PES Environmental, Inc.
Engineering & Environmental Services

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Reviewed 2/7/91 Ravi

January 31, 1992

102.01.001

Dolan Rental Company
6365 Scarlett Court
Dublin, California 94568

Attention: Mr. Michael Dolan

SOIL AND GROUNDWATER INVESTIGATION DUBLIN ROCK AND READY MIX FACILITY 6393 SCARLETT COURT DUBLIN, CALIFORNIA

Prepared by:

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REGISTERED PROFESSIONAL ENGINEER MICHAEL D. THOMPSON No. 44979 EXP. 3/31/94 CIVIL STATE OF CALIFORNIA

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1.0 INTRODUCTION

This report presents the results of PES Environmental, Inc.'s (PES) soil and groundwater investigation performed at the Dublin Rock and Ready Mix facility located at 6393 Scarlett Court in Dublin, California (Plate 1). The purpose of this investigation was to evaluate the extent of soil and groundwater containing petroleum hydrocarbons in the vicinity of a former underground storage tank (Plate 2). This investigation was conducted in accordance with PES' *Proposal, Groundwater Investigation, Dublin Rock and Ready Mix, Dublin, California,* dated October 24, 1991 (Reference No. 102.01.001). The investigative methodology presented in the proposal was reviewed and approved by the Alameda County Health Agency (ACHA), Department of Environmental Health. Monitoring well construction was conducted under Drilling Permit No. 91646 issued by the Alameda County Flood Control and Water Conservation District, Zone 7.

The subject property presently contains a concrete batch plant and a sand and gravel storage yard. An underground tank was removed from the site in February, 1990. This tank was situated adjacent to a small office/restroom building and concrete batch equipment in the southwestern corner of subject property. The underground tank excavation was backfilled after removal of the tank and has been covered by concrete slab-on-grade. The site is relatively level with drainage towards Scarlett Court.

1.1 Summary of Previous Investigation

Five soil borings were drilled in October, 1990 by Kenneth R. Henneman, Water Resource Consultant (Henneman) to access and sample groundwater in the vicinity of the former tank. That investigation was conducted in response to a request by ACHA for a work plan and time schedule for the installation of monitoring wells and performing quarterly monitoring at the site in an ACHA Hazardous Materials Division Inspection Form dated June 24, 1991. An alternative methodology was used which included drilling borings using a truck-mounted auger and collecting groundwater samples from the uncased borings. The borings were located around the former tank location at distances ranging from 24 to 48 feet. Two borings were located downgradient from the former tank location and three were located in presumed cross-gradient locations relative to the former tank location.

Groundwater was reported by Henneman to be at a depth of 13 feet (ft) below ground surface (bgs). Laboratory analyses of groundwater samples collected by Henneman indicated that total petroleum hydrocarbons reported as gasoline (TPHg) were present in each groundwater sample. Concentrations ranged from 0.42 parts per million to 110 ppm. Benzene, ethylbenzene, and total xylenes were detected in all groundwater samples at concentrations up to 1 ppm. Toluene was detected in one groundwater sample at a concentration of 0.2 ppm. One soil sample collected about 40 feet south of the former tank at a depth of 11 feet below ground surface (bgs) was found to contain 0.6 ppm TPHg and no other analytes. The results of Hennemans investigation are presented in a report titled *Laboratory results from Water Samples taken from five borings to water around an old gas tank site on 10/3/90 at Dublin Rock and Ready Mix, 6393 Scarlett Court, Dublin, CA,* dated October 17, 1990. Based on our review of the previous investigative reports, it appears that standard sampling techniques were not followed during the Henneman investigation and that the data generated may not reflect actual site conditions and contaminant distribution.

In June, 1991, ACHA requested the submittal of a work plan for further investigation. This report presents the results of the requested investigation and completes the scope of work presented in the proposal.

2.0 SOIL AND GROUNDWATER INVESTIGATION

This investigation was designed to provide additional information on the extent of soil and groundwater containing petroleum hydrocarbons in the vicinity of the former tank. Descriptions of investigative methodologies employed and the results of the investigation are presented below.

2.1 Investigative Methodology

The field investigation was performed on November 21, 22, 25, and 27,1991, and involved: (1) drilling four soil borings and collecting subsurface soil samples; (2) converting the four borings to groundwater monitoring wells; (3) developing the groundwater monitoring wells; and (4) collecting groundwater samples from each well for laboratory analyses. The locations of the groundwater monitoring wells are shown on Plate 2.

2.1.1 Soil Sampling

Samples were collected by driving a split-barrel sampler lined with stainless steel tubes a distance of 18 inches into undisturbed soil. The sample was advanced below the cutting bit of the auger using a 140-pound drop-hammer falling 30 inches. The samples were used for lithologic description and screened for the presence of volatile organic compounds with a photo-ionization detector (PID). The borings were logged using the Unified Soil Classification System (Plate 3), boring logs are presented in Plates 4 through 7. One tube from each sample drive was sealed with aluminum foil-lined plastic caps taped to the tube to prevent moisture and contaminant loss. The sample containers were labeled, placed in a chilled, thermally-insulated cooler and transported to the project analytical laboratory under chain of custody protocol. The split-barrel sampler was washed with Alconox solution and rinsed with deionized water between sampling events.

A soil sample from each of the four borings collected directly above the zone of first encountered groundwater during drilling was analyzed for TPHg by EPA Test Methods 5030/8015, and benzene, toluene, ethylbenzene and xylenes (BTEX) using EPA Test Methods 5030/8020 by Superior Analytical Laboratory, Inc. (Superior) in San Francisco, California. Superior is a State-certified laboratory for the analyses performed.

2.1.2 Groundwater Monitoring Well Construction

Each of the four borings was advanced to 20 ft bgs. The borings were screened from 5 to 20 ft bgs with 2-inch diameter, polyvinyl chloride (PVC) well screen with 0.020-inch perforations. Blank 2-inch diameter PVC casing was placed from 0.25 ft bgs to 5 ft bgs. Perforated and blank casing are fitted with screw-type connections. A sand filter pack consisting of Monterey #3 sand was placed in the annular space from 20 ft bgs to 4 ft bgs. Approximately one foot of bentonite pellets was placed in the annular space above the sand filter pack and hydrated with potable water. All well materials were installed in the borings through the center of the hollow-stem augers. The annular space above the bentonite seal was grouted from the seal up to 0.25 ft bgs with Lonestar Type I-II Portland cement after removal of the hollow-stem augers. The wells were completed 0.25 ft bgs in a traffic-resistant utility box set in concrete and the casing fitted with a locking, water-tight cap. The details of well construction for Monitoring Wells MW-1, MW-2, MW-3 and MW-4 are shown graphically on Plates 4, 5, 6 and 7, respectively.

2.1.3 Groundwater Monitoring Well Development

All groundwater monitoring wells were developed by Blaine Tech Services, Inc. (Blaine Tech) on November 25, 1991. Development involved surging the well to sort the sand pack materials and pumping to remove fine-grained sediments from the casing. A report prepared by Blaine Tech describing well development operations is presented as Appendix A.

2.1.4 Groundwater Sampling

Groundwater samples were collected from each monitoring well on November 27, 1991 by Blaine Tech. Prior to sampling, a minimum of three casing volumes of water were purged from the well using a bladder pump. This water was pumped into 55-gallon drums which are stored onsite. Groundwater samples were collected using a teflon bladder pump, decanted into 40-milliliter VOA glass containers, labeled, and placed in a chilled, thermally-insulated cooler. Groundwater samples were transported to Superior Analytical Laboratory, Inc. in San Francisco, California, under chain of custody protocol. Groundwater samples were analyzed for TPHg using EPA Test Method 5030/8015 (modified) and BTEX using EPA Test Method 5030/8020. A report prepared by Blaine Tech describing well sampling procedures is presented as Appendix B.

2.1.5 Well Survey

The wells were surveyed by Bissell and Karn, Inc., a California-licensed land surveyor, on December 11, 1991, to provide horizontal and vertical control to be used in evaluating groundwater elevations and flow direction at the site.

2.2 Results of Investigation

2.2.1 Subsurface Conditions

Surficial materials at the site consist of degraded asphaltic concrete with lean concrete patches around the concrete production equipment, and landscape aggregate along the western frontage of Scarlett Court. The pavement section and landscape materials range from 0.75 to 1.5 ft, thick and are underlain in MW-2, MW-3, and MW-4 by a 2- to 3-foot-thick layer of silty clay which is underlain by silty clays with interbedded poorly-graded sand to approximately 8.5 ft bgs. The sand interbeds observed range from 2 to 12 inches thick. Surficial materials in MW-1 are underlain by silty sand to a depth of 3.5 ft bgs. The silty sand is underlain by silty clay with poorly defined sandy clay/clayey sand interbeds to a depth of about 9.5 ft bgs. Silty clays are found in all borings from approximately 9.5 ft bgs to the bottom of each borehole (20 ft bgs).

