



**TESORO**

Tesoro Companies, Inc.  
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August 18, 2014

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

**Subject: Third Quarter 2013 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 *Third Quarter 2013 Status Report* for the subject site, dated 15 January 2014. 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 Companies Inc.

Attachments

CC: Arctos – Scott Stromberg



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15 January 2014  
Project No. 01LV

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

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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 2013 at the subject site (Figure 1).

### **Executive Summary**

A quarterly groundwater monitoring event was conducted from 21 to 22 August 2013. On average, there was approximately a 2-foot decrease in water levels since the second quarter 2013. The highest onsite petroleum hydrocarbon concentrations were along the western side of the property at wells IP-1, MW-2, and TP-1. The highest offsite petroleum hydrocarbon concentrations were at wells DW-5, MW-6, and DW-2 located northwest of the site. The soil vapor extraction (SVE) system and oxygen injection system remained shut off during the third quarter 2013.

The expanded onsite and offsite ISCO pilot test was conducted during the second quarter 2013. A description of the expanded ISCO pilot test including the results of the pilot test will be submitted in a separate report.

During the fourth quarter 2013, Tesoro will continue to monitor groundwater wells in the vicinity of the ISCO pilot test to evaluate the effectiveness of the ISCO pilot test on and off site.

## 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, Confluence Environmental, of Sacramento, California, performed a quarterly groundwater monitoring event from 21 to 22 August 2013. Samples were collected from wells MW-1 through MW-12, DW-1 through DW-9, IP-1, IP-8 through IP-10, TP-1, TP-2, VW-2, and VW-3 (Figure 2) in accordance with the site monitoring plan (Attachment A) and the ISCO pilot test work plan. 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 samples collected from wells MW-1, MW-3, DW-1, TP-1, and TP-2 were analyzed in accordance with the analytical plan in Attachment A. Groundwater samples collected from the remaining wells were tested for additional analytes in accordance with the ISCO pilot test work plan (Arctos, 2011).

## Groundwater Results

Groundwater elevations were approximately 430 to 439 feet above mean sea level (MSL; 34 to 40 feet below ground surface [bgs]). Water levels decreased an average of 1.7 feet compared to the second quarter 2013 and were an average of 4.1 feet higher than water levels in the third quarter 2012 (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.021 (1 foot/47 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment C).

During the third quarter 2013, the highest onsite petroleum concentrations were located in the northwest corner of the site. The highest onsite concentration of total petroleum hydrocarbons as gasoline (TPHg) of 23,000 micrograms per liter ( $\mu\text{g/l}$ ) was detected at IP-1. Benzene was detected onsite at a maximum concentration of 560 mg/l at MW-2. Methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA) were detected onsite at maximum concentrations of 100 and 48  $\mu\text{g/l}$  at TP-1 and MW-2, respectively.

Historically, a direct relationship between dissolved-phase hydrocarbons and water levels has been observed at shallow source area wells and an indirect relationship has historically been observed at deep source area wells. Compared to when water levels were at the same elevation, dissolved-phase hydrocarbon concentrations in both shallow and deep source area wells have decreased by 17 to 99 percent.

Well ID	Date	Groundwater Elevation (ft. MSL)	Petroleum Hydrocarbon Concentration <sup>(a)</sup> (µg/l)			Percent Reduction <sup>(b)</sup>
			TPHg	Benzene	MTBE	
MW-2	12/1/97	437.04	13,000	900	ND<250 <sup>(c)</sup>	17%
	8/21/13	436.93	11,000	560	88	
MW-11	1/31/12	438.60	13,000	380	ND<2.5	28%
	8/22/13	438.22	9,600	26	ND<0.9	
TP-1	2/14/08	436.65	18,000	1,100	7,000	86%
	5/8/08	436.65	12,000	890	2,500	76%
	8/22/13	436.78	3,500	28	100	
TP-2	2/14/08	437.31	12,000	920	17,000	99%
	8/21/13	437.35	ND<50	ND<0.5	0.89	
VW-2	8/21/13	DRY	--	--	--	--
DW-1	2/11/10	437.28	2,000	200	49	50%
	8/21/13	436.95	1,100	18	5.9	

- (a) Dissolved-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in micrograms per liter (µg/l).
- (b) Half the detection limit was used for non-detect concentrations in calculating percent reduction.
- (c) ND – Not detected at the reporting limit listed.

The highest offsite petroleum concentrations are located northwest of the intersection of 1st Street and P Street, immediately downgradient of the onsite source area. The highest offsite TPHg concentration of 22,000 µg/l was detected at DW-5. Benzene was detected at a concentration of 1,500 µg/l at MW-6. MTBE and TBA concentrations of 240 and 500 µg/l, respectively, were detected at DW-2.

Wells MW-12 and DW-9 are the farthest downgradient shallow and deep well cluster. TPHg, benzene, MTBE, and TBA were detected in deep well DW-9 at concentrations of 19,000, 320, 28, and 87 µg/l, respectively. TPHg and benzene were detected in shallow well MW-12 at concentrations of 4,500 and 15 µg/l, respectively. MTBE and TBA were not detected in well MW-12. All offsite benzene concentrations were 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 D, and the laboratory reports and the chain-of-custody forms are in Attachment E.

### **Expanded ISCO Pilot Test**

Arctos conducted an ISCO pilot test at well IP-9 in the fourth quarter 2011. Monitoring results for the first quarter 2013 showed that TPHg and benzene concentrations decreased by over 68 percent at injection well IP-9. ISCO pilot test groundwater monitoring results are summarized in Table 4.

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. On 25 March 2013, Arctos obtained approval from ACEH for an expanded ISCO pilot test to occur on and off site. The objective of the expanded pilot test was to further assess the effectiveness of the RegenOx™ chemical oxidant at remediating hydrocarbons in soil and groundwater.

Arctos installed seven offsite injection wells in April 2013. Arctos's subcontractor, Confluence Environmental of Sacramento, California, conducted the expanded ISCO pilot test from May to August 2013. Results of the expanded ISCO pilot test will be included in a separate report.

### **Source Area Remediation**

#### SVE System

On 17 November 2012, the SVE system shut down because of a system alarm. Water levels on site had increased and insufficient screen was exposed for the SVE wells to operate. The system remained shut down during third quarter 2013.

A soil gas survey was conducted in June 2010 to establish baseline soil vapor conditions before starting the SVE system. On 28 February 2013, water levels decreased to elevations similar to June 2010 and Arctos conducted a soil gas survey to evaluate the effectiveness of the SVE system after approximately 2.5 years of operation. Concentrations of petroleum hydrocarbons in soil vapor decreased by over 90 percent at all SVE and soil vapor monitoring wells between June 2010 and February 2013. The results of the soil gas survey are summarized below and in Table 5. Soil vapor sampling procedures are in Attachment F and laboratory reports and the chain-of-custody forms are in Attachment E.

Well ID	Screen Interval (feet bgs)	Date	Petroleum Hydrocarbon Concentration <sup>(a)</sup> (mg/m <sup>3</sup> )			Percent Reduction
			TPHg	Benzene	MTBE	
MW-1	34 - 54	6/24/10	NS <sup>(b)</sup>	NS	NS	NA <sup>(c)</sup>
		2/28/13	NS	NS	NS	
MW-11	28 - 43	6/24/10	2,300	13	ND<0.10 <sup>(d)</sup>	99
		2/28/13	26	ND<0.20	ND<0.20	
TP-1	28 - 43	6/24/10	350	0.15	ND<0.10	91 <sup>(e)</sup>
		2/28/13	32	ND<0.20	ND<0.20	
TP-2	28 - 43	6/24/10	3,600	24	18	99
		2/28/13	26	ND<0.20	ND<0.20	
VW-2	22 - 37	6/24/10	3,100	0.91	ND<0.10	99 <sup>(e)</sup>
		2/28/13	ND<20	ND<0.20	ND<0.20	
VW-3	21 - 36	6/24/10	120	0.33	ND<0.10	92 <sup>(e)</sup>
		2/28/13	ND<20	ND<0.20	ND<0.20	

- (a) Vapor-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in milligrams per cubic meter (mg/m<sup>3</sup>).
- (b) NS – Not sampled. A sample was not collected because of submerged screen.
- (c) NA – Not applicable.
- (d) ND – Not detected at the reporting limit listed.
- (e) Percent reduction calculated using TPHg concentrations.

During SVE operation from June 2010 through November 2012, 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 6 and 7, respectively. The total hydrocarbon mass removed by the SVE system to date is estimated to be 38,250 pounds or approximately 5,890 gallons (at a density of 6.5 pounds per gallon).

Figures 6, 7, and 8 show soil vapor influent concentrations, mass removal by volatilization, and mass removal by biodegradation, respectively, during SVE operation.

#### Oxygen Injection System

The oxygen injection system was shut down on 28 March in preparation for the expanded ISCO pilot test and has remained shut off during the third quarter 2013. 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.

The oxygen purity was approximately 88 percent and the average flow rate was 35 standard cubic feet per hour. DO readings are summarized in Attachment G.

Source Area Reduction

Concentrations in groundwater have decreased by up to 99 percent in source area wells and the plume has decreased in area compared to before the SVE and oxygen injection systems were started in June and October 2010. The reductions in hydrocarbon concentrations for shallow and deep source area wells are summarized in the following table:

Well ID	Date	Groundwater Elevation (ft. MSL)	Petroleum Hydrocarbon Concentration <sup>(a)</sup> (µg/l)			Percent Reduction <sup>(b)</sup>
			TPHg	Benzene	MTBE	
MW-2	5/3/10	440.54	26,000	3,100	530	61%
	8/21/13	436.93	11,000	560	88	
MW-11	5/3/10	441.90	62,000	3,600	ND<15 <sup>(c)</sup>	85%
	8/22/13	438.22	9,600	26	ND<0.9	
TP-1	5/3/10	440.50	15,000	2,100	3,400	82%
	8/22/13	436.78	3,500	28	100	
TP-2	5/3/10	441.08	6,400	740	14,000	99%
	8/21/13	437.35	ND<50	ND<0.5	0.89	
VW-2	8/21/13	DRY	--	--	--	--
DW-1	5/4/10	441.15	1,800	160	21	43%
	8/21/13	436.95	1,100	18	5.9	

- (a) Dissolved-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in micrograms per liter (µg/l).
- (b) Half the detection limit was used for non-detect concentrations in calculating percent reduction.
- (c) ND – Not detected at the reporting limit listed.

Figures 9A through 9C show onsite concentration contour maps for TPHg, benzene, and MTBE in May 2010, prior to startup of the SVE and oxygen injection systems, and in the third quarter 2013. As of 28 March, both the SVE and oxygen injection systems are shut down. Based on the expanded treatment area of the ISCO pilot test and the reduced concentrations in the source area, the source area treatment systems are no longer required for soil and groundwater remediation.

## Conclusions

The SVE and oxygen injection systems remained off during the third quarter 2013. Results of groundwater sampling indicate the following conclusions:

1. Onsite hydrocarbon concentrations in groundwater have decreased following SVE and oxygen injection.
2. Based on the expanded treatment area of the ISCO pilot test and the reduced concentrations in the source area, the source area treatment systems are no longer required for soil and groundwater remediation.
3. 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 2013 and beyond:

- Submit a report documenting the results and evaluating the effectiveness of the expanded ISCO pilot test.
- Continue groundwater monitoring activities. Evaluate updating the groundwater monitoring frequency from quarterly to semiannually.

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

Very truly yours,

## ARCTOS ENVIRONMENTAL



Emily Chow  
Staff Scientist



Michael P. Purchase, P.E.  
Principal Engineer



Copy: Jeffrey M. Baker, P.E. – Tesoro Refining & Marketing Company LLC  
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 – Soil Vapor Analytical Results  
Table 6 – SVE Influent Analytical Results  
Table 7 – 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  
Figure 9A – Onsite TPHg Concentration Contours  
Figure 9B – Onsite Benzene Concentration Contours  
Figure 9C – Onsite MTBE Concentration Contours  
Figure 10 – Expanded ISCO Pilot Test Injection Wells  
Attachment A – Groundwater Sampling QA/QC Procedures  
Attachment B – Field Data Sheets  
Attachment C – Historical Well and Groundwater Elevations  
Attachment D – Historical Groundwater Analytical Results  
Attachment E – Laboratory Analytical Reports and Chain-of-Custody Forms  
Attachment F – Soil Vapor Sampling QA/QC Procedures  
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**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-1	8/6/12	37.40	474.21 <sup>(c)</sup>	436.81
	11/12/12	37.10		437.11
	2/12/13	30.98		443.23
	4/22/13	33.11		441.10
	8/21/13	35.40		438.81
MW-2	8/6/12	40.95	472.98	432.03
	11/12/12	39.03		433.95
	2/12/13	32.13		440.85
	4/22/13	34.15		438.83
	8/21/13	36.05		436.93
MW-3	8/6/12	40.52	473.37	432.85
	11/12/12	39.24		434.13
	2/12/13	31.34		442.03
	4/22/13	33.51		439.86
	8/21/13	35.71		437.66
MW-4	8/6/12	40.69	473.64	432.95
	11/12/12	39.65		433.99
	2/12/13	31.56		442.08
	4/22/13	33.80		439.84
	8/21/13	36.10		437.54
MW-5	8/6/12	NM <sup>(d)</sup>	472.67	--
	11/12/12	40.72		431.95
	2/12/13	32.68		439.99
	4/22/13	35.09		437.58
	8/21/13	37.00		435.67
MW-6	8/6/12	43.66	471.93	428.27
	11/12/12	42.20		429.73
	2/12/13	34.24		437.69
	4/22/13	36.78		435.15
	6/25/13	37.15		434.78
	8/21/13	37.98		433.95
MW-7	8/6/12	39.85	472.33	432.48
	11/12/12	38.73		433.60

**TABLE 1**

**WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-7 (cont.)	2/12/13	31.46	472.33	440.87
	4/22/13	33.19		439.14
	8/21/13	36.90		435.43
MW-8	8/6/12	41.94	471.18	429.24
	11/12/12	40.87		430.31
	2/12/13	32.81		438.37
	4/22/13	35.00		436.18
	6/25/13	36.40		434.78
	8/21/13	37.20		433.98
MW-9	8/6/12	43.51	470.78	427.27
	11/12/12	42.66		428.12
	2/12/13	34.70		436.08
	4/22/13	37.01		433.77
	6/25/13	37.82		432.96
	8/21/13	39.02		431.76
MW-10	8/6/12	40.65	471.63	430.98
	11/12/12	40.53		431.10
	2/12/13	33.19		438.44
	4/22/13	34.99		436.64
	6/25/13	36.25		435.38
	8/21/13	37.11		434.52
MW-11	8/6/12	35.20	472.96 <sup>(c)</sup>	437.76
	11/12/12	35.34		437.62
	2/12/13	30.64		442.32
	4/22/13	32.74		440.22
	8/21/13	34.74		438.22
MW-12	8/6/12	43.22	469.77	426.55
	11/12/12	41.85		427.92
	2/12/13	34.10		435.67
	4/22/13	36.18		433.59
	6/25/13	37.80		431.97
	8/21/13	38.80		430.97

**TABLE 1**

**WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
VW-2	8/6/12	32.64	472.57 <sup>(c)</sup>	439.93
	11/12/12	33.90		438.67
	2/12/13	31.60		440.97
	4/22/13	33.51		439.06
	8/21/13	DRY <sup>(e)</sup>		--
VW-3	8/6/12	DRY	474.38	--
	11/12/12	DRY		--
	2/12/13	31.70		442.68
	4/22/13	33.49		440.89
	8/21/13	35.46		438.92
TP-1	8/6/12	36.59	472.64 <sup>(c)</sup>	436.05
	11/12/12	37.00		435.64
	2/12/13	31.96		440.68
	4/22/13	33.71		438.93
	8/21/13	35.86		436.78
TP-2	8/6/12	36.00	472.78 <sup>(c)</sup>	436.78
	11/12/12	36.25		436.53
	2/12/13	31.81		440.97
	4/22/13	33.70		439.08
	8/21/13	35.43		437.35
DW-1	8/6/12	40.60	472.85	432.25
	11/12/12	39.29		433.56
	2/12/13	31.63		441.22
	4/22/13	33.72		439.13
	8/21/13	35.90		436.95
DW-2	8/6/12	43.90	471.61	427.71
	11/12/12	42.25		429.36
	2/12/13	34.35		437.26
	4/22/13	36.70		434.91
	6/25/13	36.94		434.67
	8/21/13	37.85		433.76
DW-3	8/6/12	43.26	470.33	427.07
	11/12/12	41.48		428.85

**TABLE 1**

**WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-3 (cont.)	2/12/13	33.87	470.33	436.46
	4/22/13	36.10		434.23
	6/25/13	37.39		432.94
	8/21/13	38.38		431.95
DW-4	8/6/12	42.80	468.48	425.68
	11/12/12	40.86		427.62
	2/12/13	33.29		435.19
	4/22/13	35.90		432.58
	8/21/13	38.30		430.18
DW-5	8/6/12	46.32	471.86	425.54
	11/12/12	41.65		430.21
	2/12/13	34.10		437.76
	4/22/13	36.52		435.34
	6/25/13	37.42		434.44
	8/21/13	38.35		433.51
DW-6	8/6/12	44.50	471.77	427.27
	11/12/12	42.95		428.82
	2/12/13	34.96		436.81
	4/22/13	37.29		434.48
	6/25/13	38.55		433.22
	8/21/13	39.55		432.22
DW-7	8/6/12	44.02	470.07	426.05
	11/12/12	42.43		427.64
	2/12/13	34.54		435.53
	4/22/13	36.80		433.27
	6/25/13	38.44		431.63
	8/21/13	39.91		430.16
DW-8	8/6/12	39.61	472.31	432.70
	11/12/12	38.00		434.31
	2/12/13	30.46		441.85
	4/22/13	32.66		439.65
	8/21/13	34.43		437.88

**TABLE 1**

**WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-9	8/6/12	43.65	469.80	426.15
	11/12/12	42.05		427.75
	2/12/13	34.25		435.55
	4/22/13	36.39		433.41
	6/25/13	38.46		431.34
	8/21/13	39.32		430.48

- (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 <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
MW-1	8/8/12	ND<50 <sup>(b)</sup>	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	110	ND<0.5	ND<0.5	1.1	3.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/22/13	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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	8/8/12	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
	11/14/12	5,700	480	30	96	300	200	ND<0.9	ND<0.9	1.8	110	ND<200	ND<9	ND<0.9	ND<0.9
	2/13/13	270	29	4.4	8.9	19	7.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	430	10	2.2	3.8	8.5	13	ND<0.5	ND<0.5	ND<0.5	6.6	ND<50	ND<8	ND<0.5	ND<0.5
	6/24/13	1,700	7.2	0.91	12	16	9.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	11,000	560	30	430	440	88	ND<0.5	ND<0.5	1.0	48	ND<50	ND<8	ND<0.5	ND<0.5
MW-3	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
	11/12/12	170	ND<0.5	0.83	4.1	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
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	5/7/12	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 <sup>(c)</sup>	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	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
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-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
	8/6/12	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 <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
MW-5 (cont.)	11/12/12	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
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	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
	11/14/12	17,000	1,600	68	120	96	190	ND<2.5	ND<2.5	ND<2.5	86	ND<500	ND<25	ND<2.5	ND<2.5
	2/14/13	12,000	1,400	42	230	56	200	ND<2.5	ND<2.5	2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	4/24/13	8,600	880	22	89	25	190	ND<1.5	ND<1.5	2.7	700	ND<400	ND<15	ND<1.5	ND<1.5
	6/25/13	6,800	350	7.0	26	9.3	81	ND<0.9	ND<0.9	1.0	280	ND<800	ND<9	ND<0.9	ND<0.9
	8/22/13	14,000	1,500	59	290	150	110	ND<1.5	ND<1.5	ND<1.5	93	ND<400	ND<15	ND<1.5	ND<1.5
MW-7	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
	11/13/12	690	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	860	1.0	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	720	0.65	0.61	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/24/13	1,700	1.3	ND<0.5	2.7	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	880	0.54	ND<0.5	1.7	0.82	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	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	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
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-9	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/12	740	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.2	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 <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
MW-9 (cont.)	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	1,900	4.5	0.75	1.7	1.0	3.4	ND<0.5	ND<0.5	ND<0.5	5.0	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	2,800	20	0.91	3.8	2.7	6.0	ND<0.5	ND<0.5	ND<0.5	29	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	1,500	20	0.70	1.7	0.84	9.0	ND<0.5	ND<0.5	ND<0.5	40	ND<50	ND<5	ND<0.5	ND<0.5
MW-10	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	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
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-11	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
	11/13/12	1,100	5.7	4.1	15	86	1.6	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	2/13/13	6,400	28	72	160	860	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	4/24/13	5,800	16	18	140	640	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	6/24/13	8,000	24	34	190	830	ND<0.9	ND<0.9	ND<0.9	ND<0.9	5.8	ND<90	ND<9	ND<0.9	ND<0.9
	8/22/13	9,600	26	32	260	940	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.6	ND<200	ND<20	ND<0.9	ND<0.9
MW-12	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
	11/14/12	5,500	6.8	2.0	67	13	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	2/13/13	2,500	7.6	1.3	26	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
	4/24/13	1,400	2.2	0.78	7.7	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<20	ND<0.5	ND<0.5
	6/25/13	4,400	8.8	5.2	26	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	4,500	15	2.4	33	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
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
	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 <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)	
VW-2 (cont.)	11/12/12	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	
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	4/24/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	5/7/12	NS	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	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	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	
	11/13/12	180	2.3	0.63	4.7	2.3	17	ND<0.5	ND<0.5	ND<0.5	9.6	ND<50	ND<5	ND<0.5	ND<0.5	
	2/12/13	160	ND<0.5	ND<0.5	3.6	6.0	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	4/24/13	2,000	35	21	22	180	76	ND<0.5	ND<0.5	0.70	33	ND<50	ND<5	ND<0.5	ND<0.5	
	8/22/13	3,500	28	3.8	35	11	100	ND<0.5	ND<0.5	0.98	42	ND<50	ND<5	ND<0.5	ND<0.5	
TP-2	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	
	11/12/12	59	ND<0.5	ND<0.5	0.59	0.54	2.8	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5	
	2/12/13	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	
	4/24/13	100	1.2	0.88	1.6	7.4	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.89	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
DW-1	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	
	11/12/12	250	ND<0.5	ND<0.5	2.7	5.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/12/13	ND<50	ND<0.5	ND<0.5	0.54	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	0.78	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
DW-1 (cont.)	6/24/13	12,000	110	66	280	860	13	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	1,100	18	5.8	34	82	5.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	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
	11/14/12	4,000	190	7.8	13	13	120	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	2/13/13	6,400	500	18	60	19	140	ND<0.5	ND<0.5	1.6	510	ND<400	ND<8	ND<0.5	ND<0.5
	4/24/13	4,500	320	7.2	26	9.5	100	ND<0.5	ND<0.5	1.3	370	ND<80	ND<5	ND<0.5	ND<0.5
	6/25/13	4,900	250	6.2	58	26	100	ND<0.5	ND<0.5	1.2	400	ND<50	ND<8	ND<0.5	ND<0.5
	8/22/13	8,300	600	23	96	42	240	ND<0.5	ND<0.5	2.5	500	ND<50	ND<5	ND<0.5	ND<0.5
DW-3	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
	11/13/12	410	ND<0.5	ND<0.5	1.7	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	120	ND<0.5	ND<0.5	1.2	0.50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	66	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	5,600	1.1	1.1	120	76	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	840	1.4	ND<0.5	3.2	1.7	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-4	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
	11/12/12	ND<50	ND<0.5	ND<0.5	0.70	1.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-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
	11/14/12	8,800	24	2.5	110	140	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	4,400	65	5.4	110	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	4/24/13	3,000	32	2.5	38	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
DW-5 (cont.)	6/25/13	120,000	120	ND<4.0	1,400	2,200	ND<4.0	ND<4.0	ND<4.0	ND<4.0	ND<20	ND<400	ND<200	ND<4.0	ND<4.0
	8/22/13	22,000	58	11	770	1,200	ND<4.0	ND<4.0	ND<4.0	ND<4.0	ND<20	ND<400	ND<40	ND<4.0	ND<4.0
DW-6	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
	11/14/12	3,000	5.4	1.8	11	4.7	2.1	ND<0.5	ND<0.5	ND<0.5	6.8	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	4,600	25	4.0	53	8.7	10	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<9	ND<0.5	ND<0.5
	4/24/13	1,000	2.9	1.1	2.1	0.98	1.8	ND<0.5	ND<0.5	ND<0.5	6.2	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	7,000	23	3.0	80	13	9.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	5,700	28	3.4	80	11	12	ND<0.5	ND<0.5	ND<0.5	37	ND<90	ND<8	ND<0.5	ND<0.5
DW-7	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
	11/13/12	6,500	340	11	45	22	51	ND<0.5	ND<0.5	0.56	160	ND<80	ND<8	ND<0.5	ND<0.5
	2/13/13	970	78	3.0	10	2.7	18	ND<0.5	ND<0.5	ND<0.5	56	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	3,300	230	9.2	22	10	50	ND<0.5	ND<0.5	0.55	160	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	27,000	590	32	960	640	100	ND<0.5	ND<0.5	0.95	330	ND<80	ND<20	ND<4.0	ND<0.5
	8/22/13	15,000	420	18	520	320	96	ND<2.5	ND<2.5	ND<2.5	310	ND<250	ND<25	ND<2.5	ND<2.5
DW-8	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
	11/14/12	27,000	580	870	510	3,400	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	2/14/13	63,000	3,000	5,400	2,000	8,700	ND<5	ND<5	ND<5	ND<5	110	ND<500	ND<150	ND<5	ND<5
	4/24/13	5,900	350	370	140	790	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.0	ND<200	ND<80	ND<0.9	ND<0.9
	6/24/13	55,000	2,200	3,200	2,100	7,400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	56	ND<90	ND<50	ND<0.9	ND<0.9
	8/22/13	16,000	380	240	500	1,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
DW-9	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
	11/14/12	10,000	210	7.5	230	65	28	ND<1.5	ND<1.5	ND<1.5	94	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	7,800	150	9.4	160	28	45	ND<1.5	ND<1.5	ND<1.5	110	ND<150	ND<15	ND<1.5	ND<1.5
	4/24/13	3,200	18	1.7	7.8	7.2	21	ND<0.5	ND<0.5	ND<0.5	67	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl-benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
DW-9	6/25/13	27,000	490	17	1,100	430	30	ND<4	ND<4	ND<4	62	ND<400	ND<40	ND<4	ND<4
(cont.)	8/22/13	19,000	320	13	690	240	28	ND<4	ND<4	ND<4	87	ND<2,000	ND<40	ND<4	ND<4

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

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

(c) NS - Not sampled.

TABLE 3

**GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15 <sup>(b)</sup>	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 <sup>(c)</sup>	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 <sup>(d)</sup>	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
	11/13/12	9,000	170	74	280	540	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	2/13/13	17,000	480	480	690	2,000	ND<2	ND<2	ND<2	ND<2	20	ND<200	ND<20	ND<2	ND<2
	4/24/13	9,700	230	160	370	1,200	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
8/22/13	23,000	360	430	740	2,300	ND<2	ND<2	ND<2	ND<2	25	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 <sup>(c)</sup>	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	160	5.6	3.7	1.3	3.6	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/21/13	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

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
IP-3 (cont.)	5/5/10 <sup>(c)</sup>	430 <sup>(e)</sup>	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	0.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5
8/21/13	NS	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 <sup>(c)</sup>	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	140	ND<0.5	43	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
IP-5	7/23/08	2,000 <sup>(e)</sup>	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 <sup>(c)</sup>	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
IP-5 (cont.)	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	ND<50	ND<0.5	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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 <sup>(c)</sup>	8,000 <sup>(e)</sup>	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	57	ND<0.5	11	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/21/13	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 <sup>(c)</sup>	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



TABLE 3

**GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethyl- benzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanof <sup>(a)</sup> (µg/l)	Ethano <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
IP-7 (cont.)	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	ND<50	ND<0.5	5.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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 <sup>(c)</sup>	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
	11/14/12	33,000	1,000	2,300	260	4,300	ND<7	ND<7	ND<7	ND<7	47	ND<700	ND<70	ND<7	ND<7
	2/14/13	65,000	3,300	7,100	1,600	9,200	ND<7	ND<7	ND<7	ND<7	110	ND<700	ND<150	ND<7	ND<7
	4/24/13	33,000	1,700	4,200	430	5,600	ND<6	ND<6	ND<6	ND<6	ND<30	ND<600	ND<60	ND<6	ND<6
	8/22/13	19,000	130	440	260	1,900	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<80	ND<4	ND<4
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 <sup>(c)</sup>	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
	11/13/12	9,800	22	200	150	690	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	12,000	68	560	280	1,300	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethylbenzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	DIPE <sup>(a)</sup> (µg/l)	ETBE <sup>(a)</sup> (µg/l)	TAME <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Methanol <sup>(a)</sup> (µg/l)	Ethanol <sup>(a)</sup> (µg/l)	1,2-DCA <sup>(a)</sup> (µg/l)	EDB <sup>(a)</sup> (µg/l)
IP-9 (cont.)	4/24/13	8,800	42	480	210	1,100	ND<1.5	ND<1.5	ND<1.5	ND<1.5	11	ND<150	ND<15	ND<1.5	ND<1.5
	8/22/13	7,500	14	250	190	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<400	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 <sup>(c)</sup>	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
	11/13/12	2,600	12	7.6	4.7	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/12/13	6,500	26	270	180	590	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/24/13	1,800	12	11	24	81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/22/13	1,100	2.2	ND<0.5	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

- (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

**EXPANDED ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	Nitrate <sup>(a)</sup> (mg/l)	Sulfate <sup>(a)</sup> (mg/l)	Arsenic <sup>(b)</sup> (mg/l)	Chromium <sup>(b)</sup> (mg/l)	Iron <sup>(b)</sup> (mg/l)	Manganese <sup>(b)</sup> (mg/l)	Sodium <sup>(b)</sup> (mg/l)	Hex Chrome <sup>(c)</sup> (µg/l)	Fe(2+) <sup>(d)</sup> (mg/l)	CO <sub>2</sub> <sup>(e)</sup> (µg/l)	CH <sub>4</sub> <sup>(e)</sup> (µg/l)	Alk <sup>(f)</sup> (mg/l)	TDS <sup>(g)</sup> (mg/l)
MW-2	12/15/11	ND<0.1 <sup>(h)</sup>	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 <sup>(i)</sup>	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 <sup>(i)</sup>	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 <sup>(i)</sup>	2,000	504	525
	11/14/12	ND<0.1	8.3	ND<0.015	0.095	28	3.5	44	ND<1	ND<0.1	51,200	1,190	584	680
	2/13/13	4.0	99	ND<0.015	0.0088	3.2	0.50	54	ND<1	ND<0.1	82,200	94	647	915
	4/23/13	1.7	92	ND<0.015	ND<0.005	ND<0.1	0.12	54	ND<1	ND<0.1	57,800	439	643	925
	6/24/13	0.83	88	ND<0.015	ND<0.005	1.8	0.61	54	ND<1	ND<0.1	73,100	798	602	875
	8/21/13	ND<1	39	ND<0.015	ND<0.005	0.71	2.3	65	ND<1	0.33	58,600	2,020	637	780
	11/7/13	ND<1	72	ND<0.015	ND<0.005	1.0	2.5	60	ND<1	ND<0.1	35,600	1,150	586	980
1/22/14	ND<0.5	61	ND<0.015	ND<0.005	1.2	2.9	54	ND<1	0.59	69,700	2,130	640	760	
MW-6	6/25/13	ND<1	120	0.048	0.017	5.8	1.4	240	ND<1	0.37	27,900	1,390	847	1,360
	8/22/13	ND<0.5	2.6	ND<0.015	ND<0.005	0.90	1.9	87	ND<1	0.40	53,400	5,370	586	745
	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	1.0	2.1	75	ND<1	0.61	30,300	4,210	497	955
	1/22/14	ND<1	ND<5	ND<0.015	ND<0.005	1.2	2.1	68	ND<1	0.82	47,200	7,210	539	695
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 <sup>(i)</sup>	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 <sup>(i)</sup>	806	416	450
	11/13/12	ND<0.1	81	0.046	0.40	130	12	57	ND<1	ND<0.1	14,000	663	302	620
	2/12/13	ND<0.1	27	ND<0.015	0.10	30	2.7	56	ND<1	ND<0.1	17,500	1,420	366	525
	4/23/13	ND<0.1	21	ND<0.015	ND<0.005	ND<0.1	1.9	58	ND<1	ND<0.1	21,500	1,190	418	615
	6/24/13	0.13	27	ND<0.015	0.18	53	5.2	68	ND<1	0.12	24,900	1,300	437	670
	8/21/13	ND<1	34	ND<0.015	ND<0.005	0.36	1.7	110	ND<1	0.11	21,400	2,770	598	790
	11/7/13	ND<0.5	27	ND<0.015	ND<0.005	0.21	1.5	74	ND<1	ND<0.1	21,100	358	418	605
1/22/14	ND<0.1	23	ND<0.015	ND<0.005	0.42	1.6	71	ND<1	ND<0.1	25,100	1,330	448	600	
MW-8	6/25/13	1.5	64	ND<0.015	0.042	12	2.0	54	ND<1	ND<0.1	17,700	3.8	370	730
	8/22/13	1.3	63	ND<0.015	ND<0.005	ND<0.1	0.90	50	ND<1	ND<0.1	21,500	4.4	378	680

TABLE 4

**EXPANDED ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	Nitrate <sup>(a)</sup> (mg/l)	Sulfate <sup>(a)</sup> (mg/l)	Arsenic <sup>(b)</sup> (mg/l)	Chromium <sup>(b)</sup> (mg/l)	Iron <sup>(b)</sup> (mg/l)	Manganese <sup>(b)</sup> (mg/l)	Sodium <sup>(b)</sup> (mg/l)	Hex Chrome <sup>(c)</sup> (µg/l)	Fe(2+) <sup>(d)</sup> (mg/l)	CO <sub>2</sub> <sup>(e)</sup> (µg/l)	CH <sub>4</sub> <sup>(e)</sup> (µg/l)	Alk <sup>(f)</sup> (mg/l)	TDS <sup>(g)</sup> (mg/l)
MW-8 (cont.)	11/7/13	5.1	60	ND<0.015	ND<0.005	ND<0.1	0.51	55	2.4	ND<0.1	12,300	1.2	373	870
	1/22/14	1.3	64	ND<0.015	ND<0.005	ND<0.1	0.55	52	ND<1	ND<0.1	17,500	7.6	380	605
MW-9	6/25/13	ND<0.5	10	ND<0.015	0.029	9.0	2.3	71	ND<1	0.44	25,400	385	510	705
	8/22/13	ND<0.5	4.1	ND<0.015	ND<0.005	1.9	1.8	95	ND<1	0.29	35,200	381	583	760
	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	1.9	1.8	69	ND<1	0.57	21,200	280	485	900
	1/22/14	ND<0.5	ND<2.5	ND<0.015	ND<0.005	1.8	1.7	57	ND<1	0.62	32,200	426	473	600
MW-10	6/25/13	1.2	80	ND<0.015	0.066	18	0.57	54	9.6	ND<0.1	13,100	ND<1	552	840
	8/21/13	1.1	83	ND<0.015	0.0091	ND<0.1	0.058	56	9.6	ND<0.1	16,700	ND<1	561	900
	11/7/13	1.2	89	ND<0.015	0.015	ND<0.1	0.022	61	14	ND<0.1	11,500	20	556	1,080
	1/21/14	1.4	82	ND<0.015	0.014	ND<0.1	0.040	55	15	ND<0.1	19,200	14.7	557	795
MW-11	9/20/11	ND<0.1	30	ND<0.015	0.0056	1.8	3.6	67	ND<1	ND<0.1	90,300	36	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	1,200	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	6.5	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	316	2,270
	2/1/12	ND<0.1	76	0.14	1.6	680	36	470	ND<1	ND<0.1	170 <sup>(i)</sup>	27	1,430	1,640
	5/11/12	0.34	14	ND<0.015	0.050	15	2.8	210	ND<1	0.11	140 <sup>(i)</sup>	99	771	870
	8/7/12	ND<0.5	51	0.021	0.066	21	3.2	610	ND<1	0.10	110 <sup>(i)</sup>	284	1,760	1,960
	11/13/12	1.2	53	0.10	1.4	410	16	230	ND<1	ND<0.1	34,200	173	730	955
	2/13/13	0.49	95	0.062	0.39	130	5.8	730	ND<1	ND<0.1	64,900	139	1,960	2,380
	4/24/13	0.32	80	0.020	ND<0.005	ND<0.1	1.3	670	ND<1	ND<0.1	75,400	65	2,020	2,260
	6/24/13	ND<0.5	190	0.056	0.021	10	2.0	1,600	1.4	ND<0.1	4,560	325	3,100	4,210
	8/22/13	ND<0.5	260	0.048	ND<0.005	0.12	0.25	1,200	ND<1	ND<0.1	612	133	2,610	3,510
11/7/13	ND<1	190	0.049	ND<0.005	0.13	0.45	1,300	ND<1	ND<0.1	21,400	185	556	3,950	
1/22/14	ND<1	100	0.029	ND<0.005	0.12	0.54	850	ND<1	0.11	48,500	165	2,250	2,720	
MW-12	6/25/13	1.3	23	ND<0.015	0.045	14	1.7	80	ND<1	ND<0.1	9,940	2,410	450	675
	8/22/13	0.92	15	ND<0.015	ND<0.005	0.14	1.6	64	ND<1	ND<0.1	24,600	2,800	420	640

TABLE 4

**EXPANDED ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	Nitrate <sup>(a)</sup> (mg/l)	Sulfate <sup>(a)</sup> (mg/l)	Arsenic <sup>(b)</sup> (mg/l)	Chromium <sup>(b)</sup> (mg/l)	Iron <sup>(b)</sup> (mg/l)	Manganese <sup>(b)</sup> (mg/l)	Sodium <sup>(b)</sup> (mg/l)	Hex Chrome <sup>(c)</sup> (µg/l)	Fe(2+) <sup>(d)</sup> (mg/l)	CO <sub>2</sub> <sup>(e)</sup> (µg/l)	CH <sub>4</sub> <sup>(e)</sup> (µg/l)	Alk <sup>(f)</sup> (mg/l)	TDS <sup>(g)</sup> (mg/l)
MW-12 (cont.)	11/7/13	ND<0.5	14	ND<0.015	ND<0.005	0.37	1.7	66	ND<1	0.20	18,000	1,980	421	850
	1/22/14	1.8	33	ND<0.015	ND<0.005	ND<0.1	1.1	62	ND<1	ND<0.1	24,300	2,250	402	610
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	0.02	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 <sup>(i)</sup>	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 <sup>(i)</sup>	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 <sup>(i)</sup>	1,570	444	435
	11/13/12	ND<0.1	ND<0.5	ND<0.015	0.028	9.7	3.0	68	ND<1	ND<0.1	22,200	1,070	418	540
	2/13/13	ND<0.1	ND<0.5	ND<0.015	0.056	18	3.6	60	ND<1	0.37	26,000	2,980	406	585
	4/24/13	ND<0.1	0.54	ND<0.015	ND<0.005	ND<0.1	2.9	68	ND<1	ND<0.1	19,200	1,400	408	525
	6/24/13	0.61	620	0.37	0.043	26	0.95	4,400	36	ND<0.1	596	317	9,160	11,100
	8/22/13	ND<1	730	0.13	0.012	ND<0.1	0.021	2,800	13	ND<0.1	702	1,040	5,340	7,740
	11/7/13	ND<1	1,100	0.35	0.066	0.11	0.011	8,900	92	ND<0.1	ND<1.7	136	20,700	27,700
1/22/14	ND<1	680	0.20	0.0065	0.27	0.031	2,600	1.1	ND<0.1	352	842	6,570	9,800	
IP-5	6/24/13	0.14	32	0.017	0.23	74	4.6	43	ND<1	ND<0.1	14,900	271	334	545
	11/7/13	ND<0.5	41	ND<0.015	ND<0.005	ND<0.1	0.17	38	ND<1	ND<0.1	4,280	22	311	510
	1/21/14	0.39	38	ND<0.015	ND<0.005	ND<0.1	0.41	40	ND<1	ND<0.1	11,400	334	313	470
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	50	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	81	650	920
	2/1/12	ND<0.1	42	ND<0.015	0.036	11	3.0	110	ND<1	ND<0.1	48 <sup>(i)</sup>	262	688	890
	5/9/12	ND<0.1	26	ND<0.015	0.0098	3.1	2.5	100	ND<1	ND<0.1	44 <sup>(i)</sup>	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 <sup>(i)</sup>	447	664	735

