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May 31, 2005
Work Plan 0014.W9

Mr. Amir Gholami
Alameda County Department of Environmental Health
1131 Harbor Parkway, Suite 250
Alameda, CA 94502

SUBJECT: INTERIM SOURCE AREA REMEDIATION PLAN
Xtra Oil Company Site
3495 Castro Valley Boulevard vicinity
Castro Valley, CA

Dear Mr. Gholami:

P&D Environmental, a division of Paul H. King, Inc. (P&D), is pleased to present this Interim Source Area Remediation Plan (ISARP) for free product removal at the subject site. A Site Location Map is attached as Figure 1, and a Site Plan showing the historic and present Underground Storage Tank pit locations, and existing groundwater monitoring well locations is attached as Figure 2.

All work will be performed under the direct supervision of an appropriately registered professional. This work plan is prepared in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

BACKGROUND

The site is currently used as a gasoline station. Four 12,000 gallon underground fuel storage tanks are present at the site. Three of the tanks contain gasoline and the fourth tank contains diesel fuel. A 550 gallon waste oil tank was removed from the site in November, 1988. The fuel tanks were replaced during August, 1992.

Three monitoring wells, designated as MW1, MW2 and MW3 were installed at the site on February 14 and 15, 1990 by Western Geo-Engineers. The subsurface materials encountered in the boreholes consisted primarily of silt and clay. The locations of the monitoring wells are shown in Figure 2. Soil samples collected during drilling of the boreholes for the monitoring wells revealed the presence of total petroleum hydrocarbons as gasoline (TPH-G) and total petroleum hydrocarbons as diesel (TPH-D). TPH-G was encountered in borehole MW1 at depths of 5 and 10 feet below grade at concentrations of 40 and 1,400 mg/kg, respectively; in borehole MW2 at depths of 10 and 15 feet below grade at concentrations of 230 and 95 mg/kg, respectively; and in borehole MW3 at depths of 5, 10 and 15 feet at concentrations of 140, 250 and 25 mg/kg, respectively. In addition, 120 mg/kg TPH-D was detected in borehole MW3 at a depth of 5 feet. Soil samples collected at a depth of 20 feet in borehole MW1 and at a depth of 18 feet in boreholes in MW2 and MW3 did not show any detectable concentrations of TPH-G or TPH-D. Groundwater was encountered in the

boreholes at depths of approximately 15 to 16 feet below grade. A groundwater monitoring and sampling program was initiated at the site on February 20, 1990.

It is P&D's understanding that during fuel tank replacement activities in August, 1992 soil surrounding the tank pit was removed and disposed of offsite. An extraction well, designated as EW1, was constructed in one corner of the new tank pit by K&B Environmental at the time of installation of the new tanks. The locations of the former UST pit and dispensers, and the new UST pit and dispensers, and extraction well EW1 are shown on Figure 2.

Based on discussions with Xtra Oil Company, it is P&D's understanding that both UST pits were excavated to a depth of approximately 13 feet below the ground surface. It is also P&D's understanding that the former UST pit was filled with crushed rock to a depth of approximately 8 feet below the ground surface, and that the remaining UST pit void was filled with clean, clayey backfill material to near the ground surface. It is also P&D's understanding that the two UST pits were excavated in a manner so as to allow flow of water from one UST pit to the other UST pit.

On February 7, 1996 well MW2 was destroyed for the purpose of widening Redwood Road. The destruction was overseen by ACC Environmental Consultants.

On August 15, 1997 P&D personnel oversaw the installation of one groundwater monitoring well, designated as MW4 at the subject site. The location of the monitoring well is shown on the attached Site Plan, Figure 2. This work was performed in accordance with P&D's work plan 0014.W4 dated June 27, 1997. The work plan was approved by the Alameda County Department of Environmental Health (ACDEH) in a telephone conversation with Mr. Scott Seery on August 14, 1997. During the conversation, Mr. Seery indicated that he would record his approval of the work plan in the county file for the site.

On June 10, 1998 P&D personnel oversaw the installation of two observation wells designated as OW1 and OW2 in the sanitary sewer trench that is located parallel to and beneath Redwood Road and approximately 60 feet east of the site. The observation wells were installed to total depths of 7.5 feet below the ground surface. The locations of the observation wells relative to the site are shown in Figure 3. Documentation of the observation well installation is provided in P&D's Piezometer Installation Report dated November 3, 2000 (document 0014.R37).

