aqua science engineers inc.

February 28, 1996

QUARTERLY GROUNDWATER MONITORING REPORT
FEBRUARY 7, 1996 SAMPLING
ASE JOB NO. 2659
at
Romak Iron Works
3250 Hollis Street
Oakland, California 94662

REGISTERED PROFESSIONAL ENGINEER
DAVID M. SCHULTZ
No. 38738
Exp 4-97
CIVIL
STATE OF CALIFORNIA

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

1.0 INTRODUCTION

This report outlines the methods and findings of Aqua Science Engineer's, Inc. (ASE) quarterly groundwater sampling at the Romak Iron Works property located at 3250 Hollis Street in Oakland, California *(Figures 1 and 2)*.

2.0 GROUNDWATER SAMPLING

On February 16, 1996, ASE measured the depth to water in the site monitoring well using an electric water level sounder. The well was also checked for the presence of free-floating hydrocarbons. The well contained a thick hydrocarbon sheen. Prior to sampling, the well was purged of four well casing volumes of groundwater using a pre-cleaned PVC bailer. The samples were collected from the well with a dedicated polyethylene bailer. The groundwater samples were decanted from the bailer into three (3) 40-ml volatile organic analysis (VOA) vials and two (2) 1-liter amber glass bottles. The samples were preserved with hydrochloric acid, labeled, placed in protective foam sleeves, and placed into an ice chest containing wet ice for transport to Curtis and Tompkins, Ltd. (C&T) of Berkeley, California (ELAP #1459) under chain of custody.

Well sampling purge water was contained in DOT 17H drums and stored on-site for handling by the client at a later date. See Appendix A for a copy of the well sample field log.

3.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed by C&T for total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 5030/8015, total petroleum hydrocarbons as diesel (TPH-D) by modified EPA Method 3510/8015, benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Method 8020 and hydrocarbon oil and grease (O&G) by Standard Method 5520 BF. The analytical results are tabulated below in Tables One and Two, and the certified analytical report and chain of custody form are included in Appendix B.

TABLE ONE
Summary of Chemical Analysis of **GROUNDWATER** Samples
TPH-G, TPH-D and BTEX
All results are in **parts per billion**

Sampling Date	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
08-04-93	12,000	---	7.6	9.7	9.9	29	---
11-18-93	10,270	---	3,169	38.3	661.2	659.4	---
02-09-94	17,000	---	6,200	64	770	420	---
05-25-94	24,000	---	6,200	27	1,100	210	---
08-18-94	22,000	---	5,000	10	740	150	---
11-14-94	20,000	4,200	4,200	25	860	450	---
02-03-95	20,000	4,600*	3,400	11	810	100	---
05-02-95	21,000	3,400	3,100	21	910	130	---
08-08-95	17,000	1,800	2,800	11	680	63	---
11-13-95	17,000	<1,000	2,300	8	550	69	---
02-16-96	8,900	7,600	3,100	21	760	474	<40
DTSC MCL	NE	NE	1.0	100**	680	1,750	NE
EPA METHOD		5030/ 8015	602 or 8020	602 or 8020	602 or 8020	602 or 8020	8020

--- = Not analyzed
NE = Not established
DTSC = California EPA Department of Toxic Substance Control
MCL = maximum contaminant level for drinking water
* = motor oil detected
** = DTSC recommended action level for drinking water; MCL not established

TABLE TWO
Summary of Chemical Analysis of **GROUNDWATER** Samples
Oil and Grease
All results are in **parts per billion**

Sampling Date	Total Oil & Grease	Hydrocarbon Oil & Grease
11-14-94	4,000	<1,000
02-07-95	11,000	9,300
05-02-95	5,000	1,000
08-08-95	11,000	9,700
11-13-95	1,000	<1,000
02-16-96	---	<5,000
EPA METHOD	5520C	5520F

