl ether	39.9	ug/L	EPA 8260B	10/18/11	105	78.9-120
Toluene	40.0	ug/L	EPA 8260B	10/18/11	102	80-120
1,2-Dibromoethane	39.6	ug/L	EPA 8260B	10/15/11	97.2	80-120
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	10/15/11	107	75.7-122
Benzene	39.8	ug/L	EPA 8260B	10/15/11	93.7	80-120
Diisopropyl ether	39.4	ug/L	EPA 8260B	10/15/11	106	80-120
Ethanol	99.3	ug/L	EPA 8260B	10/15/11	124	55.1-159
Ethyl-tert-butyl ether	39.7	ug/L	EPA 8260B	10/15/11	102	76.5-120
Ethylbenzene	39.8	ug/L	EPA 8260B	10/15/11	98.0	80-120
Methanol	993	ug/L	EPA 8260B	10/15/11	139	53.2-147

KIFF ANALYTICAL, LLC

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

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	10/15/11	99.8	69.7-121
P + M Xylene	39.8	ug/L	EPA 8260B	10/15/11	95.4	76.8-120
TPH as Gasoline	501	ug/L	EPA 8260B	10/15/11	107	70.0-130
Tert-Butanol	192	ug/L	EPA 8260B	10/15/11	101	80-120
Tert-amyl-methyl ether	39.7	ug/L	EPA 8260B	10/15/11	99.5	78.9-120
Toluene	39.8	ug/L	EPA 8260B	10/15/11	90.2	80-120
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	10/17/11	102	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	10/17/11	115	75.7-122
Benzene	40.1	ug/L	EPA 8260B	10/17/11	98.6	80-120
Diisopropyl ether	39.7	ug/L	EPA 8260B	10/17/11	112	80-120
Ethanol	100	ug/L	EPA 8260B	10/17/11	127	55.1-159
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	10/17/11	108	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	10/17/11	101	80-120
Methanol	1000	ug/L	EPA 8260B	10/17/11	132	53.2-147
Methyl-t-butyl ether	40.3	ug/L	EPA 8260B	10/17/11	105	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	10/17/11	98.4	76.8-120
TPH as Gasoline	504	ug/L	EPA 8260B	10/17/11	103	70.0-130
Tert-Butanol	194	ug/L	EPA 8260B	10/17/11	107	80-120
Tert-amyl-methyl ether	40.0	ug/L	EPA 8260B	10/17/11	104	78.9-120
Toluene	40.1	ug/L	EPA 8260B	10/17/11	94.5	80-120
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	10/17/11	110	80-120

KIFF ANALYTICAL, LLC

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

QC Report : Laboratory Control Sample (LCS)

Date : 10/18/2011

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	40.1	ug/L	EPA 8260B	10/17/11	108	75.7-122
Benzene	40.1	ug/L	EPA 8260B	10/17/11	98.2	80-120
Diisopropyl ether	39.7	ug/L	EPA 8260B	10/17/11	105	80-120
Ethanol	100	ug/L	EPA 8260B	10/17/11	112	55.1-159
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	10/17/11	109	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	10/17/11	104	80-120
Methanol	1000	ug/L	EPA 8260B	10/17/11	110	53.2-147
Methyl-t-butyl ether	40.3	ug/L	EPA 8260B	10/17/11	106	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	10/17/11	104	76.8-120
TPH as Gasoline	502	ug/L	EPA 8260B	10/17/11	91.7	70.0-130
Tert-Butanol	194	ug/L	EPA 8260B	10/17/11	104	80-120
Tert-amyl-methyl ether	40.0	ug/L	EPA 8260B	10/17/11	111	78.9-120
Toluene	40.1	ug/L	EPA 8260B	10/17/11	104	80-120
1,2-Dibromoethane	39.7	ug/L	EPA 8260B	10/17/11	106	80-120
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	10/17/11	104	75.7-122
Benzene	39.9	ug/L	EPA 8260B	10/17/11	98.4	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	10/17/11	103	80-120
Ethanol	99.5	ug/L	EPA 8260B	10/17/11	106	55.1-159
Ethyl-tert-butyl ether	39.8	ug/L	EPA 8260B	10/17/11	105	76.5-120
Ethylbenzene	39.9	ug/L	EPA 8260B	10/17/11	100	80-120
Methanol	995	ug/L	EPA 8260B	10/17/11	74.2	53.2-147
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	10/17/11	99.5	69.7-121

