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July 10, 2001

Project No. 3628

Mr. Reed Rinehart
Rinehart Distribution, Inc.
P.O. Box 725
Ukiah, California 94582

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JUL 19 2001

Groundwater Monitoring Report, May 2001
1107 Fifth Street
Oakland, California

Dear Mr. Rinehart:

W.A. Craig, Inc. (WAC) is pleased to submit this Groundwater Monitoring Report for sampling conducted on May 7, 2001 at the Rino Pacific service station, located at 1107 Fifth Street (Site), Oakland, California (**Figure 1**). This work was performed in accordance with the scope of work presented in WAC's *Site Investigation Work Plan* dated September 16, 1996 and *Additional Site Investigation Work Plan* dated May 23, 2000.

This report includes groundwater analytical results, dissolved oxygen concentrations, groundwater elevation and well construction data (**Table 1**) for two monitoring wells installed at the site during October 1996 and six additional monitoring wells installed during August 2000. Descriptions of the previous site investigations are presented in the *Subsurface Investigation Report*, dated January 17, 1997 and the *Subsurface Investigation Report* dated September 15, 2000.

SCOPE OF WORK

The scope of work conducted by WAC during this period included the following:

- Measure dissolved oxygen concentrations and static water levels in eight monitoring wells;
- Purge and sample groundwater from eight monitoring wells;
- Analyze groundwater samples for total petroleum hydrocarbons as gasoline (TPH-g), total petroleum hydrocarbons as diesel (TPH-d), benzene, toluene, ethylbenzene, xylenes (BTEX), fuel oxygenates (MtBE, ETBE, TAME, DIPE, tert-Butanol, methanol, ethanol)

- and lead scavengers (EDB and 1,2 DCA); and
- Prepare this Groundwater Monitoring Report.

GROUNDWATER SAMPLING AND ANALYSIS

Groundwater Elevations

WAC technical staff measured water levels in the eight monitoring wells on May 7, 2001 using an electronic water-level indicator. The wells were exposed to atmospheric conditions for approximately 30 minutes to stabilize static water levels. The top of casing elevations and the depth to static water level measurements were obtained during this monitoring event. Due to unusual groundwater level measurements, groundwater contours and a groundwater flow direction were not attempted for this monitoring event. Groundwater elevations for this and previous monitoring events are presented on **Table 2**.

Groundwater Sampling

Where applicable three well casing volumes were purged from each monitoring well prior to collecting groundwater samples. Dissolved oxygen concentration, pH, conductivity, temperature, and turbidity were intermittently monitored during purging of the wells. Dissolved oxygen is a measure of the potential activity of aerobic bacteria available to bioremediate dissolved hydrocarbons in groundwater. Dissolved oxygen concentrations for this and previous sampling events are presented in **Table 3**. Groundwater samples were collected using disposable polyethylene bailers. The field groundwater sampling logs are included in **Attachment A**.

The samples were submitted under chain-of-custody control to McCampbell Analytical, Inc. (MAI), of Pacheco, California. The purged groundwater is currently stored on-site in labeled, DOT approved, 55-gallon, steel drums.

Groundwater Analytical Results

The groundwater samples were analyzed for TPH-g/TPH-d using EPA Method 8015 (modified), for purgeable aromatic hydrocarbons (BTEX) using EPA Method 8020 and for fuel oxygenates and lead scavengers using EPA Method 8260. MAI is certified by the State of California to perform these analyses. The results of the analyses are summarized in **Table 4**. A copy of the laboratory analytical report and chain-of-custody document are in **Attachment B**.

Conclusions

This is the fourth monitoring event since installation of the six monitoring wells in August 2000. During this event MtBE concentrations exceeded the primary maximum contaminant level for drinking water in all eight monitoring wells. ~~MtBE concentrations were highest in well MW-7 at 520,000 ug/l, and lowest in well MW-3 at 33 ug/l.~~ Hydrocarbon constituents have been detected in well MW-7 since its installation in August 2000. This may be residual contamination from

the former UST excavation or a leak from the product piping to the dispenser island located immediately east of well MW-7.

TPH-d concentrations in monitoring wells MW-1, MW-7 and MW-8 have increased since the previous sampling event, concentrations in the remaining wells have fluctuated slightly. Increasing TPH-d concentrations have occurred in wells MW-1 and MW-8 since the August 2000 sampling event (Figure 4). ~~TPH-g concentrations remain highest in monitoring well MW-7, at 100,000 ug/l.~~ TPH-g was detected in monitoring well MW-3, at 140 ug/l, for the first time since groundwater sampling began in November 1996. Concentrations of gasoline in the remaining wells fluctuated slightly over the previous sampling event.

~~Benzene ranged from 25,000 ug/l in monitoring well MW-7 to 0.76 ug/l in MW-3 and~~ was detected for the first time in MW-8. Toluene, ethylbenzene or xylenes were detected in monitoring wells, MW-3, and MW-7. Fuel oxygenates and lead scavengers were below detection limits in the remaining wells.

Recommendations

~~WAC recommends abandonment of well MW-3, due to incompatible well screening with the other monitoring wells. WAC further recommends reinstallation of a well MW-3, with a screened interval similar to the most recently installed wells. Site investigation work in the northeastern corner of the Site and across Fifth Street is also recommended, in an effort to delineate the lateral extent of petroleum hydrocarbons around the vicinity of MW-7. The next groundwater sampling will be in August 2001.~~ OK

Professional Certification

This report has been prepared by the staff of W. A. Craig, Inc., under the professional supervision of the persons whose seals and signatures appear hereon. No warranty, either expressed or implied, is made as to the professional advice presented herein. The analysis, conclusions and recommendations contained in this report are based upon site conditions as they existed at the time of quarterly monitoring and sampling and they are subject to change.

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this report. W.A. Craig, Inc. recognizes that the limited scope of services performed in execution of this scope of work may not be appropriate to satisfy the needs, or requirements of other state agencies, or of other users. Any use or reuse of this document or its findings, conclusions or recommendations presented herein the sole risk of the user. There is no other warranty, either expressed or implied.

If you have any questions regarding this report please call Sean O'Grady at (707) 693-2929.

