TESORO

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November 30, 2012

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

Subject: **Third Quarter 2012 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 Scott Stromberg of Arctos Environmental at 510/525-2180 with questions.

Sincerely,

Jeffrey M. Baker, P.E.
Supervisor, Environmental
Compliance & Remediation
Tesoro Environmental Resources Company

Attachments

CC: Arctos – Scott Stromberg

ARCTOS

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30 November 2012
Project No. 01LV

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

Subject: Third Quarter 2012 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 third quarter 2012 at the subject site (Figure 1).

Executive Summary

A quarterly groundwater monitoring event was conducted on 6 to 8 August 2012. There was an average 4-foot decrease in water levels since the second quarter 2012. Onsite groundwater concentrations have decreased over 81 percent in soil vapor extraction (SVE) wells since the SVE was started up during the second quarter 2010. Petroleum hydrocarbon concentrations rebounded at monitoring well DW-8, located approximately 26 feet downgradient of injection well IP-9, where an in situ chemical oxidation (ISCO) pilot test was conducted during the fourth quarter 2011.

The SVE system operated at 100 percent uptime. During operation, 130 pounds of petroleum hydrocarbons were removed through volatilization and up to 1,300 pounds of hydrocarbons were estimated to have been degraded by biodegradation. The system was optimized to focus mass removal on well TP-1, where higher concentrations have been observed. Mass removal by the SVE system was limited by low influent concentrations.

The oxygen injection system operated at 37 percent uptime because of required repairs to the air compressors and an oxygen concentrator. The average dissolved oxygen (DO) concentration decreased to 3.8 milligrams per liter (mg/l) at the monitoring wells within 10 feet of the active injection wells because of the system downtime.

During the fourth quarter 2012, Tesoro will (1) continue operation of the SVE and oxygen injection systems, (2) continue to monitor groundwater wells in the vicinity of an ISCO pilot test, and (3) submit a work plan for an expanded ISCO pilot test for onsite and offsite impacts.

Site Background

The site description and background are included in Arctos's "In Situ Chemical Oxidation (ISCO) Pilot Test Report" dated 16 March 2012 (Arctos, 2012).

Groundwater Monitoring

Arctos's subcontractor, Environmental Field Services, LLC (EFS), of Patterson, California, performed a quarterly groundwater monitoring event from 6 to 8 August 2012. Samples were collected from wells MW-1 through MW-3, MW-6, MW-7, MW-11, MW-12, TP-1, TP-2, DW-1 through DW-3, and DW-5 through DW-9 (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.

Analytical Program

Groundwater and vapor samples were analyzed in accordance with the analytical plans in Attachments A and C, respectively. In addition, samples collected from wells MW-2, MW-7, MW-11, DW-8, IP-1, and IP-8 through IP-10 were analyzed for additional analytes in accordance with the ISCO pilot test work plan (Arctos, 2011).

Groundwater Results

Groundwater elevations were approximately 426 to 433 feet above mean sea level (MSL; 40 to 46 feet below ground surface [bgs]). Water levels decreased an average of 4 feet compared to the second quarter 2012 and were an average of 9 feet lower than water levels in the third quarter 2011 (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.025 (1 foot/40 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment D).

During the third quarter 2012, the highest onsite total petroleum hydrocarbons as gasoline (TPHg) and benzene concentrations of 63,000 and 3,500 micrograms per liter (µg/l), respectively, were at well IP-8, located on site downgradient of the underground storage

tanks (USTs). The highest onsite methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA) concentrations of 140 and 70 µg/l, respectively, were at well MW-2, located downgradient of the current dispenser islands.

The highest offsite TPHg concentration of 14,000 µg/l was at well DW-5, located west of the intersection of 1st Street and P Street. The highest offsite benzene, MTBE, and TBA concentrations of 1,200, 170, and 440 µg/l, respectively, were at well MW-6 at the northwest intersection of 1st Street and P Street. Wells MW-12 and DW-9 are the farthest downgradient wells installed as a shallow and deep well cluster during the second quarter 2012. TPHg, benzene, MTBE, and TBA were detected in deep well DW-9 at concentrations of 8,300, 89, 36, and 80 µg/l, respectively. TPHg and benzene were detected in shallow well MW-12 at concentrations of 6,900 and 8.5 µg/l, respectively. MTBE and TBA were not detected in well MW-12. All offsite benzene concentrations are below the environmental screening level (ESL) of 1,800 µg/l established by the San Francisco Regional Water Quality Control Board for evaluation of potential vapor intrusion concerns.

Groundwater analytical results are summarized in Tables 2 and 3. 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.

ISCO Pilot Test Monitoring

During the fourth quarter 2011, Arctos conducted an ISCO pilot test at well IP-9. The oxidant caused an increase in hexavalent chromium concentrations at well IP-9. From the second quarter 2012 to the third quarter 2012, the hexavalent chromium concentration in well IP-9 remained at 60 µg/l. Hexavalent chromium was not detected in any other monitoring wells within the ISCO pilot test area.

In the second quarter 2012, TPHg and benzene concentrations had decreased by over 85 percent in downgradient well DW-8. However, third quarter 2012 monitoring results showed a rebound in TPHg and benzene concentrations in well DW-8 to 65 percent of baseline levels.

As described in the 16 March 2012 pilot test report, changes in groundwater chemistry and hydrocarbon concentrations indicated that the RegenOx™ chemical oxidant was effective at desorbing petroleum hydrocarbons from soil and destroying hydrocarbons in groundwater. During the fourth quarter 2012, Arctos will submit a work plan to Alameda County Environmental Health for an expanded ISCO pilot test to occur on and off site. The objective of the expanded pilot test will be to further assess the effectiveness of the

RegenOx™ chemical oxidant at remediating hydrocarbons in soil and groundwater. ISCO pilot test groundwater monitoring results are summarized in Table 4.

Source Area Remediation

SVE System

From 1 to 17 July 2012, the SVE system operated on wells MW-11, TP-1, TP-2, and VW-2. On 17 July, Arctos turned on well MW-1 because water levels had decreased and exposed sufficient well screen. The remaining SVE wells continued to operate through 30 September. The SVE wells are described below.

Well	Well Location	Well Diameter (inches)	Screen Interval (feet bgs)
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

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 5 summarizes the laboratory analytical results for influent SVE system samples.

Influent TPHg concentrations ranged from 59 parts per million by volume (ppmv; 17 July) to 81 ppmv (23 August). On 23 August, the SVE system was optimized by increasing vacuum applied to well TP-1 relative to the other operating SVE wells in an attempt to increase mass removal from an area of higher concentrations. Water levels decreased by approximately 0.3 foot from July to September 2012. During the third quarter 2012, the SVE system operated at an average flow rate of 54 standard cubic feet per minute and an average vacuum of 3.8 inches of mercury (in. Hg). Mass removal rates remain limited by low influent concentrations.

Hydrocarbon mass was removed from the subsurface through (1) volatilization caused by the SVE system and (2) in situ bioremediation from increased 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 adapted 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 5 and 6, respectively.

The following is a summary of the operating conditions for the system during the third quarter 2012.

Operation Period	Operating Wells	Operating Time (days)	Average Vacuum (in. Hg)	Average Mass Removal Rate (pounds/day)	Mass Removed[(a)] (pounds)
7/1 to 7/17	MW-11, VW-2, TP-1, TP-2	17	3.1	1.0	17
7/17 to 8/23	MW-1, MW-11, VW-2, TP-1, TP-2	37	3.8	1.5	56
8/23 to 9/30	MW-1, MW-11, VW-2, TP-1, TP-2	38	4.1	1.5	57

(a) Mass removed by volatilization only.

During the third quarter 2012, approximately 130 pounds of hydrocarbons were removed by the SVE system through volatilization and up to 1,300 pounds of hydrocarbons were estimated to have been degraded by biodegradation. The total hydrocarbon mass removed by the SVE system to date is estimated to be 37,300 pounds or approximately 5,730 gallons (at a density of 6.5 pounds per gallon). Compared to the second quarter 2010, when the SVE system began operation, groundwater concentrations of TPHg and benzene have decreased by over 81 percent in wells MW-1, MW-11, TP-1, TP-2, and VW-2. TPHg and benzene were not detected in groundwater in well MW-1 and were the lowest results since the second quarter 2011. 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 37 percent uptime during the third quarter 2012 because of required repairs to the air compressors and one of the oxygen concentrators. 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. When operational, the oxygen purity was approximately 92 percent and the average flow rate was 35 standard cubic feet per hour.

During the third quarter 2012, 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 for ISCO pilot test monitoring. During the third quarter 2012, DO was monitored in the operating injection wells and monitoring wells DW-1, MW-1, MW-2, MW-11, TP-1, TP-2, and VW-2. Average DO was approximately 5.3 mg/l at the injection wells and approximately 3.8 mg/l at the monitoring wells located within 10 feet of active injection wells. Average DO at the injection wells remained below 10 mg/l at all active injection wells because of system downtime, except well IP-5, where DO increased above 25 mg/l after the system was restarted. Average DO remained

above 2 mg/l at the monitoring wells located within 10 feet of active injection wells, indicating oxygen demand was met despite the system downtime. DO will continue to be monitored during the fourth quarter 2012. DO readings are summarized in Attachment G.

Conclusions

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

1. Onsite groundwater concentrations have decreased following SVE and oxygen injection.

2. Mass removal by the SVE system was limited by low influent concentrations. Petroleum hydrocarbon concentrations in groundwater in wells MW-1, MW-11, VW-2, TP-1, and TP-2 have decreased over 81 percent since the second quarter 2010. TPHg and benzene were not detected in groundwater in well MW-1.

3. Oxygen demand was met in groundwater surrounding the active oxygen injection wells despite oxygen injection system downtime.

4. Downgradient groundwater concentrations are consistent with the previous results and all offsite benzene concentrations are below the ESL for potential vapor intrusion concerns.

Recommendations

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

- ☐ Continue operation of the SVE and oxygen injection systems
- ☐ Continue to monitor downgradient, offsite monitoring wells MW-12 and DW-9 quarterly
- ☐ Continue to monitor ISCO pilot test groundwater monitoring wells in accordance with the work plan
- ☐ Submit a work plan for an expanded ISCO pilot test for onsite and offsite impacts.

If you have questions or comments, please call Scott Stromberg or Mike Purchase at 510/525-2180.

Very truly yours,

ARCTOS ENVIRONMENTAL

Scott Stromberg
Senior Staff Geologist

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 – Groundwater Analytical Results – Injection Wells
Table 4 – ISCO Pilot Test General Chemistry Concentrations
Table 5 – SVE Influent Analytical Results
Table 6 – SVE System Parameters
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 – Oxygen System Monitoring Results
Attachment H – Waste Manifests

References

Arctos Environmental, 2011. *Work Plan for ISCO Pilot Test, 1619 1st Street, Livermore, California, Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0000434*, 9 September.

Arctos Environmental, 2012. *In Situ Chemical Oxidation (ISCO) Pilot Test Report, Tesoro Site No. 67076 (Former Beacon 3604), 1619 1st Street, Livermore, California*, 16 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	8/3/11	31.57	474.21[c]	442.64
	10/10/11	33.12		441.09
	1/31/12	36.11		438.10
	5/7/12	36.14		438.07
	8/6/12	37.40		436.81
MW-2	8/3/11	32.40	472.98	440.58
	10/10/11	33.51		439.47
	1/31/12	39.52		433.46
	5/7/12	36.89		436.09
	8/6/12	40.95		432.03
MW-3	8/3/11	31.69	473.37	441.68
	10/10/11	33.96		439.41
	1/31/12	39.05		434.32
	5/7/12	36.03		437.34
	8/6/12	40.52		432.85
MW-4	8/3/11	32.01	473.64	441.63
	10/10/11	34.49		439.15
	1/31/12	38.91		434.73
	5/7/12	36.24		437.40
	8/6/12	40.69		432.95
MW-5	8/3/11	33.18	472.67	439.49
	10/10/11	35.58		437.09
	1/31/12	39.80		432.87
	5/7/12	37.29		435.38
	8/6/12	NM[d]		--
MW-6	8/3/11	34.95	471.93	436.98
	10/10/11	37.45		434.48
	1/31/12	42.15		429.78
	5/7/12	39.11		432.82
	8/6/12	43.66		428.27
MW-7	8/3/11	31.36	472.33	440.97
	10/10/11	33.63		438.70
	1/31/12	38.74		433.59

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	5/7/12	35.97	472.33	436.36
(cont.)	8/6/12	39.85		432.48
MW-8	8/3/11	33.09	471.18	438.09
	10/10/11	35.69		435.49
	1/31/12	40.08		431.10
	5/7/12	37.38		433.80
	8/6/12	41.94		429.24
MW-9	8/3/11	35.17	470.78	435.61
	10/10/11	37.64		433.14
	1/31/12	42.06		428.72
	5/7/12	39.43		431.35
	8/6/12	43.51		427.27
MW-10	8/3/11	33.26	471.63	438.37
	10/10/11	35.62		436.01
	1/31/12	39.67		431.96
	5/7/12	38.14		433.49
	8/6/12	40.65		430.98
MW-11	8/3/11	31.11	472.96[c]	441.85
	10/10/11	33.27		439.69
	1/31/12	34.36		438.60
	5/7/12	31.61		441.35
	8/6/12	35.20		437.76
MW-12	6/14/12	40.62	469.77	429.15
	8/6/12	43.22		426.55
VW-2	8/3/11	26.82	472.57[c]	445.75
	10/10/11	33.29		439.28
	1/31/12	32.19		440.38
	5/7/12	31.50		441.07
	8/6/12	32.64		439.93
VW-3	8/3/11	28.93	474.38	445.45
	10/10/11	33.66		440.72
	1/31/12	DRY[e]		--
	5/7/12	DRY		--
	8/6/12	DRY		--

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
TP-1	8/3/11	31.85	472.64[c]	440.79
	10/10/11	31.60		441.04
	1/31/12	35.43		437.21
	5/7/12	34.70		437.94
	8/6/12	36.59		436.05
TP-2	8/3/11	31.59	472.78[c]	441.19
	10/10/11	32.14		440.64
	1/31/12	34.32		438.46
	5/7/12	34.41		438.37
	8/6/12	36.00		436.78
DW-1	8/3/11	31.96	472.85	440.89
	10/10/11	34.40		438.45
	1/31/12	39.39		433.46
	5/7/12	36.35		436.50
	8/6/12	40.60		432.25
DW-2	8/3/11	35.00	471.61	436.61
	10/10/11	37.44		434.17
	1/31/12	42.19		429.42
	5/7/12	39.10		432.51
	8/6/12	43.90		427.71
DW-3	8/3/11	34.71	470.33	435.62
	10/10/11	37.00		433.33
	1/31/12	42.10		428.23
	5/7/12	38.70		431.63
	8/6/12	43.26		427.07
DW-4	8/3/11	34.54	468.48	433.94
	10/10/11	36.60		431.88
	1/31/12	42.10		426.38
	5/7/12	38.26		430.22
	8/6/12	42.80		425.68
DW-5	8/3/11	34.64	471.86	437.22
	10/10/11	37.00		434.86
	1/31/12	42.31		429.55
	5/7/12	38.98		432.88
	8/6/12	46.32		425.54

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-6	8/3/11	35.63	471.77	436.14
	10/10/11	38.09		433.68
	1/31/12	42.69		429.08
	5/7/12	39.82		431.95
	8/6/12	44.50		427.27
DW-7	8/3/11	35.19	470.07	434.88
	10/10/11	37.55		432.52
	1/31/12	42.35		427.72
	5/7/12	39.30		430.77
	8/6/12	44.02		426.05
DW-8	8/3/11	31.14	472.31	441.17
	10/10/11	33.41		438.90
	1/31/12	38.69		433.62
	5/7/12	35.52		436.79
	8/6/12	39.61		432.70
DW-9	6/14/12	40.85	469.80	428.95
	8/6/12	43.65		426.15

(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) NM - Not Measured

(e) 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	8/3/11	1,500	2.0	15	44	86	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
	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
	1/31/12	1,700	1.6	11	26	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<100	ND<0.5	ND<0.5
	5/9/12	3,300	2.2	5.5	52	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<5	ND<0.5	ND<0.5
	8/8/12	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-2	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
	2/1/12	14,000	1,200	130	440	650	340	ND<2.5	ND<2.5	5.4	170	ND<800	ND<25	ND<2.5	ND<2.5
	5/11/12	14,000	1,200	140	490	1,000	220	ND<2.5	ND<2.5	2.7	120	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	15,000	720	120	460	580	140	ND<2.5	ND<2.5	2.6	70	ND<250	ND<25	ND<2.5	ND<2.5
MW-3	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
	1/31/12	ND<50	ND<0.5	0.67	7.1	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/7/12	74	ND<0.5	0.56	1.9	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	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	8/4/11	NS[c]	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (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	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
	1/31/12	5,200	370	6.7	5.1	12	84	ND<0.9	ND<0.9	ND<0.9	1,500	ND<90	ND<10	ND<0.9	ND<0.9
	5/10/12	11,000	1,200	60	140	69	150	ND<0.9	ND<0.9	ND<2	290	ND<250	ND<9	ND<0.9	ND<0.9
	8/8/12	12,000	1,200	31	69	47	170	ND<2.5	ND<2.5	ND<2.5	440	ND<250	ND<25	ND<2.5	ND<2.5
MW-7	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
	1/31/12	1,700	1.5	0.55	6.0	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/9/12	1,600	1.4	0.79	1.4	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
	8/7/12	1,500	1.0	ND<0.5	0.51	0.65	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	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	2,500	12	1.1	9.0	3.0	7.4	ND<0.5	ND<0.5	ND<0.5	8.8	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	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

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	2/1/12	13,000	380	710	83	2,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<50	ND<2.5	ND<2.5
(cont.)	5/11/12	1,100	3.8	15	6.7	150	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/7/12	10,000	54	83	270	1,400	2.3	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<5	ND<0.5	ND<0.5
MW-12	6/14/12	6,900	8.5	2.2	96	22	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	8/8/12	6,000	10	2.2	100	12	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
VW-2	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	590	1.6	ND<0.5	7.1	22	28	ND<0.5	ND<0.5	ND<0.5	27	ND<80	ND<5	ND<0.5	ND<0.5
	8/7/12	2,800	24	3.7	74	68	110	ND<0.5	ND<0.5	0.94	62	ND<400	ND<5	ND<0.5	ND<0.5
TP-2	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-1	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-1	2/1/12	2,500	23	6.4	85	190	3.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	5/9/12	2,000	24	5.6	75	160	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	140	1.7	1.0	3.2	7.7	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-2	8/4/11	4,400	420	10	24	13.0	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
	1/31/12	4,400	220	7.0	15	8.9	130	ND<0.5	ND<0.5	1.2	400	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/12	2,200	140	8.6	0.63	15	98	ND<0.5	ND<0.5	1.1	430	ND<200	ND<8	ND<0.5	ND<0.5
	8/7/12	4,000	360	8.9	14	15	110	ND<0.5	ND<0.5	1.2	380	ND<400	ND<5	ND<0.5	ND<0.5
DW-3	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
	1/31/12	1,300	1.0	ND<0.5	19	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	750	1.2	ND<0.5	5.4	4.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/6/12	900	0.56	ND<0.5	7.0	4.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-4	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-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
	1/31/12	8,200	130	5.9	170	180	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<200	ND<1.5	ND<1.5
	5/10/12	11,000	100	6.8	320	380	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	8/8/12	14,000	84	11	480	590	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	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
	1/31/12	4,700	13	2.4	51	12	8.1	ND<0.5	ND<0.5	ND<0.5	28	ND<50	ND<80	ND<0.5	ND<0.5
	5/10/12	2,600	7.8	1.6	12	5.2	4.6	ND<0.5	ND<0.5	ND<0.5	17	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	4,500	15	3.2	41	8.3	6.2	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<8	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	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
	1/31/12	7,800	380	14	170	59	120	ND<0.5	ND<0.5	1.3	300	ND<150	ND<50	ND<0.5	ND<0.5
	5/10/12	940	47	1.6	6.1	5.2	120	ND<0.5	ND<0.5	1.1	280	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	1,200	33	2.5	8.0	8.4	80	ND<0.5	ND<0.5	0.83	250	ND<300	ND<5	ND<0.5	ND<0.5
DW-8	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
	2/1/12	52,000	2,500	5,200	1,900	8,200	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	5/11/12	11,000	500	1,000	300	1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	25	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	52,000	1,900	4,500	1,500	5,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	58	ND<250	ND<25	ND<2.5	ND<2.5
DW-9	6/14/12	8,300	89	2.4	21	96	36	ND<1.5	ND<1.5	ND<1.5	80	ND<150	ND<15	ND<1.5	ND<1.5
	8/8/12	12,000	310	11	400	110	35	ND<1.5	ND<1.5	ND<1.5	96	ND<150	ND<15	ND<1.5	ND<1.5

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 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

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
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)
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15[b]	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[c]	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
	2/1/12	15,000	370	350	600	1,300	ND<2	ND<2	ND<2	ND<2	16	ND<200	ND<20	NS[d]	NS
	5/9/12	16,000	580	850	800	2,100	ND<2	ND<2	ND<2	ND<2	12	ND<200	ND<20	ND<2	ND<2
	8/8/12	12,000	260	190	470	860	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
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[c]	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
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	340	10	4.8	6.3	13	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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[c]	430[e]	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
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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[c]	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
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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	5.3	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
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)
IP-5	7/23/08	2,000[e]	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[c]	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
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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[c]	8,000[e]	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
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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[c]	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	1.50	0.95	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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[c]	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
	2/1/12	67,000	2,900	7,300	1,400	11,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	NS	NS
	5/9/12	50,000	2,400	4,900	790	8,600	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	8/8/12	63,000	3,500	6,700	980	7,400	ND<9	ND<9	ND<9	ND<9	65	ND<900	ND<90	ND<9	ND<9

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
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)
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[c]	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
	2/1/12	19,000	180	1,200	640	3,100	ND<3	ND<3	ND<3	ND<3	ND<15	ND<300	ND<30	NS	NS
	5/9/12	10,000	14	180	270	780	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	8/7/12	11,000	22	240	210	880	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
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[c]	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
	2/1/12	3,200	8.2	4.6	93	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	NS	NS
	5/9/12	3,900	24	38	110	58	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/7/12	2,700	15	5.8	31	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

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

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

(c) Baseline remediation system values.

(d) NS - Not sampled.

(e) Primarily compounds not found in typical Gasoline.

TABLE 4

ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	Nitrate[a] (mg/l)	Sulfate[a] (mg/l)	Arsenic[b] (mg/l)	Chromium[b] (mg/l)	Iron[b] (mg/l)	Manganese[b] (mg/l)	Sodium[b] (mg/l)	Hex Chrome[c] (µg/l)	Fe(2+)[d] (mg/l)	CO_2[e] (µg/l)	CH_4[e] (µg/l)	Alk[f] (mg/l)	TDS[g] (mg/l)
MW-11	9/20/11	ND<0.1[h]	30	ND<0.015	0.0056	1.8	3.6	67	ND<1	ND<0.1	90,300	36.0	702	840
	10/25/11	ND<0.5	85	ND<0.015	0.011	3.2	2.8	290	ND<1	ND<0.1	60,100	55.1	1,200	1,520
	11/17/11	ND<0.1	170	0.030	0.010	2.9	1.2	740	ND<1	ND<0.15	1,870	6.52	1,630	2,340
	12/14/11	0.12	140	0.021	0.034	9.6	0.84	540	2.6	ND<0.1	29,200	10.1	316	2,270
	2/1/12	ND<0.1	76	0.14	1.6	680	36	470	ND<1	ND<0.1	170[i]	27.4	1,430	1,640
	5/11/12	0.34	14	ND<0.015	0.050	15	2.8	210	ND<1	0.11	140[i]	99.1	771	870
	8/7/12	ND<0.5	51	0.021	0.066	21	3.2	610	ND<1	0.10	110[i]	284	1,760	1,960
MW-2	12/15/11	ND<0.1	23	ND<0.015	0.026	7.4	2.2	51	ND<1	ND<0.1	64,200	2,040	574	540
	2/1/12	ND<0.1	7.6	0.030	0.18	55	5.9	52	ND<1	ND<0.1	100[i]	3,080	562	655
	5/11/12	ND<0.1	12	ND<0.015	0.098	29	5.5	46	ND<1	ND<0.1	120[i]	1,670	496	600
	8/8/12	ND<0.5	2.9	ND<0.015	0.092	25	4.2	45	ND<1	ND<0.1	70[i]	2,000	504	525
MW-7	12/15/11	ND<0.1	6.5	ND<0.015	0.32	88	5.4	58	ND<1	ND<0.1	28,100	1,080	433	515
	5/9/12	ND<0.1	7.3	0.037	0.36	110	7.1	59	ND<1	ND<0.1	55[i]	1,210	377	540
	8/7/12	ND<0.5	72	0.031	0.32	84	9.6	68	ND<1	ND<0.1	37[i]	806	416	450
IP-1	9/20/11	ND<0.1	3.9	ND<0.015	ND<0.005	1.3	2.6	34	ND<1	ND<0.1	24,000	474	369	483
	10/25/11	ND<0.5	11	ND<0.015	0.018	2.6	2.4	64	ND<1	ND<0.1	20,600	311	378	557
	11/17/11	ND<0.1	24	0.02	0.012	3.9	3.8	93	ND<1	ND<0.1	34,300	1,180	576	660
	12/15/11	0.20	26	0.015	0.017	5.5	3.3	110	ND<1	0.11	12,800	916	580	620
	2/1/12	ND<0.1	1.2	ND<0.015	ND<0.005	2.0	3.6	73	ND<1	ND<0.1	72[i]	1,130	542	635
	5/9/12	ND<0.1	ND<0.5	ND<0.015	0.011	5.8	3.7	76	ND<1	ND<0.1	96[i]	1,060	530	650
	8/8/12	ND<0.5	ND<0.5	0.023	0.50	140	8.0	71	ND<1	ND<0.1	38[i]	1,570	444	435
IP-8	9/20/11	0.17	10	ND<0.015	ND<0.005	0.54	2.0	35	ND<1	ND<0.1	6,930	49.6	229	350
	10/25/11	ND<0.5	44	ND<0.015	ND<0.005	1.6	3.8	140	ND<1	ND<0.1	12,300	109	692	1,020
	11/17/11	ND<0.1	69	ND<0.015	0.011	3.2	3.3	160	ND<1	ND<0.1	4,470	184	795	960
	11/22/11	0.31	34	ND<0.015	0.011	2.9	2.4	81	ND<1	ND<0.1	32,800	1,150	562	715
	12/14/11	0.24	52	ND<0.015	0.023	6.2	3.7	110	ND<1	ND<0.1	11,800	80.6	650	920