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
P + M Xylene	39.9	ug/L	EPA 8260B	10/17/11	100	76.8-120
TPH as Gasoline	501	ug/L	EPA 8260B	10/17/11	92.2	70.0-130
Tert-Butanol	193	ug/L	EPA 8260B	10/17/11	105	80-120
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	10/17/11	108	78.9-120
Toluene	39.9	ug/L	EPA 8260B	10/17/11	98.5	80-120
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	10/18/11	105	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	10/18/11	101	75.7-122
Benzene	40.0	ug/L	EPA 8260B	10/18/11	102	80-120
Diisopropyl ether	39.6	ug/L	EPA 8260B	10/18/11	105	80-120
Ethanol	99.7	ug/L	EPA 8260B	10/18/11	133	55.1-159
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	10/18/11	101	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	10/18/11	106	80-120
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	10/18/11	96.4	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	10/18/11	104	76.8-120
TPH as Gasoline	501	ug/L	EPA 8260B	10/18/11	92.8	70.0-130
Tert-Butanol	193	ug/L	EPA 8260B	10/18/11	107	80-120
Tert-amyl-methyl ether	39.9	ug/L	EPA 8260B	10/18/11	103	78.9-120
Toluene	40.0	ug/L	EPA 8260B	10/18/11	103	80-120
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	10/12/11	99.3	70.0-130

KIFF ANALYTICAL, LLC

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

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 79048

Page 1 of 3

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Matthew Nelson	California EDF Report? ☑ Yes ☐ No
Company / Address: Orion Environmental, 3450 East Spring Street, Suite 212, Long Beach, CA 90806	Sampling Company Log Code: EFSP
Phone Number: 562-988-2755	Global ID: T0600101410
Fax Number: 562-988-2759	EDF Deliverable To (Email Address): mnelson@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Signature:
Project Address: 1619 1st Street, Livermore, CA	

TAT: ☐ 12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☒ 1 wk

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Container:	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: H_2SO_4	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:	Analysis Request: BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Organic Carbon	Methane	COD	BOD							For Lab Use Only
VW-3	10-10-11	810	3						3					X				X	X	X	X														01
MW-8	10-10-11	910	3						3					X				X	X	X	X																02
MW-3	10-10-11	1015	3						3					X				X	X	X	X																03
MW-10	10-10-11	1100	3						3					X				X	X	X	X																04
DW-4	10-10-11	1125	3						3					X				X	X	X	X																05
MW-5	10-10-11	1145	3						3					X				X	X	X	X																06
MW-7	10-10-11	1230	3						3					X				X	X	X	X																07
DW-3	10-10-11	1350	3						3					X				X	X	X	X																08
DW-5	10-10-11	1510	3						3					X				X	X	X	X																09
DW-6	10-10-11	1610	3						3					X				X	X	X	X																10

Relinquished by:	Date	Time	Received by:
ALVARO PANTOJA	10-11-11		
	101111	1537	Kiff Analytical LLC

Remarks:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev: 031308

Page 09 of 42

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 79048

Page 2 of 3

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Matthew Nelson	California EDF Report? ☑ Yes ☐ No
Company / Address: Orion Environmental, 3450 East Spring Street, Suite 212, Long Beach, CA 90806	Sampling Company Log Code: EFSP
Phone Number: 562-988-2755	Global ID: T0600101410
Fax Number: 562-988-2759	EDF Deliverable To (Email Address): mnelson@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Signature:
Project Address: 1619 1st Street, Livermore, CA	

TAT: ☐ 12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☒ 1 wk

Sample Designation	Date	Time	Sampling	Container: 40 ml VOA	Sleeve	Poly	Glass	Tedlar		Preservative: HCl	HNO_3	None	H_2SO_4		Matrix: Water	Soil	Air		Analysis Request: BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Organic Carbon	Methane	COD	BOD								For Lab Use Only
VW-2	10-10-11	1630		3						3					X				X	X	X	X															11
MW-1	10-11-11	839		3						3					X				X	X	X	X																	12
TP-1	10-11-11	850		3						3					X				X	X	X	X																	13
TP-2	10-11-11	905		3						3					X				X	X	X	X																	14
MW-2	10-11-11	1002		5						5		3	1		X				X	X	X	X		X	X	X	X	X	X									15
DW-1	10-11-11	1033		5						5		3	1		X				X	X	X	X		X	X	X	X	X	X									16
MW-4	10-11-11	1118		5						5		3	1		X				X	X	X	X		X	X	X	X	X	X									17
DW-2	10-11-11	1220		5						5		3	1		X				X	X	X	X		X	X	X	X	X	X									18
MW-6	10-11-11	1255		5						5		3	1		X				X	X	X	X		X	X	X	X	X	X									19
															X																						/

Relinquished by: ALBAQO PANTOJA	Date: 10-11-11	Time:	Received by:	Remarks:
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date: 10/11/11	Time: 1537	Received by Laboratory: for Kiff Analytical LLC	

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev: 031308

Page 040945

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 79048

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Matthew Nelson	California EDF Report? ☑ Yes ☐ No
Company / Address: Orion Environmental, 3450 East Spring Street, Suite 212, Long Beach, CA 90806	Sampling Company Log Code: EFSP
Phone Number: 562-988-2755	Global ID: T0600101410
Fax Number: 562-988-2759	EDF Deliverable To (Email Address): mnelson@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Signature:
Project Address: 1619 1st Street, Livermore, CA	

TAT: ☐ 12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☒ 1 wk

Sample Designation	Date	Time	Sampling	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Container:	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: H_2SO_4	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:	Analysis Request: BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Organic Carbon	Methane	COD	BOD							For Lab Use Only
DW-7	10-11-11	1425		5						5		3	1		X				X	X	X	X		X	X	X	X	X								20
MW-9	10-11-11	1500		5						5		3	1		X				X	X	X	X		X	X	X	X	X								21
Trip Blank	9-26-11			4						4					X				X	X	X	X															22

Relinquished by:	Date	Time	Received by:
ALDARO PANTOJA	10-11-11		
	10/11/11	1537	Kiff Analytical LLC

Remarks:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev: 031308

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER: TJB (Initials)

SRG#: 79048 Date: 101111

Project ID: Tesoro - Livermore

Method of Receipt: [X] Courier [ ] Over-the-counter [ ] Shipper

COC Inspection

Is COC present?	[X] Yes	[ ] No	
Custody seals on shipping container?	[ ] Intact	[ ] Broken	[ ] Not present [X] N/A
Is COC Signed by Relinquisher? [X] Yes [ ] No	Dated? [X] Yes	[ ] No	
Is sampler name legibly indicated on COC?	[X] Yes	[ ] No	
Is analysis or hold requested for all samples	[X] Yes	[ ] No	
Is the turnaround time indicated on COC?	[X] Yes	[ ] No	
Is COC free of whiteout and uninitialed cross-outs?	[X] Yes	[ ] No, Whiteout	[ ] No, Cross-outs

Sample Inspection

Coolant Present: [X] Yes [ ] No (includes water)

Temperature °C 4.3 Therm. ID# IR-1 Initial TJB Date/Time 101111 / 1745 [ ] N/A

Are there custody seals on sample containers?	[ ] Intact	[ ] Broken	[X] Not present	
Do containers match COC? [X] Yes [ ] No	[ ] No, COC lists absent sample(s)	[ ] No, Extra sample(s) present		
Are there samples matrices other than soil, water, air or carbon?	[ ] Yes	[X] No		
Are any sample containers broken, leaking or damaged?	[ ] Yes	[X] No		
Are preservatives indicated? [X] Yes, on sample containers	[X] Yes, on COC	[ ] Not indicated	[ ] N/A	
Are preservatives correct for analyses requested?	[X] Yes	[ ] No	[ ] N/A	
Are samples within holding time for analyses requested?	[X] Yes	[ ] No		
Are the correct sample containers used for the analyses requested?	[X] Yes	[ ] No		
Is there sufficient sample to perform testing?	[X] Yes	[ ] No		

Does any sample contain product, have strong odor or are otherwise suspected to be hot? [ ] Yes [X] No

Receipt Details

Matrix WA	Container type VOA	# of containers received 81
Matrix WA	Container type Poly	# of containers received 21
Matrix WA	Container type Glass	# of containers received 7

