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3164 Gold Camp Drive • Suite 200
Rancho Cordova, California 95670 USA

916.638.2085 800.477.7411
Fax 916.638.8385

July 21, 2004

Mr. Amir Gholami
Alameda County Health Agency
Division of Hazardous Materials
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Subject: Multiphase Pilot Testing Work Plan and
Quarterly Groundwater Monitoring Report – First Quarter 2004
Tesoro No. 67076 (Former Beacon Station No. 3604)
1619 First Street, Livermore, California
Delta Project No. D004-076

Dear Mr. Gholami:

Delta Environmental Consultants, Inc., (Delta), has been authorized by Tesoro Environmental Resources Company (Tesoro) to prepare this work plan for multiphase extraction (MPE) pilot testing and groundwater monitoring report for the subject site (Figure 1).

Purpose

Concentrations of petroleum hydrocarbon constituents, although appearing to be stable, continue to persist in groundwater samples collected from monitoring well MW-2 located at the subject site's down-gradient property boundary and from MW-6, located offsite across the intersection of First Street and South P Street (Figure 2). It appears that a source area for petroleum hydrocarbon constituents exists in soil beneath the site. The source area may be within the zone of water table fluctuation because concentrations in monitoring well MW-2, located just down-gradient of potential site sources, are elevated during periods when the water table is highest. Enclosure A presents trend graphs of petroleum hydrocarbon concentrations and depth to groundwater in monitoring well MW-2. The purpose of the MPE pilot testing is to evaluate the effectiveness of the technology to exposing the zone of water table fluctuation for subsequent removal of hydrocarbons from the soil.

MPE Pilot Testing

Multiphase extraction utilizes groundwater dewatering to expose smear zone soils to soil vapor extraction (SVE). Impacted groundwater is removed while at the same time soil in the smear zone is dewatered and exposed to SVE. The following sections describe how this alternative will be applied to the site.

A pilot test will be performed on vapor well VW-2 to assess the effective soil dewatering profile and the effective radius of vacuum influence from SVE. Also, it will assess the soil vapor and groundwater extraction rates along with mass removal rates. It will aid in evaluating the placement of the extraction well network. The test data will be used to specify the appropriate MPE system equipment.

In an effort to properly design an effective MPE system for the site, Delta has proposed to perform an MPE pilot test for a maximum of three days. Two temporary monitoring points (TP-1 and TP-2, Figure 2), screened from 28 to 43 feet below surface grade (bsg) will be installed approximately 10 feet up gradient and 10 feet down gradient of vapor well VW-2. The monitoring points will be used to monitor drawdown and vacuum influence from VW-2 during the MPE pilot test. These data will be used to determine an effective radius of influence (ROI) for a MPE system design. After completion of the pilot test, the temporary monitoring wells will be properly abandoned by pressure grouting methods. Monitoring well installation field methods and procedures are provided in Enclosure B.

The MPE pilot-testing will begin with equipment appropriate for two-phase extraction (TPE). If groundwater flow rates exceed 2 gallons per minute (gpm), we will stop the test and begin again with equipment appropriate for dual-phase extraction (DPE).

The TPE equipment will typically consist of a 20 horsepower high vacuum blower pulling vapor and water through a single pipe into an 80 gallon separator tank. The blower is capable of generating up to 20+ inches of mercury vacuum and 200-300 cubic feet per minute (cfm) of airflow. The separator tank will capture the groundwater and the vapors will be processed through a thermal oxidizer for abatement. Ground water will be pumped to a holding tank. The water will be temporarily stored pending analytical analyses, and treatment and disposal approval

DPE equipment will typically consist of a 20 horsepower high vacuum blower and an electric submersible pump. The blower is capable of generating up to 20+ inches of mercury vacuum and 200-300 cfm of airflow, and the submersible pump is capable of extracting groundwater at up to 10 gpm. Groundwater will be extracted at the maximum achievable rate from VW-2 by using a submersible pump. The extracted groundwater will be temporarily stored in a 21,000 gallon holding tank pending laboratory analyses, and treatment and disposal approval. A vacuum will be applied to the well with the vacuum blower and the groundwater extraction rates will be adjusted accordingly to achieve maximum drawdown in the well. Extracted soil vapor will be treated to meet local air discharge requirements prior to atmospheric discharge.

The following parameters will be monitored during the MPE pilot-testing event:

- Depth to water (feet) in VW-2, TP-1, and TP-2 (during TPE testing, it will be assumed that the depth to water in VW-2 will be the depth of the extraction pipe stinger),
- Vacuums and pressures (inches of water or mercury) in VW-2, TP-1, TP-2, and MPE system inlet,
- For TPE, vacuums will also be measured at the extraction stinger,
- Influent (VW-2) and effluent (system) TPH-g vapor concentrations (ppmv),
- Vapor influent flow rates (acfm) from VW-2,
- Groundwater extraction flow rates (gpm) from VW-2, and
- Influent (VW-2) and effluent (system) vapor stream temperatures (F).

These parameters will be monitored at the start of the test and every 2 hours thereafter for the remainder of the test. Groundwater and vapor samples will be collected during the first hour of startup, at the end of 8 hours, then once daily thereafter for the remainder of the test. All vapor and groundwater samples will be sent to a California-certified laboratory where they will be analyzed for TPH-g, BTEX, and MTBE using EPA Method 8260. The water samples will also be analyzed for TBA, using EPA Method 8260.

Prior to any testing, all applicable permits and/or permissions will be obtained from the appropriate regulatory agencies and/or appropriate parties involved. Pending the groundwater analytical results from the test, groundwater in the holding tank will be hauled off by an approved recycling vendor or treated by granular activated carbon onsite and discharged to the local sewer with the prior approval of the local sewer department.

A results report will be generated after the data from the pilot test has been evaluated. A conceptual MPE design will be included with the results report.

Quarterly Groundwater Monitoring

Delta retained Doulos Environmental, Inc., (Doulos) to measure depth to groundwater and collect groundwater samples on May 10, 2004. Sampling methods are presented in Enclosure B and field data forms are presented in Enclosure C.

Doulos measured the depth to the groundwater table in monitoring wells MW-1 through MW-10. Depth measurements were obtained using an electronic water-level indicator and recorded to the nearest 0.01-foot. The water-level indicator was cleaned with a solution of non-phosphate detergent and de-ionized water, and rinsed before every use. Groundwater elevation data are presented in Table 1 and inferred groundwater elevation contours are presented on Figure 2. Depth to groundwater ranged from 29.86 to 33.61 feet below the top of well casing. Based on ground water elevation data computed from depth to water measurements in wells, the groundwater flow direction across the site was inferred to be west-northwest with an approximate gradient of 0.015.

Groundwater monitoring wells MW-2, and MW-6 through MW-10 were sampled on May 10, 2004; wells MW-3, MW-4 and MW-5 are sampled on a bi-annual basis and were excluded from this quarter's sampling event. Samples from these wells were analyzed for total petroleum hydrocarbons (TPH) in the gasoline range, benzene, toluene, ethylbenzene, xylenes (BTEX), and oxygenates including methyl tert-butyl ether (MTBE) and tert-butanol (TBA), using USEPA Method 8260B. Kiff Analytical Labs, Inc. (Kiff Analytical) of Davis, California, a California state-certified laboratory, performed the chemical analyses. The Kiff Analytical laboratory report, including chain-of-custody documentation, is presented in Enclosure D. Laboratory analyses results for the second quarter 2004 sampling event are summarized in Table 1, and TPH in the gasoline range, benzene, MTBE, and TBA concentrations are shown on Figure 3.

Discussion of Monitoring Results

Groundwater concentrations remained stable, in comparison to the March 2004 results, in the majority of the assessed wells with the following exceptions: Concentrations of TPH in the gasoline range, benzene, toluene, ethyl-benzene and total xylenes decreased in monitoring wells MW-2 and MW-6. Groundwater flow direction across the site from March to May 2004 remained stable at west-northwest.

Recommendations

Delta recommends the sampling of groundwater in vapor wells VW-1, VW-2, and VW-3. Concentration data from these wells will help establish the location of the source area for petroleum hydrocarbons in soil beneath the site. In addition, we recommend testing groundwater samples for dissolved oxygen, oxidation-reduction potential, pH, conductivity, temperature, alkalinity, nitrate, sulfate, and ferrous iron. Also, we recommend a survey of the horizontal position and vertical elevation of groundwater monitoring well MW-10, recently installed by Alisto Engineering.

Schedule

The following presents tasks with the estimated time for completion of each. Some tasks may be performed in conjunction with other tasks.

Pilot Testing:

Task 1: Procurement of well permits for pilot test well and temporary observation point installation. Estimated duration – 3 weeks.
Task 2: Pilot test implementation. Estimated duration – 2 weeks.
Task 3: Data evaluation, results report. Estimated duration – 4 weeks.

Groundwater Monitoring

Task 1: Third quarter groundwater monitoring event – July or August 2004.
Task 2: Survey of groundwater monitoring well MW-10 – During the third quarter monitoring event.

Please contact Jim Brownell at (916) 638-2765 if you have any questions.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

James R. Brownell
California Registered Geologist No. 5078

Enclosures

cc: Jeffrey Baker, Tesoro Environmental Resources Company
Chuck Miller, Agoura USA Petroleum
Brian Kelleher, Kelleher and Associates
Bettie Graham, Regional Water Quality Control Board, San Francisco Bay Region

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-1	6/1/1993	100.00	37.50	62.50	27000	2200	400	<0.50	4900	-	-	-	-	-	-	-	-	-
MW-1	6/22/1993	100.00	38.46	61.54	87000	8000	10000	260	10000	-	-	-	-	-	-	-	-	-
MW-1	10/6/1993	100.00	42.22	57.78	40000	4700	6500	740	5300	-	-	-	-	-	-	-	-	-
MW-1	1/13/1994	100.00	34.52	65.48	9400	1300	9500	110	850	-	-	-	-	-	-	-	-	-
MW-1	3/30/1994	100.00	31.93	68.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	4/25/1994	100.00	33.49	66.51	11000	1500	1800	290	1700	-	-	-	-	-	-	-	-	-
MW-1	8/12/1994	100.00	41.03	58.97	11000	550	330	260	1400	-	-	-	-	-	-	-	-	-
MW-1	12/14/1994	100.00	38.63	61.37	11000	1000	1200	320	1500	-	-	-	-	-	-	-	-	-
MW-1	2/10/1995	100.00	30.80	69.20	9300	1200	1500	280	1500	-	-	-	-	-	-	-	-	-
MW-1	6/15/1995	100.00	25.46	74.54	140	5.6	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-1	9/26/1995	100.00	31.05	68.95	410	140	<0.50	<0.50	43	-	-	-	-	-	-	-	-	-
MW-1	12/15/1995	100.00	28.11	71.89	740	250	<1.3	<1.3	87	-	-	-	-	-	-	-	-	-
MW-1	3/21/1996	100.00	17.67	82.33	<50	0.52	<0.50	<0.50	0.51	-	-	-	-	-	-	-	-	-
MW-1	6/13/1996	100.00	22.86	77.14	240	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-1	9/16/1996	100.00	30.04	69.96	720	70	<0.50	1.0	5.1	<5.0	-	-	-	-	-	-	-	-
MW-1	12/2/1996	100.00	26.74	73.26	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	3/7/1997	100.00	20.84	79.16	600	6.7	<0.50	1.2	1.8	<5.0	-	-	-	-	-	-	-	-
MW-1	6/12/1997	100.00	28.71	71.29	18000	180	800	410	1800	<5.0	-	-	-	-	-	-	-	-
MW-1	9/29/1997	100.00	33.91	66.09	350	120	1.5	<0.50	12	<5.0	-	-	-	-	-	-	-	-
MW-1	12/1/1997	100.00	34.88	65.12	<50	7.0	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	3/19/1998	100.00	19.83	80.17	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	5/29/1998	100.00	21.57	78.43	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	9/15/1998	100.00	31.68	68.32	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	11/30/1998	100.00	36.80	63.20	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	1/17/1999	100.00	30.02	69.98	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	6/10/1999	100.00	29.30	70.70	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	9/7/1999	100.00	31.41	68.59	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	12/13/1999	100.00	32.95	67.05	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	3/13/2000	100.00	25.74	74.26	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	6/12/2000	100.00	28.24	71.76	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-1	11/10/2000	100.00	30.56	69.44	<50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-1	12/31/2000	100.00	31.71	68.29	<50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-1	3/27/2001	100.00	30.43	69.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-1	6/30/2001	100.00	36.61	63.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-1	9/26/2001	100.00	45.10	54.90	90	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-

