



Tesoro Companies, Inc.  
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April 29, 2015

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

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By Alameda County Environmental Health 2:38 pm, Apr 30, 2015

**Subject: First Quarter 2015 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 First Quarter 2015 Status Report for the subject site, dated 29 April 2015. 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 253/896-8731 or Scott Stromberg of Arctos Environmental at 510/525-2180 with questions.

Sincerely,

Kyle Waldron  
Environmental Remediation Administrator  
Tesoro Companies Inc.

Attachments

CC: Arctos – Scott Stromberg



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29 April 2015  
Project No. 01LV

Jerry Wickham  
Hazardous Materials Specialist  
Alameda County Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
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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 first quarter 2015 at the subject site (Figure 1).

### **Executive Summary**

A quarterly groundwater monitoring event was conducted from 20 to 21 January 2015. On average, there was an approximately 11-foot increase in water levels since the fourth quarter 2014. The highest onsite petroleum hydrocarbon concentrations were detected in groundwater at wells MW-2 and DW-8, located in the western portion of the site adjacent to the dispenser islands and underground storage tanks (USTs), respectively. The highest offsite petroleum hydrocarbon concentrations were detected in groundwater at wells DW-2 and DW-5, located northwest of the intersection of 1st Street and South P Street.

During the first quarter 2015, Arctos operated the soil vapor extraction (SVE) system from 1 January to 19 February 2015. Influent vapor concentrations decreased below laboratory detection levels and the mass removal rate through volatilization was less than 1 pound per day (lb/day). An estimated total of 5 pounds of petroleum hydrocarbons were removed through volatilization and an estimated 490 pounds were removed through biodegradation. The oxygen injection system remained shut off during the first quarter 2015.

Based on a project meeting conducted with Alameda County Environmental Health (ACEH) on 26 February 2015, Arctos recommends (1) discontinuing the increased sampling frequency and additional analytical parameters sampled for in situ chemical

oxidation (ISCO) pilot test monitoring and (2) resuming semiannual monitoring with quarterly monitoring of selected wells. Additionally, Arctos recommends restarting oxygen injection to remediate dissolved-phase hydrocarbons on 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 20 to 21 January 2015. Confluence sampled groundwater within the saturated zone at wells MW-1 through MW-5, MW-7, DW-1 through DW-9, IP-1, IP-5, and IP-8 through IP-10. Samples were unable to be collected from 10 wells because of low water levels. 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 and 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 through MW-5, and DW-4 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 expanded ISCO pilot test work plan (Arctos, 2013).

## **Groundwater Results**

Groundwater elevations were approximately 419 to 433 feet above mean sea level (MSL; 41 to 50 feet below ground surface [bgs]). Water levels increased an average of 11 feet compared to the previous quarter and were an average of 11 feet lower than water levels in the first quarter 2014 (Table 1). Arctos evaluated the water level data and determined that the general direction of groundwater flow was toward the northwest with an estimated gradient of 0.02 (1 foot/43 feet; Figure 2). The gradient was consistent with historical data collected since 1993 (Attachment C).

During the first quarter 2015, the highest onsite dissolved-phase concentrations of total petroleum hydrocarbons as gasoline (TPHg), benzene, and methyl tert-butyl ether (MTBE) were detected at wells MW-2 and DW-8, located in the western portion of the site adjacent to the dispenser islands and USTs, respectively. The highest offsite dissolved-

phase concentrations of TPHg, benzene, and MTBE were detected at wells DW-2 and DW-5, located downgradient of the site in the offsite parking lot. All offsite benzene concentrations were below the Environmental Screening Level (ESL) of 1,800 micrograms per liter (µg/l) established by the San Francisco Regional Water Quality Control Board for evaluation of potential vapor intrusion concerns. The table below summarizes the maximum hydrocarbon concentrations detected on and off site.

Hydrocarbon Compound	Maximum Onsite Concentration <sup>(a)</sup> (µg/l)	Maximum Offsite Concentration <sup>(a)</sup> (µg/l)
TPHg	38,000 (DW-8)	26,000 (DW-5)
Benzene	2,800 (DW-8)	260 (DW-2)
MTBE	80 (MW-2)	100 (DW-2)

(a) Dissolved-phase petroleum hydrocarbons analyzed by Environmental Protection Agency (EPA) Method 8260B and reported in µg/l.

In general, hydrocarbon concentrations at onsite source area wells decreased as a result of SVE and oxygen injection system operation from 2010 to 2012. Concentrations at offsite wells remained relatively stable during this period. After ISCO injections were conducted on and off site during the second and third quarters 2013, hydrocarbon concentrations increased at on- and offsite wells as a result of hydrocarbon desorption from the injection chemicals' surfactant properties. Arctos evaluated the monitoring results and determined that concentrations are generally stable or decreasing at on- and offsite wells since the expanded ISCO pilot test. This is likely attributable to hydrocarbon mass resorbing onto soil as equilibrium conditions return. The table below summarizes TPHg concentrations at selected on- and offsite wells before and after remediation events were conducted.

Well	TPHg Concentration <sup>(a)</sup> (µg/l)			
	Before SVE and O2 (May 2010)	After SVE and O2 and Before ISCO (April 2013)	After ISCO (June or August 2013)	Current (January 2015)
<i>Onsite</i>				
MW-2	26,000	430	11,000	14,000
DW-8	NA <sup>(b)</sup>	5,900	55,000	38,000
<i>Offsite</i>				
DW-2	2,300	4,500	8,300	5,700
DW-5	2,100	3,000	120,000	26,000

(a) Dissolved-phase TPHg analyzed by EPA Method 8260B and reported in µg/l.

(b) NA – Not applicable. Well DW-8 was installed in April 2011.

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 laboratory reports and chain-of-custody forms are in Attachment E.

### **ISCO Pilot Test Monitoring**

Arctos conducted an ISCO pilot test at onsite well IP-9 during the fourth quarter 2011 and an expanded ISCO pilot test at onsite wells IP-1, IP-2, IP-3, IP-8, and IP-9 and offsite wells IP-11 through IP-17 during the second and third quarters 2013. Arctos evaluated changes in groundwater chemistry and hydrocarbon concentrations and determined that the RegenOx™ chemical oxidant was effective at desorbing petroleum hydrocarbons from soil and destroying hydrocarbons in groundwater.

The RegenOx™ oxidant complex can cause naturally-occurring, insoluble trivalent chromium to convert to soluble hexavalent chromium, resulting in an increase in hexavalent chromium concentrations in groundwater. ISCO pilot test monitoring has indicated that hexavalent chromium has been detected at monitoring wells MW-8, MW-10, MW-11, DW-8, and injection wells IP-1, IP-8, and IP-9. During the first quarter 2015, hexavalent chromium was only detected at injection well IP-9 at a concentration of 58 µg/l, exceeding the Maximum Contaminant Level (MCL) of 10 µg/l. In general, hexavalent chromium was detected above the MCL at injection or adjacent monitoring wells shortly after injection events and subsequently decreased to non-detect levels. Hexavalent chromium continues to be detected at injection well IP-9, which received the highest volume of oxidant, but overall concentrations appear to be decreasing.

ISCO pilot test groundwater monitoring results for petroleum hydrocarbons and general chemistry are summarized in Tables 4 and 5, respectively. Table 5 includes highlighting for all recent and historical sample results exceeding primary or secondary MCLs. In general, the analytical parameters detected above MCLs in the first quarter 2015 were sulfate, total and ferrous iron, and total dissolved solids (TDS). Arsenic was detected above the MCL of 0.01 milligram per liter (mg/l) at wells IP-1, IP-8, IP-9, and DW-8, ranging from 0.015 to 0.31 mg/l at wells DW-8 and IP-9, respectively. As stated above, hexavalent chromium was detected above the MCL at well IP-9. Iron and TDS concentrations appear to be naturally elevated in groundwater in the vicinity of the site based on MCL exceedances in baseline groundwater samples collected before the ISCO pilot test. At the farthest downgradient monitoring well DW-9, total and ferrous iron and TDS were detected above MCLs but consistent with concentrations before ISCO events were conducted.

## Source Area Remediation

### SVE System

Arctos operated the SVE system from June 2010 to November 2012. The system was shut down in November 2012 and remained off through the second quarter 2014. During this period of operation, the total hydrocarbon mass removed by the SVE system was estimated to be 38,000 pounds or approximately 5,900 gallons (at a density of 6.5 pounds per gallon).

During the third quarter 2014, water levels on site decreased to the lowest levels observed since 2009. Arctos restarted the SVE system on 8 July 2014 to remediate hydrocarbon-impacted, vadose zone soil that was not exposed during previous SVE system operation. The system was connected to onsite wells MW-1, MW-11, TP-1, TP-2, and VW-2. Wells MW-11 and VW-2 were shut down during the fourth quarter 2014 because of low wellhead photoionization detector (PID) readings.

During the first quarter 2015, the system operated from 1 January to 19 February 2015. Arctos shut down well TP-2 during the reporting period because of low wellhead PID readings. The SVE system was shut down on 19 February 2015 due to low influent concentrations.

Arctos monitored the SVE system influent bimonthly with a PID and by laboratory analysis of soil gas samples. The SVE system was monitored to document and optimize hydrocarbon mass removal from the subsurface. Influent hydrocarbon concentrations increased from start-up until November 2014, then decreased corresponding to increasing water levels. Water levels on site increased by approximately 11 feet between the fourth quarter 2014 and first quarter 2015, and influent hydrocarbon concentrations decreased below laboratory detection levels. Table 6 summarizes the laboratory analytical results for influent SVE system samples.

The average mass removal rate by volatilization during the first quarter 2015 was approximately 0.1 lb/day, corresponding to an estimated total of 5 pounds removed during the reporting period. The percentage of carbon dioxide in soil vapor decreased from approximately 0.7 to less than 0.5 percent during the operating period, indicative of decreased biodegradation with decreasing concentrations of petroleum hydrocarbons. The average mass removal rate by biodegradation during the first quarter 2015 was approximately 10 lb/day, corresponding to an estimated total of 490 pounds removed during the reporting period. The total hydrocarbon mass removed by the system to date is estimated to be 47,000 pounds or approximately 7,200 gallons (at a density of 6.5 pounds per gallon). Table 7 summarizes mass removal rates by volatilization and biodegradation.

Figures 6, 7, and 8 show graphs of soil vapor influent concentrations, mass removal by volatilization, and mass removal by biodegradation, respectively. Soil vapor sampling procedures are in Attachment C.

Oxygen Injection System

Arctos operated the oxygen injection system from October 2010 to March 2013. Arctos shut down the system on 28 March 2013 in preparation for the expanded ISCO pilot test and it remained shut off during the first quarter 2015.

Between May 2010 and April 2013, dissolved-phase hydrocarbon concentrations at source area wells MW-2 and DW-1 decreased by over 98 percent, indicating the oxygen injection system was effective at degrading hydrocarbons in groundwater. As stated above, concentrations at these wells have subsequently increased as a result of desorption from ISCO activities. The following table summarizes changes in hydrocarbon concentrations observed at these wells.

Well	Before O2 Injection (May 2010)	After O2 Injection and Before ISCO (April 2013)	Percent Reduction
<i>TPHg Concentration<sup>(a)</sup> (µg/l)</i>			
MW-2	26,000	430	99
DW-1	1,800	ND<50 <sup>(b)</sup>	99
<i>Benzene Concentration<sup>(a)</sup> (µg/l)</i>			
MW-2	3,100	10	99
DW-1	160	ND<0.5	99 <sup>(c)</sup>
<i>MTBE Concentration<sup>(a)</sup> (µg/l)</i>			
MW-2	530	13	98
DW-1	21	ND<0.5	99 <sup>(c)</sup>

(a) Dissolved-phase petroleum hydrocarbons analyzed by EPA Method 8260B and reported in µg/l.

(b) ND – Not detected at reporting limit listed.

(c) Half of reporting limit used to calculate percent reduction.

Based on the observed decreases in source area hydrocarbon concentrations as a result of previous oxygen injection, Arctos is proposing to restart oxygen injection at the site. Arctos’s approved Interim Remedial Action Plan (IRAP) included specifications for a system capable of delivering air up to 15 standard cubic feet per hour (scfh) at over 90 percent by volume oxygen concentration. Arctos is proposing to replace the former system with a system capable of delivering up to 45 scfh at over 90 percent by volume oxygen concentration.

### Groundwater Sampling Frequency

In a 23 July 2009 letter, ACEH approved semiannual groundwater sampling at the site (ACEH, 2009). Select wells were monitored quarterly to assess the performance of the SVE and oxygen injection systems. In addition, groundwater monitoring associated with the expanded ISCO pilot test included increased monitoring frequency and analysis of additional parameters. Arctos proposes to discontinue the additional frequency and analytical parameters for ISCO monitoring. After the oxygen injection system is restarted, Arctos proposes groundwater sampling according the following program:

Well Designation	Location	Sampling Frequency
MW-1	Upgradient	Quarterly
MW-2, MW-11, DW-1, TP-1, TP-2, and VW-2	Source area	
MW-6, MW-12, DW-2, DW-3, DW-5, DW-6, DW-7, DW-8, and DW-9	Downgradient	
MW-3, MW-4, and VW-3	Upgradient	Semiannually (2nd and 4th quarters)
MW-5 and MW-7	Cross gradient	
MW-8, MW-9, MW-10, and DW-4	Downgradient	
IP-1 through IP-10	On site	Annually (2nd quarter)

### Conclusions

Results of groundwater sampling and SVE operation and maintenance indicate the following conclusions:

1. Water levels increased approximately 11 feet during the first quarter 2015.
2. Increasing water levels submerged sorbed hydrocarbons and decreased SVE influent vapor-phase concentrations. As a result, Arctos shut down the SVE system on 19 February 2015.
3. On- and offsite dissolved-phase hydrocarbon concentrations have decreased or remained stable since the expanded ISCO pilot test.



## Recommendations

Based on the activities completed during this quarter and a meeting with ACEH conducted on 26 February 2015, Arctos recommends the following tasks during the second quarter 2015 and beyond:

- Discontinue the increased groundwater monitoring sampling frequency and additional analytical parameters sampled for expanded ISCO pilot test monitoring
- Restart an oxygen injection system with increased oxygen production capacity (up to 45 scfh)
- Resume semiannual groundwater monitoring with quarterly monitoring of selected wells to assess the oxygen injection system performance in accordance with the groundwater monitoring program approved in the 2008 IRAP (Arctos, 2008).

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

Very truly yours,

## ARCTOS ENVIRONMENTAL



Scott Stromberg  
Project Geologist



Michael P. Purchase, P.E.  
Principal Engineer



Copy: Kyle Waldron – 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 – Expanded ISCO Pilot Test VOC Concentrations  
Table 5 – Expanded ISCO Pilot Test General Chemistry Concentrations  
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  
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 – Waste Manifests

## References

Alameda County Environmental Health, 2009. "Fuel Leak Case No. RO0000434 and Geotracker Global ID T0600101410, Beacon #3604, 1619 First Street, Livermore, CA – Groundwater Monitoring Requirements," 23 July.

Arctos Environmental, 2008. "Interim Remedial Action Plan for Groundwater, 1619 1st Street, Livermore, California, Tesoro Site No. 67076 (Former Beacon 3604), ACEH Case No. RO0000434," 21 March.

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.

Arctos Environmental, 2013. "Work Plan for Expanded ISCO Pilot Test, 1619 1st Street, Livermore, California, Tesoro No. 67076 (Former Beacon 3604), ACEH Case No. RO0000434," 28 February.

**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	1/21/14	33.23	474.21	440.98
	6/10/14	41.40		432.81
	8/13/14	48.64		425.57
	11/12/14	52.80		421.41
	1/20/15	41.10		433.11
MW-2	1/21/14	33.81	472.98	439.17
	6/10/14	41.65		431.33
	8/13/14	50.12		422.86
	11/12/14	DRY <sup>(c)</sup>		--
	1/20/15	42.66		430.32
MW-3	1/21/14	33.49	473.37	439.88
	6/10/14	41.62		431.75
	8/13/14	50.67		422.70
	11/12/14	DRY		--
	1/20/15	42.22		431.15
MW-4	1/21/14	34.07	473.64	439.57
	6/10/14	42.10		431.54
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	41.89		431.75
MW-5	1/21/14	34.65	472.67	438.02
	6/10/14	42.40		430.27
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	43.24		429.43
MW-6	1/21/14	35.42	471.93	436.51
	6/10/14	42.36		429.57
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
MW-7	1/21/14	33.11	472.33	439.22
	6/10/14	40.50		431.83
	8/13/14	DRY		--

**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.)	11/12/14	DRY	472.33	--
	1/20/15	43.33		429.00
MW-8	1/21/14	34.63	471.18	436.55
	6/10/14	43.17		428.01
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
MW-9	1/21/14	36.31	470.78	434.47
	6/10/14	43.15		427.63
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
MW-10	1/21/14	34.55	471.63	437.08
	6/10/14	40.18		431.45
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
MW-11	1/21/14	32.43	472.96	440.53
	6/10/14	38.62		434.34
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
MW-12	1/21/14	35.94	469.77	433.83
	6/10/14	42.76		427.01
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
VW-2	1/21/14	33.16	472.57	439.41
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--

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**WELL AND GROUNDWATER ELEVATIONS  
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<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	1/21/14	33.80	474.38	440.58
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
TP-1	1/21/14	33.38	472.64	439.26
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
TP-2	1/21/14	33.25	472.78	439.53
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
DW-1	1/21/14	33.57	472.85	439.28
	6/10/14	41.71		431.14
	8/13/14	51.02		421.83
	11/12/14	56.47		416.38
	1/20/15	42.71		430.14
DW-2	1/21/14	35.59	471.61	436.02
	6/10/14	43.35		428.26
	8/13/14	52.02		419.59
	11/12/14	56.52		415.09
	1/20/15	48.87		422.74
DW-3	1/21/14	35.32	470.33	435.01
	6/10/14	44.03		426.30
	8/13/14	54.13		416.20
	11/12/14	58.59		411.74
	1/20/15	49.60		420.73
DW-4	1/21/14	35.99	468.48	432.49
	6/10/14	44.63		423.85
	8/13/14	54.37		414.11

**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-4 (cont.)	11/12/14	58.86	468.48	409.62
	1/20/15	49.20		419.28
DW-5	1/21/14	34.45	471.86	437.41
	6/10/14	43.51		428.35
	8/13/14	51.13		420.73
	11/13/14	56.40		415.46
	1/20/15	45.75		426.11
DW-6	1/21/14	37.03	471.77	434.74
	6/10/14	44.40		427.37
	8/13/14	52.71		419.06
	11/12/14	57.14		414.63
	1/20/15	49.51		422.26
DW-7	1/21/14	36.70	470.07	433.37
	6/10/14	44.67		425.40
	8/13/14	53.47		416.60
	11/12/14	57.99		412.08
	1/20/15	49.45		420.62
DW-8	1/21/14	33.03	472.31	439.28
	6/10/14	40.60		431.71
	8/13/14	50.56		421.75
	11/12/14	55.87		416.44
	1/20/15	42.31		430.00
DW-9	1/21/14	36.26	469.80	433.54
	6/10/14	44.05		425.75
	8/13/14	52.61		417.19
	11/12/14	56.94		412.86
	1/20/15	48.79		421.01

(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) 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	1/21/14	9,600	2.5	5.2	130	250	ND<50 <sup>(b)</sup>	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<15	ND<0.5	ND<0.5
	6/11/14	2,500	ND<0.5	1.6	27	58	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	8/13/14	1,300	2.9	3.6	9.3	25	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	11/12/14	5,400	33	48	39	530	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.4	ND<50	ND<8	ND<0.5	ND<0.5
	1/21/15	1,500	4.7	4.0	16	37	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	1/22/14	3,000	140	9.0	68	92	43	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	6,900	520	40	300	320	120	ND<0.5	ND<0.5	1.4	100	ND<80	ND<25	ND<0.5	ND<0.5
	8/14/14	10,000	1,500	41	380	300	240	ND<0.5	ND<0.5	2.6	160	ND<300	ND<20	ND<0.5	ND<0.5
	11/12/14	NS <sup>(c)</sup>	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/15	14,000	340	31	230	440	80	ND<2.5	ND<2.5	ND<2.5	93	ND<250	ND<25	ND<2.5	ND<2.5
MW-3	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-5	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	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.)	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-6	1/22/14	15,000	1,100	37	120	52	110	ND<2.5	ND<2.5	ND<2.5	190	ND<250	ND<25	ND<2.5	ND<2.5
	6/10/14	11,000	860	20	50	20	120	ND<1.5	ND<1.5	ND<1.5	280	ND<150	ND<15	ND<1.5	ND<1.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	1/22/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	100	0.50	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
MW-8	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	1/22/14	2,000	2.4	ND<0.5	0.81	0.79	2.7	ND<0.5	ND<0.5	ND<0.5	7.6	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	780	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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)
MW-10 (cont.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	1/22/14	15,000	44	45	390	910	ND<1.5	ND<1.5	ND<1.5	ND<1.5	7.7	ND<150	ND<15	ND<1.5	ND<1.5
	6/10/14	660	3.7	1.2	7.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	1/22/14	3,400	4.3	1.5	12	2.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	4,500	10	2.9	67	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-2	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	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)
TP-1	1/22/14	3,400	11	1.4	16	5.2	41	ND<0.5	ND<0.5	ND<0.5	22	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	1/22/14	5,000	51	13	98	110	12	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	3,600	56	9.4	130	220	18	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	1,200	24	1.4	7.2	1.4	12	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	160	3.0	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	9.2	ND<50	ND<5	ND<0.5	ND<0.5
	1/20/15	8,700	49	8.2	260	360	6.2	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	1/22/14	8,500	490	14	55	15	150	ND<0.9	ND<0.9	1.9	380	ND<300	ND<9	ND<0.9	ND<0.9
	6/11/14	4,400	330	6.5	26	7.3	100	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	8/14/14	3,000	170	3.0	5.8	2.7	58	ND<0.5	ND<0.5	0.76	410	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/14	1,100	0.83	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5	ND<0.5	ND<0.5	310	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/15	5,700	260	12	110	48	100	ND<0.5	ND<0.5	1.1	300	ND<50	ND<5	ND<0.5	ND<0.5
DW-3	1/22/14	860	ND<0.5	ND<0.5	3.0	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
	6/11/14	1,900	0.64	ND<0.5	23	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/13/14	430	5.3	ND<0.5	1.4	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

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-3 (cont.)	11/12/14	290	0.72	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/20/15	1,600	17	2.2	37	22	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	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/20/15	ND<50	0.76	ND<0.5	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-5	1/22/14	17,000	66	6.1	440	470	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<400	ND<40	ND<2.5	ND<2.5
	6/11/14	18,000	53	4.3	340	410	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	8/14/14	15,000	60	5.0	330	570	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	11/13/14	18,000	27	4.3	290	510	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	1/21/15	26,000	92	11	650	860	ND<2.5	ND<2.5	ND<2.5	ND<2.5	48	ND<250	ND<25	ND<2.5	ND<2.5
DW-6	1/22/14	3,000	6.8	0.98	3.6	2.9	10	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	5,400	19	3.0	39	5.6	9.2	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<8	ND<0.5	ND<0.5
	8/14/14	4,300	16	2.9	29	6.0	6.8	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<10	ND<0.5	ND<0.5
	11/13/14	3,400	2.4	1.1	ND<0.5	0.65	5.3	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/15	3,400	6.1	1.5	35	7.7	4.9	ND<0.5	ND<0.5	ND<0.5	26	ND<80	ND<5	ND<0.5	ND<0.5
DW-7	1/22/14	15,000	380	15	430	200	77	ND<1.5	ND<1.5	ND<1.5	230	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	12,000	380	13	370	190	79	ND<1.5	ND<1.5	ND<1.5	240	ND<150	ND<15	ND<1.5	ND<1.5
	8/14/14	2,400	110	3.2	30	17	37	ND<0.5	ND<0.5	ND<0.5	190	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	1,000	8.9	ND<0.5	0.61	ND<0.5	17	ND<0.5	ND<0.5	ND<0.5	160	ND<50	ND<5	ND<0.5	ND<0.5
	1/20/15	10,000	210	8.4	250	110	49	ND<0.5	ND<0.5	ND<0.5	260	ND<100	ND<5	ND<0.5	ND<0.5
DW-8	1/22/14	40,000	1,100	1,200	1,200	4,300	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	6/11/14	52,000	2,400	2,100	1,700	6,400	ND<7	ND<7	ND<7	ND<7	67	ND<700	ND<70	ND<7	ND<7

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-8 (cont.)	8/14/14	44,000	3,200	1,200	1,700	6,100	ND<7	ND<7	ND<7	ND<7	70	ND<700	ND<70	ND<7	ND<7
	11/13/14	53,000	3,200	790	2,200	7,100	ND<7	ND<7	ND<7	ND<7	65	ND<700	ND<70	ND<7	ND<7
	1/21/15	38,000	2,800	1,400	1,600	5,800	ND<9	ND<9	ND<9	ND<9	130	ND<900	ND<90	ND<9	ND<9
DW-9	1/22/14	14,000	180	6.7	200	65	27	ND<1.5	ND<1.5	ND<1.5	77	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	13,000	380	11	300	81	41	ND<2.5	ND<2.5	ND<2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	8/14/14	9,100	170	10	120	26	24	ND<1.5	ND<1.5	ND<1.5	70	ND<150	ND<15	ND<1.5	ND<1.5
	11/13/14	9,600	130	6.8	36	11	22	ND<1.5	ND<1.5	ND<1.5	53	ND<150	ND<15	ND<1.5	ND<1.5
	1/21/15	8,300	110	6.8	200	83	16	ND<1.5	ND<1.5	ND<1.5	58	ND<150	ND<15	ND<1.5	ND<1.5

- (a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), methanol, ethanol, 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).
- (b) ND - Not detected at the reporting limit listed.
- (c) NS - Not sampled.

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <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
	11/7/13	7,400	70	94	200	400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	14	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	16,000	190	280	460	1,600	ND<0.9	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<10	ND<0.9	ND<0.9
	6/10/14	50,000	1,600	4,000	1,200	5,700	ND<9	ND<9	ND<9	ND<9	110	ND<900	ND<90	ND<9	ND<9
	8/13/14	24,000	530	980	690	3,100	ND<5	ND<5	ND<5	ND<5	47	ND<500	ND<50	ND<5	ND<5
11/13/14	24,000	480	510	620	2,300	ND<5	ND<5	ND<5	ND<5	37	ND<500	ND<50	ND<5	ND<5	
1/21/15	18,000	320	340	550	1,800	ND<2.5	ND<2.5	ND<2.5	ND<2.5	38	ND<250	ND<25	ND<2.5	ND<2.5	
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

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-2 (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	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	
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	350	2.4	2.4	2.2	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<50	ND<5	ND<0.5	ND<0.5	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	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>(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	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<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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <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.)	6/11/14	580	2.6	1.0	7.2	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	70	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1/20/15	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

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.)	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	
	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	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	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	NS
	11/7/13	180	ND<0.5	ND<0.5	3.0	6.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.76	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
IP-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	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS



TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg <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-6 (cont.)	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	70	8.6	ND<0.5	ND<0.5	ND<0.5	3.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	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	1.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6/11/14	2,100	18	0.77	7.5	2.0	12	ND<0.5	ND<0.5	ND<0.5	82	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-7 (cont.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	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
	11/7/13	18,000	400	520	170	1,700	ND<4	ND<4	ND<4	ND<4	23	ND<400	ND<40	ND<4	ND<4
	1/22/14	41,000	550	1,600	560	4,200	ND<4	ND<4	ND<4	ND<4	22	ND<400	ND<40	ND<4	ND<4
	6/11/14	52,000	1,200	3,300	940	6,400	ND<5	ND<5	ND<5	ND<5	28	ND<500	ND<50	ND<5	ND<5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/13/14	53,000	1,200	3,900	1,000	8,000	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9	
1/21/15	36,000	1,200	3,300	1,000	6,700	ND<9	ND<9	ND<9	ND<9	99	ND<900	ND<90	ND<9	ND<9	
IP-9	12/16/08	110,000	7,800	23,000	2,800	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10 <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

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-9 (cont.)	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	
	11/7/13	1,100	4.9	30	14	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5	
	1/22/14	1,600	1.9	9.7	8.6	16	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	6/11/14	2,000	ND<0.5	ND<0.5	1.5	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	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	3,000	5.4	97	49	340	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31	ND<50	ND<5	ND<0.5	ND<0.5	
1/21/15	330	ND<0.5	1.7	0.56	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5		
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	
	11/7/13	810	2.6	1.7	1.5	7.6	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 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-10 (cont.)	1/22/14	2,100	7.2	2.7	1.8	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	6/10/14	2,600	10	1.8	3.4	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/13/14	1,100	2.9	ND<0.5	0.58	0.92	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	11/12/14	1,800	7.7	1.2	3.5	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	1/21/15	2,700	23	4.9	37	42	ND<0.5	ND<0.5	ND<0.5	ND<0.5	15	ND<100	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), 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) Baseline remediation system values.
- (d) NS - Not sampled.
- (e) Primarily compounds not found in typical gasoline.

TABLE 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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-2	Baseline	4/23/13	430	10	2.2	3.8	8.5	13	ND<0.5 <sup>(b)</sup>	ND<0.5	ND<0.5	6.6	ND<50	ND<8	ND<0.5	ND<0.5	
	Post-Inj #1	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	
	Post-Inj #2	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	
	Post-Inj #3	11/7/13	4,700	140	7.5	160	170	28	ND<0.9	ND<0.9	ND<0.9	22	ND<90	ND<9	ND<0.9	ND<0.9	
	1Q14	1/22/14	3,000	140	9.0	68	92	43	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5	
	2Q14	6/11/14	6,900	520	40	300	320	120	ND<0.5	ND<0.5	1.4	100	ND<80	ND<25	ND<0.5	ND<0.5	
	3Q14	8/14/14	10,000	1,500	41	380	300	240	ND<0.5	ND<0.5	2.6	160	ND<300	ND<20	ND<0.5	ND<0.5	
	4Q14	11/12/14	NS <sup>(c)</sup>	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1Q15	1/21/15	14,000	340	31	230	440	80	ND<2.5	ND<2.5	ND<2.5	93	ND<250	ND<25	ND<2.5	ND<2.5	
MW-6	Baseline	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	
	Post-Inj #1	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	
	Post-Inj #2	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	
	Post-Inj #3	11/7/13	12,000	1,200	62	190	81	100	ND<2.5	ND<2.5	ND<2.5	66	ND<250	ND<25	ND<2.5	ND<2.5	
	1Q14	1/22/14	15,000	1,100	37	120	52	110	ND<2.5	ND<2.5	ND<2.5	190	ND<250	ND<25	ND<2.5	ND<2.5	
	2Q14	6/10/14	11,000	860	20	50	20	120	ND<1.5	ND<1.5	ND<1.5	280	ND<150	ND<15	ND<1.5	ND<1.5	
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1Q15	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	Baseline	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	
	Post-Inj #1	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	
	Post-Inj #2	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	
	Post-Inj #3	11/7/13	330	ND<0.5	ND<0.5	0.51	0.73	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1Q14	1/22/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2Q14	6/10/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5	
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1Q15	1/20/15	100	0.50	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	

TABLE 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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-8	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	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
	1Q14	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	80	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1Q15	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-9	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	1,400	3.1	ND<0.5	0.70	0.58	4.2	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	2,000	2.4	ND<0.5	0.81	0.79	2.7	ND<0.5	ND<0.5	ND<0.5	7.6	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	780	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1Q15	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-10	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	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
	1Q14	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1Q15	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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-11	Baseline	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	
	Post-Inj #1	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	
	Post-Inj #2	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	
	Post-Inj #3	11/7/13	8,800	50	54	380	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	12	ND<150	ND<15	ND<1.5	ND<1.5	
	1Q14	1/22/14	15,000	44	45	390	910	ND<1.5	ND<1.5	ND<1.5	ND<1.5	7.7	ND<150	ND<15	ND<1.5	ND<1.5	
	2Q14	6/10/14	660	3.7	1.2	7.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1Q15	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-12	Baseline	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	
	Post-Inj #1	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	
	Post-Inj #2	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	
	Post-Inj #3	11/7/13	4,600	15	2.4	47	13	0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1Q14	1/22/14	3,400	4.3	1.5	12	2.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2Q14	6/10/14	4,500	10	2.9	67	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	
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1Q15	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
IP-1	Baseline	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	
	Post-Inj #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	
	Post-Inj #3	11/7/13	7,400	70	94	200	400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	14	ND<90	ND<9	ND<0.9	ND<0.9	
	1Q14	1/22/14	16,000	190	280	460	1,600	ND<0.9	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<10	ND<0.9	ND<0.9	
	2Q14	6/10/14	50,000	1,600	4,000	1,200	5,700	ND<9	ND<9	ND<9	ND<9	110	ND<900	ND<90	ND<9	ND<9	
	3Q14	8/13/14	24,000	530	980	690	3,100	ND<5	ND<5	ND<5	ND<5	47	ND<500	ND<50	ND<5	ND<5	
	4Q14	11/13/14	24,000	480	510	620	2,300	ND<5	ND<5	ND<5	ND<5	37	ND<500	ND<50	ND<5	ND<5	
1Q15	1/21/15	18,000	320	340	550	1,800	ND<2.5	ND<2.5	ND<2.5	ND<2.5	38	ND<250	ND<25	ND<2.5	ND<2.5		

TABLE 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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	Baseline	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
	Post-Inj #2	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Post-Inj #3	11/7/13	180	ND<0.5	ND<0.5	3.0	6.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.76	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q15	1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-8	Baseline	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	18,000	400	520	170	1,700	ND<4	ND<4	ND<4	ND<4	23	ND<400	ND<40	ND<4	ND<4
	1Q14	1/22/14	41,000	550	1,600	560	4,200	ND<4	ND<4	ND<4	ND<4	22	ND<400	ND<40	ND<4	ND<4
	2Q14	6/11/14	52,000	1,200	3,300	940	6,400	ND<5	ND<5	ND<5	ND<5	28	ND<500	ND<50	ND<5	ND<5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/13/14	53,000	1,200	3,900	1,000	8,000	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	1Q15	1/21/15	36,000	1,200	3,300	1,000	6,700	ND<9	ND<9	ND<9	ND<9	99	ND<900	ND<90	ND<9	ND<9
IP-9	Baseline	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	1,100	4.9	30	14	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	1Q14	1/22/14	1,600	1.9	9.7	8.6	16	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	2,000	ND<0.5	ND<0.5	1.5	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
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	3,000	5.4	97	49	340	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31	ND<50	ND<5	ND<0.5	ND<0.5
	1Q15	1/21/15	330	ND<0.5	1.7	0.56	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5
IP-10	Baseline	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	810	2.6	1.7	1.5	7.6	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 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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-10 (cont.)	1Q14	1/22/14	2,100	7.2	2.7	1.8	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2Q14	6/10/14	2,600	10	1.8	3.4	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	3Q14	8/13/14	1,100	2.9	ND<0.5	0.58	0.92	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	4Q14	11/12/14	1,800	7.7	1.2	3.5	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	1Q15	1/21/15	2,700	23	4.9	37	42	ND<0.5	ND<0.5	ND<0.5	ND<0.5	15	ND<100	ND<5	ND<0.5	ND<0.5
DW-1	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	5,200	69	13	130	200	18	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<8	ND<0.5	ND<0.5
	1Q14	1/22/14	5,000	51	13	98	110	12	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	3,600	56	9.4	130	220	18	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	1,200	24	1.4	7.2	1.4	12	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/12/14	160	3.0	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	9.2	ND<50	ND<5	ND<0.5	ND<0.5
1Q15	1/20/15	8,700	49	8.2	260	360	6.2	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5	
DW-2	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	6,500	520	18	57	17	150	ND<0.9	ND<0.9	2.2	310	ND<90	ND<9	ND<0.9	ND<0.9
	1Q14	1/22/14	8,500	490	14	55	15	150	ND<0.9	ND<0.9	1.9	380	ND<300	ND<9	ND<0.9	ND<0.9
	2Q14	6/11/14	4,400	330	6.5	26	7.3	100	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	3Q14	8/14/14	3,000	170	3.0	5.8	2.7	58	ND<0.5	ND<0.5	0.76	410	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/13/14	1,100	0.83	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5	ND<0.5	ND<0.5	310	ND<50	ND<5	ND<0.5	ND<0.5
1Q15	1/21/15	5,700	260	12	110	48	100	ND<0.5	ND<0.5	1.1	300	ND<50	ND<5	ND<0.5	ND<0.5	
DW-3	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	960	ND<0.5	ND<0.5	5.1	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

TABLE 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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-3 (cont.)	1Q14	1/22/14	860	ND<0.5	ND<0.5	3.0	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
	2Q14	6/11/14	1,900	0.64	ND<0.5	23	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	430	5.3	ND<0.5	1.4	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
	4Q14	11/12/14	290	0.72	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q15	1/20/15	1,600	17	2.2	37	22	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-5	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	26,000	62	12	1,000	1,400	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	1Q14	1/22/14	17,000	66	6.1	440	470	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<400	ND<40	ND<2.5	ND<2.5
	2Q14	6/11/14	18,000	53	4.3	340	410	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	3Q14	8/14/14	15,000	60	5.0	330	570	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	4Q14	11/13/14	18,000	27	4.3	290	510	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
1Q15	1/21/15	26,000	92	11	650	860	ND<2.5	ND<2.5	ND<2.5	ND<2.5	48	ND<250	ND<25	ND<2.5	ND<2.5	
DW-6	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	2,400	14	1.7	5.6	3.1	10	ND<0.5	ND<0.5	ND<0.5	35	ND<80	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	3,000	6.8	0.98	3.6	2.9	10	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	5,400	19	3.0	39	5.6	9.2	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<8	ND<0.5	ND<0.5
	3Q14	8/14/14	4,300	16	2.9	29	6.0	6.8	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<10	ND<0.5	ND<0.5
	4Q14	11/13/14	3,400	2.4	1.1	ND<0.5	0.65	5.3	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
1Q15	1/21/15	3,400	6.1	1.5	35	7.7	4.9	ND<0.5	ND<0.5	ND<0.5	26	ND<80	ND<5	ND<0.5	ND<0.5	
DW-7	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	9,700	260	8.4	200	63	52	ND<1.5	ND<1.5	ND<1.5	170	ND<150	ND<15	ND<1.5	ND<1.5

TABLE 4

**EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS  
TESORO - LIVERMORE, 67076**

Monitoring Well	Event	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-7 (cont.)	1Q14	1/22/14	15,000	380	15	430	200	77	ND<1.5	ND<1.5	ND<1.5	230	ND<150	ND<15	ND<1.5	ND<1.5
	2Q14	6/11/14	12,000	380	13	370	190	79	ND<1.5	ND<1.5	ND<1.5	240	ND<150	ND<15	ND<1.5	ND<1.5
	3Q14	8/14/14	2,400	110	3.2	30	17	37	ND<0.5	ND<0.5	ND<0.5	190	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/12/14	1,000	8.9	ND<0.5	0.61	ND<0.5	17	ND<0.5	ND<0.5	ND<0.5	160	ND<50	ND<5	ND<0.5	ND<0.5
	1Q15	1/20/15	10,000	210	8.4	250	110	49	ND<0.5	ND<0.5	ND<0.5	260	ND<100	ND<5	ND<0.5	ND<0.5
DW-8	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	56,000	1,800	2,800	2,100	7,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	37	ND<250	ND<25	ND<2.5	ND<2.5
	1Q14	1/22/14	40,000	1,100	1,200	1,200	4,300	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	2Q14	6/11/14	52,000	2,400	2,100	1,700	6,400	ND<7	ND<7	ND<7	ND<7	67	ND<700	ND<70	ND<7	ND<7
	3Q14	8/14/14	44,000	3,200	1,200	1,700	6,100	ND<7	ND<7	ND<7	ND<7	70	ND<700	ND<70	ND<7	ND<7
	4Q14	11/13/14	53,000	3,200	790	2,200	7,100	ND<7	ND<7	ND<7	ND<7	65	ND<700	ND<70	ND<7	ND<7
1Q15	1/21/15	38,000	2,800	1,400	1,600	5,800	ND<9	ND<9	ND<9	ND<9	130	ND<900	ND<90	ND<9	ND<9	
DW-9	Baseline	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
	Post-Inj #1	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
	Post-Inj #2	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
	Post-Inj #3	11/7/13	8,000	120	5.9	100	38	25	ND<1.5	ND<1.5	ND<1.5	73	ND<150	ND<15	ND<1.5	ND<1.5
	1Q14	1/22/14	14,000	180	6.7	200	65	27	ND<1.5	ND<1.5	ND<1.5	77	ND<150	ND<15	ND<1.5	ND<1.5
	2Q14	6/11/14	13,000	380	11	300	81	41	ND<2.5	ND<2.5	ND<2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	3Q14	8/14/14	9,100	170	10	120	26	24	ND<1.5	ND<1.5	ND<1.5	70	ND<150	ND<15	ND<1.5	ND<1.5
	4Q14	11/13/14	9,600	130	6.8	36	11	22	ND<1.5	ND<1.5	ND<1.5	53	ND<150	ND<15	ND<1.5	ND<1.5
1Q15	1/21/15	8,300	110	6.8	200	83	16	ND<1.5	ND<1.5	ND<1.5	58	ND<150	ND<15	ND<1.5	ND<1.5	

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

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

(c) NS - Not sampled.

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
MW-2	12/15/11	ND<0.1 <sup>(k)</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>(l)</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>(l)</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>(l)</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
	6/11/14	ND<0.1	2.7	ND<0.015	ND<0.005	2.6	2.8	74	ND<1	0.51	64,800	4,260	676	790
	8/14/14	ND<0.1	13	0.018	ND<0.005	6.6	3.1	64	ND<1	2.0	23,300	1,330	700	830
	11/12/14	NS <sup>(m)</sup>	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/21/15	ND<0.5	29	ND<0.015	ND<0.005	5.1	3.9	78	ND<1	0.95	120,000	100	597	798	
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
	6/10/14	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.4	2.2	78	ND<1	0.60	17,000	2,980	604	730
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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>(l)</sup>	1,210	377	540

TABLE 5

**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)	
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>						
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>	
MW-7 (cont.)	8/7/12	ND<0.5	72	0.031	0.32	84	9.6	68	ND<1	ND<0.1	37 <sup>(l)</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	
	6/10/14	ND<0.1	15	ND<0.015	ND<0.005	0.75	1.9	88	ND<1	0.17	33,600	281	574	700	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	ND<0.5	2,800	ND<0.1	ND<0.005	3.7	83	93	ND<1	2.5	91,000	ND<6.6	8.9	4,320		
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	
	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	
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
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	
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
MW-9 (cont.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	6/10/14	1.1	80	ND<0.015	ND<0.005	ND<0.1	0.34	52	5.4	ND<0.1	6,210	1.4	562	805
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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>(l)</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>(l)</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>(l)</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	

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
MW-11 (cont.)	6/10/14	ND<0.1	7.2	ND<0.015	0.0052	1.7	0.073	78	ND<1	0.36	1,910	16.8	626	770
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	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
	6/10/14	ND<0.1	38	0.016	ND<0.005	2.6	1.0	58	ND<1	0.45	10,000	1,780	425	600
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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>(l)</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>(l)</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>(l)</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	

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
IP-1 (cont.)	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
	6/10/14	ND<0.1	180	0.14	ND<0.005	0.60	0.079	1,700	ND<1	ND<0.1	598	2,650	3,060	3,960
	8/13/14	ND<0.5	360	0.47	ND<0.005	0.68	0.12	2,700	ND<1	ND<0.1	1,080	1,390	4,860	6,240
	11/13/14	ND<0.1	300	0.21	ND<0.01	0.46	0.086	2,000	ND<2	ND<0.1	1,340	1,770	3,800	4,820
	1/21/15	ND<0.5	190	0.12	ND<0.005	0.48	0.092	1,700	ND<1	ND<0.1	ND<5,000	2,060	3,070	16,700
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
	6/10/14	ND<0.1	27	ND<0.015	ND<0.005	ND<0.1	1.8	42	ND<1	ND<0.1	4,900	202	343	550
	8/13/14	ND<0.1	35	ND<0.015	ND<0.005	ND<0.1	1.4	48	ND<1	ND<0.1	5,730	123	348	550
	11/12/14	0.52	39	ND<0.015	ND<0.005	ND<0.1	1.1	42	ND<1	ND<0.1	9,200	232	306	610
	1/20/15	0.64	95	ND<0.015	ND<0.005	ND<0.1	1.6	46	ND<1	ND<0.1	27,000	121	281	548
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>(l)</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>(l)</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>(l)</sup>	447	664	735
	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	



TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
IP-8 (cont.)	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/14	ND<0.1	390	0.32	ND<0.01	0.26	0.064	2,300	ND<2	ND<0.1	628	716	4,200	5,700
	1/21/15	ND<0.5	310	0.18	ND<0.005	0.15	0.067	1,600	ND<1	ND<0.1	ND<5,000	1,770	3,110	17,600
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>(l)</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>(l)</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>(l)</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
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	ND<0.2	560	0.75	ND<0.025	0.26	0.048	4,100	ND<2	ND<0.1	538	14	7,120	9,250	
1/21/15	3.0	610	0.31	0.060	0.31	0.053	3,000	58	ND<0.1	ND<5,000	8.1	5,370	29,700	
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

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
IP-10 (cont.)	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>(l)</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>(l)</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>(l)</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
	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
	6/10/14	ND<0.1	1.7	ND<0.015	ND<0.005	0.86	2.7	64	ND<1	0.16	4,850	1,160	339	500
	8/13/14	ND<0.1	3.3	ND<0.015	ND<0.005	1.3	3.3	59	ND<1	ND<0.1	16,600	658	335	495
11/12/14	ND<0.1	1.3	ND<0.015	ND<0.005	1.6	3.5	60	ND<1	0.22	6,980	477	340	590	
1/21/15	ND<0.5	16	ND<0.015	ND<0.005	0.66	3.4	63	ND<1	ND<0.1	48,000	2,370	352	501	
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
	6/11/14	ND<0.1	27	ND<0.015	ND<0.005	ND<0.1	3.1	140	ND<1	ND<0.1	46,500	1,270	690	815
	8/13/14	ND<0.1	29	ND<0.015	ND<0.005	1.3	3.4	170	ND<1	ND<0.1	27,700	2,070	769	930
	11/12/14	ND<0.1	80	ND<0.015	ND<0.005	ND<0.1	1.9	280	ND<1	ND<0.1	18,000	656	844	1,180
1/20/15	ND<0.5	53	ND<0.015	ND<0.005	0.14	1.6	140	ND<1	ND<0.1	55,000	592	513	717	
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

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
DW-2 (cont.)	6/11/14	ND<0.1	16	ND<0.015	ND<0.005	1.0	2.4	120	ND<1	0.30	10,100	1,780	664	820
	8/14/14	ND<0.1	13	ND<0.015	ND<0.005	1.0	2.7	110	ND<1	0.67	22,200	363	625	800
	11/13/14	ND<0.1	25	ND<0.015	ND<0.005	0.69	2.4	110	ND<1	0.11	27,500	553	576	810
	1/21/15	ND<0.5	25	ND<0.015	ND<0.005	0.90	2.6	76	ND<1	0.30	61,000	1,690	527	669
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
	6/11/14	1.1	56	ND<0.015	ND<0.005	ND<0.1	0.87	54	ND<1	ND<0.1	10,200	426	401	170
	8/13/14	ND<0.1	38	ND<0.015	ND<0.005	0.56	1.8	53	ND<1	ND<0.1	10,200	343	437	570
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	ND<0.5	63	ND<0.015	ND<0.005	1.1	1.8	56	ND<1	0.63	54,000	8.0	400	573
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
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/14/14	ND<0.1	7.4	ND<0.015	ND<0.005	0.34	1.2	290	ND<1	0.12	7,050	2,990	844	1,100
	11/13/14	0.88	70	0.0166	ND<0.01	0.17	0.16	638	ND<1	ND<0.1	8,090	962	1,340	1,600
	1/21/15	ND<0.5	69	ND<0.015	ND<0.005	0.31	1.7	250	ND<1	0.23	55,000	3,310	746	1,070
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
	6/11/14	ND<0.1	4.1	ND<0.015	ND<0.005	1.0	2.2	54	ND<1	0.42	18,300	3,210	431	575

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
DW-6 (cont.)	8/14/14	ND<0.1	1.1	ND<0.015	ND<0.005	1.3	2.4	54	ND<1	0.81	11,000	853	435	600
	11/13/14	0.84	33	ND<0.015	ND<0.005	2.8	2.2	50	ND<1	0.63	11,700	878	419	585
	1/21/15	ND<0.5	46	ND<0.015	ND<0.005	0.92	2.6	55	ND<1	ND<0.1	50,000	2,110	395	550
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
	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
	6/11/14	ND<0.1	10	ND<0.015	ND<0.005	0.63	2.4	120	ND<1	0.13	39,200	4,850	638	800
	8/14/14	ND<0.1	17	ND<0.015	ND<0.005	0.49	2.7	90	ND<1	0.25	17,100	2,210	553	715
	11/12/14	ND<0.1	21	ND<0.015	ND<0.005	0.60	2.7	90	ND<1	ND<0.1	24,900	1,000	516	710
	1/20/15	ND<0.5	35	ND<0.015	ND<0.005	1.8	3.9	92	ND<1	1.1	100,000	2,510	569	801
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>(l)</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>(l)</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>(l)</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	

TABLE 5

**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)
<b>Primary MCL<sup>(h)</sup></b>		<b>45</b>		<b>0.01</b>					<b>10</b>					
<b>Secondary MCL<sup>(i)</sup></b>			<b>250</b>			<b>0.3</b>				<b>0.3<sup>(j)</sup></b>				<b>500</b>
DW-8 (cont.)	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
	6/11/14	ND<0.1	1.1	ND<0.015	ND<0.005	2.8	3.3	170	ND<1	0.67	55,300	3,430	790	970
	8/14/14	ND<0.1	0.83	ND<0.015	ND<0.005	3.8	3.6	170	ND<1	0.98	37,000	4,300	750	925
	11/13/14	ND<0.1	1.4	ND<0.015	ND<0.005	4.3	3.3	160	ND<1	0.88	42,500	4,680	755	935
	1/21/15	ND<0.5	18	0.015	ND<0.005	3.0	3.1	160	ND<1	0.25	77,000	4,350	675	834
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
	6/11/14	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.3	2.2	69	ND<1	0.42	33,100	5,910	488	625
	8/14/14	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.3	2.4	64	ND<1	0.96	13,100	3,940	469	605
	11/13/14	ND<0.1	0.79	ND<0.015	ND<0.005	4.7	2.8	61	ND<1	0.61	28,100	3,780	470	590
1/21/15	ND<0.5	13	ND<0.015	ND<0.005	0.76	2.7	63	ND<1	0.32	73,000	3,160	459	620	

(a) Nitrate and sulfate analyzed by EPA Method 300.0; reported in milligrams per liter (mg/l).

(b) Arsenic, chromium, iron, manganese, and sodium analyzed by EPA Method 6010B; reported in mg/l.

(c) Hexavalent chromium (Hex Chrome) analyzed by EPA Method 7199; reported in micrograms per liter (µg/l).

(d) Ferrous Iron (Fe (2+)) analyzed by Standard Method 3500-Fe D; reported in mg/l.

(e) Carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) analyzed by EPA Method RSK-175M; reported in µg/l.

(f) Total alkalinity as CaCO<sub>3</sub> analyzed by Standard Method 2320B; reported in mg/l.

(g) Total dissolved solids (TDS) analyzed by Standard Method 2540 C; reported in mg/l.

(h) California primary maximum contaminant limit (MCL) in drinking water, reported in same units as analyte listed, left blank where no MCL established.

(i) California secondary maximum contaminant limit (MCL) in drinking water, reported in same units as analyte listed, left blank where no MCL established.

(j) MCL does not exist for ferrous iron; MCL for total iron used.

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

(l) CO<sub>2</sub> analyzed by Standard Method 4500 C; reported in mg/l.

(m) NS - Not sampled.

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

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	4/28/11	150	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.8	ND<0.5	17.5	77.6
SVE-Manifold	5/12/11	280	ND<0.06	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.7	ND<0.5	17.2	78.1
SVE-Manifold	5/25/11	330	0.15	0.13	ND<0.05	0.10	ND<0.1	ND<0.5	5.1	ND<0.5	16.4	78.5
SVE-Manifold	6/8/11	340	0.082	ND<0.05	ND<0.05	0.084	ND<0.1	ND<0.5	4.5	ND<0.5	15.9	79.6
SVE-Manifold	6/16/11	370	0.12	0.052	0.059	0.15	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	360	0.19	ND<0.07	ND<0.06	0.13	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	370	0.20	0.083	0.056	0.18	ND<0.1	ND<0.5	4.8	ND<0.5	15.6	79.6
SVE-Manifold	6/27/11	310	0.22	0.11	ND<0.05	0.18	ND<0.1	ND<0.5	4.7	ND<0.5	16.5	78.9
SVE-Manifold	7/7/11	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

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	1/26/12	530	0.067	ND<0.05	0.052	0.87	0.34	ND<0.5	1.8	ND<0.5	21.6	76.7
SVE-Manifold	1/26/12	800	0.78	2.0	0.35	3.6	ND<0.1	ND<0.5	1.6	ND<0.5	22.3	76.1
SVE-Manifold	2/2/12	440	0.90	1.9	0.16	4.4	ND<0.1	ND<0.5	0.99	ND<0.5	22.6	76.4
SVE-Manifold	2/16/12	430	0.29	1.2	0.16	4.0	ND<0.1	ND<0.5	0.93	ND<0.5	22.5	76.5
SVE-Manifold	2/28/12	380	0.11	0.60	0.10	2.7	ND<0.07	ND<0.5	0.96	ND<0.5	22.4	76.6
SVE-Manifold	3/14/12	250	0.056	0.48	0.086	1.8	ND<0.1	ND<0.5	0.82	ND<0.5	22.6	76.6
SVE-Manifold	4/4/12	74	0.060	0.49	0.089	1.6	ND<0.1	ND<0.5	0.51	ND<0.5	21.8	77.7
SVE-Manifold	4/17/12	110	0.19	1.5	0.24	3.9	ND<0.1	ND<0.5	0.60	ND<0.5	21.5	77.9
SVE-Manifold	5/16/12	43	0.056	0.34	0.063	1.5	ND<0.1	ND<0.5	0.55	ND<0.5	21.4	78.0
SVE-Manifold	6/19/12	37	ND<0.05	0.13	ND<0.05	0.99	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.6	77.9
SVE-Manifold	7/17/12	64	ND<0.05	ND<0.05	ND<0.05	0.56	ND<0.1	ND<0.5	0.54	ND<0.5	21.1	78.3
SVE-Manifold	7/17/12	59	ND<0.05	ND<0.05	ND<0.05	0.39	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.3	78.4
SVE-Manifold	8/16/12	64	ND<0.05	ND<0.05	ND<0.05	0.29	ND<0.1	ND<0.5	0.82	ND<0.5	21.1	78.1
SVE-Manifold	8/23/12	72	ND<0.05	ND<0.05	ND<0.05	0.27	ND<0.1	ND<0.5	0.77	ND<0.5	21.3	78.0
SVE-Manifold	8/23/12	81	ND<0.05	ND<0.05	ND<0.05	0.15	ND<0.1	ND<0.5	0.86	ND<0.5	21.1	78.0
SVE-Manifold	9/13/12	79	ND<0.05	ND<0.05	ND<0.05	0.09	ND<0.1	ND<0.5	0.85	ND<0.5	21.1	78.0
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
SVE-Manifold-1	7/8/14	3,200	1.2	ND<0.8	1.3	3.5	ND<0.7	1.8	2.9	ND<0.5	14.1	81.1
SVE-Manifold-2	7/8/14	3,700	1.4	ND<1	1.8	4.9	ND<0.9	1.8	3.3	ND<0.5	14.0	80.9
SVE-Manifold	7/10/14	2,100	1.3	ND<1.5	ND<1.5	4.5	ND<1	ND<0.5	2.6	ND<0.5	18.0	79.0
SVE-Manifold	7/14/14	1,700	1.4	1.5	ND<0.8	6.1	ND<0.7	ND<0.5	2.4	ND<0.5	18.8	78.6
SVE-Manifold	7/17/14	1,700	1.3	ND<1.5	ND<1.5	6.2	ND<1	ND<0.5	2.2	ND<0.5	18.8	78.8



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	7/23/14	1,800	1.2	1.1	0.53	6.0	ND<0.5	ND<0.5	2.2	ND<0.5	18.7	78.8
SVE-Manifold	7/30/14	1,800	0.95	0.93	ND<0.5	5.0	ND<0.5	ND<0.5	1.8	ND<0.5	19.0	79.0
SVE-Manifold	8/12/14	1,800	1.2	ND<1	ND<1	4.4	ND<0.9	ND<0.5	1.9	ND<0.5	18.7	79.2
SVE-Manifold	8/26/14	1,800	1.4	ND<1	ND<1	3.2	ND<0.9	ND<0.5	ND<0.5	ND<0.5	20.4	79.6
SVE-Manifold	9/10/14	2,000	1.6	0.65	0.85	2.7	ND<0.25	ND<0.5	1.4	ND<0.5	19.2	79.2
SVE-Manifold	9/25/14	1,400	1.2	ND<1	ND<1	2.7	ND<0.9	ND<0.5	1.1	ND<0.5	19.8	79.0
SVE-Manifold	10/15/14	1,800	1.8	ND<1.5	ND<1.5	2.1	ND<1	ND<0.5	1.8	ND<0.5	18.9	79.2
SVE-Manifold-1	10/29/14	2,400	2.8	ND<1.5	ND<1.5	6.9	ND<1	ND<0.5	1.4	ND<0.5	19.3	79.1
SVE-Manifold-2	10/29/14	2,000	2.1	ND<1	1.0	5.4	ND<0.9	ND<0.5	1.4	ND<0.5	19.3	79.2
SVE-Manifold	11/6/14	3,400	2.6	0.65	1.2	3.8	ND<0.5	ND<0.5	1.7	ND<0.5	17.9	80.2
SVE-Manifold	12/4/14	3,100	1.2	ND<0.5	0.46	4.2	ND<0.5	ND<0.5	1.9	ND<0.5	18.3	79.7
SVE-Manifold	12/18/14	350	0.12	0.072	ND<0.05	1.1	ND<0.1	ND<0.5	0.95	ND<0.5	20.1	79.0
SVE-Manifold-2	12/18/14	270	0.15	0.13	ND<0.05	0.86	ND<0.1	ND<0.5	0.67	ND<0.5	20.5	78.9
SVE-Manifold	1/8/15	24	ND<0.05	ND<0.05	ND<0.05	0.12	ND<0.1	ND<0.5	0.96	ND<0.5	20.7	78.3
SVE-Manifold	1/21/15	5.0	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.76	ND<0.5	21.1	78.1
SVE-Manifold-1	2/5/15	ND<5	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.68	ND<0.5	21.3	78.0
SVE-Manifold-2	2/5/15	7.6	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.66	ND<0.5	21.3	78.0
SVE-Manifold-3	2/5/15	11	ND<0.05	ND<0.05	ND<0.05	0.094	ND<0.1	ND<0.5	0.65	ND<0.5	21.4	78.0
SVE-Manifold	2/19/15	ND<5	ND<0.05	0.071	ND<0.05	ND<0.05	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.6	78.0

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

TABLE 7

**SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076**

Influent Number Sample	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv) <sup>(a)</sup>	Differential Pressure (in. wc) <sup>(b)</sup>	Temp (°F) <sup>(c)</sup>	Vacuum (in. Hg) <sup>(d)</sup>	Standard Flow (scfm) <sup>(e)</sup>	Volatilization	Biological	
									Mass Removal Rate (lbs/day) <sup>(f)</sup>	Concentration of Carbon Dioxide (%) <sup>(g)</sup>	Mass Removal Rate (lbs/day)
<i>Operating on wells MW-11, VW-2, TP-1, TP-2</i>											
1	6/29/10	8.7	0.4	5,300	-- <sup>(h)</sup>	--	1.5	63 <sup>(i)</sup>	124	--	NA <sup>(i)</sup>
2	6/29/10	13	0.5	4,700	--	--	1.3	63 <sup>(i)</sup>	110	3.6	117
3	6/30/10	31	1	3,200	0.03	71	1.5	63 <sup>(i)</sup>	75	--	NA
4	7/1/10	56	2	3,400	0.05	72	1.5	63 <sup>(i)</sup>	80	4.0	130
5	7/6/10	175	7	4,000	0.04	69	1.5	63 <sup>(i)</sup>	94	4.3	139
6	7/8/10	200	8	7,500	0.03	73	1.5	63 <sup>(i)</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
<i>Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2</i>											
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
<i>Operating on wells MW-11, VW-2, TP-1, TP-2</i>											
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	2,412	101	150	0.35	49	4.1	41	2.3	2.3	48

TABLE 7

**SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076**

Influent Number Sample	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv) <sup>(a)</sup>	Differential Pressure (in. wc) <sup>(b)</sup>	Temp (°F) <sup>(c)</sup>	Vacuum (in. Hg) <sup>(d)</sup>	Standard Flow (scfm) <sup>(e)</sup>	Volatilization	Biological	
									Mass Removal Rate (lbs/day) <sup>(f)</sup>	Concentration of Carbon Dioxide (%) <sup>(g)</sup>	Mass Removal Rate (lbs/day)
<i>Operating on well VW-2</i>											
20	1/12/11	2,748	115	280	--	54	4.2	14 <sup>(k)</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
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
<i>Operating on wells MW-11, VW-2, TP-1, TP-2</i>											
39	9/1/11	7,231	301	310	--	74	3.6	14	1.6	3.6	25

TABLE 7

**SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076**

Influent Number Sample	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv) <sup>(a)</sup>	Differential Pressure (in. wc) <sup>(b)</sup>	Temp (°F) <sup>(c)</sup>	Vacuum (in. Hg) <sup>(d)</sup>	Standard Flow (scfm) <sup>(e)</sup>	Volatilization	Biological	
									Mass Removal Rate (lbs/day) <sup>(f)</sup>	Concentration of Carbon Dioxide (%) <sup>(g)</sup>	Mass Removal Rate (lbs/day)
<i>Operating on wells MW-11, VW-2, TP-1, TP-2 (cont.)</i>											
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
<i>Operating on wells VW-2, TP-1, TP-2</i>											
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
<i>Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2</i>											
50	1/26/12	10,711	446	800	--	56	3.6	52	15	1.6	43
51	2/2/12	10,878	453	440	--	52	3.6	51	8.4	1.0	25
52	2/16/12	11,215	467	430	--	56	3.5	54	8.6	0.9	25
53	2/28/12	11,501	479	380	--	56	3.3	54	7.6	1.0	26
54	3/14/12	11,862	494	250	--	60	3.4	51	4.7	0.8	21
55	4/4/12	12,365	515	74	--	57	3.5	50	1.4	0.5	12
<i>Operating on wells MW-11, VW-2, TP-1, TP-2</i>											
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

TABLE 7

**SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076**

Influent Number Sample	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv) <sup>(a)</sup>	Differential Pressure (in. wc) <sup>(b)</sup>	Temp (°F) <sup>(c)</sup>	Vacuum (in. Hg) <sup>(d)</sup>	Standard Flow (scfm) <sup>(e)</sup>	Volatilization	Biological	
									Mass Removal Rate (lbs/day) <sup>(f)</sup>	Concentration of Carbon Dioxide (%) <sup>(g)</sup>	Mass Removal Rate (lbs/day)
<i>Operating on wells MW-11, VW-2, TP-1, TP-2 (cont.)</i>											
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
<i>Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2</i>											
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
68	7/8/14	17,706	738	3,200	--	83	1.6	41	49	2.9	62
69	7/8/14	17,707	738	3,700	--	86	1.6	32	44	3.3	54
70	7/10/14	17,750	740	2,100	--	75	1.7	29	23	2.6	39
71	7/14/14	17,846	744	1,700	--	80	1.6	31	20	2.4	37
72	7/17/14	17,919	747	1,700	--	77	1.6	30	19	2.2	34
73	7/23/14	18,062	753	1,800	--	78	1.6	30	20	2.2	34
74	7/30/14	18,230	760	1,800	--	81	1.6	34	23	1.8	31
75	8/12/14	18,543	773	1,800	--	77	1.6	36	24	1.9	35
76	8/26/14	18,879	787	1,800	--	75	1.6	38	25	ND<0.5 <sup>(l)</sup>	NA
77	9/10/14	19,238	802	2,000	--	75	1.4	40	30	1.4	29

TABLE 7

SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076

Influent Number Sample	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv) <sup>(a)</sup>	Differential Pressure (in. wc) <sup>(b)</sup>	Temp (°F) <sup>(c)</sup>	Vacuum (in. Hg) <sup>(d)</sup>	Standard Flow (scfm) <sup>(e)</sup>	Volatilization	Biological	
									Mass Removal Rate (lbs/day) <sup>(f)</sup>	Concentration of Carbon Dioxide (%) <sup>(g)</sup>	Mass Removal Rate (lbs/day)
<i>Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2 (cont.)</i>											
78	9/25/14	19,599	817	1,400	--	73	1.4	38	20	1.1	22
79	10/15/14	20,078	837	1,800	--	72	1.5	39	26	1.8	36
<i>Operating on wells MW-1, MW-11, TP-1, TP-2</i>											
80	10/29/14	20,414	851	2,400	--	65	1.6	40	35	1.4	28
81	10/29/14	20,417	851	2,000	--	72	1.3	41	31	1.4	29
82	11/6/14	20,437	852	3,400	--	68	1.5	40	51	1.7	34
83	12/4/14	21,178	882	3,100	--	81	1.6	37	43	1.9	35
84	12/18/14	21,514	896	350	--	55	1.9	41	5.3	0.95	19
<i>Operating on wells MW-1, TP-1, TP-2</i>											
85	12/18/14	21,518	897	270	--	58	1.9	28	2.8	0.67	9.3
86	1/8/15	22,018	917	24	--	52	2.0	31	0.3	0.67	10.3
87	1/21/15	22,329	930	5.0	--	58	1.8	41	0.1	0.67	13.3
88	2/5/15	22,689	945	ND<5	--	57	1.9	38	NA	0.68	12.6
89	2/5/15	22,691	945	7.6	--	58	2.9	43	0.1	0.66	13.8

**TABLE 7**

**SVE SYSTEM PARAMETERS  
TESORO - LIVERMORE, 67076**

Influent Number Sample	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv) <sup>(a)</sup>	Differential Pressure (in. wc) <sup>(b)</sup>	Temp (°F) <sup>(c)</sup>	Vacuum (in. Hg) <sup>(d)</sup>	Standard Flow (scfm) <sup>(e)</sup>	Volatilization	Biological	
									Mass Removal Rate (lbs/day) <sup>(f)</sup>	Concentration of Carbon Dioxide (%) <sup>(g)</sup>	Mass Removal Rate (lbs/day)
<i>Operating on wells MW-1, TP-1</i>											
90	2/5/15	22,692	945	11	--	59	3.0	27	0.1	0.65	8.6
91	2/19/15	23,028	959	ND<5	--	58	3.0	35	NA	ND<0.5	NA

(a) Total petroleum hydrocarbons as gasoline (TPHg) analyzed by EPA Method 8260; reported in parts per million by volume (ppmv).

