

Casimiro and Josephine Damele  
3750 Victor Avenue  
Oakland CA 94619

14 September 2001

Project No. P257

Letter Report  
Groundwater Monitoring  
4401 Market Street  
Oakland CA

SEP 18 2001

Dear Mr. and Ms. Damele:

This letter report documents groundwater monitoring conducted 22 August 2001 for wells MW1, MW3, MW4, MW5, MW6, and MW7 at/near the subject property. The results of our work are summarized in the following:

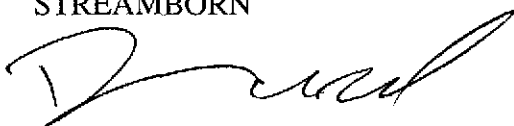
- Table 1 provides a chronology of environmental activities.
- Table 2 summarizes groundwater level and gradient data.
- Table 3 summarizes groundwater purging and sampling information since 2001.
- Table 4 summarizes laboratory results.
- Table 5 summarizes results of free product monitoring.
- Figure 1 provides a location map.
- Figure 2 shows well locations.
- Figure 3 shows groundwater elevation and gradient data.
- Attachment 1 contains the standard operating procedure we used.
- Attachment 2 contains the groundwater sampling forms.
- Attachment 3 contains the laboratory report and chain-of-custody form.

We intend to sample the wells next in November 2001.

If you have any questions or comments, please call.

Sincerely,

STREAMBORN



Douglas W. Lovell, PE  
Geoenvironmental Engineer



*Expire 12/31/04*

cc: Don Hwang/Alameda County Department of Environmental Health, Alameda CA

**Table 1**  
**Environmental Chronology**  
**4401 Market Street, Oakland CA**

Date	Activities Performed By	Description
Unknown	Unknown	<ul style="list-style-type: none"> <li>Four underground gasoline tanks (one 1,000-gallon and three 500-gallon tanks) were installed.</li> <li>W.A. Craig reported that the structure at 4401 Market Street was constructed in 1943 and used as a gasoline station until the 1970s.</li> </ul>
22 June 1990	Environmental Bio-Systems	<ul style="list-style-type: none"> <li>The 4 underground gasoline tanks were removed. Removal of the fuel dispensers, product piping, and pump island was not documented. Soil excavated during tank removal was reused to backfill the excavation.</li> <li>Soil samples were collected below the tanks and from the excavated soil. Soil samples were analyzed for TPH-gasoline and BTEX. Soil sampling indicated a release of gasoline compounds.</li> </ul>
6 September 1990	W.A. Craig	<ul style="list-style-type: none"> <li>Two trenches were excavated to a depth of approximately 5 feet in the vicinity of the former dispenser island.</li> <li>Contaminated soil was observed but no laboratory analyses were performed. Soil excavated during trenching was reused to backfill the trenches.</li> </ul>
27 and 28 October 1994	W.A. Craig	<ul style="list-style-type: none"> <li>Seven borings were drilled at and near 4401 Market Street (SB1, SB2, SB3, SB4, MW1, MW2, and MW3); three of which were completed as monitoring wells (MW1, MW2, and MW3).</li> <li>Free product, presumably gasoline, was observed in boring SB2, located near the southwest corner of 4401 Market Street.</li> <li>Soil samples were analyzed for TPH-gasoline and BTEX.</li> </ul>
8 November 1994	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline and BTEX.</li> </ul>
14 February 1995	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline and BTEX.</li> </ul>
7 June 1995	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline and BTEX.</li> </ul>
29 August 1995	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline and BTEX.</li> </ul>
8 December 1995	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline and BTEX.</li> </ul>
7 March 1996	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline, BTEX, and MtBE.</li> </ul>
19 June 1996	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline, BTEX, and MtBE.</li> </ul>
20 December 1996	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline, BTEX, and MtBE.</li> </ul>
12 June 1997	W.A. Craig	<ul style="list-style-type: none"> <li>Groundwater monitoring was conducted for wells MW1, MW2, and MW3.</li> <li>Samples were analyzed for TPH-gasoline, BTEX, and MtBE.</li> </ul>
31 March 1999	Streamborn	<ul style="list-style-type: none"> <li>Groundwater levels measured in wells MW1, MW2, and MW3.</li> </ul>
April and July 1999	Streamborn	<ul style="list-style-type: none"> <li>Nine borings were drilled near 4401 Market Street (B8 through B16). Free product, presumably gasoline, was observed in boring B10, located on the south side of 44th Street, adjacent to 903 44th Street.</li> <li>Soil samples and grab groundwater samples were collected from the 9 borings. Samples were analyzed for TPH-gasoline, BTEX, and fuel oxygenates.</li> </ul>
4-5 January 2001	Streamborn	<ul style="list-style-type: none"> <li>Four monitoring wells (MW4, MW5, MW6, and MW7) were installed near 4401 Market Street.</li> <li>Soil samples were collected and analyzed for TPH-Gasoline, BTEX, and fuel oxygenates.</li> <li>Level survey was performed.</li> </ul>
1 February 2001	Streamborn	<ul style="list-style-type: none"> <li>Wells MW4, MW5, MW6, and MW7 were developed.</li> <li>Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates.</li> <li>Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>
9 March 2001	Streamborn	<ul style="list-style-type: none"> <li>Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>
23 April 2001	Streamborn	<ul style="list-style-type: none"> <li>Water levels were measured in MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>
30 May 2001	Streamborn	<ul style="list-style-type: none"> <li>Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates.</li> <li>Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>
19 June 2001	Streamborn	<ul style="list-style-type: none"> <li>Water levels were measured in MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>
19 July 2001	Streamborn	<ul style="list-style-type: none"> <li>Water levels were measured in MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>
22 August 2001	Streamborn	<ul style="list-style-type: none"> <li>Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates.</li> <li>Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7.</li> <li>Wells MW4, MW5, and MW6 were monitored for free product.</li> </ul>

General Notes

- (a) TPH = Total petroleum hydrocarbons.  
(b) BTEX = Benzene, toluene, ethylbenzene, and xylenes.  
(c) MtBE = Methyl tertiary butyl ether.

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**Table 2**  
**Groundwater Levels and Gradient Data**  
**4401 Market Street, Oakland CA**

Location		MW1		MW2		MW3		MW4		MW5		MW6		MW7		Groundwater Gradient	
Ground Surface		Elev = 998.74		Elev = 998.07		Elev = 999.64		Elev = 998.18		Elev = 997.78		Elev = 998.02		Elev = 999.12			
Measuring Point		TOC N Side, Elev = 998.22		TOC N Side, Elev = 997.73		TOC N Side, Elev = 998.90		TOC N Side, Elev = 997.87		TOC N Side, Elev = 997.33		TOC N Side, Elev = 997.50		TOC N Side, Elev = 998.69			
Measured By	Intercepted Interval	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Direction	Magnitude
		9 to 25	973.7 to 989.7	9 to 25	973.1 to 989.1	9 to 25	974.6 to 990.6	9 to 25	973.2 to 989.2	9 to 25	972.8 to 988.8	9 to 25	973.0 to 989.0	9 to 25	974.1 to 990.1		
W.A. Craig	14 February 1995	12.65	985.57	12.12	985.61	13.45	985.45	*	*	*	*	*	*	*	*		
W.A. Craig	7 June 1995	14.62	983.60	14.38	983.35	14.64	984.26	*	*	*	*	*	*	*	*		
W.A. Craig	29 August 1995	15.04	983.18	14.40	983.33	14.94	983.96	*	*	*	*	*	*	*	*		
W.A. Craig	8 December 1995	15.94	982.28	15.22	982.51	15.82	983.08	*	*	*	*	*	*	*	*		
W.A. Craig	7 March 1996	12.36	985.86	12.04	985.69	12.89	986.01	*	*	*	*	*	*	*	*		
W.A. Craig	19 June 1996	13.70	984.52	13.38	984.35	13.94	984.96	*	*	*	*	*	*	*	*		
W.A. Craig	20 December 1996	12.35	985.87	12.22	985.51	12.86	986.04	*	*	*	*	*	*	*	*		
W.A. Craig	12 June 1997	14.64	983.58	14.08	983.65	14.50	984.4	*	*	*	*	*	*	*	*		
Streamborn	31 March 1999	13.03	985.19	12.58	985.15	13.34	985.56	*	*	*	*	*	*	*	*		
Streamborn	1 February 2001	13.77	984.45	13.21	984.52	14.01	984.89	13.22	984.65	13.14	984.19	13.31	984.19	14.76	983.93		
Streamborn	9 March 2001	12.54	985.68	12.30	985.43	13.32	985.58	12.28	985.59	11.70	985.63	12.54	984.96	13.94	984.75	N 130° E	0.01
Streamborn	23 April 2001	14.01	984.21	13.36	984.37	14.15	984.75	13.05	984.82	13.30	984.03	13.39	984.11	14.63	984.06		
Streamborn	30 May 2001	14.74	983.48	NM	NM	14.67	984.23	13.93	983.94	14.14	983.19	14.17	983.33	15.79	982.90	N 222° E	0.01
Streamborn	19 June 2001	14.83	983.39	13.93	983.80	14.67	984.23	15.47	982.40	14.29	983.04	14.34	983.16	15.87	982.82		
Streamborn	19 July 2001	15.04	983.18	14.51	983.22	14.84	984.06	14.73	983.45	14.48	982.85	14.47	983.03	15.99	982.70		
Streamborn	22 August 2001	15.03	983.19	14.48	983.25	14.83	984.07	14.63	983.24	14.58	982.75	14.57	982.93	16.15	982.54	N 217° E	0.01
Total Depth (Last Measurement)		24.7		24.6		24.7		24.7		24.7		24.9		24.6			

General Notes

- (a) Measurements cited in units of feet (site-specific datum).
- (b) Measurements by W.A. Craig (Napa CA) and Streamborn (Berkeley CA).
- (c) TOC = top of PVC casing. N = north. Measuring points are the top of PVC casing, north side.
- (d) Depth to water and total depth measured relative to the top of PVC casing.
- (e) Depth of intercepted interval measured relative to the ground surface, and corresponds to the sand pack interval.
- (f) Elevations referenced to assumed (site-specific) datum: Top of concrete, southeastern edge of eastern garage door, assumed elevation = 1000.00 feet. Elevation survey performed 5 January 2001 by Streamborn (Berkeley CA).

**Table 3**  
**Groundwater Purging and Sampling Information since 2001**  
**4401 Market Street**  
**Oakland CA**

Location	Sample Date	Sample Type	Dissolved Oxygen (mg/L)	pH	Specific Conductance ( $\mu\text{mho}/\text{cm}^2$ at field temperature)	Temperature (degrees C)	ORP (mV)	Turbidity and Color	Purge Method	Purge Duration (minutes)	Volume Purged (gallons)	Purged Dry ?	Standing Water Casing Volumes Removed
MW1	1 Feb 2001	Grab (bailer)	3.1	6.7	530	18.3	-210	Clear, none	Submersible pump	9	$\pm 5$	Yes	$\pm 3$
	30 May 2001	Grab (bailer)	1.0	6.8	560	24.2	30	Clear, none	Submersible pump	40	$\pm 5$	Yes	$\pm 3$
	22 August 2001	Grab (bailer)	3.0	6.9	510	20.4	50	Clear, none	Submersible pump	8	$\pm 5$	Yes	$\pm 3$
MW3	1 Feb 2001	Grab (bailer)	5.0	6.7	370	17.4	-230	Clear, none	Submersible pump	4	$\pm 5$	No	$\pm 3$
	30 May 2001	Grab (bailer)	5.8	7.0	390	23.6	60	Clear, none	Submersible pump	26	$\pm 5$	Yes	$\pm 3$
	22 August 2001	Grab (bailer)	4.5	7.1	370	21.5	90	Cloudy, brown	Submersible pump	6	$\pm 5$	Yes	$\pm 3$
MW4	1 Feb 2001	Grab (bailer)	5.2	6.8	580	18.2	-210	Cloudy, grey	Submersible pump	47	$\pm 15$	Yes	$\pm 9$
	30 May 2001	Grab (bailer)	1.5	6.8	700	22.8	20	Clear, none	Submersible pump	23	$\pm 6$	Yes	$\pm 3$
	22 August 2001	Grab (bailer)	2.1	6.9	540	21.2	-20	Clear, none	Submersible pump	5	$\pm 5$	No	$\pm 3$
MW5	1 Feb 2001	Grab (bailer)	0.8	6.7	640	18.1	-250	Turbid, brown	Submersible pump	18	$\pm 20$	No	$\pm 10$
	30 May 2001	Grab (bailer)	1.2	7.0	630	19.6	20	Clear, none	Submersible pump	4	$\pm 6$	No	$\pm 3$
	22 August 2001	Grab (bailer)	2.2	7.0	600	20.0	-40	Clear, none	Submersible pump	5	$\pm 5$	No	$\pm 3$
MW6	1 Feb 2001	Grab (bailer)	2.8	6.7	510	18.7	-360	Opaque, Brown	Submersible pump	23	$\pm 20$	No	$\pm 11$
	30 May 2001	Grab (bailer)	2.9	6.8	470	24.2	80	Turbid, brown	Submersible pump	5	$\pm 6$	No	$\pm 3$
	22 August 2001	Grab (bailer)	2.6	6.9	400	21.0	30	Turbid, green	Submersible pump	5	$\pm 5$	No	$\pm 3$
MW7	1 Feb 2001	Grab (bailer)	3.0	6.8	430	16.1	-200	Cloudy, Brown	Submersible pump	25	$\pm 17$	No	$\pm 11$
	30 May 2001	Grab (bailer)	3.1	6.8	500	23.6	60	Clear, none	Submersible pump	5	$\pm 5$	No	$\pm 3$
	22 August 2001	Grab (bailer)	4.6	6.9	420	19.3	20	Turbid, grey	Submersible pump	5	$\pm 5$	No	$\pm 3$

General Notes

- (a) Purging and sampling performed by Streamborn (Berkeley CA).
- (b) ORP = oxidation/reduction potential.
- (c) NM = Not Measured.

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Table 4  
Groundwater Analytical Data from Monitoring Wells  
4401 Market Street, Oakland CA

Location	Sample Date	Sampled By	TPH-Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MtBE (µg/L)	Tert-Butylalcohol (µg/L)	Other Fuel Oxygenates (EPA Method 8260) (µg/L)
MW1	8 November 1994	W.A. Craig	54	<0.5	<0.5	<0.5	1.2	NA	NA	NA
	14 February 1995	W.A. Craig	71	<0.5	<0.5	<0.5	0.97	NA	NA	NA
	7 June 1995	W.A. Craig	540	0.6	<0.5	1.7	1.3	NA	NA	NA
	29 August 1995	W.A. Craig	440	<0.5	<0.5	1.3	1.1	NA	NA	NA
	8 December 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	7 March 1996	W.A. Craig	77	<0.5	<0.5	<0.5	<0.5	44 <sup>(1)</sup>	NA	NA
	19 June 1996	W.A. Craig	500	<0.5	<0.5	0.85	0.36	84 <sup>(1)</sup>	NA	NA
	20 December 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	28 <sup>(1)</sup>	NA	NA
	12 June 1997	W.A. Craig	190	<0.5	<0.5	<0.5	<0.5	12 <sup>(1)</sup>	NA	NA
	1 February 2001	Streamborn	<50	<0.5	<0.5	<0.5	1.1	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0
22 August 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	100	<5.0 to <10	
MW2	8 November 1994	W.A. Craig	20,000	1,400	960	980	4,600	NA	NA	NA
	14 February 1995	W.A. Craig	8,600	380	210	410	2,000	NA	NA	NA
	7 June 1995	W.A. Craig	6,200	500	78	270	1,200	NA	NA	NA
	29 August 1995	W.A. Craig	4,100	330	61	210	980	NA	NA	NA
	8 December 1995	W.A. Craig	9,400	360	190	440	2,000	NA	NA	NA
	7 March 1996	W.A. Craig	12,000	790	170	440	2,000	18 <sup>(1)</sup>	NA	NA
	19 June 1996	W.A. Craig	9,000	520	82	350	1,500	<5.0	NA	NA
	20 December 1996	W.A. Craig	13,000	830	180	410	2,200	<16	NA	NA
	12 June 1997	W.A. Craig	5,100	320	32	190	880	<36	NA	NA
MW3	8 November 1994	W.A. Craig	<50	0.71	0.84	1.2	5.8	NA	NA	NA
	14 February 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	7 June 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	1.6	NA	NA	NA
	29 August 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	8 December 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	7 March 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	19 June 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	20 December 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	12 June 1997	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	1 February 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
22 August 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	14	<5.0 to <10	
MW4	1 February 2001	Streamborn	1,500	58	1.3	83	320	<5.0	16	<5.0 to <10
	30 May 2001	Streamborn	1,000	19	<0.5	50	3.4	<5.0	23	<5.0 to <10
	22 August 2001	Streamborn	220	<0.5	<0.5	3.2	2.7	<5.0	8.8	<5.0 to <10
MW5	1 February 2001	Streamborn	1,200	57	1.8	45	160	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	570	20	<0.5	26	22	<5.0	<5.0	<5.0 to <10
	22 August 2001	Streamborn	380	19	0.67	31	17	<5.0	<5.0	<5.0 to <10
MW6	1 February 2001	Streamborn	260	8.0	<0.5	22	23	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	53 <sup>(2)</sup>	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	22 August 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
MW7	1 February 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	22 August 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10

General Notes

- (a) TPH = Total petroleum hydrocarbons. MtBE = Methyl tertiary Butyl Ether. NA = Not analyzed.
- (d) W.A. Craig analytical performed by McCampbell Analytical (Pacheco CA). Streamborn analytical performed by ChromaLab (Pleasanton CA).

Footnote

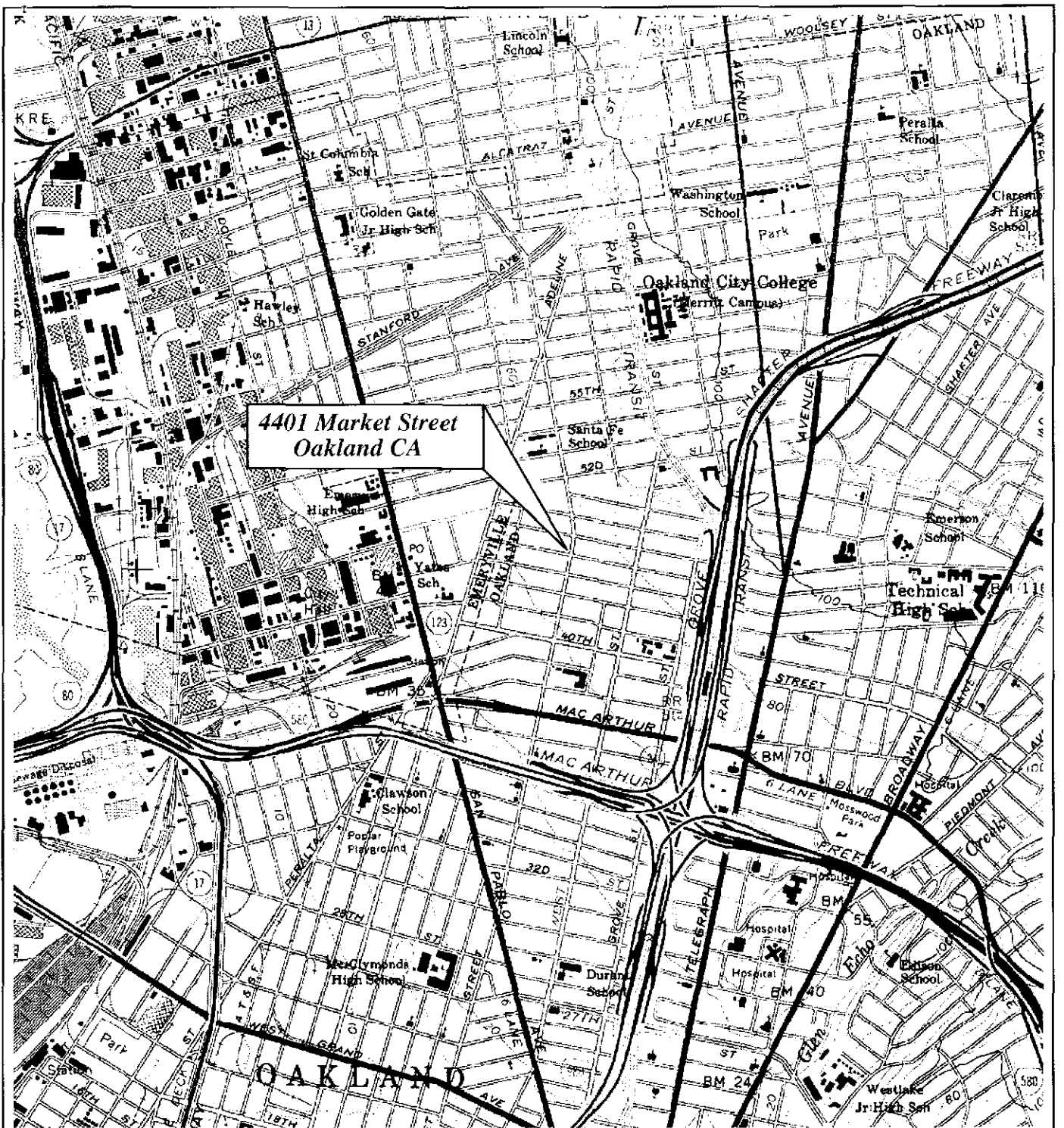
- (1) MtBE analyses prior to 2001 were performed by EPA method 8020; the MtBE detections likely represent "false positives."
- (2) The laboratory reported that the sample result did not match the standard.

**Table 5**  
**Free Product Monitoring**  
**4401 Market Street, Oakland CA**

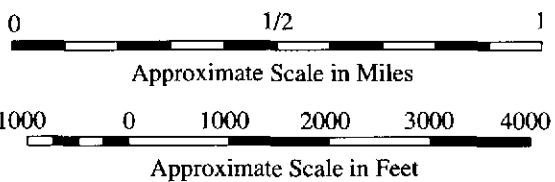
Date	MW4 (feet)	MW5 (feet)	MW6 (feet)
1 February 2001	<0.005	<0.005	<0.005
9 March 2001	<0.005	<0.005	<0.005
23 April 2001	<0.005	<0.005	<0.005
30 May 2001	<0.005	<0.005	<0.005
19 June 2001	<0.005	<0.005	<0.005
19 July 2001	<0.005	<0.005	<0.005
22 August 2001	<0.005	<0.005	<0.005

General Notes

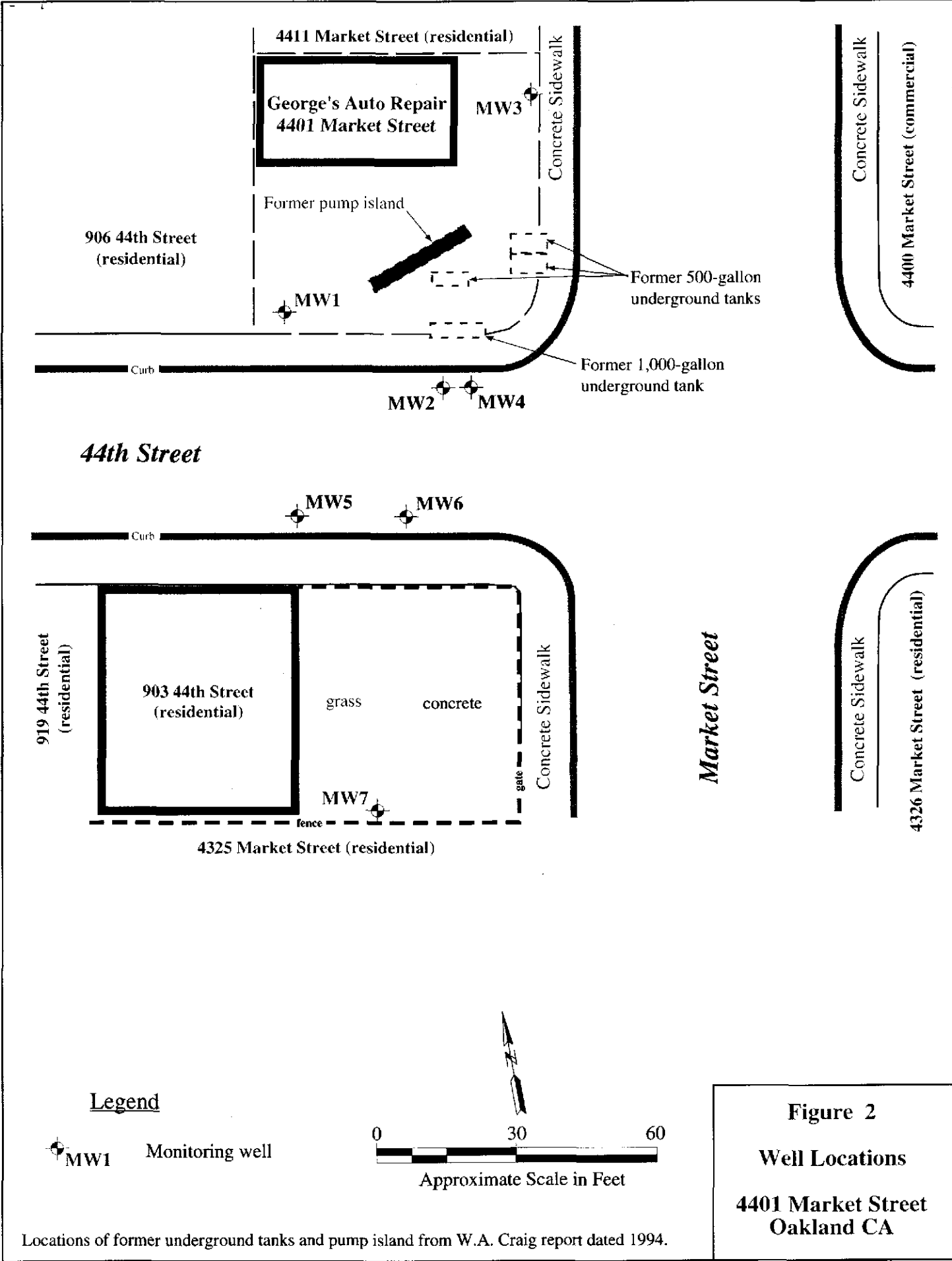
- (a) Monitoring performed by Streamborn (Berkeley CA).
- (b) Free product monitoring performed using a Water Mark Interface meter (model number H.OIL, serial number 4455).



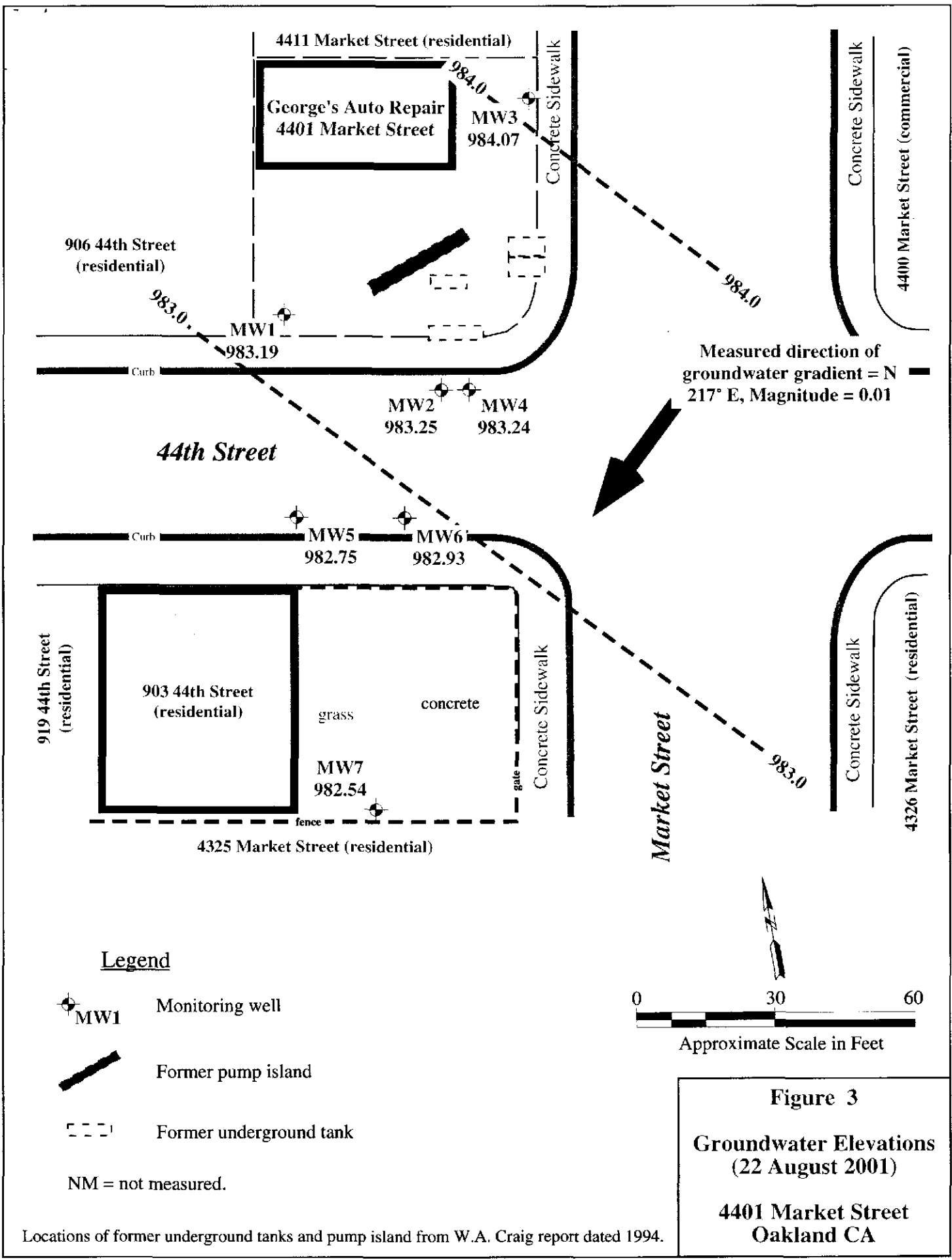
Basemap: U.S. Geological Survey, 7.5 Minute Quadrangle, Oakland West CA, 1959 (Photorevised 1980).



**Figure 1**  
**Location Map**  
**4401 Market Street**  
**Oakland CA**







- Purge volume and time
  - pH, temperature, and specific conductivity
  - Turbidity (clarity and color)
  - Approximate drawdown and well yield during purge
  - Whether well was purged dry
  - Other observations (such as presence of product) as appropriate
5. Terminate purging when one of the following conditions is observed:
- Quick Recharge Wells: Well shows stabilized field parameters and at least 3 casing volumes of standing water have been removed - ready for sampling. If field parameters have not stabilized after removal of 5 casing volumes of standing water, terminate purging anyway. Wells should be allowed to recover to at least 1/2 the original standing water depth prior to sampling.
- Slow Recharge Wells: Wells that are initially purged dry, and do not recover to 1/2 the original standing water depth within 4 hours, should be purged dry again and then sampled when sufficient recovery has occurred to submerge the sampling bailer or pump. Generally, 3 feet of recovery may be considered sufficient recovery for normal bailer or pump submergence.
6. If recharge has submerged the entire screened interval, sample from mid-depth of screened interval. Otherwise, sample from mid-depth of water column at time of sampling.
7. If dissolved metals analyses are to be performed, filter sample. Also if dissolved metals analyses are to be performed and the sample is moderately turbid or very turbid, collect companion filtered and unfiltered samples.
8. For parameters other than dissolved metals, do not filter sample. Fill sample containers directly and preserve according to the requirements of Table 1. Containers should generally filled to capacity. 40 milliliter glass vials should be filled from the bottom using a sample discharge tube (bottom-emptying device for bailer or discharge tube of bladder pump). 40 milliliter vials should not have headspace.
9. Label sample containers, place in ziplock bag, and place on ice in cooler.
10. Log samples onto chain-of-custody form and maintain sample custody until shipped to laboratory.
11. Containerize purge water, excess sample, and decontamination wastewater in steel drum(s). Label drum(s) with hazardous waste label, contents, and well number from which waste originated.

#### 4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality control samples should consist of the following:

- Duplicate samples at a frequency of 1 per 10 natural samples
- Cross-contamination blank (also known as a sampler rinsate blank) at a frequency of 1 per 10 natural samples. Cross-contamination blanks are prepared by passing deionized water over and through decontaminated sampling equipment (including sample filter if used).

- If analyses require collection of samples in 40 milliliter vials, travel blanks should also be included at a frequency of 1 per day of sampling.
- Optional quality control samples include standard reference materials and natural matrix spikes.

Meters for measurement of field parameters should be calibrated at least once per day. Calibration standards should generally approximate or span natural groundwater characteristics. Recalibration may be appropriate if unusual measurements are noticed. Calibration activities should be documented on the instrument calibration log.

## 5.0 DOCUMENTATION

The following information should be collected prior to sampling and taken into the field for reference:

- Well completion schematic
- Summary of historic water level, total depth, and field parameter measurements

Observations, measurements, and other documentation of the purging and sampling effort should be recorded on the following:

- Daily Report
- Field Notebook
- Instrument Calibration Log
- Well Purge and Sample Log
- Chain-of-Custody

Documentation should include any deviations from this SOP, as well as documentation of the containerization and disposition/disposal of investigation-derived waste.

## 6.0 DECONTAMINATION

Prior to entering the site, purging and sampling equipment should be decontaminated by steam cleaning, pressure washing, or equivalent.

Prior to sampling each well, down-well equipment and equipment that will contact the sample (except sample containers) should be decontaminated according to the following procedure:

- Steam clean or pressure wash (optional unless oily contamination covers equipment)
- Wash with soap
- Rinse with tap water
- Double rinse with distilled water

If metals are included in the analytical parameters, the decontamination procedures should include:

- Steam clean or pressure wash (optional unless oily contamination covers equipment)
- Wash with soap

- Rinse with tap water
- Rinse with dilute nitric acid (skip for pumps containing metal parts)
- Rinse with tap water
- Double rinse with distilled water

Suction or discharge hoses from purge pumps need external decontamination only. Purge or sampling pumps should be decontaminated by filling the decontamination chamber with the aforementioned solutions and pumping the solutions from the chamber to the waste drum.

Prior to leaving the site, purging and sampling equipment should be steam cleaned, pressure washed, or equivalent.

## 7.0 INVESTIGATION-DERIVED WASTE

Purge water, excess sample, and decontamination wastewater should be containerized in steel drums. Drums should be labeled with hazardous waste labels, including: Generator's name and accumulation date. Wastes from different wells may be combined, but wastes that are anticipated to contain chemical should not be mixed with waste that are not thought to be contaminated.

## 8.0 SAFETY

Primary chemical hazards during well purging and sampling are associated with dermal exposure. Acids used for decontamination and sample preservation may also present chemical hazards. Primary protection against dermal exposure includes splash protection and gloves. Special chemical hazards may be associated with the presence of product, if discovered during sampling. Water quality samples are not generally considered representative in the presence of product. Accordingly, it may be appropriate to abandon sampling efforts if product is discovered.

Other specific site safety guidance is provided in the Site Safety Plan.

## 9.0 REFERENCES

- Aller, L., T.W. Bennett, G. Hackett, R.J. Petty, J.H. Lehr, H. Sedoris, and D.M. Nielsen, 1989. Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells. National Water Well Association, Dublin, OH. 1989.
- U.S. Environmental Protection Agency, 1989a. A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, OSWER Directive 9355.0-14. USEPA, Office of Emergency and Remedial Response, Washington, DC. December 1989.
- U.S. Environmental Protection Agency, 1989b. USEPA Method Study #39, Method 504, 1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-Chloropropane (DBCP) in Water, Pb 89-119 580/AS. National Technical Information Service, Springfield VA. 1989.

**Table 1**  
**Sampling and Preservation for Groundwater Samples**

Parameter	Analytical Method	Container	Preservation	Maximum Holding Time
Purgeable Halocarbons by GC	EPA 8010	Three 40-ml glass vials	HCl to pH<2, cool to 4 degrees Celsius	14 days after collection
Purgeable Aromatics by GC	EPA 8020	Three 40-ml glass vials	HCl to pH<2, cool to 4 degrees Celsius	14 days after collection
Organochlorine Pesticides and PCB's	EPA 8080	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Organophosphorus Pesticides	EPA 8140	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Chlorinated Herbicides (Phenoxy Herbicides)	EPA 8150	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Volatile Organic Compounds by GC/MS	EPA 8240 or 8260	Three 40-ml glass vials	HCl to pH<2, Cool to 4 degrees Celsius	14 days after collection
Fuel Oxygenates (MTBE, TAME, ETBE, DIPE)	EPA SW846 8260 Modified	Three 40-ml glass vials	Cool to 4 degrees Celsius	14 days after collection
Semi-Volatile Organic Compounds by GC/MS (Base/Neutral/Acid Extractable Organics)	EPA 8270	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Dibromoethane (EDB) and 1,2-Dibromo-3-Chloropropane (DBCP)	EPA 504	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Total Petroleum Hydrocarbons Gasoline/BTEX	Extract by EPA 5030, analyze by EPA 8015	Three 40-ml glass vials	HCl to pH<2, cool to 4 degrees Celsius	Extract 7 days after collection Analyze 7 days after extraction
Total Petroleum Hydrocarbons Diesel, Kerosene, or Motor Oil	Extract by EPA 3510, analyze by EPA 8015	One 1-liter amber glass	HCl to pH<2, cool to 4 degrees Celsius	Extract 7 days after collection Analyze 7 days after extraction
Oil & Grease	SM 503	One 1-liter glass with aluminum foil-lined cap	H <sub>2</sub> SO <sub>4</sub> to pH<2, cool to 4 degrees Celsius	28 days after collection
Total Metals	EPA 7000 Series	One 1/2 liter poly	HNO <sub>3</sub> to pH<2, cool to 4 degrees Celsius	6 months after collection (28 days for mercury)
Dissolved Metals	EPA 7000 Series	One 1/2 liter poly	HNO <sub>3</sub> to pH<2, cool to 4 degrees Celsius	6 months after collection (28 days for mercury)
General Minerals	Various	Two 1-liter poly	Cool to 4 degrees Celsius	7 days after collection

## MONITORING WELL PURGE DATA

Project Name/Number: 4401 Market Street	Logged By: Matthew Hall
Property Location: Oakland CA	Date: 22 August 2001
Well Number: MW1	Sample Type: Grab
Purging Equipment: Submersible pump	Depth to Water: 15.03
Sampling Equipment: Bailer	Total Depth: 24.70
Measuring Point: Top of casing, north side	Odor:
Free Product:	Sample Number: MW1 (22 Aug 01)
Comments:	

Note obstructions, well damage, or other compromising features under comments. Record depth in feet.

Total Depth (feet)	-	Depth to Water (feet)	x	0.04 gallons/foot for 1-inch well 0.16 gallons/foot for 2-inch well 0.65 gallons/foot for 4-inch well 1.47 gallons/foot for 6-inch well	=	Single Casing Volume (gallons)		Three Casing Volumes (gallons)
24.70	-	15.03	x	9.67 x 0.16	=	1.5	x 3	4.5

Purge Volume (gallons)	Time	Dissolved Oxygen (mg/L)	pH	Specific Conductivity ( $\mu\text{S}/\text{cm}$ )	Temp ( $^{\circ}\text{C}$ )	ORP (mV)	Turbidity	Color	Purged Dry?	Comments
0	2:40	1.45	6.84	502	21.1	43.8	Clear	None	No	Start purge
2.5	2:44	1.13	6.83	506	20.6	30.8	Clear	None	No	
5	2:48	3.03	6.90	511	20.4	51.3	Clear	None	Yes	
										Collect sample

Note observations of odor, sheen, and other signs of contamination under comments. Record turbidity as clear, translucent, opaque, cloudy, or turbid.

## MONITORING WELL PURGE DATA

Project Name/Number: 4401 Market Street	Logged By: Matthew Hall
Property Location: Oakland CA	Date: 22 August 2001
Well Number: MW3	Sample Type: Grab
Purging Equipment: Submersible pump	Depth to Water: 14.83
Sampling Equipment: Bailer	Total Depth: 24.70
Measuring Point: Top of casing, north side	Odor:
Free Product:	Sample Number: MW3 (22 Aug 01)
Comments:	

Note obstructions, well damage, or other compromising features under comments. Record depth in feet.

Total Depth (feet)	-	Depth to Water (feet)	x	0.04 gallons/foot for 1-inch well 0.16 gallons/foot for 2-inch well 0.65 gallons/foot for 4-inch well 1.47 gallons/foot for 6-inch well	=	Single Casing Volume (gallons)		Three Casing Volumes (gallons)
24.70	-	14.83	=	9.87 x 0.16	=	1.6	x 3	4.8

Purge Volume (gallons)	Time	Dissolved Oxygen (mg/L)	pH	Specific Conductivity ( $\mu$ S/cm)	Temp ( $^{\circ}$ C)	ORP (mV)	Turbidity	Color	Purged Dry?	Comments
0	3:20	4.00	7.00	335	20.1	62	Clear	None	No	Start purge
2.5	3:23	4.0	7.01	341	20.0	68.5	Clear	None	No	
5	3:20	4.5	7.07	371	21.5	92.1	Cloudy	Brown	Yes	
										Collect sample

Note observations of odor, sheen, and other signs of contamination under comments. Record turbidity as clear, translucent, opaque, cloudy, or turbid.

## MONITORING WELL PURGE DATA

Project Name/Number: 4401 Market Street	Logged By: Matthew Hall
Property Location: Oakland CA	Date: 22 August 2001
Well Number: MW4	Sample Type: Grab
Purging Equipment: Submersible pump	Depth to Water: 14.63
Sampling Equipment: Bailer	Total Depth: 24.70
Measuring Point: Top of casing, north side	Odor:
Free Product:	Sample Number: MW4 (22 Aug 01)
Comments:	

Note obstructions, well damage, or other compromising features under comments. Record depth in feet.

Total Depth (feet)	-	Depth to Water (feet)	x	0.04 gallons/foot for 1-inch well 0.16 gallons/foot for 2-inch well 0.65 gallons/foot for 4-inch well 1.47 gallons/foot for 6-inch well	=	Single Casing Volume (gallons)		Three Casing Volumes (gallons)
24.70	-	14.63	x	10.07	=	1.6	x 3	4.8

Purge Volume (gallons)	Time	Dissolved Oxygen (mg/L)	pH	Specific Conductivity ( $\mu\text{S}/\text{cm}$ )	Temp ( $^{\circ}\text{C}$ )	ORP (mV)	Turbidity	Color	Purged Dry?	Comments
0	1:55	1.35	6.90	528	20.9	-1.6	Clear	None	No	Start purge
2.5	1:57	1.40	6.87	525	20.5	1.7	Clear	None	No	
5	2:00	2.12	6.84	542	21.2	-2.0	Clear	None	No	
										Collect sample

Note observations of odor, sheen, and other signs of contamination under comments. Record turbidity as clear, translucent, opaque, cloudy, or turbid.



## MONITORING WELL PURGE DATA

Project Name/Number: 4401 Market Street	Logged By: Matthew Hall
Property Location: Oakland CA	Date: 22 August 2001
Well Number: MW5	Sample Type: Grab
Purging Equipment: Submersible pump	Depth to Water: 14.58
Sampling Equipment: Bailer	Total Depth: 24.70
Measuring Point: Top of casing, north side	Odor: Slight Petroleum
Free Product:	Sample Number: MW5 (22 Aug 01)
Comments:	

Note obstructions, well damage, or other compromising features under comments. Record depth in feet.

Total Depth (feet)	-	Depth to Water (feet)	x	0.04 gallons/foot for 1-inch well 0.16 gallons/foot for 2-inch well 0.65 gallons/foot for 4-inch well 1.47 gallons/foot for 6-inch well	=	Single Casing Volume (gallons)		Three Casing Volumes (gallons)
24.70	-	14.58	=	10.12 x 0.16	=	1.6	x 3	4.8

Purge Volume (gallons)	Time	Dissolved Oxygen (mg/L)	pH	Specific Conductivity ( $\mu\text{S}/\text{cm}$ )	Temp ( $^{\circ}\text{C}$ )	ORP (mV)	Turbidity	Color	Purged Dry?	Comments
0	12:35	1.6	6.99	636	20	-7.5	Clear	None	No	Start purge
2.5	12:37	2.4	6.98	581	20	-37.5	Clear	None	No	
5	12:40	2.2	7.0	516	20	-37.5	Clear	None	No	
										Collect sample

Note observations of odor, sheen, and other signs of contamination under comments. Record turbidity as clear, translucent, opaque, cloudy, or turbid.

## MONITORING WELL PURGE DATA

Project Name/Number: 4401 Market Street	Logged By: Matthew Hall
Property Location: Oakland CA	Date: 22 August 2001
Well Number: MW6	Sample Type: Grab
Purging Equipment: Submersible pump	Depth to Water: 14.57
Sampling Equipment: Bailer	Total Depth: 24.9
Measuring Point: Top of casing, north side	Odor:
Free Product:	Sample Number: MW6 (22 Aug 01)
Comments:	

Note obstructions, well damage, or other compromising features under comments. Record depth in feet.

Total Depth (feet)	-	Depth to Water (feet)	x	0.04 gallons/foot for 1-inch well 0.16 gallons/foot for 2-inch well 0.65 gallons/foot for 4-inch well 1.47 gallons/foot for 6-inch well	=	Single Casing Volume (gallons)		Three Casing Volumes (gallons)
24.90	-	14.57	x	10.33 x 0.16	=	1.7	x 3	5.1

Purge Volume (gallons)	Time	Dissolved Oxygen (mg/L)	pH	Specific Conductivity ( $\mu$ S/cm)	Temp ( $^{\circ}$ C)	ORP (mV)	Turbidity	Color	Purged Dry?	Comments
0	1:10	2.5	6.98	396	16.8	20	Turbid	green	NO	Start purge
2.5	1:12	2.5	6.90	400	20.5	25	"	"	"	
5	1:15	2.6	6.8	404	21	28	"	"	"	
										Collect sample

Note observations of odor, sheen, and other signs of contamination under comments. Record turbidity as clear, translucent, opaque, cloudy, or turbid.

## MONITORING WELL PURGE DATA

Project Name/Number: 4401 Market Street	Logged By: Matthew Hall
Property Location: Oakland CA	Date: 22 August 2001
Well Number: MW7	Sample Type: Grab
Purging Equipment: Submersible pump	Depth to Water: 16.15
Sampling Equipment: Bailer	Total Depth: 24.60
Measuring Point: Top of casing, north side	Odor:
Free Product:	Sample Number: MW7 (22 Aug 01)
Comments:	

Note obstructions, well damage, or other compromising features under comments. Record depth in feet.

Total Depth (feet)	-	Depth to Water (feet)	x	0.04 gallons/foot for 1-inch well 0.16 gallons/foot for 2-inch well 0.65 gallons/foot for 4-inch well 1.47 gallons/foot for 6-inch well	=	Single Casing Volume (gallons)		Three Casing Volumes (gallons)
24.60	-	16.15	x	8.45 x 0.16	=	1.4	x 3	4.2

Purge Volume (gallons)	Time	Dissolved Oxygen (mg/L)	pH	Specific Conductivity ( $\mu\text{S}/\text{cm}$ )	Temp ( $^{\circ}\text{C}$ )	ORP (mV)	Turbidity	Color	Purged Dry?	Comments
0	11:45	2.8	6.87	488	19.1	-15	Turbid	Green	NO	Start purge
2.5	11:47	3.1	6.89	465	19.2	-10	Turbid	Green	NO	
5	11:50	4.6	6.87	467	19.3	17	Turbid	Green	NO	
										Collect sample

Note observations of odor, sheen, and other signs of contamination under comments. Record turbidity as clear, translucent, opaque, cloudy, or turbid.

# **ATTACHMENT 3**

**Laboratory Report and Chain-of-Custody  
Form**

**Streamborn Consulting Services**

900 Sante Fe Avenue  
Albany, CA 94706

Attn.: Matthew Hall

Project: P257  
4401 Market St.

Site: 4401 Market St.,  
Oakland, CA

Attached is our report for your samples received on Thursday August 23, 2001  
This report has been reviewed and approved for release. Reproduction of this report  
is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after October 7, 2001  
unless you have requested otherwise. We appreciate the opportunity to be of service to you.  
If you have any questions, please call me at (925) 484-1919. You can also contact me via email.  
My email address is: [vvancil@chromalab.com](mailto:vvancil@chromalab.com)

Sincerely,



Vincent Vancil

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

Gas/BTEX by 8015M/8021

<b>Streamborn Consulting Services</b>	☒ 900 Sante Fe Avenue Albany, CA 94706
Attn: Matthew Hall	Phone: (510) 528-4234 Fax: (510) 528-2613
Project #: P257	Project: 4401 Market St.
Site: 4401 Market St., Oakland, CA	

## Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW1 (22 AUG 01)	Water	08/22/2001 15:15	1
MW3 (22 AUG 01)	Water	08/22/2001 16:00	2
MW4 (22 AUG 01)	Water	08/22/2001 14:30	3
MW5 (22 AUG 01)	Water	08/22/2001 13:05	4
MW6 (22 AUG 01)	Water	08/22/2001 13:40	5
MW7 (22 AUG 01)	Water	08/22/2001 12:10	6

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8015M  
8021B

Attn.: Matthew Hall

Prep Method: 5030

Gas/BTEX by 8015M/8021

Sample ID: <b>MW1 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-001</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 09/05/2001 16:53
Sampled: 08/22/2001 15:15	QC-Batch: 2001/09/05-01.01
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	09/05/2001 16:53	
Benzene	ND	0.50	ug/L	1.00	09/05/2001 16:53	
Toluene	ND	0.50	ug/L	1.00	09/05/2001 16:53	
Ethyl benzene	ND	0.50	ug/L	1.00	09/05/2001 16:53	
Xylene(s)	ND	0.50	ug/L	1.00	09/05/2001 16:53	
<b>Surrogate(s)</b>						
Trifluorotoluene	96.8	58-124	%	1.00	09/05/2001 16:53	
4-Bromofluorobenzene-FID	90.5	50-150	%	1.00	09/05/2001 16:53	

1220 Quarry Lane \* Pleasanton, CA 94566-4756  
Telephone: (925) 484-1919 \* Facsimile: (925) 484-1096

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: Streamborn Consulting Services

Test Method: 8015M  
8021B

Attn.: Matthew Hall

Prep Method: 5030

Gas/BTEX by 8015M/8021

Sample ID: MW3 (22 AUG 01)	Lab Sample ID: 2001-08-0468-002
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 09/05/2001 17:24
Sampled: 08/22/2001 16:00	QC-Batch: 2001/09/05-01.01
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	09/05/2001 17:24	
Benzene	ND	0.50	ug/L	1.00	09/05/2001 17:24	
Toluene	ND	0.50	ug/L	1.00	09/05/2001 17:24	
Ethyl benzene	ND	0.50	ug/L	1.00	09/05/2001 17:24	
Xylene(s)	ND	0.50	ug/L	1.00	09/05/2001 17:24	
<b>Surrogate(s)</b>						
Trifluorotoluene	90.0	58-124	%	1.00	09/05/2001 17:24	
4-Bromofluorobenzene-FID	82.3	50-150	%	1.00	09/05/2001 17:24	



To: **Streamborn Consulting Services**

Test Method: 8015M  
8021B

Attn.: Matthew Hall

Prep Method: 5030

Gas/BTEX by 8015M/8021

Sample ID: <b>MW4 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-003</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 09/05/2001 17:54
Sampled: 08/22/2001 14:30	QC-Batch: 2001/09/05-01.01
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	220	50	ug/L	1.00	09/05/2001 17:54	g
Benzene	ND	0.50	ug/L	1.00	09/05/2001 17:54	
Toluene	ND	0.50	ug/L	1.00	09/05/2001 17:54	
Ethyl benzene	3.2	0.50	ug/L	1.00	09/05/2001 17:54	
Xylene(s)	2.7	0.50	ug/L	1.00	09/05/2001 17:54	
<b>Surrogate(s)</b>						
Trifluorotoluene	93.8	58-124	%	1.00	09/05/2001 17:54	
4-Bromofluorobenzene-FID	75.6	50-150	%	1.00	09/05/2001 17:54	

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8015M  
8021B

Attn.: Matthew Hall

Prep Method: 5030

Gas/BTEX by 8015M/8021

Sample ID:	<b>MW5 (22 AUG 01)</b>	Lab Sample ID:	<b>2001-08-0468-004</b>
Project:	P257 4401 Market St.	Received:	08/23/2001 16:35
Site:	4401 Market St., Oakland, CA	Extracted:	09/05/2001 18:24
Sampled:	08/22/2001 13:05	QC-Batch:	2001/09/05-01.01
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	380	50	ug/L	1.00	09/05/2001 18:24	
Benzene	19	0.50	ug/L	1.00	09/05/2001 18:24	
Toluene	0.67	0.50	ug/L	1.00	09/05/2001 18:24	
Ethyl benzene	31	0.50	ug/L	1.00	09/05/2001 18:24	
Xylene(s)	17	0.50	ug/L	1.00	09/05/2001 18:24	
<b>Surrogate(s)</b>						
Trifluorotoluene	96.6	58-124	%	1.00	09/05/2001 18:24	
4-Bromofluorobenzene-FID	75.1	50-150	%	1.00	09/05/2001 18:24	

1220 Quarry Lane \* Pleasanton, CA 94566-4756  
Telephone: (925) 484-1919 \* Facsimile: (925) 484-1096

To: **Streamborn Consulting Services**

Test Method: 8015M  
8021B

Attn.: Matthew Hall

Prep Method: 5030

Gas/BTEX by 8015M/8021

Sample ID: <b>MW6 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-005</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 09/05/2001 18:54
Sampled: 08/22/2001 13:40	QC-Batch: 2001/09/05-01.01
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	09/05/2001 18:54	
Benzene	ND	0.50	ug/L	1.00	09/05/2001 18:54	
Toluene	ND	0.50	ug/L	1.00	09/05/2001 18:54	
Ethyl benzene	ND	0.50	ug/L	1.00	09/05/2001 18:54	
Xylene(s)	ND	0.50	ug/L	1.00	09/05/2001 18:54	
<b>Surrogate(s)</b>						
Trifluorotoluene	97.3	58-124	%	1.00	09/05/2001 18:54	
4-Bromofluorobenzene-FID	84.5	50-150	%	1.00	09/05/2001 18:54	

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8015M  
8021B

Attn.: Matthew Hall

Prep Method: 5030

Gas/BTEX by 8015M/8021

Sample ID:	<b>MW7 (22 AUG 01)</b>	Lab Sample ID:	<b>2001-08-0468-006</b>
Project:	P257 4401 Market St.	Received:	08/23/2001 16:35
Site:	4401 Market St., Oakland, CA	Extracted:	09/05/2001 19:24
Sampled:	08/22/2001 12:10	QC-Batch:	2001/09/05-01.01
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	09/05/2001 19:24	
Benzene	ND	0.50	ug/L	1.00	09/05/2001 19:24	
Toluene	ND	0.50	ug/L	1.00	09/05/2001 19:24	
Ethyl benzene	ND	0.50	ug/L	1.00	09/05/2001 19:24	
Xylene(s)	ND	0.50	ug/L	1.00	09/05/2001 19:24	
<b>Surrogate(s)</b>						
Trifluorotoluene	90.2	58-124	%	1.00	09/05/2001 19:24	
4-Bromofluorobenzene-FID	83.3	50-150	%	1.00	09/05/2001 19:24	

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8015M

8021B

Attn.: Matthew Hall

Prep Method: 5030

**Batch QC Report**  
Gas/BTEX by 8015M/8021

<b>Method Blank</b>	<b>Water</b>	<b>QC Batch # 2001/09/05-01.01</b>
MB: 2001/09/05-01.01-003		Date Extracted: 09/05/2001 07:59

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Gasoline	ND	50	ug/L	09/05/2001 07:59	
Benzene	ND	0.5	ug/L	09/05/2001 07:59	
Toluene	ND	0.5	ug/L	09/05/2001 07:59	
Ethyl benzene	ND	0.5	ug/L	09/05/2001 07:59	
Xylene(s)	ND	0.5	ug/L	09/05/2001 07:59	
<b>Surrogate(s)</b>					
Trifluorotoluene	99.8	58-124	%	09/05/2001 07:59	
4-Bromofluorobenzene-FID	91.6	50-150	%	09/05/2001 07:59	

1220 Quarry Lane \* Pleasanton, CA 94566-4756  
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# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: Streamborn Consulting Services

Test Method: 8021B

Attn: Matthew Hall

Prep Method: 5030

## Batch QC Report

Gas/BTEX by 8015M/8021

Laboratory Control Spike (LCS/LCSD)		Water		QC Batch # 2001/09/05-01.01	
LCS:	2001/09/05-01.01-004	Extracted:	09/05/2001 08:28	Analyzed	09/05/2001 08:28
LCSD:	2001/09/05-01.01-005	Extracted:	09/05/2001 08:58	Analyzed	09/05/2001 08:58

Compound	Conc. [ug/L]		Exp. Conc. [ug/L]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD		Recovery	RPD	LCS	LCSD
Benzene	98.1	99.8	100.0	100.0	98.1	99.8	1.7	77-123	20		
Toluene	101	103	100.0	100.0	101.0	103.0	2.0	78-122	20		
Ethyl benzene	103	105	100.0	100.0	103.0	105.0	1.9	70-130	20		
Xylene(s)	300	306	300	300	100.0	102.0	2.0	75-125	20		
<b>Surrogate(s)</b>											
Trifluorotoluene	529	543	500	500	105.8	108.6		58-124			

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: Streamborn Consulting Services

Test Method: 8015M

Attn: Matthew Hall

Prep Method: 5030

## Batch QC Report

Gas/BTEX by 8015M/8021

Laboratory Control Spike (LCS/LCSD)	Water	QC Batch # 2001/09/05-01.01
LCS: 2001/09/05-01.01-006	Extracted: 09/05/2001 09:28	Analyzed 09/05/2001 09:28
LCSD: 2001/09/05-01.01-007	Extracted: 09/05/2001 09:57	Analyzed 09/05/2001 09:57

Compound	Conc. [ ug/L ]		Exp.Conc. [ ug/L ]		Recovery [%]		RPD [%]	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD		Recovery	RPD	LCS	LCSD
Gasoline	500	523	500	500	100.0	104.6	4.5	75-125	20		
<b>Surrogate(s)</b>											
4-Bromofluorobenzene-FI	412	435	500	500	82.4	87.0		50-150			

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# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8015M  
8021B

Attn: Matthew Hall

Prep Method: 5030

## Legend & Notes

Gas/BTEX by 8015M/8021

### Analyte Flags

g

Hydrocarbon reported in the gasoline range does not match our gasoline standard.



Fuel Oxygenates by 8260B

<b>Streamborn Consulting Services</b>	✉ 900 Sante Fe Avenue Albany, CA 94706
Attn: Matthew Hall	Phone: (510) 528-4234 Fax: (510) 528-2613
Project #: P257	Project: 4401 Market St.
Site: 4401 Market St., Oakland, CA	

### Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW1 (22 AUG 01)	Water	08/22/2001 15:15	1
MW3 (22 AUG 01)	Water	08/22/2001 16:00	2
MW4 (22 AUG 01)	Water	08/22/2001 14:30	3
MW5 (22 AUG 01)	Water	08/22/2001 13:05	4
MW6 (22 AUG 01)	Water	08/22/2001 13:40	5
MW7 (22 AUG 01)	Water	08/22/2001 12:10	6

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**  
Attn.: Matthew Hall

Test Method: 8260B  
Prep Method: 5030B

Fuel Oxygenates by 8260B

Sample ID: <b>MW1 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-001</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 08/30/2001 17:02
Sampled: 08/22/2001 15:15	QC-Batch: 2001/08/30-V1.27
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	100	5.0	ug/L	1.00	08/30/2001 17:02	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	08/30/2001 17:02	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	1.00	08/30/2001 17:02	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	1.00	08/30/2001 17:02	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	1.00	08/30/2001 17:02	
<b>Surrogate(s)</b>						
1,2-Dichloroethane-d4	102.6	76-114	%	1.00	08/30/2001 17:02	

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8260B

Attn.: Matthew Hall

Prep Method: 5030B

Fuel Oxygenates by 8260B

Sample ID: <b>MW3 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-002</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 08/30/2001 17:25
Sampled: 08/22/2001 16:00	QC-Batch: 2001/08/30-V1.27
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	14	5.0	ug/L	1.00	08/30/2001 17:25	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	08/30/2001 17:25	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	1.00	08/30/2001 17:25	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	1.00	08/30/2001 17:25	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	1.00	08/30/2001 17:25	
<b>Surrogate(s)</b>						
1,2-Dichloroethane-d4	97.6	76-114	%	1.00	08/30/2001 17:25	

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# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**  
Attn.: Matthew Hall

Test Method: 8260B  
Prep Method: 5030B

Fuel Oxygenates by 8260B

Sample ID:	<b>MW4 (22 AUG 01)</b>	Lab Sample ID:	<b>2001-08-0468-003</b>
Project:	P257 4401 Market St.	Received:	08/23/2001 16:35
Site:	4401 Market St., Oakland, CA	Extracted:	08/30/2001 17:47
Sampled:	08/22/2001 14:30	QC-Batch:	2001/08/30-V1.27
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	8.8	5.0	ug/L	1.00	08/30/2001 17:47	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	08/30/2001 17:47	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	1.00	08/30/2001 17:47	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	1.00	08/30/2001 17:47	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	1.00	08/30/2001 17:47	
<b>Surrogate(s)</b>						
1,2-Dichloroethane-d4	97.6	76-114	%	1.00	08/30/2001 17:47	

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Telephone: (925) 484-1919 \* Facsimile: (925) 484-1096

To: **Streamborn Consulting Services**  
Attn.: Matthew Hall

Test Method: 8260B  
Prep Method: 5030B

Fuel Oxygenates by 8260B

Sample ID: <b>MW5 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-004</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 08/30/2001 18:10
Sampled: 08/22/2001 13:05	QC-Batch: 2001/08/30-V1.27
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	1.00	08/30/2001 18:10	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	08/30/2001 18:10	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	1.00	08/30/2001 18:10	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	1.00	08/30/2001 18:10	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	1.00	08/30/2001 18:10	
<b>Surrogate(s)</b>						
1,2-Dichloroethane-d4	92.4	76-114	%	1.00	08/30/2001 18:10	

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**

Test Method: 8260B

Attn.: Matthew Hall

Prep Method: 5030B

Fuel Oxygenates by 8260B

Sample ID: <b>MW6 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-005</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 08/30/2001 18:32
Sampled: 08/22/2001 13:40	QC-Batch: 2001/08/30-V1.27
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	1.00	08/30/2001 18:32	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	08/30/2001 18:32	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	1.00	08/30/2001 18:32	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	1.00	08/30/2001 18:32	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	1.00	08/30/2001 18:32	
<b>Surrogate(s)</b>						
1,2-Dichloroethane-d4	92.6	76-114	%	1.00	08/30/2001 18:32	

# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**  
Attn.: Matthew Hall

Test Method: 8260B  
Prep Method: 5030B

Fuel Oxygenates by 8260B

Sample ID: <b>MW7 (22 AUG 01)</b>	Lab Sample ID: <b>2001-08-0468-006</b>
Project: P257 4401 Market St.	Received: 08/23/2001 16:35
Site: 4401 Market St., Oakland, CA	Extracted: 08/30/2001 18:54
Sampled: 08/22/2001 12:10	QC-Batch: 2001/08/30-V1.27
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	1.00	08/30/2001 18:54	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	08/30/2001 18:54	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	1.00	08/30/2001 18:54	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	1.00	08/30/2001 18:54	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	1.00	08/30/2001 18:54	
<b>Surrogate(s)</b>						
1,2-Dichloroethane-d4	91.8	76-114	%	1.00	08/30/2001 18:54	

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# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: **Streamborn Consulting Services**  
Attn.: Matthew Hall

Test Method: 8260B  
Prep Method: 5030B

## Batch QC Report Fuel Oxygenates by 8260B

<b>Method Blank</b>	<b>Water</b>	<b>QC Batch # 2001/08/30-V1.27</b>
MB: 2001/08/30-V1.27-005		Date Extracted: 08/30/2001 11:18

Compound	Result	Rep.Limit	Units	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	08/30/2001 11:18	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	08/30/2001 11:18	
Di-isopropyl Ether (DIPE)	ND	10.0	ug/L	08/30/2001 11:18	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	08/30/2001 11:18	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	08/30/2001 11:18	
<b>Surrogate(s)</b>					
1,2-Dichloroethane-d4	93.4	76-114	%	08/30/2001 11:18	



# STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-08-0468

To: Streamborn Consulting Services  
Attn: Matthew Hall

Test Method: 8260B  
Prep Method: 5030B

## Batch QC Report

Fuel Oxygenates by 8260B

Laboratory Control Spike (LCS/LCSD)	Water	QC Batch # 2001/08/30-V1.27
LCS: 2001/08/30-V1.27-003	Extracted: 08/30/2001 10:27	Analyzed 08/30/2001 10:27
LCSD: 2001/08/30-V1.27-004	Extracted: 08/30/2001 10:56	Analyzed 08/30/2001 10:56

Compound	Conc. [ ug/L ]		Exp.Conc. [ ug/L ]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD		Recovery	RPD	LCS	LCSD
Methyl tert-butyl ether	24.0	23.2	25	25	96.0	92.8	3.4	65-165	20		
<b>Surrogate(s)</b> 1,2-Dichloroethane-d4	492	462	500	500	98.4	92.4		76-114			

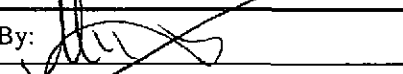
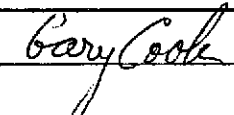
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**STREAMBORN  
CHAIN-OF-CUSTODY FORM**

Project Name: 4401 Market Street	Project Location: 4401 Market Street, Oakland CA	Project Number: P257
Sampler: Matthew Hall	Laboratory: STL ChromaLab	Laboratory Number:

Sample Designation	Date	Time	Matrix			Type	Containers		Preservative	Filtration	Turnaround			Analyses				Sampler Comments	Laboratory Comments		
			Soil	Water	Vapor	Grab	Composite	Quantity			Type	48-Hour	5- Working Days	10-Working Days	Fuel Oxygenates (by 8260)	TPH-Gasoline/BTEX					
MW1 (22 Aug 01)	22-Aug-01	3:15		x		x		6	40 mL VOA	HCl, ice				x		x	x				
MW3 (22 Aug 01)	22-Aug-01	4:00		x		x		6	40 mL VOA	HCl, ice				x		x	x				
MW4 (22 Aug 01)	22-Aug-01	7:30		x		x		6	40 mL VOA	HCl, ice				x		x	x				
MW5 (22 Aug 01)	22-Aug-01	1:05		x		x		6	40 mL VOA	HCl, ice				x		x	x				
MW6 (22 Aug 01)	22-Aug-01	1:40		x		x		6	40 mL VOA	HCl, ice				x		x	x				
MW7 (22 Aug 01)	22-Aug-01	2:10		x		x		6	40 mL VOA	HCl, ice				x		x	x				

Note: Sampler and laboratory to observe preservative, condition, integrity, etc. of samples and record (under "Comments") any exceptions from standard protocols.

Relinquished By: 	Received By: 	Date: 8/23/01	Time: 14:25
Relinquished By:	Received By:	Date:	Time: