

Group Environmental Management Company

S. T. Hooton
Portfolio Manager

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Renton, WA 98055
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June 13, 2002

Ms. Eva Chu
Alameda County Health Care Services
Agency
1131 Harbor Bay Parkway, STE 250
Alameda, CA 94502-6577

Re: Former BP Oil Site No. 11120
6400 Dublin Boulevard
Dublin, CA

JUN 24 2002

Dear Ms. Chu:

This letter transmits the 20 May 2002 Site Investigation Report prepared by Alisto Engineering Group on behalf of BP.

Contact me at (425) 251-0689 if you have questions.

Sincerely,


Scott Hooton

attachment

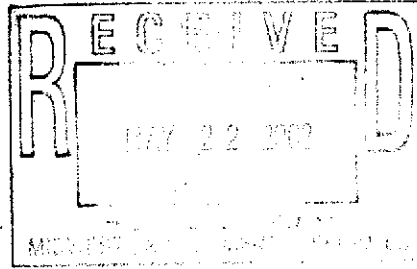
cc: site file
Amy Breckenridge – URS Corporation, 500 12th Street, STE 200, Oakland, CA 94607-4014
(w/attachment)
David Camille – Tosco (w/attachment)



ALISTO ENGINEERING GROUP

11120

May 20, 2002



Mr. Scott Hooton
BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington

Subject: Site Investigation Report
Former BP Site No. 11120
6400 Dublin Boulevard
Dublin, California

JUN 24 2002

10-170-07-005

Dear Mr. Hooton:

Alisto Engineering Group is pleased to submit copies of the final report on the site investigation report on the former BP Site No. 11120, 6400 Dublin Boulevard, Dublin, California. Please submit a copy of the final report to the following parties:

Ms. Eva Chu
Alameda County Health Care Service Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Mr. Wyman Hong
Zone 7
5997 Parkside Drive
Pleasanton, California 94588-5127

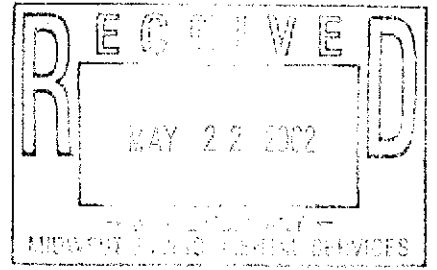
Please call if you have questions or comments.

Sincerely,

ALISTO ENGINEERING GROUP

Brady Nagle
Project Manager

Enclosures



SITE INVESTIGATION REPORT

**Former BP Site No. 11120
6400 Dublin Boulevard
Dublin, California**

Project No. 10-170-07-005

RO-2931

JUN 24 2002

May 2002



JUN 24 2002

SITE INVESTIGATION REPORT

**Former BP Site No. 11120
6400 Dublin Boulevard
Dublin, California**

Project No. 10-170-07-005

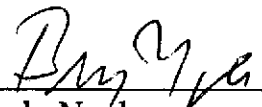
Prepared for:

**BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington**

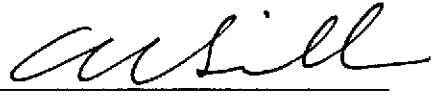
Prepared by:

**Alisto Engineering Group
3732 Mt. Diablo Boulevard, Suite 270
Lafayette, California**

May 20, 2002



**Brady Nagle
Project Manager**



**Al Sevilla, P.E.
Principal**



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- F Well Elevation Survey Map
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1.0 INTRODUCTION

BP Oil Company retained Alisto Engineering Group to perform additional site characterization at the former BP Site No. 11120, 6400 Dublin Boulevard, Dublin, California. The work was performed under BP Oil Work Release No. J963769 dated January 14, 2002. A site vicinity is shown on Figure 1, and a site plan is shown on Figure 2.

1.1 Purpose and Scope of Work

The scope of work was based on the requirements set forth in a letter from the Alameda County Health Care Services Agency (ACHCSA). A work plan prepared by Alisto (Alisto, 2002) presented the scope of work, which was approved by the ACHCSA in January 2002 (ACHCSA, 2002). The approved scope of work included the following tasks:

- Obtaining permits to install four onsite groundwater monitoring wells
- Drilling and logging the soil borings and collecting soil samples
- Installing, developing, sampling, and surveying Monitoring Wells MW-8, MW-9, MW-10, and MW-11.
- Analyzing soil and groundwater samples for specific hydrocarbon constituents and physical parameters.
- Evaluating the data and analytical results and preparing this report.

1.2 Site Location and Description

The former BP Site No. 11120, on the south corner of Dublin Boulevard and Dougherty Road, Dublin, California, is currently an operating service station, with two underground storage tanks (UST), within a common pit. The USTs are immediately northwest of the station convenience store. Properties adjacent to the site are commercial developments.

1.3 Project Background

In October 1992, four onsite groundwater monitoring wells, MW-1 through MW-4, were installed to obtain baseline data in support of BP's plans to divest properties in Northern California (HETI, 1992). Laboratory analysis of soil and groundwater samples detected petroleum hydrocarbon constituents in the samples collected from MW-3 and MW-4. On April 6, 1993, four additional soil borings were drilled onsite, three of which were completed as Monitoring Wells MW-5, MW-6 and MW-7 (HETI, 1993). The underground storage tanks were replaced during station reimaging in 1996. Quarterly groundwater monitoring began in May 1993 and continued until June 1998 (Alisto, 1998).

On January 30, 1996, Monitoring Well MW-1 was destroyed prior to of the replacement of the service station building and USTs as part of the station reimaging. On February 22, 1999, Monitoring Wells MW-2 through MW-7 were destroyed (Alisto 1999).



samples were transported in an iced cooler to Pace Analytical, a state-certified laboratory, following chain of custody procedures. The results from the laboratory analysis are presented in Table 2. Groundwater sampling data is presented in the field survey forms in Appendix E.

2.4 Groundwater Level Monitoring and Well Surveying

A licensed land surveyor, Frame Surveying & Mapping, Davis, California, surveyed all the wells to the top of each well casing in reference to an established benchmark, and in accordance with the state requirement for electronic data format. The well elevation and location survey data is presented in Appendix F.

Depths to groundwater in Monitoring Wells MW-8, MW-9, MW-10, and MW-11 were measured from the top of the well casing to the nearest 0.01 foot using an electronic sounder. Groundwater elevation data is summarized in Table 2, and the site groundwater elevation contour is presented in Figure 3.

3.0 ANALYTICAL METHODS

Soil and groundwater samples collected during this investigation were analyzed by Pace Analytical, a state-certified laboratory, using standard test methods of U.S. Environmental Protection Agency (EPA) and the California Department of Health Services for the following:

- Total petroleum hydrocarbons as gasoline (TPH-G) using EPA Methods 8015
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method Modified 8021
- Methyl tert butyl ether (MTBE) using EPA Method Modified 8021

The laboratory results for the soil and groundwater samples are summarized in Tables 1 and 2. The results of laboratory analysis of groundwater samples are shown on Figure 4. The field procedures for chain of custody documentation, laboratory reports, and chain of custody records are presented in Appendix G.

4.0 SITE GEOLOGY AND HYDROGEOLOGY

Soil types encountered at the site during drilling of Monitoring Wells MW-8, MW-9, MW-10, and MW-11 generally consisted of silty clay, with sand content increasing with depth in Borings MW-8 and MW-9.

On February 25, 2002, depth to groundwater was measured in the monitoring wells. The depth to water in Wells MW-8, MW-9, MW-10 and MW-11 ranged from 4.21 to 6.02 feet, which corresponds to groundwater elevations ranging from 322.92 to 324.06 feet above mean sea level. As interpreted from the depth to groundwater data, the general groundwater flow direction during this event was generally to the south with a relatively flat gradient of approximately 0.009 foot per foot.



5.0 DISCUSSION OF RESULTS

The results of this site investigation, based on field observations and laboratory analysis, are discussed below:

- Soil types encountered in Borings MW-8, MW-9, MW-10, and MW-11 consisted primarily of silty clay. At depths of approximately 16 feet, some sand nodules were encountered in Borings MW-8 and MW-9.
- Depth to groundwater measured in Monitoring Wells MW-8, MW-9, MW-10, and MW-11 ranged from 4.21 to 6.02 feet, which corresponds to groundwater elevations ranging from 322.92 to 324.06 feet above mean sea level. The general groundwater flow direction was to the south with a gradient of approximately 0.009 foot per foot.
- Analysis of soil samples collected from Borings MW-8, MW-9, MW-10, and MW-11 did not detect TPH-G or BTEX constituents above the reported detection limits, with the exception of 0.0051 milligrams per kilogram (mg/kg) of toluene in the sample from Boring MW-8 at a depth of approximately 6 feet. MTBE was only detected in the soil sample collected from Boring MW-11 at a depth of 6 feet at a concentration of 0.048 mg/kg.
- Dissolved-phase TPH-G and BTEX constituents were only detected in the groundwater samples collected from Wells MW-10 and MW-11 at concentrations of up to 1800 milligrams per liter (ug/l) TPH-G in MW-11 and 2.58 ug/l benzene in MW-10.
- MTBE was only detected in the groundwater samples collected from Wells MW-8 and MW-11 at concentrations of 1.98 and 2550 ug/l, respectively.

6.0 CONCLUSIONS

The concentrations of MTBE detected in the groundwater sample from Well MW-11, which is hydraulically downgradient of the underground tanks and fuel dispensers island, was lower by an order of magnitude than the concentration detected in the sample collected from temporary Boring HP-2 installed in 1999. The results of this investigation indicate that the extent of petroleum hydrocarbons and MTBE in groundwater has been defined except to the south of the site.



REFERENCES

ACHCSA, 2002. Work Plan Approval for Former BP No. 11120 at 6400 Dublin Boulevard, Dublin. January 25.

Alisto, 1998. Groundwater Monitoring and Sampling Report, BP Oil Company Service Station No. 11120, 6400 Dublin Boulevard, Dublin, California. September 2.

Alisto, 1999. Well Destruction Report, Former BP Site No. 11120, 6400 Dublin Boulevard, Dublin, California. March 5.

Alisto, 2002. Work Plan for Site Characterization, Former BP Site No. 11120, Dublin. January.

Gettler-Ryan, 1999. Limited subsurface Investigation Report, Tosco 76 Branded Facility No. 11120, 6400 Dublin Boulevard, Dublin, California. June 16.

HETI, 1992. Preliminary Site Assessment Report, BP Service Station No. 11120, Dublin Boulevard, Dublin, California. January 7.

HETI, 1993. Phase II Subsurface Investigation Report, BP Service Station No. 11120, Dublin Boulevard, Dublin, California. July 15.



TABLE 1 - SUMMARY OF RESULTS OF SOIL SAMPLING
 FORMER BP OIL COMPANY SERVICE STATION NO. 11120
 6400 DUBLIN BOULEVARD
 DUBLIN, CALIFORNIA
 ALISTO PROJECT NO. 10-170

WELL ID	DATE OF SAMPLING/ MONITORING	SAMPLE DEPTH (Feet)	TPH-G (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	LAB
MW-8	2/15/2002	6.0 - 6.5	ND<0.050	ND<0.005	0.0051	ND<0.005	ND<0.005	ND<0.005	PACE
MW-9	2/15/2002	6.0 - 6.5	ND<0.050	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	PACE
MW-10	2/15/2002	6.0 - 6.5	ND<0.050	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	PACE
MW-11	2/15/2002	6.0 - 6.5	ND<0.050	ND<0.005	ND<0.005	ND<0.005	ND<0.005	0.048	PACE

ABBREVIATIONS:

TPH-G Total petroleum hydrocarbons as gasoline (EPA Method 8015)
 B Benzene (EPA Method 8021)
 T Toluene (EPA Method 8021)
 E Ethylbenzene (EPA Method 8021)
 X Total xylenes (EPA Method 8021)
 MTBE Methyl tert butyl ether (EPA Methods 8021)
 mg/kg Micrograms per kilogram
 ND Not detected above reported detection limit
 PACE Pace Analytical

F:\01\10-170\170_SOIL.xls

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
 FORMER BP OIL COMPANY SERVICE STATION NO. 11120
 6400 DUBLIN BOULEVARD
 DUBLIN, CALIFORNIA
 ALISTO PROJECT NO. 10-170

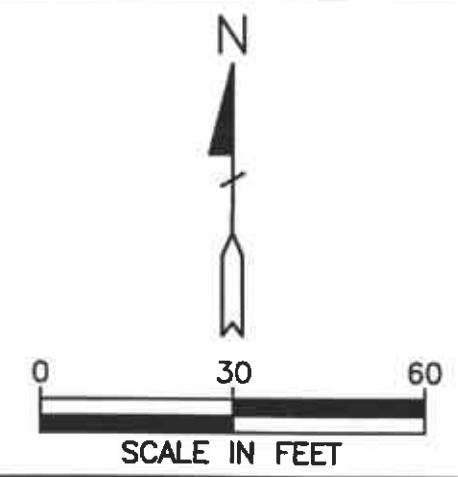
WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	(a)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	LAB
MW-8	2/25/2002	328.94	6.02	322.92		ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.0	1.98	PACE
MW-9	2/25/2002	329.96	5.90	324.06		ND<250	ND<2.50	ND<2.50	ND<2.50	ND<5.00	ND<2.50	PACE
MW-10	2/25/2002	327.44	4.21	323.23		53	2.58	ND<0.5	2.83	8.46	ND<0.5	PACE
MW-11	2/25/2002	329.75	6.02	323.73		1800	1.34	ND<0.5	ND<0.5	ND<1.0	2550	PACE

ABBREVIATIONS:

- TPH-G Total petroleum hydrocarbons as gasoline (EPA Method 8015)
- B Benzene (EPA Method 8021)
- T Toluene (EPA Method 8021)
- E Ethylbenzene (EPA Method 8021)
- X Total xylenes (EPA Method 8021)
- MTBE Methyl tert butyl ether (EPA Methods 8021)
- DO Dissolved oxygen
- ug/l Micrograms per liter
- ND Not detected above reported detection limit
- Not analyzed
- PACE Pace Analytical

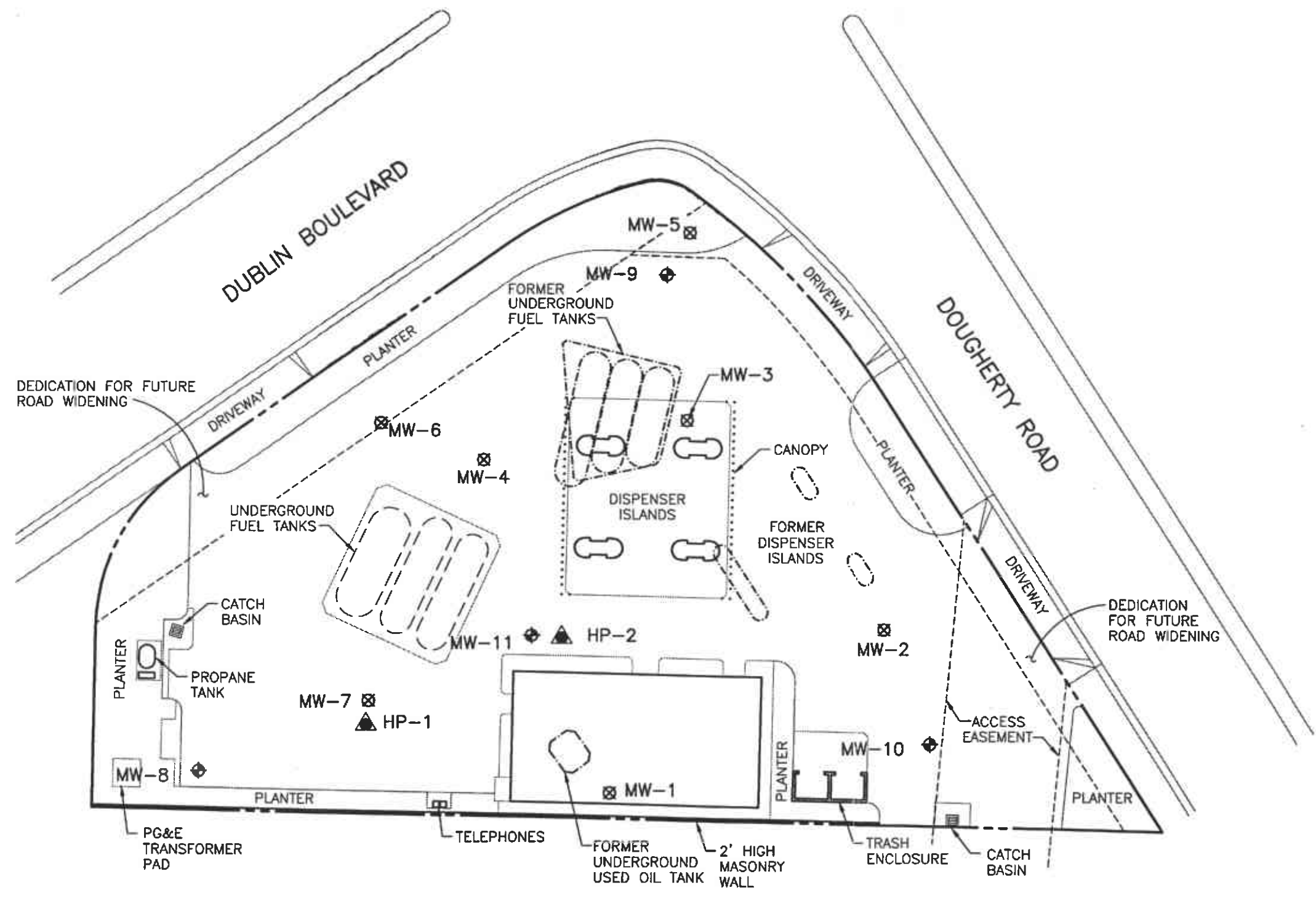
NOTES:

(a) Groundwater elevations in feet above mean sea level.



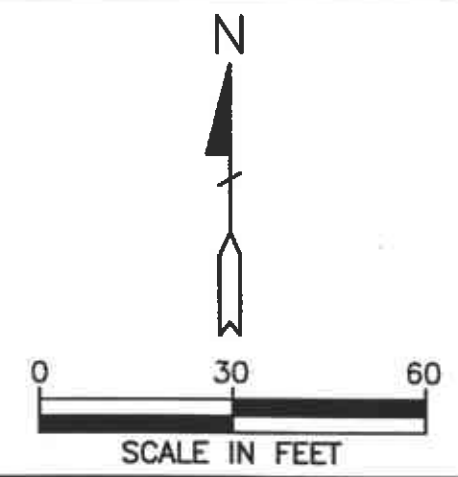
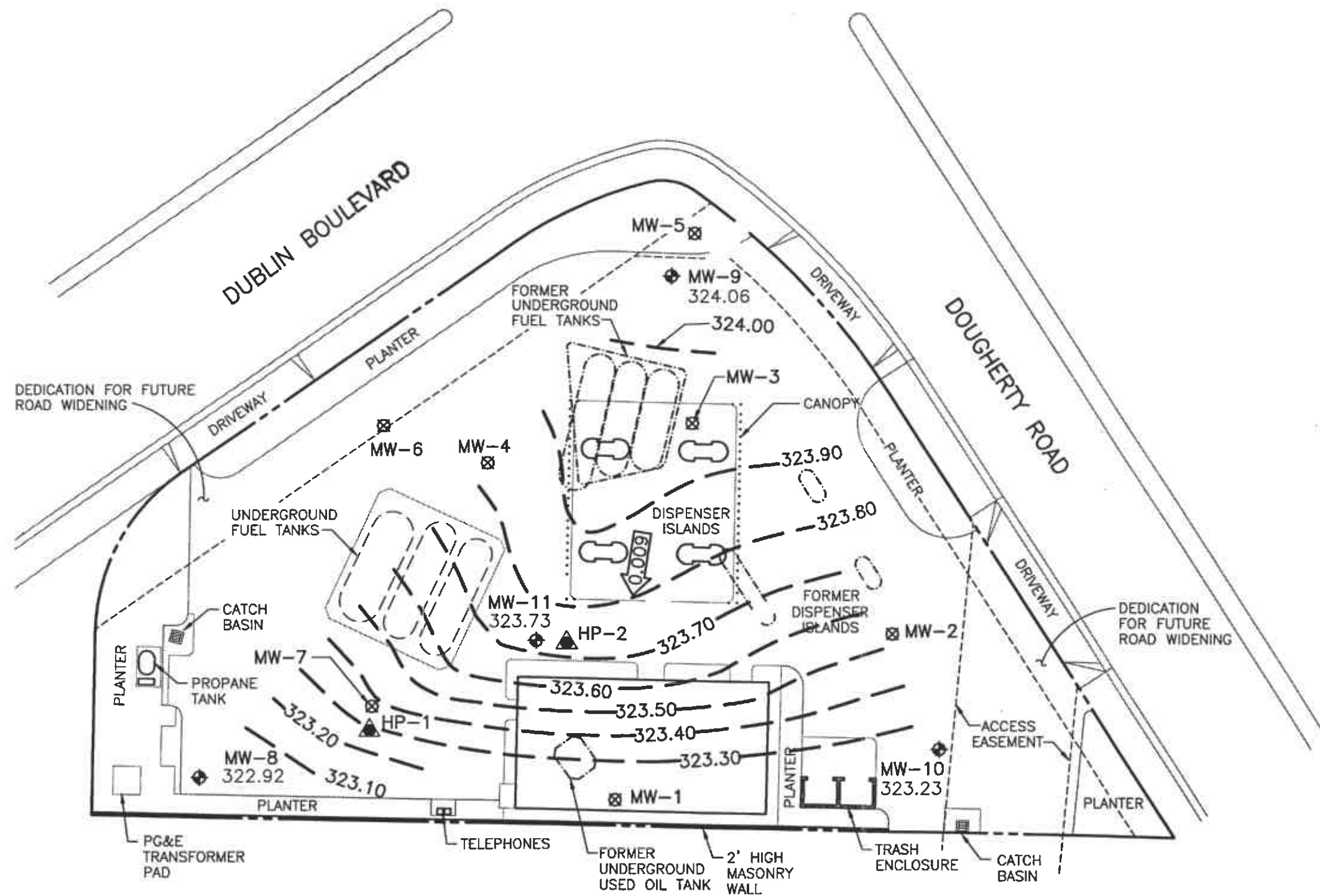
LEGEND

- ◆ GROUNDWATER MONITORING WELL
- ⊠ DESTROYED GROUNDWATER MONITORING WELL
- ▲ GRAB GROUNDWATER SAMPLE LOCATION MAY 14, 1999



**FIGURE 2
SITE PLAN**

FORMER BP SIT NO. 11120
6400 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA
PROJECT NO. 10-170



- LEGEND**
- ◆ GROUNDWATER MONITORING WELL
 - ⊗ DESTROYED GROUNDWATER MONITORING WELL
 - ▲ GRAB GROUNDWATER SAMPLE LOCATION MAY 14, 1999
 - 322.92 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 - 323.60 - GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL - 0.10 FOOT)
 - ← 0.009 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

NOTE:
 Potentiometric groundwater elevation contours were generated with Quicksurf using the Kriging method with a spherical variogram on a triangulated grid surface.

FIGURE 3
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP
FEBRUARY 25, 2002
 BP OIL SERVICE STATION NO. 11120
 6400 DUBLIN BOULEVARD
 DUBLIN, CALIFORNIA
 PROJECT NO. 10-170

APPENDIX A
WELL INSTALLATION PERMIT



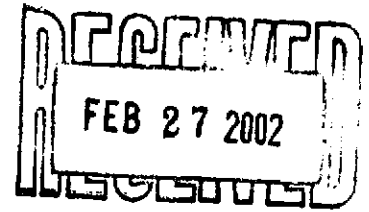
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588-5127

PHONE (925) 484-2600 FAX (925) 462-3914

February 25, 2002



Mr. Brady Nagle
Alisto Engineering Group
3732 Mt. Diablo Boulevard
Lafayette, CA 94549

Dear Mr. Nagle:

Enclosed is drilling permit 22034 for monitoring well construction project at 6400 Dublin Boulevard in Dublin for BP Oil Company. Also enclosed are current drilling permit applications for your files.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number. Please submit the original of your completion report. We will forward your submittal to the California Department of Water Resources.

If you have any questions, please contact me at extension 235 or Matt Katen at extension 234.

Sincerely,

A handwritten signature in cursive script that reads "Wyman Hong".

Wyman Hong
Water Resources Technician II

Enc.



ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600

FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT

6400 Dublin Blvd
Dublin

PERMIT NUMBER 22034

LOCATION NUMBER

CLIENT

Name BP Oil Company
Address 295 SW 41st St
City Renton, WA
Voice 425-251-0689
Zip 98055

PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT

Name Alista Engineering Group
Address 3732 Mt. Diablo
City Lafayette
Fax 925-962-6971
Voice 925-962-6970
Zip 94549

TYPE OF PROJECT

Well Construction	Geotechnical Investigation
Cathodic Protection	General
Water Supply	Contamination
Monitoring	Well Destruction

PROPOSED WATER SUPPLY WELL USE

Domestic	Industrial	Other
Municipal	Irrigation	W/G

DRILLING METHOD:

Mud Rotary _____ Air Rotary _____ Auger X
 Cable _____ Other _____

DRILLER'S LICENSE NO. CS7-72094

WELL PROJECTS

Drill Hole Diameter	<u>8</u> in.	Maximum	
Casing Diameter	<u>8</u> in.	Depth	<u>20</u> ft.
Surface Seal Depth	<u>5</u> ft.	Number	<u>4</u>

GEOTECHNICAL PROJECTS

Number of Borings	<u>W/G</u>	Maximum	
Hole Diameter	_____ in.	Depth	_____ ft.

ESTIMATED STARTING DATE 2/15/02
ESTIMATED COMPLETION DATE 2/15/02

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [Signature] Date 2/14/02

A. GENERAL

1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

- F. Special Condition: Within 60 days after completion of work, submit to Zone 7 your well installation report including soil and water laboratory results.

Approved [Signature] For WH Date 2/14/02

**FIELD PROCEDURES
FOR
DRILLING, SOIL SAMPLING,
AND GROUNDWATER MONITORING WELL INSTALLATION**

Drilling

The soil borings were drilled using 8-inch-diameter hollow-stem augers. To avoid cross-contamination, drilling equipment in contact with potentially contaminated material was decontaminated by steam cleaning before and after each use. Decontamination fluids were placed into DOT-approved drums for disposal.

Soil Sampling

During drilling, samples were collected at intervals of up to 5 feet, beginning at 5 feet below grade to the total depth of the borings. Before and after each use, the sampler was washed using a phosphate-free detergent followed by tap water and deionized water rinses. Soil was sampled using a California-modified split-spoon sampler lined with stainless steel tubes. A 140-pound slide hammer falling 30 inches was used to advance the sampler 18 inches ahead of the hollow-stem augers into undisturbed soil, and blow counts were recorded for every 18 inches of penetration to evaluate the density of the soil.

After retrieval from the augers, the sampler was split, the sample tubes were removed, and a soil sample was selected for possible chemical analysis. The sample was retained within the stainless steel tube, and both ends were immediately covered with Teflon sheeting and polyurethane caps. The caps were sealed with tape and labeled with the following information: Alisto's project number, boring number, sample depth interval, sampler's initials, and date of collection. The sample was immediately placed in a waterproof plastic bag and stored in a cooler containing blue ice. Possession of the samples was documented from the field to a state-certified analytical laboratory by using a chain of custody form.

Soil samples and, when representative, drill cuttings were described by Alisto's personnel using the Unified Soils Classification System; and field estimates of soil type, color, moisture, density, and consistency were noted on the boring logs. The logs were reviewed by a civil engineer registered in the state of California.

Groundwater Monitoring Well Installation

Construction of the groundwater monitoring wells was based on the stratigraphy encountered in the soil borings. The well construction materials were introduced into the boring through the hollow-stem augers to centralize the well casing and minimize the possibility of native material entering the annular space of the well.

The 2-inch-diameter PVC well casing consisted of 0.010-inch slotted casing from the bottom of the boring to a depth interval above the highest anticipated water level, and solid casing was installed from the top of the slotted casing to approximately 4 inches below grade.

The annular space surrounding the screened portion was backfilled with No. 2/12 Lonestar sand (filter pack) to approximately 1.0-foot above the top of the screened section. An approximately 1.0-foot-thick interval of bentonite pellets was added to the annulus above the filter pack and hydrated with approximately 2 to 3 gallons of deionized water to minimize intrusion of well seal into the filter pack. A 2.5-foot-thick interval of Portland Type I/II neat cement was placed above the bentonite, and a traffic-rated utility box was installed around the top of the well casing. An expanding, watertight well cap and lock were installed on top of the well casing to secure the well from surface fluid and tampering.

APPENDIX C
BORING LOGS AND WELL CONSTRUCTION DETAILS



**SEE SITE PLAN
FOR WELL LOCATION**

ALISTO PROJECT NO: 10-170-07

DATE DRILLED: 02/15/02

CLIENT: BP Oil Company

BOREHOLE DIAMETER: 8"

LOCATION: 6400 Dublin Blvd, Dublin

BOREHOLE DEPTH: 21.5 ft

DRILLING METHOD: 8" Hollow-stem auger

CASING DIAMETER: 2"

DRILLING COMPANY: V & W Drilling, Inc.

CASING MATERIAL: PVC

LOGGED BY: Brady Nagle

APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	
		<p>4" asphalt; 4" base material 2" diameter Sch. 40 PVC Casing 2" diameter 0.010" Slot PVC Screen Lonestar # 2/12 Sand Bentonite Grout</p>				SM	4" asphalt; 4" base material silty clay dark gray to black damp, stiff ; same organics (grass rootlets) Clays change to olive tan at 3 ft	
6,14,19	2.0			5			CL	Same material.
3,4,8				10				Same, some blue-gray mottling.
6,7,11	0.2			12 1/2				Some angular gravel to 1/2", diameter from 12 1/2 to 13 1/2; consolidate sand nodules, wet near gravels.
4,8,11	0.0			15				Minor gravel nodules; water encountered at 17 1/2".
5,7,12	0.0			17 1/2				
4,7,7				20				Minor sand at 17 1/2; some carbon granules at 18; water apparent among sand particle; otherwise, moist matrix.
10,16,20			25					
			30					



**SEE SITE PLAN
FOR WELL LOCATION**

ALISTO PROJECT NO: 10-170-07

DATE DRILLED: 02/15/02

CLIENT: BP Oil Company

BOREHOLE DIAMETER: 8"

LOCATION: 6400 Dublin Blvd, Dublin

BOREHOLE DEPTH: 21.5 ft

DRILLING METHOD: 8" Hollow-stem auger

CASING DIAMETER: 2"

DRILLING COMPANY: V & W Drilling, Inc.

CASING MATERIAL: PVC

LOGGED BY: Brady Nagle

APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
		<p>2" diameter Sch. 40 PVC Casing 2" diameter 0.010" Slot PVC Screen Grout Bentonite Lonestar # 2/12 Sand</p>				SM	4" asphalt; 6" base material; Sandy Clay; dark gray damp, fine-grained sand.
3,9,10	0.5		5			CL	Silty clay; dark gray, damp to moist, very stiff; little to no sand.
4,5,5	0.0		10				Silty clay, light brown with olive-grain mottling, damp stiff notting along rootlet.
3,2,3 4,7,7 4,7,10			15 20				Same material, wet, medium stiff, occasional singular consolidated sand nodules to 1/2 diameter. Some coarse grained Sand same, very stiff.
			25				
			30				



**SEE SITE PLAN
FOR WELL LOCATION**

ALISTO PROJECT NO: 10-170-07

DATE DRILLED: 02/15/02

CLIENT: BP Oil Company

BOREHOLE DIAMETER: 8"

LOCATION: 6400 Dublin Blvd, Dublin

BOREHOLE DEPTH: 21.5 ft

DRILLING METHOD: 8" Hollow-stem auger

CASING DIAMETER: 2"

DRILLING COMPANY: V & W Drilling, Inc.

CASING MATERIAL: PVC

LOGGED BY: Dave Radabaugh

APPROVED BY: Al Sevilla

BLOMS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
		<p>2" diameter Sch. 40 PVC Casing 2" diameter 0.010" Slot PVC Screen Grout Bentonite Lonestar # 2/12 Sand</p>				SM	4" asphalt; 4" base material silty clay, brown with rust mottling, moist; stiff rootlets + nodules.
3.8,9	1.0		5	■		CL	Silty clay, dark grey, damp, stiff, some organics.
3.2,5	0.5		10	■			Silty clay, light brown, damp, stiff (medium).
3.5,5			15				Same material, wet, stiff.
4.7,9		20					Same material becoming very stiff.
			25				
			30				



**SEE SITE PLAN
FOR WELL LOCATION**

ALISTO PROJECT NO: 10-170-07

DATE DRILLED: 02/19/02

CLIENT: BP Oil Company

BOREHOLE DIAMETER: 8"

LOCATION: 6400 Dublin Blvd, Dublin

BOREHOLE DEPTH: 21.5 ft

DRILLING METHOD: 8" Hollow-stem auger

CASING DIAMETER: 2"

DRILLING COMPANY: V & W Drilling, Inc.

CASING MATERIAL: PVC

LOGGED BY: D. J. B.

APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
6.11, 11	0	<p>2" diameter Sch. 40 PVC Casing 2" diameter 0.010" Slot PVC Screen Lonestar # 2/12 Sand Bentonite Grout</p>	5			CL	Asphalt. Silty clay: dark grey, moist, stiff. Color to olive tan.
6.7, 11	0		10			Same material, Color to grey.	
4.7, 10	0		15			Same material.	
4.7, 7	0		20			Same material becoming very stiff.	
			25				
			30				

APPENDIX D

**FIELD PROCEDURES FOR GROUNDWATER MONITORING WELL
DEVELOPMENT AND SAMPLING**

**FIELD PROCEDURES
FOR
GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING**

Groundwater Monitoring Well Development

The groundwater monitoring wells were developed to consolidate and stabilize the filter pack to optimize well production and reduce the turbidity of subsequent groundwater samples. Monitoring wells were developed by alternately using a surge block and pump to evacuate the water and sediment. Development continued until the groundwater was relatively free of sediment (approximately 10 casing volumes) while monitoring stabilization of pH, electrical conductivity, and temperature. During purging, field analysis was also performed for dissolved oxygen and turbidity. Well development fluids were placed into DOT-approved drums for disposal.

Groundwater Level Measurement

Before sampling, the groundwater level in each well was measured from the permanent survey reference point at the top of the well casing. Groundwater in each well was monitored for free-floating product or sheen. The depth to groundwater was measured to an accuracy of 0.01 foot from the top of the PVC well casing using an electronic sounder.

Groundwater Monitoring Well Sampling

To ensure that the groundwater samples were representative of the aquifer, the wells were purged of 3 casing volumes using a bailer, while monitoring stabilization of pH, electrical conductivity, and temperature. During purging, field analysis was also performed for dissolved oxygen.

The groundwater samples were collected using a disposable bailer, and transferred into laboratory-supplied containers. The samples were labeled with the well number, site identification, date of collection, and sampler's initials, and transported in an iced cooler to a state-certified laboratory following preservation and chain of custody protocol. The sampling technician wore nitrile gloves during purging and well sampling.

APPENDIX E

**GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING
FIELD SURVEY FORMS**

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING

GROUP

1575 TREAT BOULEVARD, SUITE 201

WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

Groundwater Sampling

Development

Date: 2/21/02

Project No. 10-91

Day: THURS

Station No. FORMER BP 11120

Weather: CDM

Address 6400 Dublin Blvd.

SAMPLER: DOTS (TURB)

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.
MW-9	5.87'	2"	dr/NO			3	1035	19.0	8.08	2.50
Total Depth - Water Level=						6	1045	18.6	8.03	2.34
19.8' (Hard bottom)						10	1100	20.0	8.00	1.62
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s) OSys Port						16	1117	19.4	7.92	1.31
Comments: WATER SUDDENLY (FOAMY) / WHITE COLOR.						22	1130	19.4	7.99	1.36

- EPA 601
 - TPH-G/BTEX
 - TPH Diesel
 - TOG 5520
- Time Sampled

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.
MW-10	6.41'	2"	dr/NO			3	1202	19.7	8.23	7.1000
Total Depth - Water Level=						7	1209	19.0	7.37	8.53
19.7' (Hard bottom)						10	1217	20.1	7.16	8.57
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s) OSys Port						14	1231	20.3	7.14	8.51
Comments: DRY P 79 - CHANGE SURGE						16	1240	20.3	7.11	8.51

- EPA 601
 - TPH-G/BTEX
 - TPH Diesel
 - TOG 5520
- Time Sampled

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.
MW-11	5.98'	2"	dr/NO			2	1250	19.9	7.80	3.19
Total Depth - Water Level=						7	1257	20.4	7.34	2.63
19.7' (Hard bottom)						10	1303	20.6	7.30	2.64
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s) OSys Port						14	1314	20.7	7.33	2.56
Comments: PUMP BREAKS DOWN.										

- EPA 601
 - TPH-G/BTEX
 - TPH Diesel
 - TOG 5520
- Time Sampled

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.
MW-8	5.30'	2"	dr/NO			10	1343	19.9	7.37	3.29
Total Depth - Water Level=						20	1400	20.0	7.34	3.32
19.8' (Hard)						22	1410	20.0	7.35	3.36
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s) OSys Port										
Comments: Bail this one.										

- EPA 601
 - TPH-G/BTEX
 - TPH Diesel
 - TOG 5520
- Time Sampled

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.	D.O.
Total Depth - Water Level=											
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s) OSys Port											
Comments:											

- EPA 601
 - TPH-G/BTEX
 - TPH Diesel
 - TOG 5520
- Time Sampled

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING
GROUP

Groundwater Sampling

1575 TREAT BOULEVARD, SUITE 201
WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

Date: 2-25-02 Project No. 10-170-7-1
Day: MON Station No. 1120
Weather: WINDY Address _____
SAMPLER: _____

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.	D.O.	<input type="radio"/> EPA 601 _____ <input type="radio"/> TPH-G/BTEX _____ <input type="radio"/> TPH Diesel _____ <input type="radio"/> TOG 5520 _____ Time Sampled
MW-8	6.02	2	Q/ND			1	1156	18.8	7.41	3.37	3.57	
Total Depth - Water Level=						3	1200	19.1	7.37	3.40	3.46	
x Well Vol. Factor=						5	1204	19.1	7.34	3.24	3.74	
x#vol. to Purge=						8	1212	19.1	7.34	3.24	3.76	
Purge Vol.												
Purge Method: <input checked="" type="radio"/> Surface Pump <input type="radio"/> Disp. Tube <input type="radio"/> Winch <input type="radio"/> Disp. Baller(s) <input type="radio"/> Sys Port												
Comments: <u>SUB</u>												

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.	D.O.	<input type="radio"/> EPA 601 _____ <input type="radio"/> TPH-G/BTEX _____ <input type="radio"/> TPH Diesel _____ <input type="radio"/> TOG 5520 _____ Time Sampled
MW-9	5.90					2	1241	18.7	8.06	1.91	3.10	
Total Depth - Water Level=						5	1244	18.2	8.10	1.86	3.06	
x Well Vol. Factor=						9	1250	18.3	8.07	1.82	3.09	
x#vol. to Purge=						12	1300		8.06		2.89	
Purge Vol.												
Purge Method: <input type="radio"/> Surface Pump <input type="radio"/> Disp. Tube <input type="radio"/> Winch <input type="radio"/> Disp. Baller(s) <input type="radio"/> Sys Port												
Comments: _____												

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.	D.O.	<input type="radio"/> EPA 601 _____ <input type="radio"/> TPH-G/BTEX _____ <input type="radio"/> TPH Diesel _____ <input type="radio"/> TOG 5520 _____ Time Sampled
MW10	4.21					3	1313	17.8	7.37	8.13	5.74	
Total Depth - Water Level=						5	1320	19.1	7.32	8.30	4.17	
x Well Vol. Factor=						7	1322	19.4	7.26	8.64	3.88	
x#vol. to Purge=						10	1330	19.2	7.27	8.66	3.71	
Purge Vol.												
Purge Method: <input type="radio"/> Surface Pump <input type="radio"/> Disp. Tube <input type="radio"/> Winch <input type="radio"/> Disp. Baller(s) <input type="radio"/> Sys Port												
Comments: <u>New 4.67 metal</u>												

MW-11 6.02

19.6 - 6.02 = 13.6 SD 7 gal 3 1340 19.1 7.64 2.88 4.30

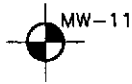
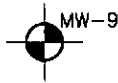
5 1345 19.1 7.48 2.68 2.67

7 1355 19.1 7.42 2.66 2.41

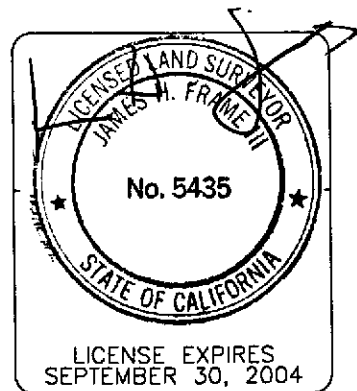
9 1400 19.1 7.42 2.69 2.22

MW-11 / 1400

APPENDIX F
WELL ELEVATION SURVEY MAP



DESCRIPTION	NORTHING	EASTING	ELEV (GROUND)	ELEV (PVC)
MW-8	2081975.2	6153738.9	226.0	328.94
MW-9	2082097.1	6153851.0	227.2	329.96
MW-10	2081976.1	6153920.7	224.7	327.44
MW-11	2082006.2	6153821.6	226.8	329.75



FRAME SURVEYING & MAPPING

609 A Street
(530) 756-8584 (TEL)

Davis, CA 95616
(530) 756-8201 (FAX)

0140-041

MONITORING WELL EXHIBIT

FORMER BP SITE NO. 11120

6400 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA

MARCH, 2002

SCALE: 1"= 20'

Contents of the GEO_XY and GEO_Z GeoTracker files for FSM Job No. 0140-041
(Former BP Station No. 11120, 6400 Dublin Boulevard, Dublin, CA)

(Revised 03/22/02 to change well numbering per David Radabaugh)
(Revised 03/28/02 to reflect TOC values)

Notes:

1. Whitespace has been removed from some records in order to reduce printed line length.
2. Question marks have been inserted in the GLOBAL_ID as placeholders, as the actual values were not known at the time this document was prepared.

GEO_XY values:

??, MW-9,	MW,02/20/2002,	37.7046068,	121.9097399,	CGPS,NAD83,	99,Frame Surveying & Mapping	Davis CA,	APM,	FSM Point Number 24
??, MW-10,	MW,02/20/2002,	37.7042773,	121.9094927,	CGPS,NAD83,	99,Frame Surveying & Mapping	Davis CA,	APM,	FSM Point Number 25
??, MW-11,	MW,02/20/2002,	37.7043559,	121.9098368,	CGPS,NAD83,	99,Frame Surveying & Mapping	Davis CA,	APM,	FSM Point Number 26
??, MW-8,	MW,02/20/2002,	37.7042674,	121.9101207,	CGPS,NAD83,	99,Frame Surveying & Mapping	Davis CA,	APM,	FSM Point Number 27

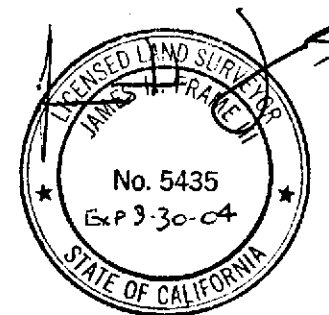
GEO_Z values:

??, MW-9,02/20/2002, 329.96, DIG, LOC, ,Frame Surveying & Mapping Davis CA, ,City of Dublin BM DOUG-SL = square TC @ DI N'ly corner Dougherty Road & Sierra Lane = Elev. 331.73 feet

??, MW-10,02/20/2002, 327.44, DIG, LOC, ,Frame Surveying & Mapping Davis CA, ,City of Dublin BM DOUG-SL = square TC @ DI N'ly corner Dougherty Road & Sierra Lane = Elev. 331.73 feet

??, MW-11,02/20/2002, 329.75, DIG, LOC, ,Frame Surveying & Mapping Davis CA, ,City of Dublin BM DOUG-SL = square TC @ DI N'ly corner Dougherty Road & Sierra Lane = Elev. 331.73 feet

??, MW-8,02/20/2002, 328.94, DIG, LOC, ,Frame Surveying & Mapping Davis CA, ,City of Dublin BM DOUG-SL = square TC @ DI N'ly corner Dougherty Road & Sierra Lane = Elev. 331.73 feet



APPENDIX G

**FIELD PROCEDURES FOR CHAIN OF CUSTODY DOCUMENTATION,
LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS**

**FIELD PROCEDURES
FOR
CHAIN OF CUSTODY DOCUMENTATION**

Samples were handled in accordance with the California Department of Health Services guidelines. Each sample was labeled in the field and immediately stored in an iced cooler for transport to a state-certified laboratory for analysis.

A chain of custody record accompanied the samples and included the site and sample identification, date of collection, analysis requested, and the name and signature of the sampling technician. When transferring possession of the samples, the transferee signed and dated the chain of custody record.



Pace Analytical™

www.pacelabs.com

Pace Analytical Services, Inc.

900 Gemini Avenue
Houston, TX 77058

Phone: 281.488.1810

Fax: 281.488.4661

February 28, 2002

Mr. Brady Nagle
Alisto Engineering Group
3732 Mt. Diablo BLVD
Suite 270
Lafayette, CA 94549

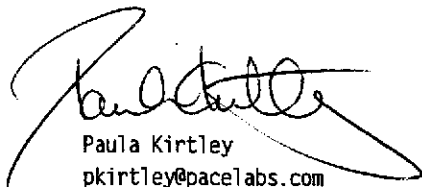
RE: Lab Project Number: 8526126
Client Project ID: Alisto Eng. BP Site#11120

Dear Mr. Nagle:

Enclosed are the analytical results for sample(s) received by the laboratory on February 21, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,



Paula Kirtley
pkirtley@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Alisto Engineering Group
3732 Mt. Diablo BLVD
Suite 270
Lafayette, CA 94549

Lab Project Number: 8526126
Client Project ID: Alisto Eng. BP Site#11120

Attn: Mr. Brady Nagle
Phone: 962-6970

Solid results are reported on a wet weight basis

Lab Sample No: 851740169 Project Sample Number: 8526126-001 Date Collected: 02/15/02 00:00
Client Sample ID: MW-8 @ 6-6.5 Matrix: Soil Date Received: 02/21/02 08:20

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
GC Volatiles							
GAS Mod 8015, Soil Prep/Method: EPA 8015 Modified / EPA 8015 Modified							
Gasoline Range Organics	ND	mg/kg	0.050	02/25/02 17:11	WRIC		
4-Bromofluorobenzene (S)	70	%		02/25/02 17:11	WRIC 460-00-4		
1,4-Difluorobenzene (S)	86	%		02/25/02 17:11	WRIC		
BTEX, Soil Prep/Method: EPA 8021 / EPA 8021							
Benzene	ND	ug/kg	5.0	02/27/02 21:20	WRIC 71-43-2		
Ethylbenzene	ND	ug/kg	5.0	02/27/02 21:20	WRIC 100-41-4		
Toluene	5.1	ug/kg	5.0	02/27/02 21:20	WRIC 108-88-3		
Xylene (Total)	ND	ug/kg	5.0	02/27/02 21:20	WRIC 1330-20-7		
Methyl-tert-butyl ether	ND	ug/kg	5.0	02/27/02 21:20	WRIC 1634-04-4		
1,4-Difluorobenzene (S)	100	%		02/27/02 21:20	WRIC		
4-Bromofluorobenzene (S)	88	%		02/27/02 21:20	WRIC 460-00-4		

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 8526126

Client Project ID: Alisto Eng. BP Site#11120

Lab Sample No: 851740170

Project Sample Number: 8526126-002

Date Collected: 02/15/02 00:00

Client Sample ID: MW-9 @ 6-6.5'

Matrix: Soil

Date Received: 02/21/02 08:20

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
------------	---------	-------	--------------	----------	---------	--------	-----------

GC Volatiles

GAS Mod 8015, Soil

Prep/Method: EPA 8015 Modified / EPA 8015 Modified

Gasoline Range Organics

ND mg/kg 0.050 02/25/02 17:30 WRIC

4-Bromofluorobenzene (S)

94 % 02/25/02 17:30 WRIC 460-00-4

1,4-Difluorobenzene (S)

108 % 02/25/02 17:30 WRIC

BTEX, Soil

Prep/Method: EPA 8021 / EPA 8021

Benzene

ND ug/kg 5.0 02/27/02 21:40 WRIC 71-43-2

Ethylbenzene

ND ug/kg 5.0 02/27/02 21:40 WRIC 100-41-4

Toluene

ND ug/kg 5.0 02/27/02 21:40 WRIC 108-88-3

Xylene (Total)

ND ug/kg 5.0 02/27/02 21:40 WRIC 1330-20-7

Methyl-tert-butyl ether

ND ug/kg 5.0 02/27/02 21:40 WRIC 1634-04-4

1,4-Difluorobenzene (S)

98 % 02/27/02 21:40 WRIC

4-Bromofluorobenzene (S)

77 % 02/27/02 21:40 WRIC 460-00-4

Date: 02/28/02

Page: 2

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 8526126
Client Project ID: Alisto Eng. BP Site#11120

Lab Sample No: 851740171 Project Sample Number: 8526126-003 Date Collected: 02/15/02 00:00
Client Sample ID: MW-10 @ 6-6.5' Matrix: Soil Date Received: 02/21/02 08:20

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Etnote	Reg Limit
GC Volatiles							
GAS Mod 8015, Soil Prep/Method: EPA 8015 Modified / EPA 8015 Modified							
Gasoline Range Organics	ND	mg/kg	0.050	02/25/02 17:49	WRIC		
4-Bromofluorobenzene (S)	74	%		02/25/02 17:49	WRIC	460-00-4	
1,4-Difluorobenzene (S)	92	%		02/25/02 17:49	WRIC		
BTEX, Soil Prep/Method: EPA 8021 / EPA 8021							
Benzene	ND	ug/kg	5.0	02/27/02 22:00	WRIC	71-43-2	
Ethylbenzene	ND	ug/kg	5.0	02/27/02 22:00	WRIC	100-41-4	
Toluene	ND	ug/kg	5.0	02/27/02 22:00	WRIC	108-88-3	
Xylene (Total)	ND	ug/kg	5.0	02/27/02 22:00	WRIC	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	5.0	02/27/02 22:00	WRIC	1634-04-4	
1,4-Difluorobenzene (S)	99	%		02/27/02 22:00	WRIC		
4-Bromofluorobenzene (S)	86	%		02/27/02 22:00	WRIC	460-00-4	

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 8526126

Client Project ID: Alisto Eng. BP Site#11120

Lab Sample No: 851740172

Project Sample Number: 8526126-004

Date Collected: 02/15/02 00:00

Client Sample ID: MW-11 @ 5-5.5'

Matrix: Soil

Date Received: 02/21/02 08:20

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
------------	---------	-------	--------------	----------	---------	--------	-----------

GC Volatiles

GAS Mod 8015, Soil

Prep/Method: EPA 8015 Modified / EPA 8015 Modified

Gasoline Range Organics

ND mg/kg 0.050 02/26/02 12:03 WRIC

4-Bromofluorobenzene (S)

73 % 02/26/02 12:03 WRIC 460-00-4

1,4-Difluorobenzene (S)

90 % 02/26/02 12:03 WRIC

BTEX, Soil

Prep/Method: EPA 8021 / EPA 8021

Benzene

ND ug/kg 5.0 02/27/02 22:20 WRIC 71-43-2

Ethylbenzene

ND ug/kg 5.0 02/27/02 22:20 WRIC 100-41-4

Toluene

ND ug/kg 5.0 02/27/02 22:20 WRIC 108-88-3

Xylene (Total)

ND ug/kg 5.0 02/27/02 22:20 WRIC 1330-20-7

Methyl-tert-butyl ether

48. ug/kg 5.0 02/27/02 22:20 WRIC 1634-04-4

1,4-Difluorobenzene (S)

97 % 02/27/02 22:20 WRIC

4-Bromofluorobenzene (S)

86 % 02/27/02 22:20 WRIC 460-00-4

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 8526126
Client Project ID: Alisto Eng. BP Site#11120

PARAMETER FOOTNOTES

- ND Not detected at or above adjusted reporting limit
- NC Not Calculable
- J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
- (S) Surrogate

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 8526126

Client Project ID: Alisto Eng. BP Site#11120

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)Laboratory Control Sample (Duplicate)

MS(D)Matrix Spike (Duplicate)

DUP Sample Duplicate

ND Not detected at or above adjusted reporting limit

NC Not Calculable

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

RPD Relative Percent Difference

(S) Surrogate

REPORT OF LABORATORY ANALYSIS

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RECEIVED MAR 11 2002

Pace Analytical Services, Inc.

900 Gemini Avenue
Houston, TX 77058

Phone: 281.488.1810

Fax: 281.488.4661

March 05, 2002

Mr. Brady Nagle
Alisto Engineering Group
3732 Mt. Diablo BLVD
Suite 270
Lafayette, CA 94549

RE: Lab Project Number: 8526247
Client Project ID: Alisto Eng. BP Site 10-170-7

Dear Mr. Nagle:

Enclosed are the analytical results for sample(s) received by the laboratory on February 27, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,



Paula Kirtley
pkirtley@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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Alisto Engineering Group
3732 Mt. Diablo BLVD
Suite 270
Lafayette, CA 94549

Lab Project Number: 8526247
Client Project ID: Alisto Eng. BP Site 10-170-7

Attn: Mr. Brady Nagle
Phone: 962-6970

Lab Sample No: 851741185 Project Sample Number: 8526247-001 Date Collected: 02/25/02 00:00
Client Sample ID: MW-8 Matrix: Water Date Received: 02/27/02 08:35

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
GC Volatiles							
GAS by Mod 8015, Water	Prep/Method: EPA 8015 Modified / EPA 8015 Modified						
Gasoline Range Organics	ND	ug/l	50.	03/04/02 14:18	WRIC		
1,4-Difluorobenzene (S)	83	%		03/04/02 14:18	WRIC		
4-Bromofluorobenzene (S)	80	%		03/04/02 14:18	WRIC	460-00-4	
SW8021 Aromatics, Water							
Benzene	ND	ug/l	0.500	03/04/02 14:18	WRIC	71-43-2	
Ethylbenzene	ND	ug/l	0.500	03/04/02 14:18	WRIC	100-41-4	
Toluene	ND	ug/l	0.500	03/04/02 14:18	WRIC	108-88-3	
Xylene (Total)	ND	ug/l	1.00	03/04/02 14:18	WRIC	1330-20-7	
Methyl-tert-butyl ether	1.98	ug/l	0.500	03/04/02 14:18	WRIC	1634-04-4	
1,4-Difluorobenzene (S)	98	%		03/04/02 14:18	WRIC		
4-Bromofluorobenzene (S)	94	%		03/04/02 14:18	WRIC	460-00-4	

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

Lab Sample No: 851741186

Project Sample Number: 8526247-002

Date Collected: 02/25/02 00:00

Client Sample ID: MW-9

Matrix: Water

Date Received: 02/27/02 08:35

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
GC Volatiles							
GAS by Mod 8015, Water							
Prep/Method: EPA 8015 Modified / EPA 8015 Modified							
Gasoline Range Organics	ND	ug/l	250	03/04/02 19:59	WRIC		
1,4-Difluorobenzene (S)	83	%		03/04/02 19:59	WRIC		
4-Bromofluorobenzene (S)	80	%		03/04/02 19:59	WRIC	460-00-4	
SW8021 Aromatics, Water							
Prep/Method: See analytical method / EPA 8021							
Benzene	ND	ug/l	2.50	03/04/02 19:59	WRIC	71-43-2	
Ethylbenzene	ND	ug/l	2.50	03/04/02 19:59	WRIC	100-41-4	
Toluene	ND	ug/l	2.50	03/04/02 19:59	WRIC	108-88-3	
Xylene (Total)	ND	ug/l	5.00	03/04/02 19:59	WRIC	1330-20-7	
Methyl-tert-butyl ether	ND	ug/l	2.50	03/04/02 19:59	WRIC	1634-04-4	
1,4-Difluorobenzene (S)	98	%		03/04/02 19:59	WRIC		
4-Bromofluorobenzene (S)	93	%		03/04/02 19:59	WRIC	460-00-4	

Comments : The sample was diluted to reduce matrix interference, resulting in elevated reporting limits.

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

Lab Sample No: 851741187 Project Sample Number: 8526247-003 Date Collected: 02/25/02 00:00
Client Sample ID: MW-10 Matrix: Water Date Received: 02/27/02 08:35

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
GC Volatiles							
GAS by Mod 8015, Water Prep/Method: EPA 8015 Modified / EPA 8015 Modified							
Gasoline Range Organics	53.	ug/l	50.	03/04/02 17:40	WRIC		
1,4-Difluorobenzene (S)	83	%		03/04/02 17:40	WRIC		
4-Bromofluorobenzene (S)	70	%		03/04/02 17:40	WRIC	460-00-4	
SW8021 Aromatics, Water Prep/Method: See analytical method / EPA 8021							
Benzene	2.58	ug/l	0.500	03/04/02 17:40	WRIC	71-43-2	
Ethylbenzene	2.83	ug/l	0.500	03/04/02 17:40	WRIC	100-41-4	
Toluene	ND	ug/l	0.500	03/04/02 17:40	WRIC	108-88-3	
Xylene (Total)	8.46	ug/l	1.00	03/04/02 17:40	WRIC	1330-20-7	
Methyl-tert-butyl ether	ND	ug/l	0.500	03/04/02 17:40	WRIC	1634-04-4	
1,4-Difluorobenzene (S)	97	%		03/04/02 17:40	WRIC		
4-Bromofluorobenzene (S)	82	%		03/04/02 17:40	WRIC	460-00-4	

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

Lab Sample No: 851741188

Project Sample Number: 8526247-004

Date Collected: 02/25/02 00:00

Client Sample ID: MW-11

Matrix: Water

Date Received: 02/27/02 08:35

Parameters	Results	Units	Report Limit	Analyzed	CAS No.	Ftnote	Reg Limit
GC Volatiles							
GAS by Mod 8015, Water							
Prep/Method: EPA 8015 Modified / EPA 8015 Modified							
Gasoline Range Organics	1800	ug/l	50.	03/04/02 14:38	WRIC		
1,4-Difluorobenzene (S)	83	%		03/04/02 14:38	WRIC		
4-Bromofluorobenzene (S)	80	%		03/04/02 14:38	WRIC	460-00-4	
SW8021 Aromatics, Water							
Prep/Method: See analytical method / EPA 8021							
Benzene	1.34	ug/l	0.500	03/04/02 14:38	WRIC	71-43-2	
Ethylbenzene	ND	ug/l	0.500	03/04/02 14:38	WRIC	100-41-4	
Toluene	ND	ug/l	0.500	03/04/02 14:38	WRIC	108-88-3	
Xylene (Total)	ND	ug/l	1.00	03/04/02 14:38	WRIC	1330-20-7	
Methyl-tert-butyl ether	2550	ug/l	5.00	03/04/02 14:38	WRIC	1634-04-4	
1,4-Difluorobenzene (S)	98	%		03/04/02 14:38	WRIC		
4-Bromofluorobenzene (S)	93	%		03/04/02 14:38	WRIC	460-00-4	

Date: 03/05/02

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

PARAMETER FOOTNOTES

ND Not detected at or above adjusted reporting limit

NC Not Calculable

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

(S) Surrogate

Date: 03/05/02

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

QC Batch: 66140

Analysis Method: EPA 8021

QC Batch Method: See analytical method

Analysis Description: SW8021 Aromatics, Water

Associated Lab Samples: 851741185 851741186 851741187 851741188

METHOD BLANK: 851741645

Associated Lab Samples: 851741185 851741186 851741187 851741188

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	0.500	
Ethylbenzene	ug/l	ND	0.500	
Toluene	ug/l	ND	0.500	
Xylene (Total)	ug/l	ND	1.50	
Methyl-tert-butyl ether	ug/l	ND	0.500	
1,4-Difluorobenzene (S)	%	98		
4-Bromofluorobenzene (S)	%	92		

LABORATORY CONTROL SAMPLE: 851741646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	Footnotes
Benzene	ug/l	50	51.58	103	
Ethylbenzene	ug/l	50	50.41	101	
Toluene	ug/l	50	49.95	100	
Xylene (Total)	ug/l	100	99.70	100	
Methyl-tert-butyl ether	ug/l	50	53.00	106	
1,4-Difluorobenzene (S)				99	
4-Bromofluorobenzene (S)				95	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 851741647 851741648

Parameter	Units	851741185 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	RPD	Footnotes
Benzene	ug/l	0	50.00	50.61	50.29	101	101	1	
Ethylbenzene	ug/l	0	50.00	49.61	49.26	99	98	1	
Toluene	ug/l	0	50.00	49.01	48.54	98	97	1	
Xylene (Total)	ug/l	0	100.00	97.47	96.64	98	97	1	

Date: 03/05/02

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QUALITY CONTROL DATA

Lab Project Number: 8526247
Client Project ID: Alisto Eng. BP Site 10-170-7

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 851741647 851741648

Parameter	Units	851741185 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	RPD	Footnotes
Methyl-tert-butyl ether	ug/l	1.980	50.00	51.98	52.32	100	101	1	
1,4-Difluorobenzene (S)						98	98		
4-Bromofluorobenzene (S)						96	96		

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

QC Batch: 66141

Analysis Method: EPA 8015 Modified

QC Batch Method: EPA 8015 Modified

Analysis Description: GAS by Mod 8015, Water

Associated Lab Samples: 851741185 851741186 851741187 851741188

METHOD BLANK: 851741649

Associated Lab Samples: 851741185 851741186 851741187 851741188

Parameter	Units	Blank	Reporting	Footnotes
		Result	Limit	
Gasoline Range Organics	ug/l	ND	50.	
1,4-Difluorobenzene (S)	%	83		
4-Bromofluorobenzene (S)	%	79		

LABORATORY CONTROL SAMPLE: 851741650

Parameter	Units	Spike	LCS	LCS	Footnotes
		Conc.	Result	% Rec	
Gasoline Range Organics	ug/l	1000	851.7	85	
1,4-Difluorobenzene (S)				101	
4-Bromofluorobenzene (S)				88	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 851741651 851741652

Parameter	Units	851741185	Spike	MS	MSD	MS	MSD	RPD	Footnotes
		Result	Conc.	Result	Result	% Rec	% Rec		
Gasoline Range Organics	ug/l	12.71	1000.00	796.6	790.8	78	78	1	
1,4-Difluorobenzene (S)						102	101		
4-Bromofluorobenzene (S)						85	84		

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Lab Project Number: 8526247

Client Project ID: Alisto Eng. BP Site 10-170-7

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)Laboratory Control Sample (Duplicate)

MS(D)Matrix Spike (Duplicate)

DUP Sample Duplicate

ND Not detected at or above adjusted reporting limit

NC Not Calculable

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

RPD Relative Percent Difference

(S) Surrogate

REPORT OF LABORATORY ANALYSIS

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