Table 1
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Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-1	12/18/2001	100.00	39.39	60.61	<50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-1	1/22/2002	483.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	3/18/2002	483.58	38.24	445.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	6/5/2002	483.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	8/21/2002	483.58	36.71	446.87	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	12/3/2002	483.58	36.85	446.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	3/4/2003	483.58	33.72	449.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	6/10/2003	483.58	31.31	452.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	9/9/2003	483.58	35.05	448.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	12/23/2003	483.58	30.15	453.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	3/23/2004	483.58	26.61	456.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-1	5/10/2004	483.58	30.31	453.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-2	6/1/1993	98.68	38.02	60.66	170000	20000	21000	3300	18000	-	-	-	-	-	-	-	-	-
MW-2	6/22/1993	98.68	39.07	59.61	160000	19000	22000	3500	18000	-	-	-	-	-	-	-	-	-
MW-2	10/6/093	98.68	43.72	54.96	110000	17000	17000	3000	15000	-	-	-	-	-	-	-	-	-
MW-2	1/13/1994	98.68	35.85	62.83	93000	20000	19000	2300	14000	-	-	-	-	-	-	-	-	-
MW-2	3/30/1994	98.68	32.82	65.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-2	4/25/1994	98.68	34.76	63.92	41000	9600	7300	840	7800	-	-	-	-	-	-	-	-	-
MW-2	8/12/1994	98.68	44.33	54.35	59000	11000	11000	2300	11000	-	-	-	-	-	-	-	-	-
MW-2	12/14/1994	98.68	40.00	58.68	63000	13000	13000	2200	12000	-	-	-	-	-	-	-	-	-
MW-2	2/10/1995	98.68	32.16	66.52	63000	12000	12000	2200	11000	-	-	-	-	-	-	-	-	-
MW-2	6/15/1995	98.68	25.93	72.75	61000	11000	12000	1900	11000	-	-	-	-	-	-	-	-	-
MW-2	9/26/1995	98.68	32.42	66.26	61000	9400	11000	2300	12000	-	-	-	-	-	-	-	-	-
MW-2	12/15/1995	98.68	29.41	69.27	48000	8000	8300	2200	12000	-	-	-	-	-	-	-	-	-
MW-2	3/21/1996	98.68	17.47	81.21	48000	8000	7700	2400	12000	-	-	-	-	-	-	-	-	-
MW-2	6/13/1996	98.68	23.69	74.99	33000	7300	8800	1900	12000	<250	-	-	-	-	-	-	-	-
MW-2	9/16/1996	98.68	31.24	67.44	8600	510	640	180	1300	<250	-	-	-	-	-	-	-	-
MW-2	12/2/1996	98.68	26.90	71.78	29000	4400	4000	1300	6100	<130	-	-	-	-	-	-	-	-
MW-2	3/7/1997	98.68	21.33	77.35	13000	1800	1100	270	2000	<250	-	-	-	-	-	-	-	-
MW-2	6/12/1997	98.68	29.94	68.74	68000	7800	6600	2300	11000	<500	-	-	-	-	-	-	-	-
MW-2	9/29/1997	98.68	34.22	64.46	15000	1500	97	740	1800	<250	-	-	-	-	-	-	-	-
MW-2	12/1/1997	98.68	35.94	62.74	13000	900	37	860	2400	<250	-	-	-	-	-	-	-	-
MW-2	3/19/1998	98.68	20.34	78.34	42000	5000	3600	2000	8300	<250	-	-	-	-	-	-	-	-
MW-2	5/29/1998	98.68	22.63	76.05	68000	5600	4700	2400	11000	<250	-	-	-	-	-	-	-	-
MW-2	9/15/1998	98.68	32.30	66.38	36000	3900	1200	1400	7800	<250	-	-	-	-	-	-	-	-
MW-2	11/30/1998	98.68	36.90	61.78	16000	2200	59	1200	1500	<250	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-2	1/17/1999	98.68	30.17	68.51	30000	4000	2200	2100	9500	<250	-	-	-	-	-	-	-	-
MW-2	6/10/1999	98.68	29.98	68.70	70000	6300	1800	3600	14000	<500	-	-	-	-	-	-	-	-
MW-2	9/7/1999	98.68	31.85	66.83	42000	3800	840	1900	8000	150	-	-	-	-	-	-	-	-
MW-2	12/13/1999	98.68	33.72	64.96	14000	1400	87	690	110	34	-	-	-	-	-	-	-	-
MW-2	3/13/2000	98.68	26.54	72.14	38000	2400	2300	1600	6400	2400	-	-	-	-	-	-	-	-
MW-2	6/12/2000	98.68	28.44	70.24	56000	4000	950	2300	7200	<50	-	-	-	-	-	-	-	-
MW-2	11/10/2000	98.68	31.31	67.37	35000	5100	850	1500	3200	230	-	-	-	-	-	-	-	-
MW-2	12/31/2000	98.68	32.68	66.00	21000	3200	420	1300	1200	440	-	-	-	-	-	-	-	-
MW-2	3/27/2001	98.68	30.81	67.87	3500	420	64	16	280	120	-	-	-	-	-	-	-	-
MW-2	6/30/2001	98.68	37.58	61.10	1200	88	4.5	65	37	29	-	-	-	-	-	-	-	-
MW-2	9/26/2001	98.68	44.97	53.71	53000	8500	1500	2400	4600	270	-	-	-	-	-	-	-	-
MW-2	12/18/2001	98.68	40.67	58.01	26000	5400	900	1500	2200	430	-	-	-	-	-	-	-	-
MW-2	1/22/2002	482.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-2	3/18/2002	482.77	38.94	443.83	4200	240	7.3	200	53	89	-	-	-	-	-	-	-	-
MW-2	6/5/2002	482.77	36.45	446.32	25000	3500	390	1400	2400	550	-	-	-	-	-	-	-	-
MW-2	8/21/2002	482.77	37.15	445.62	10000	1200	32	620	300	160	-	-	-	-	-	-	-	-
MW-2	12/3/2002	482.77	36.76	446.01	3700	110	2.5	130	11	29	-	-	-	-	-	-	-	-
MW-2	3/4/2003	482.77	33.60	449.17	8700	1100	77.0	350	540	230	<0.50	<0.50	<10	21	<150	<5.0	<0.50	<0.50
MW-2	6/10/2003	482.77	32.89	449.88	6300	660	35.0	190	120	410	<2.5	<2.5	<5.0	<25	<250	<25	<2.5	<2.5
MW-2	9/9/2003	482.77	35.45	447.32	6900	500	<20	360	29	9500	<20	<20	60	<200	<2000	<200	<20	<20
MW-2	12/23/2003	482.77	31.79	450.98	22000	4900	1300	720	2300	1700	<20	<20	21	<200	<2000	<200	<20	<20
MW-2	3/23/2004	482.77	28.25	454.52	45000	5200	1500	1800	5000	750	<20	<20	34	<200	<2000	<200	<20	<20
MW-2	5/10/2004	482.77	30.91	451.86	7300	1000	51	240	290	1800	<5.0	<5.0	14	<50	<500	<50	<5.0	<5.0
MW-3	6/1/1993	97.08	36.18	60.90	270	4.6	<0.50	<0.50	1.9	-	-	-	-	-	-	-	-	-
MW-3	6/22/1993	97.08	37.11	59.97	160	8.2	<0.50	<0.50	0.72	-	-	-	-	-	-	-	-	-
MW-3	10/6/093	97.08	41.15	55.93	740	57	110	24	120	-	-	-	-	-	-	-	-	-
MW-3	1/13/1994	97.08	33.95	63.13	83	2.6	0.67	0.78	4.2	-	-	-	-	-	-	-	-	-
MW-3	3/30/1994	97.08	30.97	66.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	4/25/1994	97.08	32.46	64.62	60	0.75	3.2	0.50	3.6	-	-	-	-	-	-	-	-	-
MW-3	8/12/1994	97.08	41.72	55.36	310	7.3	14	2.6	13	-	-	-	-	-	-	-	-	-
MW-3	12/14/1994	97.08	37.62	59.46	75	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-3	2/10/1995	97.08	29.96	67.12	96	1.4	<0.50	<0.50	1.8	-	-	-	-	-	-	-	-	-
MW-3	6/15/1995	97.08	23.66	73.42	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-3	9/26/1995	97.08	29.62	67.46	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-3	12/15/1995	97.08	27.10	69.98	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-3	3/21/1996	97.08	15.85	81.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-3	6/13/1996	97.08	21.31	75.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	9/16/1996	97.08	28.62	68.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/2/1996	97.08	25.55	71.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/7/1997	97.08	19.77	77.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	6/12/1997	97.08	27.67	69.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	9/29/1997	97.08	29.60	67.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/1/1997	97.08	33.37	63.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/19/1998	97.08	18.76	78.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	5/29/1998	97.08	20.64	76.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	9/15/1998	97.08	30.70	66.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	11/30/1998	97.08	34.96	62.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	1/17/1999	97.08	28.81	68.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	6/10/1999	97.08	28.10	68.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	9/7/1999	97.08	30.38	66.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/13/1999	97.08	31.46	65.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/13/2000	97.08	24.28	72.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	6/12/2000	97.08	26.80	70.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	11/10/2000	97.08	29.47	67.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/31/2000	97.08	31.38	65.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/27/2001	97.08	29.94	67.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	6/30/2001	97.08	37.54	59.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	9/26/2001	97.08	45.17	51.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/18/2001	97.08	39.41	57.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	1/22/2002	482.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/18/2002	482.66	37.73	444.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	6/5/2002	482.66	35.35	447.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	8/21/2002	482.66	36.21	446.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/3/2002	482.66	35.92	446.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/4/2003	482.66	32.75	449.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	6/10/2003	482.66	31.26	451.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	9/9/2003	482.66	34.72	447.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	12/23/2003	482.66	30.47	452.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	3/23/2004	482.66	26.67	455.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	5/10/2004	482.66	30.25	452.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/30/1994	99.35	31.56	67.79	120	4.2	15	2.5	26	-	-	-	-	-	-	-	-	-
MW-4	4/25/1994	99.35	32.73	66.62	65	<0.50	1.8	<0.50	2.1	-	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection	Casing Elevation	Depth to Water	Water Table Elevation	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	ETBE	TAME	TBA	Methanol	Ethanol	1,2 DCA	1,2 DBE