Sincerely,

W.A. Craig, Inc.,



Tim Cook
Tim Cook, PE
Principal Engineer

TC:sao

Attachments:

- Table 1 – Well Construction Data
- Table 2 – Groundwater Elevation Data
- Table 3 – Dissolved Oxygen Concentrations
- Table 4 – Groundwater Sample Analytical Results
- Figure 1 – Site Location Map
- Figure 2 – Groundwater Elevations
- Figure 3 – MtBE Concentrations
- Figure 4 – TPH-d Concentration Graph
- A -Groundwater Sampling Logs and Graphs
- B – Laboratory Analytical Reports

cc: Larry Seto, Alameda County Department of Environmental Health

Table 1
Well Construction Data
Oakland Truck Stop

Well Number	Date Installed	Casing Diameter (inches)	Borehole Depth (feet)	Screened Interval (feet)	Filter Pack Interval (feet)	Bentonite Interval (feet)	Grouting Interval (feet)
MW-1	10/10/96	2	20.5	10-20	9-20	7-9	1-7
MW-2	10/10/96	2	14.0	8-13	7-8	5-7	1-5
MW-2	10/10/96	2	17.0	12-17	11-17	9-11	1-9
MW-4	08/16/00	2	20.5	5-20	4-20	3-4	1-3
MW-5	08/16/00	2	20.5	5-20	4-20	7-13	1-3
MW-6	08/16/00	2	20.5	5-20	4-20	3-4	1-3
MW-7	08/17/00	2	20.5	5-20	4-20	3-4	1-3
MW-8	08/16/00	2	20.5	5-20	4-20	3-4	1-3
MW-9	08/23/00	2	20.5	5-20	4-20	3-4	1-3

Notes: MW-2 was abandoned during the UST excavation and removal in March 1999.

Table 2
Groundwater Elevations
Oakland Truck Stop

Well Number	Date	Top of Casing (ft)	Depth Below TOC (ft)	Elevation Above MSL (ft)		
MW-1	10/21/96	7.60	5.08	2.52		
	11/04/96		3.02	4.58		
	03/04/97		2.28	5.32		
	06/12/97		4.80	2.80		
	07/14/97		2.66	4.94		
	09/09/97		2.45	5.15		
	09/19/97		2.60	5.00		
	02/13/98		2.76	4.84		
	07/07/98		2.15	5.45		
	10/01/98		3.63	3.97		
	12/30/98		4.40	3.20		
	03/21/00		2.62	4.98		
	08/30/00		3.21	4.39		
	11/06/00		3.10	4.50		
	02/22/01		3.50	4.10		
05/07/01	2.94	4.66				
MW-2	10/21/96	4.48	4.66	-0.18		
	11/04/96		4.60	-0.12		
	03/04/97		3.68	0.80		
	06/12/97		3.70	0.78		
	07/14/97		4.16	0.32		
	09/09/97		3.88	0.60		
	09/19/97		4.50	-0.02		
	02/13/98		3.08	1.40		
	07/07/98		3.74	0.74		
	10/01/98		4.63	-0.15		
	12/30/98		3.90	0.58		
	03/21/00		Well Destroyed			
	MW-3		10/21/96	7.79	7.66	0.13
			11/04/96		5.70	2.09
03/04/97		11.38	-3.59			
06/12/97		5.18	2.61			
07/14/97		7.96	-0.17			
09/09/97		10.16	-2.37			
09/19/97		12.80	-5.01			
02/13/98		11.42	-3.63			
07/07/98		11.76	-3.97			
10/01/98		11.34	-3.55			
12/30/98		4.56	3.23			
03/21/00		10.92	-3.13			
08/30/00		5.12	2.67			
11/06/00		4.10	3.69			
02/22/01		6.60	1.19			
05/07/01	6.30	1.49				
MW-4	08/30/00	7.74	3.74	4.00		
	11/06/00		3.85	3.89		
	02/22/01		4.66	3.08		
	05/07/01		2.66	5.08		
MW-5	08/30/00	7.53	3.01	4.52		
	11/06/00		3.35	4.18		
	02/22/01		3.00	4.53		
	05/07/01		2.73	4.80		

Table 2
Groundwater Elevations
Oakland Truck Stop

Well Number	Date	Top of Casing (ft)	Depth Below TOC (ft)	Elevation Above MSL (ft)
MW-6	08/30/00	7.89	3.40	4.49
	11/06/00		3.72	4.17
	02/22/01		3.34	4.55
	05/07/01		3.08	4.81
MW-7	08/30/00	8.96	6.72	2.24
	11/06/00		6.85	2.11
	02/22/01		6.00	2.96
	05/07/01		6.35	2.61
MW-8	08/30/00	7.32	3.06	4.26
	11/06/00		2.98	4.34
	02/22/01		2.46	4.86
	05/07/01		2.76	4.56
MW-9	08/30/00	7.30	2.81	4.49
	11/06/00		2.68	4.62
	02/22/01		2.20	5.10
	05/07/01		2.75	4.55

Notes : Monitoring wells elevations are based on City of Oakland Datum # 16NW10 which lies 15 ft west of the centerline intersection of 3rd Street and Linden Street. Elevation = 8.108 (City of Oakland Datum = 5.108 + 3.00 = 8.108). Elevations have been converted to U.S. Geodetic Datum by adding 3.00 feet.

Table 3
Dissolved Oxygen Concentrations
Oakland Truck Stop

Monitoring Well	Date	Dissolved Oxygen Concentration (mg/l)	Temperature (Celsius)	Dissolved Oxygen Percent of Saturation
MW-1	08/30/00	0.27	24.2	3.21%
	11/06/00	0.24	21.8	2.71%
	02/22/01	0.76	15.7	7.59%
	05/07/01	0.79	20.3	8.64%
MW-3	08/30/00	0.35	26.4	4.38%
	11/06/00	0.23	22.7	2.65%
	02/22/01	0.97	15.3	9.62%
	05/07/01	*	*	*
MW-4	08/30/00	0.16	27.4	2.05%
	11/06/00	0.30	23.9	3.54%
	02/22/01	0.85	16.3	8.59%
	05/07/01	0.95	20.5	10.43%
MW-5	08/30/00	0.28	27.0	3.55%
	11/06/00	0.24	22.6	2.76%
	02/22/01	0.77	14.7	7.55%
	05/07/01	0.99	19.8	10.72%
MW-6	08/30/00	0.42	27.7	5.42%
	11/06/00	0.23	23.0	2.66%
	02/22/01	1.01	15.3	10.01%
	05/07/01	0.89	21.0	9.88%
MW-7	08/30/00	0.17	26.8	2.15%
	11/06/00	0.25	23.5	2.93%
	02/22/01	0.66	17.1	6.77%
	05/07/01	0.56	21.0	6.21%
MW-8	08/30/00	0.18	26.4	2.25%
	11/06/00	0.25	23.7	2.94%
	02/22/01	0.69	17.1	7.08%
	05/07/01	0.96	21.1	10.67%
MW-9	08/30/00	0.30	22.8	3.46%
	11/06/00	0.31	21.7	3.49%
	02/22/01	0.71	16.2	7.16%
	05/07/01	0.97	18.8	10.29%