(b) Differential pressure reported in inches of water column (in. wc).

(c) Temperature reported in degrees Fahrenheit (°F).

(d) Vacuum reported in inches of mercury (in. Hg).

(e) Standard flow reported in standard cubic feet per minute (scfm).

(f) Mass removal rate reported in pounds per day (lbs/day).

(g) Carbon dioxide analyzed by ASTM Method D-1946; reported in percent (%).

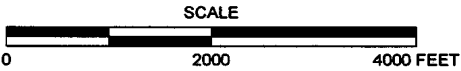
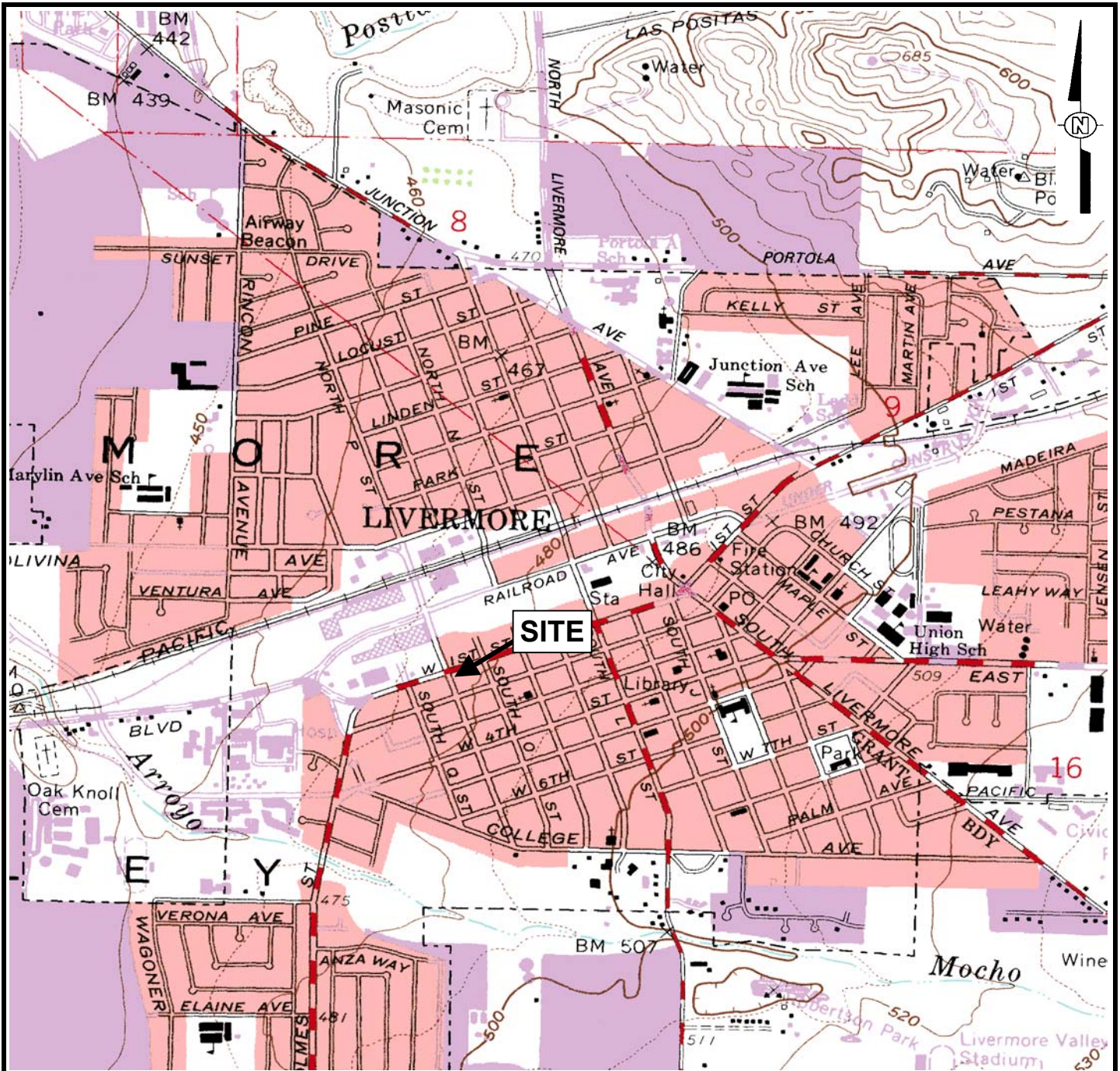
(h) "--" - Not sampled, analyzed, or collected.

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

(j) NA - Not applicable.

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

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

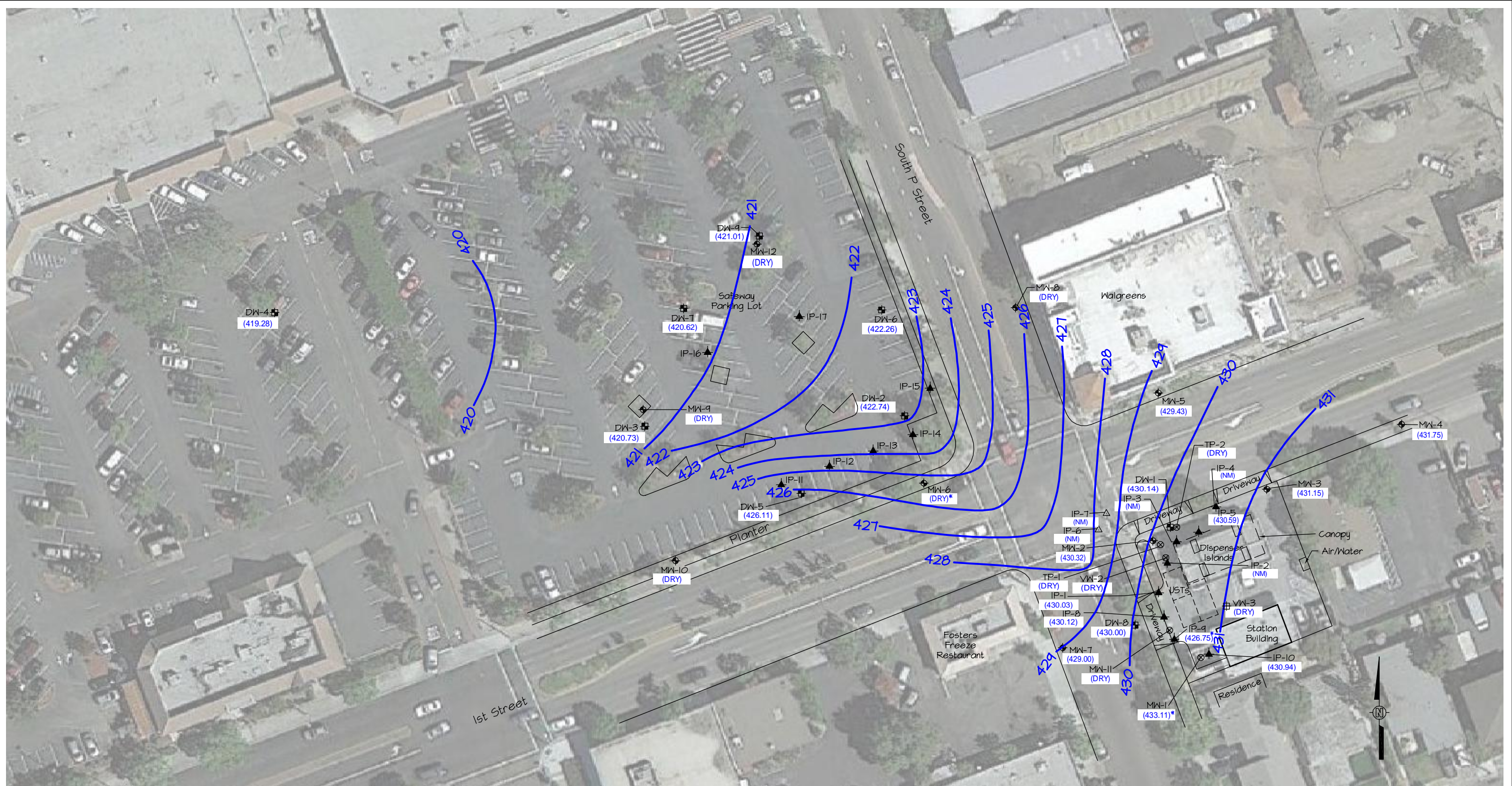


**REFERENCE**  
 7.5 MINUTE USGS TOPOGRAPHIC MAP OF  
 LIVERMORE, CALIFORNIA QUADRANGLE  
 DATE: 1961, PHOTOREVISED 1980  
 SCALE = 1:24,000

<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>	

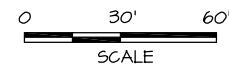


2/8/2015 1:02PM 01LV11B-20428.dwg



**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-1 Monitoring Well/Vapor Extraction Well
- (419.28) Groundwater Elevation (Feet, MSL) Measured 20 January 2015
- Groundwater Elevation Contour (Feet, MSL)
- \* Groundwater Elevation Not Used for Contours



REVISION	NO.	BY	DATE	DESCRIPTION
	23	MY	3/15/14	Fourth Quarter 2013 Monitoring Report
	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report
	28	MY	3/15/15	First Quarter 2015 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. OILV11B-20428.DWG		FIGURE 2	

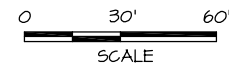
01LV11B-20528.dwg  
2/8/2015 1:06PM



**Legend**

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

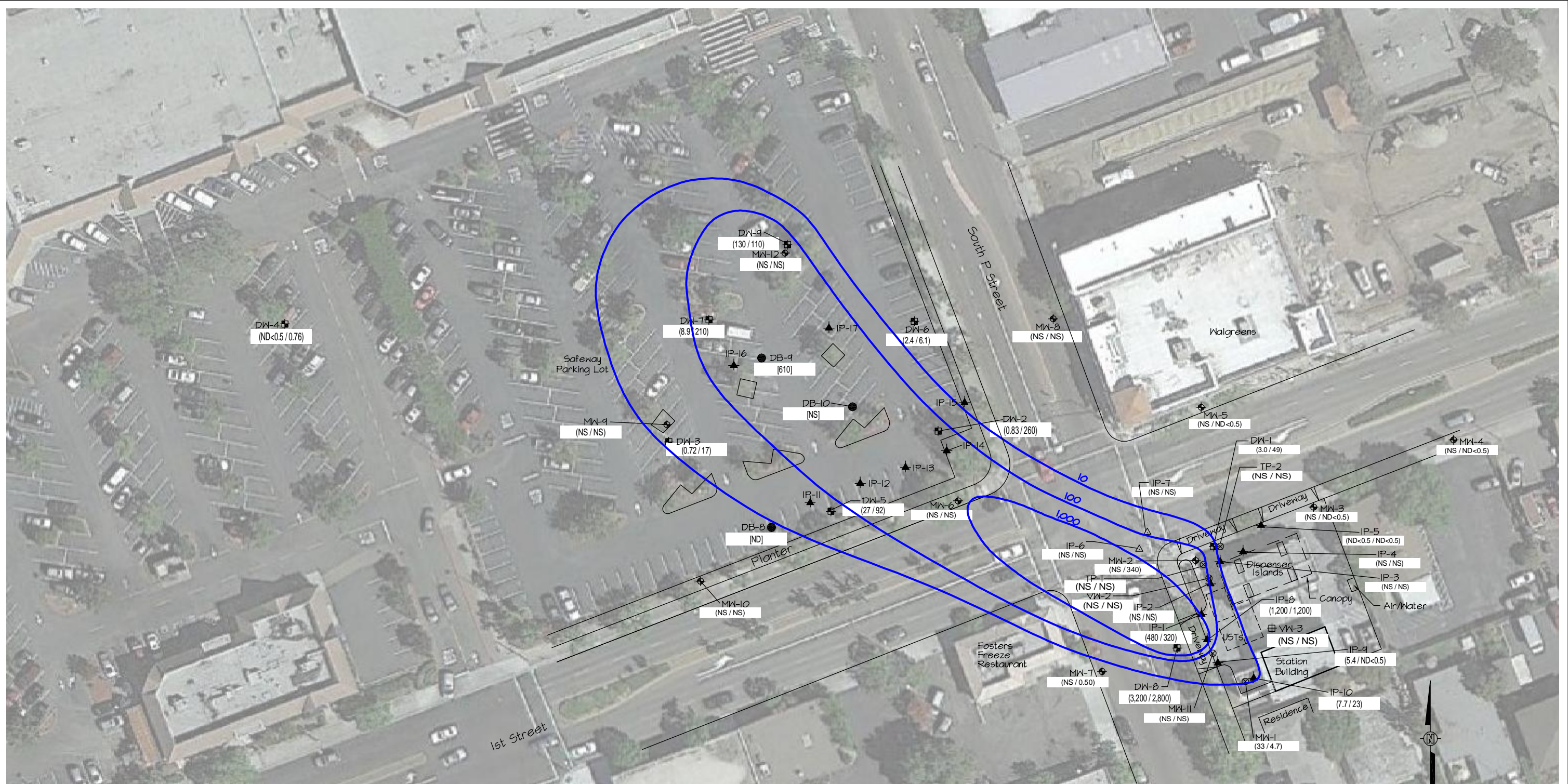
- (ND<50/NS) Previous Quarter/Current Quarter Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- 1,000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- DB-8 June 2012 Soil Boring with 55-Foot Grab Groundwater Sample Benzene Results in µg/L
- [ND] Not Detected



REVISION	NO.	BY	DATE	DESCRIPTION
	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report
	28	MY	3/15/15	First Quarter 2015 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-20528.DWG	FIGURE 3		

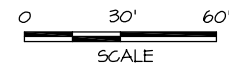
2/8/2015 1:08PM 01LV11B-20628.dwg



**Legend**

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

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



REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
24	MY	5/15/14		First Quarter 2014 Monitoring Report
25	MY	7/15/14		Second Quarter 2014 Monitoring Report
26	MY	10/15/14		Third Quarter 2014 Monitoring Report
27	MY	1/15/15		Fourth Quarter 2014 Monitoring Report
28	MY	3/15/15		First Quarter 2015 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. OILV11B-20628.DWG		FIGURE 4	

01LV11B-20728.dwg  
2/5/2015 10:37AM



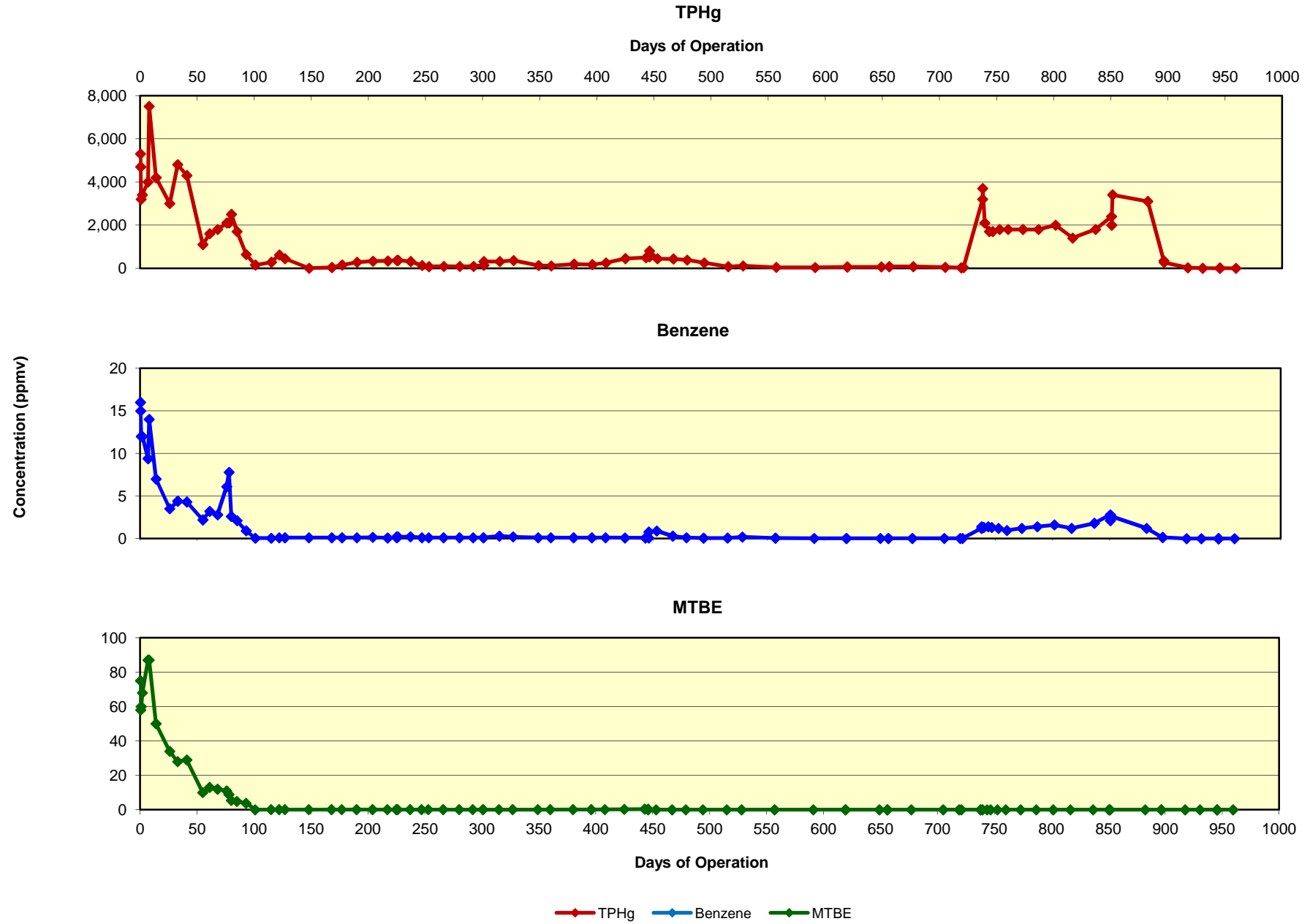
- Legend**
- MW-7 Groundwater Monitoring Well
  - DW-1 Deep Groundwater Monitoring Well
  - IP-1 Injection Well
  - IP-6 Angled Injection Well Screen
  - VW-3 Vapor Extraction Well
  - TP-1 Monitoring Well/Vapor Extraction Well

- (ND<0.5/NS) 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
- 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

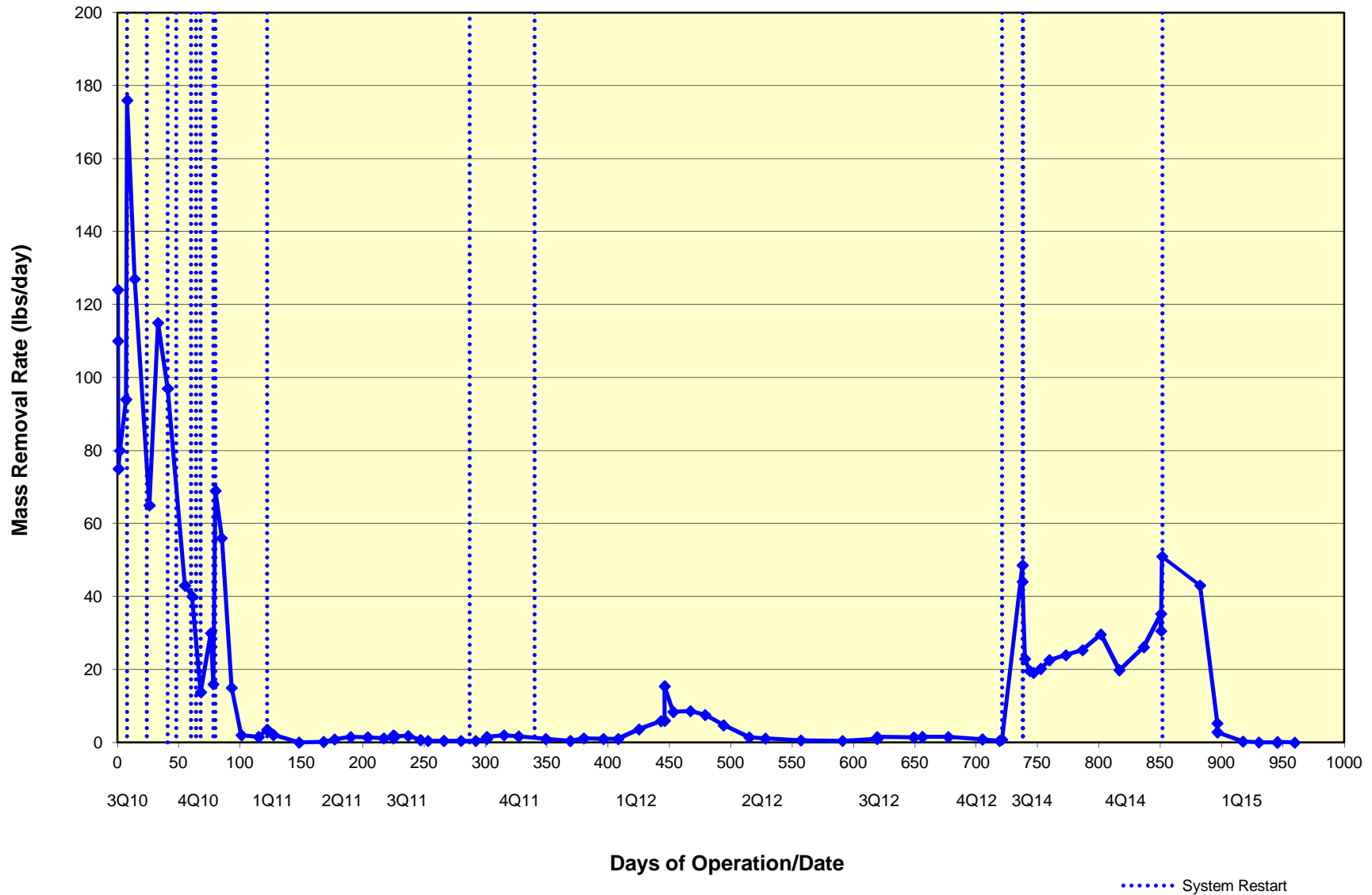


REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
28	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report
	28	MY	3/15/15	First Quarter 2015 Monitoring Report

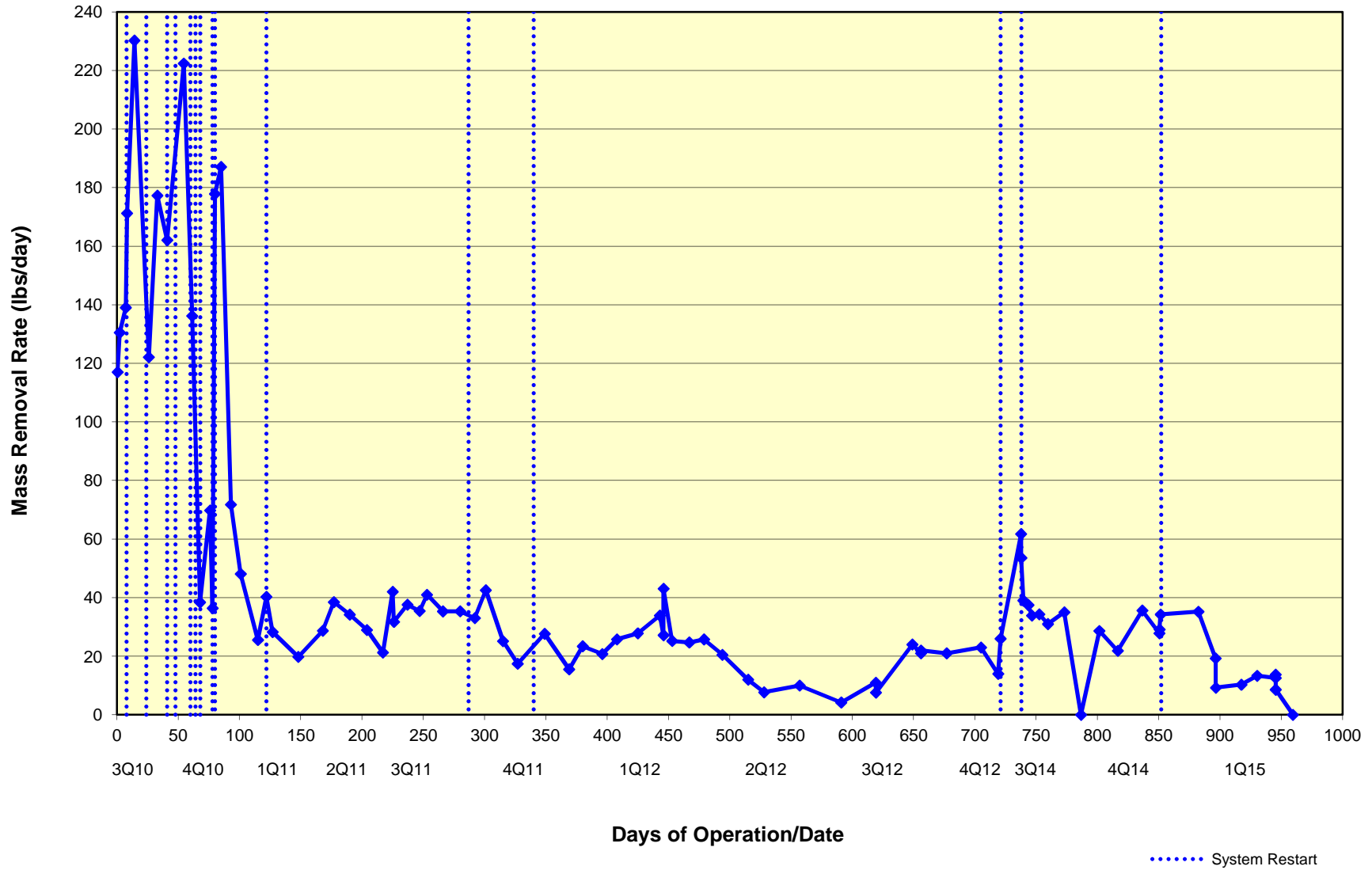
ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
<b>MTBE CONCENTRATION CONTOURS</b>			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20728.DWG		FIGURE 5	



HYDROCARBON MASS REMOVED BY VOLATILIZATION = 12,000 lbs



HYDROCARBON MASS REMOVED BY BIODEGRADATION = 35,000 lbs



**ATTACHMENT A**

**GROUNDWATER SAMPLING QUALITY ASSURANCE AND QUALITY  
CONTROL (QA/QC) PROCEDURES**



**ATTACHMENT A**  
**GROUNDWATER SAMPLING QA/QC PROCEDURES**

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### 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	Upgradient	Quarterly
MW-2, MW-11, DW-1, TP-1, TP-2, and VW-2	Source area	
MW-6, MW-12, DW-2, DW-3, DW-5, DW-6, DW-7, DW-8, and DW-9	Downgradient	
MW-3, MW-4, and VW-3	Upgradient	Semiannually (2nd and 4th quarters)
MW-5 and MW-7	Cross gradient	
MW-8, MW-9, MW-10, and DW-4	Downgradient	
IP-1 through IP-10	On site	Annually (2nd quarter)

### 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**

# Water Level Measurements

Job Number: FI-150120 Date: 1/20/15 Client: Orion

Site: TESORO Livermore

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOO/TOB)	IP probe
DW-1	0850	4			42.71		64.80	TOC	
DW-2	0732	4			48.87		59.80		
DW-3	0713	4			49.60		59.70		
DW-4	0705	4			49.20		70.06		
DW-5	0740	4			45.75		59.80		* ✓
DW-6	0730	4			49.51		60.15		
DW-7	0750	4			49.45		65.18		
DW-8	0900	4			42.31		64.68		
DW-9	0746	4			48.79		59.65		
IP-1	0828	2			43.03	64.52	<del>64.80</del>		
IP-5	0858	2			42.46		64.25		
IP-8	0810	2			43.10		64.52		
IP-9	0800	2			46.60		64.75		
IP-10	0824	2			42.94		63.05		
MW-1	0820	4			41.10		54.26		
MW-2	0830	4			42.66		54.05		
MW-3	0901	4			42.22		52.88		
MW-4	0908	2			41.89		46.56		
MW-5	0915	2			43.24		46.31		
MW-6	0736	2			Dye	47.55	47.55		

# Water Level Measurements

Job Number: FI-150120 Date: 1/20/15 Client: Orion

Site: Tesoro Livermore

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-7	0755	2			43.33		46.45	TOC		
MW-8	0915	2			44.48		44.50			
MW-9	0715	2			Dye	44.52	44.50			
MW-10	0710	2			Dye	44.98	44.98			
MW-11	0805	4			Dye	40.25	40.25			
MW-12	0740	4			Dye	44.60	44.56			
TP-1	0835	2			40.92		41.06			
TP-2	0855	2			40.12		40.15			
VW-2	0840	2			Dye	34.89	34.89			
VW-3	0820	2			Dye	36.34	36.34			

# Meter Calibration Log

EQUIPMENT MAKE	EQUIPMENT MODEL	SERIAL NUMBER	DATE	TIME	TEMP OF CALIBRATION STANDARD (°C or °F)	pH STANDARD	pH STANDARD	pH STANDARD	pH STANDARD	SPECIFIC CONDUCTANCE	ORP	DISSOLVED OXYGEN	
												mg/L	%
Hydrameter II		625276	1/20/15	0930	9.3	4	7	10		1413	-		
"	"	"	1/21/15	0700	3.5	4	7	10		1413	-		





