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Delta
Environmental
Consultants, Inc.

3164 Gold Camp Drive
Suite 200
Rancho Cordova, CA 95670-6021
U.S.A.
916/638-2085
FAX: 916/638-8385

February 20, 2003

Alameda County
FEB 26 2003
Environmental Health

Mr. Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 200
Alameda, California 94502

Subject: *Dual-Phase Extraction Pilot Testing Results Report*
Chevron Service Station No. 9-0260
21995 Foothill Boulevard
Hayward, California
Delta Project No. DG90-260

Dear Mr. Seery:

Delta Environmental Consultants, Inc. (Delta) was authorized by Chevron Product Company (Chevron) to perform high vacuum dual-phase extraction (DPE) pilot testing at the subject site (Figure 1 and Figure 2). The purpose of pilot testing was to assess whether saturated subsurface soils at the site could be effectively dewatered to expose the hydrocarbon "smear zone" for soil vapor extraction. The data collected from this event will be used to assess whether DPE is a viable remedial option.

Installation of Temporary Wells

Prior to pilot testing, two temporary wells (TMP-1 and TMP-2) were installed at the site on December 6, 2002. The wells are illustrated on Figure 2. The temporary wells were constructed with 3/4-inch diameter Schedule 40 polyvinyl chloride (PVC), with a 20-foot section of 0.020-inch slotted screen. The screens were set at the base of each boring, approximately 25 feet below surface grade (bsg). The temporary wells were surged to improve the influx of ground water through the sand pack surrounding the screen and to remove any fine-grain material that may have accumulated during well construction.

Continuous core soil samples were collected using a Macro-Core Soil Sampler from grade to approximately 25 feet bsg. The samples were field screened approximately every two feet for hydrocarbons (headspace analysis) using a photo ionization detector (PID) to assess the thickness of the remaining smear zone. Due to the headspace analysis performed on the well soil samples and the small amount of soil generated, samples were not submitted for laboratory analysis. The well construction details and soil boring logs with PID readings are included in Enclosure A.

Based on the headspace analysis of the soil borings, it is estimated that the smear zone ranges from 15.0 to 22.5 feet bgs in the area of TMP-1 and 17.5 to 22.5 in the area of TMP-2. This data indicates that the thickness of the smear zone ranges from 5 to 7 feet in the areas of the temporary wells.

DPE Pilot Test Equipment and Process Description

In December 2002, separate DPE pilot tests were conducted on monitoring wells MW-4, MW-11 and MW-12. Groundwater extraction was accomplished by using a 1/3 horsepower electric submersible pump that was set at the bottom of the test well to ensure maximum drawdown capability. Extracted groundwater was discharged into a 21,000-gallon holding tank where it was then profiled and hauled off for disposal by a Chevron approved vacuum truck service. Once maximum drawdown was sustained in the test well, vacuums were applied to the test well by using a Solleco trailer-mounted multi-phase extraction (MPE) unit. The MPE unit consisted of a trailer-mounted 350-scfm thermal oxidizer with a 25-horsepower liquid ring pump. Extracted soil vapors were treated by the thermal oxidizer on the MPE unit and then discharged to the atmosphere. In an effort to reduce head-loss in the process piping between the test well and the MPE unit, the connections were completed using a modified four-inch diameter PVC wellhead assembly with a wye (not a 90 degree elbow) at the test well which was then reduced to a 2-inch diameter smooth bore flex hose back to the MPE unit. Figure 3 presents the treatment process and the relationship between various components of the system.

Air Discharge & Water Disposal Notifications and Approvals

Before the pilot test was initiated, all pertinent notifications and approvals were obtained. The Bay Area Air Quality Management District verbally approved the use of the Solleco thermal oxidizer unit to extract and abate the soil vapors from the pilot tests after they received Delta's pilot testing notification letter dated December 5, 2003. The extracted groundwater that was temporarily stored on site in a 21,000-gallon tank was profiled and subsequently approved for pickup and disposal by a Chevron contracted vacuum truck service.

DPE Pilot Test Procedures

Prior to the start of the pilot tests, depth to water measurements and static vacuum readings were taken from temporary wells TMP-1 and TMP-2, monitoring wells MW-4, MW-5, MW-11 and MW-12, and vapor wells DVE-9 through DVE-13. During the pilot tests, field data were collected and recorded periodically from the MPE unit, observation wells and test wells as mentioned above. Well caps fitted with a magnehelic vacuum gauge were placed on observation wells to collect vacuum influence data during the pilot test. During pilot testing, the following data was measured and recorded periodically on field data sheets:

- Total system influent airflow rate after blower with an anemometer and pitot tube (in standard cubic feet per minute, scfm).
- Total influent system vacuum with a fixed gauge (in inches of mercury, "Hg).
- Total system groundwater extraction flow rates by totalizer and bucket testing (in gallons per minute, gpm).
- Influent hydrocarbon vapor concentrations by flame ionization detector (FID) and/or PID (in ppmv).
- Vacuum readings from the well casing with a fixed gauge (in inches of "Hg).
- Vacuum readings from selected monitoring wells (in inches of water column, "H_2O).
- Depth to water (DTW) in selected wells with slope indicator and/or water product interface probe (in feet).

To verify PID and/or FID field readings during the pilot test, influent vapor samples were collected at various times in tedlar bags for submittal to the laboratory and analyzed for benzene, toluene, ethyl-benzene, total xylenes (BTEX), methyl tertiary butyl ether (MTBE) by EPA Method 8020 and total petroleum hydrocarbons (TPH) as gasoline by EPA method 8015 Modified. A summary of the air analytical results from the pilot test is tabulated on Table 1. The analytical reports and chain of custody record are included in Enclosure B.

DPE Pilot Testing Results for MW-4

On December 10, 2002, DPE pilot testing was initiated on monitoring well MW-4. Monitoring well MW-4 is a four-inch diameter well screened from 6 to 22 feet bsg. This well was originally selected as the main test well since it was the deepest well on site and it had a history of relatively high dissolved petroleum hydrocarbon groundwater concentrations. Initial pilot testing results on monitoring well MW-4 revealed excessive air flow rates of approximately 260 scfm with a very low test well vacuum (<20 inches of water). In addition, FID concentrations were measured at only approximately 30 ppmv. Due to the high flow rates, low vacuum, and low hydrocarbon vapor concentrations, it was assumed that the test well was "short-circuiting" to the atmosphere due to a poor surface seal. In an effort to improve the surface seal around the well, soil was over excavated around the wellhead and 10 sacks of concrete were placed around it and allowed to set-up over night. However, after increasing the concrete seal around MW-4, no changes were observed during the second pilot test attempt thus, the test was halted. It was later concluded that the over-excavation of the former tank basin more than likely had contributed to the short-circuiting due to its proximity to the well. As a result, pilot testing was moved to MW-11 and later to MW-12 to provide useful data to further evaluate the effectiveness of DPE.

DPE Pilot Testing Results for MW-11

On December 10 and December 11, 2002, a 14-hour DPE pilot test was performed on MW-11. Monitoring well MW-11 is a four-inch diameter well screened from 10 to 20 feet bsg. Monitoring well MW-11 was selected as the next well to test due to its depth and location with respect to the temporary monitoring wells and other wells that could be used to monitor drawdown and vacuum influence. Throughout the pilot test, vacuum readings and flow measurements were taken from the MPE system every two hours. Vacuum readings and depth to water measurements were also taken every two hours throughout the pilot test in monitoring wells MW-4, MW-11, and MW-12, vapor wells DVE-9 through DVE-11 and temporary well TMP-2. Groundwater was extracted from MW-11 at an average flow rate of 2.25 gallons per minute. Vacuum and drawdown influence was observed in local monitoring wells and are discussed later in detail. Table 2 presents the summary of field data collected during the pilot test. Copies of the MPE system field data sheets are presented in Enclosure C. Results from the DPE pilot test on MW-11 are summarized below:

DPE PILOT TEST RESULTS SUMMARY (MW-11)

Total Time Operated (minutes)	Total Water Extracted (gallons)	Average Water Extraction Flow rate (gpm)	Maximum Decrease in Depth to Water in Test Well (feet)	Average Vapor Flow rate (scfm)	Average Field Hydrocarbon Vapor Concentration Reading by PID (ppmv)	Total TPH Vapor Extraction (lbs)	TPH Vapor Extraction Rates (lbs/day)
834	2,674	2.25	1.4	171.3	52.6	1.7	2.88

During the pilot test on MW-11, the test well vacuum was initially measured at 14 inches of Hg and steadily decreased to 11 inches of Hg at the end of the test. The average vapor flow rate was 171.3 scfm. Vapor concentrations remained relatively constant during the test with an average value of 52.6 ppmv as measured with a PID. Based on laboratory analytical results, beginning and ending TPHg concentrations were only 25 and 16 ppmv, respectively (Table 2). Vacuum influence was observed in wells DVE-10, DVE-11, TMP-2, MW-12 and MW-4 which are located approximately 22.1, 20.1, 37.8, 44.9 and 47.8 feet, respectively, from MW-11. Average readings collected during this phase of the pilot test are tabulated below:

System Vapor Readings			**MW-11 (Test Well)**	**DVE-10**	**DVE-11**	**TMP-2**	**MW-12**
Pilot Test Well	Average Vapor Concentration (ppmv)	System Flow rate (scfm)	Average Vacuum ("Hg)	Average Vacuum ("H_2O)	Average Vacuum ("H_2O)	Average Vacuum ("H_2O)	Average Vacuum ("H_2O)
MW-11	52.6	171.25	12.8	0.103	0.5	0.220	0.01

Vacuum Radius of Influence from MW-11

Based on EPA guidance documentation, as a rule of thumb, a vacuum of 0.1" H_2O is used as the minimum vacuum level required for observed radial influence. An observed vacuum of 0.10" H_2O was noted at 22.1 feet in DVE-10. However, since the lithology at this site is considered to be heterogeneous, vacuum radius of influence can only be used as a qualitative estimate of an effective radius of influence for well spacing in an MPE system design. Since the main purpose of MPE is to dewater and expose impacted soils to vapor extraction, drawdown in surrounding observation wells becomes the most crucial piece of data to be used in an MPE system design.

Drawdown in Observation Wells from Testing on MW-11

At the conclusion of the test on MW-11, depth to water measurements in the surrounding observation wells revealed that drawdown ranged from a maximum of 0.41 feet in monitoring well MW-12 (44.9 feet from MW-11) to a minimum of 0.22 feet in temporary well TMP-2 (37.8 feet from MW-11). Table 2 presents the drawdown or depth to water data in the surrounding observation wells. Drawdown data was graphed to assess whether steady state conditions had been achieved by the end of the pilot test. The drawdown graph for temporary well TMP-2 did not behave as expected which should have followed a typical logarithmic pattern. Instead the well showed a sporadic pattern, which may have

been caused by previous testing on MW-4. Although, observation wells MW-4 and MW-12 did show somewhat of a typical logarithmic pattern. The graphs indicate that steady state conditions had not yet occurred by the end of the test. However, this was understandable since the test was only operated for approximately 14 hours due to time constraints and the extremely low hydrocarbon concentrations measured in the well vapor stream. In addition, the well was producing an excessive amount of sand that was clogging up the groundwater flow totalizer, which limited the actual maximum drawdown that could have been achieved in the well. The data show that drawdown can be achieved in the vicinity of MW-11 with minimal groundwater production (~2 gpm). Longer testing of MW-11 would have most likely continued to drawdown water in the vicinity of MW-11, but more than likely would not have significantly increased the hydrocarbon mass removal rates. Enclosure D contains the drawdown graphs.

Hydrocarbon Mass Removal Rates from MW-11

Based on field PID measurements, hydrocarbon mass removal rates were relatively low, averaging only 2.88 pounds per day. Laboratory analytical results also indicated low hydrocarbon mass removal rates by reporting low hydrocarbon vapor concentrations (Table1). Given the depth of MW-11 in relation to the groundwater levels and the relatively high vapor flow rates encountered, it is believed that the mass removal rates from this well would not have significantly increased even if the drawdown was increased by running the test longer.

DPE Pilot Testing Results for MW-12

On December 11 and December 12, 2002 a 16-hour DPE pilot test was performed on monitoring well MW-12. Monitoring well MW-12 is a four-inch diameter well screened from 10 to 20 feet bsg. Monitoring well MW-12 was selected as the next well to test on due to its depth and location with respect to other wells that could be used to monitor drawdown and vacuum influence. It was also selected since it had a history of relatively high dissolved petroleum hydrocarbon groundwater concentrations. Throughout the pilot test vacuum readings and flow measurements were taken from the MPE system every two hours. Vacuum readings and depth to water measurements were also taken every two hours throughout the pilot test in monitoring wells MW-11, MW-12, and MW-5, and vapor wells DVE-9, DVE-11, DVE-12 and DVE-13. Groundwater was extracted from MW-12 at an average flow rate of 1.82 gallons per minute. Vacuum and drawdown influence was observed in local monitoring wells and are discussed later in detail. Table 2 presents the summary of field data collected during the pilot test. Copies of the MPE system field data sheets are presented in Enclosure C. Results from the DPE pilot test on MW-12 are summarized below:

DPE PILOT TEST RESULTS SUMMARY (MW-12)

Total Time Operated (minutes)	Total Water Extracted (gallons)	Average Water Extraction Flow rate (gpm)	Maximum Decrease in Depth to Water in Test Well (feet)	Average Vapor Flow rate (scfm)	Average Vapor Concentration (ppmv)	Total TPH Vapor Extraction (lbs)	TPH Vapor Extraction Rate (lbs/day)
954	1,732	1.82	4.1	33.1	1,200	7.8	11.8

During the pilot test on MW-12, the test well vacuum was consistently measured at 25 inches of Hg throughout the majority of the test. Vacuum gauge readings on the MPE unit showed very little difference from the wellhead vacuum gauge readings. This signified that there was very little head-loss in the process piping that connected MW-12 to the MPE unit. The average vapor flow rate was 33.1 scfm. Due to the higher hydrocarbon vapor concentrations encountered from this well, and the PID not operating properly, an FID was brought to the site and used to monitor hydrocarbon concentrations in the soil vapor stream. Using methane-filtering methods, the hydrocarbon vapor concentrations as measured by the FID initially were 1,900 ppmv and then gradually decreased to 650 ppmv two hours before the end of the test, but then jumped up to 950 ppmv at the very end. The average FID hydrocarbon vapor concentration value was 1,199 ppmv. Based on laboratory analytical results from a vapor sample collected near the end of the test, the TPHg concentration was reported at 700 ppmv (Table 2). This matched up relatively close with the field FID measurements. Vacuum influence was observed in wells DVE-11, DVE-12, DVE-13, MW-5, DVE-9 and MW-11, which are located approximately 25.8, 28.1, 34.5, 38.7, 43.1 and 45 feet, respectively from MW-12. Average readings collected during this phase of the pilot test are tabulated below:

System Vapor Readings			**MW-12**	**DVE-11**	**DVE-12**	**DVE-13**	**MW-5**
Pilot Test Well	Average Vapor Concentration (ppmv)	System Flow rate (scfm)	Average Vacuum ("Hg)	Average Vacuum ("H_2O)	Average Vacuum ("H_2O)	Average Vacuum ("H_2O)	Average Vacuum ("H_2O)
MW-12	1,200	33.1	24.9	4.14	0.23	3.3	0.13

Vacuum Radius of Influence from MW-12

Based on EPA guidance documentation, as a rule of thumb, a vacuum of 0.1" H_2O is used as the minimum vacuum level required for observed radial influence. An observed vacuum of 0.10" H_2O was noted at 43.1 feet in DVE-9. However, as explained previously, since the lithology at this site is considered to be heterogeneous, vacuum radius of influence can only be used as a qualitative estimate of an effective radius of influence for well spacing in an MPE system design. Since the main purpose of MPE is to dewater and expose impacted soils to vapor extraction, drawdown in surrounding observation wells becomes the most crucial piece of data to be used in an MPE system design.

Drawdown in Observation Wells from Testing on MW-12

At the conclusion of the test on MW-12, drawdown in the test well was measured at 4.1 feet. Depth to water measurements in the surrounding observation wells revealed that drawdown ranged from a maximum of 1.24 feet in monitoring well MW-5 (38.7 feet from MW-12) to a minimum of 0.85 feet in MW-11 (45.0 feet from MW-12). Table 2 presents the drawdown or depth to water measurements in the surrounding observation wells. Drawdown data was graphed to assess whether steady state conditions had been achieved by the end of the pilot test. The drawdown graphs for observation wells MW-5 and MW-11 showed a typical logarithmic pattern, and drawdown trends approaching steady-state conditions near the end of the test. Vapor well DVE–9 also showed a typical logarithmic pattern, but since the well went dry at around 18 feet bsg, there was no way to determine whether drawdown had reached steady state conditions in this well at the end of the test. However, based on the drawdown data from MW-5 and MW-11, the data indicate that DPE is feasible in the vicinity of MW-12. Enclosure D contains the drawdown graphs.

Hydrocarbon Mass Removal Rates from MW-12

Based on FID measurements, hydrocarbon mass removal rates were low, averaging only 11.8 pounds per day. When combined with the low flow rates, laboratory analytical results verified low hydrocarbon mass removal rates (Table 1).

DPE Pilot Test Conclusions

The pilot testing data presented above suggest that DPE, if applied correctly, can continue to remediate the remaining hydrocarbon impacted soils and groundwater at the site. However, initial hydrocarbon removal rates were low and decreased by 50 percent in well MW-12 after only 8 hours of operation. This decrease indicates that the wells efficiency may be limited. The data show that the smear zone soils can be dewatered to a certain degree using some of the existing monitoring wells as extraction points without producing an excessive amount of groundwater. Even though some of the wells that were tested did not produce conclusive results for DPE due to some form of short-circuiting, these problems may be overcome by simply installing new wells or completing old wells to a deeper depth (~30 feet bsg) with deeper screen intervals (~15 to ~30 feet bsg) in certain areas of the site. These wells would more than likely produce slightly more water than the current test wells at the site.

Remarks/Signatures

The interpretations contained in this report represent our professional opinions and are based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in the accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

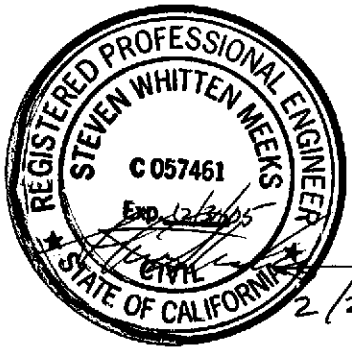
If you have any questions concerning this project, please contact Steven Meeks at (916) 536-2613.

DELTA ENVIRONMENTAL CONSULTANTS, INC.

for

Trevor L. Atkinson, P.E.
Project Engineer

Steven W. Meeks, P.E.
Senior Engineer
California Registered Civil Engineer No. C057461



2/20/03

TLA (LRP003.9-0260 PILOT TESTING RESULTS REPORT)

cc: Ms. Karen Streich – Chevron Products Company
Mr. Hugh Murphy – City of Hayward Fire Department – Hazmat Division
Mr. Tom Peargin – ChevronTexaco Energy Research Company
Mr. Scott MacLeod – Cambria Environmental
Mr. James Brownell – Delta Environmental Consultants, Inc.