Table 4
Groundwater Sample Analytical Results
Oakland Truck Stop

Well Number	Date Sampled	TPH-g	TPH-d	MtBE	MtBE 8260	benzene	toluene	ethyl-benzene	xylenes	DtPF	ETBE	TAME	tert-Butanol	Methanol	Ethanol	FDB	1,2 DCA	
MW-1	11/04/96	ND	220	ND	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	03/05/97	ND	230	ND	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	06/12/97	ND	290	ND	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	09/09/97	ND	180	ND	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	02/13/98	ND	590	9.4	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	07/07/98	ND	1,400	ND	2.7	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	10/01/98	ND	1,100	ND	1.8	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	12/30/98	ND	1,700	ND	2.3	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	03/21/00	220	3,100	3,800	4,800	11	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT
	08/30/00	140	1,600	2,900	NS	5.3	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT
	11/06/00	51	1,500	1,700	2,100	1.0	ND	ND	ND	ND	ND<50	ND<50	ND<50	ND<250	NT	NT	ND<50	ND<50
	02/22/01	140	3,000	1,000	1,100	ND	ND	ND	ND	ND	ND<20	ND<20	ND<20	ND<100	ND<4000	ND<1000	ND<20	ND<20
	05/07/01	ND	3,800	780	1,100	ND	ND	ND	ND	ND	ND<20	ND<20	ND<20	ND<100	ND<10,000	ND<100	ND<20	ND<20
MW-2	11/04/96	910	2,700	470,000	NA	120	23	3.5	51	NT	NT	NT	NT	NT	NT	NT	NT	
	03/05/97	4,400	2,300	760,000	NA	1,500	31	24	100	NT	NT	NT	NT	NT	NT	NT	NT	
	06/12/97	3,600	2,400	840,000	NA	1,200	14	12	40	NT	NT	NT	NT	NT	NT	NT	NT	
	09/09/97	3,700	970	470,000	NA	570	31	19	60	NT	NT	NT	NT	NT	NT	NT	NT	
	02/13/98	6,500	2,200	750,000	NA	2,400	31	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	07/07/98	5,200	2,700	950,000	1,000,000	2,800	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	10/01/98	1,200	1,200	420,000	360,000	330	12	8.8	11	NT	NT	NT	NT	NT	NT	NT	NT	
	12/30/98	1,000	1,900	370,000	360,000	96	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
Well Destroyed	03/21/00																	
MW-3	11/04/96	ND	310	1,000	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	03/05/97	ND	210	13	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	06/12/97	ND	94	17	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	09/09/97	ND	2,300	12	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	02/13/98	ND	570	14	NA	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	07/07/98	ND	1,100	7.8	6.6	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	10/01/98	ND	390	9.2	4.8	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	12/30/98	ND	64	6.9	4.5	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	03/21/00	ND	2,800	6.7	4.8	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	08/30/00	ND	260	12	NS	1.3	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	
	11/06/00	ND	940	25	12.0	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	ND	ND	
	02/22/01	ND	340	18	26.0	1.2	1.5	ND	0.74	ND	ND	ND	ND	ND	ND	ND	ND	
	05/07/01	140	460	25	33	0.76	4.7	2.2	14.0	ND	ND	ND	ND	ND	ND	ND	ND	
MW-4	08/30/00	1,300	390	210,000	NS	64	63	9.7	110	NT	NT	NT	NT	NT	NT	NT	NT	
	11/06/00	ND<3,300	170	130,000	120,000	80	ND<4	ND<5	ND<3	ND<2,500	ND<2,500	ND<2,500	ND<13,000	NT	NT	ND<2,500	ND<2,500	
	02/22/01	ND<3,300	120	120,000	150,000	30	ND<3	ND<3	ND<3	ND<2,500	ND<2,500	ND<2,500	ND<13,000	ND<500,000	ND<130,000	ND<2,500	ND<2,500	
	05/07/01	ND<4,200	240	150,000	200,000	ND<20	ND<10	ND<5.0	ND<5.0	ND<3,000	ND<3,000	ND<3,000	ND<25,000	ND<2,500,000	ND<250,000	ND<3,000	ND<3,000	

Table 4
Groundwater Sample Analytical Results
Oakland Truck Stop

Well Number	Date	TPH-g	TPH-d	MtBE	MtBE 8260	benzene	toluene	ethyl-benzene	xylenes	DIPE	ETBE	TAME	tert-Butanol	Methanol	Ethanol	EDB	1,2 DCA
MW-5	08/30/00	1,000	450	52,000	NS	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT
	11/06/00	ND<1,000	520	44,000	42,000	ND<1	ND<1	ND<1	ND<1	ND<1,000	ND<1,000	ND<1,000	ND<5,000	NT	NT	ND<1,000	ND<1,000
	02/22/01	ND<1,000	270	30,000	39,000	ND<1	ND<1	ND<1	ND<1	ND<500	ND<500	ND<500	ND<2,500	ND<100,000	ND<25,000	ND<500	ND<500
	05/07/01	ND<1,800	470	48,000	59,000	ND<5.0	ND<2.0	ND<2.0	ND<2.0	ND<1,000	ND<1,000	ND<1,000	ND<5,000	ND<500,000	ND<50,000	ND<1,000	ND<1,000
MW-6	08/30/00	1,300	1,300	23,000	NS	55	ND	16	27	NT	NT	NT	NT	NT	NT	NT	NT
	11/06/00	ND<630	1,100	26,000	27,000	7	8.1	ND<3	5.2	ND<630	ND<630	ND<630	ND<3,200	NT	NT	ND<630	ND<630
	02/22/01	ND<200	420	6,500	8,000	ND	ND	ND	ND	ND<100	ND<100	ND<100	ND<500	ND<20,000	ND<5,000	ND<100	ND<100
	05/07/01	ND<1000	900	37,000	40,000	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<500	ND<500	ND<500	ND<2,500	ND<250,000	ND<25,000	ND<500	ND<500
MW-7	08/30/00	160,000	2,600	800,000	NS	28,000	15,000	1,200	5,900	NT	NT	NT	NT	NT	NT	NT	NT
	11/06/00	80,000	1,700	540,000	920,000	23,000	12,000	1,200	5,000	ND<13,000	ND<13,000	ND<13,000	ND<63,000	NT	NT	ND<13,000	ND<13,000
	02/22/01	80,000	2,000	440,000	460,000	19,000	12,000	1,100	3,200	ND<5,000	ND<5,000	ND<5,000	ND<25,000	ND<1,000,000	ND<250,000	ND<5,000	ND<5,000
	05/07/01	100,000	7,600	460,000	520,000	25,000	16,000	1,700	6,600	ND<5,000	ND<5,000	ND<5,000	ND<25,000	ND<2,500,000	ND<250,000	ND<5,000	ND<5,000
MW-7D	02/22/01	84,000	2,400	400,000	500,000	20,000	13,000	1,200	3,400	ND<5,000	ND<5,000	ND<5,000	ND<25,000	ND<1,000,000	ND<250,000	ND<5,000	ND<5,000
	05/07/01	100,000	8,200	530,000	500,000	25,000	17,000	1,700	6,700	ND<5,000	ND<5,000	ND<5,000	ND<25,000	ND<2,500,000	ND<5,000	ND<5,000	ND<5,000
MW-8	08/30/00	ND	690	28,000	NS	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT
	11/06/00	ND<3,300	810	120,000	76,000	ND<8	ND<5	ND<3	ND<7	ND<2,500	ND<2,500	ND<2,500	ND<13,000	NT	NT	ND<2,500	ND<2,500
	02/22/01	ND<2500	1,100	99,000	130,000	ND<3	ND<3	ND<3	ND<3	ND<2,000	ND<2,000	ND<2,000	ND<10,000	ND<400,000	ND<100,000	ND<5,000	ND<5,000
	05/07/01	ND<5000	1,300	110,000	120,000	32	ND<10	ND<5.0	ND<5.0	ND<2,500	ND<2,500	ND<2,500	ND<13,000	ND<1,300,000	ND<13,000	ND<2,500	ND<2,500
MW-9	08/30/00	ND	770	97	NS	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT
	11/06/00	ND	390	190	220	ND	ND	ND	ND	ND<25	ND<25	ND<25	ND<125	NT	NT	ND<5.0	ND<5.0
	02/22/01	ND	240	120	160	ND	ND	ND	ND	ND<2.0	ND<2.0	ND<2.0	ND<10	ND<400	ND<100	ND<2.0	ND<2.0
	05/07/01	ND	190	120	150	ND	ND	ND	ND	ND<2.5	ND<2.5	ND<2.5	ND<13	ND<1,300	ND<130	ND<2.5	ND<2.5
MCL		NE	NE	13	13	1	150	700	1,750	NE	NE	NE	NE	NE	NE	0.05	0.5

