April 28,1999
ERI 224803.RO1

Mr. Dave DeWitt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Subject: Evaluation of Soil and Groundwater at Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California.

Mr. DeWitt:

At the request of Tosco Marketing Company (Tosco), Environmental Resolutions, Inc. (ERI) performed an environmental investigation at the subject site. Tosco requested that ERI perform the investigation in response to a letter from the Alameda County Health Services Agency (the County) dated November 6, 1998, requesting Tosco evaluate soil and groundwater conditions beneath the site. ERI conducted the investigation to evaluate whether residual hydrocarbons are present in soil and to evaluate the extent of dissolved petroleum hydrocarbons previously detected in groundwater beneath the site.

The following tasks were performed as part of this investigation:

- Drilling four on-site soil borings (B1 through B4);
- Collecting soil samples from the borings to evaluate soil stratigraphy;
- Constructing groundwater monitoring wells MW1 through MW4 in the borings;
- Developing and sampling monitoring wells MW1 through MW4;
- Collecting and submitting soil and groundwater samples for laboratory analyses for total purgeable petroleum hydrocarbons as gasoline (TPPHg), methyl tertiary butyl ether (MTBE), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and select hydrogeologic parameters;
- Surveying well locations relative to a permanent datum and well casing elevations relative to mean sea level; and,
- Evaluating the groundwater flow direction and gradient.

BACKGROUND

The site is located on the southwestern corner of Webster Street and Pacific Avenue in Alameda, California, as shown on the Site Vicinity Map (Plate 1). The locations of former underground storage tanks (USTs), dispenser islands, and other select site features are shown on the Generalized Site Plan (Plate 2). Properties in the vicinity of the site are vacant or occupied by commercial developments.

To date, environmental work at the site has included the removal of two 10,000-gallon single-walled steel gasoline USTs, one 550-gallon single-wall steel used-oil UST, product lines, and dispensers.

Tosco also installed a conductor casing within the former UST cavity backfill to accommodate possible periodic groundwater sampling and/or groundwater extraction (ERI, September 1998).

PRESENT INVESTIGATION

Scope of Work

ERI performed site specific field work at the site in general accordance with ERI's Work Plan dated January 7, 1999, as approved by the County in a letter dated January 19, 1999. ERI obtained a well installation permit from the Alameda County Public Works Agency (the County Public Works) before beginning work. The permit is included as Attachment A. ERI performed field work at the site in accordance with a Site Safety Plan which was kept on site during field operations, the Work Plan, and ERI's standard field protocol (Attachment B).

Soil Borings

On March 2, 1999, ERI observed Woodward Drilling (Woodward) of Rio Vista, California, drill four on-site soil borings (B1 through B4). Drilling was performed under the guidance of an ERI geologist who collected soil samples from the borings during drilling. Soil samples were collected at approximately 5-foot intervals and above first-encountered groundwater at approximately 8.5 to 15 feet below ground surface (bgs).

ERI's geologist identified the soil samples collected from the borings using visual and manual methods, and classified the samples using the Unified Soil Classification System (Attachment C). Descriptions of the materials encountered are presented in the Boring Logs (Attachment C). Soil borings B1 through B4 were drilled to approximately 20.5 feet bgs.

Monitoring Well Construction, Development, Sampling, and Surveying

Immediately after the borings were drilled and sampled, groundwater monitoring wells MW1 through MW4 were constructed in borings B1 through B4, respectively. Details of the monitoring well construction are shown on the Boring Logs (Attachment C).

On March 4, 1999, ERI's representative developed the four new wells using surging and pumping techniques. Morrow Surveying of Sacramento surveyed the wells on March 4, 1999. ERI's representative measured depth to water and collected groundwater samples from MW1 through MW4 on March 5, 1999. Purge water generated during well development and sampling was left on site pending removal by Tosco to the Tosco Refinery in Rodeo, California.

Analytical Laboratory Methods

Soil Samples

Selected soil samples collected from the borings were submitted under Chain of Custody protocol to Sequoia Analytical Laboratories, Inc. (Sequoia) in Petaluma, California. The Chain of Custody records are attached (Attachment D). Soil samples were analyzed for TPPHg, BTEX, MTBE, and total lead

using the methods listed in Table 1. A soil sample representative of the lithology from B1 was analyzed for select hydrogeologic parameters by PTS Laboratories, Inc. of Santa Fe Springs, California. The laboratory results are included in Attachment D.

ERI collected and submitted a composite soil sample from the drill cutting stockpile under Chain of Custody record to Sequoia to profile for disposal. The composite sample was analyzed for TPPHg, BTEX, MTBE, and total lead using the methods listed in Table 1.

Groundwater Samples

Groundwater samples collected from wells MW1 through MW4 were submitted under Chain of Custody protocol to Sequoia in Petaluma, California. The Chain of Custody records and analytical results are provided in Attachment E. The groundwater samples were analyzed for TPPHg, BTEX, and MTBE using the methods listed in Table 2.

RESULTS OF INVESTIGATION

Site Geology and Hydrogeology

Sediments encountered beneath the site consist of sandy silt and silty sand with traces of clay. Groundwater was encountered in the borings at approximately 8.5 to 15 feet bgs during drilling and appears to be unconfined. During March 1999, groundwater flow direction was towards the northeast with a gradient of approximately 0.007 (Plate 2). Static water levels in the monitoring wells ranged from approximately 4 to 5 feet bgs.

Soil Conditions

Soil samples selected for analyses were collected above first-encountered groundwater. Photoionization detector readings were noted in borings B2 and B3 at depths ranging from 10 to 20 feet bgs. Analytical laboratory results are presented in Table 1. Copies of laboratory reports for soil samples obtained during this investigation are included in Attachment D.

Groundwater Conditions

Results of laboratory analyses of groundwater samples are summarized in Table 2 and shown on Plate 2.

SOIL STOCKPILE DISPOSAL

At the request of Tosco, Manley & Sons Trucking, Inc. of Sacramento, California transported approximately 3 tons of stockpiled soil to the Forward Inc. landfill in Manteca, California for disposal. Soil disposal documentation is included in Attachment E.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental practice in California at the time this investigation was performed. This investigation was conducted solely for the purpose of evaluating environmental conditions of the soil and first-encountered groundwater with respect to petroleum hydrocarbons. No soil engineering or geotechnical references are implied or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. This report has been prepared solely for Tosco and any reliance on this report by third parties shall be at such party's sole risk.

ERI recommends a signed copy of this report be forwarded to:

Ms. Eva Chu
Alameda County Health Care Services Agency
Environmental Health Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Mr. Andreas Godfrey
Alameda County Public Works Agency
Water Resources Section
951 Turner Court, Suite 300
Hayward, California 94545-2051

Please call Mr. Glenn Matteucci at (415) 382-5994 if you have any questions regarding this report.

Sincerely,
Environmental Resolutions, Inc.

Glenn L. Matteucci
Project Manager

Mark S. Dockum
R.G. 4412
C.E.G. 1675

Enclosures:

Plate 1:	Site Vicinity Map
Plate 2:	Generalized Site Plan
Table 1:	Analytical Results of Soil Samples (TPPHg, BTEX, MTBE, and Lead)
Table 2:	Analytical Results of Groundwater Samples (TPPHg, BTEX, and MTBE)
Attachment A:	Well Construction Permit
Attachment B:	Field Protocol
Attachment C:	Unified Soil Classification System and Symbol Key and Boring Logs.
Attachment D:	Laboratory Analysis Reports and Chain of Custody Records
Attachment E:	Stockpile Soil Documentation

REFERENCES

Environmental Resolutions, Inc. January 7, 1999. Work Plan for Evaluation of Soil and Groundwater at Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224803.WO1.

United States Geological Survey. 1980. Oakland West, California. 7.5-Minute Topographic Quadrangle Map.

TABLE 1
ANALYTICAL RESULTS of SOIL SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

Sample Number	Plate Call-out	Date Sampled	TPPHg	MTBE	B	T	E	X	Lead
			<.....ppm.....>						
Soil - Borings									
S-10.5-B1	MW1	3/2/99	ND	ND	ND	ND	ND	ND	ND
S-10.5-B2	MW2	3/2/99	ND	0.561	0.0295	0.0658	0.0359	0.119	ND
S-10.5-B3	MW3	3/2/99	ND	ND	ND	ND	ND	ND	ND
S-10.5-B4	MW4	3/2/99	ND	0.109	ND	ND	ND	ND	ND
Soil-Stockpiles									
Comp SP1-(1-4)	----	3/2/99	ND	0.0108	ND	0.00351	ND	0.0304	29

Notes:

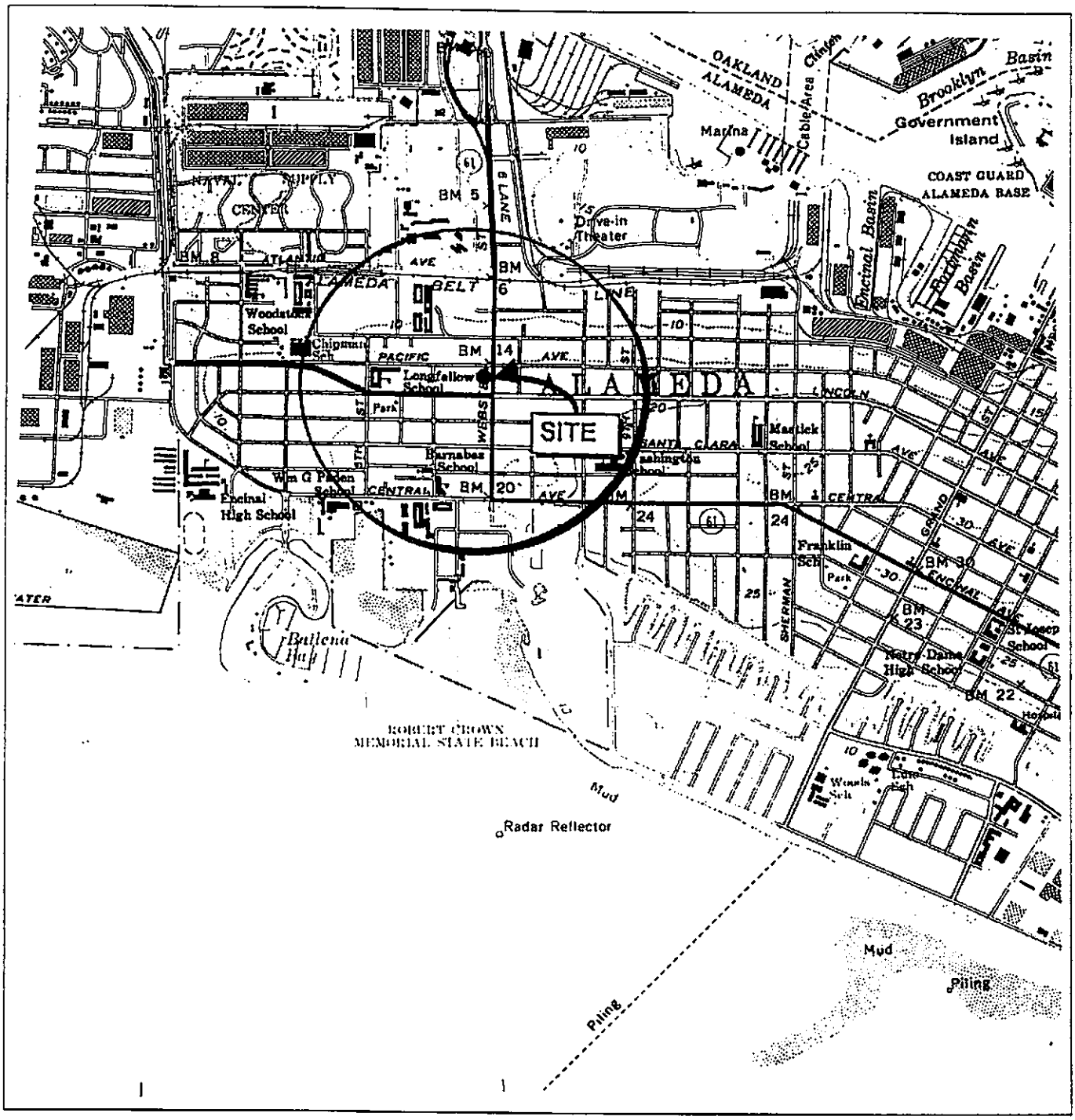
ppm	=	Parts per million.
S-10.5-B1	=	Soil Sample-depth in feet-Boring 1.
Comp SP1-(1-4)	=	Stock Pile 1, 1 through 4 composite samples.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 8015/8020 modifi
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 8015/8020 modified.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA method 8015/8020 modified .
Lead	=	Lead analyzed using EPA method 6010 A.
ND	=	Not detected at or above laboratory reporting limit.
Plate call out	=	MW1 (Monitoring Well 1).
---	=	Not applicable.

TABLE 2
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

Sample	Date Sampled	TPPHg	MTBE	B	T	E	X
		<.....ppb.....>					
Groundwater							
W-5-MW1	3/5/99	86.6	23.9	ND	2.04	ND	4.06
W-5-MW2	3/5/99	34,400	8,460	2,070	7,710	2,340	8,240
W-4-MW3	3/5/99	135	2.46	ND	ND	ND	4.84
W-4-MW4	3/5/99	ND	25.2	ND	ND	ND	2.44

Notes:

ppb	=	Parts per billion
W-5-MW1	=	Water sample-depth in feet-Monitoring Well #1.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 5030/8015 modified.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 8260.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA method 8260.
ND	=	Not detected at or above laboratory method detection limit.



FN 22480001

N

APPROXIMATE SCALE

0 1/2 1

MILE

Source: U.S.G.S. 7.5 minute topographic quadrangle map Oakland West, California (Photorevised 1980)

ENVIRONMENTAL RESOLUTIONS, INC.

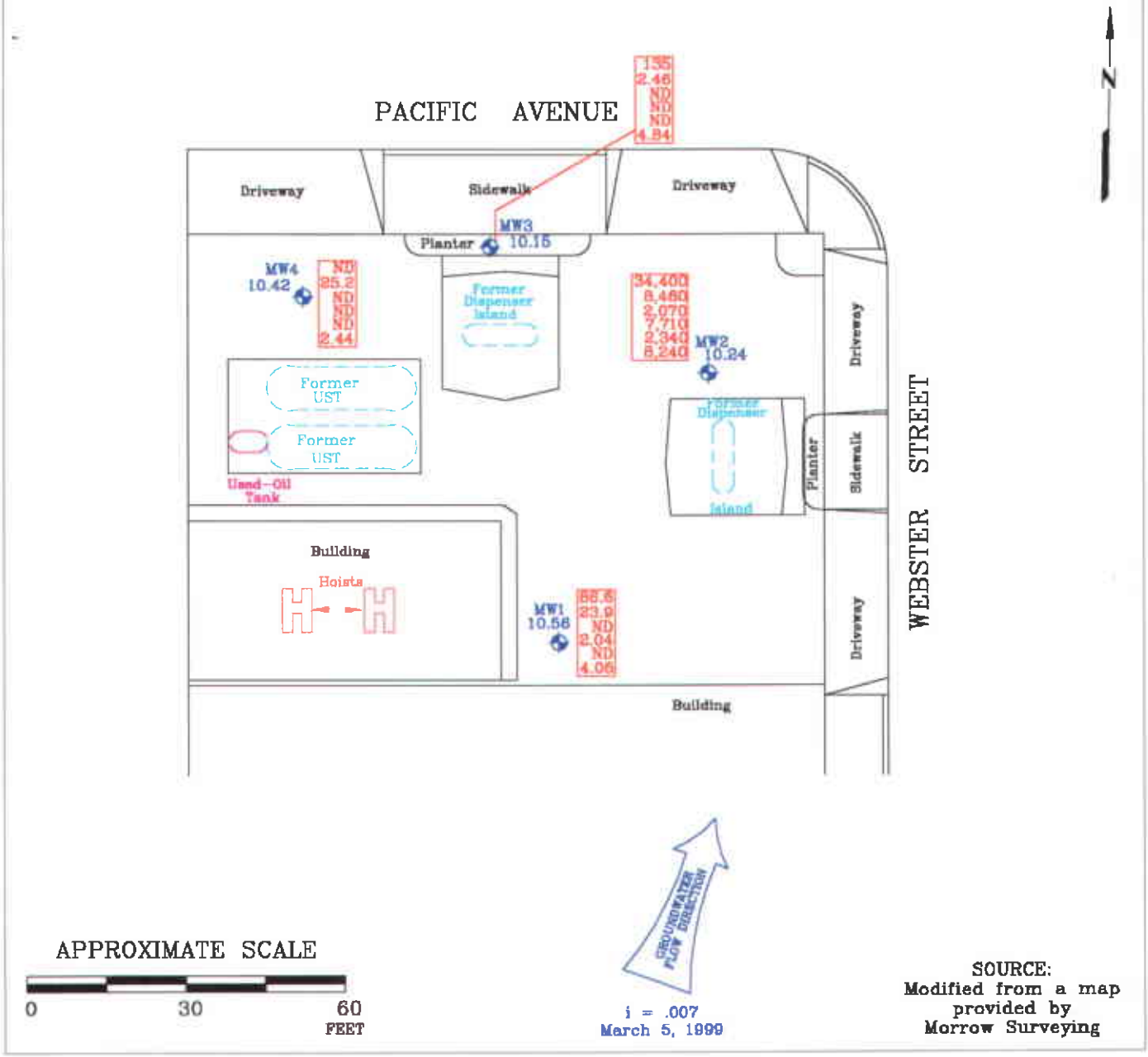
PROJECT ERI 2248

SITE VICINITY MAP

FORMER TOSCO 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PLATE

1



FN 22480002

EXPLANATION

MW4 ⊕ Groundwater Monitoring Well

10.42 Groundwater elevation in feet above mean sea level

i = Intrepreted Groundwater Gradient

Groundwater Concentrations in ug/L
Sampled March 5, 1999

34,400	Total Purgeable Petroleum Hydrocarbons as gasoline
8,460	Methyl Tertiary Butyl Ether
2,070	Benzene
7,710	Toluene
2,340	Ethylbenzene
8,240	Total Xylenes
<	Less Than the Stated Laboratory Detection Limit
ug/L	Micrograms per Liter

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER TOSCO 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PROJECT NO. 2248

PLATE 2

March 17, 1999

ATTACHMENT A
WELL CONSTRUCTION PERMIT

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-6575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5243 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Former Tosco 76 SS# 0843
1629 Webster St.
Alameda, California

California Coordinates Source ____ Accuracy ± ____ ft.
CCN ____ CCE ____
APN ____

CLIENT
Name Tosco Marketing COMPANY ATTN: DAVE DeWitt
Address 2000 Crow Canyon S Phone 925-277-2384
City SAN RAMON CA Zip 94583

APPLICANT
Name Environmental Resolutions, Inc
Dylan Crouse @
Address Digital Dr 74 Suite 6 Fax 415 382-1856
City NOVATO Phone 415 382-9105
Zip 94925

TYPE OF PROJECT

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

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other ____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S LICENSE NO. 710079

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 20 ft.
Surface Seal Depth 4 ft. Number 4

GEOTECHNICAL PROJECTS
Number of Borings ____ Maximum
Hole Diameter ____ in. Depth ____ ft.