A summary of offsite investigation reports documenting groundwater grab sample collection is provided in P&D's Offsite Groundwater Quality Investigation Report (P31-P44) dated August 23, 2001 (document 0014.R41).

Historical water levels at the site in wells MW1 and MW4 are presented in Table 1. A graph of historical depth to water measurements in well MW1 is provided in Figure 4. The historical water level in well MW3 has seasonally averaged approximately 8 feet below the ground surface. The total casing length of extraction well EW1 is approximately 13.5 feet.

In Section 4 of a letter dated July 24, 2003 from the ACDEH, concerns related to overfill events associated with the USTs is discussed. Based on conversations with Xtra Oil Company, the fuel delivery company would periodically fill the UST to 95 percent capacity, causing an overfill event to be recorded on the tank monitoring system. Overfill events are recorded when the fluid level in an UST exceeds 90 percent of the UST capacity. In several instances multiple overfill events are recorded during the same fuel delivery event because the fuel delivery truck driver would wait for the fluid level to drop in the UST as a result of customer purchase of fuel, followed by the delivery truck driver delivering additional fuel and causing additional high level events in an effort to completely empty the delivery truck. These events did not result fuel being released from the USTs, and do not require that additional unauthorized release reports be filed for this site.

In Section 4 of a letter dated July 24, 2003 from the ACDEH, concerns related to the measured thickness of free product in well MW4 is discussed. Review of Table 1 shows that the historic free product thickness in well MW4 has been measured with a maximum thickness of approximately 4.4 feet. However, this measured thickness of free product was during a time when a passive free product recovery device was not properly placed in the well. The free product layer thickness is substantially diminished when the recovery device is properly placed in the well. The thickness of separate phase layers in the materials surrounding well MW4 have been interpreted to not be represented by the accumulation of free product and associated free product layer thickness measurements in well MW4. A copy of the free product recovery log requested in the July 24, 2003 letter from the ACDEH is attached as Table 2.

Review of Figure 2 shows that well MW4 is located adjacent to a former dispenser island. Based on discussions with Xtra Oil Company, the former dispenser island located immediately north of well MW4 was formerly used as a diesel fuel dispenser. Laboratory analysis of the petroleum hydrocarbon layer in the well has shown that the liquid is predominantly diesel fuel. The suspected origin of the free product in well MW4 is historic leaks from the historic diesel dispenser adjacent to well MW4.

Table 3 of this ISARP shows monitoring results for observation wells OW1 and OW2 in Redwood Road. Review of Table 3 shows that separate phase hydrocarbons have been detected in well OW2.

SCOPE OF WORK

P&D proposes to use existing extraction well EW1 in the existing UST pit to dewater the existing pit and the previous UST pit. Wells MW1, MW3 and MW4 will be monitored to evaluate the effectiveness of water table drawdown at the site for plume control and associated free product recovery. P&D will perform the following tasks.

- Regulatory agency coordination to obtain a permit to discharge to the sanitary sewer
- Sample the water in the UST pit and arrange for laboratory analysis of the sample to characterize water that will be discharged for the sanitary sewer permit

- application.
- Install a groundwater extraction system consisting of a pump in well EW1, associated piping for discharge of water from the well, and a carbon filtration system.
 - Following receipt of permit approval to discharge to the sanitary sewer, dewater the pit and monitor water levels in the wells at the site.
 - Prepare a report documenting the findings of the dewatering activities.

Each of these is discussed below in detail.

REGULATORY AGENCY COORDINATION

Following approval of this work plan, the local sanitary sewer service provider will be contacted to arrange for discharge of water pumped from the pit to the sanitary sewer.

UST PIT GROUNDWATER SAMPLE COLLECTION

One groundwater sample will be collected from well EW1 for sample analysis to characterize water that will be discharged to the sanitary sewer. The sample collection and laboratory analysis will be performed in accordance with discharge permit application requirements. Following receipt of the sample results the permit application for discharge to the sanitary sewer will be submitted.