4.0 CONCLUSIONS AND RECOMMENDATIONS

High TPH-G, TPH-D, benzene and ethylbenzene concentrations (8,900 ppb, 7,600 ppb, 3,100 ppb and 760 ppb, respectively) were detected in groundwater samples collected from monitoring well MW-1. The benzene concentration of 3,100 ppb exceeded the California Department of Toxic Substances Control (DTSC) maximum contaminant level (MCL) for drinking water of 1 ppb. The ethylbenzene concentration of 760 ppb exceeded the DTSC MCL for drinking water of 680 ppb. The TPH-G concentration this quarter is at a historic low; however, the TPH-D concentration this quarter is at a historic high. The BTEX concentrations detected this quarter are consistent with previous results.

5.0 REPORT LIMITATIONS

The results of this investigation represent conditions at the time of the groundwater sampling, at the specific locations at which the samples were collected, and for the specific parameters analyzed for by the laboratory.

It does not fully characterize the site for contamination resulting from unknown sources, or for parameters not analyzed for by the laboratory. All of the laboratory work cited in this report was prepared under the direction of an independent CSDHS certified laboratory. The independent

laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Aqua Science Engineers appreciates the opportunity to assist Romak Iron Works with its environmental needs. Should you have any questions or comments, please feel free to call us at (510) 820-9391.

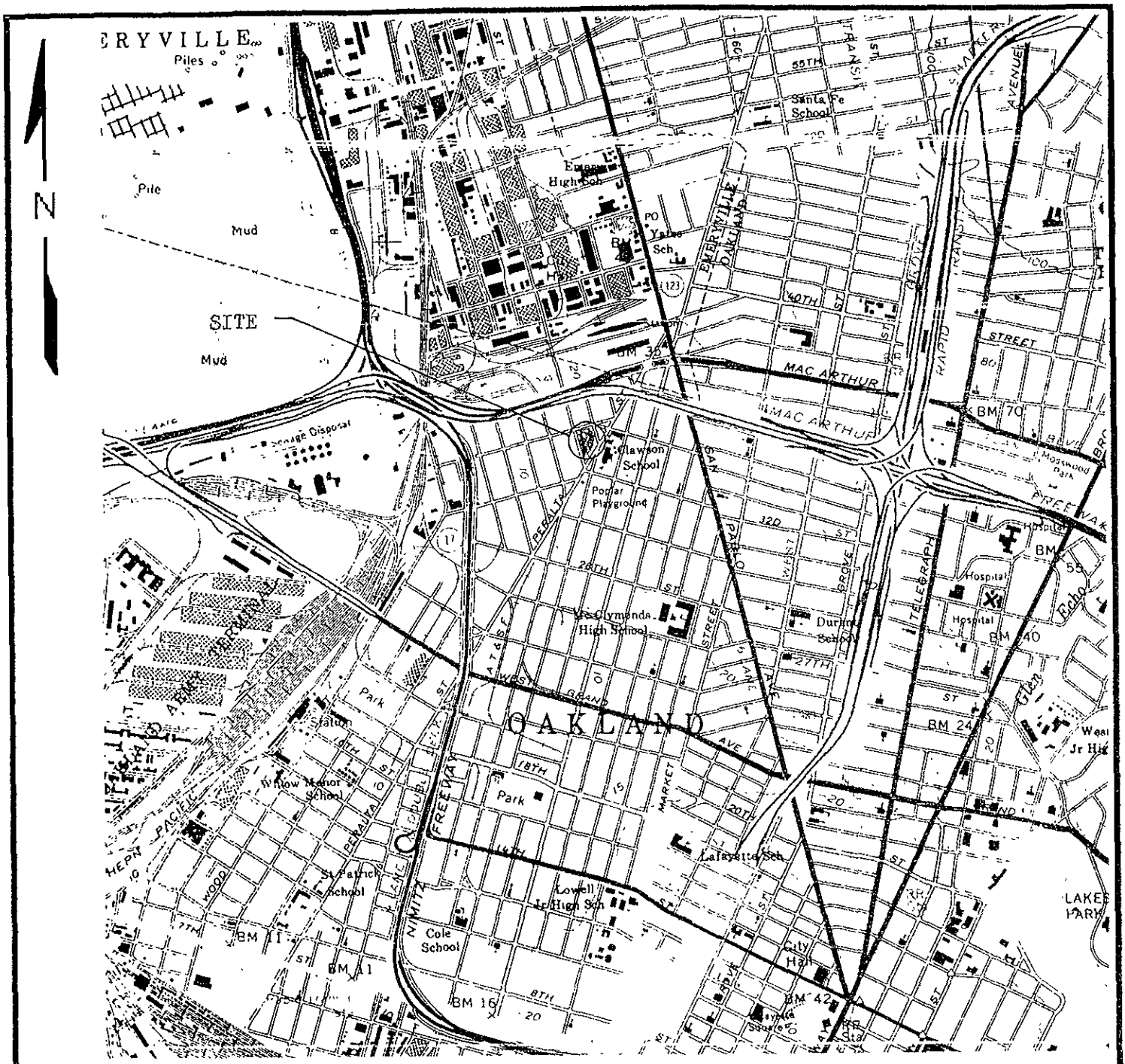
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay, R.E.A.
Project Geologist