TABLE 1

VAPOR ANALYTICAL RESULTS

Former Chevron Station No. 9-0260
21995 Foothill Boulevard
Hayward, California

Sample ID	Sample Date	Benzene (ppmv)	Toluene (ppmv)	Ethyl-benzene (ppmv)	Total Xylenes (ppmv)	MTBE (ppmv)	TPH (ppmv)
MW-11A	12/10/02	0.38	0.037	<0.012	<0.012	0.57	25
MW-11B	12/11/02	0.28	0.015	<0.012	<0.012	0.39	16
MW-12	12/11/02	12	3.5	1.1	2.2	15	700

TPH = Total petroleum hydrocarbons.
MTBE = Methyl tertiary butyl ether.
ppmv = parts per million by volume.

TABLE 2

DUAL-PHASE EXTRACTION SYSTEM FIELD DATA

Former Chevron Station No. 9-0260
21995 Foothill Boulevard
Hayward, California

								Distance		Distance		Distance		Distance		Distance		Distance	
							Extraction Well	44.9 Feet		47.8 Feet		35.1 Feet		37.8 Feet		22.1 Feet		20.1 Feet	
		System Readings					MW-11	MW-12		MW-4		DVE-9		TMP-2		DVE-10		DVE-11	
Date	Time	Total System Vacuum ("Hg)	Total System FID (ppmv)	System Flowrate (scfm)	Water Flow rate (gpm)	Total Discharge (gallons)	Depth to Water (Feet)	Vacuum Reading ("Hg)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)
12/10/02	14:40				2.25	0	15.40													
12/10/02	20:36	18	55.4	166	2.25	801	16.49	14.00	15.88	0.01	16.55	0.05	-	0.00	15.50	0.005	-	0.10	-	0.5
12/10/02	22:15	17	52.8	168	1.75	974	16.39	14.00	15.60	0.01	16.37	0.05	-	0.00	15.60	0.005	-	0.10	-	0.5
12/11/02	0:32	17	54.2	168	1.75	1,214	16.82	13.00	16.20	0.01	16.50	0.05	-	0.00	15.40	0.005	-	0.10	-	0.5
12/11/02	2:36	17	55.6	166	2.68	1,546	16.37	13.00	16.20	0.01	16.60	0.05	-	0.00	15.60	0.005	-	0.10	-	0.5
12/11/02	4:40	17	53.7	167	2.42	1,846	16.65	13.00	16.20	0.01	16.70	0.05	-	0.00	15.50	0.005	-	0.10	-	0.5
12/11/02	6:30	17	53.6	165	2.65	2,138	16.42	13.00	16.30	0.01	16.75	0.05	-	0.00	15.30	0.005	-	0.10	-	0.5
12/11/02	8:30	16	48.0	190	2.70	2,462	16.37	11.00	16.22	0.01	16.72	0.05	-	0.00	15.43	0.005	-	0.10	-	0.5
12/11/02	10:30	17	47.6	180	1.77	2,674	17.30	11.00	16.28	0.01	16.84	0.05	-	0.00	15.72	0.005	-	0.125	-	0.5
Totals	1,190	minutes	52.6	Average:	2.25		1.90	12.8	0.41	0.010	0.290	0.050		0.000	0.220	0.005		0.103		0.500
	834			171.3																

								Distance		Distance		Distance		Distance		Distance		Distance	
							Extraction Well	34.5 Feet		38.7 Feet		28.1 Feet		43.1 Feet		45.0 Feet		25.8 Feet	
		System Readings					MW-12	DVE-13		MW-5		DVE-12		DVE-9		MW-11		DVE-11	
Date	Time	Total System Vacuum ("Hg)	Total System FID (ppmv)	System Flowrate (scfm)	Water Flow rate (gpm)	Total Discharge (gallons)	Depth to Water (Feet)	Vacuum Reading ("Hg)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)	Depth to Water (Feet)	Vacuum Reading ("H_2O)
							14.90													
12/11/02	16:36	25	1,900	26	3.33	0	18.92	25.0	-	4.5	16.20	0.090	13.55	0.19	16.88	0.100	16.87	0.063	-	2.2
12/11/02	18:30	25	1,890	30	2.00	228	19.04	25.0	-	2.0	16.75	0.100	13.55	0.20	17.35	0.100	17.19	0.063	-	3.3
12/11/02	20:30	25	1,900	32	1.82	446	19.00	25.0	-	2.6	17.04	0.095	13.55	0.20	17.58	0.090	17.29	0.063	-	3.3
12/11/02	22:30	25	990	34	1.82	664	19.01	25.0	-	3.0	17.17	0.110	13.55	0.25	17.70	0.175	17.52	0.063	-	4.3
12/12/02	0:30	25	880	34	1.87	889	19.03	25.0	-	3.2	17.21	0.128	13.55	0.25	17.81	0.160	17.58	0.063	-	4.5
12/12/02	2:30	25	860	34	1.82	1,107	19.03	25.0	-	3.3	17.32	0.136	13.55	0.25	DRY	0.160	17.64	0.063	-	4.7
12/12/02	4:30	25	750	36	1.81	1,324	19.01	25.0	-	3.5	17.38	0.149	13.55	0.25	DRY	0.160	17.67	0.063	-	4.8
12/12/02	6:20	25	670	36	1.70	1,511	19.03	25.0	-	3.6	17.40	0.167	13.55	0.25	DRY	0.150	17.71	0.063	-	5.0
12/12/02	8:30	25	950	36	1.70	1,732	19.00	24.5	-	4.0	17.44	0.200	13.55	0.25	DRY	0.200	17.72	0.063	-	5.0
Totals	954	minutes	1,199	Average:	1.82		4.10	24.9		3.3	1.240	0.13	0.000	0.23	1.000	0.14	0.850	0.06		4.11
				33.1																

ppmv = parts per million by volume.
"Hg = inches of Mercury
"H_2O = inches of water collumn

acfm = actual cubic feet per minute
gpm = gallons per minute

GENERAL NOTES:
BASE MAP FROM U.S.G.S.
HAYWARD, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

QUADRANGLE LOCATION

N

0 2000 FT

SCALE 1:24,000

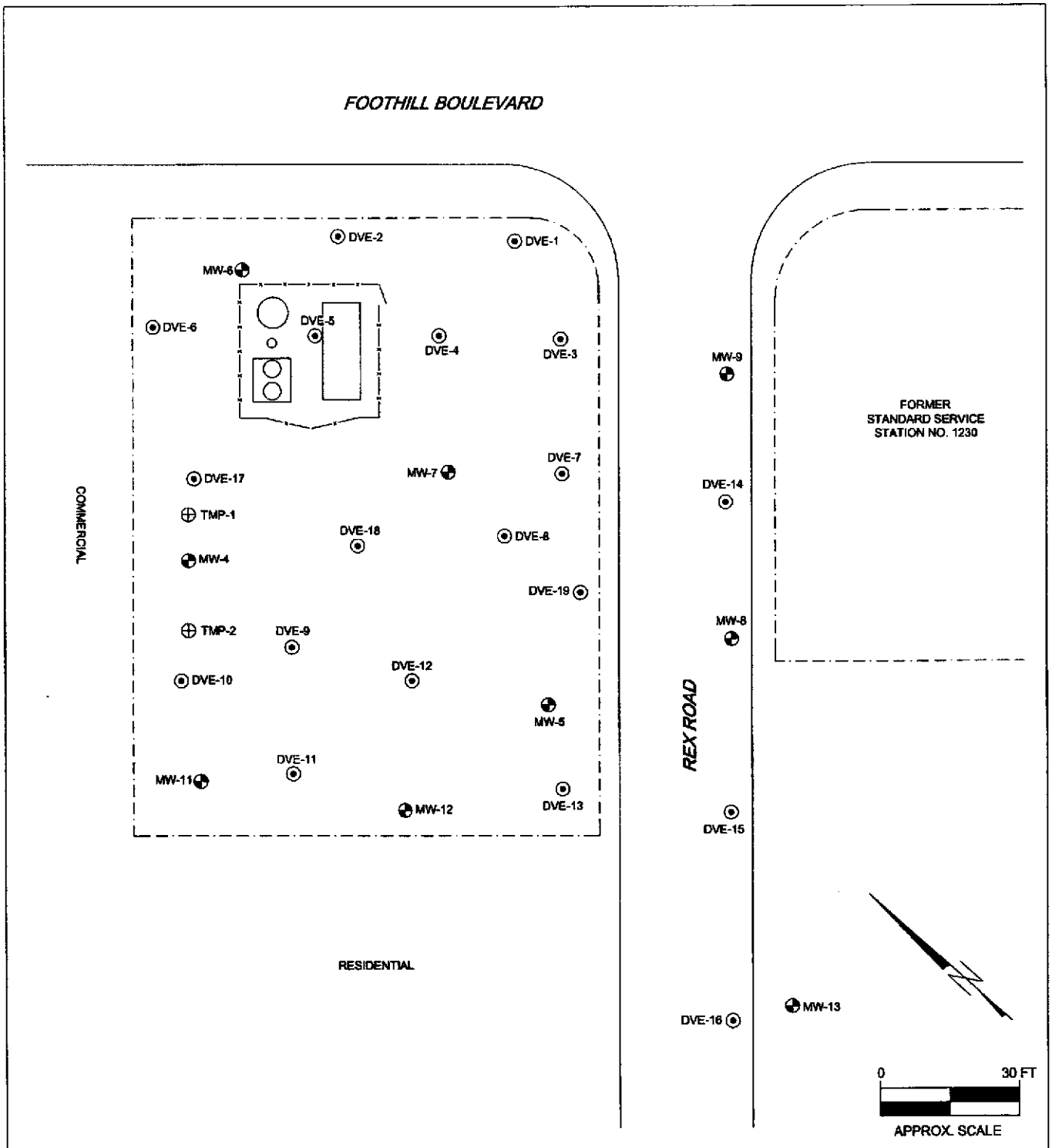
FIGURE 1

SITE LOCATION MAP

FORMER CHEVRON STATION NO. 9-0260
21995 FOOTHILL BOULEVARD
HAYWARD, CA.