ESTIMATED STARTING DATE 3/2/99
ESTIMATED COMPLETION DATE 3/2/99

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

APPLICANT'S SIGNATURE Dylan Crouse DATE 2-16-99

FOR OFFICE USE

PERMIT NUMBER 99WR 065
WELL NUMBER ____
APN ____

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA 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 SUPPLY WELLS
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.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. 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.

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

F. WELL DESTRUCTION
See attached.

G. SPECIAL CONDITIONS

APPROVED Andreas Godfrey DATE 2-22-9

ATTACHMENT B
FIELD PROTOCOL

FIELD PROTOCOL

Site Safety Plan

Field work is performed by ERI personnel in accordance with a site safety plan developed for the site. This plan describes the basic safety requirements for the subsurface investigation and the drilling of soil borings at the work site. The site safety plan is applicable to personnel and subcontractors of ERI. Personnel at the site are informed of the contents of the site safety plan before work begins. A copy of the site safety plan is kept at the work site and is available for reference by appropriate parties during the work. The ERI geologist acts as the Site Safety Officer.

Soil Borings and Sampling

Prior to drilling of borings and construction of wells, ERI acquires necessary permits from the appropriate agency(ies). ERI also contacts Underground Service Alert (USA) before drilling to help locate public utility lines at the site. ERI observes the driller hand-probe and hand-auger boring locations to a depth of approximately 5 feet bgs and a diameter greater than the soil boring diameter before drilling to reduce the risk of damaging underground structures.

Soil borings are drilled with a CME-55 (or similar) drill rig equipped with 8-inch diameter, hollow-stem augers. Auger flights and sampling equipment are steam-cleaned before use to minimize the possibility of cross-hole contamination. The rinsate is containerized and stored on site. ERI will coordinate with Tosco for appropriate recycling or disposal of the rinsate.

Drilling is performed under the observation of a field geologist, and the earth materials in the borings are identified using visual and manual methods, and classified as drilling progresses using the Unified Soil Classification System. Soil borings are drilled to approximately 10 feet below the uppermost zone of saturation or 5 feet into any competent clay layer (aquitard) encountered beneath the water-bearing zone. If an aquitard is encountered, the boring is terminated and backfilled with bentonite before installing a groundwater monitoring well.

During drilling, soil samples are collected at 5-foot intervals, obvious changes in lithology, and just above the groundwater surface. Samples are collected with a California-modified, split-spoon sampler equipped with laboratory-cleaned brass sleeves. Samples are collected by advancing the auger to a point just above the sampling depth and driving the sampler into the soil. The sampler is driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows required to drive the sampler each successive 6-inch interval is counted and recorded to give an indication of soil consistency.

Soil samples are monitored with a photoionization detector (PID), which measures hydrocarbon concentrations in the ambient air or headspace above the soil sample. Field instruments such as the PID are useful for indicating relative levels of hydrocarbon vapors, but do not detect concentrations of hydrocarbons with the same precision as laboratory analyses. Soil samples selected for possible chemical analysis are sealed promptly with Teflon® tape, and plastic caps. The samples are labeled and

placed in iced storage for transport to the laboratory. Chain of Custody Records are initiated by the geologist in the field, updated throughout handling of the samples, and sent with the samples to the laboratory. Copies of these records are in our report. Cuttings generated during drilling are placed on plastic sheeting and covered and left at the site. ERI coordinates with Tosco for the soil to either be treated on site or removed to an appropriate recycling or disposal facility.

Monitoring Well Construction

Monitoring wells are constructed in borings using thread-jointed, 2-inch inner diameter, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents are used in well construction. The screened portion of each well consists of factory-perforated casing with 0.020-inch wide slots. If unconfined aquifer conditions exist, the well screen is installed from the total depth of each well to approximately 10 feet above the uppermost water-bearing unit. If confined conditions exist, the uppermost water-bearing unit is screened exclusively. Unperforated casing is installed from the top of each screen to the ground surface. The annular space in the well is packed with #3 sand to approximately 1 to 2 feet above the slotted interval. A bentonite plug is added above the sand pack to prevent cement from entering the well pack. The remaining annulus is backfilled to grade with a slurry of portland cement.

The monitoring wells are protected with a traffic-rated, cast-aluminum utility box equipped with a PVC skirt. The box has a watertight seal to protect against surface-water infiltration and must be opened with a special wrench. The design of this box discourages vandalism and reduces the possibility of accidental disturbance of the well.

Well Development and Sampling

ERI waits a minimum of 24 hours before development of the monitoring wells to allow the grout to seal. Initially, a water sample is collected for subjective analysis before development of the monitoring wells. This sample is collected from near the water surface in the well with a Teflon® bailer cleaned with a laboratory-grade detergent and deionized water. The wells are developed with a surge block and pump. Well development continues until the discharge water is clear of silt and sand. Clay-size sediments derived from the screened portion of the formation cannot be eliminated by well development. After the well has been allowed to stabilize, the well is checked for floating product using an interface probe. The thickness of any product detected in the well is recorded. If floating product is encountered in the well, the well is not purged, and the water is not sampled for chemical analysis. Product is bailed from the well and stored in appropriately labeled drums on site. ERI apprises Tosco of appropriate recycling and disposal options for product bailed from the well.

If no floating product is detected after development, the well is purged of stagnant water and a sample is collected for laboratory analysis. The well is purged of approximately three to five well volumes of water with a submersible pump, or until pH, conductivity, and temperature of the purged water have stabilized. Water purged from the wells is stored in labeled, 55-gallon, steel drums approved for this use by the Department of Transportation until suitable disposal options can be selected based on laboratory analysis. ERI coordinates with Tosco for recycling or disposal of the purged water.

The wells are allowed to recover to at least 80 percent of static conditions, and a sample of the formation water is collected with a Teflon® bailer cleaned with a laboratory-grade detergent and

deionized water. The water is transferred slowly from the bailer to laboratory-cleaned, 1-liter amber bottles and 40-milliliter glass vials for analyses by the laboratory. The glass vials contain hydrochloric acid as a preservative. Our geologist checks to see if headspace is present. If headspace is present, we collect more samples until none is present. Chain of Custody Records are initiated in the field by the geologist, updated throughout handling of the samples, and sent along with the samples to the laboratory. Copies of Chain of Custody Records are included in our report.

Gradient Evaluation

ERI evaluates the direction of flow and gradient at the site. The elevation of the top of each well casing is measured relative to mean sea level by a licensed land surveyor. Water-depth measurements are made from the top of the casing in the well to the nearest 0.01 foot with an electronic water-level indicator. The well is vented to atmosphere for a minimum of 0.5 to 1 hour before obtaining depth-to-water measurements. Venting is conducted to allow the groundwater to equilibrate with barometric pressure. These data are combined to evaluate the relative elevation of the groundwater surface in each well and the slope of the groundwater surface across the site.

Quality Assurance/Quality Control

The sampling and analysis procedures employed by ERI for groundwater monitoring and sampling follow regulatory guidance documents for quality assurance/quality control (QA/QC). Quality control is maintained by site-specific field protocols and quality control checks performed by the laboratory. Laboratory and field handling of samples may be monitored by including QC samples for analysis. QC samples may include any combination of the following. The number and types of QC samples are selected and analyzed on a project-specific basis.

Trip Blanks - Trip blanks are sent to the project site, and travel with samples collected from the project site to the laboratory. They are not opened, and are returned from the project site with the samples for analysis.

Field Blank - Prepared in the field using organic-free water. Field blanks accompany samples collected at the project site to the laboratory and are analyzed periodically for specific chemical compounds present at the project site where they were prepared.

Duplicates - Duplicate samples are collected from a selected well and project site. They are analyzed at two different laboratories, or at the same laboratory under different labels.

Equipment Blank - Periodic QC samples are collected from field equipment rinsate to verify adequate cleaning procedures.

ATTACHMENT C
UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY AND BORING LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		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 mixture, little or no fines
		GM	Silty gravels, gravel-sand-clay mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SAND AND SANDY SOILS	SW	Well-graded sands 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
FINE GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine-grained 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-grained sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

DEPTH THROUGH WHICH SAMPLER IS DRIVEN

RELATIVELY UNDISTURBED SAMPLE

MISSED SAMPLE

GROUNDWATER LEVEL OBSERVED FROM FIRST WET SOIL SAMPLE IN BORING

STATIC GROUNDWATER LEVEL

OVM — ORGANIC VAPOR METER READING IN PARTS PER MILLION

PID — PHOTO-IONIZATION DETECTOR READING IN PARTS PER MILLION

WELL DESIGN

SAND PACK

BENTONITE ANNULAR SEAL

NEAT CEMENT ANNULAR SEAL

BLANK PVC

MACHINE-SLOTTED PVC

S-10 — SAMPLE LOCATION

NR — NOT RECORDED

NA — NOT ANALYZED

BLOW/FT. REPRESENTS THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH THE LAST 12 INCHES OF AN 18-INCH PENETRATION.