units are micrograms per liter (ug/L)

ND = Not detected

NS = Not sampled

MCL= Primary Maximum Contaminant Level (California drinking water standard)

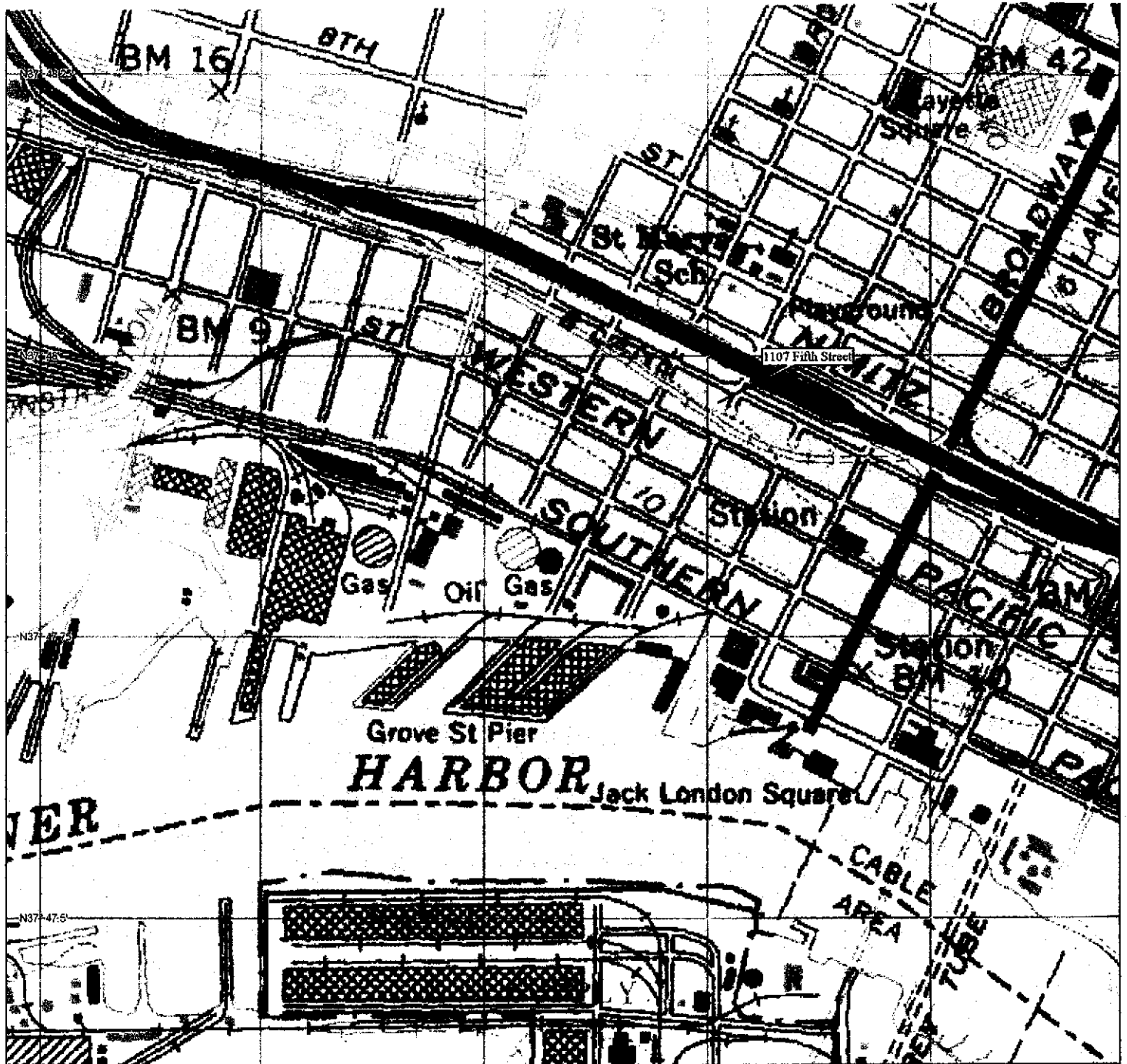
Concentrations in excess of the MCL are in bold

NE= no MCL is established

MW-2 was destroyed during excavation of contaminated soil

MW-4 through MW-9 were constructed in August 2000

4, 5, 6, 7, 8



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 350 ft Scale: 1 : 9,600 Detail: 14-4 Datum: WGS84

Project No:3628

May 2001

Site Location Map
 Rinehart
 1107 Fifth Street
 Oakland, CA.

Figure 1



Checked by:



W. A. Craig, Inc.

Environmental Contracting and Consulting

6940 Tremont Road
 Dixon, California 95620
 Cal License #455752

(707) 693-2922
 FAX (707) 693-2922

5TH STREET

CONCRETE SIDEWALK

TRUCK SCALE

SCALE HOUSE

Approx. location - former MW-2

MW4
5.08'

MW7
2.61'

DIESEL DISPENSERS

MW8
4.56'

man pumps

MW5
4.80'

FORMER UST EXCAVATION

MW6
4.81'

DIESEL & GAS DISPENSERS

Advanced in tank pit.

MW9
4.55'

*MW1
4.66'

MAIN BUILDING

*MW3
1.49'

ADELINE STREET

SCALE



(IN FEET)

1 INCH = 30 FEET

Explanation;

MW-3 is an anomalous value due to an insufficient well seal and a poorly screened interval.



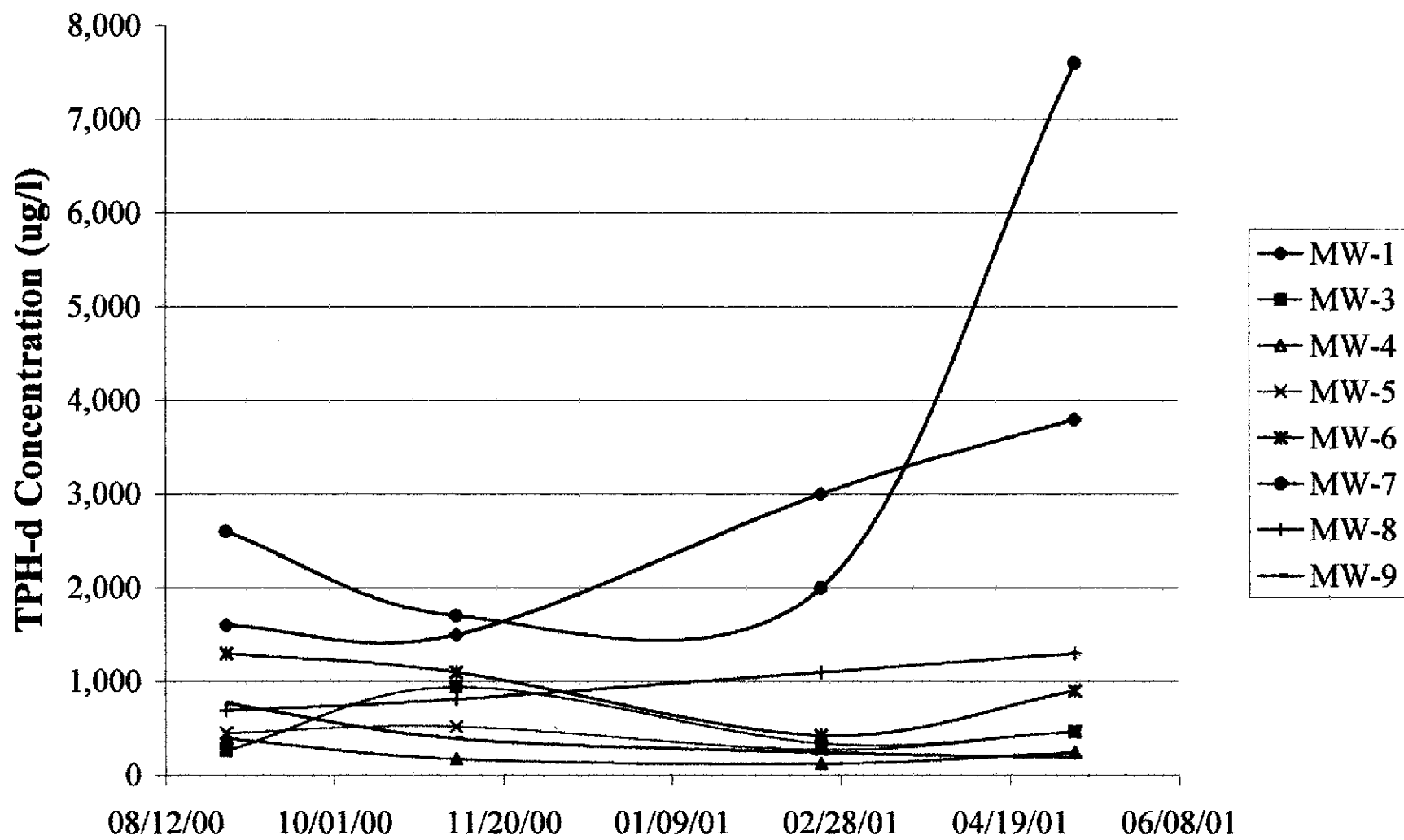
W.A. Craig, Inc.

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PH# (707) 693-2929 Fax# (707) 693-2922

GROUNDWATER ELEVATION MAP
OAKLAND TRUCK STOP
1107 FIFTH STREET
OAKLAND, CA

Project #: 3628	Figure:
Date: 05/24/01	2

Figure 4. TPH-d Concentrations in Monitoring Well Network



5TH STREET

CONCRETE SIDEWALK

TRUCK SCALE

SCALE HOUSE

MW4
200K

520K
MW7

500K

400K

300K

200K

100K

DIESEL
DISPENSERS

MW8
120K

MW5
59K

FORMER
UST
EXCAVATION

MW6
40K

DIESEL
& GAS
DISPENSERS

MW9
.15K

*MW1
1.1K

MAIN BUILDING

*MW3
.033K

ADELINE STREET

SCALE



(IN FEET)

1 INCH = 30 FEET

Explanation:

— MtBE iso-concentration contour
1,000 ug/l = 1K



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MtBE CONCENTRATION GADIENT MAP
OAKLAND TRUCK STOP
1107 FIFTH STREET
OAKLAND, CA

Project #: 3628

Date: 05/24/01

Figure:

3

ATTACHMENT A
MONITORING WELL SAMPLING LOGS

WELL DEVELOPMENT AND SAMPLING LOG

Project Name RINEHART Job No. 3628 Date 05/08/01 Weather _____
 Sampler _____

Well Data						Well Number <u>mw1</u>
Total Depth of Well	<u>20'</u>	Casing Elevation		Depth to Water	<u>2.94'</u>	Groundwater Elevation
Method of Purging Well		Method of Sampling Well				
Casing Volume	<u>2.83 gallons</u>	Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft				
Depth to Water Prior to Sampling	<u>x3 = 8.50 gallons</u>	D.O. <u>0.79 mg/l @ 20.3°C</u>				
Field Parameters						
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)
	Begin purging well					
<u>9:10</u>	<u>4.5</u>	<u>67.7</u>	<u>1.17x1000</u>	<u>7.28</u>	<u>MOD-HIGH</u>	<u>DARK GRN / BRN GRANLY SEDIMENT (SOME ODOR) PRESENT</u>
<u>10:06</u>	<u>6.5</u>	<u>69.8</u>	<u>2.38x</u>	<u>7.21</u>	<u>MOD</u>	<u>"</u>
Comments: <u>after 1/2 hr of waiting well did not recharge any further. Supplied @ 5.5 gal. seal scavenger</u>						
<u>No D.O. READING DUE TO LOSE SEAL. NEED NEW EXPANSION CAP & SCREWS (2)</u>						