TABLE 4

ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	Nitrate[a] (mg/l)	Sulfate[a] (mg/l)	Arsenic[b] (mg/l)	Chromium[b] (mg/l)	Iron[b] (mg/l)	Manganese[b] (mg/l)	Sodium[b] (mg/l)	Hex Chrome[c] (µg/l)	Fe(2+)[d] (mg/l)	CO_2[e] (µg/l)	CH_4[e] (µg/l)	Alk[f] (mg/l)	TDS[g] (mg/l)
IP-8	2/1/12	ND<0.1	42	ND<0.015	0.036	11	3.0	110	ND<1	ND<0.1	48[i]	262	688	890
(cont.)	5/9/12	ND<0.1	26	ND<0.015	0.0098	3.1	2.5	100	ND<1	ND<0.1	44[i]	143	686	925
	8/8/12	ND<0.5	15	ND<0.015	0.013	4.4	3.3	110	ND<1	ND<0.1	40[i]	447	664	735
IP-9	9/20/11	ND<0.1	11	ND<0.015	ND<0.005	0.34	1.1	41	ND<1	ND<0.1	10,100	64.6	305	413
	10/25/11	ND<2.5	630	0.24	0.21	50	0.92	4,700	84	ND<0.1	935	7.51	9,770	12,200
	11/17/11	2.5	710	0.16	0.15	34	0.54	8,500	79	ND<0.15	14,500	3.88	18,700	21,300
	11/22/11	ND<0.5	300	0.049	0.017	1.8	0.10	1,500	12	ND<0.1	1,080	302	3,010	3,960
	12/14/11	ND<2	1,400	0.42	0.15	30	0.65	18,000	90	ND<0.1	5,130	5.12	35,100	44,300
	2/1/12	0.76	850	0.56	0.074	9.2	0.14	7,200	79	ND<0.1	ND<5[i]	54.0	14,000	20,400
	5/9/12	0.62	620	0.66	0.074	12	0.14	4,600	60	ND<0.1	ND<5[i]	59.4	9,490	7,480
	8/7/12	ND<2.5	810	0.90	0.14	75	0.74	5,900	60	ND<0.1	ND<5[i]	41.0	10,600	13,000
IP-10	9/20/11	ND<0.1	26	ND<0.015	ND<0.005	0.46	1.4	48	ND<1	ND<0.1	5,530	39.0	290	483
	10/25/11	ND<0.5	37	ND<0.015	ND<0.005	0.79	4.2	74	ND<1	ND<0.1	15,500	139	390	625
	11/17/11	ND<0.1	34	ND<0.015	0.015	4.2	2.8	96	ND<1	ND<0.1	26,700	711	458	510
	12/14/11	ND<0.1	31	ND<0.015	ND<0.01	3.2	3.5	92	ND<1	ND<0.1	14,000	644	455	640
	2/1/12	ND<0.1	21	ND<0.015	ND<0.005	0.54	2.8	64	ND<1	ND<0.1	36[i]	237	353	505
	5/9/12	ND<0.1	4.2	ND<0.015	ND<0.005	1.0	3.0	66	ND<1	ND<0.1	46[i]	478	368	530
	8/7/12	ND<0.5	3.2	ND<0.015	ND<0.005	1.4	2.6	60	ND<1	ND<0.1	30[i]	535	335	435
DW-8	9/20/11	ND<0.1	6.7	ND<0.015	ND<0.005	1.9	2.8	45	ND<1	ND<0.1	27,600	1,110	502	615
	10/25/11	ND<0.5	85	ND<0.015	ND<0.005	1.4	1.2	100	ND<1	ND<0.1	16,000	519	564	780
	11/17/11	ND<0.1	48	ND<0.015	ND<0.005	0.76	1.5	92	ND<1	ND<0.1	19,100	140	591	610
	11/22/11	ND<0.1	24	ND<0.015	0.031	9.1	2.4	64	ND<1	0.16	23,200	1,480	498	560
	12/15/11	ND<0.1	36	ND<0.015	ND<0.005	0.88	2.4	78	ND<1	ND<0.1	19,100	1,210	510	560

TABLE 4

ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	Nitrate[a] (mg/l)	Sulfate[a] (mg/l)	Arsenic[b] (mg/l)	Chromium[b] (mg/l)	Iron[b] (mg/l)	Manganese[b] (mg/l)	Sodium[b] (mg/l)	Hex Chrome[c] (µg/l)	Fe(2+)[d] (mg/l)	CO_2[e] (µg/l)	CH_4[e] (µg/l)	Alk[f] (mg/l)	TDS[g] (mg/l)
DW-8	2/1/12	ND<0.1	37	ND<0.015	0.0055	1.9	3.0	90	ND<1	ND<0.1	51[i]	1,170	598	795
(cont.)	5/11/12	ND<0.1	14	ND<0.015	ND<0.005	0.12	0.14	77	2.2	ND<0.1	ND<5[i]	306	195	330
	8/8/12	ND<0.5	14	ND<0.015	0.0057	2.4	2.7	100	ND<1	ND<0.1	38[i]	404	556	600

(a) Nitrate and sulfate analyzed by EPA Method 300.0; reported in milligrams per liter (mg/l).
(b) Arsenic, chromium, iron, manganese, and sodium analyzed by EPA Method 6010B; reported in mg/l.
(c) Hexavalent chromium (Hex Chrome) analyzed by EPA Method 7199; reported in micrograms per liter (µg/l).
(d) Ferrous Iron (Fe (2+)) analyzed by Standard Method 3500-Fe D; reported in mg/l.
(e) Carbon dioxide (CO_2) and methane (CH_4) analyzed by RSK-175M; reported in µg/l.
(f) Total alkalinity as CaCO3 analyzed by Standard Method 2320B; reported in mg/l.
(g) Total dissolved solids (TDS) analyzed by Standard Method 2540 C; reported in mg/l.
(h) ND - Not detected at the reporting limit listed.
(i) CO_2 analyzed by Standard Method 4500 C; reported in mg/l.

TABLE 5

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	0.91	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 5

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	0.15	0.13	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	0.082	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	0.12	0.052	0.059	0.15	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	360	0.19	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	0.20	0.083	0.056	0.18	ND<0.1	ND<0.5	4.8	ND<0.5	15.6	79.6
SVE-Manifold	6/27/11	310	0.22	0.11	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	0.086	0.29	0.14	1.5	ND<0.1	ND<0.5	3.6	ND<0.5	22.9	73.5
SVE-Manifold	9/15/11	310	0.32	1.2	0.16	4.3	ND<0.1	ND<0.5	2.8	ND<0.5	20.1	77.1
SVE-Manifold	9/27/11	360	0.24	0.94	0.16	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	0.15	0.085	1.3	0.11	ND<0.5	2.7	ND<0.5	21.8	75.5
SVE-Catox Influent[(e)]	11/10/11	110	ND<0.05	0.10	ND<0.05	0.83	ND<0.1	ND<0.5	2.7	ND<0.5	21.3	76.1
SVE-Manifold	11/21/11	190	ND<0.05	0.071	ND<0.05	0.75	0.10	ND<0.5	2.7	ND<0.5	20.4	76.9

TABLE 5

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	0.42	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	0.57	0.12	ND<0.5	2.6	ND<0.5	21.6	75.7
SVE-Manifold	1/5/12	450	0.082	0.063	0.063	1.1	0.23	ND<0.5	2.5	ND<0.5	21.5	76.0
SVE-Manifold	1/23/12	490	0.074	0.051	0.062	1.0	0.36	ND<0.5	2.0	ND<0.5	22.0	75.9
SVE-Manifold	1/26/12	530	0.067	ND<0.05	0.052	0.87	0.34	ND<0.5	1.8	ND<0.5	21.6	76.7
SVE-Manifold	1/26/12	800	0.78	2.0	0.35	3.6	ND<0.1	ND<0.5	1.6	ND<0.5	22.3	76.1
SVE-Manifold	2/2/12	440	0.90	1.9	0.16	4.4	ND<0.1	ND<0.5	0.99	ND<0.5	22.6	76.4
SVE-Manifold	2/16/12	430	0.29	1.2	0.16	4.0	ND<0.1	ND<0.5	0.93	ND<0.5	22.5	76.5
SVE-Manifold	2/28/12	380	0.11	0.60	0.10	2.7	ND<0.07	ND<0.5	0.96	ND<0.5	22.4	76.6
SVE-Manifold	3/14/12	250	0.056	0.48	0.086	1.8	ND<0.1	ND<0.5	0.82	ND<0.5	22.6	76.6
SVE-Manifold	4/4/12	74	0.060	0.49	0.089	1.6	ND<0.1	ND<0.5	0.51	ND<0.5	21.8	77.7
SVE-Manifold	4/17/12	110	0.19	1.5	0.24	3.9	ND<0.1	ND<0.5	0.60	ND<0.5	21.5	77.9
SVE-Manifold	5/16/12	43	0.056	0.34	0.063	1.5	ND<0.1	ND<0.5	0.55	ND<0.5	21.4	78.0
SVE-Manifold	6/19/12	37	ND<0.05	0.13	ND<0.05	0.99	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.6	77.9
SVE-Manifold	7/17/12	64	ND<0.05	ND<0.05	ND<0.05	0.56	ND<0.1	ND<0.5	0.54	ND<0.5	21.1	78.3
SVE-Manifold	7/17/12	59	ND<0.05	ND<0.05	ND<0.05	0.39	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.3	78.4
SVE-Manifold	8/16/12	64	ND<0.05	ND<0.05	ND<0.05	0.29	ND<0.1	ND<0.5	0.82	ND<0.5	21.1	78.1
SVE-Manifold	8/23/12	72	ND<0.05	ND<0.05	ND<0.05	0.27	ND<0.1	ND<0.5	0.77	ND<0.5	21.3	78.0
SVE-Manifold	8/23/12	81	ND<0.05	ND<0.05	ND<0.05	0.15	ND<0.1	ND<0.5	0.86	ND<0.5	21.1	78.0
SVE-Manifold	9/13/12	79	ND<0.05	ND<0.05	ND<0.05	0.09	ND<0.1	ND<0.5	0.85	ND<0.5	21.1	78.0

(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 6

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 Carbon Dioxide (%)	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	13	0.5	4,700	--	--	1.3	63[b]	110	3.6	117
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	4.0	130
5	7/6/10	175	7	4,000	0.04	69	1.5	63[b]	94	4.3	139
6	7/8/10	200	8	7,500	0.03	73	1.5	63[b]	176	5.3	171
7	7/14/10	343	14	4,200	1.25	90	1.5	81	127	5.5	230
8	7/28/10	625	26	3,000	0.62	68	1.5	59	65	4.0	122
9	8/5/10	793	33	4,800	0.73	68	1.0	65	115	5.3	177
10	8/18/10	985	41	4,300	0.64	71	1.0	60	97	5.2	162
11	9/7/10	1,309	55	1,100	2.05	75	1.6	106	43	4.1	222
12	9/16/10	1,473	61	1,600	0.81	76	1.4	67	40	4.0	136
13	9/29/10	1,628	68	1,800	0.08	89	1.5	21	14	3.6	38
14	10/7/10	1,821	76	2,100	0.26	69	1.5	38	30	3.6	70
15	10/13/10	1,866	78	2,100	0.09	76	3.3	21	16	3.4	36
16	12/8/10	1,912	80	2,500	1.02	53	2.4	74	69	4.7	178
17	12/14/10	2,051	85	1,700	1.45	58	2.1	89	56	4.1	187
18	12/21/10	2,221	93	640	0.78	59	2.1	65	15	2.2	72
19	12/29/10[d]	2,412	101	150	0.35	49	4.1	41	2.3	2.3	48
20	1/12/11	2,748	115	280	--	54	4.2	14[e]	1.5	3.5	26
21	3/4/11	2,922	122	620	--	63	5.9	15	3.5	5.1	40
22	3/9/11	3,040	127	440	--	68	2.4	13	2.1	4.2	28

TABLE 6

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

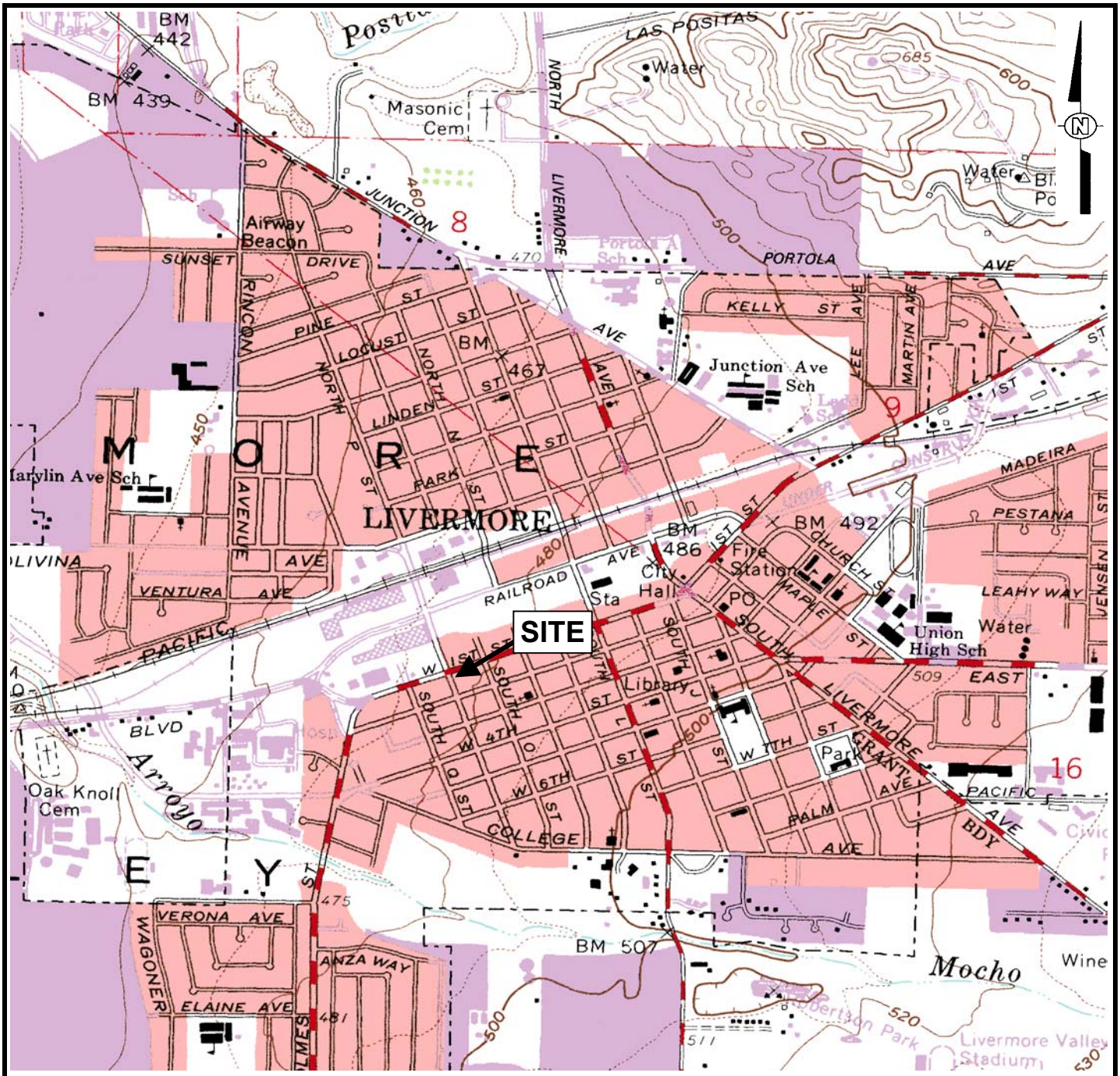
Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
23	3/30/11	3,539	147	5.2	--	55	2.4	12	0.02	3.3	20
24	4/19/11	4,020	168	38	--	63	2.3	12	0.2	4.6	29
25	4/28/11	4,238	177	150	--	65	2.3	15	0.9	4.8	38
26	5/12/11	4,570	190	280	--	60	2.4	14	1.5	4.7	34
27	5/25/11	4,885	204	330	--	66	2.4	11	1.4	5.1	29
28	6/8/11	5,219	217	340	--	64	2.4	9	1.2	4.5	21
29	6/16/11	5,410	225	370	--	68	2.4	9	1.2	5.3	24
30	6/16/11	5,412	225	360	--	73	4.1	15	2.0	5.3	42
31	6/16/11	5,416	226	370	--	83	4.0	13	1.7	4.8	32
32	6/27/11	5,676	237	310	--	71	4.0	16	1.8	4.7	38
33	7/7/11	5,918	247	130	--	91	4.0	15	0.7	4.5	35
34	7/13/11	6,062	253	78	--	72	4.1	16	0.5	4.9	41
35	7/27/11	6,395	266	88	--	74	4.0	16	0.5	4.4	35
36	8/9/11	6,709	280	87	--	75	4.0	16	0.5	4.2	35
37	8/23/11	7,015	292	92	--	83	4.0	15	0.5	4.3	33
38	9/1/11	7,227	301	140	--	66	4.0	20	1.0	4.2	43
39	9/1/11	7,231	301	310	--	74	3.6	14	1.6	3.6	25
40	9/15/11	7,566	315	310	--	70	3.6	17	2.0	2.8	25
41	9/27/11	7,857	327	360	--	81	3.5	13	1.7	2.7	17
42	10/20/11	8,379	349	130	--	74	3.6	20	1.0	2.7	28
43	11/10/11	8,867	369	110	--	60	3.7	11	0.5	2.7	16
44	11/21/11	9,131	380	190	--	57	3.7	17	1.2	2.7	23
45	12/7/11	9,513	396	170	--	54	3.7	16	1.0	2.5	21

TABLE 6

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 Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
46	12/19/11	9,798	408	250	--	51	3.7	--	--	2.6	26
47	1/5/12	10,208	425	450	--	53	3.6	22	3.6	2.5	28
48	1/23/12	10,638	443	490	--	51	3.4	33	5.9	2.0	34
49	1/26/12	10,710	446	530	--	55	3.6	30	6.0	1.8	27
50	1/26/12	10,711	446	800	--	56	3.6	52	15	1.6	43
51	2/2/12	10,878	453	440	--	52	3.6	51	8.4	1.0	25
52	2/16/12	11,215	467	430	--	56	3.5	54	8.6	0.9	25
53	2/28/12	11,501	479	380	--	56	3.3	54	7.6	1.0	26
54	3/14/12	11,862	494	250	--	60	3.4	51	4.7	0.8	21
55	4/4/12	12,365	515	74	--	57	3.5	50	1.4	0.5	12
56	4/17/12	12,676	528	110	--	60	3.7	26	1.1	0.6	7.7
57	5/16/12	13,378	557	43	--	74	3.4	38	0.6	0.6	10
58	6/19/12	14,189	591	37	--	76	3.2	38	0.5	0.3	4.2
59	7/17/12	14,861	619	64	--	74	3.1	43	1.0	0.5	11
60	7/17/12	14,863	619	59	--	74	3.7	69	1.5	0.3	7.6
61	8/16/12	15,582	649	64	--	80	3.8	59	1.4	0.8	24
62	8/23/12	15,745	656	72	--	74	3.8	56	1.5	0.8	21
63	8/23/12	15,747	656	81	--	73	4.1	49	1.5	0.9	22
64	9/13/12	16,252	677	79	--	75	4.1	50	1.5	0.9	21

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



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	TP-2 ⊗	Monitoring Well/Vapor Extraction Well
DW-1 ⊞	Deep Groundwater Monitoring Well	(436.81)	Groundwater Elevation (Feet, MSL) Measured 6 August 2012
IP-1 ▲	Injection Well	426	Groundwater Elevation Contour
IP-6 △	Angled Injection Well Screen	*	Groundwater Elevation Not Used for Contours
VW-2 ⊞	Vapor Extraction Well	NM	Groundwater Elevation Not Measured

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
17	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
	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

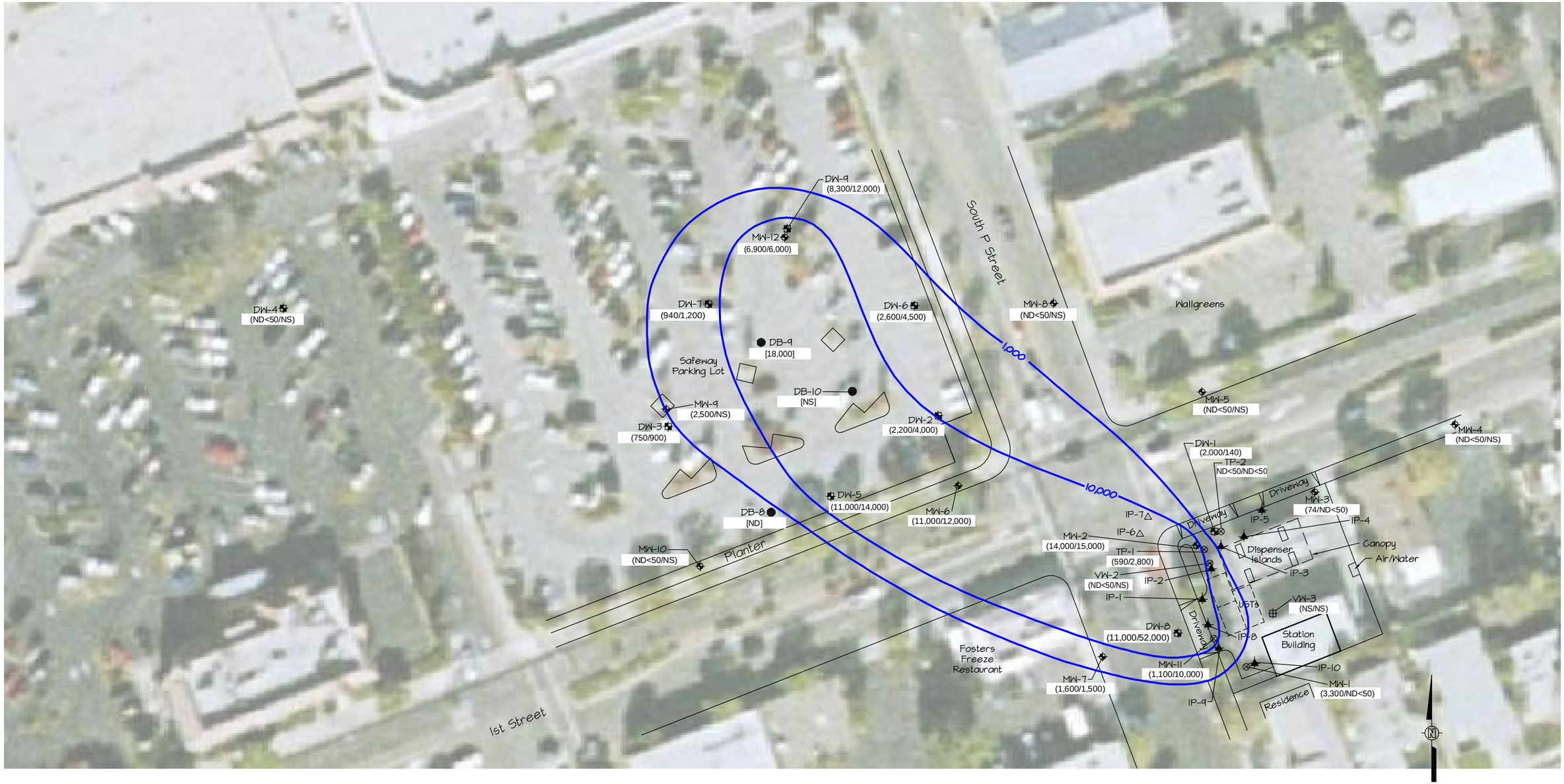
GROUNDWATER ELEVATION CONTOURS

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

FILE NO. 01LV11B-20417.DWG

FIGURE 2

01LV11B-20417.dwg 10/30/2012 3:40PM



Legend

- MW-7 ⊕ Groundwater Monitoring Well
- DW-1 ⊞ Deep Groundwater Monitoring Well
- IP-1 ▲ Injection Well
- IP-6 △ Angled Injection Well Screen
- VW-2 ⊞ Vapor Extraction Well
- TP-2 ⊗ Monitoring Well/Vapor Extraction Well

- (3,300/ND<50) Previous Quarter/Current Quarter Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- 1000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- DB-8 [ND] ● June 2012 Soil Boring with 55-Foot Grab Groundwater Sample TPHg Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
17	13	MY	11/15/11	Third Quarter 2011 Monitoring Report
	14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report
	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

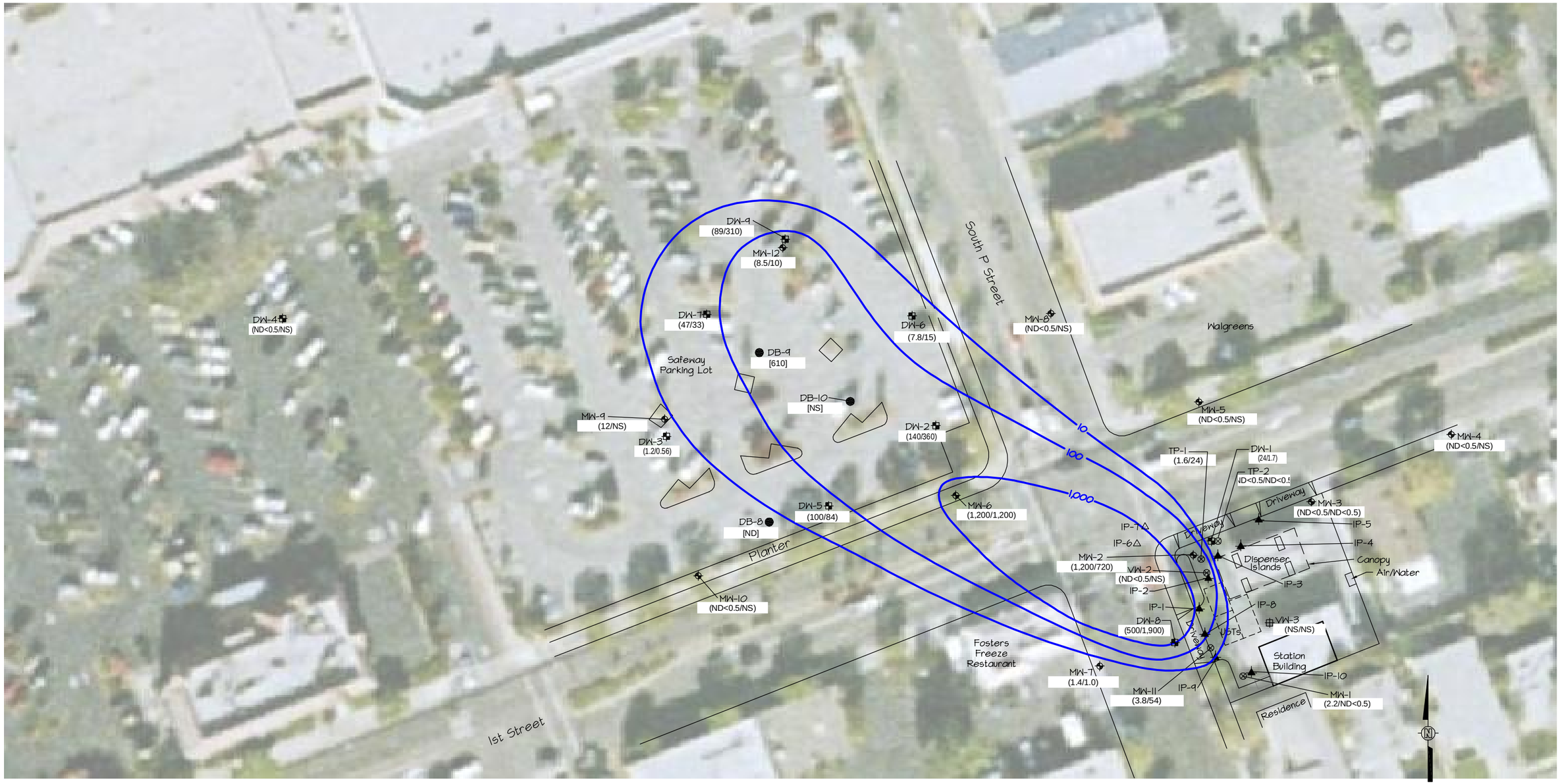
TPHg CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20517.DWG

