



SP ENVIRONMENTAL SYSTEMS, INC.

9719 LINCOLN VILLAGE DR., SUITE 310 SACRAMENTO, CA 95827 (916) 369-8971 FAX (916) 369-8370
October 11, 1991

Mr. Dennis Byrnes
Alameda County Health Care Services Agency
80 Swan Road
Oakland, California

**Subject: Soil Treatment
Southern Pacific Transportation Company
5th & Kirkham Streets Property
Oakland, California
SPEvS Project No. 05032**

Dear Mr. Byrne:

SP Environmental Systems Inc. (SPEvS), on behalf of Southern Pacific Transportation Company (SPTCo), has prepared the attached report (Attachment A) describing the results of soil samples collected from soil undergoing bioremediation at the above referenced site. This work is currently being conducted in accordance with SPEvS' workplan dated May 16, 1991, which was approved by Alameda County Health Care Services Agency (ACHCSA) in a letter dated June 21, 1991. Seven samples were collected on September 6, 1991, from approximately 225 cubic yards of soil for analysis of total petroleum hydrocarbons in the gasoline, diesel, and oil range using EPA Methodology. The sampling was performed to evaluate the effectiveness of the bioremediation project. The results of analyses indicate that gasoline and diesel are not present at concentrations above the method detection limits of 0.5 parts per million (ppm). The laboratory results of oil and grease analysis indicated a low of 52 ppm and a high of 110 ppm. The statistical average of the samples indicates a concentration of 97 ppm, which is below the regulatory criteria of 100 ppm.

Please confirm that the clean-up objective of 100 ppm for oil-range hydrocarbons, and 10 ppm for diesel and gasoline-range hydrocarbons (agreed upon in the SPEvS proposal dated May 16, 1991), has been achieved. Also, please confirm that the soil having met the clean-up objectives may be used on nearby SPTCo property. It is proposed to reuse the soil as berm material above grade, which would not contact or threaten the state's groundwater supplies.

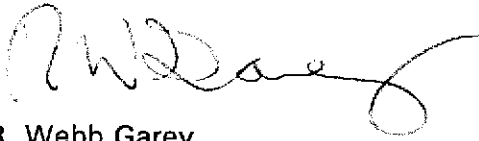
The treated soil referenced above and in Attachment A does not include the DDT-impacted soil, also present at this site, referenced in an SPEvS report submitted to the California Environmental Protection Agency dated September 6, 1991.

If there are any questions or concerns please do not hesitate to contact Mr. Walter Floyd at (916) 369-8971.

Sincerely,

Handwritten signature of Walter Floyd in cursive script.

Walter Floyd
Project Geologist

Handwritten signature of R. Webb Garey in cursive script.

R. Webb Garey
Project Manager

ATTACHMENT A

BACKGROUND

Four USTs were removed from a property owned by Southern Pacific Transportation Company (SPTCo), referred to as the 5th & Kirkham Street Property (see Figures 1 & 2), in February, 1990, by SP Environmental Systems (SPEvS), on behalf of Southern Pacific Transportation Company (SPTCo). A detailed report of the tank removal operation and findings was presented to Alameda County Health Care Services Agency (ACHCSA) in the SPEvS report dated March 23, 1990, entitled "*Removal of Underground Storage Tanks, 330 Cypress Street, Oakland, California*". A proposal to excavate and stockpile the affected soil identified in the vicinity of the USTs was presented to ACHCSA in the SPEvS workplan dated September 27, 1990 entitled "*Work Plan for Soil and Groundwater Investigation*". Implementation of this workplan resulted in approximately 700 cy of soil being excavated and stockpiled on-site. This phase of work was presented in an SPEvS report to ACHCSA dated March 1, 1991, entitled "*Phase II Environmental Site Assessment, Southern Pacific Transportation Company, 5th & Kirkham Streets Property, Oakland, California*". A proposal to separate the stockpile into apparent unimpacted soil and soil with elevated hydrocarbon concentrations to undergo bio-composting treatment (bioremediation) was presented to ACHCSA in SPEvS' letter dated May 16, 1991. In addition to selecting a remediation process, SPEvS proposed a clean-up objective of 10 ppm for diesel and gasoline-range hydrocarbons and 100 ppm for oil and grease-range hydrocarbons. The ACHCSA approved the workplan in a letter dated June 21, 1991. As part of the workplan, confirmation sampling of the apparent unimpacted soil was performed on August 14, 1991. The results of the confirmation sampling was presented to ACHCSA in SPEvS' letter dated August 26, 1991.