PROJECT NO. DG90-260	DRAWN BY M.L. 9/17/02
FILE NO. DG90260A	PREPARED BY W.S.
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.



LEGEND:

- MW-17 MONITORING WELL LOCATION
- DVE-16 DUAL VACUUM EXTRACTION WELL LOCATION
- TMP-1 TEMPORARY MONITORING WELL LOCATION

FIGURE 2

SITE MAP

FORMER CHEVRON STATION NO. 9-0260
21995 FOOTHILL BOULEVARD
HAYWARD, CA.

PROJECT NO. DG90-260	DRAWN BY M.L. 11/6/02
FILE NO. DG90260D	PREPARED BY W.S.
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

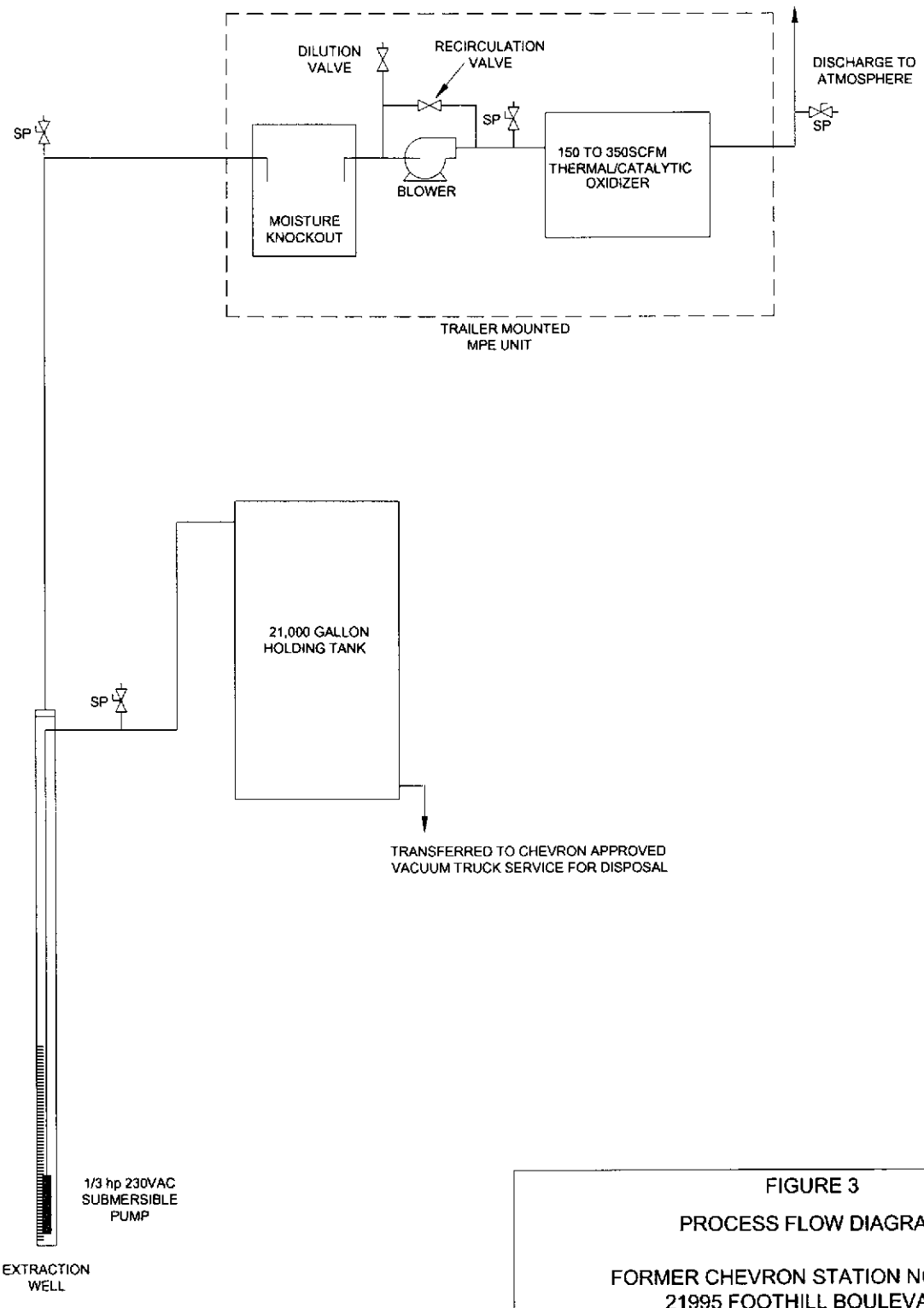


FIGURE 3

PROCESS FLOW DIAGRAM

FORMER CHEVRON STATION NO. 9-0260
21995 FOOTHILL BOULEVARD
HAYWARD, CA.

PROJECT NO. DG90-260	DRAWN BY M.L. 11/6/02
FILE NO. DG90260C	PREPARED BY W.S.
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

Street Address: 21995 Foothill Blvd. (FORMER CHEVRON 9-0460) | 25'

City State: HAYWARD, CA | BG9-0260

TMP-1 Pg 1 of 2

Dates and Times	Logged: WILL SLOWIK	Bore Hole Diameter: 2"
Start: 11/26/02 9:39	Drilling Equipment and Method: GEOPROBE	Diameter, Type and Casing: 3/4" PVC 0.020
Total Depth: 11/26/02 10:25	Sampling Method and Diameter: 2" DIRECT PUSH	Permit #: W02-1076
Completion or backfill: 11/26/02 11:30	Permitting Agency: ALAMEDA CO.	
Drilling Company and Driller: GREGG DRILLING - PAUL		Driller's C-57

Casing Size and Type: 0.75-inch PVC

Annulus Filler: Bent. GROUT

#3 LONESTAR SAND

0.020" SLOT

Depth	Sample ID	Sample Driven (in)	Sample Recovered	Blow Count	PID readings	USCS	Depth	Visual Discription	Comment
1						ML	1	GRASS SILT WITH TRACE CLAY AND COARSE SAND; BROWN; SOFT; NON PLASTIC (ML)	
2							2		
3						CL	3	LEAN CLAY, BROWN TO DARK BROWN; MOD PLASTIC; FRIABLE; MOIST (CL)	
4							4		
5							5		
6						CL	6	LEAN CLAY; BROWN; PLASTIC;	NO HC OR STAIN
7							7	FIRM; DRY (DARK BROWN MOTTLES) (CL)	
8					0		8		
9							9		
10					6		10		
11					0		11		
12						CL	12	LEAN CLAY BROWN TO LT. BRN;	LIGHT COLORED "POWDER-Y" MOTTLES
13							13	FIRM; PLASTIC - MODERATELY; MOIST / DRY (CL)	
14					38		14		
15					192	CL	15	LEAN CLAY III TRACE FINE SAND	NOTICEABLE HC ODOR - NO STAIN
16					242		16	LIGHT BROWN; MOD. PLASTIC;	
17					1000		17	FRIABLE (SOFT) VERY MOIST (CL)	
18							18		
19					971	SW	19	WELL GRADED FINE TO VERY FINE SAND W/ APPRECIABLE CLAY; GRAY; SOFT; VERY MOIST (SW)	STRONG HC ODOR AND STAIN
20					>1300	CL	20	LEAN CLAY, LIGHT BROWN TO GRAY W/ APPRECIABLE FINE TO VERY FINE SANDS; MOD PLASTIC; SOFT SATURATED (CL)	
21					>1000		21		
22					250	SW	22	WELL GRADED FINE TO VERY FINE SAND; GRAY; LOOSE; SATURATED (SW)	

Street Address	Total Depth	Surface Elevation
21995 Foothill Blvd.		

City State	Delta Project	Casing Elevation
Hayward CA		

TMP-1. Pg 2 of 2

Dates and Times	Logger	Bore Hole Diameter
Start	Drilling Equipment and Method	Diameter, Type and Slot Size Casing
Total Depth 11/26/02 10:25	Sampling Method and Diameter	
Completion or backfill	Permitting Agency	Permit #
Drilling Company and Driller		Driller's C-57

Depth	Casing Size and Type	Annulus Filler	Sample ID	Sample Driven (in)	Sample Recovered	Blow Count	PID readings	USCS	Depth	Visual Discription	Comments
	0.020	#3 LONESTAR						CH		FAT CLAY; GRAY; PLASTIC;	NOTICEABLE
23									23	FIRM, MOIST (CH)	HC ODOR AND
							80	SW		WELL GRADED FINE TO MEDIUM	STAINING
24									24	SAND, GRAY (STAINED) LOOSE;	
										SATURATED (SW)	
25									25	~~[illegible]~~ CLAY, GRAY; FIRM;	STRONG
							97	CH		FAT PLASTIC - HIGHLY;	HC ODOR AND
26									26	V. MOIST (CH)	STAIN
27									27	BORING TERMINATED @	
										25' bsg	
28									28		
29									29		
30									30		
31									31		
32									32		
33									33		
34									34		
35									35		
36									36		
37									37		
38									38		
39									39		
40									40		
41									41		
42									42		
43									43		
44									44		