FIGURE 3

01LV11B-20517.dwg 10/30/2012 3:38PM



Legend

MW-7	Groundwater Monitoring Well
DW-1	Deep Groundwater Monitoring Well
IP-1	Injection Well
IP-6 △	Angled Injection Well Screen
VW-2	Vapor Extraction Well
TP-2 ⊗	Monitoring Well/Vapor Extraction Well

(2.2/ND<0.5)	Previous Quarter/Current Quarter Benzene Results in µg/L
1000	Benzene Concentration Contour (µg/L), Queried Where Uncertain
ND	Not Detected
NS	Not Sampled
DB-8 [ND]	June 2012 Soil Boring with 55-Foot Grab Groundwater Sample Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
17	13	MY	11/15/11	Third Quarter 2011 Monitoring Report
	14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report
	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

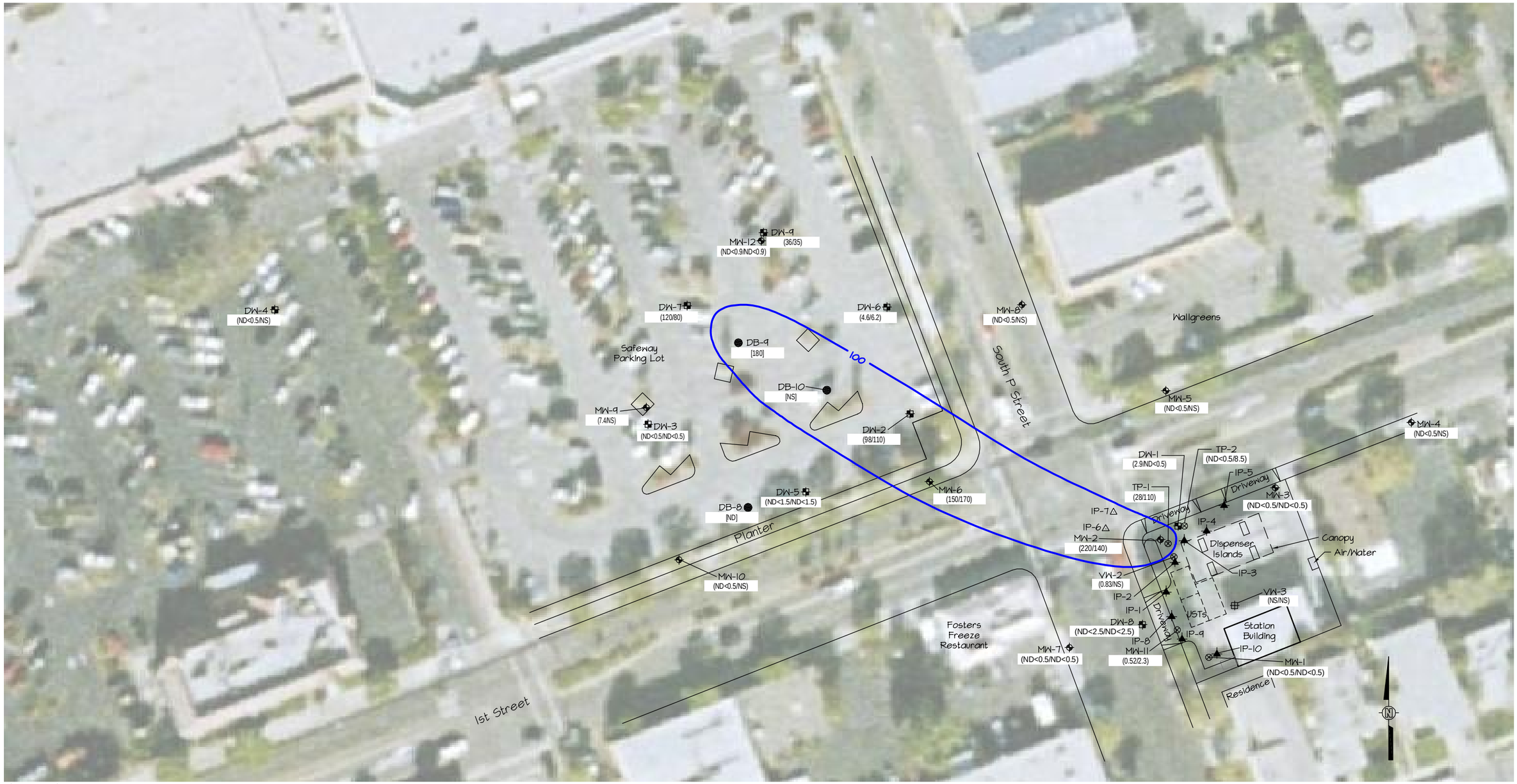
BENZENE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20617.DWG

FIGURE 4

01LV11B-20617.dwg
10/19/2012 2:58PM



Legend

MW-7 ⊕	Groundwater Monitoring Well
DW-1 ✚	Deep Groundwater Monitoring Well
IP-1 ▲	Injection Well
IP-6 △	Angled Injection Well Screen
VW-2 ⊞	Vapor Extraction Well
TP-2 ⊗	Monitoring Well/Vapor Extraction Well

(ND<0.5/ND<0.5)	Previous Quarter/Current Quarter Methyl Tert-Butyl Ether (MTBE) Results in µg/L
1,000	MTBE Concentration Contour (µg/L), Queried Where Uncertain
ND	Not Detected
NS	Not Sampled
DB-8 ● [ND]	June 2012 Soil Boring with 55-Foot Grab Groundwater Sample MTBE Results in µg/L

0 30' 60'
SCALE

REVISION 17

NO.	BY	DATE	DESCRIPTION
13	MY	11/15/11	Third Quarter 2011 Monitoring Report
14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report
15	MY	5/15/12	First Quarter 2012 Monitoring Report
16	MY	8/15/12	Second Quarter 2012 Monitoring Report
17	MY	11/15/12	Third Quarter 2012 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

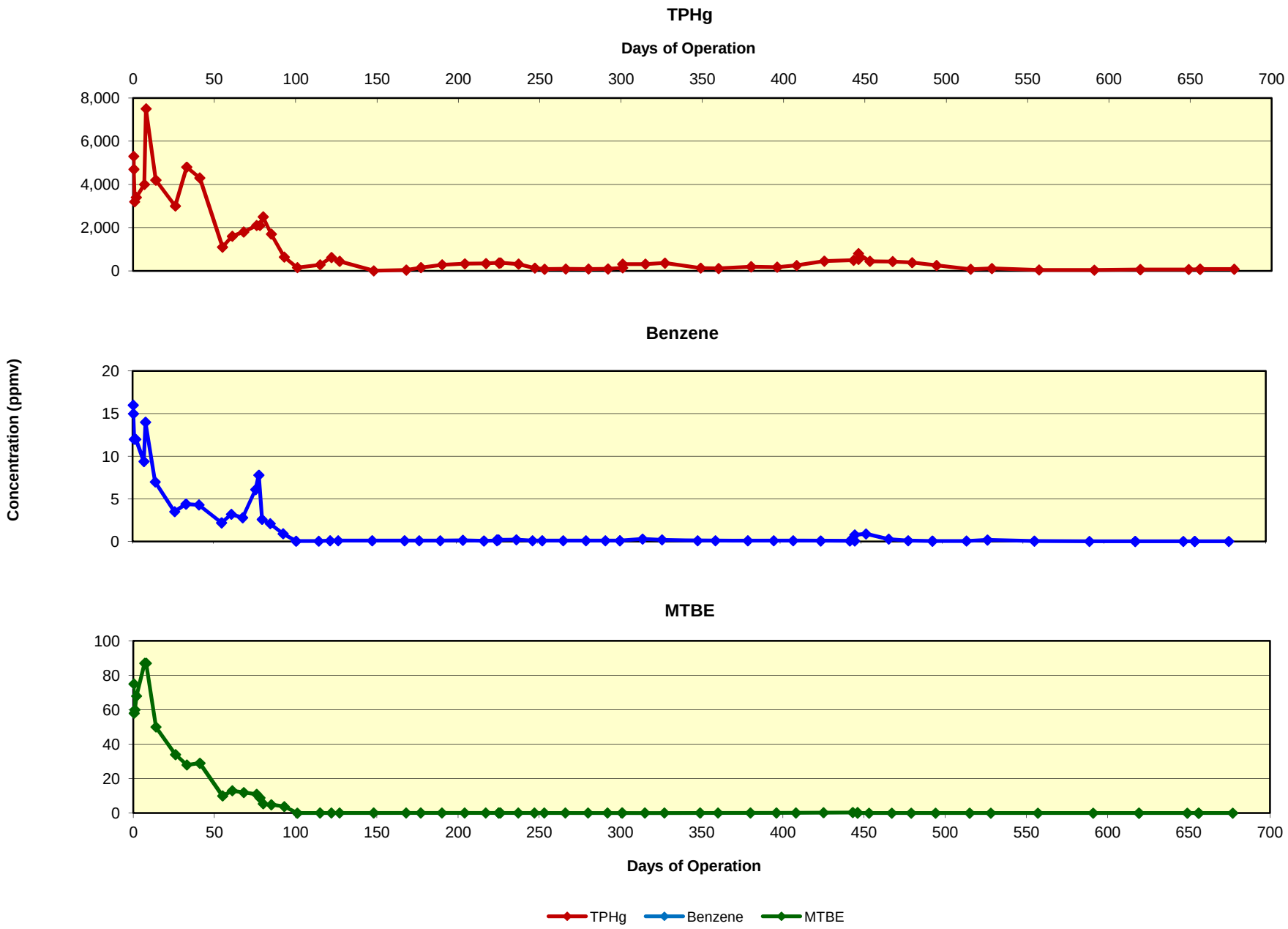
MTBE CONCENTRATION CONTOURS

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

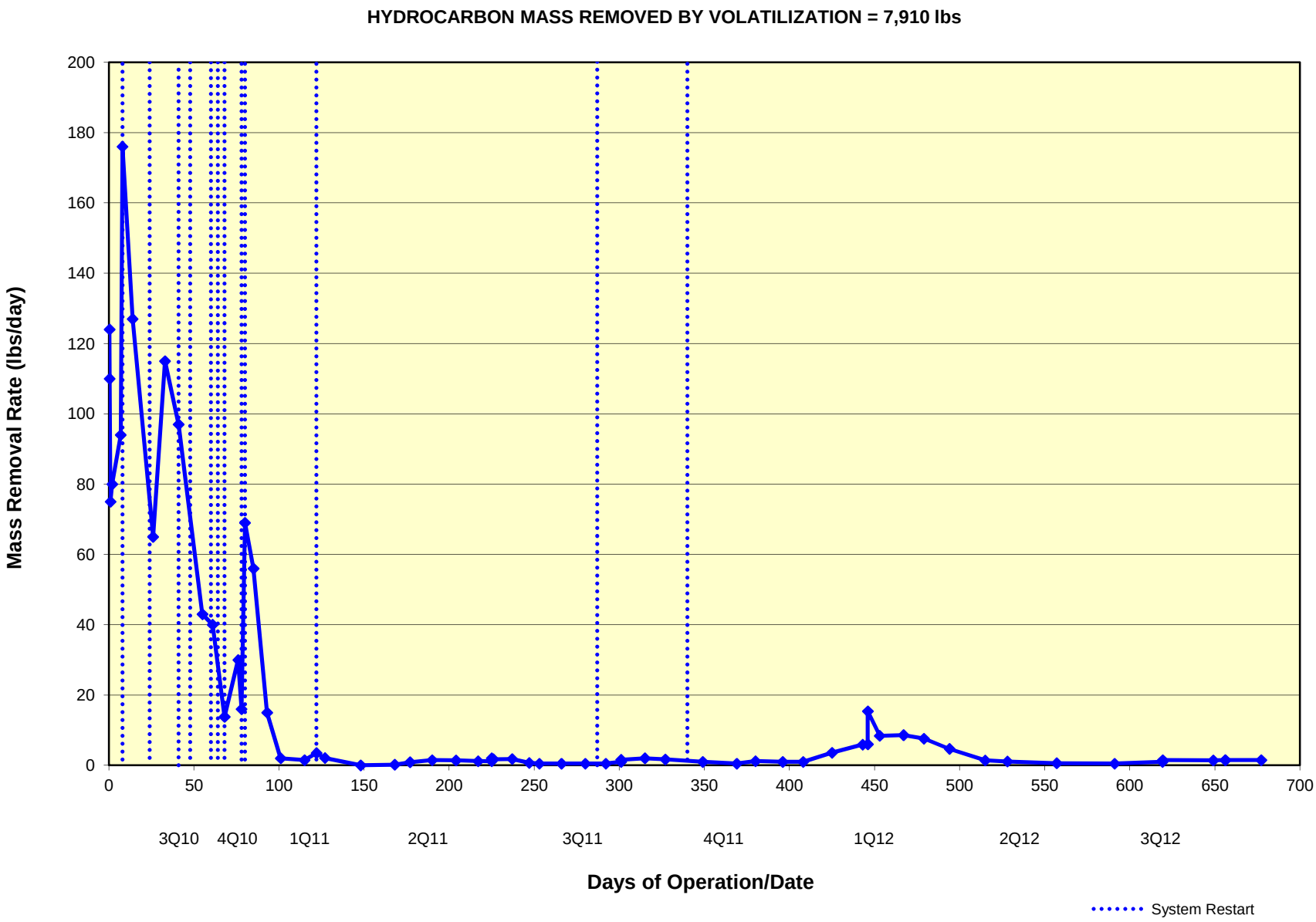
FILE NO. 01LV11B-20717.DWG

FIGURE 5

10/19/2012 3:05PM 01LV11B-20717.dwg

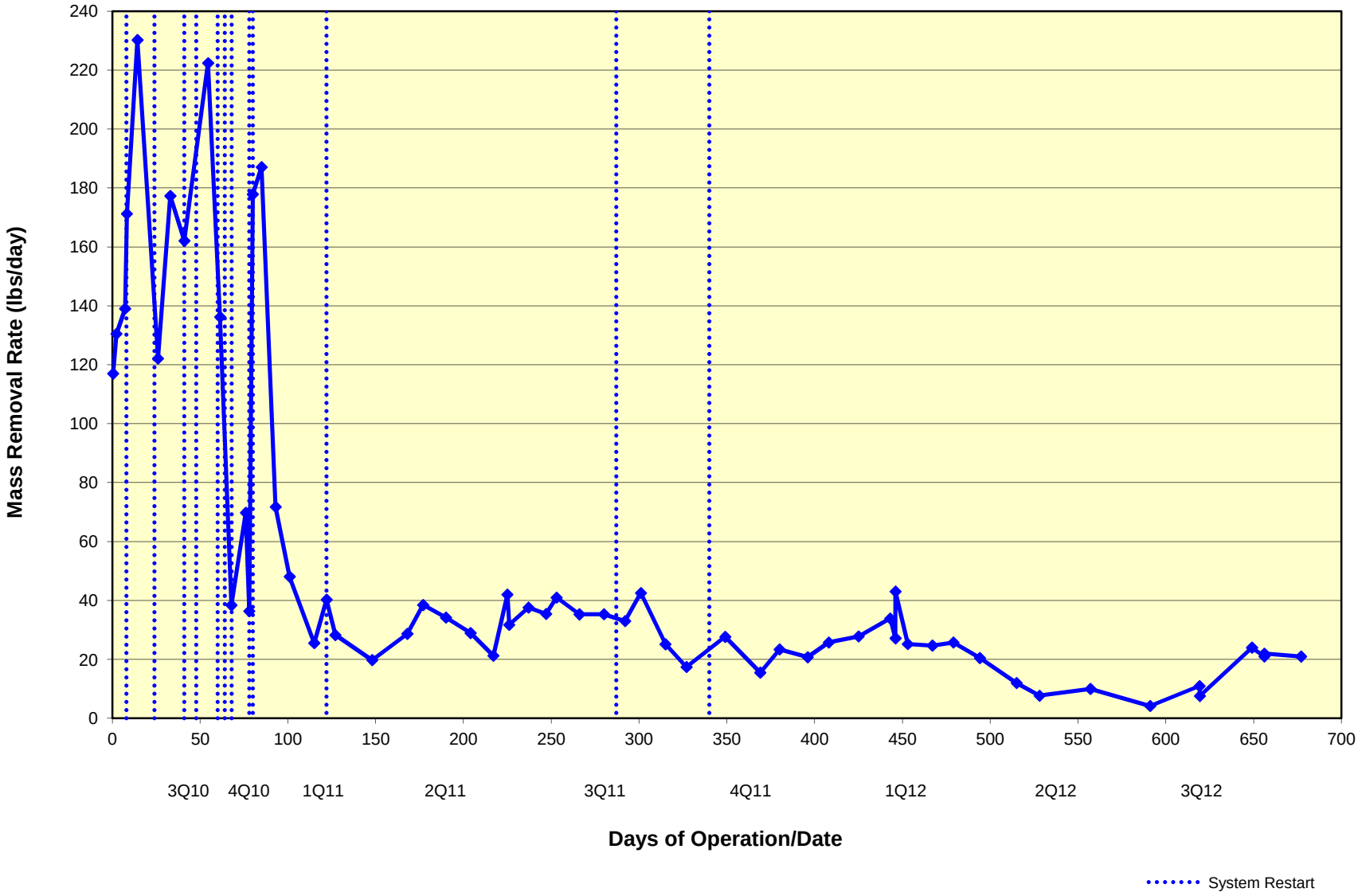


ARCTOS Arctos Environmental	Tesoro - Livermore	SOIL VAPOR INFLUENT CONCENTRATIONS	Figure 6
3Q12 System Graphs.xlsx | 11/15/2012			



ARCTOS Arctos Environmental		Tesoro - Livermore	MASS REMOVAL BY VOLATILIZATION	Figure 7
3Q12 System Graphs.xlsx	11/15/2012			

HYDROCARBON MASS REMOVED BY BIODEGRADATION = 29,350 lbs



ARCTOS Arctos Environmental		Tesoro - Livermore	MASS REMOVAL BY BIODEGRADATION	Figure 8
3Q12 System Graphs.xlsx	11/15/2012			

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 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 and MW-3	Upgradient	Quarterly
MW-2, MW-11, and DW-1	Source area	
MW-6, MW-12, DW-2, DW-3, DW-5, DW-6, DW-7, DW-8, and DW-9	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 quality assurance/quality control (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 this quarter are in Attachment H.

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: 8/6/2012 **Project Name:** Tesoro #67076 **Project Number:** 01LV

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

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	37.40	-	
MW-2	4"	54.10	-	40.95	-	
MW-3	4"	52.90	-	40.52	-	
MW-4	2"	46.80	-	40.69	-	not sampled
MW-5	2"	46.27	-	NM	-	not sampled - Construction in area unable to gauge
MW-6	2"	47.65	-	43.66	-	
MW-7	2"	46.80	-	39.85	-	
MW-8	2"	44.50	-	41.94	-	not sampled
MW-9	2"	44.58	-	43.51	-	not sampled
MW-10	2"	45.10	-	40.65	-	not sampled
MW-11	4"	42.85	-	35.20	-	
MW-12	4"	44.80		43.22		
DW-1	4"	64.75	-	40.60	-	
DW-2	4"	59.84	-	43.90	-	
DW-3	4"	59.74	-	43.26	-	
DW-4	4"	70.04	-	42.80	-	not sampled
DW-5	4"	59.80	-	46.32	-	
DW-6	4"	60.15	-	44.50	-	
DW-7	4"	65.20	-	44.02	-	
DW-8	4"	64.65	-	39.61	-	
DW-9	4"	59.80		43.65		
TP-1	2"	43.22	-	36.59	-	not sampled
TP-2	2"	41.21	-	36.00	-	not sampled
VW-2	2"	36.78	-	32.64	-	not sampled
VW-3	2"	36.34	-	Dry	-	not sampled

Field Data Sheet

Date: 8-6-12 **Project Name:** Tesoro #67076 **Project Number:** 01LV

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

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
IP-1	2"	64.45	-	40.23	-	
IP-2	2"	64.54	-	40.78	-	not sampled
IP-3	2"	64.7	-	40.70	-	not sampled
IP-4	2"	64.75	-	40.67	-	not sampled
IP-5	2"	64.27	-	40.65	-	not sampled
IP-6	2"	71.6	-	44.44	-	not sampled
IP-7	2"	71.84	-	45.63	-	not sampled
IP-8	2"	64.45	-	40.32	-	
IP-9	2"	64.75	-	40.30	-	
IP-10	2"	63.02	-	40.36	-	

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	MW-1	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / Cool

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	-	37.40	=	17.15	X	0.66	=	11.31
4.5	-		=		X		0.83	=	
6	-		=		X		1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): ND **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	0656	1016	18.32	-24.2	2.07	8.20	.756
1	11.5	0702	872	18.94	-30.9	3.17	7.66	.642
2	23	0710	781	18.92	-17.3	2.40	7.38	.574
3	34.5	0718	773	19.05	-12.0	2.12	7.15	.567
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.40	
(P) After Purging	41.96	
P- 0.8(P-I) =	38.31	80% Recovery
(S) Before Sampling	37.60	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 1025 **Turbidity (NTU):** 74.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	MW-2	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / warm

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	54.10	-	40.95	=	13.15	X	0.66	=	8.67
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)	
0	Int.	1125	1280	25.77	-211.9	2.88	7.74	.820	
1	9	1133	1240	22.80	-217.5	.64	6.83	.842	
2	18	1140	-	-	-	-	-	-	> Dry
3	27	1147	-	-	-	-	-	-	
4									
5									
6									
7									
8									
9									
10									

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.95	
(P) After Purging	53.06	
P- 0.8(P-I) =	43.37	80% Recovery
(S) Before Sampling	42.14	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCL
250 ml ~~glass~~ poly	4	3 None / 1 HNO_3
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 1300 **Turbidity (NTU):** 64.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments: Well went dry at 11 gallons

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/6/12
Well Number:	MW-3	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / cool

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	52.90	-	40.52	=	12.38	X	0.66	= 8.17
4.5		-		=		X	0.83	=
6		-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1030	745	18.56	-190.5	4.34	7.08	.549
1	8	1039	897	21.75	-153.9	1.23	7.26	.623
2	16	1047	883	21.85	-110.0	.79	7.37	.611
3	24	1054	879	22.06	-73.5	1.67	7.45	.605
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.52	
(P) After Purging	44.22	
P- 0.8(P-I) =	41.26	80% Recovery
(S) Before Sampling	40.69	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml ~~glass~~ poly		
125 ml polypropylene		

Sample Date : 8/6/12 **Time:** 1110 **Turbidity (NTU):** 19.8

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	MW-6	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / warm

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	-	43.66	=	3.99	X	0.17	=	.67
3		-		=		X	0.38	=	
4		-		=		X	0.66	=	
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	0851	1117	20.50	-176.1	.95	7.18	.795
1	1	0853	1119	20.37	-183.4	.92	6.83	.798
2	2	0856	1118	20.30	-186.6	.94	6.76	.799
3	3	0859	1138	20.07	-103.6	.53	6.70	.817
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.66	
(P) After Purging	45.99	
P- 0.8(P-I) =	44.12	80% Recovery
(S) Before Sampling	43.72	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 0950 **Turbidity (NTU):** 327

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	MW-7	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny/cool

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)	46.80 -	39.85 =	6.95 X	0.17	= 1.18
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	0859	944	19.83	-113.9	3.91	7.23	.683
1	1	0902	972	20.32	-136.6	1.18	7.15	.694
2	2	0905	944	20.38	-139.8	1.34	7.18	.673
3	3	0908	928	20.43	-143.6	1.82	7.24	.661
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.85	
(P) After Purging	44.26	
P- 0.8(P-I) =	40.73	80% Recovery
(S) Before Sampling	39.90	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCL
250 ml ~~glass~~ poly	4	3 none / 1 HNO_3
125 ml polypropylene		

Sample Date : 8/7/12 **Time:** 1130 **Turbidity (NTU):** 629

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	MW-11	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / Cool

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	42.85	-	35.20	=	7.65	X	0.66	= 5.04
4.5	-		=		X		0.83	=
6	-		=		X		1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)	
0	Int.	0929	811	19.28	-160.1	4.01	7.25	.591	
1	5	0933	1584	21.09	-161.8	1.09	7.09	1.120	
2	10	-	-	-	-	-	-	-	
3	15	-	-	-	-	-	-	-	> Dry
4									
5									
6									
7									
8									
9									
10									

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	35.20	
(P) After Purging	41.98	
P- 0.8(P-I) =	36.55	80% Recovery
(S) Before Sampling	35.41	
Sampled 80% - 100%	yes	

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCL
250 ml ~~glass~~ poly	4	3 none / 1 HNO_3
125 ml polypropylene		

Sample Date : 8/7/12 **Time:** 1145 **Turbidity (NTU):** 316

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments: Well went dry at 6.5 gallons

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	MW-12	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / 60's

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)	44.80	-	43.22	=	1.58	X	0.66	= 1.04
4.5	-		=		X		0.83	=
6	-		=		X		1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): ND **Sheen/Iridescence:** ND **Odor:** ND

Groundwater Purging Purge Method

~~Submersible Pump~~ Honda Pump (Hand Bail) Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)	
0	Int.	0736	1007	20.63	-123.7	.29	7.29	.716	
1	1	0739	1005	20.82	-168.5	.21	7.20	.710	
2	2	-	-	-	-	-	-	-	> Dry
3	3	-	-	-	-	-	-	-	
4									
5									
6									
7									
8									
9									
10									

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.22	
(P) After Purging	44.80	
P- 0.8(P-I) =	43.53	80% Recovery
(S) Before Sampling	43.46	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 0835 **Turbidity (NTU):** +1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments: well went dry at 1.5 gallons

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/6/12
Well Number:	DW-1	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / warm

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	-	40.60	=	24.15	X	0.66	=	15.93
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): ND **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1414	1233	31.96	-141.7	1.44	7.29	.707
1	16	1426	890	23.16	-81.1	1.19	7.30	.599
2	32	1438	873	22.60	-35.6	.84	7.19	.594
3	48	1448	866	22.56	-31.0	.74	7.15	.590
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.60	
(P) After Purging	42.09	
P- 0.8(P-I) =	40.89	80% Recovery
(S) Before Sampling	40.85	
Sampled 80% - 100%	yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/6/12 **Time:** 1500 **Turbidity (NTU):** 18.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/9/12
Well Number:	DW-2	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / warm

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	-	43.90	=	15.94	X	0.66	=	10.52
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	[redacted]0951	1864	22.14	-151.6	5.01	7.31	1.285
1	10.5	1000	1043	22.55	-114.3	.97	7.11	.716
2	21	1008	999	22.91	-121.1	.68	7.03	.676
3	31.5	1018	982	22.96	-121.7	.40	7.00	.664
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.90	
(P) After Purging	45.12	
P- 0.8(P-I) =	44.14	80% Recovery
(S) Before Sampling	43.94	
Sampled 80% - 100%	yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
125 ml polypropylene		

Sample Date : 8/9/12 **Time:** 1030 **Turbidity (NTU):** 14.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/6/12
Well Number:	DW-3	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / [illegible]