Attachments: Figures 1 and 2
Appendices A and B

cc: Mr. Kevin Romak, Romak Iron Works
Ms. Susan Hugo, Alameda County Health Care Services Agency
Mr. Kevin Graves, California Regional Water Quality Control Board

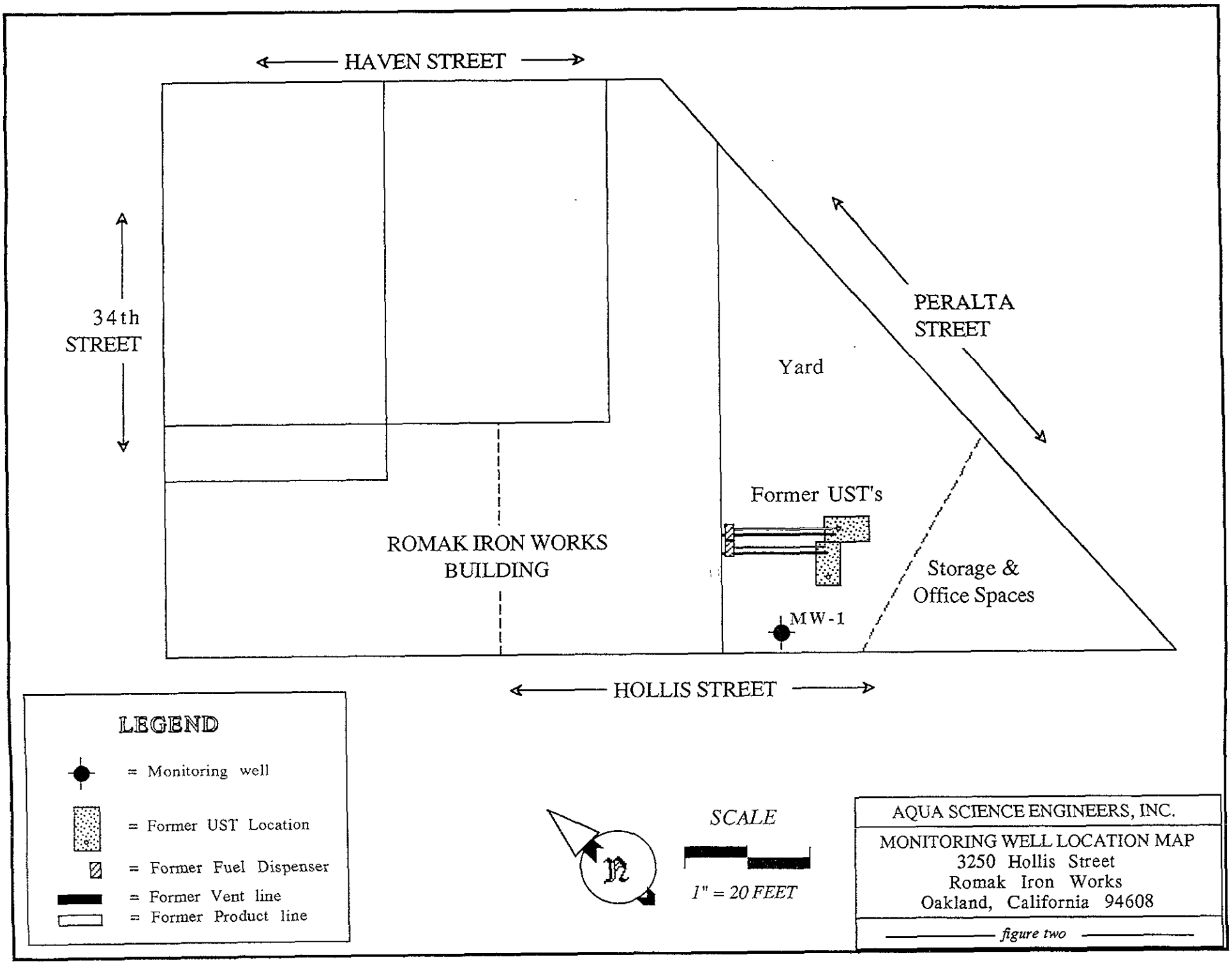


SITE LOCATION MAP

Romak Iron Works
3250 Hollis Street
Oakland, California

Aqua Science Engineers | Figure 1

BASE: USGS Oakland West 7.5 minute quadrangle topographic r
dated 1980, scale 1:24,000.


HAVEN STREET
34th STREET
PERALTA STREET
Yard
Former UST's
ROMAK IRON WORKS BUILDING
Storage & Office Spaces
MW-1
HOLLIS STREET
LEGEND
= Monitoring well
= Former UST Location
= Former Fuel Dispenser
= Former Vent line
= Former Product line
N
SCALE
1" = 20 FEET
AQUA SCIENCE ENGINEERS, INC.
MONITORING WELL LOCATION MAP
3250 Hollis Street
Romak Iron Works
Oakland, California 94608
figure two

APPENDIX A

Well Sampling Field Log

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Romak Iron Works, Oakland, CA
Job #: 2657 Date of sampling: 2-16-96
Well Name: MW-1 Sampled by: SF
Total depth of well (feet): 21.65 Well diameter (inches): 2"
Depth to water before sampling (feet): 6.81
Thickness of floating product if any: Sheen
Depth of well casing in water (feet): 14.84
Number of gallons per well casing volume (gallons): 2.5
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 10
Equipment used to purge the well: Dedicated Bailer
Time Evacuation Began: 12:45 Time Evacuation Finished: 13:02
Approximate volume of groundwater purged: 10
Did the well go dry?: NO After how many gallons: —
Time samples were collected: 13:10
Depth to water at time of sampling: 6.98
Percent recovery at time of sampling: 99%
Samples collected with: Dedicated Bailer
Sample color: clear Odor: Strong HC Odor
Description of sediment in sample: None

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-1	3	40 ml VOAs	HCl	Yes	TPHg/BTEX/MTBE
↓	1	1 L Amber	—	↓	TPHD
↓	1	1 L Amber	HCl	↓	O+G BF

APPENDIX B

Analytical Report and Chain of Custody Form

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Rd
Suite 4
San Ramon, CA 94583

Date: 22-FEB-96
Lab Job Number: 124484
Project ID: 2657
Location: Romak Iron Works

Reviewed by: _____

Reviewed by: _____

TEH-Tot Ext Hydrocarbons

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124484-001	MW-1	26059	02/16/96	02/21/96	02/22/96	

