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QUARTERLY REPORT of June 14, 1995 GROUNDWATER SAMPLING AND WATER QUALITY MONITORING

> 2844 Mountain Boulevard Oakland, CA

Prepared for: DESERT PETROLEUM P.O. Box 1601 Oxnard, CA 93032

Prepared by: RSI - REMEDIATION SERVICE, INT'L 2060 Knoll Drive Ventura, CA 93003

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Exp. 10/31/96

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August 3, 1995

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1.0 INTRODUCTION

This report presents the results of groundwater monitoring for the real property located on the northeast corner of the intersection of Mountain Boulevard and Werner Court at 2844 Mountain Boulevard in Oakland, Alameda County, California 94602 (Figure 1). The Warren Freeway, which is adjacent to Mountain Boulevard, lies approximately 50 feet downgradient or west of the site.

The property is currently occupied by a retail gasoline station. Three underground storage tanks, two pump islands and an office/garage building are present at the site. The tanks, which have individual storage capacities of 3,000, 4,000, and 10,000 gallons, originally contained various grades of unleaded gasoline. The current owners and operators of the station use one of the underground tanks for diesel storage and distribution.

2.0 BACKGROUND

The following historical summary of the above-referenced site is based on our review of the documents referenced. A summary of groundwater analytical results is included as Table 2.

Soil contamination was originally identified by Diablo Tank & Equipment during replacement of the product lines in March, 1989. Analytical results for a soil sample collected from the southern edge of the premium unleaded tank reported a total petroleum hydrocarbons as gasoline (TPH) concentration of 8,400 mg/Kg (parts per million). Samples from beneath the lines near the pump islands reported TPH concentrations of less than 100 mg/Kg. In July, 1989, On-Site Technologies excavated and disposed of contaminated soil from the southern end of the premium unleaded tank. Analysis of twelve soil samples collected from the sides of the excavation reported TPH concentrations ranging between ND to 3,300 mg/Kg (On-Site Technologies, Soil Sampling Report dated 8/31/89).

In May, 1990 RSI conducted further assessment of the site (RSI, Site Assessment Report dated July 25, 1990). Four groundwater monitoring wells (RS-1 through RS-4, Figure 2) were installed and sampled. Analysis of soil samples collected from above the water table reported TPH concentrations ranging from 1 to 240 mg/Kg. Hydrocarbons were detected in the groundwater samples collected from all four wells (Table 2).

Active remediation of soil contamination began at the site in June, 1991 using a Soil Vapor Extraction System (SVE) to vacuum extract gasoline hydrocarbons from the soil. Groundwater remediation began in October, 1991. Active remediation was suspended temporarily between February, 1992 and February, 1994.

The site has been monitored on a quarterly basis since the site assessment in May, 1990. Over this period, levels of hydrocarbons measured at this site have become asymptotic. Analytical results for groundwater samples collected during previous and current groundwater monitoring are summarized in Table 2.

A Corrective Action Plan was submitted to Alameda County Department of Environmental Health (ACDEH) on February 21, 1995.

3.0 GROUNDWATER MONITORING

3.1 Groundwater Monitoring Procedures

On February 8, 1995 groundwater monitoring wells RS-1, RS-2, RS-3 and RS-4, were measured for potentiometric groundwater elevation and checked for the presence of free product (Table 1). The distance from the top of the casing on the north side to the surface of the groundwater was measured to an accuracy of 0.01 feet. Product was found. Purging was accomplished with a truck mounted positive rotary blower vacuum extraction unit utilizing dedicated stingers. Any purging or sampling equipment with the potential for cross contamination was triple rinsed between wells using TSP using a standard three stage decontamination method. Purging continued until temperature, electrical conductivity and pH stabilized or approximately three well volumes had been purged. These measurements, along with all other pertinent data, were recorded on Water Sample Logs (Appendix A). The purged water was placed in 55 gallon DOT drums which were sealed, labeled as pending laboratory analysis and stored on-site.