# Purging And Sampling Data Sheet

Job#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-4	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	DTW: 41.89	Total Depth: 46.56
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: <b>Tubing:</b> 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 = 0.7 X 3 = 2.2 (Total Purge) 80% = 42.92

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1313	19.0	7.6	960	>1,000	175	-	1	
								well dewatered @ 1.5 gal
								with @ 80" after 2+ hours
1420	19.9	7.9	940	14	42	-	-	

Did well dewater? <u>YES</u> NO		Total volume removed: 1.5 (gal / L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 1/20/15	Sample time: 1420	DTW at sample: 44.08
Sample ID: MW-4	Lab: Pace	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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-5	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	DTW: 43.24	Total Depth: 46.31
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 = 0.5 X 3 = 1.5 (Total Purge) 80% = \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1023	19.4	7.1	221	>1,000	186	-	0.5	
								well dewatered @ 1 gal
1430	20.0	7.0	1931	>1,000	59	-	-	

Did well dewater? YES NO Total volume removed: 0.5 (gal / L)

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

Sample date: 1/20/15 Sample time: 1430 DTW at sample: 43.27

Sample ID: MW-5 Lab: Pace 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

<b>Job#:</b> F1-150120	<b>Sampler:</b> A Feeney	<b>Client:</b> Orion
<b>Well ID:</b> MW-8	<b>Date:</b> 1/20/15	<b>Site:</b> Livermore Tesoro #67076
<b>Well diam:</b> 1/4" 1" (2) 3" 4" 6" Other:	<b>DTW:</b> 44.48	<b>Total Depth:</b> 45.50
<b>Purge equip:</b> ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		
<b>Tubing:</b> OD: New Dedicated NA		
<b>Purge method:</b> 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 = \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ (Total Purge)                      80%= \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
			insufficient		water			

Did well dewater? YES NO			Total volume removed: (gal / L)				
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:							
Sample date:		Sample time:			DTW at sample:		
Sample ID:		Lab: Pace			Number of bottles:		
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> F1-150120	<b>Sampler:</b> A Feeney	<b>Client:</b> Orion
<b>Well ID:</b> MW-10	<b>Date:</b> 1/20/15	<b>Site:</b> Livermore Tesoro #67076
<b>Well diam:</b> 1/4" 1" 2" 3" 4" 6" Other:	<b>DTW:</b> Dry	<b>Total Depth:</b> 44.98
<b>Purge equip:</b> ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		
<b>Tubing:</b> OD: New Dedicated NA		
<b>Purge method:</b> 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 = \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ (Total Purge)                      80%= \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / μS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
			Insufficient			water		

Did well dewater? YES NO		Total volume removed: _____ (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:			
Sample date:	Sample time:	DTW at sample:	
Sample ID:	Lab: Pace	Number of bottles:	
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> F1-150120	<b>Sampler:</b> A Feeney	<b>Client:</b> Orion
<b>Well ID:</b> VW-3	<b>Date:</b> 1/20/15	<b>Site:</b> Livermore Tesoro #67076
<b>Well diam:</b> 1/4" 1" 2" 3" 4" 6" Other:	<b>DTW:</b> Dry	<b>Total Depth:</b> 36.34
<b>Purge equip:</b> ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: <b>Tubing:</b> OD: New Dedicated NA		
<b>Purge method:</b> 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 = \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ (Total Purge)      80% = \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
								insufficient water

Did well dewater? YES NO		Total volume removed: _____ (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:			
Sample date:	Sample time:	DTW at sample:	
Sample ID:	Lab: Pace	Number of bottles:	
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#: F1-150120		Sampler: A Feeney		Client: Orion	
Well ID: DW-4		Date: 1/20/15		Site: Livermore Tesoro #67076	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:			DTW: 49.20 Total Depth: 70.06		
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 =  $13.6 \times 3 = 41$  (Total Purge)      80% =  $53.37$

Time	Temp (C / °F)	pH	Cond (mS / (S))	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1040	20.8	7.6	871	15	163	~3	14	
1045	20.9	7.4	867	10	165	1	28	
1048	20.9	7.4	867	9	164	1	41	
	waited		for 80% / 1					

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

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

Sample date: 1/20/15      Sample time: 1055      DTW at sample: 53.37

Sample ID: DW-4      Lab: Pace      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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: IP-5	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: 42.46 Total Depth: 64.25	
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 =  $3.5 \times 3 = 10.5$  (Total Purge) 80% = 46.82

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1112	18.9	7.6	1021	2100	136	43	4	
1113	20.0	7.4	1029	855	116	1	7	
1115	20.3	7.3	1030	840	110	1	11	

Did well dewater? YES  NO  Total volume removed: 11 (gal) / L

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

Sample date: 1/20/15 Sample time: 11:20 DTW at sample: 44.70

Sample ID: IP-5 Lab: Pace Number of bottles: 10

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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: DW-1	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4) 6" Other:	DTW: 47.71	Total Depth: 64.80
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 = 14.4 x 3 = 43.1 (Total Purge) 80% = 47.13

Time	Temp (°F)	pH	Cond (mS / ft)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1144	19.6	7.6	1365	8	9	4	15	
1148	20.6	7.5	1404	10	-17	1	30	
1152	21.0	7.5	1458	12	-16	1	44	
								waited for 80%

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Total volume removed: 44 (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: 2		
Sample date: 1/20/15	Sample time: 1200	DTW at sample: 47.13
Sample ID: DW-1	Lab: Pace	Number of bottles: 10
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

4711

# Purging And Sampling Data Sheet

Job#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: <u>Dw-3</u>	Date: <u>1/20/15</u>	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: <u>49.60</u> Total Depth: <u>59.72</u>	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:	Tubing: OD: New Dedicated NA	
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 = 6.6 X 3 = 19.7 (Total Purge) 80% = 51.62

Time	Temp (°/°F)	pH	Cond (mS/cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1239	21.2	7.7	1090	7	-97	<u>4</u>	<u>7</u>	<u>odor</u>
1241	21.7	7.5	1079	6	-102	<u>1</u>	<u>14</u>	<u> </u>
1243	21.8	7.4	1095	5	-98	<u>1</u>	<u>20</u>	<u> </u>

Did well dewater? YES  NO  Total volume removed: 20 (gal / L)

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

Sample date: 1/20/15 Sample time: 1245 DTW at sample: 49.70

Sample ID: Dw-3 Lab: Pace Number of bottles: 12

Analysis: See COC (ISCO)

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

# Purging And Sampling Data Sheet

Job#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-11	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: Dye Total Depth: 40.25	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System	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 = \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ (Total Purge)      80%= \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
								ins. fact water

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

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

Sample date: \_\_\_\_\_ Sample time: \_\_\_\_\_ DTW at sample: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Lab: Pace Number of bottles: \_\_\_\_\_

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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-7	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: 43.33 Total Depth: 46.45	
Purge equip: <u>ES</u> - 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 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 = 0.5 X 3 = 1.5 (Total Purge) 80% = 43.95

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
13:10	19.5	7.5	687	10	-61	~1	~5	
								well dewatered & < 1 gal
								well came back quickly to 80%
13:15	21.7	7.1	3938	>1000	-12	-	-	

Did well dewater? YES NO Total volume removed: ~1 (gal/L)

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

Sample date: 1/20/15 Sample time: 13:15 DTW at sample: 43.95

Sample ID: MW-7 Lab: Pace Number of bottles: 10

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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: DW-7	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: 49.45	Total Depth: 65.18
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 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 = 10 X 3 = 31 (Total Purge) 80% = 52.60

Time	Temp (°/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal/hr mL/min)	Volume Removed (gal) / (L)	Notes
1342	22.0	7.2	1116	4	-109	4	10	odor ✓
1345	22.0	7.3	1128	4	-139	1	20	}
1347	22.1	7.2	1200	4	-130	1	31	

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Total volume removed: <u>31</u> (gal) / (L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:		
Sample date: <u>1/20/15</u>	Sample time: <u>1350</u>	DTW at sample: <u>48.20</u>
Sample ID: <u>DW-7</u>	Lab: Pace	Number of bottles: <u>10</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

<b>Job#:</b> F1-150120		<b>Sampler:</b> A Feeney		<b>Client:</b> Orion	
<b>Well ID:</b> DW-2		<b>Date:</b> 1/21/15		<b>Site:</b> Livermore Tesoro #67076	
<b>Well diam:</b> 1/4" 1" 2" 3" (4) 6" Other:			<b>DTW:</b> 48.87		<b>Total Depth:</b> 59.80
<b>Purge equip:</b> ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System					
disp bailer teflon bailer other:			<b>Tubing:</b> OD: New Dedicated NA		
<b>Purge method:</b> 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 =  $7.1 \times 3 = 21.3$  (Total Purge)

80% =  $51.06$

Time	Temp (°/°F)	pH	Cond (mS / μS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
0711	19.5	7.1	1222	8	-109	3.5	7.5	odo-
0713	19.3	7.2	1250	6	-105	1	15	
0715	20.3	7.1	1276	5	-103	1	22	

Did well dewater? YES  NO  Total volume removed: 22 (gal / L)

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

Sample date: 1/21/15 Sample time: 0720 DTW at sample: 48.90

Sample ID: DW-2 Lab: Pace 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> F1-150120		<b>Sampler:</b> A Feeney		<b>Client:</b> Orion	
<b>Well ID:</b> IP-10		<b>Date:</b> 11/21/15		<b>Site:</b> Livermore Tesoro #67076	
<b>Well diam:</b> 1/4" 1" <u>2"</u> 3" 4" 6" Other:			<b>DTW:</b> 42.94		<b>Total Depth:</b> 63.05
<b>Purge equip:</b> ES-diam: Bladder Peri Waterra Positive Air Displacement Ext. System					
disp bailer teflon bailer 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 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 = 3.2 X 3 = 9.7 (Total Purge)

80% = 46.96

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal/hr mL/min)	Volume Removed (gal/L)	Notes
0744	18.5	7.6	989	825	-97	~2	4	
0746	19.7	7.2	1025	655	-114		7	
0748	19.9	7.2	1032	649	-115		10	
	not			80%				will return to sample

Did well dewater? YES <input type="radio"/> NO <input checked="" type="radio"/>		Total volume removed: <u>10</u> (gal/L)	
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:			
Sample date: <u>11/21/15</u>		Sample time: <u>1120</u>	DTW at sample: <u>42.95</u>
Sample ID: <u>IP-10</u>		Lab: Pace	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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: <u>IP-9</u>	Date: <u>1/21/15</u>	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>(2")</u> 3" 4" 6" Other:	DTW: <u>46.60</u> Total Depth: <u>64.75</u>	
Purge equip: <u>ES-diam</u> : Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: <b>Tubing:</b> 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 = 2.9 X 3 = 8.7 (Total Purge) 80% = 50.23

Time	Temp (°/°F)	pH	Cond (ms/cm)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
0814	18.9	9.7	10.58	28	-32	3	3	odor
0815	20.0	9.6	10.40	25	-33	1	6	
0816	20.1	9.6	10.31	24	-31	1	10	
								water fizzy, bubbly, reacts w/ HCl

Did well dewater? YES  NO  Total volume removed: 10 (gal/L)

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

Sample date: 1/21/15 Sample time: 0820 DTW at sample: 49.45

Sample ID: IP-9 Lab: Pace 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> F1-150120	<b>Sampler:</b> A Feeney	<b>Client:</b> Orion
<b>Well ID:</b> TP-1	<b>Date:</b> 1/20/15	<b>Site:</b> Livermore Tesoro #67076
<b>Well diam:</b> 1/4" 1" <u>2</u> 3" 4" 6" Other:	<b>DTW:</b> 40.97 <b>Total Depth:</b> 41.06	
<b>Purge equip:</b> ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer 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 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 = \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ (Total Purge)      80% = \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
								insufficient water to sample

Did well dewater? YES    NO	Total volume removed: _____ (gal / L)
Sample method: Disp Bailer    Ded. Tubing    New Tubing    Ext. Port    Other:	
Sample date: _____	Sample time: _____    DTW at sample: _____
Sample ID: _____	Lab: _____    Pace: _____    Number of bottles: _____
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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: DW-6	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4) 6" Other:	DTW: 49.51 Total Depth: 60.15	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: Tubing: OD: New Dedicated NA		
Purge method: 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 = 7 X 3 = 21 (Total Purge) 80% = 51.64

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
0840	19.7	8.2	1112	10	-96	4	7	odor
0842	20.7	7.5	1088	8	-99	1	14	
0844	21.1	7.4	1116	7	-92	1	21	

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Total volume removed: <u>21</u> (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: 1/21/15	Sample time: <u>0845</u> DTW at sample: <u>50.05</u>
Sample ID: DW-6	Lab: Pace 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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-12	Date: 1/20/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <del>2"</del> 3" 4" 6" Other:	DTW: Dry	Total Depth: 44.60
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 = \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ (Total Purge)                      80% = \_\_\_\_\_

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
								insufficient water to sample

Did well dewater? YES NO		Total volume removed: _____ (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:			
Sample date:	Sample time:	DTW at sample:	
Sample ID:	Lab: Pace	Number of bottles:	
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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-1	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" <u>4"</u> 6" Other:	DTW: 41.10	Total Depth: 54.26
Purge equip: <u>ES - diam</u> : Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: <b>Tubing:</b> 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 = 8.6 X 3 = 25.7 (Total Purge) 80% = 48.99

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	Notes
								sampled out of order due to access
0820	19.3	7.3	1310	>1000	-99	4	9	odor
								well de-watered @ 10 gal
1135	20.3	7.5	1581	555	405	-	-	

Did well dewater? <u>YES</u> NO	Total volume removed: <u>10</u> (gal/L)
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:	
Sample date: <u>1/21/15</u> Sample time: <u>1135</u>	DTW at sample: <u>41.30</u>
Sample ID: <u>MW-1</u> Lab: <u>Pace</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:
Fe <sup>2+</sup> :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

# Purging And Sampling Data Sheet

Job#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: Dw-9	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4) 6" Other:	DTW: 48.79 Total Depth: 59.65	
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 = 7.1 x 3 = 21.2 (Total Purge)      80% = 50.96

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or ml/min)	Volume Removed (gal/L)	Notes
0915	20.1	7.4	1171	621	-105	25	8	odor
0916	20.5	7.2	1134	440	-99	1	16	
0918	21.4	7.2	1170	435	-91	1	22	
			waited for 80% <sup>10</sup>					

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Total volume removed: <u>22</u> (gal)/L
Sample method: <u>Disp Bailer</u> Ded. Tubing New Tubing Ext. Port Other:	
Sample date: 1/21/15	Sample time: <u>0925</u> DTW at sample: <u>50.15</u>
Sample ID: <u>Dw-9</u>	Lab: Pace 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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: MW-2	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: 42.66	Total Depth: 54.05
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 =  $7.4 \times 3 = 22.2$  (Total Purge) 80% = 44.94

Time	Temp (°C/°F)	pH	Cond (mS /µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
0944	19.6	6.9	1654	15	-112	5	8	
0946	21.5	6.7	1651	10	-107	1	16	
0947	21.1	6.8	1638	9	-95	1	23	
		waited		for	80%			

Did well dewater? YES <input type="radio"/> NO <input checked="" type="radio"/>	Total volume removed: 23 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 1/21/15	Sample time: 1000	DTW at sample: 44.94
Sample ID: MW-2	Lab: Pace	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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: DW-5	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	DTW: 45.75 Total Depth: 59.80	
Purge equip: <u>ES - diam</u> Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: <b>Tubing:</b> OD: New Dedicated NA		
Purge method: <u>3-5 Case Volume</u> Micro/Low-Flow Extraction Other:		
Pump depth/ intake: <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 = 9.1 X 3 = 27.4 (Total Purge)      80% = 48.56

Time	Temp (°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
1016	20.6	7.8	1719	11	-102	~4	10	Strong odor ↑
1018	21.0	7.5	1797	> low	-105	~4	20	
				60				
								well de-watered @ 25 gal
1230	19.1	7.7	1893	60	-95	-	-	

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

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

Sample date: 1/21/15      Sample time: 1230      DTW at sample: 46.14

Sample ID: DW-5      Lab: Pace      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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: IP-1	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" (2) 3" 4" 6" Other:	DTW: 43.03 Total Depth: 64.52	
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 = 3.4 X 3 = 10.3 (Total Purge) 80% = 47.33

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gall or mL / min)	Volume Removed (gall / L)	Notes
1029	20.1	9.1	8145	2100	-44	3	4	odor
1030	20.7	9.0	7276	128	-83	1	7	
1031	20.9	9.0	6952	175	-77	1	11	
		not	@	80%				
								water reacts to HCL (bubbles)

Did well dewater? YES  NO  Total volume removed: 11 (gal / L)

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

Sample date: 1/21/15 Sample time: 1145 DTW at sample: 43.85

Sample ID: IP-1 Lab: Pace 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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: DW-8	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	DTW: 42.31	Total Depth: 64.68
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 =  $14.5 \times 3 = 43.6$  (Total Purge) 80% =  $46.78$

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal/or mL/min)	Volume Removed (gal / L)	Notes
1044	20.9	8.0	1250	5	-124	5	15	odor
1047	21.2	7.4	1299	4	-118	1	30	
1050	21.0	7.3	1355	4	-115	1	45	
		waited		air	80%			

Did well dewater? YES  NO  Total volume removed: 45 (gal / L)

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

Sample date: 1/21/15 Sample time: 1100 DTW at sample: 46.70

Sample ID: DW-8 Lab: Pace 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#: F1-150120	Sampler: A Feeney	Client: Orion
Well ID: IP-8	Date: 1/21/15	Site: Livermore Tesoro #67076
Well diam: 1/4" 1" <u>2</u> 3" 4" 6" Other:	DTW: 43.10	Total Depth: 64.52
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 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 = 3.4 x 3 = 10.3 (Total Purge) 80% = 47.38

Time	Temp (°/°F)	pH	Cond (ms / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	Notes
11:09	20.1	9.9	9857	6	-83	-3	4	odor
12:00	18.9	9.6	5472	39	-47	-	-	water reacts w/ HCL (fizz)

Did well dewater? YES NO Total volume removed: 7 (gal) / L

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

Sample date: 1/21/15 Sample time: 12:00 DTW at sample: 47.38

Sample ID: IP-8 Lab: Pace 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

**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		
3/27/01	30.43	443.86		



**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	6/30/01	36.61	474.29	437.68
(cont.)	9/26/01	45.10		429.19
	12/18/01	39.39		434.90
	3/18/02	38.24		436.05
	8/21/02	36.71		437.58
	12/3/02	36.85		437.44
	3/4/03	33.72		440.57
	6/10/03	31.31		442.98
	9/9/03	35.05		439.24
	12/23/03	30.15		444.14
	3/23/04	26.61		447.68
	5/10/04	30.31		443.98
	8/4/04	34.77		439.52
	11/4/04	33.93		440.36
	1/12/05	27.82		446.47
	5/2/05	24.87		449.42
	7/19/05	29.26		445.03
	11/21/05	31.15		443.14
	2/9/06	26.24		448.05
	5/16/06	24.87		449.42
	8/9/06	31.64		442.65
	11/8/06	31.16		443.13
	2/14/07	30.00		444.29
	5/17/07	33.75		440.54
	8/2/07	40.00		434.29
	11/12/07	48.55		425.74
	2/14/08	34.74		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	
	4/27/09	41.90	432.39	
	8/4/09	51.44	422.85	

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-1 (cont.)	12/8/09	39.87	474.29	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>	439.65
	11/2/10	37.04		437.17
	2/1/11	32.51		441.70
	4/25/11	27.73		446.48
	8/3/11	31.57		442.64
	10/10/11	33.12		441.09
	1/31/12	36.11		438.10
	5/7/12	36.14		438.07
	8/6/12	37.40		436.81
	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
	11/7/13	34.36		439.85
	1/21/14	33.23		440.98
	6/10/14	41.40		432.81
	8/13/14	48.64		425.57
11/12/14	52.80	421.41		
1/20/15	41.10	433.11		
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

**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	12/15/95	29.41	472.98	443.57
(cont.)	3/21/96	17.47		455.51
	6/13/96	23.69		449.29
	9/16/96	31.24		441.74
	12/2/96	26.90		446.08
	3/7/97	21.33		451.65
	6/12/97	29.94		443.04
	9/29/97	34.22		438.76
	12/1/97	35.94		437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00
	9/7/99	31.85		441.13
	12/13/99	33.72		439.26
	3/13/00	26.54		446.44
	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	

**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.)	3/23/04	28.25	472.98	444.73
	5/10/04	30.91		442.07
	8/4/04	35.36		437.62
	11/4/04	34.92		438.06
	1/12/05	29.46		443.52
	5/2/05	25.61		447.37
	7/19/05	30.11		442.87
	11/21/05	32.04		440.94
	2/9/06	27.11		445.87
	5/17/06	25.18		447.80
	8/9/06	32.69		440.29
	11/8/06	33.21		439.77
	2/14/07	31.27		441.71
	5/17/07	34.40		438.58
	8/2/07	41.23		431.75
	11/12/07	48.22		424.76
	2/14/08	36.31		436.67
	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

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-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
	11/7/13	35.09		437.89
	1/21/14	33.81		439.17
	6/10/14	41.65		431.33
	8/13/14	50.12		422.86
	11/12/14	DRY <sup>(d)</sup>		--
	1/20/15	42.66		430.32
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		

**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.)	3/19/98	18.76	473.37	454.61
	5/29/98	20.64		452.73
	9/15/98	30.70		442.67
	11/30/98	34.96		438.41
	1/17/99	28.81		444.56
	6/10/99	28.10		445.27
	9/7/99	30.38		442.99
	12/13/99	31.46		441.91
	3/13/00	24.28		449.09
	6/12/00	26.80		446.57
	11/10/00	29.47		443.90
	12/31/00	31.38		441.99
	3/27/01	29.94		443.43
	6/30/01	37.54		435.83
	9/26/01	45.17		428.20
	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		

**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.)	5/16/06	24.36	473.37	449.01
	8/9/06	31.90		441.47
	11/8/06	31.30		442.07
	2/14/07	30.20		443.17
	5/17/07	33.64		439.73
	8/2/07	41.74		431.63
	11/12/07	47.41		425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77
	7/23/08	45.00		428.37
	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
	4/27/09	41.18		432.19
	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		
11/7/13	34.60	438.77		
1/21/14	33.49	439.88		
6/10/14	41.62	431.75		

**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.)	8/13/14	50.67	473.37	422.70
	11/12/14	DRY		--
	1/20/15	42.22		431.15
MW-4	3/30/94	31.56	473.64	442.08
	4/25/94	32.73		440.91
	8/12/94	41.61		432.03
	12/14/94	38.11		435.53
	2/10/95	30.50		443.14
	6/15/95	23.63		450.01
	9/26/95	29.70		443.94
	12/15/95	27.56		446.08
	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73
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		



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.)	9/26/01	43.87	473.64	429.77
	12/18/01	39.30		434.34
	3/18/02	37.75		435.89
	6/5/02	35.68		437.96
	8/21/02	36.58		437.06
	12/3/02	35.90		437.74
	3/4/03	32.73		440.91
	6/10/03	31.20		442.44
	9/9/03	34.64		439.00
	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY		--
	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	--		

**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.)	12/8/09	39.46	473.64	434.18
	2/11/10	35.31		438.33
	5/3/10	31.55		442.09
	8/2/10	35.15		438.49
	11/2/10	37.55		436.09
	2/1/11	32.86		440.78
	4/25/11	28.69		444.95
	8/3/11	32.01		441.63
	10/10/11	34.49		439.15
	1/31/12	38.91		434.73
	5/7/12	36.24		437.40
	8/6/12	40.69		432.95
	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
	11/7/13	35.18		438.46
	1/21/14	34.07		439.57
	6/10/14	42.10		431.54
	8/13/14	DRY		--
11/12/14	DRY	--		
1/20/15	41.89	431.75		
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89

**TABLE 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.)	12/2/96	26.51	472.67	446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62
	3/19/98	20.93		451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01
	3/13/00	25.87		446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
	12/31/00	31.81		440.86
	3/27/01	30.57		442.10
	6/30/01	37.24		435.43
	9/26/01	44.53		428.14
	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	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		

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-5 (cont.)	5/2/05	25.31	472.67	447.36
	7/19/05	30.49		442.18
	11/21/05	32.35		440.32
	2/9/06	27.19		445.48
	5/16/06	25.30		447.37
	8/9/06	32.68		439.99
	11/8/06	32.22		440.45
	2/14/07	34.00		438.67
	5/17/07	34.29		438.38
	8/2/07	41.72		430.95
	11/12/07	DRY		--
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
	2/11/10	36.62		436.05
	5/3/10	32.89		439.78
	8/2/10	36.16		436.51
	11/2/10	38.75		433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
	10/10/11	35.58		437.09
	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		

**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.)	8/21/13	37.00	472.67	435.67
	11/7/13	35.94		436.73
	1/21/14	34.65		438.02
	6/10/14	42.40		430.27
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	43.24		429.43
MW-6	3/30/94	33.38	471.93	438.55
	4/25/94	35.49		436.44
	8/12/94	45.14		426.79
	12/14/94	40.99		430.94
	2/10/95	33.34		438.59
	6/15/95	26.88		445.05
	9/26/95	33.55		438.38
	12/15/95	30.32		441.61
	3/21/96	18.89		453.04
	6/13/96	24.62		447.31
	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
12/13/99	35.84	436.09		
3/13/00	28.45	443.48		
6/12/00	30.52	441.41		

**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.)	11/10/00	32.99	471.93	438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	DRY		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	9/9/03	37.66		434.27
	12/23/03	33.43		438.50
	3/23/04	29.96		441.97
	5/10/04	32.98		438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	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	--		

**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.)	10/13/08	DRY	471.93	--
	2/11/09	DRY		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
	2/11/10	38.89		433.04
	5/3/10	34.56		437.37
	8/2/10	37.87		434.06
	11/2/10	40.45		431.48
	2/1/11	35.73		436.20
	4/25/11	30.72		441.21
	8/3/11	34.95		436.98
	10/10/11	37.45		434.48
	1/31/12	42.15		429.78
	5/7/12	39.11		432.82
	8/6/12	43.66		428.27
	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		
11/7/13	39.82	432.11		
1/21/14	35.42	436.51		
6/10/14	42.36	429.57		
8/13/14	DRY	--		
11/12/14	DRY	--		
1/20/15	DRY	--		
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

**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.)	9/26/95	31.43	472.33	440.90
	12/15/95	28.97		443.36
	3/21/96	17.36		454.97
	6/13/96	23.47		448.86
	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24
	6/12/00	28.76		443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	6/30/01	37.50		434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	1/22/02	NM		--
	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		



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-7 (cont.)	9/9/03	34.71	472.33	437.62
	12/23/03	30.80		441.53
	3/23/04	26.41		445.92
	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	DRY		--
	2/14/08	36.51		435.82
	5/8/08	36.00		436.33
	7/23/08	44.42		427.91
	10/13/08	DRY		--
	2/11/09	DRY		--
	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		

**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.)	10/10/11	33.63	472.33	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
	11/7/13	34.06		438.27
	1/21/14	33.11		439.22
	6/10/14	40.50		431.83
	8/13/14	DRY		--
	11/12/14	DRY		--
1/20/15	43.33	429.00		
MW-8	12/23/03	32.01	471.18	439.17
	3/23/04	28.50		442.68
	5/10/04	31.44		439.74
	8/4/04	35.11		436.07
	11/4/04	34.77		436.41
	1/12/05	29.66		441.52
	5/2/05	25.91		445.27
	7/19/05	30.56		440.62
	11/21/05	32.48		438.70
	2/9/06	27.40		443.78
	5/16/06	25.60		445.58
	8/9/06	32.77		438.41
	11/8/06	32.10		439.08
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	DRY		--
2/14/08	35.55	435.63		

**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-8 (cont.)	5/8/08	36.64	471.18	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
11/7/13	35.95	435.23		
1/21/14	34.63	436.55		
6/10/14	43.17	428.01		
8/13/14	DRY	--		
11/12/14	DRY	--		
1/20/15	DRY	--		
MW-9	12/23/03	34.03	470.78	436.75
	3/23/04	30.01		440.77
	5/10/04	33.61		437.17
	8/4/04	37.47		433.31

**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.)	11/4/04	37.44	470.78	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
1/31/12	42.06	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		

**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.)	4/22/13	37.01	470.78	433.77
	6/25/13	37.82		432.96
	8/21/13	39.02		431.76
	11/7/13	37.87		432.91
	1/21/14	36.31		434.47
	6/10/14	43.15		427.63
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
MW-10	12/23/03	33.80	471.63	437.83
	3/23/04	28.68		442.95
	5/10/04	32.15		439.48
	8/4/04	36.40		435.23
	11/4/04	36.21		435.42
	1/12/05	31.64		439.99
	5/2/05	27.01		444.62
	7/19/05	31.59		440.04
	11/21/05	32.96		438.67
	2/9/06	28.56		443.07
	5/16/06	26.83		444.80
	8/9/06	34.37		437.26
	11/8/06	33.41		438.22
	2/14/07	32.81		438.82
	5/17/07	35.85		435.78
	8/2/07	43.46		428.17
	11/12/07	DRY		--
	2/14/08	39.71		431.92
	5/8/08	37.55		434.08
	7/23/08	DRY		--
	10/13/08	DRY		--
2/11/09	DRY	--		
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
	11/7/13	36.05		435.58
	1/21/14	34.55		437.08
	6/10/14	40.18		431.45
8/13/14	DRY	--		
11/12/14	DRY	--		
1/20/15	DRY	--		
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		441.90
	8/2/10	31.94	472.96 <sup>(c)</sup>	441.02
	11/2/10	36.98		435.98
	2/1/11	32.30		440.66

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-11 (cont.)	4/25/11	27.31	472.96 <sup>(c)</sup>	445.65
	8/3/11	31.11		441.85
	10/10/11	33.27		439.69
	1/31/12	34.36		438.60
	5/7/12	31.61		441.35
	8/6/12	35.20		437.76
	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
	11/7/13	33.75		439.21
	1/21/14	32.43		440.53
	6/10/14	38.62		434.34
	8/13/14	DRY		--
11/12/14	DRY	--		
1/20/15	DRY	--		
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
	11/7/13	37.40		432.37
	1/21/14	35.94		433.83
	6/10/14	42.76		427.01
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	DRY		--
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

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.)	5/2/05	25.34	473.28	447.94
	7/19/05	29.76		443.52
	11/21/05	31.81		441.47
	2/9/06	27.21		446.07
	5/17/06	25.26		448.02
	8/9/06	31.74		441.54
	11/8/06	33.52		439.76
	2/14/07	30.77		442.51
	5/17/07	33.17		440.11
	8/2/07	36.33		436.95
	11/12/07	DRY		--
	2/14/08	35.55		437.73
	5/8/08	35.31		437.97
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	NM		--
	5/3/10	31.84	441.44	
	8/2/10	33.15	472.57 <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		



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.)	8/21/13	DRY	472.57 <sup>(c)</sup>	--
	11/7/13	DRY		--
	1/21/14	33.16		439.41
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
	1/20/15	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		--
	2/14/08	DRY		--
	5/8/08	34.80		439.58
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
12/8/09	DRY	--		
2/11/10	DRY	--		
5/3/10	31.85	442.53		
8/2/10	34.72	439.66		
11/2/10	DRY	--		

**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.)	2/1/11	32.56	474.38	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
	11/7/13	35.07		439.31
	1/21/14	33.80		440.58
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
1/20/15	DRY	--		
TP-1	7/19/05	29.91	472.82	442.91
	11/21/05	32.28		440.54
	2/9/06	28.02		444.80
	5/17/06	25.18		447.64
	8/9/06	32.81		440.01
	11/8/06	32.02		440.80
	2/14/07	33.59		439.23
	5/17/07	33.52		439.30
	8/2/07	40.30		432.52
	11/12/07	DRY		--
	2/14/08	36.17		436.65
	5/8/08	36.17		436.65
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	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)
TP-1 (cont.)	8/4/09	DRY	472.82	--
	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
	11/7/13	34.65		437.99
	1/21/14	33.38		439.26
	6/10/14	DRY		--
8/13/14	DRY	--		
11/12/14	DRY	--		
1/20/15	DRY	--		
TP-2	7/19/05	29.67	472.93	443.26
	11/21/05	31.43		441.50
	2/9/06	27.27		445.66
	5/17/06	25.00		447.93
	8/9/06	31.74		441.19
	11/8/06	32.80		440.13
	2/14/07	30.32		442.61
	5/17/07	33.28		439.65
	8/2/07	39.35		433.58
	11/12/07	DRY		--