TABLE 4

**EXPANDED ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	Nitrate <sup>(a)</sup> (mg/l)	Sulfate <sup>(a)</sup> (mg/l)	Arsenic <sup>(b)</sup> (mg/l)	Chromium <sup>(b)</sup> (mg/l)	Iron <sup>(b)</sup> (mg/l)	Manganese <sup>(b)</sup> (mg/l)	Sodium <sup>(b)</sup> (mg/l)	Hex Chrome <sup>(c)</sup> (µg/l)	Fe(2+) <sup>(d)</sup> (mg/l)	CO <sub>2</sub> <sup>(e)</sup> (µg/l)	CH <sub>4</sub> <sup>(e)</sup> (µg/l)	Alk <sup>(f)</sup> (mg/l)	TDS <sup>(g)</sup> (mg/l)
IP-8 (cont.)	11/14/12	ND<0.1	1.6	ND<0.015	ND<0.005	0.45	3.0	84	ND<1	ND<0.1	26,400	105	588	710
	2/14/13	0.11	14	ND<0.015	ND<0.005	0.46	3.2	100	ND<1	ND<0.1	30,700	1,550	659	810
	8/22/13	1.5	1,200	0.24	0.044	ND<0.1	0.0056	13,000	49	ND<0.1	338	17	28,200	34,900
	11/7/13	ND<1	750	0.14	0.026	ND<0.1	0.017	5,800	13	ND<0.1	221	122	8,900	10,800
	1/22/14	ND<1	840	0.21	0.010	ND<0.1	0.043	3,600	9.7	ND<0.1	632	216	7,080	11,800
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	65	305	413
	10/25/11	ND<2.5	630	0.24	0.21	50	0.92	4,700	84	ND<0.1	935	7.5	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	3.9	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	5.1	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 <sup>(i)</sup>	54	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 <sup>(i)</sup>	59	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 <sup>(i)</sup>	41	10,600	13,000
	11/13/12	ND<0.2	580	0.71	0.050	6.3	0.12	4,300	48	ND<0.1	81	62	8,020	10,200
	2/13/13	ND<0.5	440	0.57	0.039	2.2	0.16	3,000	30	ND>0.1	5,990	112	6,100	7,920
	8/22/13	1.4	880	0.24	0.099	0.14	0.0067	10,000	110	ND<0.1	266	1.5	25,200	38,800
	11/7/13	ND<0.5	260	0.019	0.0067	ND<0.1	ND<0.005	2,500	7.1	ND<0.1	294	3.2	5,600	654
1/22/14	ND<0.5	320	0.10	0.022	ND<0.1	0.014	3,500	16	ND<0.1	505	11	6,280	6,750	
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	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 <sup>(i)</sup>	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 <sup>(i)</sup>	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 <sup>(i)</sup>	535	335	435
	11/13/12	ND<0.1	0.86	ND<0.015	ND<0.005	1.6	2.8	57	ND<1	ND<0.1	11,900	747	304	445
2/12/13	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.4	2.7	52	ND<1	0.26	12,600	1,420	311	390	

TABLE 4

**EXPANDED ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	Nitrate <sup>(a)</sup> (mg/l)	Sulfate <sup>(a)</sup> (mg/l)	Arsenic <sup>(b)</sup> (mg/l)	Chromium <sup>(b)</sup> (mg/l)	Iron <sup>(b)</sup> (mg/l)	Manganese <sup>(b)</sup> (mg/l)	Sodium <sup>(b)</sup> (mg/l)	Hex Chrome <sup>(c)</sup> (µg/l)	Fe(2+) <sup>(d)</sup> (mg/l)	CO <sub>2</sub> <sup>(e)</sup> (µg/l)	CH <sub>4</sub> <sup>(e)</sup> (µg/l)	Alk <sup>(f)</sup> (mg/l)	TDS <sup>(g)</sup> (mg/l)
IP-10 (cont.)	4/24/13	ND<0.1	1.4	ND<0.015	ND<0.005	0.12	2.8	52	ND<1	0.11	10,300	597	296	420
	6/24/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.83	2.7	57	ND<1	0.19	5,050	795	290	505
	8/22/13	ND<0.5	2.7	ND<0.015	ND<0.005	0.60	2.6	55	ND<1	0.14	12,800	480	285	480
	11/7/13	ND<0.5	3.8	ND<0.015	ND<0.005	0.63	2.7	56	ND<1	ND<0.1	4,960	577	294	495
	1/22/14	ND<0.1	1.4	ND<0.015	ND<0.005	1.1	2.8	58	ND<1	0.30	18,100	1,150	306	455
DW-1	6/24/13	ND<0.1	45	ND<0.015	0.0096	3.0	1.2	200	ND<1	ND<0.1	36,000	817	744	1,030
	11/7/13	ND<0.5	27	ND<0.015	ND<0.005	ND<0.1	4.5	180	ND<1	ND<0.1	29,700	1,000	820	1,300
	1/22/14	ND<1	13	ND<0.015	ND<0.005	0.91	4.1	140	ND<1	0.14	57,100	2,030	715	865
DW-2	6/25/13	ND<1	79	0.021	0.032	11	1.5	210	ND<1	ND<0.25	13,700	1,420	715	1,100
	8/22/13	ND<0.5	12	ND<0.015	ND<0.005	0.39	2.2	100	ND<1	ND<0.1	64,300	2,580	638	800
	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.81	2.6	77	ND<1	ND<0.1	19,900	2,620	572	1,030
	1/22/14	ND<1	ND<5	ND<0.015	ND<0.005	0.99	2.4	75	ND<1	0.47	50,100	3,260	572	705
DW-3	6/25/13	1.2	51	ND<0.015	0.030	8.6	2.1	51	ND<1	ND<0.1	12,900	666	379	645
	8/21/13	2.4	53	ND<0.015	ND<0.005	ND<0.1	1.0	53	ND<1	ND<0.1	14,600	1,390	380	595
	11/7/13	1.5	50	ND<0.015	ND<0.005	ND<0.1	1.1	54	ND<1	ND<0.1	11,200	359	373	795
	1/22/14	3.0	59	ND<0.015	ND<0.005	ND<0.1	0.63	52	ND<1	ND<0.1	15,500	450	364	575
DW-5	6/25/13	ND<1	140	0.041	0.20	73	3.0	470	ND<1	ND<0.25	1,560	1,500	1,040	1,600
	8/22/13	ND<2	290	0.025	ND<0.005	ND<0.1	0.41	620	ND<1	ND<0.1	3,510	1,620	1,220	2,020
	11/7/13	ND<1	120	ND<0.015	ND<0.005	ND<0.1	0.91	370	ND<1	ND<0.1	12,100	1,400	219	1,520
	1/22/14	ND<2	60	ND<0.015	ND<0.005	ND<0.1	1.2	250	ND<1	ND<0.1	16,600	1,940	804	1,080
DW-6	6/25/13	ND<0.5	12	0.028	0.32	96	4.4	79	ND<1	0.14	20,400	2,670	460	655
	8/22/13	ND<0.5	7.8	ND<0.015	ND<0.005	0.83	2.2	57	ND<1	0.59	27,700	2,070	430	600
	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.73	2.2	52	ND<1	0.21	9,950	890	419	880
	1/22/14	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.69	2.2	50	ND<1	0.32	27,500	1,890	432	560
DW-7	6/25/13	ND<0.5	76	0.033	0.28	93	4.1	260	ND<1	ND<0.25	12,100	4,540	760	1,200
	8/22/13	ND<1	50	ND<0.015	ND<0.005	0.12	1.2	170	ND<1	ND<0.1	20,100	3,720	680	955

TABLE 4

**EXPANDED ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	Nitrate <sup>(a)</sup> (mg/l)	Sulfate <sup>(a)</sup> (mg/l)	Arsenic <sup>(b)</sup> (mg/l)	Chromium <sup>(b)</sup> (mg/l)	Iron <sup>(b)</sup> (mg/l)	Manganese <sup>(b)</sup> (mg/l)	Sodium <sup>(b)</sup> (mg/l)	Hex Chrome <sup>(c)</sup> (µg/l)	Fe(2+) <sup>(d)</sup> (mg/l)	CO <sub>2</sub> <sup>(e)</sup> (µg/l)	CH <sub>4</sub> <sup>(e)</sup> (µg/l)	Alk <sup>(f)</sup> (mg/l)	TDS <sup>(g)</sup> (mg/l)
DW-7 (cont.)	11/7/13	ND<1	35	ND<0.015	ND<0.005	0.45	2.2	100	ND<1	0.24	13,000	4,690	523	710
	1/22/14	ND<1	20	ND<0.015	ND<0.005	0.61	2.4	100	ND<1	0.23	40,400	6,940	572	755
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
	2/1/12	ND<0.1	37	ND<0.015	0.0055	1.9	3.0	90	ND<1	ND<0.1	51 <sup>(i)</sup>	1,170	598	795
	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 <sup>(i)</sup>	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 <sup>(i)</sup>	404	556	600
	11/14/12	ND<0.1	1.6	ND<0.015	ND<0.005	1.2	2.5	91	ND<1	ND<0.1	15,300	632	472	600
	2/14/13	ND<0.1	10	ND<0.015	0.0056	2.4	3.3	150	ND<1	ND<0.1	34,400	1,520	786	930
	4/24/13	ND<0.1	5.1	ND<0.015	ND<0.005	ND<0.1	ND<0.005	41	2.2	ND<0.1	13.9	470	232	310
	6/24/13	ND<0.5	10	ND<0.015	0.013	8.8	4.1	140	ND<1	ND<0.1	22,500	1,710	750	1,020
	8/22/13	ND<1	ND<5	ND<0.015	ND<0.005	0.13	2.5	74	ND<1	0.10	22,900	1,230	398	570
11/7/13	ND<1	ND<5	ND<0.015	ND<0.005	2.0	4.0	160	ND<1	ND<0.1	24,300	511	778	1,120	
1/22/14	ND<2	ND<10	ND<0.015	ND<0.005	1.8	3.0	110	ND<1	0.11	19,100	2,580	527	625	
DW-9	6/25/13	ND<1	6.6	0.020	0.34	110	4.8	69	ND<1	0.40	30,300	4,070	460	660
	8/22/13	ND<1	ND<5	ND<0.015	ND<0.005	1.0	2.3	68	ND<1	0.17	29,600	3,000	470	610
	11/7/13	ND<1	ND<5	ND<0.015	ND<0.005	0.82	2.3	73	ND<1	ND<0.1	9,660	3,330	461	625
	1/22/14	ND<1	ND<5	ND<0.015	ND<0.005	0.84	2.3	64	ND<1	ND<0.1	24,800	4,940	469	630

- (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 milligrams per liter (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 milligrams per liter (mg/l).  
(e) Carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) analyzed by EPA Method RSK-175M; reported in micrograms per liter (µg/l).  
(f) Total alkalinity as CaCO<sub>3</sub> analyzed by Standard Method 2320B; reported in milligrams per liter (mg/l).  
(g) Total dissolved solids (TDS) analyzed by Standard Method 2540 C; reported in milligrams per liter (mg/l).  
(h) ND - Not detected at the reporting limit listed.  
(i) CO<sub>2</sub> analyzed by Standard Method 4500 C; reported in milligrams per liter (mg/l).



TABLE 5

SOIL VAPOR ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076

Sample Location	Sample Date	TPHg <sup>(a)</sup> (µg/l)	Benzene <sup>(a)</sup> (µg/l)	Toluene <sup>(a)</sup> (µg/l)	Ethylbenzene <sup>(a)</sup> (µg/l)	Total Xylenes <sup>(a)</sup> (µg/l)	MTBE <sup>(a)</sup> (µg/l)	TBA <sup>(a)</sup> (µg/l)	Oxygen <sup>(b)</sup>	Carbon Dioxide <sup>(b)</sup>
MW-1	6/24/10	NS <sup>(c)</sup>	NS	NS	NS	NS	NS	NS	NS	NS
	2/28/13	NS	NS	NS	NS	NS	NS	NS	NA <sup>(d)</sup>	NA
MW-11	6/24/10	2,300	13	10	7.4	21	ND<0.10 <sup>(d)</sup>	ND<1.0	16	4.29
	2/28/13	26	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
TP-1	6/24/10	350	0.15	0.25	0.46	1.1	ND<0.10	ND<1.0	21.7	ND<0.5
	2/28/13 <sup>(e)</sup>	32	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
TP-2	6/24/10	3,600	24	0.59	27	28	18	ND<1.0	20.3	0.93
	2/28/13	26	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
VW-2	6/24/10	3,100	0.91	0.68	1.8	2.1	ND<0.10	ND<1.0	17	2.96
	2/28/13	ND<20	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
VW-3	6/24/10 <sup>(e)</sup>	120	0.33	ND<0.20	1.8	2.3	ND<0.10	ND<1.0	21.9	ND<0.5
	2/28/13	ND<20	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA

- (a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes, methyl tert-butyl ether (MTBE), and tert-butyl alcohol (TBA) analyzed using EPA Method 8260B.
- (b) Results are in percent by volume.
- (c) NS - Not sampled. A sample was not collected due to a submerged screen.
- (d) NA - Not analyzed.
- (e) ND - Not detected at the reporting limit listed.
- (f) Duplicate sample also collected; highest value presented in table (see laboratory report for results).

TABLE 6

**SVE INFLUENT ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Sample ID	Date	TPHg <sup>(a)</sup> (ppmv)	Benzene <sup>(a)</sup> (ppmv)	Toluene <sup>(a)</sup> (ppmv)	Ethylbenzene <sup>(a)</sup> (ppmv)	Xylenes <sup>(a)</sup> (ppmv)	MTBE <sup>(a)</sup> (ppmv)	Methane <sup>(b)</sup> (%)	Carbon Dioxide <sup>(b)</sup> (%)	Carbon Monoxide <sup>(b)</sup> (%)	Oxygen <sup>(b)</sup> (%)	Nitrogen <sup>(b)</sup> (%)
SVE-Influent-0	6/29/10	5,300	16	20	45	110	75	-- <sup>(c)</sup>	--	--	--	--
SVE-Influent-1	6/29/10	4,700	15	12	36	90	58	0.58	3.6	ND<0.5 <sup>(d)</sup>	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
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

TABLE 6

**SVE INFLUENT ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Sample ID	Date	TPHg <sup>(a)</sup> (ppmv)	Benzene <sup>(a)</sup> (ppmv)	Toluene <sup>(a)</sup> (ppmv)	Ethylbenzene <sup>(a)</sup> (ppmv)	Xylenes <sup>(a)</sup> (ppmv)	MTBE <sup>(a)</sup> (ppmv)	Methane <sup>(b)</sup> (%)	Carbon Dioxide <sup>(b)</sup> (%)	Carbon Monoxide <sup>(b)</sup> (%)	Oxygen <sup>(b)</sup> (%)	Nitrogen <sup>(b)</sup> (%)
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	7/7/11	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 <sup>(e)</sup>	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
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

TABLE 6

SVE INFLUENT ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg <sup>(a)</sup> (ppmv)	Benzene <sup>(a)</sup> (ppmv)	Toluene <sup>(a)</sup> (ppmv)	Ethylbenzene <sup>(a)</sup> (ppmv)	Xylenes <sup>(a)</sup> (ppmv)	MTBE <sup>(a)</sup> (ppmv)	Methane <sup>(b)</sup> (%)	Carbon Dioxide <sup>(b)</sup> (%)	Carbon Monoxide <sup>(b)</sup> (%)	Oxygen <sup>(b)</sup> (%)	Nitrogen <sup>(b)</sup> (%)
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
SVE-Manifold	10/11/12	45	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.84	ND<0.5	21.2	78.0
SVE-Manifold	10/25/12	26	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.51	ND<0.5	21.5	78.0
SVE-Manifold	11/1/12	37	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.94	ND<0.5	21.3	77.7

- (a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE), analyzed by EPA Method 8260; reported in parts per million by volume (ppmv).
- (b) Fixed gases analyzed by Method ASTM D-1946; reported in percent (%).
- (c) "--" - Not analyzed.
- (d) ND - Not detected at the reporting limit listed.
- (e) SVE manifold influent vapor sample damaged during shipping to lab. Results of total well inlet and recirculation air used for data analysis.

TABLE 7

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 (°F)	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	-- <sup>(a)</sup>	--	1.5	63 <sup>(b)</sup>	124	--	NA <sup>(c)</sup>
2	6/29/10	13	0.5	4,700	--	--	1.3	63 <sup>(b)</sup>	110	3.6	117
3	6/30/10	31	1	3,200	0.03	71	1.5	63 <sup>(b)</sup>	75	--	NA
4	7/1/10	56	2	3,400	0.05	72	1.5	63 <sup>(b)</sup>	80	4.0	130
5	7/6/10	175	7	4,000	0.04	69	1.5	63 <sup>(b)</sup>	94	4.3	139
6	7/8/10	200	8	7,500	0.03	73	1.5	63 <sup>(b)</sup>	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 <sup>(d)</sup>	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 <sup>(e)</sup>	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
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

TABLE 7

SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076

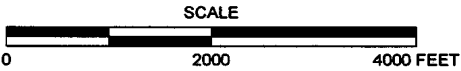
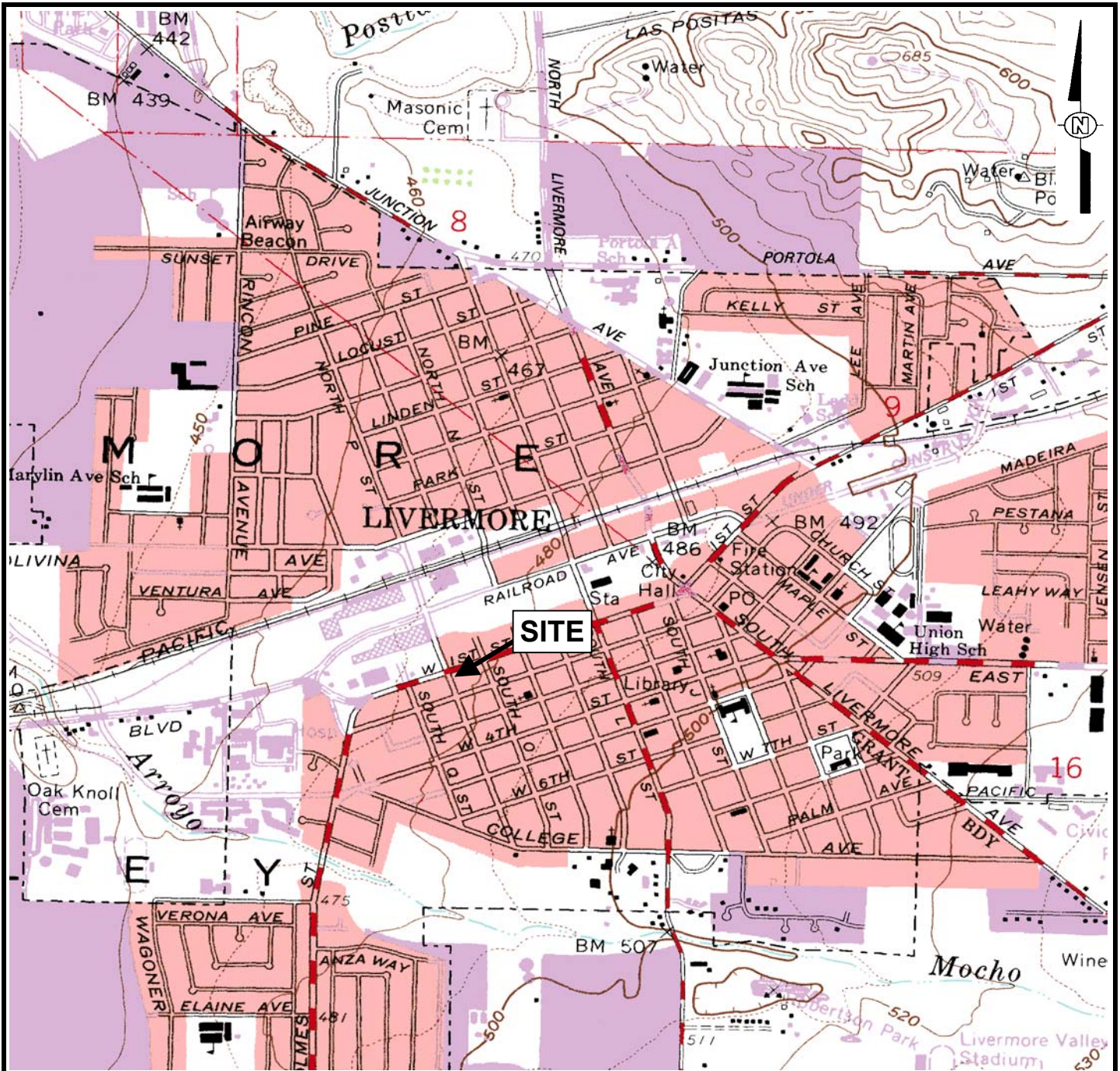
Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (°F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
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
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

TABLE 7

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 (°F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
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
65	10/11/12	16,925	705	45	--	62	4.1	56	0.9	0.8	23
66	10/25/12	17,260	719	26	--	66	3.1	57	0.5	0.5	14
67	11/1/12	17,310	721	37	--	66	4.0	55	0.8	0.9	26

- (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.

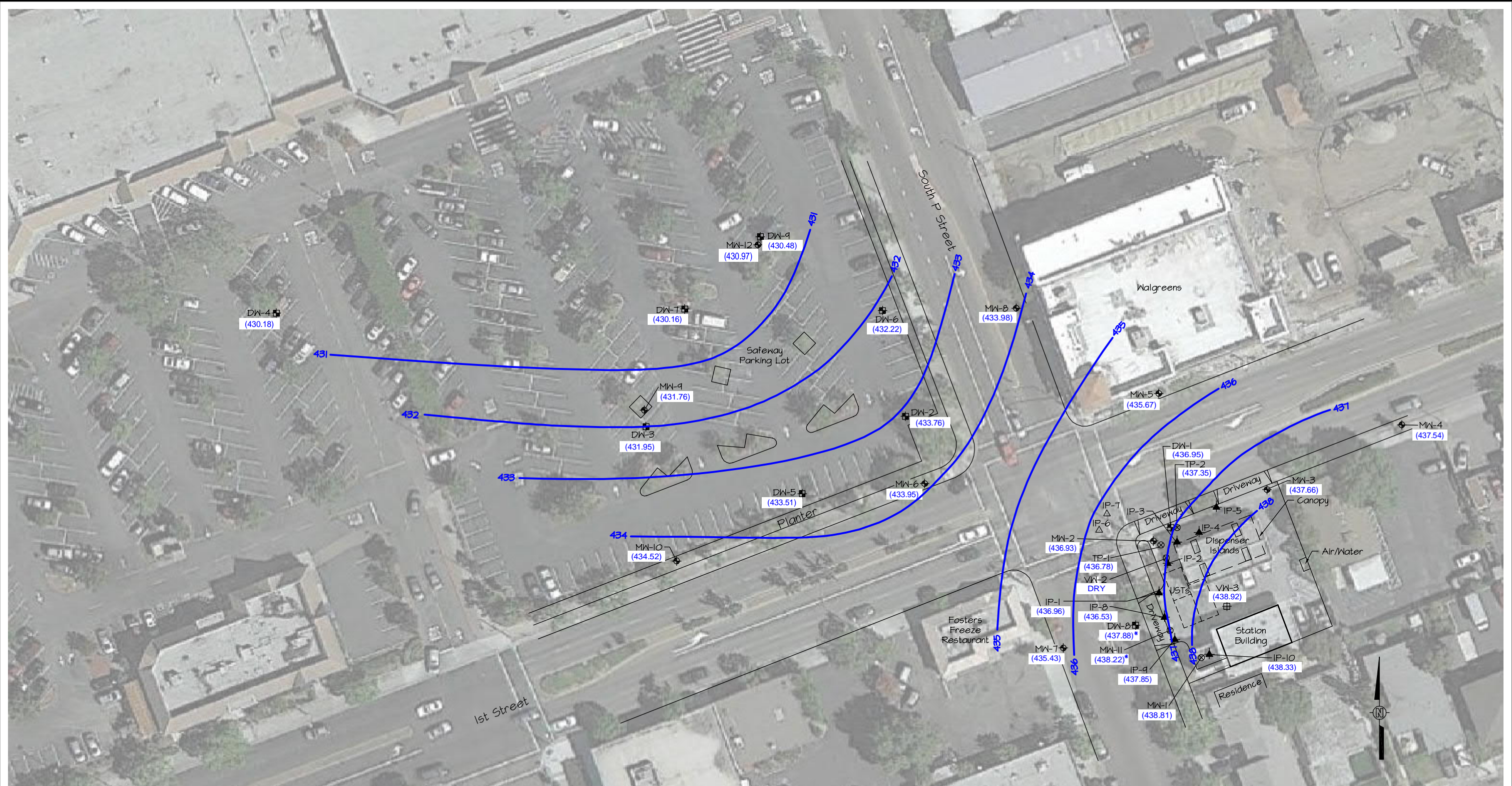


**REFERENCE**  
 7.5 MINUTE USGS TOPOGRAPHIC MAP OF  
 LIVERMORE, CALIFORNIA QUADRANGLE  
 DATE: 1961, PHOTOREVISED 1980  
 SCALE = 1:24,000

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

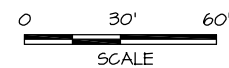


12/28/2013 6:51AM 01LV11B-20421.dwg



**Legend**

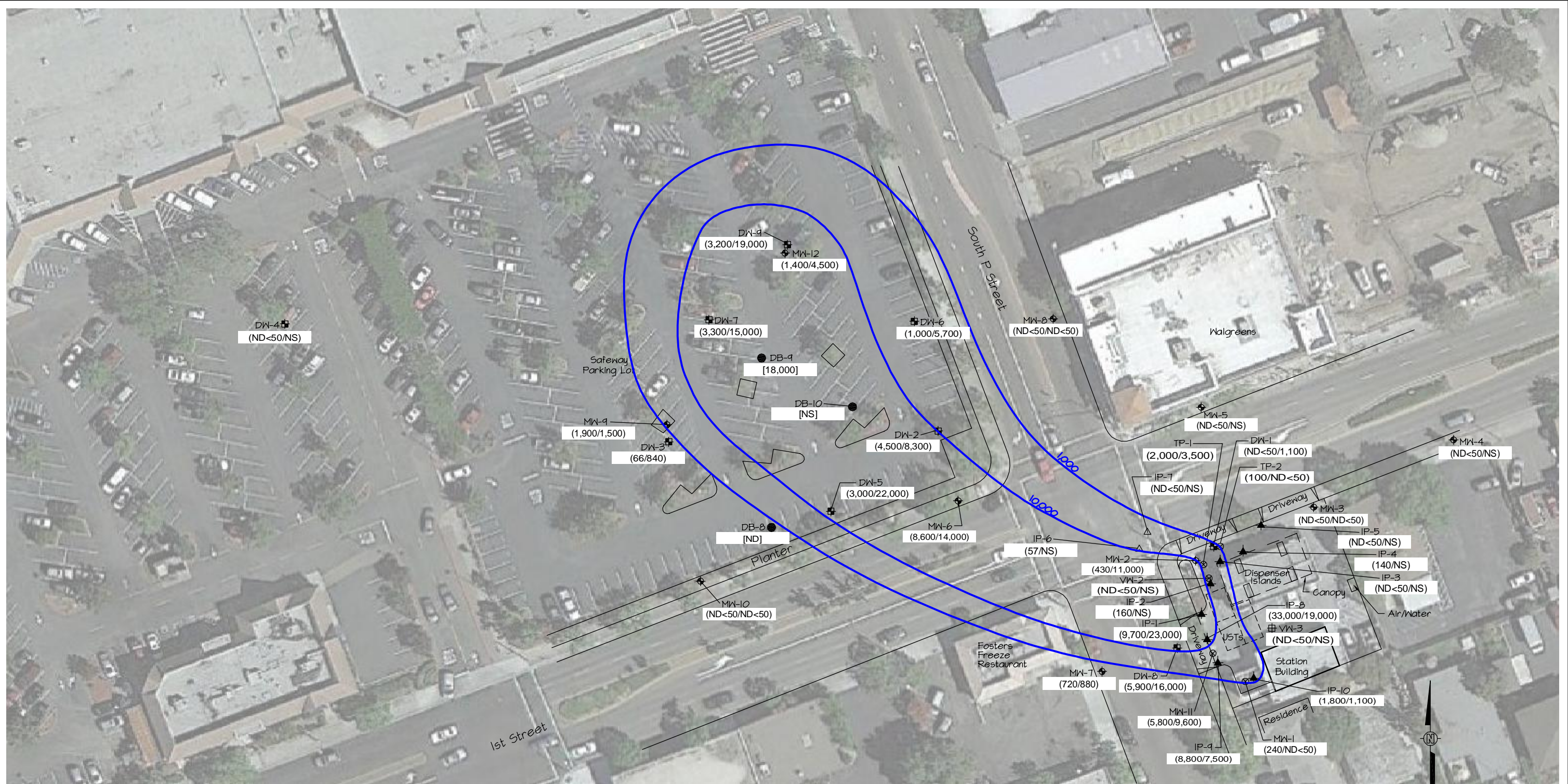
- MW-7 Groundwater Monitoring Well
- DW-1 Deep Groundwater Monitoring Well
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen
- VN-2 Vapor Extraction Well
- TP-1 Monitoring Well/Vapor Extraction Well
- DRY** Groundwater Elevation (Feet, MSL) Measured 21 August 2013
- 436** Groundwater Elevation Contour
- \*** Groundwater Elevation Not Used for Contours



REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
21	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report
	20	MY	8/15/13	Second Quarter 2013 Monitoring Report
	21	MY	11/15/13	Third Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>GROUNDWATER ELEVATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. O1LV11B-20421.DWG		FIGURE 2	

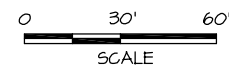
11/5/2013 9:51AM 01LV11B-20521.dwg



Legend

- MW-7 Groundwater Monitoring Well
- DW-1 Deep Groundwater Monitoring Well
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen
- VN-3 Vapor Extraction Well
- TP-1 Monitoring Well/Vapor Extraction Well

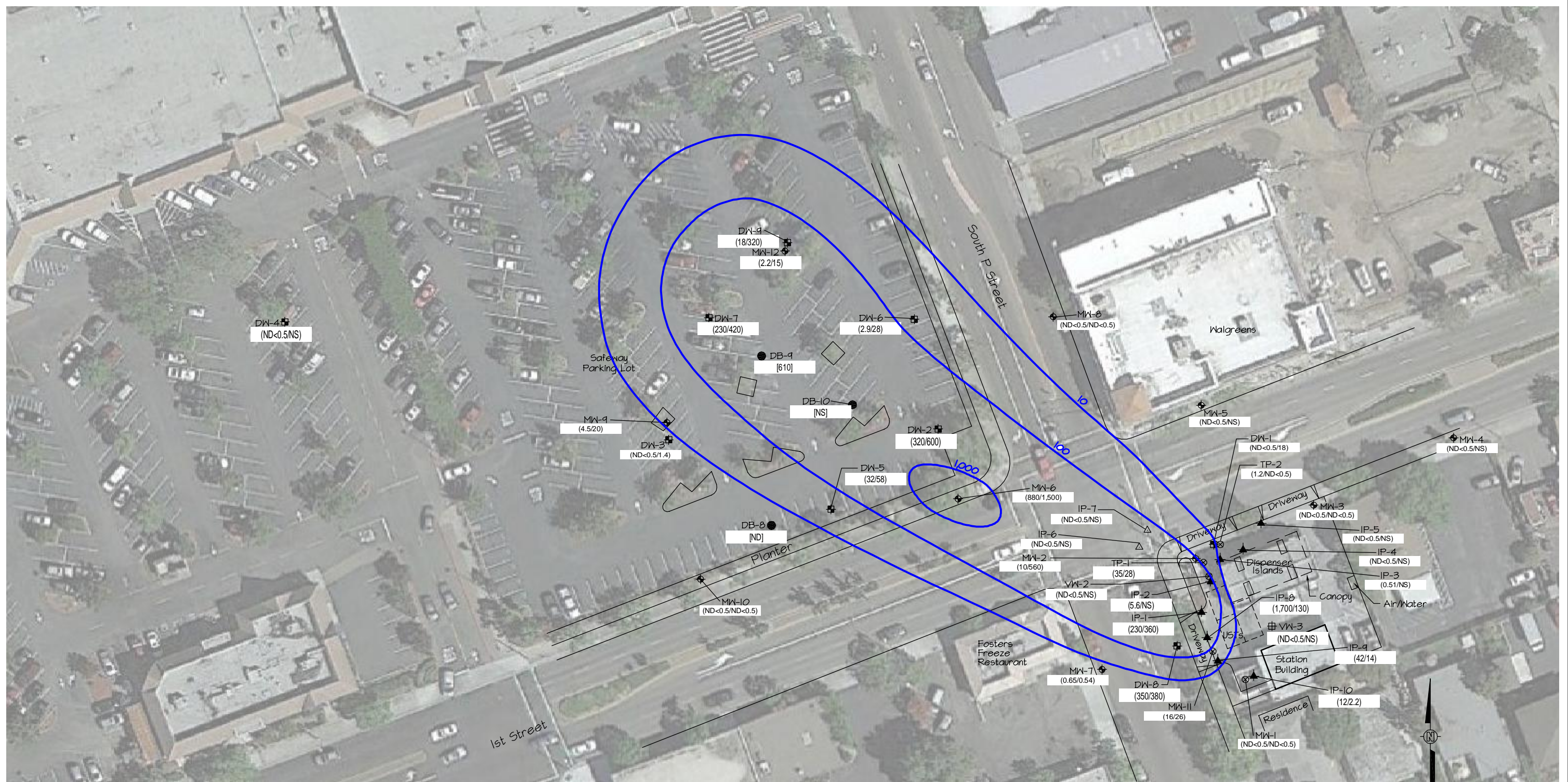
- (ND<0.5/ND<0.5) Previous Quarter/Current Quarter Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- 1,000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected at Laboratory Reporting Limit
- NS Not Sampled
- DB-8 June 2012 Soil Boring with 55-Foot Grab Groundwater Sample Benzene Results in µg/L
- [ND] [ND]



REVISION	NO.	BY	DATE	REVISIONS
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report
	20	MY	8/15/13	Second Quarter 2013 Monitoring Report
	21	MY	11/15/13	Third Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>TPHg CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20521.DWG		FIGURE 3	

11/5/2013 10:10AM 01LV11B-20621.dwg



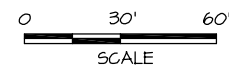
**Legend**

- MW-7 Groundwater Monitoring Well
- DW-1 Deep Groundwater Monitoring Well
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen
- VN-3 Vapor Extraction Well
- TP-1 Monitoring Well/Vapor Extraction Well

(ND<0.5/ND<0.5) Previous Quarter/Current Quarter Benzene Results in µg/L

1,000 Benzene Concentration Contour (µg/L), Queried Where Uncertain

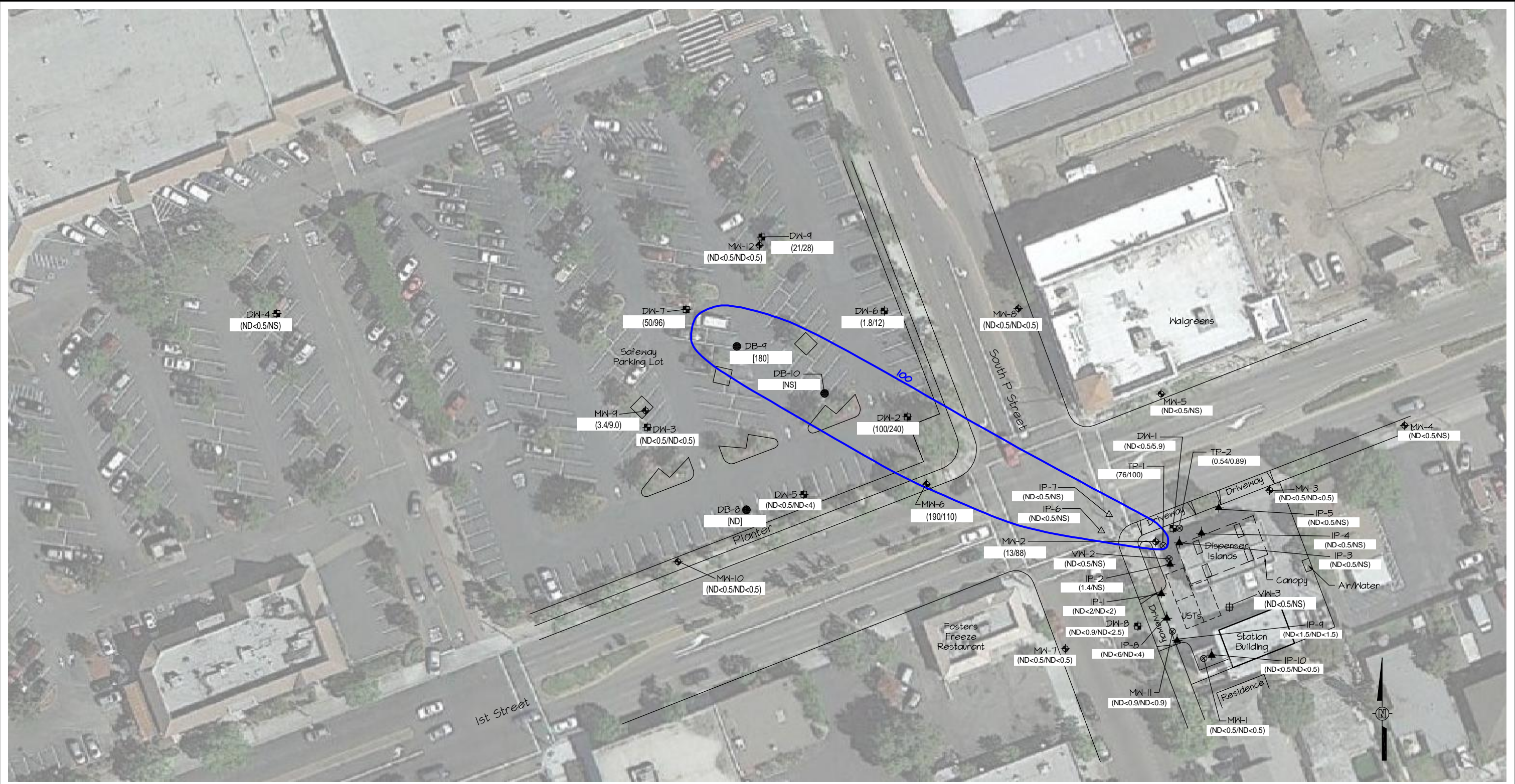
- ND Not Detected at Laboratory Reporting Limit
- NS Not Sampled
- DB-8 June 2012 Soil Boring with 55-Foot Grab Groundwater Sample Benzene Results in µg/L
- [ND] [ND]



REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
21	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report
	20	MY	8/15/13	Second Quarter 2013 Monitoring Report
	21	MY	11/15/13	Third Quarter 2013 Monitoring Report

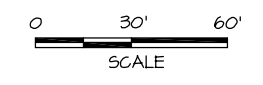
ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>BENZENE CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. O1LV11B-20621.DWG		FIGURE 4	

11/5/2013 11:08AM 01LV11B-20721.dwg



- Legend**
- MW-7 Groundwater Monitoring Well
  - DW-1 Deep Groundwater Monitoring Well
  - IP-1 Injection Well
  - IP-6 Angled Injection Well Screen
  - VN-3 Vapor Extraction Well
  - TP-1 Monitoring Well/Vapor Extraction Well

- (ND<0.5/ND<0.5) Previous Quarter/Current Quarter Methyl Tert-Butyl Ether (MTBE) Results in  $\mu\text{g/L}$
- 100 MTBE Concentration Contour ( $\mu\text{g/L}$ ), Queried Where Uncertain
- ND Not Detected at Laboratory Reporting Limit
- NS Not Sampled
- DB-8 June 2012 Soil Boring with 55-Foot Grab Groundwater Sample MTBE Results in  $\mu\text{g/L}$
- [ND] Not Detected

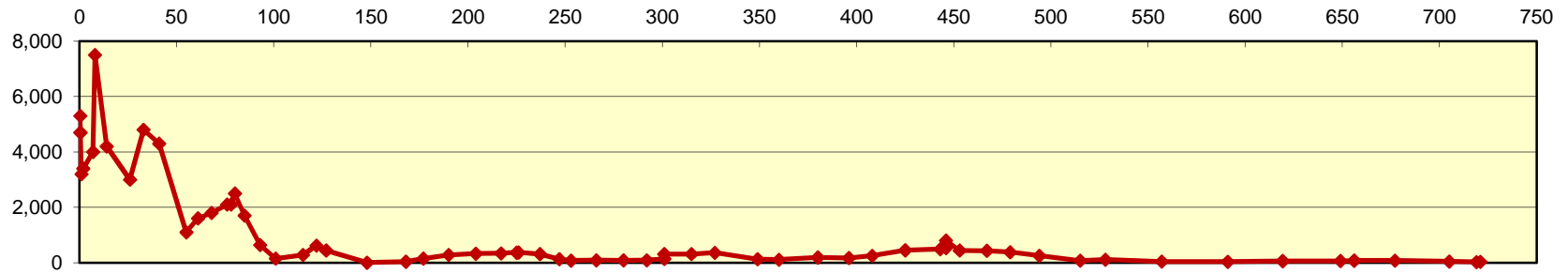


REVISION	NO.	BY	DATE	DESCRIPTION
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report
	20	MY	8/15/13	Second Quarter 2013 Monitoring Report
	21	MY	11/15/13	Third Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>MTBE CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. O1LV11B-20721.DWG		FIGURE 5	