Date and Time Sample Put into Temp Storage Date: 101111 Time: 1802

Quicklog

Are the Sample ID's indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If Sample ID's are listed on both COC and containers, do they all match?	[X] Yes	[ ] No	[ ] N/A	
Is the Project ID indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If project ID is listed on both COC and containers, do they all match?	[X] Yes	[ ] No	[ ] N/A	
Are the sample collection dates indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If collection dates are listed on both COC and containers, do they all match?	[X] Yes	[ ] No	[ ] N/A	
Are the sample collection times indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If collection times are listed on both COC and containers, do they all match?	[X] Yes	[ ] No	[ ] N/A	

COMMENTS: Bubbles in -22 (VOAs 3, 4 of 4). LJR 101111 - 1902

For samples -15 through -21, the COC indicates one H2SO4 preserved and three unpreserved containers. The COC does not indicate container type for these containers. The H2SO4 preserved container is a 250ml glass jar. The unpreserved containers are all polys - one 500ml and two 250ml. LJR 101111 - 1915

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

2795 Second Street, Suite 300 Davis, CA 95618
tel 530.297.4800 fax 530.297.4808
www.kiffanalytical.com

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

October 18, 2011

CLS Work Order #: CUJ0613
COC #: 79048

Scott Forbes
KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project Name: Tesoro-Livermore

Enclosed are the results of analyses for samples received by the laboratory on 10/12/11 12:05. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

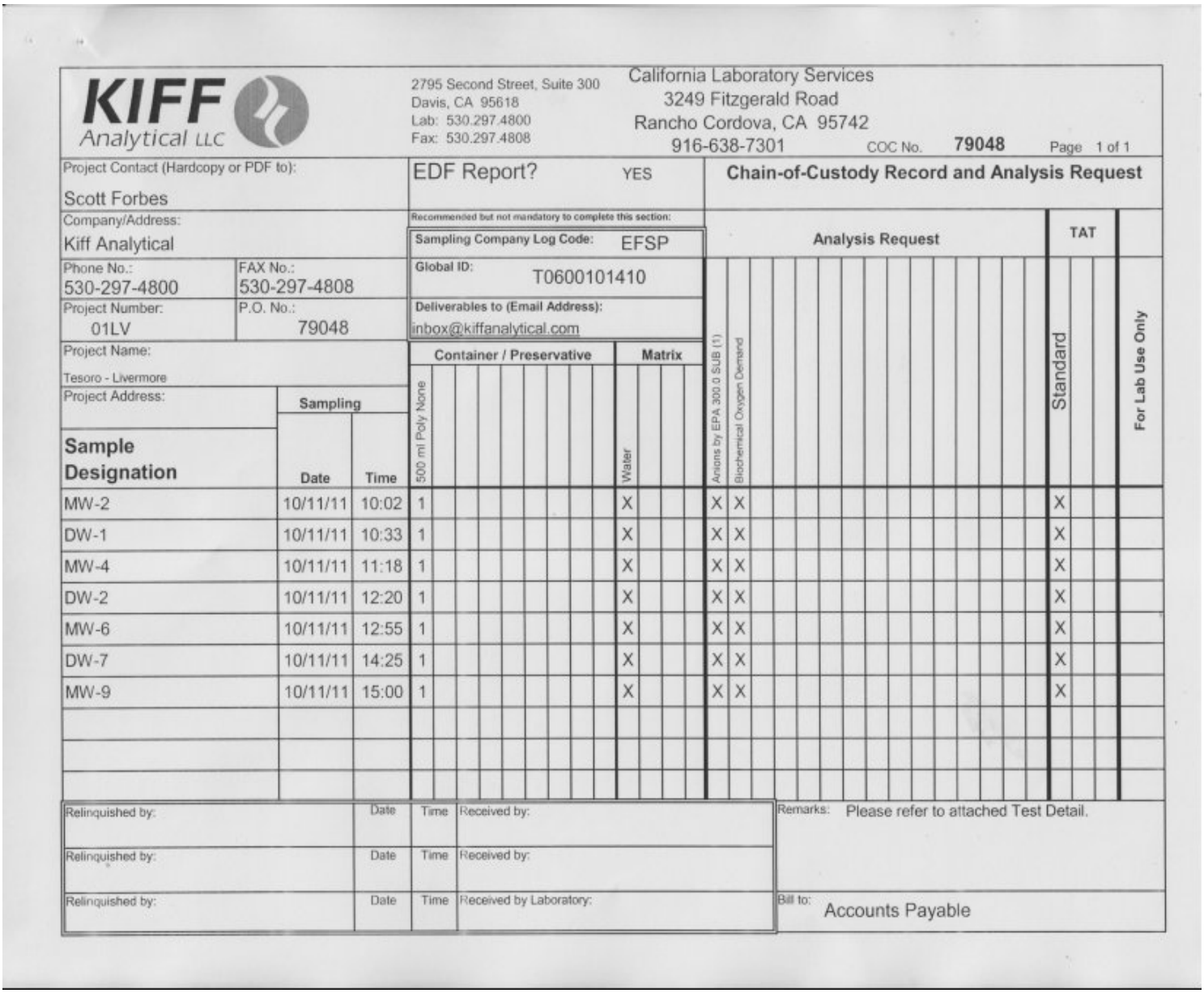
CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro-Livermore
Project Number: 01LV
Project Manager: Scott Forbes