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	-	43.26	=	16.48	X	0.66	= 10.87
4.5	-		=		X		0.83	=
6	-		=		X		1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1216	1000	26.81	-184.2	1.76	7.67	.629
1	11	1224	1021	24.51	-103.4	.64	7.47	.670
2	22	1232	998	24.15	-105.9	.50	7.34	.660
3	33	1240	1004	24.50	-101.9	.48	7.37	.659
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.26	
(P) After Purging	50.61	
P- 0.8(P-I) =	44.73	80% Recovery
(S) Before Sampling	44.22	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/6/12 **Time:** 1315 **Turbidity (NTU):** 23.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	DW-5	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny/warm

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	59.80	-	46.32	=	13.48	X	0.66	=	8.89
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): No **Sheen/Iridescence:** ~~No~~ Yes **Odor:** ~~No~~ Yes

Groundwater Purging Purge Method

(Submersible Pump) Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	0914	1011	22.79	-166.2	5.34	7.19	.688
1	9	0921	918	23.17	-203.4	.56	7.31	.618
2	18	0926	924	24.00	-228.5	.60	7.32	.614
3	27	0931	932	24.21	-244.9	.58	7.26	.615
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	46.32	
(P) After Purging	50.91	
P- 0.8(P-I) =	47.23	80% Recovery
(S) Before Sampling	47.01	
Sampled 80% - 100%	Yes	
Sample Date :	8/8/12	Time: ~~0956~~ 1020
Sampling Equipment :	Disposable Bailer	
Calibrate Date:	8/6/12	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Turbidity (NTU): 89.1

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/6/12
Well Number:	DW-6	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / Warm

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	-	44.50	=	15.65	X	0.66	=	10.32
4.5	-		=		X		0.83	=	
6	-		=		X		1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): ND **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1532	1182	34.65	23.7	2.95	7.57	.648
1	10.5	1539	959	25.00	-141.8	.52	7.17	.623
2	21	1546	933	24.20	-136.1	.43	6.89	.616
3	31.5	1553	921	24.16	-129.9	.38	6.90	.608
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	44.50	
(P) After Purging	49.21	
P- 0.8(P-I) =	45.44	80% Recovery
(S) Before Sampling	45.29	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/6/12 **Time:** 1630 **Turbidity (NTU):** 210

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/6/12
Well Number:	DW-7	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / warm

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	65.20	-	44.02	=	21.18	X	0.66	= 13.97
4.5	-	=		X		0.83	=	
6	-	=		X		1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1301	1207	32.37	+48.7	2.51	7.60	.688
1	14	1312	1041	24.71	-131.9	.49	7.12	.679
2	28	1323	1024	24.73	-118.2	.46	7.06	.671
3	42	1334	1017	24.56	-115.4	.47	7.02	.667
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	44.02	
(P) After Purging	46.74	
P- 0.8(P-I) =	44.56	80% Recovery
(S) Before Sampling	44.49	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/6/12 **Time:** 1350 **Turbidity (NTU):** 12.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	DW-8	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny Warm

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	64.65	-	39.61	=	25.04	X	0.66	= 16.52
4.5	-		=		X		0.83	=
6	-		=		X		1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1036	972	25.23	-234.7	1.01	7.61	.631
1	16.5	1047	1209	23.19	-250.9	.69	7.29	.816
2	33	1056	1292	2236	-244.5	.77	7.28	.878
3	49.5	1105	1341	22.78	-239.4	.76	7.27	.909
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.61	
(P) After Purging	48.39	
P- 0.8(P-I) =	41.36	80% Recovery
(S) Before Sampling	39.73	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
~~500 ml~~ 1L polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCl
250 ml ~~glass~~ poly	4	3 None / 1 HNO_3
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 1250 **Turbidity (NTU):** 31.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	DW-9	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / cool

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)	59.80	-	43.65	=	16.15	X	0.66	= 10.65
4.5	-	=		X			0.83	=
6	-	=		X			1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	0752	981	17.97	-157.7	2.21	7.27	.736
1	11	0759	993	21.88	-166.8	.62	6.93	.687
2	22	0807	1002	22.33	-228.4	.52	6.97	.686
3	33	0814	1005	22.49	-244.7	.52	6.96	.687
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.65	
(P) After Purging	46.03	
P- 0.8(P-I) =	44.12	80% Recovery
(S) Before Sampling	43.91	
Sampled 80% - 100%	yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 0900 **Turbidity (NTU):** 149

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	TP-1	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny/cool

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	-	36.59	=	6.63	X	0.17	=	1.12
3		-		=		X	0.38	=	
4		-		=		X	0.66	=	
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)	
0	Int.	0813	859	19.92	22.0	4.04	7.62	.619	
1	1	0818	818	20.15	-96.1	.22	7.15	.586	
2	2	-	-	-	-	-	-	-	
3	3	-	-	-	-	-	-	-	> Dry
4									
5									
6									
7									
8									
9									
10									

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	36.59	
(P) After Purging	43.18	
P- 0.8(P-I) =	37.90	80% Recovery
(S) Before Sampling	37.84	
Sampled 80% - 100%	yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/7/12 **Time:** 0920 **Turbidity (NTU):** +1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:
- Well has negative Pressure, water is very muddy
- Well went dry at 1 gallon

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	TP-2	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / cool

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	-	36.00	=	5.21	X	0.17	=	.88
3		-		=		X	0.38	=	
4		-		=		X	0.66	=	
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)	
0	Int.	0757	1035	19.76	76.8	4.57	6.88	.750	
1	1	0802	1024	20.05	32.1	1.45	7.13	.735	
2	2	-	-	-	-	-	-	-	
3	3	-	-	-	-	-	-	-	>Dry
4									
5									
6									
7									
8									
9									
10									

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	36.00	
(P) After Purging	41.18	
P- 0.8(P-I) =	37.03	80% Recovery
(S) Before Sampling	37.03	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 8/7/12 **Time:** 0900 **Turbidity (NTU):** +1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments: - Well has negative pressure, water is very muddy
- well went dry at 1.5 gallons

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	IP-1	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / Hot

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	64.45	-	40.23	=	24.22	X	0.17	= 4.11
3		-		=		X	0.38	=
4		-		=		X	0.66	=
4.5		-		=		X	0.83	=
6		-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1230	1005	21.97	-207.3	2.03	7.49	.693
1	4	1236	958	21.04	-171.2	2.60	7.06	.673
2	8	1240	944	20.52	-169.9	1.91	6.94	.671
3	12	1245	943	20.52	-181.0	2.00	6.99	.670
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.23	
(P) After Purging	48.19	
P- 0.8(P-I) =	41.82	80% Recovery
(S) Before Sampling	40.46	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCL
250 ml glass	4	3 none / 1 HNO_3
125 ml polypropylene		

Sample Date : 8/8/12 **Time:** 1415 **Turbidity (NTU):** 85.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/8/12
Well Number:	IP-8	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / Hot

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)	64.45	-	40.32	=	24.13	X	0.17	= 4.10
3		-		=		X	0.38	=
4		-		=		X	0.66	=
4.5		-		=		X	0.83	=
6		-		=		X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): No **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1147	1255	21.62	-38.5	7.05	7.63	.872
1	4	1156	1281	20.85	-178.7	7.13	7.31	.905
2	8	1204	1277	20.75	-178.6	~~7.15~~ 4.93	7.14	.904
3	12	1213	1272	20.49	-178.6	4.30	7.07	.905
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.32	
(P) After Purging	46.49	
P- 0.8(P-I) =	41.55	80% Recovery
(S) Before Sampling	40.63	
Sampled 80% - 100%	Yes	

Sample Date : 8/8/12 **Time:** 1350

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCl
250 ml glass	4	3 None / 1 HNO_3
125 ml polypropylene		

Turbidity (NTU): 20.6

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	IP-9	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny / warm

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	64.75	-	40.30	=	24.45	X	0.17	=	4.15
3		-		=		X	0.38	=	
4		-		=		X	0.66	=	
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1252	11989	21.04	-126.8	2.72	10.86	[redacted] 8.345
1	4	1302	14201	20.75	-104.7	4.59	10.79	10.03
2	8	1311	15275	20.20	-97.2	3.38	10.76	10.95
3	12	1321	15469	20.13	-96.7	2.94	10.75	11.10
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.30	
(P) After Purging	43.16	
P- 0.8(P-I) =	40.87	80% Recovery
(S) Before Sampling	40.69	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCL
250 ml ~~glass~~ Poly	4	3 none / 1 HNO_3
125 ml polypropylene		

Sample Date : 8/7/12 **Time:** 1415 **Turbidity (NTU):** 203

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	8/7/12
Well Number:	IP-10	**Well Integrity:**	Good
Technician:	C. Arroyo / R. Alpiche	**Ambient Conditions:**	Sunny/Warm

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)	63.02	-	40.36	=	22.66	X	0.17	=	3.85
3		-		=		X	0.38	=	
4		-		=		X	0.66	=	
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): NO **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)	Temp.(°C)	ORP	DO mg/l	pH	tds (g/l)
0	Int.	1204	751	20.31	-123.3	3.09	7.88	.535
1	4	1210	715	19.58	-118.8	2.54	7.23	.517
2	8	1219	714	19.65	-131.3	2.98	7.17	.517
3	12	1224	722	19.57	-133.9	2.94	7.23	.522
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.36	
(P) After Purging	45.16	
P- 0.8(P-I) =	41.32	80% Recovery
(S) Before Sampling	40.85	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1L ~~500 ml~~ polypropylene	1	None
8 oz, amber glass		
40ml VOA	5	HCL
250 ml ~~glass~~ Poly	4	3 none/1 HNO_3
125 ml polypropylene		

Sample Date : 8/7/12 **Time:** 1340 **Turbidity (NTU):** 56.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 8/6/12

Comments:

Daily Field Report

Date: August 6-8 2012
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:

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

YSI 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.

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

Turbidity readings were taken at time of sampling.

Samples will be analyzed for Tphg/BTEX/MTBE, 7 Oxy's & Lead Scavengers.

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.

Purge water was stored in self contained tank & was off loaded to Excel Environmental.

A total of 460 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.

Due to construction in the area MW-5 was not gauged, area was coned off, no access.

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 Quality Assurance Quality Control (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
	1/31/12	36.11		438.10
	5/7/12	36.14		438.07
	8/6/12	37.40		436.81
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

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	3/7/97	21.33	472.98	451.65
(cont.)	6/12/97	29.94		443.04
	9/29/97	34.22		438.76
	12/1/97	35.94		437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00
	9/7/99	31.85		441.13
	12/13/99	33.72		439.26
	3/13/00	26.54		446.44
	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

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	11/4/04	34.92	472.98	438.06
(cont.)	1/12/05	29.46		443.52
	5/2/05	25.61		447.37
	7/19/05	30.11		442.87
	11/21/05	32.04		440.94
	2/9/06	27.11		445.87
	5/17/06	25.18		447.80
	8/9/06	32.69		440.29
	11/8/06	33.21		439.77
	2/14/07	31.27		441.71
	5/17/07	34.40		438.58
	8/2/07	41.23		431.75
	11/12/07	48.22		424.76
	2/14/08	36.31		436.67
	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
	1/31/12	39.52		433.46
	5/7/12	36.89		436.09
	8/6/12	40.95		432.03

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	6/1/93	36.18	473.37	437.19
	6/22/93	37.11		436.26
	10/6/93	41.15		432.22
	1/13/94	33.95		439.42
	3/30/94	30.97		442.40
	4/25/94	32.46		440.91
	8/12/94	41.72		431.65
	12/14/94	37.62		435.75
	2/10/95	29.96		443.41
	6/15/95	23.66		449.71
	9/26/95	29.62		443.75
	12/15/95	27.10		446.27
	3/21/96	15.85		457.52
	6/13/96	21.31		452.06
	9/16/96	28.62		444.75
	12/2/96	25.55		447.82
	3/7/97	19.77		453.60
	6/12/97	27.67		445.70
	9/29/97	29.60		443.77
	12/1/97	33.37		440.00
	3/19/98	18.76		454.61
	5/29/98	20.64		452.73
	9/15/98	30.70		442.67
	11/30/98	34.96		438.41
	1/17/99	28.81		444.56
	6/10/99	28.10		445.27
	9/7/99	30.38		442.99
	12/13/99	31.46		441.91
	3/13/00	24.28		449.09
	6/12/00	26.80		446.57
	11/10/00	29.47		443.90

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	12/31/00	31.38	473.37	441.99
(cont.)	3/27/01	29.94		443.43
	6/30/01	37.54		435.83
	9/26/01	45.17		428.20
	12/18/01	39.41		433.96
	3/18/02	37.73		435.64
	6/5/02	35.35		438.02
	8/21/02	36.21		437.16
	12/3/02	35.62		437.75
	3/4/03	32.75		440.62
	6/10/03	31.26		442.11
	9/9/03	34.72		438.65
	12/23/03	30.47		442.90
	3/23/04	26.67		446.70
	5/10/04	30.25		443.12
	8/4/04	34.70		438.67
	11/4/04	33.94		439.43
	1/12/05	28.21		445.16
	5/2/05	24.56		448.81
	7/19/05	29.39		443.98
	11/21/05	31.30		442.07
	2/9/06	26.21		447.16
	5/16/06	24.36		449.01
	8/9/06	31.90		441.47
	11/8/06	31.30		442.07
	2/14/07	30.20		443.17
	5/17/07	33.64		439.73
	8/2/07	41.74		431.63
	11/12/07	47.41		425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77

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	7/23/08	45.00	473.37	428.37
(cont.)	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
	4/27/09	41.18		432.19
	8/4/09	51.89		421.48
	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
	1/31/12	39.05		434.32
	5/7/12	36.03		437.34
	8/6/12	40.52		432.85
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

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	12/1/97	33.88	473.64	439.76
(cont.)	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73
	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

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	7/19/05	29.36	473.64	444.28
(cont.)	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY[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
	1/31/12	38.91		434.73
	5/7/12	36.24		437.40
	8/6/12	40.69		432.95
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

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	12/14/94	38.89	472.67	433.78
(cont.)	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62
	3/19/98	20.93		451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01
	3/13/00	25.87		446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
	12/31/00	31.81		440.86
	3/27/01	30.57		442.10
	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

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	12/3/02	36.12	472.67	436.55
(cont.)	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
	11/4/04	34.34		438.33
	1/12/05	29.19		443.48
	5/2/05	25.31		447.36
	7/19/05	30.49		442.18
	11/21/05	32.35		440.32
	2/9/06	27.19		445.48
	5/16/06	25.30		447.37
	8/9/06	32.68		439.99
	11/8/06	32.22		440.45
	2/14/07	34.00		438.67
	5/17/07	34.29		438.38
	8/2/07	41.72		430.95
	11/12/07	DRY		--
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	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

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	8/2/10	36.16	472.67	436.51
(cont.)	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
	1/31/12	39.80		432.87
	5/7/12	37.29		435.38
	8/6/12	NM[e]		--
MW-6	3/30/94	33.38	471.93	438.55
	4/25/94	35.49		436.44
	8/12/94	45.14		426.79
	12/14/94	40.99		430.94
	2/10/95	33.34		438.59
	6/15/95	26.88		445.05
	9/26/95	33.55		438.38
	12/15/95	30.32		441.61
	3/21/96	18.89		453.04
	6/13/96	24.62		447.31
	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99

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	12/13/99	35.84	471.93	436.09
(cont.)	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
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	9/9/03	37.66		434.27
	12/23/03	33.43		438.50
	3/23/04	29.96		441.97
	5/10/04	32.98		438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43

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	8/2/07	42.24	471.93	429.69
(cont.)	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
	2/11/10	38.89		433.04
	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
	1/31/12	42.15		429.78
	5/7/12	39.11		432.82
	8/6/12	43.66		428.27
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

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	12/2/96	27.11	472.33	445.22
(cont.)	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24
	6/12/00	28.76		443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	6/30/01	37.50		434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	3/18/02	39.22		433.11
	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

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	8/4/04	34.06	472.33	438.27
(cont.)	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	DRY		--
	2/14/08	36.51		435.82
	5/8/08	36.00		436.33
	7/23/08	44.42		427.91
	10/13/08	DRY		--
	2/11/09	DRY		--
	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

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	1/31/12	38.74	472.33	433.59
(cont.)	5/7/12	35.97		436.36
	8/6/12	39.85		432.48
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
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	DRY		--
	2/14/08	35.55		435.63
	5/8/08	36.64		434.54
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	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

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	2/1/11	34.11	471.18	437.07
(cont.)	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
	10/10/11	35.69		435.49
	1/31/12	40.08		431.10
	5/7/12	37.38		433.80
	8/6/12	41.94		429.24
MW-9	12/23/03	34.03	470.78	436.75
	3/23/04	30.01		440.77
	5/10/04	33.61		437.17
	8/4/04	37.47		433.31
	11/4/04	37.44		433.34
	5/2/05	27.73		443.05
	7/19/05	32.90		437.88
	11/21/05	34.15		436.63
	2/9/06	29.44		441.34
	5/16/06	27.50		443.28
	8/9/06	35.85		434.93
	11/8/06	34.18		436.60
	2/14/07	34.00		436.78
	5/17/07	36.88		433.90
	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

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	5/3/10	34.96	470.78	435.82
(cont.)	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
	1/31/12	42.06		428.72
	5/7/12	39.43		431.35
	8/6/12	43.51		427.27
MW-10	12/23/03	33.80	471.63	437.83
	3/23/04	28.68		442.95
	5/10/04	32.15		439.48
	8/4/04	36.40		435.23
	11/4/04	36.21		435.42
	1/12/05	31.64		439.99
	5/2/05	27.01		444.62
	7/19/05	31.59		440.04
	11/21/05	32.96		438.67
	2/9/06	28.56		443.07
	5/16/06	26.83		444.80
	8/9/06	34.37		437.26
	11/8/06	33.41		438.22
	2/14/07	32.81		438.82
	5/17/07	35.85		435.78
	8/2/07	43.46		428.17
	11/12/07	DRY		--
	2/14/08	39.71		431.92
	5/8/08	37.55		434.08
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--

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	4/27/09	45.10	471.63	426.53
(cont.)	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
	1/31/12	39.67		431.96
	5/7/12	38.14		433.49
	8/6/12	40.65		430.98
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
	11/2/10	36.98		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
	1/31/12	34.36		438.60
	5/7/12	31.61		441.35
	8/6/12	35.20		437.76
MW-12	6/14/12	40.62	469.77	429.15
	8/6/12	43.22		426.55

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	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		--
	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
	1/31/12	32.19		440.38
	5/7/12	31.50		441.07
	8/6/12	32.64		439.93

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)
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
	4/25/11	27.81		446.57
	8/3/11	28.93		445.45
	10/10/11	33.66		440.72
	1/31/12	DRY		--
	5/7/12	DRY		--
	8/6/12	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)
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
	1/31/12	35.43		437.21
	5/7/12	34.70		437.94
	8/6/12	36.59		436.05

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	7/19/05	29.67	472.93	443.26
	11/21/05	31.43		441.50
	2/9/06	27.27		445.66
	5/17/06	25.00		447.93
	8/9/06	31.74		441.19
	11/8/06	32.80		440.13
	2/14/07	30.32		442.61
	5/17/07	33.28		439.65
	8/2/07	39.35		433.58
	11/12/07	DRY		--
	2/14/08	35.62		437.31
	5/8/08	36.62		436.31
	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
	1/31/12	34.32		438.46
	5/7/12	34.41		438.37
	8/6/12	36.00		436.78
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

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	2/11/09	48.28	472.85	424.57
(cont.)	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06
	2/11/10	35.57		437.28
	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
	1/31/12	39.39		433.46
	5/7/12	36.35		436.50
	8/6/12	40.60		432.25
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
	1/31/12	42.19		429.42
	5/7/12	39.10		432.51
	8/6/12	43.90		427.71

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	5/22/08	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
	5/3/10	34.51		435.82
	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
	1/31/12	42.10		428.23
	5/7/12	38.70		431.63
	8/6/12	43.26		427.07
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

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-4	10/10/11	36.60	468.48	431.88
(cont.)	1/31/12	42.10		426.38
	5/7/12	38.26		430.22
	8/6/12	42.80		425.68
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
	1/31/12	42.31		429.55
	5/7/12	38.98		432.88
	8/6/12	46.32		425.54
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
	1/31/12	42.69		429.08
	5/7/12	39.82		431.95
	8/6/12	44.50		427.27
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

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-7	11/2/10	40.42	470.07	429.65
(cont.)	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
	1/31/12	42.35		427.72
	5/7/12	39.30		430.77
	8/6/12	44.02		426.05
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
	1/31/12	38.69		433.62
	5/7/12	35.52		436.79
	8/6/12	39.61		432.70
DW-9	6/14/12	40.85	469.80	428.95
	8/6/12	43.65		426.15
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	473.06[c]	445.09
	1/31/12	39.26		433.80
	5/7/12	36.18		436.88
	8/6/12	40.23		432.83
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

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	4/25/11	28.04	473.06[c]	445.02
(cont.)	5/7/12	37.21		435.85
	8/6/12	40.78		432.28
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	473.05[c]	444.98
	5/7/12	36.41		436.64
	8/6/12	40.70		432.35
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	473.10[c]	445.17
	5/7/12	36.30		436.80
	8/6/12	40.67		432.43
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	473.05[c]	445.25
	5/7/12	36.90		436.15
	8/6/12	40.65		432.40
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	472.43[c]	441.83
	5/7/12	39.70		432.73
	8/6/12	44.44		427.99
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	472.43[c]	440.92
	5/7/12	41.87		430.56
	8/6/12	45.63		426.80

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-8	12/16/08	50.48	473.13	422.65
	5/3/10[f]	33.34		439.79
	4/25/11	28.07	473.22[c]	445.15
	1/31/12	39.45		433.77
	5/7/12	36.25		436.97
	8/6/12	40.32		432.90
IP-9	12/16/08	52.51	473.47	420.96
	5/3/10[f]	31.79		441.68
	4/25/11	27.84	473.35[c]	445.51
	1/31/12	39.37		433.98
	5/7/12	37.03		436.32
	8/6/12	40.30		433.05
IP-10	2/11/09	48.77	473.78	425.01
	5/3/10[f]	32.23		441.55
	4/25/11	27.79	473.88[c]	446.09
	1/31/12	39.24		434.64
	5/7/12	36.24		437.64
	8/6/12	40.36		433.52

(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	--	--	--	--	--	--	--	--

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	6/10/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	9/7/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/31/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	90	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	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

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	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
(cont.)	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
	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
	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
	1/31/12	1,700	1.6	11	26	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<100	ND<0.5	ND<0.5
	5/9/12	3,300	2.2	5.5	52	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<5	ND<0.5	ND<0.5
	8/8/12	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-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	--	--	--	--	--	--	--	--	--

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	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
(cont.)	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
	3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--
	6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

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	6/5/02	25,000	3,500	390	1,400	2,400	550	--	--	--	--	--	--	--	--
(cont.)	8/21/02	10,000	1,200	32	620	300	160	--	--	--	--	--	--	--	--
	12/3/02	3,700	110	2.5	130	11	29	--	--	--	--	--	--	--	--
	3/4/03	8,700	1,100	77	350	540	230	ND<0.5	ND<0.5	ND<10	21	ND<150	ND<5	ND<0.5	ND<0.5
	6/10/03	6,300	660	35	190	120	410	ND<2.5	ND<2.5	ND<5	ND<25	ND<250	ND<25	ND<2.5	ND<2.5
	9/9/03	6,900	500	ND<20	360	29	9,500	ND<20	ND<20	60	ND<200	ND<2,000	ND<200	ND<20	ND<20
	12/23/03	22,000	4,900	1,300	720	2,300	1,700	ND<20	ND<20	21	ND<200	ND<2,000	ND<200	ND<20	ND<20
	3/23/04	45,000	5,200	1,500	1,800	5,000	750	ND<20	ND<20	34	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	7,300	1,000	51	240	290	1,800	ND<5	ND<5	14	ND<50	ND<500	ND<50	ND<5	ND<5
	8/4/04	45,000	7,200	1,900	1,800	5,100	2,500	ND<25	ND<25	31	ND<250	ND<2,500	ND<250	ND<25	ND<25
	11/4/04	27,000	4,400	1,100	840	2,200	3,500	ND<9	ND<9	29	ND<50	ND<900	ND<90	ND<9	ND<9
	1/12/05	16,000	1,900	640	570	1,500	1,900	ND<4	ND<4	19	28[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

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	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
(cont.)	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
	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
	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
	2/1/12	14,000	1,200	130	440	650	340	ND<2.5	ND<2.5	5.4	170	ND<800	ND<25	ND<2.5	ND<2.5
	5/11/12	14,000	1,200	140	490	1,000	220	ND<2.5	ND<2.5	2.7	120	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	15,000	720	120	460	580	140	ND<2.5	ND<2.5	2.6	70	ND<250	ND<25	ND<2.5	ND<2.5
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	--	--	--	--	--	--	--	--	--

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	11/4/04	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
(cont.)	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	140	ND<0.5	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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

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	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
(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
	1/31/12	ND<50	ND<0.5	0.67	7.1	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/7/12	74	ND<0.5	0.56	1.9	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	3/30/94	120	4.2	15	2.5	26	--	--	--	--	--	--	--	--	--
	4/25/94	65	ND<0.5	1.8	ND<0.5	2.1	--	--	--	--	--	--	--	--	--
	8/12/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/14/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	1.8	1.1	1.4	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	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

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	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
(cont.)	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
	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
	10/11/11	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--	--

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	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
(cont.)	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--
	12/31/00	1,300	21	ND<0.5	4.3	2.6	10	--	--	--	--	--	--	--	--
	3/27/01	1,200	11	ND<0.5	2.6	ND<0.5	21	--	--	--	--	--	--	--	--
	6/30/01	1,400	4.8	ND<0.5	1.5	0.56	14	--	--	--	--	--	--	--	--
	9/26/01	660	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	--	--	--	--	--	--	--	--
	12/18/01	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	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	--	--	--	--	--	--	--	--

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	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	5/16/06	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	220	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	200	ND<0.5	ND<0.5	ND<0.5	1.1	2.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	980	ND<0.5	ND<0.5	2.1	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

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	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	3/30/94	63,000	21,000	8,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	4/25/94	77,000	22,000	12,000	2,300	16,000	--	--	--	--	--	--	--	--	--
	8/12/94	65,000	12,000	8,100	2,200	16,000	--	--	--	--	--	--	--	--	--
	12/14/94	65,000	18,000	9,500	2,200	14,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	21,000	8,400	2,000	14,000	--	--	--	--	--	--	--	--	--
	6/15/95	75,000	20,000	11,000	2,100	15,000	--	--	--	--	--	--	--	--	--
	9/26/95	62,000	15,000	9,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--
	3/21/96	65,000	18,000	9,800	2,400	16,000	--	--	--	--	--	--	--	--	--
	6/13/96	29,000	8,600	3,300	2,200	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	42,000	6,400	1,800	2,100	11,000	ND<250	--	--	--	--	--	--	--	--
	12/2/96	28,000	3,000	1,100	970	8,300	ND<500	--	--	--	--	--	--	--	--
	3/7/97	12,000	2,000	190	520	2,300	ND<250	--	--	--	--	--	--	--	--
	6/12/97	37,000	3,900	470	1,600	6,200	ND<100	--	--	--	--	--	--	--	--

TABLE 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	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--
(cont.)	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
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	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