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.)	2/14/08	35.62	472.93	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
11/7/13	34.50	438.28		
1/21/14	33.25	439.53		
6/10/14	DRY	--		
8/13/14	DRY	--		
11/12/14	DRY	--		
1/20/15	DRY	--		
DW-1	5/22/08	37.30	472.85	435.55
	7/23/08	45.55		427.30
	10/13/08	51.40		421.45
	2/11/09	48.28		424.57

**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.)	4/27/09	41.74	472.85	431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06
	2/11/10	35.57		437.28
	5/3/10	31.70		441.15
	8/2/10	34.76		438.09
	11/2/10	37.49		435.36
	2/1/11	32.83		440.02
	4/25/11	27.96		444.89
	8/3/11	31.96		440.89
	10/10/11	34.40		438.45
	1/31/12	39.39		433.46
	5/7/12	36.35		436.50
	8/6/12	40.60		432.25
	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
	11/7/13	34.79		438.06
1/21/14	33.57	439.28		
6/10/14	41.71	431.14		
8/13/14	51.02	421.83		
11/12/14	56.47	416.38		
1/20/15	42.71	430.14		
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

**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.)	5/3/10	34.46	471.61	437.15
	8/2/10	37.72		433.89
	11/2/10	40.50		431.11
	2/1/11	35.66		435.95
	4/25/11	30.69		440.92
	8/3/11	35.00		436.61
	10/10/11	37.44		434.17
	1/31/12	42.19		429.42
	5/7/12	39.10		432.51
	8/6/12	43.90		427.71
	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
	11/7/13	36.94		434.67
	1/21/14	35.59		436.02
	6/10/14	43.35		428.26
	8/13/14	52.02		419.59
11/12/14	56.52	415.09		
1/20/15	48.87	422.74		
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

**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-3 (cont.)	4/25/11	30.45	470.33	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
	11/7/13	36.85		433.48
	1/21/14	35.32		435.01
	6/10/14	44.03		426.30
	8/13/14	54.13		416.20
11/12/14	58.59	411.74		
1/20/15	49.60	420.73		
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98
	10/13/08	54.90		413.58
	2/11/09	51.71		416.77
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
	2/11/10	37.98		430.50
	5/3/10	34.04		434.44
	8/2/10	36.94		431.54
	11/2/10	39.50		428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
	10/10/11	36.60		431.88
1/31/12	42.10	426.38		

**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.)	5/7/12	38.26	468.48	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
	11/7/13	36.45		432.03
	1/21/14	35.99		432.49
	6/10/14	44.63		423.85
	8/13/14	54.37		414.11
	11/12/14	58.86		409.62
	1/20/15	49.20		419.28
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
	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
	11/7/13	36.97		434.89
	1/21/14	34.45		437.41
	6/10/14	43.51		428.35
8/13/14	51.13	420.73		



**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>
DW-5 (cont.)	11/13/14	56.40	471.86	415.46
	1/20/15	45.75		426.11
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
	11/7/13	38.24		433.53
	1/21/14	37.03		434.74
	6/10/14	44.40		427.37
8/13/14	52.71	419.06		
11/12/14	57.14	414.63		
1/20/15	49.51	422.26		
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

**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.)	10/10/11	37.55	470.07	432.52
	1/31/12	42.35		427.72
	5/7/12	39.30		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
	11/7/13	38.25		431.82
	1/21/14	36.70		433.37
	6/10/14	44.67		425.40
	8/13/14	53.47		416.60
	11/12/14	57.99		412.08
1/20/15	49.45	420.62		
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
	11/7/13	33.54		438.77
	1/21/14	33.03		439.28
	6/10/14	40.60		431.71
8/13/14	50.56	421.75		
11/12/14	55.87	416.44		
1/20/15	42.31	430.00		

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)
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
	11/7/13	37.76		432.04
	1/21/14	36.26		433.54
	6/10/14	44.05		425.75
	8/13/14	52.61		417.19
	11/12/14	56.94		412.86
	1/20/15	48.79		421.01
MW-A	1/17/99	30.13	NM	--
MW-B	1/17/99	30.29	NM	--
MW-C	1/17/99	30.60	NM	--
MW-D	1/17/99	31.32	NM	--
MW-E	1/17/99	31.36	NM	--
MW-W	1/17/99	30.91	NM	--
IP-1	7/23/08	45.49	473.16	427.67
	10/13/08	51.30		421.86
	5/3/10 <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
	11/7/13	35.07		437.99
1/21/14	33.57	439.49		

**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 (cont.)	6/10/14	40.90	473.06 <sup>(c)</sup>	432.16
	8/13/14	49.05		424.01
	11/12/14	53.97		419.09
	1/20/15	43.03		430.03
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
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	42.39		430.67
	8/13/14	50.26		422.80
	11/12/14	55.48		417.58
1/20/15	NM	--		
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
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
6/10/14	42.35	430.70		

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)
IP-3 (cont.)	8/13/14	50.90	473.05 <sup>(c)</sup>	422.15
	11/12/14	56.05		417.00
	1/20/15	NM		--
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
	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
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	41.83		431.27
	8/13/14	51.08		422.02
	11/12/14	56.56		416.54
1/20/15	NM	--		
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
	8/21/13	NM		--
	11/7/13	34.68		438.37
	1/21/14	33.14		439.91
6/10/14	41.75	431.30		

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-5 (cont.)	8/13/14	50.95	473.05	422.10
	11/12/14	56.48		416.57
	1/20/15	42.46		430.59
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
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	45.71		426.72
	8/13/14	55.68		416.75
	11/12/14	61.42		411.01
1/20/15	NM	--		
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
	2/12/13	NM		--
	4/22/13	38.34		434.09
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	46.70		425.73
8/13/14	57.10	415.33		

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.)	11/12/14	63.13	472.43	409.30
	1/20/15	NM		--
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	
	11/7/13	34.58	438.64	
	1/21/14	33.42	439.80	
	6/10/14	41.72	431.50	
	8/13/14	51.10	422.12	
	11/12/14	56.52	416.70	
1/20/15	43.10	430.12		
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
	11/7/13	33.96		439.39
	1/21/14	32.78		440.57
	6/10/14	40.65		432.70
8/13/14	50.45	422.90		

**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-9 (cont.)	11/12/14	56.42	473.35 <sup>(c)</sup>	416.93
	1/20/15	46.60		426.75
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>
	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	
	6/24/13	34.87	439.01	
	8/21/13	35.55	438.33	
	11/7/13	34.41	439.47	
	1/21/14	33.11	440.77	
	6/10/14	42.15	431.73	
	8/13/14	51.80	422.08	
11/12/14	57.45	416.43		
1/20/15	42.94	430.94		

- (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	--	--	--	--	--	--	--	--	
11/30/98	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.)	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	
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	

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.)	11/12/07	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	
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	

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.)	11/7/13	4,300	0.82	2.9	76	160	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/14	9,600	2.5	5.2	130	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<15	ND<0.5	ND<0.5
	6/11/14	2,500	ND<0.5	1.6	27	58	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	8/13/14	1,300	2.9	3.6	9.3	25	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	11/12/14	5,400	33	48	39	530	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.4	ND<50	ND<8	ND<0.5	ND<0.5
	1/21/15	1,500	4.7	4.0	16	37	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-2	6/1/93	170,000	20,000	21,000	3,300	18,000	--	--	--	--	--	--	--	--	--
	6/22/93	160,000	19,000	22,000	3,500	18,000	--	--	--	--	--	--	--	--	--
	10/6/93	110,000	17,000	17,000	3,000	15,000	--	--	--	--	--	--	--	--	--
	1/13/94	93,000	20,000	19,000	2,300	14,000	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	41,000	9,600	7,300	840	7,800	--	--	--	--	--	--	--	--	--
	8/12/94	59,000	11,000	11,000	2,300	11,000	--	--	--	--	--	--	--	--	--
	12/14/94	63,000	13,000	13,000	2,200	12,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	12,000	12,000	2,200	11,000	--	--	--	--	--	--	--	--	--
	6/15/95	61,000	11,000	12,000	1,900	11,000	--	--	--	--	--	--	--	--	--
	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--	
6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--	

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS  
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date <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.)	9/29/97	15,000	1,500	97	740	1,800	ND<250	--	--	--	--	--	--	--	--
	12/1/97	13,000	900	37	860	2,400	ND<250	--	--	--	--	--	--	--	--
	3/19/98	42,000	5,000	3,600	2,000	8,300	ND<250	--	--	--	--	--	--	--	--
	5/29/98	68,000	5,600	4,700	2,400	11,000	ND<250	--	--	--	--	--	--	--	--
	9/15/98	36,000	3900	1200	1400	7800	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	

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.)	6/10/03	6,300	660	35	190	120	410	ND<2.5	ND<2.5	ND<5	ND<25	ND<250	ND<25	ND<2.5	ND<2.5
	9/9/03	6,900	500	ND<20	360	29	9,500	ND<20	ND<20	60	ND<200	ND<2,000	ND<200	ND<20	ND<20
	12/23/03	22,000	4,900	1,300	720	2,300	1,700	ND<20	ND<20	21	ND<200	ND<2,000	ND<200	ND<20	ND<20
	3/23/04	45,000	5,200	1,500	1,800	5,000	750	ND<20	ND<20	34	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	7,300	1,000	51	240	290	1,800	ND<5	ND<5	14	ND<50	ND<500	ND<50	ND<5	ND<5
	8/4/04	45,000	7,200	1,900	1,800	5,100	2,500	ND<25	ND<25	31	ND<250	ND<2,500	ND<250	ND<25	ND<25
	11/4/04	27,000	4,400	1,100	840	2,200	3,500	ND<9	ND<9	29	ND<50	ND<900	ND<90	ND<9	ND<9
	1/12/05	16,000	1,900	640	570	1,500	1,900	ND<4	ND<4	19	28 <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
	11/7/13	4,700	140	7.5	160	170	28	ND<0.9	ND<0.9	ND<0.9	22	ND<90	ND<9	ND<0.9	ND<0.9
1/22/14	3,000	140	9.0	68	92	43	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5	
6/11/14	6,900	520	40	300	320	120	ND<0.5	ND<0.5	1.4	100	ND<80	ND<25	ND<0.5	ND<0.5	
8/14/14	10,000	1,500	41	380	300	240	ND<0.5	ND<0.5	2.6	160	ND<300	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-2	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	1/21/15	14,000	340	31	230	440	80	ND<2.5	ND<2.5	ND<2.5	93	ND<250	ND<25	ND<2.5	ND<2.5
MW-3	6/1/93	270	4.6	ND<0.5	ND<0.5	1.9	--	--	--	--	--	--	--	--	--
	6/22/93	160	8.2	ND<0.5	ND<0.5	0.72	--	--	--	--	--	--	--	--	--
	10/6/93	740	57	110	24	120	--	--	--	--	--	--	--	--	--
	1/13/94	83	2.6	0.67	0.78	4.2	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	60	0.75	3.2	0.50	3.6	--	--	--	--	--	--	--	--	--
	8/12/94	310	7.3	14	2.6	13	--	--	--	--	--	--	--	--	--
	12/14/94	75	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	96	1.4	ND<0.5	ND<0.5	1.8	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	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	

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.)	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/08	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.64	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	

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.)	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
	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	3/30/94	120	4.2	15	2.5	26	--	--	--	--	--	--	--	--	--
	4/25/94	65	ND<0.5	1.8	ND<0.5	2.1	--	--	--	--	--	--	--	--	--
	8/12/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/14/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	1.8	1.1	1.4	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

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.)	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	ND<50	2.4	1.8	2.3	4.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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	

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.)	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
	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	ND<50	ND<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-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--
	2/10/95	5,200	490	ND<13	23	19	--	--	--	--	--	--	--	--	--
	6/15/95	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	1,400	61	ND<0.5	3.1	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	2,100	77	1.5	10	1.5	--	--	--	--	--	--	--	--	--
	3/21/96	930	35	2.0	2.0	18	--	--	--	--	--	--	--	--	--
	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	

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.)	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--	
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--	
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--	
	12/31/00	1,300	21	ND<0.5	4.3	2.6	10	--	--	--	--	--	--	--	--	
	3/27/01	1,200	11	ND<0.5	2.6	ND<0.5	21	--	--	--	--	--	--	--	--	
	6/30/01	1,400	4.8	ND<0.5	1.5	0.56	14	--	--	--	--	--	--	--	--	
	9/26/01	660	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	--	--	--	--	--	--	--	--	
	12/18/01	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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<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.)	6/10/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/9/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/23/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/23/04	440	2.3	ND<0.5	1.0	5.9	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/04	160	ND<0.5	ND<0.5	ND<0.5	0.71	0.94	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	290	0.74	ND<0.5	0.58	1.3	0.61	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	300	ND<0.5	ND<0.5	0.51	1.6	0.73	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	0.63	1.0	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	220	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	200	ND<0.5	ND<0.5	ND<0.5	1.1	2.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	980	ND<0.5	ND<0.5	2.1	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5	
7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

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.)	4/27/09	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	220	ND<0.5	ND<0.5	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	190	ND<0.5	ND<0.5	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	160	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1/20/15	ND<50	ND<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



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	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	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--	

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.)	3/13/00	16,000	790	85	780	1,600	ND<25	--	--	--	--	--	--	--	--
	6/12/00	24,000	1,100	150	1,300	2,300	5,600	--	--	--	--	--	--	--	--
	11/10/00	13,000	440	7.0	760	350	1,000	--	--	--	--	--	--	--	--
	12/31/00	12,000	680	8.0	820	190	1,400	--	--	--	--	--	--	--	--
	3/27/01	14,000	330	17	940	670	380	--	--	--	--	--	--	--	--
	6/30/01	750	45	0.93	47	14	54	--	--	--	--	--	--	--	--
	9/26/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	33,000	2,600	120	1,800	2,800	740	--	--	--	--	--	--	--	--
	6/5/02	10,000	1,100	16	700	180	600	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	23	710	290	370	--	--	--	--	--	--	--	--
	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
	3/4/03	16,000	1,700	25	1,200	40	7,700	ND<20	ND<20	ND<70	ND<200	ND<2,000	ND<200	ND<20	ND<20
	6/10/03	9,500	860	15	380	47	2,600	ND<5	ND<5	18	ND<50	ND<500	ND<50	ND<5	ND<5
	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<5	ND<5
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<10	ND<10
	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	

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.)	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	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/28/09	16,000	2,200	160	860	230	320	ND<2.5	ND<2.5	3.8	580	ND<1,000	ND<25	ND<2.5	ND<2.5	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	12/9/09	15,000	2,100	96	800	160	340	ND<5	ND<5	ND<5	460	ND<2,000	ND<50	ND<5	ND<5	
	2/12/10	21,000	2,500	140	1,000	240	540	ND<5	ND<5	6.0	460	ND<500	ND<50	ND<5	ND<5	
	5/4/10	17,000	2,100	120	780	260	820	ND<5	ND<5	8.6	450	ND<500	ND<50	ND<5	ND<5	
	8/3/10	21,000	2,700	120	690	250	730	ND<5	ND<5	7.4	480	ND<500	ND<50	ND<5	ND<5	
11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5		
2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5		
4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5		
8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5		

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.)	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	
	11/7/13	12,000	1,200	62	190	81	100	ND<2.5	ND<2.5	ND<2.5	66	ND<250	ND<25	ND<2.5	ND<2.5	
	1/22/14	15,000	1,100	37	120	52	110	ND<2.5	ND<2.5	ND<2.5	190	ND<250	ND<25	ND<2.5	ND<2.5	
	6/10/14	11,000	860	20	50	20	120	ND<1.5	ND<1.5	ND<1.5	280	ND<150	ND<15	ND<1.5	ND<1.5	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-7	3/30/94	43,000	7,200	2,400	1,600	11,000	--	--	--	--	--	--	--	--	--	
	4/25/94	30,000	3,900	1,000	940	6,900	--	--	--	--	--	--	--	--	--	
	8/12/94	30,000	3,800	1,400	1,300	7,500	--	--	--	--	--	--	--	--	--	
	12/14/94	31,000	3,600	1,200	900	6,400	--	--	--	--	--	--	--	--	--	
	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--	
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--	
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--	
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--	
3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--		

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.)	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	--	--	--	--	--	--	--	--
	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

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.)	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
	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	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-7 (cont.)	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
	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	

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.)	11/7/13	330	ND<0.5	ND<0.5	0.51	0.73	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	100	0.50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5
MW-8	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	7.3	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.57	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	1.2	1.9	ND<0.5	0.66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	



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.)	2/14/08	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<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	
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		

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.)	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	1,100	2.4	ND<0.5	0.80	0.80	2.1	ND<0.5	ND<0.5	ND<0.5	5.9	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	760	8.5	ND<0.5	4.9	0.95	18	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	1,100	4.4	ND<0.5	1.3	0.67	11	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	1,200	3.4	0.59	16	7.6	6.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	610	0.52	ND<0.5	1.3	ND<0.5	2.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	1,400	1.6	0.55	5.5	1.1	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	1,500	10	0.55	6.7	1.1	27	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,800	5.5	0.69	12	1.6	10	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,200	0.94	ND<0.5	1.4	ND<0.5	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	1,200	2.8	0.51	6.4	0.84	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	1,600	3.8	0.57	12	1.8	4.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	760	ND<0.5	ND<0.5	1.0	ND<0.5	2.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	1,700	1.7	0.53	6.7	1.4	1.7	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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

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.)	2/14/08	3,300	68	2.1	110	7.8	16	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	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	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	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	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	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	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	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	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-9 (cont.)	11/7/13	1,400	3.1	ND<0.5	0.7	0.58	4.2	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	2,000	2.4	ND<0.5	0.81	0.79	2.7	ND<0.5	ND<0.5	ND<0.5	7.6	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	780	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

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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.)	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	12/9/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	11/2/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	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	
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		

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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.)	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	100,000	6,100	9,000	3,100	20,000	3.3	ND<0.5	ND<0.5	ND<0.5	25	ND<200	ND<20	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/3/10	62,000	3,600	5,900	2,600	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	8/3/10	53,000	2,800	3,800	2,100	10,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	11/4/10	59,000	2,100	5,400	1,400	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	2/2/11	20,000	210	610	560	3,600	ND<5	ND<5	ND<5	ND<5	38	ND<500	ND<50	ND<5	ND<5
	4/28/11	20,000	300	920	450	4,300	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	8/4/11	15,000	96	370	240	2,800	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	10/25/11	18,000	130	500	319	2,900	ND<0.5	ND<0.5	ND<0.5	ND<0.5	18	ND<50	ND<10	ND<0.5	ND<0.5
	2/1/12	13,000	380	710	83	2,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<50	ND<2.5	ND<2.5
	5/11/12	1,100	3.8	15	6.7	150	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/7/12	10,000	54	83	270	1,400	2.3	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<5	ND<0.5	ND<0.5
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	

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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.)	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	
	11/7/13	8,800	50	54	380	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	12	ND<150	ND<15	ND<1.5	ND<1.5	
	1/22/14	15,000	44	45	390	910	ND<1.5	ND<1.5	ND<1.5	ND<1.5	7.7	ND<150	ND<15	ND<1.5	ND<1.5	
	6/10/14	660	3.7	1.2	7.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
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	
	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	
	11/7/13	4,600	15	2.4	47	13	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/22/14	3,400	4.3	1.5	12	2.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	6/10/14	4,500	10	2.9	67	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	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
VW-2	8/4/04	5,700	480	ND<20	600	ND<20	12,000	ND<20	ND<20	110	ND<90	ND<2,000	ND<200	ND<20	ND<20	
	11/4/04	5,800	340	ND<20	38	ND<20	10,000	ND<20	ND<20	120	ND<90	ND<2,000	ND<200	ND<20	ND<20	

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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.)	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
	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	



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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.)	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	0.51	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1/20/15	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		
1/31/12	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)
VW-3 (cont.)	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
	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	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	

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.)	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	10,000	690	19	700	45	1,000	ND<2.5	ND<2.5	8.8	2,900	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	15,000	2,100	360	1,100	620	3,400	ND<8	ND<8	27	4,500	ND<800	ND<80	ND<8	ND<8
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	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	
11/7/13	2,800	14	1.8	19	7.3	43	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5	
1/22/14	3,400	11	1.4	16	5.2	41	ND<0.5	ND<0.5	ND<0.5	22	ND<50	ND<5	ND<0.5	ND<0.5	
6/10/14	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.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	7/20/05	26,000	1,800	1,100	1,100	2,500	63,000	ND<150	ND<150	400	ND<700	ND<15,000	ND<1,500	ND<150	ND<150
	11/22/05	16,000	1,200	140	840	820	52,000	ND<90	ND<90	340	1,200	ND<9,000	ND<900	ND<90	ND<90
	2/9/06	2,700	94	2.9	28	14	1,200	ND<2.5	ND<2.5	13	1,600	ND<250	ND<25	ND<2.5	ND<2.5
	5/17/06	31,000	2,200	1,100	1,500	3,300	87,000	ND<90	ND<90	680	4,800	ND<15,000	ND<1,500	ND<90	ND<90
	8/9/06	14,000	1,400	86	1,200	830	56,000	ND<2.5	ND<2.5	350	2,800	ND<4,000	ND<25	ND<2.5	ND<2.5
	11/8/06	16,000	1,300	ND<90	930	370	38,000	ND<90	ND<90	280	3,600	ND<40,000	ND<900	ND<90	ND<90
	2/14/07	22,000	1,900	230	1,700	1,600	53,000	ND<90	ND<90	400	2,800	ND<20,000	ND<900	ND<90	ND<90
	5/17/07	ND<25,000	2,400	51	1,500	510	69,000	ND<2	ND<0.5	550	4,300	ND<25,000	ND<5	--	--
	8/2/07	10,000	1,200	ND<25	640	140	14,000	ND<25	ND<25	110	16,000	ND<10,000	ND<250	ND<25	ND<25
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	12,000	920	28	850	740	17,000	ND<25	ND<25	120	5,900	ND<4,000	ND<250	ND<25	ND<25
	5/8/08	7,400	710	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	

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.)	11/4/10	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
	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
	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1/20/15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
DW-1	5/22/08	5,100	470	150	210	570	100	ND<0.9	ND<0.9	0.98	76	ND<90	ND<9	ND<0.9	ND<0.9
	7/23/08	560	43	5.2	18	40	16	ND<0.5	ND<0.5	ND<0.5	21	ND<100	ND<5	ND<0.5	ND<0.5
	10/13/08	2,800	370	15	120	78	140	ND<0.5	ND<0.5	1.2	220	ND<300	ND<80	ND<0.5	ND<0.5
	2/11/09	520	45	5.3	32	31	42	ND<0.5	ND<0.5	ND<0.5	43	ND<100	ND<8	ND<0.5	ND<0.5
	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

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.)	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
	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
	11/7/13	5,200	69	13	130	200	18	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<8	ND<0.5	ND<0.5
	1/22/14	5,000	51	13	98	110	12	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	3,600	56	9.4	130	220	18	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
8/13/14	1,200	24	1.4	7.2	1.4	12	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<5	ND<0.5	ND<0.5	
11/12/14	160	3.0	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	9.2	ND<50	ND<5	ND<0.5	ND<0.5	
1/20/15	8,700	49	8.2	260	360	6.2	ND<0.5	ND<0.5	ND<0.5	14	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-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
	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	
11/7/13	6,500	520	18	57	17	150	ND<0.9	ND<0.9	2.2	310	ND<90	ND<9	ND<0.9	ND<0.9	



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)
DW-2 (cont.)	1/22/14	8,500	490	14	55	15	150	ND<0.9	ND<0.9	1.9	380	ND<300	ND<9	ND<0.9	ND<0.9
	6/11/14	4,400	330	6.5	26	7.3	100	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	8/14/14	3,000	170	3.0	5.8	2.7	58	ND<0.5	ND<0.5	0.76	410	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/14	1,100	0.83	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5	ND<0.5	ND<0.5	310	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/15	5,700	260	12	110	48	100	ND<0.5	ND<0.5	1.1	300	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	
	11/7/13	960	ND<0.5	ND<0.5	5.1	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	
	1/22/14	860	ND<0.5	ND<0.5	3.0	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	
	6/11/14	1,900	0.64	ND<0.5	23	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5	
	8/13/14	430	5.3	ND<0.5	1.4	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	
	11/12/14	290	0.72	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
1/20/15	1,600	17	2.2	37	22	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	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	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	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	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)	
DW-4 (cont.)	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	
	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
	11/7/13	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	
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
1/20/15	ND<50	0.76	ND<0.5	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
DW-5	12/9/09	15,000	140	25	200	960	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5	
	2/11/10	1,600	37	2.5	36	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5	
	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		

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-5 (cont.)	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
	11/7/13	26,000	62	12	1,000	1,400	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	1/22/14	17,000	66	6.1	440	470	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<400	ND<40	ND<2.5	ND<2.5
	6/11/14	18,000	53	4.3	340	410	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	8/14/14	15,000	60	5.0	330	570	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	11/13/14	18,000	27	4.3	290	510	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
1/21/15	26,000	92	11	650	860	ND<2.5	ND<2.5	ND<2.5	ND<2.5	48	ND<250	ND<25	ND<2.5	ND<2.5	
DW-6	12/9/09	6,200	33	4.3	100	43	9.7	ND<1	ND<1	ND<1	10	ND<100	ND<10	ND<1	ND<1
	2/11/10	4,800	18	3.0	44	15	14	ND<0.5	ND<0.5	ND<0.5	9.2	ND<80	ND<10	ND<0.5	ND<0.5
	5/4/10	4,600	13	3.5	29	17	5.6	ND<0.5	ND<0.5	ND<0.5	7.2	ND<80	ND<8	ND<0.5	ND<0.5
	8/2/10	4,500	13	4.4	54	14	5.9	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<8	ND<0.5	ND<0.5
	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9
	2/1/11	4,000	11	2.9	32	11	6.0	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	3,100	8.8	2.4	12	8.2	6.2	ND<0.5	ND<0.5	ND<0.5	19	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/11	2,900	4.2	0.95	6.0	4.9	6.5	ND<0.5	ND<0.5	ND<0.5	24	ND<50	ND<8	ND<0.5	ND<0.5
	10/10/11	1,500	4.1	3.3	3.0	3.3	4.9	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	4,700	13	2.4	51	12	8.1	ND<0.5	ND<0.5	ND<0.5	28	ND<50	ND<80	ND<0.5	ND<0.5
5/10/12	2,600	7.8	1.6	12	5.2	4.6	ND<0.5	ND<0.5	ND<0.5	17	ND<50	ND<5	ND<0.5	ND<0.5	

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.)	8/6/12	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	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
	11/7/13	2,400	14	1.7	5.6	3.1	10	ND<0.5	ND<0.5	ND<0.5	35	ND<80	ND<5	ND<0.5	ND<0.5
	1/22/14	3,000	6.8	0.98	3.6	2.9	10	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	5,400	19	3.0	39	5.6	9.2	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<8	ND<0.5	ND<0.5
	8/14/14	4,300	16	2.9	29	6.0	6.8	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<10	ND<0.5	ND<0.5
	11/13/14	3,400	2.4	1.1	ND<0.5	0.65	5.3	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
1/21/15	3,400	6.1	1.5	35	7.7	4.9	ND<0.5	ND<0.5	ND<0.5	26	ND<80	ND<5	ND<0.5	ND<0.5	
DW-7	12/9/09	10,000	500	20	310	110	160	ND<2	ND<2	ND<2	270	ND<200	ND<20	ND<2	ND<2
	2/12/10	12,000	590	23	440	120	190	ND<2	ND<2	2.4	290	ND<200	ND<20	ND<2	ND<2
	5/4/10	4,100	250	15	89	32	97	ND<0.5	ND<0.5	1.0	160	ND<80	ND<5	ND<0.5	ND<0.5
	8/3/10	3,500	280	13	49	30	130	ND<0.5	ND<0.5	1.3	220	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	0.96	160	ND<80	ND<5	ND<0.5	ND<0.5
	10/11/11	400	45	1.1	0.80	1.6	90	ND<0.5	ND<0.5	0.89	180	ND<50	ND<5	ND<0.5	ND<0.5
	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

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.)	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
	11/7/13	9,700	260	8.4	200	63	52	ND<1.5	ND<1.5	ND<1.5	170	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	15,000	380	15	430	200	77	ND<1.5	ND<1.5	ND<1.5	230	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	12,000	380	13	370	190	79	ND<1.5	ND<1.5	ND<1.5	240	ND<150	ND<15	ND<1.5	ND<1.5
	8/14/14	2,400	110	3.2	30	17	37	ND<0.5	ND<0.5	ND<0.5	190	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	1,000	8.9	ND<0.5	0.61	ND<0.5	17	ND<0.5	ND<0.5	ND<0.5	160	ND<50	ND<5	ND<0.5	ND<0.5
1/20/15	10,000	210	8.4	250	110	49	ND<0.5	ND<0.5	ND<0.5	260	ND<100	ND<5	ND<0.5	ND<0.5	
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20
	10/25/11	82,000	4,300	10,000	1,900	12,000	ND<4	ND<4	ND<4	ND<4	58	ND<400	ND<40	ND<4	ND<4
	2/1/12	52,000	2,500	5,200	1,900	8,200	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	5/11/12	11,000	500	1,000	300	1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	25	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	52,000	1,900	4,500	1,500	5,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	58	ND<250	ND<25	ND<2.5	ND<2.5
	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
	11/7/13	56,000	1,800	2,800	2,100	7,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	37	ND<250	ND<25	ND<2.5	ND<2.5
1/22/14	40,000	1,100	1,200	1,200	4,300	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	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)
DW-8 (cont.)	6/11/14	52,000	2,400	2,100	1,700	6,400	ND<7	ND<7	ND<7	ND<7	67	ND<700	ND<70	ND<7	ND<7
	8/14/14	44,000	3,200	1,200	1,700	6,100	ND<7	ND<7	ND<7	ND<7	70	ND<700	ND<70	ND<7	ND<7
	11/13/14	53,000	3,200	790	2,200	7,100	ND<7	ND<7	ND<7	ND<7	65	ND<700	ND<70	ND<7	ND<7
	1/21/15	38,000	2,800	1,400	1,600	5,800	ND<9	ND<9	ND<9	ND<9	130	ND<900	ND<90	ND<9	ND<9
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
	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
	11/7/13	8,000	120	5.9	100	38	25	ND<1.5	ND<1.5	ND<1.5	73	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	14,000	180	6.7	200	65	27	ND<1.5	ND<1.5	ND<1.5	77	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	13,000	380	11	300	81	41	ND<2.5	ND<2.5	ND<2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	8/14/14	9,100	170	10	120	26	24	ND<1.5	ND<1.5	ND<1.5	70	ND<150	ND<15	ND<1.5	ND<1.5
	11/13/14	9,600	130	6.8	36	11	22	ND<1.5	ND<1.5	ND<1.5	53	ND<150	ND<15	ND<1.5	ND<1.5
1/21/15	8,300	110	6.8	200	83	16	ND<1.5	ND<1.5	ND<1.5	58	ND<150	ND<15	ND<1.5	ND<1.5	
MW-A	1/17/99	5,800	1,700	85	65	320	ND<5	--	--	--	--	--	--	--	--
MW-B	1/17/99	4,400	240	30	21	39	ND<5	--	--	--	--	--	--	--	--
MW-C	1/17/99	1,800	0.80	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--

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-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>(g)</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	1,000	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
	11/7/13	7,400	70	94	200	400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	14	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	16,000	190	280	460	1,600	ND<0.9	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<10	ND<0.9	ND<0.9
	6/10/14	50,000	1,600	4,000	1,200	5,700	ND<9	ND<9	ND<9	ND<9	110	ND<900	ND<90	ND<9	ND<9
8/13/14	24,000	530	980	690	3,100	ND<5	ND<5	ND<5	ND<5	47	ND<500	ND<50	ND<5	ND<5	
11/13/14	24,000	480	510	620	2,300	ND<5	ND<5	ND<5	ND<5	37	ND<500	ND<50	ND<5	ND<5	
1/21/15	18,000	320	340	550	1,800	ND<2.5	ND<2.5	ND<2.5	ND<2.5	38	ND<250	ND<25	ND<2.5	ND<2.5	
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



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 (cont.)	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	350	2.4	2.4	2.2	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/20/15	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
	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<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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/21/14	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-3 (cont.)	6/11/14	580	2.6	1.0	7.2	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	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1/20/15	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	
	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	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	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	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	70	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	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1/20/15	NS	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	

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-5 (cont.)	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
	11/7/13	180	ND<0.5	ND<0.5	3.0	6.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.76	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
1/20/15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
IP-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
	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	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.)	6/11/14	70	8.6	ND<0.5	ND<0.5	ND<0.5	3.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/20/15	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>(g)</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
	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
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	2,100	18	0.77	7.5	2.0	12	ND<0.5	ND<0.5	ND<0.5	82	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1/20/15	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>(g)</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

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.)	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	
	11/7/13	18,000	400	520	170	1,700	ND<4	ND<4	ND<4	ND<4	23	ND<400	ND<40	ND<4	ND<4	
	1/22/14	41,000	550	1,600	560	4,200	ND<4	ND<4	ND<4	ND<4	22	ND<400	ND<40	ND<4	ND<4	
	6/11/14	52,000	1,200	3,300	940	6,400	ND<5	ND<5	ND<5	ND<5	28	ND<500	ND<50	ND<5	ND<5	
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/14	53,000	1,200	3,900	1,000	8,000	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9	
1/21/15	36,000	1,200	3,300	1,000	6,700	ND<9	ND<9	ND<9	ND<9	99	ND<900	ND<90	ND<9	ND<9		
IP-9	12/16/08	110,000	7,800	23,000	2,800	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40	
	5/5/10 <sup>(g)</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	
	11/7/13	1,100	4.9	30	14	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5	
	1/22/14	1,600	1.9	9.7	8.6	16	0.50	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-9 (cont.)	6/11/14	2,000	ND<0.5	ND<0.5	1.5	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	3,000	5.4	97	49	340	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/15	330	ND<0.5	1.7	0.56	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5
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>(g)</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
	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
	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
	11/7/13	810	2.6	1.7	1.5	7.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	2,100	7.2	2.7	1.8	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	6/10/14	2,600	10	1.8	3.4	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
8/13/14	1100	2.9	ND<0.5	0.58	0.92	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	11/12/14	1800	7.7	1.2	3.5	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
(cont.)	1/21/15	2,700	23	4.9	37	42	ND<0.5	ND<0.5	ND<0.5	ND<0.5	15	ND<100	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), 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).
- (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**





Report Number : 90175

Date : 01/28/2015

## Laboratory Results

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

Subject : 9 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 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 Pace Analytical Services, Inc.