21495 Foothill Blvd. (FORMER CHEVRON 9-0660) 25' 65g

City State: HAYWARD, CA

Delta Project: DG90260

TMP-2 Pg 1 of 2

Dates and Times	Logged: WILL SLOWIK	Bore Hole Diameter: 2"
Start: 11/26/02 08:30	Drilling Equipment and Method: Geoprobe	Diameter, Type and Sk Casing: 0.75" PI
Total Depth: 11/26/02 09:25	Sampling Method and Diameter: 2" DIRECT PUSH	0.020
Completion or backfill: 11/26/02 11:20	Permitting Agency: ALAMEDA CO.	Permit #: W02-1075
Drilling Company and Driller: GREGG DRILLING - PAUL		Driller's C-57

Depth	Casing Size and Type	Annulus Filler	Sample ID	Sample Driven (in)	Sample Recovered	Blow Count	PID readings	USCS	Depth	Visual Discription	Comments
										GRASS	
23									1	LEAN CLAY WITH APPRECIABLE SILT; BROWN TO DARK BROWN;	
24									2	FRIABLE; LOW PLASTICITY;	
25	0.75-inch PVC	CEMENT						CL	3	MOIST. (CL)	
26		Bent.							4		
27								CL	5	LEAN CLAY; LIGHT BROWN;	
							0			FRIABLE; MODRATE PLASTICITY;	
28									6	MOIST (CL)	
29									7		
							2	CL		LEAN CLAY, DARK BROWN	
30									8	VERY FRIABLE (SOFT); MOD	
31									9	PLASTIGITY; MOIST (CL)	
							17	CL		LEAN CLAY; LIGHT BROWN W/	
32									10	GRAY MOTTLES (CL)	
33									11		
							2				
34									12		
35									13		
							31				
36									14		
37									15		
38								CL	16	LEAN CLAY; GRAY/BROWN	NOTICEABLE
							189			FRIABLE; MOD PLASTIC	STALE HC
39									17	VERY MOIST (CL)	ODOR
40									18		▼
							>2000	SC		CLAYEY SAND; WELL GRADED	STRONG
41									19	FINE TO MEDIUM SAND;	PETROLEUM
										(SC)	HYDROCAR
42									20		
							56				
43									21		
								CL		LEAN CLAY, GRAY; MOD PLASTIC;	STRONG
44									22	FRIABLE MOIST (CL)	HC ODOR
							197				GRAY STAIN

#3 LONESTAR SAND

SLOT 0.020

Street Address: 21995 Foothill Blvd.
City State: Hayward, CA

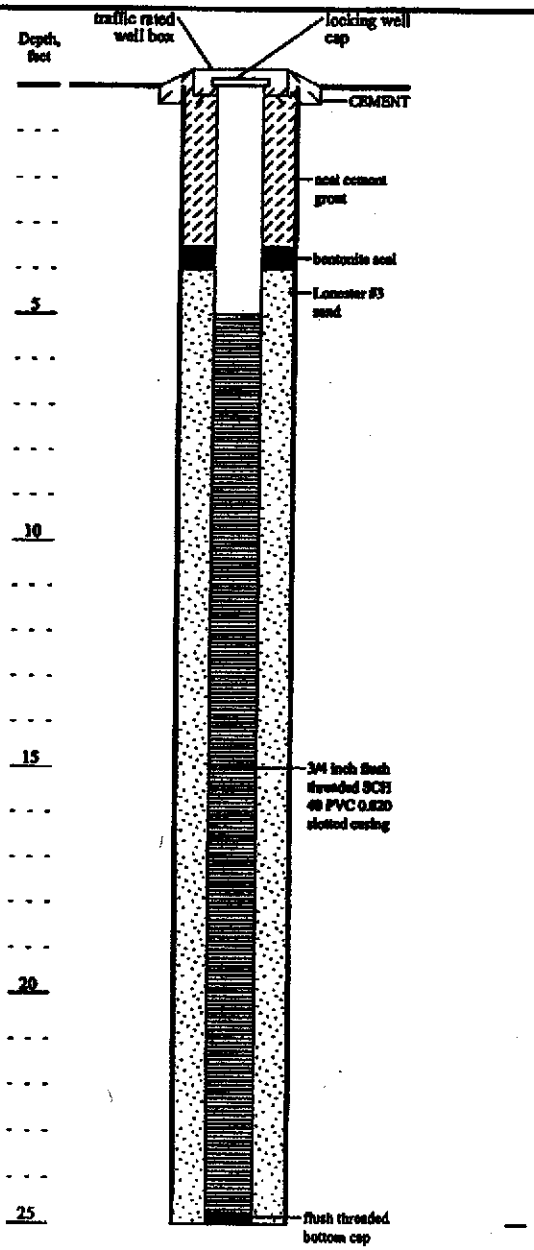
TMP-2 Pg 2 of 2

Dates and Times	Logger	Bore Hole Diameter
Start	Drilling Equipment and Method	Diameter, Type and Slot Si: Casing
Total Depth 11/26/02 9:25	Sampling Method and Diameter	
Completion or backfill	Permitting Agency	Permit #
Drilling Company and Driller		Driller's C-57

Delta Project | Surface Elevation | Casing Elevation

Depth	Casing Size and Type	Annulus Filler	Sample ID	Sample Driven (in)	Sample Recovered	Blow Count	PID readings	USCS	Depth	Visual Discription	Comments
23	0.020	#3						SW	23	WELL GRADED SAND; FINE TO MEDIUM GRAINED SAND; LOOSE; SATURATED (SW)	STRONG HC ODOR
24								CH	24	FAT CLAY; GRAY, STIFF, PLASTIC, MOIST; (CH)	STRONG HC ODOR
25							140 PP		25		
26									26	BORING TERMINATED	
27									27		
28									28		
29									29		
30									30		
31									31		
32									32		
33									33		
34									34		
35									35		
36									36		
37									37		
38									38		
39									39		
40									40		
41									41		
42									42		
43									43		
44									44		

Delta Environmental Consultants, Inc.	Street Address **21995 Foothill Boulevard**	Project ID **Chevron Station No. 9-0260**	
	City & State **Hayward, California**	Surface Elev. **NA**	Well / Boring ID **PMW**
	Delta Project # **DG90-260**	Casing Elev. **NA**	Total Depth **25'**



Dates and Times	Logger **Delta Geologist**	Sampling Method & Diameter **NA**	Permitting Agency **Alameda County Health Care Services Agency**
Start	Drilling Company & Driller **NA, TBA**	Bore Hole Diameter **4-inches**	Permit # **NA**
Total Depth	Drillers C-57#	Diameter, Type & Slot Size of Casing **3/4-Inch SCH 40 PVC/0.020 slot**	
Completion or backfill	Drilling Equipment and method **Geoprobe 6600, NA**		

PROPOSED 90260.GPJ 11/5/02

Sequoia Analytical

819 Striker Avenue, Suite 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

January 10 , 2003

Steven Meeks
Delta Environmental Consultants (Rancho Cordova)
3164 Gold Camp Drive Ste. 200
Rancho Cordova, CA 95670
RE: Former Chevron Station No. 9-0260 / S212330

Enclosed are the results of analyses for samples received by the laboratory on 12/13/02. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew
Client Services Representative

CA ELAP Certificate Number 1624

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Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	**Reported:**
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-11A	S212330-01	Air	12/10/02 23:00	12/13/02 11:30
MW-11B	S212330-02	Air	12/11/02 07:00	12/13/02 11:30
MW-12	S212330-03	Air	12/11/02 17:42	12/13/02 11:30

This report was re-issued on 01/10/03 to revised the data originally reported on 12/30/02.

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819 Striker Avenue, Suite 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	**Reported:**
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

Total Purgeable Hydrocarbons, BTEX and MTBE in Air by DHS LUFT

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-11A (S212330-01) Air Sampled: 12/10/02 23:00 Received: 12/13/02 11:30									
Purgeable Hydrocarbons	**86**	10	mg/m³ Air	1	2120370	12/24/02	12/24/02	DHS LUFT	
Benzene	**1.2**	0.050	"	"	"	"	"	"	
Toluene	**0.14**	0.050	"	"	"	"	"	"	
Ethylbenzene	ND	0.050	"	"	"	"	"	"	
Xylenes (total)	ND	0.050	"	"	"	"	"	"	
Methyl tert-butyl ether	**2.0**	0.50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*105 %*	*60-140*		"	"	"	"	
MW-11B (S212330-02) Air Sampled: 12/11/02 07:00 Received: 12/13/02 11:30									
Purgeable Hydrocarbons	**56**	10	mg/m³ Air	1	2120370	12/24/02	12/24/02	DHS LUFT	
Benzene	**0.89**	0.050	"	"	"	"	"	"	
Toluene	**0.057**	0.050	"	"	"	"	"	"	
Ethylbenzene	ND	0.050	"	"	"	"	"	"	
Xylenes (total)	ND	0.050	"	"	"	"	"	"	
Methyl tert-butyl ether	**1.4**	0.50	"	"	"	"	"	"	Q-28
Surrogate: a,a,a-Trifluorotoluene		*91 %*	*60-140*		"	"	"	"	
MW-12 (S212330-03) Air Sampled: 12/11/02 17:42 Received: 12/13/02 11:30									
Purgeable Hydrocarbons	**2500**	100	mg/m³ Air	10	2120370	12/24/02	12/24/02	DHS LUFT	
Benzene	**37**	0.50	"	"	"	"	"	"	
Toluene	**13**	0.50	"	"	"	"	"	"	
Ethylbenzene	**4.6**	0.50	"	"	"	"	"	"	
Xylenes (total)	**9.4**	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	**53**	5.0	"	"	"	"	"	"	Q-28
Surrogate: a,a,a-Trifluorotoluene		*113 %*	*60-140*		"	"	"	"	

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Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	Reported:
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

Total Purgeable Hydrocarbons, BTEX and MTBE in Air (ppmv) by DHS LUFT

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-11A (S212330-01) Air Sampled: 12/10/02 23:00 Received: 12/13/02 11:30									
Purgeable Hydrocarbons	**25**	2.8	ppmv	1	2120370	12/24/02	12/24/02	DHS LUFT	
Benzene	**0.38**	0.016	"	"	"	"	"	"	
Toluene	**0.037**	0.013	"	"	"	"	"	"	
Ethylbenzene	ND	0.012	"	"	"	"	"	"	
Xylenes (total)	ND	0.012	"	"	"	"	"	"	
Methyl tert-butyl ether	**0.57**	0.14	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*105 %*	*60-140*		"	"	"	"	
MW-11B (S212330-02) Air Sampled: 12/11/02 07:00 Received: 12/13/02 11:30									
Purgeable Hydrocarbons	**16**	2.8	ppmv	1	2120370	12/24/02	12/24/02	DHS LUFT	
Benzene	**0.28**	0.016	"	"	"	"	"	"	
Toluene	**0.015**	0.013	"	"	"	"	"	"	
Ethylbenzene	ND	0.012	"	"	"	"	"	"	
Xylenes (total)	ND	0.012	"	"	"	"	"	"	
Methyl tert-butyl ether	**0.39**	0.14	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*91 %*	*60-140*		"	"	"	"	
MW-12 (S212330-03) Air Sampled: 12/11/02 17:42 Received: 12/13/02 11:30									
Purgeable Hydrocarbons	**700**	28	ppmv	10	2120370	12/24/02	12/24/02	DHS LUFT	
Benzene	**12**	0.16	"	"	"	"	"	"	
Toluene	**3.5**	0.13	"	"	"	"	"	"	
Ethylbenzene	**1.1**	0.12	"	"	"	"	"	"	
Xylenes (total)	**2.2**	0.12	"	"	"	"	"	"	
Methyl tert-butyl ether	**15**	1.4	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*113 %*	*60-140*		"	"	"	"	

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Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	**Reported:**
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

Total Purgeable Hydrocarbons, BTEX and MTBE in Air by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120370 - EPA 5030B (P/T)										
Blank (2120370-BLK1)				Prepared & Analyzed: 12/23/02						
Purgeable Hydrocarbons	ND	10	mg/m³ Air							
Benzene	ND	0.050	"							
Toluene	ND	0.050	"							
Ethylbenzene	ND	0.050	"							
Xylenes (total)	ND	0.050	"							
Methyl tert-butyl ether	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*2.06*		"	*2.00*		*103*	*60-140*			
Blank (2120370-BLK2)				Prepared & Analyzed: 12/24/02						
Purgeable Hydrocarbons	ND	10	mg/m³ Air							
Benzene	ND	0.050	"							
Toluene	ND	0.050	"							
Ethylbenzene	ND	0.050	"							
Xylenes (total)	ND	0.050	"							
Methyl tert-butyl ether	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*2.03*		"	*2.00*		*102*	*60-140*			
Laboratory Control Sample (2120370-BS1)				Prepared & Analyzed: 12/23/02						
Benzene	1.86	0.050	mg/m³ Air	2.00		93	70-130			
Toluene	1.98	0.050	"	2.00		99	70-130			
Ethylbenzene	1.99	0.050	"	2.00		100	70-130			
Xylenes (total)	5.95	0.050	"	6.00		99	70-130			
Methyl tert-butyl ether	2.03	0.50	"	2.00		102	70-130			
Surrogate: a,a,a-Trifluorotoluene	*2.17*		"	*2.00*		*108*	*60-140*			
Laboratory Control Sample (2120370-BS2)				Prepared & Analyzed: 12/24/02						
Benzene	1.87	0.050	mg/m³ Air	2.00		94	70-130			
Toluene	1.99	0.050	"	2.00		100	70-130			
Ethylbenzene	1.95	0.050	"	2.00		98	70-130			
Xylenes (total)	5.74	0.050	"	6.00		96	70-130			
Methyl tert-butyl ether	1.80	0.50	"	2.00		90	70-130			
Surrogate: a,a,a-Trifluorotoluene	*2.24*		"	*2.00*		*112*	*60-140*			

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Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	**Reported:**
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

Total Purgeable Hydrocarbons, BTEX and MTBE in Air by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120370 - EPA 5030B (P/T)										
Laboratory Control Sample Dup (2120370-BSD1)				Prepared & Analyzed: 12/23/02						
Benzene	2.07	0.050	mg/m³ Air	2.00		104	70-130	11	25	
Toluene	2.17	0.050	"	2.00		108	70-130	9	25	
Ethylbenzene	2.12	0.050	"	2.00		106	70-130	6	25	
Xylenes (total)	6.12	0.050	"	6.00		102	70-130	3	25	
Methyl tert-butyl ether	1.92	0.50	"	2.00		96	70-130	6	25	
Surrogate: a,a,a-Trifluorotoluene	*2.37*		"	*2.00*		*118*	*60-140*			

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Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	**Reported:**
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

Total Purgeable Hydrocarbons, BTEX and MTBE in Air (ppmv) by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120370 - EPA 5030B (P/T)										
Blank (2120370-BLK1)				Prepared & Analyzed: 12/23/02						
Purgeable Hydrocarbons	ND	2.8	ppmv							
Benzene	ND	0.016	"							
Toluene	ND	0.013	"							
Ethylbenzene	ND	0.012	"							
Xylenes (total)	ND	0.012	"							
Methyl tert-butyl ether	ND	0.14	"							
Surrogate: a,a,a-Trifluorotoluene	*0.345*		"	*0.335*		*103*	*60-140*			
Blank (2120370-BLK2)				Prepared & Analyzed: 12/24/02						
Purgeable Hydrocarbons	ND	2.8	ppmv							
Benzene	ND	0.016	"							
Toluene	ND	0.013	"							
Ethylbenzene	ND	0.012	"							
Xylenes (total)	ND	0.012	"							
Methyl tert-butyl ether	ND	0.14	"							
Surrogate: a,a,a-Trifluorotoluene	*0.340*		"	*0.335*		*101*	*60-140*			
Laboratory Control Sample (2120370-BS1)				Prepared & Analyzed: 12/23/02						
Surrogate: a,a,a-Trifluorotoluene	*0.363*		*ppmv*	*0.335*		*108*	*60-140*			
Laboratory Control Sample (2120370-BS2)				Prepared & Analyzed: 12/24/02						
Surrogate: a,a,a-Trifluorotoluene	*0.375*		*ppmv*	*0.335*		*112*	*60-140*			
Laboratory Control Sample Dup (2120370-BSD1)				Prepared & Analyzed: 12/23/02						
Surrogate: a,a,a-Trifluorotoluene	*0.397*		*ppmv*	*0.335*		*119*	*60-140*			

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Sacramento, CA 95834
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FAX (916) 921-0100
www.sequoialabs.com

Delta Environmental Consultants (Rancho Cordova	Project: Former Chevron Station No. 9-0260	S212330
3164 Gold Camp Drive Ste. 200	Project Number: N/A	Reported:
Rancho Cordova CA, 95670	Project Manager: Steven Meeks	01/10/03 15:25

Notes and Definitions

Q-28	The opening calibration verification standard was outside acceptance limits by 4%. Although the Laboratory Control Sample verified the accuracy of the batch, this should be considered in evaluating the data for its intended purpose.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CHAIN OF CUSTODY

Delta Environmental Consultants, Inc.

Delta Environmental Consultants, Inc.
3164 Gold Camp Drive, Suite 200
Ranch Cordova, California 95670
916/638-2085 • FAX 916/638-8385

LABORATORY SAMPLES SENT TO: Sequoia
ADDRESS: Sacramento

PROJ. NO.:
PROJECT NAME: Chevron 9-0260
PROJECT LOCATION: 29905 Foothill Blvd. Hayward
PROJECT MANAGER: Ben Heiningerg Steve Meeks

SAMPLERS (Signature): ROBERT LARSEN [signature]

LABORATORY SAMPLE ID	SAMPLE ID	DATE	TIME	SAMPLE TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	8021 BTEX, MtBE	~~TPHd 8015~~	TPHg 8015			REMARKS
				Air	System inlet					S212330		
	A MW-11A	12/10	23:00	"	" " "	1	X		X	-01		MW11 AT START-UP
	B MW-11B	12/11	07:00	"	" " "	1	X		X	-02		MW11 AT END
	C MW-12	12/11	17:42	"	" " "	1	X		X	-03		MW12 AT START-UP

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
[signature]	12/12	1842	William Slavet	William Slavet	12/12/02	11:30	Monica Gregersen

Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Turnaround Time:

Sealed for shipment by: (signature)
Date/Time
Shipment method:

Sampler Comments:

Laboratory Comments:

Condition of Samples:

White: Return with analytical results to Delta   Yellow: Laboratory Copy   Pink: Delta's Copy

1A/3

DTW

Pilot Test Data Sheet for Chevron 9-0280

Vacuum and DTW Readings in Wells ORIGINAL ✓

Dist to Wells (feet):		Test Well		10		5						30		26			
Well Names:		MW-4		TMP-1		TMP-2		DVE-5		DVE-6		DVE-9		DVE-10		DVE-17	
Date	Time	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum
12/10	20:36					15.5	.005						000		.101		
12/10	22:00					15.6	.005						000		.100		
12/11	00:32					15.4	.005						002		.100		
12/11	2:36					15.6	.005						000		.100		
12/11	04:40					15.5	.005						100		.100		
12/11	06:30					15.3	.005						000		.100		
						SECOND TEST ON MW 4											
START OF TEST 10:00	12/12 10:00	5.75		15.34	1.5	15.5	.35	7.71	—	DRY	.08	17.15	.02	DRY	.190	16.05	.200
	12/12 11:05				1.5		.35			—	.08		.02	—		16.15	.200

EPA = 30 ppm

THIS IS DATA FOR MW4. NOT MUCH INFORMATION DUE TO SHORT RUNS.

7.25 − 1.25 = 6.00 1/3

Pumping Data at Chevron No. 9-0260 Test Well: MW-4

Bottom (Measured with 10 inch ext) Sensor at 23.8'

Date	Time	Submersible Pump Flow Rate (gpm)	Submersible Pump Flow Totalizer Reading (gallons)	Pump Depth Setting (feet bsg)	Notes
12/10	13:20	—	—	24.3	Intake at 22.5 feet [redacted] Depth [redacted] (17.3)
12/10	13:[illegible]	0.67	85790		
	MW4				PID = 30 ppm
MW-11	14:40	2.25		19	Intake @ 17.25
12/10 [redacted]	22:49	1.75			INTAKE @ 17.25
12/10	02:00	2.68			TOTALIZER LOCKED UP.
12/11	04:05	3.17			TAKING BUCKET READINGS
					AVERAGE 2.0 EIGHT READINGS
					AVERAGE [redacted] GP
					1,200 GPM 8:30 - 10:30

W/O Vacuum

MW-11 Depth to water = 15.4
" DTB = 19.0

MW-5 DTW = 15.05
DTB = 18.7

MW-12 DTW = 14.9
DTB = 20.5

TEST
WELL
MW 11

Pilot Test on MW-[illegible] Chevron No. 9-0260

Date	Time	Total System FID readings pressure side (ppmv)	Carbon Filter FID readings (ppmv)	Total System FID - Carbon Filtered FID Readings or Non Methane (ppmv)	Total System Blower Air Flow Vacuum (In Hg)	Total System Blower Air Flow Temp (°F)	Total System Blower Air Flow Rate (ACFM)	System Dilution Air Vacuum (In H2O)	System Air Dilution Air Temp (°F)	System Air Dilution Flow Rate (ACFM)	Well Casing Vacuum (In Hg)	Moisture Separator ground water flow totalizer reading (gallons)	Notes
12/10	20:30	55.4			18 hg		166				13hg		
12/10	22:15	52.8			17hg		168				13hg		
12/11	00:32	54.2			17hg		168				13hg		EFFLUENT-STACK SAMPLE 3PPM
12/11	2:36	55.6			17hg		166				13hg		
12/11	4:40	53.7			17hg		167				13hg		
12/11	6:30	53.6			17hg		165				13hg		
12/11	08:30	48.0			16hg		190				11hg		MW5 DTW 15.7
12/11	10:30	47.6			17hg		180				11hg		MW5 DTW 15.68

Pilot Test Data Sheet for Chevron 9-0260

Vacuum and DTW Readings in Wells

Dist to Wells (feet):				TEST													
Well Names:		MW-4		MW 11		MW 12		DUE 12		DUE 9		TMP 2		DUE 10		DUE 11	
Date	Time	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum
12/10	20:36	16.55	.05	2.58	14.0	15.875	.010	—	0.00	—	000	15.5	.005	—	.100		.500
12/10	22:15	16.31	.05	2.68	14.09	15.600	.010	—	000	—	000	15.6	.005	—	.100		.500
12/11	0:32	16.50	.05	2.45	13.69	16.200	.010	—	000	—	000	15.4	.005	—	.100		.500
12/11	02:36	16.60	.05	2.70	13.69	16.200	.010	—	000	—	000	15.6	.005	—	.100		.500
12/11	04:40	16.70	.05	2.42	13.69	16.200	.010	—	000	—	000	15.5	.005	—	.100		.500
12/11	06:30	16.75	.05	2.65	13.69	16.300	.010	—	000	—	000	15.3	.005	—	.100		.500
12/11	08:30	16.72	.05	2.70	11.69	16.220	.010	—	000	—	000	15.43	.005	—	.100		.500
12/11	10:30	16.84	.05	1.77	11.69	16.280	.010	—	000	—	000	15.72	.009	—	.125		.500
12/12	09:30	16.61															

Pumping Data at Chevron No. 9-0260 ~~Test Well~~ TEST ON MW 11

Date	Time	Submersible Pump Flow Rate (gpm)	Submersible Pump Flow Totalizer Reading (gallons)	Pump Depth Setting (feet bgs)	Notes
12/10	14:40	2.25		19	INTAKE @ 1725
12/10	22:49	1.75			INTAKE @ 1725
12/11	02:00	2.68			TOTALIZER LOCKED UP FROM SAND.
					STARTED TAKING BUCKET READINGS.
	04:30	2.42	→ READINGS		(BUCKET TEST AVERAGE ABOUT
	06:30	2.65	/ OFF PALM PILOT		2 GPM OVER THIS PERIOD)
	08:30	2.70	→ READINGS		(BUCKET READINGS AVERAGE 1.200
	10:30	1.77	/ OFF PALM PILOT		GPM DUE TO CHOG TOTALIZER.

Pilot Test on ~~Mobil~~ Chevron No. 9-0260 TEST ON MW 12

Date	Time	Total System FID readings pressure side (ppmv)	Carbon Filter FID readings (ppmv)	Total System FID - Carbon Filtered FID Readings or Non Methane (ppmv)	Total System Blower Air Flow Vacuum (In Hg)	Total System Blower Air Flow Temp (°F)	Total System Blower Air Flow Rate (ACFM)	System Dilution Air Vacuum (In H2O)	System Air Dilution Air Temp (°F)	System Air Dilution Flow Rate (ACFM)	Well Casing Vacuum (In Hg)	Moisture Separator ground water flow totalizer reading (gallons)	Notes
12/11	16:36	2000	100	1900	25Hg	—	26	—	—	—	25Hg		
12/11	18:30	2000	110	1890	25Hg	—	30	—	—	—	25Hg		
12/11	20:30	2000	100	1900	25Hg	—	32	—	—	—	25Hg		
12/11	22:30	1100	110	990	25Hg	—	34	—	—	—	25Hg		
12/12	00:30	900	120	880	25Hg	—	34	—	—	—	25Hg		BAD VACUUM GAUGE ON
12/12	02:30	900	140	860	25Hg	—	34	—	—	—	25Hg		SYSTEM, CHANGED OUT AND
12/12	04:30	900	150	850	25Hg	—	36	—	—	—	25Hg		ADJUSTED NUMBERS
12/12	06:20	850	180	670	25Hg	—	36	—	—	—	25Hg		ACCORDINGLY
12/12	08:30	1300	350	950	25Hg	—	36	—	—	—	24.5Hg		EFFLUENT - STACK
													DISCHARGE - 2.5 PPM

Pilot Test Data Sheet for Chevron 9-0260

Vacuum and DTW Readings in Wells TEST ON MW 12

Dist to Wells (feet):		TEST																DUE 11	
Well Names:		MW-12		DUE 13		MW 5		DUE 12		DUE 9		TPM 2		DUE 10		MW 11		DTW	VAC
Date	Time	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	—	2.200
12/11	16:36	1.650	25 hg	—	4.5	16.2	.090	13.55	.190	16.88	.100	15.120	—	—	—	16.87	.063	—	3.300
12/11	18:30	1.530	25 hg	—	2.0	16.75	.100	13.55	.200	17.35	.100	15.340	—	—	—	17.19	.063	—	3.300
12/11	20:30	1.570	25 hg	—	2.6	17.04	.095	13.55	.200	17.58	.090	15.50	—	—	—	17.29	.063	—	4.300
12/11	22:30	1.560	25 hg	—	3.0	17.17	.110	13.55	.250	17.70	.175	15.57	—	—	—	17.52	.063	—	4.450
12/12	00:30	1.540	25 hg	—	3.2	17.27	.128	13.55	.250	17.81	.160	15.37	—	—	—	17.58	.063	—	4.680
12/12	02:30	1.540	25 hg	—	3.3	17.32	.136	13.55	.250	—	.160	15.17	—	—	—	17.64	.063	—	4.800
12/12	04:30	1.560	25 hg	—	3.45	17.38	.149	13.55	.250	—	.160	15.45	—	—	—	17.67	.063	—	5.0
12/12	06:20	1.540	25 hg	—	3.6	17.4	.167	13.55	.250	—	.150	15.70	—	—	—	17.71	.063	—	5.0
12/12	08:30	1.570	24.5 hg	—	4.0	17.44	.200	13.55	.250	—	.200	15.77	—	—	—	17.72	.063		
										DRY									

TEST ON

Pumping Data at Chevron No. 9-0260 Test Well: MW 12

Date	Time	Submersible Pump Flow Rate (gpm)	Submersible Pump Flow Totalizer Reading (gallons)	Pump Depth Setting (feet bsg)	Notes
12/11	16:36	3.33			
12/11	18:30	2.0			ALL READINGS WERE TAKEN BY
12/11	20:30	1.818			BUCKET TEST.
12/12	0:36	1.870			
12/12	02:30	1.820			5 ÷ TOTAL SECONDS TO FILL 5 GALLON
12/12	04:30	1.810			BUCKET TO 5 GALLON LINE, X 60 = GPM.
12/12	06:36	1.700			
12/12	08:30	1.760			

12/10/02

Delta Project # DG90260
LOCATION: 21995 Foothill Blvd, HAYWARD
OBJECTIVE: ASSIST IN GWE SVE PILOT TEST
DELTA PERSONNEL: STEVE MEEKS, WILL SLOWIK

DEPTH TO GW MEASUREMENTS TAKEN PRE-TEST

WELL ID	DTW	TIME		
MW-4	15.60	820		
MW-5	15.06	8:41		
MW-6	DRY			
MW-7	14.39	8:49		
MW-8	13.26	9:02		
MW-9	14.04	8:59		
MW-11	15.11	8:36		
MW-12	15.84	8:39	15.03	
MW-13				
TMP-1	14.~~7~~35	814	15.31	15.82
TMP-2	14.~~8~~24	816	14.96	15.41 14.87
DVE-5	7.62	851		
DVE-6	NO WATER			
DVE-9	15.18	8:32		
DVE-10	NO WATER			
DVE-17	15.41	8:43		
DVE-18	15.18	8:30		
DVE-11	DRY			

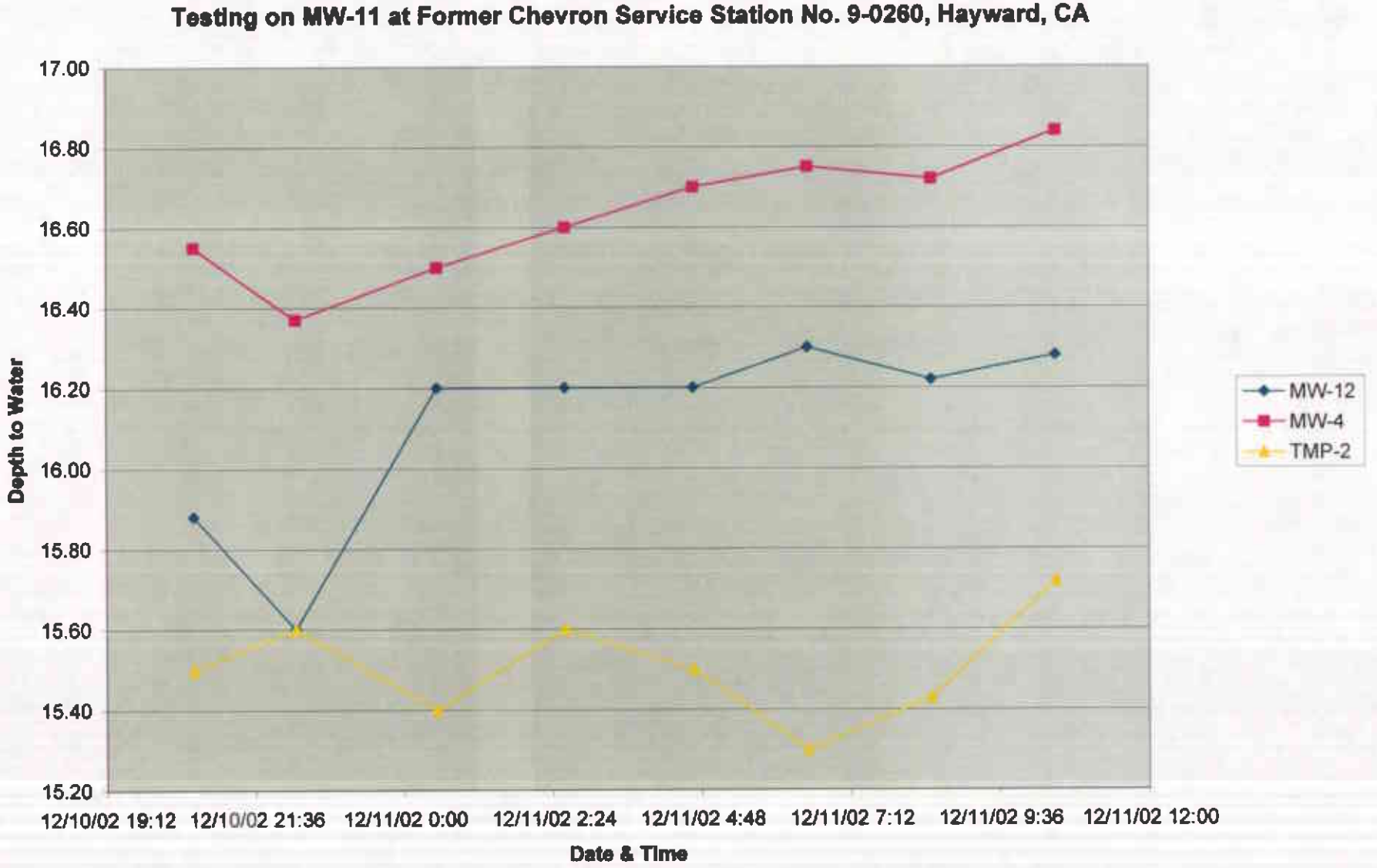
NOTES ON CATALYTIC OXIDIZER

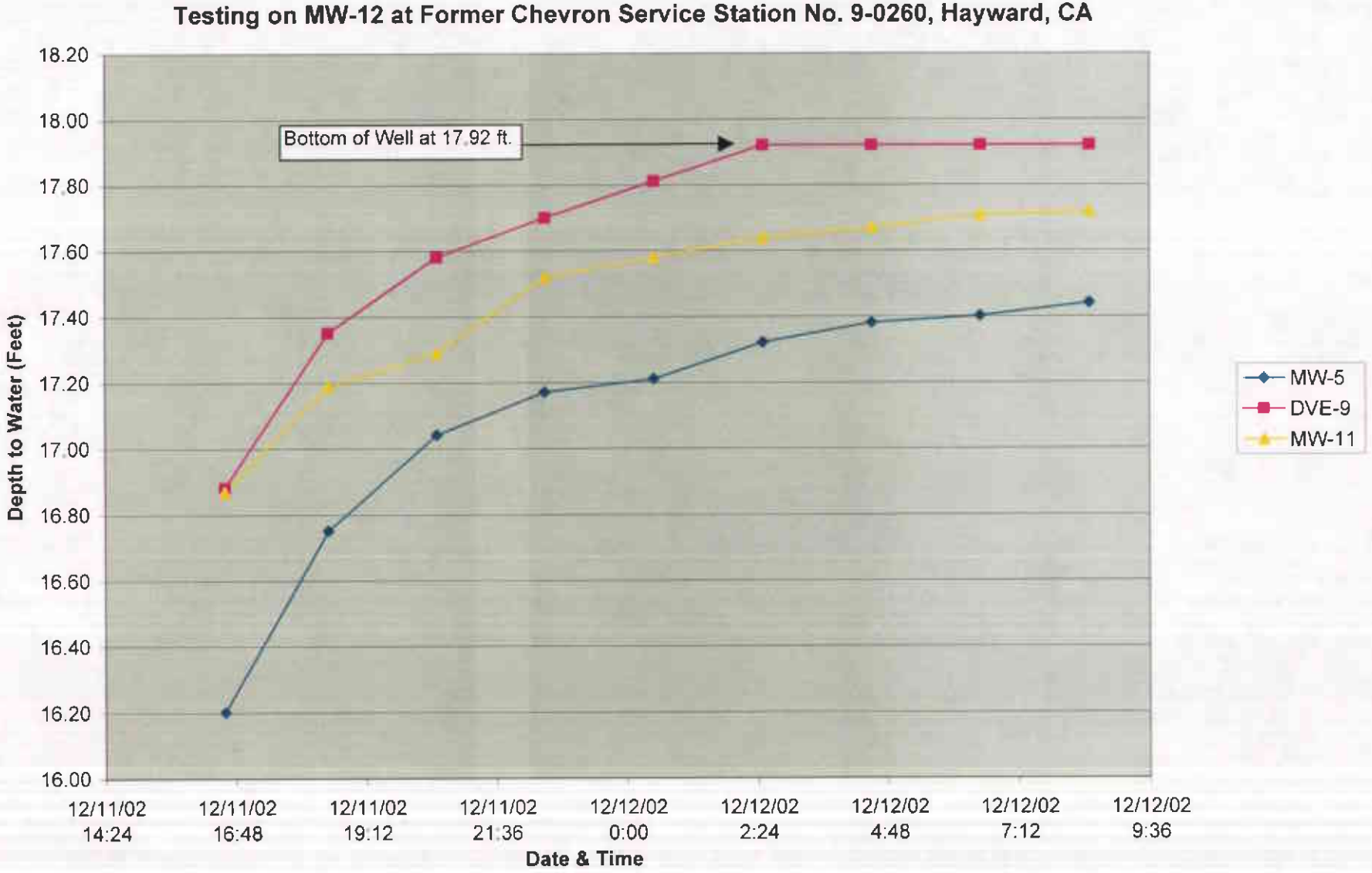
1400°F what we want to burn at
1650° when we start to dilute
> 1800° when it shuts OFF

"0" on dilution controller is wide open

ENCLOSURE D

Well Drawdown Trend Graphs


Testing on MW-11 at Former Chevron Service Station No. 9-0260, Hayward, CA
17.00
16.80
16.60
16.40
16.20
16.00
15.80
15.60
15.40
15.20
Depth to Water
12/10/02 19:12
12/10/02 21:36
12/11/02 0:00
12/11/02 2:24
12/11/02 4:48
12/11/02 7:12
12/11/02 9:36
12/11/02 12:00
Date & Time
MW-12
MW-4
TMP-2


Testing on MW-12 at Former Chevron Service Station No. 9-0260, Hayward, CA
Bottom of Well at 17.92 ft.
Depth to Water (Feet)
18.20
18.00
17.80
17.60
17.40
17.20
17.00
16.80
16.60
16.40
16.20
16.00
12/11/02 14:24
12/11/02 16:48
12/11/02 19:12
12/11/02 21:36
12/12/02 0:00
12/12/02 2:24
12/12/02 4:48
12/12/02 7:12
12/12/02 9:36
Date & Time
MW-5
DVE-9
MW-11