The process of preparing hydrocarbon-affected soil for bio-composting was initiated on June 24, 1991. The process entailed the addition of specialized compost to the soil, in a ratio of 3-parts soil to 1-part compost. The soil-compost matrix was then distributed into treatment

beds approximately 2 feet deep formed atop an asphalt surface. The beds were then watered and covered with plastic sheeting.

ANALYTICAL DATA

Eleven weeks after the start of the bioremediation process, on September 6, 1991, seven discrete samples were collected from the approximate 225 cy of soil undergoing bioremediation (see Figure 3). The samples were analyzed for Total Petroleum Hydrocarbons (TPH) using EPA Method 418.1 and TPH as gasoline and diesel using a modified EPA Method 8260. All analyses were performed at Coast-To-Coast Analytical Services, a state certified analytical laboratory. The analytical laboratory reports are attached as Appendix A.

The soil samples were collected by digging into the treatment beds approximately 1 to 2 feet. Soil from this depth was then manually packed into a clean brass tube (2-inches in diameter by 6-inch length). The ends of the cylinder were covered with Teflon sheeting and then capped with tight fitting end caps which were taped to the cylinder with duct tape. The samples were then labeled and stored in a cooled ice chest until delivery to the laboratory under chain of custody. Copies of the chain of custody forms are included in Appendix A.

RESULTS

The results of analyses on the 7 samples collected from the treated soil are summarized in Table 1. The results of analyses on all of the samples submitted for analyses indicate that gasoline and diesel are not present at concentration above the method detection limit (0.5 mg/kg). The results of the EPA Method 418.1 analyses indicate that heavy-end hydrocarbons are still present at concentrations ranging from 52 to 110 parts per million (ppm).

