Lee
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PRELIMINARY RESULTS OF ADDITIONAL ONSITE SUBSURFACE INVESTIGATION

at

ARCO Station 6041
7249 Village Parkway
Dublin, California

60006.04

Sep 1993

September 3, 1993

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September 3, 1993
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60006.04

Mr. Mike Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Preliminary Results of Additional Onsite Subsurface Investigation at ARCO Station 6041, located at 7249 Village Parkway in Dublin, California

Mr. Whelan:

At the request of ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) performed an additional onsite subsurface investigation at ARCO Station 6041, located at 7249 Village Parkway in Dublin, California. The purpose of this investigation was to evaluate potential onsite sources of gasoline hydrocarbons to aid in the design of an air sparge test and an interim air sparge and vapor extraction remediation system at the site. As requested by Ms. Eva Chu of the Alameda County Health Care Services Agency (ACHCSA), this letter report provides preliminary results of this investigation and is being submitted in conjunction with a Work Plan for Evaluation of Interim Remediation Alternatives at the subject site. A complete discussion of the results presented in this letter report will be included in a detailed report to be submitted following the upcoming air sparge test.

The work performed for this investigation included hydraulically coring six soil test holes (B-11 through B-16); collecting and describing soil samples from the test holes; submitting selected soil samples for laboratory analyses; and preparing this letter report presenting results. This work was performed as agreed upon in the May 19, 1993, meeting between Ms. Eva Chu of the ACHCSA, Mr. Michael Whelan of ARCO, Mr. John Young and Ms. Valli Voruganti of RESNA.

The operating ARCO Station 6041 is located at the northern corner of the intersection of Village Parkway and Amador Valley Boulevard in a commercial and residential area at 7249 Village Parkway, in Dublin, California. The site location is shown on the Site Vicinity Map, Plate 1. The location of the existing groundwater monitoring wells, the newly cored test holes, and pertinent site features are shown on the Generalized Site Plan, Plate 2. Results of previous environmental investigations at the site are summarized in the reports listed in the References section.

Field Work

On August 11, 1993, six soil test holes (B-11 through B-16) were cored at the subject site to depths between 16 and 22 feet. Soil test holes B-11, B-12 and B-13 were cored in the central portion of the site at the northern end (the fill end) of the gasoline underground storage tanks (USTs), test holes B-14 and B-15 were cored in the vicinity of the western service islands, and test hole B-16 was cored in the vicinity of the southeastern service islands.

Twenty five soil samples were collected from soil test holes B-11 through B-16. A summary of the Unified Soil Classification System used to identify the soil encountered during coring is presented on Plate 3, and the description of the soil encountered in the test holes is presented on the Logs of Test Holes, Plates 4 through 9. Field monitoring of organic vapor concentrations in soil samples was performed during coring using an organic vapor meter (OVM). Field OVM readings are considered order of magnitude readings only.

Following the completion of coring on August 11, 1993, four soil samples were collected from the soil stockpile for compositing and analyses by the laboratory.

The earth materials encountered at the site consisted primarily of sandy to clayey silt interbedded with clayey to silty sand. Water was encountered in the test borings at depths between approximately 9½ and 14½ feet. Within the strata, four zones were loosely defined, 1) the vadose zone between depths of about 0 and 7 feet, 2) the capillary fringe zone, located immediately above groundwater, between depths of about 9 and 14 feet, 3) the water bearing zone between depths of about 9½ and 18½ feet, and 4) the aquitard underlying the shallowest water-bearing unit between depths of about 18½ and 20 feet. Complete descriptions of the subsurface materials are shown on Plates 4 through 9, Logs of Test Holes, and subsurface interpretations are shown on Plate 10, Geologic Cross Section C-C' updated from RESNA's Additional Onsite Subsurface Investigation and Vapor Extraction Test report (RESNA, January 29, 1993).

Laboratory Methods

Soil samples collected from test holes B-11 through B-16 were analyzed by Sequoia Analytical Laboratories, Inc., of Redwood City, California (California Hazardous Waste Testing Laboratory Certification #1210) for the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total petroleum hydrocarbons as gasoline (TPHg) using Environmental Protection Agency (EPA) Methods 5030/8020/8015. The soil samples collected from the soil stockpile were composited in the laboratory and analyzed for BTEX using EPA Method 5030/8020, TPHg using EPA Method 5030/8015, STLC lead using EPA 7421, corrosivity using EPA 9045, ignitability using EPA 1010, and reactivity using EPA 9010 and 9030.

Results of Soil Samples

Laboratory analytical results of soil samples collected from test holes B-11, B-12, and B-13, located in the central portion of the site at the northern end of the gasoline USTs, indicated concentrations of TPHg ranged from less than the laboratory method detection limit (MDL) of 1.0 ppm to 7.5 ppm in the vadose zone; from 280 ppm to 5,300 ppm in the capillary fringe zone; and from less than the laboratory MDL of 1.0 ppm to 2.3 ppm in the aquitard. The laboratory analytical reports indicate the greatest concentrations of BTEX to also be in the capillary fringe zone (210 ppm), with minor concentrations (0.2 ppm) in the vadose zone and aquitard.

Laboratory analytical results of soil samples collected from test holes B-14 and B-15, located in the vicinity of the western service islands, indicated concentrations of TPHg to be less than the laboratory MDL of 1.0 ppm in the vadose zone, and to be less than the laboratory MDL of 1.0 ppm to 1.4 ppm (B-14) in the capillary fringe zone. Concentrations of BTEX were less than the laboratory MDL of 0.005 ppm except in the capillary fringe of B-15 where a concentration of 0.038 ppm benzene was detected.

Laboratory analytical results of soil samples from test hole B-16, located in the vicinity of the southeastern service islands, indicated concentrations of TPHg to be less than the laboratory MDL of 1.0 ppm in the vadose zone and the underlying aquitard, and to be 410 ppm in the capillary fringe zone. Concentrations of BTEX were minor in the vadose zone (0.031 ppm) greatest in the capillary fringe zone (9.4 ppm), and less than the laboratory MDL of 0.005 ppm in the aquitard.

Laboratory analytical results of the composite sample from the soil stockpile indicated BTEX to be less than the laboratory MDL of 0.005 ppm, 4.6 ppm TPHg, 0.11 ppm STLC

lead, a pH of 8.2, a flashpoint of greater than 100 degrees Centigrade, and no reactivities with sulfide, cyanide, or water. The soil stockpile was removed from the site by ARCO's contracted hauler, Dillard Environmental Services of Byron, California.

The analytical results of soil samples are summarized in Table 1, Cumulative Laboratory Analytical Results of Soil Samples. Certified Laboratory Analytical Reports and Chain of Custody Records for soil samples are included in Appendix A.

It is recommended that copies of this report be forwarded to:

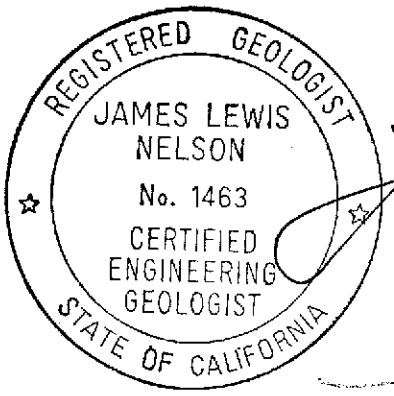
Ms. Eva Chu
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Mr. Richard Hiett
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

If you have any questions or comments, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.

Erin Krueger
Staff Geologist



James L. Nelson
Certified Engineering
Geologist 1463

John C. Young
Project Manager

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Unified Soil Classification System and Symbol Key
Plates 4 through 9, Logs of Test Holes
Plate 10, Geologic Cross Section C-C'

Table 1, Cumulative Laboratory Analytical Results of Soil Samples

Appendix A: Certified Laboratory Analytical Reports and Chain of Custody Records

REFERENCES

Alameda County Flood Control and Water Conservation District, Zone 7. January 16, 1991. Fall 1990 groundwater Level Report.

Applied GeoSystems. September 19, 1990. Letter Report Limited Environmental Investigation Related to the Removal of Waste-Oil Tank at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006-1.

California Department of Water Resources, 1974. Evaluation of Ground-Water Resources Engineering Livermore and Sunol Valleys; Bulletin No. 118-2, Appendix A.

Chevron Research and Technology Company, Environmental Group, October 10, 1991, Chevron USA Inc. Marketing Department, Vapor Extraction System Performance Study.

Department of Health Services, State of California. October 24, 1990. Summary of California Drinking Water Standards.

PACIFIC AERIAL SURVEYS. Aerial Photographs: AV-253-24-34 (5/16/57), AV-844-20-45 (5/3/68), AV-1498-7-28 (5/5/78), AV-3368-23-41 (8/18/88).

RESNA. August 22, 1991. Work Plan for Subsurface Investigation and Remediation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02.

RESNA. August 22, 1991. Addendum One to Work Plan for Subsurface Investigation and Remediation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02.

RESNA. February 12, 1992. Subsurface Environmental Investigation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02

REFERENCES
(Continued)

RESNA. March 7, 1992. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03

RESNA. May 1, 1992. Letter Report, Quarterly Groundwater Monitoring, First Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03

RESNA. September 25, 1992. Letter Report, Quarterly Groundwater Monitoring, Second Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03

RESNA. September 29, 1992. Work Plan for Initial Offsite and Additional Onsite Subsurface Investigations at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.04

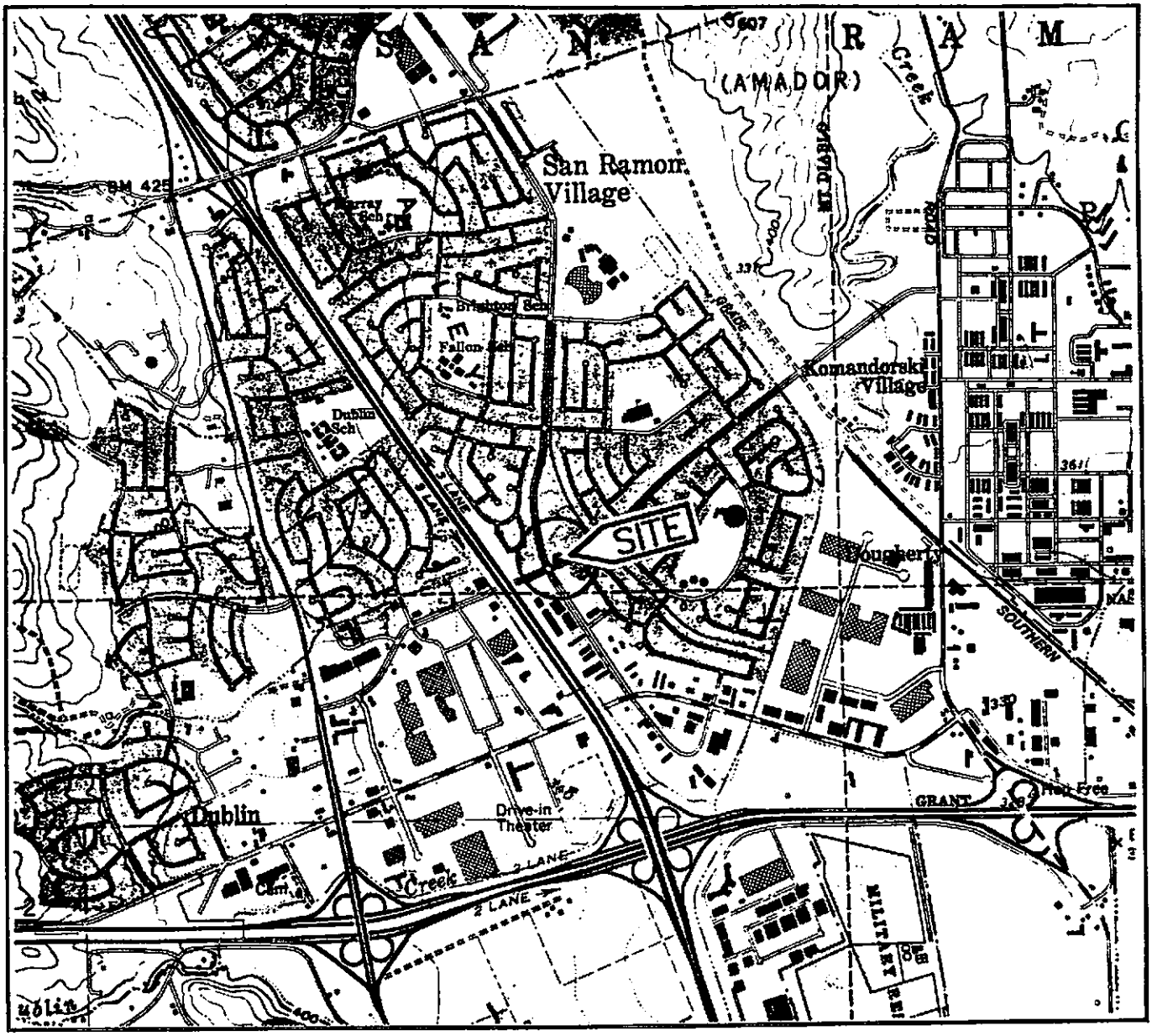
RESNA. October 23, 1992. Site Safety Plan. 60006.SP

RESNA November 3, 1992. Notification Letter of Vapor Extraction Test to be Performed at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.04

RESNA. December 3, 1992. Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03

RESNA. January 29, 1993. Additional Onsite Subsurface Investigation and Vapor Extraction Test at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.04

VISTA Environmental Information, Inc. December 15, 1992. Radius Status Report. 3-10264



Base: U.S. Geological Survey
7.5–Minute Quadrangle
Dublin, California.
Photorevised 1980

LEGEND

⊙ = Site Location

N

Approximate Scale

2000 1000 0 2000 4000

feet

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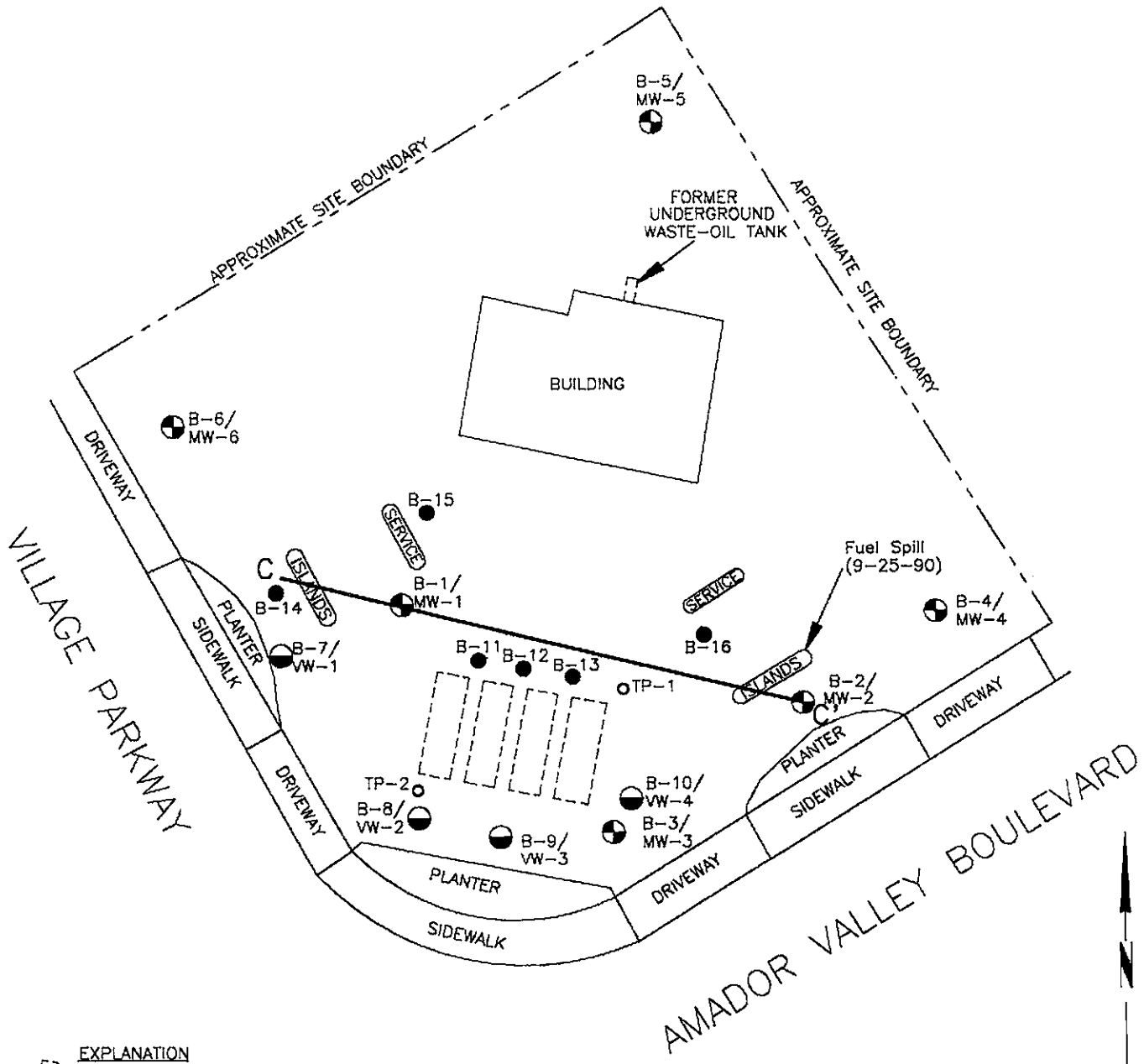
SITE VICINITY MAP
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
1



EXPLANATION

- = Existing gasoline underground storage tanks
- B-10/VW-4 = Boring/vapor extraction well (RESNA, October 1992)
- B-6/MW-6 = Boring/groundwater monitoring well (RESNA, September 1991 and October 1992)
- TP-2 = Tank pit observation well
- B-16 = Soil borings (RESNA, August 1993)
- C—C' = Geologic cross section

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

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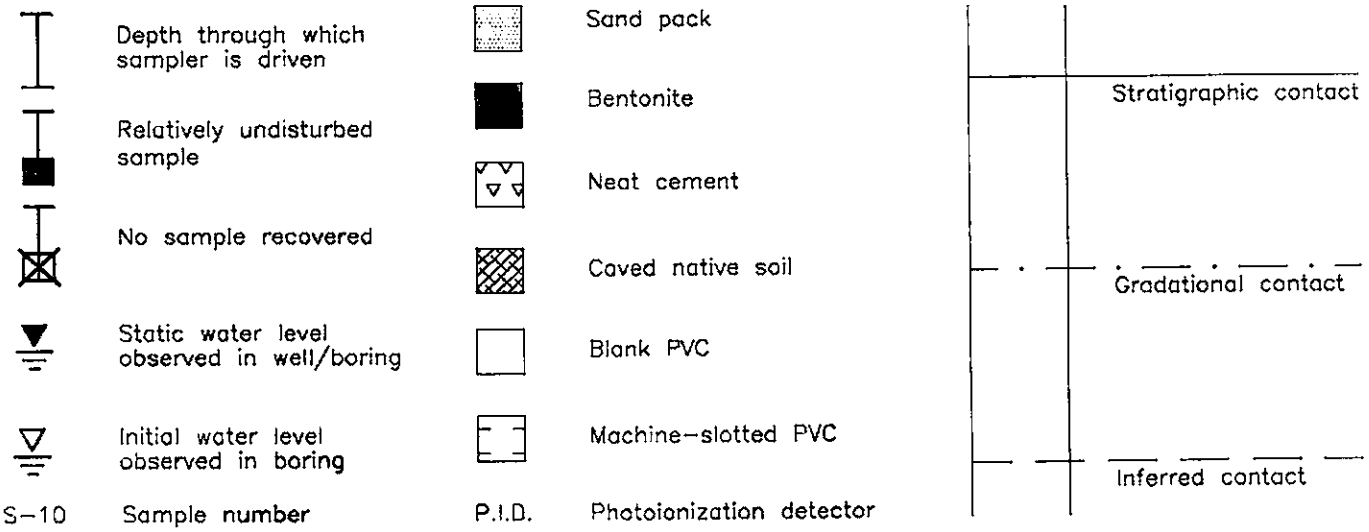
GENERALIZED SITE PLAN
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISION		LTR	DESCRIPTION
COARSE-GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines.
		GM	Silty gravels, gravel-sand-silt mixtures.
		GC	Clayey gravel, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS	SW	Well-graded sand or gravelly sands, little or no fines.
		SP	Poorly-graded sands or gravelly sands, little or no fines.
		SM	Silty sands, sand-silt mixtures.
		SC	Clayey sands, sand-clay mixtures.

MAJOR DIVISION		LTR	DESCRIPTION
FINE-GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity.
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		OL	Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS LL>50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
		CH	Inorganic clays of high plasticity, fat clays.
		OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils.



BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.

GRADATIONAL AND INFERRED CONTACT LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

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UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 3

Total depth of boring:	19 feet	Casing diameter:	N/A
Diameter of boring:	2 inches	Casing material:	N/A
Date drilled:	8/11/93	Slot size:	N/A
Drilling Company:	Precision Sampling	Sand size:	N/A
Driller:	Sean and Fernando	Screen interval:	N/A
Drilling method:	Hydraulic Core	Field Geologist:	Erin McLucas

Signature of Registered Professional: _____

Registration No.: CEG: 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
				GP	Surface: Asphalt 4".	
					Hand auger to 5 feet.	
2				ML	Sandy gravel, coarse, tan, damp, dense; baserock.	
					Sandy silt, dark gray, damp, medium plasticity, stiff.	
4						
6	S-6		0			
8						
	S-9.5		19	SM	Silty sand, fine- to medium-grained, dark gray to dark brown, damp, dense; roots and gypsum inclusions.	
10						
	S-11.5		2234	SW	Sand, medium-grained trace gravel, gray, wet, dense.	
12				CL	Sandy clay, dark gray, moist to wet, medium plasticity, stiff; wet around coarse gravel; roots.	
14						
	S-15.5		158		Brown.	
16						
18	S-18.5		0	CL	Silty clay, dark gray, damp, medium plasticity, stiff; no gravel or roots.	
20					Total depth = 19 feet.	
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						

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LOG OF TEST HOLE B-11

ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 4

Total depth of boring:	19 feet	Casing diameter:	N/A
Diameter of boring:	2 inches	Casing material:	N/A
Date drilled:	8/11/93	Slot size:	N/A
Drilling Company:	Precision Sampling	Sand size:	N/A
Driller:	Sean and Fernando	Screen Interval:	N/A
Drilling method:	Hydraulic Core	Field Geologist:	Erin McLucas

Signature of Registered Professional: _____

Registration No.: CEG: 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
				GP	Surface: Asphalt 4".	
					Hand auger to 5 feet.	
2				ML	Coarse sandy gravel, tan, damp, dense; baserock.	
					Sandy silt, dark gray to black, damp, medium plasticity, stiff.	
4						
6	S-6		10.2			
8				SM	Silty sand with fine to coarse gravel, dark gray, damp, dense.	
10	S-9.5		250			
12	S-12.5		1550	ML	Clayey silt, trace sand, dark gray, moist, medium plasticity, stiff.	
14					With fine gravel, wet around gravel.	
16						
18	S-18.5		0	ML	Clayey silt, trace sand, dark gray, damp, medium plasticity, stiff; no gravel.	
20					Total depth = 19 feet.	
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						

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LOG OF TEST HOLE B-12

ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 5

Total depth of boring:	22 feet	Casing diameter:	N/A
Diameter of boring:	2 inches	Casing material:	N/A
Date drilled:	8/11/93	Slot size:	N/A
Drilling Company:	Precision Sampling	Sand size:	N/A
Driller:	Sean and Fernando	Screen Interval:	N/A
Drilling method:	Hydraulic Core	Field Geologist:	Erin McLucas

Signature of Registered Professional: _____

Registration No.: CEG: 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0				GP	Surface: Asphalt 4". Hand auger to 5-1/2 feet. Coarse sandy gravel, tan, damp, dense; baserock.	
2				ML	Sandy silt, dark gray, damp, medium plasticity, stiff.	
4						
6	S-5		23	SP	Sand, fine- to coarse-grained, gray, damp, dense.	
8						
10	S-9.5		16	ML	Sandy silt, dark gray to black, damp, medium plasticity, very stiff; gypsum inclusions abundant, wet around gravel.	
12	S-11		1450			
14						
16						
18						
20	S-20		0	CL	Sandy clay, dark gray, damp, medium plasticity, stiff.	
22					Total depth = 22 feet.	
24						
26						
28						
30						
32						
34						
36						
38						
40						

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LOG OF TEST HOLE B-13

ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 6

Total depth of boring: 19 feet
Diameter of boring: 2 inches
Date drilled: 8/11/93
Drilling Company: Precision Sampling
Driller: Sean and Fernando
Drilling method: Hydraulic Core

Casing diameter: N/A
Casing material: N/A
Slot size: N/A
Sand size: N/A
Screen Interval: N/A
Field Geologist: Erin McLucas

Signature of Registered Professional: _____

Registration No.: CEG: 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Surface: Asphalt 4".	
2			8.1	ML	Hand auger to 5 feet. Sandy silt, dark, damp, medium plasticity, stiff.	
4						
6	S-6.5		1.1	SP-SM	Sand with silt, fine- to medium-grained, dark gray, damp to moist, dense.	
8				ML	Silty clay, black, damp, medium plasticity, very stiff; with gypsum inclusions.	
10	S-9.5		1.6		Roots.	
12	S-12.5		2.1	ML	Clayey silt with pockets of fine gravel, brown, damp to moist, medium plasticity, stiff.	
14						
16	S-15.5		2.1	SC	Clayey sand, fine-grained with gravel, brown, moist, wet around gravel, dense.	
18						
20					Total depth = 19 feet.	
22						
24						
26						
28						
30						
32						
34						
36						
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LOG OF TEST HOLE B-14
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
7

Total depth of boring: 16 feet
Diameter of boring: 2 inches
Date drilled: 8/11/93
Drilling Company: Precision Sampling
Driller: Sean and Fernando
Drilling method: Hydraulic Core

Casing diameter: N/A
Casing material: N/A
Slot size: N/A
Sand size: N/A
Screen Interval: N/A
Field Geologist: Erin McLucas

Signature of Registered Professional: _____

Registration No.: CEG: 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0				CP	Surface: Asphalt 4". Hand auger to 5-1/2 feet. Coarse sandy gravel, brown, damp, dense; baserock.	
4				ML	Sandy silt, dark gray, damp, medium plasticity, stiff.	
6	S-5		2.5	ML	Clayey silt, dark gray, damp, medium plasticiy, very stiff.	
10	S-9.5		3.4	ML	Sandy silt, trace fine gravel, dark gray, damp, medium plasticity, stiff.	
12	S-12.5		1.2		Abundant gypsum inclusions. Moist, abundant roots. Sand lenses, medium- to fine-grained.	
14	S-14.5		0.6	▽ SC	Clayey sand with fine gravel, fine- to medium-grained, dark brown to gray, moist to wet, dense; blocky structure, wet around gravel.	
16					Total depth = 16 feet.	

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LOG OF TEST HOLE B-15
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
8

Total depth of boring:	19 feet	Casing diameter:	N/A
Diameter of boring:	2 inches	Casing material:	N/A
Date drilled:	8/11/93	Slot size:	N/A
Drilling Company:	Precision Sampling	Sand size:	N/A
Driller:	Sean and Fernando	Screen Interval:	N/A
Drilling method:	Hydraulic Core	Field Geologist:	Erin McLucas

Signature of Registered Professional: _____

Registration No.: CEG: 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
				GP	Surface: Asphalt 4".	
					Hand auger to 5 feet.	
2				ML	Sandy gravel, coarse, tan, damp, dense; baserock	
					Sandy silt, dark gray, damp, medium plasticity, stiff.	
4						
6	S-6.5		25	SP	Sand, fine- to coarse-grained, gray, damp, dense.	
8						
10	S-9.5		1390	ML	Clayey sand, dark gray to black, damp, medium plasticity, stiff; gypsum inclusions	
12	S-11.5		150	▽	With fine sand and gravel, wet around gravel.	
14						
16						
18	S-18.5		0	ML	Clayey sand, dark gray, damp, medium plasticity, stiff; no gravel.	
20					Total depth = 19 feet.	
22						
24						
26						
28						
30						
32						
34						
36						
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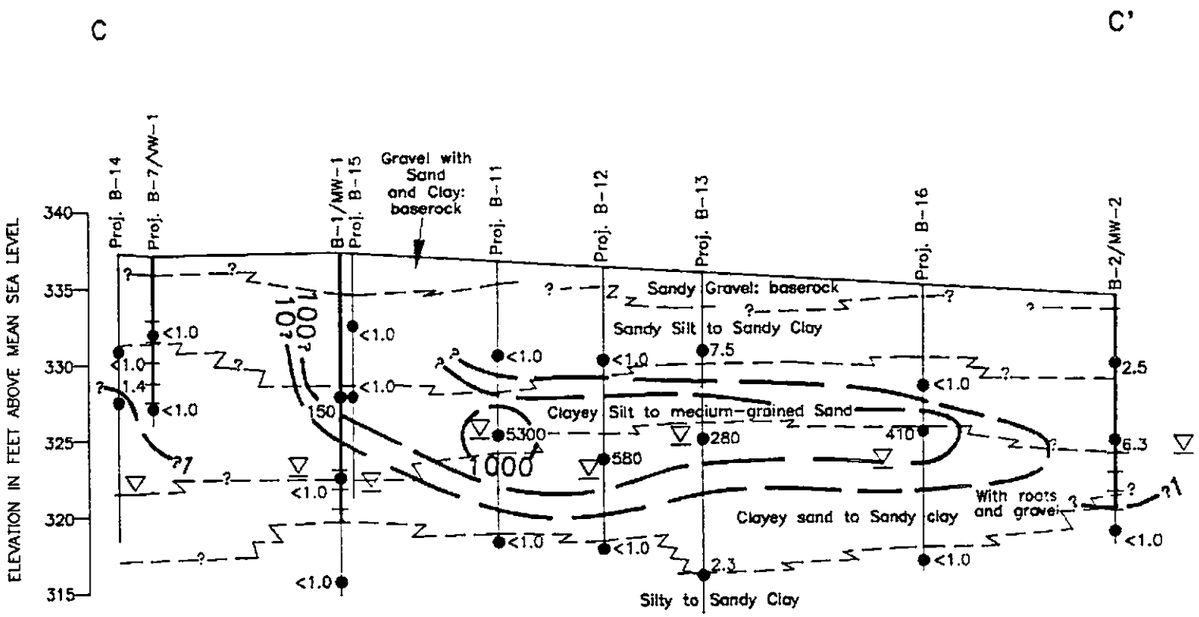
LOG OF TEST HOLE B-16

ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 9



EXPLANATION

1000 = Line of equal concentration of TPHg in soil in parts per million (ppm)

5,300 = Laboratory analyzed soil sample showing concentration of TPHg in ppm

= Well casing

= Well screen

= Boring

= Initial water level in boring

Approximate Horizontal Scale

20 10 0 20 40

feet

Approximate Vertical Scale

10 5 0 10 20

feet

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GEOLOGIC CROSS SECTION C-C'
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
10

TABLE 1
CUMULATIVE LABORATORY ANALYTICAL RESULTS
OF SOIL SAMPLES
ARCO Station 6041
Dublin, California
(Page 1 of 3)

Sample Identification	TPHg	B	T	E	X
September 1991					
S-9½-B1	150	0.90	4.2	2.4	13
S-14½-B1	<1.0	0.0060	0.019	0.0090	0.060
S-21½-B1	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-4½-B2	2.5	0.071	<0.0050	0.093	0.017
S-9½-B2	6.3	0.30	0.011	0.30	0.060
S-15½-B2	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9½-B3	52	1.2	2.5	1.4	8.5
S-19½-B3	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-0913-SP1(A-D)	1.9	0.027	<0.0050	0.035	0.0070
S-0913-SP2(A-D)	18	0.045	0.43	0.29	1.8
October 1992					
S-5½-B4	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9½-B4	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-15½-B4	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5½-B5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-10-B5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-19½-B5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5½-B6	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-10½-B6	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-18½-B6	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5½-B7	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-10-B7	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5½-B8	1.6	0.091	<0.0050	0.060	0.14
S-10-B8	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5½-B9	4.1	0.21	0.018	0.11	0.26
S-10-B9	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

See Notes on Page 3 of 3

TABLE 1
CUMULATIVE LABORATORY ANALYTICAL RESULTS
OF SOIL SAMPLES
ARCO Station 6041
Dublin, California
(Page 2 of 3)

ppm

Sample Identification	TPHg	B	T	E	X
October 1992 cont.					
S-5½-B10	16	0.26	0.69	0.30	2.1
S-10½-B10	3,200	12	74	59	390
S-1027-SP1(A-D)	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-1027-SP2(A-D)*	110	0.42	2.9	2.1	12
August 1993					
S-6-B11	<1.0	0.10	<0.0050	<0.0050	<0.0050
S-11.5-B11	5,300	9.0	<0.0050	8.3	210
S-18.5-B11	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-6-B12	<1.0	0.16	0.017	0.016	0.050
S-12.5-B12	580	4.0	2.0	13	50
S-18.5-B12	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5-B13	7.5	0.054	<0.0050	0.20	0.15
S-11-B13	280	1.5	<0.0050	8.8	7.5
S-20-B13	2.3	0.020	<0.0050	0.058	0.051
S-6.5-B14	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9.5-B14	1.4	<0.0050	<0.0050	<0.0050	<0.0050
S-5-B15	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9.5-B15	<1.0	0.038	<0.0050	<0.0050	<0.0050
S-6.5-B16	<1.0	0.019	<0.0050	0.018	0.031
S-9.5-B16	410	1.9	1.9	9.4	2.5
S-18.5-B16	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
0811-SP-(A-D)	4.6	<0.0050	<0.0050	<0.0050	<0.0050
STLC Lead 0.11					
Reactivities; none					
pH 8.2					
ignitability >100 deg C					

See Notes on Page 3 of 3

TABLE 1
CUMULATIVE LABORATORY ANALYTICAL RESULTS
OF SOIL SAMPLES
ARCO Station 6041
Dublin, California
(Page 3 of 3)

Results measured in part per million **(ppm)**.

TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Method 5030/8015/8020).

B: benzene; T: toluene; E: ethylbenzene; X: total xylenes.

BTEX: Analyzed by EPA Method 5030/8015/8020.

<: Less than the laboratory detection limit.

*: Additional analyses were performed for soil disposal. Results were as follows:
STLC lead by EPA Method 7421; 0.13 mg/L;
corrosivity by EPA 9045; pH=8.5;
ignitability by EPA 1010; flashpoint >100°C;
reactivity by EPA 9010 and 9030; below detection limit.

Sample Identification:

S-19½-B3
- S: Soil sample
- 19½: Depth in feet
- B3: Boring number

S-1027-SP2(A-D)
- S: Stockpile sample
- 1027: Sampling date
- SP2: Stockpile number
- A-D: Composite sample A through D

RESNA
Working to Restore Nature

APPENDIX A

CERTIFIED LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: John Young

Project: Arco 6041, Dublin

Enclosed are the results from 16 soil samples received at Sequoia Analytical on August 12,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3H77101	Soil, S-6-B11	8/11/93	EPA 5030/8015/8020
3H77102	Soil, S-11.5-B11	8/11/93	EPA 5030/8015/8020
3H77103	Soil, S-18.5-B11	8/11/93	EPA 5030/8015/8020
3H77104	Soil, S-6-B12	8/11/93	EPA 5030/8015/8020
3H77105	Soil, S-12.5-B12	8/11/93	EPA 5030/8015/8020
3H77106	Soil, S-18.5-B12	8/11/93	EPA 5030/8015/8020
3H77107	Soil, S-5-B15	8/11/93	EPA 5030/8015/8020
3H77108	Soil, S-9.5-B14	8/11/93	EPA 5030/8015/8020
3H77109	Soil, S-9.5-B15	8/11/93	EPA 5030/8015/8020
3H77110	Soil, S-6.5-B14	8/11/93	EPA 5030/8015/8020
3H77111	Soil, S-5-B13	8/11/93	EPA 5030/8015/8020
3H77112	Soil, S-11-B13	8/11/93	EPA 5030/8015/8020
3H77113	Soil, S-20-B13	8/11/93	EPA 5030/8015/8020
3H77114	Soil, S-6.5-B16	8/11/93	EPA 5030/8015/8020
3H77115	Soil, S-9.5-B16	8/11/93	EPA 5030/8015/8020
3H77116	Soil, S-18.5-B16	8/11/93	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin	Sampled:	Aug 11, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Aug 12, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 23, 1993
Attention: John Young	First Sample #:	3H77101		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3H77101 S-6-B11	Sample I.D. 3H77102 S-11.5-B11	Sample I.D. 3H77103 S-18.5-B11	Sample I.D. 3H77104 S-6-B12	Sample I.D. 3H77105 S-12.5-B12	Sample I.D. 3H77106 S-18.5-B12
Purgeable Hydrocarbons	1.0	N.D.	5,300	N.D.	N.D.	580	N.D.
Benzene	0.0050	0.10	9.0	N.D.	0.16	4.0	N.D.
Toluene	0.0050	N.D.	N.D.	N.D.	0.017	2.0	N.D.
Ethyl Benzene	0.0050	N.D.	8.3	N.D.	0.016	13	N.D.
Total Xylenes	0.0050	N.D.	210	N.D.	0.050	50	N.D.
Chromatogram Pattern:		Discrete Peak	Gas	--	Gas	Gas	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1,000	1.0	1.0	250	1.0
Date Analyzed:	8/18/93	8/19/93	8/18/93	8/18/93	8/20/93	8/18/93
Instrument Identification:	GCHP-18	GCHP-18	GCHP-18	GCHP-18	GCHP-7	GCHP-18
Surrogate Recovery, %: (QC Limits = 70-130%)	90	125	97	96	100	88

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin	Sampled:	Aug 11, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Aug 12, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 23, 1993
Attention: John Young	First Sample #:	3H77107	Amended:	Sept. 1, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3H77107 S-5-B15	Sample I.D. 3H77108 S-9.5-B14	Sample I.D. 3H77109 S-9.5-B15	Sample I.D. 3H77110 S-6.5-B14	Sample I.D. 3H77111 S-5-B13	Sample I.D. 3H77112 S-11-B3
Purgeable Hydrocarbons	1.0	N.D.	1.4	N.D.	N.D.	7.5	280
Benzene	0.0050	N.D.	N.D.	0.038	N.D.	0.054	1.5
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	0.20	8.8
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	0.15	7.5
Chromatogram Pattern:		--	Discrete Peak	Discrete Peak	--	Gas	Gas

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	2.5	250
Date Analyzed:	8/18/93	8/18/93	8/18/93	8/18/93	8/18/93	8/20/93
Instrument Identification:	GCHP-18	GCHP-18	GCHP-18	GCHP-18	GCHP-7	GCHP-7
Surrogate Recovery, %: (QC Limits = 70-130%)	97	128	106	104	93	98

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin	Sampled:	Aug 11, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Aug 12, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 23, 1993
Attention: John Young	First Sample #:	3H77113	Amended:	Sept. 1, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3H77113 S-20-B13	Sample I.D. 3H77114 S-6.5-B16	Sample I.D. 3H77115 S-9.5-B16	Sample I.D. 3H77116 S-18.5-B16
Purgeable Hydrocarbons	1.0	2.3	N.D.	410	N.D.
Benzene	0.0050	0.020	0.019	1.9	N.D.
Toluene	0.0050	N.D.	N.D.	1.9	N.D.
Ethyl Benzene	0.0050	0.058	0.018	9.4	N.D.
Total Xylenes	0.0050	0.051	0.031	2.5	N.D.
Chromatogram Pattern:		Gas	Gas	Gas	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	100	1.0
Date Analyzed:	8/18/93	8/18/93	8/20/93	8/18/93
Instrument Identification:	GCHP-18	GCHP-18	GCHP-7	GCHP-18
Surrogate Recovery, %: (QC Limits = 70-130%)	104	96	99	105

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin
3315 Almaden Expwy., Suite 34	Matrix:	Soil
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3H77101-16	Reported: Aug 23, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	R. Geckler	R. Geckler	R. Geckler	R. Geckler
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
LCS Batch#:	BLK081893	BLK081893	BLK081893	BLK081893
Date Prepared:	8/18/93	8/18/93	8/18/93	8/18/93
Date Analyzed:	8/18/93	8/18/93	8/18/93	8/18/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
LCS % Recovery:	95	100	100	97
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3H71204	3H71204	3H71204	3H71204
Date Prepared:	8/18/93	8/18/93	8/18/93	8/18/93
Date Analyzed:	8/18/93	8/18/93	8/18/93	8/18/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
Matrix Spike % Recovery:	85	85	90	87
Matrix Spike Duplicate % Recovery:	85	90	90	88
Relative % Difference:	0.0	5.7	0.0	1.1

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 6041-92-2

Chain of Custody

ARCO Facility no. 6041	City (Facility) DUBLIN	Project manager (Consultant) JOHN YOUNG / ERIN MCLUCAS	Laboratory name SEQUOIA
ARCO engineer MIKE WHELAN	Telephone no. (ARCO) (415)571-2434	Telephone no. (Consultant) (408)264-7723	Fax no. (Consultant) (408)264-2435	Contract number 07-073
Consultant name RESNA INDUSTRIES INC	Address (Consultant) 3315 ALMADEN EXPY, SUITE 34, SAN JOSE CA 95118		Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sample # / Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
S-6-B11		1	✓			✓		8/11/93	1		✓					9308771						
S-9.5-B11		1	✓			✓		8/11/93														
S-11.5-B11		1	✓			✓		8/11/93	2		✓											
S-15.5-B11		1	✓			✓		8/11/93														
S-18.5-B11		1	✓			✓		8/11/93	3		✓											
S-6-B12		1	✓			✓		8/11/93	4		✓											
S-9.5-B12		1	✓			✓		8/11/93														
S-12.5-B12		1	✓			✓		8/11/93	5		✓											
S-18.5-B12		1	✓			✓		8/11/93	6		✓											
S-5-B15		1	✓			✓		8/11/93	7		✓											
S-9.5-B15		2	✓			✓		8/11/93	8,9		✓											
S-12.5-B15		1	✓			✓		8/11/93														
S-14.5-B15		1	✓			✓		8/11/93			NO ANA.											
S-6.5-B14		1	✓			✓		8/11/93	10		✓											
S-9.5-B14		0	✓			✓		8/11/93			✓											
S-15.5-B14		1	✓			✓		8/11/93														

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 9308771

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

	Date	Time
Relinquished by sampler: Erin M. McLucas	8/12/93	945
Relinquished by: J. Armstrom	8/12/93	1120
Relinquished by:	Date	Time

Received by: Lisa Armstrom

Received by:

Received by laboratory: [signature] Date 8-12-93 Time 1120

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. 6041-92-2

ARCO Facility no. 6041	City (Facility) DUBLIN	Project manager (Consultant) JOHN YOUNG / ERIN MCLUCAS	Laboratory name SEQUOIA
ARCO engineer MIKE WHELAN	Telephone no. (ARCO) (415) 571-2434	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) (408) 264-2435
Consultant name RESNA INDUSTRIES INC	Address (Consultant) 3315 ALMADEN EXPY, SUITE 34, SAN JOSE CA 95118		Contract number 07-073

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH(GC) EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
S-5-BB		1	✓			✓		8/11/93	11		✓						9308771			
S-9.5-BB		1	✓			✓		8/11/93												
S-11-BB		1	✓			✓		8/11/93	12		✓									
S-20-BB		1	✓			✓		8/11/93	13		✓									
S-5-BB		1	✓			✓		8/11/93	14		✓									
S-9.5-BB		1	✓			✓		8/11/93	15		✓									
S-11.5-BB		1	✓			✓		8/11/93												
S-18.5-BB		1	✓			✓		8/11/93	16		✓									
S-12.5-BB		1	✓			✓		8/11/93												

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 9308771

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

	Date	Time	
Relinquished by sampler: E. Lucas	8/12/93	945	Received by: Lisa Stenstrom
Relinquished by: L. Stenstrom	8/12/93	1120	Received by
Relinquished by	Date	Time	Received by laboratory / Date / Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: John Young

Project: Arco 6041, Dublin

Enclosed are the results from 1 soil sample received at Sequoia Analytical on August 12,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3H54501	Soil, 0811-SP(A-D)	8/11/93	TCLP BTEX EPA 5030/8015 Corrosivity Ignitability Reactivity STLC Lead

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin	Sampled:	Aug 11, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	TCLP Extract	Received:	Aug 12, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8020	Reported:	Aug 16, 1993
Attention: John Young	First Sample #:	3H54501		

BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3H54501 0811-SP(A-D)
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Total Xylenes	0.50	N.D.

Quality Control Data

Report Limit Multiplication Factor:	20
Date Analyzed:	8/13/93
Instrument Identification:	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	102

Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

VM Tague

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin	Sampled: August 11, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received: August 12, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015	Reported: August 16, 1993
Attention: John Young	First Sample #:	3H54501	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3H54501 0811-SP(A-D)
Purgeable Hydrocarbons	1.0	4.6
Chromatogram Pattern:		Gas

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	8/13/93
Instrument Identification:	GCHP-18
Surrogate Recovery: (QC Limits = 70-130%)	119

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin	Sampled:	Aug 11, 1993
3315 Almaden Expwy., Suite 34	Sample Descript:	Soil, 0811-SP(A-D)	Received:	Aug 12, 1993
San Jose, CA 95118			Analyzed:	Aug 12-16, 1993
Attention: John Young	Lab Number:	3H54501	Reported:	Aug 16, 1993

CORROSIVITY, IGNITABILITY, AND REACTIVITY

Analyte	Detection Limit	Sample Results
Corrosivity:		
pH	N.A.	8.2
Ignitability:		
Flashpoint (Pensky-Martens), °C	25	> 100 °C
Reactivity:		
Sulfide, mg/kg	13	N.D.
Cyanide, mg/kg	0.50	N.D.
Reaction with water	N.A.	Negative

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6041, Dublin
3315 Almaden Expwy., Suite 34	Matrix:	Liquid
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3H54501	Reported: Aug 16, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK081393	BLK081393	BLK081393	BLK081393
Date Prepared:	-	-	-	-
Date Analyzed:	8/13/93	8/13/93	8/13/93	8/13/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	86	86	88	87
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3H57701	3H57701	3H57701	3H57701
Date Prepared:	-	-	-	-
Date Analyzed:	8/13/93	8/13/93	8/13/93	8/13/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	100	100	110	103
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	0.0	0.0	9.5	0.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

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Vickie Tague
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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RESNA	Client Project ID:	Arco 6041, Dublin
3315 Almaden Expwy., Suite 34	Matrix:	Soil
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3H54501	Reported: Aug 16, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	C. Donohue	C. Donohue	C. Donohue	C. Donohue
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
LCS Batch#:	BLK081393	BLK081393	BLK081393	BLK081393
Date Prepared:	8/13/93	8/13/93	8/13/93	8/13/93
Date Analyzed:	8/13/93	8/13/93	8/13/93	8/13/93
Instrument I.D.#:	GCHP-6	GCHP-6	GCHP-6	GCHP-6
LCS % Recovery:	95	100	95	97
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3H43909	3H43909	3H43909	3H43909
Date Prepared:	8/13/93	8/13/93	8/13/93	8/13/93
Date Analyzed:	8/13/93	8/13/93	8/13/93	8/13/93
Instrument I.D.#:	GCHP-6	GCHP-6	GCHP-6	GCHP-6
Matrix Spike % Recovery:	85	90	90	90
Matrix Spike Duplicate % Recovery:	85	90	90	87
Relative % Difference:	0.0	0.0	0.0	3.4

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

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RESNA	Client Project ID:	Arco 6041, Dublin
3315 Almaden Expwy., Suite 34	Matrix:	Soil
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3H54501	Reported: Aug 16, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	pH	Flashpoint	Reactive Cyanide	Reactive Sulfide
Method:	EPA 9045	EPA 1010	SW 846	EPA 9030
Analyst:	Y. Arteaga	K. Newberry	A. Savva	K. Follett
Units:	N/A	Celsius	mg/Kg	mg/Kg
Date:	8/12/93	8/9/93	8/16/93	8/16/93
Sample #:	3H51604	3H35104	3H54501	3H54501
Sample Concentration:	6.7	>100°C	N.D.	N.D.
Sample Duplicate Concentration:	6.8	>100°C	N.D.	N.D.
% RPD:	1.5	0.0	0.0	0.0
Control Limits:	0-30%	±20%	0-20%	0-20%

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

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RESNA	Client Project ID:	Arco 6041, Dublin	Sampled:	Aug 11, 1993
3315 Almaden Expwy., Suite 34	Sample Descript:	Soil, 0811-SP(A-D)	Received:	Aug 12, 1993
San Jose, CA 95118		STLC Extract	Analyzed:	see below
Attention: John Young	Lab Number:	3H54501	Reported:	Aug 17, 1993

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit mg/L	Sample Result mg/L
Lead	8/16/93	0.010	0.11

Analytes reported as N.D. were not present above the stated limit of detection.

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RESNA	Client Project ID:	Arco 6041, Dublin
3315 Almaden Expwy., Suite 34	Matrix:	Liquid
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3H54501	Reported: Aug 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	STLC Lead
Method:	EPA 239.2
Analyst:	J. Martinez
Conc. Spiked:	0.050
Units:	mg/L
LCS Batch#:	BLK081693
Date Prepared:	8/16/93
Date Analyzed:	8/16/93
Instrument I.D.#:	MV-1
LCS % Recovery:	111
Control Limits:	75-125

MS/MSD Batch #:	3H47301
Date Prepared:	8/16/93
Date Analyzed:	8/16/93
Instrument I.D.#:	MV-1
Matrix Spike % Recovery:	105
Matrix Spike Duplicate % Recovery:	95
Relative % Difference:	10

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

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ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 6041-92-2

Chain of Custody

ARCO Facility no. 6041	City (Facility) DUBLIN	Project manager (Consultant) JOHN YOUNG/ERIN MCLUCAS	Laboratory name SEQUOIA
ARCO engineer MIKE WHELAN	Telephone no. (ARCO) (415) 571-2434	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) (408) 264-2435
Consultant name DESNA INDUSTRIES INC	Address (Consultant) 3315 ALMADEN EXPY, SUITE 34, SAN JOSE 95118		Contract number 07-073

Method of shipment: Sequoia

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX TCLP 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas X / Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	STLC-Pb	RCT
0811-SRA		1	✓			✓		8/11/93	Composite 4 pt													
0811-SR-B		1	✓			✓		8/11/93														
0811-SR-C		1	✓			✓		8/11/93		✓		✓									✓	✓
0811-SR-D		1	✓			✓		8/11/93														

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number: 9308545

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☒
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☐

Condition of sample:

Temperature received:

	Date	Time	
Relinquished by sampler: Erin D. McLucas	8/12/93	945	Received by: Lisa Stevenson
Relinquished by: Lisa Stevenson	8/12/93	1120	Received by:
Relinquished by:	Date	Time	Received by laboratory: Date 8/12 Time 11:20

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)