Pace Analytical Services, Inc. is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab number 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".

Troy Turpen



Report Number : 90175

Date : 01/28/2015

Subject : 9 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

## Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for sample DW-7.

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



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **MW-3**

Matrix : Water

Lab Number : 90175-01

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/21/15 23:12
Methanol	< 50	50	ug/L	EPA 8260B	01/21/15 23:12
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/21/15 23:12
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/21/15 23:12
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:12
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	01/21/15 23:12
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	01/21/15 23:12



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **MW-4**

Matrix : Water

Lab Number : 90175-02

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/21/15 23:47
Methanol	< 50	50	ug/L	EPA 8260B	01/21/15 23:47
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/21/15 23:47
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/21/15 23:47
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/15 23:47
1,2-Dichloroethane-d4 (Surr)	98.5		% Recovery	EPA 8260B	01/21/15 23:47
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	01/21/15 23:47



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

Project Number : **01LV**

Sample : **MW-5**

Matrix : Water

Lab Number : 90175-03

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 00:22
Methanol	< 50	50	ug/L	EPA 8260B	01/22/15 00:22
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 00:22
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/22/15 00:22
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:22
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	01/22/15 00:22
Toluene - d8 (Surr)	99.0		% Recovery	EPA 8260B	01/22/15 00:22



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-4**

Matrix : Water

Lab Number : 90175-04

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>0.76</b>	0.50	ug/L	EPA 8260B	01/22/15 00:57
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
<b>Ethylbenzene</b>	<b>0.68</b>	0.50	ug/L	EPA 8260B	01/22/15 00:57
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 00:57
Methanol	< 50	50	ug/L	EPA 8260B	01/22/15 00:57
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 00:57
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/22/15 00:57
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 00:57
1,2-Dichloroethane-d4 (Surr)	99.8		% Recovery	EPA 8260B	01/22/15 00:57
Toluene - d8 (Surr)	99.9		% Recovery	EPA 8260B	01/22/15 00:57



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **IP-5**

Matrix : Water

Lab Number : 90175-05

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 14:02
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 14:02
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	01/26/15 14:02
<b>Manganese, Dissolved</b>	<b>1.6</b>	0.0050	mg/L	EPA 6010B	01/26/15 14:02
<b>Sodium, Dissolved</b>	<b>46</b>	0.50	mg/L	EPA 6010B	01/26/15 14:02
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 01:32
Methanol	< 50	50	ug/L	EPA 8260B	01/22/15 01:32
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 01:32
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/22/15 01:32
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 01:32
1,2-Dichloroethane-d4 (Surr)	99.9		% Recovery	EPA 8260B	01/22/15 01:32
Toluene - d8 (Surr)	99.1		% Recovery	EPA 8260B	01/22/15 01:32



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-1**

Matrix : Water

Lab Number : 90175-06

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 14:07
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 14:07
<b>Iron, Dissolved</b>	<b>0.14</b>	0.10	mg/L	EPA 6010B	01/26/15 14:07
<b>Manganese, Dissolved</b>	<b>1.6</b>	0.0050	mg/L	EPA 6010B	01/26/15 14:07
<b>Sodium, Dissolved</b>	<b>140</b>	0.50	mg/L	EPA 6010B	01/26/15 14:07
<b>Benzene</b>	<b>49</b>	0.50	ug/L	EPA 8260B	01/22/15 02:07
<b>Toluene</b>	<b>8.2</b>	0.50	ug/L	EPA 8260B	01/22/15 02:07
<b>Ethylbenzene</b>	<b>260</b>	0.50	ug/L	EPA 8260B	01/22/15 02:07
<b>Total Xylenes</b>	<b>360</b>	0.50	ug/L	EPA 8260B	01/22/15 02:07
<b>Methyl-t-butyl ether (MTBE)</b>	<b>6.2</b>	0.50	ug/L	EPA 8260B	01/22/15 02:07
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:07
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:07
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:07
<b>Tert-Butanol</b>	<b>14</b>	5.0	ug/L	EPA 8260B	01/22/15 02:07
Methanol	< 50	50	ug/L	EPA 8260B	01/22/15 02:07
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 02:07
<b>TPH as Gasoline</b>	<b>8700</b>	150	ug/L	EPA 8260B	01/23/15 00:10
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:07
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:07
1,2-Dichloroethane-d4 (Surr)	91.2		% Recovery	EPA 8260B	01/22/15 02:07
Toluene - d8 (Surr)	94.7		% Recovery	EPA 8260B	01/22/15 02:07





Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-3**

Matrix : Water

Lab Number : 90175-07

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 14:12
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 14:12
<b>Iron, Dissolved</b>	<b>1.1</b>	0.10	mg/L	EPA 6010B	01/26/15 14:12
<b>Manganese, Dissolved</b>	<b>1.8</b>	0.0050	mg/L	EPA 6010B	01/26/15 14:12
<b>Sodium, Dissolved</b>	<b>56</b>	0.50	mg/L	EPA 6010B	01/26/15 14:12
<b>Benzene</b>	<b>17</b>	0.50	ug/L	EPA 8260B	01/22/15 02:42
<b>Toluene</b>	<b>2.2</b>	0.50	ug/L	EPA 8260B	01/22/15 02:42
<b>Ethylbenzene</b>	<b>37</b>	0.50	ug/L	EPA 8260B	01/22/15 02:42
<b>Total Xylenes</b>	<b>22</b>	0.50	ug/L	EPA 8260B	01/22/15 02:42
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:42
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:42
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:42
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:42
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 02:42
Methanol	< 50	50	ug/L	EPA 8260B	01/22/15 02:42
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 02:42
<b>TPH as Gasoline</b>	<b>1600</b>	50	ug/L	EPA 8260B	01/22/15 02:42
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:42
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 02:42
1,2-Dichloroethane-d4 (Surr)	97.3		% Recovery	EPA 8260B	01/22/15 02:42
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	01/22/15 02:42



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **MW-7**

Matrix : Water

Lab Number : 90175-08

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	01/27/15 10:35
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 14:17
<b>Iron, Dissolved</b>	<b>3.7</b>	0.10	mg/L	EPA 6010B	01/26/15 14:17
<b>Manganese, Dissolved</b>	<b>83</b>	0.050	mg/L	EPA 6010B	01/27/15 10:35
<b>Sodium, Dissolved</b>	<b>93</b>	0.50	mg/L	EPA 6010B	01/26/15 14:17
<b>Benzene</b>	<b>0.50</b>	0.50	ug/L	EPA 8260B	01/22/15 03:17
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 03:17
Methanol	< 50	50	ug/L	EPA 8260B	01/22/15 03:17
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 03:17
<b>TPH as Gasoline</b>	<b>100</b>	50	ug/L	EPA 8260B	01/22/15 03:17
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 03:17
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	01/22/15 03:17
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	01/22/15 03:17



Report Number : 90175

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-7**

Matrix : Water

Lab Number : 90175-09

Sample Date :01/20/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 14:23
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 14:23
<b>Iron, Dissolved</b>	<b>1.8</b>	0.10	mg/L	EPA 6010B	01/26/15 14:23
<b>Manganese, Dissolved</b>	<b>3.9</b>	0.0050	mg/L	EPA 6010B	01/26/15 14:23
<b>Sodium, Dissolved</b>	<b>92</b>	0.50	mg/L	EPA 6010B	01/26/15 14:23
<b>Benzene</b>	<b>210</b>	0.50	ug/L	EPA 8260B	01/22/15 11:23
<b>Toluene</b>	<b>8.4</b>	0.50	ug/L	EPA 8260B	01/22/15 11:23
<b>Ethylbenzene</b>	<b>250</b>	0.50	ug/L	EPA 8260B	01/22/15 11:23
<b>Total Xylenes</b>	<b>110</b>	0.50	ug/L	EPA 8260B	01/22/15 11:23
<b>Methyl-t-butyl ether (MTBE)</b>	<b>49</b>	0.50	ug/L	EPA 8260B	01/22/15 11:23
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 11:23
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 11:23
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 11:23
<b>Tert-Butanol</b>	<b>260</b>	5.0	ug/L	EPA 8260B	01/22/15 11:23
Methanol	< 100	100	ug/L	EPA 8260B	01/22/15 11:23
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/15 11:23
<b>TPH as Gasoline</b>	<b>10000</b>	250	ug/L	EPA 8260B	01/26/15 16:29
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 11:23
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/15 11:23
1,2-Dichloroethane-d4 (Surr)	80.6		% Recovery	EPA 8260B	01/22/15 11:23
Toluene - d8 (Surr)	81.6		% Recovery	EPA 8260B	01/22/15 11:23

Report Number : 90175

Date : 01/28/2015

**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	01/23/2015	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/26/2015
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/23/2015	Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	01/23/2015	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/23/2015	Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	01/23/2015	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/2015
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Methanol	< 50	50	ug/L	EPA 8260B	01/22/2015
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/21/2015	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/22/2015
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Methanol	< 50	50	ug/L	EPA 8260B	01/21/2015	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/22/2015
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/21/2015	1,2-Dichloroethane-d4 (Surr)	97.9		%	EPA 8260B	01/22/2015
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015	Toluene - d8 (Surr)	103		%	EPA 8260B	01/22/2015
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/21/2015	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/22/2015
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015						
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/2015						
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	01/21/2015						
Toluene - d8 (Surr)	100		%	EPA 8260B	01/21/2015						

**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
Arsenic, (Dis)	90176-02	< 0.015	0.400	0.400	0.419	0.432	mg/L	EPA 6010B	1/23/15	104	108	3.10	75-125	20
Chromium, (Dis)	90176-02	< 0.0050	0.400	0.400	0.390	0.400	mg/L	EPA 6010B	1/23/15	97.3	99.9	2.63	75-125	20
Iron, (Dis)	90176-02	< 0.10	4.00	4.00	3.73	3.76	mg/L	EPA 6010B	1/23/15	92.7	93.3	0.721	75-125	20
Manganese, (Dis)	90176-02	0.27	0.400	0.400	0.656	0.666	mg/L	EPA 6010B	1/23/15	95.8	98.5	1.63	75-125	20
Sodium, (Dis)	90176-02	380	40.0	40.0	418	424	mg/L	EPA 6010B	1/23/15	100	114	1.33	75-125	20
1,2-Dibromoethane	90162-03	<0.50	40.0	40.0	42.7	42.5	ug/L	EPA 8260B	1/21/15	107	106	0.362	70.0-130	25
1,2-Dichloroethane	90162-03	<0.50	40.0	40.0	37.9	37.7	ug/L	EPA 8260B	1/21/15	94.8	94.2	0.650	70.0-130	25
Benzene	90162-03	<0.50	40.0	40.0	39.4	39.3	ug/L	EPA 8260B	1/21/15	98.5	98.4	0.177	70.0-130	25
Diisopropyl ether	90162-03	<0.50	40.0	40.0	40.9	39.8	ug/L	EPA 8260B	1/21/15	102	99.5	2.85	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	90162-03	<5.0	100	100	118	119	ug/L	EPA 8260B	1/21/15	118	119	1.12	55.0-150	25
Ethyl-tert-butyl ether	90162-03	<0.50	40.0	40.0	39.5	39.0	ug/L	EPA 8260B	1/21/15	98.8	97.6	1.18	70.0-130	25
Ethylbenzene	90162-03	<0.50	40.0	40.0	41.5	42.7	ug/L	EPA 8260B	1/21/15	104	107	2.77	70.0-130	25
Methanol	90162-03	<50	1000	1000	1000	999	ug/L	EPA 8260B	1/21/15	100	99.9	0.617	65.0-150	25
Methyl-t-butyl ether	90162-03	<0.50	40.0	40.0	38.2	38.3	ug/L	EPA 8260B	1/21/15	95.4	95.6	0.219	70.0-130	25
P + M Xylene	90162-03	<0.50	40.0	40.0	39.0	40.5	ug/L	EPA 8260B	1/21/15	97.5	101	3.85	70.0-130	25
Tert-Butanol	90162-03	<5.0	200	200	197	194	ug/L	EPA 8260B	1/21/15	98.4	96.9	1.47	70.0-130	25
Tert-amyl-methyl ether	90162-03	<0.50	40.0	40.0	38.7	38.8	ug/L	EPA 8260B	1/21/15	96.8	97.1	0.307	70.0-130	25
Toluene	90162-03	<0.50	40.0	40.0	39.9	39.8	ug/L	EPA 8260B	1/21/15	99.6	99.6	0.0757	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
Toluene	90196-02	<0.50	40.0	40.0	39.5	39.5	ug/L	EPA 8260B	1/26/15	98.9	98.8	0.0694	70.0-130	25
1,2-Dibromoethane	90172-01	<0.50	40.0	40.0	42.6	43.0	ug/L	EPA 8260B	1/22/15	106	107	0.901	70.0-130	25
1,2-Dichloroethane	90172-01	<0.50	40.0	40.0	37.6	38.1	ug/L	EPA 8260B	1/22/15	94.0	95.3	1.34	70.0-130	25
Benzene	90172-01	<0.50	40.0	40.0	41.0	42.0	ug/L	EPA 8260B	1/22/15	102	105	2.56	70.0-130	25
Diisopropyl ether	90172-01	<0.50	40.0	40.0	41.5	42.3	ug/L	EPA 8260B	1/22/15	104	106	1.96	70.0-130	25
Ethanol	90172-01	<5.0	100	100	104	108	ug/L	EPA 8260B	1/22/15	104	108	3.67	55.0-150	25
Ethyl-tert-butyl ether	90172-01	<0.50	40.0	40.0	43.1	43.8	ug/L	EPA 8260B	1/22/15	108	109	1.49	70.0-130	25
Ethylbenzene	90172-01	<0.50	40.0	40.0	43.5	44.3	ug/L	EPA 8260B	1/22/15	109	111	1.83	70.0-130	25
Methanol	90172-01	52	1000	1000	1190	1200	ug/L	EPA 8260B	1/22/15	114	115	0.936	65.0-150	25

Report Number : 90175

Date : 01/28/2015

**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	90172-01	70	40.0	40.0	118	120	ug/L	EPA 8260B	1/22/15	120	126	4.50	70.0-130	25
P + M Xylene	90172-01	<0.50	40.0	40.0	42.4	43.0	ug/L	EPA 8260B	1/22/15	106	107	1.23	70.0-130	25
Tert-Butanol	90172-01	<5.0	200	200	218	217	ug/L	EPA 8260B	1/22/15	109	108	0.622	70.0-130	25
Tert-amyl-methyl ether	90172-01	<0.50	40.0	40.0	43.0	43.3	ug/L	EPA 8260B	1/22/15	107	108	0.688	70.0-130	25
Toluene	90172-01	<0.50	40.0	40.0	42.7	42.9	ug/L	EPA 8260B	1/22/15	107	107	0.413	70.0-130	25
Toluene	90172-38	<0.50	40.0	40.0	41.3	41.4	ug/L	EPA 8260B	1/22/15	103	104	0.317	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	1/23/15	103	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	1/23/15	100	85-115
Iron, (Dis)	4.00	mg/L	EPA 6010B	1/23/15	94.8	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	1/23/15	99.3	85-115
Sodium, (Dis)	40.0	mg/L	EPA 6010B	1/23/15	104	85-115
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	1/21/15	103	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	1/21/15	91.0	70.0-130
Benzene	40.0	ug/L	EPA 8260B	1/21/15	94.7	70.0-130
Diisopropyl ether	40.0	ug/L	EPA 8260B	1/21/15	99.1	70.0-130
Ethanol	100	ug/L	EPA 8260B	1/21/15	110	55.0-150
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	1/21/15	94.4	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	1/21/15	99.9	70.0-130
Methanol	1000	ug/L	EPA 8260B	1/21/15	101	65.0-150
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	1/21/15	91.6	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	1/21/15	97.2	70.0-130
TPH as Gasoline	501	ug/L	EPA 8260B	1/21/15	91.2	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	1/21/15	92.5	70.0-130
Tert-amyl-methyl ether	40.0	ug/L	EPA 8260B	1/21/15	93.3	70.0-130
Toluene	40.0	ug/L	EPA 8260B	1/21/15	96.4	70.0-130
TPH as Gasoline	498	ug/L	EPA 8260B	1/26/15	81.3	70.0-130

Report Number : 90175

Date : 01/28/2015

**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-Dibromoethane	39.8	ug/L	EPA 8260B	1/22/15	107	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	1/22/15	92.5	70.0-130
Benzene	39.8	ug/L	EPA 8260B	1/22/15	102	70.0-130
Diisopropyl ether	39.8	ug/L	EPA 8260B	1/22/15	104	70.0-130
Ethanol	99.5	ug/L	EPA 8260B	1/22/15	108	55.0-150
Ethyl-tert-butyl ether	39.8	ug/L	EPA 8260B	1/22/15	106	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	1/22/15	109	70.0-130
Methanol	995	ug/L	EPA 8260B	1/22/15	114	65.0-150
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	1/22/15	107	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	1/22/15	106	70.0-130
Tert-Butanol	199	ug/L	EPA 8260B	1/22/15	102	70.0-130
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	1/22/15	104	70.0-130
Toluene	39.8	ug/L	EPA 8260B	1/22/15	108	70.0-130
TPH as Gasoline	500	ug/L	EPA 8260B	1/22/15	103	70.0-130





# SAMPLE RECEIPT CHECKLIST

SRG #: 90175

**Sample Receipt** Initials/Date: RM 01/20/15 Storage Time: 803 Sample Login Initials/Date: TJB 01/21/15  
 TAT:  Standard  Rush  Split  None Method of Receipt:  Courier  Over-the-counter  Shipped  
 Temp °C 4-2  N/A Therm ID IR-1 Time 1745 Coolant present  Yes  No  Water  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	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
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
<u>WA</u>	<u>VOA</u>	<u>47</u>
<u>WA</u>	<u>Poly</u>	<u>25</u>

**Requires client:** Clarification  Approval  Notification   
 Proceed With Analysis:  YES  NO Init/Date: \_\_\_\_\_  
 Client Communication: \_\_\_\_\_



# Subcontract Laboratory Report Attac\ments

2795 Second Street, Suite 300 Davis, CA 95618  
tel 530.297.4800 fax 530.297.4808  
[www.kiffanalytical.com](http://www.kiffanalytical.com)

# CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

January 27, 2015

**CLS Work Order #: CYA0802**

**COC #: 90175**

Scott Forbes

Pace Analytical Services, Inc. - Davis

2795 Second St. Suite 300

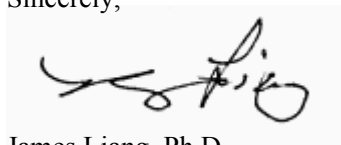
Davis, CA 95616

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

Enclosed are the results of analyses for samples received by the laboratory on 01/21/15 08:45. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'James Liang', is placed over a light gray rectangular background.

James Liang, Ph.D.

Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233



# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis 2795 Second St. Suite 300 Davis, CA 95616	Project: Tesoro-Livermore #67076 Project Number: F1-150120 Project Manager: Scott Forbes	CLS Work Order #: <b>CYA0802</b> COC #: 90175
--	--	--

## Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>IP-5 (CYA0802-01) Water    Sampled: 01/20/15 11:20    Received: 01/21/15 08:45</b>									
Carbon Dioxide as CO2	27	5.0	mg/L	1	CY00445	01/21/15	01/21/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00425	01/21/15	01/21/15	EPA 7199	
Ferrous Iron	ND	0.10	mg/L	"	CY00437	01/21/15	01/21/15	SM3500-Fe D	
Nitrate as N	0.64	0.50	"	"	CY00424	01/21/15	01/21/15	EPA 300.0	
Sulfate as SO4	95	5.0	"	10	"	"	"	"	
<b>DW-1 (CYA0802-02) Water    Sampled: 01/20/15 12:00    Received: 01/21/15 08:45</b>									
Carbon Dioxide as CO2	55	5.0	mg/L	1	CY00445	01/21/15	01/21/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00425	01/21/15	01/21/15	EPA 7199	
Ferrous Iron	ND	0.10	mg/L	"	CY00437	01/21/15	01/21/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00424	01/21/15	01/21/15	EPA 300.0	
Sulfate as SO4	53	5.0	"	10	"	"	01/21/15	"	
<b>DW-3 (CYA0802-03) Water    Sampled: 01/20/15 12:45    Received: 01/21/15 08:45</b>									
Carbon Dioxide as CO2	54	5.0	mg/L	1	CY00445	01/21/15	01/21/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00425	01/21/15	01/21/15	EPA 7199	
Ferrous Iron	0.63	0.10	mg/L	"	CY00437	01/21/15	01/21/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00424	01/21/15	01/21/15	EPA 300.0	
Sulfate as SO4	63	5.0	"	10	"	"	01/21/15	"	
<b>MW-7 (CYA0802-04) Water    Sampled: 01/20/15 13:15    Received: 01/21/15 08:45</b>									
Carbon Dioxide as CO2	91	5.0	mg/L	1	CY00445	01/21/15	01/21/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00425	01/21/15	01/21/15	EPA 7199	
Ferrous Iron	2.5	1.0	mg/L	10	CY00437	01/21/15	01/21/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	1	CY00424	01/21/15	01/21/15	EPA 300.0	
Sulfate as SO4	2800	50	"	100	"	"	01/22/15	"	



# CALIFORNIA LABORATORY SERVICES

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Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

CLS Work Order #: CYA0802  
COC #: 90175

## Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DW-7 (CYA0802-05) Water</b> <b>Sampled: 01/20/15 13:50</b> <b>Received: 01/21/15 08:45</b>									
<b>Carbon Dioxide as CO2</b>	<b>100</b>	5.0	mg/L	1	CY00445	01/21/15	01/21/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00425	01/21/15	01/21/15	EPA 7199	
<b>Ferrous Iron</b>	<b>1.1</b>	0.10	mg/L	"	CY00437	01/21/15	01/21/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00424	01/21/15	01/21/15	EPA 300.0	
<b>Sulfate as SO4</b>	<b>35</b>	0.50	"	"	"	"	"	"	

CA DOHS ELAP Accreditation/Registration Number 1233

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis 2795 Second St. Suite 300 Davis, CA 95616	Project: Tesoro-Livermore #67076 Project Number: F1-150120 Project Manager: Scott Forbes	CLS Work Order #: CYA0802 COC #: 90175
--	--	---

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch CY00424 - General Prep

<b>Blank (CY00424-BLK1)</b>				Prepared & Analyzed: 01/21/15						
Sulfate as SO4	ND	0.50	mg/L							
Nitrate as N	ND	0.50	"							

<b>LCS (CY00424-BS1)</b>				Prepared & Analyzed: 01/21/15						
Sulfate as SO4	5.13	0.50	mg/L	5.00		103	80-120			
Nitrate as N	0.464	0.50	"	0.451		103	80-120			

<b>LCS Dup (CY00424-BSD1)</b>				Prepared & Analyzed: 01/21/15						
Sulfate as SO4	4.99	0.50	mg/L	5.00		100	80-120	3	20	
Nitrate as N	0.458	0.50	"	0.451		102	80-120	1	20	

<b>Matrix Spike (CY00424-MS1)</b>				Source: CYA0782-01		Prepared & Analyzed: 01/21/15				
Sulfate as SO4	22.7	0.50	mg/L	5.00	17.4	107	80-120			
Nitrate as N	6.21	0.50	"	0.451	6.10	24	80-120			QM-4X

<b>Matrix Spike Dup (CY00424-MSD1)</b>				Source: CYA0782-01		Prepared & Analyzed: 01/21/15				
Sulfate as SO4	22.6	0.50	mg/L	5.00	17.4	105	80-120	0.4	20	
Nitrate as N	6.22	0.50	"	0.451	6.10	26	80-120	0.1	20	QM-4X

### Batch CY00425 - General Prep

<b>Blank (CY00425-BLK1)</b>				Prepared & Analyzed: 01/21/15						
Hexavalent Chromium	ND	1.0	µg/L							

<b>LCS (CY00425-BS1)</b>				Prepared & Analyzed: 01/21/15						
Hexavalent Chromium	4.75	1.0	µg/L	5.00		95	80-120			

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

CLS Work Order #: CYA0802  
COC #: 90175

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch CY00425 - General Prep</b>										
<b>LCS Dup (CY00425-BSD1)</b>				Prepared & Analyzed: 01/21/15						
Hexavalent Chromium	4.91	1.0	µg/L	5.00		98	80-120	3	20	
<b>Matrix Spike (CY00425-MS1)</b>				Source: CYA0759-01		Prepared & Analyzed: 01/21/15				
Hexavalent Chromium	4.05	1.0	µg/L	5.00	ND	81	75-125			
<b>Matrix Spike Dup (CY00425-MSD1)</b>				Source: CYA0759-01		Prepared & Analyzed: 01/21/15				
Hexavalent Chromium	4.12	1.0	µg/L	5.00	ND	82	75-125	2	25	
<b>Batch CY00437 - General Preparation</b>										
<b>Blank (CY00437-BLK1)</b>				Prepared & Analyzed: 01/21/15						
Ferrous Iron	ND	0.10	mg/L							
<b>LCS (CY00437-BS1)</b>				Prepared & Analyzed: 01/21/15						
Ferrous Iron	0.277	0.10	mg/L	0.250		111	80-120			
<b>LCS Dup (CY00437-BSD1)</b>				Prepared & Analyzed: 01/21/15						
Ferrous Iron	0.268	0.10	mg/L	0.250		107	80-120	3	25	
<b>Matrix Spike (CY00437-MS1)</b>				Source: CYA0802-01		Prepared & Analyzed: 01/21/15				
Ferrous Iron	0.268	0.10	mg/L	0.250	0.0272	96	75-125			
<b>Matrix Spike Dup (CY00437-MSD1)</b>				Source: CYA0802-01		Prepared & Analyzed: 01/21/15				
Ferrous Iron	0.259	0.10	mg/L	0.250	0.0272	93	75-125	3	30	
<b>Batch CY00445 - General Preparation</b>										
<b>Blank (CY00445-BLK1)</b>				Prepared & Analyzed: 01/21/15						
Carbon Dioxide as CO2	ND	5.0	mg/L							

# CALIFORNIA LABORATORY SERVICES

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01/27/15 16:24

Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

**CLS Work Order #: CYA0802**  
COC #: 90175

## Notes and Definitions

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference



# Subcontract Laboratory Report Attac\ments

2795 Second Street, Suite 300 Davis, CA 95618  
tel 530.297.4800 fax 530.297.4808  
[www.kiffanalytical.com](http://www.kiffanalytical.com)

January 27, 2015

Scott Forbes  
Pace Analytical Services, Inc  
2795 Second Street  
Suite 300  
Davis, CA 95618

RE: Project: Tesoro-Livermore #67076  
Pace Project No.: 10294722

Dear Scott Forbes:

Enclosed are the analytical results for sample(s) received by the laboratory on January 22, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Chee Lee  
chee.lee@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## CERTIFICATIONS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

---

### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN\_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10294722001	IP-5	Water	01/20/15 11:20	01/22/15 09:35
10294722002	DW-1	Water	01/20/15 12:00	01/22/15 09:35
10294722003	DW-3	Water	01/20/15 12:45	01/22/15 09:35
10294722004	MW-7	Water	01/20/15 13:15	01/22/15 09:35
10294722005	DW-7	Water	01/20/15 13:50	01/22/15 09:35

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10294722001	IP-5	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294722002	DW-1	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294722003	DW-3	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294722004	MW-7	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294722005	DW-7	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: Tesoro-Livermore #67076  
Pace Project No.: 10294722

---

**Method:** RSK 175  
**Description:** RSK 175 AIR Headspace  
**Client:** PASI California  
**Date:** January 27, 2015

**General Information:**

5 samples were analyzed for RSK 175. All samples were received in acceptable condition with any exceptions noted below.

C5: The sample was not collected in the appropriate container for headspace analysis.

- DW-1 (Lab ID: 10294722002)
- DW-3 (Lab ID: 10294722003)
- DW-7 (Lab ID: 10294722005)
- IP-5 (Lab ID: 10294722001)
- MW-7 (Lab ID: 10294722004)

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

---

**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** PASI California

**Date:** January 27, 2015

**General Information:**

5 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

C5: The sample was not collected in the appropriate container for headspace analysis.

- DW-1 (Lab ID: 10294722002)
- DW-3 (Lab ID: 10294722003)
- DW-7 (Lab ID: 10294722005)
- IP-5 (Lab ID: 10294722001)
- MW-7 (Lab ID: 10294722004)

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: Tesoro-Livermore #67076  
Pace Project No.: 10294722

---

**Method:** SM 2540C  
**Description:** 2540C Total Dissolved Solids  
**Client:** PASI California  
**Date:** January 27, 2015

**General Information:**

5 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below.

C5: The sample was not collected in the appropriate container for headspace analysis.