	Date	(msl)	(feet)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-4	8/12/1994	99.35	41.61	57.74	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-4	12/14/1994	99.35	38.11	61.24	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-4	2/10/1995	99.35	30.50	68.85	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-4	6/15/1995	99.35	23.63	75.72	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-4	9/26/1995	99.35	29.70	69.65	<50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-4	12/15/1995	99.35	27.56	71.79	<51	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-4	3/21/1996	99.35	15.63	83.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/13/1996	99.35	21.07	78.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	9/16/1996	99.35	28.99	70.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/2/1996	99.35	26.04	73.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/7/1997	99.35	19.69	79.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/12/1997	99.35	28.04	71.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	9/29/1997	99.35	29.91	69.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/1/1997	99.35	33.88	65.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/19/1998	99.35	18.67	80.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	5/29/1998	99.35	20.16	79.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	9/15/1998	99.35	30.46	68.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	11/30/1998	99.35	34.50	64.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	1/17/1999	99.35	28.30	71.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/10/1999	99.35	27.60	71.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	9/7/1999	99.35	30.79	68.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/13/1999	99.35	31.60	67.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/13/2000	99.35	24.35	75.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/12/2000	99.35	26.91	72.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	11/10/2000	99.35	29.71	69.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/31/2000	99.35	31.79	67.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/27/2001	99.35	29.98	69.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/30/2001	99.35	36.88	62.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	9/26/2001	99.35	43.87	55.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/18/2001	99.35	39.30	60.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	1/22/2002	482.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/18/2002	482.93	37.75	445.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/5/2002	482.93	35.68	447.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	8/21/2002	482.93	36.58	446.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/3/2002	482.93	35.90	447.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/4/2003	482.93	32.73	450.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	6/10/2003	482.93	31.20	451.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-4	9/9/2003	482.93	34.64	448.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	12/23/2003	482.93	31.30	451.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	3/23/2004	482.93	26.71	456.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	5/10/2004	482.93	30.33	452.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-5	3/30/1994	98.37	32.07	66.30	7500	1300	20	<13	160	-	-	-	-	-	-	-	-	-
MW-5	4/25/1994	98.37	33.65	64.72	6500	1100	41	130	740	-	-	-	-	-	-	-	-	-
MW-5	8/12/1994	98.37	42.73	55.64	4000	420	2.9	41	98	-	-	-	-	-	-	-	-	-
MW-5	12/14/1994	98.37	38.89	59.48	4800	660	<2.5	33	13	-	-	-	-	-	-	-	-	-
MW-5	2/10/1995	98.37	31.44	66.93	5200	490	<13	23	19	-	-	-	-	-	-	-	-	-
MW-5	6/15/1995	98.37	24.99	73.38	460	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-
MW-5	9/26/1995	98.37	30.20	68.17	1400	61	<0.50	3.1	<0.50	-	-	-	-	-	-	-	-	-
MW-5	12/15/1995	98.37	28.56	69.81	2100	77	1.5	10	1.5	-	-	-	-	-	-	-	-	-
MW-5	3/21/1996	98.37	16.82	81.55	930	35	2.0	2.0	18	-	-	-	-	-	-	-	-	-
MW-5	6/13/1996	98.37	22.61	75.76	610	38	0.72	1.9	2.0	<5.0	-	-	-	-	-	-	-	-
MW-5	9/16/1996	98.37	29.78	68.59	380	29	<0.50	0.95	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	12/2/1996	98.37	26.51	71.86	200	1.1	0.64	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	3/7/1997	98.37	21.91	76.46	520	74	<0.50	0.58	1.5	<5.0	-	-	-	-	-	-	-	-
MW-5	6/12/1997	98.37	-	-	140	5.3	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	9/29/1997	98.37	31.74	66.63	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	12/1/1997	98.37	34.05	64.32	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	3/19/1998	98.37	20.93	77.44	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	5/29/1998	98.37	21.30	77.07	540	4.1	<0.50	<0.50	0.52	<5.0	-	-	-	-	-	-	-	-
MW-5	9/15/1998	98.37	31.32	67.05	67	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	11/30/1998	98.37	35.44	62.93	430	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	1/17/1999	98.37	29.59	68.78	500	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	6/10/1999	98.37	28.05	70.32	66	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	9/7/1999	98.37	31.11	67.26	820	46	1.7	10	21	<5.0	-	-	-	-	-	-	-	-
MW-5	12/13/1999	98.37	32.66	65.71	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	3/13/2000	98.37	25.87	72.50	270	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	6/12/2000	98.37	28.15	70.22	<50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-	-	-	-	-
MW-5	11/10/2000	98.37	30.05	68.32	2200	42	1.1	25	30	8.6	-	-	-	-	-	-	-	-
MW-5	12/31/2000	98.37	31.81	66.56	1300	21	<0.50	4.3	2.6	10	-	-	-	-	-	-	-	-
MW-5	3/27/2001	98.37	30.57	67.80	1200	11	<0.50	2.6	<0.50	21	-	-	-	-	-	-	-	-
MW-5	6/30/2001	98.37	37.24	61.13	1400	4.8	<0.50	1.5	0.56	14	-	-	-	-	-	-	-	-
MW-5	9/26/2001	98.37	44.53	53.84	660	<0.50	<0.50	<0.50	<0.50	3.0	-	-	-	-	-	-	-	-
MW-5	12/18/2001	98.37	40.65	57.72	240	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-5	1/22/2002	481.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-5	3/18/2002	481.94	38.75	443.19	890	0.65	<0.50	<0.50	<0.50	3.1	-	-	-	-	-	-	-	-
MW-5	6/5/2002	481.94	36.21	445.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-5	8/21/2002	481.94	36.76	445.18	2100	20	<0.50	63	4	7	-	-	-	-	-	-	-	-
MW-5	12/3/2002	481.94	36.12	445.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-5	3/4/2003	481.94	32.90	449.04	490	10	<0.50	2.2	<0.50	1.0	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-5	6/10/2003	481.94	33.04	448.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-5	9/9/2003	481.94	34.20	447.74	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-5	12/23/2003	481.94	31.38	450.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-5	3/23/2004	481.94	27.51	454.43	440	2.3	<0.50	1.0	5.9	2.4	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-5	5/10/2004	481.94	31.12	450.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-6	3/30/1994	97.62	33.38	64.24	63000	21000	8600	1700	12000.0	-	-	-	-	-	-	-	-	-
MW-6	4/25/1994	97.62	35.49	62.13	77000	22000	12000	2300	16000	-	-	-	-	-	-	-	-	-
MW-6	8/12/1994	97.62	45.14	52.48	65000	12000	8100	2200	16000	-	-	-	-	-	-	-	-	-
MW-6	12/14/1994	97.62	40.99	56.63	65000	18000	9500	2200	14000	-	-	-	-	-	-	-	-	-
MW-6	2/10/1995	97.62	33.34	64.28	63000	21000	8400	2000	14000	-	-	-	-	-	-	-	-	-
MW-6	6/15/1995	97.62	26.88	70.74	75000	20000	11000	2100	15000	-	-	-	-	-	-	-	-	-
MW-6	9/26/1995	97.62	33.55	64.07	62000	15000	9600	1700	12000	-	-	-	-	-	-	-	-	-
MW-6	12/15/1995	97.62	30.32	67.30	61000	15000	9000	2300	15000	-	-	-	-	-	-	-	-	-
MW-6	3/21/1996	97.62	18.89	78.73	65000	18000	9800	2400	16000	-	-	-	-	-	-	-	-	-
MW-6	6/13/1996	97.62	24.62	73.00	29000	8600	3300	2200	12000	<250	-	-	-	-	-	-	-	-
MW-6	9/16/1996	97.62	32.64	64.98	42000	6400	1800	2100	11000	<250	-	-	-	-	-	-	-	-
MW-6	12/2/1996	97.62	27.42	70.20	28000	3000	1100	970	8300	<500	-	-	-	-	-	-	-	-
MW-6	3/7/1997	97.62	22.13	75.49	12000	2000	190	520	2300	<250	-	-	-	-	-	-	-	-
MW-6	6/12/1997	97.62	31.02	66.60	37000	3900	470	1600	6200	<100	-	-	-	-	-	-	-	-
MW-6	9/29/1997	97.62	35.77	61.85	34000	3500	370	1600	5200	<100	-	-	-	-	-	-	-	-
MW-6	12/1/1997	97.62	37.14	60.48	20000	2100	<10	1200	2200	<100	-	-	-	-	-	-	-	-
MW-6	3/19/1998	97.62	21.10	76.52	24000	2900	460	1100	3400	<100	-	-	-	-	-	-	-	-
MW-6	5/29/1998	97.62	23.26	74.36	38000	3500	700	1800	5200	<100	-	-	-	-	-	-	-	-
MW-6	9/15/1998	97.62	33.50	64.12	22000	1900	110	1400	3000	<100	-	-	-	-	-	-	-	-
MW-6	11/30/1998	97.62	38.73	58.89	9900	770	16	820	710	<100	-	-	-	-	-	-	-	-
MW-6	1/17/1999	97.62	32.05	65.57	14000	2200	160	1700	3600	<100	-	-	-	-	-	-	-	-
MW-6	6/10/1999	97.62	31.44	66.18	22000	1600	160	1400	2900	5.5	-	-	-	-	-	-	-	-
MW-6	9/7/1999	97.62	33.94	63.68	17000	1400	33	1300	1800	<50	-	-	-	-	-	-	-	-
MW-6	12/13/1999	97.62	35.84	61.78	16000	790	9.2	840	780	<25	-	-	-	-	-	-	-	-
MW-6	3/13/2000	97.62	28.45	69.17	16000	790	85	780	1600	<25	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection	Casing Elevation	Depth to Water	Water Table Elevation	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	ETBE	TAME	TBA	Methanol	Ethanol	1,2 DCA	1,2 DBE
	Date	(msl)	(feet)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-6	6/12/2000	97.62	30.52	67.10	24000	1100	150	1300	2300	5600	-	-	-	-	-	-	-	-
MW-6	11/10/2000	97.62	32.99	64.63	13000	440	6.6	760	350	1000	-	-	-	-	-	-	-	-
MW-6	12/31/2000	97.62	34.95	62.67	12000	680	7.6	820	190	1400	-	-	-	-	-	-	-	-
MW-6	3/27/2001	97.62	32.72	64.90	14000	330	17	940	670	380	-	-	-	-	-	-	-	-
MW-6	6/30/2001	97.62	39.86	57.76	750	45	0.93	47	14	54	-	-	-	-	-	-	-	-
MW-6	9/26/2001	97.62	Dry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-6	12/18/2001	97.62	43.36	54.26	43000	3800	350	1900	3000	900	-	-	-	-	-	-	-	-
MW-6	1/22/2002	481.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-6	3/18/2002	481.20	41.29	439.91	33000	2600	120	1800	2800	740	-	-	-	-	-	-	-	-
MW-6	6/5/2002	481.20	38.35	442.85	10000	1100	16	700	180	600	-	-	-	-	-	-	-	-
MW-6	8/21/2002	481.20	39.02	442.18	10000	1200	23	710	290	370	-	-	-	-	-	-	-	-
MW-6	12/3/2002	481.20	38.76	442.44	16000	1700	63	970	630	1500	-	-	-	-	-	-	-	-
MW-6	3/4/2003	481.20	35.13	446.07	16000	1700	25	1200	40	7700	<20	<20	<70	<200	<2000	<200	<20	<20
MW-6	6/10/2003	481.20	34.15	447.05	9500	860	15	380	47	2600	<5.0	<5.0	18	<50	<500	<50	<5.0	<5.0
MW-6	9/9/2003	481.20	37.66	443.54	11000	1000	16	630	120	2500	<5.0	<5.0	20	52	<500	<50	<5.0	<5.0
MW-6	12/23/2003	481.20	33.43	447.77	18000	2100	41	1100	390	4900	<10	<10	42	<100	<1000	<100	<10	<10
MW-6	3/23/2004	481.20	29.96	451.24	24000	1400	71	1500	2000	7500	<20	<20	66	<200	<2000	<200	<20	<20
MW-6	5/10/2004	481.20	32.98	448.22	6500	550	<10	71	43	3700	<10	<10	31	<100	<1000	<100	<10	<10
MW-7	3/30/1994	98.03	31.98	66.05	43000	7200	2400	1600	11000	-	-	-	-	-	-	-	-	-
MW-7	4/25/1994	98.03	33.56	64.47	30000	3900	1000	940	6900	-	-	-	-	-	-	-	-	-
MW-7	8/12/1994	98.03	43.35	54.68	30000	3800	1400	1300	7500	-	-	-	-	-	-	-	-	-
MW-7	12/14/1994	98.03	39.34	58.69	31000	3600	1200	900	6400	-	-	-	-	-	-	-	-	-
MW-7	2/10/1995	98.03	32.11	65.92	27000	4000	900	890	5100	-	-	-	-	-	-	-	-	-
MW-7	6/15/1995	98.03	25.51	72.52	17000	920	680	740	4100	-	-	-	-	-	-	-	-	-
MW-7	9/26/1995	98.03	31.43	66.60	7000	200	150	170	810	-	-	-	-	-	-	-	-	-
MW-7	12/15/1995	98.03	28.97	69.06	11000	350	170	540	1900	-	-	-	-	-	-	-	-	-
MW-7	3/21/1996	98.03	17.36	80.67	12000	320	100	730	2500	-	-	-	-	-	-	-	-	-
MW-7	6/13/1996	98.03	23.47	74.56	5900	98	19	370	620	<50	-	-	-	-	-	-	-	-
MW-7	9/16/1996	98.03	31.35	66.68	7800	140	43	440	590	<25	-	-	-	-	-	-	-	-
MW-7	12/2/1996	98.03	27.11	70.92	6300	87	29	290	430	<50	-	-	-	-	-	-	-	-
MW-7	3/7/1997	98.03	21.33	76.70	4500	35	19	360	470	<25	-	-	-	-	-	-	-	-
MW-7	6/12/1997	98.03	29.90	68.13	3900	29	5.2	170	48	<5.0	-	-	-	-	-	-	-	-
MW-7	9/29/1997	98.03	34.37	63.66	6100	56	9	340	190	<25	-	-	-	-	-	-	-	-
MW-7	12/1/1997	98.03	36.46	61.57	6500	24	<2.5	400	250	<25	-	-	-	-	-	-	-	-
MW-7	3/19/1998	98.03	20.33	77.70	2000	20	<2.5	73	79	<25	-	-	-	-	-	-	-	-
MW-7	5/29/1998	98.03	22.30	75.73	5700	22	7.3	290	350	<25	-	-	-	-	-	-	-	-

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

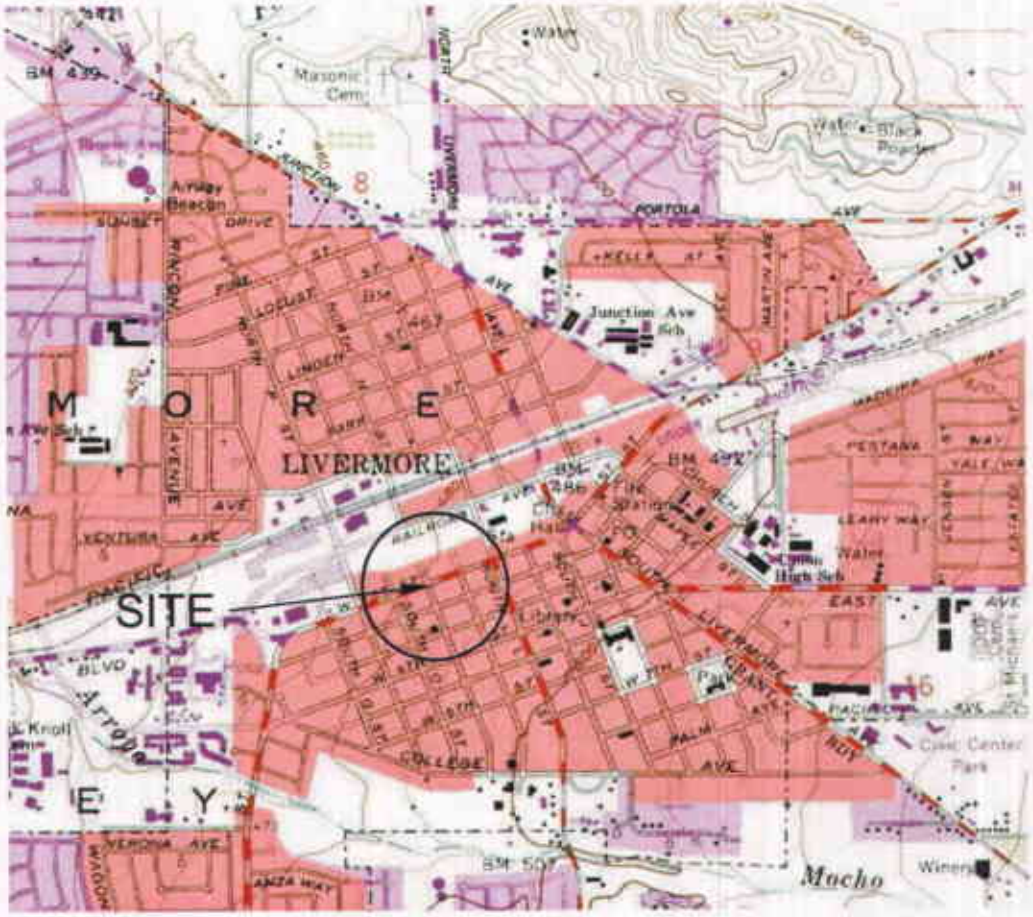
Well	Sample Collection Date	Casing Elevation (msl)	Depth to Water (feet)	Water Table Elevation (msl)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	1,2 DCA (µg/L)	1,2 DBE (µg/L)
MW-7	9/15/1998	98.03	32.54	65.49	1700	15	<2.5	44	5.1	<25	-	-	-	-	-	-	-	-
MW-7	11/30/1998	98.03	37.96	60.07	4800	42	12	270	640	<25	-	-	-	-	-	-	-	-
MW-7	1/17/1999	98.03	31.04	66.99	3400	33	<5.0	200	190	<50	-	-	-	-	-	-	-	-
MW-7	6/10/1999	98.03	29.89	68.14	1700	7.8	1.5	23	4.1	<5.0	-	-	-	-	-	-	-	-
MW-7	9/7/1999	98.03	32.38	65.65	1900	9.7	2.1	70	2.9	<5.0	-	-	-	-	-	-	-	-
MW-7	12/13/1999	98.03	33.98	64.05	1900	8.0	1.1	10	1.1	<5.0	-	-	-	-	-	-	-	-
MW-7	3/13/2000	98.03	27.09	70.94	1500	7.5	<0.50	6.7	2.9	<5.0	-	-	-	-	-	-	-	-
MW-7	6/12/2000	98.03	28.76	69.27	1200	5.4	<0.50	5.2	1.0	<5.0	-	-	-	-	-	-	-	-
MW-7	11/10/2000	98.03	31.54	66.49	1000	3.9	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-7	12/31/2000	98.03	32.76	65.27	620	1.8	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
MW-7	3/27/2001	98.03	30.97	67.06	1200	4.8	<0.50	6.7	0.94	<0.50	-	-	-	-	-	-	-	-
MW-7	6/30/2001	98.03	37.50	60.53	2800	10	1.7	75	170	<0.50	-	-	-	-	-	-	-	-
MW-7	9/26/2001	98.03	45.11	52.92	1900	16	0.89	2.3	25	<0.50	-	-	-	-	-	-	-	-
MW-7	12/18/2001	98.03	41.13	56.90	3000	13	0.88	3.4	3.4	<0.50	-	-	-	-	-	-	-	-
MW-7	1/22/2002	481.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-7	3/18/2002	481.61	39.22	442.39	3100	7.3	1.5	38	110	<0.50	-	-	-	-	-	-	-	-
MW-7	6/5/2002	481.61	36.55	445.06	1800	7.6	1.0	39	20	<0.50	-	-	-	-	-	-	-	-
MW-7	8/21/2002	481.61	36.81	444.80	3300	7.6	0.7	85	36	<0.50	-	-	-	-	-	-	-	-
MW-7	12/3/2002	481.61	36.52	445.09	1700	5.4	<0.50	15	5.5	<0.50	-	-	-	-	-	-	-	-
MW-7	3/4/2003	481.61	32.60	449.01	440	1.8	<0.50	0.54	2.9	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-7	6/10/2003	481.61	31.33	450.28	550	0.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-7	9/9/2003	481.61	34.71	446.90	120	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-7	12/23/2003	481.61	30.80	450.81	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-7	3/23/2004	481.61	26.41	455.20	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-7	5/10/2004	481.61	29.86	451.75	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-8	9/5/2003	-	-	-	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-
MW-8	12/23/2003	483.13	32.01	451.12	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	7.3	<0.50	<0.50
MW-8	3/23/2004	483.13	28.50	454.63	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-8	5/10/2004	483.13	31.44	451.69	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-9	9/5/2003	-	-	-	3400	23	1.5	110	10	10	<0.50	<0.50	<0.50	<5.0	-	-	-	-
MW-9	12/23/2003	482.72	34.03	448.69	1100	2.4	<0.50	0.8	0.8	2.1	<0.50	<0.50	<0.50	5.9	<50	<5.0	<0.50	<0.50
MW-9	3/23/2004	482.72	30.01	452.71	760	8.5	<0.50	4.9	0.95	18	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-9	5/10/2004	482.72	33.61	449.11	1100	4.4	<0.50	1.3	0.67	11	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50

Table 1
Groundwater Analytical Data
Tesoro Site No. 67076
Delta Project No. D004-076

Well	Sample Collection	Casing Elevation	Depth to Water	Water Table Elevation	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	ETBE	TAME	TBA	Methanol	Ethanol	1,2 DCA	1,2 DBE
	Date	(msl)	(feet)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-10	12/23/2003	-	33.80	-	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	-	-	-	-
MW-10	12/23/2003	-	33.80	-	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-10	3/23/2004	-	28.68	-	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-10	5/10/2004	-	32.15	-	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0	<0.50	<0.50
MW-A	1/17/1999	-	30.13	-	5800	1700	85	65	320	<5.0	-	-	-	-	-	-	-	-
MW-A	6/10/1999	Well abandoned																
MW-B	1/17/1999	-	30.29	-	4400	240	30	21	39	<5.0	-	-	-	-	-	-	-	-
MW-B	6/10/1999	Well abandoned																
MW-C	1/17/1999	-	30.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-C	6/10/1999	Well abandoned																
MW-D	1/17/1999	-	31.32	-	5600	1600	130	66	220	<5.0	-	-	-	-	-	-	-	-
MW-D	6/10/1999	Well abandoned																
MW-E	1/17/1999	-	31.36	-	5700	1600	180	180	310	<50	-	-	-	-	-	-	-	-
MW-E	6/10/1999	-	-	-	5000	1300	130	320	450	<25	-	-	-	-	-	-	-	-
MW-E	9/7/1999	Well abandoned																
MW-W	1/17/1999	-	30.91	-	23000	7600	760	1400	5000	<50	-	-	-	-	-	-	-	-
MW-W	6/10/1999	-	-	-	16000	4100	420	1300	4000	<50	-	-	-	-	-	-	-	-
MW-W	9/7/1999	Well abandoned																

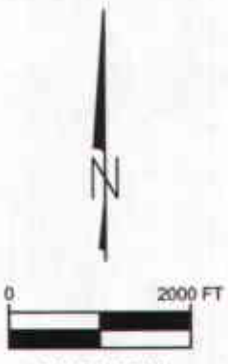
Explanations:

msl = mean seal level
(µg/L) = micrograms per liter
- = not measured / not analyzed
< = not detected at or above the stated laboratory reporting limit
TPHg = Total petroleum hydrocarbons in the gasoline rante
MTBE = Methyl tertiary butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary butyl ether
TAME = Tertiary amyl methyl ether
TBA = Tertiary butyl alcohol
1,2-DCA = Dichloroethane
1,2-DBE = 1,2-Dibromoethane
DRY = Insufficient water to sample



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
LIVERMORE
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

QUADRANGLE LOCATION



SCALE 1:24,000

FIGURE 1

SITE LOCATION MAP

TESORO SITE NO. 67076
FORMER BEACON STATION NO. 604
1619 WEST FIRST STREET
LIVERMORE, CA.