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	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
(cont.)	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
	5/8/08	15,000	1,700	59	700	130	540	ND<2.5	ND<2.5	5.9	410	ND<2,000	ND<25	ND<2.5	ND<2.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

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	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
(cont.)	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	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
	1/31/12	5,200	370	6.7	5.1	12	84	ND<0.9	ND<0.9	ND<0.9	1,500	ND<90	ND<10	ND<0.9	ND<0.9
	5/10/12	11,000	1,200	60	140	69	150	ND<0.9	ND<0.9	ND<2	290	ND<250	ND<9	ND<0.9	ND<0.9
	8/8/12	12,000	1,200	31	69	47	170	ND<2.5	ND<2.5	ND<2.5	440	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	--	--	--	--	--	--	--	--
	3/7/97	4,500	35	19	360	470	ND<25	--	--	--	--	--	--	--	--
	6/12/97	3,900	29	5.2	170	48	ND<5	--	--	--	--	--	--	--	--
	9/29/97	6,100	56	9.0	340	190	ND<25	--	--	--	--	--	--	--	--
	12/1/97	6,500	24	ND<2.5	400	250	ND<25	--	--	--	--	--	--	--	--
	3/19/98	2,000	20	ND<2.5	73	79	ND<25	--	--	--	--	--	--	--	--
	5/29/98	5,700	22	7.3	290	350	ND<25	--	--	--	--	--	--	--	--
	9/15/98	1,700	15	ND<2.5	44	5.1	ND<25	--	--	--	--	--	--	--	--

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	11/30/98	4,800	42	12	270	640	ND<25	--	--	--	--	--	--	--	--
(cont.)	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
	9/9/03	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	2,600	2.5	ND<0.5	36	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	1,600	2.0	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

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	5/2/05	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
(cont.)	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
	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
	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	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

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	1/31/12	1,700	1.5	0.55	6.0	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	5/9/12	1,600	1.4	0.79	1.4	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
	8/7/12	1,500	1.0	ND<0.5	0.51	0.65	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
	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

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	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5	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
	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

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	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
(cont.)	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	2,500	12	1.1	9.0	3.0	7.4	ND<0.5	ND<0.5	ND<0.5	8.8	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
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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	8/4/04	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
(cont.)	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
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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	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
(cont.)	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	10/25/11	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
	2/1/12	13,000	380	710	83	2,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<50	ND<2.5	ND<2.5
	5/11/12	1,100	3.8	15	6.7	150	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/7/12	10,000	54	83	270	1,400	2.3	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<5	ND<0.5	ND<0.5
MW-12	6/14/12	6,900	8.5	2.2	96	22	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	8/8/12	6,000	10	2.2	100	12	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
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

TABLE E-1

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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	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
(cont.)	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	--	--
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	5,700	180	14	150	120	530	ND<2.5	ND<2.5	4.1	5,000	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	3,000	40	3.8	32	34	270	ND<1.5	ND<1.5	2.7	4,500	ND<250	ND<15	ND<1.5	ND<1.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	1/31/12	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)
VW-2	5/7/12	ND<50	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
(cont.)	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	1,100
	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

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	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	7/20/05	42,000	2,800	1,100	1,700	4,800	12,000	ND<20	ND<20	92	130	ND<2,000	ND<200	ND<20	ND<20
	11/22/05	36,000	2,100	290	1,400	2,600	11,000	ND<20	ND<20	70	810	ND<2,000	ND<200	ND<20	ND<20
	2/9/06	19,000	1,400	230	990	1,700	8,900	ND<15	ND<15	72	2,200	ND<1,500	ND<150	ND<15	ND<15
	5/17/06	20,000	1,400	200	920	1,800	9,200	ND<20	ND<20	37	2,500	ND<10,000	ND<200	ND<20	ND<20
	8/9/06	28,000	1,600	150	1,200	2,200	13,000	ND<15	ND<15	84	4,900	ND<2,500	ND<150	ND<15	ND<15
	11/8/06	20,000	1,100	78	990	1,600	6,800	ND<15	ND<15	47	4,400	ND<8,000	ND<150	ND<15	ND<15
	2/14/07	15,000	820	37	810	1,000	8,300	ND<15	ND<15	58	8,500	ND<4,000	ND<150	ND<15	ND<15
	5/17/07	16,000	850	35	810	1,200	6,700	ND<10	ND<10	42	12,000	ND<2,000	ND<100	--	--
	8/2/07	15,000	2,000	100	970	630	3,400	ND<7	ND<7	25	4,000	ND<700	ND<70	ND<7	ND<7
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	18,000	1,100	49	1,200	910	7,000	ND<15	ND<15	58	4,200	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	12,000	890	54	770	380	2,500	ND<5	ND<5	22	3,400	ND<2,500	ND<50	ND<5	ND<5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

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	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
(cont.)	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	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	590	1.6	ND<0.5	7.1	22	28	ND<0.5	ND<0.5	ND<0.5	27	ND<80	ND<5	ND<0.5	ND<0.5
	8/7/12	2,800	24	3.7	74	68	110	ND<0.5	ND<0.5	0.94	62	ND<400	ND<5	ND<0.5	ND<0.5
TP-2	7/20/05	26,000	1,800	1,100	1,100	2,500	63,000	ND<150	ND<150	400	ND<700	ND<15,000	ND<1,500	ND<150	ND<150
	11/22/05	16,000	1,200	140	840	820	52,000	ND<90	ND<90	340	1,200	ND<9,000	ND<900	ND<90	ND<90
	2/9/06	2,700	94	2.9	28	14	1,200	ND<2.5	ND<2.5	13	1,600	ND<250	ND<25	ND<2.5	ND<2.5
	5/17/06	31,000	2,200	1,100	1,500	3,300	87,000	ND<90	ND<90	680	4,800	ND<15,000	ND<1,500	ND<90	ND<90
	8/9/06	14,000	1,400	86	1,200	830	56,000	ND<2.5	ND<2.5	350	2,800	ND<4,000	ND<25	ND<2.5	ND<2.5
	11/8/06	16,000	1,300	ND<90	930	370	38,000	ND<90	ND<90	280	3,600	ND<40,000	ND<900	ND<90	ND<90
	2/14/07	22,000	1,900	230	1,700	1,600	53,000	ND<90	ND<90	400	2,800	ND<20,000	ND<900	ND<90	ND<90
	5/17/07	ND<25,000	2,400	51	1,500	510	69,000	ND<2	ND<0.5	550	4,300	ND<25,000	ND<5	--	--
	8/2/07	10,000	1,200	ND<25	640	140	14,000	ND<25	ND<25	110	16,000	ND<10,000	ND<250	ND<25	ND<25
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	12,000	920	28	850	740	17,000	ND<25	ND<25	120	5,900	ND<4,000	ND<250	ND<25	ND<25
	5/8/08	7,400	710	28	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

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	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
(cont.)	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
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	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
	8/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	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
	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
	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

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	2/1/12	2,500	23	6.4	85	190	3.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	5/9/12	2,000	24	5.6	75	160	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	140	1.7	1.0	3.2	7.7	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-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
	1/31/12	4,400	220	7.0	15	8.9	130	ND<0.5	ND<0.5	1.2	400	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/12	2,200	140	8.6	0.63	15	98	ND<0.5	ND<0.5	1.1	430	ND<200	ND<8	ND<0.5	ND<0.5
	8/7/12	4,000	360	8.9	14	15	110	ND<0.5	ND<0.5	1.2	380	ND<400	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
	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

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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	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
(cont.)	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
	1/31/12	1,300	1.0	ND<0.5	19	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	750	1.2	ND<0.5	5.4	4.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/6/12	900	0.56	ND<0.5	7.0	4.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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

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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-4	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	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
	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
	1/31/12	8,200	130	5.9	170	180	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<200	ND<1.5	ND<1.5
	5/10/12	11,000	100	6.8	320	380	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	8/8/12	14,000	84	11	480	590	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
	1/31/12	4,700	13	2.4	51	12	8.1	ND<0.5	ND<0.5	ND<0.5	28	ND<50	ND<80	ND<0.5	ND<0.5
	5/10/12	2,600	7.8	1.6	12	5.2	4.6	ND<0.5	ND<0.5	ND<0.5	17	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	4,500	15	3.2	41	8.3	6.2	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<8	ND<0.5	ND<0.5

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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-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
	1/31/12	7,800	380	14	170	59	120	ND<0.5	ND<0.5	1.3	300	ND<150	ND<50	ND<0.5	ND<0.5
	5/10/12	940	47	1.6	6.1	5.2	120	ND<0.5	ND<0.5	1.1	280	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	1,200	33	2.5	8.0	8.4	80	ND<0.5	ND<0.5	0.83	250	ND<300	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
	2/1/12	52,000	2,500	5,200	1,900	8,200	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	5/11/12	11,000	500	1,000	300	1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	25	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	52,000	1,900	4,500	1,500	5,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	58	ND<250	ND<25	ND<2.5	ND<2.5
DW-9	6/14/12	8,300	89	2.4	21	96	36	ND<1.5	ND<1.5	ND<1.5	80	ND<150	ND<15	ND<1.5	ND<1.5
	8/8/12	12,000	310	11	400	110	35	ND<1.5	ND<1.5	ND<1.5	96	ND<150	ND<15	ND<1.5	ND<1.5
MW-A	1/17/99	5,800	1,700	85	65	320	ND<5	--	--	--	--	--	--	--	--
MW-B	1/17/99	4,400	240	30	21	39	ND<5	--	--	--	--	--	--	--	--
MW-C	1/17/99	1,800	0.80	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--

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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-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
	2/1/12	15,000	370	350	600	1,300	ND<2	ND<2	ND<2	ND<2	16	ND<200	ND<20	NS	NS
	5/9/12	16,000	580	850	800	2,100	ND<2	ND<2	ND<2	ND<2	12	ND<200	ND<20	ND<2	ND<2
	8/8/12	12,000	260	190	470	860	ND<2	ND<2	ND<2	ND<2	ND<90	ND<200	ND<20	ND<2	ND<2
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
	5/8/12	340	10	4.8	6.3	13	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	5/8/12	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	5.3	ND<0.5	ND<0.5
	8/7/12	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)
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
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	5/8/12	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
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	2/1/12	67,000	2,900	7,300	1400	11,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	NS	NS
	5/9/12	50,000	2,400	4,900	790	8,600	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	8/8/12	63,000	3,500	6,700	980	7,400	ND<9	ND<9	ND<9	ND<9	65	ND<900	ND<90	ND<9	ND<9
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

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-9 (cont.)	2/1/12	19,000	180	1,200	640	3,100	ND<3	ND<3	ND<3	ND<3	ND<15	ND<300	ND<30	NS	NS
	5/9/12	10,000	14	180	270	780	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	8/7/12	11,000	22	240	210	880	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
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
	2/1/12	3,200	8.2	4.6	93	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	NS	NS
	5/9/12	3,900	24	38	110	58.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/7/12	2,700	15	5.8	31	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

(a) 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 : 82169
Date : 08/08/2012

Laboratory Results

Scott Stromberg
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 4 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Stromberg,

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 and TNI 2009 standards. 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,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 82169
Date : 08/08/2012

Subject : 4 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 sample DW-7.

KIFF Analytical LLC

Report Number : 82169
Date : 08/08/2012

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

Sample : **MW-3** Matrix : Water Lab Number : 82169-01
Sample Date :08/06/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 00:51
Methanol	< 50	50	ug/L	EPA 8260B	08/08/12 00:51
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 00:51
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/08/12 00:51
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 00:51
1,2-Dichloroethane-d4 (Surr)	99.3		% Recovery	EPA 8260B	08/08/12 00:51
Toluene - d8 (Surr)	104		% Recovery	EPA 8260B	08/08/12 00:51

KIFF Analytical LLC

Report Number : 82169
Date : 08/08/2012

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

Sample : **DW-3** Matrix : Water Lab Number : 82169-02
Sample Date :08/06/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**0.56**	0.50	ug/L	EPA 8260B	08/08/12 01:23
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
Ethylbenzene	**7.0**	0.50	ug/L	EPA 8260B	08/08/12 01:23
Total Xylenes	**4.6**	0.50	ug/L	EPA 8260B	08/08/12 01:23
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 01:23
Methanol	< 50	50	ug/L	EPA 8260B	08/08/12 01:23
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 01:23
TPH as Gasoline	**900**	50	ug/L	EPA 8260B	08/08/12 01:23
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:23
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	08/08/12 01:23
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	08/08/12 01:23

KIFF Analytical LLC

Report Number : 82169
Date : 08/08/2012

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

Sample : **DW-7** Matrix : Water Lab Number : 82169-03
Sample Date :08/06/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**33**	0.50	ug/L	EPA 8260B	08/08/12 01:54
Toluene	**2.5**	0.50	ug/L	EPA 8260B	08/08/12 01:54
Ethylbenzene	**8.0**	0.50	ug/L	EPA 8260B	08/08/12 01:54
Total Xylenes	**8.4**	0.50	ug/L	EPA 8260B	08/08/12 01:54
Methyl-t-butyl ether (MTBE)	**80**	0.50	ug/L	EPA 8260B	08/08/12 01:54
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:54
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:54
Tert-amyl methyl ether (TAME)	**0.83**	0.50	ug/L	EPA 8260B	08/08/12 01:54
Tert-Butanol	**250**	5.0	ug/L	EPA 8260B	08/08/12 01:54
Methanol	< 300	300	ug/L	EPA 8260B	08/08/12 01:54
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 01:54
TPH as Gasoline	**1200**	50	ug/L	EPA 8260B	08/08/12 01:54
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:54
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 01:54
1,2-Dichloroethane-d4 (Surr)	98.5		% Recovery	EPA 8260B	08/08/12 01:54
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/08/12 01:54

KIFF Analytical LLC

Report Number : 82169
Date : 08/08/2012

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

Sample : **DW-1** Matrix : Water Lab Number : 82169-04
Sample Date :08/06/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**1.7**	0.50	ug/L	EPA 8260B	08/08/12 02:26
Toluene	**1.0**	0.50	ug/L	EPA 8260B	08/08/12 02:26
Ethylbenzene	**3.2**	0.50	ug/L	EPA 8260B	08/08/12 02:26
Total Xylenes	**7.7**	0.50	ug/L	EPA 8260B	08/08/12 02:26
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 02:26
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 02:26
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 02:26
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 02:26
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 02:26
Methanol	< 50	50	ug/L	EPA 8260B	08/08/12 02:26
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/12 02:26
TPH as Gasoline	**140**	50	ug/L	EPA 8260B	08/08/12 02:26
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 02:26
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/12 02:26
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	08/08/12 02:26
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	08/08/12 02:26

Report Number : 82169

Date : 08/08/2012

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	08/07/2012
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/07/2012
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
Methanol	< 50	50	ug/L	EPA 8260B	08/07/2012
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/07/2012
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/07/2012
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/07/2012
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	08/07/2012
Toluene - d8 (Surr)	104		%	EPA 8260B	08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

KIFF ANALYTICAL, LLC

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

Report Number : 82169

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/08/2012

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														
	82166-02	<0.50	39.9	39.9	42.2	42.3	ug/L	EPA 8260B	8/7/12	106	106	0.245	80-120	25
1,2-Dichloroethane														
	82166-02	<0.50	40.0	40.0	39.3	39.4	ug/L	EPA 8260B	8/7/12	98.4	98.4	0.0682	75.7-122	25
Benzene														
	82166-02	7.1	40.0	40.0	45.7	44.6	ug/L	EPA 8260B	8/7/12	96.5	93.8	2.90	80-120	25
Diisopropyl ether														
	82166-02	<0.50	39.5	39.5	39.2	39.6	ug/L	EPA 8260B	8/7/12	99.1	100	1.15	80-120	25
Ethanol														
	82166-02	<5.0	99.7	99.7	92.4	77.4	ug/L	EPA 8260B	8/7/12	92.6	77.6	17.6	55.1-159	25
Ethyl-tert-butyl ether														
	82166-02	<0.50	39.8	39.8	38.5	42.0	ug/L	EPA 8260B	8/7/12	96.6	105	8.75	76.5-120	25
Ethylbenzene														
	82166-02	17	40.0	40.0	56.9	56.1	ug/L	EPA 8260B	8/7/12	99.3	97.3	2.09	80-120	25
Methanol														
	82166-02	<50	998	998	885	845	ug/L	EPA 8260B	8/7/12	88.7	84.7	4.62	53.2-147	25
Methyl-t-butyl ether														
	82166-02	<0.50	40.0	40.0	36.3	42.0	ug/L	EPA 8260B	8/7/12	90.8	105	14.5	69.7-121	25
P + M Xylene														
	82166-02	3.5	40.0	40.0	42.6	42.6	ug/L	EPA 8260B	8/7/12	97.8	97.7	0.0895	76.8-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 82169

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/08/2012

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														
	82166-02	<5.0	202	202	189	188	ug/L	EPA 8260B	8/7/12	93.8	93.2	0.654	80-120	25
Tert-amyl-methyl ether														
	82166-02	<0.50	39.9	39.9	38.4	40.8	ug/L	EPA 8260B	8/7/12	96.2	102	6.15	78.9-120	25
Toluene														
	82166-02	2.4	40.0	40.0	42.5	41.9	ug/L	EPA 8260B	8/7/12	100	98.9	1.47	80-120	25

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
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	8/7/12	107	80-120
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	8/7/12	99.1	75.7-122
Benzene	39.9	ug/L	EPA 8260B	8/7/12	96.2	80-120
Diisopropyl ether	39.4	ug/L	EPA 8260B	8/7/12	101	80-120
Ethanol	99.5	ug/L	EPA 8260B	8/7/12	102	55.1-159
Ethyl-tert-butyl ether	39.7	ug/L	EPA 8260B	8/7/12	94.4	76.5-120
Ethylbenzene	39.9	ug/L	EPA 8260B	8/7/12	100	80-120
Methanol	995	ug/L	EPA 8260B	8/7/12	99.6	53.2-147
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	8/7/12	92.6	69.7-121
P + M Xylene	39.9	ug/L	EPA 8260B	8/7/12	102	76.8-120
TPH as Gasoline	497	ug/L	EPA 8260B	8/7/12	98.6	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/7/12	95.8	80-120
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	8/7/12	97.5	78.9-120
Toluene	39.9	ug/L	EPA 8260B	8/7/12	101	80-120

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. 82169

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Scott Stromberg

California EDF Report? ☒ Yes ☐ No

Company / Address: Arcto's Environmental 1332 Peralta ave. Berkeley, CA 94702

Sampling Company Log Code: EFSP

Phone Number: 510-525-2180

Global ID: T0600101410

Fax Number: 510-525-2392

EDF Deliverable To (Email Address): mnelson@orionenv.com

Project #: 01LV

P.O. #:

Bill to: Jeff Baker

Project Name: Tesoro - Livermore

Sampler Print Name: Chris Arroyo

Sampler Signature:

Project Address: 1619 1st Street Livermore, CA

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:	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air
MW-3	8/6/12	1110	3						3					X		
DW-3	8/6/12	1315	3						3					X		
DW-7	8/6/12	1350	3						3					X		
DW-1	8/6/12	1500	3						3					X		

Analysis Request

Sample Designation	MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)					TAT	For Lab Use Only
MW-3		X	X		X	X																STND	01
DW-3		X	X		X	X																STND	02
DW-7		X	X		X	X																STND	03
DW-1		X	X		X	X																STND	04

CIRCLE METHOD

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

Relinquished by:	Date	Time	Received by:
	8/6/12	1507	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	080612	1507	Kiff Analytical LLC

Remarks:

Page 11 of 12

Distribution: White - Lab; Pink - Originator
Rev: 060409

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER: TJB (Initials)

SRG#: 82169 Date: 080612

Project ID: Tesoro - Livermore

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

Shipping Only: [ ] FedEx * [ ] OnTrac * [ ] Greyhound [ ] Other *Service level if not Priority or Sunrise (M-F): _____

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 4.6 Therm. ID# IR-4 Initial TJB Date/Time 080612/1728 [ ] 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? [ ] 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 12
Matrix	Container type	# of containers received
Matrix	Container type	# of containers received

Date and Time Sample Put into Temp Storage Date: 080612 Time: 1731

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: Bubble in -04 (VOA 3 of 3), LJR 080612 - 1746

O:\old_ed\samprec\Forms\Sample Receipt Checklist rev 072412.doc

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

Laboratory Results

Scott Stromberg
Orion Environmental
3450 East Spring Street, Suite 212
Long Beach, CA 90806

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

Dear Mr. Stromberg,

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 and TNI 2009 standards. 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,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Case Narrative

California Laboratory Services provided analytical testing associated with these samples, but is not accredited by the National Environmental Laboratory Accreditation Program (NELAP). Please refer to the attached subcontract report for a list of this laboratory's current certifications.

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

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for sample DW-6.

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-7, MW-11, and IP-10 for the analytes Iron, Manganese, and Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with sample IP-9 for the analytes Iron and Sodium were affected by the analyte concentrations already present in the un-spiked sample.

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **DW-6** Matrix : Water Lab Number : 82190-01
Sample Date :08/06/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**15**	0.50	ug/L	EPA 8260B	08/09/12 02:22
Toluene	**3.2**	0.50	ug/L	EPA 8260B	08/09/12 02:22
Ethylbenzene	**41**	0.50	ug/L	EPA 8260B	08/09/12 02:22
Total Xylenes	**8.3**	0.50	ug/L	EPA 8260B	08/09/12 02:22
Methyl-t-butyl ether (MTBE)	**6.2**	0.50	ug/L	EPA 8260B	08/09/12 02:22
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:22
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:22
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:22
Tert-Butanol	**20**	5.0	ug/L	EPA 8260B	08/09/12 02:22
Methanol	< 50	50	ug/L	EPA 8260B	08/09/12 02:22
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	08/09/12 02:22
TPH as Gasoline	**4500**	90	ug/L	EPA 8260B	08/10/12 00:08
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:22
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:22
1,2-Dichloroethane-d4 (Surr)	92.5		% Recovery	EPA 8260B	08/09/12 02:22
Toluene - d8 (Surr)	93.3		% Recovery	EPA 8260B	08/09/12 02:22

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **TP-2** Matrix : Water Lab Number : 82190-02
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Methyl-t-butyl ether (MTBE)	**8.5**	0.50	ug/L	EPA 8260B	08/09/12 12:58
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 12:58
Methanol	< 50	50	ug/L	EPA 8260B	08/09/12 12:58
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 12:58
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/09/12 12:58
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:58
1,2-Dichloroethane-d4 (Surr)	97.5		% Recovery	EPA 8260B	08/09/12 12:58
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	08/09/12 12:58

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **TP-1** Matrix : Water Lab Number : 82190-03
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**24**	0.50	ug/L	EPA 8260B	08/09/12 12:26
Toluene	**3.7**	0.50	ug/L	EPA 8260B	08/09/12 12:26
Ethylbenzene	**74**	0.50	ug/L	EPA 8260B	08/09/12 12:26
Total Xylenes	**68**	0.50	ug/L	EPA 8260B	08/09/12 12:26
Methyl-t-butyl ether (MTBE)	**110**	0.50	ug/L	EPA 8260B	08/09/12 12:26
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:26
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:26
Tert-amyl methyl ether (TAME)	**0.94**	0.50	ug/L	EPA 8260B	08/09/12 12:26
Tert-Butanol	**62**	5.0	ug/L	EPA 8260B	08/09/12 12:26
Methanol	< 400	400	ug/L	EPA 8260B	08/09/12 12:26
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 12:26
TPH as Gasoline	**2800**	50	ug/L	EPA 8260B	08/09/12 12:26
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:26
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 12:26
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	08/09/12 12:26
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	08/09/12 12:26

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **MW-7** Matrix : Water Lab Number : 82190-04
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/07/12 21:53
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/08/12 10:33
Arsenic	**0.031**	0.015	mg/L	EPA 6010B	08/15/12 12:56
Chromium	**0.32**	0.0050	mg/L	EPA 6010B	08/15/12 12:56
Iron	**84**	0.10	mg/L	EPA 6010B	08/15/12 12:56
Manganese	**9.6**	0.0050	mg/L	EPA 6010B	08/15/12 12:56
Sodium	**68**	0.50	mg/L	EPA 6010B	08/15/12 12:56
Benzene	**1.0**	0.50	ug/L	EPA 8260B	08/09/12 02:53
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
Ethylbenzene	**0.51**	0.50	ug/L	EPA 8260B	08/09/12 02:53
Total Xylenes	**0.65**	0.50	ug/L	EPA 8260B	08/09/12 02:53
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 02:53
Methanol	< 50	50	ug/L	EPA 8260B	08/09/12 02:53
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 02:53
TPH as Gasoline	**1500**	50	ug/L	EPA 8260B	08/09/12 02:53
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 02:53
1,2-Dichloroethane-d4 (Surr)	99.8		% Recovery	EPA 8260B	08/09/12 02:53
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/09/12 02:53

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **DW-2** Matrix : Water Lab Number : 82190-05
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**360**	0.50	ug/L	EPA 8260B	08/09/12 03:25
Toluene	**8.9**	0.50	ug/L	EPA 8260B	08/09/12 03:25
Ethylbenzene	**14**	0.50	ug/L	EPA 8260B	08/09/12 03:25
Total Xylenes	**15**	0.50	ug/L	EPA 8260B	08/09/12 03:25
Methyl-t-butyl ether (MTBE)	**110**	0.50	ug/L	EPA 8260B	08/09/12 03:25
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:25
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:25
Tert-amyl methyl ether (TAME)	**1.2**	0.50	ug/L	EPA 8260B	08/09/12 03:25
Tert-Butanol	**380**	5.0	ug/L	EPA 8260B	08/09/12 03:25
Methanol	< 400	400	ug/L	EPA 8260B	08/09/12 03:25
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 03:25
TPH as Gasoline	**4000**	90	ug/L	EPA 8260B	08/10/12 00:39
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:25
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:25
1,2-Dichloroethane-d4 (Surr)	92.8		% Recovery	EPA 8260B	08/09/12 03:25
Toluene - d8 (Surr)	96.0		% Recovery	EPA 8260B	08/09/12 03:25

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **MW-11** Matrix : Water Lab Number : 82190-06
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/07/12 23:31
Ferrous Iron	**0.10**	0.10	mg/L	SM 3500-Fe D	08/08/12 10:37
Arsenic	**0.021**	0.015	mg/L	EPA 6010B	08/15/12 13:08
Chromium	**0.066**	0.0050	mg/L	EPA 6010B	08/15/12 13:08
Iron	**21**	0.10	mg/L	EPA 6010B	08/15/12 13:08
Manganese	**3.2**	0.0050	mg/L	EPA 6010B	08/15/12 13:08
Sodium	**610**	5.0	mg/L	EPA 6010B	08/15/12 14:17
Benzene	**54**	0.50	ug/L	EPA 8260B	08/09/12 05:31
Toluene	**83**	0.50	ug/L	EPA 8260B	08/09/12 05:31
Ethylbenzene	**270**	0.50	ug/L	EPA 8260B	08/09/12 05:31
Total Xylenes	**1400**	3.0	ug/L	EPA 8260B	08/10/12 01:43
Methyl-t-butyl ether (MTBE)	**2.3**	0.50	ug/L	EPA 8260B	08/09/12 05:31
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 05:31
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 05:31
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 05:31
Tert-Butanol	**10**	5.0	ug/L	EPA 8260B	08/09/12 05:31
Methanol	< 50	50	ug/L	EPA 8260B	08/09/12 05:31
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 05:31
TPH as Gasoline	**10000**	300	ug/L	EPA 8260B	08/10/12 01:43
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 05:31
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 05:31
1,2-Dichloroethane-d4 (Surr)	93.4		% Recovery	EPA 8260B	08/09/12 05:31
Toluene - d8 (Surr)	96.1		% Recovery	EPA 8260B	08/09/12 05:31