When the water levels had recharged to 80 percent, or a two hour time period had lapsed since purging, the wells were sampled with disposable polyethylene bailers. The samples were sealed, labeled and placed on blue ice for transportation to the state certified laboratory listed in Appendix B. All samples were analyzed for TPH as gasoline, MTBE and for BTEX using approved methods. The laboratory report is contained in Appendix B.



3.2 Groundwater Monitoring Results

Groundwater elevations are included in Appendix A. The groundwater flowpath was calculated to be in a south-southwesterly direction (Figure 2).

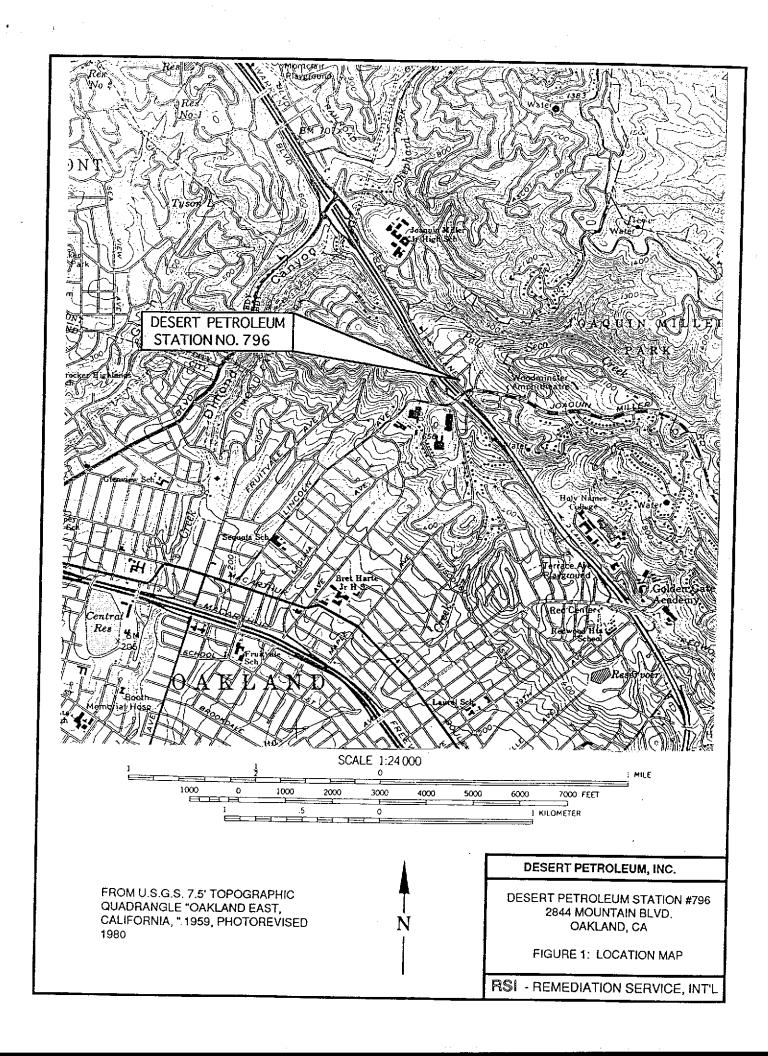
Ambition results for the samples soffected June 14, 1995 are summarized in Table 2 and shown on Figure 2. The complete laboratory report is contained in Appendix B. State of California concentrations for drinking water standards are included in Table 2. TPH was detected in groundwater monitoring wells RS-1 and RS-2 with values of 370 and 490 mg/L. TPH was not detected in RS-3 and RS-4. Benzene was detected in only RS-1 and RS-2 at concentrations of 460 and 1,300 ug/L.