Attachment A
October 3, 1991
ACHCSA (05032)
Mr. Dennis Byrne
Page 3

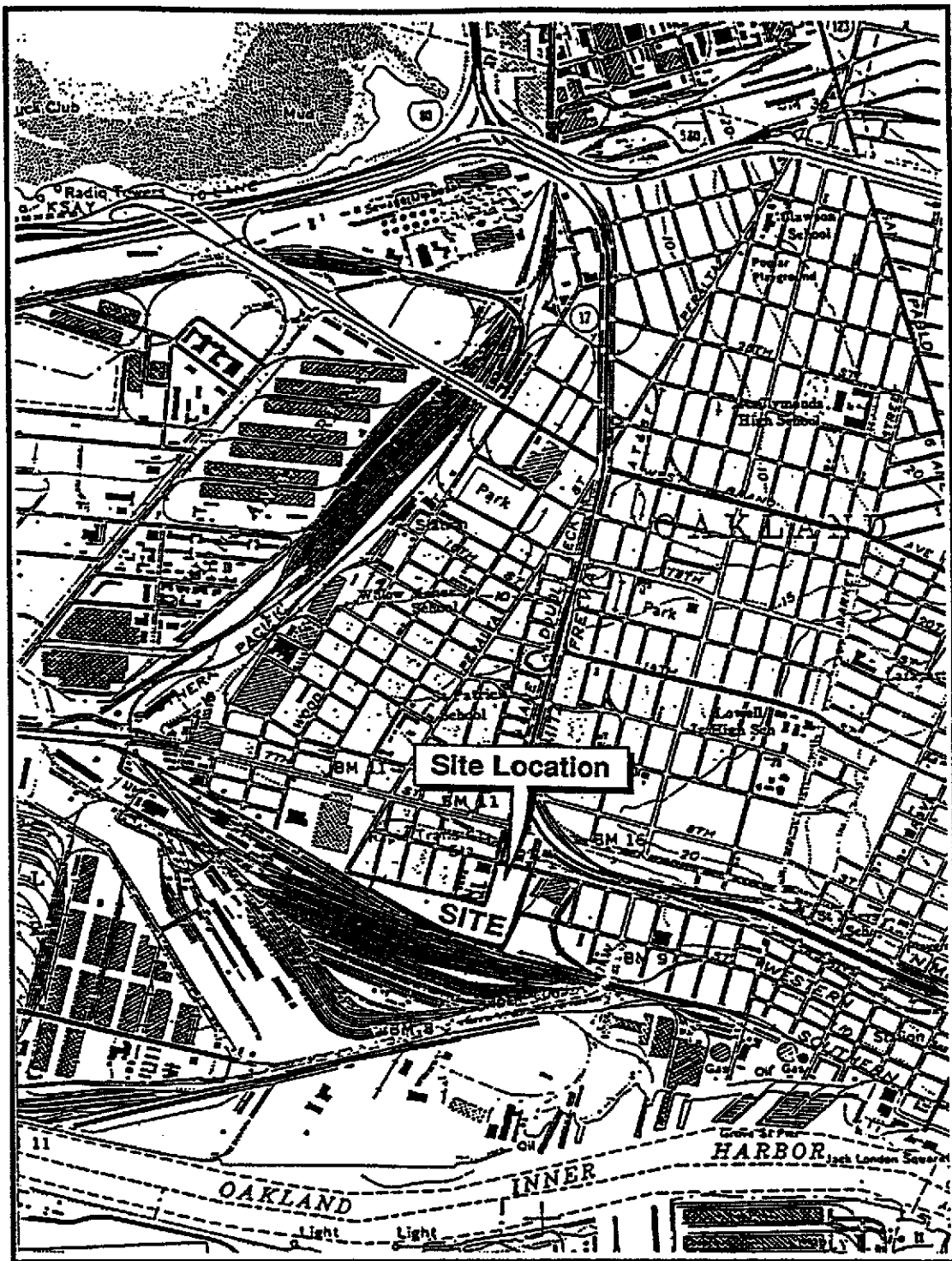
CONCLUSIONS

The clean-up objectives approved in the May 16, 1991 proposal called for reducing the TPH as gasoline and diesel to below 10 ppm, and to reduce the TPH by EPA Method 418.1 to below 100 ppm. The results of analyses on these samples indicate that gasoline and diesel concentrations in the treated soil are well below the clean-up objective. The average concentration of the EPA Method 418.1 analyses is 97 ppm, which is below the clean-up objective of 100 ppm.

Table 1
Summary of Analytical Results
Soil Bioremediation
Southern Pacific Transportation Company
5th and Kirkham Streets Property
Oakland, California
SPEvS Project No. 05032

Sample ¹ Number	TPH ² (mg/kg)	TPH-D ³ (mg/kg)	TPH-G ⁴ (mg/kg)
21402	52	<0.5	<0.5
21403	110	<0.5	<0.5
21404	110	<0.5	<0.5
21405	100	<0.5	<0.5
21406	97	<0.5	<0.5
21407	100	<0.5	<0.5
21408	82	<0.5	<0.5

- 1 See Figure 3 for approximate locations of samples.
- 2 Total Petroleum Hydrocarbons analyzed by EPA Method 418.1
- 3 Total Petroleum Hydrocarbons as Diesel analyzed by EPA Method 8260 Modified
- 4 Total Petroleum Hydrocarbons as Gasoline analyzed by EPA Method 8260 Modified
- < Indicates the compound was not detected at or above the practical quantitation limit.