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **IP-10** Matrix : Water Lab Number : 82190-07
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/07/12 23:02
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/08/12 10:39
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/12 13:12
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/12 13:12
Iron	**1.4**	0.10	mg/L	EPA 6010B	08/15/12 13:12
Manganese	**2.6**	0.0050	mg/L	EPA 6010B	08/15/12 13:12
Sodium	**60**	0.50	mg/L	EPA 6010B	08/15/12 13:12
Benzene	**15**	0.50	ug/L	EPA 8260B	08/09/12 03:56
Toluene	**5.8**	0.50	ug/L	EPA 8260B	08/09/12 03:56
Ethylbenzene	**31**	0.50	ug/L	EPA 8260B	08/09/12 03:56
Total Xylenes	**6.4**	0.50	ug/L	EPA 8260B	08/09/12 03:56
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:56
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:56
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:56
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:56
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 03:56
Methanol	< 50	50	ug/L	EPA 8260B	08/09/12 03:56
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/12 03:56
TPH as Gasoline	**2700**	50	ug/L	EPA 8260B	08/09/12 03:56
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:56
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/12 03:56
1,2-Dichloroethane-d4 (Surr)	97.0		% Recovery	EPA 8260B	08/09/12 03:56
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	08/09/12 03:56

KIFF Analytical LLC

Report Number : 82190
Date : 08/16/2012

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

Sample : **IP-9** Matrix : Water Lab Number : 82190-08
Sample Date :08/07/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	**60**	5.0	ug/L	EPA 7199	08/07/12 23:46
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/08/12 10:40
Arsenic	**0.90**	0.015	mg/L	EPA 6010B	08/15/12 15:47
Chromium	**0.14**	0.0050	mg/L	EPA 6010B	08/15/12 15:47
Iron	**75**	0.10	mg/L	EPA 6010B	08/15/12 15:47
Manganese	**0.74**	0.0050	mg/L	EPA 6010B	08/15/12 15:47
Sodium	**5900**	51	mg/L	EPA 6010B	08/15/12 16:20
Benzene	**22**	1.5	ug/L	EPA 8260B	08/09/12 15:43
Toluene	**240**	1.5	ug/L	EPA 8260B	08/09/12 15:43
Ethylbenzene	**210**	1.5	ug/L	EPA 8260B	08/09/12 15:43
Total Xylenes	**880**	1.5	ug/L	EPA 8260B	08/09/12 15:43
Methyl-t-butyl ether (MTBE)	< 1.5	1.5	ug/L	EPA 8260B	08/09/12 15:43
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	08/09/12 15:43
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	08/09/12 15:43
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	08/09/12 15:43
Tert-Butanol	< 7.0	7.0	ug/L	EPA 8260B	08/09/12 15:43
Methanol	< 150	150	ug/L	EPA 8260B	08/09/12 15:43
Ethanol	< 15	15	ug/L	EPA 8260B	08/09/12 15:43
TPH as Gasoline	**11000**	150	ug/L	EPA 8260B	08/09/12 15:43
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	08/09/12 15:43
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	08/09/12 15:43
1,2-Dichloroethane-d4 (Surr)	96.4		% Recovery	EPA 8260B	08/09/12 15:43
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	08/09/12 15:43

Report Number : 82190

Date : 08/16/2012

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/2012
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/2012
Iron	< 0.10	0.10	mg/L	EPA 6010B	08/15/2012
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/2012
Sodium	< 0.50	0.50	mg/L	EPA 6010B	08/15/2012
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/2012
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/2012
Iron	< 0.10	0.10	mg/L	EPA 6010B	08/15/2012
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/2012
Sodium	< 0.50	0.50	mg/L	EPA 6010B	08/15/2012
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/2012
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Methanol	< 50	50	ug/L	EPA 8260B	08/08/2012
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/2012
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/08/2012
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/2012
1,2-Dichloroethane-d4 (Surr)	97.7		%	EPA 8260B	08/08/2012
Toluene - d8 (Surr)	102		%	EPA 8260B	08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/2012
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Methanol	< 50	50	ug/L	EPA 8260B	08/09/2012
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/2012
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/09/2012
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
1,2-Dichloroethane-d4 (Surr)	99.9		%	EPA 8260B	08/09/2012
Toluene - d8 (Surr)	103		%	EPA 8260B	08/09/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/09/2012
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	08/07/2012

KIFF ANALYTICAL, LLC

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

Report Number : 82190

QC Report : Method Blank Data

Date : 08/16/2012

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

KIFF ANALYTICAL, LLC

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

Report Number : 82190

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/16/2012

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
Hexavalent Chromium														
	82190-04	< 1.0	5.00	5.00	4.77	4.91	ug/L	EPA 7199	8/7/12	93.9	96.8	2.93	90.0-110	10
Ferrous Iron														
	82190-04	< 0.10	0.251	0.251	0.264	0.286	mg/L	SM 3500-Fe D	8/8/12	92.8	102	8.00	70.0-130	25
Arsenic														
	82190-04	0.031	0.400	0.400	0.409	0.413	mg/L	EPA 6010B	8/15/12	94.5	95.4	0.900	75-125	20
Chromium														
	82190-04	0.32	0.400	0.400	0.695	0.691	mg/L	EPA 6010B	8/15/12	94.8	93.8	0.548	75-125	20
Iron														
	82190-04	84	0.400	0.400	82.3	80.4	mg/L	EPA 6010B	8/15/12	**0.00**	**0.00**	2.38	75-125	20
Manganese														
	82190-04	9.6	0.400	0.400	9.56	9.30	mg/L	EPA 6010B	8/15/12	**1.00**	**0.00**	2.69	75-125	20
Sodium														
	82190-04	68	0.400	0.400	62.4	64.3	mg/L	EPA 6010B	8/15/12	**0.00**	**0.00**	3.08	75-125	20
Arsenic														
	82223-01	< 0.015	0.400	0.400	0.393	0.391	mg/L	EPA 6010B	8/15/12	97.4	96.9	0.510	75-125	20

KIFF ANALYTICAL, LLC

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

Report Number : 82190

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/16/2012

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
Chromium														
	82223-01	0.0074	0.400	0.400	0.389	0.383	mg/L	EPA 6010B	8/15/12	95.4	94.0	1.53	75-125	20
Iron														
	82223-01	3.6	0.400	0.400	3.83	3.84	mg/L	EPA 6010B	8/15/12	**55.8**	**56.8**	0.104	75-125	20
Manganese														
	82223-01	0.096	0.400	0.400	0.440	0.445	mg/L	EPA 6010B	8/15/12	86.0	87.2	1.02	75-125	20
Sodium														
	82223-01	520	0.400	0.400	511	506	mg/L	EPA 6010B	8/15/12	**0.00**	**0.00**	0.964	75-125	20
1,2-Dibromoethane														
	82165-11	<0.50	39.9	39.9	43.4	42.8	ug/L	EPA 8260B	8/8/12	109	107	1.42	80-120	25
1,2-Dichloroethane														
	82165-11	<0.50	40.0	40.0	40.6	39.5	ug/L	EPA 8260B	8/8/12	101	98.7	2.65	75.7-122	25
Benzene														
	82165-11	<0.50	40.0	40.0	39.9	38.8	ug/L	EPA 8260B	8/8/12	99.8	96.9	3.00	80-120	25
Diisopropyl ether														
	82165-11	<0.50	39.5	39.5	43.2	42.7	ug/L	EPA 8260B	8/8/12	109	108	1.34	80-120	25
Ethanol														
	82165-11	<5.0	99.7	99.7	86.6	82.3	ug/L	EPA 8260B	8/8/12	86.9	82.6	5.09	55.1-159	25

KIFF ANALYTICAL, LLC

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

Report Number : 82190

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/16/2012

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
Ethyl-tert-butyl ether														
	82165-11	<0.50	39.8	39.8	40.2	44.2	ug/L	EPA 8260B	8/8/12	101	111	9.70	76.5-120	25
Ethylbenzene														
	82165-11	<0.50	40.0	40.0	40.4	39.6	ug/L	EPA 8260B	8/8/12	101	99.0	2.09	80-120	25
Methanol														
	82165-11	<50	998	998	980	900	ug/L	EPA 8260B	8/8/12	98.2	90.2	8.45	53.2-147	25
Methyl-t-butyl ether														
	82165-11	<0.50	40.0	40.0	39.1	45.0	ug/L	EPA 8260B	8/8/12	97.7	112	14.0	69.7-121	25
P + M Xylene														
	82165-11	<0.50	40.0	40.0	41.2	40.0	ug/L	EPA 8260B	8/8/12	103	100	2.78	76.8-120	25
Tert-Butanol														
	82165-11	<5.0	202	202	196	193	ug/L	EPA 8260B	8/8/12	97.1	95.8	1.33	80-120	25
Tert-amyl-methyl ether														
	82165-11	<0.50	39.9	39.9	40.2	42.9	ug/L	EPA 8260B	8/8/12	101	107	6.29	78.9-120	25
Toluene														
	82165-11	<0.50	40.0	40.0	41.9	40.7	ug/L	EPA 8260B	8/8/12	105	102	3.00	80-120	25
1,2-Dibromoethane														
	82195-01	<0.50	39.9	39.9	42.4	42.1	ug/L	EPA 8260B	8/9/12	106	105	0.754	80-120	25

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/16/2012

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dichloroethane														
	82195-01	<0.50	40.0	40.0	40.4	39.8	ug/L	EPA 8260B	8/9/12	101	99.6	1.35	75.7-122	25
Benzene														
	82195-01	<0.50	40.0	40.0	39.3	38.4	ug/L	EPA 8260B	8/9/12	98.2	96.1	2.12	80-120	25
Diisopropyl ether														
	82195-01	<0.50	39.5	39.5	41.8	42.7	ug/L	EPA 8260B	8/9/12	106	108	2.05	80-120	25
Ethanol														
	82195-01	<5.0	99.7	99.7	94.4	105	ug/L	EPA 8260B	8/9/12	94.7	105	10.6	55.1-159	25
Ethyl-tert-butyl ether														
	82195-01	<0.50	39.8	39.8	40.2	40.2	ug/L	EPA 8260B	8/9/12	101	101	0.261	76.5-120	25
Ethylbenzene														
	82195-01	<0.50	40.0	40.0	40.6	39.2	ug/L	EPA 8260B	8/9/12	102	98.0	3.65	80-120	25
Methanol														
	82195-01	<50	998	998	952	996	ug/L	EPA 8260B	8/9/12	95.4	99.9	4.58	53.2-147	25
Methyl-t-butyl ether														
	82195-01	<0.50	40.0	40.0	39.6	39.8	ug/L	EPA 8260B	8/9/12	99.0	99.5	0.579	69.7-121	25
P + M Xylene														
	82195-01	<0.50	40.0	40.0	41.3	39.9	ug/L	EPA 8260B	8/9/12	103	99.7	3.50	76.8-120	25
Tert-Butanol														
	82195-01	<5.0	202	202	197	200	ug/L	EPA 8260B	8/9/12	97.8	99.3	1.52	80-120	25

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

Report Number : 82190

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/16/2012

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-amyl-methyl ether														
	82195-01	<0.50	39.9	39.9	39.8	39.9	ug/L	EPA 8260B	8/9/12	99.6	100	0.343	78.9-120	25
Toluene														
	82195-01	<0.50	40.0	40.0	41.4	40.1	ug/L	EPA 8260B	8/9/12	103	100	3.04	80-120	25
P + M Xylene														
	82188-04	<0.50	40.0	40.0	40.5	40.4	ug/L	EPA 8260B	8/9/12	101	101	0.398	76.8-120	25

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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
Arsenic	0.400	mg/L	EPA 6010B	8/15/12	93.1	85-115
Chromium	0.400	mg/L	EPA 6010B	8/15/12	95.6	85-115
Iron	0.400	mg/L	EPA 6010B	8/15/12	89.4	85-115
Manganese	0.400	mg/L	EPA 6010B	8/15/12	91.6	85-115
Sodium	0.400	mg/L	EPA 6010B	8/15/12	99.8	85-115
Arsenic	0.400	mg/L	EPA 6010B	8/15/12	92.9	85-115
Chromium	0.400	mg/L	EPA 6010B	8/15/12	95.2	85-115
Iron	0.400	mg/L	EPA 6010B	8/15/12	87.7	85-115
Manganese	0.400	mg/L	EPA 6010B	8/15/12	90.0	85-115
Sodium	0.400	mg/L	EPA 6010B	8/15/12	101	85-115
1,2-Dibromoethane	39.7	ug/L	EPA 8260B	8/8/12	108	80-120
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	8/8/12	99.9	75.7-122
Benzene	39.8	ug/L	EPA 8260B	8/8/12	99.2	80-120
Diisopropyl ether	39.4	ug/L	EPA 8260B	8/8/12	108	80-120
Ethanol	99.2	ug/L	EPA 8260B	8/8/12	94.4	55.1-159
Ethyl-tert-butyl ether	39.6	ug/L	EPA 8260B	8/8/12	101	76.5-120
Ethylbenzene	39.8	ug/L	EPA 8260B	8/8/12	102	80-120
Methanol	993	ug/L	EPA 8260B	8/8/12	96.3	53.2-147
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	8/8/12	96.3	69.7-121
P + M Xylene	39.8	ug/L	EPA 8260B	8/8/12	102	76.8-120

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
TPH as Gasoline	496	ug/L	EPA 8260B	8/8/12	88.7	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/8/12	97.8	80-120
Tert-amyl-methyl ether	39.7	ug/L	EPA 8260B	8/8/12	102	78.9-120
Toluene	39.8	ug/L	EPA 8260B	8/8/12	103	80-120
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	8/9/12	110	80-120
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	8/9/12	102	75.7-122
Benzene	39.9	ug/L	EPA 8260B	8/9/12	100	80-120
Diisopropyl ether	39.4	ug/L	EPA 8260B	8/9/12	110	80-120
Ethanol	99.5	ug/L	EPA 8260B	8/9/12	96.2	55.1-159
Ethyl-tert-butyl ether	39.7	ug/L	EPA 8260B	8/9/12	104	76.5-120
Ethylbenzene	39.9	ug/L	EPA 8260B	8/9/12	103	80-120
Methanol	995	ug/L	EPA 8260B	8/9/12	99.1	53.2-147
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	8/9/12	104	69.7-121
P + M Xylene	39.9	ug/L	EPA 8260B	8/9/12	105	76.8-120
TPH as Gasoline	500	ug/L	EPA 8260B	8/9/12	99.4	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/9/12	99.4	80-120
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	8/9/12	106	78.9-120
Toluene	39.9	ug/L	EPA 8260B	8/9/12	105	80-120
P + M Xylene	39.9	ug/L	EPA 8260B	8/9/12	105	76.8-120
TPH as Gasoline	497	ug/L	EPA 8260B	8/9/12	99.9	70.0-130

Report Number : 82190

QC Report : Laboratory Control Sample (LCS)

Date : 08/16/2012

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Hexavalent Chromium	5.00	ug/L	EPA 7199	8/7/12	100	90.0-110
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	8/8/12	96.8	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. 82190

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Scott Stromberg	California EDF Report? ☒ Yes ☐ No
Company / Address: 1332 Peralta Ave. Berkeley, CA 94702	Sampling Company Log Code: EFSP
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 510-525-2392	EDF Deliverable To (Email Address): mnelson@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Print Name: Chris Arroyo
	Sampler Signature:
Project Address: 1619 1st Street Livermore, CA	

Sample Designation	Sampling: Date	Sampling: Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO_3	Preservative: None	Matrix: Water	Matrix: Soil	Matrix: Air	MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	~~Volatile Hydrocarbons (EPA 8260B)~~ Ferrous Iron (SM 3500-Fe-D)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	~~TPH as Diesel (EPA 8015M)~~ Nitrate & Sulfate (EPA 300.0)	~~TPH as Motor Oil (EPA 8015M)~~ Total Alkalinity (SM 2320B)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)	Total Dissolved Solids (SM 2540C)	Methane and Carbon Dioxide by RSK 175M	Hexavalent Chromium (EPA 7199)	Total Metals by EPA 6010 (As,Cr,Fe,Mn,Ni)	TAT	For Lab Use Only
DW-6	8/6/12	1630	3					3			X				X	X		X	X															STND	01
TP-2	8/7/12	0900	3					3			X				X	X		X	X															STND	02
TP-1	8/7/12	0920	3					3			X				X	X		X	X															STND	03
MW-7	8/7/12	1130	5		5			5	1	4	X				X	X		X	X	X			X	X					X	X	X	X		04
DW-2	8/7/12	1030	3					3			X				X	X		X	X															STND	05
MW-11	8/7/12	1145	5		5			5	1	4	X				X	X		X	X	X			X	X					X	X	X	X		06
IP-10	8/7/12	1340	5		5			5	1	4	X				X	X		X	X	X			X	X					X	X	X	X		07
IP-9	8/7/12	1415	5		5			5	1	4	X				X	X		X	X	X			X	X					X	X	X	X		08

CIRCLE METHOD

Relinquished by:	Date	Time	Received by:
	8/7/12	1507	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
	080712	1507	KIFF Analytical LLC

Remarks:

Distribution: White - Lab; Pink - Originator
Rev: 060409

Page 21 of 23

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER: TJB (Initials)

SRG#: 82190 Date: 080712

Project ID: Tesoro - Livermore

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

Shipping Only: [ ] FedEx * [ ] OnTrac * [ ] Greyhound [ ] Other *Service level if not Priority or Sunrise (M-F): _____

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?	[ ] Yes	[ ] No, Whiteout	[X] No, Cross-outs	

Sample Inspection

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

Temperature °C 2.0 Therm. ID# IR-4 Initial TJB Date/Time 080712/1731 [ ] 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 32
Matrix Wd	Container type Poly	# of containers received 20
Matrix _____	Container type _____	# of containers received _____

Date and Time Sample Put into Temp Storage Date: 080712 Time: 1742

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: Per MAS of Sample Receiving, Carbon Dioxide to be subbed to CLS with TDS ~~of~~ TJB 080712 out of 1L polys. TJB 080712 1729

NO unpreserved VOAs were received for Carbon Dioxide analysis. ~~The only~~ MAS The analysis can be completed out of an unpreserved poly at CLS. ~~It will be combined with the TDS analysis.~~ MAS 080812 T. Turpen of CS confirmed this course of action. MAS 080812 0716

Sediment in all VOAs for samples -02 & -03 MAS 080812 0948

O:\old_ed\samprec\Forms\Sample Receipt Checklist rev 072412.doc

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

August 15, 2012

CLS Work Order #: CVH0305
COC #: 82190

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 08/08/12 13:00. 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 #: CVH0305
COC #: 82190

CVH0305

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. 82190 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.: 82190
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: 250ml Poly None	Matrix: Water	Analysis Request: Carbon Dioxide	TAT: Standard	For Lab Use Only
MW-7	08/07/12	11:30	1	X	X	X	
MW-11	08/07/12	11:45	1	X	X	X	
IP-10	08/07/12	13:40	1	X	X	X	
IP-9	08/07/12	14:15	1	X	X	X	

Relinquished by: Kiff Analytical — Date 080812 — Time 1320 — Received by:
Relinquished by: — Date — Time — Received by:
Relinquished by: — Date — Time — Received by Laboratory: Jon 12 8-8-12 13:00

Remarks: 3.1°C
Bill to: Accounts Payable

KIFF Analytical	Project: Tesoro Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CVH0305**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 82190

CVH0305

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

REVISED 8/8/12

COC No. 82190 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.: 82190
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: 250ml Poly None	Matrix: Water	Analysis Request: Anions by EPA 300.0 SUB (1)	Analysis Request: Carbon Dioxide	TAT: Standard	For Lab Use Only
MW-7	08/07/12	11:30	1	X	X	X	X	
MW-11	08/07/12	11:45	1	X	X	X	X	
IP-10	08/07/12	13:40	1	X	X	X	X	
IP-9	08/07/12	14:15	1	X	X	X	X	

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

Remarks: Please refer to attached Test Detail.
LAB: Revision, add sulfate and nitrate

Bill to: Accounts Payable

CALIFORNIA LABORATORY SERVICES

KIFF Analytical	Project: Tesoro Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CVH0305**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 82190

CVH0305

Test Detail for Kiff Work Order: 82190

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

Page 1 of 1

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

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

CLS Work Order #: CVH0305
COC #: 82190

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (CVH0305-01) Water Sampled: 08/07/12 11:30 Received: 08/08/12 13:00									
Carbon Dioxide as CO2	**37**	5.0	mg/L	1	CV05387	08/09/12	08/09/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05370	08/09/12	08/09/12	EPA 300.0	
Sulfate as SO4	**72**	2.5	"	5	"	"	08/13/12	"	
MW-11 (CVH0305-02) Water Sampled: 08/07/12 11:45 Received: 08/08/12 13:00									
Carbon Dioxide as CO2	**110**	5.0	mg/L	1	CV05387	08/09/12	08/09/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05370	08/09/12	08/09/12	EPA 300.0	
Sulfate as SO4	**51**	2.5	"	5	"	"	08/13/12	"	
IP-10 (CVH0305-03) Water Sampled: 08/07/12 13:40 Received: 08/08/12 13:00									
Carbon Dioxide as CO2	**30**	5.0	mg/L	1	CV05387	08/09/12	08/09/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05370	08/09/12	08/09/12	EPA 300.0	
Sulfate as SO4	**3.2**	0.50	"	"	"	"	"	"	
IP-9 (CVH0305-04) Water Sampled: 08/07/12 14:15 Received: 08/08/12 13:00									
Carbon Dioxide as CO2	ND	5.0	mg/L	1	CV05387	08/09/12	08/09/12	SM 4500C	
Nitrate as N	ND	2.5	"	5	CV05370	08/09/12	08/13/12	EPA 300.0	QRL-5
Sulfate as SO4	**810**	50	"	100	"	"	"	"	

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

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

CLS Work Order #: CVH0305
COC #: 82190

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 CV05370 - General Prep										
Blank (CV05370-BLK1)				Prepared & Analyzed: 08/09/12						
Sulfate as SO4	ND	0.50	mg/L							
Nitrate as N	ND	0.50	"							
LCS (CV05370-BS1)				Prepared & Analyzed: 08/09/12						
Sulfate as SO4	5.38	0.50	mg/L	5.00		108	80-120			
Nitrate as N	0.457	0.50	"	0.451		101	80-120			
LCS Dup (CV05370-BSD1)				Prepared & Analyzed: 08/09/12						
Sulfate as SO4	5.53	0.50	mg/L	5.00		111	80-120	3	20	
Nitrate as N	0.479	0.50	"	0.451		106	80-120	5	20	
Matrix Spike (CV05370-MS1)		**Source: CVH0301-01**		Prepared & Analyzed: 08/09/12						
Sulfate as SO4	10.5	0.50	mg/L	5.00	5.02	109	75-125			
Nitrate as N	1.34	0.50	"	0.451	0.667	150	80-120			QM-5
Matrix Spike Dup (CV05370-MSD1)		**Source: CVH0301-01**		Prepared & Analyzed: 08/09/12						
Sulfate as SO4	10.3	0.50	mg/L	5.00	5.02	105	75-125	2	25	
Nitrate as N	1.33	0.50	"	0.451	0.667	146	80-120	1	20	QM-5
Batch CV05387 - General Preparation										
Blank (CV05387-BLK1)				Prepared & Analyzed: 08/09/12						
Carbon Dioxide as CO2	ND	5.0	mg/L							

KIFF Analytical	Project: Tesoro Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CVH0305**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 82190

Notes and Definitions

QRL-5	The sample was diluted due to the presence of high levels of non-target analytes or matrix interference resulting in elevated reporting limits.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
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 Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 12-08-0620

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 95618-6505

Amanda Porter

Approved for release on 08/15/2012 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 12-08-0620

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 08/09/12
Work Order No: 12-08-0620
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-7	**12-08-0620-1-A**	**08/07/12 11:30**	**Aqueous**	**GC 52**	**N/A**	**08/10/12 19:00**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	806	4.00	4		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**12-08-0620-2-A**	**08/07/12 11:45**	**Aqueous**	**GC 52**	**N/A**	**08/10/12 17:24**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	284	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-10	**12-08-0620-3-A**	**08/07/12 13:40**	**Aqueous**	**GC 52**	**N/A**	**08/10/12 17:58**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	535	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**12-08-0620-4-A**	**08/07/12 14:15**	**Aqueous**	**GC 52**	**N/A**	**08/10/12 18:27**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	41.0	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	**099-12-663-1,675**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**08/10/12 12:06**	**120810L01**

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 95618-6505

Date Received: 08/09/12
Work Order No: 12-08-0620

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-7	**12-08-0620-1**	**08/07/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	416	5.00	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	450	1.00	1		mg/L	08/13/12	08/13/12	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-11	**12-08-0620-2**	**08/07/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	1760	10.0	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	1960	10.0	1		mg/L	08/13/12	08/13/12	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-10	**12-08-0620-3**	**08/07/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	335	5.00	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	435	1.00	1		mg/L	08/13/12	08/13/12	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-9	**12-08-0620-4**	**08/07/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	10600	100	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	13000	100	1		mg/L	08/13/12	08/13/12	SM 2540 C

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
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	08/13/12	08/13/12	SM 2540 C

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

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: N/A
Work Order No: 12-08-0620

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	12-08-0887-1	08/13/12	375	376	0	0-25	
Bicarbonate (as CaCO3)	SM 2320B	12-08-0887-1	08/13/12	375	376	0	0-25	
Carbonate (as CaCO3)	SM 2320B	12-08-0887-1	08/13/12	ND	ND	NA	0-25	
Hydroxide (as CaCO3)	SM 2320B	12-08-0887-1	08/13/12	ND	ND	NA	0-25	
Solids, Total Dissolved	SM 2540 C	12-08-0618-1	08/13/12	600	610	2	0-10	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	12-08-0620
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,675	**Aqueous**	**GC 52**	**N/A**	**08/10/12**	**120810L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98.50	93.42	95	94.98	96	79-109	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 12-08-0620

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.
MPN - Most Probable Number

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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

12-08-0620
COC No. 82190 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.: 82190
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: 1-L Poly None	250ml Poly None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
MW-7	08/07/12	11:30	1	1	2	X	X	X	X	X	1
MW-11	08/07/12	11:45	1	1	2	X	X	X	X	X	2
IP-10	08/07/12	13:40	1	1	2	X	X	X	X	X	3
IP-9	08/07/12	14:15	1	1	2	X	X	X	X	X	4

	Date	Time	
Relinquished by: Kiff Analytical	080812	1900	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by: (UNIPAC)	8/9/12	11:00	Received by Laboratory:

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

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0620

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Date Printed 8/8/2012

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Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 1
Reference: SUBS
Reference 2: CLASS 600

Ship To Company:	*Service:* **S**
CALSCIENCE ENVIRONMENTAL LABS **7440 LINCOLN WAY** **GARDEN GROVE, CA 92841** **SAMPLE RECEIVING (714)895-5494**	*Sort Code:* **ORG** *Special Services:* **Signature Required**

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 12-08-0629

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF

DATE: 08/09/12

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.7 °C - 0.3 °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: JR

CUSTODY SEALS INTACT:

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

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

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:** TS

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

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:**_____

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KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

Laboratory Results

Scott Stromberg
Orion Environmental
3450 East Spring Street, Suite 212
Long Beach, CA 90806

Subject : 9 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Stromberg,

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 and TNI 2009 standards. 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,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

Subject : 9 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

California Laboratory Services provided analytical testing associated with these samples, but is not accredited by the National Environmental Laboratory Accreditation Program (NELAP). Please refer to the attached subcontract report for a list of this laboratory's current certifications.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-8, MW-2, IP-8, and IP-1 for the analytes Iron, Manganese, and Sodium were affected by the analyte concentrations already present in the un-spiked sample.