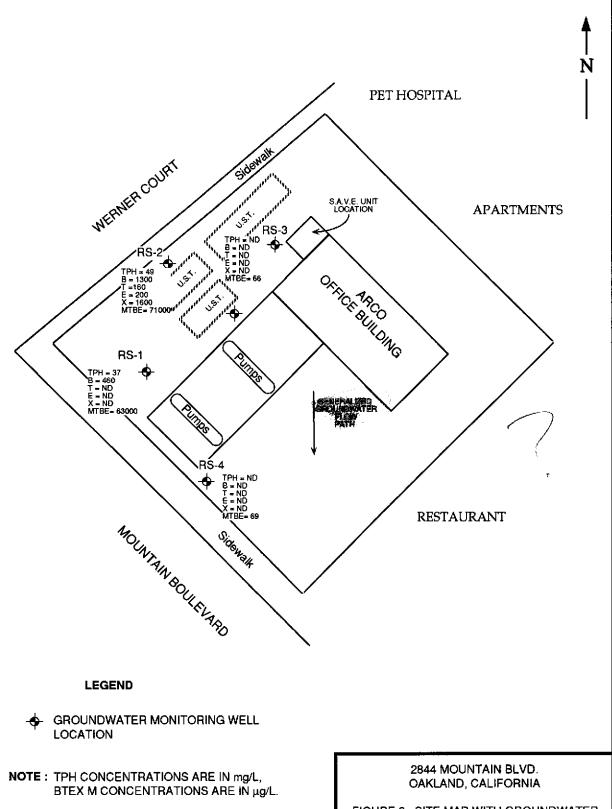
4.0 LIMITATIONS

The discussion, conclusion and any recommendations presented in this report are based on the professional performance of the personnel who conducted the investigations, the observations of the field personnel, the results of laboratory analyses performed by a state certified laboratory, any referenced documents and our understanding of the regulations of the State of California; also, if applicable, other local regulations.

Variations in the soil and groundwater conditions may exist beyond the points explored in this and prior investigations.

The services performed by Remediation Service, Int'l. have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California. No other warranty, expressed or implied, is made.





SCALE IN FEET

15 30

FIGURE 2: SITE MAP WITH GROUNDWATER FLOW PATH JUNE 14, 1995



TABLE 1 GROUNDWATER ELEVATION DATA

2844 MOUNTAIN BLVD. OAKLAND, CA

Measurements are in feet.

	Date	Depth to	Well Head	Water Table	Change in
Well	Measured	Water*	Elevation**	Elevation**	Elevation
RS-1	5/90	7.20	689.25	682.05	
	5/91	8.35		680.90	-1,15
	10/91	10.22	689.17	678.95	
	1/92	8.06		681.11	2.16
	1/93	5.30		683.87	2.76
	8/93	8.56		680.61	-3.26
	11/93	8.44		680.73	0.12
	1/94	6.88		682.29	1.56
	5/94	7.87	675.63	667.76	
	8/94	16.28		659.35	-8.41
	11/94	8.02		667,61	8.26
	2/95	6.51		669.12	1.51
	6/95	7.34		668.29	-0:00
RS-2	5/90	7.06	689.00	681.94	• **
	5/91	7.14		681.86	-0.08
	10/91	8,84	688.89	680.05	
	1/92	7.34		681.55	1,50
	1/93	4.10		684.79	3.24
	8/93	7.32		681.57	-3.22
	11/93	7.34		681.55	-0.02
	1/94	5.52		683.37	1.82
	5/94	6.40	675,25	668.85	
	8/94	22.11		653.14	-15.71
	11/94	9.82		665.43	12.29
	2/95	4.81		670.44	5.Q 1
	6/95	5.80		669.45	1.00
RS-3	5/90	6.00	690,00	684.00	
	5/91	6.76		683.24	-0.76
	10/91	8.98		681.02	-2.22
	1/92	6.81		683.19	2.17
	1/93	4.05		685.95	2.76
	8/93	7.19		682.81	-3.14
	11/93	7.12		682.88	0.07
	1/94	5.42		684.58	1.70
	5/94	5.78	676.20	670.42	
	8/94	5.86		670.34	-0.08
	11/94	5.08		671.12	0.78
	2/95	4.51		671.69	0.57
	6/95	5.29		670.91	76.78
RS-4	5/90	8.34	689.06	680.72	
	5/91	9.50		679.56	-1.16
	10/91	10.82	689.10	678.28	****
	1/92	9.31		679.79	1.51
	1/93	6.89		682.21	2.42
	8/93	9.68		679.42	-2.79
	11/93	9.83		679.27	-0.15
	1/94	8.17		680.93	1.66
	5/94	8.69	675.38	666.69	
	8/94	9.04		666.34	-0.35
	11/94	8.00		667.38	1.04
	2/95	7.93		667.45	0.07
	6/95	8,61		666.77	₹.108