CLS Work Order #: CUJ0613
COC #: 79048



KIFF Analytical LLC
2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

California Laboratory Services
3249 Fitzgerald Road
Rancho Cordova, CA 95742
916-638-7301

COC No. 79048 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes
Company/Address: Kiff Analytical
Phone No.: 530-297-4800
FAX No.: 530-297-4808
Project Number: 01LV
P.O. No.: 79048
Project Name: Tesoro - Livermore
Project Address:

EDF Report? YES

Recommended but not mandatory to complete this section:
Sampling Company Log Code: EFSP
Global ID: T0600101410
Deliverables to (Email Address): inbox@kiffanalytical.com

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 500 ml Poly None	Matrix: Water	Analysis Request: Anions by EPA 300.0 SUB (1)	Analysis Request: Biochemical Oxygen Demand	TAT: Standard	For Lab Use Only
MW-2	10/11/11	10:02	1	X	X	X	X	
DW-1	10/11/11	10:33	1	X	X	X	X	
MW-4	10/11/11	11:18	1	X	X	X	X	
DW-2	10/11/11	12:20	1	X	X	X	X	
MW-6	10/11/11	12:55	1	X	X	X	X	
DW-7	10/11/11	14:25	1	X	X	X	X	
MW-9	10/11/11	15:00	1	X	X	X	X	

Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

KIFF Analytical	Project: Tesoro-Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CUJ0613**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 79048

Test Detail for Kiff Work Order: 79048

Anions by EPA 300.0 SUB (1)
Nitrate as N
Sulfate

Page 1 of 1

CALIFORNIA LABORATORY SERVICES

KIFF Analytical	Project: Tesoro-Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CUJ0613**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 79048

CHANGE OF STATUS

Work Order # CUJ0613

Project Name: Tesoro-Livermore

Date Sample(s) Were Received: 10/12/11. **Original Date** 10/19.

Tray (Client Contacted) **of** KIFF (Company) **called**

On 10/12/11 (Date) **at** 16:02 (Time)

Please add

... and requested the following:

Nitrate as N, Nitrite as N, Sulfate to all samples

Turnaround time requested for additional work: 5 day

Natalie Neadway (Signature) 10/12/11 (Date)

Updated lab job database and file folder by: _____

Cc: _____ _____ _____

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro-Livermore
Project Number: 01LV
Project Manager: Scott Forbes

CLS Work Order #: CUJ0613
COC #: 79048

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (CUJ0613-01) Water Sampled: 10/11/11 10:02 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	**21**	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	ND	0.50	"	"	CU07360	10/12/11	10/12/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	**26**	0.50	"	"	"	"	"	"	
DW-1 (CUJ0613-02) Water Sampled: 10/11/11 10:33 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	**3.8**	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	**0.76**	0.50	"	"	CU07360	10/12/11	10/12/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	**49**	2.5	"	5	"	"	10/14/11	"	
MW-4 (CUJ0613-03) Water Sampled: 10/11/11 11:18 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	**3.5**	0.50	"	"	CU07360	10/12/11	10/12/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	**62**	2.5	"	5	"	"	10/14/11	"	
DW-2 (CUJ0613-04) Water Sampled: 10/11/11 12:20 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	**8.4**	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	ND	0.50	"	"	CU07360	10/12/11	10/12/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	**1.2**	0.50	"	"	"	"	"	"	
MW-6 (CUJ0613-05) Water Sampled: 10/11/11 12:55 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	**18**	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	ND	0.50	"	"	CU07360	10/12/11	10/13/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	ND	0.50	"	"	"	"	"	"	