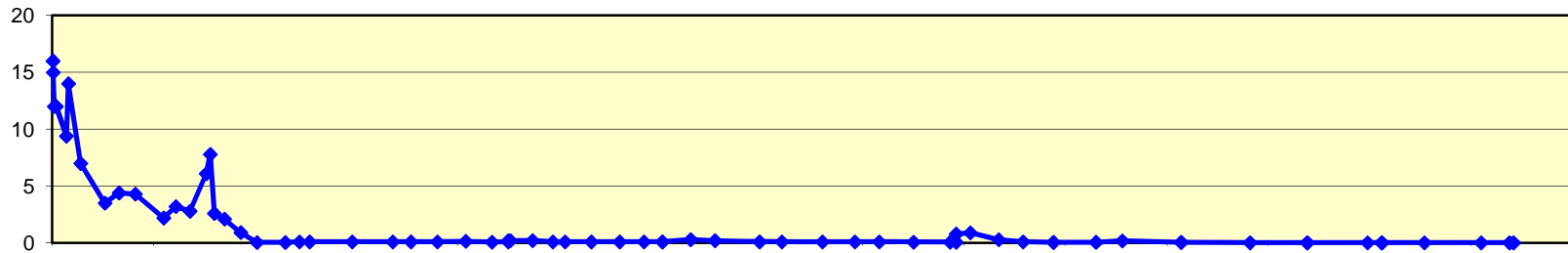
### TPHg

Days of Operation

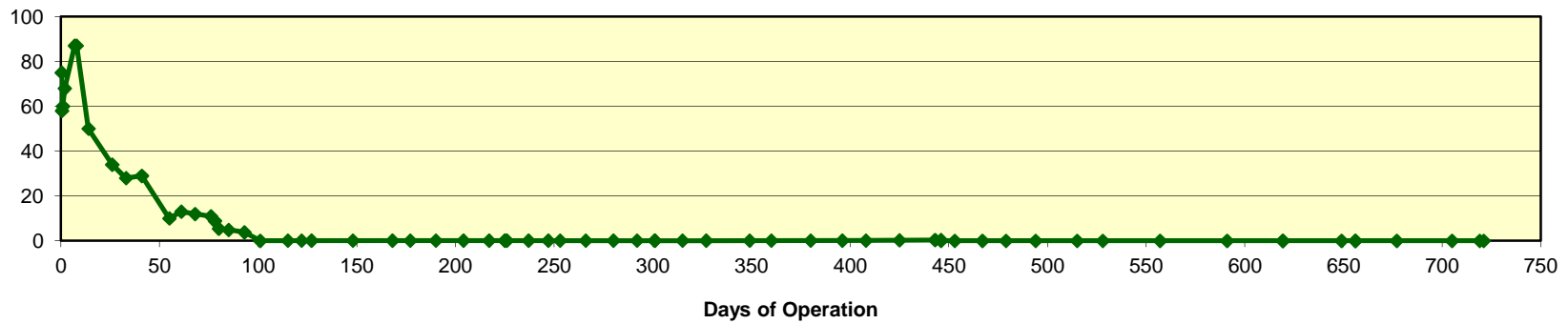


### Benzene

Concentration (ppmv)

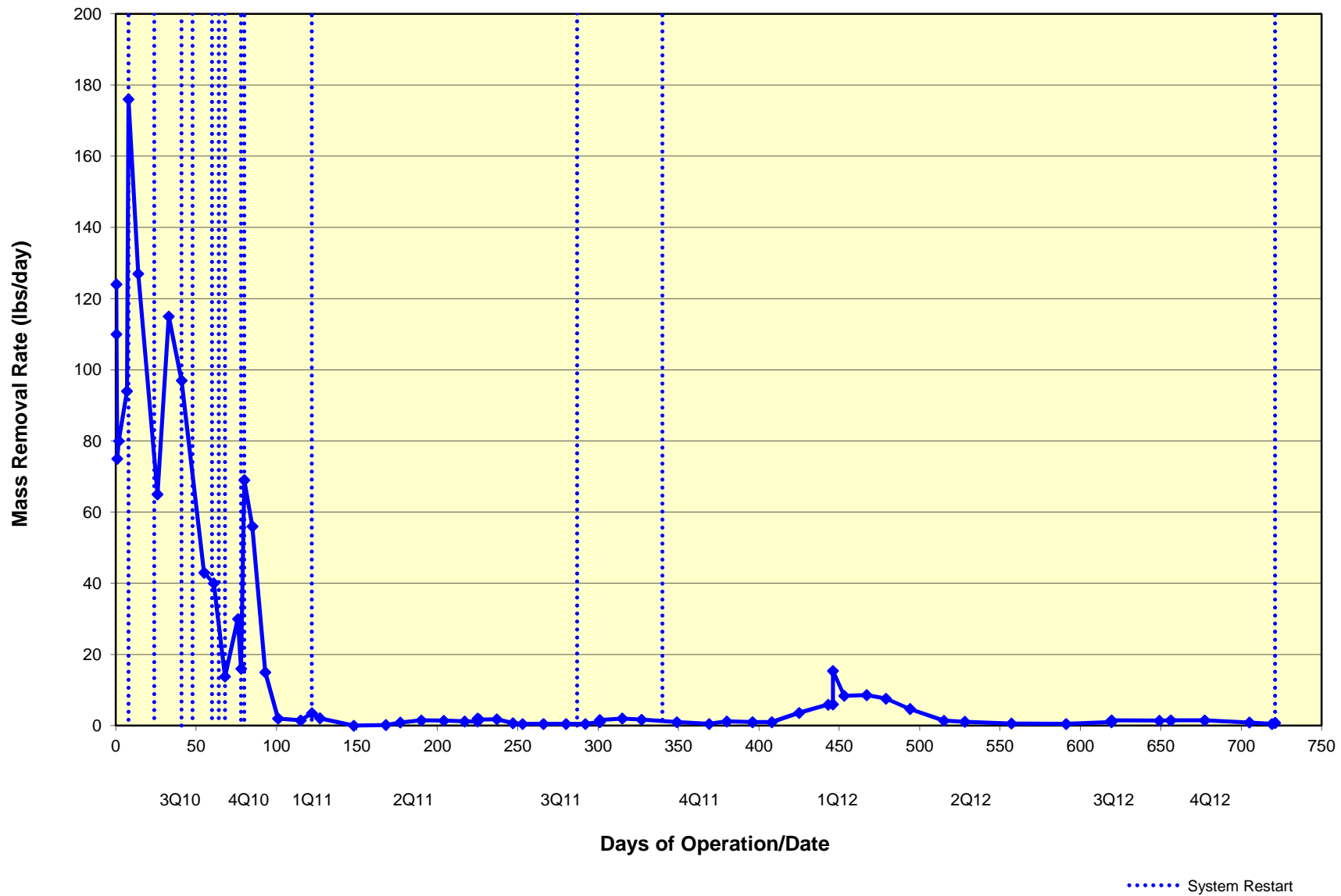


### MTBE

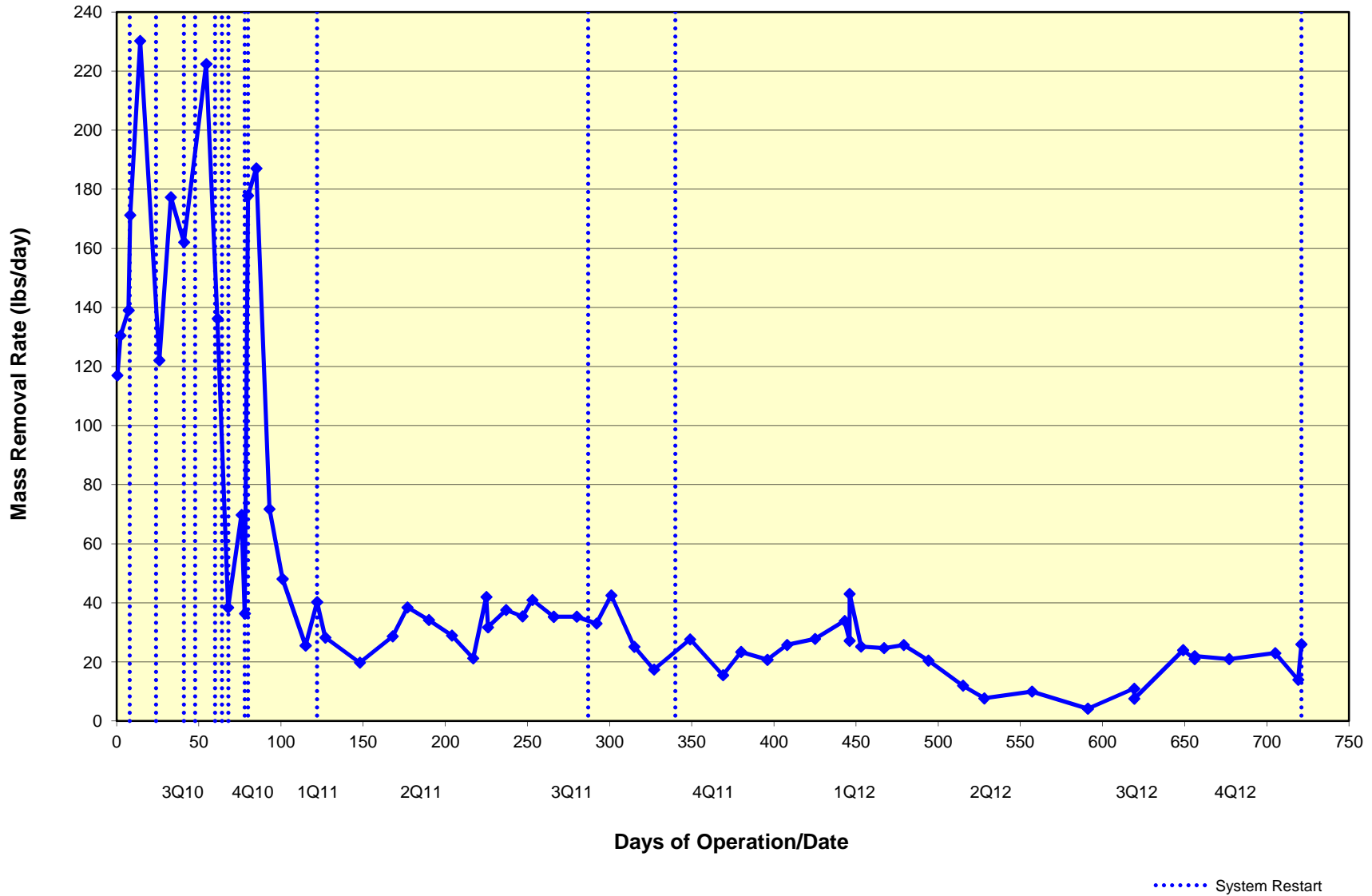


—◆— TPHg —◆— Benzene —◆— MTBE

HYDROCARBON MASS REMOVED BY VOLATILIZATION = 7,950 lbs



HYDROCARBON MASS REMOVED BY BIODEGRADATION = 30,300 lbs



01LV11B2302.dwg  
12/28/2013 7:30AM



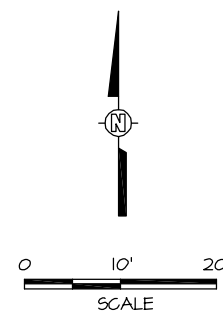
May 2010



August 2013

Legend

- MW-1 Groundwater Monitoring Well
- DW-1 Deep Groundwater Monitoring Well
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen
- VW-3 Vapor Extraction Well (Not Connected to System)
- TP-1 Monitoring Well/Vapor Extraction Well
- MIP-1 January 2011 Membrane Interface Probe (MIP) Boring
- 1,000 TPHg Concentration Contour (µg/L), Queried Where Uncertain



REVISION	REVISIONS			DESCRIPTION
	NO.	BY	DATE	
2	0	MY	5/15/13	First Quarter 2013 Monitoring Report
	1	MY	10/15/13	Second Quarter 2013 Monitoring Report
	2	MY	12/28/13	Third Quarter 2013 Monitoring Report

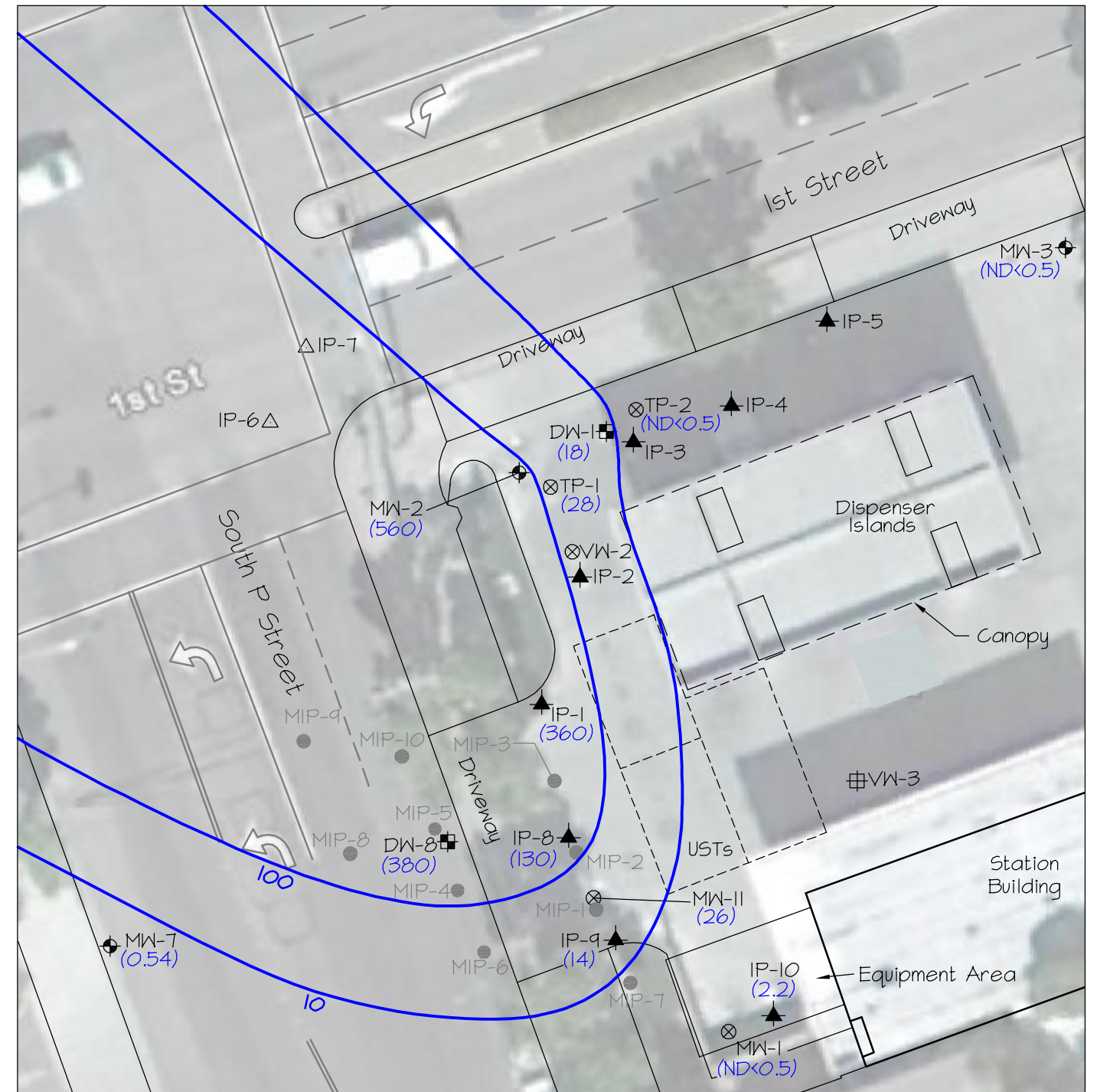
ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>ONSITE TPHg CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MN	APPROVED BY JPG
FILE NO. OILV11B2302.DWG		FIGURE 9A	



01LV11B2402.dwg  
12/29/2013 1:47PM

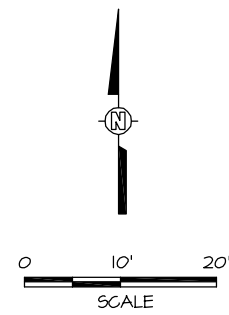


May 2010



August 2013

- Legend
- MW-1 ◈ Groundwater Monitoring Well
  - DW-1 ◈ Deep Groundwater Monitoring Well
  - IP-1 ▲ Injection Well
  - IP-6 △ Angled Injection Well Screen
  - VW-3 ⊞ Vapor Extraction Well (Not Connected to System)
  - TP-1 ⊗ Monitoring Well/Vapor Extraction Well
  - MIP-1 ● January 2011 Membrane Interface Probe (MIP) Boring
  - 1000 — Benzene Concentration Contour (µg/L), Queried Where Uncertain



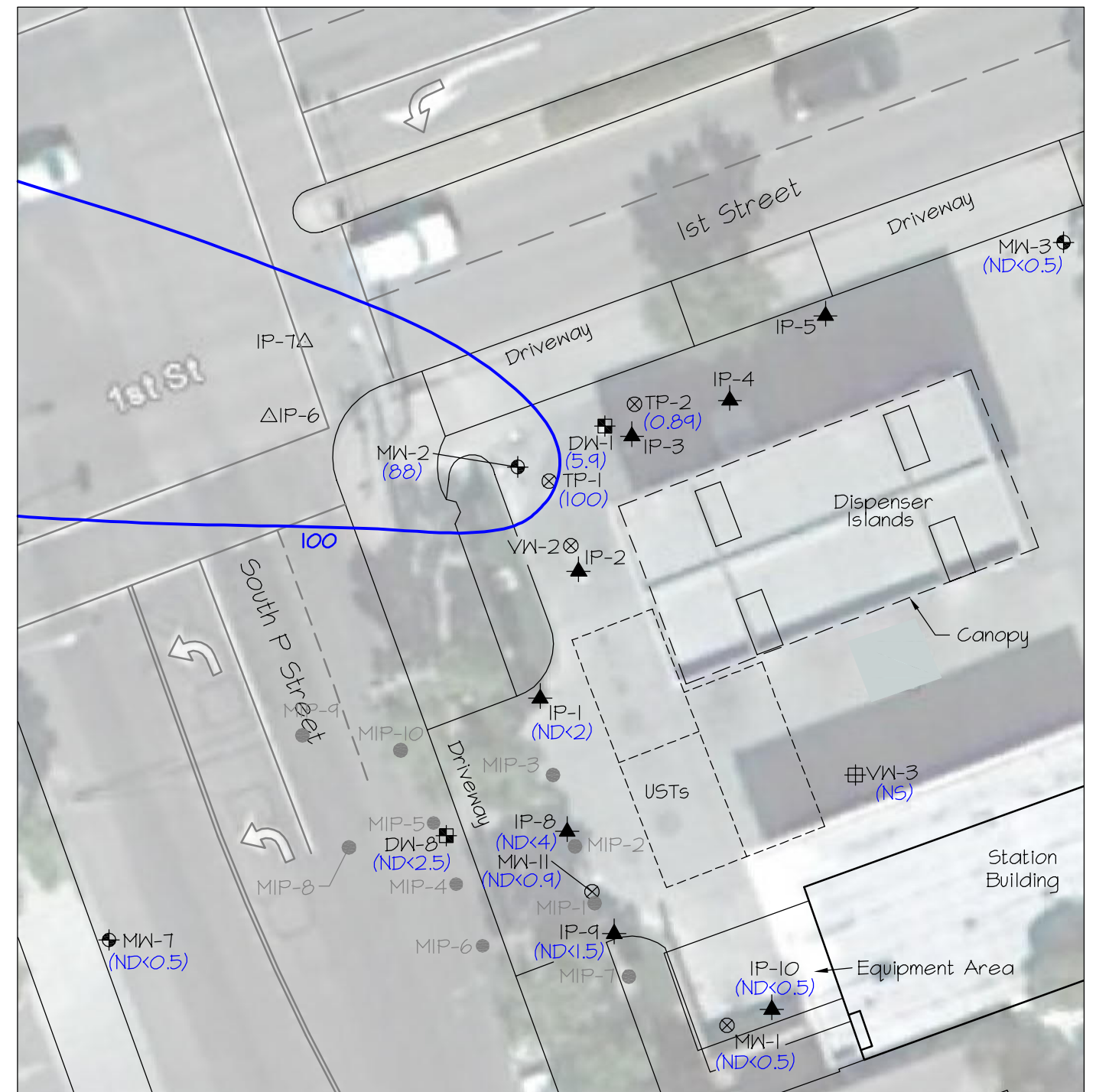
REVISION	REVISIONS		
	NO.	BY	DATE
2	0	MY	5/15/13
	1	MY	10/15/13
	2	MY	12/28/13

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>ONSITE BENZENE CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MN	APPROVED BY JPG
FILE NO. OILVIB2402.DWG		FIGURE 9B	

01LV11B2502.dwg  
12/30/2013 5:29AM



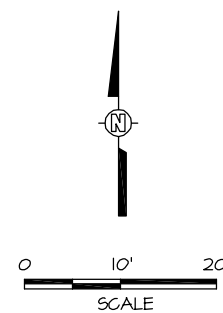
May 2010



August 2013

Legend

- MW-1 Groundwater Monitoring Well
- DW-1 Deep Groundwater Monitoring Well
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen
- VW-3 Vapor Extraction Well (Not Connected to System)
- TP-1 Monitoring Well/Vapor Extraction Well
- MIP-1 January 2011 Membrane Interface Probe (MIP) Boring
- MTBE Concentration Contour ( $\mu\text{g/L}$ ), Queried Where Uncertain



REVISION	REVISIONS		
	NO.	BY	DATE
2	0	MY	5/15/13
	1	MY	10/15/13
	2	MY	12/28/13

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>ONSITE MTBE CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MN	APPROVED BY JPG
FILE NO. OILV11B2502.DWG		FIGURE 9C	

01LV11B1602.dwg 3/4/2014 10:41AM



**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

- DB-8 Soil Boring
- IP-2 Expanded ISCO Pilot Test Onsite Injection Well
- IP-11 Offsite Injection Well Installed April 2013

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>EXPANDED ISCO PILOT TEST INJECTION WELLS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B1601.DWG		FIGURE 10	

REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
0	MY		10/1/12	Work Plan for Expanded ISCO Pilot Test
1	MY		2/19/13	Work Plan for Expanded ISCO Pilot Test
2	MY		3/15/14	Fourth Quarter 2013 Monitoring Report

**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 County 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 I.

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**

85772

Page 1 of 1

# Chain of Custody

Project Name: Tesoro - Livermore #67076

Job Number: P1-130821

TAT: STANDARD 5 DAY 2 DAY 24 HOUR OTHER:

Confluence Environmental, Inc.  
 3308 El Camino Ave, Suite 300 # 148  
 Sacramento, CA 95821  
 916-760-7641 - main  
 916-473-8617 - fax  
 www.confluence-env.com



Lab: Kiff Address: 2795 2nd St, Suite 300, Davis CA 95616 Contact: Troy Turpen Phone/ Fax: 530-297-4800 x.111		Site Address: 1619 1st St, Livermore California Global ID No.: J0600101410 Include EDF w/ Report: Yes No Consultant / PM: Orion / Mike Purchase Phone / Fax: 510-525-2180 / 510-525-2392		Confluence PM: Jason Brown Phone / Fax: 916-760-7641 / 916-473-8617 Confluence Log Code: CESC Report to: Mike Purchase Invoice to: Mike Purchase																							
Sample ID	Time	Date	Matrix		Laboratory No.	No. of Containers	Preservative					Requested Analysis							Notes and Comments								
			Soil/Solid	Water/Liquid			Air	Unpreserved	H2SO4	HNO3	HCl	NaOH	TPH-G, BTEX (8260)	Oxygenates (7) & Lead Scavengers (8260)	Ferrous Iron (SM 3500-Fe-D)	Hexavalent Chromium (7199)	Nitrate & Sulfate (300)	Total Alkalinity (SM2320B)		Metals by ICP (6010B)*	Methane (RSK 175M)	Carbon Dioxide (RSK 175M)	TDS (2540C)				
MW-1	1439	8/2/13	X			5					3					X	X	X	X	X	X	X	X	X	X		01
MW-2	1430					12	6	1	5		5					X	X	X	X	X	X	X	X	X	X	X	02
MW-7	1355					12	6	1	5		3					X	X	X	X	X	X	X	X	X	X	X	03
DW-1	1455					3					3					X	X	X	X	X	X	X	X	X	X	X	04
DW-3	1230					12	6	1	5		12					X	X	X	X	X	X	X	X	X	X	X	05
MW-10	1200					12	6	1	5		12					X	X	X	X	X	X	X	X	X	X	X	06
TP-2	1448					3					3					X	X	X	X	X	X	X	X	X	X	X	07
Sampler's Name: Matt Perstoni		Retriever's Name: [Signature]		Date: 8/2/13		Time: 1530		Accepted By / Affiliation: [Signature]		Date: 8/2/13		Time: 1530		Accepted By / Affiliation: [Signature]		Date: 8/2/13		Time: 1530									
Sampler's Company: Confluence Environmental		Shipment Date:		Shipment Method:		Special Instructions: *Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field		Confluence PM: Jason Brown		Phone / Fax: 916-760-7641 / 916-473-8617		Confluence Log Code: CESC		Report to: Mike Purchase		Invoice to: Mike Purchase											

85787

Confluence Environmental, Inc.  
 3308 El Camino Ave, Suite 300 #140  
 Sacramento, CA 95821  
 916-760-7641 - main  
 916-473-0617 - fax  
 www.confluence-env.com

### Chain of Custody

Project Name: Tesoro - Livermore #67076

Job Number: P1-130821

TAT: STANDARD 5 DAY 2 DAY 24 HOUR OTHER:



Lab: <u>K1F</u>	Site Address: <u>1619 1st St, Livermore</u>	Confluence PM: <u>Jason Brown</u>																											
Address: <u>2795 2nd St, Suite 300, Davis CA 95616</u>	California Global ID No.: <u>IQ0600101410</u>	Phone / Fax: <u>916-760-7641 / 916-473-8617</u>																											
Contact: <u>Troy Turpen</u>	Include EDF w/ Report: <u>Yes</u> <input type="radio"/> <u>No</u> <input type="radio"/>	Confluence Log Code: <u>CEESC</u>																											
Phone/ Fax: <u>530-297-4800 x.111</u>	Consultant / PM: <u>Orion / Mike Purchase</u>	Report to: <u>Mike Purchase</u>																											
	Phone / Fax: <u>510-525-2180 / 510-525-2392</u>	Invoice to: <u>Mike Purchase</u>																											
Sample ID	Time	Date	Matrix			Laboratory No.	No. of Containers	Preservative					Requested Analysis							Notes and Comments									
			Soil/Solid	Water/Liquid	Air			Unpreserved	H2SO4	HNO3	HCl	NaOH	TPH-G, BTEX (8260)	Oxygenates(7) & Lead Scavengers (8260)	Ferrous Iron (SM 3500-Fe-D)	Hexavalent Chromium (7199)	Nitrate & Sulfate (300)	Total Alkalinity (SM2320B)	Metals by ICP (6010B)*		Methane (RSK 175M)	Carbon Dioxide (RSK 175M)	TDS (2540C)						
<u>IP-10</u>	<u>0615</u>	<u>8/22/13</u>	<u>W</u>			<u>12</u>	<u>6</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>01</u>
<u>TP-1</u>	<u>0730</u>					<u>3</u>																							<u>02</u>
<u>MW-9</u>	<u>0800</u>					<u>12</u>	<u>6</u>																						<u>03</u>
<u>MW-12</u>	<u>0830</u>					<u>12</u>	<u>6</u>																						<u>04</u>
<u>DW-2</u>	<u>0910</u>					<u>12</u>	<u>6</u>																						<u>05</u>
<u>MW-8</u>	<u>0950</u>					<u>12</u>	<u>6</u>																						<u>06</u>
<u>MW-3</u>	<u>1050</u>					<u>3</u>																							<u>07</u>
<u>DW-8</u>	<u>1115</u>					<u>12</u>	<u>6</u>																						<u>08</u>
<u>MW-6</u>	<u>1100</u>					<u>12</u>	<u>6</u>																						<u>09</u>
<u>DW-6</u>	<u>1135</u>					<u>12</u>	<u>6</u>																						<u>10</u>
Sampler's Name: <u>Matt Peters</u>	Relinquished By / Affiliation		Date		Time		Accepted By / Affiliation		Date		Time																		
Sampler's Company: <u>Confluence Environmental</u>	<u>Stacy</u>		<u>8/22/13</u>		<u>1255</u>		<u>Stacy</u>		<u>8/22/13</u>		<u>1255</u>																		
Shipment Date:																													
Shipment Method:																													
Special Instructions: *Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field							<u>Stacy</u>																						

Confluence Environmental, Inc.  
 3308 El Camino Ave, Suite 300 # 148  
 Sacramento, CA 95821  
 916-760-7641 - main  
 916-473-0617 - fax  
 www.confluence-env.com



# Chain of Custody

Project Name: Tesoro - Livermore #67076

Job Number: P1-13 0821

TAT: STANDARD 5 DAY 2 DAY 24 HOUR OTHER:

85788

Page 1 of 1

Sample ID	Time	Date	Matrix	Laboratory No.	Preservative					Requested Analysis								Notes and Comments			
					Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	TPH-G, BTEX (8260)	Oxygenates (7) & Lead Scavengers (8260)	Ferrous Iron (SM 3500-Fe-D)	Hexavalent Chromium (7199)	Nitrate & Sulfate (300)	Total Alkalinity (SM2320B)	Metals by ICP (6010B)*	Methane (RSK 175M)		Carbon Dioxide (RSK 175M)	TDS (2540C)	
0	1715	8/22/13	Water/Liquid		6					X	X	X	X	X	X	X	X	X	X	X	
0	1410		Water/Liquid							X	X	X	X	X	X	X	X	X	X	X	
0	1440		Water/Liquid							X	X	X	X	X	X	X	X	X	X	X	
0	1455		Water/Liquid							X	X	X	X	X	X	X	X	X	X	X	
1	1255		Water/Liquid							X	X	X	X	X	X	X	X	X	X	X	
1	1315		Water/Liquid							X	X	X	X	X	X	X	X	X	X	X	
1	1330		Water/Liquid							X	X	X	X	X	X	X	X	X	X	X	
Sampler's Name: Matt Pestini				Relinquished By / Affiliation: Matt Pestini				Date: 8/24/13		Time: 1530		Accepted By / Affiliation: [Signature]		Date: 8/24/13		Time: 1545					
Sampler's Company: Confluence Environmental																					
Shipment Date:																					
Shipment Method:																					
Special Instructions: *Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field																					

Equipment Calibration Log

Equipment make/model	Equipment ID/serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI 556	05K140840	8/21/13	0907	Ph 7.410 amt 1413	70, 40, 100 1413	YES YES	17.3	JP	
			0906	0.1 244.5	244.5	YES		JP	
YSI 556	05K140840	8/22/13	0600	Ph 7.410 amt 1413	70, 40, 100 1413	Y	16.5	JP	
			0607	0.1 244.5	244.5	Y		JP	
Ultrameter	621642	8-22-8	0900	7.0, 4.0, 100 1413	70, 40, 100 1413	YES	20	AP	
		8-22-8	0904	130.0	230.0	YES	20	AP	

## Water Level Measurements

Job Number: P1-130821 Date: 8/21/13 Client: Orion

Site: Livermore Tesoro

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
DW-1	0930	4			35.90	64.80				
DW-2	1030	4			37.85	59.80				
DW-3	1056	4			38.38	59.72				
DW-4	1129	4			38.30	70.06				
DW-5	1120	4			38.35	59.80			IP. ✓	
DW-6	1035	4			39.55	60.15				
DW-7	1045	4			39.91	65.18				
DW-8	1125	4			34.43	64.68				
DW-9	1021	4			39.32	59.65				
IP-1	0945	2			36.10	64.52				
IP-10	1111	2			35.55	63.05				
IP-8	0936	2			36.69	64.52				
IP-9	0942	2			35.50	64.75				
MW-1	1035	4			35.40	54.26				
MW-10	1100 <del>1000</del>	2			37.11	44.98				
MW-11	0951	4			34.74	40.25				
MW-12	1039	4			38.80	44.56				
MW-2	0955	4			36.05	54.05				
MW-3	1014	2			35.71	52.85				
MW-4	1020	2			36.10	46.69				

## Water Level Measurements

Job Number: P1-130821    Date: 8/21/13    Client: Orion

Site: Livermore Tesoro

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
MW-5	1027	2			37.00	46.27				
MW-6	1107	2			37.98	47.55				
MW-7	1115	2			36.90	46.15				
MW-8	0935	2			37.20	44.31			Traffic Control	g/cc
MW-9	1050	2			39.02	44.50				
TP-1	0924	2			35.86	41.06				
TP-2	0919	2			35.43	40.11				
VW-2	1000	2			Dry	34.87				
VW-3	1004	2			35.46	36.34				

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: DW-1	Date: 8/21/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: 35.90	Total Depth: 64.80
Purge equip: <input checked="" type="checkbox"/> ES diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <input checked="" type="checkbox"/> 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $18.8 \times 3 = 56.4$  (Total Purge)      80% = 41.68

Time	Temp (°F)	pH	Cond (mS / °C)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1208	70.2	8.2	1977	260	70	5	19.	
							30	well dewatered @
1455	76.4	8.0	2214	134	80	—	—	

Did well dewater? <input checked="" type="checkbox"/> YES NO		Total volume removed: 30 (gal / L)	
Sample method: <input checked="" type="checkbox"/> Disp Bailer Ded. Tubing New Tubing Ext. Port Other:			
Sample date: 8/21/13	Sample time: 1455	DTW at sample: 36.50	
Sample ID: DW-1	Lab: Kiff	Number of bottles: 3	
Analysis: See COC (ISCO)			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
Fe <sup>2+</sup> :	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed:	ml



# Purging And Sampling Data Sheet

Job#: P1-130821		Sampler: M Pestoni		Client: Orion	
Well ID: DW-2		Date: 8/22/17		Site: Livermore Tesoro #67076	
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:				DTW: 37.85 Total Depth: 59.80	
Purge equip: <u>ES</u> diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA					
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:					
Pump depth/ intake:		Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 <u>4"= 0.63</u> 5"=1.02 6"= 1.47 Radius <sup>2</sup> X 0.163			
(TD - DTW X Multiplier = 1 Volume			80% Recovery (TD - DTW X 0.20 + DTW)		

1 Volume =  $\frac{21.95}{14.3} \times 3 = 42.9$  (Total Purge)      80% =  $42.24$

Time	Temp (°C/°F)	pH	Cond (mS/cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
0845	69.2	8.0	1311	240	-136.8	3	14.5	
0850	69.8	7.7	1294	207	-131.5	1	29.0	
0855	69.9	7.7	1295	200	-129.8	2	43	

Did well dewater? YES  NO  Total volume removed: 213 (gal/L)

Sample method: Disp. Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: 8/22/17 Sample time: 0910 DTW at sample: 38.90

Sample ID: DW-2 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe<sup>2+</sup>: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

<b>Job#:</b> P1-130821		<b>Sampler:</b> M Pestoni		<b>Client:</b> Orion	
<b>Well ID:</b> DW-3		<b>Date:</b> 8/21/13		<b>Site:</b> Livermore Tesoro #67076	
<b>Well diam:</b> 1/4" 1" 2" 3" <input checked="" type="radio"/> 6" Other:			<b>DTW:</b> 38.38		<b>Total Depth:</b> 59.72
<b>Purge equip:</b> <input checked="" type="radio"/> ES diam: 3 Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: <b>Tubing:</b> OD: New Dedicated NA					
<b>Purge method:</b> <input checked="" type="radio"/> 3-5 Case Volume Micro/Low-Flow Extraction Other:					
<b>Pump depth/ intake:</b>		<b>Multipliers:</b> 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163			
(TD - DTW X Multiplier = 1 Volume			80% Recovery (TD - DTW X 0.20 + DTW)		

1 Volume =  $\frac{21.34}{13.9} \times 3 = 4.7$  (Total Purge)      80% = 42.64

Time	Temp (°C) <input checked="" type="radio"/> (°F)	pH	Cond (mS/cm) <input checked="" type="radio"/>	Turbidity (NTU)	ORP (mv)	Purge Rate <input checked="" type="radio"/> gal/hr mL/min	Volume Removed (gal) <input checked="" type="radio"/> (L)	Notes
1220	72.9	7.7	1008	340	19.2	5	12	
1223	71.9	7.5	995	324	7.3	↓	28	
1226	71.9	7.5	998	315	3.2	↓	42	

Did well dewater? YES <input checked="" type="radio"/> NO <input checked="" type="radio"/>		Total volume removed: 42 (gal/L)	
Sample method: <input checked="" type="radio"/> Disp Bailer <input type="radio"/> Ded. Tubing <input type="radio"/> New Tubing <input type="radio"/> Ext. Port <input type="radio"/> Other:			
Sample date: 8/21/13		Sample time: 1230	DTW at sample: 39.90
Sample ID: DW-3		Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)			
Equipment blank ID @		Field blank ID @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
Fe <sup>2+</sup> :		Pre-purge ORP:	Post purge ORP:
NAPL depth:		Volume of NAPL:	Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: <u>M. Pestoni A. Feun</u>	Client: Orion
Well ID: <del>DW-5</del> <u>DW-5</u>	Date: <u>DW-5</u>	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: <u>38.35</u> Total Depth: <u>59.80</u>	
Purge equip: <u>ES</u> - diam: <u>3"</u> Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: <u>Tubing</u> : OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 14 X 3 = 42 (Total Purge) 80% = 42.64

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or ml/min)	Volume Removed (gal/L)	Notes
1238	20.9	9.5	3719	7.1 pu	18	~8	14	
								well dewatered @ 15 gallons
1330	22.5	9.6	2794	7.1 w	26	—	—	

Did well dewater? <u>YES</u> NO	Total volume removed: <u>15</u> (gal/DL)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:	
Sample date: <u>8/22/13</u> Sample time: <u>1330</u>	DTW at sample: <u>39.40</u>
Sample ID: <u>DW-5</u> Lab: <u>Kiff</u>	Number of bottles: <u>12</u>
Analysis: <u>See COC (ISCO)</u>	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe <sup>2+</sup> :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: DW-6	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: 39.55	Total Depth: 60.15
Purge equip: ES - diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.55 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $13.4 \times 3 = 40.2$  (Total Purge) 80% = 43.67

Time	Temp (°F)	pH	Cond (mS/CS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal/hr or mL/min)	Volume Removed (gal / L)	Notes
1127	21.1	8.5	1049	> 1000	-8	~8	13.5	
1129	21.2	8.7	1049	> 1000	-24	1	27	
1131	21.2	8.2	1039	> 1000	-26	1	40	

Did well dewater? YES <input checked="" type="checkbox"/> NO	Total volume removed: 40 (gal/L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:	
Sample date: 8/22/13	Sample time: 1135 DTW at sample: 43.65
Sample ID: DW-6	Lab: Kiff Number of bottles: 12
Analysis: See COC (ISCO)	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe <sup>2+</sup> :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: <u>A. Feary</u> M-Pestoni	Client: Orion
Well ID: <u>DW-7</u>	Date: <u>8/22/13</u>	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>(4")</u> 6" Other:	DTW: <u>39.91</u>	Total Depth: <u>65.18</u>
Purge equip: <u>ES - diam</u> 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 16.4 X 3 = 49.3 (Total Purge)                      80% = 44.96

Time	Temp (°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal/hr mL/min)	Volume Removed (gal / L)	Notes
<u>1223</u>	<u>21.2</u>	<u>8.1</u>	<u>1537</u>	<u>18</u>	<u>5</u>	<u>-8</u>	<u>17</u>	
<u>1225</u>						<u>-8</u>	<u>34</u>	<u>well de-watered @</u>
					<u>19</u>	<u>gal</u>		
<u>1315</u>	<u>21.5</u>	<u>9.3</u>	<u>1529</u>	<u>59</u>	<u>11</u>	<u>-</u>	<u>-</u>	

Did well dewater? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Total volume removed: <u>19</u> (gal/L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:		
Sample date: <u>8/22/13</u>	Sample time: <u>1315</u>	DTW at sample: <u>40.27</u>
Sample ID: <u>DW-7</u>	Lab: <u>Kiff</u>	Number of bottles: <u>12</u>
Analysis: <u>See COC (ISCO)</u>		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2 <sup>+</sup> :	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: <u>        </u> ml

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: DW-8	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: 34.43	Total Depth: 64.68
Purge equip: <u>ES</u> diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: New Dedicated NA	
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 <u>4"= 0.63</u> 5"=1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 19.7 X <sup>30.25</sup> 3 = 59 (Total Purge)      80% = 40.48

Time	Temp (°C) <u>16</u>	pH	Cond (mS) <u>15</u>	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal) <u>10</u> (L)	Notes
<del>1100</del> 1055	69.7	7.3	980	5	-152.9	5	20	
1104	69.5	7.2	972	3	-145.7	↓	40	
1108	69.5	7.2	965	2	-142.8	↓	59	

Did well dewater? YES <u>NO</u>	Total volume removed: <u>59</u> (gal/L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:	
Sample date: <u>8/22/13</u> Sample time: <u>1115</u>	DTW at sample: <u>36.10</u>
Sample ID: <u>DW-8</u> Lab: Kiff	Number of bottles: <u>12</u>
Analysis: See COC (ISCO)	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe2 <sup>+</sup> :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: DW-9	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	DTW: 39.32 Total Depth: 59.65	
Purge equip: ES - diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $13.2 \times 3 = 40$  (Total Purge) 80% = 43.39

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1202	21.1	8.5	1141	>1,000	9	10	13.5	
1204	21.4	8.2	1127	>1,000	-24	1	27	
1206	21.2	8.2	1121	>1,000	-25	1	41	
	N/A	@	80%					will return to sample
1255	20.9	8.3	1134	27	-8	—	—	

Did well dewater? YES  NO  Total volume removed: 41 (gal/L)

Sample method: Disp Bailer  Ded. Tubing  New Tubing  Ext. Port  Other:

Sample date: 8/22/13 Sample time: 1255 DTW at sample: 39.95

Sample ID: DW-9 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe<sup>2+</sup>: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: 1P-1	Date: 8/22/13	Site: Livermore Tesoro #87076
Well diam: 1/4" 1" (2) 3" 4" 6" Other:	DTW: 36.10	Total Depth: 64.52
Purge equip: <input checked="" type="radio"/> ES diam: 2" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <input checked="" type="radio"/> 3-5 Case Volume <input type="radio"/> Micro/Low-Flow <input type="radio"/> Extraction <input type="radio"/> Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $\frac{28.42}{4.6} \times 3 = 13.7$  (Total Purge)      80% = 41.78

Time	Temp (°C / °F)	pH	Cond (mS / cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gpm or mL/min)	Volume Removed (gals / L)	Notes
1215	69.4	10.1	29.07	121	-105.8	2.5	5	
1217	70.2	10.2	23.73	90	-97.3	↓	10	
1219	70.4	10.2	23.50	86	-93.9	↓	14	Not @ 80%

Did well dewater? YES <input type="radio"/> NO <input checked="" type="radio"/>	Total volume removed: 14 (Total)	
Sample method: <input checked="" type="radio"/> Disp Bailer <input type="radio"/> Ded. Tubing <input type="radio"/> New Tubing <input type="radio"/> Ext. Port <input type="radio"/> Other:		
Sample date: 8/22/13	Sample time: 1515	DTW at sample: 36.20
Sample ID: 1P-1	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe <sup>2+</sup> :	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml



## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: 1P-8	Date: 8/20/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: 36.69 Total Depth: 64.52	
Purge equip: <u>ES</u> diam: <u>2"</u> Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: <u>5/8"</u> New Dedicated <u>NA</u>	
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 <u>2"= 0.06</u> 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 4.5 X 3 = 13.4 (Total Purge) 80% = 42.25

Time	Temp (°C <u>(F)</u> )	pH	Cond ( <u>ms</u> )	Turbidity (NTU)	ORP (mv)	Purge Rate ( <u>gpm</u> or mL/min)	Volume Removed ( <u>gal</u> / L)	Notes
1230	69.8	10.6	41.82	230	-91.6	<u>2</u>	4.5	
							5	with Dewaters
1410	70.0	11.2	36.51	180	-130.5	—	—	

Did well dewater? <u>YES</u> NO	Total volume removed: <u>5</u> ( <u>gal</u> / L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:	
Sample date: <u>8/20/13</u> Sample time: <u>1410</u>	DTW at sample: <u>37.70</u>
Sample ID: <u>1P-8</u> Lab: Kiff	Number of bottles: <u>12</u>
Analysis: See COC (ISCO)	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe2 <sup>+</sup> :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: 1P-9	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	DTW: 35.50 Total Depth: 64.75	
Purge equip: ES - diam: 2" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: 5/8" New Dedicated <input checked="" type="checkbox"/>		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $2.7 \times 3 = 14.1$  (Total Purge)      80% = 41.35

Time	Temp (°C)	pH	Conc (mg/L)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal/min) or (L/min)	Volume Removed (gal/L)	Notes
1150	68.9	10.5	28.56	130	-111.6	5	5	
				Well Dewatered @			8	
1455	70.4	11.2	30.95	40	-135.6	—	—	

Did well dewater? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Total volume removed: 8 gal/L	
Sample method: Disp Bailer <input checked="" type="checkbox"/> Ded. Tubing <input type="checkbox"/> New Tubing <input type="checkbox"/> Ext. Port <input type="checkbox"/> Other: <input type="checkbox"/>		
Sample date: 8/22/13	Sample time: 1455	DTW at sample: 35.71
Sample ID: 1P-9	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2 <sup>+</sup> :	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: IP-10	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: 35.55	Total Depth: 63.05
Purge equip: <u>ES</u> diam: 2 Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: New Dedicated NA	
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1" = 0.04 <u>2" = 0.15</u> 3" = 0.37 4" = 0.65 5" = 1.02 6" = 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $4.4^{27.5}$  X 3 = 13.2 (Total Purge)      80% = 41.05

Time	Temp (°C)	pH	Cond (mS/cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
0630	68.8	7.6	823	40	-104.2	2	4.5	
0632	69.3	7.5	833	32	-121.7	1	9	
0634	69.4	7.5	841	30	-130.4	1	13.5	

Did well dewater? YES NO      Total volume removed: 13.5 (gal/L)

Sample method: Disp Bailor Ded. Tubing New Tubing Ext. Port Other:

Sample date: 8/22/13 Sample time: 0645      DTW at sample: 38.80

Sample ID: IP-10 Lab: Kiff      Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @      Field blank ID @

Duplicate ID:      Pre-purge DO:      Post purge DO:

Fe<sup>2+</sup>:      Pre-purge ORP:      Post purge ORP:

NAPL depth:      Volume of NAPL:      Volume removed:      ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-1	Date: 8/21/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: 35.90	Total Depth: 54.26
Purge equip: <input checked="" type="checkbox"/> ES diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <input checked="" type="checkbox"/> 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 12.3 X 3 = 36.9 (Total Purge) 80% = 39.17

Time	Temp (°C)	pH	Cond (mS / 45)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1300	70.4	7.4	1088	21	1.2	5	12.5	
1307	69.9	7.2	1050	12	3.1	5	25.0	
Well		Dewatered				25	0.00	54.50
1439	70.8	7.1	1021	9	10.9	-	-	

Did well dewater? <input checked="" type="checkbox"/> YES NO	Total volume removed: 25 (gal / L)	
Sample method: <input checked="" type="checkbox"/> Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 8/21/13	Sample time: 1439	DTW at sample: 36.10
Sample ID: MW-1	Lab: Kiff	Number of bottles: 3
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2 <sup>+</sup> :	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-2	Date: 8/21/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: 36.05 Total Depth: 54.05	
Purge equip: <u>6"</u> diam: 3 Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: New Dedicated NA	
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1" = 0.04 2" = 0.16 3" = 0.37 <u>4" = 0.65</u> 5" = 1.02 6" = 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $\frac{1360}{11.7} \times 3 = 35.1$  (Total Purge)      80% = 39.65

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
1350	70.8	6.9	1380	560	-22.4	4	12	
1333	71.0	6.8	1410	410	-44.9	4	24	
14	Well	Dewatered @					25 gal	51.90
1430	70.6	6.9	1443	231	-80.9	—	—	

Did well dewater? YES NO      Total volume removed: 25 (gal/L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: 8/21/13 Sample time: 1230 DTW at sample: 37.70

Sample ID: MW-2 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @      Field blank ID @

Duplicate ID:      Pre-purge DO:      Post purge DO:

Fe<sup>2+</sup>:      Pre-purge ORP:      Post purge ORP:

NAPL depth:      Volume of NAPL:      Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-3	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <del>2"</del> 3" <del>4"</del> 6" Other:	DTW: 35.71 Total Depth: 52.85	
Purge equip: <input checked="" type="checkbox"/> ES diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: New Dedicated NA	
Purge method: <input checked="" type="checkbox"/> 3-5 Case Volume <input type="checkbox"/> Micro/Low-Flow <input type="checkbox"/> Extraction <input type="checkbox"/> Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 <input checked="" type="checkbox"/> 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = <sup>17.1A</sup> 11.2 X 3 = 33.5 (Total Purge)      80% = 39.13

Time	Temp (°C/°F)	pH	Cond (mS/cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
1035	67.8	7.1	931	20	-107.6	3	11.5	
1039	68.9	7.0	918	17	-108.4	3	23.0	
1043	68.8	7.0	915	15	-109.2	3	33.5	

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Total volume removed: 33.5 (gal/L)	
Sample method: <input checked="" type="checkbox"/> Disp Bailer <input type="checkbox"/> Ded. Tubing <input type="checkbox"/> New Tubing <input type="checkbox"/> Ext. Port <input type="checkbox"/> Other:		
Sample date: 8/22/13	Sample time: 1050	DTW at sample: 37.00
Sample ID: MW-3	Lab: Kiff	Number of bottles: 3
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe <sup>2+</sup> :	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: <u>A. Feenly</u> <u>M. Pastorini</u>	Client: Orion
Well ID: <u>MW-6</u>	Date: <u>8/22/13</u>	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>(2")</u> 3" 4" 6" Other:	DTW: <u>37.98</u> Total Depth: <u>47.55</u>	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
<input checked="" type="checkbox"/> disp bailer <input type="checkbox"/> teflon bailer    other: _____    Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow    Extraction    Other:		
Pump depth/ intake: _____    Multipliers: 1"= 0.04    2"= 0.16    3"= 0.37    4"= 0.65    5"= 1.02    6"= 1.47    Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 1.5 X 3 = 4.6 (Total Purge)                      80% = 39.90

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
<u>1048</u>	<u>20.2</u>	<u>9.3</u>	<u>1264</u>	<u>&gt;1,000</u>	<u>91</u>	-	<u>1.5</u>	
<u>1052</u>	<u>20.6</u>	<u>8.5</u>	<u>1280</u>	<u>&gt;1,000</u>	<u>65</u>	-	<u>3</u>	
<u>1055</u>	<u>20.5</u>	<u>8.4</u>	<u>1289</u>	<u>&gt;1,000</u>	<u>63</u>	-	<u>5</u>	

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Total volume removed: <u>5</u> (gal/L)	
Sample method: <u>Disp Bailer</u> Ded. Tubing    New Tubing    Ext. Port    Other:			
Sample date: <u>8/22/13</u>		Sample time: <u>1100</u>	DTW at sample: <u>38.25</u>
Sample ID: <u>MW-6</u>		Lab: <u>Kiff</u>	Number of bottles: <u>12</u>
Analysis:    See COC (ISCO)			
Equipment blank ID    @		Field blank ID    @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
Fe <sup>2+</sup> :		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed:	ml

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-7	Date: 8/21/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2</u> 3" 4" 6" Other:	DTW: 36.90 Total Depth: 46.15	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 <u>2"= 0.10</u> 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $1.5^{1.25} \times 3 = 4.5$  (Total Purge)      80% = 38.75

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
1341	71.7	7.4	1306	>1000	-33.4	.5	1.5	
1344	71.5	7.2	1280	>1000	-49.8	2	3.0	
1347	71.2	7.2	1272	>1000	-52.9	2	4.5	

Did well dewater? YES  NO  Total volume removed: 4.5 (gal/L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: 8/21/13 Sample time: 1355 DTW at sample: 37.53

Sample ID: MW-7 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe<sup>2+</sup>: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml



## Purging And Sampling Data Sheet

<b>Job#:</b> P1-130821	<b>Sampler:</b> M Pestoni	<b>Client:</b> Orion
<b>Well ID:</b> MW-8	<b>Date:</b> 8/22/13	<b>Site:</b> Livermore Tesoro #67076
<b>Well diam:</b> 1/4" 1" <u>2"</u> 3" 4" 6" Other:	<b>DTW:</b> 37.20 <b>Total Depth:</b> 44.31	
<b>Purge equip:</b> ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
<input checked="" type="checkbox"/> disp bailer <input type="checkbox"/> teflon bailer <input type="checkbox"/> other: <b>Tubing:</b> OD: New Dedicated NA		
<b>Purge method:</b> <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
<b>Pump depth/ intake:</b> <b>Multipliers:</b> 1" = 0.04 <u>2" = 0.16</u> 3" = 0.37 4" = 0.65 5" = 1.02 6" = 1.47 Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 1.2 X 3<sup>7.d</sup> = 3.5 (Total Purge) 80% = 38.62

Time	Temp (°C)	pH	Cond (mS/cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
0940	68.7	7.3	1061	30	-12.5	0.5	1.5	
0943	69.2	7.2	1071	37	-11.8	1	2.5	
0946	69.4	7.2	1076	46	-11.3	2	3.5	

out of order Due To Traffic Control (End Tech needed)

Did well dewater? YES <input checked="" type="checkbox"/> NO	Total volume removed: <u>3.5</u> (gal/L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:	
Sample date: <u>8/22/13</u> Sample time: <u>0950</u>	DTW at sample: <u>38.50</u>
Sample ID: <u>MW-8</u> Lab: Kiff	Number of bottles: <u>12</u>
Analysis: See COC (ISCO)	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: <span style="float: right;">Post purge DO:</span>
Fe2 <sup>+</sup> :	Pre-purge ORP: <span style="float: right;">Post purge ORP:</span>
NAPL depth:	Volume of NAPL: <span style="float: right;">Volume removed: ml</span>

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-9	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <input checked="" type="radio"/> 3" 4" 6" Other:	DTW: 39.02	Total Depth: 44.50
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System <input checked="" type="radio"/> disp bailer <input type="radio"/> teflon bailer other:	Tubing: OD: New Dedicated NA	
Purge method: <input checked="" type="radio"/> 3-5 Case Volume <input type="radio"/> Micro/Low-Flow <input type="radio"/> Extraction <input type="radio"/> Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume)		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $0.9 \times 5.48 \times 3 = 2.7$  (Total Purge)      80% = 40.01

Time	Temp (°C / °F)	pH	Cond (ms / <input checked="" type="radio"/> Ω)	Turbidity (NTU)	ORP (mv)	Purge Rate ( <input checked="" type="radio"/> gal / min) or (L / min)	Volume Removed ( <input checked="" type="radio"/> gal / L)	Notes
0745	68.9	7.5	1312	>1000	-133.7	.5	1	
0747	70.2	7.4	1319	>1000	-134.1	↓	2	
0749	70.5	7.4	1321	>1000	-133.7	↓	3	

Did well dewater? YES  NO  Total volume removed: 3 ( gal / L)

Sample method:  Disp Bailor  Ded. Tubing  New Tubing  Ext. Port  Other:

Sample date: 8/22/13 Sample time: 0800 DTW at sample: 39.80

Sample ID: MW-9 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe2+: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-10	Date: 8/21/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: 37.11	Total Depth: 44.98
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
Disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Multipliers: 1"= 0.04 <u>2"= 0.06</u> 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 1.5 X 3 = 3.8 (Total Purge) 80% = 38.68

Time	Temp (°C) (°F)	pH	Cond (mS) (µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1145	70.6	7.3	1367	>1000	210.5	.3	1.5	
1149	69.8	7.1	1343	>1000	190.7	L	2.6	
1153	69.7	7.1	1340	>1000	185.8		4.0	

Did well dewater? YES  NO  Total volume removed: 4.0 (gal / L)

Sample method: Disp Bailer  Ded. Tubing  New Tubing  Ext. Port  Other:

Sample date: 8/4/13 Sample time: 1200 DTW at sample: 37.89

Sample ID: MW-10 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @ \_\_\_\_\_ Field blank ID @ \_\_\_\_\_

Duplicate ID: \_\_\_\_\_ Pre-purge DO: \_\_\_\_\_ Post purge DO: \_\_\_\_\_

Fe<sup>2+</sup>: \_\_\_\_\_ Pre-purge ORP: \_\_\_\_\_ Post purge ORP: \_\_\_\_\_

NAPL depth: \_\_\_\_\_ Volume of NAPL: \_\_\_\_\_ Volume removed: \_\_\_\_\_ ml

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-11	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: 34.74	Total Depth: 40.25
Purge equip: <u>ES</u> diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		
Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 <u>4"= 0.63</u> 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume) 80% Recovery (TD - DTW X 0.20 + DTW)		

1 Volume =  $\frac{3.6}{0.63} \times \frac{5.5}{3} = \frac{10.8}{0.63}$  (Total Purge)      80% = 35.84

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1135	68.5	8.6	4425	>1000	-166.7	5	3.6	
		well down trend		@			4	
1440	70.5	8.9	4210	>1000	-130.7	—	—	
out of order Press To Being Parked over								

Did well dewater? <u>YES</u> NO	Total volume removed: 4 (gal / L)	
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 8/22/13	Sample time: 1440	DTW at sample: 34.90
Sample ID: MW-11	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe <sup>2+</sup> :	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: MW-12	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: 38.80	Total Depth: 44.56
Purge equip: <u>ES</u> diam: 3" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		
Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163		
(TD - DTW X Multiplier = 1 Volume) 80% Recovery (TD - DTW X 0.20 + DTW)		

1 Volume =  $3.8 \times 3 = 11.3$  (Total Purge) 80% = 39.95

Time	Temp (°C <sup>F</sup> )	pH	Cond (mS / <u>cm</u> )	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
0815	68.4	7.9	1093	48	-107.3	3	4	
0817	69.2	7.7	1081	42	-112.8	2	8	
0819	69.3	7.7	1076	38	-117.7	2	12.5	

Did well dewater? YES <u>(NO)</u>				Total volume removed: 12.5 (gal/L)			
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:							
Sample date: 8/22/13		Sample time: 0830			DTW at sample: 39.30		
Sample ID: MW-12		Lab: Kiff			Number of bottles: 12		
Analysis: See COC (ISCO)							
Equipment blank ID @				Field blank ID @			
Duplicate ID:				Pre-purge DO:		Post purge DO:	
Fe2 <sup>+</sup> :				Pre-purge ORP:		Post purge ORP:	
NAPL depth:		Volume of NAPL:		Volume removed:		ml	

# Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: TP1	Date: 8/22/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: 35.86 Total Depth: 41.06	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
d/isp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 <u>2"= 0.16</u> 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume =  $0.83 \times 3 = 2.5$  (Total Purge) 80% = 36-90

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
0720	68.7	7.5	1415	>1000	-114.1	DIS	1.0	
0724	68.9	7.3	1442	>1000	-126.3	0.25	2.0	
0728	69.2	7.3	1450	>1000	-127.4	<del>0.25</del> 3	3.0	

Did well dewater? YES <input checked="" type="radio"/> NO <input type="radio"/>		Total volume removed: <u>3</u> (gal / L)	
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:			
Sample date: <u>8/22/13</u>	Sample time: <u>0730</u>	DTW at sample: <u>35.86</u>	
Sample ID: <u>TP1</u>	Lab: <u>Kiff</u>	Number of bottles: <u>3</u>	
Analysis: <u>See COC (ISCO)</u>			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
Fe2 <sup>+</sup> :	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed:	ml

## Purging And Sampling Data Sheet

Job#: P1-130821	Sampler: M Pestoni	Client: Orion
Well ID: TP-2	Date: 8/21/13	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	DTW: 35.43	Total Depth: 40.11
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius <sup>2</sup> X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 0.75 X 3 = 2.25 (Total Purge) 80% = 36.36

Time	Temp (°C)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
12:10	70.5	7.5	1201	>1000	115.5	0.25 <del>0.75</del>	0.75	
12:13	69.9	7.3	1225	>1000	144.3	}	1.5	
12:16	69.5	7.2	1231	>1000	152.8		2.5	
12:19	69.4	7.2	1240	>1000	157.9		3.5	
								Met @ 80%

Did well dewater? YES  NO  Total volume removed: 3.5 (gal / L)

Sample method: Disp Bailer  Ded. Tubing  New Tubing  Ext. Port  Other:

Sample date: 8/21/13 Sample time: 1428 DTW at sample: 35.80

Sample ID: TP-2 Lab: Kiff Number of bottles: 3

Analysis: See COC (ISCO)

Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe2 <sup>+</sup> :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

**ATTACHMENT C**  
**HISTORICAL WELL AND GROUNDWATER ELEVATIONS**



**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
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		
12/31/00	31.71	442.58		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-1 (cont.)	3/27/01	30.43	474.29	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		
10/13/08	51.00	423.29		
2/11/09	48.69	425.60		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-1 (cont.)	4/27/09	41.90	474.29	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 <sup>(c)</sup>
	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	
	11/12/12	37.10	437.11	
	2/12/13	30.98	443.23	
	4/22/13	33.11	441.10	
8/21/13	35.40	438.81		
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

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-2 (cont.)	6/13/96	23.69	472.98	449.29
	9/16/96	31.24		441.74
	12/2/96	26.90		446.08
	3/7/97	21.33		451.65
	6/12/97	29.94		443.04
	9/29/97	34.22		438.76
	12/1/97	35.94		437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00
	9/7/99	31.85		441.13
	12/13/99	33.72		439.26
	3/13/00	26.54		446.44
	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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-2 (cont.)	5/10/04	30.91	472.98	442.07
	8/4/04	35.36		437.62
	11/4/04	34.92		438.06
	1/12/05	29.46		443.52
	5/2/05	25.61		447.37
	7/19/05	30.11		442.87
	11/21/05	32.04		440.94
	2/9/06	27.11		445.87
	5/17/06	25.18		447.80
	8/9/06	32.69		440.29
	11/8/06	33.21		439.77
	2/14/07	31.27		441.71
	5/17/07	34.40		438.58
	8/2/07	41.23		431.75
	11/12/07	48.22		424.76
	2/14/08	36.31		436.67
	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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-2 (cont.)	5/7/12	36.89	472.98	436.09
	8/6/12	40.95		432.03
	11/12/12	39.03		433.95
	2/12/13	32.13		440.85
	4/22/13	34.15		438.83
	6/24/13	35.05		437.93
	8/21/13	36.05		436.93
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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-3 (cont.)	6/10/99	28.10	473.37	445.27
	9/7/99	30.38		442.99
	12/13/99	31.46		441.91
	3/13/00	24.28		449.09
	6/12/00	26.80		446.57
	11/10/00	29.47		443.90
	12/31/00	31.38		441.99
	3/27/01	29.94		443.43
	6/30/01	37.54		435.83
	9/26/01	45.17		428.20
	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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-3 (cont.)	5/17/07	33.64	473.37	439.73
	8/2/07	41.74		431.63
	11/12/07	47.41		425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77
	7/23/08	45.00		428.37
	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
	4/27/09	41.18		432.19
	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		
11/12/12	39.24	434.13		
2/12/13	31.34	442.03		
4/22/13	33.51	439.86		
8/21/13	35.71	437.66		
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



**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-4 (cont.)	9/26/95	29.70	473.64	443.94
	12/15/95	27.56		446.08
	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73
	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		

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
MW-4 (cont.)	9/9/03	34.64	473.64	439.00
	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY <sup>(d)</sup>		--
	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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-4 (cont.)	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
	11/12/12	39.65		433.99
	2/12/13	31.56		442.08
	4/22/13	33.80		439.84
	8/21/13	36.10		437.54
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62
	3/19/98	20.93		451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
6/10/99	28.05	444.62		
9/7/99	31.11	441.56		
12/13/99	32.66	440.01		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-5 (cont.)	3/13/00	25.87	472.67	446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
	12/31/00	31.81		440.86
	3/27/01	30.57		442.10
	6/30/01	37.24		435.43
	9/26/01	44.53		428.14
	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	12/3/02	36.12		436.55
	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
	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	--		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-5 (cont.)	2/14/08	35.66	472.67	437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
	2/11/10	36.62		436.05
	5/3/10	32.89		439.78
	8/2/10	36.16		436.51
	11/2/10	38.75		433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
	10/10/11	35.58		437.09
	1/31/12	39.80		432.87
	5/7/12	37.29		435.38
	8/6/12	NM <sup>(e)</sup>		--
	11/12/12	40.72		431.95
2/12/13	32.68	439.99		
4/22/13	35.09	437.58		
8/21/13	37.00	435.67		
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

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-6 (cont.)	6/13/96	24.62	471.93	447.31
	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
	12/13/99	35.84		436.09
	3/13/00	28.45		443.48
	6/12/00	30.52		441.41
	11/10/00	32.99		438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	DRY		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64
	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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-6 (cont.)	5/10/04	32.98	471.93	438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	8/2/07	42.24		429.69
	11/12/07	DRY		--
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
	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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-6 (cont.)	5/7/12	39.11	471.93	432.82
	8/6/12	43.66		428.27
	11/12/12	42.20		429.73
	2/12/13	34.24		437.69
	4/22/13	36.78		435.15
	6/25/13	37.15		434.78
	8/21/13	37.98		433.95
MW-7	3/30/94	31.98	472.33	440.35
	4/25/94	33.56		438.77
	8/12/94	43.35		428.98
	12/14/94	39.34		432.99
	2/10/95	32.11		440.22
	6/15/95	25.51		446.82
	9/26/95	31.43		440.90
	12/15/95	28.97		443.36
	3/21/96	17.36		454.97
	6/13/96	23.47		448.86
	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
1/17/99	31.04	441.29		
6/10/99	29.89	442.44		
9/7/99	32.38	439.95		
12/13/99	33.98	438.35		
3/13/00	27.09	445.24		



**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-7 (cont.)	6/12/00	28.76	472.33	443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	6/30/01	37.50		434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	3/18/02	39.22		433.11
	6/5/02	36.55		435.78
	8/21/02	36.81		435.52
	12/3/02	36.52		435.81
	3/4/03	32.60		439.73
	6/10/03	31.33		441.00
	9/9/03	34.71		437.62
	12/23/03	30.80		441.53
	3/23/04	26.41		445.92
	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
5/17/07	33.31	439.02		
8/2/07	37.09	435.24		
11/12/07	DRY	--		
2/14/08	36.51	435.82		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-7 (cont.)	5/8/08	36.00	472.33	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
	1/31/12	38.74		433.59
	5/7/12	35.97		436.36
	8/6/12	39.85		432.48
	11/12/12	38.73		433.60
	2/12/13	31.46		440.87
4/22/13	33.19	439.14		
6/24/13	34.10	438.23		
8/21/13	36.90	435.43		
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
MW-8 (cont.)	2/9/06	27.40	471.18	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
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
	10/10/11	35.69		435.49
	1/31/12	40.08		431.10
	5/7/12	37.38		433.80
	8/6/12	41.94		429.24
	11/12/12	40.87		430.31
2/12/13	32.81	438.37		
4/22/13	35.00	436.18		
6/25/13	36.40	434.78		
8/21/13	37.20	433.98		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
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
	5/3/10	34.96		435.82
	8/2/10	38.00		432.78
	11/2/10	40.30		430.48
2/1/11	35.97	434.81		
4/25/11	30.64	440.14		
8/3/11	35.17	435.61		
10/10/11	37.64	433.14		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-9 (cont.)	1/31/12	42.06	470.78	428.72
	5/7/12	39.43		431.35
	8/6/12	43.51		427.27
	11/12/12	42.66		428.12
	2/12/13	34.70		436.08
	4/22/13	37.01		433.77
	6/25/13	37.82		432.96
	8/21/13	39.02		431.76
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	--		
4/27/09	45.10	426.53		
8/4/09	44.52	427.11		

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
MW-10 (cont.)	12/8/09	42.80	471.63	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
	11/12/12	40.53		431.10
	2/12/13	33.19		438.44
	4/22/13	34.99		436.64
	6/25/13	36.25		435.38
8/21/13	37.11	434.52		
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	--	
	5/3/10	31.36	472.96 <sup>(c)</sup>	441.90
	8/2/10	31.94		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

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
MW-11 (cont.)	8/6/12	35.20	472.96	437.76
	11/12/12	35.34		437.62
	2/12/13	30.64		442.32
	4/22/13	32.74		440.22
	6/24/13	33.62		439.34
	8/21/13	34.74		438.22
MW-12	6/14/12	40.62	469.77	429.15
	8/6/12	43.22		426.55
	11/12/12	41.85		427.92
	2/12/13	34.10		435.67
	4/22/13	36.18		433.59
	6/25/13	37.80		431.97
	8/21/13	38.80		430.97
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	--		

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
VW-2 (cont.)	4/27/09	DRY	473.28	--
	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 <sup>(c)</sup>	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
	11/12/12	33.90		438.67
	2/12/13	31.60		440.97
	4/22/13	33.51		439.06
8/21/13	DRY	--		
VW-3	8/4/04	32.89	474.38	441.49
	11/4/04	34.78		439.60
	1/12/05	29.51		444.87
	5/2/05	24.79		449.59
	7/19/05	28.91		445.47
	11/21/05	31.07		443.31
	2/9/06	26.60		447.78
	5/16/06	24.19		450.19
	8/9/06	30.53		443.85
	11/8/06	31.62		442.76
	2/14/07	30.48		443.90
	5/17/07	31.70		442.68
	8/2/07	35.55		438.83
	11/12/07	DRY		--



**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
VW-3 (cont.)	2/14/08	DRY	474.38	--
	5/8/08	34.80		439.58
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	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		--
	11/12/12	DRY		--
2/12/13	31.70	442.68		
4/22/13	33.49	440.89		
8/21/13	35.46	438.92		
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
TP-1 (cont.)	11/12/07	DRY	472.82	--
	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 <sup>(c)</sup>	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
11/12/12	37.00	435.64		
2/12/13	31.96	440.68		
4/22/13	33.71	438.93		
8/21/13	35.86	436.78		
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
TP-2 (cont.)	8/2/07	39.35	472.93	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 <sup>(c)</sup>	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
	11/12/12	36.25		436.53
	2/12/13	31.81		440.97
4/22/13	33.70	439.08		
8/21/13	35.43	437.35		
DW-1	5/22/08	37.30	472.85	435.55
	7/23/08	45.55		427.30
	10/13/08	51.40		421.45
	2/11/09	48.28		424.57
	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-1 (cont.)	2/11/10	35.57	472.85	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
	11/12/12	39.29		433.56
	2/12/13	31.63		441.22
	4/22/13	33.72		439.13
	6/24/13	35.08		437.77
8/21/13	35.90	436.95		
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		

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-2 (cont.)	5/7/12	39.10	471.61	432.51
	8/6/12	43.90		427.71
	11/12/12	42.25		429.36
	2/12/13	34.35		437.26
	4/22/13	36.70		434.91
	6/25/13	36.94		434.67
	8/21/13	37.85		433.76
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
	11/12/12	41.48		428.85
	2/12/13	33.87		436.46
4/22/13	36.10	434.23		
6/25/13	37.39	432.94		
8/21/13	38.38	431.95		
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-4 (cont.)	10/13/08	54.90	468.48	413.58
	2/11/09	51.71		416.77
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
	2/11/10	37.98		430.50
	5/3/10	34.04		434.44
	8/2/10	36.94		431.54
	11/2/10	39.50		428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
	10/10/11	36.60		431.88
	1/31/12	42.10		426.38
	5/7/12	38.26		430.22
	8/6/12	42.80		425.68
	11/12/12	40.86		427.62
	2/12/13	33.29		435.19
4/22/13	35.90	432.58		
8/21/13	38.30	430.18		
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

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-5 (cont.)	11/12/12	41.65	471.86	430.21
	2/12/13	34.10		437.76
	4/22/13	36.52		435.34
	6/25/13	37.42		434.44
	8/21/13	38.35		433.51
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
	11/12/12	42.95		428.82
	2/12/13	34.96		436.81
	4/22/13	37.29		434.48
	6/25/13	38.55		433.22
8/21/13	39.55	432.22		
DW-7	12/8/09	43.01	470.07	427.06
	2/11/10	38.70		431.37
	5/3/10	34.64		435.43
	8/2/10	37.82		432.25
	11/2/10	40.42		429.65
	2/1/11	35.76		434.31
	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
	10/10/11	37.55		432.52
	1/31/12	42.35		427.72

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
DW-7 (cont.)	5/7/12	39.30	470.07	430.77
	8/6/12	44.02		426.05
	11/12/12	42.43		427.64
	2/12/13	34.54		435.53
	4/22/13	36.80		433.27
	6/25/13	38.44		431.63
	8/21/13	39.91		430.16
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
	11/12/12	38.00		434.31
	2/12/13	30.46		441.85
	4/22/13	32.66		439.65
	6/24/13	33.87		438.44
	8/21/13	34.43		437.88
DW-9	6/14/12	40.85	469.80	428.95
	8/6/12	43.65		426.15
	11/12/12	42.05		427.75
	2/12/13	34.25		435.55
	4/22/13	36.39		433.41
	6/25/13	38.46		431.34
	8/21/13	39.32		430.48
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	--



**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
IP-1	7/23/08	45.49	473.16	427.67
	10/13/08	51.30		421.86
	5/3/10 <sup>(f)</sup>	33.80		439.36
	4/25/11	27.97	473.06 <sup>(c)</sup>	445.09
	1/31/12	39.26		433.80
	5/7/12	36.18		436.88
	8/6/12	40.23		432.83
	11/12/12	38.76		434.30
	2/12/13	31.25		441.81
	4/22/13	33.28		439.78
	6/24/13	34.85		438.21
	8/21/13	36.10		436.96
IP-2	7/23/08	46.83	473.21	426.38
	10/13/08	51.40		421.81
	5/3/10 <sup>(f)</sup>	32.00		441.21
	4/25/11	28.04	473.06 <sup>(c)</sup>	445.02
	5/7/12	37.21		435.85
	8/6/12	40.78		432.28
	11/12/12	39.79		433.27
	2/12/13	NM		--
	4/22/13	33.86		439.20
IP-3	7/23/08	45.47	472.97	427.50
	10/13/08	51.11		421.86
	5/3/10 <sup>(f)</sup>	31.68		441.29
	4/25/11	28.07	473.05 <sup>(c)</sup>	444.98
	5/7/12	36.41		436.64
	8/6/12	40.70		432.35
	11/12/12	39.41		433.64
	2/12/13	NM		--
	4/22/13	34.12		438.93
IP-4	7/23/08	44.55	473.02	428.47
	10/13/08	50.89		422.13
	5/3/10 <sup>(f)</sup>	31.61		441.41

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
IP-4 (cont.)	4/25/11	27.93	473.10 <sup>(c)</sup>	445.17
	5/7/12	36.30		436.80
	8/6/12	40.67		432.43
	11/12/12	39.15		433.95
	2/12/13	NM		--
	4/22/13	33.76		439.34
IP-5	7/23/08	44.70	473.06	428.36
	10/13/08	51.06		422.00
	5/3/10 <sup>(f)</sup>	31.60		441.46
	4/25/11	27.80	473.05 <sup>(c)</sup>	445.25
	5/7/12	36.90		436.15
	8/6/12	40.65		432.40
	11/12/12	39.16		433.89
	2/12/13	NM		--
	4/22/13	33.78		439.27
	6/24/13	35.08		437.97
IP-6	7/23/08	49.91	472.73	422.82
	10/13/08	55.63		417.10
	5/3/10 <sup>(f)</sup>	34.98		437.75
	4/25/11	30.60	472.43 <sup>(c)</sup>	441.83
	5/7/12	39.70		432.73
	8/6/12	44.44		427.99
	11/12/12	42.67		429.76
	2/12/13	NM		--
	4/22/13	37.05		435.38
IP-7	7/23/08	51.45	472.86	421.41
	10/13/08	57.23		415.63
	5/3/10 <sup>(f)</sup>	35.75		437.11
	4/25/11	31.51	472.43 <sup>(c)</sup>	440.92
	5/7/12	41.87		430.56
	8/6/12	45.63		426.80
	11/12/12	43.87		428.56

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation <sup>(a)</sup> (feet MSL)	Water Table Elevation <sup>(b)</sup> (feet MSL)
IP-7 (cont.)	2/12/13	NM	472.43	--
	4/22/13	38.34		434.09
IP-8	12/16/08	50.48	473.13	422.65
	5/3/10 <sup>(f)</sup>	33.34		439.79
	4/25/11	28.07		473.22 <sup>(c)</sup>
	1/31/12	39.45	433.77	
	5/7/12	36.25	436.97	
	8/6/12	40.32	432.90	
	11/12/12	39.10	434.12	
	2/12/13	31.59	441.63	
	4/22/13	33.75	439.47	
	8/21/13	36.69	436.53	
IP-9	12/16/08	52.51	473.47	420.96
	5/3/10 <sup>(f)</sup>	31.79		441.68
	4/25/11	27.84	473.35 <sup>(c)</sup>	445.51
	1/31/12	39.37		433.98
	5/7/12	37.03		436.32
	8/6/12	40.30		433.05
	11/12/12	38.77		434.58
	2/12/13	31.25		442.10
	4/22/13	33.85		439.50
	8/21/13	35.50		437.85
IP-10	2/11/09	48.77	473.78	425.01
	5/3/10 <sup>(f)</sup>	32.23		441.55
	4/25/11	27.79	473.88 <sup>(c)</sup>	446.09
	1/31/12	39.24		434.64
	5/7/12	36.24		437.64
	8/6/12	40.36		433.52
	11/12/12	38.99		434.89
	2/12/13	31.18		442.70
	4/22/13	33.40		440.48

**TABLE C-1**

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS  
TESORO - LIVERMORE, 67076**

<b>Well No.</b>	<b>Date of Measurement</b>	<b>Depth to Water (feet below casing)</b>	<b>PVC Casing Elevation<sup>(a)</sup> (feet MSL)</b>	<b>Water Table Elevation<sup>(b)</sup> (feet MSL)</b>
IP-10	6/24/13	34.87	473.88	439.01
(cont.)	8/21/13	35.55		438.33

- (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 D**  
**HISTORICAL GROUNDWATER ANALYTICAL RESULTS**

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-1	6/1/93	27,000	2,200	400	ND<0.5 <sup>(c)</sup>	4,900	-- <sup>(d)</sup>	--	--	--	--	--	--	--	--
	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 <sup>(e)</sup>	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	--	--	--	--	--	--	--	--	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-1 (cont.)	11/30/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/31/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	90	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-1 (cont.)	5/17/07	2,300	ND<0.5	0.66	17	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	--	--
	8/2/07	580	5.7	0.64	6.8	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	750	0.85	2.7	4.2	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	2/14/08	1,700	3.3	17	38	83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	620	1.8	ND<0.5	12	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	270	0.52	ND<0.5	3.9	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	10/13/08	730	ND<0.5	ND<0.5	0.68	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	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	
11/12/12	110	ND<0.5	ND<0.5	1.1	3.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	



TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-1 (cont.)	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/22/13	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<50	ND<5.0	ND<0.5	ND<0.5
MW-2	6/1/93	170,000	20,000	21,000	3,300	18,000	--	--	--	--	--	--	--	--	--
	6/22/93	160,000	19,000	22,000	3,500	18,000	--	--	--	--	--	--	--	--	--
	10/6/93	110,000	17,000	17,000	3,000	15,000	--	--	--	--	--	--	--	--	--
	1/13/94	93,000	20,000	19,000	2,300	14,000	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	41,000	9,600	7,300	840	7,800	--	--	--	--	--	--	--	--	--
	8/12/94	59,000	11,000	11,000	2,300	11,000	--	--	--	--	--	--	--	--	--
	12/14/94	63,000	13,000	13,000	2,200	12,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	12,000	12,000	2,200	11,000	--	--	--	--	--	--	--	--	--
	6/15/95	61,000	11,000	12,000	1,900	11,000	--	--	--	--	--	--	--	--	--
	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-2 (cont.)	3/19/98	42,000	5,000	3,600	2,000	8,300	ND<250	--	--	--	--	--	--	--	--
	5/29/98	68,000	5,600	4,700	2,400	11,000	ND<250	--	--	--	--	--	--	--	--
	9/15/98	36,000	3,900	1,200	1,400	7,800	ND<250	--	--	--	--	--	--	--	--
	11/30/98	16,000	2,200	59	1,200	1,500	ND<250	--	--	--	--	--	--	--	--
	1/17/99	30,000	4,000	2,200	2,100	9,500	ND<250	--	--	--	--	--	--	--	--
	6/10/99	70,000	6,300	1,800	3,600	14,000	ND<500	--	--	--	--	--	--	--	--
	9/7/99	42,000	3,800	840	1,900	8,000	150	--	--	--	--	--	--	--	--
	12/13/99	14,000	1,400	87	690	110	34	--	--	--	--	--	--	--	--
	3/13/00	38,000	2,400	2,300	1,600	6,400	2,400	--	--	--	--	--	--	--	--
	6/12/00	56,000	4,000	950	2,300	7,200	ND<50	--	--	--	--	--	--	--	--
	11/10/00	35,000	5,100	850	1,500	3,200	230	--	--	--	--	--	--	--	--
	12/31/00	21,000	3,200	420	1,300	1,200	440	--	--	--	--	--	--	--	--
	3/27/01	3,500	420	64	16	280	120	--	--	--	--	--	--	--	--
	6/30/01	1,200	88	4.5	65	37	29	--	--	--	--	--	--	--	--
	9/26/01	53,000	8,500	1,500	2,400	4,600	270	--	--	--	--	--	--	--	--
	12/18/01	26,000	5,400	900	1,500	2,200	430	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	4,200	240	7.3	200	53	89	--	--	--	--	--	--	--	--
	6/5/02	25,000	3,500	390	1,400	2,400	550	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	32	620	300	160	--	--	--	--	--	--	--	--
12/3/02	3,700	110	2.5	130	11	29	--	--	--	--	--	--	--	--	
3/4/03	8,700	1,100	77	350	540	230	ND<0.5	ND<0.5	ND<10	21	ND<150	ND<5	ND<0.5	ND<0.5	
6/10/03	6,300	660	35	190	120	410	ND<2.5	ND<2.5	ND<5	ND<25	ND<250	ND<25	ND<2.5	ND<2.5	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-2 (cont.)	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 <sup>(f)</sup>	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 <sup>(f)</sup>	ND<700	ND<70	ND<7	ND<7
	11/22/05	33,000	4,400	880	1,200	2,600	2,200	ND<9	ND<9	19	480	ND<900	ND<90	ND<9	ND<9
	2/9/06	25,000	3,300	720	1,300	2,200	2,500	ND<7	ND<7	27	490	ND<700	ND<70	ND<7	ND<7
	5/17/06	22,000	3,200	240	1,200	2,100	4,600	ND<7	ND<7	46	1,000	ND<700	ND<70	ND<7	ND<7
	8/9/06	34,000	4,200	830	1,300	2,400	2,900	ND<9	ND<9	25	1,600	ND<900	ND<90	ND<9	ND<9
	11/8/06	27,000	3,600	300	1,200	1,800	1,500	ND<9	ND<9	15	1,100	ND<900	ND<90	ND<9	ND<9
	2/14/07	36,000	4,600	740	1,600	2,100	1,800	ND<5	ND<5	20	910	ND<700	ND<50	ND<5	ND<5
	5/17/07	37,000	7,400	680	1,900	2,400	3,000	ND<9	ND<9	24	2,600	ND<4,000	ND<90	--	--
	8/2/07	37,000	4,200	500	1,800	2,200	1,300	ND<9	ND<9	18	1,200	ND<2,000	ND<90	ND<9	ND<9
	11/12/07	25,000	5,900	120	1,700	820	1,400	ND<15	ND<15	16	720	ND<1,500	ND<150	ND<15	ND<15
	2/14/08	31,000	5,400	450	1,900	2,000	1,200	ND<15	ND<15	16	410	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	29,000	3,200	620	1,400	1,700	580	ND<5	ND<5	10	210	ND<1,000	ND<50	ND<5	ND<5
7/23/08	25,000	3,800	220	1,600	1,000	780	ND<5	ND<5	14	470	ND<900	ND<50	ND<5	ND<5	
10/13/08	31,000	7,600	160	1,800	440	1,600	ND<9	ND<9	20	710	ND<1,500	ND<90	ND<9	ND<9	
2/11/09	22,000	4,400	120	1,500	430	650	ND<9	ND<9	12	330	ND<3,000	ND<90	ND<9	ND<9	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-2 (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
	11/14/12	5,700	480	30	96	300	200	ND<0.9	ND<0.9	1.8	110	ND<200	ND<9	ND<0.9	ND<0.9
	2/13/13	270	29	4.4	8.9	19	7.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	430	10	2.2	3.8	8.5	13	ND<0.5	ND<0.5	ND<0.5	6.6	ND<50	ND<8	ND<0.5	ND<0.5
6/24/13	1,700	7.2	0.91	12	16	9.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/21/13	11,000	560	30	430	440	88	ND<0.5	ND<0.5	1.0	48	ND<50	ND<8	ND<0.5	ND<0.5	
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	--	--	--	--	--	--	--	--	--

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-3 (cont.)	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	60	0.75	3.2	0.50	3.6	--	--	--	--	--	--	--	--	--
	8/12/94	310	7.3	14	2.6	13	--	--	--	--	--	--	--	--	--
	12/14/94	75	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	96	1.4	ND<0.5	ND<0.5	1.8	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	140	ND<0.5	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-3 (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	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	0.64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	150	3.6	1.1	2.4	2.6	0.82	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	2/11/10	61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	5/6/10	ND<50	ND<0.5	1.0	ND<0.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	74	2.4	5.5	0.96	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	ND<50	ND<0.5	2.5	ND<0.5	3.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	11/12/12	170	ND<0.5	0.83	4.1	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
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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	--	--	--	--	--	--	--	--	--

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-4 (cont.)	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	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-4 (cont.)	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
	11/12/12	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
2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--



TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-5 (cont.)	2/10/95	5,200	490	ND<13	23	19	--	--	--	--	--	--	--	--	--
	6/15/95	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	1,400	61	ND<0.5	3.1	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	2,100	77	1.5	10	1.5	--	--	--	--	--	--	--	--	--
	3/21/96	930	35	2.0	2.0	18	--	--	--	--	--	--	--	--	--
	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-5 (cont.)	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	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	NS
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--	--
	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/03	490	10	ND<0.5	2.2	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	6/10/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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	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	NS
	8/4/04	160	ND<0.5	ND<0.5	ND<0.5	0.71	0.94	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/4/04	290	0.74	ND<0.5	0.58	1.3	0.61	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	300	ND<0.5	ND<0.5	0.51	1.6	0.73	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
7/20/05	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
11/21/05	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
2/9/06	ND<50	ND<0.5	ND<0.5	0.63	1.0	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-5 (cont.)	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	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	NS
	10/13/08	NS	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	NS
	4/27/09	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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	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	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	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		

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-5 (cont.)	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
	11/12/12	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
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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	--	--	--	--	--	--	--	--
	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--
12/1/97	20,000	2,100	ND<10	1,200	2,200	ND<100	--	--	--	--	--	--	--	--	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-6 (cont.)	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-6 (cont.)	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<5	ND<5	
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<10	ND<10	
	3/23/04	24,000	1,400	71	1,500	2,000	7,500	ND<20	ND<20	66	ND<200	ND<2,000	ND<200	ND<20	ND<20	
	5/10/04	6,500	550	ND<10	71	43	3,700	ND<10	ND<10	31	ND<100	ND<1,000	ND<100	ND<10	ND<10	
	8/4/04	8,200	990	19	300	120	3,300	ND<5	ND<5	23	ND<50	ND<500	ND<50	ND<5	ND<5	
	11/4/04	9,600	1,100	30	320	160	2,200	ND<4	ND<4	18	22	ND<400	ND<40	ND<4	ND<4	
	1/12/05	12,000	1,100	34	600	500	3,600	ND<4	ND<4	31	30	ND<400	ND<40	ND<4	ND<4	
	5/2/05	14,000	630	22	610	920	4,000	ND<10	ND<10	32	120	ND<3,000	ND<100	ND<10	ND<10	
	7/20/05	9,800	1,200	21	340	150	1,800	ND<2.5	ND<2.5	14	140	ND<500	ND<25	ND<2.5	ND<2.5	
	11/21/05	6,600	150	26	580	640	100	ND<1	ND<1	ND<1	13	ND<100	ND<10	ND<1	ND<1	
	2/9/06	7,100	340	11	370	360	910	ND<2	ND<2	9.3	120	ND<200	ND<20	ND<2	ND<2	
	5/17/06	7,100	270	5.1	320	290	930	ND<2	ND<2	8.4	260	ND<200	ND<20	ND<2	ND<2	
	8/9/06	5,800	440	7.5	120	45	670	ND<2	ND<2	7.3	380	ND<2,000	ND<50	ND<2	ND<2	
	11/8/06	9,200	990	37	390	140	310	ND<2	ND<2	3.2	110	ND<200	ND<20	ND<2	ND<2	
	2/14/07	5,900	480	10	73	23	1,600	ND<2	ND<2	14	1,100	ND<500	ND<20	ND<2	ND<2	
	5/17/07	3,700	240	3.4	30	10	770	ND<0.5	ND<0.5	9.2	800	ND<2,000	ND<5	--	--	
	8/2/07	15,000	1,800	120	980	510	310	ND<2.5	ND<2.5	3.0	180	ND<250	ND<25	ND<2.5	ND<2.5	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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	NS	
10/13/08	NS	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	NS	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-6 (cont.)	4/28/09	16,000	2,200	160	860	230	320	ND<2.5	ND<2.5	3.8	580	ND<1,000	ND<25	ND<2.5	ND<2.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	15,000	2,100	96	800	160	340	ND<5	ND<5	ND<5	460	ND<2,000	ND<50	ND<5	ND<5
	2/12/10	21,000	2,500	140	1,000	240	540	ND<5	ND<5	6.0	460	ND<500	ND<50	ND<5	ND<5
	5/4/10	17,000	2,100	120	780	260	820	ND<5	ND<5	8.6	450	ND<500	ND<50	ND<5	ND<5
	8/3/10	21,000	2,700	120	690	250	730	ND<5	ND<5	7.4	480	ND<500	ND<50	ND<5	ND<5
	11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5
	2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5
	4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5
	8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5
	10/11/11	10,000	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
	11/14/12	17,000	1,600	68	120	96	190	ND<2.5	ND<2.5	ND<2.5	86	ND<500	ND<25	ND<2.5	ND<2.5
	2/14/13	12,000	1,400	42	230	56	200	ND<2.5	ND<2.5	2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
4/24/13	8,600	880	22	89	25	190	ND<1.5	ND<1.5	2.7	700	ND<400	ND<15	ND<1.5	ND<1.5	
6/25/13	6,800	350	7.0	26	9.3	81	ND<0.9	ND<0.9	1.0	280	ND<800	ND<9	ND<0.9	ND<0.9	
8/22/13	14,000	1,500	59	290	150	110	ND<1.5	ND<1.5	ND<1.5	93	ND<400	ND<15	ND<1.5	ND<1.5	
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	--	--	--	--	--	--	--	--	--

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-7 (cont.)	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--	
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--	
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--	
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--	
	3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--	
	6/13/96	5,900	98	19	370	620	ND<50	--	--	--	--	--	--	--	--	--
	9/16/96	7,800	140	43	440	590	ND<25	--	--	--	--	--	--	--	--	--
	12/2/96	6,300	87	29	290	430	ND<50	--	--	--	--	--	--	--	--	--
	3/7/97	4,500	35	19	360	470	ND<25	--	--	--	--	--	--	--	--	--
	6/12/97	3,900	29	5.2	170	48	ND<5	--	--	--	--	--	--	--	--	--
	9/29/97	6,100	56	9.0	340	190	ND<25	--	--	--	--	--	--	--	--	--
	12/1/97	6,500	24	ND<2.5	400	250	ND<25	--	--	--	--	--	--	--	--	--
	3/19/98	2,000	20	ND<2.5	73	79	ND<25	--	--	--	--	--	--	--	--	--
	5/29/98	5,700	22	7.3	290	350	ND<25	--	--	--	--	--	--	--	--	--
	9/15/98	1,700	15	ND<2.5	44	5.1	ND<25	--	--	--	--	--	--	--	--	--
	11/30/98	4,800	42	12	270	640	ND<25	--	--	--	--	--	--	--	--	--
	1/17/99	3,400	33	ND<5	200	190	ND<50	--	--	--	--	--	--	--	--	--
	6/10/99	1,700	7.8	1.5	23	4.1	ND<5	--	--	--	--	--	--	--	--	--
	9/7/99	1,900	9.7	2.1	70	2.9	ND<5	--	--	--	--	--	--	--	--	--
	12/13/99	1,900	8.0	1.1	10	1.1	ND<5	--	--	--	--	--	--	--	--	--
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	ND<0.5	--	--	--	--	--	--	--	--	



TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-7 (cont.)	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	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	
	5/2/05	710	ND<0.5	ND<0.5	0.75	0.52	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
7/20/05	1,400	1.1	ND<0.5	9.2	8.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
11/21/05	1,100	0.56	ND<0.5	3.4	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
2/9/06	270	ND<0.5	ND<0.5	1.2	0.98	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-7 (cont.)	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 D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-7 (cont.)	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
	11/13/12	690	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	860	1.0	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	720	0.65	0.61	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/24/13	1,700	1.3	ND<0.5	2.7	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	880	0.54	ND<0.5	1.7	0.82	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-8 (cont.)	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
	12/17/09	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	
11/12/12	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-8 (cont.)	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	1,100	2.4	ND<0.5	0.80	0.80	2.1	ND<0.5	ND<0.5	ND<0.5	5.9	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	760	8.5	ND<0.5	4.9	0.95	18	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	1,100	4.4	ND<0.5	1.3	0.67	11	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	1,200	3.4	0.59	16	7.6	6.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	610	0.52	ND<0.5	1.3	ND<0.5	2.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	1,400	1.6	0.55	5.5	1.1	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	1,500	10	0.55	6.7	1.1	27	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,800	5.5	0.69	12	1.6	10	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,200	0.94	ND<0.5	1.4	ND<0.5	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	1,200	2.8	0.51	6.4	0.84	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	1,600	3.8	0.57	12	1.8	4.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	760	ND<0.5	ND<0.5	1.0	ND<0.5	2.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	1,700	1.7	0.53	6.7	1.4	1.7	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	1,000	ND<0.5	ND<0.5	0.51	ND<0.5	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	870	ND<0.5	ND<0.5	0.54	ND<0.5	0.93	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	NS	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	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-9 (cont.)	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
	11/13/12	740	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4/23/13	1,900	4.5	0.75	1.7	1.0	3.4	ND<0.5	ND<0.5	ND<0.5	5.0	ND<50	ND<5	ND<0.5	ND<0.5	
6/25/13	2,800	20	0.91	3.8	2.7	6.0	ND<0.5	ND<0.5	ND<0.5	29	ND<50	ND<5	ND<0.5	ND<0.5	
8/22/13	1,500	20	0.70	1.7	0.84	9.0	ND<0.5	ND<0.5	ND<0.5	40	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-10	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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<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<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	NS	
10/13/08	NS	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	NS	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
MW-10 (cont.)	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	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<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	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<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	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<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	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<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	NS
	11/12/12	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<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
6/25/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	



TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-11 (cont.)	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
	11/13/12	1,100	5.7	4.1	15	86	1.6	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	2/13/13	6,400	28	72	160	860	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	4/24/13	5,800	16	18	140	640	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
6/24/13	8,000	24	34	190	830	ND<0.9	ND<0.9	ND<0.9	ND<0.9	5.8	ND<90	ND<9	ND<0.9	ND<0.9	
8/22/13	9,600	26	32	260	940	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.6	ND<200	ND<20	ND<0.9	ND<0.9	
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
	11/14/12	5,500	6.8	2.0	67	13	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	2/13/13	2,500	7.6	1.3	26	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
	4/24/13	1,400	2.2	0.78	7.7	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<20	ND<0.5	ND<0.5

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
MW-12 (cont.)	6/25/13	4,400	8.8	5.2	26	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	4,500	15	2.4	33	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
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 <sup>(f)</sup>	ND<500	ND<50	ND<5	ND<5
	5/2/05	2,600	84	ND<2	13	7.0	960	ND<2	ND<2	12	57	ND<500	ND<20	ND<2	ND<2
	7/20/05	6,200	240	13	290	480	6,600	ND<2	ND<2	56	59 <sup>(f)</sup>	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 <sup>(f)</sup>	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
VW-2 (cont.)	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<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	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<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	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<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	NS
	11/12/12	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<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/24/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/21/13	NS	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
VW-3 (cont.)	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	NS
	2/14/08	NS	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	NS
	10/13/08	NS	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	NS
	4/27/09	NS	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	NS
	12/9/09	NS	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	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	NS
	11/4/10	NS	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	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	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		

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
VW-3 (cont.)	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
TP-1 (cont.)	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	10,000	690	19	700	45	1,000	ND<2.5	ND<2.5	8.8	2,900	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	15,000	2,100	360	1,100	620	3,400	ND<8	ND<8	27	4,500	ND<800	ND<80	ND<8	ND<8
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	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
	11/13/12	180	2.3	0.63	4.7	2.3	17	ND<0.5	ND<0.5	ND<0.5	9.6	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	160	ND<0.5	ND<0.5	3.6	6.0	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
4/24/13	2,000	35	21	22	180	76	ND<0.5	ND<0.5	0.70	33	ND<50	ND<5	ND<0.5	ND<0.5	
8/22/13	3,500	28	3.8	35	11	100	ND<0.5	ND<0.5	0.98	42	ND<50	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

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
TP-2 (cont.)	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
	12/17/09	7,200	950	ND<25	77	ND<25	13,000	ND<25	ND<25	130	20,000	ND<2,500	ND<250	ND<25	ND<25
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	6,400	740	ND<25	450	130	14,000	ND<25	ND<25	130	9,900	ND<2,500	ND<250	ND<25	ND<25
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6.3	14,000	ND<500	ND<50	ND<5	ND<5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	130	1.6	ND<0.5	1.5	5.2	350	ND<0.5	ND<0.5	1.3	630	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	120	ND<0.5	ND<0.5	ND<0.5	380	ND<50	ND<5	ND<0.5	ND<0.5
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	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
TP-2 (cont.)	11/12/12	59	ND<0.5	ND<0.5	0.59	0.54	2.8	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	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
	4/24/13	100	1.2	0.88	1.6	7.4	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.89	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
	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
	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	
11/12/12	250	ND<0.5	ND<0.5	2.7	5.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	



TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-1 (cont.)	2/12/13	ND<50	ND<0.5	ND<0.5	0.54	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	0.78	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/24/13	12,000	110	66	280	860	13	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	1,100	18	5.8	34	82	5.9	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	
11/14/12	4,000	190	7.8	13	13	120	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-2 (cont.)	2/13/13	6,400	500	18	60	19	140	ND<0.5	ND<0.5	1.6	510	ND<400	ND<8	ND<0.5	ND<0.5
	4/24/13	4,500	320	7.2	26	9.5	100	ND<0.5	ND<0.5	1.3	370	ND<80	ND<5	ND<0.5	ND<0.5
	6/25/13	4,900	250	6.2	58	26	100	ND<0.5	ND<0.5	1.2	400	ND<50	ND<8	ND<0.5	ND<0.5
	8/22/13	8,300	600	23	96	42	240	ND<0.5	ND<0.5	2.5	500	ND<50	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
	12/9/09	2,200	24	5.9	56	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.2	ND<300	ND<20	ND<0.5	ND<0.5
	2/11/10	700	9.5	2.0	18	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	5/4/10	420	5.5	0.93	8.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/2/10	640	4.0	ND<0.5	5.3	3.9	0.59	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	60	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	310	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/10/11	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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	
11/13/12	410	ND<0.5	ND<0.5	1.7	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-3 (cont.)	2/12/13	120	ND<0.5	ND<0.5	1.2	0.50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	66	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	5,600	1.1	1.1	120	76	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	840	1.4	ND<0.5	3.2	1.7	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-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
	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
11/12/12	ND<50	ND<0.5	ND<0.5	0.70	1.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-4 (cont.)	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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
	11/14/12	8,800	24	2.5	110	140	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	4,400	65	5.4	110	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	4/24/13	3,000	32	2.5	38	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
6/25/13	120,000	120	ND<4	1,400	2,200	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<200	ND<4	ND<4	
8/22/13	22,000	58	11	770	1,200	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4	
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

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-6 (cont.)	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
	11/14/12	3,000	5.4	1.8	11	4.7	2.1	ND<0.5	ND<0.5	ND<0.5	6.8	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	4,600	25	4.0	53	8.7	10	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<9	ND<0.5	ND<0.5
	4/24/13	1,000	2.9	1.1	2.1	0.98	1.8	ND<0.5	ND<0.5	ND<0.5	6.2	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	7,000	23	3.0	80	13	9.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
8/22/13	5,700	28	3.4	80	11	12	ND<0.5	ND<0.5	ND<0.5	37	ND<90	ND<8	ND<0.5	ND<0.5	
DW-7	12/9/09	10,000	500	20	310	110	160	ND<2	ND<2	ND<2	270	ND<200	ND<20	ND<2	ND<2
	2/12/10	12,000	590	23	440	120	190	ND<2	ND<2	2.4	290	ND<200	ND<20	ND<2	ND<2
	5/4/10	4,100	250	15	89	32	97	ND<0.5	ND<0.5	1.0	160	ND<80	ND<5	ND<0.5	ND<0.5
	8/3/10	3,500	280	13	49	30	130	ND<0.5	ND<0.5	1.3	220	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	0.96	160	ND<80	ND<5	ND<0.5	ND<0.5
10/11/11	400	45	1.1	0.80	1.6	90	ND<0.5	ND<0.5	0.89	180	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-7 (cont.)	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
	11/13/12	6,500	340	11	45	22	51	ND<0.5	ND<0.5	0.56	160	ND<80	ND<8	ND<0.5	ND<0.5
	2/13/13	970	78	3.0	10	2.7	18	ND<0.5	ND<0.5	ND<0.5	56	ND<50	ND<5	ND<0.5	ND<0.5
	4/23/13	3,300	230	9.2	22	10	50	ND<0.5	ND<0.5	0.55	160	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	27,000	590	32	960	640	100	ND<0.5	ND<0.5	0.95	330	ND<80	ND<20	ND<4	ND<0.5
	8/22/13	15,000	420	18	520	320	96	ND<2.5	ND<2.5	ND<2.5	310	ND<250	ND<25	ND<2.5	ND<2.5
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
	11/14/12	27,000	580	870	510	3,400	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	2/14/13	63,000	3,000	5,400	2,000	8,700	ND<5	ND<5	ND<5	ND<5	110	ND<500	ND<150	ND<5	ND<5
	4/24/13	5,900	350	370	140	790	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.0	ND<200	ND<80	ND<0.9	ND<0.9
	6/24/13	55,000	2,200	3,200	2,100	7,400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	56	ND<90	ND<50	ND<0.9	ND<0.9
	8/22/13	16,000	380	240	500	1,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	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
	11/14/12	10,000	210	7.5	230	65	28	ND<1.5	ND<1.5	ND<1.5	94	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	7,800	150	9.4	160	28	45	ND<1.5	ND<1.5	ND<1.5	110	ND<150	ND<15	ND<1.5	ND<1.5

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
DW-9 (cont.)	4/24/13	3,200	18	1.7	7.8	7.2	21	ND<0.5	ND<0.5	ND<0.5	67	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	27,000	490	17	1,100	430	30	ND<4	ND<4	ND<4	62	ND<400	ND<40	ND<4	ND<4
	8/22/13	19,000	320	13	690	240	28	ND<4	ND<4	ND<4	87	ND<2,000	ND<40	ND<4	ND<4
MW-A	1/17/99	5,800	1,700	85	65	320	ND<5	--	--	--	--	--	--	--	--
MW-B	1/17/99	4,400	240	30	21	39	ND<5	--	--	--	--	--	--	--	--
MW-C	1/17/99	1,800	0.80	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--
MW-W	1/17/99	23,000	7,600	760	1,400	5,000	ND<50	--	--	--	--	--	--	--	--
	6/10/99	16,000	4,100	420	1,300	4,000	ND<50	--	--	--	--	--	--	--	--
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	10/13/08	55,000	3,100	3,300	2,300	7,700	ND<15	ND<15	ND<15	ND<15	98	ND<1,500	ND<150	ND<15	ND<15
	5/5/10 <sup>(9)</sup>	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<9	ND<200	ND<20	ND<2	ND<2
	11/13/12	9,000	170	74	280	540	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	2/13/13	17,000	480	480	690	2,000	ND<2	ND<2	ND<2	ND<2	20	ND<200	ND<20	ND<2	ND<2
	4/24/13	9,700	230	160	370	1,200	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	6/24/13	14,000	130	260	280	1000	ND<2	ND<2	ND<2	ND<2	10	ND<200	ND<20	ND<2	ND<2
8/22/13	23,000	360	430	740	2,300	ND<2	ND<2	ND<2	ND<2	25	ND<200	ND<20	ND<2	ND<2	

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
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 <sup>(g)</sup>	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	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	160	5.6	3.7	1.3	3.6	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/21/13	NS	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 <sup>(g)</sup>	430 <sup>(h)</sup>	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	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/22/13	ND<50	0.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/21/13	NS	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 <sup>(g)</sup>	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	



TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
IP-4 (cont.)	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	140	ND<0.5	43	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-5	7/23/08	2,000 <sup>(h)</sup>	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 <sup>(g)</sup>	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
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	ND<50	ND<0.5	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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 <sup>(g)</sup>	8,000 <sup>(h)</sup>	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

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)	
IP-6 (cont.)	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/23/13	57	ND<0.5	11	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/21/13	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 <sup>(9)</sup>	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	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/23/13	ND<50	ND<0.5	5.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/21/13	NS	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 <sup>(9)</sup>	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	
	11/14/12	33,000	1,000	2,300	260	4,300	ND<7	ND<7	ND<7	ND<7	47	ND<700	ND<70	ND<7	ND<7	
2/14/13	65,000	3,300	7,100	1,600	9,200	ND<7	ND<7	ND<7	ND<7	110	ND<700	ND<150	ND<7	ND<7		

TABLE D-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl- benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
IP-8 (cont.)	4/24/13	33,000	1,700	4,200	430	5,600	ND<6	ND<6	ND<6	ND<6	ND<30	ND<600	ND<60	ND<6	ND<6
	8/22/13	19,000	130	440	260	1,900	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<80	ND<4	ND<4
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 <sup>(9)</sup>	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
	11/13/12	9,800	22	200	150	690	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	12,000	68	560	280	1,300	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	4/24/13	8,800	42	480	210	1,100	ND<1.5	ND<1.5	ND<1.5	ND<1.5	11	ND<150	ND<15	ND<1.5	ND<1.5
	8/22/13	7,500	14	250	190	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<400	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 <sup>(9)</sup>	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
	11/13/12	2,600	12	7.6	4.7	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/12/13	6,500	26	270	180	590	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/24/13	1,800	12	11	24	81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date <sup>(a)</sup>	TPHg <sup>(b)</sup> (µg/l)	Benzene <sup>(b)</sup> (µg/l)	Toluene <sup>(b)</sup> (µg/l)	Ethyl-benzene <sup>(b)</sup> (µg/l)	Total Xylenes <sup>(b)</sup> (µg/l)	MTBE <sup>(b)</sup> (µg/l)	DIPE <sup>(b)</sup> (µg/l)	ETBE <sup>(b)</sup> (µg/l)	TAME <sup>(b)</sup> (µg/l)	TBA <sup>(b)</sup> (µg/l)	Methanol <sup>(b)</sup> (µg/l)	Ethanol <sup>(b)</sup> (µg/l)	1,2-DCA <sup>(b)</sup> (µg/l)	EDB <sup>(b)</sup> (µg/l)
IP-10	6/24/13	1,500	5.4	1.1	0.76	6.5	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.)	8/22/13	1,100	2.2	ND<0.5	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

- (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 E**

**LABORATORY ANALYTICAL REPORTS AND  
CHAIN-OF-CUSTODY FORMS**

## Laboratory Results

Mike Purchase  
Arctos Environmental  
2332 5th St., Suite A  
Berkeley, CA 94610

Subject : 7 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

Dear Mr. Purchase,

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

Subject : 7 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

## Case Narrative

The Method Reporting Limit for Nitrate as N by Method EPA 300.0 was raised due to dilution for high levels of hydrocarbons for samples MW-2 and MW-7.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for sample MW-2.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-3, MW-10, MW-2, and MW-7 for the analyte Sulfate were affected by the analyte concentration present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-2, MW-7, DW-3, and MW-10 for the analyte Dissolved Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-10 and TP-2 for the analyte 1,2-Dichloroethane were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-1**

Matrix : Water

Lab Number : 85772-01

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 11:58
Methanol	< 50	50	ug/L	EPA 8260B	08/22/13 11:58
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 11:58
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/22/13 11:58
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 11:58
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	08/22/13 11:58
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	08/22/13 11:58



Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-2**

Matrix : Water

Lab Number : 85772-02

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 1.0	1.0	mg/L	EPA 300.0	08/21/13 21:37
<b>Sulfate</b>	<b>39</b>	5.0	mg/L	EPA 300.0	08/21/13 21:37
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/21/13 20:52
<b>Ferrous Iron</b>	<b>0.33</b>	0.10	mg/L	SM 3500-Fe D	08/21/13 21:23
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/23/13 13:36
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/23/13 13:36
<b>Iron, Dissolved</b>	<b>0.71</b>	0.10	mg/L	EPA 6010B	08/23/13 13:36
<b>Manganese, Dissolved</b>	<b>2.3</b>	0.0050	mg/L	EPA 6010B	08/23/13 13:36
<b>Sodium, Dissolved</b>	<b>65</b>	0.50	mg/L	EPA 6010B	08/23/13 13:36
<b>Benzene</b>	<b>560</b>	2.5	ug/L	EPA 8260B	08/23/13 23:51
<b>Toluene</b>	<b>30</b>	0.50	ug/L	EPA 8260B	08/22/13 12:29
<b>Ethylbenzene</b>	<b>430</b>	2.5	ug/L	EPA 8260B	08/23/13 23:51
<b>Total Xylenes</b>	<b>440</b>	2.5	ug/L	EPA 8260B	08/23/13 23:51
<b>Methyl-t-butyl ether (MTBE)</b>	<b>88</b>	0.50	ug/L	EPA 8260B	08/22/13 12:29
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 12:29
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 12:29
<b>Tert-amyl methyl ether (TAME)</b>	<b>1.0</b>	0.50	ug/L	EPA 8260B	08/22/13 12:29
<b>Tert-Butanol</b>	<b>48</b>	5.0	ug/L	EPA 8260B	08/22/13 12:29
Methanol	< 50	50	ug/L	EPA 8260B	08/22/13 12:29
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	08/22/13 12:29
<b>TPH as Gasoline</b>	<b>11000</b>	250	ug/L	EPA 8260B	08/23/13 23:51
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 12:29
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 12:29
1,2-Dichloroethane-d4 (Surr)	85.4		% Recovery	EPA 8260B	08/22/13 12:29
Toluene - d8 (Surr)	86.7		% Recovery	EPA 8260B	08/22/13 12:29

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-7**

Matrix : Water

Lab Number : 85772-03

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 1.0	1.0	mg/L	EPA 300.0	08/21/13 21:51
<b>Sulfate</b>	<b>34</b>	5.0	mg/L	EPA 300.0	08/21/13 21:51
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/21/13 21:02
<b>Ferrous Iron</b>	<b>0.11</b>	0.10	mg/L	SM 3500-Fe D	08/21/13 21:24
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/26/13 11:49
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/26/13 11:49
<b>Iron, Dissolved</b>	<b>0.36</b>	0.10	mg/L	EPA 6010B	08/26/13 11:49
<b>Manganese, Dissolved</b>	<b>1.7</b>	0.0050	mg/L	EPA 6010B	08/26/13 11:49
<b>Sodium, Dissolved</b>	<b>110</b>	0.50	mg/L	EPA 6010B	08/26/13 11:49
<b>Benzene</b>	<b>0.54</b>	0.50	ug/L	EPA 8260B	08/23/13 22:48
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
<b>Ethylbenzene</b>	<b>1.7</b>	0.50	ug/L	EPA 8260B	08/23/13 22:48
<b>Total Xylenes</b>	<b>0.82</b>	0.50	ug/L	EPA 8260B	08/23/13 22:48
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/23/13 22:48
Methanol	< 50	50	ug/L	EPA 8260B	08/23/13 22:48
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/23/13 22:48
<b>TPH as Gasoline</b>	<b>880</b>	50	ug/L	EPA 8260B	08/23/13 22:48
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 22:48
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	08/23/13 22:48
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/23/13 22:48

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-1**

Matrix : Water

Lab Number : 85772-04

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>18</b>	0.50	ug/L	EPA 8260B	08/22/13 13:33
<b>Toluene</b>	<b>5.8</b>	0.50	ug/L	EPA 8260B	08/22/13 13:33
<b>Ethylbenzene</b>	<b>34</b>	0.50	ug/L	EPA 8260B	08/22/13 13:33
<b>Total Xylenes</b>	<b>82</b>	0.50	ug/L	EPA 8260B	08/22/13 13:33
<b>Methyl-t-butyl ether (MTBE)</b>	<b>5.9</b>	0.50	ug/L	EPA 8260B	08/22/13 13:33
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:33
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:33
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:33
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 13:33
Methanol	< 50	50	ug/L	EPA 8260B	08/22/13 13:33
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 13:33
<b>TPH as Gasoline</b>	<b>1100</b>	50	ug/L	EPA 8260B	08/22/13 13:33
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:33
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:33
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	08/22/13 13:33
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	08/22/13 13:33

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-3**

Matrix : Water

Lab Number : 85772-05

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Nitrate as N</b>	<b>2.4</b>	0.50	mg/L	EPA 300.0	08/21/13 22:09
<b>Sulfate</b>	<b>53</b>	2.5	mg/L	EPA 300.0	08/21/13 22:09
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/21/13 21:11
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/21/13 21:24
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/26/13 11:53
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/26/13 11:53
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/26/13 11:53
<b>Manganese, Dissolved</b>	<b>1.0</b>	0.0050	mg/L	EPA 6010B	08/26/13 11:53
<b>Sodium, Dissolved</b>	<b>53</b>	0.50	mg/L	EPA 6010B	08/26/13 11:53
<b>Benzene</b>	<b>1.4</b>	0.50	ug/L	EPA 8260B	08/23/13 23:20
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
<b>Ethylbenzene</b>	<b>3.2</b>	0.50	ug/L	EPA 8260B	08/23/13 23:20
<b>Total Xylenes</b>	<b>1.7</b>	0.50	ug/L	EPA 8260B	08/23/13 23:20
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/23/13 23:20
Methanol	< 50	50	ug/L	EPA 8260B	08/23/13 23:20
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/23/13 23:20
<b>TPH as Gasoline</b>	<b>840</b>	50	ug/L	EPA 8260B	08/23/13 23:20
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/23/13 23:20
1,2-Dichloroethane-d4 (Surr)	99.7		% Recovery	EPA 8260B	08/23/13 23:20
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	08/23/13 23:20

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-10**

Matrix : Water

Lab Number : 85772-06

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Nitrate as N</b>	<b>1.1</b>	0.50	mg/L	EPA 300.0	08/21/13 22:22
<b>Sulfate</b>	<b>83</b>	2.5	mg/L	EPA 300.0	08/21/13 22:22
<b>Hexavalent Chromium</b>	<b>9.6</b>	1.0	ug/L	EPA 7199	08/21/13 21:24
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/21/13 21:25
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/26/13 11:57
<b>Chromium, Dissolved</b>	<b>0.0091</b>	0.0050	mg/L	EPA 6010B	08/26/13 11:57
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/26/13 11:57
<b>Manganese, Dissolved</b>	<b>0.058</b>	0.0050	mg/L	EPA 6010B	08/26/13 11:57
<b>Sodium, Dissolved</b>	<b>56</b>	0.50	mg/L	EPA 6010B	08/26/13 11:57
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 13:02
Methanol	< 50	50	ug/L	EPA 8260B	08/22/13 13:02
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 13:02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/22/13 13:02
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:02
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	08/22/13 13:02
Toluene - d8 (Surr)	110		% Recovery	EPA 8260B	08/22/13 13:02

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **TP-2**

Matrix : Water

Lab Number : 85772-07

Sample Date :08/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
<b>Methyl-t-butyl ether (MTBE)</b>	<b>0.89</b>	0.50	ug/L	EPA 8260B	08/22/13 13:35
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 13:35
Methanol	< 50	50	ug/L	EPA 8260B	08/22/13 13:35
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/13 13:35
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/22/13 13:35
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/13 13:35
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	08/22/13 13:35
Toluene - d8 (Surr)	110		% Recovery	EPA 8260B	08/22/13 13:35

Report Number : 85772  
Date : 08/27/2013

**QC Report : Method Blank Data**  
**Project Name : Tesoro - Livermore #67076**  
**Project Number : 01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/23/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/23/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/23/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/23/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	08/23/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/23/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Methanol	< 50	50	ug/L	EPA 8260B	08/23/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/23/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/2013	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/23/2013
Methanol	< 50	50	ug/L	EPA 8260B	08/22/2013	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/23/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/2013	1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	08/23/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Toluene - d8 (Surr)	102		%	EPA 8260B	08/23/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/22/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	08/22/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
Toluene - d8 (Surr)	100		%	EPA 8260B	08/22/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
						Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/2013
						Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
						Methanol	< 50	50	ug/L	EPA 8260B	08/22/2013
						Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
						Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/22/2013
						Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
						TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/22/2013
						1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
						1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/22/2013
						1,2-Dichloroethane-d4 (Surr)	105		%	EPA 8260B	08/22/2013
						Toluene - d8 (Surr)	109		%	EPA 8260B	08/22/2013

Report Number : 85772  
 Date : 08/27/2013

**QC Report : Method Blank Data**  
 Project Name : **Tesoro - Livermore #67076**  
 Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	08/21/2013						
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	08/21/2013						
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	08/21/2013						
Sulfate	<0.50	0.50	mg/L	EPA 300.0	08/21/2013						



**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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														
	85753-01	< 1.0	5.00	5.00	5.10	5.15	ug/L	EPA 7199	8/21/13	102	103	0.888	90.0-110	10
Ferrous Iron														
	85753-01	< 0.10	0.251	0.251	0.266	0.274	mg/L	SM 3500-Fe D	8/21/13	97.1	100	2.96	70.0-130	25
Nitrate as N														
	85749-01	6.9	0.500	0.500	7.35	7.35	mg/L	EPA 300.0	8/21/13	91.5	90.6	0.0560	90.0-110	10
<b>Sulfate</b>														
	85749-01	40	2.50	2.50	41.8	41.8	mg/L	EPA 300.0	8/21/13	<b>88.4</b>	<b>87.7</b>	0.0433	90.0-110	10
Arsenic, (Dis)														
	85772-02	< 0.015	0.400	0.400	0.396	0.401	mg/L	EPA 6010B	8/23/13	98.2	99.6	1.35	75-125	20
Chromium, (Dis)														
	85772-02	< 0.0050	0.400	0.400	0.398	0.405	mg/L	EPA 6010B	8/23/13	99.4	101	1.84	75-125	20
Iron, (Dis)														
	85772-02	0.71	0.400	0.400	1.05	1.09	mg/L	EPA 6010B	8/23/13	85.5	96.0	3.92	75-125	20
Manganese, (Dis)														
	85772-02	2.3	0.400	0.400	2.65	2.74	mg/L	EPA 6010B	8/23/13	89.0	113	3.60	75-125	20

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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
<b>Sodium, (Dis)</b>	85772-02	65	0.400	0.400	64.2	67.4	mg/L	EPA 6010B	8/23/13	0.00	510	4.91	75-125	20
1,2-Dibromoethane	85753-04	<0.50	40.3	40.3	42.7	42.6	ug/L	EPA 8260B	8/22/13	106	106	0.139	70.0-130	25
1,2-Dichloroethane	85753-04	<0.50	40.0	40.0	38.5	38.5	ug/L	EPA 8260B	8/22/13	96.3	96.2	0.112	70.0-130	25
Benzene	85753-04	<0.50	40.0	40.0	39.2	38.6	ug/L	EPA 8260B	8/22/13	98.0	96.5	1.50	70.0-130	25
Diisopropyl ether	85753-04	<0.50	39.3	39.3	39.5	39.6	ug/L	EPA 8260B	8/22/13	100	101	0.309	70.0-130	25
Ethanol	85753-04	<5.0	99.3	99.3	91.8	95.0	ug/L	EPA 8260B	8/22/13	92.4	95.7	3.48	55.0-150	25
Ethyl-tert-butyl ether	85753-04	<0.50	40.1	40.1	42.4	42.7	ug/L	EPA 8260B	8/22/13	106	106	0.911	70.0-130	25
Ethylbenzene	85753-04	<0.50	40.0	40.0	41.6	41.6	ug/L	EPA 8260B	8/22/13	104	104	0.0952	70.0-130	25
Methanol	85753-04	160	997	997	1070	1080	ug/L	EPA 8260B	8/22/13	91.5	92.3	0.933	65.0-150	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Methyl-t-butyl ether	85753-04	240	39.9	39.9	285	287	ug/L	EPA 8260B	8/22/13	105	111	5.78	70.0-130	25
P + M Xylene	85753-04	<0.50	40.0	40.0	42.2	41.9	ug/L	EPA 8260B	8/22/13	106	105	0.856	70.0-130	25
Tert-Butanol	85753-04	<5.0	202	202	200	200	ug/L	EPA 8260B	8/22/13	99.2	99.4	0.163	70.0-130	25
Tert-amyl-methyl ether	85753-04	1.4	40.3	40.3	46.2	47.0	ug/L	EPA 8260B	8/22/13	111	113	1.62	70.0-130	25
Toluene	85753-04	<0.50	40.0	40.0	40.4	40.1	ug/L	EPA 8260B	8/22/13	101	100	0.786	70.0-130	25
1,2-Dibromoethane	85794-03	<0.50	40.3	40.3	44.0	43.1	ug/L	EPA 8260B	8/23/13	109	107	2.09	70.0-130	25
1,2-Dichloroethane	85794-03	<0.50	40.0	40.0	39.1	38.0	ug/L	EPA 8260B	8/23/13	97.7	95.0	2.84	70.0-130	25
Benzene	85794-03	1.8	40.0	40.0	41.4	39.7	ug/L	EPA 8260B	8/23/13	99.0	94.9	4.25	70.0-130	25
Diisopropyl ether	85794-03	<0.50	39.3	39.3	40.4	39.3	ug/L	EPA 8260B	8/23/13	103	100	2.60	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethanol	85794-03	<5.0	99.3	99.3	93.2	93.5	ug/L	EPA 8260B	8/23/13	93.8	94.2	0.354	55.0-150	25
Ethyl-tert-butyl ether	85794-03	<0.50	40.1	40.1	43.3	42.1	ug/L	EPA 8260B	8/23/13	108	105	2.95	70.0-130	25
Ethylbenzene	85794-03	<0.50	40.0	40.0	42.8	41.3	ug/L	EPA 8260B	8/23/13	107	103	3.64	70.0-130	25
Methanol	85794-03	<50	997	997	894	877	ug/L	EPA 8260B	8/23/13	89.7	87.9	2.02	65.0-150	25
Methyl-t-butyl ether	85794-03	4.2	39.9	39.9	45.9	44.2	ug/L	EPA 8260B	8/23/13	105	100	4.26	70.0-130	25
P + M Xylene	85794-03	0.57	40.0	40.0	43.9	41.9	ug/L	EPA 8260B	8/23/13	108	103	4.76	70.0-130	25
Tert-Butanol	85794-03	100	202	202	308	303	ug/L	EPA 8260B	8/23/13	103	99.9	2.70	70.0-130	25
Tert-amyl-methyl ether	85794-03	<0.50	40.3	40.3	46.6	45.5	ug/L	EPA 8260B	8/23/13	115	113	2.29	70.0-130	25
Toluene	85794-03	4.2	40.0	40.0	45.6	43.8	ug/L	EPA 8260B	8/23/13	103	99.0	4.37	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85776-06	<0.50	40.3	40.3	47.2	46.9	ug/L	EPA 8260B	8/22/13	117	116	0.695	70.0-130	25
<b>1,2-Dichloroethane</b>														
Benzene	85776-06	<0.50	40.0	40.0	52.5	50.6	ug/L	EPA 8260B	8/22/13	131	127	3.53	70.0-130	25
Diisopropyl ether	85776-06	1.7	40.0	40.0	41.3	40.3	ug/L	EPA 8260B	8/22/13	99.1	96.6	2.51	70.0-130	25
Ethanol	85776-06	<0.50	39.3	39.3	40.1	39.0	ug/L	EPA 8260B	8/22/13	102	99.2	2.90	70.0-130	25
Ethyl-tert-butyl ether	85776-06	<5.0	99.3	99.3	114	116	ug/L	EPA 8260B	8/22/13	115	117	1.56	55.0-150	25
Ethylbenzene	85776-06	<0.50	40.1	40.1	41.1	40.6	ug/L	EPA 8260B	8/22/13	102	101	1.10	70.0-130	25
Methanol	85776-06	<0.50	40.0	40.0	38.2	37.4	ug/L	EPA 8260B	8/22/13	95.5	93.5	2.16	70.0-130	25
Methyl-t-butyl ether	85776-06	<50	997	997	929	945	ug/L	EPA 8260B	8/22/13	93.2	94.8	1.65	65.0-150	25
P + M Xylene	85776-06	<0.50	39.9	39.9	39.8	39.2	ug/L	EPA 8260B	8/22/13	99.9	98.4	1.56	70.0-130	25
	85776-06	0.55	40.0	40.0	37.0	36.6	ug/L	EPA 8260B	8/22/13	91.1	90.0	1.18	70.0-130	25