^{*}Depth of water measured from top of well cover.

Well Head Elevations surveyed 5/94 to City of Oakland Bench Mark #2804, Bench Mark elevation = 676.08', based on USGS Sea Level Datum 1929.



^{**}Elevations are in feet above mean sea level.

TABLE 2 SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

2844 MOUNTAIN BLVD. OAKLAND, CA

TFH analytical results are in mg/L (parts per million) BTEX analytical results are in $\mu g/L$ (parts per billion).

	DATE	TPH			ETHYL-	TOTAL	
WELL#	SAMPLED	GASOLINE	BENZENE	TOLUENE	BENZENE	XYLENES	MTBE
RS-1	5/90	2.7	370	420	40	320	NA
	5/91	1.3	580	130	62	240	NA
	10/91	1.1	140	100	45	210	NA
	1/92	1.7	9.9	31	9.7	170	NA
	1/93	3.7	650	9.2	51	170	NA
	8/93	0.9	14	0.6	2.1	7.8	NA
	11/93	1.4	9.6	ND	0.9	4.9	NA
	1/94	4.2	95	3.1	58	130	NA NA
	5/94	7.5	270	11	37	96	NA
	8/94	0.13			2.6	4.7	NA NA
	11/94		12 4.7	0.5			NA NA
		0.27		0.7	0.6	15	
	- 3∕49.5 6/95	12 97	8 1 46 0	2.3 ND	1 ND	12 ND	63000
RS-2	5/90	23	7,200	4,800	300	3,300	NA
110 4	5/91	26	14,000	1,800	750	2,900	NA
	10/91	13	4,300		300	2,300	NA
				910			
	1/92	8.3	1,800	920	140	1,700	NA
	1/93	41	7,000	210	1,200	4,200	NA
	8/93	19	5,300	62	810	1,600	NA
	11/93	9.3	2,400	3.9	46	800	NA
	1/94	30	4,900	ND	880	2,600	NA
	5/94	120	3,300	330	ND	2,200	NA
	8/94	0.51	7.3	3.8	3.5	32	NA
	11/94	0.62	6.6	3.9	1.1	47	NA
	2/95	22	228	80	2	463	13 MA
	6/9 5	49	1800	160	200	1,600	71000
RS-3	5/90	0.33	2	1	1	150	NA
	5/91	ND	0.4	ND	8.0	8.2	NA
	10/91	ND	ND	ND	ND	ND	NA
	1/92	ND	2.2	7.2	0.6	3.6	NA
	1/93	ND	ND	ND	ND	ND	NA
	8/93	ND	30	6	2.4	5	NA
	11/93	ND	4.8	0.4	0.6	1.9	NA
	1/94	0.33	25	3.2	3.9	12	NA
	5/94	0.67	34	4	28	70	NA
	8/94	ND	ND	ND	ND	ND	NA
	11/94	0.069	2.5	3.1	1	3.8	NA
	2/95	ND	0.3	0.4	, ND	0.7	NA
	E795	ND ND	ND	ND	ND	ND	66
RS-4	5/90	0.44	9	11	9	49	NA
	5/91	ND	8	4	3	5	NA
	10/91	0.83	280	120	24	170	NA
	1/92	0.62	34	8.3	2.1	21	NA
	1/93	0.15	32	1.7	5.8	13	NA
	8/93	ND	0.9	0.7	ND	0.3	NA
	11/93	ND	ND	ND	ND	ND	NA
	1/94	ND	1.7	ND	0.81	2.2	NA
	5/94	ND	ND	ND	ND	0.7	NA.
	8/94	0.42	6.5	4.1	1.9	40	NA.
					1.7	7.9	NA NA
	11/94	0.13 ND	4.1	0.7			NA.
	2/95 6795	ND ND	6 ND	1.2 ND	3.5 ND	13 ND	•
							•

TPH = Total petroleum hydrocarbons (gasoline)
ND = Not detected above minimum detection levels.



LOCATION:	2844 Mountai	in Blvd., Oakla	ınd, CA		DATE: 6/14/95
WELL NUME	BER:	RS-1			-
WEATHER CO	ONDITIONS: _ RVATIONS: _ _	Hot, sunny			
DEPTH TO FE	TH OF WELL: _ REE PRODUCT: /ATER:ASURED FROM	NONE 7.34	feet		METER: 4 inches THOD: vacuum side.
		·	WELL PUR	RGING DATA	
	Discharge			Specific Conductance	
Time	(gallons)	pН	Temp in F.	(µmhos/cm)	
1:29	5	8.13	65.1	15.31	
1:32	10	8.07	65.1	15.34	
1:36	20	8.09	64.4	15.73	
1:39	30	7.77	64.0	15,32	Dry at 15 gallons
1:43	40	7.59	63.8	15.31	
TOTAL DISC	HARGE:	45	gallons		
	E COLLECTED		13.69	feet	
METHOD OF	SAMPLE COLL	ECTION:	Disposable E	Bailer	
APPEARANC	E OF SAMPLE	Clear, no	odor.		
	D SIZE OF SAN			3 x 40 ML V	OA's, 2 x 1 L. Amber bottle
	ANSPORTED T		Onsite	,	
	Y:	10 10 10 10 10 10 10 10 10 10 10 10 10 1		-	2060 KNOLL DR., SUITE 200, VENTURA, CA 93003 (805) 644-5892 • FAX (805) 654-0720

LOCATION:	2844 Mountai	n Blvd., Oakl	and, CA		_	DATE: 6/14/95		
WELL NUMB	BER:	RS-2			-			
WEATHER CO	ONDITIONS:	Hot, sunny						
FIELD OBSER	***************************************	Pump in well						
TOTAL DEPT	H OF WELL:	24.50	feet	CASING DIAM	IETER:	4	inches	
	REE PRODUCT:					vacuum		
	ATER:							
	SURED FROM			casing, north s	side.			
								
		· · · · ·	WELL PUF	RGING DATA	1			
		-		Specific				
	Discharge			Conductance		Comments		
Time	(gallons)	pН	Temp in F.	(µmhos/cm)				
1:50	10	76.99	68.5	0.01		Strong lime odor		
1:54	20	7.98	68.1	0.01		Dry at 20 gallons		
					ļ <u></u>			
								
				· <u>-</u> ···				
				<u> </u>	L	· · · · · · · · · · · · · · · · · · ·		
TOTAL DISCH	HARGE:	20	gallons					
TIME SAMPLE	E COLLECTED:	2:40 PM						
	ATER AT TIME		19.09	feet			•	
METHOD OF	SAMPLE COLL	ECTION:	Disposable E	Bailer				
APPEARANCE	E OF SAMPLE:	Clear, no	odor.					
AMOUNT AND	O SIZE OF SAM	IPLE CONTAIN	NERS:	3 x 40 ML V	OA's			
SAMPLE TRA	NSPORTED T	O:	Onsite					
SAMPLED BY	<i>(</i> -	R. Pilat				E F REMEDIATION SERVICE	. INT'L	