DASHED 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.

ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT 2248

UNIFIED SOIL CLASSIFICATION SYSTEM AND LOG OF BORINGS SYMBOL KEY

FORMER TOSCO 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PLATE

Attachment C

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: B1/MW1 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: South End of Site Approximately 50 Feet West of Southern Driveway Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						3" asphalt	
					SP	Sand, trace of silt, yellowish brown, moist	
5	5	0					
						Sands, trace of silt and some clay, brown, moist, some plasticity	
10	38	0			SC		
						Sand, trace of silt, light yellowish brown, wet	
15	35	0			SP		
						sand, trace of silt, olive, wet	
20	40	0					
						Total depth at 20.5 feet. Groundwater encountered at 12 feet. Static groundwater encountered at 5.6 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland III

FN: 2248B001

Project No.: 2248 Boring: B2/MW2 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: Northeast Corner of Site Approximately 10 Feet North of East Dispenser Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5	2	0				Sand, fine-grained, trace of silt, yellowish brown, very moist	
					SP	sand, trace of silt, olive gray, very moist	
10	27	1023				sand, trace of silt, dark yellowish brown, wet	
15	43	46				sand, trace of silt, light olive yellow, wet	
20	86	9				Total depth at 20.5 feet. Groundwater encountered at 8.5 feet. Static groundwater encountered at 5.3 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland I,II

FN: 2248B002

Project No.: 2248 Boring: B3/MW3 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: North Center in the Planter Approximately 1 Foot South of the Sidewalk Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						3" planter soil	
						Silt, trace of sand and clay, fine-grained, dark yellowish brown, very moist, some plasticity	
5	5	0			ML		
10	35	0					
15	20	1				silt, trace of sand, fine-grained, dark yellowish brown, wet, no plasticity	
20	37	7				very moist	
						Total depth at 20.5 feet. Groundwater encountered at 12 feet. Static groundwater encountred at 4.9 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland III

FN: 2248B003

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: B4/MW4 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: Northeast Corner of Site Approximately 13 Feet South of Driveway Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						3" asphalt at top	
5	10	▽ 0				silt, trace of sands, fine-grained, gravel and clay 0.5", dark yellowish brown, moist, some plasticity	
					ML		
10	50	5				olive, very moist	
15	33	0 ▼				light olive brown, wet, no plasticity	
20	35	0					
						Total depth at 20.5 feet. Groundwater encountered at 15 feet. Static groundwater encountered at 4.7 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland 1,II

FN: 2248B004

ATTACHMENT D
LABORATORY ANALYSIS REPORTS
AND CHAIN OF CUSTODY RECORDS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (925) 988-9600, FAX (925) 988-9673
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1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

March 12, 1999

Glenn Mattuecci
ERI
74 Digital Dr. Suite 6
Novato, CA 94949

RE: Unocal/Tosco/P903185

Dear Glenn Mattuecci:

Enclosed are the results of analyses for sample(s) received by the laboratory on March 5, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Matt Sakai
Project Manager

CA ELAP Certificate Number 2245

Sequoia Analytical

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ERI	Project:	Unocal/Tosco	Sampled:	3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received:	3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported:	3/12/99

ANALYTICAL REPORT FOR P903185

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
S-10.5-B1	P903185-02	Soil	3/2/99
S-10.0-B2	P903185-06	Soil	3/2/99
S-10.5-B3	P903185-10	Soil	3/2/99
S-10.5-B4	P903185-14	Soil	3/2/99
Comp SP1-(1-4)	P903185-17	Soil	3/2/99

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Sample Description: **S-10.5-B1**
Laboratory Sample Number: **P903185-02**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
Sequoia Analytical - Petaluma								
Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M								
Gasoline	9030257	3/11/99	3/11/99		0.400	ND	mg/kg	
Benzene	"	"	"		0.00200	ND	"	
Toluene	"	"	"		0.00200	ND	"	
Ethylbenzene	"	"	"		0.00200	ND	"	
Xylenes (total)	"	"	"		0.00400	ND	"	
Methyl tert-butyl ether	"	"	"		0.0100	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*65.0-135*		*94.0*	%	
Surrogate: 4-Bromofluorobenzene	"	"	"	*65.0-135*		*90.0*	"	
Total Metals by EPA 6000/7000 Series Methods								
Lead	9030212	3/10/99	3/11/99	EPA 6010A	7.50	ND	mg/kg	

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Sample Description: **S-10.0-B2**
Laboratory Sample Number: **P903185-06**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
Sequoia Analytical - Petaluma								
Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M								
Gasoline	9030257	3/11/99	3/11/99		2.00	ND	mg/kg	
Benzene	"	"	"		0.0100	**0.0295**	"	
Toluene	"	"	"		0.0100	**0.0658**	"	
Ethylbenzene	"	"	"		0.0100	**0.0359**	"	
Xylenes (total)	"	"	"		0.0200	**0.119**	"	
Methyl tert-butyl ether	"	"	"		0.0500	**0.561**	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*65.0-135*		*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene	"	"	"	*65.0-135*		*89.7*	"	
Total Metals by EPA 6000/7000 Series Methods								
Lead	9030212	3/10/99	3/11/99	EPA 6010A	7.50	ND	mg/kg	

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Sample Description: **S-10.5-B3**
Laboratory Sample Number: **P903185-10**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
Sequoia Analytical - Petaluma								
Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M								
Gasoline	9030257	3/11/99	3/11/99		0.400	ND	mg/kg	
Benzene	"	"	"		0.00200	ND	"	
Toluene	"	"	"		0.00200	ND	"	
Ethylbenzene	"	"	"		0.00200	ND	"	
Xylenes (total)	"	"	"		0.00400	ND	"	
Methyl tert-butyl ether	"	"	"		0.0100	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*65.0-135*		*93.3*	*%*	
Surrogate: 4-Bromofluorobenzene	"	"	"	*65.0-135*		*86.0*	"	
Total Metals by EPA 6000/7000 Series Methods								
Lead	9030212	3/10/99	3/11/99	EPA 6010A	7.50	ND	mg/kg	

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Sample Description: **S-10.5-B4**
Laboratory Sample Number: **P903185-14**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
Sequoia Analytical - Petaluma								
Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M								
Gasoline	9030257	3/11/99	3/11/99		0.400	ND	mg/kg	
Benzene	"	"	"		0.00200	ND	"	
Toluene	"	"	"		0.00200	ND	"	
Ethylbenzene	"	"	"		0.00200	ND	"	
Xylenes (total)	"	"	"		0.00400	ND	"	
Methyl tert-butyl ether	"	"	"		0.0100	**0.109**	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*65.0-135*		*96.3*	*%*	
Surrogate: 4-Bromofluorobenzene	"	"	"	*65.0-135*		*84.7*	"	
Total Metals by EPA 6000/7000 Series Methods								
Lead	9030212	3/10/99	3/11/99	EPA 6010A	7.50	ND	mg/kg	

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Sample Description: **Comp SP1-(1-4)**
Laboratory Sample Number: **P903185-17**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
Sequoia Analytical - Petaluma								
Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M								
Gasoline	9030257	3/11/99	3/11/99		0.400	ND	mg/kg	
Benzene	"	"	"		0.00200	ND	"	
Toluene	"	"	"		0.00200	**0.00351**	"	
Ethylbenzene	"	"	"		0.00200	ND	"	
Xylenes (total)	"	"	"		0.00400	**0.0304**	"	
Methyl tert-butyl ether	"	"	"		0.0100	**0.0108**	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*65.0-135*		*97.7*	%	
Surrogate: 4-Bromofluorobenzene	"	"	"	*65.0-135*		*79.0*	"	
Total Metals by EPA 6000/7000 Series Methods								
Lead	9030212	3/10/99	3/11/99	EPA 6010A	7.50	**29.0**	mg/kg	

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M/Quality Control
Sequoia Analytical - Petaluma

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9030257	**Date Prepared: 3/11/99**					**Extraction Method: EPA 5030 soils**				
Blank	**9030257-BLK1**									
Gasoline	3/11/99			**ND**	mg/kg	**0.400**				
Benzene	"			**ND**	"	**0.00200**				
Toluene	"			**ND**	"	**0.00200**				
Ethylbenzene	"			**ND**	"	**0.00200**				
Xylenes (total)	"			**ND**	"	**0.00400**				
Methyl tert-butyl ether	"			**ND**	"	**0.0100**				
Surrogate: a,a,a-Trifluorotoluene	"	*0.300*		*0.271*	"	*65.0-135*	*90.3*			
Surrogate: 4-Bromofluorobenzene	"	*0.300*		*0.258*	"	*65.0-135*	*86.0*			
LCS	**9030257-BS1**									
Gasoline	3/11/99	2.00		2.14	mg/kg	65.0-135	107			
Surrogate: 4-Bromofluorobenzene	"	*0.300*		*0.272*	"	*65.0-135*	*90.7*			
Matrix Spike	**9030257-MS1**		**P903273-01**							
Gasoline	3/11/99	2.00	ND	1.60	mg/kg	65.0-135	**80.0**			
Surrogate: 4-Bromofluorobenzene	"	*0.300*		*0.225*	"	*65.0-135*	*75.0*			
Matrix Spike Dup	**9030257-MSD1**		**P903273-01**							
Gasoline	3/11/99	2.00	ND	1.33	mg/kg	65.0-135	**66.5**	35.0	**18.4**	
Surrogate: 4-Bromofluorobenzene	"	*0.300*		*0.207*	"	*65.0-135*	*69.0*			

Sequoia Analytical

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ERI	Project: Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number: Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager: Glenn Mattuecci	Reported: 3/12/99

Total Metals by EPA 6000/7000 Series Methods/Quality Control
Sequoia Analytical - Petaluma

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9030212	**Date Prepared: 3/10/99**					**Extraction Method: EPA 3050B**				
Blank	**9030212-BLK1**									
Lead	3/11/99			**ND**	mg/kg	**7.50**				
LCS	**9030212-BS1**									
Lead	3/11/99	50.0		51.1	mg/kg	80.0-120	102			
Matrix Spike	**9030212-MS1**		**P903120-01**							
Lead	3/11/99	45.5	ND	43.5	mg/kg	75.0-125	**95.6**			
Matrix Spike Dup	**9030212-MSD1**		**P903120-01**							
Lead	3/11/99	46.3	ND	45.3	mg/kg	75.0-125	**97.8**	20.0	**2.28**	

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ERI	Project:	Unocal/Tosco	Sampled: 3/2/99
74 Digital Dr. Suite 6	Project Number:	Fmr Tosco 76 SS #0843	Received: 3/5/99
Novato, CA 94949	Project Manager:	Glenn Mattuecci	Reported: 3/12/99

Notes and Definitions

#	Note
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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Company Name: Environmental Resolutions, Inc	Project Name: Fmr Tosco 76 SS # 0843
Mailing Address: 74 Digital Dr #6	Billing Address (if different): TOSCO MARKETING CO
City: Novato State: CA Zip Code: 94949	ATTN: DAVE DeWitt
Telephone: 415-382-9105 FAX #: 415-382-1856	P.O. #:
Report To: Glenn M Sampler: D. Crouse	QC Data: ☒ Level D (Standard) ❑ Level C ❑ Level B ❑ Level A

Turnaround Time: ❑ 10 Working Days ❑ 3 Working Days ❑ 2 - 8 Hours ❑ 7 Working Days ❑ 2 Working Days ❑ 5 Working Days ❑ 24 Hours

❑ Drinking Water ❑ Waste Water ❑ Other

Analyses Requested

P903185

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	TPH-g 8015	BTEX/MTBE 8020	Total Lead 6010	Comments
1. S-5.5-B1	3/2/99 836	Soil	1	Brass sleeve	P903185-01	~~X~~	~~X~~	~~X~~	Hold
2. S-10.5-B1	841		1		-02	X	X	X	
3. S-15.5-B1	844		1		-03	X	X	X	Hold
4. S-20.5-B1	850		1		-04	X	X	X	Hold
5. S-5.5-B2	710		1		-05	X	X	X	hold
6. S-10.5-B2	715		1		-06	X	X	X	
7. S-15.5-B2	717		1		-07	X	X	X	hold
8. S-18.5-B2	754		1		-08	X	X	X	hold
9. S-5.5-B3	1051		1		-09	X	X	X	hold
10. S-10.5-B3	3/2/99 1056		1		-10	X	X	X	

COOLER CUSTODY SEALS INTACT ❑ NOT INTACT ❑
COOLER TEMPERATURE 3 °C

Relinquished By: D. Crouse	Date:	Time:	Received By:	Date: 3-3	Time: 1345
Relinquished By:	Date: 3-3	Time: 1645	Received By: Paul Hurman	Date: 3/3/99	Time: 1645
Relinquished By: Paul Hurman	Date: 3/4/99	Time: 13:00	Received By Lab:	Date: 3/4	Time: 1400

3-5-99 1600 3-5 1200

Were Samples Received in Good Condition? ❑ Yes ❑ No Samples on Ice? ☒ Yes ❑ No Method of Shipment

Page ___ of ___

Pink - Client
Yellow - Sequoia
White - Sequoia

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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❑ 1455 McDowell Blvd. North, Suite D • Petaluma, CA 94954 • (707) 792-1865 FAX (707) 792-0342

Company Name: Environmental Resolutions, Inc	Project Name: FMR Tosco 76 SS # 0843
Mailing Address: 74 Digital Dr. suite 6	Billing Address (if different): Tosco marketing Co
City: Novato State: CA Zip Code:	Attn: Dave Dewitt
Telephone: 415-382-9105 FAX #: 415-382-1856	P.O. #:
Report To: Glenn M Sampler: D. Crouse	QC Data: ☒ Level D (Standard) ❑ Level C ❑ Level B ❑ Level A

Turnaround Time: ❑ 10 Working Days ❑ 7 Working Days ❑ 5 Working Days ❑ 3 Working Days ❑ 2 Working Days ❑ 24 Hours ❑ 2 - 8 Hours

❑ Drinking Water ❑ Waste Water ❑ Other

Analyses Requested: TPH-g 8015 / MTBE / BTEX 8020 / Total lead 7420

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	TPH-g	MTBE	BTEX	Comments
1. S-15.5-B3	3/2/99 1059	Soil	1	Brass Sleeve	-11	X	X	X	hold
2. S-20.5-B3	1102		1		-12	X	X	X	hold
3. S-5.5-B4	952		1		-13	X	X	X	hold
4. S-10.5-B4	957		1		-14	X	X	X	
5. S-15.5-B4	959		1		-15	X	X	X	hold
6. S-20.5-B4	1006		1		-16	X	X	X	hold
7. SP1-1 (Composite)	1200		1			X	X	X	composite
8. SP1-2 (Composite)	1200		1		-17	X	X	X	
9. SP1-3 (Composite)	1200		1			X	X	X	
10. SP1-4 (Composite)	1200		1			X	X	X	

Relinquished By:		Date:	Time:	Received By:		Date: 3-3	Time: 1345
Relinquished By:		Date: 3-3	Time: 1645	Received By:		Date: 3/3/99	Time: 1645
Relinquished By:		Date: 3/4/99	Time: 13:00	Received By Lab:		Date: 3/4	Time: 1500

Were Samples Received in Good Condition? ☒ Yes ❑ No Samples on Ice? ☒ Yes ❑ No Method of Shipment 3-5 1200

Page ___ of ___

Pink - Client
Yellow - Sequoia
White - Sequoia

Sequoia Analytical

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Environmental Resolutions
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Novato, CA 94949
Attention: Ed Ralston

Client Proj. ID: Fmr. Tosco 76 SS 0843

Lab Proj. ID: 9903672

Received: 03/09/99

Reported: 03/26/99

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 12 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

Notes:
EPA Method 8260A:
The analysis for Benzene, Toluene, Ethybenzene, Xylene, and MTBE was subcontracted to Sequoia Analytical-Sacramento.

EPA Method 8015(mod.)-Gas:
The analysis for Total Purgeable Hydrocarbons was subcontracted to Sequoia Analytical-Sacramento.

SEQUOIA ANALYTICAL

David A. Richette
Project Manager

Sequoia Analytical

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled:	3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received:	3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported:	3/19/99

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
9903672-01(W-5-MW1)	S903209-01	Water	3/5/99
9903672-02(W-5-MW2)	S903209-02	Water	3/5/99
9903672-03(W-4-MW3)	S903209-03	Water	3/5/99
9903672-04(W-4-MW4)	S903209-04	Water	3/5/99
9903672-05(W-BB-MW4)	S903209-05	Water	3/5/99

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sandra R. Hanson, Client Services Representative

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

Total Purgeable Hydrocarbons by DHS LUFT
Sequoia Analytical - Sacramento

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
9903672-01(W-5-MW1)			**S903209-01**				**Water**	
Purgeable Hydrocarbons	9030211	3/17/99	3/17/99		50.0	**86.6**	ug/l	1
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*60.0-140*		*102*	%	
9903672-02(W-5-MW2)			**S903209-02**				**Water**	
Purgeable Hydrocarbons	9030249	3/18/99	3/18/99		2500	**34400**	ug/l	1,D
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*60.0-140*		*97.6*	%	
9903672-03(W-4-MW3)			**S903209-03**				**Water**	
Purgeable Hydrocarbons	9030211	3/17/99	3/17/99		50.0	**135**	ug/l	1
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*60.0-140*		*99.0*	%	
9903672-04(W-4-MW4)			**S903209-04**				**Water**	
Purgeable Hydrocarbons	9030211	3/17/99	3/17/99		50.0	ND	ug/l	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*60.0-140*		*96.2*	%	
9903672-05(W-BB-MW4)			**S903209-05**				**Water**	
Purgeable Hydrocarbons	9030211	3/17/99	3/17/99		50.0	ND	ug/l	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	*60.0-140*		*99.7*	%	