Report Number : 85772

Date : 08/27/2013

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85776-06	22	202	202	278	279	ug/L	EPA 8260B	8/22/13	127	127	0.148	70.0-130	25
Tert-amyl-methyl ether	85776-06	<0.50	40.3	40.3	46.5	45.4	ug/L	EPA 8260B	8/22/13	115	112	2.54	70.0-130	25
Toluene	85776-06	<0.50	40.0	40.0	43.3	41.8	ug/L	EPA 8260B	8/22/13	108	104	3.60	70.0-130	25

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	8/23/13	94.8	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	8/23/13	100	85-115
Iron, (Dis)	0.400	mg/L	EPA 6010B	8/23/13	89.4	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	8/23/13	95.5	85-115
Sodium, (Dis)	0.400	mg/L	EPA 6010B	8/23/13	96.4	85-115
1,2-Dibromoethane	40.5	ug/L	EPA 8260B	8/22/13	102	70.0-130
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	8/22/13	92.6	70.0-130
Benzene	40.2	ug/L	EPA 8260B	8/22/13	95.3	70.0-130
Diisopropyl ether	39.5	ug/L	EPA 8260B	8/22/13	96.8	70.0-130
Ethanol	99.8	ug/L	EPA 8260B	8/22/13	108	55.0-150
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	8/22/13	97.2	70.0-130
Ethylbenzene	40.2	ug/L	EPA 8260B	8/22/13	101	70.0-130
Methanol	1000	ug/L	EPA 8260B	8/22/13	102	65.0-150
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	8/22/13	90.6	70.0-130
P + M Xylene	40.2	ug/L	EPA 8260B	8/22/13	103	70.0-130
TPH as Gasoline	494	ug/L	EPA 8260B	8/22/13	98.3	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	8/22/13	94.8	70.0-130
Tert-amyl-methyl ether	40.5	ug/L	EPA 8260B	8/22/13	102	70.0-130
Toluene	40.2	ug/L	EPA 8260B	8/22/13	97.8	70.0-130
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	8/23/13	102	70.0-130

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	8/23/13	91.3	70.0-130
Benzene	39.9	ug/L	EPA 8260B	8/23/13	93.4	70.0-130
Diisopropyl ether	39.2	ug/L	EPA 8260B	8/23/13	96.0	70.0-130
Ethanol	99.1	ug/L	EPA 8260B	8/23/13	106	55.0-150
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	8/23/13	93.5	70.0-130
Ethylbenzene	39.9	ug/L	EPA 8260B	8/23/13	101	70.0-130
Methanol	994	ug/L	EPA 8260B	8/23/13	100	65.0-150
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	8/23/13	85.9	70.0-130
P + M Xylene	39.9	ug/L	EPA 8260B	8/23/13	102	70.0-130
TPH as Gasoline	495	ug/L	EPA 8260B	8/23/13	99.2	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/23/13	95.0	70.0-130
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	8/23/13	102	70.0-130
Toluene	39.9	ug/L	EPA 8260B	8/23/13	98.1	70.0-130
1,2-Dibromoethane	40.5	ug/L	EPA 8260B	8/22/13	117	70.0-130
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	8/22/13	127	70.0-130
Benzene	40.2	ug/L	EPA 8260B	8/22/13	97.2	70.0-130
Diisopropyl ether	39.5	ug/L	EPA 8260B	8/22/13	99.3	70.0-130
Ethanol	99.8	ug/L	EPA 8260B	8/22/13	125	55.0-150
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	8/22/13	102	70.0-130
Ethylbenzene	40.2	ug/L	EPA 8260B	8/22/13	105	70.0-130
Methanol	1000	ug/L	EPA 8260B	8/22/13	108	65.0-150
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	8/22/13	98.6	70.0-130



**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
P + M Xylene	40.2	ug/L	EPA 8260B	8/22/13	103	70.0-130
TPH as Gasoline	493	ug/L	EPA 8260B	8/22/13	96.0	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	8/22/13	110	70.0-130
Tert-amyl-methyl ether	40.5	ug/L	EPA 8260B	8/22/13	111	70.0-130
Toluene	40.2	ug/L	EPA 8260B	8/22/13	112	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	8/21/13	98.7	90.0-110
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	8/21/13	99.5	70.0-130
Nitrate as N	0.500	mg/L	EPA 300.0	8/21/13	104	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	8/21/13	101	90.0-110

# Chain of Custody

Confluence Environmental, Inc.  
 3308 El Camino Ave, Suite 300 #148  
 Sacramento, CA 95821  
 916-760-7641 - main  
 916-473-8617 - fax  
 www.confluence-env.com

Project Name: Tesoro - Livermore #67076

Job Number: P1-130821

TAT: STANDARD 5 DAY 2 DAY 24 HOUR OTHER:

Lab: <b>Kiff</b>	Site Address: 1619 1st St, Livermore	Confluence PM: Jason Brown
Address: 2795 2nd St, Suite 300, Davis CA 95616	California Global ID No.: TO600101410	Phone / Fax: 916-760-7641 / 916-473-8617
Contact: Troy Turpen	Include EDF w/ Report: <input checked="" type="radio"/> Yes <input type="radio"/> No	Confluence Log Code: <b>CESC</b>
Phone/ Fax: 530-297-4800 x.111	Consultant / PM: Orion / Mike Purchase	Report to: Mike Purchase
	Phone / Fax: 510-525-2180 / 510-525-2392	Invoice to: Mike Purchase

Sample ID	Time	Date	Matrix		Laboratory No.	No. of Containers	Preservative					Requested Analysis							Notes and Comments							
			Soil/Solid	Water/Liquid			Air	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	TPH-G, BTEX (8260)	Oxygenates(7) & Lead	Scavengers (8260)	Ferrous Iron (SM 3500-Fe-D)	Hexavalent Chromium (7199)	Nitrate & Sulfate (300)		Total Alkalinity (SM2320B)	Metals by ICP (6010B)*	Methane (RSK 175M)	Carbon Dioxide (RSK 175M)	FDS (2540C)		
MW-1	1239	8/21/13		X		3								X	X	X	X	X	X	X	X	X	X	X	X	01
MW-2	1230					12	6	1	5					X	X	X	X	X	X	X	X	X	X	X	X	02
MW-7	1355					12	6	1	5					X	X	X	X	X	X	X	X	X	X	X	X	03
DW-1	1455					3								X	X	X	X	X	X	X	X	X	X	X	X	04
DW-3	1230					12	6	1	5					X	X	X	X	X	X	X	X	X	X	X	X	05
MW-10	1200					12	6	1	5					X	X	X	X	X	X	X	X	X	X	X	X	06
TP-2	1448					3								X	X	X	X	X	X	X	X	X	X	X	X	07

Sampler's Name: <u>Matt Pestoni</u>	Relinquished By / Affiliation: <u>[Signature]</u>	Date: <u>8/21/13</u>	Time: <u>1530</u>	Accepted By / Affiliation: <u>[Signature]</u>	Date: <u></u>	Time: <u></u>
Sampler's Company: Confluence Environmental						
Shipment Date:						
Shipment Method:						

Special Instructions: \*Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field



# SAMPLE RECEIPT CHECKLIST

SRG #: 85772

Sample Receipt	Initials/Date: ABP 082113	Storage Time: 1818	Sample Login
TAT: <input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush	<input type="checkbox"/> Split	<input checked="" type="checkbox"/> Courier
Temp °C: 1.6	<input type="checkbox"/> N/A	Therm ID: IR-1	Method of Receipt: <input checked="" type="checkbox"/> Over-the-counter
		Time: 1808	<input type="checkbox"/> Shipped
			Coolant present: <input checked="" type="checkbox"/> Yes
			<input type="checkbox"/> No
			<input type="checkbox"/> Water
			<input type="checkbox"/> Temp Excursion

For Shipments Only: Cooler Receipt Initials/Date/Time: \_\_\_\_\_ Custody Seals:  N/A  Intact  Broken

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?	X	
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	/	/	
Project ID	/	/	
Sample Date	/	/	
Sample Time	/	/	
Does COC match project history?			<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**Samples:**

	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
<b>In-house Analysis:</b>	N/A	Yes	No
Are preservatives acceptable?		X	
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		X	

**Comments:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Receipt Details:**

Matrix	Container Type	# of Containers
WA	Voa	37
WA	Poly	20

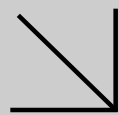
**CS Required:**

Proceed With Analysis:  YES  NO      Init/Date: \_\_\_\_\_

Client Communication: \_\_\_\_\_



# Subcontract Laboratory Report Attachments



# CALSCIENCE

**WORK ORDER NUMBER: 13-08-1612**

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

## Analytical Report For

**Client:** Kiff Analytical

**Client Project Name:** Tesoro Livermore #67076

**Attention:** Joel Kiff  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

*Amanda Porter*

Approved for release on 08/28/2013 by:  
Amanda Porter  
Project Manager

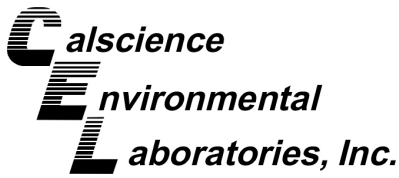
ResultLink ▶

Email your PM ▶



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Work Order Number: 13-08-1612

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	2.3 Combined Inorganic Tests. . . . .	6
3	Quality Control Sample Data. . . . .	7
	3.1 Sample Duplicate. . . . .	7
	3.2 LCS/LCSD. . . . .	9
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**Work Order Narrative**

Work Order: 13-08-1612

Page 1 of 1

**Condition Upon Receipt:**

Samples were received under Chain of Custody (COC) on 08/23/13. They were assigned to Work Order 13-08-1612.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

**Holding Times:**

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

**Quality Control:**

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

**Additional Comments:**

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

**Subcontractor Information:**

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.



## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

Project: Tesoro Livermore #67076

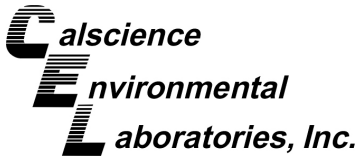
Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-2</b>	<b>13-08-1612-1-C</b>	<b>08/21/13 14:30</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/23/13 13:08</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		58600	17.0		10		
<b>MW-7</b>	<b>13-08-1612-2-C</b>	<b>08/21/13 13:55</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/23/13 13:26</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		21400	17.0		10		
<b>DW-3</b>	<b>13-08-1612-3-C</b>	<b>08/21/13 12:30</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/23/13 13:46</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		14600	17.0		10		
<b>MW-10</b>	<b>13-08-1612-4-C</b>	<b>08/21/13 12:00</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/23/13 14:07</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		16700	17.0		10		
<b>Method Blank</b>	<b>099-12-659-588</b>	<b>N/A</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/23/13 10:30</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		ND	1.70		1		

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

Project: Tesoro Livermore #67076

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-2</b>	<b>13-08-1612-1-A</b>	<b>08/21/13 14:30</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/24/13 00:26</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		2020	8.00		8		
<b>MW-7</b>	<b>13-08-1612-2-A</b>	<b>08/21/13 13:55</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/23/13 22:25</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		2770	8.00		8		
<b>DW-3</b>	<b>13-08-1612-3-A</b>	<b>08/21/13 12:30</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/23/13 22:50</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		1390	8.00		8		
<b>MW-10</b>	<b>13-08-1612-4-A</b>	<b>08/21/13 12:00</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/23/13 23:34</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		ND	1.00		1		
<b>Method Blank</b>	<b>099-12-663-1974</b>	<b>N/A</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/23/13 12:16</b>	<b>130823L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		ND	1.00		1		

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1612

08/23/13  
13-08-1612

Project: Tesoro Livermore #67076

Page 1 of 1

Client Sample Number		Lab Sample Number			Date/Time Collected		Matrix	
<b>MW-2</b>		<b>13-08-1612-1</b>			<b>08/21/13 14:30</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	637	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	780	1.00	1		mg/L	08/27/13	08/27/13	SM 2540 C
<b>MW-7</b>		<b>13-08-1612-2</b>			<b>08/21/13 13:55</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	598	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	790	1.00	1		mg/L	08/27/13	08/27/13	SM 2540 C
<b>DW-3</b>		<b>13-08-1612-3</b>			<b>08/21/13 12:30</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	380	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	595	1.00	1		mg/L	08/27/13	08/27/13	SM 2540 C
<b>MW-10</b>		<b>13-08-1612-4</b>			<b>08/21/13 12:00</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	561	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	900	1.00	1		mg/L	08/27/13	08/27/13	SM 2540 C
<b>Method Blank</b>					<b>N/A</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	08/27/13	08/27/13	SM 2540 C

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Quality Control - Sample Duplicate

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

Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: SM 2320B

Project: Tesoro Livermore #67076

Page 1 of 2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>13-08-1613-1</b>	<b>Aqueous</b>	<b>PH1/BUR03</b>	<b>N/A</b>	<b>08/23/13 18:00</b>	<b>D0823ALKD4</b>
<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	318.0	317.0	0	0-25	



## Quality Control - Sample Duplicate

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

Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: SM 2540 C

Project: Tesoro Livermore #67076

Page 2 of 2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>MW-2</b>	<b>Aqueous</b>	<b>N/A</b>	<b>08/27/13 00:00</b>	<b>08/27/13 15:50</b>	<b>D0827TDSD2</b>
<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Solids, Total Dissolved	780.0	770.0	1	0-20	



## Quality Control - LCS/LCSD

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

Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: RSK-175M

Project: Tesoro Livermore #67076

Page 1 of 4

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-659-588</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/23/13 09:46</b>	<b>130823L01</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon Dioxide	102.0	97.04	95	96.91	95	80-120	0	0-20	



## Quality Control - LCS/LCSD

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

Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: RSK-175M

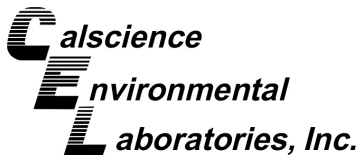
Project: Tesoro Livermore #67076

Page 2 of 4

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-663-1974</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/23/13 11:24</b>	<b>130823L01</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Methane	98.50	92.24	94	91.90	93	80-120	0	0-20	

  
Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Quality Control - LCS/LCSD

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

Date Received: 08/23/13  
 Work Order: 13-08-1612  
 Preparation: N/A  
 Method: SM 2320B

Project: Tesoro Livermore #67076

Page 3 of 4

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-15-859-154</b>	<b>Aqueous</b>	<b>PH1/BUR03</b>	<b>N/A</b>	<b>08/23/13 18:00</b>	<b>D0823ALKB4</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	100.0	97.00	97	96.00	96	80-120	1	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



## Quality Control - LCS/LCSD

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

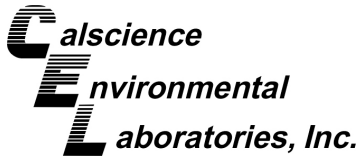
Date Received: 08/23/13  
Work Order: 13-08-1612  
Preparation: N/A  
Method: SM 2540 C

Project: Tesoro Livermore #67076

Page 4 of 4

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-180-3801</b>	<b>Aqueous</b>	<b>N/A</b>	<b>08/27/13</b>	<b>08/27/13 15:50</b>	<b>D0827TDSL2</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Solids, Total Dissolved	100.0	90.00	90	105.0	105	80-120	15	0-20	





## Sample Analysis Summary Report

Work Order: 13-08-1612

Page 1 of 1

<u>Method</u>	<u>Extraction</u>	<u>Chemist ID</u>	<u>Instrument</u>	<u>Analytical Location</u>
RSK-175M	N/A	460	GC 61	2
RSK-175M	N/A	846	GC 14	2
SM 2320B	N/A	857	PH1/BUR03	1
SM 2540 C	N/A	722	N/A	1

  
Return to Contents

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841

Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841

## Glossary of Terms and Qualifiers

Work Order: 13-08-1612

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	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 suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
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.
BV	Sample received 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 Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
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.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.



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

**13-08-1612**  
 COC No. 85772

Page 1 of 1

Project Contact (Hardcopy or PDF to):

Scott Forbes

Company/Address:

Kiff Analytical

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

Project Number: P1-130821  
 P.O. No.: 85772

Project Name:

Tesoro - Livermore #67076  
 Project Address:

Sampling

**Sample Designation**

Date	Time
08/21/13	14:30
08/21/13	13:55
08/21/13	12:30
08/21/13	12:00

Container / Preservative

Matrix

Container / Preservative	Matrix
1-L Poly None	
250ml Poly None	
VOA 40 ml None	
VOA 40 ml HCl	
Water	

Recommended but not mandatory to complete this section:

Sampling Company Log Code: CESC

Global ID: T0600101410

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

EDF Report? YES

Chain-of-Custody Record and Analysis Request

Analysis Request

TAT

Analysis Request	TAT	For Lab Use Only
Alkalinity SM 2320 (1)	X	1
Carbon Dioxide by RSK 175 (1)	X	2
Hydrocarbons in Water by RSK 175 (1)	X	3
Total Dissolved Solids	X	4
3-Days	X	

Relinquished by: *Scott Forbes* Date: 8/21/13 Time: 1700

Relinquished by: (OMPAC) Date: 8/23/13 Time: 0940

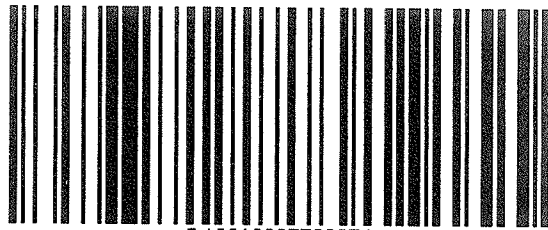
Relinquished by: *Scott Forbes* Date: 8/23/13 Time: 0940

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable



800.334.5000  
ontrac.com



D10010607733254

Date Printed 8/22/2013

Tracking# D10010607733254

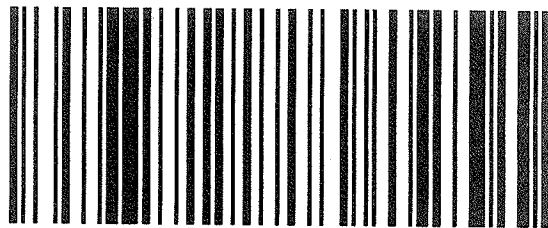
Shipped From:  
KIFF ANALYTICAL  
2795 2ND STREET 300  
DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125  
Phone#: (530)297-4800  
wgt(lbs): 40  
Reference: SUBS 85787  
Reference 2: 600

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



800.334.5000  
ontrac.com



D10010607733345

Date Printed 8/22/2013

Tracking# D10010607733345

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

Sent By: SAMPLE RECEIVINGX125  
Phone#: (530)297-4800  
wgt(lbs): 50  
Reference: SUBS 85772  
Reference 2: 600

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



# SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: Kiff

DATE: 08/23/13

**TEMPERATURE:** Thermometer ID: SC3 (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Temperature 2.6 °C - 0.2°C (CF) = 2.74 °C     Blank     Sample

Sample(s) outside temperature criteria (PM/APM contacted by: 8/23).

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: JP

**CUSTODY SEALS INTACT:**

Cooler     \_\_\_\_\_     No (Not Intact)     Not Present     N/A    Initial: JP

Sample     \_\_\_\_\_     No (Not Intact)     Not Present    Initial: JP

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfides <input type="checkbox"/> Dissolved Oxygen.....			
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**     4ozCGJ     8ozCGJ     16ozCGJ     Sleeve (\_\_\_\_)     EnCores®     TerraCores®     \_\_\_\_\_

**Aqueous:**     VOA     VOAh     VOAna<sub>2</sub>     125AGB     125AGBh     125AGBp     1AGB     1AGBna<sub>2</sub>     1AGBs

500AGB     500AGJ     500AGJs     250AGB     250CGB     250CGBs     1PB     1PBna     500PB

250PB     250PBn     125PB     125PBz<sub>2</sub>na     100PJ     100PJna<sub>2</sub>     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_

**Air:**     Tedlar®     Canister    **Other:**     \_\_\_\_\_    **Trip Blank Lot#:** \_\_\_\_\_    **Labeled/Checked by:** JP

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

**Preservative:**    h: HCL    n: HNO<sub>3</sub>    na<sub>2</sub>: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>    na: NaOH    p: H<sub>3</sub>PO<sub>4</sub>    s: H<sub>2</sub>SO<sub>4</sub>    u: Ultra-pure    z<sub>2</sub>na: ZnAc<sub>2</sub>+NaOH    f: Filtered    **Scanned by:** JP



# SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: Kiff

DATE: 08/23/13

**TEMPERATURE:** Thermometer ID: SC3 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.1 °C - 0.2 °C (CF) = 1.9 °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: AP

**CUSTODY SEALS INTACT:**

Cooler     \_\_\_\_\_     No (Not Intact)     Not Present     N/A    Initial: AP

Sample     \_\_\_\_\_     No (Not Intact)     Not Present    Initial: PS

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfides <input type="checkbox"/> Dissolved Oxygen.....			
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**     4ozCGJ     8ozCGJ     16ozCGJ     Sleeve (\_\_\_\_)     EnCores®     TerraCores®     \_\_\_\_\_

**Aqueous:**     VOA     VOA<sub>h</sub>     VOA<sub>na2</sub>     125AGB     125AGB<sub>h</sub>     125AGB<sub>p</sub>     1AGB     1AGB<sub>na2</sub>     1AGB<sub>s</sub>

500AGB     500AGJ     500AGJ<sub>s</sub>     250AGB     250CGB     250CGB<sub>s</sub>     1PB     1PB<sub>na</sub>     500PB

250PB     250PB<sub>n</sub>     125PB     125PB<sub>z</sub>na     100PJ     100PJ<sub>na2</sub>     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_

**Air:**     Tedlar®     Canister    **Other:**     \_\_\_\_\_    **Trip Blank Lot#:** \_\_\_\_\_    **Labeled/Checked by:** PS

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

**Preservative:**    h: HCL    n: HNO<sub>3</sub>    na<sub>2</sub>: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>    na: NaOH    p: H<sub>3</sub>PO<sub>4</sub>    s: H<sub>2</sub>SO<sub>4</sub>    u: Ultra-pure    zna: ZnAc<sub>2</sub>+NaOH    f: Filtered    **Scanned by:** PS

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## Laboratory Results

Mike Purchase  
Arctos Environmental  
2332 5th St., Suite A  
Berkeley, CA 94610

Subject : 10 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

Dear Mr. Purchase,

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

Subject : 10 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

## Case Narrative

The Method Reporting Limit for Nitrate as N by Method EPA 300.0 was raised due to dilution for high concentrations of hydrocarbons for samples DW-2, DW-6, DW-8, IP-10, MW-6, MW-9.

The Method Reporting Limit for Sulfate by Method EPA 300.0 was raised due to dilution for high concentrations of hydrocarbons for sample DW-8.

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

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 DW-2, DW-6, DW-8, IP-10, MW-12, MW-6, MW-8, and MW-9 for the analyte Nitrate as N were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with sample MW-8 for the analyte Sulfate were affected by the analyte concentration present in the un-spiked sample. Recoveries were calculated using data points beyond the calibration range.

Matrix Spike/Matrix Spike Duplicate results associated with samples IP-10, MW-9, MW-12, DW-2, MW-8, DW-8, MW-6, and DW-6 for the analytes Dissolved Manganese and Dissolved Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Methanol was detected in the Method Blank associated with samples DW-8 and DW-6. Since Methanol was not detected above the reporting limit in the samples, no data were flagged.



Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **IP-10**

Matrix : Water

Lab Number : 85787-01

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.50	0.50	mg/L	EPA 300.0	08/22/13 20:40
<b>Sulfate</b>	<b>2.7</b>	2.5	mg/L	EPA 300.0	08/22/13 20:40
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 17:54
<b>Ferrous Iron</b>	<b>0.14</b>	0.10	mg/L	SM 3500-Fe D	08/22/13 18:53
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 09:50
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 09:50
<b>Iron, Dissolved</b>	<b>0.60</b>	0.10	mg/L	EPA 6010B	08/29/13 09:50
<b>Manganese, Dissolved</b>	<b>2.6</b>	0.0050	mg/L	EPA 6010B	08/29/13 09:50
<b>Sodium, Dissolved</b>	<b>55</b>	0.50	mg/L	EPA 6010B	08/29/13 09:50
<b>Benzene</b>	<b>2.2</b>	0.50	ug/L	EPA 8260B	08/27/13 22:08
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
<b>Total Xylenes</b>	<b>2.3</b>	0.50	ug/L	EPA 8260B	08/27/13 22:08
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/13 22:08
Methanol	< 50	50	ug/L	EPA 8260B	08/27/13 22:08
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/13 22:08
<b>TPH as Gasoline</b>	<b>1100</b>	50	ug/L	EPA 8260B	08/27/13 22:08
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:08
1,2-Dichloroethane-d4 (Surr)	99.9		% Recovery	EPA 8260B	08/27/13 22:08
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/27/13 22:08

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **TP-1**

Matrix : Water

Lab Number : 85787-02

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>28</b>	0.50	ug/L	EPA 8260B	08/27/13 22:40
<b>Toluene</b>	<b>3.8</b>	0.50	ug/L	EPA 8260B	08/27/13 22:40
<b>Ethylbenzene</b>	<b>35</b>	0.50	ug/L	EPA 8260B	08/27/13 22:40
<b>Total Xylenes</b>	<b>11</b>	0.50	ug/L	EPA 8260B	08/27/13 22:40
<b>Methyl-t-butyl ether (MTBE)</b>	<b>100</b>	0.50	ug/L	EPA 8260B	08/27/13 22:40
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:40
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:40
<b>Tert-amyl methyl ether (TAME)</b>	<b>0.98</b>	0.50	ug/L	EPA 8260B	08/27/13 22:40
<b>Tert-Butanol</b>	<b>42</b>	5.0	ug/L	EPA 8260B	08/27/13 22:40
Methanol	< 50	50	ug/L	EPA 8260B	08/27/13 22:40
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/13 22:40
<b>TPH as Gasoline</b>	<b>3500</b>	50	ug/L	EPA 8260B	08/27/13 22:40
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:40
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 22:40
1,2-Dichloroethane-d4 (Surr)	95.3		% Recovery	EPA 8260B	08/27/13 22:40
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	08/27/13 22:40

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-9**

Matrix : Water

Lab Number : 85787-03

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.50	0.50	mg/L	EPA 300.0	08/22/13 20:53
<b>Sulfate</b>	<b>4.1</b>	2.5	mg/L	EPA 300.0	08/22/13 20:53
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:03
<b>Ferrous Iron</b>	<b>0.29</b>	0.10	mg/L	SM 3500-Fe D	08/22/13 18:52
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 13:14
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 13:14
<b>Iron, Dissolved</b>	<b>1.9</b>	0.10	mg/L	EPA 6010B	08/29/13 13:14
<b>Manganese, Dissolved</b>	<b>1.8</b>	0.0050	mg/L	EPA 6010B	08/29/13 13:14
<b>Sodium, Dissolved</b>	<b>95</b>	0.50	mg/L	EPA 6010B	08/29/13 13:14
<b>Benzene</b>	<b>20</b>	0.50	ug/L	EPA 8260B	08/28/13 01:01
<b>Toluene</b>	<b>0.70</b>	0.50	ug/L	EPA 8260B	08/28/13 01:01
<b>Ethylbenzene</b>	<b>1.7</b>	0.50	ug/L	EPA 8260B	08/28/13 01:01
<b>Total Xylenes</b>	<b>0.84</b>	0.50	ug/L	EPA 8260B	08/28/13 01:01
<b>Methyl-t-butyl ether (MTBE)</b>	<b>9.0</b>	0.50	ug/L	EPA 8260B	08/28/13 01:01
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:01
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:01
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:01
<b>Tert-Butanol</b>	<b>40</b>	5.0	ug/L	EPA 8260B	08/28/13 01:01
Methanol	< 50	50	ug/L	EPA 8260B	08/28/13 13:36
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/13 01:01
<b>TPH as Gasoline</b>	<b>1500</b>	50	ug/L	EPA 8260B	08/28/13 01:01
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:01
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:01
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	08/28/13 01:01
Toluene - d8 (Surr)	99.7		% Recovery	EPA 8260B	08/28/13 01:01

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-12**

Matrix : Water

Lab Number : 85787-04

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:13
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/22/13 18:53
<b>Nitrate as N</b>	<b>0.92</b>	0.50	mg/L	EPA 300.0	08/22/13 21:06
<b>Sulfate</b>	<b>15</b>	2.5	mg/L	EPA 300.0	08/22/13 21:06
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:06
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:06
<b>Iron, Dissolved</b>	<b>0.14</b>	0.10	mg/L	EPA 6010B	08/29/13 10:06
<b>Manganese, Dissolved</b>	<b>1.6</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:06
<b>Sodium, Dissolved</b>	<b>64</b>	0.50	mg/L	EPA 6010B	08/29/13 10:06
<b>Benzene</b>	<b>15</b>	0.50	ug/L	EPA 8260B	08/27/13 20:22
<b>Toluene</b>	<b>2.4</b>	0.50	ug/L	EPA 8260B	08/27/13 20:22
<b>Ethylbenzene</b>	<b>33</b>	0.50	ug/L	EPA 8260B	08/27/13 20:22
<b>Total Xylenes</b>	<b>6.4</b>	0.50	ug/L	EPA 8260B	08/27/13 20:22
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 20:22
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 20:22
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 20:22
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 20:22
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/13 20:22
Methanol	< 50	50	ug/L	EPA 8260B	08/28/13 13:04
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/13 20:22
<b>TPH as Gasoline</b>	<b>4500</b>	50	ug/L	EPA 8260B	08/27/13 20:22
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 20:22
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/13 20:22
1,2-Dichloroethane-d4 (Surr)	95.7		% Recovery	EPA 8260B	08/27/13 20:22
Toluene - d8 (Surr)	96.5		% Recovery	EPA 8260B	08/27/13 20:22

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-2**

Matrix : Water

Lab Number : 85787-05

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.50	0.50	mg/L	EPA 300.0	08/22/13 21:20
<b>Sulfate</b>	<b>12</b>	2.5	mg/L	EPA 300.0	08/22/13 21:20
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:23
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/22/13 18:54
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 13:17
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 13:17
<b>Iron, Dissolved</b>	<b>0.39</b>	0.10	mg/L	EPA 6010B	08/29/13 13:17
<b>Manganese, Dissolved</b>	<b>2.2</b>	0.0050	mg/L	EPA 6010B	08/29/13 13:17
<b>Sodium, Dissolved</b>	<b>100</b>	0.50	mg/L	EPA 6010B	08/29/13 13:17
<b>Benzene</b>	<b>600</b>	2.0	ug/L	EPA 8260B	08/28/13 12:46
<b>Toluene</b>	<b>23</b>	0.50	ug/L	EPA 8260B	08/28/13 00:15
<b>Ethylbenzene</b>	<b>96</b>	0.50	ug/L	EPA 8260B	08/28/13 00:15
<b>Total Xylenes</b>	<b>42</b>	0.50	ug/L	EPA 8260B	08/28/13 00:15
<b>Methyl-t-butyl ether (MTBE)</b>	<b>240</b>	0.50	ug/L	EPA 8260B	08/28/13 00:15
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:15
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:15
<b>Tert-amyl methyl ether (TAME)</b>	<b>2.5</b>	0.50	ug/L	EPA 8260B	08/28/13 00:15
<b>Tert-Butanol</b>	<b>500</b>	5.0	ug/L	EPA 8260B	08/28/13 00:15
Methanol	< 50	50	ug/L	EPA 8260B	08/28/13 00:15
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/13 00:15
<b>TPH as Gasoline</b>	<b>8300</b>	200	ug/L	EPA 8260B	08/28/13 12:46
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:15
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:15
1,2-Dichloroethane-d4 (Surr)	94.0		% Recovery	EPA 8260B	08/28/13 00:15
Toluene - d8 (Surr)	96.1		% Recovery	EPA 8260B	08/28/13 00:15

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-8**

Matrix : Water

Lab Number : 85787-06

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Nitrate as N</b>	<b>1.3</b>	0.10	mg/L	EPA 300.0	08/22/13 23:15
<b>Sulfate</b>	<b>63</b>	2.5	mg/L	EPA 300.0	08/29/13 13:10
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:29
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/22/13 18:54
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:13
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:13
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/29/13 10:13
<b>Manganese, Dissolved</b>	<b>0.90</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:13
<b>Sodium, Dissolved</b>	<b>50</b>	0.50	mg/L	EPA 6010B	08/29/13 10:13
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/13 00:47
Methanol	< 50	50	ug/L	EPA 8260B	08/28/13 00:47
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/13 00:47
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/13 00:47
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:47
1,2-Dichloroethane-d4 (Surr)	98.0		% Recovery	EPA 8260B	08/28/13 00:47
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/28/13 00:47

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-3**

Matrix : Water

Lab Number : 85787-07

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/13 01:18
Methanol	< 50	50	ug/L	EPA 8260B	08/28/13 01:18
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/13 01:18
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/13 01:18
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 01:18
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	08/28/13 01:18
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	08/28/13 01:18

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-8**

Matrix : Water

Lab Number : 85787-08

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:36
<b>Ferrous Iron</b>	<b>0.10</b>	0.10	mg/L	SM 3500-Fe D	08/22/13 18:55
Nitrate as N	< 1.0	1.0	mg/L	EPA 300.0	08/22/13 21:47
Sulfate	< 5.0	5.0	mg/L	EPA 300.0	08/22/13 21:47
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:24
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:24
<b>Iron, Dissolved</b>	<b>0.13</b>	0.10	mg/L	EPA 6010B	08/29/13 10:24
<b>Manganese, Dissolved</b>	<b>2.5</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:24
<b>Sodium, Dissolved</b>	<b>74</b>	0.50	mg/L	EPA 6010B	08/29/13 10:24
<b>Benzene</b>	<b>380</b>	2.5	ug/L	EPA 8260B	08/29/13 03:21
<b>Toluene</b>	<b>240</b>	2.5	ug/L	EPA 8260B	08/29/13 03:21
<b>Ethylbenzene</b>	<b>500</b>	2.5	ug/L	EPA 8260B	08/29/13 03:21
<b>Total Xylenes</b>	<b>1400</b>	2.5	ug/L	EPA 8260B	08/29/13 03:21
Methyl-t-butyl ether (MTBE)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:21
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:21
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:21
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:21
Tert-Butanol	< 15	15	ug/L	EPA 8260B	08/29/13 03:21
Methanol	< 250	250	ug/L	EPA 8260B	08/29/13 03:21
Ethanol	< 25	25	ug/L	EPA 8260B	08/29/13 03:21
<b>TPH as Gasoline</b>	<b>16000</b>	250	ug/L	EPA 8260B	08/29/13 03:21
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:21
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:21
1,2-Dichloroethane-d4 (Surr)	99.8		% Recovery	EPA 8260B	08/29/13 03:21
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/29/13 03:21



Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-6**

Matrix : Water

Lab Number : 85787-09

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:43
<b>Ferrous Iron</b>	<b>0.40</b>	0.10	mg/L	SM 3500-Fe D	08/22/13 18:55
Nitrate as N	< 0.50	0.50	mg/L	EPA 300.0	08/22/13 22:00
<b>Sulfate</b>	<b>2.6</b>	2.5	mg/L	EPA 300.0	08/22/13 22:00
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:28
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:28
<b>Iron, Dissolved</b>	<b>0.90</b>	0.10	mg/L	EPA 6010B	08/29/13 10:28
<b>Manganese, Dissolved</b>	<b>1.9</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:28
<b>Sodium, Dissolved</b>	<b>87</b>	0.50	mg/L	EPA 6010B	08/29/13 10:28
<b>Benzene</b>	<b>1500</b>	2.5	ug/L	EPA 8260B	08/29/13 12:33
<b>Toluene</b>	<b>59</b>	1.5	ug/L	EPA 8260B	08/28/13 17:17
<b>Ethylbenzene</b>	<b>290</b>	1.5	ug/L	EPA 8260B	08/28/13 17:17
<b>Total Xylenes</b>	<b>150</b>	1.5	ug/L	EPA 8260B	08/28/13 17:17
<b>Methyl-t-butyl ether (MTBE)</b>	<b>110</b>	1.5	ug/L	EPA 8260B	08/28/13 17:17
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 17:17
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 17:17
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 17:17
<b>Tert-Butanol</b>	<b>93</b>	7.0	ug/L	EPA 8260B	08/28/13 17:17
Methanol	< 400	400	ug/L	EPA 8260B	08/28/13 17:17
Ethanol	< 15	15	ug/L	EPA 8260B	08/28/13 17:17
<b>TPH as Gasoline</b>	<b>14000</b>	250	ug/L	EPA 8260B	08/29/13 12:33
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 17:17
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 17:17
1,2-Dichloroethane-d4 (Surr)	97.8		% Recovery	EPA 8260B	08/28/13 17:17
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	08/28/13 17:17

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-6**

Matrix : Water

Lab Number : 85787-10

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Ferrous Iron</b>	<b>0.59</b>	0.10	mg/L	SM 3500-Fe D	08/22/13 18:56
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/22/13 18:49
Nitrate as N	< 0.50	0.50	mg/L	EPA 300.0	08/22/13 22:13
<b>Sulfate</b>	<b>7.8</b>	2.5	mg/L	EPA 300.0	08/22/13 22:13
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:32
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:32
<b>Iron, Dissolved</b>	<b>0.83</b>	0.10	mg/L	EPA 6010B	08/29/13 10:32
<b>Manganese, Dissolved</b>	<b>2.2</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:32
<b>Sodium, Dissolved</b>	<b>57</b>	0.50	mg/L	EPA 6010B	08/29/13 10:32
<b>Benzene</b>	<b>28</b>	0.50	ug/L	EPA 8260B	08/28/13 00:26
<b>Toluene</b>	<b>3.4</b>	0.50	ug/L	EPA 8260B	08/28/13 00:26
<b>Ethylbenzene</b>	<b>80</b>	0.50	ug/L	EPA 8260B	08/28/13 00:26
<b>Total Xylenes</b>	<b>11</b>	0.50	ug/L	EPA 8260B	08/28/13 00:26
<b>Methyl-t-butyl ether (MTBE)</b>	<b>12</b>	0.50	ug/L	EPA 8260B	08/28/13 00:26
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:26
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:26
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:26
<b>Tert-Butanol</b>	<b>37</b>	5.0	ug/L	EPA 8260B	08/28/13 00:26
Methanol	< 90	90	ug/L	EPA 8260B	08/29/13 01:46
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	08/28/13 00:26
<b>TPH as Gasoline</b>	<b>5700</b>	90	ug/L	EPA 8260B	08/29/13 01:46
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:26
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/13 00:26
1,2-Dichloroethane-d4 (Surr)	94.3		% Recovery	EPA 8260B	08/28/13 00:26
Toluene - d8 (Surr)	94.9		% Recovery	EPA 8260B	08/28/13 00:26

Report Number : 85787

Date : 08/29/2013

**QC Report : Method Blank Data**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/29/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	08/29/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Methanol	< 50	50	ug/L	EPA 8260B	08/28/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/2013	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Methanol	< 50	50	ug/L	EPA 8260B	08/27/2013	1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	08/28/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Toluene - d8 (Surr)	100		%	EPA 8260B	08/28/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/27/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	08/27/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013
Toluene - d8 (Surr)	100		%	EPA 8260B	08/27/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						Methanol	150	50	ug/L	EPA 8260B	08/28/2013
						Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013
						Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/2013
						1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	08/28/2013
						Toluene - d8 (Surr)	101		%	EPA 8260B	08/28/2013

Report Number : 85787

Date : 08/29/2013

**QC Report : Method Blank Data**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	08/22/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	08/22/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	08/22/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Sulfate	<0.50	0.50	mg/L	EPA 300.0	08/22/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013	Sulfate	<0.50	0.50	mg/L	EPA 300.0	08/29/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/2013						
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013						
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013						
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/27/2013						
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/27/2013						
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013						
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/27/2013						
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	08/27/2013						
Toluene - d8 (Surr)	100		%	EPA 8260B	08/27/2013						
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/2013						
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/29/2013						