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I OCATION:	2844 Mountai	n Blyd Oakla	and CA		D	ATE: <u>6/14/</u>	95	
LOOATION.	2044 Woulder	II DIVO., Carie	iliu, OA		_			
WELL NUME	BER:	RS-3			-			
WEATHER CO	ONDITIONS: RVATIONS:	Hot, sunny			·			
TOTAL DEPT	TH OF WELL:	24.40	feet	CASING DIAM	ETER:		4	inches
DEPTH TO FF	REE PRODUCT:	NONE		PURGING ME	THOD:	vacuum		
	ATER:			:	م امان			
DEPTHSME	ASURED FROM	:	TOP OF WELL	casing, north s	ide.			
			WELL PUF	RGING DATA	<u> </u>			
				Specific				
	Discharge			Conductance		Commen	nts	
Time	(gallons)	рН	Temp in F.	(µmhos/cm)				
1:15	10	8.04	65.1	0.02	Dry, clear			
1:18	20	8.07	65.0	0.02	Dry, clear			
1:21	30	8.11	64.9	0.02	Dry, clear			
1:25	40	8.18	64.6	.02 x100	Dry, clear			
TOTAL DISC	HARGE:	40	galions		l			ł
	E COLLECTED: VATER AT TIME		7.02	feet				
METHOD OF	SAMPLE COLL	ECTION:	Disposable E	Bailer				
APPEARANC	E OF SAMPLE:	Clear, no	odor.					
	D SIZE OF SAM			3 x 40 ML V	DA's			
SAMPLE TRA	ANSPORTED T	O:	Onsite					
SAMPLED B	Y:	R. Pilat		. [17.	学当 REMEDIATION	SERVIC	E, INT'L.

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LOCATION:	2844 Mountai	in Blvd., Oakla	and, CA		DATE: 6/14/95
WELL NUME	BER:	RS-4			_
WEATHER CO	ONDITIONS: RVATIONS:	Hot, sunny			
DEPTH TO FF		NONE 8.61	feet		METER: 4 inches THOD: vacuum side.
			WELL DU	OCINIC DATA	
	<u> </u>	<u> </u>	WELL PUI	RGING DATA	4
	Discharge			Specific Conductance	Comments
Time	(gallons)	Hq	Temp in F	(µmhos/cm)	1
2:00	10	8.17	63.3	11.96	Slight gray
2:05	20	8.15	63.0	11.77	Slight gray
2:10	30	8.09	62.1	11.69	Slight gray
		:			
		:			
			· · · · · · · · · · · · · · · · · · ·	<u></u>	
TOTAL DISC	HARGE:	30	gallons	l	
	E COLLECTED				
	ATER AT TIME		-	feet	
	SAMPLE COLL		Disposable E	Bailer	
	E OF SAMPLE:			0 5 40 141 37	OAL-
	D SIZE OF SAN			3 x 40 ML V	UAS
SAMPLE IH	ANSPORTED T	U	Onsite	Г	
SAMPLED B	Y:	R. Pilat			量量量Remediation Service, INT'L.
J 120 0	· · · · · · · · · · · · · · · · · · ·			-	2 060 KNOLL DR., SUITE 200, VENTURA, CA 93003
					(805) 644-5892 • FAX (805) 654-0720

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY



Analytical Laboratory Report

EPA Methods 8015 Modified / 8020

Date Sampled:

14-Jun-95

Date Received:

14-Jun-95

Date Analyzed:

6/15,16/1995

Date Reported: Report Number: 19-Jun-95

Lab Number:

3B214b.rpt 3B214

Proj Mgr:

Rick Pilat

Client:

RSI

Project:

Desert Pet.