Soils encountered in MW-2 exhibited strong petroleum hydrocarbon odors throughout the entire soil column. No odors were noted in MW-1, MW-3, or MW-4. Groundwater was first encountered at approximately 12 ft bgs in each boring. The depth to water at the time of well development and sampling was approximately 5 ft bgs.

2.2.2 Soil and Groundwater Analyses Results

One soil sample from each boring and one water sample from each monitoring well were submitted to the project laboratory for analyses. The soil samples submitted for analyses were all collected at about 11 ft bgs near the groundwater/vadose zone interface observed during drilling.

Laboratory analyses of soil samples indicate the presence of TPHg in the sample from MW-2 at a concentration of 140 ppm, and combined BTEX concentrations of about 22 ppm. No detectable TPHg and BTEX concentrations were found in soil samples collected from MW-1, MW-3 and MW-4.

The results of the chemical analyses indicated the presence of TPHg at concentrations of 170 ppm and 11 ppm in groundwater samples from Monitoring Wells MW-2 and MW-4, respectively. The combined concentrations of the volatile aromatics compounds (BTEX) were 56.5 ppm and 0.68 ppm in samples from MW-2 and MW-4, respectively. TPHg and BTEX were not found at or above method detection limits in groundwater samples from MW-1 and MW-3.

Chemical analyses results are presented in Table 1 and Plate 2. Copies of laboratory reports prepared by Superior Analytical Laboratory, Inc. are presented as Appendix C.

2.2.3 Evaluation of Hydrogeologic Conditions

Groundwater levels were measured on November 25, 1991, prior to well development activities. Groundwater level data indicates that groundwater flows in a south-southwesterly direction at a gradient of 0.00133 feet per foot.

3.0 SUMMARY AND RECOMMENDATIONS

This section presents: (1) an overview of a typical process used for investigation and remediation of releases of hydrocarbons from underground tanks; (2) a summary of the investigative results; and (3) recommendations for additional investigation.

3.1 Overview of Remedial Process

The purpose of this presentation is to provide a reference by which the progress of this project can be evaluated. The approach to investigation and remediation outlined below is consistent with the process required for participation in the State Water Resources Control Board's Underground Storage Tank Cleanup Fund program and consists of four main phases: (1) Initial Identification; (2) Site Characterization and Remedial Planning; (3) Site Remediation; and (4) Monitoring and Verification.

Phase I - Initial Identification (Completed)

Phase I consists of activities associated with the discovery and confirmation of contamination near an underground tank and the evaluation of whether a site characterization investigation is necessary. With respect to the site, petroleum hydrocarbons were identified during removal of the underground tank and during the site investigation performed for Dublin Rock and Ready Mix in 1990. Because petroleum hydrocarbons were identified in soil and groundwater at the site, site characterization activities to evaluate the extent of contamination were required by the ACHA.

Phase II - Site Characterization and Remedial Planning (In Progress)

As defined in the Underground Storage Tank Cleanup Fund documentation, Phase II activities consist of: (1) evaluating the extent of soil and groundwater contamination (site characterization); (2) evaluating remedial alternatives; and (3) preparing remedial plans. The objective of each portion of Phase II activities are as follows:

- Site Characterization - The primary objective of evaluating the extent of contamination is to determine the amount of soil and groundwater that will require remediation. This information serves as the basis for evaluating remedial alternatives.

- Evaluation of Remedial Alternatives - The goal of this evaluation is to determine the most cost-effective remedial alternative that satisfies the remedial objectives.

- Preparation of Remedial Plan - The remedial plan presents details of the remedial technologies that will be implemented to meet the remedial objectives.

Current site investigative activities fall into the Phase II - Site Characterization category. As discussed below, the investigative data collected to date is not sufficient to allow for an evaluation of the extent of soil and groundwater contamination, and, therefore, additional Phase II Site Characterization activities will be required.

Phase III - Remediation

During Phase III, the remedial plan prepared during Phase II is implemented. Based on the site investigation completed to date, remedial operations will likely include remedial technologies for the cleanup of soil and groundwater.

Phase IV - Monitoring

Post-remediation monitoring is performed to provide documentation that the cleanup objectives have been met. After the monitoring has adequately documented conformance with the cleanup objectives, the local implementing agency should issue a letter indicating that no further remedial action is required.

3.2 Investigative Summary and Recommendations

Hydrocarbons were initially identified in subsurface soils during removal of an underground tank. The presence of hydrocarbons was confirmed during a subsequent soil and groundwater investigation performed at the site by the former operator of Dublin Rock and Ready Mix.

PES' soil and groundwater investigation was performed at the site using standardized drilling, monitoring well installation, sampling and decontamination procedures. The results of our investigation indicated the following:

- Groundwater at the site flows in a south-southwesterly direction;
- Petroleum hydrocarbons were identified in a soil sample collected adjacent to the former location of the underground tank (sample location MW-2);
- Petroleum hydrocarbons were identified in groundwater samples collected from near the former underground tank and in a downgradient well (sample locations MW-2 and MW-4, respectively); and
- Petroleum hydrocarbons were not identified in groundwater samples collected in the northerly or southeasterly directions from the former underground tank (sample locations MW-1 and MW-3, respectively).

Additional investigative data is needed before an evaluation of the extent of soil and groundwater contamination can be made. The information needed is as follows:

- Additional chemical analysis data for soil near the former location of the underground tank to evaluate the horizontal and vertical extent of the source of the contamination; and
- Additional chemical analysis data for groundwater to better define the extent of groundwater contamination south and west of the former underground tank.

PES recommends that a draft work plan be prepared for review by Dolan Rental Company. The Plan will include the scope of work for an additional site characterization investigation. Following review, a final work plan will be submitted to the ACHA. Site characterization activities should proceed until the extent of soil and groundwater contamination can be assessed, at which time, an evaluation of remedial alternatives can be performed.

4.0 REFERENCES

Alameda County Department of Environmental Health, Hazardous Materials Division, 1991, Hazardous Materials Division Inspection Form (Ravi Arulanantham, Ph.D.), June 24.

Henneman, Kenneth R., 1990, Laboratory results from Water Samples taken from five borings to water around an old gas tank site on 10/3/90 at Dublin Rock and Ready Mix, 6393 Scarlett Court, Dublin, California, October 17.

PES Environmental, Inc., 1991, Proposal, Groundwater Investigation, Dublin Rock and Ready Mix, Dublin, California, October 24.

TABLE 1.
SOIL AND GROUNDWATER ANALYTICAL RESULTS
DUBLIN ROCK AND READY MIX
6393 SCARLETT COURT
DUBLIN, CALIFORNIA

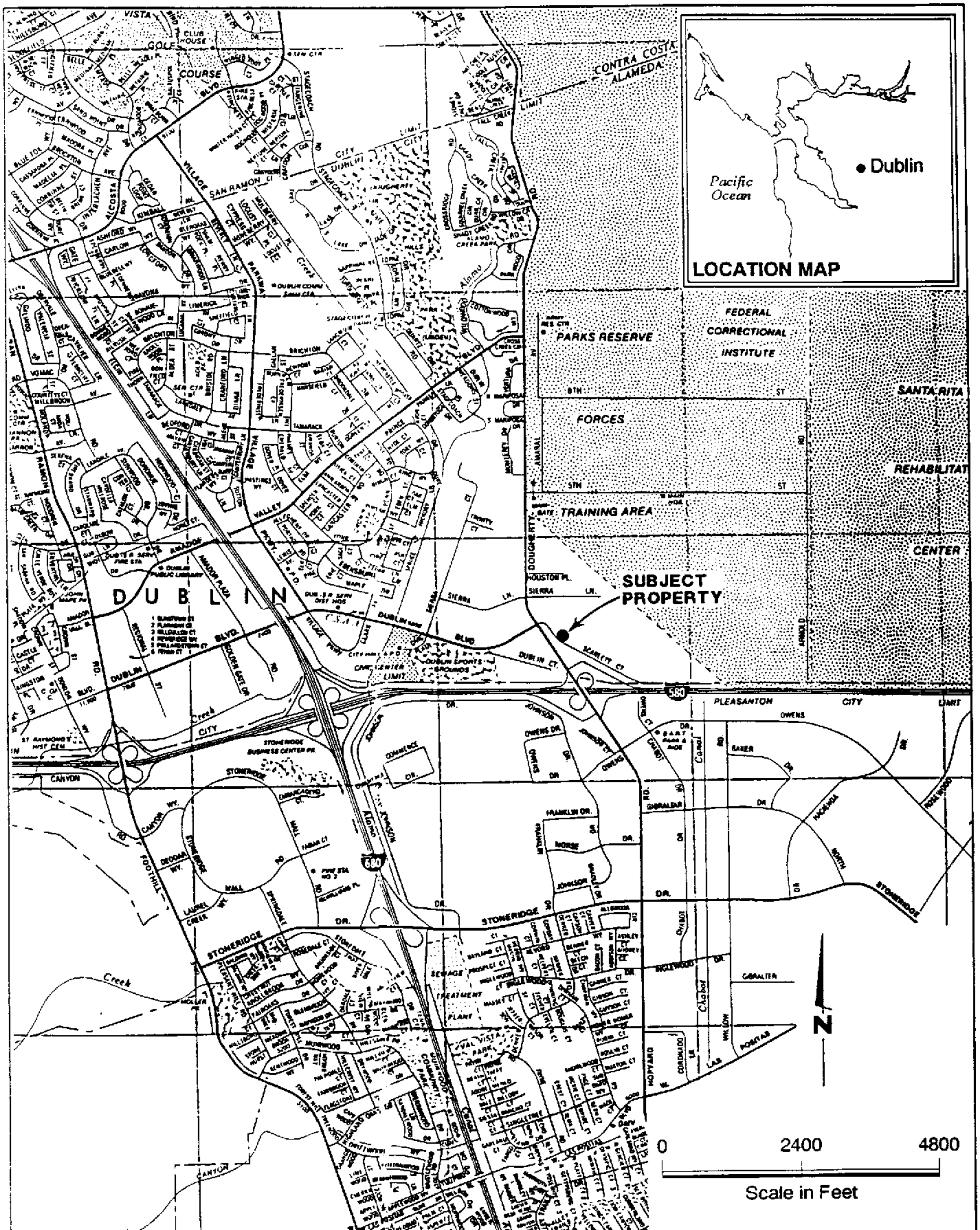
(all results expressed in parts per million)

SOILS

Sample I.D.	Depth	Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes
MW1-4A	11.0	11/22/91	<1	<0.003	<0.003	<0.003	<0.003
MW2-4A	**11.0**	11/21/91	**140**	1.7	3.6	2.6	14
MW3-4A	11.0	11/21/91	<1	<0.003	0.005	<0.003	<0.003
MW4-2A	11.0	11/21/91	<1	<0.003	0.006	0.005	<0.003

GROUNDWATER

Sample I.D.	Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	11/27/91	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
MW-2	11/27/91	**170**	24	13	3.5	16
MW-3	11/27/91	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
MW-4	11/27/91	11	0.1	0.0007	0.25	0.33



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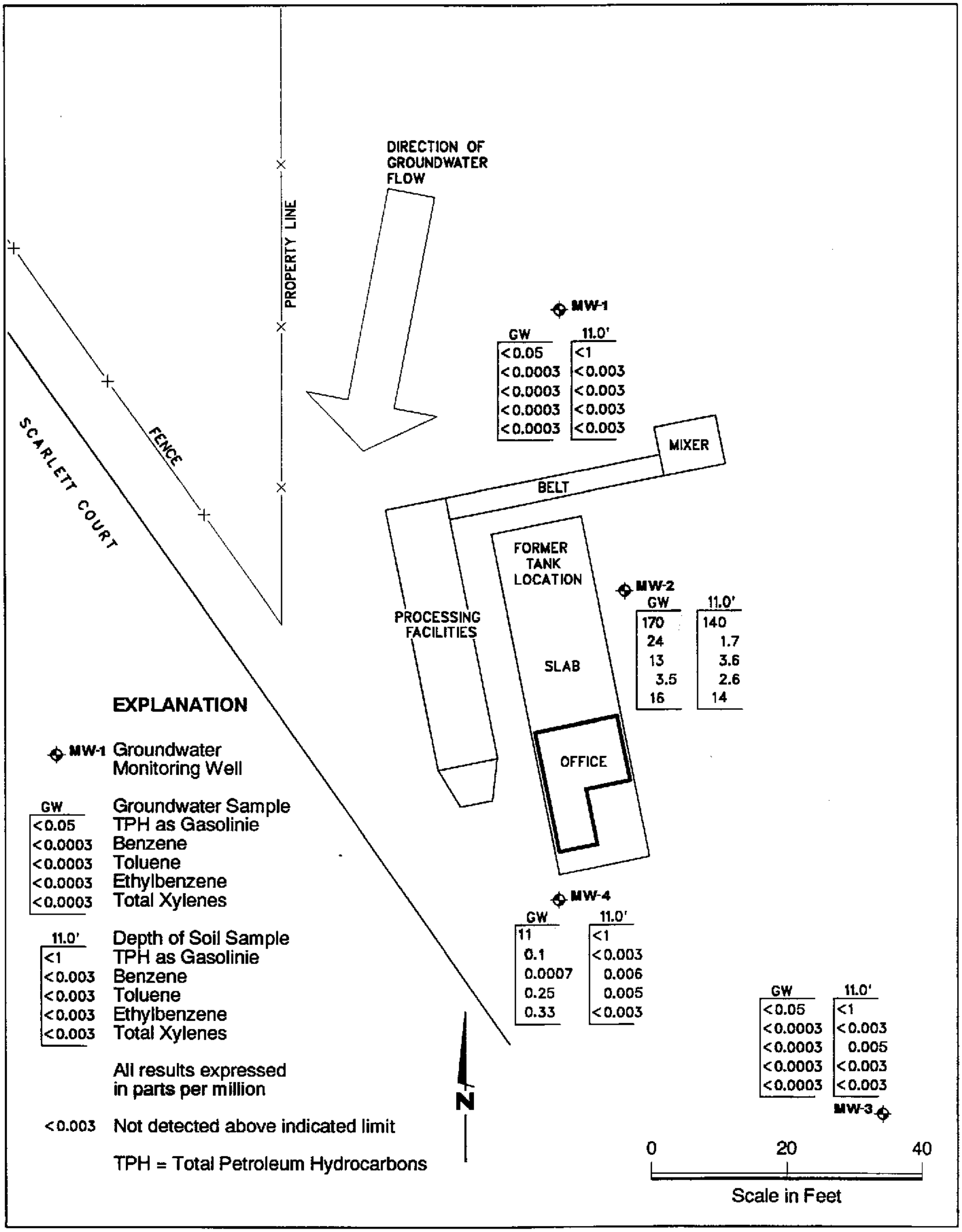
Vicinity Map
Dublin Rock & Ready Mix
6393 Scarlett Court
Dublin, California

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
102.01.001		1/92		



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Site Map
Dublin Rock & Ready Mix
6393 Scarlett Court
Dublin, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
102.01.001	[signature]	1/92		

MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

Perm	- Permeability
Consol	- Consolidation
LL	- Liquid Limit (%)
PI	- Plastic Index (%)
G_s	- Specific Gravity
MA	- Particle Size Analysis
2.5 YR 6/2	- Soil Color according to Munsell Soil Color Charts (1975 Edition)
5 GY 5/2	- GSA Rock Color Chart

☐	- No Soil Sample Recovered
▨	- Disturbed Soil Sample Recovered
■	- Sample Submitted for Laboratory Analysis
⊠	- Undisturbed Bulk or Classification Sample
▽	- First Encountered Ground Water Level
▼	- Piezometric Ground Water Level
Penetration	- Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 6 inches are indicated on the logs

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Unified Soil Classification Chart
6393 Scarlett Court
Dublin, California

PLATE **3**

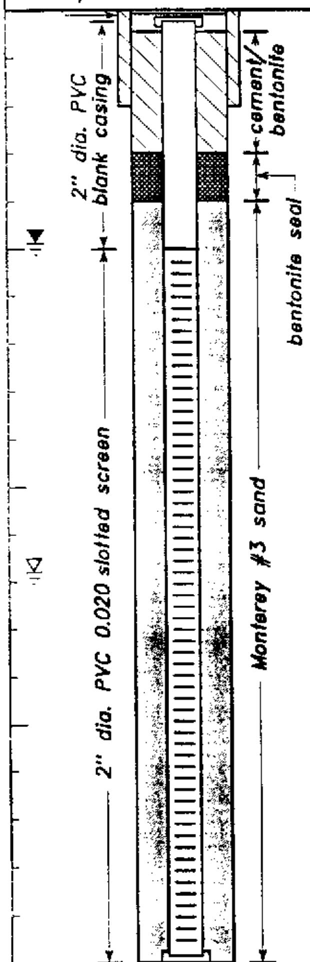
JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
102.01.001	[signature]	12/91		

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF WELL MW-1

WELL CONSTRUCTION DETAIL

Christy Box



PID (PPM)	BLOWS/6"	DEPTH (FT)	MATERIALS DESCRIPTION
			CONCRETE
			GRAY BROWN SILTY SAND (SM) loose, wet, very fine-grained sand grades to
			GRAY SILTY SAND (SM) WITH CLAY loose, wet grades to
0	2 3 4		DARK GRAY TO BLACK SILTY CLAY (CL/CH) soft, moist to wet grades to
		5	INTERBEDDED GRAY AND LIGHT YELLOWISH BROWN SILTY CLAY (CL/CH) - soft, moist and GRAY SILTY SAND (SM) WITH CLAY loose, wet, very fine-grained to fine-grained sand.
0	1 2 3		
	3 4 6		GRAY AND LIGHT YELLOWISH BROWN SILTY CLAY (CL/CH) soft to medium stiff, moist to wet.
0	2 4 5	10	
			Becomes saturated.
0	3 4 6	15	
		20	*Bottom of Boring 20 feet below ground surface.*
		25	
		30	

CLIENT	Dolan Rental Company	DIAMETER OF HOLE	7.25 inches
LOCATION	6393 Scarlett Court, Dublin, CA	TOTAL DEPTH OF HOLE	20.0 feet
JOB NUMBER	102.01.001	TOP OF CASING ELEVATION	0.25 feet below ground surface
GEOLOGIST/ENGINEER	D. Trumbly	DATE STARTED	11/22/91
DRILL RIG	CME-75	DATE COMPLETED	11/22/91

PLATE

4

PES Environmental, Inc.
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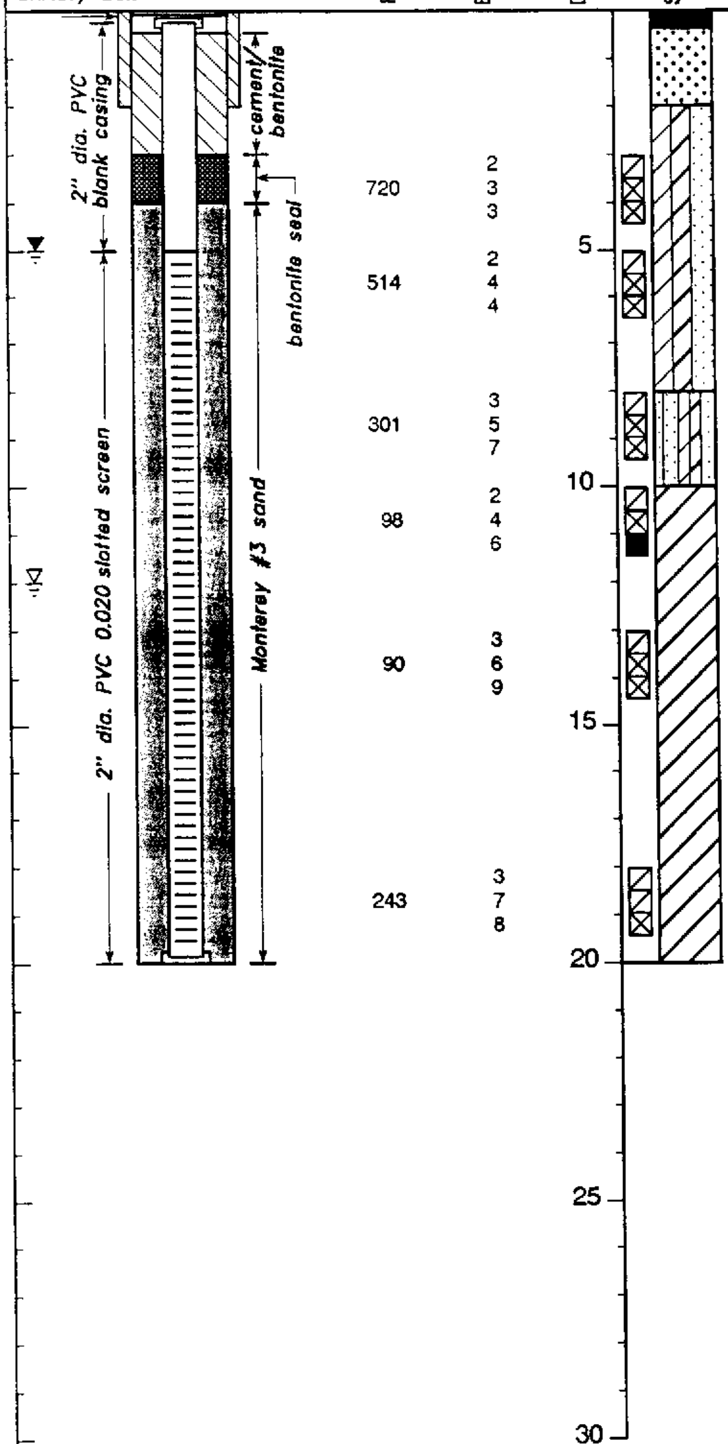
LOG OF WELL MW-2

WELL CONSTRUCTION DETAIL

Christy Box



PID (PPM)	BLOWS/6"	DEPTH (FT)	MATERIALS DESCRIPTION
		0	PAVEMENT SECTION DARK BROWN GRAVELLY SAND (SW) loose to medium dense, moist, gravel to 3-inch diameter, mild hydrocarbon odor.
			INTERBEDDED DARK GREEN GRAY SILTY CLAY (CL/CH) soft, moist to wet, and GRAY SAND (SP) loose, moist to wet, sand interbeds from 3 to 9 inches thick, clays predominant, strong hydrocarbon odor.
720	2 3 3		
514	2 4 4	5	
301	3 5 7		GRAY GREEN SILTY CLAYEY SAND (SM) loose, moist, and DARK GRAY SILTY CLAY (CL/CH) with interbedded GRAY SAND (SP) layers to 1/4-inch thick.
98	2 4 6	10	YELLOWISH GRAY SILTY CLAY (CH) WITH VERY FINE-GRAINED SAND - medium stiff, slight hydrocarbon odor.
90	3 6 9		Becomes yellowish gray brown.
		15	
243	3 7 8		
		20	Bottom of Boring 20 feet below ground surface.

CLIENT	Dolan Rental Company	DIAMETER OF HOLE	7.25 inches
LOCATION	6393 Scarlett Court, Dublin, CA	TOTAL DEPTH OF HOLE	20.0 feet
JOB NUMBER	102.01.001	TOP OF CASING ELEVATION	0.25 feet below ground surface
GEOLOGIST/ENGINEER	D. Trumbly	DATE STARTED	11/21/91
DRILL RIG	CME-75	DATE COMPLETED	11/21/91

PLATE

5

PES Environmental, Inc.
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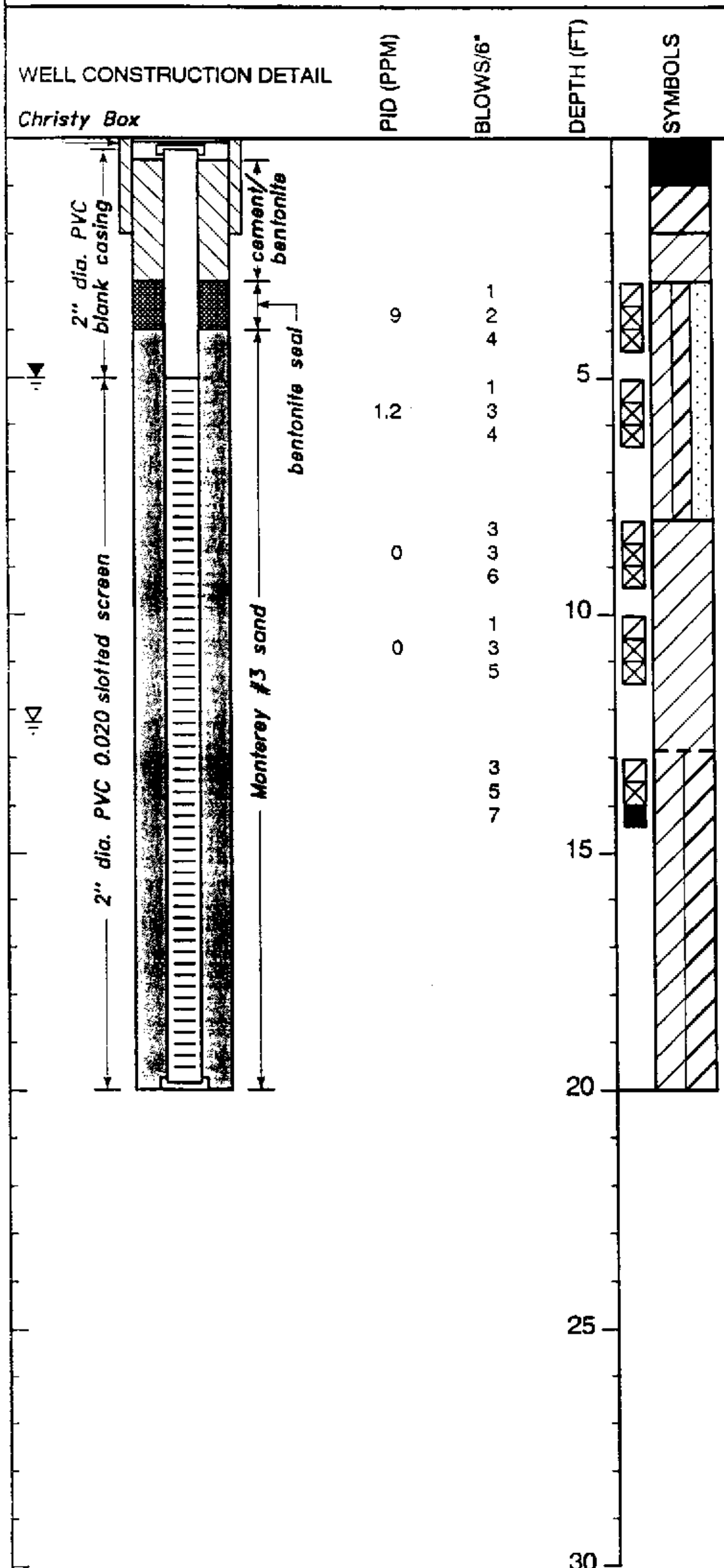
LOG OF WELL MW-3



PID (PPM)	BLOWS/6"
9	1, 2, 4
1.2	1, 3, 4
0	3, 3, 6
0	1, 3, 5
	3, 5, 7

MATERIALS DESCRIPTION

PAVEMENT SECTION

BLACK SILTY SANDY CLAY WITH GRAVEL (CH)
soft, moist.

GRAY SILTY SANDY CLAY (CL)
soft, moist, very fine-grained sand.

INTERBEDDED BLACK SILTY CLAY (CL/CH)
soft, moist and
GRAY SAND (SP)
loose, moist to wet, sand interbeds from 2 to 12 inches thick.

YELLOW BROWN AND GRAY SANDY SILTY CLAY (CL)
medium stiff,moist.

Plasticity and moisture increase.

OLIVE SILTY CLAY (CL/CH) WITH FINE-GRAINED SAND
medium stiff, saturated.

Bottom of Boring 20 feet below ground surface.

CLIENT	Dolan Rental Company	DIAMETER OF HOLE	7.25 inches
LOCATION	6393 Scarlett Court, Dublin, CA	TOTAL DEPTH OF HOLE	20.0 feet
JOB NUMBER	102.01.001	TOP OF CASING ELEVATION	0.25 feet below ground surface
GEOLOGIST/ENGINEER	D. Trumbly	DATE STARTED	11/21/91
DRILL RIG	CME-75	DATE COMPLETED	11/21/91

PLATE

6

PES Environmental, Inc.
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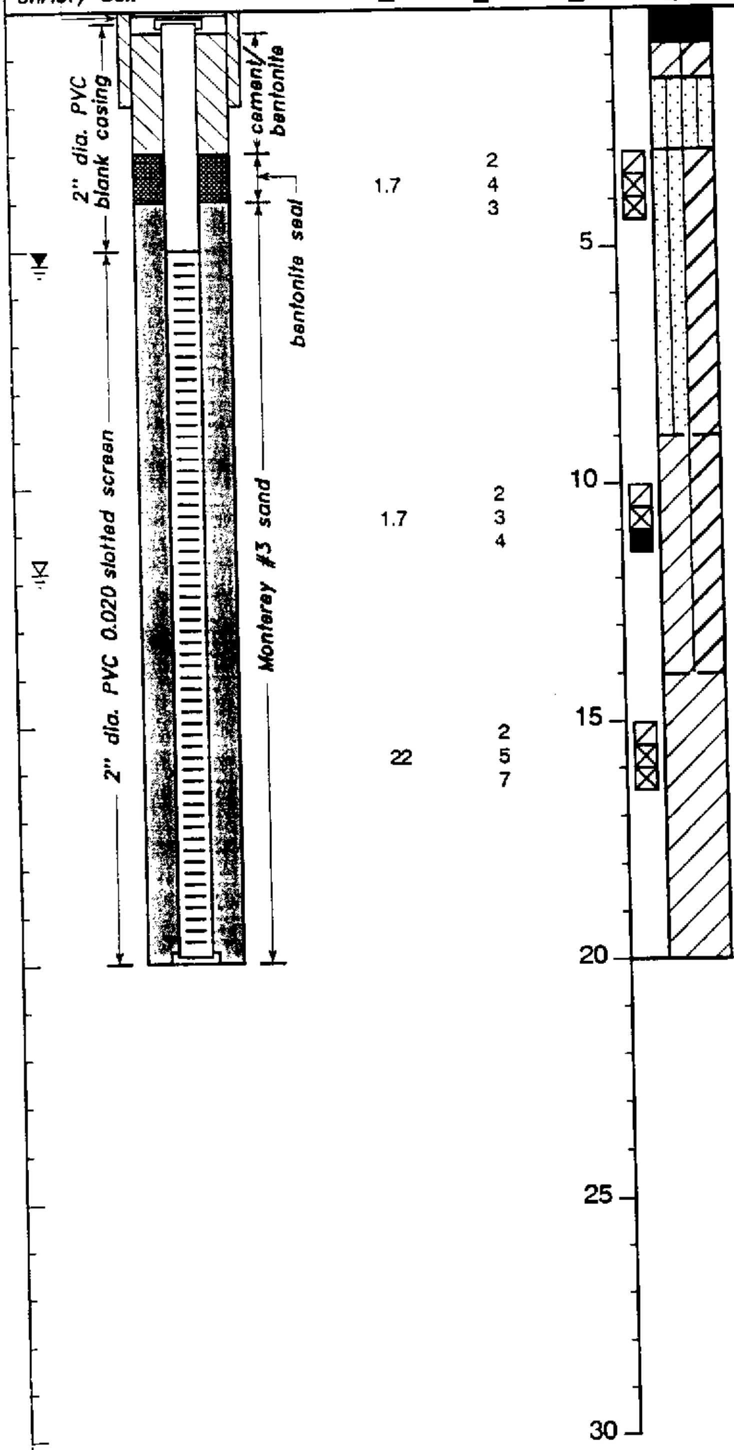
LOG OF WELL MW-4

WELL CONSTRUCTION DETAIL	PID (PPM)	BLOWS/6"	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION

Christy Box



LANDSCAPE AGGREGATE

DARK BROWN SILTY CLAY (CL/CH)
soft, moist.

VERY DARK BROWN SILTY SAND (SM)
loose, moist to wet.

INTERBEDDED LIGHT BROWN SILTY SAND (SM)
loose, moist to wet and
BLACK SILTY CLAY (CH)
soft, moist.

GRAY BROWN SILTY CLAY (CL/CH)
soft, moist.

GRAY SILTY CLAY (CL)
medium stiff,moist to wet, mild hydrocarbon odor.

Bottom of Boring 20 feet below ground surface.

CLIENT	Dolan Rental Company	DIAMETER OF HOLE	7.25 inches	PLATE
LOCATION	6393 Scarlett Court, Dublin, CA	TOTAL DEPTH OF HOLE	20.0 feet	**7**
JOB NUMBER	102.01.001	TOP OF CASING ELEVATION	0.25 feet below ground surface	
GEOLOGIST/ENGINEER	D. Trumbly	DATE STARTED	11/21/91	
DRILL RIG	CME-75	DATE COMPLETED	11/21/91	

APPENDIX A
WELL DEVELOPMENT REPORT

BLAINE
TECH SERVICES INC.
1370 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

RECEIVED DEC 2 1991

December 10, 1991

PES Environmental, Inc.
P.O. Box 1833
Novato, CA 94947

Attention: Dan Trumbly

SITE:
6393 Scarlet Court
Dublin, California

PROJECT:
Well Development

PROJECT INITIATED ON:
November 25, 1991

WELL DEVELOPMENT REPORT 911125-Z-1.DEV

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems. The interpretation of results should be performed by representatives of the interested regulatory agencies and those certified professionals who are engaged as paid consultants in the business of providing professional opinions along with recommendations and proposals for further investigative or remedial activities.

As an independent third party, Blaine Tech Services, Inc. routinely performs evacuation and sampling of groundwater wells. In addition, we are frequently asked to provide specialized personnel, instruments and equipment for well development work. Similar standards of care and cleanliness are required in all these activities and our personnel are accustomed to the safety measures that must be taken.

Because formations vary in their geologic composition, transmissivity and water production capability, well development cannot be reduced to a set of fixed procedures that can simply be repeated for a set period of time and be expected to produce a complete or satisfactory result. Instead, well development is accomplished by procedures that (1) repair the portion of the native formation that was disrupted by the cutting action of the well drilling tool, and (2) promote the flow of water out of the native formation into the newly installed well (through the filter pack and well screen). Execution of development actions that are not appropriate to the native formation will be inefficient and even deleterious. While trial and error experimentation (guided by field instrument readings) can eventually succeed, the most efficient approach is to have the well development actions specified by the geologist who oversaw the installation of the well. This person will have observed and examined both the cuttings and soil samples produced during the drilling, and then characterized the native materials according to the Unified Soil Classification System as part of logging the well. This information together with the professional knowledge of soil types and their hydraulic characteristics will also have served as the basis for judgments that determined the final construction details of the finished well. Because the same information and judgments are needed to select the processes that can be expected to efficiently develop the well, it is common practice to have the well development specifications set by the same geologist (or geological team) as installed the well.

In addition to specifying the particular well development actions that will be performed, the geologist is also asked to determine the evaluation criteria to be used in evaluating the progress and completeness of the well development work. The most common standard are volumetric, recharge rate, and water clarity (measured as turbidity). Through the use of field instruments and radio communications our personnel can work independently of the project geologist. However, it is often productive to have the geologist on site so as to observe the progress being made as the well is being developed. This is especially true of sites where multiple wells have been installed, because wells even a short distance apart will often display quite different characteristics and the adequacy of development for a particular well may need to be evaluated in light of the hydrologic condition presented by the native formation at that location on the site.

Scope of Requested Services

Blaine Tech Services, Inc. was asked to provide specialized equipment, instruments and personnel for a well development project being overseen by PES Environmental, Inc..

Execution of the Recent Work

Our personnel arrived at the site on Monday, November 25, 1991 and developed four wells in accordance with PES Environmental, Inc. specifications communicated to us by Mr. Dan Trumbly. A summary of the well development actions is presented in the tables of field data which follow.

MW-1

Well Designation	Well Diameter (inches)	Initial Depth to Water (feet)	Well Depth (feet)	Volume of single case (gallons)
MW-1	2	4.82	19.42	2.34

Equipment Used: Bailer/swab

Data collection during well development:

Date	Time	Gallons Removed	pH	EC (micromhos)	Temp. (F)	Turbidity	Notes
11/27/91	15:10	--	--	--	--	--	Surged with swab.
	15:22	2.5	7.6	5700	66.6	>200	Silty.
	15:27	5.0	7.7	5100	64.9	>200	
	15:31	7.5	7.8	5200	65.2	>200	
	15:36	10.0	7.8	4600	64.6	>200	Silty.
	15:40	12.5	7.8	5100	65.1	>200	
	15:44	15.0	7.6	4900	65.1	>200	
	15:49	17.5	7.8	4900	64.7	>200	
	15:54	20.0	7.7	5000	64.7	>200	
	15:59	23.5	7.9	5000	64.9	>200	

MW-2

Well Designation	Well Diameter (inches)	Initial Depth to Water (feet)	Well Depth (feet)	Volume of single case (gallons)
MW-2	2	4.92	19.90	2.39

Equipment Used: Bailer/swab

Data collection during well development:

Date	Time	Gallons Removed	pH	EC (micromhos)	Temp. (F)	Turbidity	Notes
11/27/91	13:40	2.0	7.8	3700	67.1	>200	Surged with swab. Strong odor, thick sheen, silty.
	14:01	5.0	7.8	3600	67.1	>200	Strong odor, thick sheen, silty.
	14:07	7.5	7.8	3900	66.8	>200	Strong odor, thick sheen, silty.
	14:12	10.0	7.7	3400	66.8	>200	Strong odor, thick sheen, silty.
	14:16	12.5	7.6	3400	66.2	>200	Strong odor, thick sheen, silty.
	14:22	15.0	7.5	3400	66.2	>200	Strong odor, thick sheen, silty.
	14:27	17.5	7.4	3400	65.8	>200	Strong odor, thick sheen, silty.
	14:30	20.0	7.4	3300	65.6	>200	Strong odor, thick sheen, silty.
	14:38	24.0	7.6	3400	65.8	>200	Strong odor, thick sheen, silty.

MW-3

Well Designation	Well Diameter (inches)	Initial Depth to Water (feet)	Well Depth (feet)	Volume of single case (gallons)
MW-3	2	4.96	19.25	2.29

Equipment Used: Bailer/swab

Data collection during well development:

Date	Time	Gallons Removed	pH	EC (micromhos)	Temp. (F)	Turbidity	Notes
11/27/91	10:25	--	--	--	--	--	Surged with swab.
	10:52	--	--	--	--	--	Started bailing.
	10:59	3.0	6.0	5200	69.7	>200	Silty/sandy.
	11:03	5.0	6.6	5300	70.0	>200	Silty/sandy.
	11:10	7.5	6.7	5800	70.8	>200	Silty/sandy.
	11:16	10.0	7.2	5400	69.1	>200	Silty/sandy.
	11:20	12.5	7.2	5300	69.1	>200	
	11:24	15.0	7.2	5400	68.7	>200	Silty, turbidity decreasing.
	11:29	17.5	7.4	5300	68.3	>200	Silty, turbidity decreasing.
	11:33	20.0	7.3	5300	68.8	>200	Silty, turbidity decreasing.
	11:39	23.0	7.4	5100	68.7	>200	Silty, turbidity decreasing.

MW-4

Well Designation	Well Diameter (inches)	Initial Depth to Water (feet)	Well Depth (feet)	Volume of single case (gallons)
MW-4	2	5.26	19.42	2.27

Equipment Used: Bailer

Data collection during well development:

Date	Time	Gallons Removed	pH	EC (micromhos)	Temp. (F)	Turbidity	Notes
11/27/91	12:13	2.5	7.5	3900	65.6	>200	Sandy/silty.
	12:18	5.0	7.5	3800	65.5	>200	Sandy/silty.
	12:23	7.5	7.4	4100	65.8	>200	
	12:26	10.0	7.4	3800	66.1	>200	
	12:34	12.5	7.2	4000	65.5	>200	
	12:37	15.0	7.4	3900	65.6	>200	Silty.
	12:44	17.25	7.5	3800	65.8	>200	Silty.
	12:48	20.0	7.2	3700	65.8	>200	
	12:54	23.0	7.4	3800	65.4	>200	

STANDARD PROCEDURES

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.1020 training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Selection of Development Equipment

Each Blaine Tech Services, Inc. vehicle provided for a well development project will have a wide assortment of development tools including stainless steel surgeblocks and swabs, several types of pumps, and complete instrumentation for determining standard parameters. Special equipment which includes certain type of winches, jetting heads, and drop surging pumps can be provided.

General Policy

Truly difficult conditions which can only be resolved by the application of massive force or large volumes of high pressure air should be addressed by the well drilling contractor. Blaine Tech Services, Inc. has a general policy against the use of tools or techniques which provide enough mechanical advantage to pose a serious risk of damaging the well. The same policy prohibits introducing foreign materials into a well which would be presumed to carry with them contaminants that would also be introduced to the well. In keeping with this policy, our personnel avoid surging with slugs of effluent water, or jetting with unfiltered air unless these actions are specifically requested by a geologist who seems cognizant of the problems and hazards that accompany the action. In a similar vein, our personnel will, whenever possible, avoid development actions that are likely to seal clay formations or promote bridging, and make every attempt to call obvious indications of such conditions to the attention of the project geologist so that a different regimen can be selected.

Effluent Materials

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water than has been newly drawn into the well from the surrounding geologic formation.

Well development routinely generates as much or more effluent water as routine evacuation prior to monitoring. In some cases very large amounts of water must be removed from the well before a satisfactory level of development has been achieved. The effluent water from these development actions must be contained in suitable containers. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new DOT 17 E drums to the site which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of samples collected from each individual groundwater well. If those individual samples do not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment will be decontaminated after use in each well and before leaving the site. Decontamination consists of complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces (including the inside of the Teflon bladders in USGS/Middleburg pumps. Teflon conductor tubing is connected to the steam cleaner water outlet and water is run through the interior of the tubing for several minutes. The devices are then reassembled and actuated for a period of time as an additional measure. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lpn

APPENDIX B
WELL SAMPLING REPORT

BLAINE
TECH SERVICES INC.
1570 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

December 10, 1991

PES Environmental, Inc.
P.O. Box 1833
Novato, CA 94947

Attn: Dan Trumbly

SITE:
6393 Scarlet Court
Dublin, California

PROJECT:
PES Environmental, Inc.
well installation project

SAMPLING EVENT:
Evacuate and sample four wells

DATE:
November 27, 1991

GROUNDWATER SAMPLING REPORT 911127-Z-1

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site is presented in the TABLE OF WELL MONITORING DATA. This data was collected during our inspection, well evacuation, and sample collection. Measurements include the total depth of the well and depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, and temperature readings were obtained during well evacuation and at the time of sample collection. Recharge performance can be evaluated by comparing the anticipated three, four, or five case volume evacuation gallonage with the volume which could actually be purged.

TABLE OF WELL MONITORING DATA

Well I.D.	MW-1			MW-2 *			MW-3			MW-4		
Date Sampled	11/27/91			11/27/91			11/27/91			11/27/91		
Well Diameter (in.)	2			2			2			2		
Total Well Depth (ft.)	19.36			19.90			18.84			18.94		
Depth To Water (ft.)	5.20			5.05			5.08			5.48		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	2.27			2.38			2.20			2.15		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	7.0			7.25			7.5			7.0		
Purging Device	MIDDLEBURG			MIDDLEBURG			MIDDLEBURG			MIDDLEBURG		
Sampling Device	MIDDLEBURG			MIDDLEBURG			MIDDLEBURG			MIDDLEBURG		
Time	10:36	10:48	10:58	11:32	11:45	12:00	09:32	09:43	09:56	12:37	12:46	12:53
Temperature (Fahrenheit)	64.1	64.7	64.7	66.2	64.7	64.6	67.0	65.3	64.6	64.2	64.8	62.7
pH	7.4	7.4	7.5	7.4	7.5	7.3	6.3	7.1	7.0	7.1	6.8	7.0
Conductivity (micromhos/cm)	4800	4800	4600	3400	3300	3200	5700	5500	5500	3800	3900	3900
Nephelometric Turbidity Units	58.4	23.3	10.1	>200	29.1	13.5	>200	129.7	49.5	>200	74.6	37.2
BTS Chain of Custody	911127-Z-1			911127-Z-1			911127-Z-1			911127-Z-1		
BTS Sample I.D.	MW-1			MW-2			MW-3			MW-4		
DHS HMTL Laboratory	SUPERIOR			SUPERIOR			SUPERIOR			SUPERIOR		
Analysis	TPH (GAS), BTXE			TPH (GAS), BTXE			TPH (GAS), BTXE			TPH (GAS), BTXE		

* Note: There was sheen and odor in well MW-2.

EQUIPMENT

Selection of Sampling Equipment

The determination of what apparatus is to be used on particular wells may be made by the property owner or the professional consultant directing the performance of the monitoring on the property owner's behalf. If no specific requirement is made known to us, our personnel will select equipment that will accomplish the work in the most efficient manner. Our personnel are equipped with a variety of sampling devices that include USGS/Middleburg pumps, down hole electric submersible pumps, air lift pumps, suction pumps, and bailers made of both Teflon and stainless steel.

Evacuation and Sampling Equipment Mechanics

When equipment is not selected by the client, the apparatus for well evacuation and sample collection is selected by our field personnel based on an evaluation of the field conditions. Four types of devices are commonly available for employment:

Bailers
High Volume Suction Pumps
Electric Submersible Pumps
USGS/Middleburg positive displacement sampling pumps

USGS/Middleburg pumps were selected for the collection of samples at this site.

USGS/Middleburg Positive Displacement Sampling Pumps: USGS/Middleburg positive displacement sampling pumps are EPA approved pumps appropriate for use in wells down to two inches in diameter and depths up to several hundred feet. The pump contains a flexible Teflon bladder which is alternately allowed to fill with well water and then collapsed. Actuation of the pump is accomplished with compressed air supplied by a single hose to one side of the Teflon membrane. Water on the other side of the membrane is squeezed out of the pump and up a Teflon conductor pipe to the surface. Evacuation and sampling are accomplished as a continuum. The rate of water removal is relatively slow and loss of volatiles almost non-existent. There is only positive pressure on the water being sampled and there is no impeller cavitation or suction. The pumps can be placed at any location within the well, can draw water from the very bottom of the well case, and are virtually immune to the erosive effects of silt or lack of water which destroy other types of pumps.

Disadvantages associated with Middleburg pumps include their high cost, low flow rate, temperamental operation, and cleaning requirements which are both elaborate and time consuming.

STANDARD PRACTICES

Evacuation

There are few accepted groundwater sampling protocols that do not call for the evacuation of at least three case volumes of water prior to sample collection, and there are situations where up to ten case volumes of evacuation may be requested. Different professional consultants may specify different levels of evacuation prior to sampling or may request that specific parameters be used to determine when to collect the sample. Our personnel use several standard instruments to record the changes in parameters as the well is evacuated. These instruments are used regardless of whether or not a specific volumetric standard has been called for. As a result, the consultant will always be provided with a record of the pH, EC, and temperature changes that occurred during the evacuation process. Additional information obtained with different types of instruments (such as dissolved oxygen and turbidity meters) can also be collected if requested in advance.

Effluent Materials

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water than has been newly drawn into the well from the surrounding geologic formation. The evacuation of this purge water creates a volume of effluent water which must be contained. Blaine Tech Service, Inc. will place this water in appropriate containers of the client's choice or bring new DOT 17 E drums to the site which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well. If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Observations and Measurements

Included in the scope of work are routine measurements and investigative procedures which are intended to determine if the wells are suitable for evacuation and sampling. These include measurement (from the top of the well case) of the total depth of the well; the depth to water, and the thickness of any free product zone (FPZ) encountered. The presence of a significant free product zone may interfere with efforts to collect a water sample that accurately reflects the condition of groundwater lying below the FPZ. This interference is caused by adhesion of petroleum to any device being lowered through the FPZ and the likelihood that minute globules of petroleum may break free of the sampling device and be included in the sample. Accordingly, evaluation of analytical results from wells containing any amount of free petroleum should take into account the possibility that positive results have been skewed higher by such an inclusion. The decision to sample or not sample such wells is left to the discretion of our field personnel at the site and the consultant who establishes sampling guidelines based on the need for current information on groundwater conditions at the site.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms with State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846.

Sample Containers

Sample material is collected in specially prepared containers appropriate to the type of analyses intended. Our firm uses new sample containers of the type specified by either EPA or the RWQCB. Often times analytical laboratories wish to supply the sample containers because checks performed on these bottles are often part of a comprehensive laboratory QC program. In cases where the laboratory does not supply sample containers our personnel collect water samples in containers that are appropriate to the type of analytical procedure that the sample is to receive. For example, 40 ml volatile organic analysis vials (VOAs) are used when analysis for gasoline and similar light volatile compounds is intended. These containers are prepared according to EPA SW 846 and will usually contain a small amount of preservative when the analysis is for TPH as gasoline or EPA 602. Vials intended for EPA 601 analysis and EPA 624 GCMS procedures are not preserved. The closure of volatile organic analysis water sample containers is accomplished with an open headed (syringe accessible) plastic screw cap brought down on top of a Teflon faced septum which is used to seal the sample without headspace.

Water samples intended for semivolatile and nonvolatile analysis such as total oil and grease (TOG) and diesel (TPH HBF) are collected and transported in properly prepared new glass liter bottles. Dark amber glass is used in the manufacture of these bottles to reduce any adverse effect on the sample by sunlight. Antimicrobial preservative may be added to the sample liquid if a prolonged holding time is expected prior to analysis. Closure is accomplished with a heavy plastic screw cap.

Groundwater well samples intended for metals analysis are transported in new plastic bottles and preserved with nitric acid. Our personnel can field filter the sample liquid prior to placing it in the sample container if instructed to perform this procedure.

Sample Handling Procedures

Water samples are collected in any of several appropriate devices such as bailers, Coliwasas, Middleburg sampling pumps etc. which are described in detail only as warranted by their employment at a given site. Sample liquid is decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA procedures for handling volatile organic and semi-volatile compounds. Only two variations from the EPA methods are generally employed. First, preservative is added to the sample container prior to addition of the sample liquid. We first discovered this method in bottles prepared by Stoner Laboratories in 1982. It was subsequently adopted by many northern California laboratories and environmental consulting firms as a practical means of reducing the time that a liquid is allowed to aerate prior to closure of the sampling container. Second, because tests have shown that the preservative readily mixes with sample liquid, glass stirring rods are not used to agitate the sample/preservative mixture.

Groundwater samples that are to receive metals analyses can be filtered prior to being placed in the plastic sample bottles that contain the nitric acid preservative. The filtration process employs new glass containers which are discarded and laboratory quality disposable filtering containers which are also discarded. A frequently used filtering procedure employs a vacuum pump to draw sample material through a 0.45 micron filter. The 0.45 micron pore size is standard, but the amount of filter available varies with the type of package selected. Filters are selected on the basis of the relative turbidity of the water sample. Samples which are relatively clean can be efficiently filtered with relatively inexpensive filters while very turbid water will require a very large filter with a high tolerance for sediments. One of many such filters our firm uses are the Nalgene Type A filters in which an upper and lower receptacle chamber are affixed to the filter. Sample material is poured into the upper chamber and a vacuum pump attached to the lower chamber. Simple actuation of the vacuum pump induces the flow of water through the filter and into the lower chamber. The sample is then decanted into the laboratory container and the filter assembly discarded.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days as jobs and projects often do.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

After completion of the field work, the sample containers were delivered to Superior Analytical Laboratory in San Francisco, California. Superior Analytical Laboratory is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #220.

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Decontamination procedures include complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces (this applies to the *inside* of the Teflon bladders of USGS/Middleburg pumps). Teflon conductor tubing is connected to the steam cleaner water outlet and water is run through the interior of the tubing for several minutes. The devices are then reassembled and actuated for a period of time as an additional measure. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lpn

attachments: chain of custody

BLAINE
TECH SERVICES INC.

1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CHAIN OF CUSTODY 911127-Z-1

CLIENT PES

SITE 6393 Scarlet Ct.
Dublin CA

LAB Superior   DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☒ RWQCB REGION 2

SPECIAL INSTRUCTIONS

Routine (5 day)

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	CONTAINERS	C = COMPOSITE ALL CONTAINERS	TPH (Gas) BTEX								ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1	W	3	VOA		X									Routine		
MW-2	↓	3	↓		X									↓		
MW-3	↓	3	↓		X									↓		
MW-4	↓	3	↓		X									↓		

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	11-27-91	1300	Scott Zavack	

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Scott Zavack	11-27-91	14:56	Angela a. Rlolun x790	11/27/91	1500

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	
EXPRESS-IT	11-27-91		#130	

APPENDIX C
LABORATORY ANALYTICAL REPORTS

RECEIVED DEC - 9 1991

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54346
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 102.01.001

DATE RECEIVED: 11/26/91
DATE REPORTED: 12/04/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/kg) Gasoline Range
1	MW2-4A	140
2	MW3-4A	ND<1
3	MW4-2A	ND<1
4	MW1-4A	ND<1

mg/kg - parts per million (ppm)
Minimum Detection Limit for Gasoline in Soil: 1mg/kg

QAQC Summary:
Daily Standard run at 2mg/L: %DIFF Gasoline = <15%
MS/MSD Average Recovery = 92%: Duplicate RPD = 0.2%

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54346
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 102.01.001

DATE RECEIVED: 11/26/91
DATE REPORTED: 12/04/91

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/kg) Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW2-4A	1700	3600	2600	14000
2	MW3-4A	ND<3	5	ND<3	ND<3
3	MW4-2A	ND<3	6	5	ND<3
4	MW1-4A	ND<3	ND<3	ND<3	ND<3

ug/kg - parts per billion (ppb)

Minimum Detection Limit in Soil: 3.0ug/kg

QAQC Summary:
Daily Standard run at 20ug/L: %DIFF 8020 = <15%
MS/MSD Average Recovery = 88% : Duplicate RPD = 2.3%

Richard Srna, Ph.D.

Laboratory Director

PES Environmental, Inc.
Engineering & Environmental Services

CHAIN OF COUSTODY RECORD

SF # 52134 6

SAMPLERS: D. TRUMBLY

JOB NUMBER: 102.01.001

NAME/LOCATION: DOLAN, DUBLIN

PROJECT MANAGER: MICHAEL D. THOMPSON

RECORDER: [signature] (Signature Required)

DATE YR	MO	DY	TIME	SAMPLE NUMBER OR LAB NUMBER (YR / WK / SEQ)	SOURCE CODE	MATRIX: Water	Sedim't	Soil	Oil	# CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	Filtered	HCl	DEPTH IN FEET	COL MTD CD	QA CODE	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	BTEX	TPH (GASOLINE)	TPH (DIESEL)	TOG (5520 C&F)	Priority Pollutant Metals
91	11	21	0855	MW2-4A	49			X		1					1100	36			X				X			
			1110	MW3-4A	49			X		1					1100	36			X				X			
			1355	MW4-2A	49			X		1					1100	36			X				X			
91	11	22	0915	MW1-4A	49			X		1					1100	36			X				X			

NOTES

Standard turn-around time.

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
[signature]	[signature]	11/26/91	2:01
RELINQUISHED BY: (Signature) [signature]	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME

DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE	TIME
			[signature]	11-26-91	1700

METHOD OF SHIPMENT: Courier to Sequoia Analytical

Laboratory Copy White | Project Office Copy Yellow | Field or Office Copy Pink

RECEIVED DEC - 9 1991

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / Fax (415) 821-7123

C E R T I F I C A T E   O F   A N A L Y S I S

LABORATORY NO.: 54356
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 911127-Z-1

DATE RECEIVED: 11/27/91
DATE REPORTED: 12/05/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ug/L) Gasoline Range
1	MW-1	ND<50
2	MW-2	170000
3	MW-3	ND<50
4	MW-4	11000

ug/L - parts per billion (ppb)

Minimum Detection Limit for Gasoline in Water: 50ug/L

QAQC Summary:
Daily Standard run at 2mg/L: %DIFF Gasoline = <15%
MS/MSD Average Recovery = 108%: Duplicate RPD = 3.0%

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54356
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 911127-Z-1

DATE RECEIVED: 11/27/91
DATE REPORTED: 12/05/91

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-1	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2	MW-2	24000	13000	3500	16000
3	MW-3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
4	MW-4	100	0.7	250	330

ug/L - parts per billion (ppb)

Minimum Detection Limit in Water:0.3ug/L

QAQC Summary:
Daily Standard run at 20ug/L: %DIFF 8020 = <15%
MS/MSD Average Recovery = 93% : Duplicate RPD = 3.9%

Richard Srna, Ph.D.

Laboratory Director

BLAINE TECH SERVICES INC.

1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CHAIN OF CUSTODY 911127-Z-1

CLIENT PES

SITE 6393 Scarlett CT
Dublin CA

CONDUCT ANALYSIS TO DETECT

LAB Superior | DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION

SPECIAL INSTRUCTIONS

Routine (5 day)

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	CONTAINERS	C = COMPOSITE ALL CONTAINERS	TPH (Gas) BTEX							ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1	W	3	VOA										Routine		
MW-2	↓	3	↓										↓		
MW-3	↓	3	↓										↓		
MW-4	↓	3	↓										↓		

Please initial: Cy
Samples Stored in ice. Yes
Appropriate containers. Yes
Samples preserved. Yes
VOA's without headspace. Yes
Comments:

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	11-27-91	1300	Scott Jarack	

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Scott Jarack	11-27-91	14:56			
[illegible signature]	11-27-91	1640			
			Cecilia Joaquin	11/27/91	1643

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #
EXPRESS-IT	11-27-91		#130

BLAINE TECH SERVICES INC.
1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CHAIN OF CUSTODY 911127-Z-1

CLIENT PES

SITE 6393 Scarlet Ct.
Dublin CA

CONDUCT ANALYSIS TO DETECT: TPH (Gas) BTEX

LAB Superior DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- [ ] EPA
- [ ] LIA
- [ ] OTHER
- [x] RWQCB REGION 2

SPECIAL INSTRUCTIONS
Routine (5day)

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	TPH (Gas) BTEX								ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1	W	3	VOA		X									Routine		
MW-2	↓	3	↓		X									↓		
MW-3	↓	3	↓		X									↓		
MW-4	↓	3	↓		X									↓		

SAMPLING COMPLETED DATE 11-27-91 TIME 1300

SAMPLING PERFORMED BY Scott Zavack

RESULTS NEEDED NO LATER THAN

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Scott Zavack	11-27-91	14:56	Angela a. Rlahm x790	11/27/91	1500

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #
EXPRESS-IT	11-27-91		#130

DISTRIBUTION

SOIL AND GROUNDWATER INVESTIGATION
DUBLIN ROCK AND READY MIX FACILITY
6393 SCARLETT COURT
DUBLIN, CALIFORNIA

January 31, 1992

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William F. Frizzell

William F. Frizzell, P.E.
Principal Engineer
Quality Control Reviewer