- DW-1 (Lab ID: 10294722002)
- DW-3 (Lab ID: 10294722003)
- DW-7 (Lab ID: 10294722005)
- IP-5 (Lab ID: 10294722001)
- MW-7 (Lab ID: 10294722004)

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

Sample: IP-5		Lab ID: 10294722001	Collected: 01/20/15 11:20	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 20:49	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 20:49	74-85-1	
Methane	121	ug/L	6.6	1		01/23/15 20:49	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 20:49	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	281	mg/L	5.0	1		01/23/15 11:38		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	548	mg/L	10.0	1		01/22/15 16:38		

Sample: DW-1		Lab ID: 10294722002	Collected: 01/20/15 12:00	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 20:57	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 20:57	74-85-1	
Methane	592	ug/L	6.6	1		01/23/15 20:57	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 20:57	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	513	mg/L	5.0	1		01/23/15 11:43		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	717	mg/L	10.0	1		01/22/15 16:38		

Sample: DW-3		Lab ID: 10294722003	Collected: 01/20/15 12:45	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 21:05	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 21:05	74-85-1	
Methane	8.0	ug/L	6.6	1		01/23/15 21:05	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 21:05	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	400	mg/L	5.0	1		01/23/15 11:47		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	573	mg/L	10.0	1		01/22/15 16:38		

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

<b>Sample: MW-7</b>		<b>Lab ID: 10294722004</b>	Collected: 01/20/15 13:15	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 21:14	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 21:14	74-85-1	
Methane	ND	ug/L	6.6	1		01/23/15 21:14	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 21:14	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>8.9</b>	mg/L	5.0	1		01/23/15 11:58		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>4320</b>	mg/L	40.0	1		01/22/15 16:38		

<b>Sample: DW-7</b>		<b>Lab ID: 10294722005</b>	Collected: 01/20/15 13:50	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 21:22	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 21:22	74-85-1	
Methane	<b>2510</b>	ug/L	6.6	1		01/23/15 21:22	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 21:22	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>569</b>	mg/L	5.0	1		01/23/15 11:53		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>801</b>	mg/L	10.0	1		01/22/15 16:38		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Tesoro-Livermore #67076  
Pace Project No.: 10294722

QC Batch: AIR/22334 Analysis Method: RSK 175  
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE  
Associated Lab Samples: 10294722001, 10294722002, 10294722003, 10294722004, 10294722005

METHOD BLANK: 1887036 Matrix: Water  
Associated Lab Samples: 10294722001, 10294722002, 10294722003, 10294722004, 10294722005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	01/23/15 13:19	
Ethene	ug/L	ND	6.2	01/23/15 13:19	
Methane	ug/L	ND	6.6	01/23/15 13:19	
n-Propane	ug/L	ND	18.1	01/23/15 13:19	

LABORATORY CONTROL SAMPLE & LCSD: 1887037

Parameter	Units	1887038		LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result						
Ethane	ug/L	114	107	113	94	99	85-115	5	20
Ethene	ug/L	106	99.7	102	94	96	85-115	3	20
Methane	ug/L	60.7	56.7	58.4	93	96	85-115	3	20
n-Propane	ug/L	168	160	154	95	92	85-115	4	20

SAMPLE DUPLICATE: 1887039

Parameter	Units	35172031002		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	3.1U	ND		20	
Ethene	ug/L	3.1U	ND		20	
Methane	ug/L	33.6	33.0	2	20	
n-Propane	ug/L	0.89U	ND		20	

SAMPLE DUPLICATE: 1887040

Parameter	Units	10294728003		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	8.1	8.1	0	20	
n-Propane	ug/L	ND	ND		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Tesoro-Livermore #67076  
Pace Project No.: 10294722

QC Batch: WET/40160 Analysis Method: SM 2320B  
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
Associated Lab Samples: 10294722001, 10294722002, 10294722003, 10294722004, 10294722005

METHOD BLANK: 1886512 Matrix: Water  
Associated Lab Samples: 10294722001, 10294722002, 10294722003, 10294722004, 10294722005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	ND	5.0	01/23/15 09:13	

LABORATORY CONTROL SAMPLE & LCSD: 1886513 1886514

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	40	42.2	42.3	105	106	90-110	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1886515 1886516

Parameter	Units	10294005002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	240	40	40	280	276	100	92	80-120	1	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1886517 1886518

Parameter	Units	10294256006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	529	40	40	567	566	96	93	80-120	0	30	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

QC Batch: WET/40146 Analysis Method: SM 2540C  
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 10294722001, 10294722002, 10294722003, 10294722004, 10294722005

METHOD BLANK: 1885826 Matrix: Water  
 Associated Lab Samples: 10294722001, 10294722002, 10294722003, 10294722004, 10294722005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	01/22/15 16:38	

LABORATORY CONTROL SAMPLE: 1885827

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1050	105	80-120	

SAMPLE DUPLICATE: 1885828

Parameter	Units	10294722001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	548	537	2	10	

SAMPLE DUPLICATE: 1885829

Parameter	Units	10294722002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	717	776	8	10	

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## QUALIFIERS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### SAMPLE QUALIFIERS

Sample: 10294722001

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294722002

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294722003

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294722004

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294722005

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1887040

[1] The sample was not collected in the appropriate container for headspace analysis.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Tesoro-Livermore #67076

Pace Project No.: 10294722

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10294722001	IP-5	RSK 175	AIR/22334		
10294722002	DW-1	RSK 175	AIR/22334		
10294722003	DW-3	RSK 175	AIR/22334		
10294722004	MW-7	RSK 175	AIR/22334		
10294722005	DW-7	RSK 175	AIR/22334		
10294722001	IP-5	SM 2320B	WET/40160		
10294722002	DW-1	SM 2320B	WET/40160		
10294722003	DW-3	SM 2320B	WET/40160		
10294722004	MW-7	SM 2320B	WET/40160		
10294722005	DW-7	SM 2320B	WET/40160		
10294722001	IP-5	SM 2540C	WET/40146		
10294722002	DW-1	SM 2540C	WET/40146		
10294722003	DW-3	SM 2540C	WET/40146		
10294722004	MW-7	SM 2540C	WET/40146		
10294722005	DW-7	SM 2540C	WET/40146		

### REPORT OF LABORATORY ANALYSIS


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**Sample Condition Upon Receipt**

**Client Name:** PACE CA

**Project #:** \_\_\_\_\_

WO#: 10294722

  
 10294722

**Courier:**  Fed Ex     UPS     USPS     Client  
 Commercial     Pace     Speedee     Other: \_\_\_\_\_  
**Tracking Number:** 7726 6616 1264

**Custody Seal on Cooler/Box Present?**  Yes     No    **Seals Intact?**  Yes     No    **Optional:** Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_

**Packing Material:**  Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_    **Temp Blank?**  Yes     No

**Thermom. Used:**  B88A9130516413     B88A912167504     B88A9132521491    **Type of Ice:**  Wet     Blue     None     Samples on ice, cooling process has begun

**Cooler Temp Read (°C):** 3.9    **Cooler Temp Corrected (°C):** 4.0    **Biological Tissue Frozen?**  Yes     No     N/A  
**Temp should be above freezing to 6°C**    **Correction Factor:** +0.1    **Date and Initials of Person Examining Contents:** JP 1/22/15

**Comments:** \_\_\_\_\_

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	3.	
Sampler Name and/or Signature on COC?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	5.	
<b>Short Hold Time Analysis (&lt;72 hr)?</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	6.	
<b>Rush Turn Around Time Requested?</b>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	7.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	8.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	9.	
-Pace Containers Used?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	10.	
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	11.	
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>					
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	13.	<input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Sample #	
	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		Initial when completed:	Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	14.	
Trip Blank Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	15.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):					

**CLIENT NOTIFICATION/RESOLUTION**

**Field Data Required?**  Yes     No

**Person Contacted:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

**Comments/Resolution:** \_\_\_\_\_

**Project Manager Review:** \_\_\_\_\_

**Date:** 1/23/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)





Report Number : 90184

Date : 01/28/2015

## Laboratory Results

Scott Stromberg  
Orion Environmental  
2955 Redondo Ave.  
Long Beach, CA 90806

Subject : 11 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

Dear Mr. Stromberg,

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

Pace Analytical Services, Inc. is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab number 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".

Troy Turpen



Report Number : 90184

Date : 01/28/2015

Subject : 11 Water Samples  
Project Name : Tesoro - Livermore #67076  
Project Number : 01LV

## Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples IP-10 and DW-6.

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

Recoveries for some Matrix Spike/Matrix Spike Duplicate analytes were outside of control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data are flagged.



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-2**

Matrix : Water

Lab Number : 90184-01

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 15:52
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 15:52
<b>Iron, Dissolved</b>	<b>0.90</b>	0.10	mg/L	EPA 6010B	01/26/15 15:52
<b>Manganese, Dissolved</b>	<b>2.6</b>	0.0050	mg/L	EPA 6010B	01/26/15 15:52
<b>Sodium, Dissolved</b>	<b>76</b>	0.50	mg/L	EPA 6010B	01/26/15 15:52
<b>Benzene</b>	<b>260</b>	0.50	ug/L	EPA 8260B	01/23/15 21:28
<b>Toluene</b>	<b>12</b>	0.50	ug/L	EPA 8260B	01/23/15 21:28
<b>Ethylbenzene</b>	<b>110</b>	0.50	ug/L	EPA 8260B	01/23/15 21:28
<b>Total Xylenes</b>	<b>48</b>	0.50	ug/L	EPA 8260B	01/23/15 21:28
<b>Methyl-t-butyl ether (MTBE)</b>	<b>100</b>	0.50	ug/L	EPA 8260B	01/23/15 21:28
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 21:28
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 21:28
<b>Tert-amyl methyl ether (TAME)</b>	<b>1.1</b>	0.50	ug/L	EPA 8260B	01/23/15 21:28
<b>Tert-Butanol</b>	<b>300</b>	5.0	ug/L	EPA 8260B	01/23/15 21:28
Methanol	< 50	50	ug/L	EPA 8260B	01/23/15 21:28
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/23/15 21:28
<b>TPH as Gasoline</b>	<b>5700</b>	90	ug/L	EPA 8260B	01/26/15 14:08
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 21:28
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 21:28
1,2-Dichloroethane-d4 (Surr)	96.9		% Recovery	EPA 8260B	01/23/15 21:28
Toluene - d8 (Surr)	96.6		% Recovery	EPA 8260B	01/23/15 21:28





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

Project Number : **01LV**

Sample : **IP-10**

Matrix : Water

Lab Number : 90184-02

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 16:04
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:04
<b>Iron, Dissolved</b>	<b>0.66</b>	0.10	mg/L	EPA 6010B	01/26/15 16:04
<b>Manganese, Dissolved</b>	<b>3.4</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:04
<b>Sodium, Dissolved</b>	<b>63</b>	0.50	mg/L	EPA 6010B	01/26/15 16:04
<b>Benzene</b>	<b>23</b>	0.50	ug/L	EPA 8260B	01/23/15 23:00
<b>Toluene</b>	<b>4.9</b>	0.50	ug/L	EPA 8260B	01/23/15 23:00
<b>Ethylbenzene</b>	<b>37</b>	0.50	ug/L	EPA 8260B	01/23/15 23:00
<b>Total Xylenes</b>	<b>42</b>	0.50	ug/L	EPA 8260B	01/23/15 23:00
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:00
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:00
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:00
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:00
<b>Tert-Butanol</b>	<b>15</b>	5.0	ug/L	EPA 8260B	01/23/15 23:00
Methanol	< 100	100	ug/L	EPA 8260B	01/23/15 23:00
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/23/15 23:00
<b>TPH as Gasoline</b>	<b>2700</b>	50	ug/L	EPA 8260B	01/23/15 23:00
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:00
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:00
1,2-Dichloroethane-d4 (Surr)	97.6		% Recovery	EPA 8260B	01/23/15 23:00
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	01/23/15 23:00



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **IP-9**

Matrix : Water

Lab Number : 90184-03

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Arsenic, Dissolved</b>	<b>0.31</b>	0.015	mg/L	EPA 6010B	01/27/15 16:34
<b>Chromium, Dissolved</b>	<b>0.060</b>	0.0050	mg/L	EPA 6010B	01/27/15 16:34
<b>Iron, Dissolved</b>	<b>0.31</b>	0.10	mg/L	EPA 6010B	01/27/15 16:34
<b>Manganese, Dissolved</b>	<b>0.053</b>	0.0050	mg/L	EPA 6010B	01/27/15 16:34
<b>Sodium, Dissolved</b>	<b>3000</b>	2.0	mg/L	EPA 6010B	01/28/15 12:56
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
<b>Toluene</b>	<b>1.7</b>	0.50	ug/L	EPA 8260B	01/23/15 23:46
<b>Ethylbenzene</b>	<b>0.56</b>	0.50	ug/L	EPA 8260B	01/23/15 23:46
<b>Total Xylenes</b>	<b>7.7</b>	0.50	ug/L	EPA 8260B	01/23/15 23:46
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
<b>Tert-Butanol</b>	<b>35</b>	5.0	ug/L	EPA 8260B	01/23/15 23:46
Methanol	< 50	50	ug/L	EPA 8260B	01/23/15 23:46
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/23/15 23:46
<b>TPH as Gasoline</b>	<b>330</b>	50	ug/L	EPA 8260B	01/23/15 23:46
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:46
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	01/23/15 23:46
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	01/23/15 23:46



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-6**

Matrix : Water

Lab Number : 90184-04

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 16:14
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:14
<b>Iron, Dissolved</b>	<b>0.92</b>	0.10	mg/L	EPA 6010B	01/26/15 16:14
<b>Manganese, Dissolved</b>	<b>2.6</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:14
<b>Sodium, Dissolved</b>	<b>55</b>	0.50	mg/L	EPA 6010B	01/26/15 16:14
<b>Benzene</b>	<b>6.1</b>	0.50	ug/L	EPA 8260B	01/23/15 23:23
<b>Toluene</b>	<b>1.5</b>	0.50	ug/L	EPA 8260B	01/23/15 23:23
<b>Ethylbenzene</b>	<b>35</b>	0.50	ug/L	EPA 8260B	01/23/15 23:23
<b>Total Xylenes</b>	<b>7.7</b>	0.50	ug/L	EPA 8260B	01/23/15 23:23
<b>Methyl-t-butyl ether (MTBE)</b>	<b>4.9</b>	0.50	ug/L	EPA 8260B	01/23/15 23:23
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:23
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:23
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:23
<b>Tert-Butanol</b>	<b>26</b>	5.0	ug/L	EPA 8260B	01/23/15 23:23
Methanol	< 80	80	ug/L	EPA 8260B	01/23/15 23:23
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/23/15 23:23
<b>TPH as Gasoline</b>	<b>3400</b>	50	ug/L	EPA 8260B	01/23/15 23:23
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:23
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/15 23:23
1,2-Dichloroethane-d4 (Surr)	97.3		% Recovery	EPA 8260B	01/23/15 23:23
Toluene - d8 (Surr)	96.9		% Recovery	EPA 8260B	01/23/15 23:23



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

Project Number : **01LV**

Sample : **MW-1**

Matrix : Water

Lab Number : 90184-05

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>4.7</b>	0.50	ug/L	EPA 8260B	01/26/15 12:58
<b>Toluene</b>	<b>4.0</b>	0.50	ug/L	EPA 8260B	01/26/15 12:58
<b>Ethylbenzene</b>	<b>16</b>	0.50	ug/L	EPA 8260B	01/26/15 12:58
<b>Total Xylenes</b>	<b>37</b>	0.50	ug/L	EPA 8260B	01/26/15 12:58
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/26/15 12:58
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/26/15 12:58
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/26/15 12:58
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/26/15 12:58
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/26/15 12:58
Methanol	< 50	50	ug/L	EPA 8260B	01/26/15 12:58
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/26/15 12:58
<b>TPH as Gasoline</b>	<b>1500</b>	50	ug/L	EPA 8260B	01/26/15 12:58
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/26/15 12:58
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/26/15 12:58
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	01/26/15 12:58
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	01/26/15 12:58



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-9**

Matrix : Water

Lab Number : 90184-06

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 16:25
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:25
<b>Iron, Dissolved</b>	<b>0.76</b>	0.10	mg/L	EPA 6010B	01/26/15 16:25
<b>Manganese, Dissolved</b>	<b>2.7</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:25
<b>Sodium, Dissolved</b>	<b>63</b>	0.50	mg/L	EPA 6010B	01/26/15 16:25
<b>Benzene</b>	<b>110</b>	1.5	ug/L	EPA 8260B	01/24/15 00:32
<b>Toluene</b>	<b>6.8</b>	1.5	ug/L	EPA 8260B	01/24/15 00:32
<b>Ethylbenzene</b>	<b>200</b>	1.5	ug/L	EPA 8260B	01/24/15 00:32
<b>Total Xylenes</b>	<b>83</b>	1.5	ug/L	EPA 8260B	01/24/15 00:32
<b>Methyl-t-butyl ether (MTBE)</b>	<b>16</b>	1.5	ug/L	EPA 8260B	01/24/15 00:32
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	01/24/15 00:32
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	01/24/15 00:32
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	01/24/15 00:32
<b>Tert-Butanol</b>	<b>58</b>	7.0	ug/L	EPA 8260B	01/24/15 00:32
Methanol	< 150	150	ug/L	EPA 8260B	01/24/15 00:32
Ethanol	< 15	15	ug/L	EPA 8260B	01/24/15 00:32
<b>TPH as Gasoline</b>	<b>8300</b>	150	ug/L	EPA 8260B	01/24/15 00:32
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	01/24/15 00:32
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	01/24/15 00:32
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	01/24/15 00:32
Toluene - d8 (Surr)	96.9		% Recovery	EPA 8260B	01/24/15 00:32



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **MW-2**

Matrix : Water

Lab Number : 90184-07

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 16:29
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:29
<b>Iron, Dissolved</b>	<b>5.1</b>	0.10	mg/L	EPA 6010B	01/26/15 16:29
<b>Manganese, Dissolved</b>	<b>3.9</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:29
<b>Sodium, Dissolved</b>	<b>78</b>	0.50	mg/L	EPA 6010B	01/26/15 16:29
<b>Benzene</b>	<b>340</b>	2.5	ug/L	EPA 8260B	01/24/15 00:55
<b>Toluene</b>	<b>31</b>	2.5	ug/L	EPA 8260B	01/24/15 00:55
<b>Ethylbenzene</b>	<b>230</b>	2.5	ug/L	EPA 8260B	01/24/15 00:55
<b>Total Xylenes</b>	<b>440</b>	2.5	ug/L	EPA 8260B	01/24/15 00:55
<b>Methyl-t-butyl ether (MTBE)</b>	<b>80</b>	2.5	ug/L	EPA 8260B	01/24/15 00:55
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 00:55
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 00:55
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 00:55
<b>Tert-Butanol</b>	<b>93</b>	15	ug/L	EPA 8260B	01/24/15 00:55
Methanol	< 250	250	ug/L	EPA 8260B	01/24/15 00:55
Ethanol	< 25	25	ug/L	EPA 8260B	01/24/15 00:55
<b>TPH as Gasoline</b>	<b>14000</b>	250	ug/L	EPA 8260B	01/24/15 00:55
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 00:55
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 00:55
1,2-Dichloroethane-d4 (Surr)	99.1		% Recovery	EPA 8260B	01/24/15 00:55
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	01/24/15 00:55



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

Project Number : **01LV**

Sample : **DW-5**

Matrix : Water

Lab Number : 90184-08

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/26/15 16:34
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:34
<b>Iron, Dissolved</b>	<b>0.31</b>	0.10	mg/L	EPA 6010B	01/26/15 16:34
<b>Manganese, Dissolved</b>	<b>1.7</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:34
<b>Sodium, Dissolved</b>	<b>250</b>	0.50	mg/L	EPA 6010B	01/26/15 16:34
<b>Benzene</b>	<b>92</b>	2.5	ug/L	EPA 8260B	01/24/15 01:18
<b>Toluene</b>	<b>11</b>	2.5	ug/L	EPA 8260B	01/24/15 01:18
<b>Ethylbenzene</b>	<b>650</b>	2.5	ug/L	EPA 8260B	01/24/15 01:18
<b>Total Xylenes</b>	<b>860</b>	2.5	ug/L	EPA 8260B	01/24/15 01:18
Methyl-t-butyl ether (MTBE)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 01:18
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 01:18
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 01:18
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 01:18
<b>Tert-Butanol</b>	<b>48</b>	15	ug/L	EPA 8260B	01/24/15 01:18
Methanol	< 250	250	ug/L	EPA 8260B	01/24/15 01:18
Ethanol	< 25	25	ug/L	EPA 8260B	01/24/15 01:18
<b>TPH as Gasoline</b>	<b>26000</b>	1500	ug/L	EPA 8260B	01/27/15 03:42
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 01:18
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	01/24/15 01:18
1,2-Dichloroethane-d4 (Surr)	97.5		% Recovery	EPA 8260B	01/24/15 01:18
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	01/24/15 01:18



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **IP-1**

Matrix : Water

Lab Number : 90184-09

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Arsenic, Dissolved</b>	<b>0.12</b>	0.015	mg/L	EPA 6010B	01/26/15 16:39
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:39
<b>Iron, Dissolved</b>	<b>0.48</b>	0.10	mg/L	EPA 6010B	01/26/15 16:39
<b>Manganese, Dissolved</b>	<b>0.092</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:39
<b>Sodium, Dissolved</b>	<b>1700</b>	2.0	mg/L	EPA 6010B	01/27/15 10:27
<b>Benzene</b>	<b>320</b>	2.5	ug/L	EPA 8260B	01/26/15 15:54
<b>Toluene</b>	<b>340</b>	2.5	ug/L	EPA 8260B	01/26/15 15:54
<b>Ethylbenzene</b>	<b>550</b>	2.5	ug/L	EPA 8260B	01/26/15 15:54
<b>Total Xylenes</b>	<b>1800</b>	2.5	ug/L	EPA 8260B	01/26/15 15:54
Methyl-t-butyl ether (MTBE)	< 2.5	2.5	ug/L	EPA 8260B	01/26/15 15:54
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	01/26/15 15:54
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	01/26/15 15:54
Tert-amyl methyl ether (TAME)	< 2.5	2.5	ug/L	EPA 8260B	01/26/15 15:54
<b>Tert-Butanol</b>	<b>38</b>	15	ug/L	EPA 8260B	01/26/15 15:54
Methanol	< 250	250	ug/L	EPA 8260B	01/26/15 15:54
Ethanol	< 25	25	ug/L	EPA 8260B	01/26/15 15:54
<b>TPH as Gasoline</b>	<b>18000</b>	250	ug/L	EPA 8260B	01/26/15 15:54
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	01/26/15 15:54
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	01/26/15 15:54
1,2-Dichloroethane-d4 (Surr)	96.1		% Recovery	EPA 8260B	01/26/15 15:54
Toluene - d8 (Surr)	95.9		% Recovery	EPA 8260B	01/26/15 15:54





Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **DW-8**

Matrix : Water

Lab Number : 90184-10

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Arsenic, Dissolved</b>	<b>0.015</b>	0.015	mg/L	EPA 6010B	01/26/15 16:44
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:44
<b>Iron, Dissolved</b>	<b>3.0</b>	0.10	mg/L	EPA 6010B	01/26/15 16:44
<b>Manganese, Dissolved</b>	<b>3.1</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:44
<b>Sodium, Dissolved</b>	<b>160</b>	0.50	mg/L	EPA 6010B	01/26/15 16:44
<b>Benzene</b>	<b>2800</b>	9.0	ug/L	EPA 8260B	01/24/15 02:04
<b>Toluene</b>	<b>1400</b>	9.0	ug/L	EPA 8260B	01/24/15 02:04
<b>Ethylbenzene</b>	<b>1600</b>	9.0	ug/L	EPA 8260B	01/24/15 02:04
<b>Total Xylenes</b>	<b>5800</b>	9.0	ug/L	EPA 8260B	01/24/15 02:04
Methyl-t-butyl ether (MTBE)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:04
Diisopropyl ether (DIPE)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:04
Ethyl-t-butyl ether (ETBE)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:04
Tert-amyl methyl ether (TAME)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:04
<b>Tert-Butanol</b>	<b>130</b>	50	ug/L	EPA 8260B	01/24/15 02:04
Methanol	< 900	900	ug/L	EPA 8260B	01/24/15 02:04
Ethanol	< 90	90	ug/L	EPA 8260B	01/24/15 02:04
<b>TPH as Gasoline</b>	<b>38000</b>	900	ug/L	EPA 8260B	01/24/15 02:04
1,2-Dichloroethane	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:04
1,2-Dibromoethane	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:04
1,2-Dichloroethane-d4 (Surr)	99.5		% Recovery	EPA 8260B	01/24/15 02:04
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	01/24/15 02:04



Report Number : 90184

Date : 01/28/2015

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

Project Number : **01LV**

Sample : **IP-8**

Matrix : Water

Lab Number : 90184-11

Sample Date :01/21/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Arsenic, Dissolved</b>	<b>0.18</b>	0.015	mg/L	EPA 6010B	01/26/15 16:49
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/15 16:49
<b>Iron, Dissolved</b>	<b>0.15</b>	0.10	mg/L	EPA 6010B	01/26/15 16:49
<b>Manganese, Dissolved</b>	<b>0.067</b>	0.0050	mg/L	EPA 6010B	01/26/15 16:49
<b>Sodium, Dissolved</b>	<b>1600</b>	2.0	mg/L	EPA 6010B	01/27/15 10:31
<b>Benzene</b>	<b>1200</b>	9.0	ug/L	EPA 8260B	01/24/15 02:27
<b>Toluene</b>	<b>3300</b>	9.0	ug/L	EPA 8260B	01/24/15 02:27
<b>Ethylbenzene</b>	<b>1000</b>	9.0	ug/L	EPA 8260B	01/24/15 02:27
<b>Total Xylenes</b>	<b>6700</b>	9.0	ug/L	EPA 8260B	01/24/15 02:27
Methyl-t-butyl ether (MTBE)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:27
Diisopropyl ether (DIPE)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:27
Ethyl-t-butyl ether (ETBE)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:27
Tert-amyl methyl ether (TAME)	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:27
<b>Tert-Butanol</b>	<b>99</b>	50	ug/L	EPA 8260B	01/24/15 02:27
Methanol	< 900	900	ug/L	EPA 8260B	01/24/15 02:27
Ethanol	< 90	90	ug/L	EPA 8260B	01/24/15 02:27
<b>TPH as Gasoline</b>	<b>36000</b>	900	ug/L	EPA 8260B	01/24/15 02:27
1,2-Dichloroethane	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:27
1,2-Dibromoethane	< 9.0	9.0	ug/L	EPA 8260B	01/24/15 02:27
1,2-Dichloroethane-d4 (Surr)	98.8		% Recovery	EPA 8260B	01/24/15 02:27
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	01/24/15 02:27

Report Number : 90184

Date : 01/28/2015

**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	01/26/2015	Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/2015	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	01/26/2015	Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/26/2015	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	01/26/2015	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	01/27/2015	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/26/2015
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/27/2015	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	01/27/2015	Methanol	< 50	50	ug/L	EPA 8260B	01/26/2015
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	01/27/2015	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	01/27/2015	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/26/2015
						Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/26/2015
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/26/2015
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015	1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	01/26/2015
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015	Toluene - d8 (Surr)	100		%	EPA 8260B	01/26/2015
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	01/23/2015						
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/26/2015
Methanol	< 50	50	ug/L	EPA 8260B	01/23/2015						
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015						
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/23/2015						
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/23/2015						
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015						
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/23/2015						
1,2-Dichloroethane-d4 (Surr)	99.6		%	EPA 8260B	01/23/2015						
Toluene - d8 (Surr)	98.9		%	EPA 8260B	01/23/2015						

**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
Arsenic, (Dis)	90184-01	< 0.015	0.400	0.400	0.455	0.422	mg/L	EPA 6010B	1/26/15	111	103	7.53	75-125	20
Chromium, (Dis)	90184-01	< 0.0050	0.400	0.400	0.423	0.394	mg/L	EPA 6010B	1/26/15	106	98.5	7.08	75-125	20
Iron, (Dis)	90184-01	0.90	4.00	4.00	5.09	4.85	mg/L	EPA 6010B	1/26/15	104	98.7	4.75	75-125	20
<b>Manganese, (Dis)</b>	90184-01	2.6	0.400	0.400	3.18	3.01	mg/L	EPA 6010B	1/26/15	<b>152</b>	108	5.65	75-125	20
Sodium, (Dis)	90184-01	76	40.0	40.0	124	118	mg/L	EPA 6010B	1/26/15	120	106	4.62	75-125	20
Arsenic, (Dis)	90184-03	0.31	0.400	0.400	0.738	0.741	mg/L	EPA 6010B	1/27/15	106	107	0.446	75-125	20
Chromium, (Dis)	90184-03	0.060	0.400	0.400	0.431	0.432	mg/L	EPA 6010B	1/27/15	92.9	93.1	0.208	75-125	20
Iron, (Dis)	90184-03	0.31	4.00	4.00	3.87	3.90	mg/L	EPA 6010B	1/27/15	89.0	89.8	0.797	75-125	20
Manganese, (Dis)	90184-03	0.053	0.400	0.400	0.407	0.408	mg/L	EPA 6010B	1/27/15	88.5	88.8	0.319	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>	90184-03	2600	40.0	40.0	2570	2550	mg/L	EPA 6010B	1/27/15	0.00	0.00	0.703	75-125	20
1,2-Dibromoethane	90184-01	<0.50	39.6	39.9	39.1	40.8	ug/L	EPA 8260B	1/23/15	98.8	102	3.23	70.0-130	25
1,2-Dichloroethane	90184-01	<0.50	39.6	39.9	35.8	36.8	ug/L	EPA 8260B	1/23/15	90.4	92.3	2.07	70.0-130	25
<b>Benzene</b>	90184-01	260	39.6	39.9	281	281	ug/L	EPA 8260B	1/23/15	44.3	45.0	1.64	70.0-130	25
Diisopropyl ether	90184-01	<0.50	39.6	39.9	36.1	37.1	ug/L	EPA 8260B	1/23/15	91.2	93.0	1.97	70.0-130	25
Ethanol	90184-01	<5.0	99.0	99.8	99.8	93.8	ug/L	EPA 8260B	1/23/15	101	94.0	7.02	55.0-150	25
Ethyl-tert-butyl ether	90184-01	<0.50	39.6	39.9	39.0	40.5	ug/L	EPA 8260B	1/23/15	98.4	101	3.02	70.0-130	25
Ethylbenzene	90184-01	110	39.6	39.9	144	144	ug/L	EPA 8260B	1/23/15	82.4	82.4	0.0130	70.0-130	25
Methanol	90184-01	<50	990	998	1040	985	ug/L	EPA 8260B	1/23/15	105	98.7	6.38	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	90184-01	100	39.6	39.9	138	142	ug/L	EPA 8260B	1/23/15	93.6	103	9.98	70.0-130	25
P + M Xylene	90184-01	42	39.6	39.9	82.0	81.9	ug/L	EPA 8260B	1/23/15	99.4	98.4	1.04	70.0-130	25
Tert-Butanol	90184-01	300	198	200	500	501	ug/L	EPA 8260B	1/23/15	101	101	0.155	70.0-130	25
Tert-amyl-methyl ether	90184-01	1.1	39.6	39.9	40.5	41.9	ug/L	EPA 8260B	1/23/15	99.6	102	2.69	70.0-130	25
Toluene	90184-01	12	39.6	39.9	48.6	49.0	ug/L	EPA 8260B	1/23/15	92.3	92.5	0.164	70.0-130	25
1,2-Dibromoethane	90196-02	<0.50	40.0	40.0	42.2	42.1	ug/L	EPA 8260B	1/26/15	106	105	0.261	70.0-130	25
1,2-Dichloroethane	90196-02	<0.50	40.0	40.0	37.2	36.6	ug/L	EPA 8260B	1/26/15	93.1	91.6	1.67	70.0-130	25
Benzene	90196-02	<0.50	40.0	40.0	38.8	38.5	ug/L	EPA 8260B	1/26/15	97.1	96.3	0.789	70.0-130	25
Diisopropyl ether	90196-02	<0.50	40.0	40.0	39.5	39.9	ug/L	EPA 8260B	1/26/15	98.7	99.8	1.10	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	90196-02	<5.0	100	100	119	119	ug/L	EPA 8260B	1/26/15	119	119	0.201	55.0-150	25
Ethyl-tert-butyl ether	90196-02	<0.50	40.0	40.0	38.6	38.7	ug/L	EPA 8260B	1/26/15	96.5	96.8	0.377	70.0-130	25
Ethylbenzene	90196-02	<0.50	40.0	40.0	41.6	41.7	ug/L	EPA 8260B	1/26/15	104	104	0.241	70.0-130	25
Methanol	90196-02	<50	1000	1000	1110	1060	ug/L	EPA 8260B	1/26/15	111	106	4.43	65.0-150	25
Methyl-t-butyl ether	90196-02	<0.50	40.0	40.0	37.6	37.5	ug/L	EPA 8260B	1/26/15	93.9	93.7	0.205	70.0-130	25
P + M Xylene	90196-02	<0.50	40.0	40.0	40.3	40.3	ug/L	EPA 8260B	1/26/15	101	101	0.0430	70.0-130	25
Tert-Butanol	90196-02	<5.0	200	200	194	194	ug/L	EPA 8260B	1/26/15	97.2	97.0	0.139	70.0-130	25
Tert-amyl-methyl ether	90196-02	<0.50	40.0	40.0	37.5	38.2	ug/L	EPA 8260B	1/26/15	93.8	95.6	1.92	70.0-130	25
Toluene	90196-02	<0.50	40.0	40.0	39.5	39.5	ug/L	EPA 8260B	1/26/15	98.9	98.8	0.0694	70.0-130	25