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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														
	85787-01	< 1.0	5.00	5.00	5.14	5.15	ug/L	EPA 7199	8/22/13	103	103	0.131	90.0-110	10
Ferrous Iron														
	85787-03	0.29	0.251	0.251	0.516	0.524	mg/L	SM 3500-Fe D	8/22/13	91.5	94.7	1.54	70.0-130	25
Nitrate as N														
	85784-02	< 0.10	0.500	0.500	0.0953	0.0952	mg/L	EPA 300.0	8/22/13	19.1	19.0	0.136	90.0-110	10
Sulfate														
	85784-02	2.5	2.50	2.50	4.95	4.97	mg/L	EPA 300.0	8/22/13	99.2	100	0.449	90.0-110	10
Sulfate														
	85828-01	88	2.50	2.50	89.9	89.9	mg/L	EPA 300.0	8/29/13	76.3	75.8	0.0158	90.0-110	10
Arsenic, (Dis)														
	85787-01	< 0.015	0.400	0.400	0.395	0.398	mg/L	EPA 6010B	8/29/13	98.6	99.6	0.908	75-125	20
Chromium, (Dis)														
	85787-01	< 0.0050	0.400	0.400	0.388	0.393	mg/L	EPA 6010B	8/29/13	97.0	98.2	1.20	75-125	20
Iron, (Dis)														
	85787-01	0.60	0.400	0.400	0.946	0.966	mg/L	EPA 6010B	8/29/13	87.6	92.4	2.00	75-125	20

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	
<b>Manganese, (Dis)</b>															
	85787-01	2.6	0.400	0.400	2.91	2.96	mg/L	EPA 6010B	8/29/13	73.5	86.2	1.74	75-125	20	
<b>Sodium, (Dis)</b>															
	85787-01	55	0.400	0.400	54.0	55.4	mg/L	EPA 6010B	8/29/13	0.00	0.00	2.51	75-125	20	
<b>1,2-Dibromoethane</b>															
	85783-16	<0.50	40.3	40.3	42.5	41.7	ug/L	EPA 8260B	8/27/13	105	103	1.90	70.0-130	25	
<b>1,2-Dichloroethane</b>															
	85783-16	<0.50	40.0	40.0	39.0	38.3	ug/L	EPA 8260B	8/27/13	97.5	95.7	1.80	70.0-130	25	
<b>Benzene</b>															
	85783-16	<0.50	40.0	40.0	38.1	37.6	ug/L	EPA 8260B	8/27/13	95.2	93.9	1.45	70.0-130	25	
<b>Diisopropyl ether</b>															
	85783-16	<0.50	39.3	39.3	38.8	38.7	ug/L	EPA 8260B	8/27/13	98.8	98.4	0.445	70.0-130	25	
<b>Ethanol</b>															
	85783-16	<5.0	99.3	99.3	109	102	ug/L	EPA 8260B	8/27/13	110	103	6.82	55.0-150	25	
<b>Ethyl-tert-butyl ether</b>															
	85783-16	<0.50	40.1	40.1	41.1	42.4	ug/L	EPA 8260B	8/27/13	102	106	3.19	70.0-130	25	
<b>Ethylbenzene</b>															
	85783-16	<0.50	40.0	40.0	40.8	40.8	ug/L	EPA 8260B	8/27/13	102	102	0.0227	70.0-130	25	

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85783-16	<0.50	997	997	1100	1020	ug/L	EPA 8260B	8/27/13	110	102	8.18	65.0-150	25
Methyl-t-butyl ether	85783-16	<0.50	39.9	39.9	39.1	41.4	ug/L	EPA 8260B	8/27/13	98.0	104	5.72	70.0-130	25
P + M Xylene	85783-16	<0.50	40.0	40.0	41.3	41.4	ug/L	EPA 8260B	8/27/13	103	103	0.246	70.0-130	25
Tert-Butanol	85783-16	<5.0	202	202	196	195	ug/L	EPA 8260B	8/27/13	97.2	96.6	0.690	70.0-130	25
Tert-amyl-methyl ether	85783-16	<0.50	40.3	40.3	44.2	45.4	ug/L	EPA 8260B	8/27/13	110	113	2.76	70.0-130	25
Toluene	85783-16	<0.50	40.0	40.0	39.9	39.3	ug/L	EPA 8260B	8/27/13	99.7	98.3	1.43	70.0-130	25
1,2-Dibromoethane	85783-23	<0.50	40.3	40.3	43.0	42.6	ug/L	EPA 8260B	8/28/13	107	106	0.935	70.0-130	25
1,2-Dichloroethane	85783-23	<0.50	40.0	40.0	38.9	39.0	ug/L	EPA 8260B	8/28/13	97.2	97.5	0.338	70.0-130	25
Diisopropyl ether	85783-23	<0.50	39.3	39.3	39.2	39.4	ug/L	EPA 8260B	8/28/13	99.8	100	0.531	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethanol	85783-23	6.8	99.3	99.3	118	107	ug/L	EPA 8260B	8/28/13	112	101	9.54	55.0-150	25
Ethyl-tert-butyl ether	85783-23	<0.50	40.1	40.1	41.4	43.7	ug/L	EPA 8260B	8/28/13	103	109	5.34	70.0-130	25
Ethylbenzene	85783-23	<0.50	40.0	40.0	42.0	41.5	ug/L	EPA 8260B	8/28/13	105	104	1.21	70.0-130	25
Methanol	85783-23	<50	997	997	1140	1070	ug/L	EPA 8260B	8/28/13	114	107	6.41	65.0-150	25
Methyl-t-butyl ether	85783-23	<0.50	39.9	39.9	39.5	42.3	ug/L	EPA 8260B	8/28/13	99.2	106	6.70	70.0-130	25
P + M Xylene	85783-23	<0.50	40.0	40.0	42.5	41.6	ug/L	EPA 8260B	8/28/13	106	104	2.08	70.0-130	25
Tert-Butanol	85783-23	<5.0	202	202	199	198	ug/L	EPA 8260B	8/28/13	98.9	98.2	0.709	70.0-130	25
Tert-amyl-methyl ether	85783-23	<0.50	40.3	40.3	44.7	46.0	ug/L	EPA 8260B	8/28/13	111	114	2.86	70.0-130	25
Toluene	85783-23	<0.50	40.0	40.0	40.4	39.9	ug/L	EPA 8260B	8/28/13	101	99.8	1.12	70.0-130	25



**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85801-09	<0.50	40.3	40.3	42.8	42.7	ug/L	EPA 8260B	8/28/13	106	106	0.128	70.0-130	25
1,2-Dichloroethane	85801-09	<0.50	40.0	40.0	38.1	38.3	ug/L	EPA 8260B	8/28/13	95.4	95.8	0.424	70.0-130	25
Benzene	85801-09	160	40.0	40.0	197	196	ug/L	EPA 8260B	8/28/13	100	99.7	0.492	70.0-130	25
Diisopropyl ether	85801-09	15	39.3	39.3	53.2	53.3	ug/L	EPA 8260B	8/28/13	97.1	97.4	0.364	70.0-130	25
Ethanol	85801-09	<5.0	99.3	99.3	105	111	ug/L	EPA 8260B	8/28/13	106	112	5.67	55.0-150	25
Ethyl-tert-butyl ether	85801-09	<0.50	40.1	40.1	40.6	40.6	ug/L	EPA 8260B	8/28/13	101	101	0.0278	70.0-130	25
Ethylbenzene	85801-09	3.0	40.0	40.0	43.9	43.3	ug/L	EPA 8260B	8/28/13	102	101	1.52	70.0-130	25
Methanol	85801-09	<50	997	997	1090	1080	ug/L	EPA 8260B	8/28/13	109	108	1.43	65.0-150	25
Methyl-t-butyl ether	85801-09	<0.50	39.9	39.9	38.4	38.3	ug/L	EPA 8260B	8/28/13	96.3	96.0	0.317	70.0-130	25
P + M Xylene	85801-09	6.4	40.0	40.0	48.4	47.4	ug/L	EPA 8260B	8/28/13	105	102	2.43	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85801-09	22	202	202	217	217	ug/L	EPA 8260B	8/28/13	96.5	96.8	0.252	70.0-130	25
Tert-amyl-methyl ether	85801-09	<0.50	40.3	40.3	43.6	44.1	ug/L	EPA 8260B	8/28/13	108	109	1.09	70.0-130	25
Toluene	85801-09	2.2	40.0	40.0	42.0	41.8	ug/L	EPA 8260B	8/28/13	99.6	99.0	0.556	70.0-130	25
1,2-Dibromoethane	85787-04	<0.50	40.3	40.3	40.7	41.2	ug/L	EPA 8260B	8/27/13	101	102	1.22	70.0-130	25
1,2-Dichloroethane	85787-04	<0.50	40.0	40.0	41.2	41.4	ug/L	EPA 8260B	8/27/13	103	103	0.424	70.0-130	25
Benzene	85787-04	15	40.0	40.0	57.3	56.9	ug/L	EPA 8260B	8/27/13	105	104	1.07	70.0-130	25
Diisopropyl ether	85787-04	<0.50	39.3	39.3	39.6	39.6	ug/L	EPA 8260B	8/27/13	101	101	0.257	70.0-130	25
Ethanol	85787-04	<5.0	99.3	99.3	118	117	ug/L	EPA 8260B	8/27/13	118	118	0.662	55.0-150	25
Ethyl-tert-butyl ether	85787-04	<0.50	40.1	40.1	39.4	39.3	ug/L	EPA 8260B	8/27/13	98.2	97.9	0.332	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethylbenzene	85787-04	33	40.0	40.0	78.2	77.2	ug/L	EPA 8260B	8/27/13	113	110	2.21	70.0-130	25
Methyl-t-butyl ether	85787-04	<0.50	39.9	39.9	39.4	39.1	ug/L	EPA 8260B	8/27/13	98.8	98.0	0.880	70.0-130	25
P + M Xylene	85787-04	5.6	40.0	40.0	46.7	46.0	ug/L	EPA 8260B	8/27/13	103	101	1.79	70.0-130	25
Tert-Butanol	85787-04	<5.0	202	202	214	212	ug/L	EPA 8260B	8/27/13	106	105	0.842	70.0-130	25
Tert-amyl-methyl ether	85787-04	<0.50	40.3	40.3	41.4	40.8	ug/L	EPA 8260B	8/27/13	103	101	1.48	70.0-130	25
Toluene	85787-04	2.4	40.0	40.0	42.8	42.4	ug/L	EPA 8260B	8/27/13	101	100	0.904	70.0-130	25
Benzene	85797-03	<0.50	40.0	40.0	45.8	44.0	ug/L	EPA 8260B	8/28/13	114	110	3.95	70.0-130	25
Benzene	85801-11	10	40.0	40.0	48.0	45.6	ug/L	EPA 8260B	8/29/13	94.6	88.6	6.61	70.0-130	25

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	98.0	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	98.7	85-115
Iron, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	96.8	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	96.6	85-115
Sodium, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	99.4	85-115
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	8/27/13	103	70.0-130
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	8/27/13	94.8	70.0-130
Benzene	39.9	ug/L	EPA 8260B	8/27/13	93.7	70.0-130
Diisopropyl ether	39.2	ug/L	EPA 8260B	8/27/13	98.0	70.0-130
Ethanol	99.1	ug/L	EPA 8260B	8/27/13	107	55.0-150
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	8/27/13	105	70.0-130
Ethylbenzene	39.9	ug/L	EPA 8260B	8/27/13	100	70.0-130
Methanol	994	ug/L	EPA 8260B	8/27/13	104	65.0-150
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	8/27/13	102	70.0-130
P + M Xylene	39.9	ug/L	EPA 8260B	8/27/13	101	70.0-130
TPH as Gasoline	495	ug/L	EPA 8260B	8/27/13	100	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/27/13	93.9	70.0-130
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	8/27/13	108	70.0-130
Toluene	39.9	ug/L	EPA 8260B	8/27/13	98.0	70.0-130
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	8/28/13	105	70.0-130

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	8/28/13	96.0	70.0-130
Diisopropyl ether	39.1	ug/L	EPA 8260B	8/28/13	100	70.0-130
Ethanol	98.9	ug/L	EPA 8260B	8/28/13	112	55.0-150
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	8/28/13	102	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	8/28/13	104	70.0-130
Methanol	992	ug/L	EPA 8260B	8/28/13	113	65.0-150
Methyl-t-butyl ether	39.7	ug/L	EPA 8260B	8/28/13	99.2	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	8/28/13	105	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/28/13	98.3	70.0-130
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	8/28/13	110	70.0-130
Toluene	39.8	ug/L	EPA 8260B	8/28/13	100	70.0-130
1,2-Dibromoethane	40.4	ug/L	EPA 8260B	8/28/13	102	70.0-130
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	8/28/13	92.9	70.0-130
Benzene	40.1	ug/L	EPA 8260B	8/28/13	94.2	70.0-130
Diisopropyl ether	39.4	ug/L	EPA 8260B	8/28/13	96.6	70.0-130
Ethanol	99.6	ug/L	EPA 8260B	8/28/13	111	55.0-150
Ethyl-tert-butyl ether	40.2	ug/L	EPA 8260B	8/28/13	99.8	70.0-130
Ethylbenzene	40.1	ug/L	EPA 8260B	8/28/13	101	70.0-130
Methanol	999	ug/L	EPA 8260B	8/28/13	124	65.0-150
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	8/28/13	94.9	70.0-130
P + M Xylene	40.1	ug/L	EPA 8260B	8/28/13	102	70.0-130
TPH as Gasoline	495	ug/L	EPA 8260B	8/28/13	100	70.0-130

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Tert-Butanol	202	ug/L	EPA 8260B	8/28/13	94.9	70.0-130
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	8/28/13	106	70.0-130
Toluene	40.1	ug/L	EPA 8260B	8/28/13	98.1	70.0-130
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	8/27/13	102	70.0-130
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	8/27/13	106	70.0-130
Benzene	39.9	ug/L	EPA 8260B	8/27/13	107	70.0-130
Diisopropyl ether	39.2	ug/L	EPA 8260B	8/27/13	105	70.0-130
Ethanol	99.1	ug/L	EPA 8260B	8/27/13	105	55.0-150
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	8/27/13	104	70.0-130
Ethylbenzene	39.9	ug/L	EPA 8260B	8/27/13	110	70.0-130
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	8/27/13	101	70.0-130
P + M Xylene	39.9	ug/L	EPA 8260B	8/27/13	103	70.0-130
TPH as Gasoline	492	ug/L	EPA 8260B	8/27/13	100	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/27/13	102	70.0-130
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	8/27/13	108	70.0-130
Toluene	39.9	ug/L	EPA 8260B	8/27/13	104	70.0-130
Benzene	39.8	ug/L	EPA 8260B	8/28/13	110	70.0-130
TPH as Gasoline	493	ug/L	EPA 8260B	8/28/13	106	70.0-130
Benzene	40.1	ug/L	EPA 8260B	8/29/13	97.4	70.0-130

Report Number : 85787

Date : 08/29/2013

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Gasoline	493	ug/L	EPA 8260B	8/29/13	97.3	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	8/22/13	101	90.0-110
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	8/22/13	99.1	70.0-130
Nitrate as N	0.500	mg/L	EPA 300.0	8/22/13	102	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	8/22/13	103	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	8/29/13	101	90.0-110







# SAMPLE RECEIPT CHECKLIST

SRG #: 85787

Sample Receipt	Initials/Date: TJB 8/22/13	Storage Time: 1549	Initials/Date: <i>any</i> 082313
TAT: <input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush	<input type="checkbox"/> Split	<input type="checkbox"/> None
Temp °C 1.4	<input type="checkbox"/> N/A	Therm ID JK-1	Time 1538
Method of Receipt: <input checked="" type="checkbox"/> Courier		<input type="checkbox"/> Over-the-counter	
Coolant present: <input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	
Custody Seals: <input type="checkbox"/> N/A		<input type="checkbox"/> Intact <input type="checkbox"/> Broken	

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?	X	
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	/	/	
Project ID	/	/	
Sample Date	/	/	
Sample Time	/	/	
Does COC match project history? <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

Samples:	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
<b>In-house Analysis:</b>	N/A	Yes	No
Are preservatives acceptable?		X	
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		X	

**Comments:**

Receipt Details:	Container Type	# of Containers
Matrix WA	VDA	62
WA	Poly	56

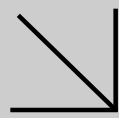
**CS Required:**

Proceed With Analysis:  YES  NO      Init/Date: \_\_\_\_\_

Client Communication: \_\_\_\_\_



# Subcontract Laboratory Report Attachments



# CALSCIENCE

**WORK ORDER NUMBER: 13-08-1615**

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

## Analytical Report For

**Client:** Kiff Analytical

**Client Project Name:** Tesoro Livermore #67076

**Attention:** Joel Kiff  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

*Amanda Porter*

Approved for release on 08/30/2013 by:  
Amanda Porter  
Project Manager

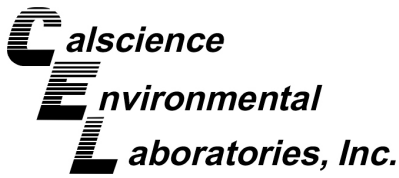
ResultLink ▶

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.





# Contents

Client Project Name: Tesoro Livermore #67076  
Work Order Number: 13-08-1615

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**Work Order Narrative**

Work Order: 13-08-1615

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**Condition Upon Receipt:**

Samples were received under Chain of Custody (COC) on 08/23/13. They were assigned to Work Order 13-08-1615.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

**Holding Times:**

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

**Quality Control:**

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

**Additional Comments:**

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

**Subcontractor Information:**

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.



## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1615  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

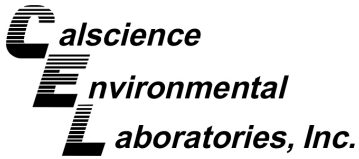
Project: Tesoro Livermore #67076

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>IP-10</b>	<b>13-08-1615-1-C</b>	<b>08/22/13 06:45</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 12:43</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		12800	17.0		10		
<b>MW-9</b>	<b>13-08-1615-2-C</b>	<b>08/22/13 08:00</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 13:56</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		35200	17.0		10		
<b>MW-12</b>	<b>13-08-1615-3-C</b>	<b>08/22/13 08:30</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 14:15</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		24600	17.0		10		
<b>DW-2</b>	<b>13-08-1615-4-C</b>	<b>08/22/13 09:10</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 14:33</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		64300	17.0		10		
<b>MW-8</b>	<b>13-08-1615-5-C</b>	<b>08/22/13 09:50</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 14:53</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		21500	17.0		10		
<b>DW-8</b>	<b>13-08-1615-6-C</b>	<b>08/22/13 11:15</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 15:16</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		22900	17.0		10		
<b>MW-6</b>	<b>13-08-1615-7-C</b>	<b>08/22/13 11:00</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 15:35</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		53400	17.0		10		
<b>DW-6</b>	<b>13-08-1615-8-C</b>	<b>08/22/13 11:35</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/24/13 16:01</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		27700	17.0		10		

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1615  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

Project: Tesoro Livermore #67076

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>IP-10</b>	<b>13-08-1615-1-A</b>	<b>08/22/13 06:45</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/24/13 15:51</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		480	1.00		1		
<b>MW-9</b>	<b>13-08-1615-2-A</b>	<b>08/22/13 08:00</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/24/13 16:14</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		381	1.00		1		
<b>MW-12</b>	<b>13-08-1615-3-A</b>	<b>08/22/13 08:30</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/24/13 17:03</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		2800	8.00		8		
<b>DW-2</b>	<b>13-08-1615-4-B</b>	<b>08/22/13 09:10</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/25/13 03:12</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		2580	8.00		8		
<b>MW-8</b>	<b>13-08-1615-5-A</b>	<b>08/22/13 09:50</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/24/13 21:13</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		4.41	1.00		1		
<b>DW-8</b>	<b>13-08-1615-6-A</b>	<b>08/22/13 11:15</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/25/13 03:52</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		1230	8.00		8		
<b>MW-6</b>	<b>13-08-1615-7-B</b>	<b>08/22/13 11:00</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/25/13 05:45</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		5370	20.0		20		
<b>DW-6</b>	<b>13-08-1615-8-A</b>	<b>08/22/13 11:35</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/25/13 05:01</b>	<b>130824L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		2070	8.00		8		

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1615  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

Project: Tesoro Livermore #67076

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-663-1975	N/A	Aqueous	GC 61	N/A	08/24/13 12:07	130824L01

Parameter	Result	RL	DF	Qualifiers
Methane	ND	1.00	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





## Analytical Report

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

Date Received: 08/23/13  
Work Order: 13-08-1615

Project: Tesoro Livermore #67076

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Client Sample Number		Lab Sample Number			Date/Time Collected		Matrix	
<b>IP-10</b>		<b>13-08-1615-1</b>			<b>08/22/13 06:45</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	285	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	480	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C
<b>MW-9</b>		<b>13-08-1615-2</b>			<b>08/22/13 08:00</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	583	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	760	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C
<b>MW-12</b>		<b>13-08-1615-3</b>			<b>08/22/13 08:30</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	420	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	640	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C
<b>DW-2</b>		<b>13-08-1615-4</b>			<b>08/22/13 09:10</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	638	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	800	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C
<b>MW-8</b>		<b>13-08-1615-5</b>			<b>08/22/13 09:50</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	378	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	680	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C
<b>DW-8</b>		<b>13-08-1615-6</b>			<b>08/22/13 11:15</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	398	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	570	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C
<b>MW-6</b>		<b>13-08-1615-7</b>			<b>08/22/13 11:00</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	586	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	745	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

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

Date Received:  
Work Order:

08/23/13  
13-08-1615

Project: Tesoro Livermore #67076

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
<b>DW-6</b>	<b>13-08-1615-8</b>	<b>08/22/13 11:35</b>	<b>Aqueous</b>

<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO <sub>3</sub> )	430	5.00	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	600	1.00	1		mg/L	08/28/13	08/28/13	SM 2540 C

<b>Method Blank</b>	<b>N/A</b>						<b>Aqueous</b>
---------------------	------------	--	--	--	--	--	----------------

<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO <sub>3</sub> )	ND	1.0	1		mg/L	N/A	08/23/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	08/28/13	08/28/13	SM 2540 C

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Quality Control - Sample Duplicate

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

Date Received: 08/23/13  
Work Order: 13-08-1615  
Preparation: N/A  
Method: SM 2320B

Project: Tesoro Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>13-08-1613-1</b>	<b>Aqueous</b>	<b>PH1/BUR03</b>	<b>N/A</b>	<b>08/23/13 18:00</b>	<b>D0823ALKD4</b>
<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	318.0	317.0	0	0-25	



## Quality Control - Sample Duplicate

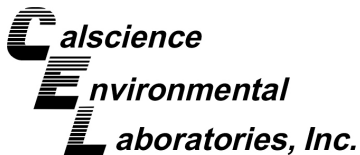
Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

Date Received: 08/23/13  
Work Order: 13-08-1615  
Preparation: N/A  
Method: SM 2540 C

Project: Tesoro Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>13-08-1578-1</b>	<b>Aqueous</b>	<b>SC 5</b>	<b>08/28/13 00:00</b>	<b>08/28/13 15:30</b>	<b>D0828TDSD1</b>
<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Solids, Total Dissolved	1005	985.0	2	0-20	



Quality Control - LCS/LCSD

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

Date Received: 08/23/13  
 Work Order: 13-08-1615  
 Preparation: N/A  
 Method: RSK-175M

Project: Tesoro Livermore #67076

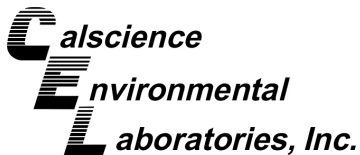
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
<b>099-12-663-1975</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/24/13 09:37</b>	<b>130824L01</b>

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Methane	98.50	91.59	93	91.68	93	80-120	0	0-20	



RPD: Relative Percent Difference. CL: Control Limits



Quality Control - LCS/LCSD

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

Date Received: 08/23/13  
 Work Order: 13-08-1615  
 Preparation: N/A  
 Method: SM 2320B

Project: Tesoro Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-15-859-154</b>	<b>Aqueous</b>	<b>PH1/BUR03</b>	<b>N/A</b>	<b>08/23/13 18:00</b>	<b>D0823ALKB4</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	100.0	97.00	97	96.00	96	80-120	1	0-20	

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RPD: Relative Percent Difference. CL: Control Limits



## Quality Control - LCS/LCSD

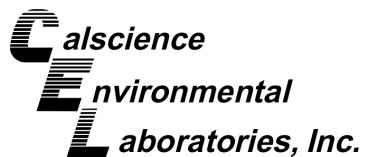
Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

Date Received: 08/23/13  
Work Order: 13-08-1615  
Preparation: N/A  
Method: SM 2540 C

Project: Tesoro Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-180-3805</b>	<b>Aqueous</b>	<b>SC 5</b>	<b>08/28/13</b>	<b>08/28/13 15:30</b>	<b>D0828TDSL1</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Solids, Total Dissolved	100.0	95.00	95	100.0	100	80-120	5	0-20	



## Sample Analysis Summary Report

Work Order: 13-08-1615

Page 1 of 1

<u>Method</u>	<u>Extraction</u>	<u>Chemist ID</u>	<u>Instrument</u>	<u>Analytical Location</u>
RSK-175M	N/A	460	GC 61	2
RSK-175M	N/A	858	GC 14	2
RSK-175M	N/A	858	GC 61	2
RSK-175M	N/A	888	GC 61	2
SM 2320B	N/A	857	PH1/BUR03	1
SM 2540 C	N/A	722	SC 5	1

  
Return to Contents

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841

Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



## Glossary of Terms and Qualifiers

Work Order: 13-08-1615

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	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 suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
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.
BV	Sample received 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 Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
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.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq$  15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.



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

7440 Lincoln Way  
 Garden Grove, CA 92841-1427  
 714-895-5494  
 COC No. 85787

**13-08-1615**  
 Page 1 of 1

Project Contact (Hardcopy or PDF to): **Scott Forbes**  
 Company/Address: **Kiff Analytical**  
 Phone No.: **530-297-4800**  
 Project Number: **01LV**  
 Project Name: **Tesororo - Livermore #67076**  
 Project Address: **Tesororo - Livermore #67076**

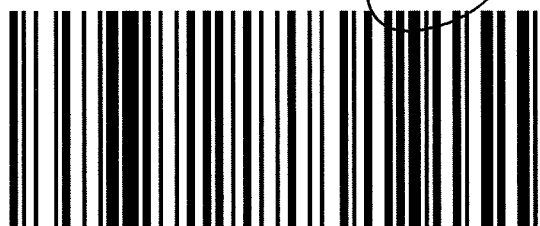
EDF Report? **YES**  
 Recommended but not mandatory to complete this section:  
 Sampling Company Log Code: **CESS**  
 Global ID: **T0600101410**  
 Deliverables to (Email Address): **inbox@kiffanalytical.com**

Sample Designation	Sampling		Container / Preservative				Matrix				Analysis Request				TAT
	Date	Time	1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Water	Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids				
IP-10	08/22/13	06:45	1	1	2	2	X	X	X	X	X	X	X	X	1
MW-9	08/22/13	08:00	1	1	2	2	X	X	X	X	X	X	X	X	2
MW-12	08/22/13	08:30	1	1	2	2	X	X	X	X	X	X	X	X	3
DW-2	08/22/13	09:10	1	1	2	2	X	X	X	X	X	X	X	X	4
MW-8	08/22/13	09:50	1	1	2	2	X	X	X	X	X	X	X	X	5
DW-8	08/22/13	11:15	1	1	2	2	X	X	X	X	X	X	X	X	6
MW-6	08/22/13	11:00	1	1	2	2	X	X	X	X	X	X	X	X	7
DW-6	08/22/13	11:35	1	1	2	2	X	X	X	X	X	X	X	X	8

Relinquished by: *Scott Forbes* Date: *08/22/13* Time: *09:00*  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: *(Contract)* Date: *08/23/13* Time: *09:40*  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: *Scott Forbes* Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Remarks: Please refer to attached Test Detail.  
 Bill to: **Accounts Payable**



**800.334.5000**  
**ontrac.com**



D10010607733254

Date Printed 8/22/2013

Tracking#D10010607733254

*Shipped From:*

KIFF ANALYTICAL  
2795 2ND STREET 300  
DAVIS, CA 95618

*Sent By:* SAMPLE RECEIVINGX125

*Phone#:* (530)297-4800

*wgt(lbs):* 40

*Reference:* SUBS 85787

*Reference 2:* 600

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

Cooler 1 of 1

CLIENT: Kiff

DATE: 08/23/13

**TEMPERATURE:** Thermometer ID: SC3 (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Temperature 2.6 °C - 0.2°C (CF) = 2.74 °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: AF

**CUSTODY SEALS INTACT:**

Cooler  \_\_\_\_\_  No (Not Intact)  Not Present  N/A Initial: AF

Sample  \_\_\_\_\_  No (Not Intact)  Not Present Initial: AF

**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfides <input type="checkbox"/> Dissolved Oxygen.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**  4ozCGJ  8ozCGJ  16ozCGJ  Sleeve (\_\_\_\_)  EnCores®  TerraCores®  \_\_\_\_\_

**Aqueous:**  VOA  VOAh  VOAna<sub>2</sub>  125AGB  125AGBh  125AGBp  1AGB  1AGBna<sub>2</sub>  1AGBs

500AGB  500AGJ  500AGJs  250AGB  250CGB  250CGBs  1PB  1PBna  500PB

250PB  250PBn  125PB  125PBz<sub>na</sub>  100PJ  100PJna<sub>2</sub>  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_

**Air:**  Tedlar®  Canister **Other:**  \_\_\_\_\_ **Trip Blank Lot#:** \_\_\_\_\_ **Labeled/Checked by:** PS

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

**Preservative:** h: HCL n: HNO<sub>3</sub> na<sub>2</sub>:Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> na: NaOH p: H<sub>3</sub>PO<sub>4</sub> s: H<sub>2</sub>SO<sub>4</sub> u: Ultra-pure z<sub>na</sub>: ZnAc<sub>2</sub>+NaOH f: Filtered **Scanned by:** PS

Return to Contents



## Laboratory Results

Mike Purchase  
Arctos Environmental  
2332 5th St., Suite A  
Berkeley, CA 94610

Subject : 7 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

Dear Mr. Purchase,

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

A handwritten signature in black ink that reads "Troy G. Turpen". The signature is written in a cursive style with a large, prominent "T" and "G".

Troy Turpen

Subject : 7 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

## Case Narrative

The Method Reporting Limit for Nitrate as N by Method EPA 300.0 was raised due to dilution for high concentrations of hydrocarbons for samples DW-5, DW-7, DW-9, IP-1, and MW-11.

The Method Reporting Limit for Sulfate by Method EPA 300.0 was raised due to high concentrations of hydrocarbons for sample DW-9.

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples MW-11, IP-9 and DW-9.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for samples IP-8 and MW-11.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-5, DW-7, DW-9, IP-1, IP-8, IP-9, and MW-11 for the analyte Hexavalent Chromium were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-5, DW-7, DW-9, IP-1, IP-8, IP-9, and MW-11 for the analyte Ferrous Iron were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples IP-1, IP-8, MW-11, IP-9, DW-9, DW-7, and DW-5 for the analytes Dissolved Manganese and Dissolved Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Methanol was detected in the Method Blank associated with samples IP-8 and DW-7. Since Methanol was not detected above the reporting limit in the samples, no data were flagged.

LCS and Matrix Spike/Matrix Spike Duplicate results associated with samples IP-1, MW-11, IP-9, and DW-9 for the analyte Methanol were outside of control limits, indicating a possible high bias for this analyte. Since Methanol was not detected above the Method Reporting Limit in the associated samples, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with sample IP-1 for the analyte P + M Xylene were affected by the analyte concentrations already present in the un-spiked sample.

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **IP-1**

Matrix : Water

Lab Number : 85788-01

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 1.0	1.0	mg/L	EPA 300.0	08/23/13 13:24
<b>Sulfate</b>	<b>730</b>	25	mg/L	EPA 300.0	08/28/13 11:47
<b>Hexavalent Chromium</b>	<b>13</b>	2.0	ug/L	EPA 7199	08/23/13 11:36
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/23/13 11:07
<b>Arsenic, Dissolved</b>	<b>0.13</b>	0.015	mg/L	EPA 6010B	08/29/13 10:36
<b>Chromium, Dissolved</b>	<b>0.012</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:36
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/29/13 10:36
<b>Manganese, Dissolved</b>	<b>0.021</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:36
<b>Sodium, Dissolved</b>	<b>2800</b>	50	mg/L	EPA 6010B	08/29/13 13:21
<b>Benzene</b>	<b>360</b>	2.0	ug/L	EPA 8260B	08/28/13 15:48
<b>Toluene</b>	<b>430</b>	2.0	ug/L	EPA 8260B	08/28/13 15:48
<b>Ethylbenzene</b>	<b>740</b>	2.0	ug/L	EPA 8260B	08/28/13 15:48
<b>Total Xylenes</b>	<b>2300</b>	4.0	ug/L	EPA 8260B	08/29/13 03:29
Methyl-t-butyl ether (MTBE)	< 2.0	2.0	ug/L	EPA 8260B	08/28/13 15:48
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	08/28/13 15:48
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	08/28/13 15:48
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	08/28/13 15:48
<b>Tert-Butanol</b>	<b>25</b>	9.0	ug/L	EPA 8260B	08/28/13 15:48
Methanol	< 200	200	ug/L	EPA 8260B	08/28/13 15:48
Ethanol	< 20	20	ug/L	EPA 8260B	08/28/13 15:48
<b>TPH as Gasoline</b>	<b>23000</b>	400	ug/L	EPA 8260B	08/29/13 03:29
1,2-Dichloroethane	< 2.0	2.0	ug/L	EPA 8260B	08/28/13 15:48
1,2-Dibromoethane	< 2.0	2.0	ug/L	EPA 8260B	08/28/13 15:48
1,2-Dichloroethane-d4 (Surr)	93.7		% Recovery	EPA 8260B	08/28/13 15:48
Toluene - d8 (Surr)	93.4		% Recovery	EPA 8260B	08/28/13 15:48

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **IP-8**

Matrix : Water

Lab Number : 85788-02

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Nitrate as N</b>	<b>1.5</b>	1.0	mg/L	EPA 300.0	08/23/13 13:36
<b>Sulfate</b>	<b>1200</b>	25	mg/L	EPA 300.0	08/28/13 11:58
<b>Hexavalent Chromium</b>	<b>49</b>	10	ug/L	EPA 7199	08/23/13 10:59
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/23/13 11:11
<b>Arsenic, Dissolved</b>	<b>0.24</b>	0.015	mg/L	EPA 6010B	08/29/13 10:41
<b>Chromium, Dissolved</b>	<b>0.044</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:41
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/29/13 10:41
<b>Manganese, Dissolved</b>	<b>0.0056</b>	0.0054	mg/L	EPA 6010B	08/29/13 10:41
<b>Sodium, Dissolved</b>	<b>13000</b>	540	mg/L	EPA 6010B	08/29/13 13:25
<b>Benzene</b>	<b>130</b>	4.0	ug/L	EPA 8260B	08/29/13 04:56
<b>Toluene</b>	<b>440</b>	4.0	ug/L	EPA 8260B	08/29/13 04:56
<b>Ethylbenzene</b>	<b>260</b>	4.0	ug/L	EPA 8260B	08/29/13 04:56
<b>Total Xylenes</b>	<b>1900</b>	4.0	ug/L	EPA 8260B	08/29/13 04:56
Methyl-t-butyl ether (MTBE)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 04:56
Diisopropyl ether (DIPE)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 04:56
Ethyl-t-butyl ether (ETBE)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 04:56
Tert-amyl methyl ether (TAME)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 04:56
Tert-Butanol	< 20	20	ug/L	EPA 8260B	08/29/13 04:56
Methanol	< 400	400	ug/L	EPA 8260B	08/29/13 04:56
Ethanol	< 80	80	ug/L	EPA 8260B	08/29/13 04:56
<b>TPH as Gasoline</b>	<b>19000</b>	400	ug/L	EPA 8260B	08/29/13 04:56
1,2-Dichloroethane	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 04:56
1,2-Dibromoethane	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 04:56
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	08/29/13 04:56
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	08/29/13 04:56



Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **MW-11**

Matrix : Water

Lab Number : 85788-03

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.50	0.50	mg/L	EPA 300.0	08/23/13 13:47
<b>Sulfate</b>	<b>260</b>	25	mg/L	EPA 300.0	08/28/13 12:10
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/23/13 11:09
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/23/13 11:59
<b>Arsenic, Dissolved</b>	<b>0.048</b>	0.015	mg/L	EPA 6010B	08/29/13 10:46
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:46
<b>Iron, Dissolved</b>	<b>0.12</b>	0.10	mg/L	EPA 6010B	08/29/13 10:46
<b>Manganese, Dissolved</b>	<b>0.25</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:46
<b>Sodium, Dissolved</b>	<b>1200</b>	50	mg/L	EPA 6010B	08/29/13 13:29
<b>Benzene</b>	<b>26</b>	0.90	ug/L	EPA 8260B	08/28/13 14:43
<b>Toluene</b>	<b>32</b>	0.90	ug/L	EPA 8260B	08/28/13 14:43
<b>Ethylbenzene</b>	<b>260</b>	0.90	ug/L	EPA 8260B	08/28/13 14:43
<b>Total Xylenes</b>	<b>940</b>	0.90	ug/L	EPA 8260B	08/28/13 14:43
Methyl-t-butyl ether (MTBE)	< 0.90	0.90	ug/L	EPA 8260B	08/28/13 14:43
Diisopropyl ether (DIPE)	< 0.90	0.90	ug/L	EPA 8260B	08/28/13 14:43
Ethyl-t-butyl ether (ETBE)	< 0.90	0.90	ug/L	EPA 8260B	08/28/13 14:43
Tert-amyl methyl ether (TAME)	< 0.90	0.90	ug/L	EPA 8260B	08/28/13 14:43
<b>Tert-Butanol</b>	<b>8.6</b>	5.0	ug/L	EPA 8260B	08/28/13 14:43
Methanol	< 200	200	ug/L	EPA 8260B	08/28/13 14:43
Ethanol	< 20	20	ug/L	EPA 8260B	08/28/13 14:43
<b>TPH as Gasoline</b>	<b>9600</b>	250	ug/L	EPA 8260B	08/29/13 04:01
1,2-Dichloroethane	< 0.90	0.90	ug/L	EPA 8260B	08/28/13 14:43
1,2-Dibromoethane	< 0.90	0.90	ug/L	EPA 8260B	08/28/13 14:43
1,2-Dichloroethane-d4 (Surr)	92.3		% Recovery	EPA 8260B	08/28/13 14:43
Toluene - d8 (Surr)	92.9		% Recovery	EPA 8260B	08/28/13 14:43

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **IP-9**

Matrix : Water

Lab Number : 85788-04

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Nitrate as N</b>	<b>1.4</b>	0.50	mg/L	EPA 300.0	08/23/13 13:59
<b>Sulfate</b>	<b>880</b>	25	mg/L	EPA 300.0	08/28/13 12:21
<b>Hexavalent Chromium</b>	<b>110</b>	10	ug/L	EPA 7199	08/23/13 11:16
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/23/13 11:39
<b>Arsenic, Dissolved</b>	<b>0.24</b>	0.015	mg/L	EPA 6010B	08/29/13 10:50
<b>Chromium, Dissolved</b>	<b>0.099</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:50
<b>Iron, Dissolved</b>	<b>0.14</b>	0.10	mg/L	EPA 6010B	08/29/13 10:50
<b>Manganese, Dissolved</b>	<b>0.0067</b>	0.0053	mg/L	EPA 6010B	08/29/13 10:50
<b>Sodium, Dissolved</b>	<b>10000</b>	530	mg/L	EPA 6010B	08/29/13 13:33
<b>Benzene</b>	<b>14</b>	1.5	ug/L	EPA 8260B	08/28/13 15:15
<b>Toluene</b>	<b>250</b>	1.5	ug/L	EPA 8260B	08/28/13 15:15
<b>Ethylbenzene</b>	<b>190</b>	1.5	ug/L	EPA 8260B	08/28/13 15:15
<b>Total Xylenes</b>	<b>1000</b>	1.5	ug/L	EPA 8260B	08/28/13 15:15
Methyl-t-butyl ether (MTBE)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 15:15
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 15:15
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 15:15
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 15:15
Tert-Butanol	< 7.0	7.0	ug/L	EPA 8260B	08/28/13 15:15
Methanol	< 400	400	ug/L	EPA 8260B	08/28/13 15:15
Ethanol	< 15	15	ug/L	EPA 8260B	08/28/13 15:15
<b>TPH as Gasoline</b>	<b>7500</b>	150	ug/L	EPA 8260B	08/28/13 15:15
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 15:15
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	08/28/13 15:15
1,2-Dichloroethane-d4 (Surr)	97.8		% Recovery	EPA 8260B	08/28/13 15:15
Toluene - d8 (Surr)	97.4		% Recovery	EPA 8260B	08/28/13 15:15