Matrix:

Water

Units:

ug/L

COC#:

194030

Lab ID No.	Field ID No.		Tolucne	Ethyl- benzene	Xylenes total	TPH- Gasoline			BTEX Surrogate %
04	RS-I	460	ND	ND	ND	37000	63000		99
05	RS-2		160	200	1600	49000	71000		95
. 06	RS-3	ND	ND	ND	ND	ND	66	00 00 00 00 00 00 00 00 00 00 00 00 00	86
07		ND	ND	ND	ND	ND	69	000 20-40 20-40	89
					•			<u></u>	
		823J							
				, .					
						· ·		00000 00000 00000 00000	
	ä		7						

NOTES:

NR - Not requested

COC - Chain of custody

ND - Analytes not detected at, or above the stated detection limit

TPHg - Total petroleum hydrocarbons as gasoline ug/L - Micrograms per liter (PPB)

PQL - Practical Quantitation Limit

*Higher boiling compounds indicated

*1 Matrix Interference

*2 Sample has elevated levels of non-target compounds detected

*3 Preliminary estimated result (sample will be rerun)

E - exceeds calibration limit (samples will be diluted and rerup)

PROCEDURES:

BTEX - This analysis was performed using EPA Method 8020, and EPA Method 5030

CERTIFICATION:

California Department of Health Services ELAP Certificate #2010

Onsite Environmental Laboratories, 5500 Boscell Common, Fremont, CA 94538 (\$10) 490-8571

Laboratory Director

8/14/93

Date



95



Analytical Laboratory Report Volatile Aromatic Hydrocarbons Method 8020/8015

6/14/95 Date Sampled: 6/14/95 Date Received: 6/15/95 Date Analyzed: 6/21/95 Date Reported: Report #:

3B214.QAC 3B214-07

FROM

Project Manager:

TO

Rick Pilat

RSL Client: Desert Pet. Project:

90

Matrix: Units:

Water ug/L

N/A

COC#:

Sample ID: RS-4	SPIKE AMT	LCS REC %	SAMPLE RESULTS	SPIKE REC %	SPIKE DUP REC %	RPD %	BLANK RESULT
Analyte					<u> </u>		ļ
Веплене	10	99	ND	95	97	2	ND
Toluene	10	105	ND	101	103	2	ND
Ethylbenzene	10	102	ND	98	99 -	i	ND
Xylene (total)	30	106	ND	102	104	2	ND
MTBE			-	-	-	-	<u> </u>
,					· [1 &D

Nΰ

100

NOTES:

Gasoline Surrogates

Lab ID #:

NR - Not requested

Trifluorobenzene

COC - Chain of custody

ND - Analyses not detected at, or above the stated detection limit.

mg/Kg - Milligrams per kilogram (PPM).

DL - Detection limit.

DF - Dilution Factor

PQL - Practical Quantitation Limit - Multiply DL by the DF to obtain the PQL for a specific sample.

4300

PROCEDURES:

This analysis was performed using EPA Method 8015 modified, EPA Method 8020, and EPA Method 5030 .

THE ASSURANCE OF QUALITY	190 BOS-6	144-5892 1LAT / 1251	CHAIN-OF-CUSTODY RECORD Analytical Request
	Report To:	LAT /RSI	Pace Client No.
in PESERT liess 2844 MOUNTAIN BL	Bill To:		Pace Project Manager
fiess 2844 MOUNTAIN PC.	P.O. # / Billing Referer	ice	Pace Project No.
De la Maria de Maria de Caracteria de Caracteria de Caracteria de Caracteria de Caracteria de Caracteria de Ca Caracteria de Caracteria d Maria de Caracteria de Car	Project Name / No.	:	'Requested Due Date:
mpled By (PRINT): mpter Signature Date Sampled EM SAMPLE DESCRIPTION TIME MAT	SO.	MALYSES POLICE OF THE PROPERTY	REMARKS
	9 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1	x X	see corrective action report
		X X	action report
² R5-2 2:46	GU	X V	
3 R5-3 Zizor	6 	and the second of the second of the second of the	ental university of the property of the proper
4 RS-4 31.00	G. U.	XX	
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6			A second
	100 F		
		Standard Medical Control of the Cont	
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			the second of th
DESES 40720 F. 03	SE	E REVERSE SIDE FOR IN	STRUCTIONS