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

MTBE by EPA Method 8260A
Sequoia Analytical - Sacramento

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
9903672-01(W-5-MW1)			**S903209-01**				**Water**	
Methyl tert-butyl ether	9030186	3/16/99	3/16/99		2.00	**23.9**	ug/l	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*		*105*	%	
9903672-02(W-5-MW2)			**S903209-02**				**Water**	
Methyl tert-butyl ether	9030186	3/16/99	3/17/99		100	**8460**	ug/l	D
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*		*100*	%	
9903672-03(W-4-MW3)			**S903209-03**				**Water**	
Methyl tert-butyl ether	9030186	3/16/99	3/16/99		2.00	**2.46**	ug/l	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*		*95.2*	%	
9903672-04(W-4-MW4)			**S903209-04**				**Water**	
Methyl tert-butyl ether	9030186	3/16/99	3/16/99		2.00	**25.2**	ug/l	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*		*102*	%	
9903672-05(W-BB-MW4)			**S903209-05**				**Water**	
Methyl tert-butyl ether	9030186	3/16/99	3/16/99		2.00	ND	ug/l	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*		*87.6*	%	

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

BTEX by EPA Method 8260A
Sequoia Analytical - Sacramento

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
9903672-01(W-5-MW1)			**S903209-01**				**Water**	
Benzene	9030186	3/16/99	3/16/99		2.00	ND	ug/l	
Toluene	"	"	"		2.00	**2.04**	"	
Ethylbenzene	"	"	"		2.00	ND	"	
Xylenes (total)	"	"	"		2.00	**4.06**	"	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*	*4.00*	*105*	%	
Surrogate: Toluene-d8	"	"	"	*60.0-140*	*4.00*	*103*	"	
Surrogate: 4-BFB	"	"	"	*60.0-140*	*4.00*	*100*	"	
9903672-02(W-5-MW2)			**S903209-02**				**Water**	
Benzene	9030186	3/16/99	3/17/99		100	**2070**	ug/l	D
Toluene	"	"	"		100	**7710**	"	D
Ethylbenzene	"	"	"		100	**2340**	"	D
Xylenes (total)	"	"	"		100	**8240**	"	D
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*	*4.00*	*100*	%	
Surrogate: Toluene-d8	"	"	"	*60.0-140*	*4.00*	*101*	"	
Surrogate: 4-BFB	"	"	"	*60.0-140*	*4.00*	*95.2*	"	
9903672-03(W-4-MW3)			**S903209-03**				**Water**	
Benzene	9030186	3/16/99	3/16/99		2.00	ND	ug/l	
Toluene	"	"	"		2.00	ND	"	
Ethylbenzene	"	"	"		2.00	ND	"	
Xylenes (total)	"	"	"		2.00	**4.84**	"	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*	*4.00*	*95.2*	%	
Surrogate: Toluene-d8	"	"	"	*60.0-140*	*4.00*	*102*	"	
Surrogate: 4-BFB	"	"	"	*60.0-140*	*4.00*	*99.6*	"	
9903672-04(W-4-MW4)			**S903209-04**				**Water**	
Benzene	9030186	3/16/99	3/16/99		2.00	ND	ug/l	
Toluene	"	"	"		2.00	ND	"	
Ethylbenzene	"	"	"		2.00	ND	"	
Xylenes (total)	"	"	"		2.00	**2.44**	"	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*	*4.00*	*103*	%	
Surrogate: Toluene-d8	"	"	"	*60.0-140*	*4.00*	*100*	"	
Surrogate: 4-BFB	"	"	"	*60.0-140*	*4.00*	*98.4*	"	
9903672-05(W-BB-MW4)			**S903209-05**				**Water**	
Benzene	9030186	3/16/99	3/16/99		2.00	ND	ug/l	
Toluene	"	"	"		2.00	ND	"	
Ethylbenzene	"	"	"		2.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*60.0-140*	*4.00*	*87.6*	%	

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**Refer to end of report for text of notes and definitions.*

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

BTEX by EPA Method 8260A
Sequoia Analytical - Sacramento

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
9903672-05(W-BB-MW4) (continued)			**S903209-05**				**Water**	
Surrogate: Toluene-d8	*9030186*	*3/16/99*	*3/16/99*	*60.0-140*	*4.00*	*102*	*%*	
Surrogate: 4-BFB	*"*	*"*	*"*	*60.0-140*	*4.00*	*98.4*	*"*	

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

Total Purgeable Hydrocarbons by DHS LUFT/Quality Control
Sequoia Analytical - Sacramento

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9030211	**Date Prepared: 3/17/99**					**Extraction Method: EPA 5030B (P/T)**				
Blank	**9030211-BLK1**									
Purgeable Hydrocarbons	3/17/99			**ND**	ug/l	**50.0**				
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.45*	"	*60.0-140*	*94.5*			
LCS	**9030211-BS1**									
Purgeable Hydrocarbons	3/17/99	60.0		42.1	ug/l	70.0-130	70.2			
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.60*	"	*60.0-140*	*96.0*			
Matrix Spike	**9030211-MS1**		**S903171-04**							
Purgeable Hydrocarbons	3/17/99	60.0	ND	41.1	ug/l	60.0-140	**68.5**			
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.30*	"	*60.0-140*	*93.0*			
Matrix Spike Dup	**9030211-MSD1**		**S903171-04**							
Purgeable Hydrocarbons	3/17/99	60.0	ND	41.8	ug/l	60.0-140	**69.7**	25.0	**1.74**	
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.58*	"	*60.0-140*	*95.8*			
Batch: 9030249	**Date Prepared: 3/18/99**					**Extraction Method: EPA 5030B (P/T)**				
Blank	**9030249-BLK1**									
Purgeable Hydrocarbons	3/18/99			**ND**	ug/l	**50.0**				
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.32*	"	*60.0-140*	*93.2*			
LCS	**9030249-BS1**									
Purgeable Hydrocarbons	3/18/99	60.0		56.1	ug/l	70.0-130	93.5			
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.36*	"	*60.0-140*	*93.6*			
Matrix Spike	**9030249-MS1**		**S903195-02**							
Purgeable Hydrocarbons	3/18/99	60.0	ND	54.4	ug/l	60.0-140	**90.7**			
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.61*	"	*60.0-140*	*96.1*			
Matrix Spike Dup	**9030249-MSD1**		**S903195-02**							
Purgeable Hydrocarbons	3/18/99	60.0	ND	54.1	ug/l	60.0-140	**90.2**	25.0	**0.553**	
Surrogate: a,a,a-Trifluorotoluene	"	*10.0*		*9.69*	"	*60.0-140*	*96.9*			

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

MTBE by EPA Method 8260A/Quality Control
Sequoia Analytical - Sacramento

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9030186	**Date Prepared: 3/16/99**					**Extraction Method: EPA 5030B [P/T]**				
Blank	**9030186-BLK1**									
Methyl tert-butyl ether	3/16/99			**ND**	ug/l	**2.00**				
Surrogate: 1,2-DCA-d4	"	*50.0*		*53.6*	"	*60.0-140*	*107*			
LCS	**9030186-BS1**									
Methyl tert-butyl ether	3/16/99	50.0		55.8	ug/l	70.0-130	112			
Surrogate: 1,2-DCA-d4	"	*50.0*		*53.8*	"	*60.0-140*	*108*			
Matrix Spike	**9030186-MS1**		**S903202-01**							
Methyl tert-butyl ether	3/16/99	50.0	ND	55.8	ug/l	60.0-140	**112**			
Surrogate: 1,2-DCA-d4	"	*50.0*		*55.2*	"	*60.0-140*	*110*			
Matrix Spike Dup	**9030186-MSD1**		**S903202-01**							
Methyl tert-butyl ether	3/16/99	50.0	ND	55.6	ug/l	60.0-140	**111**	25.0	**0.897**	
Surrogate: 1,2-DCA-d4	"	*50.0*		*56.2*	"	*60.0-140*	*112*			

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Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

BTEX by EPA Method 8260A/Quality Control
Sequoia Analytical - Sacramento

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9030186	**Date Prepared: 3/16/99**					**Extraction Method: EPA 5030B [P/T]**				
Blank	**9030186-BLK1**									
Benzene	3/16/99			**ND**	ug/l	**2.00**				
Toluene	"			**ND**	"	**2.00**				
Ethylbenzene	"			**ND**	"	**2.00**				
Xylenes (total)	"			**ND**	"	**2.00**				
Surrogate: 1,2-DCA-d4	"	*50.0*		*53.6*	"	*60.0-140*	*107*			
Surrogate: Toluene-d8	"	*50.0*		*51.6*	"	*60.0-140*	*103*			
Surrogate: 4-BFB	"	*50.0*		*47.6*	"	*60.0-140*	*95.2*			
LCS	**9030186-BS1**									
Benzene	3/16/99	50.0		54.2	ug/l	70.0-130	108			
Toluene	"	50.0		48.2	"	70.0-130	96.4			
Surrogate: 1,2-DCA-d4	"	*50.0*		*53.8*	"	*60.0-140*	*108*			
Surrogate: Toluene-d8	"	*50.0*		*49.0*	"	*60.0-140*	*98.0*			
Surrogate: 4-BFB	"	*50.0*		*46.8*	"	*60.0-140*	*93.6*			
Matrix Spike	**9030186-MS1**		**S903202-01**							
Benzene	3/16/99	50.0	ND	54.2	ug/l	70.0-130	**108**			
Toluene	"	50.0	ND	50.0	"	70.0-130	**100**			
Surrogate: 1,2-DCA-d4	"	*50.0*		*55.2*	"	*60.0-140*	*110*			
Surrogate: Toluene-d8	"	*50.0*		*52.2*	"	*60.0-140*	*104*			
Surrogate: 4-BFB	"	*50.0*		*48.0*	"	*60.0-140*	*96.0*			
Matrix Spike Dup	**9030186-MSD1**		**S903202-01**							
Benzene	3/16/99	50.0	ND	53.4	ug/l	70.0-130	**107**	25.0	**0.930**	
Toluene	"	50.0	ND	49.6	"	70.0-130	**99.2**	25.0	**0.803**	
Surrogate: 1,2-DCA-d4	"	*50.0*		*56.2*	"	*60.0-140*	*112*			
Surrogate: Toluene-d8	"	*50.0*		*52.6*	"	*60.0-140*	*105*			
Surrogate: 4-BFB	"	*50.0*		*49.4*	"	*60.0-140*	*98.8*			

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1551 Industrial Road, San Carlos, CA 94070-4111, (650) 232-9600, FAX (650) 232-9612

Sequoia Analytical - Redwood City	Project:	N/A	Sampled: 3/5/99
680 Chesapeake Drive	Project Number:	(WO#9903672)	Received: 3/16/99
Redwood City, CA 94063	Project Manager:	Ron Chew	Reported: 3/19/99

Notes and Definitions

#	Note
D	Data reported from a dilution.
1	Chromatogram Pattern: Weathered Gasoline C6-C12
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

Sandra R. Hanson, Client Services Representative

SUB-CHAIN OF CUSTODY

SEQUOIA ANALYTICAL
680 CHESAPEAKE DRIVE
REDWOOD CITY, CA 94063
TEL415-364-9600 FAX415-364-9233

PROJECT SUBBED TO: SACRAMENTO

TAT REQUESTED: ☐ 24H ☐ 48H ☐ 72H ☐ 5D ☐ 10D

DUE DATE: 3/19/99

REPORT TO: RON CHEW

WORKORDER # 9903672

PROJECT NAME: ERI / TOSCO

FRACTION NUMBER	SAMPLE DESCRIPTION	MATRIX	NUMBER OF CONT.	TYPE CONT.	SAMPLING TIME/DATE	ANALYSIS REQUESTED: TPHGas	BTEX/MTBE (by 8260)	REMARKS
01	W-5-MW1	Li	3	VOAs	3/5/99	X	X	9903209-01
02	W-5-MW2	"	"	"	"	X	X	02
03	W-4-MW3	"	"	"	"	X	X	03
04	W-4-MW4	"	"	"	"	X	X	04
05	W-DB-MW4	"	1	"	"	X	X	05

RELINQUISHED FROM SEQUOIA BY: DATE TIME

RELINQUISHED BY: DATE 3/6 TIME

RELINQUISHED BY: DATE TIME

RECEIVED BY: DATE 3/5 TIME 1500

RECEIVED BY: DATE TIME

RECEIVED BY: Kay Pmud DATE 3/6 TIME 0900

SAMPLE CONDITION?

TEMP?

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

☐ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 364-9233
☐ 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
☐ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600 FAX (510) 988-9673

Company Name: Environmental Resolutions, Inc	Project Name: Fmr. Tosco 76 SS 0843
Address: 74 Digital Dr suite 6	Billing Address (if different): Tosco Marketing Company
City: Novato State: CA Zip Code: 94949	Attn: ED Ralston
Telephone: 415-382-9105 FAX #: 415-382-1856	P.O. #:
Report To: Sampler: D. Crouse	QC Data: ☒ Level D (Standard) ☐ Level C ☐ Level B ☐ Level A

Turnaround Time: ☐ 10 Working Days ☐ 3 Working Days ☐ 2 - 8 Hours ☐ 7 Working Days ☐ 2 Working Days ☐ 5 Working Days ☐ 24 Hours 9903672

☐ Drinking Water ☐ Waste Water ☐ Other

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	TPPHg 5030	BTEX/MTBE 8015(mod) 8020	[illegible]							Comments
1. W-5-mw1	3/5 1224	WATER	3	Voa	01	X	X								
2. W-5-mw2	3/5 1259	↓	3	↓	02	X	X								
3. W-4-mw3	3/5 1250	↓	3	↓	03	X	X								
4. W-4 mw4	3/5 1236	↓	3	↓	04	X	X								
5. W-BB-MW4	3/5 1230	↓	1	↓	05	X	X								hold
6.															
7.															
8.															
9.															
10.															

Relinquished By: Dale Crouse	Date: 3/5	Time:	Received By: MK	Date: 3/9	Time: 9:55
Relinquished By: [illegible]	Date: 3/9	Time: 1130	Received By: [illegible]	Date: 3-9	Time: 1600
Relinquished By: [illegible]	Date: 3-9	Time:	Received By Lab: [illegible]	Date: 3/9/99	Time: 1900

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment______________ Page __ of __

Pink - Client
Yellow - Sequoia
White - Sequoia

PTS Laboratories, Inc.

Geotechnical Services

8100 Secura Way • Santa Fe Springs • CA 90670
Phone (562) 907-3607 • Fax (562) 907-3610

March 10, 1999

Mr. Glenn Matteucci
Environmental Resolutions
74 Digital Dr. Suite 6
Novato, CA 94949

Re: Former Tosco #0843
PTS File: 29061

Dear Mr. Matteucci:

Enclosed are final data for samples submitted for analysis under Former Tosco #0843 Project # 224803T5. Analyses were performed by applicable ASTM, EPA or API methodology. Samples will be retained for 30 days before disposal unless other arrangements are made.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this project. Please feel free to call myself or Larry Kunkel, District Manager, should you have any questions or require additional information.

Sincerely,

PTS Laboratories, Inc.

R. L. Young

Rick Young
Project Manager

RY/vk

encl.

PHYSICAL PROPERTIES DATA

(METHODOLOGY: ASTM D2216, API RP40, EPA 9100, WALKLEY-BLACK)

PROJECT NAME Former Tosco #0843
PROJECT NO: 224803T5

SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	MOISTURE CONTENT (% wt)	DENSITY BULK (g/cc)	DENSITY GRAIN (g/cc)	EFFECTIVE POROSITY, % Vb	TOTAL ORGANIC CARBON mg/kg	25.0 PSI CONFINING STRESS: NATIVE STATE EFFECTIVE PERMEABILITY TO AIR (millidarcy)	25.0 PSI CONFINING STRESS: NATIVE STATE EFFECTIVE PERMEABILITY TO WATER (millidarcy)	25.0 PSI CONFINING STRESS: NATIVE STATE EFFECTIVE HYDRAULIC CONDUCTIVITY (cm/s)
S-11.0-B1	11.0	V	19.4	1.70	2.64	35.5	270	10.5	19.9	1.92E-05

(1) Sample Orientation: H = Horizontal; V = Vertical

Vb = Bulk Volume, cc
Pv = Pore Volume, cc
ND = Not Detected

PTS Laboratories, Inc.

Environmental Resolutions, Inc.
PTS File No: 29061

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D4464)

PROJECT NAME: Former Tosco 0843
PROJECT NO: 224803T5

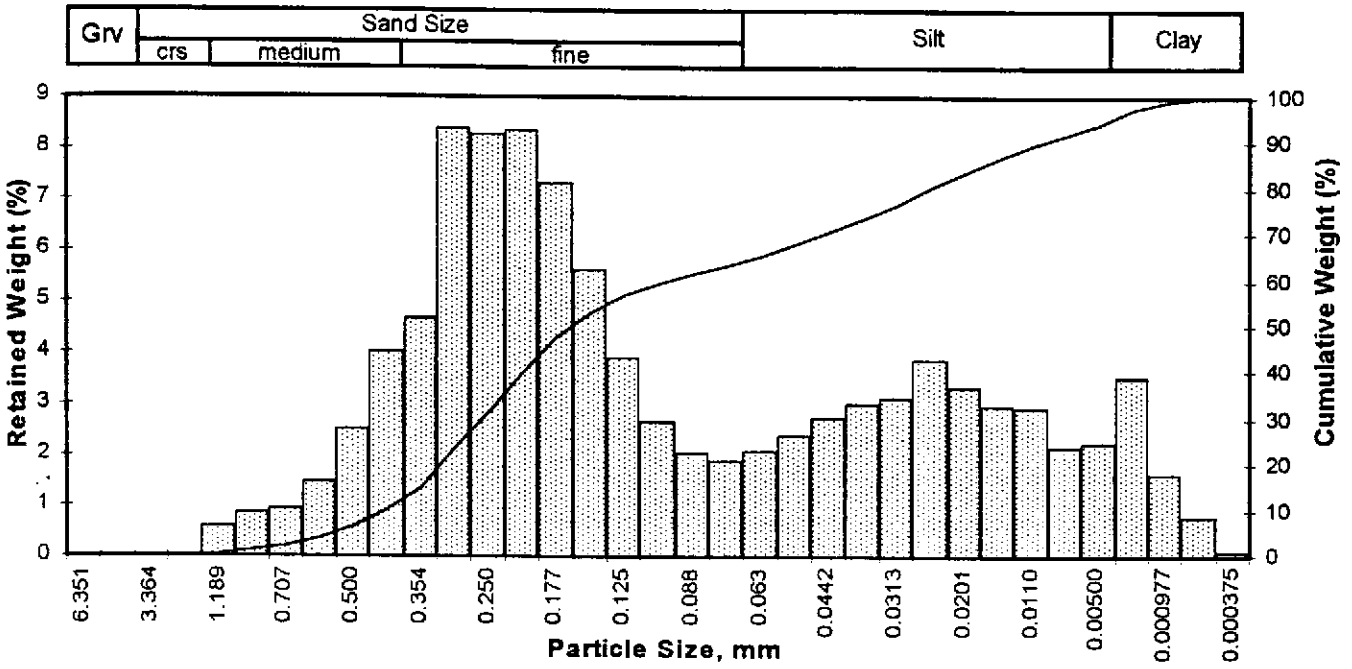
Sample ID	Depth, ft.	Description USCS/ASTM (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
S-11.0-B1	11.00	Fine sand	0.162	0.00	0.00	10.27	53.02	30.76	5.94	36.70