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro-Livermore
Project Number: 01LV
Project Manager: Scott Forbes

CLS Work Order #: CUJ0613
COC #: 79048

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DW-7 (CUJ0613-06) Water Sampled: 10/11/11 14:25 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	ND	0.50	"	"	CU07360	10/12/11	10/13/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	**2.1**	0.50	"	"	"	"	"	"	
MW-9 (CUJ0613-07) Water Sampled: 10/11/11 15:00 Received: 10/12/11 12:05									
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CU07420	10/13/11	10/18/11	SM5210B	
Nitrate as N	ND	0.50	"	"	CU07360	10/12/11	10/13/11	EPA 300.0	
Nitrite as N	ND	0.10	"	"	"	"	"	"	
Sulfate as SO4	**4.1**	0.50	"	"	"	"	"	"	

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro-Livermore
Project Number: 01LV
Project Manager: Scott Forbes

CLS Work Order #: CUJ0613
COC #: 79048

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CU07360 - General Prep										
Blank (CU07360-BLK1)				Prepared & Analyzed: 10/12/11						
Sulfate as SO4	ND	0.50	mg/L							
Nitrite as N	ND	0.10	"							
Nitrate as N	ND	0.50	"							
LCS (CU07360-BS1)				Prepared & Analyzed: 10/12/11						
Sulfate as SO4	5.13	0.50	mg/L	5.00		103	80-120			
Nitrate as N	0.463	0.50	"	0.451		103	80-120			
Nitrite as N	0.613	0.10	"	0.610		101	80-120			
LCS Dup (CU07360-BSD1)				Prepared & Analyzed: 10/12/11						
Sulfate as SO4	5.23	0.50	mg/L	5.00		105	80-120	2	20	
Nitrite as N	0.619	0.10	"	0.610		102	80-120	1	20	
Nitrate as N	0.466	0.50	"	0.451		103	80-120	0.5	20	
Matrix Spike (CU07360-MS1)		**Source: CUJ0559-01**		Prepared & Analyzed: 10/12/11						
Sulfate as SO4	5.48	0.50	mg/L	5.00	0.494	100	75-125			
Nitrite as N	0.625	0.10	"	0.610	ND	102	75-125			
Nitrate as N	0.717	0.50	"	0.451	0.289	95	80-120			
Matrix Spike Dup (CU07360-MSD1)		**Source: CUJ0559-01**		Prepared & Analyzed: 10/12/11						
Sulfate as SO4	5.46	0.50	mg/L	5.00	0.494	99	75-125	0.4	25	
Nitrate as N	0.715	0.50	"	0.451	0.289	94	80-120	0.3	20	
Nitrite as N	0.617	0.10	"	0.610	ND	101	75-125	1	25	
Batch CU07420 - General										
Blank (CU07420-BLK1)				Prepared: 10/13/11 Analyzed: 10/18/11						
Biochemical Oxygen Demand	ND	3.0	mg/L							

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro-Livermore
Project Number: 01LV
Project Manager: Scott Forbes

CLS Work Order #: CUJ0613
COC #: 79048

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CU07420 - General										
Blank (CU07420-BLK2)				Prepared: 10/13/11	Analyzed: 10/18/11					
Biochemical Oxygen Demand	ND	3.0	mg/L							
LCS (CU07420-BS1)				Prepared: 10/13/11	Analyzed: 10/18/11					
Biochemical Oxygen Demand	180	3.0	mg/L	167		108	83-138			
LCS (CU07420-BS2)				Prepared: 10/13/11	Analyzed: 10/18/11					
Biochemical Oxygen Demand	210	3.0	mg/L	167		126	83-138			
LCS Dup (CU07420-BSD1)				Prepared: 10/13/11	Analyzed: 10/18/11					
Biochemical Oxygen Demand	183	3.0	mg/L	167		110	83-138	2	21	
LCS Dup (CU07420-BSD2)				Prepared: 10/13/11	Analyzed: 10/18/11					
Biochemical Oxygen Demand	183	3.0	mg/L	167		110	83-138	14	21	