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-9**

Matrix : Water

Lab Number : 85788-05

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 1.0	1.0	mg/L	EPA 300.0	08/23/13 14:33
Sulfate	< 5.0	5.0	mg/L	EPA 300.0	08/23/13 14:33
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/23/13 10:27
<b>Ferrous Iron</b>	<b>0.17</b>	0.10	mg/L	SM 3500-Fe D	08/23/13 11:39
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:55
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:55
<b>Iron, Dissolved</b>	<b>1.0</b>	0.10	mg/L	EPA 6010B	08/29/13 10:55
<b>Manganese, Dissolved</b>	<b>2.3</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:55
<b>Sodium, Dissolved</b>	<b>68</b>	0.50	mg/L	EPA 6010B	08/29/13 10:55
<b>Benzene</b>	<b>320</b>	4.0	ug/L	EPA 8260B	08/28/13 16:53
<b>Toluene</b>	<b>13</b>	4.0	ug/L	EPA 8260B	08/28/13 16:53
<b>Ethylbenzene</b>	<b>690</b>	4.0	ug/L	EPA 8260B	08/28/13 16:53
<b>Total Xylenes</b>	<b>240</b>	4.0	ug/L	EPA 8260B	08/28/13 16:53
<b>Methyl-t-butyl ether (MTBE)</b>	<b>28</b>	4.0	ug/L	EPA 8260B	08/28/13 16:53
Diisopropyl ether (DIPE)	< 4.0	4.0	ug/L	EPA 8260B	08/28/13 16:53
Ethyl-t-butyl ether (ETBE)	< 4.0	4.0	ug/L	EPA 8260B	08/28/13 16:53
Tert-amyl methyl ether (TAME)	< 4.0	4.0	ug/L	EPA 8260B	08/28/13 16:53
<b>Tert-Butanol</b>	<b>87</b>	20	ug/L	EPA 8260B	08/28/13 16:53
Methanol	< 2000	2000	ug/L	EPA 8260B	08/28/13 16:53
Ethanol	< 40	40	ug/L	EPA 8260B	08/28/13 16:53
<b>TPH as Gasoline</b>	<b>19000</b>	400	ug/L	EPA 8260B	08/28/13 16:53
1,2-Dichloroethane	< 4.0	4.0	ug/L	EPA 8260B	08/28/13 16:53
1,2-Dibromoethane	< 4.0	4.0	ug/L	EPA 8260B	08/28/13 16:53
1,2-Dichloroethane-d4 (Surr)	96.7		% Recovery	EPA 8260B	08/28/13 16:53
Toluene - d8 (Surr)	96.3		% Recovery	EPA 8260B	08/28/13 16:53

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-7**

Matrix : Water

Lab Number : 85788-06

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 1.0	1.0	mg/L	EPA 300.0	08/23/13 14:44
<b>Sulfate</b>	<b>50</b>	5.0	mg/L	EPA 300.0	08/23/13 14:44
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/23/13 10:40
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/23/13 11:56
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/13 10:59
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 10:59
<b>Iron, Dissolved</b>	<b>0.12</b>	0.10	mg/L	EPA 6010B	08/29/13 10:59
<b>Manganese, Dissolved</b>	<b>1.2</b>	0.0050	mg/L	EPA 6010B	08/29/13 10:59
<b>Sodium, Dissolved</b>	<b>170</b>	0.50	mg/L	EPA 6010B	08/29/13 10:59
<b>Benzene</b>	<b>420</b>	2.5	ug/L	EPA 8260B	08/29/13 03:52
<b>Toluene</b>	<b>18</b>	2.5	ug/L	EPA 8260B	08/29/13 03:52
<b>Ethylbenzene</b>	<b>520</b>	2.5	ug/L	EPA 8260B	08/29/13 03:52
<b>Total Xylenes</b>	<b>320</b>	2.5	ug/L	EPA 8260B	08/29/13 03:52
<b>Methyl-t-butyl ether (MTBE)</b>	<b>96</b>	2.5	ug/L	EPA 8260B	08/29/13 03:52
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:52
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:52
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:52
<b>Tert-Butanol</b>	<b>310</b>	15	ug/L	EPA 8260B	08/29/13 03:52
Methanol	< 250	250	ug/L	EPA 8260B	08/29/13 03:52
Ethanol	< 25	25	ug/L	EPA 8260B	08/29/13 03:52
<b>TPH as Gasoline</b>	<b>15000</b>	250	ug/L	EPA 8260B	08/29/13 03:52
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:52
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	08/29/13 03:52
1,2-Dichloroethane-d4 (Surr)	98.3		% Recovery	EPA 8260B	08/29/13 03:52
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	08/29/13 03:52

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Sample : **DW-5**

Matrix : Water

Lab Number : 85788-07

Sample Date :08/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 2.0	2.0	mg/L	EPA 300.0	08/23/13 14:56
<b>Sulfate</b>	<b>290</b>	10	mg/L	EPA 300.0	08/23/13 14:56
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	08/23/13 10:50
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	08/23/13 12:12
<b>Arsenic, Dissolved</b>	<b>0.025</b>	0.015	mg/L	EPA 6010B	08/29/13 11:03
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/13 11:03
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/29/13 11:03
<b>Manganese, Dissolved</b>	<b>0.41</b>	0.0050	mg/L	EPA 6010B	08/29/13 11:03
<b>Sodium, Dissolved</b>	<b>620</b>	5.0	mg/L	EPA 6010B	08/29/13 13:37
<b>Benzene</b>	<b>58</b>	4.0	ug/L	EPA 8260B	08/29/13 11:46
<b>Toluene</b>	<b>11</b>	4.0	ug/L	EPA 8260B	08/29/13 11:46
<b>Ethylbenzene</b>	<b>770</b>	4.0	ug/L	EPA 8260B	08/29/13 11:46
<b>Total Xylenes</b>	<b>1200</b>	4.0	ug/L	EPA 8260B	08/29/13 11:46
Methyl-t-butyl ether (MTBE)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 11:46
Diisopropyl ether (DIPE)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 11:46
Ethyl-t-butyl ether (ETBE)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 11:46
Tert-amyl methyl ether (TAME)	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 11:46
Tert-Butanol	< 20	20	ug/L	EPA 8260B	08/29/13 11:46
Methanol	< 400	400	ug/L	EPA 8260B	08/29/13 11:46
Ethanol	< 40	40	ug/L	EPA 8260B	08/29/13 11:46
<b>TPH as Gasoline</b>	<b>22000</b>	400	ug/L	EPA 8260B	08/29/13 11:46
1,2-Dichloroethane	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 11:46
1,2-Dibromoethane	< 4.0	4.0	ug/L	EPA 8260B	08/29/13 11:46
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	08/29/13 11:46
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	08/29/13 11:46

Report Number : 85788

Date : 08/29/2013

**QC Report : Method Blank Data**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	08/29/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	08/29/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	08/29/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	08/29/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/29/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Methanol	< 50	50	ug/L	EPA 8260B	08/29/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/29/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/29/2013
Methanol	150	50	ug/L	EPA 8260B	08/28/2013	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/29/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013	1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	08/29/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Toluene - d8 (Surr)	99.9		%	EPA 8260B	08/29/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	08/28/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
Toluene - d8 (Surr)	101		%	EPA 8260B	08/28/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013
						Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						Methanol	< 50	50	ug/L	EPA 8260B	08/28/2013
						Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/28/2013
						Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/2013
						1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013
						1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	08/28/2013
						Toluene - d8 (Surr)	99.5		%	EPA 8260B	08/28/2013

KIFF ANALYTICAL, LLC

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

Report Number : 85788

Date : 08/29/2013

**QC Report : Method Blank Data**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/28/2013						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/28/2013						
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	08/23/2013						
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	08/23/2013						
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	08/23/2013						
Sulfate	<0.50	0.50	mg/L	EPA 300.0	08/23/2013						
Sulfate	<0.50	0.50	mg/L	EPA 300.0	08/28/2013						

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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. Limit	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
<b>Ferrous Iron</b>	85788-05	0.17	0.252	0.252	0.527	0.541	mg/L	SM 3500-Fe D	8/23/13	142	147	2.62	70.0-130	25
<b>Hexavalent Chromium</b>	85788-03	< 1.0	5.00	5.00	5.46	5.56	ug/L	EPA 7199	8/23/13	109	111	1.65	90.0-110	10
Nitrate as N	85786-01	< 0.10	0.500	0.500	0.590	0.596	mg/L	EPA 300.0	8/23/13	101	102	0.962	90.0-110	10
Sulfate	85786-01	13	2.50	2.50	16.0	16.0	mg/L	EPA 300.0	8/23/13	105	104	0.122	90.0-110	10
Sulfate	85786-02	12	2.50	2.50	13.8	14.0	mg/L	EPA 300.0	8/28/13	93.6	99.2	1.01	90.0-110	10
Arsenic, (Dis)	85787-01	< 0.015	0.400	0.400	0.395	0.398	mg/L	EPA 6010B	8/29/13	98.6	99.6	0.908	75-125	20
Chromium, (Dis)	85787-01	< 0.0050	0.400	0.400	0.388	0.393	mg/L	EPA 6010B	8/29/13	97.0	98.2	1.20	75-125	20
Iron, (Dis)	85787-01	0.60	0.400	0.400	0.946	0.966	mg/L	EPA 6010B	8/29/13	87.6	92.4	2.00	75-125	20



**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	
<b>Manganese, (Dis)</b>															
	85787-01	2.6	0.400	0.400	2.91	2.96	mg/L	EPA 6010B	8/29/13	73.5	86.2	1.74	75-125	20	
<b>Sodium, (Dis)</b>															
	85787-01	55	0.400	0.400	54.0	55.4	mg/L	EPA 6010B	8/29/13	0.00	0.00	2.51	75-125	20	
<b>1,2-Dibromoethane</b>															
	85801-09	<0.50	40.3	40.3	42.8	42.7	ug/L	EPA 8260B	8/28/13	106	106	0.128	70.0-130	25	
<b>1,2-Dichloroethane</b>															
	85801-09	<0.50	40.0	40.0	38.1	38.3	ug/L	EPA 8260B	8/28/13	95.4	95.8	0.424	70.0-130	25	
<b>Benzene</b>															
	85801-09	160	40.0	40.0	197	196	ug/L	EPA 8260B	8/28/13	100	99.7	0.492	70.0-130	25	
<b>Diisopropyl ether</b>															
	85801-09	15	39.3	39.3	53.2	53.3	ug/L	EPA 8260B	8/28/13	97.1	97.4	0.364	70.0-130	25	
<b>Ethanol</b>															
	85801-09	<5.0	99.3	99.3	105	111	ug/L	EPA 8260B	8/28/13	106	112	5.67	55.0-150	25	
<b>Ethyl-tert-butyl ether</b>															
	85801-09	<0.50	40.1	40.1	40.6	40.6	ug/L	EPA 8260B	8/28/13	101	101	0.0278	70.0-130	25	
<b>Ethylbenzene</b>															
	85801-09	3.0	40.0	40.0	43.9	43.3	ug/L	EPA 8260B	8/28/13	102	101	1.52	70.0-130	25	

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85801-09	<0.50	997	997	1090	1080	ug/L	EPA 8260B	8/28/13	109	108	1.43	65.0-150	25
Methyl-t-butyl ether	85801-09	<0.50	39.9	39.9	38.4	38.3	ug/L	EPA 8260B	8/28/13	96.3	96.0	0.317	70.0-130	25
P + M Xylene	85801-09	6.4	40.0	40.0	48.4	47.4	ug/L	EPA 8260B	8/28/13	105	102	2.43	70.0-130	25
Tert-Butanol	85801-09	22	202	202	217	217	ug/L	EPA 8260B	8/28/13	96.5	96.8	0.252	70.0-130	25
Tert-amyl-methyl ether	85801-09	<0.50	40.3	40.3	43.6	44.1	ug/L	EPA 8260B	8/28/13	108	109	1.09	70.0-130	25
Toluene	85801-09	2.2	40.0	40.0	42.0	41.8	ug/L	EPA 8260B	8/28/13	99.6	99.0	0.556	70.0-130	25
1,2-Dibromoethane	85801-07	<0.50	40.3	40.3	43.0	42.6	ug/L	EPA 8260B	8/29/13	106	106	0.761	70.0-130	25
1,2-Dichloroethane	85801-07	<0.50	40.0	40.0	38.2	37.8	ug/L	EPA 8260B	8/29/13	95.6	94.6	1.06	70.0-130	25
Benzene	85801-07	260	40.0	40.0	301	298	ug/L	EPA 8260B	8/29/13	98.9	91.3	7.96	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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
Diisopropyl ether	85801-07	<0.50	39.3	39.3	37.1	37.1	ug/L	EPA 8260B	8/29/13	94.4	94.5	0.160	70.0-130	25
Ethanol	85801-07	<5.0	99.3	99.3	125	102	ug/L	EPA 8260B	8/29/13	126	102	20.6	55.0-150	25
Ethyl-tert-butyl ether	85801-07	<0.50	40.1	40.1	40.1	41.6	ug/L	EPA 8260B	8/29/13	99.9	104	3.76	70.0-130	25
Ethylbenzene	85801-07	12	40.0	40.0	55.5	55.0	ug/L	EPA 8260B	8/29/13	107	106	1.05	70.0-130	25
Methanol	85801-07	<50	997	997	1320	1110	ug/L	EPA 8260B	8/29/13	132	112	17.2	65.0-150	25
Methyl-t-butyl ether	85801-07	<0.50	39.9	39.9	37.6	40.0	ug/L	EPA 8260B	8/29/13	94.3	100	6.21	70.0-130	25
P + M Xylene	85801-07	170	40.0	40.0	211	210	ug/L	EPA 8260B	8/29/13	112	108	3.24	70.0-130	25
Tert-Butanol	85801-07	<5.0	202	202	202	194	ug/L	EPA 8260B	8/29/13	100	96.2	3.95	70.0-130	25
Tert-amyl-methyl ether	85801-07	<0.50	40.3	40.3	42.0	44.6	ug/L	EPA 8260B	8/29/13	104	110	6.04	70.0-130	25
Toluene	85801-07	55	40.0	40.0	104	102	ug/L	EPA 8260B	8/29/13	120	118	2.48	70.0-130	25

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

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	85782-04	<0.50	40.3	40.3	42.1	41.1	ug/L	EPA 8260B	8/28/13	104	102	2.36	70.0-130	25
1,2-Dichloroethane	85782-04	<0.50	40.0	40.0	38.9	37.9	ug/L	EPA 8260B	8/28/13	97.3	94.8	2.56	70.0-130	25
Benzene	85782-04	<0.50	40.0	40.0	40.6	39.3	ug/L	EPA 8260B	8/28/13	102	98.3	3.23	70.0-130	25
Diisopropyl ether	85782-04	<0.50	39.3	39.3	40.8	39.6	ug/L	EPA 8260B	8/28/13	104	101	3.16	70.0-130	25
Ethanol	85782-04	<5.0	99.3	99.3	123	123	ug/L	EPA 8260B	8/28/13	124	124	0.467	55.0-150	25
Ethyl-tert-butyl ether	85782-04	<0.50	40.1	40.1	41.0	40.2	ug/L	EPA 8260B	8/28/13	102	100	1.96	70.0-130	25
Ethylbenzene	85782-04	<0.50	40.0	40.0	42.1	41.0	ug/L	EPA 8260B	8/28/13	105	102	2.65	70.0-130	25
<b>Methanol</b>	85782-04	<50	997	997	1540	1490	ug/L	EPA 8260B	8/28/13	<b>154</b>	150	3.14	65.0-150	25
Methyl-t-butyl ether	85782-04	1.2	39.9	39.9	39.9	39.8	ug/L	EPA 8260B	8/28/13	97.0	96.6	0.502	70.0-130	25

Report Number : 85788

Date : 08/29/2013

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
P + M Xylene	85782-04	<0.50	40.0	40.0	41.5	40.5	ug/L	EPA 8260B	8/28/13	104	101	2.34	70.0-130	25
Tert-Butanol	85782-04	<5.0	202	202	208	204	ug/L	EPA 8260B	8/28/13	103	101	2.13	70.0-130	25
Tert-amyl-methyl ether	85782-04	<0.50	40.3	40.3	40.6	39.8	ug/L	EPA 8260B	8/28/13	100	98.6	1.94	70.0-130	25
Toluene	85782-04	<0.50	40.0	40.0	41.2	39.7	ug/L	EPA 8260B	8/28/13	103	99.2	3.64	70.0-130	25
<b>P + M Xylene</b>	85801-02	160	40.0	40.0	214	208	ug/L	EPA 8260B	8/28/13	<b>132</b>	116	13.1	70.0-130	25

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	98.0	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	98.7	85-115
Iron, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	96.8	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	96.6	85-115
Sodium, (Dis)	0.400	mg/L	EPA 6010B	8/29/13	99.4	85-115
1,2-Dibromoethane	40.4	ug/L	EPA 8260B	8/28/13	102	70.0-130
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	8/28/13	92.9	70.0-130
Benzene	40.1	ug/L	EPA 8260B	8/28/13	94.2	70.0-130
Diisopropyl ether	39.4	ug/L	EPA 8260B	8/28/13	96.6	70.0-130
Ethanol	99.6	ug/L	EPA 8260B	8/28/13	111	55.0-150
Ethyl-tert-butyl ether	40.2	ug/L	EPA 8260B	8/28/13	99.8	70.0-130
Ethylbenzene	40.1	ug/L	EPA 8260B	8/28/13	101	70.0-130
Methanol	999	ug/L	EPA 8260B	8/28/13	124	65.0-150
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	8/28/13	94.9	70.0-130
P + M Xylene	40.1	ug/L	EPA 8260B	8/28/13	102	70.0-130
TPH as Gasoline	495	ug/L	EPA 8260B	8/28/13	100	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	8/28/13	94.9	70.0-130
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	8/28/13	106	70.0-130
Toluene	40.1	ug/L	EPA 8260B	8/28/13	98.1	70.0-130
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	8/29/13	104	70.0-130

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	8/29/13	92.6	70.0-130
Benzene	39.8	ug/L	EPA 8260B	8/29/13	92.8	70.0-130
Diisopropyl ether	39.1	ug/L	EPA 8260B	8/29/13	95.5	70.0-130
Ethanol	98.9	ug/L	EPA 8260B	8/29/13	97.9	55.0-150
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	8/29/13	104	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	8/29/13	101	70.0-130
Methanol	992	ug/L	EPA 8260B	8/29/13	104	65.0-150
Methyl-t-butyl ether	39.7	ug/L	EPA 8260B	8/29/13	99.6	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	8/29/13	103	70.0-130
TPH as Gasoline	492	ug/L	EPA 8260B	8/29/13	101	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/29/13	96.1	70.0-130
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	8/29/13	110	70.0-130
Toluene	39.8	ug/L	EPA 8260B	8/29/13	98.5	70.0-130
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	8/28/13	104	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	8/28/13	98.4	70.0-130
Benzene	39.8	ug/L	EPA 8260B	8/28/13	103	70.0-130
Diisopropyl ether	39.1	ug/L	EPA 8260B	8/28/13	105	70.0-130
Ethanol	98.9	ug/L	EPA 8260B	8/28/13	127	55.0-150
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	8/28/13	103	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	8/28/13	106	70.0-130
<b>Methanol</b>	992	ug/L	EPA 8260B	8/28/13	<b>159</b>	65.0-150
Methyl-t-butyl ether	39.7	ug/L	EPA 8260B	8/28/13	97.4	70.0-130

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
P + M Xylene	39.8	ug/L	EPA 8260B	8/28/13	105	70.0-130
TPH as Gasoline	494	ug/L	EPA 8260B	8/28/13	101	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	8/28/13	102	70.0-130
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	8/28/13	99.4	70.0-130
Toluene	39.8	ug/L	EPA 8260B	8/28/13	104	70.0-130
P + M Xylene	40.2	ug/L	EPA 8260B	8/28/13	100	70.0-130
TPH as Gasoline	493	ug/L	EPA 8260B	8/28/13	98.2	70.0-130
Ferrous Iron	0.252	mg/L	SM 3500-Fe D	8/23/13	99.8	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	8/23/13	100	90.0-110
Nitrate as N	0.500	mg/L	EPA 300.0	8/23/13	99.1	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	8/23/13	101	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	8/28/13	102	90.0-110







# SAMPLE RECEIPT CHECKLIST

SRG #: 85788

<b>Sample Receipt</b>	Initials/Date: RM 082213	Storage Time: 1852	Initials/Date: EG 082213
TAT: <input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush	<input type="checkbox"/> Split	<input type="checkbox"/> None
Temp °C 28	<input type="checkbox"/> N/A	Therm ID 1R-1	Time 1843
Method of Receipt: <input checked="" type="checkbox"/> Courier		<input type="checkbox"/> Over-the-counter	
Coolant present: <input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	
Water: <input type="checkbox"/>		Temp Excursion: <input type="checkbox"/>	

**For Shipments Only:** Cooler Receipt Initials/Date/Time: \_\_\_\_\_

Custody Seals:  N/A  Intact  Broken

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?	X	
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	/	/	
Project ID	/	/	
Sample Date	/	/	
Sample Time	/	/	
Does COC match project history? <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

Samples:	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
<b>In-house Analysis:</b>	N/A	Yes	No
Are preservatives acceptable?		X	
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		X	

**Comments:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Receipt Details:	Container Type	# of Containers
Matrix WA	VOA	49
WA	Poly	35

**CS Required:**

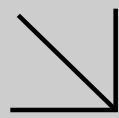
Proceed With Analysis:  YES  NO      Init/Date: \_\_\_\_\_

Client Communication: \_\_\_\_\_

O:\old\_edtsamprc\Forms\Sample Receipt Checklist 070113.doc



# Subcontract Laboratory Report Attachments



# CALSCIENCE

## WORK ORDER NUMBER: 13-08-1710

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

### Analytical Report For

**Client:** Kiff Analytical

**Client Project Name:** Tesoro - Livermore #67076

**Attention:** Joel Kiff  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

*Amanda Porter*

Approved for release on 08/30/2013 by:  
Amanda Porter  
Project Manager

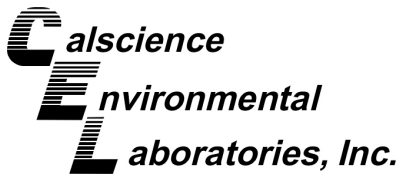
ResultLink ▶

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.





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Work Order Number: 13-08-1710

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**Work Order Narrative**

Work Order: 13-08-1710

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**Condition Upon Receipt:**

Samples were received under Chain of Custody (COC) on 08/24/13. They were assigned to Work Order 13-08-1710.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

**Holding Times:**

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

**Quality Control:**

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

**Additional Comments:**

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

**Subcontractor Information:**

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.



## Analytical Report

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

Date Received: 08/24/13  
Work Order: 13-08-1710  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

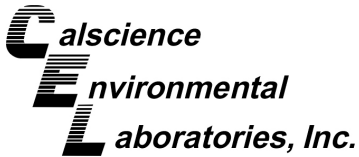
Project: Tesoro - Livermore #67076

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>IP-1</b>	<b>13-08-1710-1-C</b>	<b>08/22/13 15:15</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 15:02</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		702	1.70		1		
<b>IP-8</b>	<b>13-08-1710-2-C</b>	<b>08/22/13 14:10</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 15:24</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		338	1.70		1		
<b>MW-11</b>	<b>13-08-1710-3-C</b>	<b>08/22/13 14:40</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 15:43</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		612	1.70		1		
<b>IP-9</b>	<b>13-08-1710-4-C</b>	<b>08/22/13 14:55</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 16:02</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		266	1.70		1		
<b>DW-9</b>	<b>13-08-1710-5-C</b>	<b>08/22/13 12:55</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 17:14</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		29600	17.0		10		
<b>DW-7</b>	<b>13-08-1710-6-C</b>	<b>08/22/13 13:15</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 18:00</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		20100	17.0		10		
<b>DW-5</b>	<b>13-08-1710-7-C</b>	<b>08/22/13 13:30</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 19:37</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		3510	1.70		1		
<b>Method Blank</b>	<b>099-12-659-591</b>	<b>N/A</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 12:47</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Carbon Dioxide		ND	1.70		1		

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

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

Date Received: 08/24/13  
Work Order: 13-08-1710  
Preparation: N/A  
Method: RSK-175M  
Units: ug/L

Project: Tesoro - Livermore #67076

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>IP-1</b>	<b>13-08-1710-1-A</b>	<b>08/22/13 15:15</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 15:31</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		1040	2.00		2		
<b>IP-8</b>	<b>13-08-1710-2-A</b>	<b>08/22/13 14:10</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 16:19</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		17.0	1.00		1		
<b>MW-11</b>	<b>13-08-1710-3-A</b>	<b>08/22/13 14:40</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 17:45</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		133	1.00		1		
<b>IP-9</b>	<b>13-08-1710-4-A</b>	<b>08/22/13 14:55</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 18:12</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		1.54	1.00		1		
<b>DW-9</b>	<b>13-08-1710-5-A</b>	<b>08/22/13 12:55</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 19:05</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		3000	8.00		8		
<b>DW-7</b>	<b>13-08-1710-6-A</b>	<b>08/22/13 13:15</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 19:33</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		3720	8.00		8		
<b>DW-5</b>	<b>13-08-1710-7-A</b>	<b>08/22/13 13:30</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 20:03</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		1620	8.00		8		
<b>Method Blank</b>	<b>099-12-663-1976</b>	<b>N/A</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 13:26</b>	<b>130826L01</b>
<u>Parameter</u>		<u>Result</u>	<u>RL</u>		<u>DF</u>		<u>Qualifiers</u>
Methane		ND	1.00		1		

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.





## Analytical Report

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

Date Received:  
Work Order:

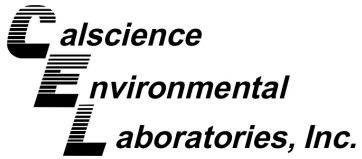
08/24/13  
13-08-1710

Project: Tesoro - Livermore #67076

Page 1 of 2

Client Sample Number	Lab Sample Number				Date/Time Collected		Matrix	
<b>IP-1</b>	<b>13-08-1710-1</b>				<b>08/22/13 15:15</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	5340	10.0	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	7740	10.0	1		mg/L	08/29/13	08/29/13	SM 2540 C
<b>IP-8</b>	<b>13-08-1710-2</b>				<b>08/22/13 14:10</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	28200	100	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	34900	100	1		mg/L	08/29/13	08/29/13	SM 2540 C
<b>MW-11</b>	<b>13-08-1710-3</b>				<b>08/22/13 14:40</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	2610	10.0	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	3510	10.0	1		mg/L	08/29/13	08/29/13	SM 2540 C
<b>IP-9</b>	<b>13-08-1710-4</b>				<b>08/22/13 14:55</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	25200	100	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	38800	100	1		mg/L	08/29/13	08/29/13	SM 2540 C
<b>DW-9</b>	<b>13-08-1710-5</b>				<b>08/22/13 12:55</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	470	5.00	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	610	1.00	1		mg/L	08/29/13	08/29/13	SM 2540 C
<b>DW-7</b>	<b>13-08-1710-6</b>				<b>08/22/13 13:15</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	680	5.00	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	955	1.00	1		mg/L	08/29/13	08/29/13	SM 2540 C
<b>DW-5</b>	<b>13-08-1710-7</b>				<b>08/22/13 13:30</b>		<b>Aqueous</b>	
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO3)	1220	10.0	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	2020	10.0	1		mg/L	08/29/13	08/29/13	SM 2540 C

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Analytical Report

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

Date Received:  
Work Order:

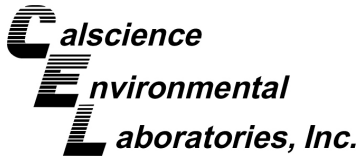
08/24/13  
13-08-1710

Project: Tesoro - Livermore #67076

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Client Sample Number	Lab Sample Number				Date/Time Collected	Matrix		
<b>Method Blank</b>					<b>N/A</b>	<b>Aqueous</b>		
<u>Parameter</u>	<u>Results</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>	<u>Units</u>	<u>Date Prepared</u>	<u>Date Analyzed</u>	<u>Method</u>
Alkalinity, Total (as CaCO <sub>3</sub> )	ND	1.0	1		mg/L	N/A	08/26/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	08/29/13	08/29/13	SM 2540 C

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



## Quality Control - Sample Duplicate

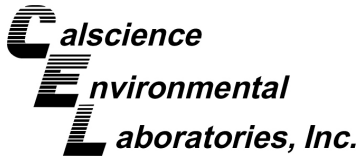
Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

Date Received: 08/24/13  
Work Order: 13-08-1710  
Preparation: N/A  
Method: SM 2320B

Project: Tesoro - Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>13-08-1711-11</b>	<b>Aqueous</b>	<b>PH1/BUR03</b>	<b>N/A</b>	<b>08/26/13 21:30</b>	<b>D0826ALKD1</b>
<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO <sub>3</sub> )	112.0	114.0	2	0-25	



## Quality Control - Sample Duplicate

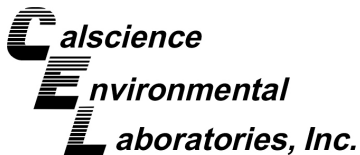
Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95618-6505

Date Received: 08/24/13  
Work Order: 13-08-1710  
Preparation: N/A  
Method: SM 2540 C

Project: Tesoro - Livermore #67076

Page 2 of 2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
<b>13-08-1856-1</b>	<b>Aqueous</b>	<b>N/A</b>	<b>08/29/13 00:00</b>	<b>08/29/13 15:40</b>	<b>D0829TDSD1</b>
<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Solids, Total Dissolved	995.0	975.0	2	0-20	



Quality Control - LCS/LCSD

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

Date Received: 08/24/13  
 Work Order: 13-08-1710  
 Preparation: N/A  
 Method: RSK-175M

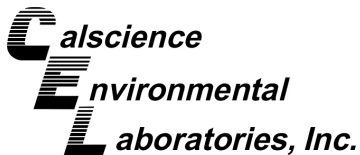
Project: Tesoro - Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-659-591</b>	<b>Aqueous</b>	<b>GC 14</b>	<b>N/A</b>	<b>08/26/13 11:55</b>	<b>130826L01</b>				
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	102.0	96.08	94	96.09	94	80-120	0	0-20	

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RPD: Relative Percent Difference. CL: Control Limits



Quality Control - LCS/LCSD

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

Date Received: 08/24/13  
 Work Order: 13-08-1710  
 Preparation: N/A  
 Method: RSK-175M

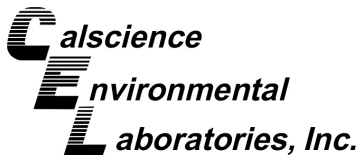
Project: Tesoro - Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-663-1976</b>	<b>Aqueous</b>	<b>GC 61</b>	<b>N/A</b>	<b>08/26/13 12:21</b>	<b>130826L01</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Methane	98.50	95.70	97	91.57	93	80-120	4	0-20	

Return to Contents 

RPD: Relative Percent Difference. CL: Control Limits



Quality Control - LCS/LCSD

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

Date Received: 08/24/13  
 Work Order: 13-08-1710  
 Preparation: N/A  
 Method: SM 2320B

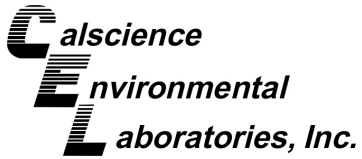
Project: Tesoro - Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-15-859-159</b>	<b>Aqueous</b>	<b>PH1/BUR03</b>	<b>N/A</b>	<b>08/26/13 21:30</b>	<b>D0826ALKB1</b>				
<u>Parameter</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec.</u>	<u>LCSD Conc.</u>	<u>LCSD %Rec.</u>	<u>%Rec. CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	100.0	96.00	96	97.00	97	80-120	1	0-20	

Return to Contents 

RPD: Relative Percent Difference. CL: Control Limits



## Quality Control - LCS/LCSD

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

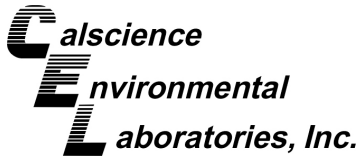
Date Received: 08/24/13  
Work Order: 13-08-1710  
Preparation: N/A  
Method: SM 2540 C

Project: Tesoro - Livermore #67076

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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
<b>099-12-180-3807</b>	<b>Aqueous</b>	<b>N/A</b>	<b>08/29/13</b>	<b>08/29/13 15:40</b>	<b>D0829TDSL1</b>				
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	100.0	105.0	105	95.00	95	80-120	10	0-20	





## Sample Analysis Summary Report

Work Order: 13-08-1710

Page 1 of 1

<u>Method</u>	<u>Extraction</u>	<u>Chemist ID</u>	<u>Instrument</u>	<u>Analytical Location</u>
RSK-175M	N/A	846	GC 14	2
RSK-175M	N/A	846	GC 61	2
RSK-175M	N/A	884	GC 14	2
RSK-175M	N/A	884	GC 61	2
SM 2320B	N/A	857	PH1/BUR03	1
SM 2540 C	N/A	722	N/A	1

  
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Location 1: 7440 Lincoln Way, Garden Grove, CA 92841

Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841

## Glossary of Terms and Qualifiers

Work Order: 13-08-1710

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	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 suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
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.
BV	Sample received 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 Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
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.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

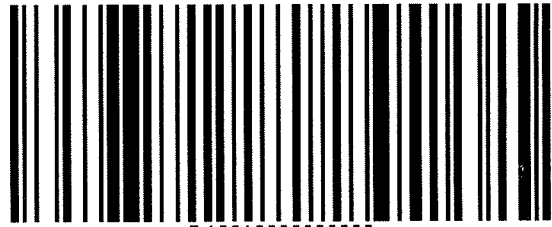
A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.



1710



**800.334.5000**  
ontrac.com



D10010608068329

Date Printed 8/23/2013

Tracking#D10010608068329

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

*Sent By:* SAMPLE RECEIVINGX125  
*Phone#:* (530)297-4800  
*wgt(lbs):* 45  
*Reference:* SUBS 85797  
*Reference 2:* 600

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

*Service:* **S**  
*Sort Code:* **ORG**  
*Special Services:*  
**Saturday Delivery**  
**Signature Required**

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WORK ORDER #: **13-08-1710**

**SAMPLE RECEIPT FORM**

Cooler 1 of 1

CLIENT: Kiff

DATE: 08/24/13

**TEMPERATURE:** Thermometer ID: SC3 (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Temperature 3.5 °C - 0.2°C (CF) = 3.3 °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: \_\_\_\_\_

**CUSTODY SEALS INTACT:**

Cooler     \_\_\_\_\_     No (Not Intact)     Not Present     N/A    Initial: \_\_\_\_\_

Sample     \_\_\_\_\_     No (Not Intact)     Not Present    Initial: JD

**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfides <input type="checkbox"/> Dissolved Oxygen.....			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**  4ozCGJ     8ozCGJ     16ozCGJ     Sleeve (\_\_\_\_)     EnCores®     TerraCores®     \_\_\_\_\_

**Aqueous:**  VOA     VOAh     VOAna<sub>2</sub>     125AGB     125AGBh     125AGBp     1AGB     1AGBna<sub>2</sub>     1AGBs

500AGB     500AGJ     500AGJs     250AGB     250CGB     250CGBs     1PB     1PBna     500PB

250PB     250PBn     125PB     125PBzna     100PJ     100PJna<sub>2</sub>     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_

**Air:**  Tedlar®     Canister    **Other:**  \_\_\_\_\_    **Trip Blank Lot#:** \_\_\_\_\_    **Labeled/Checked by:** JD

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

**Preservative:** h: HCL n: HNO<sub>3</sub> na<sub>2</sub>:Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> na: NaOH p: H<sub>3</sub>PO<sub>4</sub> s: H<sub>2</sub>SO<sub>4</sub> u: Ultra-pure zna: ZnAc<sub>2</sub>+NaOH f: Filtered    **Scanned by:** JD

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**ATTACHMENT F**  
**SOIL VAPOR SAMPLING QA/QC PROCEDURES**

## ATTACHMENT F

### SOIL VAPOR SAMPLING QA/QC PROCEDURES

---

#### Vapor Sample Collection

Vapor samples were collected using a vacuum chamber with a Tedlar bag. Sample lines were 1/4-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

### Analytical Quality Assurance Quality Control (QA/QC) Procedures

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



**ATTACHMENT G**  
**OXYGEN SYSTEM MONITORING RESULTS**

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-1	10/15/10	0.03	NM <sup>(c)</sup>
	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	
11/20/12	-0.02	NM	
12/11/12	NM	NM	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-1 (cont.)	1/3/13	NM	91.2
	3/28/13	NM	85.4
IP-2	10/15/10	0.03	NM
	10/18/10	NM	NM
	10/22/10	0.05	NM
	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	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-2 (cont.)	11/20/12	NM	NM
	12/11/12	31.74	NM
	1/3/13	11.65	91.2
	3/28/13	24.84	85.4
IP-3	10/15/10	0.06	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2
	11/1/10	0.12	77.7
	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	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-3 (cont.)	8/16/12	NM	NM
	9/21/12	1.48	NM
	11/20/12	NM	NM
	12/11/12	6.42	NM
	1/3/13	4.42	91.2
	3/28/13	7.62	85.4
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
	12/14/10	0.01	53.3
	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	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-4 (cont.)	6/19/12	2.22	NM
	7/17/12	1.11	NM
	8/16/12	NM	NM
	9/21/12	4.00	NM
	11/20/12	NM	NM
	12/11/12	3.11	NM
	1/3/13	2.38	91.2
	3/28/13	5.06	85.4
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
	1/5/11	NM	52.0
	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	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-5 (cont.)	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
	11/20/12	NM	NM
	12/11/12	52.5	NM
	1/3/13	6.32	91.2
3/28/13	2.02	85.4	
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
	2/1/11	15.94	88.9
	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	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-6 (cont.)	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
	11/20/12	NM	NM
	12/11/12	NM	91.8
	1/3/13	1.57	91.2
	3/28/13	2.30	85.4
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
	4/8/11	2.58	49.8
	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	



TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-7 (cont.)	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
	11/20/12	NM	NM
	12/11/12	NM	NM
	1/3/13	0.22	91.2
	3/28/13	0.08	85.4
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
	6/27/11	0.01	0.0
	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	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-8 (cont.)	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
	11/20/12	3.55	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
	3/28/13	NM	85.4
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
	6/30/11	27.14	94.3
	7/5/11	23.48	94.5
7/7/11	22.62	94.2	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-9 (cont.)	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
	11/20/12	0.12	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
3/28/13	NM	85.4	
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

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
IP-10 (cont.)	7/5/11	NM	94.5
	7/7/11	NM	94.2
	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
	11/20/12	0.04	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
3/28/13	NM	85.4	
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

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
MW-1 (cont.)	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
	7/22/11	16.04	94.5
	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
	11/20/12	NM	NM
	12/11/12	NM	NM
1/3/13	0.01	91.2	
3/28/13	NM	85.4	
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

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
MW-2 (cont.)	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
	9/1/11	0.24	92.9
	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
11/20/12	0.18	NM	
12/11/12	5.98	NM	
1/3/13	0.07	91.2	
3/28/13	15.51	85.4	
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

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
MW-11 (cont.)	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
	1/5/12	NM	93.6
	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	
11/20/12	12.9	NM	
12/11/12	NM	NM	
1/3/13	NM	91.2	
3/28/13	NM	85.4	
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

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
DW-1 (cont.)	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
	3/20/12	0.17	93.0
	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
	11/20/12	0.26	NM
	12/11/12	0.36	NM
1/3/13	0.45	91.2	
3/28/13	0.58	85.4	
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



TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
TP-1 (cont.)	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
	5/16/12	16.03	NM
	6/19/12	7.31	NM
	7/17/12	7.01	NM
	8/16/12	1.25	NM
	9/21/12	0.01	NM
	11/20/12	8.32	NM
	12/11/12	28.48	NM
1/3/13	34.85	91.2	
3/28/13	23.98	85.4	
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

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
TP-2 (cont.)	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
	7/17/12	15.29	NM
	8/16/12	3.22	NM
	9/21/12	8.70	NM
11/20/12	28.4	NM	
12/11/12	2.64	NM	
1/3/13	37.35	91.2	
3/28/13	35.85	85.4	
VW-2	1/5/12	13.24	93.6
	2/2/12	5.56	91.0
	3/20/12	6.11	93.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS  
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen <sup>(a)</sup> (mg/l)	Oxygen Purity <sup>(b)</sup> (%)
VW-2 (cont.)	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
	11/20/12	3.64	NM
	12/11/12	32.72	NM
	1/3/13	32.77	91.2
	3/28/13	32.14	85.4

(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)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No.		Manifest Document No.		2. Page 1 of 1	
3. Generator's Name and Mailing Address <i>TCSUO 1ST and South P ST. Livermore CA</i>							
4. Generator's Phone ( )							
5. Transporter 1 Company Name <i>Confluence</i>		6. US EPA ID Number		A. State Transporter's ID		B. Transporter 1 Phone <i>916 760-1641</i>	
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 <i>ISI 1105 Airport Rd Riverside</i>		10. US EPA ID Number		E. State Facility's ID		F. Facility's Phone <i>727 3721 3834</i>	
11. WASTE DESCRIPTION <i>Non-Haz Ground Water</i>				12. Containers		13. Total Quantity	14. Unit Wt./Vol.
				No. Type			
a.				1		Boty	460 gal
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information <i>771 677</i>							
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 <i>Matthew Pastoni</i>				Signature <i>[Signature]</i>		Date Month Day Year <i>08 22 13</i>	
17. Transporter 1 Acknowledgement of Receipt of Materials				Printed/Typed Name <i>Adam Feeney</i>		Signature <i>[Signature]</i>	
18. Transporter 2 Acknowledgement of Receipt of Materials				Printed/Typed Name		Signature	
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 <i>MICHAEL WHITEHEAD</i>				Signature <i>[Signature]</i>		Date Month Day Year <i>8 22 13</i>	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY