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Northern California Carpenters Pension Trust Fund, LLC c/o Ms. Mary Schroeder
McMorgan & Company LLC
425 Market Street, Suite 1600
San Francisco, CA 94105

RE: January 2009 Groundwater Monitoring Report 300 Hegenberger Road, Oakland, California *ERS Project Number 1013-01.00* 

Dear Ms. Schroeder:

Environmental Risk Specialties Corporation (ERS) has enclosed one hard copy of the January 2009 Groundwater Monitoring Report for 300 Hegenberger Road, Oakland, California. ERS will also upload the Report along with monitoring well sampling and analytical data to the Regional Water Quality Control Board's GeoTracker database.

If you have any questions regarding this report or the findings of the work, please contact me at (925) 938-1600, extension 109 or email me at <u>ddement@erscorp.us</u>.

Sincerely,

David DeMent, PG, REA II

Senior Geologist

cc: Mr. Jerry Wickham, ACHCSA

**Enclosure** 



# JANUARY 2009 GROUNDWATER MONITORING REPORT

300 Hegenberger Road Oakland, California

## Prepared for:

Northern California Carpenters Pension Trust Fund, LLC c/o Ms. Mary Schroeder
McMorgan & Company LLC
425 Market Street, Suite 1600
San Francisco, CA 94105

# Prepared by:

Environmental Risk Specialties Corporation Walnut Creek, California

February 9, 2009

Reviewed By:

David DeMent, PG, REA II Senior Geologist



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- 1 Well Monitoring Worksheet
- 2 Analytical Results and Chain of Custody Record

### 1.0 INTRODUCTION

This January 2009 Groundwater Monitoring Report was prepared by Environmental Risk Specialties Corporation (ERS) at the request of McMorgan & Company LLC, on behalf of the Bank of New York Trust Company, N.A as Corporate Co-Trustee for the Northern California Carpenters Pension Trust Fund (Client). This Report describes groundwater monitoring work performed at 300 Hegenberger Road, Oakland, California (Site). The project objectives were to purge and sample the six existing groundwater monitoring wells, measure the depth to groundwater in the wells to calculate groundwater gradient and flow direction, evaluate analytical results, and report the findings.

#### 2.0 BACKGROUND

The Site is located at 300 Hegenberger Road in the southeast corner of the intersection of Hegenberger Road and Hegenberger Loop. The rectangular lot is approximately 250 feet long by 200 feet wide and is approximately 9 feet above mean sea level.

The available data indicate that a series of subsurface investigations have been conducted at the Site since 1997. A site assessment in April 1997 indicated the presence of petroleum hydrocarbons in soils and groundwater beneath the Site but no reportable concentrations of methyl tertiary butyl ether (MTBE). A subsequent investigation conducted in July and October 1997 confirmed previous investigation findings and that no underground storage tanks (USTs) remained at the Site.

Tetra Tech EM Inc. (Tetra Tech) installed five 2-inch-diameter groundwater monitoring wells in November 1998. The five monitoring wells were screened from 5 to 20 feet below ground surface (bgs). Well MW-1 was subsequently destroyed in December 1999 and well MW-6 was installed in the estimated downgradient direction of the former waste oil tank. Well MW-6 was screened from 10 to 20 feet bgs. In December 2000, Tetra Tech installed offsite wells MW-7 and MW-8 estimated to be in the downgradient direction of the Site. Wells MW-7 and MW-8 were screened from 5 to 20 feet bgs. Groundwater monitoring was performed periodically from December 1998 to October 2001 in the existing wells.

Tetra Tech reported the findings of a Sensitive Receptor Survey in its March 8, 2001 Fourth Quarter Groundwater Monitoring Report, December 2000. According to the California Department of Water resources, 40 monitoring wells and two irrigation wells were located at 11 sites within the search distance. One irrigation well is reportedly

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located approximately 500 feet cross gradient from the Site and a second irrigation well is located approximately 2,800 feet crossgradient of the Site.

From February 2005 to May 2007, ACC Environmental Consultants (ACC) continued periodic groundwater monitoring at the Site.

On September 25, 2006, ACC advanced eleven soil borings to further investigate current subsurface conditions and characterize soil and groundwater for suspect residual petroleum hydrocarbon impacts associated with former site use. ACC advanced its exploratory soil borings in select locations relative to probable sources, such as the former UST locations and the product dispenser islands, and in representative locations between existing groundwater monitoring wells.

Concentrations of MTBE in soil and grab groundwater samples were not detected above the laboratory detection limit. Elevated concentrations of total extractable petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX) were reported in shallow soil sampled collected beneath the dispenser islands and are generally above their respective Environmental Screening Levels (ESLs), which warrant removal. Minor concentrations of TPHg and BTEX were reported in grab groundwater samples collected downgradient of the dispenser islands in the vicinity of the former USTs.

A previously performed utility survey provided information that was incorporated as part of ACC's subsurface investigation and demonstrated that all USTs had been successfully removed from the Site. Available utility survey information also demonstrated that preferential migration and/or interception of impacted groundwater cannot occur. This finding is confirmed by the lack of significant concentrations of constituents of concern being reported in monitoring wells MW-7 and MW-8 during periodic groundwater monitoring.

#### 2.1 Subsurface Conditions

Soil boring logs from wells MW-7 and MW-8, included in the March 8, 2001 *Fourth Quarter Groundwater Monitoring Report, December 2000*, indicate that clay and silty clay is present from the surface to the minimum depth of 11.5 feet bgs and sandy gravels and sands are present from approximately 12 to 15 feet bgs to 20.5 feet bgs. Silty clays logged at 10 to 10.5 feet bgs are described as dry to moist, medium plasticity, and medium stiff. Sandy gravels logged from 15 to 16 feet bgs are described as saturated, coarse to fine grained sand, and fine to medium grained gravel.

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The data summarized in the soil boring logs directly contradicts other conclusions presented in Tetra Tech's March 8, 2001 Fourth Quarter Groundwater Monitoring Report, December 2000. In the "Subsurface Soil Conditions and Hydrology" section of the report, Tetra Tech states that "Groundwater is usually encountered within five feet bgs," and in the "Preferential Pathways" section "the utility trenches may act as preferential pathways and could allow for movement of petroleum hydrocarbons to the north and west beyond the site." Saturated permeable soils are not logged shallower than 12 feet bgs. Utility trenches along Hegenberger Road likely exist no deeper than seven feet bgs; therefore, interception or preferential movement of groundwater along utility trenches is highly unlikely. Measured groundwater elevations in the monitoring wells approximate 5 feet bgs due to semi-confined aquifer conditions in the deeper water bearing zone.

#### 3.0 GROUNDWATER MONITORING AND SAMPLING

Groundwater monitoring and sampling of the Site was performed on January 29, 2009 by ERS personnel. Work at the Site included measuring depth to water, subjectively evaluating groundwater in the wells, purging and sampling the wells, and submitting the samples to a state-certified laboratory for analysis of constituents of concern.

# 3.1 Groundwater Monitoring

Before groundwater purging and sampling, the depth to the water table was measured from the top of each well casing using a Solinst Water Level Meter. The water level measurements were recorded to the nearest 0.01 foot with respect to mean sea level (MSL). Worksheets of recorded groundwater monitoring data are included as Appendix 1. Information regarding well elevations and groundwater depths for the Site is summarized in Table 1.

TABLE 1 – GROUNDWATER ELEVATIONS

Well	Date Measured	Well Elevation*	Depth to	Groundwater
Number		(feet above MSL)	Groundwater (feet)	Elevation (feet)
MW-1	12/02/98	100.74	2.90	97.84
	03/08/99		3.43	97.31
	07/01/99		3.81	96.93
	08/18/99		3.62	97.12
	09/15/99		3.69	97.05
	12/27/99		3.81	96.93
	12/99		Well Destroyed	Well Destroyed

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Well	Date Measured	Well Elevation*	Depth to	Groundwater
Number		(feet above MSL)	Groundwater (feet)	Elevation (feet)
MW-2	12/02/98	102.44	4.61	97.83
	03/08/99		5.16	97.28
	07/01/99		5.91	96.53
	08/18/99		5.53	96.91
	09/15/99		5.55	96.89
	12/27/99		5.55	96.89
	03/24/00		5.44	97.00
	06/09/00			FP
	12/14/00	$9.05^{(1)}$	5.00	4.05
	05/07/01		5.69	3.36
	10/04/01		5.60	3.45
	02/09/05		5.00	4.05
	05/16/05		3.98	5.07
	11/16/05		5.23	3.82
	02/09/06		4.77	4.28
	05/19/06		5.51	3.54
	08/17/06		5.32	3.73
	11/16/06		4.77	4.28
	03/02/07		4.37	4.68
	05/17/07		5.75	3.30
	01/29/09		5.44	3.61
MW-3	12/02/98	102.00	4.24	97.76
	03/08/99		4.90	97.10
	07/01/99		5.35	96.65
	08/18/99		5.21	96.79
	09/15/99		5.26	96.74
	12/27/99		5.42	96.58
	03/24/00		5.81	96.19
	06/09/00		5.43	96.57
	12/14/00	$8.60^{(1)}$	4.85	3.75
	05/07/01		5.37	3.23
	10/04/01		5.27	3.33
	02/09/05		4.45	4.15
	05/16/05		3.81	4.79
	11/16/05		4.90	3.70
	02/09/06		4.41	4.19
	05/19/06		5.35	3.25
	08/17/06		4.10	4.50
	11/16/06		4.43	4.17
	03/02/07		4.69	3.91
	05/17/07		5.50	3.10

Well	Date Measured	Well Elevation*	Depth to	Groundwater
Number		(feet above MSL)	Groundwater (feet)	Elevation (feet)
MW-3 cont	01/29/09		5.10	3.50
MW-4	12/02/98	100.00	2.20	97.80
	03/08/99		2.80	97.20
	07/01/99		5.23	64.77
	08/18/99		5.00	95.00
	09/15/99		4.99	95.01
	12/27/99		5.23	94.77
	03/24/00		5.39	94.61
	06/09/00		5.24	94.76
	12/14/00	$8.50^{(1)}$	4.60	3.90
	05/07/01		5.20	3.30
	10/04/01		5.08	3.42
	02/09/05		4.45	4.05
	05/16/05		3.98	4.52
	11/16/05		4.72	3.78
	02/09/06		4.24	4.26
	05/19/06		5.02	3.48
	08/17/06		5.76	2.74
	11/16/06		4.26	4.24
	03/02/07		4.29	4.21
	05/17/07		5.29	3.21
	01/29/09		4.94	3.56
MW-5	12/02/98	102.22	4.59	97.63
	03/08/99		5.20	97.02
	07/01/99		5.59	96.63
	08/18/99		5.37	96.85
	09/15/99		5.55	96.67
	12/27/99		5.48	96.74
	03/24/00		6.02	96.20
	06/09/00		5.59	96.63
	12/14/00	8.84(1)	5.10	3.74
	05/07/01		5.52	3.32
	10/04/01		5.45	3.39
	02/09/05		4.90	3.94
	05/16/05		3.92	4.92
	11/16/05		5.10	3.74
	02/09/06		4.60	4.24
	05/19/06		4.35	4.49
	08/17/06		4.16	4.68
	11/16/06		4.61	4.23

Well	Date Measured	Well Elevation*	Depth to	Groundwater
Number		(feet above MSL)	Groundwater (feet)	Elevation (feet)
MW-5 cont	03/02/07		4.51	4.33
	05/17/07		5.65	3.19
	01/29/09		5.28	3.56
MW-6	03/24/00	102.58	5.49	97.09
	06/09/00		5.87	96.71
	12/14/00	$9.19^{(1)}$	5.13	4.06
	05/07/01		5.89	3.30
	10/04/01		5.71	3.48
	02/09/05		5.20	3.99
	05/16/05		3.98	5.21
	11/16/05		5.34	3.85
	02/09/06		4.92	4.27
	05/19/06		5.71	3.48
	08/17/06		5.41	3.78
	11/16/06		4.94	4.25
	03/02/07		5.02	4.17
	05/17/07		5.90	3.29
	01/29/09		5.58	3.61
MW-7	12/14/00	$8.10^{(1)}$	3.48	4.62
	05/07/01		5.13	2.97
	10/04/01		4.87	3.23
	02/09/05		4.15	3.95
	05/16/05		3.79	4.31
	11/16/05		4.55	3.55
	02/09/06		4.92	3.18
	05/19/06			
	08/17/06		4.61	3.49
	11/16/06		4.57	3.53
	03/02/07		4.25	3.08
	05/17/07		5.17	2.93
	01/29/09		4.73	3.37
MW-8	12/14/00	$8.68^{(1)}$	5.10	3.58
	05/07/01		5.74	2.94
	10/04/01		5.52	3.16
	02/09/05		4.80	3.88
	05/16/05		3.41	5.27
	11/16/05		5.28	3.40
	02/09/06		4.58	4.10
	05/19/06			 
	08/17/06		5.12	3.56

Well	Date Measured	Well Elevation*	Depth to	Groundwater
Number		(feet above MSL)	Groundwater (feet)	Elevation (feet)
MW-8 cont	11/16/06		3.98	4.70
	03/02/07		Well Destroyed	Well Destroyed

Notes: All measurements are in feet

#### 3.2 Groundwater Gradient

Groundwater elevation contours as determined from monitoring well data obtained on January 29, 2009 are illustrated on Figure 3. Based on the measured groundwater elevations, calculated groundwater flow direction is to the west-northwest at an average gradient of 0.001 foot per foot. Historical groundwater gradients and flow directions are summarized in Table 2.

TABLE 2 - GROUNDWATER GRADIENT AND FLOW DIRECTION

Date Monitored	Gradient (foot/foot)	Direction
12/02/98	0.00091	West
03/08/99	0.00086	Southwest
07/01/99	0.0011	Southwest
08/18/99	0.0013	West
09/15/99	$0.04089^{(1)}$	North <sup>(1)</sup>
	$0.00125^{(5)}$	West
03/29/00	$0.0469^{(1)}$	Northwest
	$0.0131^{(2)}$	West-southwest
06/09/00	0.03(3)	North
	$0.0011^{(2)}$	South-Southwest
12/14/00	$0.003^{(1)}$	North
	$0.006^{(4)}$	North
05/07/01	0.0014	Northwest
	$0.0025^{(6)}$	Northwest
10/04/01	0.0013	Northwest
	$0.001^{(6)}$	Northwest
02/09/05	0.001	Southwest
05/16/05	0.004	West-Northwest
11/16/05	0.002	Northwest
02/09/06	0.001	Northwest
05/19/06	0.003	Northwest
08/17/06	0.008(7)	Northwest



<sup>\*</sup>Well elevation measured to top of casing

<sup>(1)</sup> Well elevation relative to established City of Oakland Benchmark (feet above sea level)

Date Monitored	Gradient (foot/foot)	Direction
11/16/06	0.004	Northwest
03/02/07	0.001	East-Northeast
05/17/07	0.003	West-Northwest
01/29/09	0.001	West-Northwest

Notes: (1) Flow component from MW-2 to MW-4

## 3.3 Groundwater Sampling

Before groundwater sampling, each well was purged using a disposable polyethylene bailer. Groundwater samples were collected after four well casing volumes of water were measured for temperature, conductivity, pH, and dissolved oxygen (DO) and removed. Following purging, each well was allowed to recharge before sampling. When recovery to 80 percent of the static water level was observed, a sample was collected for analysis. Groundwater conditions monitored during purging and sampling were recorded on monitoring wells worksheets, included as Appendix 1.

Wells were sampled using disposable polyethylene bailers attached to new rope for each well. From each monitoring well, three laboratory-supplied 40-milliliter sample vials and one 1-Liter amber bottle were filled to overflowing and sealed to eliminate trapped air. Once filled, sample vials were inverted and tapped to test for air bubbles. Sample containers were labeled with self adhesive, preprinted tags. The samples were stored in a pre-chilled, insulated container and returned to ERS's Walnut Creek Office pending courier pickup by AccuTest, a state-certified analytical laboratory, for the requested analyses.

Water purged during the development and sampling of the monitoring wells is being temporarily stored onsite in a 55-gallon drum pending laboratory analysis and proper disposal.

#### 4.0 RESULTS OF GROUNDWATER SAMPLING

Groundwater samples collected from each well were submitted for analysis, following chain of custody protocol. Groundwater samples collected from wells MW-2 through

<sup>(2)</sup> Flow component from MW-6 to area of MW-5

 $<sup>^{(3)}</sup>$  Flow component from MW-2, MW-3, and MW-4 and from MW-6 to MW-4

<sup>(4)</sup> Flow component from MW-7 to MW-8

<sup>(5)</sup> Flow component among wells MW-2, MW-3, and MW-5

<sup>(6)</sup> Flow component from MW-3 to MW-7

<sup>(7)</sup> Flow component among wells MW-3, MW-5, MW-7, and MW-8

MW-7 were analyzed for diesel-range petroleum hydrocarbons (TPHd) by EPA Method 8015 and gasoline-range petroleum hydrocarbons (TPHg), benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by EPA Method 8260B. Copies of the chain of custody record and laboratory analytical reports are included as Appendix 2. TPHd, TPHg, BTEX, and MTBE analytical results are summarized in Table 3.

TABLE 3 – GROUNDWATER ANALYTICAL RESULTS

Well	Date	TPHd	TPHg	MTBE	Benzene	Toluene	Ethyl-	Total
Number	Sampled	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	benzene	Xylenes
							(µg/L)	(µg/L)
MW-1	12/02/98	<50	<50		< 0.05	< 0.05	< 0.05	< 0.05
	03/08/99	190	<50		< 0.3	< 0.3	<0.3	<0.3
	07/01/99	<50	<50		< 0.5	< 0.5	< 0.5	<0.5
	08/18/99	<50	3,100		< 0.5	9.6	12	12
	09/15/99	< 50	< 50		< 0.5	< 0.5	<0.5	< 0.5
	12/27/99							
	Destroyed							
MW-2	12/02/98	99	<50		4.6	0.85	0.57	5
	03/08/99	210	180		200	0.74	1.3	2.3
	07/01/99	<50	1,100		190	13	33	36
	08/18/99							
	09/15/99	100	990		330	9.7	11	19
	12/27/99	< 50	1,000		260	7.2	1.3	10
	03/24/00	31,000	1,900		110	4.8	9.5	12
	06/09/00							
	12/14/00	470	1,600	<2	450	18	61	26
	05/07/01	300	950		120	5.8	8.5	32
	10/04/01	170	370		55	2.8	17	4.2
	02/09/05	< 50	160	< 0.50	69	1.2	1.3	<1.0
	05/16/05	140	650	< 0.50	96	4.7	15	7.5
	11/16/05	$160^{1}$	$54^{1}$	< 0.50	19	< 0.5	<0.5	< 0.5
	02/09/06	$230^{1}$	250	< 0.50	160	4.0	3.9	2.1
	05/19/06	2101	<50	< 0.50	7.8	< 0.50	< 0.50	< 0.50
	08/17/06	4601,2,3	500	<2.0	220	14	17	28.1
	11/16/06	$370^{1,3}$	190	19	20	1.1	0.58	0.72
	03/02/07	$450^{1,2}$	980	<8.3	1,400	19	35	14
	05/17/07	130	3,200	<2.5	390	23	60	30
	01/29/09	47.5 <sup>J</sup>	353	< 0.50	55.6	1.1	1.6	< 0.70
MW-3	12/02/98	300	970		160	6.5	16	9
	03/08/99	1,400	2,600		1,800	30	67	26
	07/01/99	150	3,000		1	<0.5	32	36
	08/18/99							

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Well	Date	TPHd	TPHg	MTBE	Benzene	Toluene	Ethyl-	Total
Number	Sampled	(µg/L)	(μg/L)	(µg/L)	(µg/L)	(µg/L)	benzene	Xylenes
	•	,, 0, 7	,, 0	,, ,	,, ,	,, 0	(µg/L)	(μg/L)
MW-3	09/15/99	110	1,100		350	8.3	5.4	10
cont	12/27/99	70	560		170	2.1	7.6	3.1
	03/24/00	1,000	8,400		4,100	71	190	75
	06/09/00	320	2,700		1,100	17	18	<10
	12/14/00	<100	710	<0.5	140	2.2	3.3	1.2
	05/07/01	<400	1,500		270	7.9	11	5.6
	10/04/01	<50	140		45	< 0.3	1.3	<0.6
	02/09/05		7,700	<5.0	670	16	83	36
	05/16/05		7,100	<5.0	1,200	20	110	49
	11/16/05	55 <sup>1</sup>	2701	<0.5	30	0.61	<0.5	<0.5
	02/09/06	3,0001	3,700	< 0.50	720	12	50	29.9
	05/19/06	510 <sup>1</sup>	1,700	<2.0	300	4.2	17	11
	08/17/06	4301,2,3	650	< 0.50	78	1.2	1.2	1.4
	11/16/06	<50	170	2.7	12	< 0.50	< 0.50	< 0.50
	03/02/07	1,8001,2	4,800	<8.3	1,000	13	70	28
	05/17/07	360	2,100	<2.5	270	3.8	14	5.6
	01/29/09	99.1	452	< 0.50	72.2	0.89 <sup> j</sup>	2.0	0.79 <sup> j</sup>
MW-4	12/02/98	620	<50		1.1	0.37	<0.3	2
	03/08/99	<50	1,300		1,900	9.4	1.2	11
	07/01/99	<50	610		120	< 0.5	<0.5	<0.5
	08/18/99							
	09/15/99	59	830		320	6.5	1.7	<2.0
	12/27/99	<50	55		5.8	< 0.5	< 0.5	< 0.5
	03/24/00	77	430		240	3.3	0.98	1.5
	06/09/00	< 50	220		91	0.93	< 0.5	< 0.5
	12/14/00	< 50	96	<0.5	15	< 0.5	<0.5	<0.5
	05/07/01	<100	380		130	2.5	1.7	2.5
	10/04/01	<50	76		21	< 0.3	<0.3	<0.6
	02/09/05		2,000	<2.5	440	12	9.3	7.6
	05/16/05		2,400	<2.5	610	16	11	8.0
	11/16/05	520 <sup>1</sup>	$490^{1}$	<1.0	170	4.5	3.3	2.3
	02/09/06	2,0001	1,500	<1.0	630	16	10	9.3
	05/19/06	<50	220	< 0.71	120	2.4	<0.71	1.0
	08/17/06	1,5001,2,3	1,300	<3.1	480	13	9.4	6.5
	11/16/06	4301,2	6,100	<2.0	1,300	48	53	27
	03/02/07	1,4001,2	5,900	<10	1,500	54	67	34
	05/17/07	260	4,500	<5.0	660	25	20	15
	01/29/09	798	7,130	<5.0	770	43.7	52.1	32.6
MW-5	12/02/98	620	<50		1.1	0.37	<0.3	2
	03/08/99	<50	58		23	0.31	< 0.31	1.8
	07/01/99	64	1,900	160	10	13	22	
	08/18/99							

Well	Date	TPHd	TPHg	MTBE	Benzene	Toluene	Ethyl-	Total
Number	Sampled	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	benzene	Xylenes
	•	, 0 ,	, O ,	,, ,	,, ,	,, 0	(µg/L)	(μg/L)
MW-5	09/15/99	<50	410		64	2.1	1.3	2.7
cont	12/27/99	<50	130		15	0.73	<0.5	<0.5
	03/24/00	460	2,500		560	57	18	87
	06/09/00	140	2,600		770	63	15	71
	12/14/00	<50	220	<0.5	17	0.63	1.7	1.1
	05/07/01	<200	3,200		450	44	54	66
	10/04/01	<50	<50		3.6	< 0.3	<0.3	<0.6
	02/09/05	57	1,100	0.58	160	14	50	9.6
	05/16/05	340	4,700	<10	730	79	340	36
	11/16/05	<50	1201	0.57	18	< 0.5	< 0.5	<0.5
	02/09/06	$100^{1}$	180	< 0.50	33	2.2	2.1	1.8
	05/19/06	< 50	1,400	< 5.0	630	55	79	19.1
	08/17/06	2701,2,3	280	0.52	41	1.9	5.3	0.79
	11/16/06	< 50	76	<2.0	4.8	< 0.50	< 0.50	< 0.50
	03/02/07	761,2	650	<1.0	140	12	46	7.5
	05/17/07	180	3,400	<2.5	420	34	180	10
	01/29/09	<47	51	< 0.50	2.5	< 0.50	< 0.30	< 0.70
MW-6	03/24/00	470	2,400		430	16	340	73
	06/09/00	<50	540		190	1.2	3.7	4.5
	12/14/00	< 50	< 50	<0.5	0.51	< 0.5	<0.5	0.94
	05/07/01	< 50	<50		4.4	< 0.5	< 0.5	<0.5
	10/04/01	< 50	<50		< 0.3	< 0.3	<0.3	<0.6
	02/09/05	<50	< 50	< 0.50	0.94	< 0.50	< 0.50	<1.0
	05/16/05	<50	< 50	< 0.50	0.55	< 0.50	< 0.50	<1.0
	11/16/05	270	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
	02/09/06	65 <sup>1</sup>	<50	< 0.50	0.64	< 0.50	< 0.50	< 0.50
	05/19/06	3901	600	<1.3	180	15	35	20.4
	08/17/06	150 <sup>1</sup>	<50	< 0.50	1.1	< 0.50	< 0.50	< 0.50
	11/16/06	<50	<50	<2.0	< 0.50	< 0.50	< 0.50	< 0.50
	03/02/07	<50	<50	< 0.50	1.0	< 0.50	< 0.50	0.55
	05/17/07	<50	<50	<0.50	2.2	<0.50	<0.50	<1.0
	01/29/09	<47	<25	<0.50	<0.30	<0.50	<0.30	<0.70
MW-7	12/14/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
	05/07/01	<50	<50		<0.5	< 0.5	<0.5	<0.5
	10/04/01	<50	<50		<0.3	<0.3	<0.3	<0.6
	02/09/05		<50	0.55	< 0.50	< 0.50	< 0.50	<1.0
	05/16/05		<50	<0.50	<0.50	<0.50	<0.50	<1.0
	11/16/05	<50	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50
	02/09/06	811	<50	< 0.50	<0.50	< 0.50	<0.50	< 0.50
	05/19/06							
	08/17/06	1101	<50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/16/06	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Well	Date	TPHd	TPHg	MTBE	Benzene	Toluene	Ethyl-	Total
Number	Sampled	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	benzene	Xylenes
							(µg/L)	(µg/L)
MW-7	03/02/07	<50	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cont	05/17/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	<1.0
	01/29/09	<47	<25	< 0.50	< 0.30	< 0.50	< 0.30	< 0.70
MW-8	12/14/00	<50	<50	0.52	<0.5	< 0.5	< 0.5	<0.5
	05/07/01	<50	<50		<0.5	<0.5	<0.5	<0.5
	10/04/01	< 50	< 50		< 0.3	< 0.3	< 0.3	<0.6
	02/09/05		< 50	< 0.50	< 0.50	< 0.50	< 0.50	<1.0
	05/16/05		< 50	< 0.50	< 0.50	< 0.50	< 0.50	<1.0
	11/16/05	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
	02/09/06	$72^{1}$	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
	05/19/06							
	08/17/06	1201	<50	< 0.50	< 0.50	< 0.50	< 0.50	0.51
	11/16/06	<83	<50	<2.0	< 0.50	< 0.50	< 0.50	< 0.50
	Destroyed							

*Notes:*  $\mu g/L = micrograms per liter (approximately equivalent to ppb)$ 

#### 5.0 DISCUSSION

During this groundwater monitoring and sampling event, the calculated groundwater flow direction was west-northwest at an average gradient of 0.001 foot per foot. Groundwater flow direction and gradient are generally consistent with historical trends and surface topography. ERS used groundwater elevation data from wells MW-3, MW-4, MW-5, MW-6, and MW-7 to calculate groundwater flow direction and gradient. Wells MW-1 and MW-8 have been destroyed and well MW-2 yields anomalous groundwater elevations.

TPHd, TPHg, BTEX, and MTBE concentrations decreased in wells MW-2, MW-3, and MW-5, and increased in well MW-4. TPHd, TPHg, BTEX, and MTBE were not detected above their respective laboratory method detection limits in wells MW-6 and MW-7. In comparison to the May 2007 sampling event, TPHd, TPHg, BTEX, and MTBE concentrations generally decreased in all wells, with the exception of well MW-4, which reported general increases in TPHg, TPHg, BTEX and MTBE concentrations. As a percentage of the reported TPHg in well MW-4, total BTEX decreased from 28 percent in March 2007 to 16 percent in May 2007 to 12.6 percent in January 2009, indicating preferential BTEX attenuation in groundwater over time.

<sup>&</sup>lt; = Concentration is below the reporting limit of the lab

<sup>--- =</sup> analysis not performed

<sup>&</sup>lt;sup>1</sup> Chromatographic pattern does not resemble standard

<sup>&</sup>lt;sup>2</sup> Lighter hydrocarbons contributed to the quantitation

<sup>&</sup>lt;sup>3</sup> Heavier hydrocarbons contributed to the quantitation

J Indicated an estimated value

Periodic groundwater monitoring results obtained since December 1998 have demonstrated that residual sources of petroleum hydrocarbon impact to groundwater appear to exist primairly in soil in the vicinity of monitoring well MW-4. Generally, residual soil sources of TPH impact to groundwater continues appear to be relatively minor, fluctuate with time and/or season, but are decreasing with time in most of the monitoring wells.

Sometime following the November 2006 groundwater monitoring and sampling event, well MW-8 was destroyed by the property owner under permit from the Alameda County Public Works Agency (ACPWA). Monitoring well MW-8 was apparently installed without an access agreement and the ACPWA inadvertently approved well destruction. Prior to its destruction, well MW-8 has not reported detectable TPHg, BTEX, or MTBE since the first sampling event in December 2000.

#### 6.0 CONCLUSIONS

Based on the results of groundwater monitoring performed at 300 Hegenberger Road, ERS has made the following conclusions:

- Calculated groundwater flow direction is to the west-northwest at an average gradient of 0.001 foot per foot and continues to be consistent with historical trends;
- Reported TPHd, TPHg, BTEX, and MTBE concentrations in well MW-4 indicate a residual soil source of petroleum hydrocarbon impact to groundwater appears to exist in the vicinity of well MW-4;
- TPHd, TPHg, BTEX, and MTBE concentrations were not reported above laboratory method detection limits in wells MW-6 and MW-7; and
- Natural attenuation processes are degrading dissolved petroleum hydrocarbon concentrations in groundwater and no significant TPH or BTEX concentrations are migrating off the property.

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### 7.0 RECOMMENDATIONS

Based on current groundwater monitoring results and observations made during Site investigations, ERS recommends the following;

- Implement the remedial soil excavation work plan prepared by ACC Environmental Consultants as soon as feasible;
- Continuing groundwater sampling in existing monitoring wells on a semi-annual basis; and
- Request evaluating the Site for full regulatory closure as a "low risk fuel case" following successful completion of the recommended remedial action, revising the Site Conceptual Model (CSM) accordingly, and obtaining acceptable confirmatory sidewall soil sample analytical results.

The next groundwater monitoring event is tentatively scheduled for July 29, 2009.

#### 8.0 LIMITATIONS

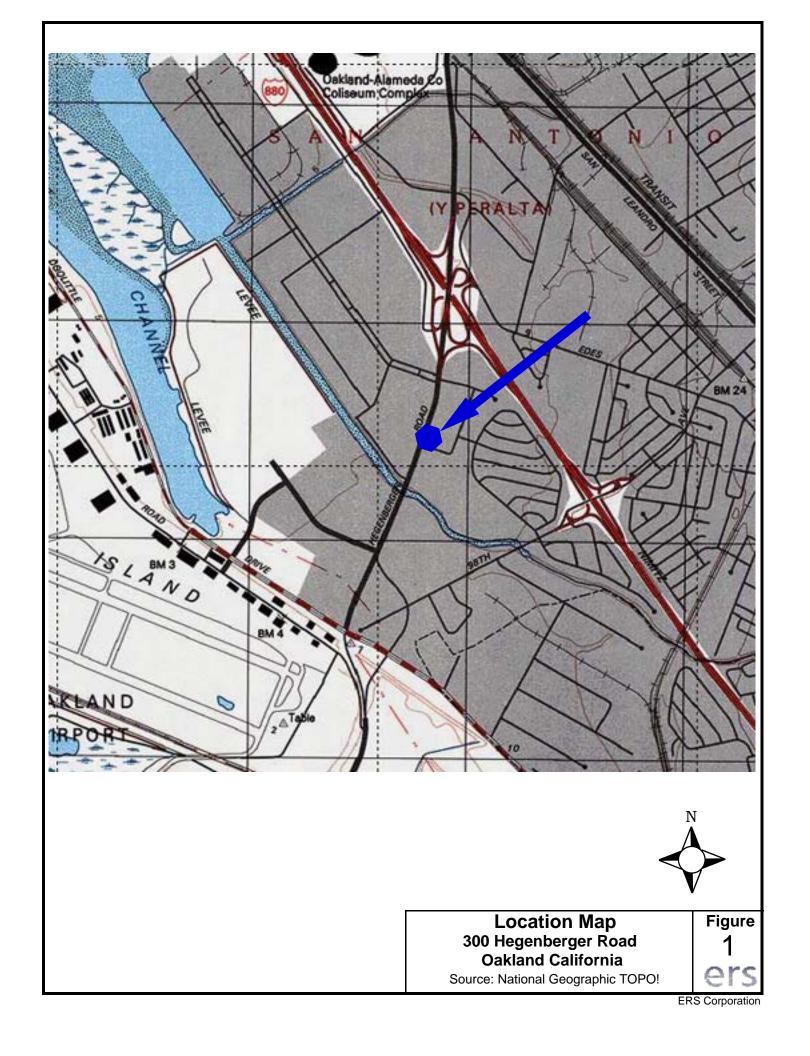
The service performed by ERS has been conducted in a manner consistent with the levels of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area. No other warranty, expressed or implied, is made.

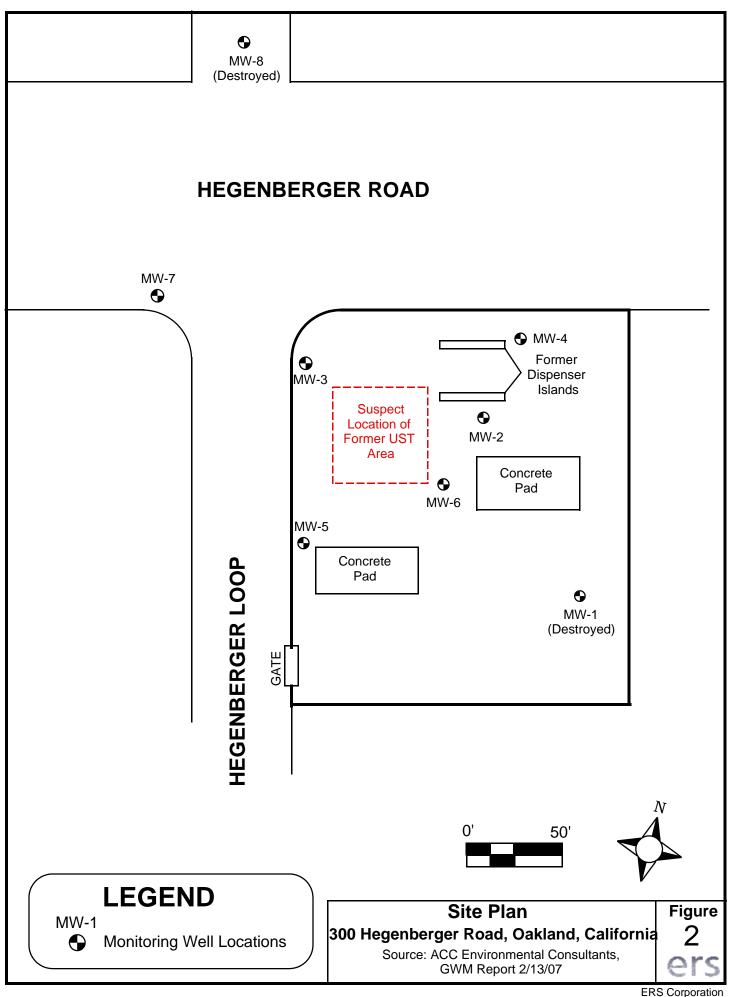
The conclusions presented in this report are professional opinions based on the indicated data described in this report and applicable regulations and guidelines currently in place. They are intended only for the purpose, site, and project indicated. Opinions and recommendations presented herein apply to site conditions existing at the time of our study.

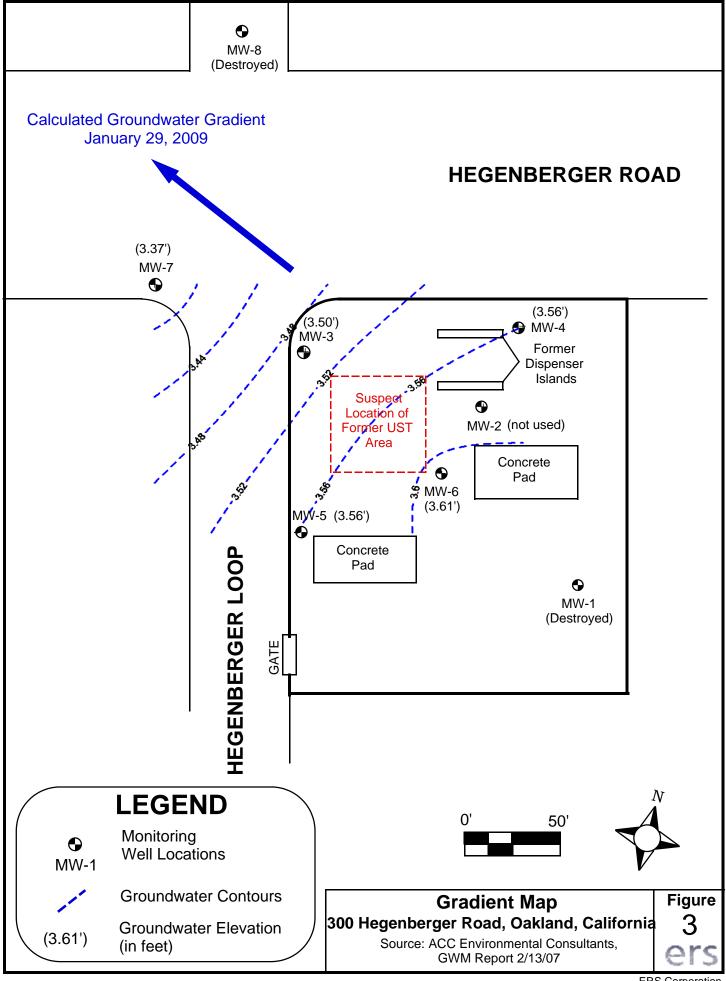
ERS has included analytical results from a state-certified laboratory, which performs analyses according to procedures suggested by the U.S. Environmental Protection Agency and the State of California. ERS is not responsible for laboratory errors in procedure or result reporting.

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# **FIGURES**







# **APPENDIX 1**

	WEL	L MO	NITOR	ING I	DATA	SHE	ET
SITE ADDRESS: 300	1) Hearnk	emer	Rd	SAMPL	ED BY:	KR.	B/LL
DATE: 1/29/09		J					en Test
	lanual Ba	11		ANALY	SIS: 7	PHO	TPHQ, BTEX, MTBE
ONSITE DRUM INVEN			*			,	
							·
CIRCLE ONE: Monitoring Sampling Developing							
A			Temp	ing/L		in5/cn	n
WELL: MW-5	Time	Gallons	(°C or °F)	D.O.	pН	Cond	
Depth of Boring: 19.47	11:17	2.4	18.7	25	7.05	1.21	Froth
Depth of Water: 5, 28				2.33			Sheen
Water Column: 14,19	11:21	4.8	19.3	2.21		1.08	Odor Type:
Well Diameter: 2 1/	11:24	7.2	19.4	1.37			☐ Free Product
Well Volume: 2,4	11:28	9.6	19.5	1.81	7.34	0.87	Amount Type:
Comments:							☐ Other
					12		
							Sample Time: 13:30
2			Temp	mg/L		m5/cm	*
WELL: MW-3	Time	Gallons	(co or °F)	D.O.	pН	Cond	
Depth of Boring: 16,30	11:41	2.0	18,3	1,90	7.28	1.32	☐ Froth
Depth of Water: 5.10	11:44	4.0	19.1	1,87	7.32	1.13	Sheen
Water Column: 11, 20	11:47	6.0	19.2	1.80	7.32	1.00	Sodor Type: fuel
Well Diameter: 2 1/	11:50	8.0	19.2	1.24	7.33		Annual control of the
Well Volume: 2.0							Amount Type:
Comments:							☐ Other
							1240
							Sample Time: 1346
			Temp	mg/L		mS/cm	
WELL: WW-4	Time	Gallons	(Cor°F)	D.O.	рН	Cond	5
Depth of Boring: 19.30	11:51	2.4	18.4	2.31	7.39	1.06	☐ Froth
Depth of Water: 4.94	11.54	4.8	19.0	2.07	7.45	0.98	☐ Sheen
Water Column: 14, 36	11:57	7.2	18.9	2.30	7.43	0.85	Odor Type: fuel
Well Diameter: 2 1/	12:00	9.6	19.0	2,47	7.36	0.94	☐ Free Product
Well Volume: 2,4							Amount Type:
Comments:							☐ Other
							12110
							Sample Time: 1345

SHEET 1 OF 2

WELL MONITORING DATA SHEET							
SITE ADDRESS: 30	00 Hegy	whenge	W RD	SAMPL	ED BY:	KB/	U
DATE: 1/29/8	9	0	5	LABOR	ATORY	: Acc	cutest
	Janual B	ail		ANALY	SIS: 7	FTPH	d, TPHg, BTEX, MTBE
ONSITE DRUM INVEN	11 Carlo - 20 Carlo -					1	1 01
CIRCLE ONE: Monitoring Sampling Developing							
			Temp		28		
WELL: MW-2	Time	Gallons	(cor °F)	D.O.	рН	Cond	le con con con
Depth of Boring: 19.30	11-17	2					☐ Froth
Depth of Water: 5,44	12:10	2.3	18.9	1.76	7.32	1,10	Sheen fuel
Water Column: 13,86	12:13	4.6	19.3	1.55	7.35	1.04	Odor Type: Luc
Well Diameter: 2 (1		6.9	19.4	1,41	7.35	0.99	☐ Free Product
Well Volume: 2.3	12:19	9.2	19.4	1.53	7,35	0.99	Amount Type:
Comments:							☐ Other
							12.11
							Sample Time: 13:40
			Temp	mg/L		in S/con	
WELL: MW.6	Time	Gallons	10.2.3 1 2	D.O.	pН	Cond	
Depth of Boring: 15,75	11:29	1.8	18.8	2.64	7,40	100	Froth
Depth of Water: 5,58	11:31	1 10	19.0	2.48	7,45		Sheen
Water Column: 10, 17	11:33	5.4	19.4	2.59	T 100 000		Odor Type:
Well Diameter: 2"	11:35	7.2	19.3	2.73	1.32	0.92	
Well Volume: 1,8							AmountType:
Comments:							Other
							12.21
							Sample Time: /3 *3/
	Sc		Temp	mg/L		m5/cu	
WELL: MW-7 Depth of Boring: 19.44	Time	Gallons	(°C or °F)	D.O.	pH	Cond	
	12:29	2.4	18.8	1.96	7.46		Froth
Depth of Water: 4,73	12:32	4.8	19.7	2.74	7.58		Sheen
Water Column: 14,71	12:35	7.2	19.6	2.63	7.73	Charleson	Odor <sub>Type:</sub>
Well Diameter: 2"	12:38	9.6	19.9	2.82	7.69	0.79	Free Product
Well Volume: 2.4							Amount Type:
Comments:							Other
							Sample Time: 13:55

# **APPENDIX 2**





02/05/09



# **Technical Report for**

## **ERS Corporation**

T0600102125-300 Hegenberger Road, Oakland, CA

**Accutest Job Number: C4125** 

**Sampling Date: 01/29/09** 

### Report to:

ERS Corporation 1600 Riviera Ave Suite 310 Walnut Creek, CA 94596 ddement@erscorp.us; kblume@erscorp.us

ATTN: Kenneth Blume

Total number of pages in report: 31



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Diane Theesen 408-588-0200

Certifications: CA (08258CA)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



Laurie Glantz-Murphy

**Laboratory Director** 

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# **Sample Summary**

**ERS** Corporation

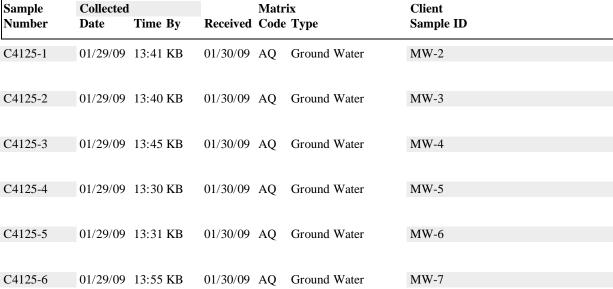
Collected

T0600102125-300 Hegenberger Road, Oakland, CA

Client Sample ID	
MW-2	
MW-3	
MW-4	

C4125

Job No:





# Sample Results

Report of Analysis



# **Report of Analysis**

Page 1 of 1

Client Sample ID: MW-2

 Lab Sample ID:
 C4125-1
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8260B
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 W3802.D 1 02/04/09 BD n/a n/a VW143

Run #2

**Purge Volume** 

Run #1 10.0 ml

Run #2

#### **Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 1634-04-4	Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Butyl Ether TPH-GRO (C6-C10)	55.6 1.1 1.6 ND ND 353	1.0 1.0 1.0 2.0 1.0 50	0.30 0.50 0.30 0.70 0.50 25	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	101% 99% 99%		60-13 60-13	80%	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



# N

# **Report of Analysis**

Page 1 of 1

Client Sample ID: MW-2

 Lab Sample ID:
 C4125-1
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8015B M SW846 3510C
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 HH1944.D 1 02/02/09 JH 02/02/09 OP678 GHH104

Run #2

Initial Volume Final Volume

Run #1 1060 ml 1.0 ml

Run #2

#### **TPH Extractable**

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28) <sup>a</sup>	0.0475	0.094	0.047	mg/l	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	Limits	
630-01-3	Hexacosane	86%		45-1	40%	

(a) Not a typical Diesel pattern. Higher boiling gasoline compounds in Diesel range (C10-C16).

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



# **Report of Analysis**

Page 1 of 1

Client Sample ID: MW-3

 Lab Sample ID:
 C4125-2
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8260B
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 W3780.D 1 02/03/09 BD n/a n/a VW142

Run #2

**Purge Volume** 

Run #1 10.0 ml

Run #2

#### **Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 1634-04-4	Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Butyl Ether TPH-GRO (C6-C10)	72.2 0.89 2.0 0.79 ND 452	1.0 1.0 1.0 2.0 1.0 50	0.30 0.50 0.30 0.70 0.50 25	ug/l ug/l ug/l ug/l ug/l ug/l	J J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	101% 100% 100%		60-13 60-13	30%	

ND = Not detected MDI

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$ 



# N

# **Report of Analysis**

Page 1 of 1

Client Sample ID: MW-3

 Lab Sample ID:
 C4125-2
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8015B M SW846 3510C
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 HH1945.D 1 02/02/09 JH 02/02/09 OP678 GHH104

Run #2

Initial Volume Final Volume

Run #1 1060 ml 1.0 ml

Run #2

#### **TPH Extractable**

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28) <sup>a</sup>	0.0991	0.094	0.047	mg/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	2 Limits		
630-01-3	Hexacosane	79%		45-1	40%	

(a) Not a typical Diesel pattern. Higher boiling gasoline compounds in Diesel range (C10-C16).

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$ 



# **Report of Analysis**

Page 1 of 1

Client Sample ID: MW-4

 Lab Sample ID:
 C4125-3
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8260B
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W3781.D	10	02/03/09	BD	n/a	n/a	VW142
Run #2	W3803.D	20	02/04/09	BD	n/a	n/a	VW143

	Purge Volume	
Run #1	10.0 ml	
Run #2	10.0 ml	

#### **Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 1634-04-4	Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Butyl Ether TPH-GRO (C6-C10)	770 43.7 52.1 32.6 ND 7130 <sup>a</sup>	10 10 10 20 10 1000	3.0 5.0 3.0 7.0 5.0 500	ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	101% 100% 100%	101% 100% 98%	60-1 60-1 60-1	30%	

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



# **Report of Analysis**

Page 1 of 1

Client Sample ID: MW-4

 Lab Sample ID:
 C4125-3
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8015B M SW846 3510C
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 HH1946.D 1 02/02/09 JH 02/02/09 OP678 GHH104

Run #2

Initial Volume Final Volume

Run #1 1060 ml 1.0 ml

Run #2

#### **TPH Extractable**

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28) <sup>a</sup>	0.798	0.094	0.047	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
630-01-3	Hexacosane	78%		45-1	40%	

(a) Not a typical Diesel pattern. Higher boiling gasoline compounds in Diesel range (C10-C16).

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$ 

N = Indicates presumptive evidence of a compound



Page 1 of 1

Client Sample ID: MW-5

 Lab Sample ID:
 C4125-4
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8260B
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 W3782.D 1 02/03/09 BD n/a n/a VW142

Run #2

**Purge Volume** 

Run #1 10.0 ml

Run #2

#### **Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	2.5 ND ND ND	1.0 1.0 1.0 2.0	0.30 0.50 0.30 0.70	ug/l ug/l ug/l ug/l	
1634-04-4	Methyl Tert Butyl Ether TPH-GRO (C6-C10)	ND 51.0	1.0 50	0.50 25	ug/l ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Limi	ts	
1868-53-7 2037-26-5	Dibromofluoromethane Toluene-D8	99% 100%		60-13 60-13		
460-00-4	4-Bromofluorobenzene	99%		60-13		

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



Page 1 of 1

Client Sample ID: MW-5

Lab Sample ID: C4125-4 **Date Sampled:** 01/29/09 Matrix: AQ - Ground Water **Date Received:** 01/30/09 Method: SW846 8015B M SW846 3510C Percent Solids: n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF **Prep Date Prep Batch Analytical Batch** Analyzed By Run #1 HH1947.D 1 02/02/09 JH 02/02/09 **OP678** GHH104

Run #2

**Final Volume Initial Volume** 

Run #1 1060 ml 1.0 ml

Run #2

#### **TPH Extractable**

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	0.094	0.047	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
630-01-3	Hexacosane	79%		45-1	40%	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



Page 1 of 1

Client Sample ID: MW-6

 Lab Sample ID:
 C4125-5
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8260B
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 W3783.D 1 02/03/09 BD n/a n/a VW142

Run #2

**Purge Volume** 

Run #1 10.0 ml

Run #2

#### **Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.70	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Limi	its	
1868-53-7	Dibromofluoromethane	98%		60-13	30%	
2037-26-5	Toluene-D8	100%		60-13	30%	
460-00-4	4-Bromofluorobenzene	99%		60-13	30%	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



Page 1 of 1

**Client Sample ID:** MW-6

Lab Sample ID: C4125-5 **Date Sampled:** 01/29/09 Matrix: AQ - Ground Water **Date Received:** 01/30/09 Method: SW846 8015B M SW846 3510C Percent Solids: n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF **Prep Date Prep Batch Analytical Batch** Analyzed By Run #1 HH1948.D 1 02/02/09 JH 02/02/09 **OP678** GHH104

Run #2

**Final Volume Initial Volume** 

Run #1 1060 ml 1.0 ml

Run #2

#### **TPH Extractable**

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	0.094	0.047	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
630-01-3	Hexacosane	84%		45-1	40%	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



# Page 1 of 1

### **Report of Analysis**

Client Sample ID: MW-7

 Lab Sample ID:
 C4125-6
 Date Sampled:
 01/29/09

 Matrix:
 AQ - Ground Water
 Date Received:
 01/30/09

 Method:
 SW846 8260B
 Percent Solids:
 n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 W3784.D 1 02/03/09 BD n/a n/a VW142

Run #2

**Purge Volume** 

Run #1 10.0 ml

Run #2

#### **Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 1634-04-4	Benzene Toluene Ethylbenzene Xylene (total) Methyl Tert Butyl Ether TPH-GRO (C6-C10)	ND ND ND ND ND ND	1.0 1.0 1.0 2.0 1.0 50	0.30 0.50 0.30 0.70 0.50 25	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	99% 100% 99%		60-13 60-13 60-13	80%	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



Page 1 of 1

Client Sample ID: MW-7

Lab Sample ID: C4125-6 **Date Sampled:** 01/29/09 Matrix: AQ - Ground Water **Date Received:** 01/30/09 Method: SW846 8015B M SW846 3510C Percent Solids: n/a

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

File ID DF **Prep Date Prep Batch Analytical Batch** Analyzed By Run #1 HH1949.D 1 02/02/09 JH 02/02/09 **OP678** GHH104

Run #2

**Final Volume Initial Volume** 

Run #1 1060 ml 1.0 ml

Run #2

#### **TPH Extractable**

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	0.094	0.047	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
630-01-3	Hexacosane	81%		45-1	40%	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range







Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



# CHAIN OF CUSTODY

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C4125: Chain of Custody Page 1 of 2



# Accutest Laboratories Northern California STANDARD OPERATING PROCEDURE

Sampl	e Re	ceivin	a Ch	eckli	St
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	Job#	0	412	25
Sample	Control	Initial		JM

Review Chain of Custody The Chain of Custody is to be completely and legibly filled out by Client.
Are these regulatory (NPDES) samples? Yes No circle one
□ 45 pH requested? Yes /No circle one □ Was Client informed that hold time is 15 min? Yes / No circle one
If yes, did Client consent to continue?
Are sample within hold time? Res / No circle one Are sample in danger of exceeding its hold-time within 6-48 hours?
Report to info is complete and legible, including;
□ Type of deliverable needed □ Name □ Address □ phone □ e-mail
□ Bill to info is complete and legible, including; □ PO# □ Credit card □ Gontact □ address □ phone □ e-mail
□ Centact and/or Project Manager identified, including; □ ethone □ e-mail
□ Project name / number □ Special requirements? (res / No circle one
Sample IDs / date & time of collection provided? Yes / No circle one
IT Is Matrix listed and correct? Yes/ No circle one
Analyses listed are those we do or client has authorized a subcontract? Yes / No circle one
□-Chain is signed and dated by both client and sample custodian? Yes / No circle one
□ TAT requested available? Approved by
Review Coolers:
Derivere Coolers temperatures measured at ≤6°C? Cooler # Temp 49°C
elf cooler is outside the ≤6°C; note down below the affected bottles in that cooler
Note that ANC does NOT accept evidentiary samples. (We do not lock refrigerators)
□ Shipment Method <u>Accultust Usuuur</u>
□ Custody Seals: Present : Yes / No circle one Unbroken: Yes / No circle one
Review of Sample Bottles: If you answer no, explain below
□ Sample ID / bottle number / Date / Time of bottle labels match the COC? (Yes) / No circle one
Semple bottle intact? Res / No circle one
□ Is there enough samples for requested analyses? If so, were samples placed in proper containers (Yes) No circle one
Preper Preservatives? Check pH on preserved samples except 1664, 625, 8270 and VOAs and list below
□ Are VOAs received without headspace? Size of bubble (not greater than 6mm in diameter) Yes / No circle one
List sample ID and affected container
Lab # Client Sample ID pH Check Other Comments/issues
Lab # Client Sample ID pH Check Other Comments/Issues

Lab #	Client Sample ID	pH Check	Other Comments/Issues

C4125: Chain of Custody Page 2 of 2

Non-Compliance issues and discrepancies on the COC are forwarded to Project Management

\\Anc-srv-file1\Entech-Data\Laboratory\Sample\_Control\Form\_Sample Receipt Checklist\_Rev0.doc



## GC/MS Volatiles

## QC Data Summaries

### Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## **Method Blank Summary**

Job Number: C4125

ERSCCAWC ERS Corporation **Account:** 

T0600102125-300 Hegenberger Road, Oakland, CA **Project:** 

Sample VW142-MB	File ID W3775.D	<b>DF</b> 1	<b>Analyzed</b> 02/03/09	By BD	<b>Prep Date</b> n/a	<b>Prep Batch</b> n/a	Analytical Batch VW142

The QC reported here applies to the following samples:

C4125-2, C4125-3, C4125-4, C4125-5, C4125-6

CAS No.	CAS No. Compound		RL	MDL	Units Q
71-43-2 100-41-4	Benzene Ethylbenzene	ND ND	1.0 1.0	0.30 0.30	ug/l ug/l
1634-04-4 108-88-3	Methyl Tert Butyl Ether Toluene	ND ND	1.0	0.50 0.50	ug/l ug/l
1330-20-7	Xylene (total) TPH-GRO (C6-C10)	ND ND	2.0	0.70 25	ug/l ug/l

Surrogate Recoveries	Limits	
Dibromofluoromethane	103%	60-130%
Toluene-D8	99%	60-130%
4-Bromofluorobenzene	100%	60-130%
	Dibromofluoromethane Toluene-D8	Dibromofluoromethane 103% Toluene-D8 99%



Page 1 of 1

**Method:** SW846 8260B

# **Method Blank Summary Job Number:** C4125

ERSCCAWC ERS Corporation Account:

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

Sample VW143-MB	File ID W3800.D	<b>DF</b> 1	<b>Analyzed</b> 02/04/09	By BD	Prep Date n/a	Prep Batch n/a	Analytical Batch VW143

The QC reported here applies to the following samples: **Method:** SW846 8260B

C4125-1, C4125-3

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.30	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l
108-88-3	Toluene	ND	1.0	0.50	ug/l
1330-20-7	Xylene (total)	ND	2.0	0.70	ug/l
	TPH-GRO (C6-C10)	ND	50	25	ug/l

CAS No.	Surrogate Recoveries	Limits	
2037-26-5	Dibromofluoromethane Toluene-D8	102% 99%	60-130% 60-130%
460-00-4	4-Bromofluorobenzene	99%	60-130%



Page 1 of 1

**Method:** SW846 8260B

**Blank Spike Summary Job Number:** C4125

ERSCCAWC ERS Corporation Account:

T0600102125-300 Hegenberger Road, Oakland, CA **Project:** 

Sample VW142-BS	File ID W3772.D	<b>DF</b> 1	<b>Analyzed</b> 02/03/09	By BD	<b>Prep Date</b> n/a	<b>Prep Batch</b> n/a	Analytical Batch VW142

The QC reported here applies to the following samples:

C4125-2, C4125-3, C4125-4, C4125-5, C4125-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	18.1	91	60-130
100-41-4	Ethylbenzene	20	17.9	90	60-130
1634-04-4	Methyl Tert Butyl Ether	20	19.1	96	60-130
108-88-3	Toluene	20	16.8	84	60-130
1330-20-7	Xylene (total)	60	54.1	90	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
	Dibromofluoromethane	110% 98%	60-130%
2037-26-5 460-00-4	Toluene-D8 4-Bromofluorobenzene	98% 102%	60-130% 60-130%



**Method:** SW846 8260B

# Blank Spike Summary Job Number: C4125

460-00-4

Account: **ERSCCAWC ERS Corporation** 

T0600102125-300 Hegenberger Road, Oakland, CA **Project:** 

Sample VW142-BS	File ID W3774.D	<b>DF</b> 1	<b>Analyzed</b> 02/03/09	By BD	<b>Prep Date</b> n/a	<b>Prep Batch</b> n/a	Analytical Batch VW142

60-130%

#### The QC reported here applies to the following samples:

C4125-2, C4125-3, C4125-4, C4125-5, C4125-6

4-Bromofluorobenzene

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
	TPH-GRO (C6-C10)	125	141	113	60-130
CAS No.	<b>Surrogate Recoveries</b>	BSP	Lim	its	
1868-53-7	Dibromofluoromethane	101%	60-1	30%	
2037-26-5	Toluene-D8	99%	60-1	30%	

100%

**Method:** SW846 8260B

# **Blank Spike Summary Job Number:** C4125

Account: **ERSCCAWC ERS Corporation** 

T0600102125-300 Hegenberger Road, Oakland, CA **Project:** 

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
VW143-BS	W3797.D	1	02/04/09	BD	n/a	n/a	VW143

The QC reported here applies to the following samples:

C4125-1, C4125-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	20.4	102	60-130
100-41-4	Ethylbenzene	20	20.1	101	60-130
1634-04-4	Methyl Tert Butyl Ether	20	21.4	107	60-130
108-88-3	Toluene	20	18.7	94	60-130
1330-20-7	Xylene (total)	60	60.6	101	60-130

CAS No.	<b>Surrogate Recoveries</b>	BSP	Limits
	Dibromofluoromethane Toluene-D8	109% 98%	60-130% 60-130%
460-00-4	4-Bromofluorobenzene	101%	60-130%



# **Blank Spike Summary Job Number:** C4125

ERSCCAWC ERS Corporation **Account:** 

T0600102125-300 Hegenberger Road, Oakland, CA **Project:** 

Sample VW143-BS	File ID W3799.D	<b>DF</b> 1	<b>Analyzed</b> 02/04/09	By BD	<b>Prep Date</b> n/a	<b>Prep Batch</b> n/a	Analytical Batch VW143

The QC reported here applies to the following samples: **Method:** SW846 8260B

C4125-1, C4125-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
	TPH-GRO (C6-C10)	125	118	94	60-130
CAS No.	<b>Surrogate Recoveries</b>	BSP	Lim	its	
1868-53-7	Dibromofluoromethane	103%	60.1	30%	
	2 ioi omonaoi omemane				
2037-26-5	Toluene-D8	98%	60-1	30%	
460-00-4	4-Bromofluorobenzene	101%	60-1	30%	



## Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C4125

Account: ERSCCAWC ERS Corporation

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
C4133-3MS	W3791.D	1	02/03/09	BD	n/a	n/a	VW142
C4133-3MSD	W3792.D	1	02/03/09	BD	n/a	n/a	VW142
C4133-3	W3787.D	1	02/03/09	BD	n/a	n/a	VW142

The QC reported here applies to the following samples:

C4125-2, C4125-3, C4125-4, C4125-5, C4125-6

CAS No.	Compound	C4133-3 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	20	16.9	85	19.8	99	16	60-130/25
100-41-4 1634-04-4	Ethylbenzene Methyl Tert Butyl Ether	ND ND	20 20	16.7 16.4	84 82	19.2 19.4	96 97	14 17	60-130/25 60-130/25
108-88-3	Toluene	ND	20	15.8	79	18.3	92	15	60-130/25
1330-20-7	Xylene (total)	ND	60	49.8	83	56.8	95	13	60-130/25
CAS No.	Surrogate Recoveries	MS	MSD	C4	133-3	Limits			
1868-53-7	Dibromofluoromethane	105%	106%	979	%	60-1309	6		
2037-26-5	Toluene-D8	99%	98%	10	1%	60-1309	6		
460-00-4	4-Bromofluorobenzene	101%	100%	989	%	60-1309	6		



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**Method:** SW846 8260B





## Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C4125

Account: ERSCCAWC ERS Corporation

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
C4155-2MS	W3816.D	1	02/04/09	BD	n/a	n/a	VW143
C4155-2MSD	W3817.D	1	02/04/09	BD	n/a	n/a	VW143
C4155-2	W3805.D	1	02/04/09	BD	n/a	n/a	VW143

The QC reported here applies to the following samples:

4-Bromofluorobenzene

C4125-1, C4125-3

460-00-4

CAS No.	Compound	C4155-2 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	20	21.7	109	19.0	95	13	60-130/25
100-41-4	Ethylbenzene	ND	20	21.2	106	18.5	93	14	60-130/25
1634-04-4	Methyl Tert Butyl Ether	ND	20	22.3	112	19.4	97	14	60-130/25
108-88-3	Toluene	ND	20	19.9	100	17.6	88	12	60-130/25
1330-20-7	Xylene (total)	ND	60	63.8	106	55.5	93	14	60-130/25
CAS No.	Surrogate Recoveries	MS	MSD	C	4155-2	Limits			
1868-53-7	Dibromofluoromethane	107%	107%	10	01%	60-1309	6		
2037-26-5	Toluene-D8	97%	98%	99	9%	60-1309	6		

102%

99%

60-130%

101%



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**Method:** SW846 8260B







# GC Semi-volatiles

## QC Data Summaries

### Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



**Method:** SW846 8015B M

Job Number: C4125

Account: ERSCCAWC ERS Corporation

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

Sample OP678-MB	File ID HH1941.D	<b>DF</b> 1	<b>Analyzed</b> 02/02/09	<b>Ву</b> ЈН	Prep Date 02/02/09	Prep Batch OP678	Analytical Batch GHH104

The QC reported here applies to the following samples:

C4125-1, C4125-2, C4125-3, C4125-4, C4125-5, C4125-6

CAS No. Compound Result RL MDL Units Q

TPH (C10-C28) ND 0.10 0.050 mg/l

CAS No. Surrogate Recoveries Limits

630-01-3 Hexacosane 79% 45-140%





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**Method:** SW846 8015B M

#### C

### Blank Spike/Blank Spike Duplicate Summary

Job Number: C4125

**Account:** ERSCCAWC ERS Corporation

**Project:** T0600102125-300 Hegenberger Road, Oakland, CA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP678-BS	HH1942.D	1	02/02/09	JH	02/02/09	OP678	GHH104
OP678-BSD	HH1943.D	1	02/02/09	JH	02/02/09	OP678	GHH104

The QC reported here applies to the following samples:

C4125-1, C4125-2, C4125-3, C4125-4, C4125-5, C4125-6

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C10-C28)	2	1.61	80 a	1.53	76 <sup>a</sup>	6	45-140/30

CAS No.	<b>Surrogate Recoveries</b>	BSP	BSD	Limits
630-01-3	Hexacosane	82%	79%	45-140%

<sup>(</sup>a) BS/BSD inadvertently double spiked; spike recoveries corrected to reflect actual spike amount.