(1) based on Mean from Trask

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	Environmental Resolutions, Inc.	**PTS File No:**	29061
Project:	Former Tosco 0843	**Sample ID:**	S-11.0-B1
Project No:	224803T5	**Depth, ft:**	11.00



Opening		Phi of	U.S.	Sample Weight,	Increment Weight,	Cumulative Weight,
Inches	Millimeters	Screen	No.	grams	percent	percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.58	0.58	0.58
0.0331	0.841	0.25	20	0.84	0.84	1.42
0.0278	0.707	0.50	25	0.92	0.92	2.34
0.0234	0.595	0.75	30	1.46	1.46	3.80
0.0197	0.500	1.00	35	2.48	2.48	6.28
0.0166	0.420	1.25	40	3.99	3.99	10.27
0.0139	0.354	1.50	45	4.67	4.67	14.94
0.0117	0.297	1.75	50	8.38	8.38	23.33
0.0098	0.250	2.00	60	8.27	8.27	31.60
0.0083	0.210	2.25	70	8.33	8.33	39.94
0.0070	0.177	2.50	80	7.29	7.29	47.23
0.0059	0.149	2.75	100	5.61	5.61	52.84
0.0049	0.125	3.00	120	3.89	3.89	56.73
0.0041	0.105	3.25	140	2.65	2.65	59.38
0.0035	0.088	3.50	170	2.02	2.02	61.41
0.0029	0.074	3.75	200	1.89	1.89	63.30
0.0025	0.063	4.00	230	2.07	2.07	65.37
0.0021	0.053	4.25	270	2.38	2.38	67.75
0.00174	0.0442	4.50	325	2.73	2.73	70.48
0.00146	0.0372	4.75	400	3.00	3.00	73.48
0.00123	0.0313	5.00	450	3.11	3.11	76.59
0.000986	0.0250	5.32	500	3.85	3.85	80.44
0.000790	0.0201	5.64	635	3.32	3.32	83.77
0.000615	0.0156	6.00		2.95	2.95	86.72
0.000435	0.0110	6.50		2.93	2.93	89.65
0.000308	0.00781	7.00		2.17	2.17	91.82
0.000197	0.00500	7.65		2.24	2.24	94.06
0.000077	0.00195	9.00		3.48	3.48	97.54
0.000038	0.000977	10.00		1.61	1.61	99.15
0.000019	0.000488	11.00		0.77	0.77	99.93
0.000015	0.000375	11.38		0.07	0.07	100.00
TOTALS				**99.95**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight	Phi	Particle Size	
percent	Value	Inches	Millimeters
5	0.87	0.0215	0.547
10	1.23	0.0167	0.425
16	1.53	0.0136	0.346
25	1.80	0.0113	0.287
40	2.25	0.0083	0.210
50	2.62	0.0064	0.162
60	3.33	0.0039	0.100
75	4.87	0.0013	0.034
84	5.67	0.0008	0.020
90	6.58	0.0004	0.010
95	8.01	0.0002	0.004

Measure	Trask	Inman	Folk-Ward
Median, phi	2.62	2.62	2.62
Median, in.	0.0064	0.0064	0.0064
Median, mm	0.162	0.162	0.162
Mean, phi	2.64	3.60	3.27
Mean, in.	0.0063	0.0032	0.0041
Mean, mm	0.161	0.082	0.103
Sorting	0.345	2.069	2.116
Skewness	0.610	0.472	0.491
Kurtosis	0.305	0.726	0.953

Grain Size Description (ASTM-USCS Scale)	Fine sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	10.27
Fine Sand	200	53.02
Silt	>0.005 mm	30.76
Clay	<0.005 mm	5.94
	Total	100

Phone: (562) 907-3607 Fax: (562) 907-3610

DATE **PTS FILE#** 29061 **CHAIN OF CUSTODY RECORD** **PAGE** 1 **OF** 1

COMPANY: Environmental Resolutions, Inc
ADDRESS: 74 Digital Dr suite G
PROJECT MANAGER: Glenn Matteucci
PROJECT NAME / PHONE NUMBER: Former TOSCO 76 55 0843
PROJECT NUMBER / FAX NUMBER: 224803TS 415-382-1856
SITE LOCATION: 1629 Webster st Alameda CA
SAMPLER SIGNATURE: Glen Matteucci

ANALYSIS REQUEST

SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT	PHYSICAL PROPERTIES PACKAGE, API RP40	MOISTURE CONTENT, ASTM D2216	POROSITY, API RP40	GRAIN DENSITY, API RP40	BULK DENSITY, API RP40	AIR PERMEABILITY, API RP40	SPECIFIC RETENTION/YELD ASTM D425	CATION EXCHANGE CAPACITY EPA 9080	SOIL pH, EPA 9045	GRAIN SIZE: DRY; 400 MESH	GRAIN SIZE: SIEVE & LASER	GRAIN SIZE: LASER; 1 MICRON	HYDRAULIC CONDUCTIVITY, EPA 9100, API RP40	TOC: WALKLEY-BLACK	HYDRAULIC CONDUCTIVITY PACKAGE	NUMBER OF SAMPLES
S-14.0-B1	3/2/99	841	11 Feet		X	X		XX							XX	X	X		B1/MW1

P0#:

SPECIAL HANDLING
24 HOURS 5 DAYS
72 HOURS NORMAL
OTHER

SAMPLE CONDITIONS
RECEIVED ON ICE YES/NO
SEALED YES/NO
OTHER YES/NO

COMMENTS

1. RELINQUISHED BY	2. RELINQUISHED BY	3. RELINQUISHED BY	4. RELINQUISHED BY
Glen Matteucci	Paul		
COMPANY	COMPANY PTS Labs	COMPANY	COMPANY
DATE TIME	DATE 3/3/99 TIME 0945	DATE TIME	DATE TIME

PTS Laboratories, Inc. • 8100 Secura Way • Santa Fe Springs, CA 90670 • Phone (562) 907-3607 • Fax (562) 907-3610

COMPANY				ANALYSIS REQUEST		P0#
Environmental Resolutions, INC						

ADDRESS
74 Digital Dr suite 6

PROJECT MANAGER
Glenn Matteucci

PROJECT NAME / PHONE NUMBER
Former Tesco 76 55 0843

PROJECT NUMBER / FAX NUMBER
224805TS 415-382-1856

SITE LOCATION
1629 Webster st. Alameda CA

SAMPLER SIGNATURE
[signature]

SPECIAL HANDLING

24 HOURS 5 DAYS
72 HOURS NORMAL

OTHER

SAMPLE CONDITIONS

RECEIVED ON ICE YES/NO
SEALED YES/NO
OTHER YES/NO

SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT	PHYSICAL PROPERTIES PACKAGE, API RP40	MOISTURE CONTENT, ASTM D2216	POROSITY, API RP40	GRAIN DENSITY, API RP40	BULK DENSITY, API RP40	AIR PERMEABILITY, API RP40	SPECIFIC RETENTION/YELD ASTM D425	CATION EXCHANGE CAPACITY EPA 9080	SOIL pH, EPA 9045	GRAIN SIZE: DRY; 400 MESH	GRAIN SIZE: SIEVE & LASER	GRAIN SIZE: LASER; 1 MICRON	HYDRAULIC CONDUCTIVITY, EPA 9100, API RP40	TOC: WALKLEY-BLACK	HYDRAULIC CONDUCTIVITY PACKAGE	NUMBER OF SAMPLES	COMMENTS
S-11.0-B1	3/2/99	841	11 feet		X	X		X	X						X	X	X			B1/MW1

1. RELINQUISHED BY	2. RELINQUISHED BY	3. RELINQUISHED BY	4. RELINQUISHED BY
[signature]			
COMPANY	COMPANY	COMPANY	COMPANY
DATE TIME	DATE TIME	DATE TIME	DATE TIME

ATTACHMENT E
STOCKPILE DISPOSAL DOCUMENTATION

DISPOSAL CONFIRMATION

Consultant:	E R I
Contact:	DYLAN CROUSE
Phone/Fax:	(415) 378-8622
Client:	UNOCAL 76 - DAVE DEWITT
Station #/Wic #:	UNOCAL # 0843
Site Address:	1629 WEBSTER STREET
City/State:	ALAMEDA, CA
Estimated YD/Ton:	3 YARDS
Actual YD/Ton:	3.12 TONS
Disposal Facility:	FORWARD LANDFILL
Disposal Date:	MARCH 09, 1999
Contact:	BRAD BONNER
Phone #:	(800) 204-4242
Hauler:	MANLEY & SONS TRUCKING, INC.
Contact:	TIM A. MANLEY
Phone #:	(916) 381-6864
Fax #:	(916) 381-1573

Date & Time Faxed

8613