Analyte	Units	124484-001	
Diln Fac:		1	
Diesel Range	ug/L	7600	YLH
Surrogate			
Hexacosane	%REC	77	

Y: Sample exhibits fuel pattern which does not resemble standard
H: Heavier hydrocarbons than indicated standard
L: Lighter hydrocarbons than indicated standard

Curtis & Tompkins, Ltd

Lab #: 124484

BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water
Batch#: 26059
Units: ug/L
Diln Fac: 1

Prep Date: 02/21/96
Analysis Date: 02/22/96

MB Lab ID: QC15681

Analyte	Result	
Diesel Range	<50	
Surrogate	%Rec	Recovery Limits
Hexacosane	98	60-140

Curtis & Tompkins, Ltd.

Lab #: 124484 BATCH QC REPORT

TEH-Tot Ext Hydrocarbons	
Client: Aqua Science Engineers, Inc.	Analysis Method: CA LUFT (EPA 8015M)
Project#: 2657	Prep Method: EPA 3520
Location: Romak Iron Works	

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water	Prep Date: 02/21/96
Batch#: 26059	Analysis Date: 02/22/96
Units: ug/L	
Diln Fac: 1	

BS Lab ID: QC15682

Analyte	Spike Added	BS	%Rec #	Limits
Diesel Range	2475	2471	100	60-140
Surrogate	%Rec	Limits		
Hexacosane	110	60-140		

BSD Lab ID: QC15683

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel Range	2475	2731	110	60-140	10	<35
Surrogate	%Rec	Limits				
Hexacosane	111	60-140				

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

TVH-Total Volatile Hydrocarbons

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124484-001	MW-1	26042	02/16/96	02/20/96	02/20/96	

Analyte	Units	124484-001
Diln Fac:		20
Gasoline	ug/L	8900
Surrogate		
Trifluorotoluene	%REC	102
Bromobenzene	%REC	104

BTXE

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: EPA 8020
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124484-001	MW-1	26042	02/16/96	02/20/96	02/20/96	

Analyte	Units	124484-001
Diln Fac:		20
Benzene	ug/L	3100
Toluene	ug/L	21
Ethylbenzene	ug/L	760
m,p-Xylenes	ug/L	450
o-Xylene	ug/L	24
Surrogate		
Trifluorotoluene	%REC	108
Bromobenzene	%REC	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 124484
CLIENT: AQUA SCIENCE ENGINEERS, INC.
PROJECT ID: 2657
LOCATION: ROMAK IRON WORKS

DATE SAMPLED: 02/16/96
DATE RECEIVED: 02/16/96
DATE ANALYZED: 02/20/96
DATE REPORTED: 02/23/96
BATCH NO: 26042

ANALYSIS: MTBE
ANALYSIS METHOD: EPA 8020

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
124484-001	MW-1	ND	ug/L	40
METHOD BLANK	N/A	ND	ug/L	2.0

ND = Not detected at or above reporting limit.

Curtis & Tompkins, Ltd.

Lab #: 124484 BATCH QC REPORT

TVH-Total Volatile Hydrocarbons	
Client: Aqua Science Engineers, Inc. Project#: 2657 Location: Romak Iron Works	Analysis Method: CA LUFT (EPA 8015M) Prep Method: EPA 5030
METHOD BLANK	
Matrix: Water Batch#: 26042 Units: ug/L Diln Fac: 1	Prep Date: 02/20/96 Analysis Date: 02/20/96

MB Lab ID: QC15644

Analyte	Result	
Gasoline	<50	
Surrogate	**%Rec**	**Recovery Limits**
Trifluorotoluene	94	69-120
Bromobenzene	84	70-122

Curtis & Tompkins, Ltd.

Lab #: 124484 BATCH QC REPORT

BTXE	
Client: Aqua Science Engineers, Inc.	Analysis Method: EPA 8020
Project#: 2657	Prep Method: EPA 5030
Location: Romak Iron Works	
METHOD BLANK	
Matrix: Water	Prep Date: 02/20/96
Batch#: 26042	Analysis Date: 02/20/96
Units: ug/L	
Diln Fac: 1	

MB Lab ID: QC15644

Analyte	Result
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	100	58-130
Bromobenzene	95	62-131

Curtis & Tompkins, Ltd.

Lab #: 124484

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 26042
Units: ug/L
Diln Fac: 1

Prep Date: 02/20/96
Analysis Date: 02/20/96

LCS Lab ID: QC15642

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline	1951	2000	98	80-120
Surrogate	**%Rec**	**Limits**		
Trifluorotoluene	101	69-120		
Bromobenzene	106	70-122		

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 1 outside limits

Curtis & Tompkins, Ltd.

Lab #: 124484

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ
Lab ID: 124439-001
Matrix: Water
Batch#: 26042
Units: ug/L
Diln Fac: 1

Sample Date: 02/08/96
Received Date: 02/13/96
Prep Date: 02/20/96
Analysis Date: 02/20/96

MS Lab ID: QC15645

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline	2000	<50.00	1934	97	75-125
Surrogate	**%Rec**	**Limits**			
Trifluorotoluene	108	69-120			
Bromobenzene	112	70-122			

MSD Lab ID: QC15646

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline	2000	1937	97	75-125	0	<20
Surrogate	**%Rec**	**Limits**				
Trifluorotoluene	107	69-120				
Bromobenzene	112	70-122				

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

Curtis & Tompkins, Ltd.

Lab #: 124484

BATCH QC REPORT

BTXE

Client: Aqua Science Engineers, Inc.
Project#: 2657
Location: Romak Iron Works

Analysis Method: EPA 8020
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 26042
Units: ug/L
Diln Fac: 1

Prep Date: 02/20/96
Analysis Date: 02/20/96

LCS Lab ID: QC15643

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	20.9	20	105	80-120
Toluene	21.5	20	108	80-120
Ethylbenzene	20.9	20	105	80-120
m,p-Xylenes	42	40	105	80-120
o-Xylene	21.4	20	107	80-120

Surrogate	%Rec	Limits
Trifluorotoluene	100	58-130
Bromobenzene	99	62-131

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

Curtis & Tompkins, Ltd.

Client: Aqua Science Engineers, Inc.

Laboratory Login Number: 124484

Project Name: Romak Iron Works
Project Number: 2657

Report Date: 22 February 96

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) METHOD: SMWW 17:5520BF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
124484-001	MW-1	Water	16-FEB-96	16-FEB-96	21-FEB-96	ND	mg/L	5	TR	26064

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

Q C B a t c h R e p o r t

Client: Aqua Science Engineers, Inc.
Project Name: Romak Iron Works
Project Number: 2657

Laboratory Login Number: 124484
Report Date: 22 February 96

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) QC Batch Number: 26064

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
MB	ND	5	mg/L	SMWW 17:5520BF	21-FEB-96

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	81%	SMWW 17:5520BF	21-FEB-96
BSD	87%	SMWW 17:5520BF	21-FEB-96

		Control Limits
Average Spike Recovery	84%	80% - 120%
Relative Percent Difference	7.1%	< 20%

1414484

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Custody

DATE 2-16-96 PAGE 1 OF 1

SAMPLERS (SIGNATURE) Scott T. Ferriman (PHONE NO.) 510-820-9391

PROJECT NAME Romak Iron Works NO. 2657

ADDRESS Oakland, CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

5-Day TAT

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH- GASOLINE (EPA 5030/8015)	TPH- GASOLINE/BTEX (EPA 5030/8015-8020)	TPH- DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 B&F or (B&F))	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	MTBE
MW-1	2-16-96	13:10	water	5		X	X					X						X

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
Scott T. Ferriman 13:50			D. Moore	
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)	
Scott Ferriman 2-16-96			D. MOORE 1:50 pm	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE, Inc.	Company-	Company-	Company- 2/16/96	