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **MW-12** Matrix : Water Lab Number : 82212-01
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**10**	0.90	ug/L	EPA 8260B	08/10/12 03:57
Toluene	**2.2**	0.90	ug/L	EPA 8260B	08/10/12 03:57
Ethylbenzene	**100**	0.90	ug/L	EPA 8260B	08/10/12 03:57
Total Xylenes	**12**	0.90	ug/L	EPA 8260B	08/10/12 03:57
Methyl-t-butyl ether (MTBE)	< 0.90	0.90	ug/L	EPA 8260B	08/10/12 03:57
Diisopropyl ether (DIPE)	< 0.90	0.90	ug/L	EPA 8260B	08/10/12 03:57
Ethyl-t-butyl ether (ETBE)	< 0.90	0.90	ug/L	EPA 8260B	08/10/12 03:57
Tert-amyl methyl ether (TAME)	< 0.90	0.90	ug/L	EPA 8260B	08/10/12 03:57
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/10/12 03:57
Methanol	< 90	90	ug/L	EPA 8260B	08/10/12 03:57
Ethanol	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 03:57
TPH as Gasoline	**6000**	90	ug/L	EPA 8260B	08/10/12 03:57
1,2-Dichloroethane	< 0.90	0.90	ug/L	EPA 8260B	08/10/12 03:57
1,2-Dibromoethane	< 0.90	0.90	ug/L	EPA 8260B	08/10/12 03:57
1,2-Dichloroethane-d4 (Surr)	96.3		% Recovery	EPA 8260B	08/10/12 03:57
Toluene - d8 (Surr)	95.8		% Recovery	EPA 8260B	08/10/12 03:57

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **DW-9** Matrix : Water Lab Number : 82212-02
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**310**	1.5	ug/L	EPA 8260B	08/10/12 04:30
Toluene	**11**	1.5	ug/L	EPA 8260B	08/10/12 04:30
Ethylbenzene	**400**	1.5	ug/L	EPA 8260B	08/10/12 04:30
Total Xylenes	**110**	1.5	ug/L	EPA 8260B	08/10/12 04:30
Methyl-t-butyl ether (MTBE)	**35**	1.5	ug/L	EPA 8260B	08/10/12 04:30
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 04:30
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 04:30
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 04:30
Tert-Butanol	**96**	7.0	ug/L	EPA 8260B	08/10/12 04:30
Methanol	< 150	150	ug/L	EPA 8260B	08/10/12 04:30
Ethanol	< 15	15	ug/L	EPA 8260B	08/10/12 04:30
TPH as Gasoline	**12000**	250	ug/L	EPA 8260B	08/11/12 18:03
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 04:30
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 04:30
1,2-Dichloroethane-d4 (Surr)	92.2		% Recovery	EPA 8260B	08/10/12 04:30
Toluene - d8 (Surr)	92.0		% Recovery	EPA 8260B	08/10/12 04:30

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **MW-1** Matrix : Water Lab Number : 82212-03
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/10/12 02:52
Methanol	< 50	50	ug/L	EPA 8260B	08/10/12 02:52
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/10/12 02:52
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/10/12 02:52
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/10/12 02:52
1,2-Dichloroethane-d4 (Surr)	103		% Recovery	EPA 8260B	08/10/12 02:52
Toluene - d8 (Surr)	99.3		% Recovery	EPA 8260B	08/10/12 02:52

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **MW-6** Matrix : Water Lab Number : 82212-04
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**1200**	2.5	ug/L	EPA 8260B	08/10/12 05:35
Toluene	**31**	2.5	ug/L	EPA 8260B	08/10/12 05:35
Ethylbenzene	**69**	2.5	ug/L	EPA 8260B	08/10/12 05:35
Total Xylenes	**47**	2.5	ug/L	EPA 8260B	08/10/12 05:35
Methyl-t-butyl ether (MTBE)	**170**	2.5	ug/L	EPA 8260B	08/10/12 05:35
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 05:35
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 05:35
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 05:35
Tert-Butanol	**440**	15	ug/L	EPA 8260B	08/10/12 05:35
Methanol	< 250	250	ug/L	EPA 8260B	08/10/12 05:35
Ethanol	< 25	25	ug/L	EPA 8260B	08/10/12 05:35
TPH as Gasoline	**12000**	250	ug/L	EPA 8260B	08/10/12 05:35
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 05:35
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 05:35
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	08/10/12 05:35
Toluene - d8 (Surr)	96.5		% Recovery	EPA 8260B	08/10/12 05:35

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **DW-5** Matrix : Water Lab Number : 82212-05
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**84**	1.5	ug/L	EPA 8260B	08/10/12 05:02
Toluene	**11**	1.5	ug/L	EPA 8260B	08/10/12 05:02
Ethylbenzene	**480**	1.5	ug/L	EPA 8260B	08/10/12 05:02
Total Xylenes	**590**	1.5	ug/L	EPA 8260B	08/10/12 05:02
Methyl-t-butyl ether (MTBE)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 05:02
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 05:02
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 05:02
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 05:02
Tert-Butanol	< 7.0	7.0	ug/L	EPA 8260B	08/10/12 05:02
Methanol	< 150	150	ug/L	EPA 8260B	08/10/12 05:02
Ethanol	< 15	15	ug/L	EPA 8260B	08/10/12 05:02
TPH as Gasoline	**14000**	250	ug/L	EPA 8260B	08/11/12 18:35
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 05:02
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	08/10/12 05:02
1,2-Dichloroethane-d4 (Surr)	95.2		% Recovery	EPA 8260B	08/10/12 05:02
Toluene - d8 (Surr)	93.3		% Recovery	EPA 8260B	08/10/12 05:02

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **DW-8** Matrix : Water Lab Number : 82212-06
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/08/12 19:44
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/09/12 11:57
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/12 13:17
Chromium	**0.0057**	0.0050	mg/L	EPA 6010B	08/15/12 13:17
Iron	**2.4**	0.10	mg/L	EPA 6010B	08/15/12 13:17
Manganese	**2.7**	0.0050	mg/L	EPA 6010B	08/15/12 13:17
Sodium	**100**	0.50	mg/L	EPA 6010B	08/15/12 13:17
Benzene	**1900**	2.5	ug/L	EPA 8260B	08/10/12 06:07
Toluene	**4500**	9.0	ug/L	EPA 8260B	08/11/12 17:44
Ethylbenzene	**1500**	2.5	ug/L	EPA 8260B	08/10/12 06:07
Total Xylenes	**5900**	9.0	ug/L	EPA 8260B	08/11/12 17:44
Methyl-t-butyl ether (MTBE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:07
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:07
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:07
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:07
Tert-Butanol	**58**	15	ug/L	EPA 8260B	08/10/12 06:07
Methanol	< 250	250	ug/L	EPA 8260B	08/10/12 06:07
Ethanol	< 25	25	ug/L	EPA 8260B	08/10/12 06:07
TPH as Gasoline	**52000**	900	ug/L	EPA 8260B	08/11/12 17:44
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:07
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:07
1,2-Dichloroethane-d4 (Surr)	98.1		% Recovery	EPA 8260B	08/10/12 06:07
Toluene - d8 (Surr)	94.8		% Recovery	EPA 8260B	08/10/12 06:07

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **MW-2** Matrix : Water Lab Number : 82212-07
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/08/12 21:12
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/09/12 11:58
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/12 13:21
Chromium	**0.092**	0.0050	mg/L	EPA 6010B	08/15/12 13:21
Iron	**25**	0.10	mg/L	EPA 6010B	08/15/12 13:21
Manganese	**4.2**	0.0050	mg/L	EPA 6010B	08/15/12 13:21
Sodium	**45**	0.50	mg/L	EPA 6010B	08/15/12 13:21
Benzene	**720**	2.5	ug/L	EPA 8260B	08/10/12 06:40
Toluene	**120**	2.5	ug/L	EPA 8260B	08/10/12 06:40
Ethylbenzene	**460**	2.5	ug/L	EPA 8260B	08/10/12 06:40
Total Xylenes	**580**	2.5	ug/L	EPA 8260B	08/10/12 06:40
Methyl-t-butyl ether (MTBE)	**140**	2.5	ug/L	EPA 8260B	08/10/12 06:40
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:40
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:40
Tert-amyl methyl ether (TAME)	**2.6**	2.5	ug/L	EPA 8260B	08/10/12 06:40
Tert-Butanol	**70**	15	ug/L	EPA 8260B	08/10/12 06:40
Methanol	< 250	250	ug/L	EPA 8260B	08/10/12 06:40
Ethanol	< 25	25	ug/L	EPA 8260B	08/10/12 06:40
TPH as Gasoline	**15000**	250	ug/L	EPA 8260B	08/10/12 06:40
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:40
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	08/10/12 06:40
1,2-Dichloroethane-d4 (Surr)	98.4		% Recovery	EPA 8260B	08/10/12 06:40
Toluene - d8 (Surr)	96.6		% Recovery	EPA 8260B	08/10/12 06:40

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **IP-8** Matrix : Water Lab Number : 82212-08
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/08/12 21:32
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/09/12 11:59
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/12 13:25
Chromium	**0.013**	0.0050	mg/L	EPA 6010B	08/15/12 13:25
Iron	**4.4**	0.10	mg/L	EPA 6010B	08/15/12 13:25
Manganese	**3.3**	0.0050	mg/L	EPA 6010B	08/15/12 13:25
Sodium	**110**	0.50	mg/L	EPA 6010B	08/15/12 13:25
Benzene	**3500**	9.0	ug/L	EPA 8260B	08/10/12 16:24
Toluene	**6700**	15	ug/L	EPA 8260B	08/11/12 18:16
Ethylbenzene	**980**	9.0	ug/L	EPA 8260B	08/10/12 16:24
Total Xylenes	**7400**	9.0	ug/L	EPA 8260B	08/10/12 16:24
Methyl-t-butyl ether (MTBE)	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 16:24
Diisopropyl ether (DIPE)	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 16:24
Ethyl-t-butyl ether (ETBE)	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 16:24
Tert-amyl methyl ether (TAME)	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 16:24
Tert-Butanol	**65**	50	ug/L	EPA 8260B	08/10/12 16:24
Methanol	< 900	900	ug/L	EPA 8260B	08/10/12 16:24
Ethanol	< 90	90	ug/L	EPA 8260B	08/10/12 16:24
TPH as Gasoline	**63000**	900	ug/L	EPA 8260B	08/10/12 16:24
1,2-Dichloroethane	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 16:24
1,2-Dibromoethane	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 16:24
1,2-Dichloroethane-d4 (Surr)	98.6		% Recovery	EPA 8260B	08/10/12 16:24
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	08/10/12 16:24

KIFF Analytical LLC

Report Number : 82212
Date : 08/15/2012

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

Sample : **IP-1** Matrix : Water Lab Number : 82212-09
Sample Date :08/08/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/08/12 21:42
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/09/12 11:59
Arsenic	**0.023**	0.015	mg/L	EPA 6010B	08/15/12 13:29
Chromium	**0.50**	0.0050	mg/L	EPA 6010B	08/15/12 13:29
Iron	**140**	0.10	mg/L	EPA 6010B	08/15/12 13:29
Manganese	**8.0**	0.0050	mg/L	EPA 6010B	08/15/12 13:29
Sodium	**71**	0.50	mg/L	EPA 6010B	08/15/12 13:29
Benzene	**260**	2.0	ug/L	EPA 8260B	08/10/12 15:52
Toluene	**190**	2.0	ug/L	EPA 8260B	08/10/12 15:52
Ethylbenzene	**470**	2.0	ug/L	EPA 8260B	08/10/12 15:52
Total Xylenes	**860**	2.0	ug/L	EPA 8260B	08/10/12 15:52
Methyl-t-butyl ether (MTBE)	< 2.0	2.0	ug/L	EPA 8260B	08/10/12 15:52
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	08/10/12 15:52
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	08/10/12 15:52
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	08/10/12 15:52
Tert-Butanol	< 9.0	9.0	ug/L	EPA 8260B	08/10/12 15:52
Methanol	< 200	200	ug/L	EPA 8260B	08/10/12 15:52
Ethanol	< 20	20	ug/L	EPA 8260B	08/10/12 15:52
TPH as Gasoline	**12000**	200	ug/L	EPA 8260B	08/10/12 15:52
1,2-Dichloroethane	< 2.0	2.0	ug/L	EPA 8260B	08/10/12 15:52
1,2-Dibromoethane	< 2.0	2.0	ug/L	EPA 8260B	08/10/12 15:52
1,2-Dichloroethane-d4 (Surr)	97.4		% Recovery	EPA 8260B	08/10/12 15:52
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	08/10/12 15:52

Report Number : 82212

Date : 08/15/2012

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	08/15/2012
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/2012
Iron	< 0.10	0.10	mg/L	EPA 6010B	08/15/2012
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	08/15/2012
Sodium	< 0.50	0.50	mg/L	EPA 6010B	08/15/2012
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/10/2012
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Methanol	< 50	50	ug/L	EPA 8260B	08/10/2012
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/10/2012
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/10/2012
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/10/2012
1,2-Dichloroethane-d4 (Surr)	98.8		%	EPA 8260B	08/10/2012
Toluene - d8 (Surr)	103		%	EPA 8260B	08/10/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/11/2012
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/2012
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Methanol	< 50	50	ug/L	EPA 8260B	08/09/2012
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/09/2012
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/09/2012
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/09/2012
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	08/09/2012
Toluene - d8 (Surr)	102		%	EPA 8260B	08/09/2012
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/11/2012
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/11/2012
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/11/2012

KIFF ANALYTICAL, LLC

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

Report Number : 82212

Date : 08/15/2012

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	08/08/2012
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	08/09/2012

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/15/2012

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
Hexavalent Chromium														
	82202-01	5.4	5.00	5.00	10.4	10.7	ug/L	EPA 7199	8/8/12	100	106	2.98	90.0-110	10
Ferrous Iron														
	82212-06	< 0.10	0.251	0.251	0.270	0.291	mg/L	SM 3500-Fe D	8/9/12	94.8	103	7.49	70.0-130	25
1,2-Dibromoethane														
	82201-01	<0.50	39.9	39.9	42.2	41.5	ug/L	EPA 8260B	8/10/12	106	104	1.68	80-120	25
1,2-Dichloroethane														
	82201-01	4.2	40.0	40.0	43.2	43.4	ug/L	EPA 8260B	8/10/12	97.3	97.9	0.608	75.7-122	25
Benzene														
	82201-01	<0.50	40.0	40.0	39.0	38.9	ug/L	EPA 8260B	8/10/12	97.6	97.2	0.407	80-120	25
Diisopropyl ether														
	82201-01	<0.50	39.5	39.5	41.4	41.3	ug/L	EPA 8260B	8/10/12	105	104	0.123	80-120	25
Ethanol														
	82201-01	<5.0	99.7	99.7	97.1	95.0	ug/L	EPA 8260B	8/10/12	97.4	95.2	2.21	55.1-159	25
Ethyl-tert-butyl ether														
	82201-01	<0.50	39.8	39.8	39.0	39.2	ug/L	EPA 8260B	8/10/12	98.0	98.3	0.293	76.5-120	25
Ethylbenzene														
	82201-01	30	40.0	40.0	71.6	70.1	ug/L	EPA 8260B	8/10/12	104	99.7	3.73	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 82212

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/15/2012

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
Methanol														
	82201-01	<50	998	998	995	1020	ug/L	EPA 8260B	8/10/12	99.7	102	2.32	53.2-147	25
Methyl-t-butyl ether														
	82201-01	<0.50	40.0	40.0	40.1	40.0	ug/L	EPA 8260B	8/10/12	100	99.9	0.280	69.7-121	25
P + M Xylene														
	82201-01	29	40.0	40.0	70.8	70.4	ug/L	EPA 8260B	8/10/12	103	102	0.965	76.8-120	25
Tert-Butanol														
	82201-01	<5.0	202	202	196	194	ug/L	EPA 8260B	8/10/12	97.4	96.1	1.36	80-120	25
Tert-amyl-methyl ether														
	82201-01	<0.50	39.9	39.9	39.3	39.0	ug/L	EPA 8260B	8/10/12	98.4	97.8	0.658	78.9-120	25
Toluene														
	82201-01	<0.50	40.0	40.0	40.3	39.4	ug/L	EPA 8260B	8/10/12	101	98.5	2.32	80-120	25
Toluene														
	82219-02	<0.50	40.0	40.0	39.4	37.6	ug/L	EPA 8260B	8/11/12	98.6	94.0	4.67	80-120	25
1,2-Dibromoethane														
	82203-03	<0.50	39.9	39.9	42.9	41.4	ug/L	EPA 8260B	8/10/12	107	104	3.61	80-120	25
1,2-Dichloroethane														
	82203-03	<0.50	40.0	40.0	39.8	39.2	ug/L	EPA 8260B	8/10/12	99.4	98.1	1.31	75.7-122	25

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/15/2012

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														
	82203-03	82	40.0	40.0	121	116	ug/L	EPA 8260B	8/10/12	98.5	84.3	15.5	80-120	25
Diisopropyl ether														
	82203-03	<0.50	39.5	39.5	37.5	37.2	ug/L	EPA 8260B	8/10/12	94.8	94.2	0.710	80-120	25
Ethanol														
	82203-03	<5.0	99.7	99.7	115	116	ug/L	EPA 8260B	8/10/12	116	116	0.153	55.1-159	25
Ethyl-tert-butyl ether														
	82203-03	<0.50	39.8	39.8	37.3	37.2	ug/L	EPA 8260B	8/10/12	93.6	93.4	0.145	76.5-120	25
Ethylbenzene														
	82203-03	67	40.0	40.0	108	101	ug/L	EPA 8260B	8/10/12	102	84.9	18.6	80-120	25
Methanol														
	82203-03	51	998	998	1200	1130	ug/L	EPA 8260B	8/10/12	115	108	5.75	53.2-147	25
Methyl-t-butyl ether														
	82203-03	26	40.0	40.0	61.5	61.7	ug/L	EPA 8260B	8/10/12	89.8	90.2	0.481	69.7-121	25
P + M Xylene														
	82203-03	3.0	40.0	40.0	45.6	42.6	ug/L	EPA 8260B	8/10/12	106	99.0	7.17	76.8-120	25
Tert-Butanol														
	82203-03	24	202	202	229	224	ug/L	EPA 8260B	8/10/12	101	99.1	2.35	80-120	25
Tert-amyl-methyl ether														
	82203-03	1.2	39.9	39.9	40.2	40.5	ug/L	EPA 8260B	8/10/12	97.7	98.3	0.596	78.9-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 82212

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 08/15/2012

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														
	82203-03	0.79	40.0	40.0	42.4	39.6	ug/L	EPA 8260B	8/10/12	104	97.1	6.91	80-120	25
P + M Xylene														
	82250-02	17	40.0	40.0	60.0	58.4	ug/L	EPA 8260B	8/11/12	108	104	3.60	76.8-120	25
Toluene														
	82250-02	3.8	40.0	40.0	45.0	43.2	ug/L	EPA 8260B	8/11/12	103	98.6	4.25	80-120	25
Arsenic														
	82190-04	0.031	0.400	0.400	0.409	0.413	mg/L	EPA 6010B	8/15/12	94.5	95.4	0.900	75-125	20
Chromium														
	82190-04	0.32	0.400	0.400	0.695	0.691	mg/L	EPA 6010B	8/15/12	94.8	93.8	0.548	75-125	20
Iron														
	82190-04	84	0.400	0.400	82.3	80.4	mg/L	EPA 6010B	8/15/12	**0.00**	**0.00**	2.38	75-125	20
Manganese														
	82190-04	9.6	0.400	0.400	9.56	9.30	mg/L	EPA 6010B	8/15/12	**1.00**	**0.00**	2.69	75-125	20
Sodium														
	82190-04	68	0.400	0.400	62.4	64.3	mg/L	EPA 6010B	8/15/12	**0.00**	**0.00**	3.08	75-125	20

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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
Arsenic	0.400	mg/L	EPA 6010B	8/15/12	93.1	85-115
Chromium	0.400	mg/L	EPA 6010B	8/15/12	95.6	85-115
Iron	0.400	mg/L	EPA 6010B	8/15/12	89.4	85-115
Manganese	0.400	mg/L	EPA 6010B	8/15/12	91.6	85-115
Sodium	0.400	mg/L	EPA 6010B	8/15/12	99.8	85-115
1,2-Dibromoethane	39.7	ug/L	EPA 8260B	8/10/12	106	80-120
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	8/10/12	98.7	75.7-122
Benzene	39.8	ug/L	EPA 8260B	8/10/12	97.5	80-120
Diisopropyl ether	39.4	ug/L	EPA 8260B	8/10/12	105	80-120
Ethanol	99.2	ug/L	EPA 8260B	8/10/12	94.3	55.1-159
Ethyl-tert-butyl ether	39.6	ug/L	EPA 8260B	8/10/12	98.7	76.5-120
Ethylbenzene	39.8	ug/L	EPA 8260B	8/10/12	101	80-120
Methanol	993	ug/L	EPA 8260B	8/10/12	106	53.2-147
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	8/10/12	98.2	69.7-121
P + M Xylene	39.8	ug/L	EPA 8260B	8/10/12	102	76.8-120
TPH as Gasoline	500	ug/L	EPA 8260B	8/10/12	86.2	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/10/12	97.6	80-120
Tert-amyl-methyl ether	39.7	ug/L	EPA 8260B	8/10/12	101	78.9-120
Toluene	39.8	ug/L	EPA 8260B	8/10/12	99.8	80-120
TPH as Gasoline	496	ug/L	EPA 8260B	8/11/12	98.8	70.0-130

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
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	8/9/12	107	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	8/9/12	100	75.7-122
Benzene	40.0	ug/L	EPA 8260B	8/9/12	99.8	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	8/9/12	94.2	80-120
Ethanol	99.7	ug/L	EPA 8260B	8/9/12	115	55.1-159
Ethyl-tert-butyl ether	39.8	ug/L	EPA 8260B	8/9/12	91.7	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	8/9/12	108	80-120
Methanol	998	ug/L	EPA 8260B	8/9/12	111	53.2-147
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	8/9/12	87.7	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	8/9/12	104	76.8-120
TPH as Gasoline	501	ug/L	EPA 8260B	8/9/12	95.6	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	8/9/12	101	80-120
Tert-amyl-methyl ether	39.9	ug/L	EPA 8260B	8/9/12	97.3	78.9-120
Toluene	40.0	ug/L	EPA 8260B	8/9/12	105	80-120
P + M Xylene	39.8	ug/L	EPA 8260B	8/11/12	110	76.8-120
TPH as Gasoline	501	ug/L	EPA 8260B	8/11/12	97.4	70.0-130
Toluene	39.8	ug/L	EPA 8260B	8/11/12	105	80-120
Hexavalent Chromium	5.00	ug/L	EPA 7199	8/8/12	102	90.0-110

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

Report Number : 82212

QC Report : Laboratory Control Sample (LCS)

Date : 08/15/2012

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	8/9/12	102	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. 82212

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Scott Stromberg	California EDF Report? ☒ Yes ☐ No
Company / Address: 1332 Peralta ave. Berkeley CA 94702	Sampling Company Log Code: EFSP
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 510-525-2397	EDF Deliverable To (Email Address): mnelson@originenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Print Name: Chris Arroyo
	Sampler Signature:
Project Address: 1619 1st Street Livermore, CA	

Sample Designation	Date	Time	Container: 40 ml VOA	Sleeve	Poly	Glass	Tedlar	Preservative: HCl	HNO_3	None	Matrix: Water	Soil	Air	MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471) Ferrous Iron (SM 3500-Fe D)	Total Lead (EPA 200.7 / 6010) Nitrate as Nitrate (EPA 300.0)	M.E.T. Lead (STLC) Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbon Dioxide by RSK 175M	Hexavalent Chromium (EPA 7199)	Total Metals by EPA 6010 (As, Fe, Mn, Na)	For Lab Use Only
MW-12	8/8/12	0835	3					3			X				X	X		X	X									X	X						01
DW-9	8/8/12	0900	3					3			X				X	X		X	X									X	X						02
MW-1	8/8/12	1025	3					3			X				X	X		X	X									X	X						03
MW-6	8/8/12	0950	3					3			X				X	X		X	X									X	X						04
DW-5	8/8/12	1020	3					3			X				X	X		X	X									X	X						05
DW-8	8/8/12	1250	5		5			5	1	4	X				X	X		X	X									X	X	X	X	X	X	X	06
MW-2	8/8/12	1300	5		5			5	1	4	X				X	X		X	X									X	X	X	X	X	X	X	07
IP-8	8/8/12	1350	5		5			5	1	4	X				X	X		X	X									X	X	X	X	X	X	X	08
IP-1	8/8/12	1415	5		5			5	1	4	X				X	X		X	X									X	X	X	X	X	X	X	09

CIRCLE METHOD

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

Relinquished by:	Date: 8/8/12	Time: 1420	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date: 080812	Time: 1420	Received by Laboratory: Harold Brewer Kiff

Remarks:

Page 21 of 22

Distribution: White - Lab; Pink - Originator
Rev: 060409

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER: VKB Initials

SRG#: 82212 Date: 080812

Project ID: Tesoro - Livermore

Method of Receipt: ☒ Courier ☐ Over-the-counter ☐ Shipper

Shipping Only: ☐ FedEx * ☐ OnTrac * ☐ Greyhound ☐ Other *Service level if not Priority or Sunrise (M-F): _____

COC Inspection

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

Sample Inspection

Coolant Present: ☒ Yes ☐ No (includes water)

Temperature °C 4.2 Therm. ID# IR-4 Initial LTR Date/Time 080812 / 1657 ☐ N/A

Are there custody seals on sample containers?	☐ Intact	☐ Broken	☒ Not present	
Do containers match COC? ☒ 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	☒ No		
Are any sample containers broken, leaking or damaged?	☐ Yes	☒ No		
Are preservatives indicated? ☐ Yes, on sample containers	☒ Yes, on COC	☐ Not indicated	☐ N/A	
Are preservatives correct for analyses requested?	☒ Yes	☐ No	☐ N/A	
Are samples within holding time for analyses requested?	☒ Yes	☐ No		
Are the correct sample containers used for the analyses requested?	☒ Yes	☐ No		
Is there sufficient sample to perform testing?	☒ Yes	☐ No		
Does any sample contain product, have strong odor or are otherwise suspected to be hot?	☐ Yes	☒ No		

Receipt Details

Matrix WA	Container type VOA	# of containers received 35
Matrix WA	Container type poly	# of containers received 20
Matrix _____	Container type _____	# of containers received _____

Date and Time Sample Put into Temp Storage Date: 080812 Time: 1705

Quicklog

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

COMMENTS:

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

August 15, 2012

CLS Work Order #: CVH0395
COC #: 82212

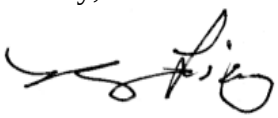
Scott Forbes
KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project Name: Tesoro-Livermore

Enclosed are the results of analyses for samples received by the laboratory on 08/09/12 13:35. 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 #: CVH0395
COC #: 82212

CVH0395

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. 82212 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.: 82212
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: 250ml Poly None	Matrix: Water	Analysis Request: Anions by EPA 300.0 SUB (1)	Analysis Request: Carbon Dioxide	TAT: Standard	For Lab Use Only
DW-8	08/08/12	12:50	1	X	X	X	X	
MW-2	08/08/12	13:00	1	X	X	X	X	
IP-8	08/08/12	13:50	1	X	X	X	X	
IP-1	08/08/12	14:15	1	X	X	X	X	

Relinquished by: Kiff Analytical LLC — Date: 8/9/12 — Time: 1334 — Received by:
Relinquished by: — Date: — Time: — Received by:
Relinquished by: — Date: — Time: — Received by Laboratory: Jon R 8-9-12 13:35

Remarks: Please refer to attached Test Detail.
2.7°C
Bill to: Accounts Payable

CALIFORNIA LABORATORY SERVICES

KIFF Analytical	Project: Tesoro-Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CVH0395**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 82212

CVH0395

Test Detail for Kiff Work Order: 82212

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

Page 1 of 1

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 #: CVH0395
COC #: 82212

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DW-8 (CVH0395-01) Water Sampled: 08/08/12 12:50 Received: 08/09/12 13:35									
Carbon Dioxide as CO2	**38**	5.0	mg/L	1	CV05458	08/13/12	08/13/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05423	08/10/12	08/10/12	EPA 300.0	
Sulfate as SO4	**14**	0.50	"	"	"	"	"	"	
MW-2 (CVH0395-02) Water Sampled: 08/08/12 13:00 Received: 08/09/12 13:35									
Carbon Dioxide as CO2	**70**	5.0	mg/L	1	CV05458	08/13/12	08/13/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05423	08/10/12	08/10/12	EPA 300.0	
Sulfate as SO4	**2.9**	0.50	"	"	"	"	"	"	
IP-8 (CVH0395-03) Water Sampled: 08/08/12 13:50 Received: 08/09/12 13:35									
Carbon Dioxide as CO2	**40**	5.0	mg/L	1	CV05458	08/13/12	08/13/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05423	08/10/12	08/10/12	EPA 300.0	
Sulfate as SO4	**15**	0.50	"	"	"	"	"	"	
IP-1 (CVH0395-04) Water Sampled: 08/08/12 14:15 Received: 08/09/12 13:35									
Carbon Dioxide as CO2	**38**	5.0	mg/L	1	CV05458	08/13/12	08/13/12	SM 4500C	
Nitrate as N	ND	0.50	"	"	CV05423	08/10/12	08/10/12	EPA 300.0	
Sulfate as SO4	ND	0.50	"	"	"	"	"	"	

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 #: CVH0395
COC #: 82212

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 CV05423 - General Prep										
Blank (CV05423-BLK1)				Prepared & Analyzed: 08/10/12						
Sulfate as SO4	ND	0.50	mg/L							
Nitrate as N	ND	0.50	"							
LCS (CV05423-BS1)				Prepared & Analyzed: 08/10/12						
Sulfate as SO4	5.11	0.50	mg/L	5.00		102	80-120			
Nitrate as N	0.466	0.50	"	0.451		103	80-120			
LCS Dup (CV05423-BSD1)				Prepared & Analyzed: 08/10/12						
Sulfate as SO4	5.11	0.50	mg/L	5.00		102	80-120	0.04	20	
Nitrate as N	0.463	0.50	"	0.451		103	80-120	0.7	20	
Matrix Spike (CV05423-MS1)		**Source: CVH0439-01**		Prepared & Analyzed: 08/10/12						
Sulfate as SO4	121	0.50	mg/L	5.00	597	NR	75-125			QM-4X
Nitrate as N	0.469	0.50	"	0.451	ND	104	80-120			
Matrix Spike Dup (CV05423-MSD1)		**Source: CVH0439-01**		Prepared & Analyzed: 08/10/12						
Sulfate as SO4	121	0.50	mg/L	5.00	597	NR	75-125	0.05	25	QM-4X
Nitrate as N	0.459	0.50	"	0.451	ND	102	80-120	2	20	
Batch CV05458 - General Preparation										
Blank (CV05458-BLK1)				Prepared & Analyzed: 08/13/12						
Carbon Dioxide as CO2	ND	5.0	mg/L							

KIFF Analytical	Project: Tesoro-Livermore	
2795 Second St. Suite 300	Project Number: 01LV	**CLS Work Order #: CVH0395**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 82212

Notes and Definitions

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
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 Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 12-08-0618

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 95618-6505

Amanda Porter

Approved for release on 08/15/2012 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc. (Calscience) 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 attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 12-08-0618

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 08/09/12
Work Order No: 12-08-0618
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
DW-8	**12-08-0618-1-A**	**08/08/12 12:50**	**Aqueous**	**GC 61**	**N/A**	**08/10/12 13:53**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	404	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-2	**12-08-0618-2-A**	**08/08/12 13:00**	**Aqueous**	**GC 61**	**N/A**	**08/10/12 15:41**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	2000	4.00	4		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-8	**12-08-0618-3-A**	**08/08/12 13:50**	**Aqueous**	**GC 61**	**N/A**	**08/10/12 15:11**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	447	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**12-08-0618-4-A**	**08/08/12 14:15**	**Aqueous**	**GC 61**	**N/A**	**08/10/12 16:34**	**120810L01**

Parameter	Result	RL	DF	Qual	Units
Methane	1570	4.00	4		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,674**	**N/A**	**Aqueous**	**GC 61**	**N/A**	**08/10/12 12:02**	**120810L01**

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 95618-6505

Date Received: 08/09/12
Work Order No: 12-08-0618

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-8	**12-08-0618-1**	**08/08/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	556	5.00	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	600	1.00	1		mg/L	08/13/12	08/13/12	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-2	**12-08-0618-2**	**08/08/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	504	5.00	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	525	1.00	1		mg/L	08/13/12	08/13/12	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-8	**12-08-0618-3**	**08/08/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	664	5.00	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	735	1.00	1		mg/L	08/13/12	08/13/12	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-1	**12-08-0618-4**	**08/08/12**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	444	5.00	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	435	1.00	1		mg/L	08/13/12	08/13/12	SM 2540 C

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
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	08/13/12	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	08/13/12	08/13/12	SM 2540 C

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

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: N/A
Work Order No: 12-08-0618

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	12-08-0887-1	08/13/12	375	376	0	0-25	
Bicarbonate (as CaCO3)	SM 2320B	12-08-0887-1	08/13/12	375	376	0	0-25	
Carbonate (as CaCO3)	SM 2320B	12-08-0887-1	08/13/12	ND	ND	NA	0-25	
Hydroxide (as CaCO3)	SM 2320B	12-08-0887-1	08/13/12	ND	ND	NA	0-25	
Solids, Total Dissolved	SM 2540 C	DW-8	08/13/12	600	610	2	0-10	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	12-08-0618
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,674	**Aqueous**	**GC 61**	**N/A**	**08/10/12**	**120810L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98.50	94.59	96	94.38	96	79-109	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 12-08-0618

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.
MPN - Most Probable Number

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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

12-08-0618

COC No. **82212** 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.: 82212

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: 1-L Poly None	250ml Poly None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
DW-8	08/08/12	12:50	1	1	2	X	X	X	X	X	1
MW-2	08/08/12	13:00	1	1	2	X	X	X	X	X	2
IP-8	08/08/12	13:50	1	1	2	X	X	X	X	X	3
IP-1	08/08/12	14:15	1	1	2	X	X	X	X	X	4

Relinquished by:	Date	Time	Received by:
Kiff Analytical	080812	1900	
Relinquished by:	Date	Time	Received by:
Relinquished by: (ONTRAC)	8/9/12	11:00	Received by Laboratory:

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

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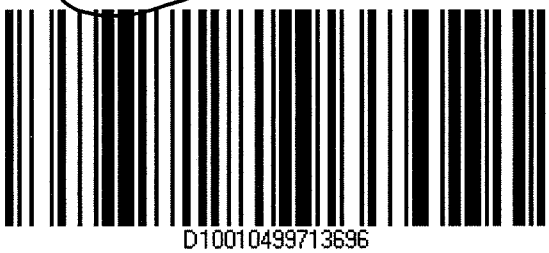
0618

OnTrac
On Time Delivery For Less

800.334.5000
ontrac.com



Date Printed 8/8/2012

Tracking#D10010499713696

Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 1
Reference: SUBS
Reference 2: CLASS 600

Ship To Company:	*Service:* **S**
CALSCIENCE ENVIRONMENTAL LABS **7440 LINCOLN WAY** **GARDEN GROVE, CA 92841** **SAMPLE RECEIVING (714)895-5494**	*Sort Code:* **ORG** *Special Services:* **Signature Required**

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 12-08-0 6 1 8

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFT DATE: 08/09/12

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.7 °C - 0.3 °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:** JN

CUSTODY SEALS INTACT:

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

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

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 ☑2VOA**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:** TS

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

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:** JL

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ATTACHMENT G

OXYGEN SYSTEM MONITORING RESULTS

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-1	10/15/10	0.03	NM[(c)]
	10/18/10	NM	NM
	10/22/10	9.96	NM
	10/25/10	41.75	82.2
	11/1/10	51.19	77.7
	12/9/10	24.66	51.3
	12/14/10	23.67	53.3
	12/23/10	28.27	58.1
	1/5/11	29.06	52.0
	1/18/11	0.0	0.0
	2/1/11	0.25	88.9
	3/4/11	15.02	90.4
	4/8/11	0.12	49.8
	5/3/11	0.01	88.0
	6/27/11	0.01	0.0
	6/28/11	0.24	91.3
	6/30/11	0.08	94.3
	7/5/11	0.13	94.5
	7/7/11	0.01	94.2
	7/13/11	0.01	95.3
	7/22/11	0.01	94.5
	8/9/11	0.01	94.5
	9/1/11	0.05	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.01	91.0
	3/20/12	0.02	93.0
	4/26/12	NM	94.7
	5/16/12	0.01	NM
	6/19/12	NM	NM
	7/17/12	0.01	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
IP-2	10/15/10	0.03	NM
	10/18/10	NM	NM

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-2	10/22/10	0.05	NM
(cont.)	10/25/10	0.29	82.2
	11/1/10	0.02	77.7
	12/9/10	0.46	51.3
	12/14/10	0.84	53.3
	12/23/10	0.41	58.1
	1/5/11	NM	52.0
	1/18/11	2.01	0.0
	2/1/11	2.09	88.9
	3/4/11	1.45	90.4
	4/8/11	3.38	49.8
	5/3/11	0.47	88.0
	6/27/11	0.01	0.0
	6/28/11	25.05	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	9.31	94.5
	8/9/11	17.38	94.5
	9/1/11	24.79	92.9
	11/29/11	1.14	0.0
	1/5/12	44.72	93.6
	2/2/12	36.25	91.0
	3/20/12	7.40	93.0
	4/26/12	11.27	94.7
	5/16/12	8.48	NM
	6/19/12	18.34	NM
	7/17/12	7.41	NM
	8/16/12	NM	NM
	9/21/12	2.31	NM
IP-3	10/15/10	0.06	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-3	11/1/10	0.12	77.7
(cont.)	12/9/10	0.15	51.3
	12/14/10	0.19	53.3
	12/23/10	0.33	58.1
	1/5/11	0.66	52.0
	1/18/11	0.08	0.0
	2/1/11	15.12	88.9
	3/4/11	14.61	90.4
	4/8/11	20.46	49.8
	5/3/11	5.59	88.0
	6/27/11	0.01	0.0
	6/28/11	0.96	91.3
	6/30/11	0.67	94.3
	7/5/11	0.55	94.5
	7/7/11	1.32	94.2
	7/13/11	0.26	95.3
	7/22/11	0.30	94.5
	8/9/11	0.49	94.5
	9/1/11	3.63	92.9
	11/29/11	2.11	0.0
	1/5/12	11.85	93.6
	2/2/12	8.91	91.0
	3/20/12	2.97	93.0
	4/26/12	1.17	94.7
	5/16/12	2.11	NM
	6/19/12	11.83	NM
	7/17/12	0.73	NM
	8/16/12	NM	NM
	9/21/12	1.48	NM
IP-4	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	0.04	NM
	10/25/10	0.14	82.2
	11/1/10	0.15	77.7
	12/9/10	0.09	51.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-4	12/14/10	0.01	53.3
(cont.)	12/23/10	0.03	58.1
	1/5/11	0.02	52.0
	1/18/11	1.04	0.0
	2/1/11	1.25	88.9
	3/4/11	0.18	90.4
	4/8/11	1.02	49.8
	5/3/11	13.77	88.0
	6/27/11	1.33	0.0
	6/28/11	7.11	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	9.74	94.5
	8/9/11	15.48	94.5
	9/1/11	16.45	92.9
	11/29/11	0.91	0.0
	1/5/12	15.56	93.6
	2/2/12	26.26	91.0
	3/20/12	0.58	93.0
	4/26/12	1.06	94.7
	5/16/12	0.38	NM
	6/19/12	2.22	NM
	7/17/12	1.11	NM
	8/16/12	NM	NM
	9/21/12	4.00	NM
IP-5	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.04	NM
	10/25/10	0.09	82.2
	11/1/10	0.02	77.7
	12/9/10	0.21	51.3
	12/14/10	0.01	53.3
	12/23/10	0.07	58.1

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-5	1/5/11	NM	52.0
(cont.)	1/18/11	0.72	0.0
	2/1/11	0.77	88.9
	3/4/11	50.28	90.4
	4/8/11	25.82	49.8
	5/3/11	19.23	88
	6/27/11	0.03	0.0
	6/28/11	38.65	91.3
	6/30/11	30.79	94.3
	7/5/11	41.81	94.5
	7/7/11	42.53	94.2
	7/13/11	38.87	95.3
	7/22/11	31.29	94.5
	8/9/11	32.78	94.5
	9/1/11	40.51	92.9
	11/29/11	13.76	0.0
	1/5/12	16.42	93.6
	2/2/12	16.21	91.0
	3/20/12	4.49	93.0
	4/26/12	12.87	94.7
	5/16/12	7.53	NM
	6/19/12	11.44	NM
	7/17/12	6.47	NM
	8/16/12	NM	NM
	9/21/12	25.52	NM
IP-6	10/15/10	0.25	NM
	10/18/10	NM	NM
	10/22/10	0.27	NM
	10/25/10	0.44	82.2
	11/1/10	11.22	77.7
	12/9/10	12.55	51.3
	12/14/10	12.79	53.3
	12/23/10	12.82	58.1
	1/5/11	14.3	52
	1/18/11	5.19	0.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-6	2/1/11	15.94	88.9
(cont.)	3/4/11	10.31	90.4
	4/8/11	13.22	49.8
	5/3/11	9.97	88.0
	6/27/11	4.88	0.0
	6/28/11	3.65	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	2.69	94.5
	8/9/11	2.40	94.5
	9/1/11	2.79	92.9
	11/29/11	1.17	0.0
	1/5/12	3.30	93.6
	2/2/12	2.72	91.0
	3/20/12	2.43	93.0
	4/26/12	2.29	94.7
	5/16/12	2.36	NM
	6/19/12	10.41	NM
	7/17/12	3.59	NM
	8/16/12	NM	NM
	9/21/12	NM	NM
IP-7	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	0.13	NM
	10/25/10	0.17	82.2
	11/1/10	0.34	77.7
	12/9/10	5.75	51.3
	12/14/10	4.72	53.3
	12/23/10	6.29	58.1
	1/5/11	5.75	52.0
	1/18/11	0.14	0.0
	2/1/11	32.69	88.9
	3/4/11	10.22	90.4

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-7	4/8/11	2.58	49.8
(cont.)	5/3/11	0.75	88.0
	6/27/11	0.26	0.0
	6/28/11	0.26	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	0.15	94.5
	8/9/11	0.10	94.5
	9/1/11	0.24	92.9
	11/29/11	0.74	0.0
	1/5/12	1.17	93.6
	2/2/12	0.17	91.0
	3/20/12	0.12	93.0
	4/26/12	0.94	94.7
	5/16/12	0.05	NM
	6/19/12	0.06	NM
	7/17/12	0.01	NM
	8/16/12	NM	NM
	9/21/12	NM	NM
IP-8	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.27	NM
	10/25/10	0.21	82.2
	11/1/10	NM	77.7
	12/9/10	NM	51.3
	12/14/10	NM	53.3
	12/23/10	NM	58.1
	1/5/11	NM	52.0
	1/18/11	NM	0.0
	2/1/11	NM	88.9
	3/4/11	NM	90.4
	4/8/11	24.74	49.8
	5/3/11	5.15	88.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-8	6/27/11	0.01	0.0
(cont.)	6/28/11	21.98	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	11.34	94.5
	8/9/11	12.88	94.5
	9/1/11	16.02	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	26.83	91.0
	3/20/12	1.94	93.0
	4/26/12	NM	94.7
	5/16/12	1.64	NM
	6/19/12	NM	NM
	7/17/12	5.14	NM
	8/16/12	0.06	NM
	9/21/12	NM	NM
IP-9	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	11.27	NM
	10/25/10	18.36	82.2
	11/1/10	18.96	77.7
	12/9/10	31.42	51.3
	12/14/10	33.16	53.3
	12/23/10	31.77	58.1
	1/5/11	35.3	52.0
	1/18/11	0.0	0.0
	2/1/11	0.65	88.9
	3/4/11	0.45	90.4
	4/8/11	0.42	49.8
	5/3/11	0.55	88.0
	6/27/11	0.01	0.0
	6/28/11	NM	91.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-9	6/30/11	27.14	94.3
(cont.)	7/5/11	23.48	94.5
	7/7/11	22.62	94.2
	7/13/11	21.37	95.3
	7/22/11	20.65	94.5
	8/9/11	16.24	94.5
	9/1/11	36.38	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	46.40	91.0
	3/20/12	33.17	93.0
	4/26/12	NM	94.7
	5/16/12	28.85	NM
	6/19/12	NM	NM
	7/17/12	1.33	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
IP-10	10/15/10	0.11	NM
	10/18/10	NM	NM
	10/22/10	0.07	NM
	10/25/10	5.33	82.2
	11/1/10	8.48	77.7
	12/9/10	0.25	51.3
	12/14/10	0.30	53.3
	12/23/10	0.04	58.1
	1/5/11	0.01	52.0
	1/18/11	0.0	0.0
	2/1/11	0.18	88.9
	3/4/11	0.04	90.4
	4/8/11	26.54	49.8
	5/3/11	4.45	88.0
	6/27/11	0.04	0.0
	6/28/11	10.08	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-10	7/7/11	NM	94.2
(cont.)	7/13/11	NM	95.3
	7/22/11	29.15	94.5
	8/9/11	11.44	94.5
	9/1/11	37.28	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.14	91.0
	3/20/12	0.01	93.0
	4/26/12	NM	94.7
	5/16/12	0.09	NM
	6/19/12	NM	NM
	7/17/12	0.04	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
MW-1	10/15/10	0.11	NM
	10/18/10	NM	NM
	10/22/10	0.31	NM
	10/25/10	0.35	82.2
	11/1/10	1.79	77.7
	12/9/10	0.21	51.3
	12/14/10	0.01	53.3
	12/23/10	0.01	58.1
	1/5/11	0.0	52.0
	1/18/11	0.0	0.0
	2/1/11	0.66	88.9
	3/4/11	NM	90.4
	4/8/11	10.53	49.8
	5/3/11	10.43	88.0
	6/27/11	0.71	0.0
	6/28/11	NM	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	11.42	95.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-1	7/22/11	16.04	94.5
(cont.)	8/9/11	27.72	94.5
	9/1/11	32.16	92.9
	11/29/11	NM	0.0
	1/5/12	0.97	93.6
	2/2/12	1.73	91.0
	3/20/12	0.32	93.0
	4/26/12	NM	94.7
	5/16/12	0.01	NM
	6/19/12	NM	NM
	7/17/12	0.01	NM
	8/16/12	0.66	NM
	9/21/12	NM	NM
MW-2	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.15	NM
	10/25/10	0.04	82.2
	11/1/10	0.08	77.7
	12/9/10	0.03	51.3
	12/14/10	0.21	53.3
	12/23/10	0.01	58.1
	1/5/11	0.06	52.0
	1/18/11	0.0	0.0
	2/1/11	0.15	88.9
	3/4/11	0.44	90.4
	4/8/11	0.06	49.8
	5/3/11	0.01	88.0
	6/27/11	0.02	0.0
	6/28/11	NM	91.3
	6/30/11	0.04	94.3
	7/5/11	0.01	94.5
	7/7/11	0.07	94.2
	7/13/11	0.04	95.3
	7/22/11	0.11	94.5
	8/9/11	1.14	94.5

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-2	9/1/11	0.24	92.9
(cont.)	11/29/11	0.71	0.0
	1/5/12	1.92	93.6
	2/2/12	0.17	91.0
	3/20/12	0.02	93.0
	4/26/12	0.93	94.7
	5/16/12	0.24	NM
	6/19/12	0.41	NM
	7/17/12	0.01	NM
	8/16/12	0.07	NM
	9/21/12	0.06	NM
MW-11	10/15/10	0.04	NM
	10/18/10	NM	NM
	10/22/10	29.48	NM
	10/25/10	29.78	82.2
	11/1/10	32.42	77.7
	12/9/10	5.07	51.3
	12/14/10	13.39	53.3
	12/23/10	11.87	58.1
	1/5/11	11.42	52.0
	1/18/11	0.0	0.0
	2/1/11	1.18	88.9
	3/4/11	0.23	90.4
	4/8/11	16.87	49.8
	5/3/11	12.14	88.0
	6/27/11	0.01	0.0
	6/28/11	36.72	91.3
	6/30/11	32.83	94.3
	7/5/11	33.76	94.5
	7/7/11	33.91	94.2
	7/13/11	35.42	95.3
	7/22/11	33.97	94.5
	8/9/11	34.22	94.5
	9/1/11	27.88	92.9
	11/29/11	NM	0.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-11	1/5/12	NM	93.6
(cont.)	2/2/12	0.04	91.0
	3/20/12	0.01	93.0
	4/26/12	NM	94.7
	5/16/12	6.89	NM
	6/19/12	NM	NM
	7/17/12	0.37	NM
	8/16/12	0.04	NM
	9/21/12	NM	NM
DW-1	10/15/10	0.03	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2
	11/1/10	0.03	77.7
	12/9/10	10.38	51.3
	12/14/10	9.93	53.3
	12/23/10	7.14	58.1
	1/5/11	15.77	52.0
	1/18/11	11.58	0.0
	2/1/11	24.42	88.9
	3/4/11	28.71	90.4
	4/8/11	19.81	49.8
	5/3/11	0.01	88.0
	6/27/11	0.02	0.0
	6/28/11	0.24	91.3
	6/30/11	0.05	94.3
	7/5/11	0.08	94.5
	7/7/11	0.16	94.2
	7/13/11	0.04	95.3
	7/22/11	0.08	94.5
	8/9/11	0.46	94.5
	9/1/11	0.09	92.9
	11/29/11	0.94	0.0
	1/5/12	3.25	93.6
	2/2/12	15.07	91.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
DW-1	3/20/12	0.17	93.0
(cont.)	4/26/12	1.30	94.7
	5/16/12	0.42	NM
	6/19/12	0.92	NM
	7/17/12	0.09	NM
	8/16/12	0.08	NM
	9/21/12	2.61	NM
TP-1	10/15/10	0.12	NM
	10/18/10	NM	NM
	10/22/10	2.11	NM
	10/25/10	16.11	82.2
	11/1/10	5.15	77.7
	12/9/10	0.01	51.3
	12/14/10	0.33	53.3
	12/23/10	0.16	58.1
	1/5/11	0.0	52.0
	1/18/11	0.0	0.0
	2/1/11	27.22	88.9
	3/4/11	12.11	90.4
	4/8/11	15.61	49.8
	5/3/11	1.25	88.0
	6/27/11	0.01	0.0
	6/28/11	7.49	91.3
	6/30/11	0.02	94.3
	7/5/11	0.19	94.5
	7/7/11	8.43	94.2
	7/13/11	0.02	95.3
	7/22/11	11.89	94.5
	8/9/11	18.19	94.5
	9/1/11	10.35	92.9
	11/29/11	0.67	0.0
	1/5/12	12.64	93.6
	2/2/12	2.75	91.0
	3/20/12	0.03	93.0
	4/26/12	16.6	94.7

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
TP-1	5/16/12	16.03	NM
(cont.)	6/19/12	7.31	NM
	7/17/12	7.01	NM
	8/16/12	1.25	NM
	9/21/12	0.01	NM
TP-2	10/15/10	0.05	NM
	10/18/10	NM	NM
	10/22/10	25.44	NM
	10/25/10	24.90	82.2
	11/1/10	25.83	77.7
	12/9/10	6.03	51.3
	12/14/10	5.12	53.3
	12/23/10	0.63	58.1
	1/5/11	0.43	52.0
	1/18/11	0.0	0.0
	2/1/11	33.44	88.9
	3/4/11	34.15	90.4
	4/8/11	19.31	49.8
	5/3/11	11.95	88
	6/27/11	0.01	0.0
	6/28/11	24.27	91.3
	6/30/11	23.57	94.3
	7/5/11	31.33	94.5
	7/7/11	33.74	94.2
	7/13/11	33.16	95.3
	7/22/11	33.72	94.5
	8/9/11	35.64	94.5
	9/1/11	26.08	92.9
	11/29/11	0.69	0.0
	1/5/12	14.77	93.6
	2/2/12	21.95	91.0
	3/20/12	16.32	93.0
	4/26/12	8.75	94.7
	5/16/12	19.78	NM
	6/19/12	19.87	NM

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
TP-2 (cont.)	7/17/12	15.29	NM
	8/16/12	3.22	NM
	9/21/12	8.70	NM
VW-2	1/5/12	13.24	93.6
	2/2/12	5.56	91.0
	3/20/12	6.11	93.0
	4/26/12	10.57	94.7
	5/16/12	10.52	NM
	6/19/12	5.87	NM
	7/17/12	5.13	NM
	8/16/12	4.93	NM
	9/21/12	8.11	NM

(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.

ATTACHMENT H

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.: 1998 | 2. Page 1 of 1

3. Generator's Name and Mailing Address
Tesoro Environmental Resource Co.
3450 34TH Way Auburn, CA 95601
4. Generator's Phone ( )

Tesoro # 670716
1619 First St.
Livermore, CA

5. Transporter 1 Company Name: EXCEL Environmental Services
6. US EPA ID Number: CAL 000229350
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
Riverbank Oil Transfer (ROT)
5300 Claus Rd.
Riverbank, CA 95367
10. US EPA ID Number: CAL000190816
E. State Facility's ID
F. Facility's Phone: 209 863-8181

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste Water	001	TT	460	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 / Day / Year): 8 / 8 / 12

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Tim Liggett
Signature
Date (Month / Day / Year): 8 / 8 / 12

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

Rev. 3/95