Well Data						Well Number <u>mw3</u>
Total Depth of Well	<u>20</u>	Casing Elevation		Depth to Water	<u>6.30'</u>	Groundwater Elevation
Method of Purging Well		Method of Sampling Well				
Casing Volume	<u>2.3 gallons</u>	Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft				
Depth to Water Prior to Sampling	<u>x3 = 6.8 gallons</u>					
Field Parameters						
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)
	Begin purging well					
<u>12:36</u>	<u>2.6</u>	<u>88.7</u>	<u>1.84x1000</u>	<u>7.50</u>	<u>MOD</u>	<u>BROWN NO ODOR / PRESENT PRESENT IN SMALL SHEEN</u>
Comments: <u>Purged 3.0 gallons</u>						
<u>after .5 hr. could not get any more water. No recharge</u>						
<u>Need New EXPANSION CAP & SCREWS (2)</u>						

WELL DEVELOPMENT AND SAMPLING LOG

Project Name RINEN AET Job No. 3L2B Date 05/09/01 Weather _____
 Sampler OGRADY

Well Data						Well Number <u>MWS 4</u>
Total Depth of Well <u>20.5'</u>		Casing Elevation _____		Depth to Water <u>2.66'</u>		Groundwater Elevation _____
Method of Purging Well _____			Method of Sampling Well _____			
Casing Volume <u>2.9 gallons</u>		Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft				
Depth to Water Prior to Sampling <u>3 x 3 = 8.6 gallons</u>		D.O. <u>0.95 mg/L @ 20.5°C</u>				
Field Parameters						
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)
	Begin purging well					
<u>11:02</u>	<u>4.7</u>	<u>70.1</u>	<u>1.98x1000</u>	<u>7.47</u>	<u>MOD-MILD</u>	<u>TRANSLUCENT GRN/BRN</u> <u>FAINT PETRO ODOR/NO PRECIPIT</u>
<u>11:10</u>	<u>8.8</u>	<u>72.5</u>	<u>2.20x1000</u>	<u>6.71</u>	<u>"</u>	<u>BRN</u>
Comments: <u>Purged 8.8 gallons</u>						
<u>5-phys for TPH, TPH-D, BTEX, P-Dioxins / lead scavengers</u>						

Well Data						Well Number <u>MWS 6</u>
Total Depth of Well <u>20.6</u>		Casing Elevation _____		Depth to Water <u>2.73'</u>		Groundwater Elevation _____
Method of Purging Well _____			Method of Sampling Well _____			
Casing Volume <u>2.9 gallons</u>		Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft				
Depth to Water Prior to Sampling <u>3 x 3 = 8.6 gallons</u>		D.O. <u>0.99 mg/L @ 19.5°C</u>				
Field Parameters						
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)
	Begin purging well					
<u>10:39</u>	<u>4.6</u>	<u>74.7</u>	<u>2.02x1000</u>	<u>8.06</u>	<u>MOD</u>	<u>GRN/BRN</u> <u>FAINT PETRO ODOR / NO PRECIPIT</u>
<u>10:43</u>	<u>8.7</u>	<u>73.7</u>	<u>1.92x1000</u>	<u>7.04</u>	<u>"</u>	<u>"</u>
Comments: <u>Purged 8.7 gallons</u>						
<u>Extremely fast recharge!</u>						
<u>Need New EXPANSION CAP & SCREWS (2)</u>						

WELL DEVELOPMENT AND SAMPLING LOG

Project Name PINSHART Job No. 3028 Date 05/07/01 Weather _____
 Sampler O'GRADY

Well Data						Well Number <u>MW 6</u>
Total Depth of Well <u>20.6</u>		Casing Elevation _____		Depth to Water <u>3.08</u>		Groundwater Elevation _____
Method of Purging Well _____			Method of Sampling Well _____			
Casing Volume <u>2.8 gallons</u>		Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft				
Depth to Water Prior to Sampling <u>4 x 3 = 8.4 gallons</u>		D.O. <u>0.89 mg/l @ 21.0°C</u>				
Field Parameters						
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)
	Begin purging well					
<u>11:29</u>	<u>4.7</u>	<u>78.8</u>	<u>1.50 x 1000</u>	<u>7.86</u>	<u>MOD-HIGH</u>	<u>MURKY BRN SOME PETRO ODOR/NO PRODUCT</u>
<u>11:36</u>	<u>8.7</u>	<u>76.5</u>	<u>1.24 x 1000</u>	<u>7.16</u>	<u>"</u>	<u>"</u>
Comments: <u>Purged 8.8 gallons</u>						

Well Data						Well Number <u>MW 7</u>
Total Depth of Well <u>20.6</u>		Casing Elevation _____		Depth to Water <u>6.35</u>		Groundwater Elevation _____
Method of Purging Well _____			Method of Sampling Well _____			
Casing Volume <u>2.5 gallons</u>		Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft				
Depth to Water Prior to Sampling <u>4 x 3 = 6.8 gallons</u>		D.O. <u>0.56 mg/l @ 21.0°C</u>				
Field Parameters						
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)
	Begin purging well					
<u>11:58</u>	<u>4</u>	<u>81.1</u>	<u>1.46 x 1000</u>	<u>8.21</u>	<u>MOD</u>	<u>GREY STREAK PETRO ODOR/STREAK PRESENCE OF PRODUCT</u>
<u>12:03</u>	<u>7</u>	<u>81.7</u>	<u>1.28 x 1000</u>	<u>7.15</u>	<u>"</u>	<u>"</u>
Comments: <u>Purged 7.0 gallons</u>						

WELL DEVELOPMENT AND SAMPLING LOG

Project Name Pinkerton Job No. 3228 Date 05/07/01 Weather _____
 Sampler J GRADY

Well Data				Well Number <u>MJ 8</u>			
Total Depth of Well <u>20.5</u>		Casing Elevation _____		Depth to Water <u>2.76'</u>		Groundwater Elevation _____	
Method of Purging Well _____				Method of Sampling Well _____			
Casing Volume <u>2.8 gallons</u>		Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft					
Depth to Water Prior to Sampling <u>3 x 3 = 8.6 gallons</u>		D.O. <u>0.96 mg/l @ 21.1°C</u>					
Field Parameters							
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)	
	Begin purging well						
<u>10:17</u>	<u>4.6</u>	<u>72.4</u>	<u>2.37x1000</u>	<u>7.07</u>	<u>MUD</u>	<u>GRN/BEN STRONG PETRO ODOR / NO PRODUCT</u>	
<u>10:22</u>	<u>8.8</u>	<u>73.0</u>	<u>2.37x1000</u>	<u>7.15</u>	<u>"</u>	<u>MORE BEN</u>	
Comments: <u>Purged 8.8 gallons</u> <u>Sample analyzed!</u>							

Well Data				Well Number <u>MJ 9</u>			
Total Depth of Well <u>20.5</u>		Casing Elevation _____		Depth to Water <u>2.75'</u>		Groundwater Elevation _____	
Method of Purging Well _____				Method of Sampling Well _____			
Casing Volume <u>2.9 gallons</u>		Volume Factors: 2"=0.166g/ft; 4"=0.653g/ft; 6"=1.47g/ft; 8"=2.61g/ft; 12"=5.88g/ft					
Depth to Water Prior to Sampling <u>7 x 3 = 8.6 gallons</u>		D.O. <u>0.97 mg/l @ 18.5°C</u>					
Field Parameters							
Time	Volume (gal)	Temperature	SP	pH	Turbidity	Comments (color/odor/sheen/product etc.)	
	Begin purging well						
<u>9:40</u>	<u>4.5</u>	<u>73.1</u>	<u>1.72x1000</u>	<u>7.22</u>	<u>MUD</u>	<u>GREENISH COLOR (ODOR) / NO PRODUCT</u>	
<u>9:46</u>	<u>8.6</u>	<u>73.8</u>	<u>2.38x1000</u>	<u>7.13</u>	<u>"</u>	<u>"</u>	
Comments: <u>Purged 8.8 gallons</u>							

ATTACHMENT B
LABORATORY ANALYTICAL RESULTS



McCAMPBELL ANALYTICAL INC.

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<http://www.mccampbell.com> E-mail: main@mccampbell.com

W. A. Craig, Inc. 6940 Tremont Road Dixon, CA 95620-9603	Client Project ID: #3628; Rinehart	Date Sampled: 05/08/2001
	Client Contact: Sean O'Grady	Date Received: 05/09/2001
	Client P.O.: <i>need to confirm</i>	Date Extracted: 05/09-05/15/2001
		Date Analyzed: 05/09-05/15/2001

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*
 EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

MTBE below
 1100
 33
 200,000
 59,000
 40,000
 500/520,000
 120,000

Lab ID	Client ID	Matrix	TPH(g)*	MTBE	Benzene	Toluene	Ethyl-benzene	Xylenes	% Recovery Surrogate
67032	MW-1	W	ND	780	ND	ND	ND	ND	104
67033	MW-3	W	140,a	25	0.76	4.7	2.2	14	102
67034	MW-4	W	ND<4200	150,000	ND<20	ND<10	ND<5.0	ND<5.0	103
67035	MW-5	W	ND<1800	48,000	ND<5.0	ND<2.0	ND<2.0	ND<2.0	97
67036	MW-6	W	ND<1000	37,000	ND<2.0	ND<2.0	ND<1.0	ND<1.0	98
67037	MW-7	W	100,000,a,h	460,000	25,000	16,000	1700	6600	103
67038	MW-7D	W	100,000,a,h	530,000	25,000	17,000	1700	6700	96
67039	MW-8	W	ND<5000	110,000	32	ND<10	ND<5.0	ND<5.0	102
67040	MW-9	W	ND	120	ND	ND	ND	ND	95
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/l., wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

* cluttered chromatogram; sample peak coelutes with surrogate peak

*The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director



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W. A. Craig, Inc. 6940 Tremont Road Dixon, CA 95620-9603	Client Project ID: #3628; Rinehart	Date Sampled: 05/08/2001
		Date Received: 05/09/2001
	Client Contact: Sean O'Grady	Date Extracted: 05/09/2001
	Client P.O:	Date Analyzed: 05/09-05/14/2001

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)


Lab ID	Client ID	Matrix	TPH(d) [†]	% Recovery Surrogate
67032	MW-1	W	3800,c/e	105
67033	MW-3	W	460,b,d	105
67034	MW-4	W	240,c	93
67035	MW-5	W	470,c	94
67036	MW-6	W	900,c	102
67037	MW-7	W	7600,d,b,h	104
67038	MW-7D	W	8200,d,b,h	103
67039	MW-8	W	1300,c	90
67040	MW-9	W	190,c	93
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W		50 ug/L	
	S		1.0 mg/kg	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP / STLC / SPLP extracts in ug/L.

[†] cluttered chromatogram resulting in coeluted surrogate and sample peaks. or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

[‡]The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant; d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (fuel oil); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment.

DHS Certification No. 1644

 Edward Hamilton, Lab Director



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W. A. Craig, Inc. 6940 Tremont Road Dixon, CA 95620-9603	Client Project ID: #3628; Rinehart	Date Sampled: 05/08/2001
		Date Received: 05/09/2001
	Client Contact: Sean O'Grady	Date Extracted: 05/09-05/10/2001
	Client P.O:	Date Analyzed: 05/09-05/10/2001

Seven Oxygenated Volatile Organics By GC/MS

EPA method 8260 modified

Lab ID	67032	67033	67034	67035	Reporting Limit	
Client ID	MW-1	MW-3	MW-4	MW-5		
Matrix	W	W	W	W	S	W
Compound	Concentration*				ug/kg	ug/L
Di-isopropyl Ether (DIPE)	ND<20	ND	ND<5000	ND<1000	5.0	1.0
Ethyl tert-Butyl Ether (ETBE)	ND<20	ND	ND<5000	ND<1000	5.0	1.0
Methyl tert-Butyl Ether (MTBE)	1100	33	200,000	59,000	5.0	1.0
tert-Amyl Methyl Ether (TAME)	ND<20	ND	ND<5000	ND<1000	5.0	1.0
tert-Butanol	ND<100	ND	ND<25,000	ND<5000	25	5.0
Methanol	ND<10,000	ND	ND<2,500,000	ND<500,000	2500	500
Ethanol	ND<1000	ND	ND<250,000	ND<50,000	250	50

Surrogate Recoveries (%)

Dibromofluoromethane	123	120	96	120	
Comments:					

* water samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / STLC / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means surrogate not applicable to this analysis
 (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content



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W. A. Craig, Inc. 6940 Tremont Road Dixon, CA 95620-9603	Client Project ID: #3628; Rinehart	Date Sampled: 05/08/2001
		Date Received: 05/09/2001
	Client Contact: Sean O'Grady	Date Extracted: 05/09-05/10/2001
	Client P.O:	Date Analyzed: 05/09-05/10/2001

Seven Oxygenated Volatile Organics By GC/MS

EPA method 8260 modified

Lab ID	67036	67037	67038	67039	Reporting Limit	
	Client ID	MW-6	MW-7	MW-7D	MW-8	
Matrix	W	W	W	W	S	W
Compound	Concentration*				ug/kg	ug/L
Di-isopropyl Ether (DIPE)	ND<500	ND<5000	ND<5000	ND<2500	5.0	1.0
Ethyl tert-Butyl Ether (ETBE)	ND<500	ND<5000	ND<5000	ND<2500	5.0	1.0
Methyl tert-Butyl Ether (MTBE)	40,000	520,000	500,000	120,000	5.0	1.0
tert-Amyl Methyl Ether (TAME)	ND<500	ND<5000	ND<5000	ND<2500	5.0	1.0
tert-Butanol	ND<2500	ND<25,000	ND<25,000	ND<13,000	25	5.0
Methanol	ND<250,000	ND<2,500,000	ND<2,500,000	ND<1,300,000	2500	500
Ethanol	ND<25,000	ND<250,000	ND<5000	ND<13,000	250	50

Surrogate Recoveries (%)

Dibromofluoromethane	118	118	119	119	
Comments:		h	h		

* water samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / STLC / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means surrogate not applicable to this analysis
 (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content



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W. A. Craig, Inc. 6940 Tremont Road Dixon, CA 95620-9603	Client Project ID: #3628; Rinehart	Date Sampled: 05/08/2001
		Date Received: 05/09/2001
	Client Contact: Sean O'Grady	Date Extracted: 05/09-05/10/2001
	Client P.O:	Date Analyzed: 05/09-05/10/2001

Seven Oxygenated Volatile Organics By GC/MS

EPA method 8260 modified

Lab ID	67040	67041	Reporting Limit		
	Client ID	MW-9	Trip Blank		
Matrix	W	W	S	W	
Compound	Concentration*			ug/kg	ug/L
Di-isopropyl Ether (DIPE)	ND<2.5	ND		5.0	1.0
Ethyl tert-Butyl Ether (ETBE)	ND<2.5	ND		5.0	1.0
Methyl tert-Butyl Ether (MTBE)	150	ND		5.0	1.0
tert-Amyl Methyl Ether (TAME)	ND<2.5	ND		5.0	1.0
tert-Butanol	ND<13	ND		25	5.0
Methanol	ND<1300	ND		2500	500
Ethanol	ND<130	ND		250	50

Surrogate Recoveries (%)

Dibromofluoromethane	120	122		
Comments:				

* water samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / STLC / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means surrogate not applicable to this analysis
 (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content



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W. A. Craig, Inc. 6940 Tremont Road Dixon, CA 95620-9603	Client Project ID: #3628; Rinehart	Date Sampled: 05/08/2001
		Date Received: 05/09/2001
	Client Contact: Sean O'Grady	Date Extracted: 05/09-05/10/2001
	Client P.O:	Date Analyzed: 05/09-05/10/2001

Ethylene Dibromide (1,2-Dibromoethane) and 1,2-Dichloroethane (1,2-DCA)

EPA method 8260

Lab ID	Client ID	Matrix	EDB	1,2-DCA	% Recovery Surrogate
67032	MW-1	W	ND<20,j	ND<20	123
67033	MW-3	W	ND	ND	120
67034	MW-4	W	ND<5000,j	ND<5000	119
67035	MW-5	W	ND<1000,j	ND<1000	120
67036	MW-6	W	ND<500,j	ND<500	118
67037	MW-7	W	ND<5000,j,h	ND<5000	118
67038	MW-7D	W	ND<5000,j,h	ND<5000	119
67039	MW-8	W	ND<2500,j	ND<2500	119
67040	MW-9	W	ND<2.5,j	ND<2.5	120
67041	Trip Blank	W	ND	ND	122
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	1.0 ug/L	1.0	
		S	5.0 ug/kg	5.0	

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) sample diluted due to high organic content.

DHS Certification No. 1644

Edward Hamilton, Lab Director



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QC REPORT

Date: 05/15/01 Matrix: Water

Extraction: TTLC

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	

SampleID: 51701 Instrument: GC-3

Surrogate1	0.000	100.0	105.0	100.00	100	105	4.9
Xylenes	0.000	26.0	25.4	30.00	87	85	2.3
Ethyl Benzene	0.000	8.6	8.5	10.00	86	85	1.2
Toluene	0.000	8.8	9.2	10.00	88	92	4.4
Benzene	0.000	8.9	9.4	10.00	89	94	5.5
MTBE	0.000	9.6	10.1	10.00	96	101	5.1
GAS	0.000	81.2	77.2	100.00	81	77	5.0

SampleID: 50501 Instrument: GC-11 B

Surrogate1	0.000	100.0	101.0	100.00	100	101	1.0
TPH (diesel)	0.000	6350.0	6350.0	7500.00	85	85	0.0

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation



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QC REPORT

Date: 05/13/01-05/14/01 Matrix: Water

Extraction: TTLC

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	

SampleID: 51701

Instrument:

GC-3

Surrogate1	0.000	106.0	103.0	100.00	106	103	2.9
Xylenes	0.000	26.2	26.2	30.00	87	87	0.0
Ethyl Benzene	0.000	8.7	8.6	10.00	87	86	1.2
Toluene	0.000	9.5	8.9	10.00	95	89	6.5
Benzene	0.000	9.6	9.0	10.00	96	90	6.5
MTBE	0.000	10.3	9.7	10.00	103	97	6.0
GAS	0.000	78.0	79.5	100.00	78	80	1.9

SampleID: 51701

Instrument:

MB-1

Oil & Grease	0.000	19.7	21.1	23.70	83	89	6.9
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SampleID: 50501

Instrument:

GC-11 B

Surrogate1	0.000	99.0	94.0	100.00	99	94	5.2
TPH (diesel)	0.000	6250.0	5975.0	7500.00	83	80	4.5

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 100$$

RPD means Relative Percent Deviation



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QC REPORT

VOCs (EPA 8240/8260)

Date: 05/09/01-05/10/01 Matrix: Water

Extraction: N/A

Compound	Concentration: ug/L			%Recovery		RPD	
	Sample	MS	MSD	Amount Spiked	MS		MSD
SampleID: 51001				Instrument:	GC-10		
Surrogate	0.000	101.0	101.0	100.00	101	101	0.0
tert-Amyl Methyl Ether	0.000	92.0	86.0	100.00	92	86	6.7
Methyl tert-Butyl Ether	0.000	95.0	87.0	100.00	95	87	8.8
Ethyl tert-Butyl Ether	0.000	91.0	88.0	100.00	91	88	3.4
Di-isopropyl Ether	0.000	93.0	90.0	100.00	93	90	3.3
Toluene	0.000	113.0	113.0	100.00	113	113	0.0
Benzene	0.000	108.0	108.0	100.00	108	108	0.0
Chlorobenzene	0.000	108.0	107.0	100.00	108	107	0.9
Trichloroethane	0.000	98.0	95.0	100.00	98	95	3.1
1,1-Dichloroethene	0.000	110.0	113.0	100.00	110	113	2.7

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$\text{RPD} = \frac{(MS - \text{MSD})}{(MS + \text{MSD})} \cdot 100$$

RPD means Relative Percent Deviation