KIFF Analytical	Project: Tesoro-Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CUJ0613**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 79048

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Calscience
Environmental & Marine Chemistry Laboratories

CALSCIENCE

WORK ORDER NUMBER: 11-10-0922

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore

Attention: Joel Kiff
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Amanda Porter

Approved for release on 10/19/2011 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience
Environmental & Marine Chemistry Laboratories

Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 11-10-0922

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical		Date Received:	10/13/11
2795 2nd Street, Suite 300		Work Order No:	11-10-0922
Davis, CA 95616-6593		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**11-10-0922-1-A**	**10/11/11 10:02**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 16:34**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	2720	20.0	20		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-1	**11-10-0922-2-A**	**10/11/11 10:33**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 13:34**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	6.42	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	**11-10-0922-3-A**	**10/11/11 11:18**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 14:00**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-2	**11-10-0922-4-A**	**10/11/11 12:20**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 17:16**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	1520	20.0	20		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	**11-10-0922-5-A**	**10/11/11 12:55**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 16:56**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	3170	20.0	20		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-7	**11-10-0922-6-A**	**10/11/11 14:25**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 16:02**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	397	2.00	2		ug/L

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical	Date Received: 10/13/11
2795 2nd Street, Suite 300	Work Order No: 11-10-0922
Davis, CA 95616-6593	Preparation: N/A
	Method: RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-9	**11-10-0922-7-A**	**10/11/11 15:00**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 15:30**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	283	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,419**	**N/A**	**Aqueous**	**GC 33**	**N/A**	**10/14/11 12:16**	**111014L01**

Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: 10/13/11
Work Order No: 11-10-0922

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-2	**11-10-0922-1**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	52	20	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	588	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	10	2.5	5		mg/L	N/A	10/15/11	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-1	**11-10-0922-2**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	47	20	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	316	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	1.3	0.50	1		mg/L	N/A	10/15/11	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-4	**11-10-0922-3**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	55	20	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	359	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	1.0	0.50	1		mg/L	N/A	10/15/11	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-2	**11-10-0922-4**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	26	20	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	448	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	4.9	0.50	1		mg/L	N/A	10/15/11	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-6	**11-10-0922-5**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	70	20	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	650	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	12	2.5	5		mg/L	N/A	10/15/11	SM 5310 D

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: 10/13/11
Work Order No: 11-10-0922

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-7	**11-10-0922-6**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	13	5.0	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	244	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	4.4	0.50	1		mg/L	N/A	10/15/11	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-9	**11-10-0922-7**	**10/11/11**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	13	5.0	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	456	5.00	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	2.0	0.50	1		mg/L	N/A	10/15/11	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	ND	5.0	1		mg/L	10/15/11	10/15/11	EPA 410.4
Chemical Oxygen Demand	ND	20	1		mg/L	10/15/11	10/15/11	EPA 410.4
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	10/13/11	SM 2320B
Carbon, Total Organic	ND	0.50	1		mg/L	N/A	10/15/11	SM 5310 D

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 11-10-0922

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	SM 5310 D	11-10-0969-5	10/15/11	N/A	103	101	75-125	1	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 11-10-0922

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	SM 2320B	11-10-0935-1	10/13/11	106	107	1	0-25	
Bicarbonate (as CaCO3)	SM 2320B	11-10-0935-1	10/13/11	106	107	1	0-25	
Carbonate (as CaCO3)	SM 2320B	11-10-0935-1	10/13/11	ND	ND	NA	0-25	
Hydroxide (as CaCO3)	SM 2320B	11-10-0935-1	10/13/11	ND	ND	NA	0-25	
Chemical Oxygen Demand	EPA 410.4	MW-2	10/15/11	52	50	4	0-25	
Chemical Oxygen Demand	EPA 410.4	11-10-0791-1	10/15/11	10	9.0	11	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 11-10-0922
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,419	**Aqueous**	**GC 33**	**N/A**	**10/14/11**	**111014L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	100.0	87	84	79-109	3	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 11-10-0922

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Extracted	Date Analyzed	LCS % REC	LCSD % REC	%REC CL	RPD	RPD CL	Qual
Carbon, Total Organic	SM 5310 D	099-05-097-4,417	N/A	10/15/11	95	97	80-120	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 11-10-0922

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Return to Contents

KIFF Analytical LLC

2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

Calscience
7440 Lincoln Way
Garden Grove, CA 92841-1427
714-895-5494

11-10-0922

COC No. **79048** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

Phone No.: 530-297-4800 | FAX No.: 530-297-4808

Project Number: 01LV | P.O. No.: 79048

Project Name: Tesoro - Livermore

Project Address:

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP

Global ID: T0600101410

Deliverables to (Email Address): inbox@kiffanalytical.com

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 250ml Glass H2SO4	250ml Poly None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Chemical Oxygen Demand	Hydrocarbons in Water by RSK 175 (1)	Total Organic Carbon	TAT: 4-Days	For Lab Use Only
MW-2	10/11/11	10:02	1	1	2	X	X	X	X	X	X	1
DW-1	10/11/11	10:33	1	1	2	X	X	X	X	X	X	2
MW-4	10/11/11	11:18	1	1	2	X	X	X	X	X	X	3
DW-2	10/11/11	12:20	1	1	2	X	X	X	X	X	X	4
MW-6	10/11/11	12:55	1	1	2	X	X	X	X	X	X	5
DW-7	10/11/11	14:25	1	1	2	X	X	X	X	X	X	6
MW-9	10/11/11	15:00	1	1	2	X	X	X	X	X	X	7

Relinquished by: KiffAnalytical	Date 10/12/11	Time 1900	Received by:	
Relinquished by:	Date	Time	Received by:	
Relinquished by: ONTRAC	Date 10/13/11	Time 10:30	Received by Laboratory:	

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

Return to Contents

0922

Test Detail for Kiff Work Order: 79048

Alkalinity SM 2320 (1)
Alkalinity, Total (as CaCO3)

Hydrocarbons in Water by RSK 175 (1)
Methane

Return to Contents

0922

OnTrac
On Time Delivery For Less

800.334.5000
ontrac.com

D10010417617309

Date Printed 10/12/2011

Tracking#D10010417617309

Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95616

Sent By: SAMPLE RECEIVING
Phone#: (530)297-4800
wgt(lbs): 1
Reference: SUB SRG SAMPLES
Reference 2:

Ship To Company:
CALSCIENCE ENVIRONMENTAL
7440 LINCOLN WAY
GARDEN GROVE, CA 92841
RECEIVING (714)895-5494

B10207210772

Service: **S**

Sort Code: **ORG**

Special Services:
Signature Required

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-10-0922

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF

DATE: 10/13/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 0.9 °C + 0.5 °C (CF) = 1.4 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: BS

CUSTODY SEALS INTACT:

☑ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: BS

☐ Sample ☐ _____ ☐ No (Not Intact) ☑ Not Present Initial: YC

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☑VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☑250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☑250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ Labeled/Checked by: YC

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope Reviewed by: WSC

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered Scanned by: WSC

Return to Contents

ATTACHMENT G

WASTE MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N/A

Manifest Document No. 19241 / 19240

2. Page 1 of 1

3. Generator's Name and Mailing Address
Tesoro Environmental Research Co.
3450 344th Way Auburn WA 98001

4. Generator's Phone ( )

Tesoro #670716
1019 First Street
Livermore, CA

5. Transporter 1 Company Name: EXCEL Environmental Svs

6. US EPA ID Number: CAL000209350

A. State Transporter's ID

B. Transporter 1 Phone: 800-376-6008

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
ROT
5300 Claus Rd.
Riverbank, CA 95367

10. US EPA ID Number: CAD009081616

E. State Facility's ID

F. Facility's Phone: 209-863-8181

11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste Water	001	TT	530	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
Non Haz Water

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Gloves ERG 171

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name | Signature | Date: Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Peter Arroyo | Signature | Date: Month 10 Day 11 Year 11

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Tina Liggett | Signature | Date: Month 10 Day 11 Year 11

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name | Signature | Date: Month Day Year

NON-HAZARDOUS WASTE GENERATOR

F-14 © 2002 LABELMASTER® (800) 621-5808 www.labelmaster.com
PRINTED ON RECYCLED PAPER USING SOYBEAN INK
PRINTED WITH SOY INK

Rev. 3/95