Report Number : 90184

Date : 01/28/2015

**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
Toluene	90205-07	<0.50	40.0	40.0	39.7	39.3	ug/L	EPA 8260B	1/26/15	99.2	98.3	0.973	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	1/26/15	106	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	1/26/15	104	85-115
Iron, (Dis)	4.00	mg/L	EPA 6010B	1/26/15	101	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	1/26/15	100	85-115
Sodium, (Dis)	40.0	mg/L	EPA 6010B	1/26/15	104	85-115
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	1/27/15	102	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	1/27/15	97.8	85-115
Iron, (Dis)	4.00	mg/L	EPA 6010B	1/27/15	91.3	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	1/27/15	93.3	85-115
Sodium, (Dis)	40.0	mg/L	EPA 6010B	1/27/15	97.8	85-115
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	1/23/15	102	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	1/23/15	94.5	70.0-130
Benzene	40.0	ug/L	EPA 8260B	1/23/15	92.5	70.0-130
Diisopropyl ether	40.0	ug/L	EPA 8260B	1/23/15	93.0	70.0-130
Ethanol	100	ug/L	EPA 8260B	1/23/15	95.7	55.0-150
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	1/23/15	99.1	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	1/23/15	99.6	70.0-130
Methanol	1000	ug/L	EPA 8260B	1/23/15	96.0	65.0-150
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	1/23/15	99.6	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	1/23/15	99.2	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	200	ug/L	EPA 8260B	1/23/15	93.4	70.0-130
Tert-amyl-methyl ether	40.0	ug/L	EPA 8260B	1/23/15	99.3	70.0-130
Toluene	40.0	ug/L	EPA 8260B	1/23/15	94.3	70.0-130
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	1/26/15	103	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	1/26/15	91.1	70.0-130
Benzene	39.8	ug/L	EPA 8260B	1/26/15	95.0	70.0-130
Diisopropyl ether	39.8	ug/L	EPA 8260B	1/26/15	99.3	70.0-130
Ethanol	99.5	ug/L	EPA 8260B	1/26/15	112	55.0-150
Ethyl-tert-butyl ether	39.8	ug/L	EPA 8260B	1/26/15	95.9	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	1/26/15	99.1	70.0-130
Methanol	995	ug/L	EPA 8260B	1/26/15	105	65.0-150
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	1/26/15	92.2	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	1/26/15	97.4	70.0-130
TPH as Gasoline	498	ug/L	EPA 8260B	1/26/15	81.3	70.0-130
Tert-Butanol	199	ug/L	EPA 8260B	1/26/15	94.7	70.0-130
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	1/26/15	94.0	70.0-130
Toluene	39.8	ug/L	EPA 8260B	1/26/15	96.7	70.0-130
TPH as Gasoline	496	ug/L	EPA 8260B	1/26/15	88.8	70.0-130







# SAMPLE RECEIPT CHECKLIST

SRG #: 90184

Sample Receipt Initials/Date: RUM 012115 Storage Time: 1525 Initials/Date: TJB 012215

TAT:  Standard  Rush  Split  None Method of Receipt:  Courier  Over-the-counter  Shipped

Temp °C 4.0  N/A Therm ID R-1 Time 1500 Coolant present:  Yes  No  Water  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	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
Does COC match project history? <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			

Samples:

	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
In-house Analysis:	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: Bubbles in samples -08 (HCl VOAs 4,5), -09 (HCl VOAs 4,5). TJB 012215 1426

Receipt Details:

Matrix	Container Type	# of Containers
WA	VOA	73
WA	Poly	50

Requires client: Clarification  Approval  Notification

Proceed With Analysis:  YES  NO Init/Date:

Client Communication:



# Subcontract Laboratory Report Attac\ments

2795 Second Street, Suite 300 Davis, CA 95618  
tel 530.297.4800 fax 530.297.4808  
[www.kiffanalytical.com](http://www.kiffanalytical.com)

# CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

January 28, 2015

**CLS Work Order #: CYA0841**

**COC #: 90184**

Scott Forbes

Pace Analytical Services, Inc. - Davis

2795 Second St. Suite 300

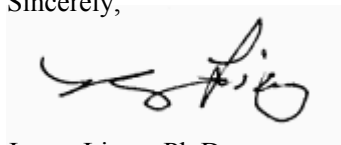
Davis, CA 95616

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

Enclosed are the results of analyses for samples received by the laboratory on 01/21/15 17:15. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'James Liang', is placed over a light gray rectangular background.

James Liang, Ph.D.  
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis 2795 Second St. Suite 300 Davis, CA 95616	Project: Tesoro-Livermore #67076 Project Number: F1-150120 Project Manager: Scott Forbes	CLS Work Order #: CYA0841 COC #: 90184
--	--	---

CYA0841-1

2795 Second Street, Suite 300 Davis, CA 95618 Lab: 530.297.4800 Fax: 530.297.4808		California Laboratory Services 3249 Fitzgerald Road Rancho Cordova, CA 95742 916-638-7301		COC No. <b>90184</b> Page 1 of 1	
Project Contact (Hardcopy or PDF to): <b>Scott Forbes</b>		EDF Report? <b>YES</b>		<b>Chain-of-Custody Record and Analysis Request</b>	
Company/Address: Pace Analytical Services, Inc.		Recommended but not mandatory to complete this section: Sampling Company Log Code: <b>CESC</b>		Analysis Request	
Phone No.: <b>530-297-4800</b>	FAX No.: <b>530-297-4808</b>	Global ID: <b>T0600101410</b>		TAT	
Project Number: <b>F1-150120</b>	P.O. No.: <b>90184</b>	Deliverables to (Email Address): inbox@kiffanalytical.com			
Project Name: Tesoro - Livermore #67076		Container / Preservative      Matrix		Standard	
Project Address:		Sampling			
<b>Sample Designation</b>		Date      Time		For Lab Use Only	
		250ml Poly None      Water			
DW-2		01/21/15 07:20		X X X X	
IP-10		01/21/15 11:20		X X X X	
IP-9		01/21/15 08:20		X X X X	
DW-6		01/21/15 08:45		X X X X	
DW-9		01/21/15 09:25		X X X X	
MW-2		01/21/15 10:00		X X X X	
DW-5		01/21/15 12:30		X X X X	
IP-1		01/21/15 11:45		X X X X	
DW-8		01/21/15 11:00		X X X X	
IP-8		01/21/15 12:00		X X X X	
Relinquished by: <i>Michelle [Signature]</i>		Date: 02/15/15	Time: 17:15	Received by:	
Relinquished by:		Date:	Time:	Received by:	
Relinquished by:		Date: 1/21/15	Time: 17:15	Received by Laboratory:	
				Remarks: Please refer to attached Test Detail.	
				Bill to: Accounts Payable	



# CALIFORNIA LABORATORY SERVICES

Page 2 of 8

01/28/15 13:49

Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

**CLS Work Order #: CYA0841**  
COC #: 90184

CYA0841-2

## Test Detail for Kiff Work Order: 90184

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

Page 1 of 1

CA DOHS ELAP Accreditation/Registration Number 1233

# CALIFORNIA LABORATORY SERVICES

Page 3 of 8

01/28/15 13:49

Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

CLS Work Order #: CYA0841  
COC #: 90184

## Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DW-2 (CYA0841-01) Water</b> Sampled: 01/21/15 07:20 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	61	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	0.30	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	25	0.50	"	"	"	"	"	"	
<b>IP-10 (CYA0841-02) Water</b> Sampled: 01/21/15 11:20 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	48	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	ND	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	16	0.50	"	"	"	"	"	"	
<b>IP-9 (CYA0841-03) Water</b> Sampled: 01/21/15 08:20 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	ND	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	58	5.0	µg/L	5	CY00454	01/22/15	01/23/15	EPA 7199	HT-4
Ferrous Iron	ND	0.10	mg/L	1	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	3.0	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	610	25	"	50	"	"	01/23/15	"	
<b>DW-6 (CYA0841-04) Water</b> Sampled: 01/21/15 08:45 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	50	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	ND	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	46	5.0	"	10	"	"	01/22/15	"	

CA DOHS ELAP Accreditation/Registration Number 1233

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

CLS Work Order #: CYA0841  
COC #: 90184

## Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DW-9 (CYA0841-05) Water</b> Sampled: 01/21/15 09:25 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	73	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	0.32	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	13	0.50	"	"	"	"	"	"	
<b>MW-2 (CYA0841-06) Water</b> Sampled: 01/21/15 10:00 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	120	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	0.95	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	29	0.50	"	"	"	"	"	"	
<b>DW-5 (CYA0841-07) Water</b> Sampled: 01/21/15 12:30 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	55	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	0.23	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	69	5.0	"	10	"	"	01/22/15	"	
<b>IP-1 (CYA0841-08) Water</b> Sampled: 01/21/15 11:45 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	ND	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	ND	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
Sulfate as SO4	190	5.0	"	10	"	"	"	"	

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis 2795 Second St. Suite 300 Davis, CA 95616	Project: Tesoro-Livermore #67076 Project Number: F1-150120 Project Manager: Scott Forbes	CLS Work Order #: <b>CYA0841</b> COC #: 90184
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## Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>DW-8 (CYA0841-09) Water</b> Sampled: 01/21/15 11:00 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	77	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
<b>Ferrous Iron</b>	<b>0.25</b>	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
<b>Sulfate as SO4</b>	<b>18</b>	0.50	"	"	"	"	"	"	
<b>IP-8 (CYA0841-10) Water</b> Sampled: 01/21/15 12:00 Received: 01/21/15 17:15									
Carbon Dioxide as CO2	ND	5.0	mg/L	1	CY00465	01/22/15	01/22/15	SM 4500C	
Hexavalent Chromium	ND	1.0	µg/L	"	CY00454	01/22/15	01/22/15	EPA 7199	
Ferrous Iron	ND	0.10	mg/L	"	CY00453	01/22/15	01/22/15	SM3500-Fe D	
Nitrate as N	ND	0.50	"	"	CY00459	01/22/15	01/22/15	EPA 300.0	
<b>Sulfate as SO4</b>	<b>310</b>	5.0	"	10	"	"	"	"	

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis 2795 Second St. Suite 300 Davis, CA 95616	Project: Tesoro-Livermore #67076 Project Number: F1-150120 Project Manager: Scott Forbes	CLS Work Order #: CYA0841 COC #: 90184
--	--	---

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch CY00453 - General Preparation</b>										
<b>Blank (CY00453-BLK1)</b> Prepared & Analyzed: 01/22/15										
Ferrous Iron	ND	0.10	mg/L							
<b>LCS (CY00453-BS1)</b> Prepared & Analyzed: 01/22/15										
Ferrous Iron	0.263	0.10	mg/L	0.250		105	80-120			
<b>LCS Dup (CY00453-BSD1)</b> Prepared & Analyzed: 01/22/15										
Ferrous Iron	0.259	0.10	mg/L	0.250		104	80-120	2	25	
<b>Matrix Spike (CY00453-MS1)</b> Source: CYA0841-01 Prepared & Analyzed: 01/22/15										
Ferrous Iron	0.574	0.10	mg/L	0.250	0.303	108	75-125			
<b>Matrix Spike Dup (CY00453-MSD1)</b> Source: CYA0841-01 Prepared & Analyzed: 01/22/15										
Ferrous Iron	0.561	0.10	mg/L	0.250	0.303	103	75-125	2	30	
<b>Batch CY00454 - General Prep</b>										
<b>Blank (CY00454-BLK1)</b> Prepared & Analyzed: 01/22/15										
Hexavalent Chromium	ND	1.0	µg/L							
<b>LCS (CY00454-BS1)</b> Prepared & Analyzed: 01/22/15										
Hexavalent Chromium	5.33	1.0	µg/L	5.00		107	80-120			
<b>LCS Dup (CY00454-BSD1)</b> Prepared & Analyzed: 01/22/15										
Hexavalent Chromium	5.15	1.0	µg/L	5.00		103	80-120	4	20	
<b>Matrix Spike (CY00454-MS1)</b> Source: CYA0842-05 Prepared & Analyzed: 01/22/15										
Hexavalent Chromium	8.32	1.0	µg/L	5.00	2.21	122	75-125			

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis 2795 Second St. Suite 300 Davis, CA 95616	Project: Tesoro-Livermore #67076 Project Number: F1-150120 Project Manager: Scott Forbes	CLS Work Order #: CYA0841 COC #: 90184
--	--	---

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch CY00454 - General Prep</b>										
<b>Matrix Spike Dup (CY00454-MSD1)</b>		<b>Source: CYA0842-05</b>			Prepared & Analyzed: 01/22/15					
Hexavalent Chromium	7.40	1.0	µg/L	5.00	2.21	104	75-125	12	25	
<b>Batch CY00459 - General Prep</b>										
<b>Blank (CY00459-BLK1)</b>		Prepared & Analyzed: 01/22/15								
Sulfate as SO4	ND	0.50	mg/L							
Nitrate as N	ND	0.50	"							
<b>LCS (CY00459-BS1)</b>		Prepared & Analyzed: 01/22/15								
Sulfate as SO4	4.96	0.50	mg/L	5.00		99	80-120			
Nitrate as N	0.456	0.50	"	0.451		101	80-120			
<b>LCS Dup (CY00459-BSD1)</b>		Prepared & Analyzed: 01/22/15								
Sulfate as SO4	5.00	0.50	mg/L	5.00		100	80-120	0.9	20	
Nitrate as N	0.457	0.50	"	0.451		101	80-120	0.3	20	
<b>Matrix Spike (CY00459-MS1)</b>		<b>Source: CYA0839-04</b>			Prepared & Analyzed: 01/22/15					
Sulfate as SO4	14.3	0.50	mg/L	5.00	9.85	89	80-120			
Nitrate as N	4.25	0.50	"	0.451	3.98	60	80-120			QM-4X
<b>Matrix Spike Dup (CY00459-MSD1)</b>		<b>Source: CYA0839-04</b>			Prepared & Analyzed: 01/22/15					
Sulfate as SO4	14.4	0.50	mg/L	5.00	9.85	92	80-120	1	20	
Nitrate as N	4.25	0.50	"	0.451	3.98	60	80-120	0.01	20	QM-4X
<b>Batch CY00465 - General Preparation</b>										
<b>Blank (CY00465-BLK1)</b>		Prepared & Analyzed: 01/22/15								
Carbon Dioxide as CO2	ND	5.0	mg/L							

# CALIFORNIA LABORATORY SERVICES

Pace Analytical Services, Inc. - Davis  
2795 Second St. Suite 300  
Davis, CA 95616

Project: Tesoro-Livermore #67076  
Project Number: F1-150120  
Project Manager: Scott Forbes

**CLS Work Order #: CYA0841**  
COC #: 90184

## Notes and Definitions

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
HT-4	Sample was originally analyzed within holding time. Due to high concentration of the analyte, the sample was reanalyzed with a dilution outside of the EPA recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference



# Subcontract Laboratory Report Attac\ments

2795 Second Street, Suite 300 Davis, CA 95618  
tel 530.297.4800 fax 530.297.4808  
[www.kiffanalytical.com](http://www.kiffanalytical.com)



January 27, 2015

Scott Forbes  
Pace Analytical Services, Inc  
2795 Second Street  
Suite 300  
Davis, CA 95618

RE: Project: Tesoro-Livermore #67076  
Pace Project No.: 10294728

Dear Scott Forbes:

Enclosed are the analytical results for sample(s) received by the laboratory on January 22, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Chee Lee  
chee.lee@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## CERTIFICATIONS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

---

### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN\_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10294728001	DW-2	Water	01/21/15 07:20	01/22/15 09:35
10294728002	IP-10	Water	01/21/15 11:20	01/22/15 09:35
10294728003	IP-9	Water	01/21/15 08:20	01/22/15 09:35
10294728004	DW-6	Water	01/21/15 08:45	01/22/15 09:35
10294728005	DW-9	Water	01/21/15 09:25	01/22/15 09:35
10294728006	MW-2	Water	01/21/15 10:00	01/22/15 09:35
10294728007	DW-5	Water	01/21/15 12:30	01/22/15 09:35
10294728008	IP-1	Water	01/21/15 11:45	01/22/15 09:35
10294728009	DW-8	Water	01/21/15 11:00	01/22/15 09:35
10294728010	IP-8	Water	01/21/15 12:00	01/22/15 09:35

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10294728001	DW-2	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728002	IP-10	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728003	IP-9	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728004	DW-6	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728005	DW-9	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728006	MW-2	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728007	DW-5	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728008	IP-1	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728009	DW-8	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M
10294728010	IP-8	RSK 175	JRB	4	PASI-M
		SM 2320B	MW	1	PASI-M
		SM 2540C	DCL	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

---

**Method:** RSK 175

**Description:** RSK 175 AIR Headspace

**Client:** PASI California

**Date:** January 27, 2015

### General Information:

10 samples were analyzed for RSK 175. All samples were received in acceptable condition with any exceptions noted below.

C5: The sample was not collected in the appropriate container for headspace analysis.

- DW-2 (Lab ID: 10294728001)
- DW-5 (Lab ID: 10294728007)
- DW-6 (Lab ID: 10294728004)
- DW-8 (Lab ID: 10294728009)
- DW-9 (Lab ID: 10294728005)
- IP-1 (Lab ID: 10294728008)
- IP-10 (Lab ID: 10294728002)
- IP-8 (Lab ID: 10294728010)
- IP-9 (Lab ID: 10294728003)
- MW-2 (Lab ID: 10294728006)

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

---

**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** PASI California

**Date:** January 27, 2015

### General Information:

10 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

C5: The sample was not collected in the appropriate container for headspace analysis.

- DW-2 (Lab ID: 10294728001)
- DW-5 (Lab ID: 10294728007)
- DW-6 (Lab ID: 10294728004)
- DW-8 (Lab ID: 10294728009)
- DW-9 (Lab ID: 10294728005)
- IP-1 (Lab ID: 10294728008)
- IP-10 (Lab ID: 10294728002)
- IP-8 (Lab ID: 10294728010)
- IP-9 (Lab ID: 10294728003)
- MW-2 (Lab ID: 10294728006)

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WET/40186

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10294122001, 10294216001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1887992)
  - Alkalinity, Total as CaCO<sub>3</sub>

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

---

**Method:** SM 2540C

**Description:** 2540C Total Dissolved Solids

**Client:** PASI California

**Date:** January 27, 2015

### General Information:

10 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below.

C5: The sample was not collected in the appropriate container for headspace analysis.

- DW-2 (Lab ID: 10294728001)
- DW-5 (Lab ID: 10294728007)
- DW-6 (Lab ID: 10294728004)
- DW-8 (Lab ID: 10294728009)
- DW-9 (Lab ID: 10294728005)
- IP-1 (Lab ID: 10294728008)
- IP-10 (Lab ID: 10294728002)
- IP-8 (Lab ID: 10294728010)
- IP-9 (Lab ID: 10294728003)
- MW-2 (Lab ID: 10294728006)

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

<b>Sample: DW-2</b>		<b>Lab ID: 10294728001</b>	Collected: 01/21/15 07:20	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 21:30	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 21:30	74-85-1	
Methane	<b>1690</b>	ug/L	6.6	1		01/23/15 21:30	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 21:30	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>527</b>	mg/L	5.0	1		01/26/15 13:22		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>669</b>	mg/L	10.0	1		01/24/15 12:17		

<b>Sample: IP-10</b>		<b>Lab ID: 10294728002</b>	Collected: 01/21/15 11:20	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 21:38	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 21:38	74-85-1	
Methane	<b>2370</b>	ug/L	6.6	1		01/23/15 21:38	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 21:38	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>352</b>	mg/L	5.0	1		01/26/15 13:27		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>501</b>	mg/L	10.0	1		01/24/15 12:17		

<b>Sample: IP-9</b>		<b>Lab ID: 10294728003</b>	Collected: 01/21/15 08:20	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 22:03	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 22:03	74-85-1	
Methane	<b>8.1</b>	ug/L	6.6	1		01/23/15 22:03	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 22:03	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>5370</b>	mg/L	25.0	1		01/26/15 16:24		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>29700</b>	mg/L	40.0	1		01/24/15 12:17		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

Sample: DW-6		Lab ID: 10294728004	Collected: 01/21/15 08:45	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 22:20	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 22:20	74-85-1	
Methane	2110	ug/L	6.6	1		01/23/15 22:20	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 22:20	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	395	mg/L	5.0	1		01/26/15 13:35		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	550	mg/L	10.0	1		01/24/15 12:17		

Sample: DW-9		Lab ID: 10294728005	Collected: 01/21/15 09:25	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 22:28	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 22:28	74-85-1	
Methane	3160	ug/L	6.6	1		01/23/15 22:28	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 22:28	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	459	mg/L	5.0	1		01/26/15 13:41		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	620	mg/L	10.0	1		01/24/15 12:17		

Sample: MW-2		Lab ID: 10294728006	Collected: 01/21/15 10:00	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 22:36	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 22:36	74-85-1	
Methane	100	ug/L	6.6	1		01/23/15 22:36	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 22:36	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	597	mg/L	5.0	1		01/26/15 13:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	798	mg/L	10.0	1		01/24/15 12:17		

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### ANALYTICAL RESULTS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

<b>Sample: DW-5</b>		<b>Lab ID: 10294728007</b>	Collected: 01/21/15 12:30	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 22:44	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 22:44	74-85-1	
Methane	<b>3310</b>	ug/L	6.6	1		01/23/15 22:44	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 22:44	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>746</b>	mg/L	5.0	1		01/26/15 13:50		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>1070</b>	mg/L	10.0	1		01/24/15 12:17		

<b>Sample: IP-1</b>		<b>Lab ID: 10294728008</b>	Collected: 01/21/15 11:45	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 22:53	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 22:53	74-85-1	
Methane	<b>2060</b>	ug/L	6.6	1		01/23/15 22:53	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 22:53	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>3070</b>	mg/L	12.5	1		01/26/15 16:08		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>16700</b>	mg/L	40.0	1		01/24/15 12:17		

<b>Sample: DW-8</b>		<b>Lab ID: 10294728009</b>	Collected: 01/21/15 11:00	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 23:01	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 23:01	74-85-1	
Methane	<b>4350</b>	ug/L	6.6	1		01/23/15 23:01	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 23:01	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>675</b>	mg/L	5.0	1		01/26/15 14:12		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>834</b>	mg/L	10.0	1		01/24/15 12:17		

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## ANALYTICAL RESULTS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

<b>Sample: IP-8</b>		<b>Lab ID: 10294728010</b>	Collected: 01/21/15 12:00	Received: 01/22/15 09:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	6.2	1		01/23/15 23:09	74-84-0	
Ethene	ND	ug/L	6.2	1		01/23/15 23:09	74-85-1	
Methane	<b>1770</b>	ug/L	6.6	1		01/23/15 23:09	74-82-8	
n-Propane	ND	ug/L	18.1	1		01/23/15 23:09	74-98-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	<b>3110</b>	mg/L	12.5	1		01/26/15 16:16		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C						
Total Dissolved Solids	<b>17600</b>	mg/L	40.0	1		01/24/15 12:17		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

QC Batch:	AIR/22334	Analysis Method:	RSK 175
QC Batch Method:	RSK 175	Analysis Description:	RSK 175 AIR HEADSPACE
Associated Lab Samples:	10294728001, 10294728002, 10294728003, 10294728004, 10294728005, 10294728006, 10294728007, 10294728008, 10294728009, 10294728010		

METHOD BLANK:	1887036	Matrix:	Water
Associated Lab Samples:	10294728001, 10294728002, 10294728003, 10294728004, 10294728005, 10294728006, 10294728007, 10294728008, 10294728009, 10294728010		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	01/23/15 13:19	
Ethene	ug/L	ND	6.2	01/23/15 13:19	
Methane	ug/L	ND	6.6	01/23/15 13:19	
n-Propane	ug/L	ND	18.1	01/23/15 13:19	

LABORATORY CONTROL SAMPLE & LCSD:		1887037	1887038							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	107	113	94	99	85-115	5	20	
Ethene	ug/L	106	99.7	102	94	96	85-115	3	20	
Methane	ug/L	60.7	56.7	58.4	93	96	85-115	3	20	
n-Propane	ug/L	168	160	154	95	92	85-115	4	20	

SAMPLE DUPLICATE:		1887039	35172031002	Dup Result	RPD	Max RPD	Qualifiers
Parameter	Units	Result	Result				
Ethane	ug/L	3.1U	ND			20	
Ethene	ug/L	3.1U	ND			20	
Methane	ug/L	33.6	33.0		2	20	
n-Propane	ug/L	0.89U	ND			20	

SAMPLE DUPLICATE:		1887040	10294728003	Dup Result	RPD	Max RPD	Qualifiers
Parameter	Units	Result	Result				
Ethane	ug/L	ND	ND			20	
Ethene	ug/L	ND	ND			20	
Methane	ug/L	8.1	8.1		0	20	
n-Propane	ug/L	ND	ND			20	

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### QUALITY CONTROL DATA

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

QC Batch: WET/40179

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 10294728001, 10294728002, 10294728003, 10294728004, 10294728005, 10294728006, 10294728007, 10294728008, 10294728009, 10294728010

METHOD BLANK: 1887415

Matrix: Water

Associated Lab Samples: 10294728001, 10294728002, 10294728003, 10294728004, 10294728005, 10294728006, 10294728007, 10294728008, 10294728009, 10294728010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	01/24/15 12:17	

LABORATORY CONTROL SAMPLE: 1887416

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	800	80	80-120	

SAMPLE DUPLICATE: 1887417

Parameter	Units	10294641004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 1887418

Parameter	Units	10294641005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	293	305	4	10	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### SAMPLE QUALIFIERS

Sample: 10294728001

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728002

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728003

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728004

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728005

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728006

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728007

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728008

[1] The sample was not collected in the appropriate container for headspace analysis.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

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### SAMPLE QUALIFIERS

Sample: 10294728009

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 10294728010

[1] The sample was not collected in the appropriate container for headspace analysis.

Sample: 1887040

[1] The sample was not collected in the appropriate container for headspace analysis.

### ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Tesoro-Livermore #67076

Pace Project No.: 10294728

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10294728001	DW-2	RSK 175	AIR/22334		
10294728002	IP-10	RSK 175	AIR/22334		
10294728003	IP-9	RSK 175	AIR/22334		
10294728004	DW-6	RSK 175	AIR/22334		
10294728005	DW-9	RSK 175	AIR/22334		
10294728006	MW-2	RSK 175	AIR/22334		
10294728007	DW-5	RSK 175	AIR/22334		
10294728008	IP-1	RSK 175	AIR/22334		
10294728009	DW-8	RSK 175	AIR/22334		
10294728010	IP-8	RSK 175	AIR/22334		
10294728001	DW-2	SM 2320B	WET/40186		
10294728002	IP-10	SM 2320B	WET/40186		
10294728003	IP-9	SM 2320B	WET/40186		
10294728004	DW-6	SM 2320B	WET/40186		
10294728005	DW-9	SM 2320B	WET/40186		
10294728006	MW-2	SM 2320B	WET/40186		
10294728007	DW-5	SM 2320B	WET/40186		
10294728008	IP-1	SM 2320B	WET/40186		
10294728009	DW-8	SM 2320B	WET/40186		
10294728010	IP-8	SM 2320B	WET/40186		
10294728001	DW-2	SM 2540C	WET/40179		
10294728002	IP-10	SM 2540C	WET/40179		
10294728003	IP-9	SM 2540C	WET/40179		
10294728004	DW-6	SM 2540C	WET/40179		
10294728005	DW-9	SM 2540C	WET/40179		
10294728006	MW-2	SM 2540C	WET/40179		
10294728007	DW-5	SM 2540C	WET/40179		
10294728008	IP-1	SM 2540C	WET/40179		
10294728009	DW-8	SM 2540C	WET/40179		
10294728010	IP-8	SM 2540C	WET/40179		


### REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt**

Client Name: Pace CA Project #: \_\_\_\_\_

**WO# : 10294728**



10294728

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  SpeedDee  Other: \_\_\_\_\_  
 Tracking Number: 7720 6618 0568

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No  
 Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No  
 Thermom. Used:  B88A9130516413  B88A912167504  B88A9132521491 Type of Ice:  Wet  Blue  None  Samples on ice, cooling process has begun  
 Cooler Temp Read (°C): 1.7 Cooler Temp Corrected (°C): 1.0 Biological Tissue Frozen?  Yes  No  N/A  
 Temp should be above freezing to 6°C Correction Factor: 0.1 Date and Initials of Person Examining Contents: JP 1/22/15

			Comments:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	11.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: (VOA), Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Sample #
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____			

**CLIENT NOTIFICATION/RESOLUTION** Field Data Required?  Yes  No  
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/Resolution: \_\_\_\_\_

Project Manager Review: [Signature] Date: 1/23/15  
 Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers)



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

Pace Analytical Minneapolis  
 1700 Elm St. SE  
 Minneapolis, MN 55414

COC No. 90184

Page 1 of 1

**Chain-of-Custody Record and Analysis Request**

EDF Report? YES

Project Contact (Hardcopy or PDF to):  
 Scott Forbes

Recommended but not mandatory to complete this section:  
 Sampling Company Log Code: CESC

Global ID: T0600101410  
 Deliverables to (Email Address):  
 inbox@kiffanalytical.com

Project Name:  
 Tesoro - Livemore #67076

Project Address:  
 Project Address:

Sample Designation	Sampling	
	Date	Time
DW-2	01/21/15	07:20
IP-10	01/21/15	11:20
IP-9	01/21/15	08:20
DW-6	01/21/15	08:45
DW-9	01/21/15	09:25
MW-2	01/21/15	10:00
DW-5	01/21/15	12:30
IP-1	01/21/15	11:45
DW-8	01/21/15	11:00
IP-8	01/21/15	12:00

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

Analysis Request	TAT	
Alkalinity SM 2320 (1)	X	001
Hydrocarbons in Water by RSK 175 (1)	X	002
Total Dissolved Solids	X	003
	X	001
	X	005
	X	006
	X	007
	X	008
	X	009
	X	010

Remarks: Please refer to attached Test Detail.  
 T = 1.0°C

Relinquished by: *[Signature]* Pace Analytical  
 Date: 01/21/15 1608  
 Time: 9:35  
 Received by: *[Signature]* Pace  
 Date: 1/21/15  
 Time: 9:35

Relinquished by:  
 Date:  
 Relinquished by:  
 Date:  
 Relinquished by:  
 Date:

Bill to: Accounts Payable

## Test Detail for Kiff Work Order: 90184

**Alkalinity SM 2320 (1)**  
Alkalinity, Total (as CaCO<sub>3</sub>)

**Hydrocarbons in Water by RSK 175 (1)**  
Methane

**ATTACHMENT F**  
**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>Tosco Livermore 1619 19th St. Livermore, CA</i>					
4. Generator's Phone ( )					
5. Transporter 1 Company Name <i>Confluence Env.</i>		6. US EPA ID Number		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone <i>916-765-7641</i>	
9. Designated Facility Name and Site Address <i>JSE 1105 Airport Rd. Riv. Vista CA</i>		10. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone <i>767-374-3834</i>	
11. WASTE DESCRIPTION			12. Containers	13. Total Quantity	14. Unit Wt./Vol.
a.			No.	Type	
<i>NON-HAZ Purgx Water</i>			<i>1</i>	<i>Poly</i>	<i>365 Gal</i>
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information					
<b>16. GENERATOR'S CERTIFICATION:</b> 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				Date	
Signature				Month	Day Year
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name <i>Adam Feeney</i>				Month	Day Year
Signature <i>[Signature]</i>				<i>1</i>	<i>21</i> <i>15</i>
18. Transporter 2 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name				Month	Day Year
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>				Date	
Signature <i>[Signature]</i>				Month	Day Year
				<i>11</i>	<i>22</i> <i>15</i>

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