GROUNDWATER EXTRACTION SYSTEM INSTALLATION

The groundwater extraction system will consist of a pump in well EW1, piping to contain water discharged from the well, and a carbon filtration system that will satisfy sanitary sewer discharge permit requirements. The carbon filtration system will be located at the western edge of the property in the vicinity of the UST pit. The piping will be contained in a trench from well EW1 to the western edge of the property. At the western edge of the property the pipes will remain above ground and at the property perimeter until the water is discharged to the sanitary sewer at the southern edge of the property, immediately east of the site building.

PIT DEWATERING AND WATER LEVEL MONITORING

Following receipt of the permit to discharge to the sanitary sewer, the UST pits will be dewatered. Water levels will be monitored in the extraction well and surrounding wells MW1, MW3 and MW4 on a daily basis to evaluate the effects of the dewatering system. A flow meter will be used to quantify the volume of water discharged from the system. Water levels will be monitored using an electric water level indicator. Free product layer thickness will be monitored in each well using a steel tape with water-finding and product-finding paste.

Based on the historical average depth to water in well MW1 of approximately eight feet, and the

approximate depth of 13.5 feet for extraction well EW1, approximately five feet of drawdown is anticipated in the UST pit. Based on the clayey nature of the subsurface materials at the site, P&D anticipates that the effects of dewatering at the pit will not be immediately observed in the surrounding wells.

REPORT PREPARATION

Following pit dewatering and evaluation of water levels in the UST pit and onsite groundwater monitoring wells, a report will be prepared documenting the findings of the dewatering activities, including an evaluation of the effectiveness of the dewatering and recommendations. The report will contain documentation of field activities associated with the construction of the groundwater extraction system and filtration system, sampling of well EW1, copies of the laboratory analytical reports and chain of custody documentation; a tabulated summary of the laboratory analytical results and the water level monitoring results; a discussion of the results and recommendations based upon the results; and the signature and stamp of an appropriately registered professional.

SCHEDULE

The following schedule addresses elements identified in this work plan.

<u>Activity</u>	<u>Calendar Days</u>
Work plan submittal to ACDEH	Day 0
Work plan approval by ACDEH	Day 30
Collect water sample for permit app	Day 35
Receive sample results	Day 43
Submit sanitary sewer discharge permit app	Day 44
Schedule trenching contractor for pipes	Day 49
Schedule carbon delivery	Day 49
Install piping for water discharge	Day 59
Install carbon filtration system	Day 59
Sanitary sewer discharge permit approval	Day 60
Begin pit dewatering and well monitoring	Day 63
Report delivered to ACDEH	Day 93

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Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental

Paul H. King
Professional Geologist #5901
Expires 12/31/05

Attachments: Tables 1, 2, & 3
Site Location Map - Figure 1
Site Plan - Figure 2
Site Vicinity Map – Figure 3
Graph of Historical Depth to Water Measurements in Well MW1 – Figure 4

cc: Mr. Keith Simas, Xtra Oil Company

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TABLE 1
WELL MONITORING DATA

Well No.	Date Monitored	Top of Casing Elev. (ft.)	Depth to Water (ft.)	Water Table Elev. (ft.)
MW1	04/13/05	177.37*	6.90	170.47
	01/31/05		7.20	170.17
	10/15/04		8.52	168.85
	07/13/04		8.33	169.04
	04/06/04		7.93	169.44
	12/18/03		7.65	169.72
	09/18/03		8.15	169.22
	06/19/03		8.13	169.24
	03/18/03		7.77	169.60
	12/21/02		5.74	171.63
	9/10/02		8.28	169.09
	3/30/02		7.43	169.94
	12/22/01		6.92	170.45
	9/23/01		8.53	168.84
	6/22/01		8.30	169.07
	4/22/01		7.77	169.60
	12/14/00		8.49	168.88
	9/18/00		8.56	168.81
	6/08/00		7.97	169.40
	3/09/00		6.68	170.69
	12/09/99		8.15	169.22
	8/31/99		8.36	169.01
	4/29/99		7.68	169.69

NOTES:

* = Surveyed on August 20, 1997

TABLE 1
 WELL MONITORING DATA

Well No.	Date Monitored	Top of Casing Elev. (ft.)	Depth to Water (ft.)	Water Table Elev. (ft.)
MW1	1/29/99	177.37*	6.99	170.38
(Continued)	4/26/98		7.50	169.87
	1/24/98		6.61	170.76
	11/06/97		8.79	168.58
	8/26/97	177.37*	8.51	168.86
	7/24/97		8.71	168.72
	4/25/97		7.98	169.45
	1/20/97		7.12	170.31
	7/26/96		8.39	169.04
	7/09/96		8.16	169.27
	4/23/96		7.47	169.96
	2/07/96		6.09	171.34
	1/29/96		6.17	171.26
	10/26/95		8.45	168.98
	7/28/95		8.27	169.16
	5/02/95		6.96	170.47
	2/23/95		7.72	169.71
	11/18/94		7.14	170.29
	8/22/94		8.67	168.76
	5/19/94	177.43**	8.05	169.38
	2/28/94		7.44	169.99
	11/24/93		8.74	168.69
	8/30/93		8.78	168.65
	5/18/93		8.12	169.31
	2/23/93		7.34	170.09
	11/13/92	200.00***	9.13	190.87
	5/29/92	175.73	8.59	167.14
	1/14/92		8.57	167.16
	12/23/91		9.65	166.08
	11/25/91		9.41	166.32
	10/10/91		9.70	166.03
	9/17/91		9.50	166.23
	8/19/91		9.31	166.42

NOTES:

* = Surveyed on August 20, 1997

** = Surveyed on March 24, 1993

*** = Surveyed on December 5, 1992

TABLE 1
 WELL MONITORING DATA

Well No.	Date Monitored	Top of Casing Elev. (ft.)	Depth to Water (ft.)	Water Table Elev. (ft.)
MW4	04/13/05	176.35*	6.78 (0.01)#	169.58
	01/31/05		7.34 (0.19)#	169.15
	10/15/04		8.73 (0.15)#	167.73
	07/13/04		8.44 (0.03)#	167.93
	04/06/04		9.58 (2.83)#	168.89
	02/11/04		9.43 (2.70)#	168.95
	12/18/03		9.75 (1.51)#	167.73
	9/18/03		9.13 (1.80)#	168.57
	6/19/03		8.56 (0.31)#	168.02
	3/18/03		7.49 (0.06)#	168.91
	12/21/02		8.58 (4.39)#	171.06
	9/10/02		9.09 (1.60)#	168.46
	3/30/02		9.86 (2.49)#	168.36
	12/22/01		7.79 (1.75)#	169.87
	9/23/01		8.97 (1.17)#	168.26
	6/22/01		7.79	168.56
	4/22/01		9.07 (2.20)#	168.93
	12/14/00		8.87 (0.72)#	168.02
	9/18/00		8.50 (0.45)#	168.19
	6/08/00		7.34	169.01
	3/09/00		6.61 (0.46)#	170.08
	12/09/99		8.80	167.55
	8/31/99		8.28	168.07
	4/29/99		7.14	169.21
	1/29/99		6.68	169.67
	4/26/98		6.87	169.48
	1/24/98		6.61	169.74
	11/06/97		9.16	167.19
	8/26/97		8.92	167.43
	8/20/97		7.66 (prior to development)	

NOTES:

* = Surveyed on August 20, 1997

= Indicates free product thickness in feet. The water table elevation has been corrected for the presence of free product by assuming a free product specific gravity of 0.75.

TABLE 3
 WELL MONITORING DATA

Well No.	Date Monitored	Top of Casing Elev. (ft.)	Depth to Water (ft.)	Total Well Depth (ft.)
OW1	01/31/05	Not Surveyed	6.99	7.44
	01/31/05		7.03	7.44
	10/15/04		7.19 (0.08)#	7.44
	07/14/04		7.02	7.44
	04/06/04		7.01	7.44
	02/11/04		7.01	7.44
	10/06/03		7.07 (0.01)#	7.44
	11/02/00		7.12,+	
	12/09/99		7.27	
	01/29/99		7.12	
OW2	04/13/05	Not Surveyed	7.06	7.35
	01/31/05		7.29	7.37
	10/15/04		No Water or Product	7.35
	07/14/04		No Water or Product	7.35
	04/06/04		7.27	7.33
	02/11/04		7.19	7.33
	10/06/03		7.29	7.34
	11/02/00		7.19	
	12/09/99		7.17	
	01/29/99		7.19	

NOTES:

= Indicates free product thickness in feet.

+ = Petroleum hydrocarbon odor reported on probe for water level indicator.