Reference:
 USGS Topographic Map
 Oakland, California



SP ENVIRONMENTAL SYSTEMS, INC.

PROJECT NO: 05032

DATE: 02/08/91

DRAWN BY: PD

CHECKED BY: WF

**SITE LOCATION MAP
 SOUTHERN PACIFIC TRANSPORTATION CO.
 5TH & KIRKHAM STREETS PROPERTY
 OAKLAND, CALIFORNIA**

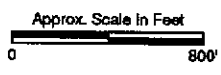
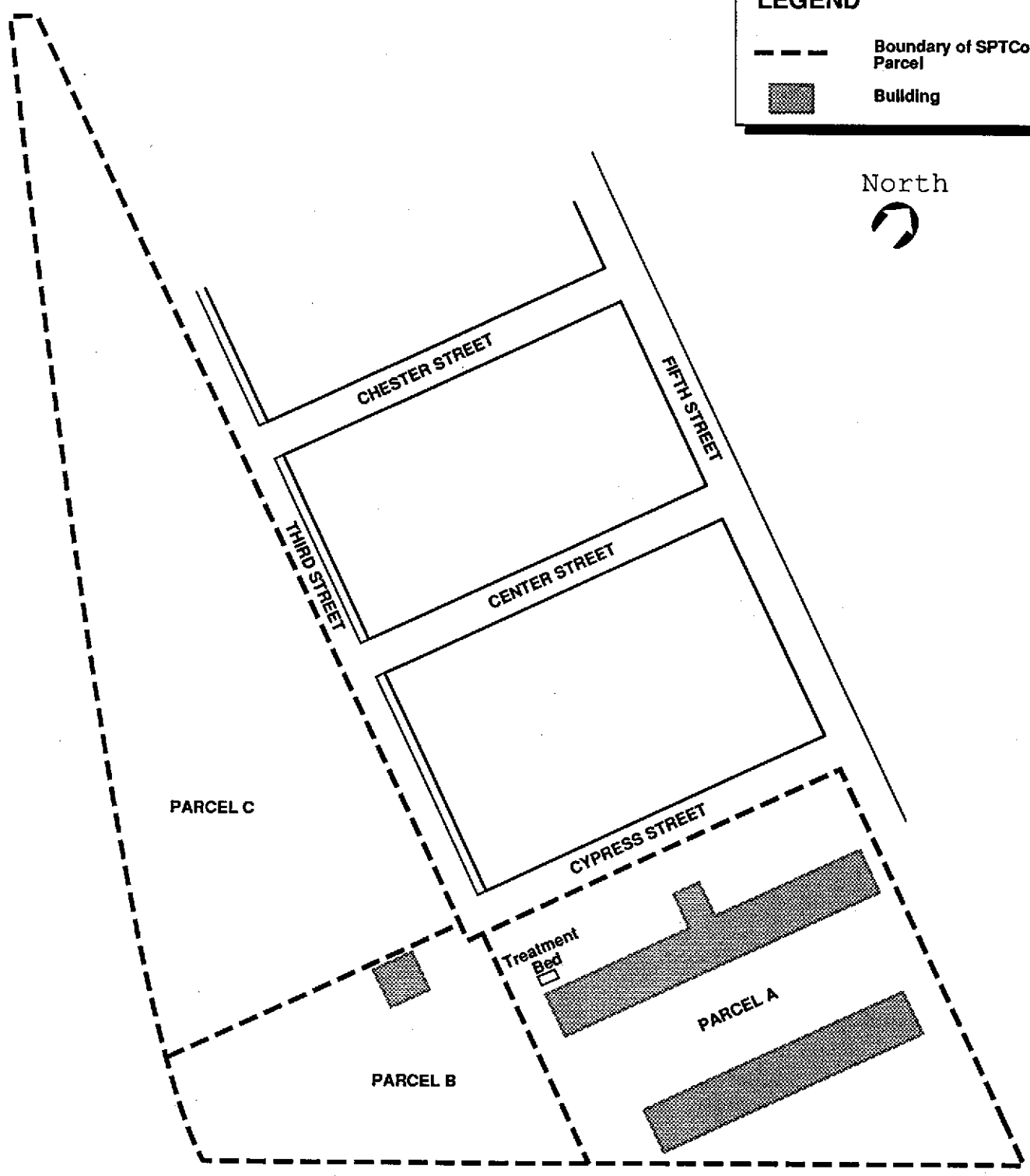
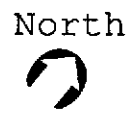
FIGURE:

1

LEGEND

--- Boundary of SPTCo Parcel

▒ Building



SP ENVIRONMENTAL SYSTEMS, INC.

**LOCATION OF MONITORING WELLS
SOUTHERN PACIFIC TRANSPORTATION CO.
5TH & KIRKHAM PROPERTY
OAKLAND, CALIFORNIA**

FIGURE 2

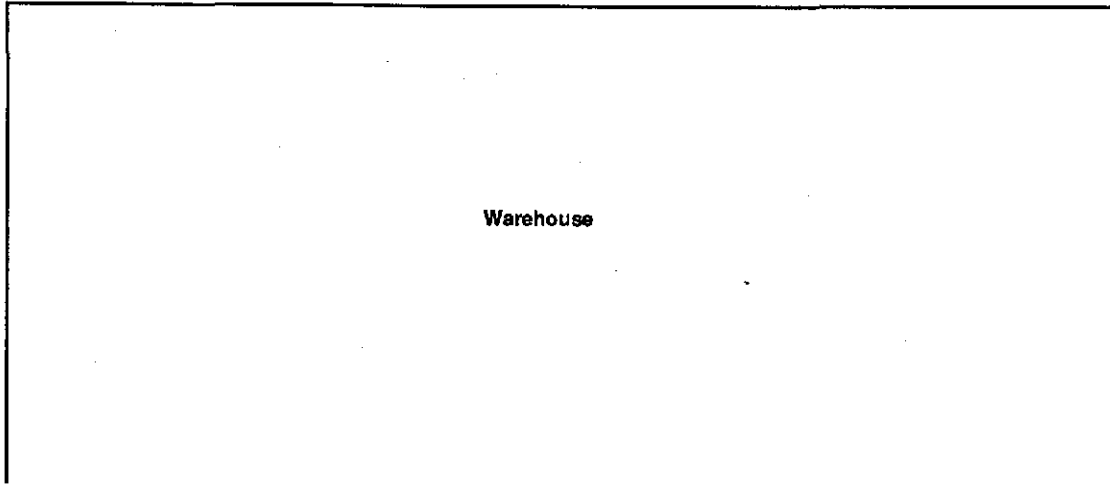
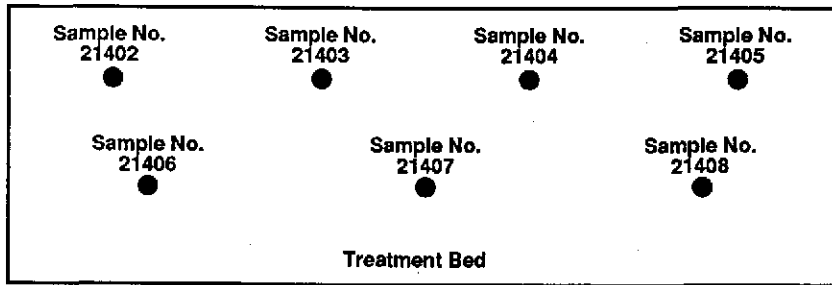
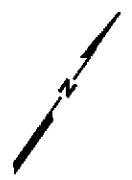
SCALE as shown

PROJECT NO: 05032

DATE: 02/04/91

DRAWN BY: PD

CHECKED BY: WF



Warehouse

LEGEND

- Sample Location
- 21402 Sample Number

Approx. Scale in Feet
0 20'



SP ENVIRONMENTAL SYSTEMS, INC.

PROJECT NO: 05032	DATE: 10/11/91
DRAWN BY: PD	CHECKED BY: WF

**SOIL STOCKPILE SAMPLING LOCATIONS
SOUTHERN PACIFIC TRANSPORTATION CO.
5TH AND KIRKHAM STREETS PROPERTY
OAKLAND, CALIFORNIA
SEPTEMBER 6, 1991**

FIGURE: 3
SCALE: as shown

Benicia Division
6006 Egret Ct., Benicia, California 94510

(707) 747-2757
FAX (707) 747-2765

CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-1
Project : 05032
Analyzed : 09/10/91
Analyzed by: GB
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21402	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
TOTAL PETROLEUM HYDROCARBONS					1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND		
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND		
Percent Surrogate Recovery			93.		

Benicia Division is certified by CA Department of Health Services: Laboratory #227

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NCI1011

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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CLIENT: Walt Floyd
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Sacramento, CA 95827

Lab Number : NC-0490-2
Project : 05032
Analyzed : 09/10/91
Analyzed by: GB
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21403	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
TOTAL PETROLEUM HYDROCARBONS					1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND		
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND		
Percent Surrogate Recovery			94.		

Benicia Division is certified by CA Department of Health Services: Laboratory #227
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NCI10I1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek
Mary Havlicek, Ph.D.
President

**COAST - TO -
COAST
ANALYTICAL
SERVICES**

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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CLIENT: Walt Floyd
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9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-3
Project : 05032
Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21404	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL MG/KG	RESULT MG/KG	NOTE	
TOTAL PETROLEUM HYDROCARBONS					1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND		
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND		
Percent Surrogate Recovery			87.		

Benicia Division is certified by CA Department of Health Services: Laboratory #227
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(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NC11111

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek
Mary Havlicek, Ph.D.
President



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CLIENT: Walt Floyd
S.P. Environmental Systems
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Sacramento, CA 95827

Lab Number : NC-0490-4
Project : 05032
Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21405	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
TOTAL PETROLEUM HYDROCARBONS					1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND		
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND		
Percent Surrogate Recovery			102.		

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*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NCI1111

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President



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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-5
Project : 05032
Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
21406	Soil		09/04/91	09/06/91
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
TOTAL PETROLEUM HYDROCARBONS				1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND	
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND	
Percent Surrogate Recovery			94.	

Benicia Division is certified by CA Department of Health Services: Laboratory #227
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NC11111

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek
Mary Havlicek, Ph.D.
President



Benicia Division
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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-6
Project : 05032
Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
			09/04/91	09/06/91	
21407	Soil				
CONSTITUENT		(CAS RN)	*PQL	RESULT	NOTE
			mg/Kg	mg/Kg	
TOTAL PETROLEUM HYDROCARBONS					
Total Petroleum Hydrocarbons (Gasoline)					1,2
Total Petroleum Hydrocarbons (Diesel 2)			0.5	ND	
Percent Surrogate Recovery			0.5	ND	
				104.	

Benicia Division is certified by CA Department of Health Services: Laboratory #227
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91
MH/mje/glb/htc
NCI1111

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.
Mary Havlicek
Mary Havlicek, Ph.D.
President



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-7
Project : 05032
Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
21408	Soil		09/04/91	09/06/91
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
TOTAL PETROLEUM HYDROCARBONS				1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND	
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND	
Percent Surrogate Recovery			97.	

Benicia Division is certified by CA Department of Health Services: Laboratory #227
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91
MH/mje/glb/htc
NCI1111

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.
Mary Havlicek
Mary Havlicek, Ph.D.
President

Benicia Division
6006 Egret Ct., Benicia, California 94510

(707) 747-2757
FAX (707) 747-2765

QC Batch ID: NCI1111

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

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REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
INSTRUMENT BLANK	Solid				
CONSTITUENT	(CAS RN)	*PQL MG/KG	RESULT MG/KG	NOTE	
TOTAL PETROLEUM HYDROCARBONS				1,2	
Total Petroleum Hydrocarbons (Gasoline)		0.5	ND		
Total Petroleum Hydrocarbons (Diesel 2)		0.5	ND		
Percent Surrogate Recovery			99.		

Benicia Division is certified by CA Department of Health Services: Laboratory #227

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) EXTRACTED by EPA 5030 (purge-and-trap)
- (2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NCO490-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlik
Mary Havlik, Ph.D.
President



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Benicia Division
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(707) 747-2757
FAX (707)747-2765

QC Batch ID: NCI1111

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
QC SPIKE	Solid					
CONSTITUENT		*PQL MG/KG	SPIKE AMOUNT	RESULT MG/KG	%REC	NOTE
TOTAL PETROLEUM HYDROCARBONS						1,2
Total Petroleum Hydrocarbons (Gasoline)		0.5	1.42	1.62	114.	
Total Petroleum Hydrocarbons (Diesel 2)		0.5		NS		
Percent Surrogate Recovery			100.	102.		

Benicia Division is certified by CA Department of Health Services: Laboratory #227

* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit

- (1) EXTRACTED by EPA 5030 (purge-and-trap)
- (2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NCO490-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

Benicia Division
6006 Egret Ct., Benicia, California 94510

(707) 747-2757
FAX (707) 747-2765

QC Batch ID: NC11111

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/11/91
Analyzed by: AZ
Method : As Listed

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED		
QC SPIKE DUPLICATE	Solid					
CONSTITUENT	*PQL MG/KG	SPIKE AMOUNT	RESULT MG/KG	%REC	%DIFF	NOTE
TOTAL PETROLEUM HYDROCARBONS						1,2
Total Petroleum Hydrocarbons (Gasoline)	0.5	1.42	1.55	109.	4.9	
Total Petroleum Hydrocarbons (Diesel 2)	0.5		NS			
Percent Surrogate Recovery		100.	99.			

Benicia Division is certified by CA Department of Health Services: Laboratory #227

* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit

- (1) EXTRACTED by EPA 5030 (purge-and-trap)
- (2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

10/03/91

MH/mje/glb/htc
NC0490-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek
Mary Havlicek, Ph.D.
President



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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-1
Project : 05032
Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21402	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
Total Petroleum Hydrocarbons by 418.1		5.	52.	1	

Benicia Division is certified by CA Department of Health Services: Laboratory #227
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 09/12/91 by JLK

09/12/91
MH/trk/jlk
NCI12IR1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.
Mary Havlicek
Mary Havlicek, Ph.D.
President



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA • Newport Beach, CA • Valparaiso, IN

Benicia Division
6006 Egret Ct., Benicia, California 94510

(707) 747-2757
FAX (707) 747-2765

CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-2
Project : 05032
Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21403	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
Total Petroleum Hydrocarbons by 418.1		5.	110.	1	

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(1) Sample Preparation on 09/12/91 by JLK

09/12/91

MH/trk/jlk
NCI12IR1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlik
Mary Havlik, Ph.D.
President



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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-3
Project : 05032
Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21404	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
Total Petroleum Hydrocarbons by 418.1		5.	110.	1	

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(1) Sample Preparation on 09/12/91 by JLK

09/12/91

MH/trk/jlk
NCI12IR1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

**COAST - TO -
COAST
ANALYTICAL
SERVICES**

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CLIENT: Walt Floyd
 S.P. Environmental Systems
 9719 Lincoln Village Suite 310
 Sacramento, CA 95827

Lab Number : NC-0490-4
 Project : 05032
 Analyzed : 09/12/91
 Analyzed by: JK
 Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21405	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
Total Petroleum Hydrocarbons by 418.1		5.	100.		1

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 *RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
 (1) Sample Preparation on 09/12/91 by JLK

09/12/91

MH/trk/jlk
 NCI12IR1

Respectfully submitted,
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Mary Havlicek

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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-5
Project : 05032
Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
21406	Soil		09/04/91	09/06/91	
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
Total Petroleum Hydrocarbons by 418.1		5.	97.	1	

Benicia Division is certified by CA Department of Health Services: Laboratory #227
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 09/12/91 by JLK

09/12/91
MH/trk/jlk
NC112IR1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.
Mary Havlicek
Mary Havlicek, Ph.D.
President



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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-6
Project : 05032
Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
21407	Soil		09/04/91	09/06/91
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
Total Petroleum Hydrocarbons by 418.1		5.	100.	1

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(1) Sample Preparation on 09/12/91 by JLK

09/12/91

MH/trk/jlk
NCI12IR1

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CLIENT: Walt Floyd
S.P. Environmental Systems
9719 Lincoln Village Suite 310
Sacramento, CA 95827

Lab Number : NC-0490-7
Project : 05032
Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
21408	Soil		09/04/91	09/06/91
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
Total Petroleum Hydrocarbons by 418.1		5.	82.	1

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(1) Sample Preparation on 09/12/91 by JLK

09/12/91
MH/trk/jlk
NCI12IR1

Respectfully submitted,
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QC Batch ID: NCI12IR1

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
QC SPIKE	Solid					
CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE	
Total Petroleum Hydrocarbons by 418.1	5.	200.	200.	100.	1	

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(1) Sample Preparation on 09/12/91 by JLK

09/12/91
MH/trk/jlk
NC0490-7

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.
Mary Havlicek
Mary Havlicek, Ph.D.
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QC Batch ID: NCI12IR1

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED		
QC SPIKE DUPLICATE	Solid					
CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
Total Petroleum Hydrocarbons by 418.1	5.	200.	230.	115.	15.	1

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(1) Sample Preparation on 09/12/91 by JLK

09/12/91

MH/trk/jlk
NC0490-7

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QC Batch ID: NCI12IR1

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/12/91
Analyzed by: JK
Method : EPA 418.1

INSTRUMENT BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
INSTRUMENT BLANK	Solid				
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
Total Petroleum Hydrocarbons by 418.1		5.	ND		

Benicia Division is certified by CA Department of Health Services: Laboratory #227
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09/12/91

MH/trk/jlk
NCO490-7

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President



SP - EVS

CHAIN-OF-CUSTODY RECORD

No. 11456

SP - Environmental Systems, Inc. • 9719 Lincoln Village Drive, Ste. 310 • Sacramento, CA 95827 • Phone 916-369-8971 • FAX 916-369-8370

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE LOCATION (INCLUDE MATRIX AND POINT OF SAMPLE)	PROJECT LOCATION	PROJECT CONTACT	PROJECT TELEPHONE NO.	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)	NUMBER OF CONTAINERS	REMARKS
							Oakland, CA	W.D. FLOYD	916-369-8971	TPH-G TPH-D TPH-H		
							R.W. Garey					
1	21402	9/4	10:30		X					X	1	NC- 498 -1
2	21403	9/4	10:45		Y						1	-2
3	21404	9/4	13:15		Y						1	-3
4	21405	9/4	13:20		Y						1	-4
5	21406	9/4	15:30		Y						1	-5
6	21407	9/4	15:40		Y						1	-6
7	21408	9/4	16:00		X						1	-7
8												
9												
10												

TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
Water Pump	<i>[Signature]</i>	9/19	9:41am	Results by 9/13/91
				REMOVED, COOLED, SEALED, IMPACT
				7 ST

SAMPLER'S NAME	WALTER FLOYD	SAMPLER'S SIGNATURE	<i>[Signature]</i>
----------------	--------------	---------------------	--------------------

LAB COPY

PLEASE PRESS HARD. ALL 4 PARTS MUST BE READABLE.