PROJECT NO. D004-076	DRAWN BY REG 6/15/04
FILE NO. TS-67076-FIG1	PREPARED BY BAB
REVISION NO. *	REVIEWED BY

Delta Environmental Consultants, Inc.

LEGEND

PROPERTY LINE

GROUNDWATER MONITORING WELL

VAPOR EXTRACTION WELL

PROPOSED TEMPORARY GROUNDWATER MONITORING POINT

(449.11) GROUND WATER ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL

450.0 INFERRED WATER TABLE CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL

INFERRED GROUND WATER FLOW DIRECTION

SOURCE: Doulos Environmental, Inc. site plan. Wells resurveyed by Advanced Geomatic Engineering on 1/22/02. MW-8, MW-9, MW-10 installed on September 2, 2003.

MW-9
(449.11)

MW-8
(451.69)

450.0

452.0

SAFEWAY PARKING LOT

HOLLYWOOD VIDEO

MW-5
(450.82)

MW-4
(452.60)

SOUTH P STREET

MW-6
(448.22)

MW-10*

FIRST STREET

FOSTERS FREEZE RESTAURANT

MW-7
(451.75)

ADOBE PET HOSPITAL

DRIVEWAY

MW-3
(452.41)

DRIVEWAY

MW-2
(451.86)

TP-1

VW-2

TP-2

CANOPY

DISPENSER ISLANDS

AIR/WATER

North

FORMER USTs

AWNING

VW-3

STATION BUILDING

TRASH

VW-1

MW-1
(453.27)

0 40 FT

SCALE

EXISTING USTs

FORMER WASTE OIL TANK

RESIDENCE

FIGURE 2
GROUNDWATER ELEVATION CONTOUR MAP
5/10/04
TESORO SITE NO. 67076
FORMER BEACON STATION 604
1619 WEST FIRST STREET
LIVERMORE, CA

PROJECT NO. D004-076	DRAWN BY REG 5/10/04
FILE NO. TS-67076-2Q04	PREPARED BY JB
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

7/2/04

LEGEND

PROPERTY LINE

GROUNDWATER MONITORING WELL

VAPOR EXTRACTION WELL

MW- 2	
TPH-G	1,100
Benzene	4.4
MTBE	11

DISSOLVED PHASE HYDROCARBON CONCENTRATIONS (µg/L)

SOURCE: Doulos Environmental, Inc. site plan. Wells resurveyed by Advanced Geomatic Engineering on 1/22/02. MW-8, MW-9, MW-10 installed on September 2, 2003.

MW-9

MW-9	
TPH-G	1,100
Benzene	4.4
MTBE	11

MW-8

MW-8	
TPH-G	<50
Benzene	<0.5
MTBE	<0.5

MW-5

MW-4

MW-6

MW-6	
TPH-G	6,500
Benzene	550
MTBE	3,700

MW-2

MW-2	
TPH-G	7,300
Benzene	1,000
MTBE	1,800

MW-3

MW-10*

MW-10	
TPH-G	<50
Benzene	<0.5
MTBE	<0.5

MW-7

MW-7	
TPH-G	67
Benzene	<0.5
MTBE	<0.5

VW-2

VW-3

VW-1

MW-1

SAFEWAY PARKING LOT

HOLLYWOOD VIDEO

SOUTH P STREET

FIRST STREET

FOSTERS FREEZE RESTAURANT

ADOBE PET HOSPITAL

DRIVEWAY

CANOPY

AIR/WATER

FORMER USTs

STATION BUILDING

TRASH

RESIDENCE

EXISTING USTs

FORMER WASTE OIL TANK

North

0 40 FT

SCALE

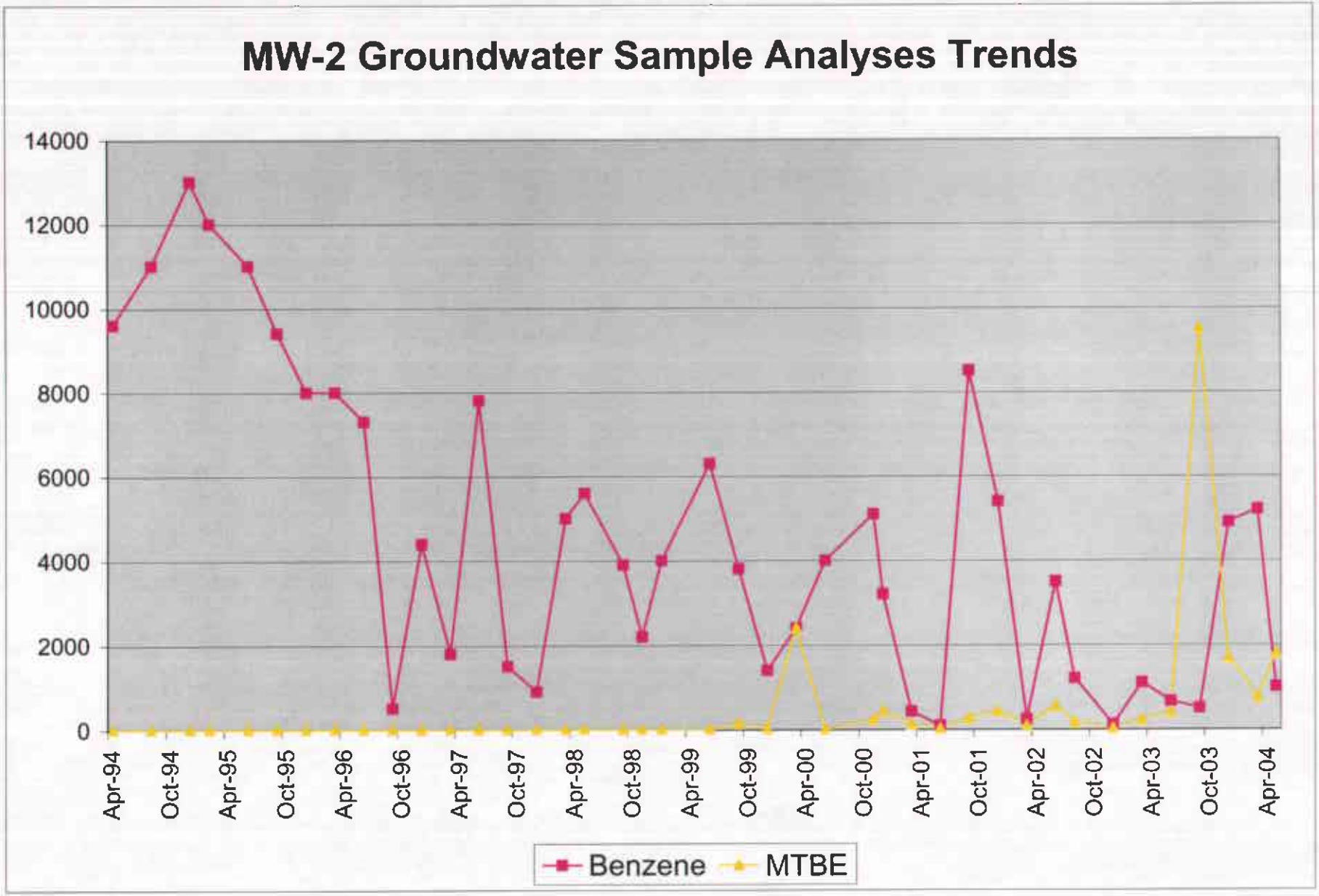
FIGURE 3
DISTRIBUTION OF TPH-G, BENZENE AND MTBE IN GROUNDWATER-5/10/04
TESORO STATION NO. 67076
FORMER BEACON STATION 3604
1619 WEST FIRST STREET
LIVERMORE, CA

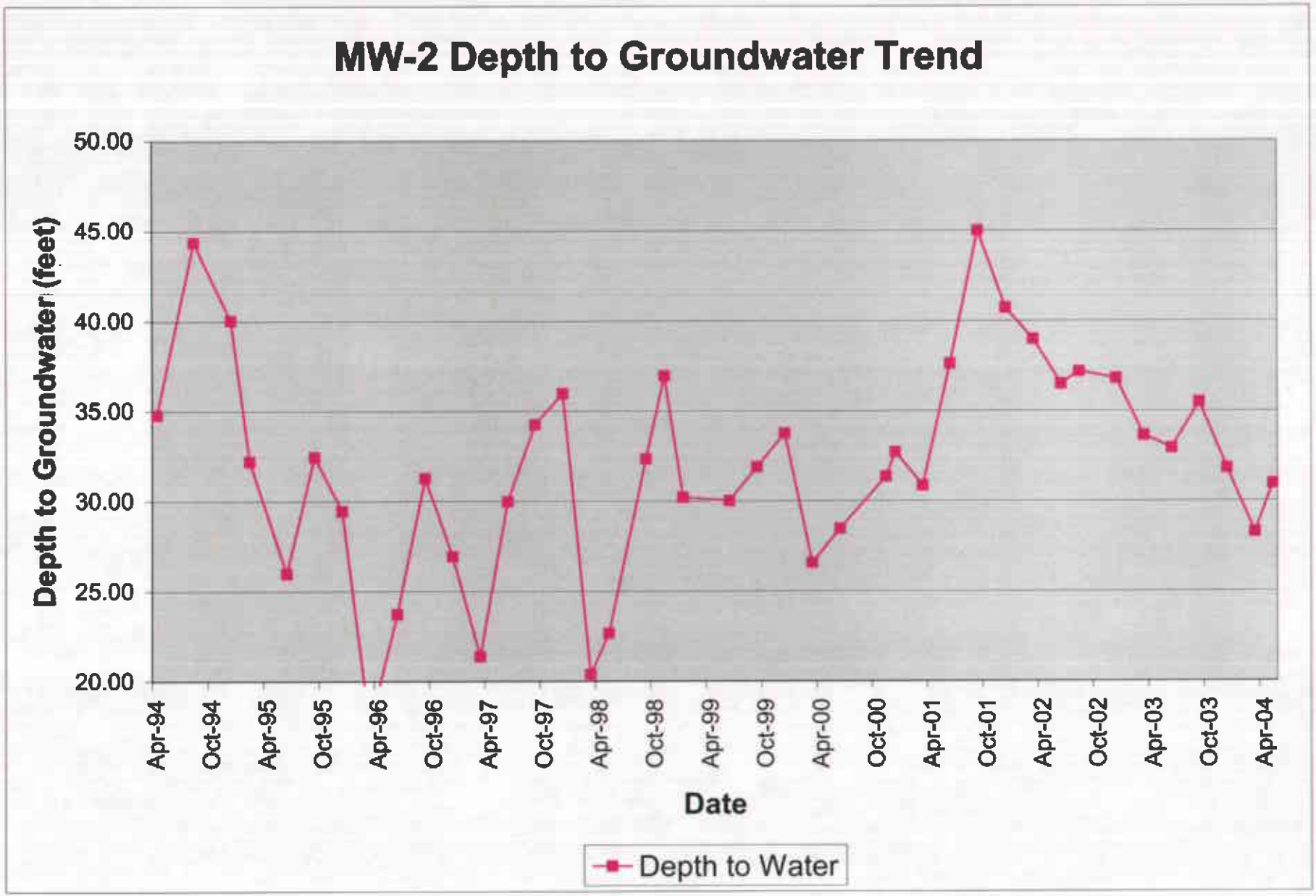
PROJECT NO.	DRAWN BY
D004-076	REG 5/20/04
FILE NO.	PREPARED BY
TS-67076-2Q04D	JB
REVISION NO.	REVIEWED BY
1	JB 7/1/04

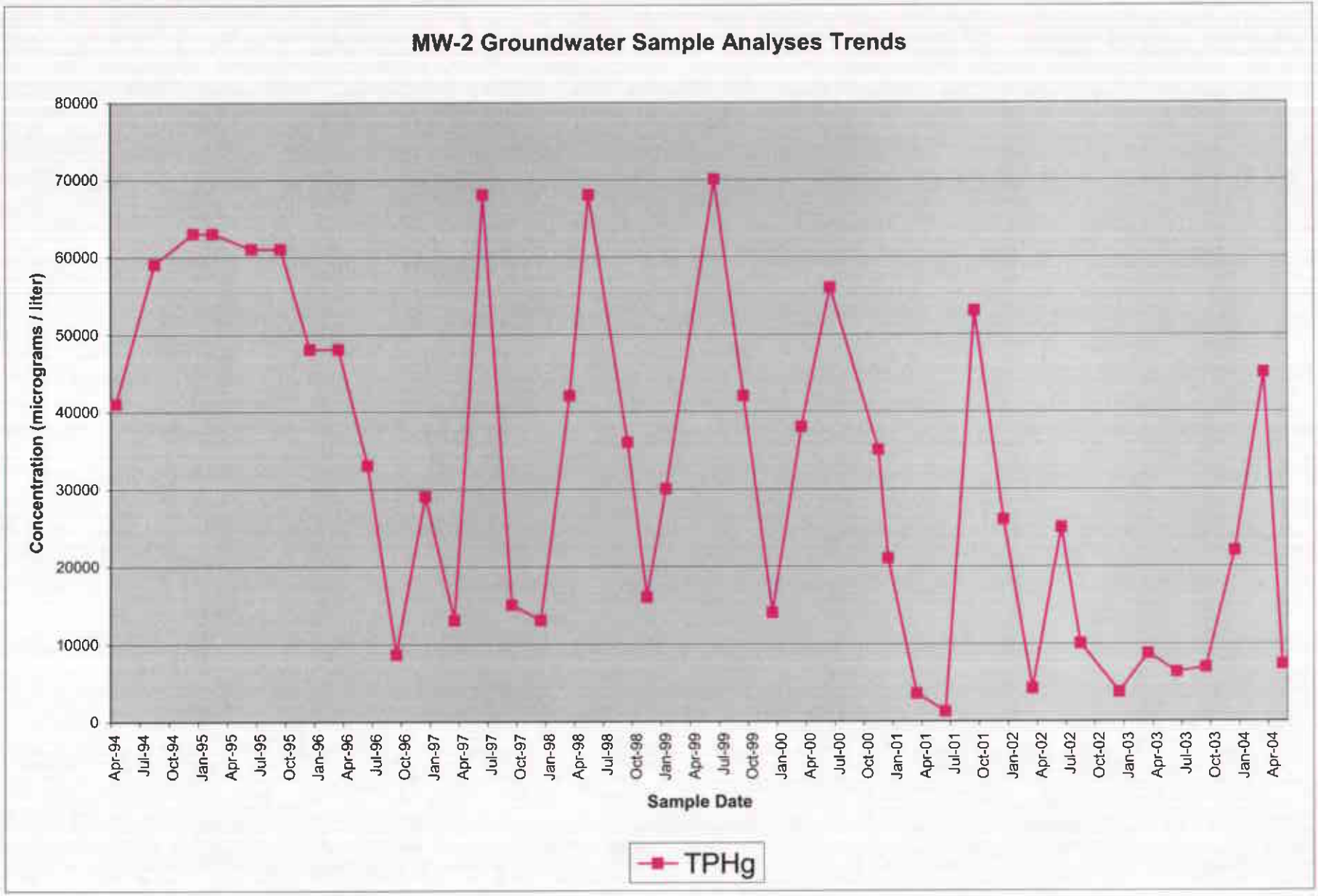
Delta Environmental Consultants, Inc.

ENCLOSURE A

Trends in Groundwater Monitoring Well MW-2


MW-2 Groundwater Sample Analyses Trends
14000
12000
10000
8000
6000
4000
2000
0
Apr-94
Oct-94
Apr-95
Oct-95
Apr-96
Oct-96
Apr-97
Oct-97
Apr-98
Oct-98
Apr-99
Oct-99
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Apr-04
Benzene
MTBE


MW-2 Depth to Groundwater Trend
Depth to Groundwater (feet)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
Apr-94
Oct-94
Apr-95
Oct-95
Apr-96
Oct-96
Apr-97
Oct-97
Apr-98
Oct-98
Apr-99
Oct-99
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Apr-04
Date
Depth to Water


MW-2 Groundwater Sample Analyses Trends
Concentration (micrograms / liter)
80000
70000
60000
50000
40000
30000
20000
10000
0
Apr-94
Jul-94
Oct-94
Jan-95
Apr-95
Jul-95
Oct-95
Jan-96
Apr-96
Jul-96
Oct-96
Jan-97
Apr-97
Jul-97
Oct-97
Jan-98
Apr-98
Jul-98
Oct-98
Jan-99
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Sample Date
TPHg

METHODS AND PROCEDURES

Health and Safety Plan

Field work performed by Delta and Delta's subcontractors at the site is conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the SHSP is at the site and available for reference by appropriate parties during work at the site.

Locating Underground Utilities

Prior to commencement of work on-site, Delta researches the location of all underground utilities with the assistance of Underground Service Alert (USA). USA contacts the owners of the various utilities in the vicinity of the site to have the utility owners mark the locations of their underground utilities. Work associated with the boring and monitoring well installation is preceded by manual hand augering to a minimum depth of 5 feet below surface grade (bsg) to avoid contact with underground utilities.

Soil Sampling and Contamination Reduction

Soil borings and soil sampling are performed under the direction of a Delta geologist. The soil borings are advanced using a truck-mounted drill rig.

To reduce the chances of cross-contamination between boreholes, all downhole drilling equipment are steam-cleaned between each boring. To reduce cross-contamination between samples, the barrel sampler is washed in a soap solution and double-rinsed between each sampling event.

Upon recovery, a portion of the soil sample is placed into a plastic bag and sealed for later screening with a photoionization detector (PID). Another portion of the soil sample is used for classification and description. That part of the soil sample collected in the leading brass tube within the California-type sampler is stored at approximately 4°C for transport to the laboratory.

Soil Classification

As the samples are obtained in the field, they are classified by the geologist in accordance with the Unified Soil Classification System, Visual/Manual Method (USCS). Representative portions of the samples are then be retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, and pertinent information regarding the method of maintaining and advancing the borehole are made.

Soil Sample Screening/hNu Portable Photoionization Detector Method

After the soil sample plastic bags have been brought to ambient temperature, the headspace vapors of the soil sample in the bag are screened with a PID equipped with a 10.2 eV lamp. The sample corner of the bag will be opened and the detector probe immediately placed within the headspace. The highest observed readings are recorded.

Monitoring Well Gravel Pack and Slot Size Selection

The gravel pack is selected such that it will permit the development of a zone of higher hydraulic conductivity adjacent to the well screen but will reduce piping of the finer-grained formation materials into the well. The slot size of the well screen is selected such that it will retain a minimum of 95 percent of the gravel pack material.

Monitoring Well Development

After monitoring wells are installed, each monitoring well is be developed with a surge block and bailer (or pump) until the water produced is relatively sediment-free and until the conductivity, pH, and temperature stabilize. If the well is pumped dry during the development process, recharge rates will be recorded. No water or chemicals will be introduced into the monitoring wells during well development. All developed water will be placed in drums on-site for later disposal.

Groundwater Sampling

At least three wetted casing volumes of liquid are removed from each well by bailing with a clean disposable bailer. A liquid sample will then be collected from each well with a clean disposable bailer and transferred into a laboratory supplied sampling container. Each sample will be appropriately

labeled and stored on ice from the time of collection through the time of delivery to the laboratory. Groundwater samples are transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses.

Liquid-Phase Petroleum Hydrocarbons

If liquid-phase petroleum hydrocarbons are present in a well, the thickness of the petroleum layer will be measured by collecting a sample in a transparent disposable bailer with a check valve at the bottom, or by measurement using appropriate fluid-level sounding equipment.

ANALYTICAL PROCEDURES

Selected soil and groundwater samples submitted to the laboratory are analyzed for benzene, toluene, ethylbenzene, total xylenes, total petroleum hydrocarbons in the gasoline range, and, methyl tertiary butyl ether using EPA Method 8260B.

QUALITY ASSURANCE PLAN

This section describes the field and analytical procedures followed by Delta throughout the investigation.

General Sample Collection and Handling Procedures

Proper collection and handling are essential to ensure the quality of a sample. Each sample is collected in a suitable container, preserved correctly for the intended analysis, and stored prior to analysis for no longer than the maximum allowable holding time.

Water Sample Collection for Volatile Organic Analyses

For volatile organic analyses (VOA), the water sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated according to the Soil and Water Sample Labeling and Preservation section.

Soil and Water Sample Labeling and Preservation

Label information includes a unique sample identification number, job identification number, date, and time. After labeling, water samples are placed in a Ziploc® type bag and placed in an ice chest cooled to approximately 4° Celsius. Upon arriving at Delta's office, the samples are transferred to a locked

refrigerator cooled to approximately 4° Celsius. Chemical preservation is controlled by the required analysis and is noted on the chain-of-custody form.

Sample Identification and Chain-of-Custody Procedures

Sample identification and chain-of-custody procedures document sample possession from the time of collection to ultimate disposal. Each sample container submitted for analysis has a label affixed to identify the job number, sampler, date and time of sample collection, and a sample number unique to that sample. This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations, is recorded in the field records. A California-certified laboratory analyzes samples.

A chain-of-custody form is used to record possession of the sample from time of collection to its arrival at the laboratory. When the samples are shipped, the person in custody of them relinquishes the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory verifies sample integrity and confirms that the samples are collected in the proper containers, preserved correctly, and contain adequate volumes for analysis.

If these conditions are met, each sample is assigned a unique log number for identification throughout analysis and reporting. The log number is recorded on the chain-of-custody form and in the legally required logbook maintained by the laboratory in the laboratory. The sample description, date received, client's name, and other relevant information is also recorded.

DOULOS ENVIRONMENTAL, INC.
GROUNDWATER/LIQUID LEVEL DATA
(measurements in feet)

Project Address: 1619 First St.

Livermore

Date: 5-10-04

Project No.: 67076

Recorded by:

Well No.	Time	Well Elev. TOC	Depth to Groundwater	Measured Total Depth	Groundwater Elevation	Depth to Product	Product Thickness	Comments
MW-1	11:38		30.31	69.56				
MW-2	11:41	-	30.91	67.89				
MW-3	11:45		30.25	67.15				
MW-4	11:50		30.33	69.39				
MW-5	11:10		31.12	67.80				
MW-6	11:30	-	32.98	64.90				
MW-7	11:35	-	29.86	67.05				
MW-8	11:16	-	31.44	44.30				
MW-9	11:20	-	33.61	44.35				
MW-10	11:24	-	32.15	44.90				

Notes:

DOULOS ENVIRONMENTAL, INC. **SAMPLING INFORMATION SHEET**

Client: Tesoro 67076 Sampling Date: 5-10-04

Site: 1619 First St. Project No.:

Livermore, Ca. Well Designation: MW-2

Is setup of traffic control devices required? (NO) YES time: _____ hours
Is there standing water in the well box? (NO) YES Above TOC Below TOC
Is top of casing cut level? NO (YES) If no, see remarks
Is well cap sealed and locked? NO (YES) If no, see remarks
Height of well casing riser (in inches): 4
Well cover type: 8" or 12" UV_____ 12" EMCO_____ 8" or 12" BK_____ 8" Christy_____
12" Christy_____ 8" M&D_____ 12" M&D_____ 12" DWP _____
12" CNI _____ 36" CNI _____ 12" Pomeco X Other: _____
General condition of wellhead assembly: Excellent_____ Good X Fair_____ Poor_____

Purging Equipment: _____2" disposable bailer _____Submersible pump
_____2" PVC bailer _____Dedicated bailer
_____4" PVC bailer _____Centrifugal pump
Sampled with: Disposable bailer X Teflon bailer _____ Disposable Tubing_____

Well Diameter: 2" _____ 4" X 6" _____ 8" _____
Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 11:41
Depth of well: 67.89
Depth to water: 30.91

Recharge Measurement
Time: NA
Depth to water: NA

Calculated purge: _____
Actual purge: NA

Start purge: NA Sampling time: 12:26

Time	Temperature	E.C.	pH	Turbidity	Volume
		NA			

Sample appearance: clear Lock: Dolphin

Equipment replaced: (check all that apply) Note condition of replaced item(s)
2" Locking Cap: _____ Lock: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL, INC. **SAMPLING INFORMATION SHEET**

Client: Tesoro 67076 Sampling Date: 5-10-04

Site: 1619 First St. Project No.:

Livermore, Ca. Well Designation: MW-6

Is setup of traffic control devices required? (NO) YES time: _____ hours
Is there standing water in the well box? (NO) YES Above TOC Below TOC
Is top of casing cut level? NO (YES) If no, see remarks
Is well cap sealed and locked? NO (YES) If no, see remarks
Height of well casing riser (in inches): 5
Well cover type: 8" or 12" UV_____ 12" EMCO_____ 8" or 12" BK_____ 8" Christy_____
12" Christy_____ 8" M&D X 12" M&D_____ 12" DWP _____
12" CNI _____ 36" CNI _____ 12" Porneco_____ Other: _____
General condition of wellhead assembly: Excellent_____ Good X Fair_____ Poor_____

Purging Equipment: _____2" disposable bailer _____Submersible pump
_____2" PVC bailer _____Dedicated bailer
_____4" PVC bailer _____Centrifugal pump
Sampled with: Disposable bailer X Teflon bailer _____ Disposable Tubing_____

Well Diameter: 2" X 4" _____ 6" _____ 8" _____
Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement
Time: 11:30
Depth of well: 64.90
Depth to water: 32.98
Recharge Measurement
Time: NA
Depth to water: NA
Calculated purge: _____
Actual purge: NA

Start purge: NA Sampling time: 12:16

Time	Temperature	E.C.	pH	Turbidity	Volume
		NA			

Sample appearance: clear Lock: OK

Equipment replaced: (check all that apply) Note condition of replaced item(s)
2" Locking Cap: _____ Lock: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL, INC. **SAMPLING INFORMATION SHEET**

Client: Tesoro 67076 Sampling Date: 5-10-04

Site: 1619 First St. Project No.:

Livermore, Ca. Well Designation: MW-7

Is setup of traffic control devices required? (NO) YES time:____ hours
Is there standing water in the well box? (NO) YES Above TOC Below TOC
Is top of casing cut level? NO (YES) If no, see remarks
Is well cap sealed and locked? NO (YES) If no, see remarks
Height of well casing riser (in inches): 4
Well cover type: 8" or 12" UV X 12" EMCO____ 8" or 12" BK____ 8" Christy____
12" Christy____ 8" M&D____ 12" M&D____ 12" DWP____
12" CNI____ 36" CNI____ 12" Pomeco____ Other:____
General condition of wellhead assembly: Excellent____ Good X Fair____ Poor____

Purging Equipment: ____ 2" disposable bailer ____ Submersible pump
____ 2" PVC bailer ____ Dedicated bailer
____ 4" PVC bailer ____ Centrifugal pump
Sampled with: Disposable bailer X Teflon bailer ____ Disposable Tubing____

Well Diameter:	2" X	4"	6"	8"
Purge Vol. Multiplier:	0.16	0.65	1.47	2.61 gal/ft.

Initial Measurement
Time: 11:35
Depth of well: 67.05
Depth to water: 29.86

Recharge Measurement
Time: NA
Depth to water: NA

Calculated purge:
Actual purge: NA

Start purge: NA Sampling time: 12:22

Time	Temperature	E.C.	pH	Turbidity	Volume
		N/A			

Sample appearance: clear Lock: OK

Equipment replaced: (check all that apply) Note condition of replaced item(s)
2" Locking Cap: ____ Lock: ____ 7/32 Allenhead: ____
4" Locking Cap: ____ Lock-Dolphin: ____ 9/16 Bolt: ____
6" Locking Cap: ____ Pinned Allenhead (DWP): ____

Remarks: ____

Signature: ____

DOULOS ENVIRONMENTAL, INC. **SAMPLING INFORMATION SHEET**

Client: Tesoro 67076 Sampling Date: 5-10-04

Site: 1619 First St. Project No.:

Livermore, Ca. Well Designation: MW-8

Is setup of traffic control devices required? (NO) YES time: _____ hours
Is there standing water in the well box? (NO) YES Above TOC Below TOC
Is top of casing cut level? NO (YES) If no, see remarks
Is well cap sealed and locked? NO (YES) If no, see remarks
Height of well casing riser (in inches): 6
Well cover type: 8" or 12" UV_____ 12" EMCO_____ 8" or 12" BK_____ 8" Christy_____
12" Christy_____ 8" M&D_____ 12" M&D_____ 12" DWP _____
12" CNI _____ 36" CNI _____ 12" Pomeco_____ Other: 12
General condition of wellhead assembly: Excellent _____ Good X Fair_____ Poor_____

Purging Equipment: _____ 2" disposable bailer _____ Submersible pump
_____ 2" PVC bailer _____ Dedicated bailer
_____ 4" PVC bailer X Centrifugal pump
Sampled with: Disposable bailer X Teflon bailer _____ Disposable Tubing_____

Well Diameter: 2" X 4" _____ 6" _____ 8" _____
Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 11:16
Depth of well: 44.30
Depth to water: 31.44

Recharge Measurement
Time: NA
Depth to water: NA

Calculated purge: _____
Actual purge: NA

Start purge: NA Sampling time: 11:56

Time	Temperature	E.C.	pH	Turbidity	Volume
		NA			

Sample appearance: Clear Lock: Dolphin

Equipment replaced: (check all that apply) Note condition of replaced item(s)
2" Locking Cap: _____ Lock: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL, INC. **SAMPLING INFORMATION SHEET**

Client: Tesoro 67076 Sampling Date: 5-10-04

Site: 1619 First St. Project No.: _____

Livermore, Ca. Well Designation: mw-9

Is setup of traffic control devices required? (NO) YES time: _____ hours
Is there standing water in the well box? (NO) YES Above TOC Below TOC
Is top of casing cut level? NO (YES) If no, see remarks
Is well cap sealed and locked? NO (YES) If no, see remarks
Height of well casing riser (in inches): 5
Well cover type: 8" or 12" UV_____ 12" EMCO_____ 8" or 12" BK_____ 8" Christy_____
12" Christy_____ 8" M&D_____ 12" M&D_____ 12" DWP _____
12" CNI _____ 36" CNI _____ 12" Pomeco_____ Other: NR
General condition of wellhead assembly: Excellent_____ Good X Fair_____ Poor_____

Purging Equipment: _____2" disposable bailer _____Submersible pump
_____2" PVC bailer _____Dedicated bailer
_____4" PVC bailer X Centrifugal pump
Sampled with: Disposable bailer X Teflon bailer _____ Disposable Tubing_____

Well Diameter: 2" X 4" _____ 6" _____ 8" _____
Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 11:20
Depth of well: 44-35
Depth to water: 33-61

Recharge Measurement
Time: NA
Depth to water: NA

Calculated purge: _____
Actual purge: NA

Start purge: NA Sampling time: 12:01

Time	Temperature	E.C.	pH	Turbidity	Volume
		N/A			

Sample appearance: clear Lock: OK

Equipment replaced: (check all that apply)
2" Locking Cap: _____
4" Locking Cap: _____
6" Locking Cap: _____
Lock: _____
Lock-Dolphin: _____
Note condition of replaced item(s)
7/32 Allenhead: _____
9/16 Bolt: _____
Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL, INC. **SAMPLING INFORMATION SHEET**

Client: Tesoro 67076 Sampling Date: 5-10-04

Site: 1619 First St. Project No.:

Livermore, Ca. Well Designation: MW-10

Is setup of traffic control devices required? (NO) YES time: _____ hours
Is there standing water in the well box? (NO) YES Above TOC Below TOC
Is top of casing cut level? NO (YES) If no, see remarks
Is well cap sealed and locked? NO (YES) If no, see remarks
Height of well casing riser (in inches): 5
Well cover type: 8" or 12" UV_____ 12" EMCO_____ 8" or 12" BK_____ 8" Christy_____
12" Christy_____ 8" M&D_____ 12" M&D_____ 12" DWP_____
12" CNI_____ 36" CNI_____ 12" Pomeco_____ Other: 12
General condition of wellhead assembly: Excellent_____ Good X Fair_____ Poor_____

Purging Equipment: _____2" disposable bailer _____Submersible pump
_____2" PVC bailer _____Dedicated bailer
_____4" PVC bailer _____Centrifugal pump
Sampled with: Disposable bailer X Teflon bailer _____ Disposable Tubing_____

Well Diameter: 2" X 4" _____ 6" _____ 8" _____
Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 11:24
Depth of well: 44.90
Depth to water: 32.15

Recharge Measurement
Time: NA
Depth to water: NA

Calculated purge: _____
Actual purge: NA

Start purge: NA Sampling time: 12:10

Time	Temperature	E.C.	pH	Turbidity	Volume
		NA			

Sample appearance: clear Lock: Polyglow

Equipment replaced: (check all that apply) Note condition of replaced item(s)
2" Locking Cap: _____ Lock: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

ENCLOSURE D

Laboratory Analytical Results With
Chain-of-Custody Documentation

KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Jim Brownell
Delta Environmental Consultants, Inc.
3164 Gold Camp Drive, Suite 200
Rancho Cordova, CA 95670

Subject : 6 Water Samples
Project Name : Tesoro
Project Number : 67076 Livermore
P.O. Number : AFE 023139615

Dear Mr. Brownell,

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

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Jeff Dahl

KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Project Name : **Tesoro**
Project Number : **67076 Livermore**

Sample : **MW-2** Matrix : Water Lab Number : 38252-01
Sample Date :05/10/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1000**	5.0	ug/L	EPA 8260B	05/17/2004
Toluene	**51**	5.0	ug/L	EPA 8260B	05/17/2004
Ethylbenzene	**240**	5.0	ug/L	EPA 8260B	05/17/2004
Total Xylenes	**290**	5.0	ug/L	EPA 8260B	05/17/2004
Methyl-t-butyl ether (MTBE)	**1800**	5.0	ug/L	EPA 8260B	05/17/2004
Diisopropyl ether (DIPE)	**< 5.0**	5.0	ug/L	EPA 8260B	05/17/2004
Ethyl-t-butyl ether (ETBE)	**< 5.0**	5.0	ug/L	EPA 8260B	05/17/2004
Tert-amyl methyl ether (TAME)	**14**	5.0	ug/L	EPA 8260B	05/17/2004
Tert-Butanol	**< 50**	50	ug/L	EPA 8260B	05/17/2004
Methanol	**< 500**	500	ug/L	EPA 8260B	05/17/2004
Ethanol	**< 50**	50	ug/L	EPA 8260B	05/17/2004
1,2-Dichloroethane	**< 5.0**	5.0	ug/L	EPA 8260B	05/17/2004
1,2-Dibromoethane	**< 5.0**	5.0	ug/L	EPA 8260B	05/17/2004
TPH as Gasoline	**7300**	500	ug/L	EPA 8260B	05/17/2004
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	05/17/2004
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	05/17/2004

Approved By: Jeff Dahl

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KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Project Name : **Tesoro**
Project Number : **67076 Livermore**

Sample : **MW-6** Matrix : Water Lab Number : 38252-02
Sample Date :05/10/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**550**	10	ug/L	EPA 8260B	05/15/2004
Toluene	**< 10**	10	ug/L	EPA 8260B	05/15/2004
Ethylbenzene	**71**	10	ug/L	EPA 8260B	05/15/2004
Total Xylenes	**43**	10	ug/L	EPA 8260B	05/15/2004
Methyl-t-butyl ether (MTBE)	**3700**	10	ug/L	EPA 8260B	05/15/2004
Diisopropyl ether (DIPE)	**< 10**	10	ug/L	EPA 8260B	05/15/2004
Ethyl-t-butyl ether (ETBE)	**< 10**	10	ug/L	EPA 8260B	05/15/2004
Tert-amyl methyl ether (TAME)	**31**	10	ug/L	EPA 8260B	05/15/2004
Tert-Butanol	**< 100**	100	ug/L	EPA 8260B	05/15/2004
Methanol	**< 1000**	1000	ug/L	EPA 8260B	05/15/2004
Ethanol	**< 100**	100	ug/L	EPA 8260B	05/15/2004
1,2-Dichloroethane	**< 10**	10	ug/L	EPA 8260B	05/15/2004
1,2-Dibromoethane	**< 10**	10	ug/L	EPA 8260B	05/15/2004
TPH as Gasoline	**6500**	1000	ug/L	EPA 8260B	05/15/2004
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	05/15/2004
4-Bromofluorobenzene (Surr)	101		% Recovery	EPA 8260B	05/15/2004

Approved By: Jeff Dahl

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KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Project Name : **Tesoro**
Project Number : **67076 Livermore**

Sample : **MW-7** Matrix : Water Lab Number : 38252-03
Sample Date :05/10/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
Methanol	**< 50**	50	ug/L	EPA 8260B	05/13/2004
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
TPH as Gasoline	**67**	50	ug/L	EPA 8260B	05/13/2004
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	05/13/2004
4-Bromofluorobenzene (Surr)	101		% Recovery	EPA 8260B	05/13/2004

Approved By: Jeff Dahl

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KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Project Name : **Tesoro**
Project Number : **67076 Livermore**

Sample : **MW-8** Matrix : Water Lab Number : 38252-04

Sample Date :05/10/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
Methanol	**< 50**	50	ug/L	EPA 8260B	05/13/2004
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	05/13/2004
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	05/13/2004
4-Bromofluorobenzene (Surr)	101		% Recovery	EPA 8260B	05/13/2004

Approved By: Jeff Dahl

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KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Project Name : **Tesoro**
Project Number : **67076 Livermore**

Sample : **MW-9** Matrix : Water Lab Number : 38252-05
Sample Date :05/10/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**4.4**	0.50	ug/L	EPA 8260B	05/13/2004
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethylbenzene	**1.3**	0.50	ug/L	EPA 8260B	05/13/2004
Total Xylenes	**0.67**	0.50	ug/L	EPA 8260B	05/13/2004
Methyl-t-butyl ether (MTBE)	**11**	0.50	ug/L	EPA 8260B	05/13/2004
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
Methanol	**< 50**	50	ug/L	EPA 8260B	05/13/2004
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
TPH as Gasoline	**1100**	50	ug/L	EPA 8260B	05/13/2004
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	05/13/2004
4-Bromofluorobenzene (Surr)	99.8		% Recovery	EPA 8260B	05/13/2004

Approved By: Jeff Dahl

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KIFF ANALYTICAL LLC

Report Number : 38252
Date : 05/18/2004

Project Name : **Tesoro**
Project Number : **67076 Livermore**

Sample : **MW-10** Matrix : Water Lab Number : 38252-06
Sample Date :05/10/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
Methanol	**< 50**	50	ug/L	EPA 8260B	05/13/2004
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	05/13/2004
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	05/13/2004
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	05/13/2004
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	05/13/2004
4-Bromofluorobenzene (Surr)	101		% Recovery	EPA 8260B	05/13/2004

Approved By: Jeff Dahl

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

Report Number : 38252

Date : 05/18/2004

QC Report : Method Blank Data

Project Name : **Tesoro**

Project Number : **67076 Livermore**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/13/2004
Methanol	< 50	50	ug/L	EPA 8260B	05/13/2004
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/13/2004
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	05/13/2004
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	05/13/2004
Toluene - d8 (Surr)	101		%	EPA 8260B	05/13/2004
4-Bromofluorobenzene (Surr)	100		%	EPA 8260B	05/13/2004
Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/14/2004
Methanol	< 50	50	ug/L	EPA 8260B	05/14/2004
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/14/2004
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	05/14/2004
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	05/14/2004
Toluene - d8 (Surr)	102		%	EPA 8260B	05/14/2004
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	05/14/2004

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/16/2004
Methanol	< 50	50	ug/L	EPA 8260B	05/16/2004
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/16/2004
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	05/16/2004
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	05/16/2004
Toluene - d8 (Surr)	105		%	EPA 8260B	05/16/2004
4-Bromofluorobenzene (Surr)	101		%	EPA 8260B	05/16/2004

Approved By: Jeff Dahl

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 38252

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 05/18/2004

Project Name : **Tesoro**

Project Number : **67076 Livermore**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	38238-01	<0.50	40.0	40.0	38.8	38.8	ug/L	EPA 8260B	5/13/04	97.0	97.0	0.0296	70-130	25
Toluene	38238-01	<0.50	40.0	40.0	40.0	39.3	ug/L	EPA 8260B	5/13/04	100	98.2	1.81	70-130	25
Tert-Butanol	38238-01	<5.0	200	200	194	197	ug/L	EPA 8260B	5/13/04	97.2	98.5	1.41	70-130	25
Methyl-t-Butyl Ether	38238-01	9.4	40.0	40.0	48.2	48.6	ug/L	EPA 8260B	5/13/04	96.9	98.0	1.11	70-130	25
Benzene	38274-01	<0.50	40.0	40.0	40.2	38.9	ug/L	EPA 8260B	5/14/04	100	97.3	3.11	70-130	25
Toluene	38274-01	<0.50	40.0	40.0	41.4	40.0	ug/L	EPA 8260B	5/14/04	103	100	3.36	70-130	25
Tert-Butanol	38274-01	<5.0	200	200	202	199	ug/L	EPA 8260B	5/14/04	101	99.7	1.33	70-130	25
Methyl-t-Butyl Ether	38274-01	3.8	40.0	40.0	43.5	44.0	ug/L	EPA 8260B	5/14/04	99.1	100	1.38	70-130	25
Benzene	38274-10	<0.50	40.0	40.0	41.4	40.0	ug/L	EPA 8260B	5/16/04	104	100	3.39	70-130	25
Toluene	38274-10	<0.50	40.0	40.0	41.8	40.6	ug/L	EPA 8260B	5/16/04	104	101	2.90	70-130	25
Tert-Butanol	38274-10	<5.0	200	200	203	204	ug/L	EPA 8260B	5/16/04	101	102	0.266	70-130	25
Methyl-t-Butyl Ether	38274-10	17	40.0	40.0	56.4	58.5	ug/L	EPA 8260B	5/16/04	98.8	104	5.22	70-130	25

Approved By: Jeff Dahl

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 38252

QC Report : Laboratory Control Sample (LCS)

Date : 05/18/2004

Project Name : **Tesoro**

Project Number : **67076 Livermore**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	5/13/04	101	70-130
Toluene	40.0	ug/L	EPA 8260B	5/13/04	104	70-130
Tert-Butanol	200	ug/L	EPA 8260B	5/13/04	98.8	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	5/13/04	107	70-130
Benzene	40.0	ug/L	EPA 8260B	5/14/04	96.5	70-130
Toluene	40.0	ug/L	EPA 8260B	5/14/04	98.7	70-130
Tert-Butanol	200	ug/L	EPA 8260B	5/14/04	97.2	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	5/14/04	95.5	70-130
Benzene	40.0	ug/L	EPA 8260B	5/16/04	100	70-130
Toluene	40.0	ug/L	EPA 8260B	5/16/04	103	70-130
Tert-Butanol	200	ug/L	EPA 8260B	5/16/04	100	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	5/16/04	106	70-130

Approved By: Jeff Dahl

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Lab No. 38252 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Jim Brownell
Company/Address: Delta Env. Sac.
Phone No.: 638-2765 FAX No.: 638-8385
Project Number: 67076 Livermore P.O. No.: AFE 023139615
Project Name: Tesoro
Sampler Signature (below):

EDF Report? [X] Yes [ ] No
Recommended but not mandatory to complete this section:
Sampling Company Log Code: DEIO
Global ID: T0600101410
EDF Deliverable to (Email Address): jbrownell@deltaenv.com
Project Address: Livermore

Project Address: Edgar Alvarez

Sample Designation	Date	Time	Sampling	Container: 40 ml VOA	Container: SLEEVE	Preservative: HCl	Preservative: HNO_3	Preservative: ICE	Preservative: NONE	Matrix: WATER	Matrix: SOIL	BTEX (8021B)	BTEX/TPH Gas/MTBE (8021B/M8015)	TPH as Diesel (M8015)	TPH as Motor Oil (M8015)	TPH Gas/BTEX/MTBE (8260B)	5 Oxygenates/TPH Gas/BTEX (8260B)	7 Oxygenates/TPH Gas/BTEX (8260B)	5 Oxygenates (8260B)	7 Oxygenates (8260B)	Lead Scav. (1,2 DCA & 1,2 EDB - 8260B)	EPA 8260B (Full List)	Volatile Halocarbons (EPA 8260B)	Lead (7421/239.2)	TOTAL (X)	W.E.T. (X)	TAT: 12 hr/24 hr/48 hr/72 hr/1 wk	For Lab Use Only
mw-2	5-10-04	12:26		3		X		X		X								X			X						STAT	01
mw-6		12:16																										02
mw-7		12:22																										03
mw-8		11:56																										04
mw-9		12:01																										05
mw-10		12:10		V		V		V		V								V			V							06

Relinquished by:	Date	Time	Received by:	Remarks:
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date: 051204	Time: 1076	Received by Laboratory: KIFF ANALYTICAL	Bill to: ROB DONOVAN

Distribution: White - Lab, Pink - Originator

Forms/coc 121001.fm9